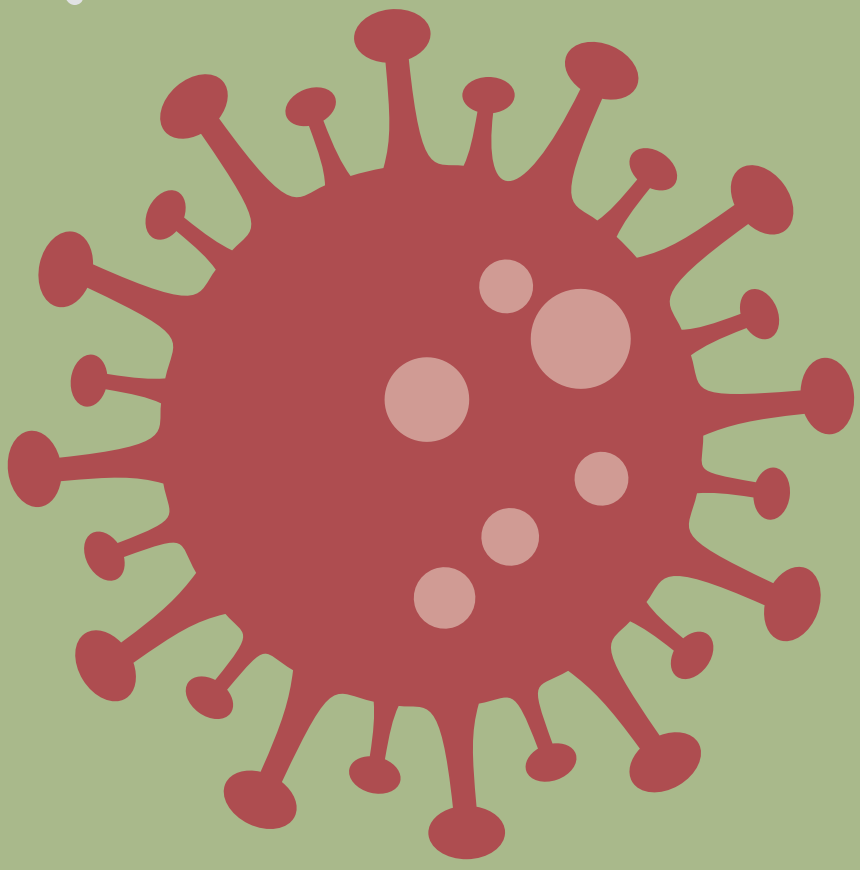
Thai Health 2021

Institute for Population and Social Research, Mahidol University
Thai Health Promotion Foundation



COVID-19

The Virus that Shudders the World

10 Indicators of "Area Health"

10 Outstanding Situations on Health and Wellbeing

4 Outstanding Accomplishments for Health

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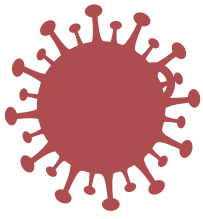

2021

COVID-19

The Virus that Shudders the World

Foreword

The 2021 Report of Thai Health starts off with ten area indicators of health as follows: 1) Health behavior; 2) Physical health; 3) Mental health; 4) Social health; 5) Maternal and child health; 6) Vulnerable populations; 7) Environment; 8) Natural resources; 9) Health resourcess; and 10) Special Health Zones.

Next, the authors discuss ten health milestones in 2020, including the following important issues: 1) New generation of political activism: From flash mob to the People's Party 2020; 2) Smog and wildfires in the North: Sustainable management approaches; 3) Looking at the process of criminal justice through the case of "Boss;" 4) The poverty problem in Thailand: Has it improved or worsened?; 5) "Drink and Drive:" Road crimes; 6) Violence against students: Problems and solutions; 7) Liver cancer: The Grim Reaper takes down Thais; 8) Land bridge: Gulf of Thailand – Andaman, a 20-year mega-project proposal; 9) The problem of missing children in the Thai social context; and 10) Man and elephant: The dynamics of coexistence.

This section of the report concludes with the following four "best practice" cases in Thailand during calendar year 2020: 1) International praise for Thailand's response to COVID-19; 2) "The Gold Card" Policy for treatment anywhere: Part 2 of "30 baht cures all diseases"; 3) Thai massage is listed as a World Cultural Heritage; and 4) ThaiHealth wins the "Nelson Mandela" award for being a global model of a health promotion organization.

The special theme of this year's issue of Thai Health is a crisis not just affecting Thailand, but virtually every country in the world and nearly simultaneously. That is the sudden emergence of COVID-19: A Disaster that is Shaking the World. COVID-19 burst onto the world stage in early 2020. This volume will review the early sequence of events related to COVID-19, the strong response and victory over COVID in China, and the epidemic situation in the United States, Italy, Iran, and England. Next, the report takes a closer look at Thailand and COVID, the impact and response, the development of treatments, the campaign to vaccinate the population.

This volume uses the word "COVID-19" to refer to the novel coronavirus. The "-19" refers to the fact that the virus was first discovered in later 2019. The Thai Health Report 2021 Working Group would like to thank all readers for their continued support and follow-up by using the information herein for benefit in terms of education, policy, and practice. It is a feeling of pride and power for the Working Group to continue to produce quality health reports about and for the Thai people. Please stay tuned to read more Thai health reports and interesting articles on the Report website www.thaihealthreport.com

Thai Health Working Group

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10

Indicators of “Area Health”

10 Indicators of "Area Health"

In each area of Thailand, there are differences in climate, terrain, social, economic and cultural characteristics. These variations also shape a variety of health issues including health status, risk factors and competitive factors.

Each area has a specific issue which reflects the health of Thai people at the local level. Looking at these issues from an areal perspective helps to illuminate myriad problems, challenges, and disparities of Thai people around the country.

Thai Health 2021 presents the indicators of population health at the area level of Thailand to reflect the diversity of health issues at the provincial, regional, and special-health-zone levels including the online world. This year, this section is divided into 10 sections. The first section is about health behaviors, while sections 2-5 are about health status: physical, mental, social and maternal and child health. Sections 6-8 focus on vulnerable populations, the environment, and natural resources. Next, Section 9 addresses the health resources. Finally, Section 10 concludes with special healthcare zones, which refer to areas with a unique context that differs from the mainstream and requires an unconventional approach to public health management. These special zones consist of the following: Marine public health; border public health; cross-border migrant population settlements; and the Eastern Economic Corridor. Each category focuses on presenting a variety of health issues in various dimensions of each area.

Worrisome health behaviors in Thai society today include smoking, consumption of alcohol, and driving while intoxicated. Southerners have the highest rates of smoking behavior among regions, while the northerners have the highest proportion of alcohol consumption, including the highest prevalence of drink-driving. In 2019, people in the north region also had the highest mortality rate (all causes). Part of this may be due to risky behavior, but another factor may be related to the fact that the north has the highest proportion of older people

Today's trends in lifestyle behavior are an important determinant of health. Currently, the top three causes of death among Thais people are chronic non-communicable diseases (NCD), including cancer, tumors of the circulatory system, and respiratory disease. It is noteworthy that residents of Bangkok are more likely to die from these NCDs than people in other regions. In the area of mental health, even though Bangkok has the most facilities and personnel to address mental health care, there remain problems of access to these services by those in need. The central region has consistently had lower mental health scores than other regions over the past five years. That said, the northern region has the most marked decline in mental health over the same period. It is also the region with the highest suicide rate: almost twice as high as the country overall.

The overall social health of Thai people is in a good condition. Most Thai people in all regions feel safe in their communities. But there are also issues of economic stress and job pressure that create feelings of inequality for Bangkokians. Feeling discriminated against or by their employment status is clearly higher among workers in Bangkok than in other regions.

At the macro level, Thailand's lower birthrate is also continuing to decline. The north has the lowest birth rate, but, by contrast, the north also has the highest teen birth rate. Bangkok has the highest prevalence of mothers practicing exclusive breastfeeding in the first six months of their infant's life. However, at the same time, the proportion of overweight/obesity was higher in Bangkok than other regions as well. Poverty continues to be a major cause of population vulnerability. Since 2017, the southern region has recorded the highest rate of poverty. This trend may be more evident as teenagers in the south currently have the lowest enrollment rate in secondary school. The northeast region used to have the highest proportion of people living below the poverty line, but that population remains vulnerable due to the high proportion of workers in the non-formal labor sector who are not under the Social Security System.

In the area of the environment and natural resources, this review found deterioration of the air and water quality, as well as pollution caused by solid waste and hazardous industrial waste. The north of Thailand continues to experience the highest prevalence of small dust particles in the atmosphere. Hazardous waste from industry was highest in industry-heavy provinces such as Rayong, Chonburi, and Samut Prakan. While the south, east and central regions faced problems of marine debris that, when combined with global warming, is contributing to the deterioration of the Thai marine life.

Although, overall, Thailand's medical resources are improving, the gap between the regions remained glaring. The ratio of population to physicians in the northeast nearly five times more than in Bangkok. When considering coverage of health resources in Bangkok compared with the other four regions it is therefore not surprising that stubborn inequality in healthcare persists even today.

Finally, the survey of issues in special health zones is divided into four areas: marine health, border public health; cross-border migrant settlements, and the Eastern Economic Corridor. This review found that there are health challenges that are specific to the area. In the marine zone, there are hazards such asaccidents at sea and and decompression sickness. In the international border areas, there are issues with the cost of health services. In settlements ofnon-Thai cross-bordermigrants there are health protection issues. Finally, in the Eastern Economic Corridor, there are issues of growing population size due to in-migration,and expanding the public health system to keep pace with the growing working-age population and accompanying dependents.

The Thai Health Report hopes that shining a light on these area-based health issues will help society appreciate the diversity of the country, and the importance of not leaving any person or any locality behind in the march toward a comprehensively healthy Thai population.

01 Health Behavior

People in the north and the south regions of the country have greater health risks by excessive consumption of alcohol and drink driving than the other regions.

In the north, more than half of persons who are consumers of alcohol reported a history of driving a car or motorcycle while under the influence.

Changes in smoking rates in each region between 2011 and 2017:

North

Average decline in smoking rates

14.9%

Central

Average decline in smoking rates

5.1%

Northeast

Average decline in smoking rates

10.6%

South

Average decline in smoking rates

6.2%

People in the southern region have the highest rate of smoking.

> **"The different socio-economic and cultural profile of a population can affect various health behaviors in each locality, whether that is smoking, drinking alcohol, engaging in healthy physical activity, and appropriate use of public health services, among other behaviors."**

$$\text{Changes in smoking percentages in each province} = \frac{\text{Smoking percentage in 2017} - \text{Smoking percentage in 2011}}{\text{Smoking percentage in 2011}} \times 100$$

Smoking and drinking alcohol is a behavioral norm that have long affected the health of Thai people. But the situation may be improving. Data for smoking among Thais age 15 years or over is on a downward trend. Yet there remain regional differences, and the south had the highest prevalence of smokers.

Prevalence of smokers by province: 2011 and 2017

Central	2011	2017
Bangkok	15.4	15.4
Kanchanaburi	26.6	17.6
Chantaburi	19.1	17.3
Chachoengsao	18.6	15.9
Chonburi	17.3	19.0
Chainat	20.0	19.8
Trat	20.8	22.8
Nakhon Nayok	21.0	22.7
Nakhon Pathom	16.0	13.5
Nonthaburi	14.6	21.1
Pathum Thani	15.9	15.2
Prachuap Khiri Khan	26.0	22.6
Prachin Buri	22.3	16.8
Phetchaburi	20.8	20.6
Rayong	20.7	12.7
Ratchaburi	19.2	17.9
Lop Buri	22.3	18.0
Samut Prakan	17.0	14.0
Samut Songkhram	18.3	17.3
Samut Sakhon	17.0	20.8
Sra Kaeo	26.0	22.9
Saraburi	21.0	16.0
Sing Buri	17.6	18.1
Suphan Buri	16.7	16.5
Phra Nakhon Si Ayutthaya	17.4	19.8
Ang Thong	20.0	19.7

North	2011	2017
Chiang Mai	22.1	15.1
Chiang Rai	19.6	14.5
Phetchabun	22.3	20.1
Phrae	21.3	16.0
Mae Hong Son	30.6	18.3
Kamphaeng Phet	23.3	21.4
Tak	23.1	20.5
Nakhon Sawan	16.8	15.6
Nan	16.7	15.7
Phayao	16.0	18.0
Phichit	18.2	15.5
Phitsanulok	21.8	17.4
Lampang	17.8	17.1
Lamphun	23.8	20.8
Sukhothai	22.4	18.3
Uttaradit	16.8	16.4
Uthai Thani	24.5	17.8

Northeast	2011	2017
Kalasin	24.6	22.9
Khon Kaen	26.7	17.5
Chaiyaphum	22.5	19.8
Nakhon Phanom	24.6	19.9
Nakhon Ratchasima	21.6	22.4
Buriram	23.4	19.5
Maha Sarakham	23.1	18.0
Mukdahan	23.0	19.0
Yasothon	21.0	20.8
Roi Et	24.1	22.9

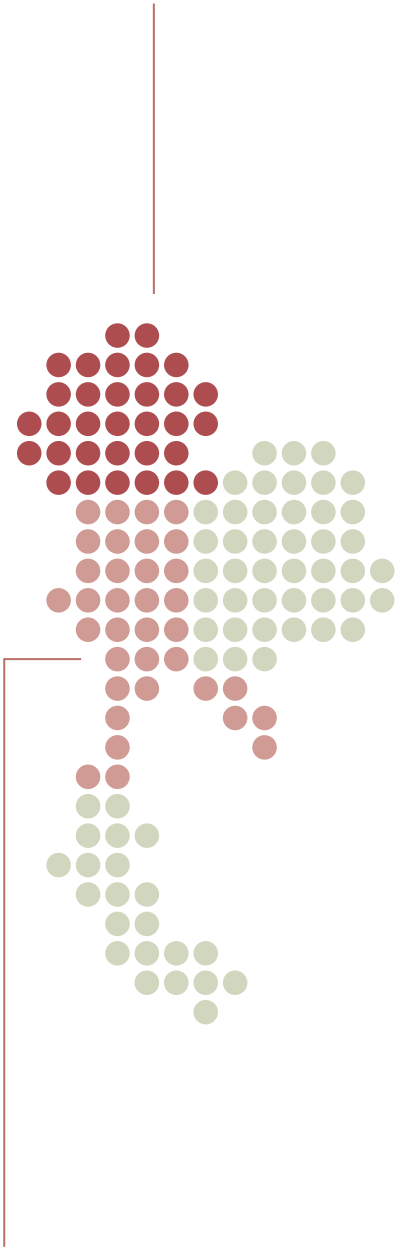
Northeast	2011	2017
Loei	26.2	19.3
Sisaket	25.0	19.0
Sakon Nakhon	18.8	25.9
Surin	25.0	20.6
Nong Khai	23.3	18.0
Nongbua Lumphoo	26.4	22.8
Amnat Charoen	26.1	22.6
Udon Thani	23.3	25.0
Ubon Ratchathani	22.1	22.8

South	2011	2017
Krabi	22.7	28.4
Chumphon	25.8	24.0
Trang	26.4	24.2
Nakhon Si Thammarat	27.4	27.6
Narathiwat	25.6	20.1
Pattani	29.1	23.4
Phang Nga	24.4	23.8
Phatthalung	24.0	24.3
Phuket	20.4	18.7
Yala	24.0	21.9
Ranong	27.6	25.5
Song Khla	22.8	20.1
Satun	29.4	27.0
Surat Thani	27.0	24.4

Source: The Smoking and Alcohol Drinking Behaviors Survey 2017, National Statistical Office

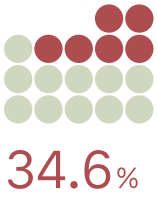
For alcohol consumption, it was found that the northern Thais had the highest prevalence of drinkers. About one in three northerners, or 34.6 percent, drink compared to about one in seven, or 14.9 percent of southerners.

Highest alcohol drinking in the North



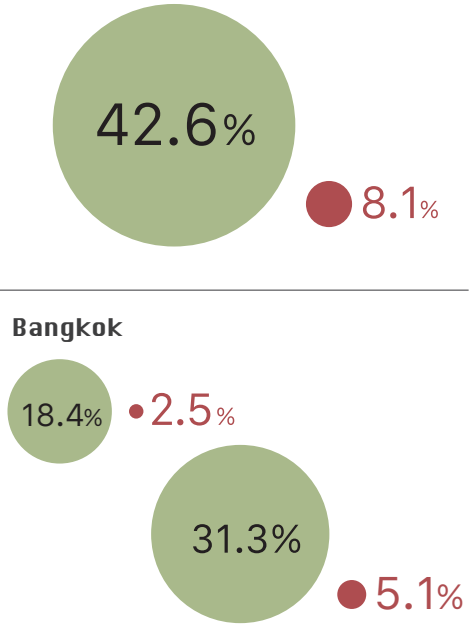
People in the Central region the least physical activity.

Percentage of alcohol drinking in 2017



Source: Smoking and Drinking Behavior Survey 2017, National Statistical Office

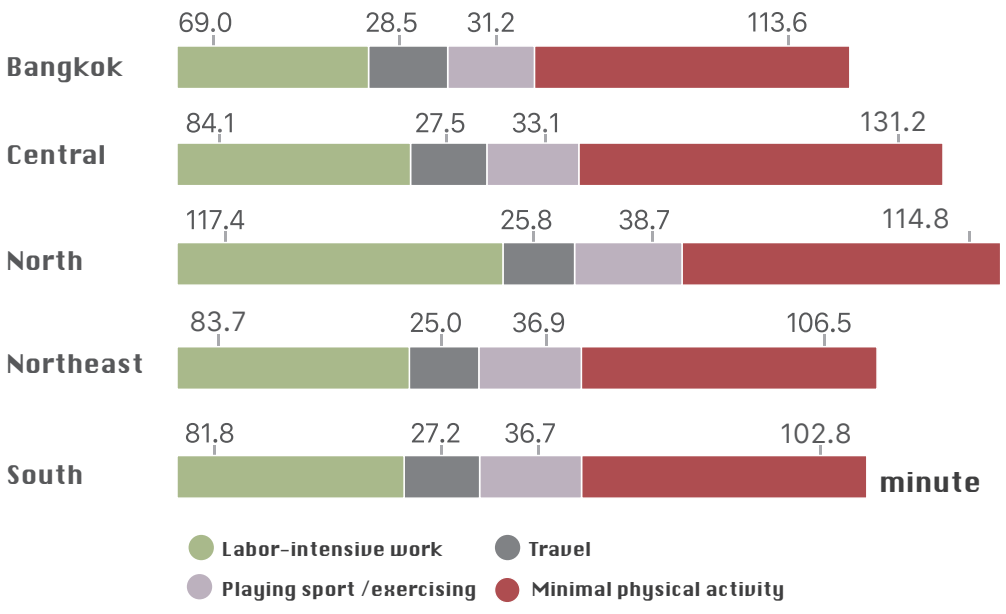
Percentage of population aged 15 and over who drink before or during driving a car/ motorcycle



Source: Smoking and Drinking Behavior Survey in 2017, National Statistical Office

Another major cause of health problems is associated with insufficient physical activity. Overall, it was found that northern Thais spent more of their time in labor-intensive work and exerting themselves, or playing sports/ exercise each day than their counterparts in other regions. Central Thais spent the least amount of time in physical activity each day among all regions.

Average time (minute) of physical activity per day of people aged 15 and over in each region by activity

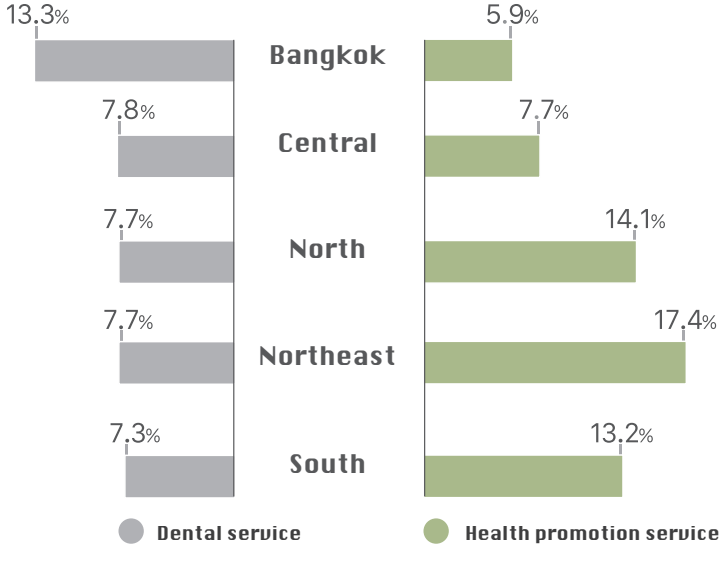


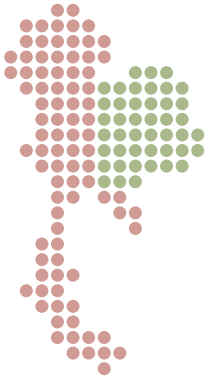
Source: The 2015 Physical Activity Survey, National Statistical Office

Bangkokians receive the highest

dental services but the lowest health promotion services.

Receipt of health services in the past 12 months in 2019





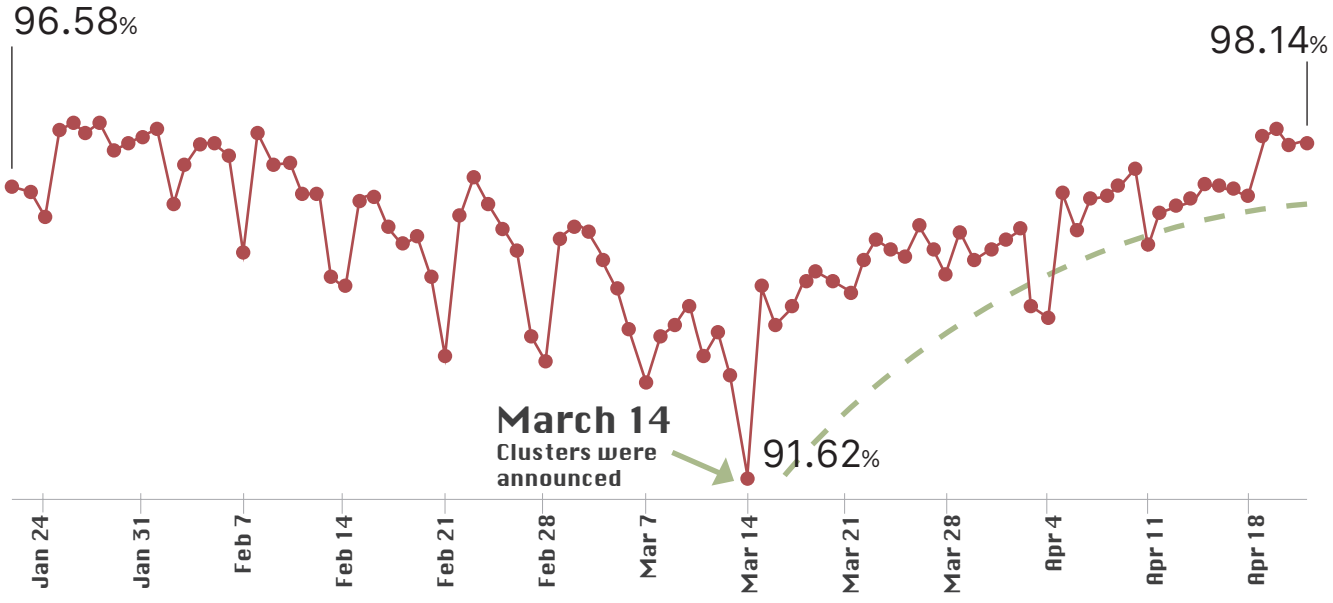
Source: The 2019 Health and Welfare Survey, National Statistical Office

Health promotion services are a key factor in disease prevention. In 2019, northeastern Thais had the highest rate of receiving health promotion services among all regions 17.4 percent.

For dental care, people in Bangkok had the highest rate of coverage for this health promotion service 13.3 percent.

Note: Health promotion refers to the use of various services to attain better health status, such as getting vaccinated, attending antenatal care check-ups, receiving family planning services, going for regular health checks and disease screening, getting prescription for food supplements, and receiving consultation services on reducing risky health behaviors..

The trend of wearing a mask correctly among people in Bangkok



Daily report

January 21 - April 22, 2021

In 2020, Thailand and the world faced the COVID-19 outbreak. Epidemic prevention is a health behavior that people should have to reduce the chance of infection. This includes, in particular, wearing a mask correctly. At the beginning of 2021, approximately 97% of Bangkok residents were likely to wear masks correctly, but the trend declined as the epidemic situation improved. By mid-March 2021, 92 percent wore masks correctly. However, the 3rd wave of COVID-19 spread erupted in April, 2021, and proper mask-wearing in Bangkok again returned to the high level of 98 percent.

The correct wearing of face masks for Bangkokians varies with the severity of the COVID-19 outbreak.

Source: Artificial Intelligence System for Assessing Mask Wearing (AiMASK), Medical Innovation Operations Center and research and development

Physical Health 02

People in Bangkok and the central region had the highest prevalence of obesity in all regions at

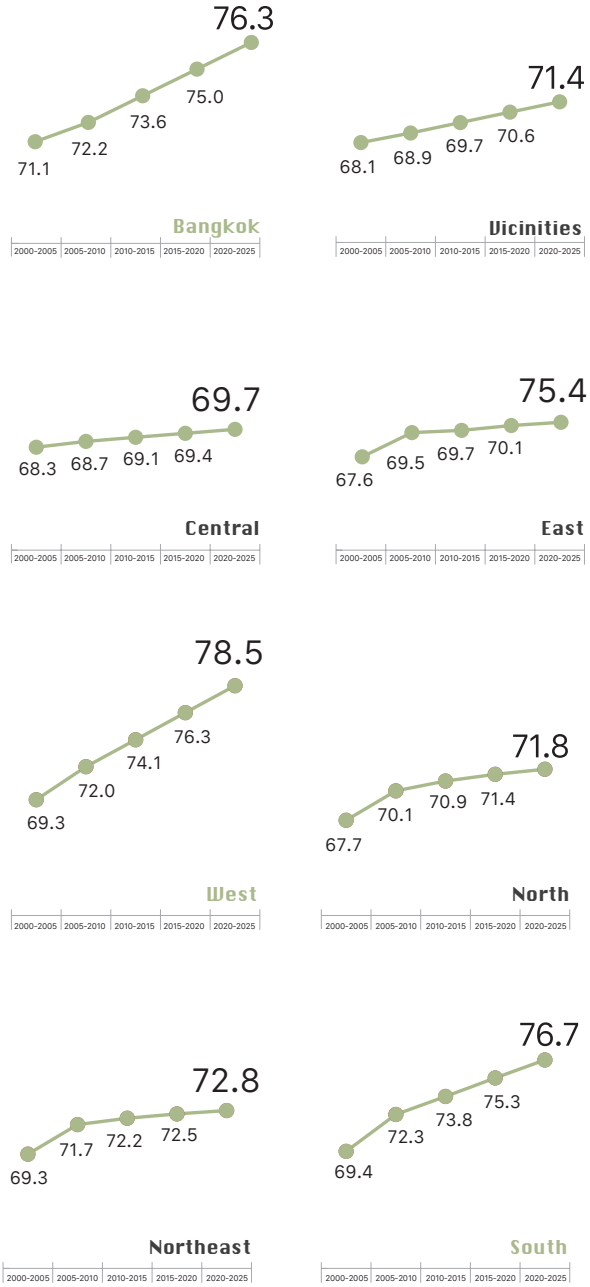
40.4%.

Physical health refers to the state of soundness of the body, not just being free from disease and infirmity.

The socio-economic environment and public health management are important influences that differentiate the physical health of people in each area.

Life Expectancy at birth in Thailand is trending upward in each region.

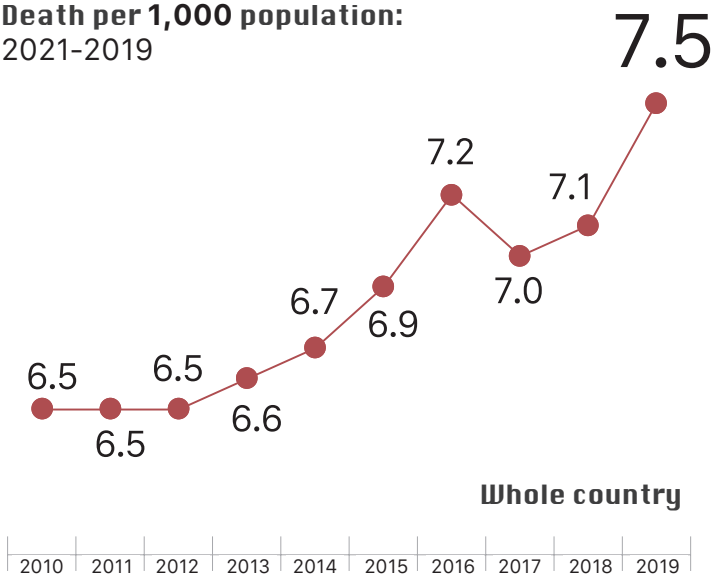
Life expectancy at birth of the population in Thailand, 1900-2025 (years)



The overall physical health of Thai people tends to improve if the average life expectancy at birth tends to increase in all regions, especially in the west, the south and Bangkok.

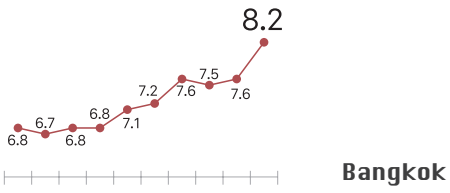
Source: Population Projections of Thailand 2000-2030, Office of the National Economic and Social Development Board

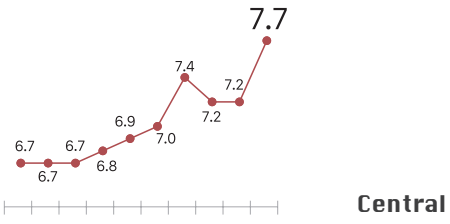
Death per 1,000 population:
2021-2019

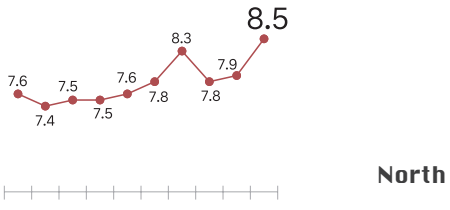


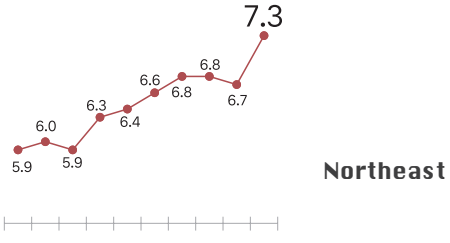
Source: Public Health Statistics A.D.2019, Strategy and Plan Division, Office of the Permanent Secretary, Ministry of Public Health

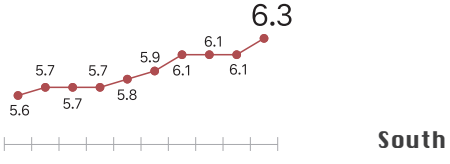
(Unit: Per 1,000 population)











As Thailand transitions into an aged society, mortality rate in all regions is on an increasing trend, especially in the north and Bangkok with mortality rates of 8.5 and 8.2 deaths per 1,000 population.

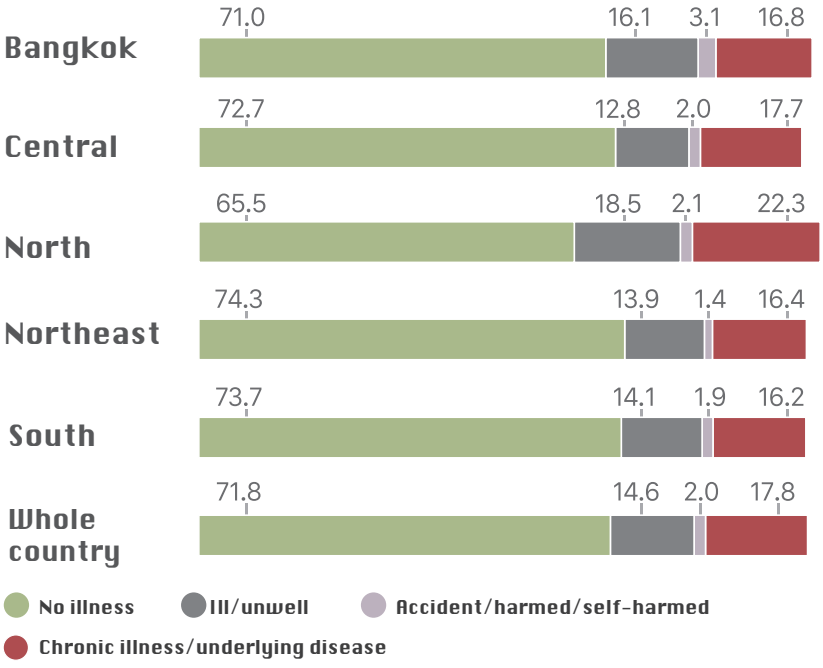
As for the cause of death in 2019, it was found that the top three causes of death were: all types of cancer and tumor, circulatory diseases and respiratory diseases. Residents of Bangkok, both male and female, have a higher mortality rate from cancer, tumors, and respiratory disease compared to other regions. Men in the north had the highest mortality rates from respiratory diseases among all regions, while women in the north had a higher cause of death from circulatory diseases than women in other regions.

Table: Deaths from all forms of cancer and tumor, circulatory diseases and respiratory diseases by region and sex: 2019

	Bangkok		Central		North		Northeast		South		Whole country	
	male	female	male	female	male	female	male	female	male	female	male	female
All types of cancer and tumor	213.6	170.1	146.6	106.7	106.7	116.4	147.3	101.9	102.0	72.6	149.8	107.6
Circulatory diseases	107.6	102.8	145.7	104.6	149.5	117.1	104.5	74.9	132.7	96.3	132.2	95.7
Respiratory diseases	106.6	76.6	97.0	63.5	110.2	66.7	81.6	47.4	69.4	39.5	90.9	56.5

Source: Public Health Statistics A.D.2019, Strategy and Plan Division, Office of the Permanent Secretary, Ministry of Public Health
(Per 100,000 population)

Illness/injury in the past month by region: 2019 (percent)

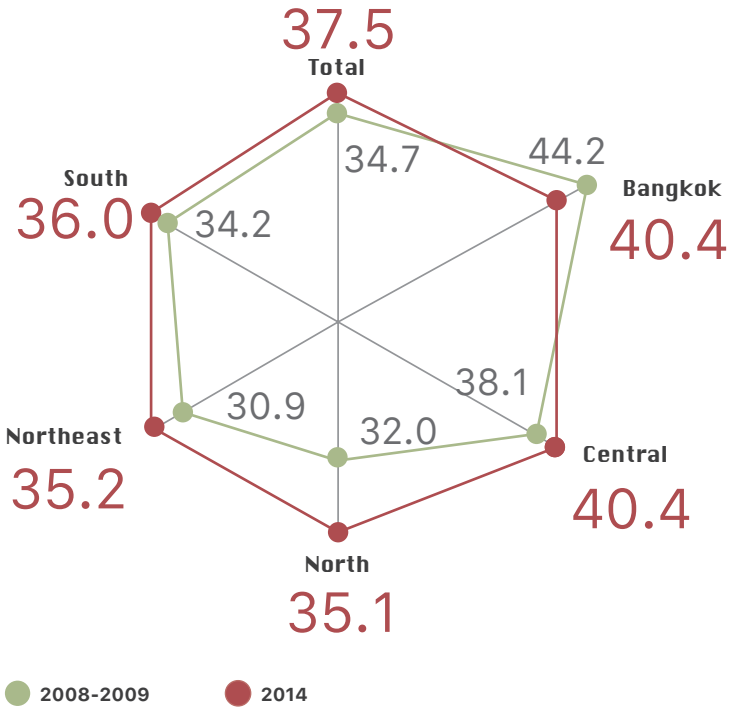


Source: The 2019 Health and Welfare Survey, National Statistical Office

In 2019, about 70 percent of Thai people had no symptoms of serious illness or injury in the month before the interview. The north had the highest proportion of sick people: 18.5 percent felt ill or unwell, especially feeling sick or unwell, and one in five suffered from a chronic illness or condition.

In terms of health risk factors such as obesity, there is an increasing trend in almost all areas of Thailand, but especially in the central region with a high proportion in 2014. Stakeholders need to be vigilant including encouraging changes in behavior and lifestyle to reduce the chance of morbidity and premature death in the future.

Proportion of Thais with obesity: 2008-2014 (percent)



Note: Obesity refers to those with a BMI greater than or equal to 25 kg/m^2

Source: Thai National Health Examination Survey, NHES IV and NHES V, Health Systems Research Institute

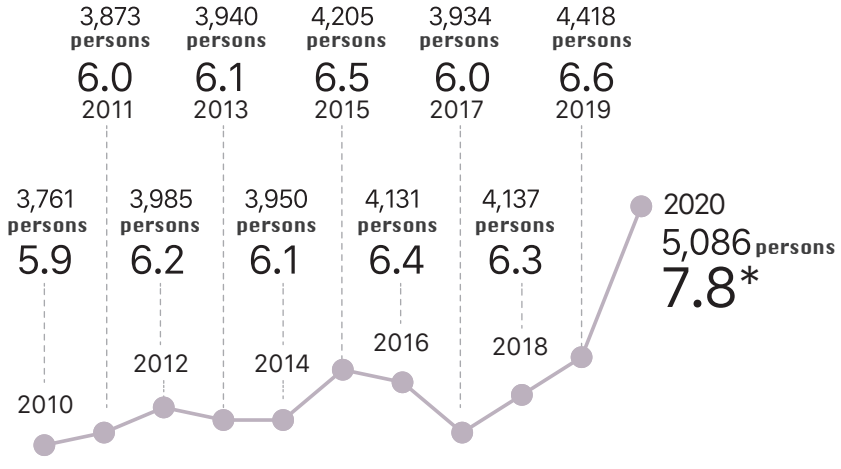
In 2015, mortality from infectious and parasitic diseases was the third leading cause of death in Thai people. However, in 2019, the cause of death from infectious diseases dropped to rank 5, with respiratory disease becoming the 3rd leading cause of death instead.

03 Mental Health

In 2020, more than

5,000 Thais committed suicide; the highest rate was in the north at 10.9 per 100,000 population.

The number and rate of completed suicide for 2010-2020 (per 100,000 population)



Note: * Year 2020 is the data reported for FY 2020 (October 1, 2019-September 30, 2020). As of January 25, 2021, the total suicide rate of the country in 2020 was 7.3 persons per 100,000 population. But there is no report on the number and rate classified by region.

Source: Suicide Rate Report 2010-2020, National Center for Suicide Prevention. Khon Kaen Rajanagarindra Psychiatric Hospital, Department of Mental Health

"Suicide tends to be an increasing problem in all regions of Thailand, but the severity of the problem and the mental health situation of the population remains different in each area, as is the availability of health resources for mental health care and access to psychiatric services."

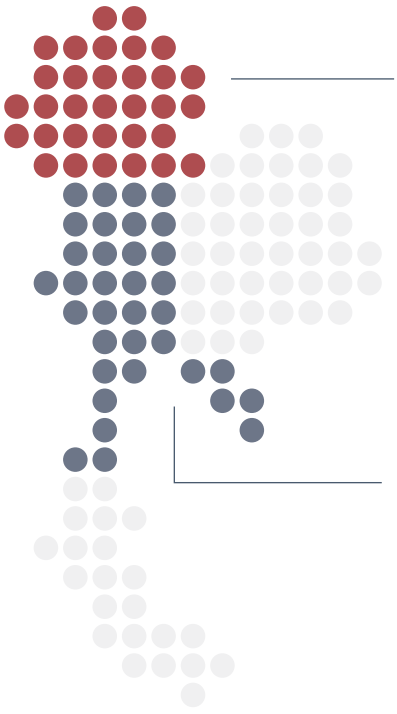
In the last decade the completed suicide rate of Thais has tended to increase, especially in 2020 during height of the COVID-19 epidemic, when the overall suicide rate of the country increased to 7.8 per 100,000 population. The region with the highest suicide rate was the north, with the top three provinces being Tak, Mae Hong Son, and Chiang Mai, where suicide rates were almost twice as high as the country overall.

Completed Suicide rate per 100,000 population: 2019-2020

	2019	2020*
Bangkok	2.6	3.0
Central	5.8	6.8
North	9.4	10.9
Northeast	7.0	8.5
South	6.1	6.6

Tak, Mae Hong Son and Chiang Mai Provinces had suicide rates that were almost twice as high as the country overall.

The mental health situation of the general Thai population is measured by the Mental Health ("Happiness") Score, which is continuously surveyed nationwide by the National Statistical Office (NSO). The data show that people in the central region had lower mental health scores than those in other regions throughout the survey period from 2014 to 2018. The north was the only region where mental health scores tended to decline. From being the "happiest" compared to other regions in 2014, northerners suffered the second lowest score after the central region residents in 2018.



North Region:

It is the only region where mental health scores tended to decline.

Central Region:

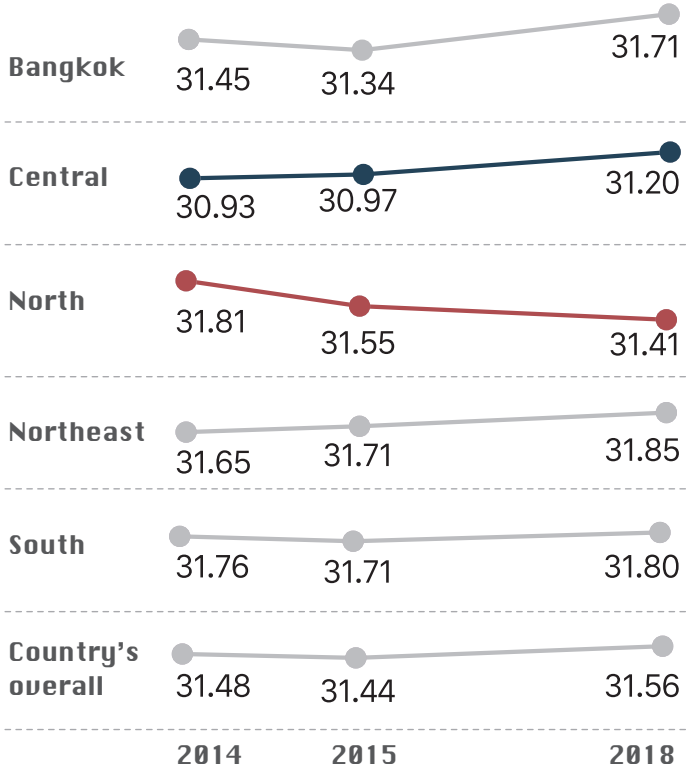
It had the lowest mental health scores compared to other regions.

10 provinces with highest completed suicide rates in 2020
(per 100,000 population)

Tak	16.4
Mae Hong Son	15.4
Chiang Mai	14.9
Sra Kaeo	12.5
Chantaburi	12.2
Nan	12.0
Chiang Rai	11.7
Phayao	11.7
Phrae	11.5
Lampang	11.5

Source: Suicide rate, FY 2020, National Center for Suicide Prevention, Khon Kaen Rajanagarindra Psychiatric Hospital, Department of Mental Health

Average mental health scores of Thai people by region: 2014, 2015, and 2018



Source: Survey of Mental Health (Happiness) of Thai People 2014-2015, The 2018 Survey on Conditions of Society, and Culture and Mental Health (Thai Happiness), National Statistical Office

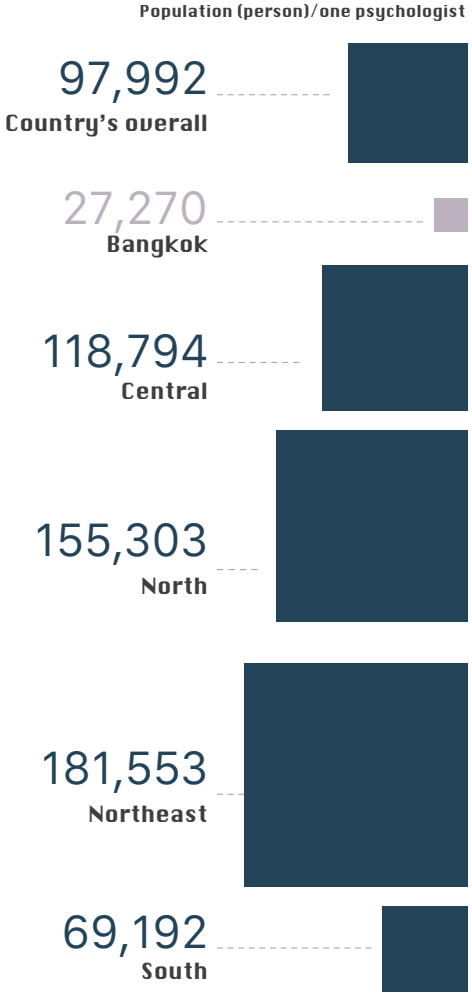
Regarding access to psychiatric services, considering the availability of resources and level of care, services, and mental health care personnel, Bangkok is the most prepared. Bangkok has the most psychologists per population compared to other regions, especially the northeast and north. In those two regions one psychologist had to care for the 5-6 times more population one psychologist in Bangkok. Conversely, access to psychiatric services for depression patients in Bangkok was the lowest compared to other regions and provinces in the country. Part of the cause for this anomaly may be due to the relatively higher prevalence of depression in Bangkok. It is also possible that total number of patients admitted to psychiatric services in health facilities in the provinces are under-reported. In any case, the data seem to indicate that mental health sufferers in Bangkok – not just cases of depression – are probably facing problems of access to essential mental health services.

Population per one psychologist

Bangkok

appears to be the most ready and capable to provide mental health care; the ratio of population to psychologists is lowest.

Population (person)/one psychologist



Source: Compiled by regional data from Public Health Resources Information Report for the year 2019, Strategy and Planning Division, Office of the Permanent Secretary, Ministry of Public Health

The 5 provinces with the lowest rates of access to psychiatric services for depression patients compared to the estimates of total caseload

	estimates preralence rate at deprtssion
14.5% Bangkok	5.1%
46.6% Samut Prakan	2.4%
47.0% Rayong	2.4%
47.8% Chonburi	2.4%
50.0% Phuket	2.4%
Country's overall 69.5%	2.7%

Note: Percentage of access to services of patients diagnosed and treated for depression. (with household registration in the province) compared to the estimated caseload in each province

Source: Report on the rate of access to services for depression patients, FY 2020, HDC Dashboard, Ministry of Public Health.

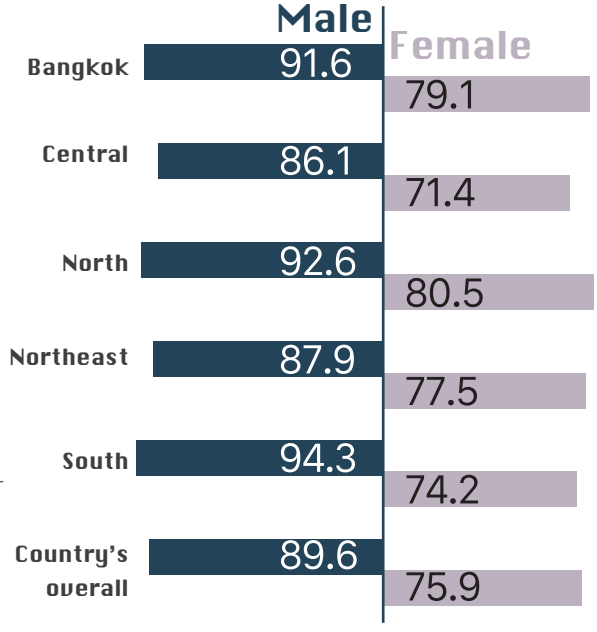
Trat, Phrae, Loei, Samut Songkhram, Nongbua Lumphoo and Ang Thong are the provinces without any psychologist.

Males in the north

region have the highest level of perception of being negatively discriminated against for their poverty at

8.4%

Feel safe walking alone in the community at night (percent)



Source: The Multiple Indicator Cluster Survey 2019, National Statistical Office

Females in Bangkok

feel the most negative discrimination regarding their job position at

8.9%

Overall, most Thai people feel safe in their community, even when having to walk alone in the community at night. On average, men felt safer than women at 89.6 percent, compared to 75.9 percent. By region, both women and men in the central region had the lowest proportion of feeling safe walking alone at night.

In this chapter, social health means

interacting with the people around you and feeling part of society.

Most Thai people feel safe and not negatively discriminated or threatened. Except for one's economic status that can cause the feeling of unfair discrimination, especially in Bangkok.

The southern border provinces of Thailand is an subregion where separatist violence and unrest has been festering for decades. That said, this review found that, since 2012, the number of incidents of unrest has continued to decline.

In terms of feeling discriminated against or threatened, Bangkok women feel more discriminated against job positions than women in other regions. However, Bangkok women also feel the least discriminated against on the basis of ethnicity or migration status than women in other regions (at only 1.7 percent, which is less than half the rate for their counterparts in the northeast). The percentage of men who felt discriminated against in regards to job and position was highest in Bangkok at 10.5 percent, or twice as much as their counterparts in the central region. By contrast, northern men felt the most discrimination about their relative poverty (8.4 percent).

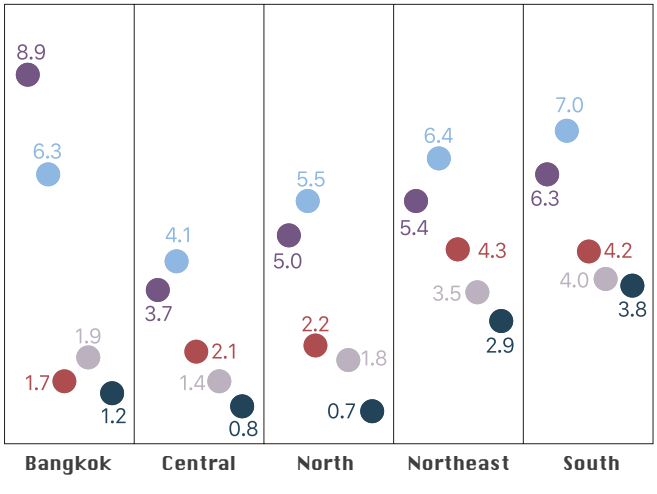
Trend of the situation in the southern-border provinces

Number of incidents	Year	Death (persons)	Injury (persons)
1,472	2004	374	552
2,084	2005	533	1,017
1,996	2006	658	1,101
2,396	2007	892	1,670
1,053	2008	448	965
970	2009	490	1,075
1,092	2010	452	927
1,161	2011	512	1,039
1,850	2012	507	1,021
1,791	2013	521	1,019
1,354	2014	429	754
942	2015	312	581
815	2016	309	630
581	2017	250	374
544	2018	218	265
411	2019	180	243
285	2020	107	150

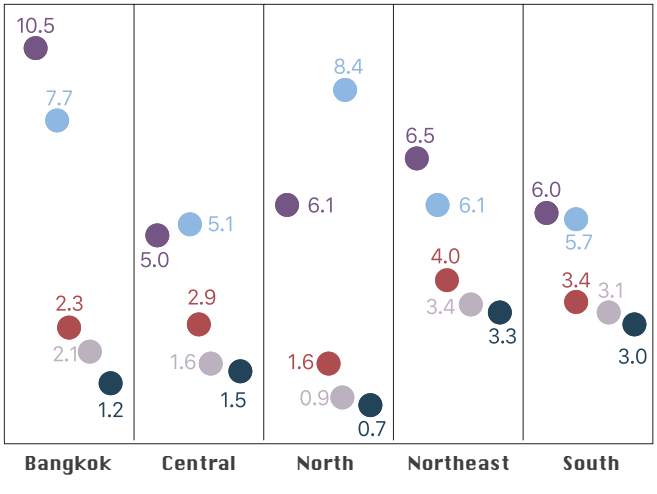
Remark: As of November 2020

Source: Summary of Southern situation in 2001-2020, Deep South Watch

Proportion of women who felt discriminated against or harassed in the past 12 months in five key areas (percent)



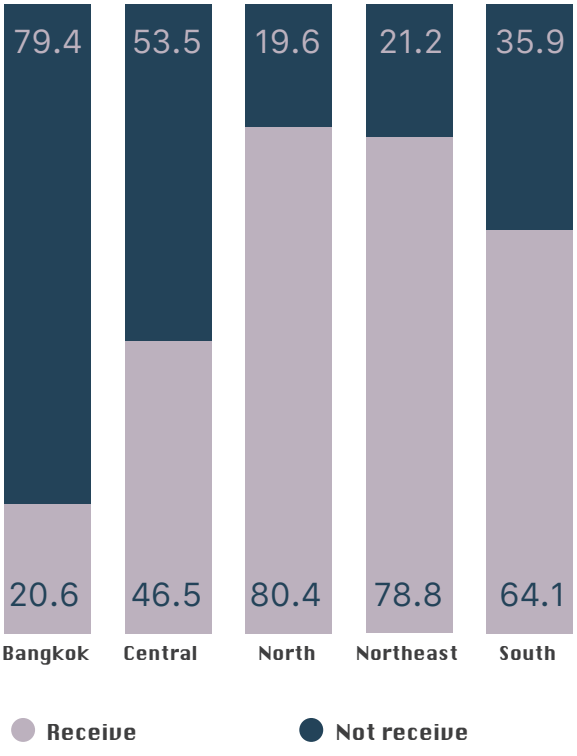
Proportion of men who felt discriminated against or harassed in the past 12 months in five key areas (percent)



work position · poverty status · race or migrant status · religion or belief · sexual orientation

Source: The Multiple Indicator Cluster Survey 2019, National Statistical Office

Proportion of poorest households receiving external economic assistance by region (percent)



80.4% and 78.8% of poor households in the north and northeast received assistance. That is almost 4 times higher than the poor households in Bangkok.

Note:

- Survey respondents were asked about receiving various types of assistance during the past 3 months, such as the state welfare card program, Senior Citizens stipend scheme, Child Care Subsidy Program, pension after retirement, other external assistance, or tuition/other educational assistance (for household members aged 5-24 years studying in elementary school or above).
- The poorest households refer to households with the wealth index in the bottom two quintiles.

Source: The Multiple Indicator Cluster Survey 2019, National Statistical Office

Getting outside assistance may help ameliorate the economic situation of poor families. Fully 80.4 percent and 78.8 percent of households below the poverty line in the North and Northeast received assistance. That proportion was almost 4 times higher than the poor households in Bangkok who had significantly fewer households who received a state welfare card. The explanation for this disparity may be that the poorest households in Bangkok still have enough income and deposits relative to their counterparts in the north and northeast and, thus, did not meet the conditions for participating in the welfare card project.

The poorest households in Bangkok still have enough income and deposits to not qualify for participation in the state welfare card program.

Cyberworld

is an increasingly important social space in the modern era where all sectors should pay attention to the online environment.

Data from the Electronic Transactions Development Agency reported that in 2019, 39,592 complaints were filed at the Online Complaint Center. More than half were related online trading (55.6 percent), and the rest were about illegal websites.

Online trading

55.6%

Illegal website

43.9%

Others

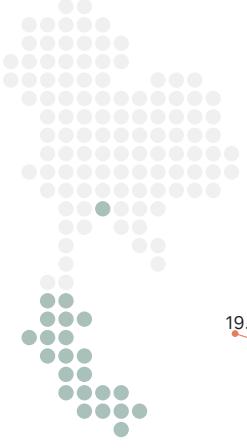
0.5%

05 Maternal and Child Health

About two-thirds of infants born to mothers who reside in Bangkok are breastfed for the first six months, while one in five southern children are breastfed for two years.

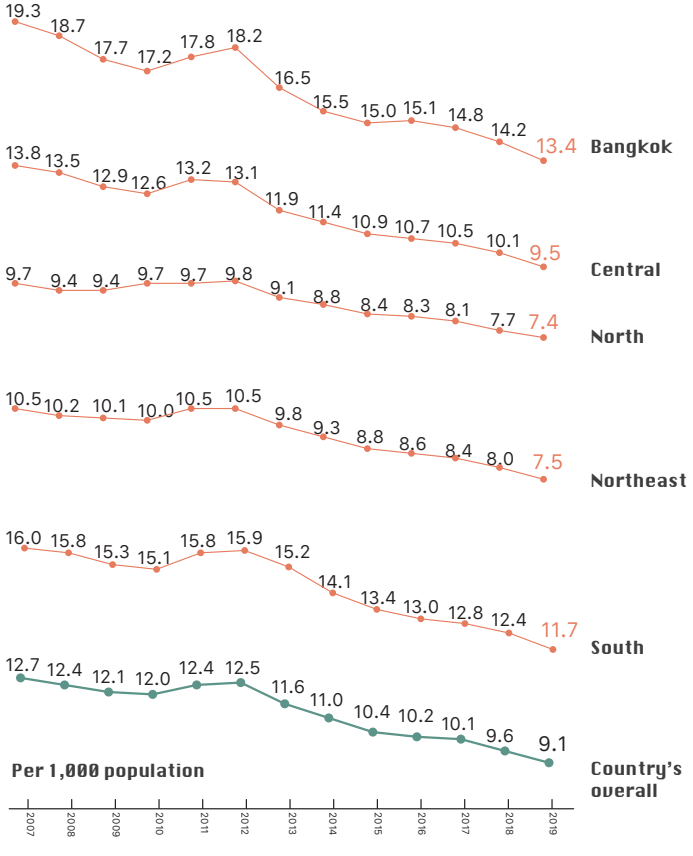
Births in Thailand have been declining every year. In just the past 10 years, the live birth rate has dropped from 12.7 to 9.1 per 1,000 population, with Bangkok and the southern region having the highest birth rates among regions. This may be because these two regions have a higher proportion of people of reproductive age than the other regions, especially in Bangkok with a large working age population who have migrated to the city for jobs.

Bangkok and the South regularly record the highest birth rates among regions.

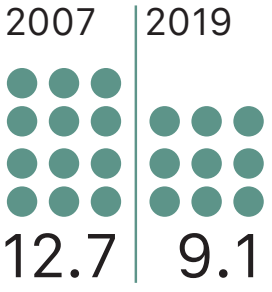


"In the situation of maternal and child health in Thailand, **births have decreased in all regions.** The north continues to face challenges in managing teen pregnancy and childbearing. In terms of childhood nutrition in all regions (except Bangkok), **There is a problem of wasting as well as overweight among children.**"

Crude live birth rate per 1,000 population by region: 2007-2019



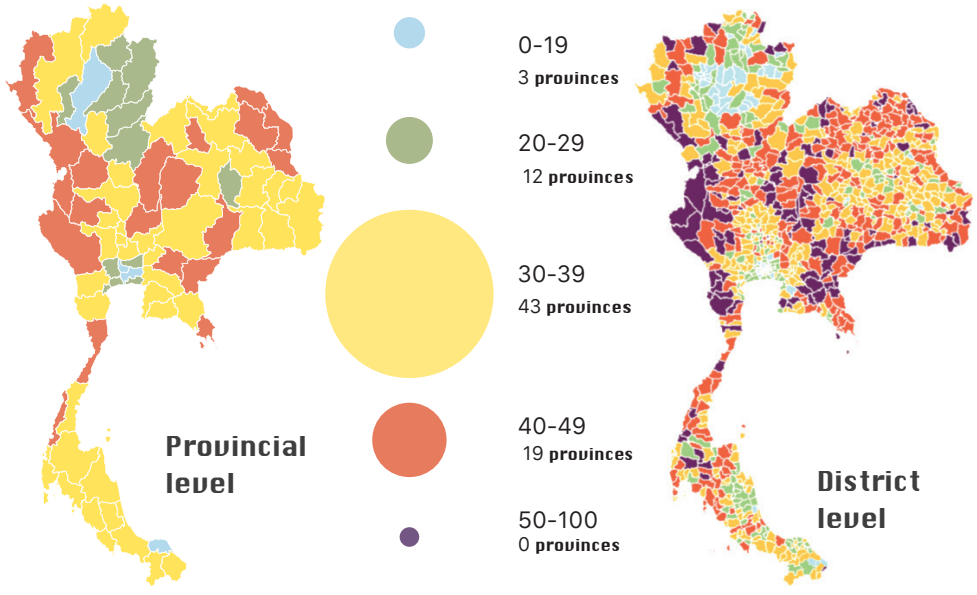
Live birth decline



Live birth per 1,000 population

Source: Public Health Statistics A.D.2019, Strategy and Plan Division, Office of the Permanent Secretary, Ministry of Public Health

The rate of births per 1,000 female population aged 15-19 years in 2018

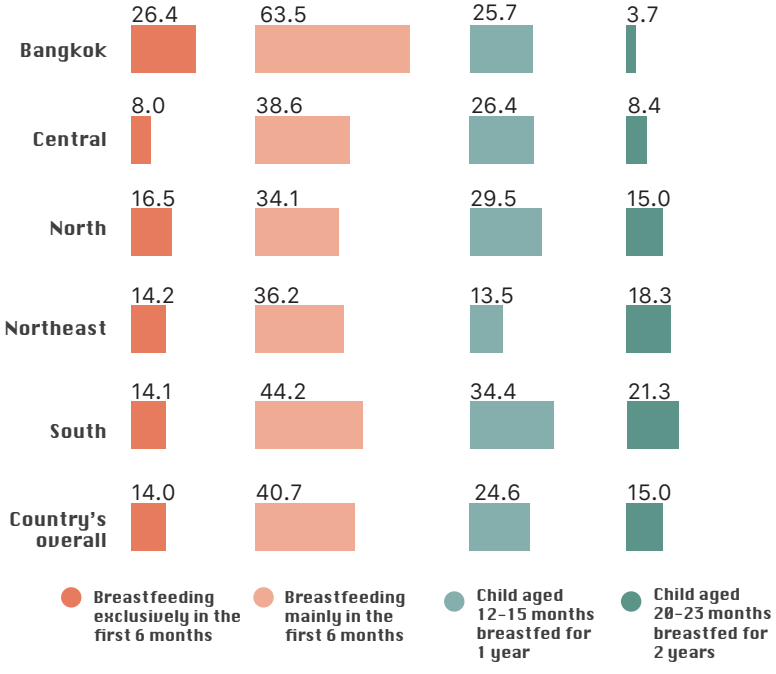


Source: "Where are the teenage mothers?" Geographical Scenario Trends: Area-level Adolescent Mothers Data, United Nations Population Fund.

Understanding the situation at the local level is particularly important for reviewing the situation adolescent mothers. It was found that most Thai provinces had birth rates for adolescent mothers in the range of 30-39 per 1,000 female population aged 15-19 years. At the sub-provincial level, it was found that several districts had significantly different birth rates for adolescent mothers than those at the provincial level. A case in point is Nan Province in the north, which had a lower provincial average, but some districts had a teen birth rate as high as 50 per 1,000 female population aged 15-19 years.

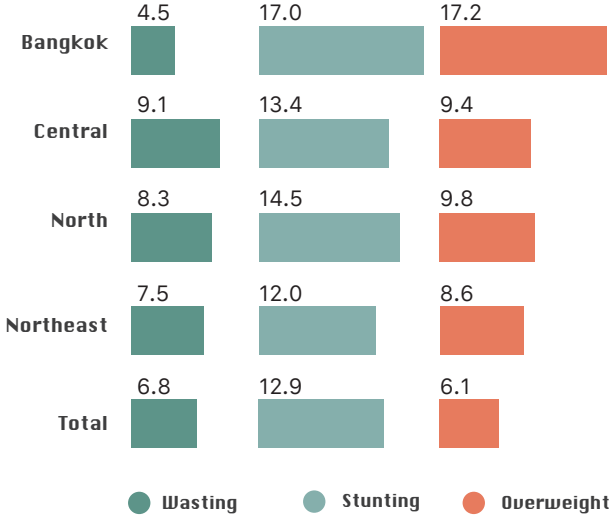
In their the first 6 months of life, one in four infants in Bangkok were breastfed exclusively, and that is the highest rate among regions. For longer-term breastfeeding, this review found that up to 1 in 3 children in the South are exclusively breastfed for at least 1 year.

Percentage of breastfeeding by region in 2019



Source: The Multiple Indicator Cluster Survey 2019, National Statistical Office

Nutritional status of children under 5 years (percent)



Source: The Multiple Indicator Cluster Survey 2019, National Statistical Office

For the nutritional status of children under 5 years old, in Bangkok there was a disparity at the extremes of nutritional status. The proportion of children with stunted growth was highest among regions at 17 percent. By contrast, the proportion overweight was also highest at 17.2 percent for Bangkok children.

Finally, in terms of vaccination coverage, it was found that more than 80 percent of Thai children receive basic vaccinations, with coverage in the northeast higher than other regions, especially for polio, diphtheria, pertussis, tetanus, hepatitis B, measles, mumps and rubella.

The northeast region has the highest coverage rate for childhood vaccinations.

More than 80 % of Thai children have received basic vaccinations.

Vaccination coverage for children by region in 2012 and 2019 (percent)

Tuberculosis	2012	2019
Bangkok	97.7	99.0
Central	97.7	99.6
North	99.1	98.9
Northeast	96.6	98.8
South	97.6	97.6

Polio	2012	2019
Bangkok	78.8	82.4
Central	90.1	81.2
North	96.8	89.1
Northeast	91.8	94.7
South	90.5	85.7

Diphtheria, tetanus and pertussis	2012	2019
Bangkok	79.2	83.8
Central	87.8	83.3
North	96.5	91.1
Northeast	91.1	97.0
South	89.4	87.8

Hepatitis	2012	2019
Bangkok	66.4	86.7
Central	80.3	81.1
North	90.9	89.7
Northeast	86.6	96.0
South	83.1	87.6

Measles, mumps and rubella	2012	2019
Bangkok	91.3	90.7
Central	95.6	90.7
North	97.9	95.1
Northeast	95.8	96.9
South	93.2	92.0

Source: The Multiple Indicator Cluster Survey 2012 and 2019, National Statistical Office.

06 Vulnerable Populations

Even though, by 2019, the overall proportion of the poor in the country has decreased, the disparities among regions still exist. Currently, the south has become the region with the highest proportion of the population below the poverty line.

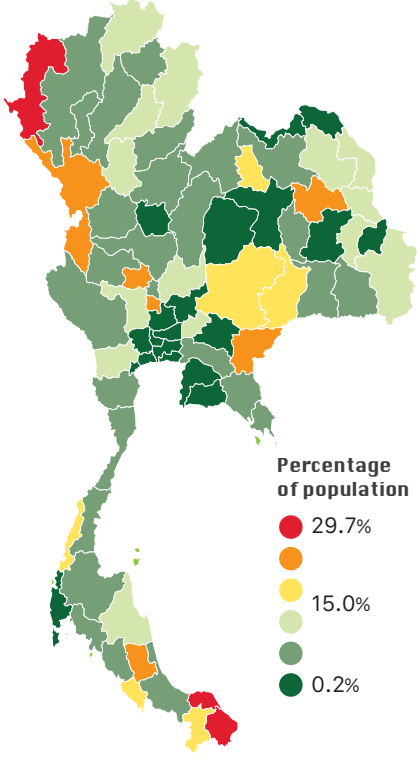
"Vulnerable populations include the economically disadvantaged, ethnic minority groups, uninsured children in poor households, older persons, the homeless, HIV-infected people, and people with chronic illnesses, including mental illness."
(Borwornsom Leerapan et al., 2016)

Population vulnerability

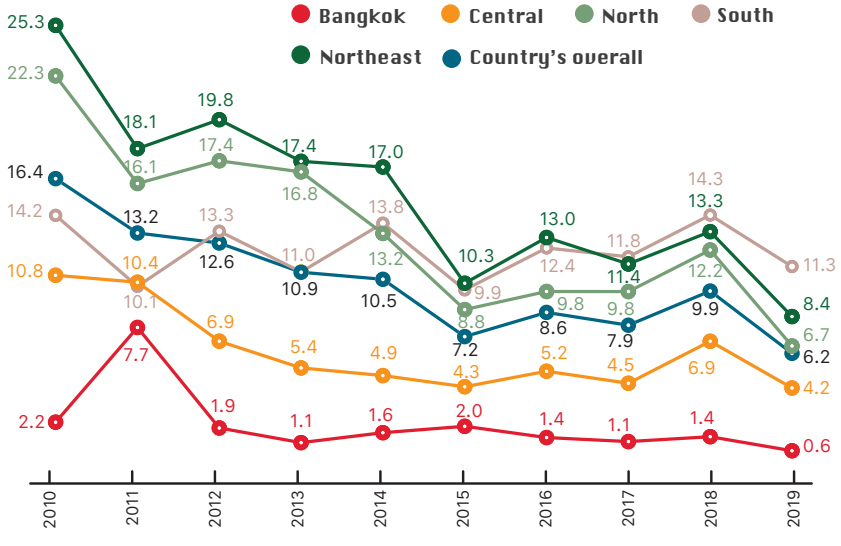
can be considered across many dimensions from a variety of socioeconomic factors, physical and health limitations, or even factors related to opportunities and obstacles to improving the quality of life of the population in each age group.

Poverty is a contributing factor to many economic and social vulnerabilities. In the last decade the proportion of the poor in Thailand declined steadily from 14.2 percent of the total population in 2010 to 6.2 percent in 2019.

Proportion of population living in poverty in 2019



Proportion of population living in poverty in Thailand, 2010-2019 (percent)



Note: This represents the proportion of population living in poverty when measuring consumption expenditure, classified by region
Source: Population Projections of Thailand 2010-2040 (Revised Edition), Office of the National Economic and Social Development Board.

What is noteworthy interesting is that the region with the highest proportion of the poor, which was originally the northeast region, has, since 2017, become the south. In 2019, 11.3 percent of southerners lived below the poverty line.

Percentage of people with disabilities

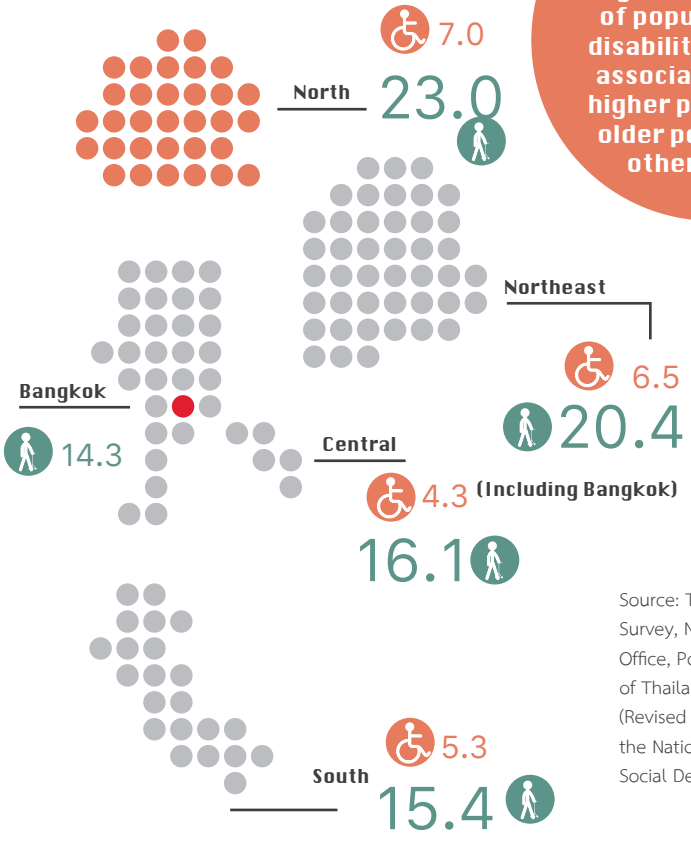
5.5

Percentage of older persons

18.1

Disability is another factor that causes physical and health limitations and vulnerable living. In 2017, Thailand had approximately 3.7 million people with disabilities, representing 5.5 percent of the total population.

Percentage of people with disabilities (2017) **and older persons** (2020) **by region**



The North is the region with the highest percentage of population with disabilities, which is associated with its higher proportion of older persons than other regions.

Source: The 2017 Disability Survey, National Statistical Office, Population Projections of Thailand 2010-2040 (Revised Edition), Office of the National Economic and Social Development Board

As of December 31, 2020, the number of Thais who received an identification card for Persons with Disabilities (PWD) was

2,076,313 **people**

(3.12 percent of the total population.)

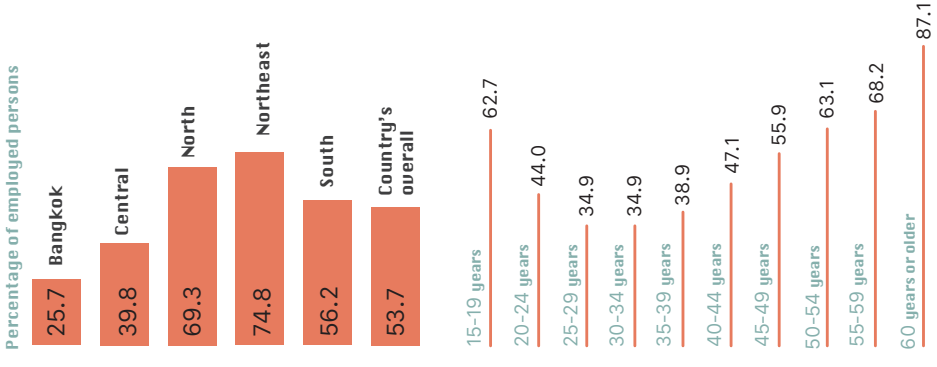
Of these,

54.8%

were persons aged 60 years or older.

(Department of Empowerment of Persons with Disabilities, Ministry of Social Development and Human Security, 2021)

Workers in informal employment in 2019



By age group

Source: The Informal Workers Employment Survey 2019, National Statistical Office

Among the labor force aged 15 years or over, more than half are informal workers. These workers do not receive standard protections and social security. The northeast is the region with the highest proportion of informal workers, or about three-quarters of the total workforce in the region. The most vulnerable population in this regard are the workers aged 60 years or older.

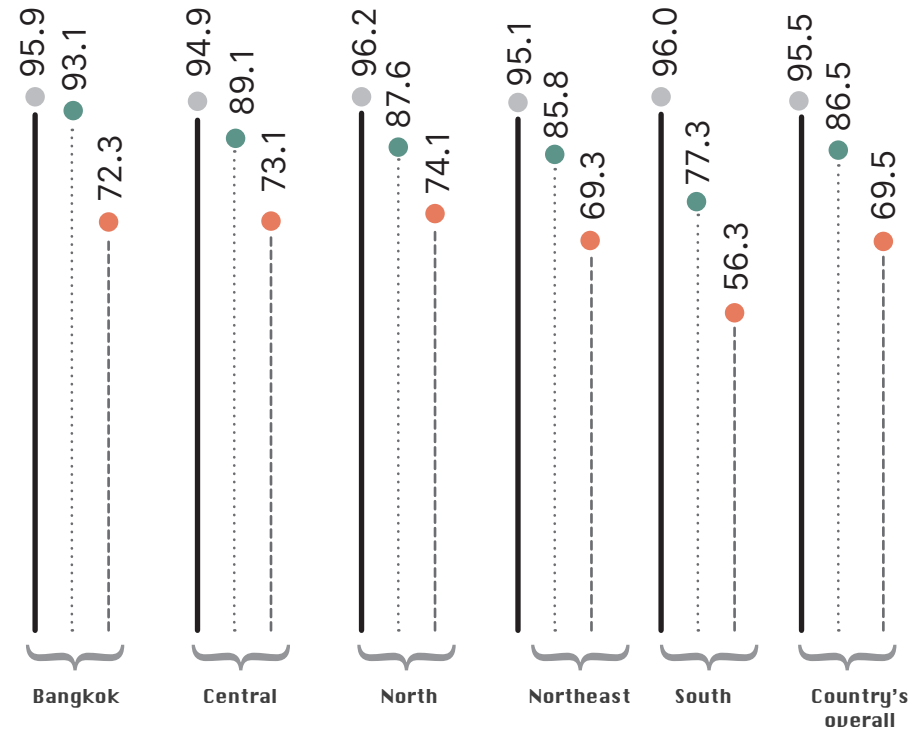
NEET

Not in education, employment or training

In childhood and adolescence, access to a quality education is a key factor in determining opportunities for long-term improvement in quality of life. There are still gaps in access to education among the Thai school age population, especially at the upper secondary level. The south region had the lowest net enrollment rate. It is possible that some of these youth left the education system to enter the labor market.

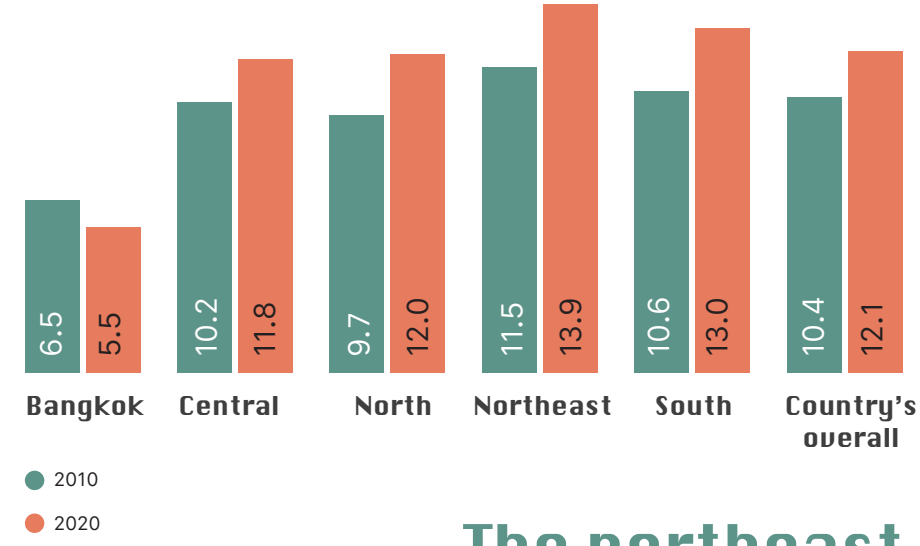
Labor force surveys of the total population found that 12.1 percent of Thais aged 15-24 years (or approximately 1.1 million people out of the 9 million people in that age group) were neither in the education system or employed (i.e., not in education, employment or training: NEET). Many of these cases are the result of poverty, and they need to help with household chores, caring for dependent members of the household, including those with illness or disabilities. These NEET youth are vulnerable both in terms of educational opportunities and skill development, which threaten for long-term career development. The northeast region had the highest proportion of NEET youth.

Net enrollment rate of school-age children (%)



Source: The Multiple Indicator Survey 2019, National Statistical Office

Percent of NEET among Thais aged 15-24 years by region in 2010 and 2020



Source: Computed from tThe 2019 Labor Force Survey and The 2020 Labor Force Survey (3rd quarter), National Statistical Office

The northeast had the highest proportion of NEET youth.

07 The Environment

10 provinces in Thailand have an annual average of PM2.5 dust that is 3 times higher than the threshold set by the World Health Organization.

Environmental issues remain a challenge in all areas of Thailand, especially air and noise pollution, and pollution caused by solid waste and hazardous waste from industrial processes. Thailand needs to urgently address the health of people in this area.

Average PM2.5 dust in 2019 by provinces in rank order from lowest to highest
(micrograms per cubic meter)

Phuket	13.7
Ranong	15.2
Phang Nga	15.4
Krabi	16.0
Trang	16.2
Satun	16.3
Nakhon Si Thammarat	16.4
Surat Thani	16.5
Phatthalung	16.6
Yala	17.0
Narathiwat	17.0
Song Khla	17.2
Chumphon	17.3
Pattani	17.5
Rayong	23.0
Chonburi	23.4
Trat	23.4
Chantaburi	23.5
Prachuap Khiri Khan	23.8
Sra Kaeo	23.8
Chachoengsao	23.8
Prachin Buri	24.1
Buriram	24.2
Phetchaburi	24.2
Nakhon Nayok	24.3
Surin	24.3
Samut Prakan	24.4
Nakhon Ratchasima	24.4
Pathum Thani	24.4
Ratchaburi	24.5
Samut Songkhram	24.5
Suphan Buri	24.5
Nakhon Pathom	24.5
Nonthaburi	24.5
Bangkok	24.6
Phra Nakhon Si Ayutthaya	24.6
Kanchanaburi	24.6
Ang Thong	24.7
Sing Buri	24.7
Saraburi	24.8
Samut Sakhon	24.8
Lop Buri	24.8
Chainat	24.9
Chaiyaphum	25.3
Uthai Thani	25.4
Sisaket	25.4
Nakhon Sawan	25.8
Yasothon	26.3
Roi Et	26.5
Maha Sarakham	26.5
Phetchabun	26.6
Phichit	26.8
Khon Kaen	27.0
Kamphaeng Phet	27.3
Amnat Charoen	27.6
Kalasin	28.0
Ubon Ratchathani	28.0
Mukdahan	28.4
Phitsanulok	29.0
Sakon Nakhon	28.8
Nongbua Lumphoo	29.1
Udon Thani	29.2
Nong Khai	29.4
Loei	29.4
Tak	29.5
Nakhon Phanom	29.8
Bueng Kan	29.8
Sukhothai	30.1
Uttaradit	30.7
Phrae	30.9
Nan	31.1
Lampang	31.1
Phayao	31.3
Lamphun	31.5
Mae Hong Son	31.7
Chiang Mai	31.8
Chiang Rai	32.0

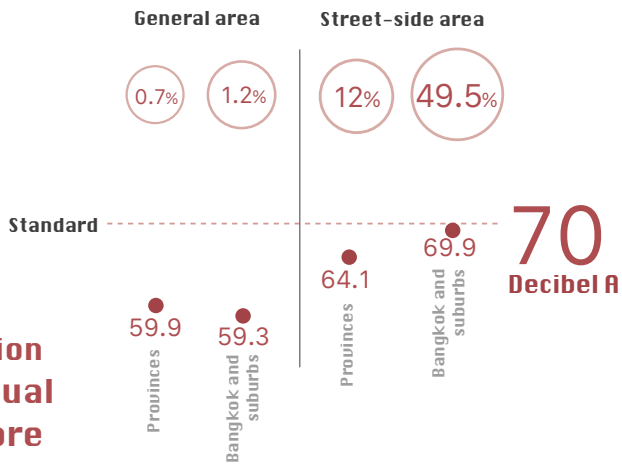
Source: Attavanich, W. 2020. Social Cost of Air Pollution from Particulate Matter 2.5 Micrometers (PM2.5) in Thailand

Combustion from motor vehicles, incineration in agriculture, forest fires, and industrial processes produce PM2.5 dust, which is a very small particulate dust that can spread into the respiratory tract and bloodstream and infiltrate the function of various organs and it also increases risk of cancer.

The World Health Organization proposes an average annual PM2.5 threshold of no more than 10 mcg/m³.

All provinces in Thailand have an annual average that exceeds the criteria set by the World Health Organization.

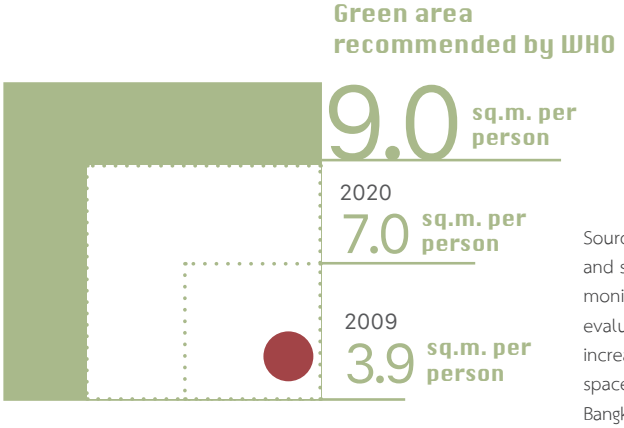
Average sound level and percentage of days that the sound level exceeds the standard, 2018



Source: Situation and Management of Air Pollution and Noise Problems in Thailand in 2018, Pollution Control Department

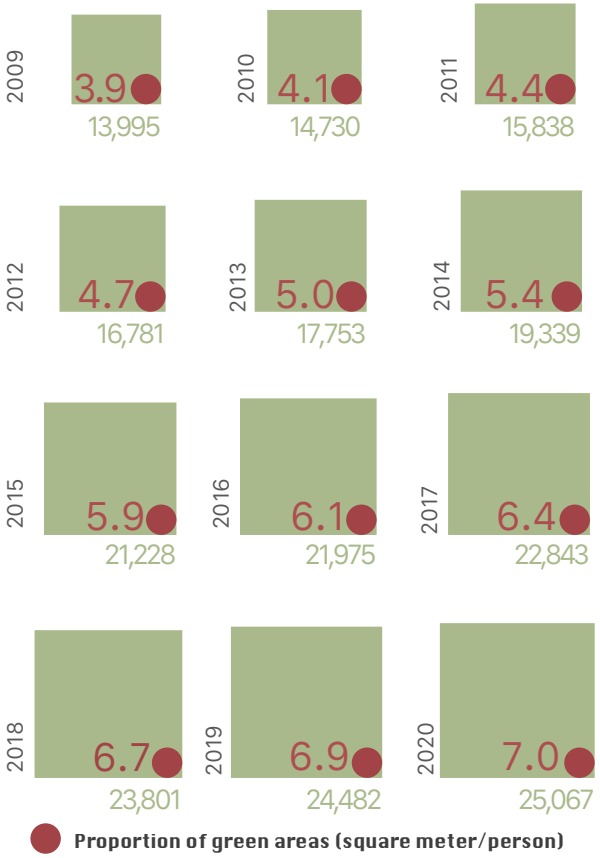
Sound quality is another factor that affects the quality of life of people who live or work near the side of the street. This is especially the case in Bangkok and suburbs where the number of days that the 24-hour average noise level exceeded the standard by about half in 2018.

Big cities such as Bangkok are densely populated, and residents are more exposed to various kinds of pollution. Therefore, there needs to be more effort to manage the urban environment to promote health of the people, such as the green area management that has tended to improve greatly in the past 10 years, i.e., from 3.9 square meters per person in 2009 to 7.0 square meters per person in 2020. However, this figure is still lower than the WHO recommendation of 9 square meters of green space per person.



Source: Database and system for monitoring and evaluating the increase of green space in Bangkok, Bangkok Metropolitan Administration

Number and proportion of green areas (square meters per person) in Bangkok: 2009-2020



Cities with large populations often have a large amount of man-made solid waste. However, what is interesting is the proper disposal of solid waste. What is noteworthy is that many provinces were not in the top 10 for volume of solid waste, but were in the top 10 for improper waste disposal. These provinces include Lop Buri, Buriram, Chachoengsao, Surin, and Roi Et. The country needs to accelerate ways to help all provinces properly manage their solid waste.

Top 10 provinces with the highest amount of solid waste in 2019

Volume of solid waste (ton)

Bangkok	4,957,970
Chonburi	1,054,007
Nakhon Ratchasima	916,606
Samut Prakan	862,218
Nonthaburi	728,277
Khon Kaen	683,678
Ubon Ratchathani	657,245
Pathum Thani	605,254
Chiang Mai	601,469
Song Khla	601,403

Top 10 provinces with the highest amount of improperly disposed of solid waste in 2019

Volume of solid waste (ton)

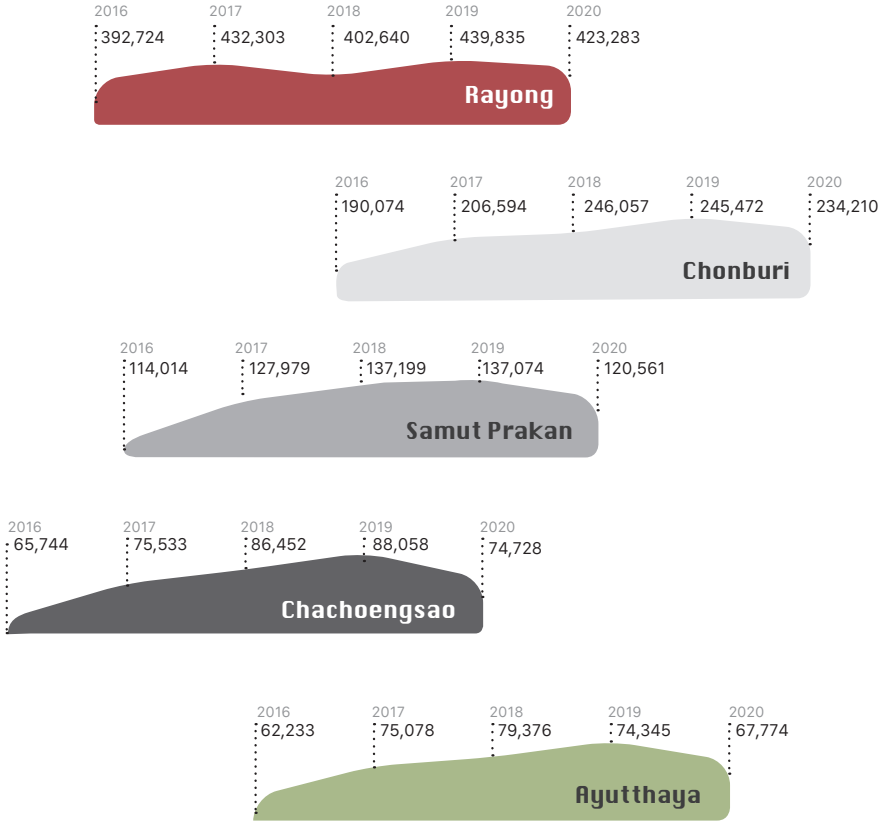
Samut Prakan	542,613
Nakhon Ratchasima	386,170
Pathum Thani	308,848
Lop Buri	289,737
Chonburi	244,503
Buriram	234,100
Chachoengsao	215,233
Surin	169,181
Khon Kaen	166,623
Roi Et	156,457

Source: The situation of solid waste in Thailand in 2019, Pollution Control Department, Ministry of Natural Resources and Environment

Many provinces were not in the top 10 for volume of solid waste, but were in the top 10 for improper waste disposal.

Industrial growth affects the environment as well. Trends in the last five years show that there has been an increase in hazardous industrial waste. The provinces with the highest amount of hazardous waste are those provinces with larger-scale industry. The major provinces with this problem are Rayong, Chonburi, Samut Prakan, Chachoengsao, and Ayutthaya. Hazardous wastes are an issue that must be closely monitored and managed in order not to cause negative impacts on the health of local population and the environment.

Amount of hazardous industrial waste spreading out of the factory area (amount transported tons/year) in 5 provinces, 2016-2020



Source: Summary report on the amount of hazardous industrial waste spreading outside the factory area 2016-2020, Department of Industrial Works

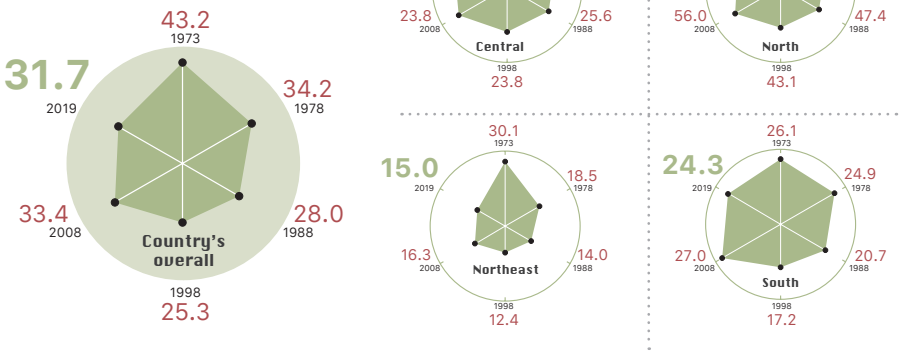
Natural Resources 08

In 2019,
the northern region had forest fires covering an area of more than 100,000 rai.

The south and the provinces on the seacoast had 1.6 million pieces of marine Debris.

"The quality and management of natural resource utilization, especially forests and marine resources, including arable land, is a social factor determines the health of the population and is a critical pre-condition for sustainable development of the country."

Forested areas (%) by region: 1973-2019



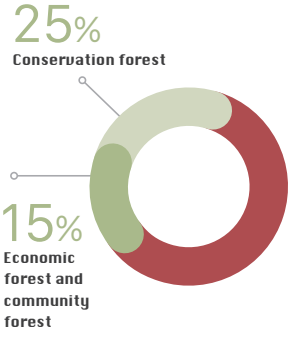
Source: Forested area of Thailand, 1973, 1978, 1988, 1998, 2008, 2019, Royal Forest Department

Forest cover in Thailand

Currently, Thailand forest-covered land accounts for about one-third of the total land area of the country. The north is the most forested region with more than half of the total area covered. The forest is considered a source of food and natural resources that reflect the abundance of the natural environment. At the same time there are risks to the sustainable of Thai forests, especially from forest fires and intentional burning that lead to problems with smoke and air pollution that are harmful to health. In 2019, the total area of forest fires in Thailand was about 149,000 rai, which represents an increase of by more than 2.5 times from 2018 and the highest in 10 years, with two-thirds of the fire-prone areas in the north.

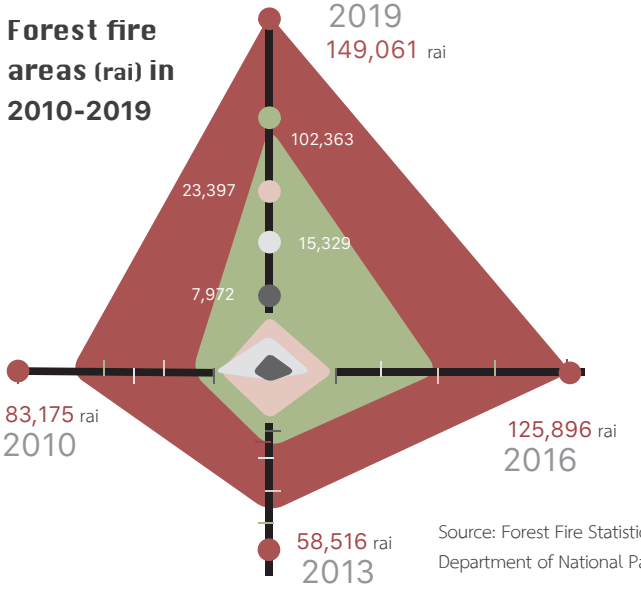
Target according to the National Forest Policy

As approved by the Cabinet in 2019, the target is that Thailand must have a forest area of not less than 40% of the country, comprised of conservation forests of not less than 25 percent, and economic forests and community forests of not less than 15 percent.



Source: National Forest Policy

Forest fire areas (rai) in 2010-2019

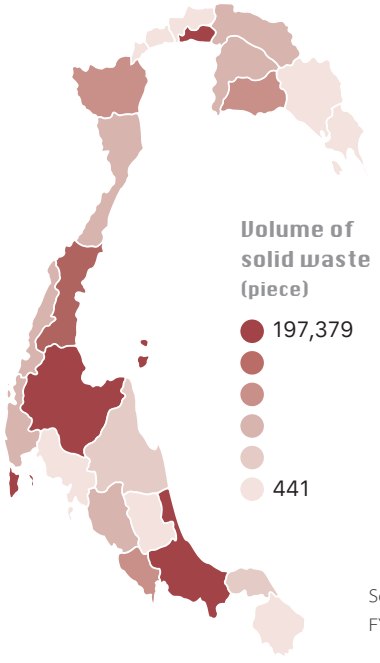


Source: Forest Fire Statistics 2010-2019, Forest Fire Control Division Department of National Park Wildlife and Plant Conservation

Seas and coastal areas

are as rich in natural resources as forests. These areas contribute to the development of the region in terms of being a source of food. The undersea and coastal resources are also important international tourist attractions. But populations in marine areas also face risks to their livelihoods and health as a result of natural events such as storms, floods, mudslides, etc., as well as coastal erosion problems and man-made activities. This is especially the case in terms of marine debris and changes in sea water temperature from global warming that is adversely affecting marine ecosystems.

Volume of marine debris in 24 coastal provinces in 2019



Top 10 provinces with the largest amount of marine debris

Volume of debris (piece)

Samut Prakan	197,379
Surat Thani	153,919
Phuket	146,377
Song Khla	121,391
Chumphon	103,309
Rayong	90,983
Satun	89,487
Phetchaburi	75,771
Phang Nga	72,975
Chachoengsao	66,511

Source: Data on the amount of marine debris in Thailand, FY 2019, Department of Marine and Coastal Resources

In 2018,
there were
350,081
pieces of marine debris.

In 2019,
there were
1,568,870
pieces of marine debris.

Top 10 types of marine debris in 2018 and 2019

	2018	Volume (piece)	2019	Volume (piece)
1	Other plastic bags	41,005	Drinking bottles (plastic)	251,181
2	Food boxes (foam)	34,780	Other plastic bags	172,739
3	Wraps/food bags (candies, potato chips, etc)	30,909	Foam	160,782
4	Light plastic bags	29,935	Drinking bottles (glass)	110,448
5	Drinking bottles (glass)	26,151	Wraps/food bags (candies, potato chips, etc)	94,531
6	Drinking bottles (plastic)	25,216	Light plastic bags	74,695
7	Straws/stirring sticks	17,861	Drinking cans	73,562
8	Bottle caps (plastic)	17,690	Food boxes (foam)	71,585
9	Foam	15,191	Cups/plates (foam)	65,611
10	Cigarettes/cigarette filters	12,056	Food boxes (plastic)	59,638
	Other debris	99,287	Other debris	434,098

Source: Data on the amount of marine debris in Thailand, FY 2018-2019, Department of Marine and Coastal Resources

In 2019, the amount of marine debris in 24 coastal provinces in Thailand in the southern, eastern, and central regions accounted for nearly 1.6 million pieces, mostly plastic, foam, and glass waste. The provinces facing the most severe problem were Samut Prakan, Surat Thani, and Phuket.The worsening situation of coral reef is partly attributable to global warming, and presents another threat to Thailand's seas and seacoast.

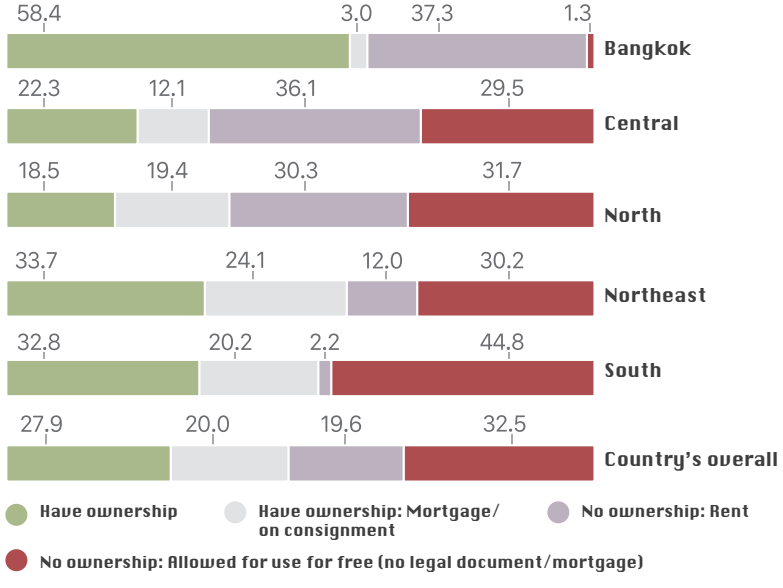
Proportion of coral reef areas found to be "very damaged" in 10 coastal provinces (percent)

	Very good	Good	Moderate	Damaged	Very damaged
Nakhon Si Thammarat				15.5	84.5
Phang Nga	2.8	14.8	26.6	7.7	48.1
Trat	8.2	1.3	11.6	55.8	23.1
Krabi		26.7	40.5	18.4	14.4
Prachuap Khiri Khan	42.7	32.2	10.4	5.3	9.1
Phuket	23.3	16.7	33.3	20.0	6.7
Rayong	10.7	24.1	41.2	18.5	5.5
Surat Thani	39.1	6.9	43.0	5.7	5.3
Chonburi	25.6	7.8	41.8	21.3	3.5
Chumphon	11.3	3.4	84.7		0.6

Source: Coral Damage Survey Report 2020, Marine and Coastal Resources Research and Development Institute

Remark: Coral reef condition is divided into 5 levels which are very good, good, moderate, damaged, and very damaged. Provinces with surveys and assessments of coral reef conditions with no "very damaged" areas include Ranong, Trang, Satun, Chantaburi, Song Khla, Pattani and Narathiwat.

Farmers' land holding characteristics in 2019 (percent)



Source: Agricultural Statistics of Thailand Year 2019, Office of Agricultural Economics, Ministry of Agriculture and Cooperatives

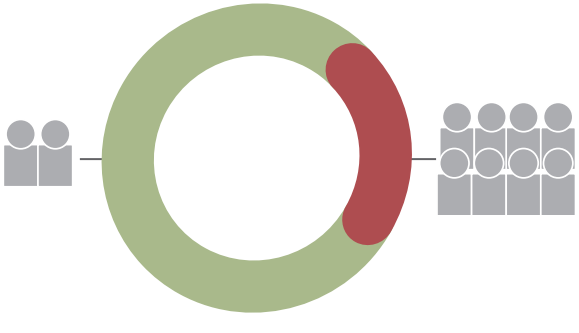
Land resources

Land is a production factor that is important to the security of life and occupation of the population in the agricultural sector, as well as the country's food security as a whole. However, land ownership in Thailand is still highly concentrated in a minority of individuals and entities. One study found that four-fifths of the country's total landholders, most of them smallholders, accounted for only 20 percent or one-fifth of the total available land area. This information reflects the problem of inequality in society as a whole, and inequity in access to land resources of Thai citizens.

Large land owners

20%
have ownership over the lands, accounted for
80%
of total land areas in Thailand.

Inequality of land ownership in Thailand



Source: Duangmanee Laokul (2013), A Study on the Concentration of Wealth in Thai Society.

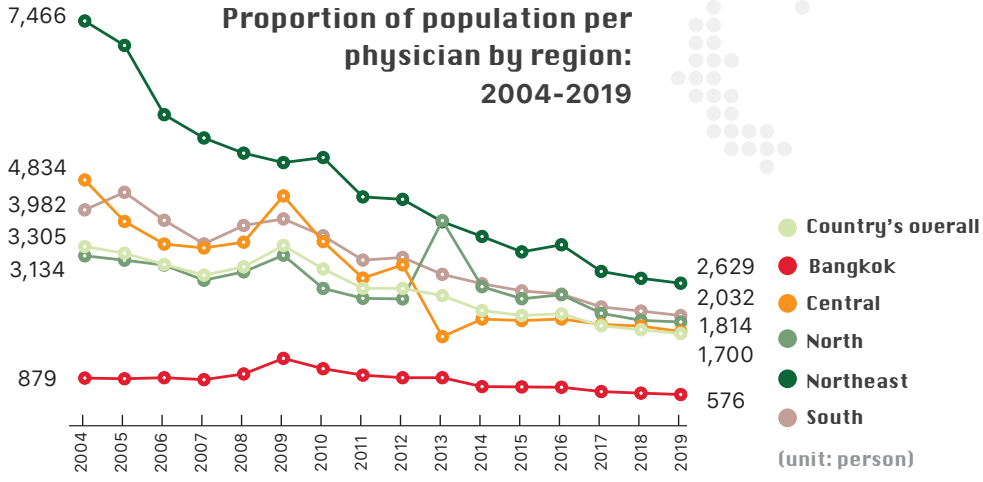
An overview of Thai farmers in 2019 found that only about one-fourth 27.9 percent owned their land outright, without any obligations. This proportion was the lowest in the northern and central regions.

09 Health Resources

In the northeast region, there is one doctor for every 2,629 residents.

The comparable ration of doctors per population is five times higher in Bangkok.

"The sufficiency and allocation of health resources must not be overly imbalanced in terms of personnel, hospitals, medical equipment and tools, including health finance. This is an important determinant of access to essential health services, with the goal being equal access of the population in all areas of the country."



Proportion of population to 1 medical personnel by type: 2019

	Doctor	Dentist	Pharmacist	Nurse
Bangkok	576	5,376	1,925	163
Central	1,737	8,019	4,096	405
North	1,914	7,426	4,815	419
Northeast	2,629	11,186	6,409	521
South	2,032	7,681	4,911	387
Country's overall	1,700	8,275	4,424	384

Source: Public Health Resources Report 2019, Office of the Permanent Secretary, Ministry of Public Health; Population data by province in 2019, Department of Provincial Administration

Distribution of professional medical personnel, especially doctors, dentists, pharmacists and nurses in each region of Thailand is still imbalanced, especially when comparing between Bangkok with the northeast region. That said, over the past 10 years, readiness and adequacy of medical personnel in proportion to the overall population of the country has improved. Moreover, the gap between the regions has also shown a tendency to decrease. However, spatial differences in this regard still exist.

In the case of doctors, the 10 provinces with the best population-to-doctor ratio in the country are mostly in the central region, including Bangkok. Other provinces with large urban centers also have favorable doctor-population rations. These include Phitsanulok and Chiang Mai in the north, Chonburi in the east, and Khon Kaen in the northeast. Thus, inequality of health and medical resources is not only between regions, but also between provinces within a given region.

Proportion of population per physician by province in 2019

Top ten best

Bangkok	576
Phitsanulok	1,064
Nakhon Nayok	1,105
Samut Sakhon	1,129
Chonburi	1,153
Khon Kaen	1,136
Chiang Mai	1,286
Pathum Thani	1,344
Chantaburi	1,449
Saraburi	1,527

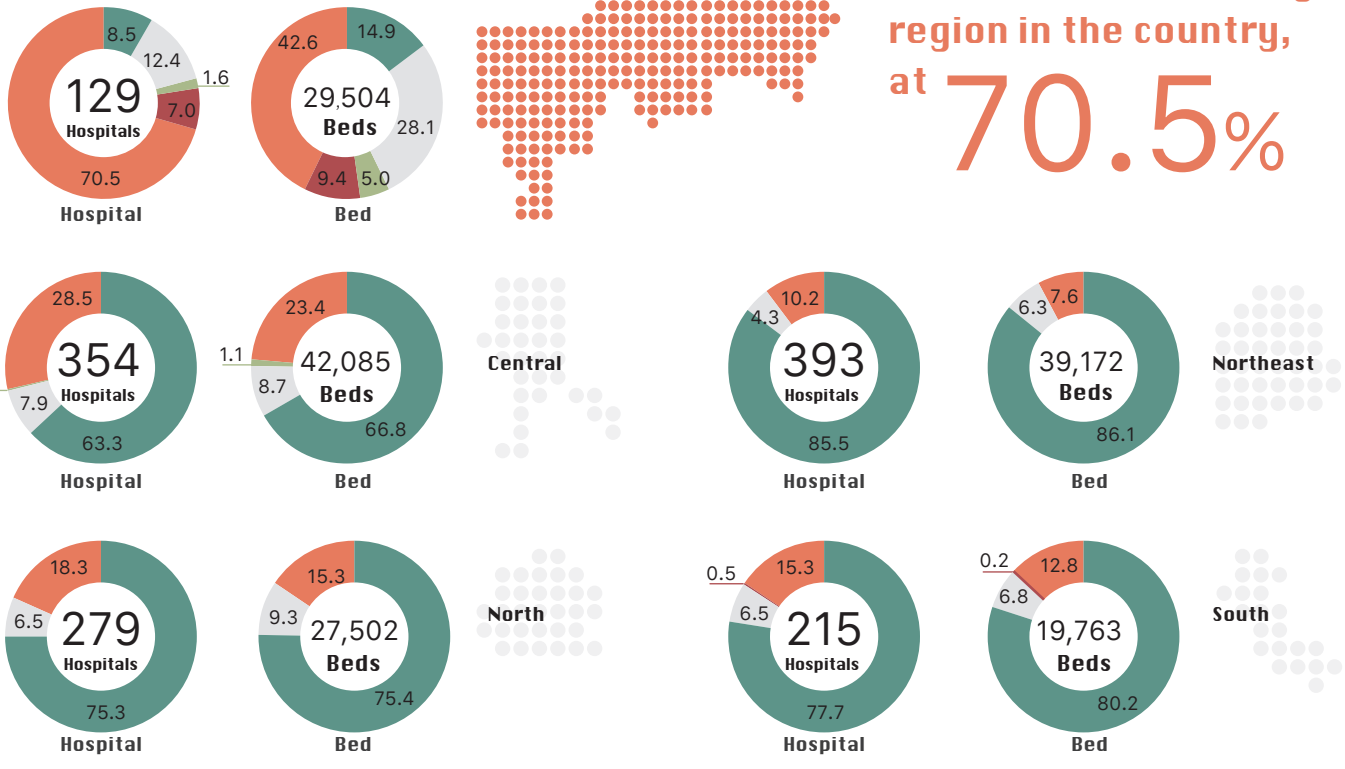
Top ten worst

Nongbua Lumphoo	4,748
Bueng Kan	4,512
Nakhon Phanom	4,157
Kalasin	3,642
Kamphaeng Phet	3,593
Sakon Nakhon	3,423
Phetchabun	3,364
Roi Et	3,288
Buriram	3,263
Chaiyaphum	3,240

In terms of hospitals, Bangkok is an area with a different context from other regions. The proportion of private hospitals and inpatient beds was the highest at 70.5 percent and 42.6 percent, respectively. By contrast the proportion of hospitals and inpatient beds under the MOPH (or other government ministry), ranges from 70 percent in the central region to 90 percent in the northeast region.

Sources: Public Health Resources Report 2019, Office of the Permanent Secretary, Ministry of Public Health; Provincial Population Data 2019, Department of Provincial Administration

Proportion of hospitals and hospital beds in each region in 2019 (percent)

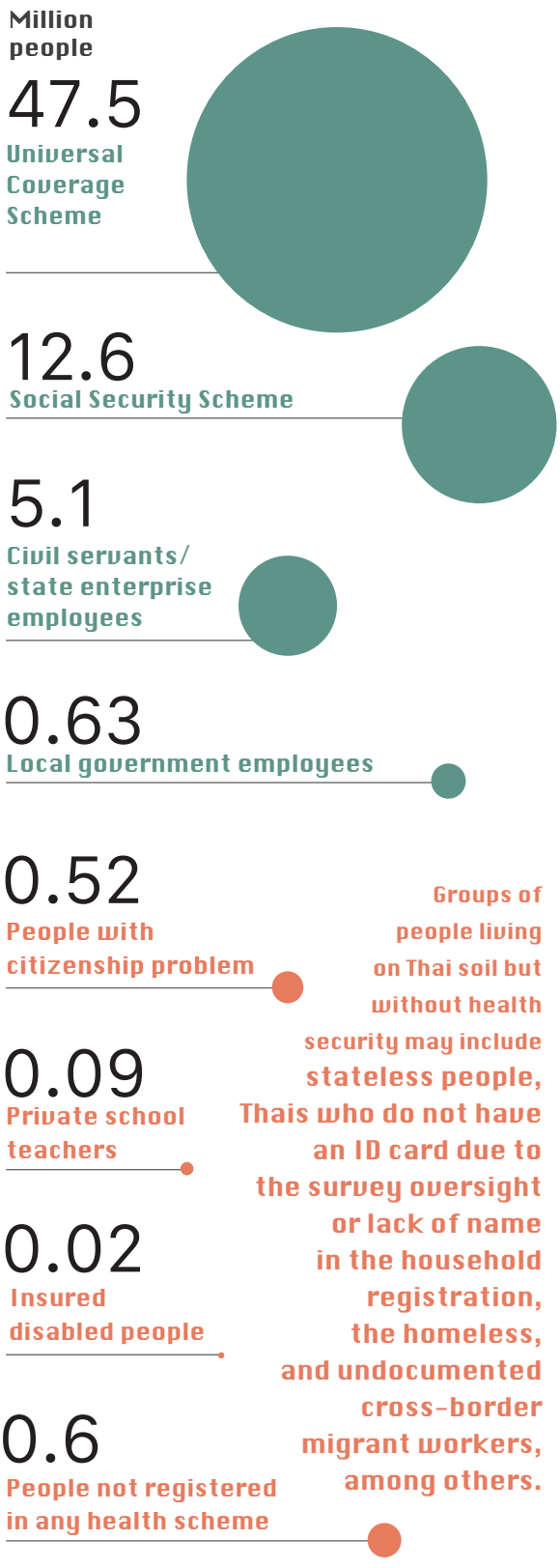


Bangkok

has the highest proportion of hospitals that are private of any region in the country, at 70.5%

Source: Public Health Resources Report 2019, Office of the Permanent Secretary, Ministry of Public Health

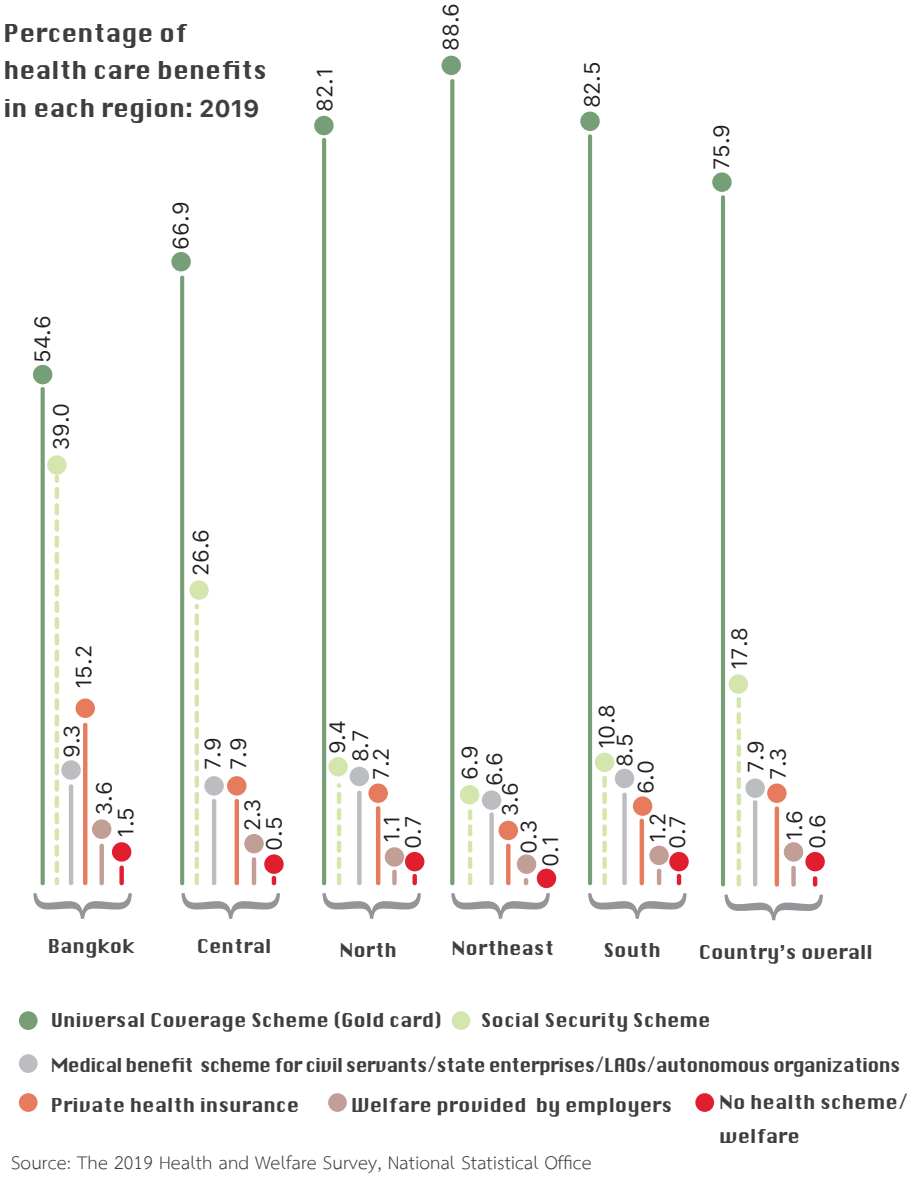
Population in the Universal Health Coverage (Unit: Million people)



Source: Report on the Creation of the National Health Security System. Fiscal Year 2019, National Health Security Office

In terms of health financing national health insurance, more than 99 percent of the Thai population is now financially protected from the potential costs of accessing essential health care services. This is made possible by the government health insurance schemes such as the Universal Coverage Scheme (Gold Card), social Scheme, and medical benefits scheme for civil servants and state enterprise employees. Each fund or welfare system has a scope of health benefits, and fiscal resources are still quite different in many respects. Therefore, the coverage ratio of each fund and welfare system in each region is different. This is especially the case when comparing Bangkok and the central region with other regions. Therefore, coverage of a standard benefits package under the various health insurance schemes is another dimension of spatial inequality that still needs to be assessed and monitored.

Percentage of health care benefits in each region: 2019



Source: The 2019 Health and Welfare Survey, National Statistical Office

Bangkokians

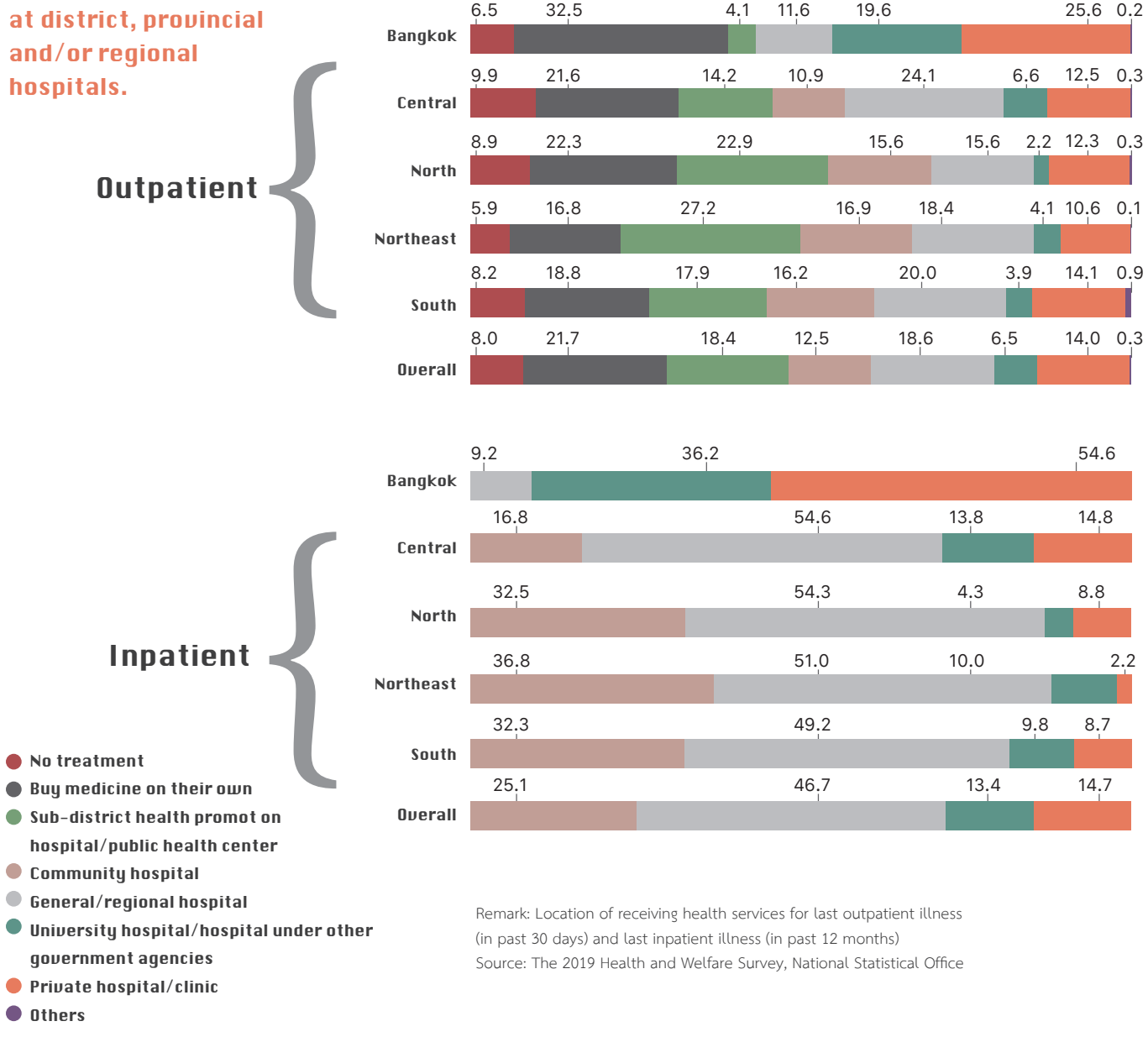
use health services at private hospitals and clinics, including hospitals affiliated with universities and other government agencies.

By contrast, people in the northeast region

use outpatient services at sub-district health promoting hospitals and inpatient services at district, provincial and/or regional hospitals.

The spatial differences in the availability and allocation of health resources above would likely explain the differences found in health service use behaviors, including the ability to access essential health services when needed.

Health behavior when ill or injured (percent)



Remark: Location of receiving health services for last outpatient illness (in past 30 days) and last inpatient illness (in past 12 months)
Source: The 2019 Health and Welfare Survey, National Statistical Office

10 Special Area Health

In 2020, the Cabinet approved the draft of the National Public Health Action Plan on Special Area Health, Phase 1 (2019-2022) with the target area covering 19 provinces.

"Special Area Health"

refers to an area with certain interventions to address the specific context, and which differ from the mainstream services. This includes a public health management approach to comprehensively solve the health problems of people in the area, and consists of the following four areas:

- Marine Health
- Border Health
- Migrant Health
- Eastern Economic Corridor (EEC)

02 **Border Health**

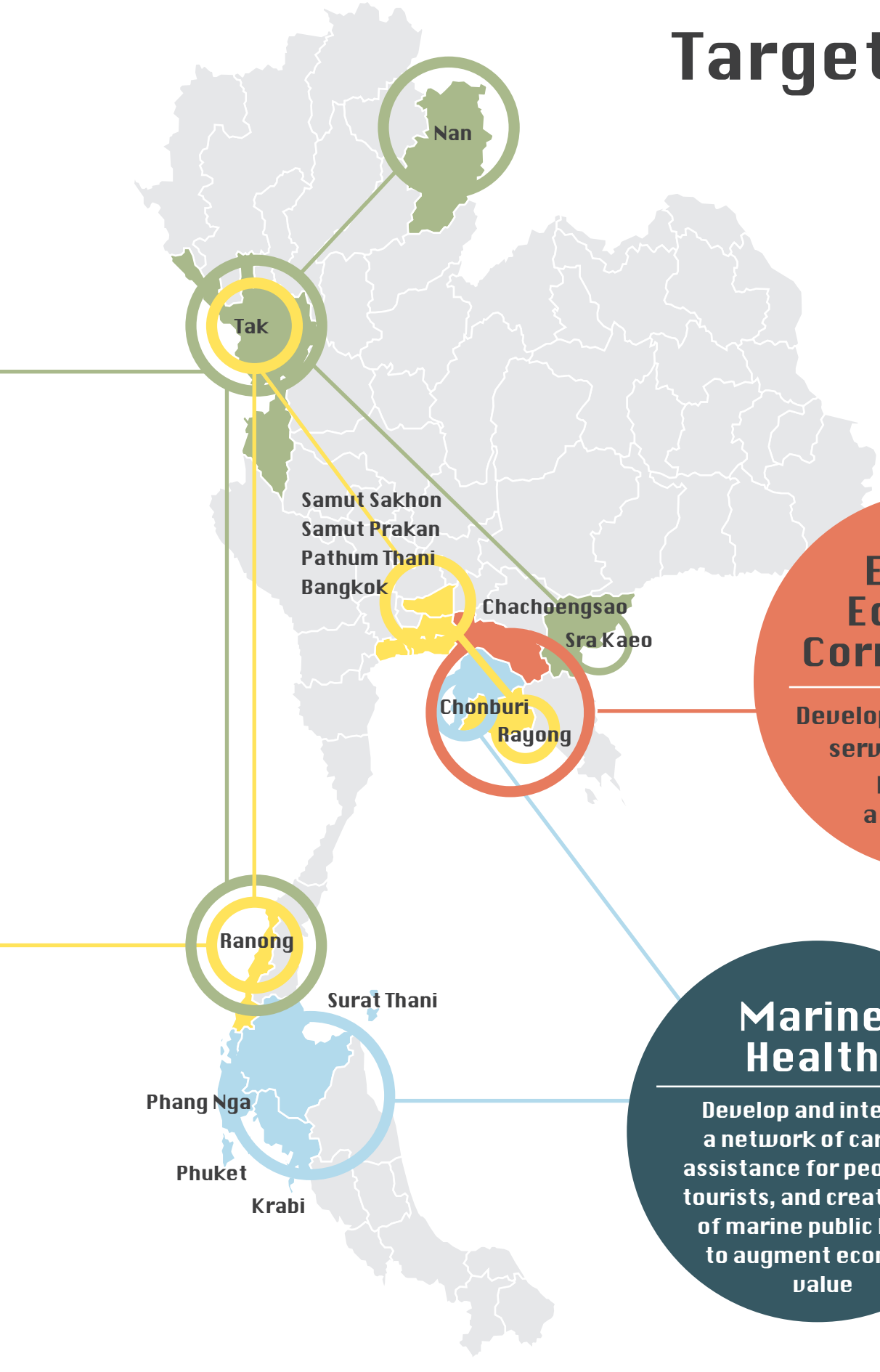
Develop potential and mechanisms for cross-border cooperation on preventive health systems

Migrant Health

Develop a model of health insurance for migrant workers

03

Target Areas



04 Eastern Economic Corridor (EEC)

Develop a modern health service system and promote as a medical hub

01 Marine Health

Develop and integrate a network of care and assistance for people and tourists, and create value of marine public health to augment economic value

01 Marine Health

Thailand has a total coastal area that covers 24 provinces (including Bangkok),

many of which are provinces in the south that are tourism economic zones

and residential areas along the coasts as well as on small and large islands.

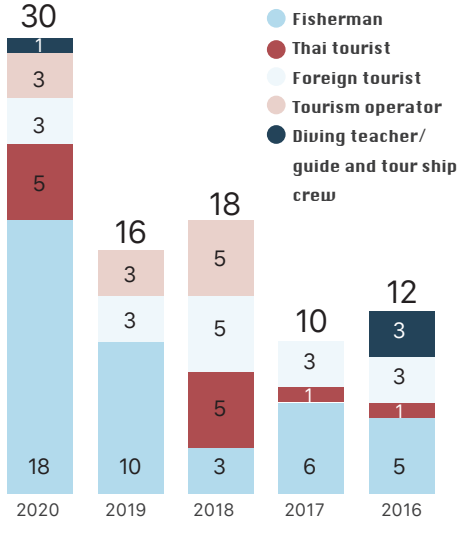
5 coastal provinces with the highest number of tourists in 2019

Number of tourists (person)

Foreigner		Thai	
Phuket	10,598,921	Chonburi	8,636,346
Chonburi	9,966,574	Phetchaburi	8,410,769
Krabi	4,312,606	Rayong	7,310,599
Surat Thani	3,591,556	Phuket	3,977,545
Phang Nga	3,470,414	Nakhon Si Thammarat	3,723,472

Source: Summary of domestic tourism situation by province, Office of the Permanent Secretary, Ministry of Tourism and Sports

Number of patients with decompression sickness



Source: Summary report on the number of patients with decompression sickness in 2016 – 2020, Vachira Phuket Hospital

Impact of COVID-19 resulting in the number of foreign tourists in Thailand in January - October 2020

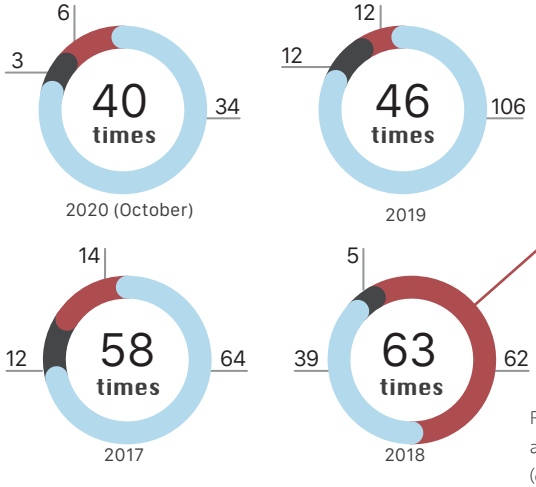
to decrease by 78.9%

and Thai tourists decreased by 50.7 from 2019

Phuket, Chonburi, Krabi, Phang Nga and Surat Thani are the five coastal provinces with, historically, the highest number of foreign tourists in Thailand. Thus, these provinces were designated as a target area for marine health. In the early stages, the focus is on developing and integrating networks for care and assistance of local residents and tourists, and creating economic value in the process.

The maritime geographic context leads to many important public health challenges. One of them is immediate access to emergency medical services for local residents and tourists in the area who may experience a sudden illness. These conditions include decompression sickness or a disease caused by scuba diving and resurfacing too quickly to the surface (the bends), or injuries from marine accidents, an increasing number of incidents, many of which are severe, such as the 2018 Phuket ferry capsizing of the Phoenix cruise ship.

Number of marine accidents in coastal provinces



In 2018 in Phuket, the Phoenix cruise ship capsized by big waves causing 47 deaths.

Remark: Selected only marine accidents in 23 coastal provinces (excluding Bangkok)

Source: Compiled from statistics on water accidents during 2017-2020, Marine Department

02

Border Health

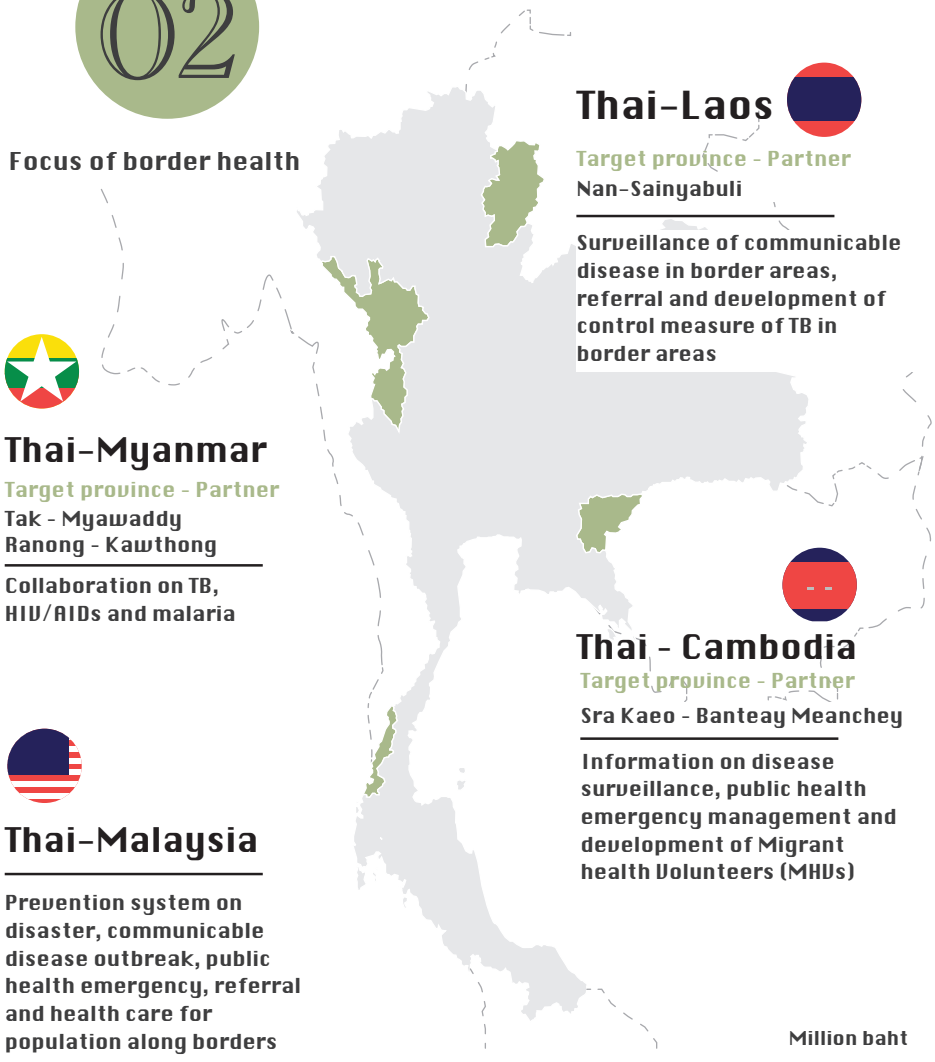
This Special Area Health covers 31 provinces which share borders with Thailand's four neighbors.

These areas are characterized by the high dynamics of transnational population movement and border trade,

both through formal and natural crossings.

Many areas are rural areas. There are problems of stateless persons who have been born in Thailand, or problems of registration status. Many health service providers face difficulty in serving migrant population, most of whom cannot be billed for services. There are also difficulties in controlling cross-border communicable diseases such as tuberculosis, HIV/AIDs, malaria, and COVID-19. Covid-19 has prompted urgent attention to the need for collaboration and mechanisms for cross-border public health in prevention, disease control, referral and emergency medical management including consumer protection involving health products and services in border areas. These are of paramount importance.

Focus of border health



Thai-Laos

Target province - Partner

Nan-Sainyabuli

Surveillance of communicable disease in border areas, referral and development of control measure of TB in border areas

Thai-Myanmar

Target province - Partner

Tak - Myawaddy
Ranong - Kawthong

Collaboration on TB, HIV/AIDs and malaria

Thai - Cambodia

Target province - Partner

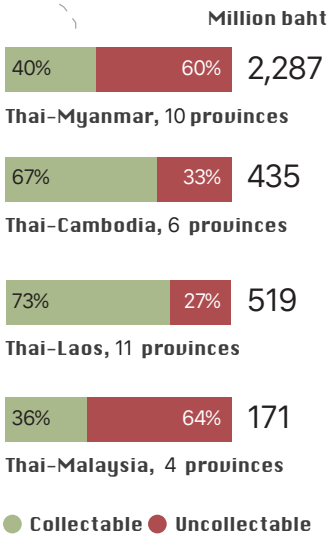
Sra Kaeo - Banteay Meanchey

Information on disease surveillance, public health emergency management and development of Migrant health Volunteers (MHVs)

Thai-Malaysia

Prevention system on disaster, communicable disease outbreak, public health emergency, referral and health care for population along borders

Proportion of health service costs charged to migrant populations receiving services in border provinces in 2020



Note: 1. Only the hospitals under the Office of the Permanent Secretary, Ministry of Public Health, nationwide (excluding Bangkok)
2. 31 provinces including Chiang Rai, Chiang Mai, Mae Hong Son, Tak, Ratchaburi, Kanchanaburi, Phetchaburi, Prachuap Khiri Khan, Ranong, Chumphon, Chanthaburi, Trat, Sra Kaeo, Buriram, Surin, Sisaket, Ubon Ratchathani, Amnat Charoen, Bueng Kan, Nong Khai, Nakhon Phanom, Mukdahan, Phitsanulok, Uttaradit, Nan, Phayao, Song Khla, Satun, Yala, and Narathiwat

Source: Expenses for health services for migrant populations only in border provinces: 2020. Health Data Center, Information and Communication Technology Center, Ministry of Public Health

Migrant Health volunteers or MHVs,

the key actors to promote access to services, and essential health care for all populations in border areas with huge ethnic and cultural diversities.

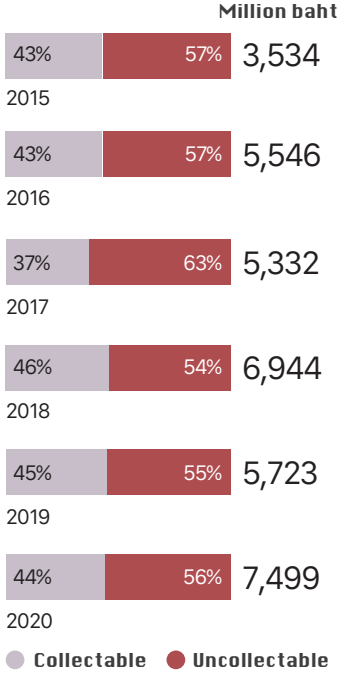
Thailand has developed a Migrant-friendly health service system through the recruitment and training of MHVs to promote access to essential health services for all populations in border areas with high diversity of ethnicities and cultures. This is another important focus in the border health (which promotes the cadres of MHVs. In non-border areas where there is a large number of migrant populations who live and work there). Target areas of the Border Health include Nan, Tak, Ranong and Sra Kaeo provinces.

03 Migrant Health

The emphasis
is on migrant populations, especially migrant workers and their dependents from neighboring countries. This special health area covers all
77 provinces across the country.

A major challenge for public health in this area is to develop a model and expand health coverage for all migrant population. The goal is to promote access to essential health services and minimize the burden of health expenditures incurred for patients and service recipients who are migrant population.

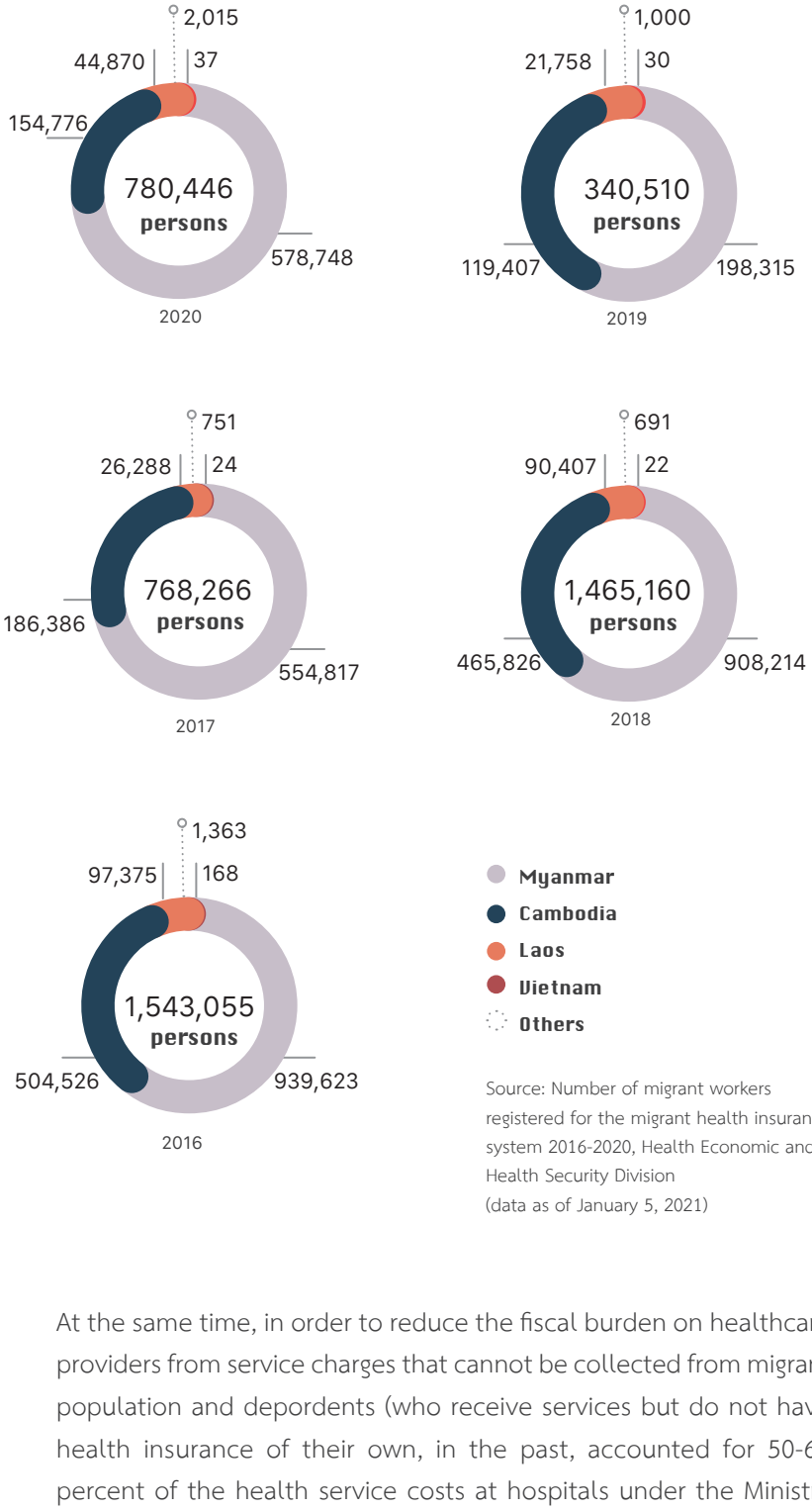
Proportion of health service costs charged to migrant population who receive services



Note: Only hospitals under the Office of the Permanent Secretary, Ministry of Public Health, nationwide (excluding Bangkok)

Source: Health service expenses for migrant populations: 2015-2020, Health Data Center, Information and Communication Technology Center, Ministry of Health

Number of purchases of Migrant Health Insurance Cards among migrant workers and dependents



Source: Number of migrant workers registered for the migrant health insurance system 2016-2020, Health Economic and Health Security Division
(data as of January 5, 2021)

At the same time, in order to reduce the fiscal burden on healthcare providers from service charges that cannot be collected from migrant population and depordents (who receive services but do not have health insurance of their own, in the past, accounted for 50-60 percent of the health service costs at hospitals under the Ministry of Public Health), the government has introduced two schemes, especially for migrant workers and population.

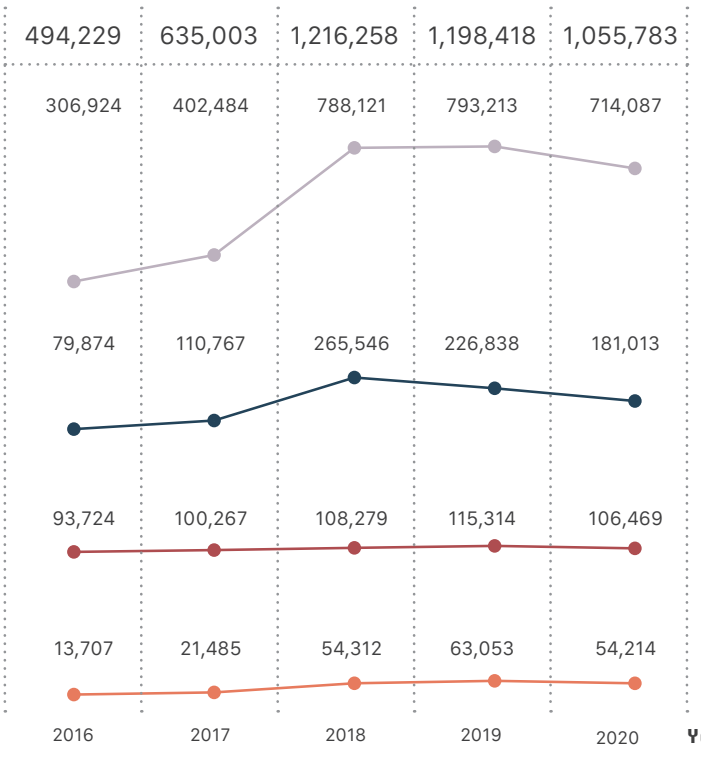
For migrant population, there are

two major systems

of health insurance.

1 Migrant Health Insurance Card Scheme by the Ministry of Public Health (coverage period ranges from 3 months to 2 years)

2 Social Security Scheme



Number of migrant workers insured under the Social Security Scheme (person)

Source: Number of insured migrant workers by nationality, 2016-2020, Social Security Office

Number of beneficiaries under the Health Insurance Fund for people with Citizenship Problems

Fiscal Year	Number (person)
2016	562,983
2017	576,857
2018	519,070
2019	543,994
2020	549,201

Source: Number of people with Citizenship problems, 2016-2020, Division of Health Economics and Health Security, Office of the Permanent Secretary, Ministry of Public Health

Thailand has two major health insurance systems for migrants, namely the Migrant Health Insurance Card Scheme by the Ministry of Public Health (coverage period ranges from 3 months to 2 years), and the Social Security Schem. For the population with Citizenship problems of rights and status (especially many ethnic groups who have not received Thai citizenship), there is a Health Insurance Fund for People with Citizenship Problems, securing their right to necessary health coverage. In the first phase, the target areas of Migrant Health are Tak, Ranong, Samut Sakhon, Samut Prakan, Pathum Thani, Bangkok and Rayong.

04 Eastern Economic Corridor (EEC)

The EEC project covers the three provinces of Chonburi, Rayong, and Chachoengsao.

The Eastern Economic Corridor (EEC)

focused on industrial development, investment in technology and innovation in urban areas in order to become an 'economic city' and a 'tourist city' that generate income for the country.

The eastern region of Thailand is the area where urban population growth is projested to be the highest.

Along with the industrial development in the future and the past under the Eastern Seaboard Project, the area needs environmental management efficiency, and address the potential impact such as the problem of volatile organic compounds. This is a health hazard found in Map Ta Phut and areas close to Rayong Province. The problem of industrial waste management, for example, is a major health challenge in the EEC as well as the potential social impacts of urban and population expansion as reflected by the mortality rate from road accidents. Rayong, Chonburi and Chachoengsao are three of the five provinces with the highest mortality rates from road arcidents in the country.

The Eastern Economic Corridor will lead to changes in many aspects, such as urbanization and the increase in the population of outsiders who come to invest and work in the area. Based on the 2010-2040 population projections for Thailand, the eastern region is the area with the highest urban population growth when compared to other regions.

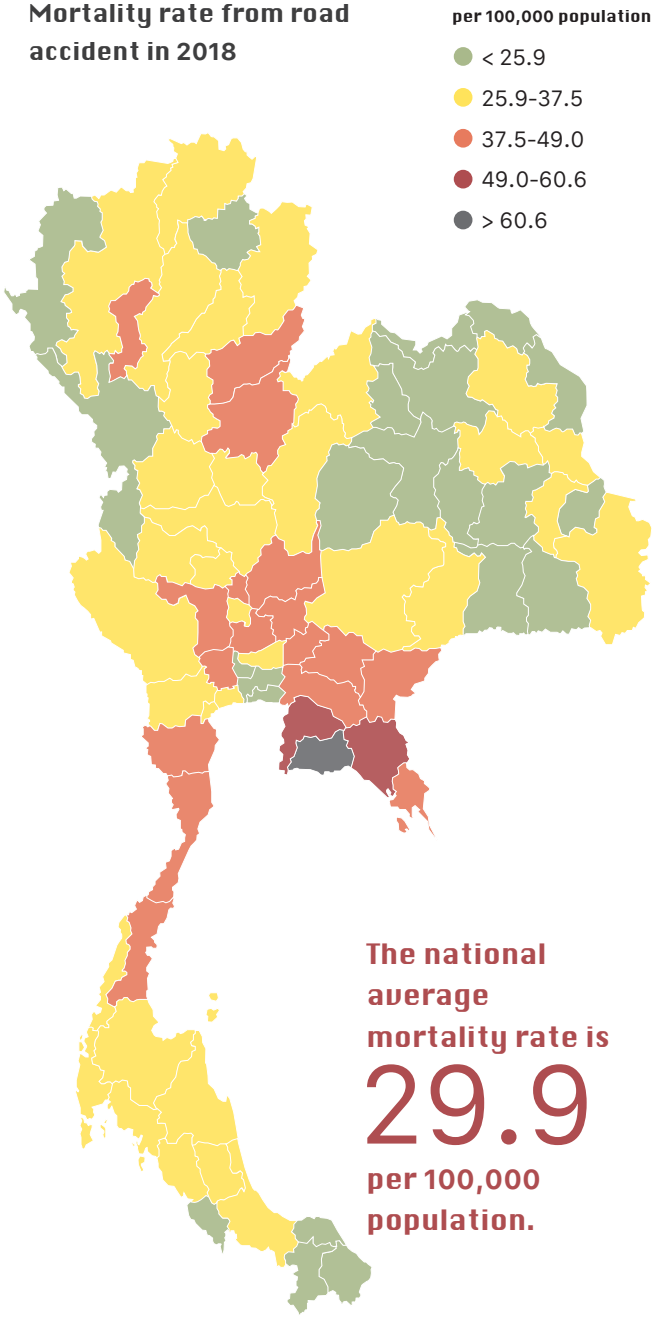
Number of urban population and average growth rate by region in 2010-2040 (million people)

Region/Year	2010	2020	2030	2040	Increase rate per year (2010 – 2040) (percent)
Bangkok	7.69	8.36	8.46	8.14	0.2
Vicinities	3.18	4.94	6.36	7.41	4.4
Central	1.19	1.69	1.96	2.00	2.3
East	2.20	3.65	4.86	5.70	5.3
West	1.20	1.53	1.79	1.87	1.9
North	3.95	5.18	6.24	6.38	2.1
Northeast	5.49	8.91	10.88	11.06	3.4
South	2.81	3.84	5.11	6.02	3.8

Source: Impact Study Report of changes in population structure and policy recommendations on national development from the results of population projections for Thailand 2019, Office of the National Economic and Social Development Council

It is imperative to accelerate development of the potential and capability of the health service system in the three EEC provinces to support the increasing trend of service usage including outpatient, inpatient and other health services. This is a consequence of the development and expansion of the population in the area, and should be the focus of public health in the Eastern Economic Corridor.

Mortality rate from road accident in 2018

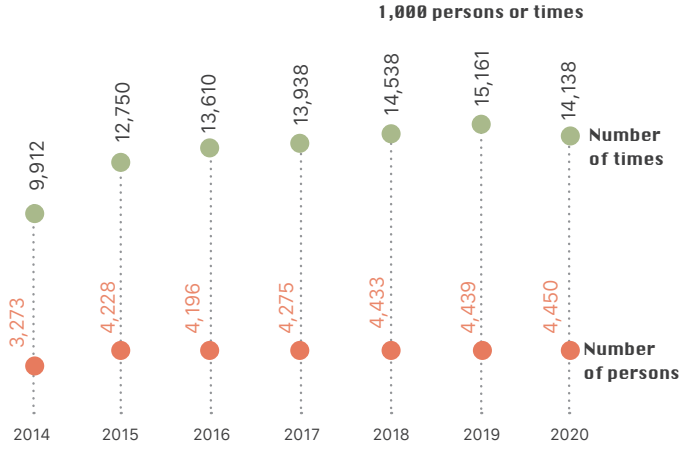


The national average mortality rate is

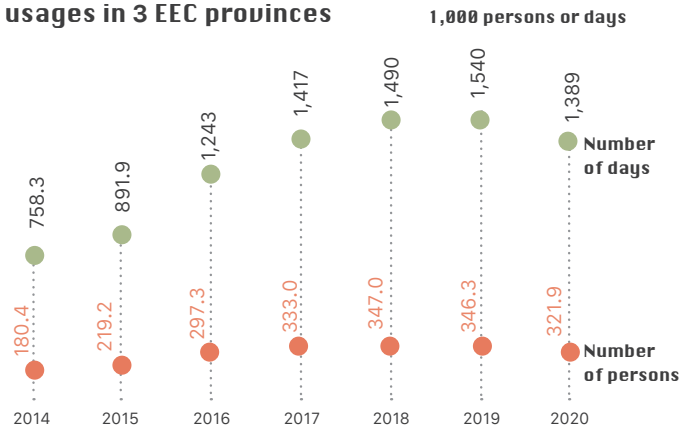
29.9

per 100,000 population.

Number of outpatient service usage in 3 EEC provinces



Number of inpatient service usages in 3 EEC provinces



Source: Outpatient and Inpatient Service Usage of Thai Population, FY 2014-2020, Health Data Center, Information and Communication Technology Center Ministry of Public Health

Top 5 provinces with highest moritality rate from road accident (per 100,000 population)

Rayong	65.5
Chonburi	49.6
Chantaburi	49.0
Saraburi	48.1
Chachoengsao	47.6

Note: Using 3 databases, including data from the Ministry of Public Health, the Royal Thai Police and Road Accident Victims Protection Company Limited

Source: 2018 Thailand Road Safety Situation Report, Provincial Traffic Accident Prevention Support Plan

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Nakhon Pathom: Institute for Population and Social Research, Mahidol University.

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Thai Health Project 2021. New generation of political activism: From flash mob to the People's Party 2020. 2021 (page 50-57).
Nakhon Pathom: Institute for Population and Social Research, Mahidol University.

Outstanding Situations

on Health and Wellbeing

New generation of political activism:

From flash mob to the People's Party 2020

The year 2019 was a time when the world faced a pandemic caused by unchecked spread of the novel coronavirus or COVID-19. This is a natural disaster that affected all countries around the world, big and small, rich and poor. The pandemic seemed to last longer until vaccines would be available. But the pandemic did not blunt the movement of Thai politics. The Thai government came up with the slogan : *"Stay home -- Stop the virus -- Do it for the Nation".* The year 2020 was a time when the younger generation experimented with forming flash mobs for political expression. These ad hoc events brought groups together without warning, and then disintegrating quickly. They soon became a force that could challenge the power structure of the state. Day after day, flash mobs began to replicate throughout the country even without clear leadership or organization. This sort of political phenomenon has never happened before in Thai political history. This article discusses the emergence and expansion of a new generation of political mobilization since the 2019 national elections, and the reaction of society to this new generation of political activists.

The first election in 8 years and the role of the new voters

The March 24, 2019 House of Representatives election was the first in eight years (since the July 3, 2011 general election). It was also the first election in five years since the coup d'etat by the National Council for Peace and Order (NCPO) on May 22, 2014. As a result of the 2019 elections, General Prayut Chan-o-cha, the head of the 2014 coup d'etat, returned to become Prime Minister again. His Palang Pracharath Party was a mainstay in forming the government, and the newly-prescribed role of 250 appointed senators is a key condition that allows General Prayut to maintain political power indefinitely. That is because the 2017 Constitution requires senators to join in the selection of the Prime Minister and members of the House of Representatives as well. It is undeniable that the design of the 2017 constitution is an important mechanism that creates political advantages for Gen. Prayut as the former NCPO leader.

Picture: https://www.freepik.com

In the 2019 elections, the *"New Voters,"* or as social demographers refer to them as "Generation Z" (i.e., persons born between 1995 and 2002), became the new profile of the House of Representatives. They are also being closely watched because, for more than eight years, Thai society has not had this kind of election. As a result, the millions of 'new voters' have become a demographic bloc that could be a key political variable. Before that time, no one could have predicted how the new voters would vote under the rules of the 2017 Constitution. Political scientists predicted that the political thoughts and attitudes of this generation should be markedly different from those of the "older generation," insofar as they espouse liberal (anti-conservative) ideals, and have a high level of self-esteem. After the election, it became apparent that the new voters had gravitated to the Future Forward Party, which was a newly-formed political party whose political platform reflected the new generation. That party received 6,312,213 votes from a total of 38,268,366 voters, and seated a total of 80 members of the House of Representatives, the third highest among all political parties.[1]

Flash mobs after the dissolution of the Future Forward Party

After the Constitutional Court's resolution to dissolve the Future Forward Party on February 21, 2020,[2] former members of parliament (MPs) from the Future Forward Party later formed the Move Forward Party. The next day's reaction (February 22, 2020) was a "flash mob" (a spontaneous type of rally with clearly-set start and end times) comprised of students and other young people gathering simultaneously in parts of the country. The main theme of the rally was to express disapproval of the dissolution of the Future Forward Party. As a result, the 'new voters' took on politics outside the House of Representatives. However, the flash mob demonstrations were halted after the emergence of the COVID-19 epidemic. When the lockdown measures were relaxed after the first wave of COVID-19 spread subsided, the mobilization of the new generation resurfaced, both inside and outside the educational institutions in many provinces. At that time, their political platform became clearer. On July 18, 2020, a group called "Free Youth" organized a rally under the hashtag slogan "#Can't stand it anymore" at the Democracy Monument to issue three demands, namely: 1. Dissolve Parliament; 2. Stop harassing the people; and 3. Draft a new constitution.[3] Following that, the gatherings of this new generation of voters occurred at weekly intervals, and started to build a broader-scale social movement through online media channels, as per the following examples:[4]

July 26, 2020: A group of students and the public participated in the activity: "#Let's run Hamtaro." Participants ran around the Democracy Monument, singing a song adapted from the soundtrack of the Japanese manga "Hamtaro" character: "Run, run, Hamtaro... the most delicious thing is the people's tax."

August 3, 2020: The groups called "Mahanakorn for Democracy" and "Kased Movement" held a rally on the theme "Harry Potter has #Bewitched Guardians of Democracy." These were held at the Democracy Monument and Mr. Anon Nampa, a human rights lawyer in a wizard's robe, gave an opening speech on the issue of expanding the royal power of the Monarchy and reform of the institution for the first time.

#Bewitched Guardians of Democracy

August 10, 2020: "United Front of Thammasat and Demonstration" organized a rally under the name of the "#Thammasat will not tolerate" at Thammasat University, Rangsit Campus. Ms. Panasaya Sitthijirawattanakul (Rung), the group's leader, read 10 demands on the reform of the Monarchy.

#Can't stand it anymore

August 16, 2020: A group that called itself "Free People" held a large demonstration at the Democracy Monument with tens of thousands of attendees. This was the largest gathering in six years, i.e., since the 2014 coup. In addition to these public space events on the street, a parallel set of phenomena were emerging inside schools. For example, there was the practice of tying a white bow and "raising the three-finger" salute in protest of the dictatorship while singing the national anthem in front of the flagpole. This is considered a symbolic performance that took place in at least 16 provinces.

#FreeYouth

#Let's run Hamtaro

September 19, 2020: The "United Front of Thammasat and Demonstration" organized an activity called "#19 September to reclaim power of the people" at Sanam Luang. The next morning, the protesters joined the ceremony to bury the "People's Party 2020" before moving in a procession to submit a letter to the Privy Council to call for the reform of the Monarchy. However, the procession was intercepted by the police. Accordingly, the group filed a petition with the Metropolitan Police Commissioner instead.

October 2, 2020: A group of high school students who called themselves "Bad Students" gathered in front of the Ministry of Education to call for progress in implementing three demands: Stop harassing students; Abolish obsolete rules; and Conduct education reform.

Movement on behalf of the
People's Party 2020

Among the various initiatives of this new generation of protesters is the "People's Party 2020." The role of this movement has expanded steadily by trying to create a coalition to push for structural political reforms and articulate various demands that can be considered a challenge to state power. On October 8, 2020, representatives from various groups that were active in the previous period announced the assimilation of the "People's Party 2020" by consolidating various demands of the new generation, whether it was an issue of education reform, gender diversity, anti-patriarchy, secular state, welfare state, labor rights, and constitutional amendment to reform the Monarchy. These demands were being driven in the name of the "People's Party 2020."[5] The following are the significant milestones of this movement:[6]

October 14, 2020, "The People's Party 2020" held a large gathering at the Democracy Monument. Despite the police dismantling the stage on October 13, 2020, the protesters moved to settle down overnight at Government House to call for the Prime Minister to resign, draft a new constitution, and reform the monarchy. But the leaders announced the cessation of the demonstrations in the early morning hours of October 15, 2020 to avoid the dispersal of the protests by the authorities. Later, Prime Minister General Prayut declared a State of Emergency in the Bangkok area which gave officials the authority to disperse the rally at the Government House in the early morning. The three leaders of the sit-in, namely Mr. Anon Nampa, Mr. Parit Chiwarak

Picture: https://www.thairath.co.th/news/politic/1954831

The police use a water cannon to disburse a crowd at the Pathumwan Intersection

and Ms. Panasaya Sitthijirawattanakul were arrested. Despite the suppression attempt, in the evening the demonstrators gathered again at Ratchaprasong Intersection.

October 16, 2020, "The People's Party 2020" held a rally at Pathumwan Intersection in the evening. The police used a loudspeaker to announce the cessation of the demonstration, but to no avail. Next, the police sprayed high-pressure water on the protesters and tightened a cordon around the area on both Rama I Road and Phaya Thai Road until the protest group was dissolved, and the Pathumwan Intersection was successfully controlled.

October 17, 2020, the "People's Party 2020" changed its name to the "People's Group" to reflect the concept that "everyone is a leader" as the original group leaders were arrested. Next, the group organized flash mobs simultaneously in many locations in Bangkok and other provinces. In Bangkok, there were three main spots, namely the intersections at Lad Phrao, Udom Suk, and Wongwian Yai.

18 October 2020 Bangkok flash mobs reappeared, primarily at the Victory Monument and Asok Intersections in Bangkok. These leaderless rallies had clearer format and arrangement, using such unique mechanisms as sign language communication, using face masks, wearing black T-shirts, and using the Telegram application to deliver news, which is a social media app that is difficult for the state to control.

In summary, the "People's Group" has three main demands: 1. The Prime Minister resigns; 2. Convene an extraordinary session of the House of Representatives to consider amending the 2017 Constitution; and 3. Reform the Monarchy to be under the Constitution.

Reaction
from the government

At first, the government acted as if they were indifferent to the demands of the new generation of protesters outside the House of Representatives. But later, when the "iLaw" group submitted a constitutional amendment to support the demands of the new generation, especially on the issue of limiting the powers of senators, with a list of 100,732 names on September 22, 2020,[7] two days later (September 24, 2020) a joint parliamentary meeting passed a resolution of 432 to 255 votes to set up a committee to consider drafting constitutional amendments before adopting the principles. The incident assumed that Parliament had "flipped a switch," and was now receptive to the idea of amending the constitution. Many parties saw this as the 'light at the end of the tunnel' that may help reduce political conflict.

Regarding the attitude of the government, although the Prime Minister ignored the calls for his resignation, and declared a State of Emergency in Bangkok (October 15, 2020) to empower the authorities to disperse the protests, when the rallies of the "People's Group" persisted, the Cabinet, on October 20, 2020, approved and issued a royal decree convening an extraordinary parliamentary session, 2020[8] to allow discussion and exchange of political opinions in the parliamentary system to resolve the conflict. On October 21, 2020, the Prime Minister made a statement, aired through the Television Pool of Thailand, calling on all parties to "take a step back." Then, the next day (October 22, 2020), the Government Gazette website published an announcement "Cancellation of State of Emergency" in Bangkok including related notices and requirements, and that was seen as a positive signal for the de-escalation of the political crisis at that time.

On October 26-27, 2020, an extraordinary parliamentary session was held to find a way out from the situation of political rallies. This was an open general debate without a resolution under Article 165 of the Constitution. The meeting came to two conclusions: One, proceeding with a constitutional amendment; and two, the establishment of a multi-party committee to solve political problems.[9, 10] Following that, General Prayut stated in an interview that he agreed with both proposals but would not resign.[11]

However, when the main demands of the "People's Group" (i.e., the reform of the Monarchy) began to gain traction in the public sphere, various internal security laws were enforced against the leaders of the "People's Group", and on a continuous basis, such as the law against inciting rebellion against administrative power (Criminal Code, Section 116), the Computer Crime Act, B.E. 2550, and the lese-majeste law (Criminal Code, Article 112) that was been applied more intensely. Throughout this period, there have been 24 prosecutions under Section 112 related to the 2020 protests, including arrest warrants for at least 55 individuals, including at least three juveniles.[12]

Diversity of opinion in society

In addition to the attitude and reaction from the government, there are still some groups of people who disagree with the People's Group's approach and goals, and have protested against them in many important events, including the following: [13]

August 16, 2020, Dr. Warong Dejkitwikrom, former member of the Democrat Party's House of Representatives, launched the "Thai Phakdi" Group as a central organization for coordinating the defenders of the Monarchy, before holding the first big Yellow Shirt rally on August 30, 2020 at the Thai-Japanese Stadium in Bangkok.

Picture: https://thestandard.co/unicef-call-on-all-sides-to-protect-children-and-youth

Youth protests in 2020

October 12, 2020: The "Coordination Centre for Vocational Students and People to Protect the Monarchy" organize a rally to "Invite Thanathorn to Leave Thailand," with a march to the Thai Summit Building. which is the location of the office of the Future Forward Committee, with Mr. Thanathorn Juangroongruangkit as chairman.

October 22, 2020: Pol Maj. Gen. Rianthong Nanna, Director of Mongkutwattana Hospital, and the leaders of the "Rubbish Collection Organization" arranged for people to wear yellow shirts to gather to show their power to protect the Monarchy at Government Complex, Chaengwattana Road.

October 27, 2020: Several groups of Yellow Shirts show their power to protect the Monarchy. In the morning, Ms. Haruthai Muangboonsri gathered a group at the US Embassy to call for the United States to "Respect Thailand's internal affairs" because it believes that there are foreign countries behind the attacks on the Thai Monarchy. In the evening the Yellow Shirts, led by Dr. Warong Dejkitvikrom and some former PDRC leaders gathered at Lumpini Park.

Amid the current opposition to the People's Party from the above groups, there are various groups in society that support students' freedom of expression and peaceful protest of the new generation, whether it is some political party, Academic Network Group,[14] or a large number of people in the entertainment industry. Some international organizations have expressed support and advocacy for the protection of the right to freedom of protest. For example, the United Nations Children's Fund (UNICEF) issued a statement calling on all sides to ensure the safety of children and youth protesters, and allow schools and educational institutions to express and exchange ideas constructively.[15] The Office of the United Nations High Commissioner for Human Rights (UNHCR) ratified the peaceful state of the demonstrations and condemned the dispersal tactics of the government.[16]

Assoc. Prof. Dr. Yuttaporn Issarachai , a political science scholar, suggested that the government should create a forum for discussion between the government and the protesters to amend the constitution. This should include the arrangement of areas for people and all parties to participate widely. Any discussion of constitutional amendments needs to have broad discussion and participation going forward.[17] Subsequently, Chuan Leekpai, President of the National Assembly, appointed the Reconciliation Committee to study the pattern of reconciliation in the country.[18]

Comparison
of the student movement of October 14, 1973 with the new generation mob of 2020

The student movement that burst onto the scene on October 14, 1973 boldly and openly confronted the military dictatorship of Field Marshal Thanom Kittikachorn. That movement was a political force that has changed the face of Thai political society since then. It can be said that it was a role model and inspiration for the current youth movement. However, the student movements of the two periods are both similar and different in important ways.

If we compare the movements of the younger generations on October 14, 1973 and in 2020, there are four notable similarities: 1. They are both movements against a junta; 2. They are both movements calling for a democratic constitutional amendment. 3. They are both movements that took place in a depressed economic context; and 4. They are both movements that focused on fighting in a symbolic way.

However, the movement of the new generation in 2020 has three distinct differences from the political movement of October 14, 1973, as follows:

One

The movement of the new generation in 2020 differs from the student movement of October 14, 1973 in that it does not focus on centralized leadership, but also creates a space for movement, mobilization, and exchange of knowledge in new ways, e.g., via the internet and online media space.[19] The new generation in 2020 has the skills to reach and galvanize people from the online space to the offline space without much investment. They accomplish this through the creation of various hashtags in organizing activities to mobilize action, and that has become one of the powerful weapons of the new generation when compared to the student movement on October 14, 1973, which was very limited by comparison, since they only had newspapers, radio, or television in that era. That made their messaging prone to interception or censorship by the government. By contrast, at present, the internet makes it more difficult to control communications and intervention by the state.

Picture: https://www.tnews.co.th /politic/480966/สุริยะใส-สรุปบทเรียน-14-ตุลา-คุณค่าของประชาธิปไตยที่มากกว่าการเลือกตั้ง
https://blog.startdee.com/ชูสามนิ้วคือ-ประเทศไทย-ความหมาย-3-fingers-salute

Two

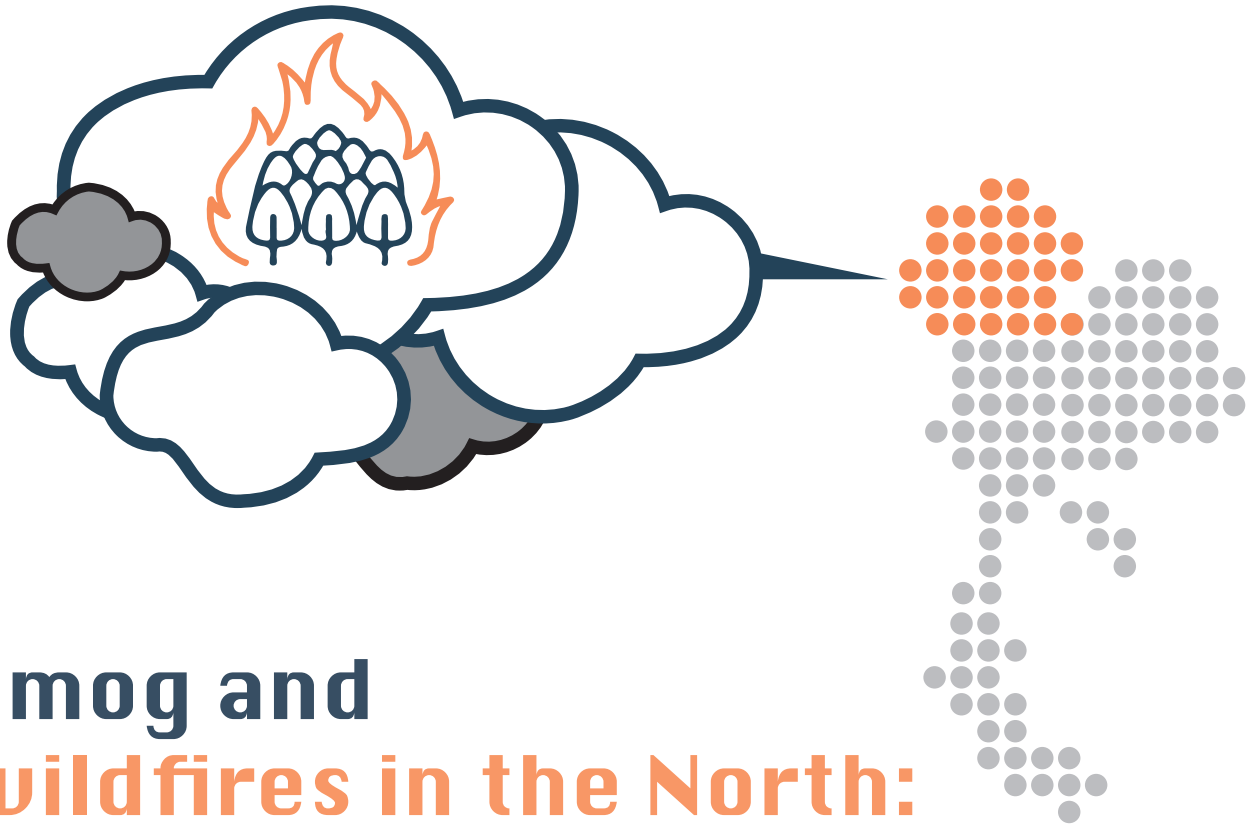
The existence of a parliamentary mechanism differs. Before the events of October 14, 1973, an interim constitution was promulgated in 1972 along with a constitution inherited from Field Marshal Sarit Thanarat in 1959 that gave the Prime Minister absolute power under Section 17.[20] That is to say, the political context at that time had no space or any channel for the people to check and balance the use of the government's powers under the parliamentary mechanism. By contrast, in 2020, although the government may have inherited power from the 2014 coup, the 2017 constitution still provided for general elections. That gave political space to examine the work of the government through the House of Representatives, which gave the new generation hope that it could resist the power of the government to some extent via the parliamentary system.

Three

Third, the aim of the student movement in the October 14, 1973 era was to fight for the ideology of a democratic monarchy, and to mainstream that concept to create a united front to fight against the military dictatorship.[21] That was a call for change in the political regime, not intended to make a major change in the political structure in Thai society. By contrast, the new generation movement in 2020 looks different. The new generation did not come out calling for a change of government alone. Instead, it posed a fundamental challenge to the structure and relationship of power, especially on the issue of reforming the Monarchy. In addition, the proposals and demands of the new generation are not limited to political issues. They also cover the education system, environment, natural resources, cultural dimensions, gender, and myriad other issues.

Conclusion

The student movements, the students, and the new generation in 2020 are a major political phenomenon that have occurred in different social Thai contexts. The gathering of the new generation of activists did not take place only in Bangkok. The goal of the rallies was also different from rallies in the past 15 years, as most of the earlier rallies were aimed at ousting the government of the day. However, in the current rallies, despite the one demand of calling for the Prime Minister to resign, the main goal is to reform Thai politics in a big way. It is expected that sometime during 2021-2022 there will be a push for a constitutional amendment by many parties. This may lead to a referendum process and the selection of members of the Constituent Assembly in accordance with the mechanisms of the Parliament. Perhaps a constitutional amendment which is more relevant to the people, and with content in accordance with democratic rules, will open a door to finding a "solution" for the country at this time in history.



Smog and wildfires in the North:

Sustainable management approaches

Most of the smog problems in Thailand occur in nine provinces of the upper northern region, namely: Chiang Rai, Chiang Mai, Lamphun, Lampang, Phrae, Nan, Phayao, Mae Hong Son, and Tak. The worst air pollution often occurs in the dry season, between January and April every year. Burn traces data from Landsat-8 satellite show that in 2020, the total area burned in these nine provinces exceeded 8.6 million rai, compared with 2019. The cumulative burning area increased to 1.4 million rai, an increase of 2.1 percent. The amount of burning in the northern region has increased in almost every province. Mae Hong Son has the largest cumulative combustion area of 1.8 million rai, accounting for 22.4 percent of the total area of the province.

Actually, smog is not a new problem for people living in this area. Rather, it is a consequence of an agricultural lifestyle that relies on burning to prepare the land for planting during the rainy season. Because of the practice of burning of deciduous dipterocarp and mixed deciduous forest areas with accumulated leaf fall, combined with the mountainous terrain and the surrounding mountains, the smog situation is more severe in the north than other areas of the country. Moreover, there is more smog from neighboring countries in the upper reaches due to the expansion of agricultural areas near the borders, and this has made the problem of air pollution in the north a major issue since late 1997, when the PM2.5 and PM10 dust crisis received widespread attention from the government and the public. General Prayut Chan-o-cha, the Prime Minister, therefore announced the level of solving the smog problem to be a national agenda in February 2019.

Learning about the problem of smog and forest fires through research

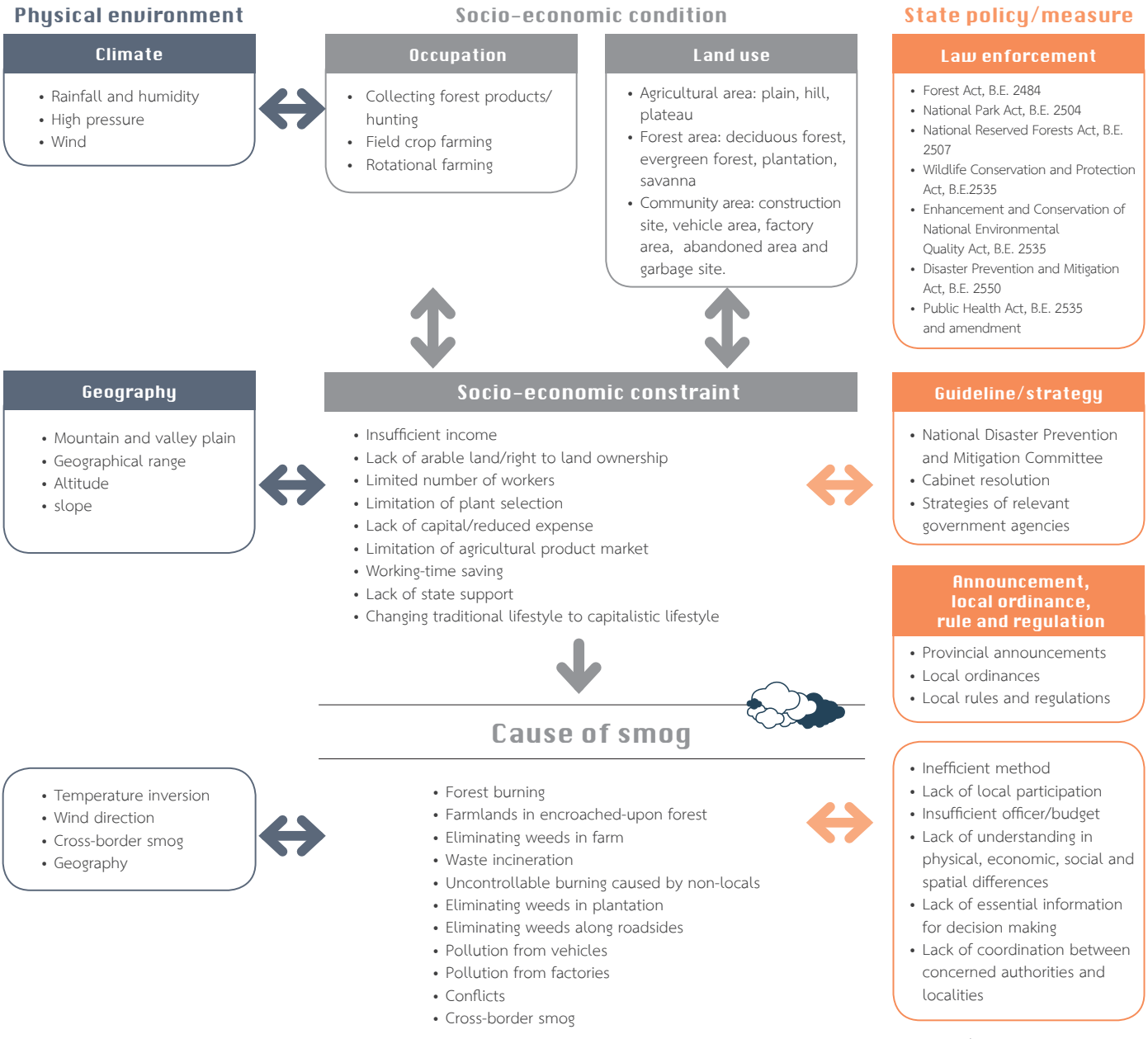
Many research studies[1] have pointed out that smog is a problem of air pollution caused by the accumulation of smoke and dust in the air. The proportion of the composition of each substance is different. It depends on a number of factors, such as the type of fuel used to burn, air humidity level, fire temperature, air pressure, wind speed, and wind direction. All of these can have adverse impacts on people's health, such as respiratory and cardiovascular disease. Added to that is the economic cost of flight cancellation and a decrease in the number of tourists.

Northern smog usually occurs in the Thai winter before the onset of summer. This is the period when the weather is stable due to high air pressure resulting in less vertical ventilation. Small fine dust is suspended, i.e., not being swept up into a higher atmosphere. The concentration of air pollution is mainly caused by open burning, which can be divided into three causes: 1. Wildfire, 2. Burning of weeds and agricultural materials from corn planting activities, and 3. Burning of weeds and agricultural materials from cultivation. The burning practices are done out of the belief that it can eliminate weeds and prevent pathogens in the soil. It is a method that is very popular among farmers because it is simple, convenient, and economical for the farmer. Climate is a reinforcing factor. If it occurs during a long dry year, the problem will become more severe. By contrast, if there is a lot of rainfall, as occurred in 2011 (i.e., the year of the Great Flood Disaster in Bangkok) that year was the only year where PM10 levels were not above the benchmark for even one day or zero at almost all the monitoring stations in the North. It is assumed that this phenomenon was caused by La Niña 2011.

Samoeng district, Chiang Mai

However, cross-border smog is another issue that cannot be overlooked, especially in Myanmar. There are many "heat points" along this corridor in the period March-April every year, particularly in the Shan State area adjacent to northern Thailand. The number of heat points in that location alone is more than twice the number of heat points found in Thailand nationwide almost every year. Monthly cumulative heat points data from January 1 to May 31, 2020 from the MODIS system show that Myanmar recorded a total of 55,158 heat points, with 27,994 heat points found in March, while Thailand had 26,308, with the highest number of heat points for Thailand occurring in February with 8,434. The VIIRS system found 401,734 heat points throughout Myanmar during that period, with the most in March at 195,553. In Thailand, VIIRS found at total of 205,288 heat points, and March also had the highest number at 70,680. In Myanmar, the number of heat points increased over 2019, while in Thailand there was a slight decrease.[2] Thai investors have expanded the contract farming base into the Shan State. There are approximately 8,440,800 hectares of maize planted, with about 30 percent of the amount of heat points being cultivated in/around the maize cultivation area.[3] In line with the statistics of imported goods through the border checkpoints adjacent to Myanmar in the north of Thailand, the crop that ranked No. 1 in the past 1-2 years is maize. When assessing by the dust values of PM10 and PM2.5 at the border area, it was found that both measures were significantly higher than those in the deep urban areas. That means that even if we can control the burning in Thailand, the smog problem will persist if there continues to be large-scale burning in neighboring countries.[4]

Figure 1: Depiction of the Dynamics of Smog in the Upper North Sub-region of Thailand[5]



Source: Suthinee, 2019

Myths
about smog problem

In 1995, Thailand started to use PM10 particulate matter as an index to measure air quality. In 2004, the 24-hour average standard was set at not more than 120 µg/m (micrograms per cubic meter or mcg/m^3). PM10 has always been criticized as too crude a measure. Accordingly, the PM2.5 particulate matter was recently added in 2010, but it was limited to only the Bangkok area. The benchmark is set to mean that, during a 24-hour period, PM2.5 must not exceed 50 µg/m^3. Indeed, PM2.5 is the better measurement. A major change in Thai smog monitoring occurred in 2018 as a result of the fact that Bangkok faced a severe smog crisis at the end of 2017. The result was that PM2.5 became the standard value that must be measured at all stations across the country, and is considered as one of the components of the Air Quality Index (AQI) of the Pollution Control Department. For the northern area, PM2.5 could be measured at all 15 stations in nine provinces since 2019 onwards.

It is important to note that there are two myths arising from the repetition of the media which have caused misunderstandings among the people about the smog problem: Myth #1: Chiang Mai has the most severe problem among provinces in Thailand.[6] Myth #2: The problem is getting worse every year.[7] However, statistics dating back 24 years since the establishment of air quality monitoring stations in Chiang Mai and Lampang around 1996 indicates that this is not the case. Actually, Chiang Mai as well as the upper northern region has been experiencing smog problems for a long time. Historically, there were few measuring stations, so the data was not comprehensive. Now, with the internet and satellite data, it is clear that the border areas with Myanmar have always faced more severe problems of smog than Chiang Mai, including such locations as Muang District of Mae Hong Son Province, Mae Sot District of Tak Province, and Mae Sai District, of Chiang Rai Province.

If you look at the big picture and compare it to a line graph, it is a trend line that goes up and down, not a steady increase in the worsening of the situation or, conversely, a progressive improving of the situation. In some years, the graph may change in some months, especially due to government measures taken to tackle this problem, such as "Zero-burning" campaign to prohibit burning and, as a result, the burning behavior of villagers was adjusted accordingly. The area-specific factor also plays an important role because the severity of the problem in each province at different times is not quite consistent. In 2020, the smog problem in the North as a whole was slightly more severe than the previous year. This was especially the case in Mae Sai District, where the highest PM2.5 values were found to be 398 µg/m, and included 79 days that were above the norm. In March, the PM2.5 values were found to be above the threshold all day. By contrast, the situation in Chiang Mai during that time improved. The highest PM2.5 days were found at 174 µg/m and included 67 days above the norm.

Situation of forest fires in 2020

In general, there are two main causes of forest fires: (1) Natural causes such as lightning, friction between branches or dry leaves, spontaneous combustion; and (2). Human activity, such as seasonal farmland burning, forest harvesting and hunting, or deliberately starting a fire to collect forest products, and arson. In FY 2019, data from the Department of National Parks, Wildlife and Plant Conservation found that human-activity caused 68 percent of the forest fires.[8]

Wildfires are also caused by hunting and burning forest to clear land for cultivation. There are wildfires that are the result of negligence from intentional burning of fields which then gets out of control and spreads to the forest. The steep hilly terrain makes it difficult for fire fighters to put out the fire. For example, seven people died while fighting forest fires in just a three-month period (between February-April 2020). These included officers (from sub-district administrative organizations and village headmen) and volunteers (ethnics and youth). Three died in Chiang Mai, three in Mae Hong Son and one in Chiang Rai.[9]

To compare the cumulative heat-point statistics (hot spots) in the nine upper north sub-region during the first five months of 2020, using data from Terra/Aqua satellites, one can examine the data from the MODIS and the VIIRS systems, using "burnt scars" as an indicator of prevalence of burning. The largest number of hot spots are in Chiang Mai in the north of the country, but that does not necessarily correspond to the actual burning area. Mae Hong Son is the province with the most burn areas, and has the highest proportion of burn area per province in the north and for the whole country. If analyzed by type of land use, the largest number of heat points were found in national forest areas, followed by conservation forest areas (accounting for 90 percent combined), followed by agricultural land reform areas, community forests, and highway perimeters.

Picture: https://mgronline.com/local/detail/9640000012194

However, the data clearly indicate that **the campaigns to prohibit burning at certain times of the year was ineffective.** Up to 70 percent of the total seasonal burns were still found to occur during the ban period. While in general and by province, burning tended to decline, compared to the previous years' statistics some provinces have increased burning, especially in Chiang Mai. The burning trace data from Landsat-8 satellite showed that the total area burned in the nine northern provinces covers an area of more than 8.6 million rai. Compared to 2019, the cumulative burn area increased by 1.4 million rai, or 2.1 percent. Mae Hong Son has the largest cumulative combustion area of 1.8 million rai, accounting for 22.4 percent of the total area in the province. The prevalence of burning increased in almost every province in the sub-region except for Tak, which recorded a decrease. However, Tak still ranks second highest for proportion of burn area of 1.5 million rai, accounting for 13.5 percent of the provincial area.

Another important factor that is often neglected is the socio-economic inequality of the highland population. Many of these minority group populations are barred from cultivating in the highlands where they live. Plus, there is only a limited area of plains that are eligible for cultivation. Therefore, destitute farmers are forced to expand cultivation into the forested areas of the highlands. These farmers prefer monocropping such as maize and paddy rice, according to marketing incentives and government promotion. These crops are short-lived plants, and burning is used to manage farmland. Naturally, this gives rise to the annual season of forest fires and smog problems.

The dynamics of tackling forest fires, smog, and increasing social awareness

The smog problem is a complex problem with no single cause. Extensive research has given weight to the cause of forest fires as domestic burning of farmland (including farmland in encroached-upon forested areas). This does not address the smog that drifts across the border from Thailand's neighbors. Obviously, the smog in the north has a different source than Bangkok, whose air pollution problem is more the result of exhaust from motor vehicles and industrial pollution.

In the past, a trial-and-error strategy was use to address the problem. But the problem is attributable to a complex array of determinants that vary over time and with the context of each area. When government agencies first took this problem seriously in 2004-2013, they used a top-down "zero-burning" approach. Then, around 2013, the policy shifted to a more lenient approach of appealing for a stop to burning or "no burning" during certain times of the year, and focusing on all the upper north provinces. The government also set up a comprehensive command center system by decentralizing the control effort to the province/district to be the core of management. The provincial governor/district chief now had the power to take full responsibility for controlling burning in their area.

Originally, the surveillance area was divided according to the functions of the agency, such as national park areas, whereby the National Park Service staff would take responsibility for their jurisdiction, or the reserved forest areas, whereby the Royal Forest Department staff would take responsibility for that. In some years, for some provinces, this approach has been very successful. There is the "Chiang Rai Model" that was able to reduce hot spots to only 19 in 2017. But the approach was not sustainable. That is because, when there is less burning, more combustible material accumulates in the forest. In the subsequent years, wildfires in Chiang Rai were found to be more severe and more damaging than in the past. In addition, some government agencies started to implement strict anti-burning measures, announced days during which burning was prohibited, and used the number of heat points as an indicator of compliance. Statistically, some provinces had good control over heat points, but the area was still burning and the level of the pollution was still above the standard. Furthermore, the satellite imagery is not continuous, and measuring hot spots alone does not reflect the true extent of the problem.

Picture: https://www.iqair.com/th/air-quality-app

While people in urban areas are increasingly sensitive to the AQI, they do not trust the government standards. The AirVisual application has become more popular than the official Air4Thai application[10], starting around 2019. This has led to some interesting phenomena, such as the establishment of the Chiang Mai Breathing Council, the announcement to suspend classes at all types of educational institutions on bad-air days, N95 mask distribution by government and private agencies, and campaigns by various groups with calls to improve air quality standards to be closer to international standards, etc. These social forces have pushed the government to change its stance significantly, by acknowledging the growing role of Civil Society in this area.

Advocacy for clean air laws

One approach to solving the problem of air pollution and PM2.5 dust is to push for clean air laws and motivate regulators to come up with concrete solutions. Prof. Siwatt Pongpiachan, Director of Center for Research and Development of Disaster Prevention and Management, Graduate School of Social and Environmental Development, National Institute of Development Administration proposed that Thailand should have a "Clean Air Act" and establish a National Environmental Protection Agency. He reasoned that as long as there are no laws and agencies to regulate PM 2.5 dust, the problem will not be solved. This is in line with the opinion of Asst. Prof. Kanungnit Sribua-iam from Faculty of Law, Chulalongkorn University, who said that if Thailand does not have a separate clean air act, then establishing a National Environmental Protection Agency will not happen. Setting up one organization alone is not enough because the two parts must be joined together. In the past, this idea has been drafted and presented to the leaders of many governments, but never approved.[11]

However, various network partners, whether it is private organizations, academia, political parties or a large people's network, are trying to push for clean air laws. For example, the Thai Chamber of Commerce agreed to advocate for a draft of the Clean Air Act because the results of an academic survey indicated that the problem of toxic dust in the ten northern provinces cost the Thai economy at least 163,313 million baht per year. They proposed that the government establish a new agency to address air pollution. On July 13, 2020, the Thai Chamber of Commerce submitted a petition to the House of Representatives with 12,000 signatures in support of the *first* draft Clean Air Management Act. The Chamber of Commerce also teamed up with the network to establish a working group on the legal measures and campaigns to tackle PM2.5 issues to work in parallel with the draft legislation process, aimed at reducing burning by purchasing sugarcane leaves, rice straw, corn stalks, etc.[12]

The public sector network has also pushed for its own draft law. Phenchom Saetang of the Thailand Clean Air Network and Director of the Ecological Alert and Recovery – Thailand has advocated for the "Draft Act on Clean Air Management for Integrated Health" to fill policy and legal gaps, and integrate the work of all government agencies. The draft law focuses on three main issues: (1) The right to access information or to be aware of relevant information; (2) The right to participate; and (3) Penal oversight which will emphasize the equality of all sources of pollution. The draft also includes incentive measures for reduced emissions to help solve the pollution problem.[13]

In addition to these two bills, between 2020 and 2021, two other bills have been proposed by political parties, namely the Clean Air Act for the People proposed by members of the Bhumjaithai Party on July 9, 2020, and the Draft Act on Reporting on Emissions and Movement

Picture: https://today.line.me/th/v2/article/qQkBpx

Reforestation in Thailand

Picture: https://www.thairath.co.th/news/politic/1841106

of Pollutants into the Environment, proposed by the Move Forward Party. The content of two draft laws proposed by the Bhumjaithai and by people is similar, as each call for certifying the right to breathe clean air, the right to sue against air polluters, and enabling people to participate in formulating policies for clean air. In addition, the two bills also establish the duty of the state to organize an administrative system for clean air through the organization of national policies, government agency orders, and budget allocation. The draft laws would require the state to develop a monitoring, evaluation, surveillance, and warning system for the people. The law proposed by the Bhumjaithai Party would also require states to establish relationships with the ASEAN community to cooperate in the prevention and resolution of air pollution.

The draft Act on Reporting on Emissions and Movement of Pollutants into the Environment has some provisions that differ from other draft laws, such as the focus on establishing a database on pollution which illuminates the root cause of air pollution. The provisions also call for the analysis of pollution data and enabling the public to verify effectiveness wherever they reside. There should be data on the volume of pollutants released and/or transported. The data should specify the types of pollutants, and any establishments related to emissions.

Community model, local strength and participation of the people

When looking at the whole region or at the provincial level, it may seem that smog and forest fires are unsurmountable problems. However, if one considers the problem at the district or sub-district level, it will be found that many sub-provincial entities have been able to reduce forest fires continuously over the years, whether looking at the heat points or the burn area. There are 19 pilot sub-districts (Tambon) in nine upper northern provinces that participated in a project to develop a model area for community capacity building, and developing a participatory mechanism for community forest management to prevent air pollution from forest fires. This project was supported by the Thai Health Promotion Foundation (ThaiHealth) together with the Sustainable Development Foundation.

An interesting example is the case of Tambon Ban Luang, Chom Thong District, Chiang Mai Province, which introduced an innovative land use history registration by the Ban Luang Municipality. Previously, villagers had conflicts with government officials on fuel management and firebreak. However, because the arable/residential land overlaps with the national park area, the villagers had no right to act on such land. This led to pushing for a municipal law on natural resource management and land management innovation. They surveyed the land area of the villages through geographic information technology (GPS) over 20,000 rai, and enumerated 6,000 plots of land. Next, they registered the history of land use per plot. The result data show the boundaries of land and community forests. When a forest fire occurs, the system will identify the source of heat and from which plot of land. Having a registration system helps to have evidence to track down the person/action that caused a forest fire. As a result, since 2019, there has been no problem of forest encroachment, and forest fires declined.[14, 15]

Another sub-district is Tambon Mae Win, Mae Wang District, Chiang Mai Province, where the burn area has continued to decline every year, from 36,918 rai in 2015 to 6,204 rai in 2019. This is the result of the community plan to

manage forest fires with the Tambon Administrative Organization as the host. The local residents also actively participate in the planning and implementation. First, by showing how the government that the ban on burning does not really work, the community developed a plan with some flexibility to allow some controlled burning, but using a surveillance system to monitor how that is managed.[16]

The common characteristics of the areas that have been able to successfully manage forest fires are as follows: The presence of serious local management, active people participation, and support by networks in the bureaucracy, business organizations and Civil Society. The challenge is how to replicate these successful lessons throughout all affected parts of the country.

Solutions for the year 2021

As exemplified by the 2021 Northern Smog Prevention and Solution Action Plan, the central government still adheres to the "4 Spatial Measures, 5 Management Measures" approach, which is the same approach that has been used for many years.[17] It consists of 4 main areas: 1) Conserved forest areas and national reserved forests; 2) Agricultural areas; 3) Community and urban areas; and 4) and roadside areas. The 5 Management Measures include: 1) Incident command system; 2) Awareness measures; 3) Measures to reduce fuel consumption; 4) Civil state volunteer measures; and 5) Law enforcement.

However, for Chiang Mai Province in 2021, the focus is on spatial management. This is the first time (since 2013) to completely lift the ban on burning. Instead, the province will use the method of asking for people's cooperation and dividing the north-south zone to manage fuel according to the database. The strategy is to start in the southern part of the province between January and February, and then expand to the northern part between March-April. The total duration of implementation is four months, which should be more flexible and appropriate than the policy that was sent down from above. There is also a project to support burn-free villages. The basic idea is to reward constructive behavior as an integrated project to reduce the smog problem. This includes mechanisms to stimulate local participation in community management to prevent the problem of dust and smoke by burning in a sustainable way through activities such as creating a forest fire barrier, training to make a community defense plan, establishing patrol routes and an observatory tower, and establishing of a fire-fighting fund, among other interventions.[18]

In conclusion

Solving the problem of smog and forest fires in the northern region in the past has been conducted by trial and error. Initially, government adopted the "Zero-burning" anti-burn measure, that was a top-down directive and overly coercive. Later, measures to prohibit burning in each province were implemented, but once again failed. Instead, the approaches that worked were sub-provincial initiatives, led by the district or sub-district. Many sub-districts have been able to reduce forest fires continuously over the years through empowering communities, and developing mechanisms for community participation in forest management. Studies on the decentralization of forest management have shown that local organizations are more effective than central agencies and top-down directives. That is because the locals know their own problems better, and each locality can tailor the measures to suit their village, according to the context and appropriateness of each area. In the future, clean air laws and regulatory bodies will help to achieve concrete and systematic solutions. The right to breathe clean air of a person will be protected and will lead to the development of guidelines and measures, but only through greater public participation.

Looking at the process of criminal justice through the case of "Boss"

From the past to the present, "justice" in Thailand's criminal justice system is questioned and has always been criticized. Many people in Thai society agree with the sarcastic statement that prisons are for the poor.[1] That preamble was offered to introduce the event that Mr. Vorayuth or "Boss", the heir to the Red Bull Business Group, driving a luxury Ferrari, crashed into and killed Pol. Major Wichian Klanprasert, the commander of the Crime Suppression Division at Thonglor Police Station, at the mouth of Soi Sukhumvit 47 in the early morning hours of September 3, 2012. Meanwhile, Mr. Boss fled the scene to his house at No. 9, Soi Sukhumvit 53.[2]

After the incident, the embodiment of Thai justice, the Royal Thai Police and the prosecutor's organization have been very much in the public eye. That is because, from an incident in 2012 until 2021, a period of nearly 10 years, the progress of the prosecution against Mr. Boss has been so "distorted" that some charges have expired, leading to criticism of the peculiarity of this case, the justice system, and the investigation process by both the police and prosecutors. New details continue to be unearthed, even nearly a decade later.

In fact, in Thailand, motor vehicle accidents and deaths are frequent. Boss's case would not have become a big problem if he had not fled the scene or try to distort the facts of the case. In the past, there were many famous people who had caused serious accidents. But if they remained at the scene, and ensured proper care and compensation to the injured or the deceased's family, then that was acceptable.[3] For example, there is the case of Mr. Somchai Verojpipat, the owner of Thai Carbon and Graphite Co., Ltd. (also known as "Sia Benz"), who drove while intoxicated and crashed into the car of Lt. Col. Jatuporn Ngamsuwichakul, killing Pol Lt. Col. Jatuporn and his wife, while their 12-year-old daughter was seriously injured. Mr. Somchai pled guilty and paid 45 million baht in damages to the victim and relatives of the deceased.[4] By contrast, the absence of any remorse or compensation by a fabulously wealthy person such as Mr. Boss, has exacerbated the public acrimony about how his case was handled.

Boss's car after the accident

Problems with the prosecution

Even though the case of Mr. Boss is a personal matter, it is undeniable that the influence of money from a person with the big surname may have contributed to the distortion of the facts of the case. For example, on the morning of the incident, the police took Mr. Boss's housekeeper into custody and claimed that said person was the perpetrator. Academics were also called in to present a method for calculating the speed of the vehicle when the collision occurred.[5] It also appears that Mr. Boss and his legal representatives have also been given the opportunity to fight the case in a way that delays adjudication. For example, Mr. Boss has asked to postpone the meeting with the prosecutor many times on the grounds that he had requested "fairness" with various agencies such as the Legal Commission, the justice process, law enforcement, and the National Legislative Assembly (NLA),[6] among others.

Last year, the 'Mr. Boss' case has returned to the public eye, and was heavily criticized again in 2020 when the prosecutor decided not to indict Mr. Boss because Mr. Boss and Mr. Boss's legal representatives used the rules of the Attorney General's Office on Criminal Prosecution of Public Prosecutors, (2004), Article 48, to repeatedly request justice from 2013 to 2019. During that time, more than ten requests for justice have been filed. The last request for justice took place on October 7, 2019, causing delays in the prosecution process. With each request, there had to be a review of the case and investigating witnesses. Finally, Mr. Nate Naksuk, Deputy Attorney General, citing the same "evidence" that had been used in the past, that the accused did not drive too fast, and that it was Maj. Wichian's motorcycle which suddenly changed lanes that caused Mr. Boss to be unable to stop the car in time. Thus, the accident and death was deemed to be a case of force majeure, and not due to negligence or carelessness. The upshot of this was that there was insufficient evidence to sue Mr. Boss for negligent acts causing death to another person, resulting in plaintiff dropping the law suit.[7] (See Table 1 with the timeline below.)

Table 1:
Filing a request for justice by Mr. Vorayuth Yoovidhya

2013

	Topic	Results	Official
1 01/04/2013	Request for additional witnesses to review the vehicle speed calculation	Discontinue the prosecution; there is no reason for further investigation, and the case is nearing the expiration of some charges.	Attorney General Julasing Wasantasing Deputy Attorney General Attaphon Yaisawang
2 17/05/2013	Request for additional witnesses to review the speed calculation. Including asking for an additional cross-examination of Mr. Boss (who refused to appear)	Discontinue the prosecution	
3 04/09/2013	Request to consider revoking the order notifying the investigating officer to request the court to issue an arrest warrant	Discontinue the prosecution	

2014

4 24/02/2014	Request for further investigation of witnesses about Mr. Boss's illness in the period before, during and on the day of the accident	Discontinue the prosecution	Attorney General Attaphon Yaisawang Deputy Attorney General Wuthipong Wiboonwong
5 21/04/2014	Request to examine more witnesses	Discontinue the prosecution	
6 24/06/2014	Request to consider revoking the order notifying the investigating officer to request the court to issue an arrest warrant by asking to wait for the results of further investigations	Discontinue the prosecution	

2014-2015

7 18/07/2014	Request for further investigation of witnesses, and to re-cross-examine Mr. Boss (but Mr. Boss refused to appear). Another request to delay the prosecution was submitted	Discontinue the prosecution	Attorney General Trakul Winitchaipak Deputy Attorney General Wuthipong Wiboonwong
8 16/06/2015	Request to examine more witnesses	No prosecution. The witnesses have no bearing on the matter. It was just word-of-mouth, almost 3 years after the fact.	

2016-2017

9 12/01/2016	Request further testimony on the speed of the vehicle of Mr. Boss	No prosecution. No new evidence was presented and the witnesses did not have enough credibility refute the original allegation.	**Attorney General** Police Lieutenant Pongniwat Yuthapanboripan **Deputy Attorney General** Nipaporn Rujnarong
10 15/05/2016	Request for re-investigation of the case, and set up a working group to investigate	No prosecution. The witnesses did not have enough credibility refute the original allegation.	
11 23/12/2016	Speed of the vehicle of Mr. Boss	No prosecution	
12 06/03/2017	Request a summoning the case of the NLA Commission for consideration in order to not prosecute	No prosecution Deputy Attorney General Nipaporn proposed to the Attorney General to consider issuing the order due to the accused's complaint that he did not order the case. Attorney General, Police Lieutenant Colonel Pongniwat was of the view that, since this case is in the public interest as well as having been fair to the accused for a long time, therefore, there is an order to "Stop the request for justice" and allow the accused to sue if the accused still asks for justice to be considered separately without having to wait for the results of the request for justice.	

2018

13 19/02/2018	Request to investigate the NLA members on the issue that Mr. Boss requests justice from the Commission	No prosecution	**Attorney General** Khemchai Chutiwong **Deputy Attorney General** Wattanachai Kumwongdee

2019

14 07/10/2019	Request testimony of Air Marshal Chakkrit Thanomkulbutr and Mr. Jaruchat Madthong regarding Mr. Boss's speed while driving	Deputy Attorney General Nate Naksuk used the same evidence that had been used in the past to recycle the opinion that the accused did not drive excessively fast. However, of Maj.Wichian's motorcycle suddenly changed lanes, causing Mr. Boss to be unable to brake the car in time, causing a rear-end collision.The collision was unavoidable and, thus, it is a case of force majeure, i.e., not due to negligence or carelessness. The case did not have enough evidence to sue Mr. Boss for negligent acts causing the death of Major Wichian.	**Attorney General** Wongsakul Kittipromwong **Deputy Attorney General** Nate Naksuk

Source: Thansettakij. (14 August 2020)

Social pressure grows

Later, when the Royal Thai Police gave a press conference agreeing with the prosecutor's non-prosecution order, Pol Lt. Gen. Permpoon Chidchob, Deputy Police Chief, did not oppose the order. As a result, the order terminated the prosecution process according to the Criminal Code, Section 145/1, leading to the revocation of all arrest warrants for Mr. Boss. [8] This seeming miscarriage of justice caused widespread criticism, with a mounting social movement to demand that both organizations clarify the termination of the prosecution against Mr. Boss. Dr. Taejing Siripanich, Secretary-General of the Don't Drive Drunk Foundation, wrote the following to the Attorney General:[9] "*I request clarification of the reason for not contradicting the prosecutor's order, in the case of the order not to prosecute Mr. Vorayuth.*"

This series of events caused a significant ripple effect on the judicial process of this case. In addition, there was increasing mobilization of many organizations and individuals calling for justice in the case, and an investigation of the process and institutions involved. Mr. Veera Somkwamkid, Secretary-general of the People's Anti-Corruption Network sent an open letter to the Prime Minister, requesting him to investigate and punish the offenders who helped Mr. Vorayuth Yoovidhya to avoid punishment under the law.[10] Not only this, there was also pressure from both mainstream and social media urging the Prime Minister to intervene honestly and fairly on Mr. Boss's case.

The constant stream of pressure finally prompted the Prime Minister to set up a Fact and Legal Investigation Committee to review the order not to prosecute a criminal case. The committee was chaired by Mr. Wicha Mahakhun, in the interest of the public, to investigate the facts behind Mr. Boss's case. After their review, the committee concluded the following: "*There was a systematic collaboration of officials in the judiciary and other government agencies, political office holders, lawyers, witnesses, and the general public to intervene in the judicial process continuously from the beginning of the proceedings to the present. The opinion is that the case involved using loopholes of the law, abuse of authority, force, and creating false evidence to help the accused avoid being prosecuted under the law.*"[11]

Boss came to report to the police after the accident

The Fact and Legal Investigation Committee, chaired by Mr. Wicha Mahakhun, proposed amendments to the regulations of the Office of the Attorney General on Criminal Prosecution of Public Prosecutors on the procedure of "request for justice/fairness." The proposal specified rules for the injured or the accused to personally request justice. There must be specific reasons and evidence for making said request, especially when requesting justice more than once. The proposed rules also specified that a repeat request can only be done when there is new evidence that has never been presented before.[12] When considering such a matter, it can be seen that requesting justice at the prosecutor's level is important. All accused parties need to have the opportunity to show their innocence to the public prosecutor, and is a process that may help prevent litigation merely for the purpose of harassment. However, if the request for justice is used as a delaying tactic, then the principle of requesting fairness will be distorted. Thus, it is reasonable to reconsider the matter to see if the system was abused.

The results of the investigation prompted another review of the case. The Attorney General issued an order No. 1400/2563 dated August 4, 2020 to set up a working group to consider Mr. Boss' case under Section 147 of the Criminal Code, with Mr. Ittiporn Kaewthip, Deputy Director-General of the Department of Criminal Litigation as the head of the working group. Subsequently, on August 10, 2020, the working group ordered the investigating officer at Thonglor Police Station to conduct additional investigations on several issues. Later, on September 18, 2020, the Working Group jointly reconsidered the case and all additional investigation results, and issued the following unanimous opinion:[13]

1 The plaintiff showed new evidence and was an important witness to the case, which was likely to allow the court to punish the accused. Accordingly, plaintiff filed a lawsuit against Mr. Vorayuth (or 'Boss') Yoovidhya, the accused, for reckless driving causing death to another, according to the Criminal Code, Section 291, and informing the investigator to bring Mr. Vorayuth Yoovidhya to account.

2 In this case, there is evidence, both in the original case and from the further investigation, that firmly establishes that, at the time of the incident, the accused was under the influence of cocaine, which is a Type 2 narcotic. Therefore, it is advisable to order a charge against Mr. Vorayuth Yoovidhya for illegally consuming a Type 2 narcotic (cocaine) according to the Narcotics Act, B.E. 2522, Sections 58, 91.

Intervention in the justice system in Thai society

It is commonly known that Thailand has a large number of laws. Therefore, in theory, problems in society can be solved by using the law to serve justice. But the problem in the Thai judicial system is bigger than the law: Law enforcement needs to be just, effective, and verifiable. The important thing is that law enforcement personnel in the justice system must be accountable to the people and not just answerable to their superiors.

The practitioners of justice, whether it is the Royal Thai Police or public prosecutors, all play an important role in the administration of justice. These agencies have the power to use their "discretion" to find the truth, gather evidence, and investigate those involved. The discretion of these entities to perform the above shall be based on "acting in good faith." However, as exemplified by the case of Mr. Boss, law enforcement can choose to be discretionary in the prosecution process when there is interference from outside. The "patronage system" leads to a vicious cycle of "conflict of interest" of the government officials involved. On the one hand, being deferential causes law enforcement officers to sympathize with their benefactors, or those who can/do confer benefits to them or their group. On the other hand, law enforcement officers may fear the power and influence of the person involved in the case if they do not submit to the pressure tactics.[14]

In the past, Thai society often focused on the wrongful conduct of the police. But in the case of Mr. Boss, it can be seen that the act of the prosecutor itself has led to public outcry about the corrupt legal system. The public prosecutor has the power to order a case to proceed or not. The "opportunity principle" is considered a principle that is more flexible than the "legality principle" because discretion gives prosecutors the power to judge the merits of a case, taking a case to

trial, and ordering of their cases to proceed rather than abiding by legal principles.[15] The 2017 Constitution of the Kingdom of Thailand, Section 248, paragraph two, states that "*State attorneys are independent in considering and making orders in cases and in performing duties expeditiously and justly and without any prejudice, and such act shall not be deemed an administrative order.*" However, the exercise of the prosecutor's discretion at various levels and dimensions of a case, and whether discretion is used in order not to sue, the use of discretion in accepting a request for justice or fairness is too broad, especially when there is not enough verification.

Examination of the prosecutor's discretion in ordering cases to be prosecuted is another important issue and deserves consideration. That is because, if the act of ordering a case to be prosecuted or non-prosecuted has not received the attention of the public or from the media (such as Mr. Boss' case), justice in the case may be undermined. At present, there are no regulations or a mechanism to directly examine the use of discretion in ordering cases to be/not to be prosecuted. That means that if either party disagrees with the prosecutor's order and wants to contest it, there must be sufficient grounds and evidence that the order is unlawful, such as an obviously corrupt prosecutor's order not to prosecute. However, sometimes the cause of disagreement with the non-prosecution order may not be caused by a public prosecutor's act of dishonesty. Instead, it may be caused by listening or considering incomplete evidence as well. The regulation or the creation of a mechanism to examine direct non-prosecution orders, especially in cases of non-prosecution in cases with severe penalties or cases involving famous people or persons of influence, would be another solution to solve the problem. However, the issue of investigation and ordering a prosecution still requires careful research and does not cause an unreasonable burden to the performance of duties of the public prosecutor or the proceedings of the judicial process as well.

Conclusion

The 'Boss' case is an example of a high-profile national misrepresentation, to the extent that it undermined the credibility of the Thai justice system. Since the ten years since the incident in 2012 up until 2021, the judicial process against Mr. Boss has been "distorted" and has been delayed until some of the charges have expired. This has caused criticism of the peculiarity of this case, and prompted extensive investigations by both the police and prosecutors. The Fact and Legal Investigation Committee, chaired by Mr. Wicha Mahakhun, found that the case was collaborated by judicial officials, government officials, political office holders, lawyers, witnesses, and the general public who intervened in the judicial process to use loop-holes which allowed seemingly guilty partners to evade prosecution and manufacture false evidence. Therefore, the regulations of the Attorney General's Office regarding the request for justice or fairness should be amended. There need to be new rules for the injured or the accused to personally request justice or fairness. If there are multiple requests for justice, that can only be done when there is new evidence that has never been presented before. There needs to be the creation of a mechanism to examine direct non-prosecution orders, especially in cases with severe penalties or cases involving famous or influential people. That would be another solution to the problem.

The poverty problem in Thailand:

Has it improved or worsened?

Before the outbreak of COVID-19, the situation of poverty in Thailand over the past three decades appeared to be improving, as the number and proportion of the poor were on a decline. In 1988, Thailand had 34.1 million poor people, or 65.2 percent of the total population. However, by 2019, the number of Thai below the poverty line dropped to only 4.3 million, or 6.2 percent of the total population. This was in line with the 12th National Economic and Social Development Plan which aims to reduce the proportion of the poor to 6.5 percent by 2021. However, the number of poor people in Thailand had increased during some intervals when there was a macro-economic crisis, such as in 1998, 2000, and 2020-2021 the 'COVID-19 era,' which especially threatened the 1.2 million fragile Thai households.

Concepts and trends in poverty

When talking about poverty, there are different viewpoints and indicators for measuring poverty. Some people measure poverty by whether or not there is enough money to cover daily living expenses. Others may measure poverty by the lack of opportunity for education, lack of access to financial source, or the lack of housing or arable land of their own.

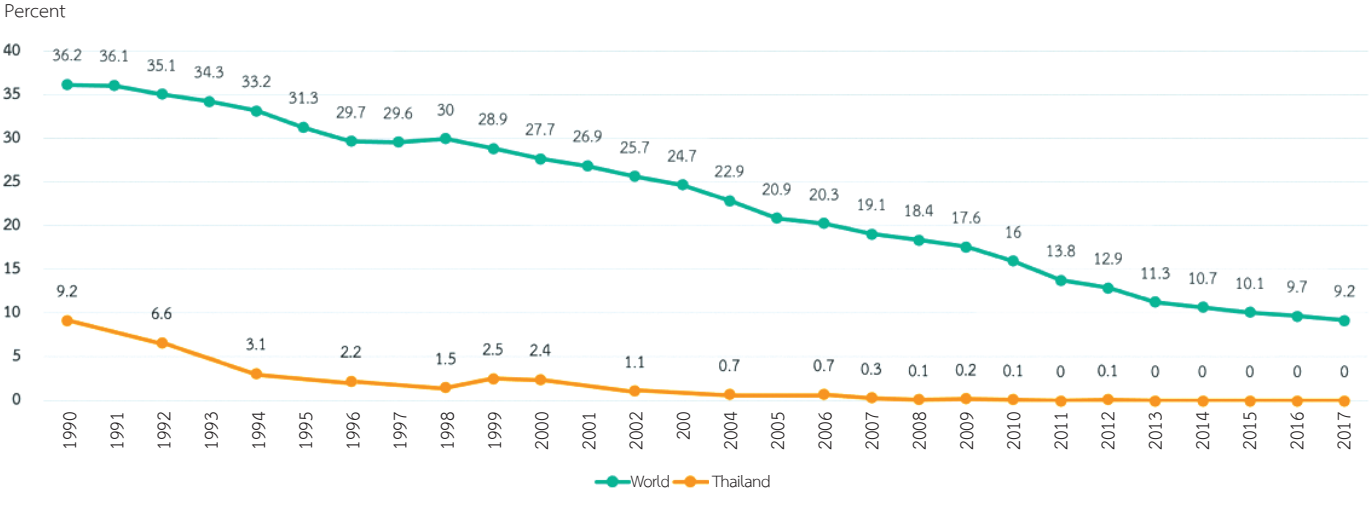
Because of the complexity of the various definitions of poverty, measuring who is poor requires a combination of factors. The United Nations defines poverty as the absence of choice and opportunity, and lack of dignity, including lack of ability to join society equally, being unable to feed one's family, lacking education, being unable to seek treatment when sick, lacking arable land/employment/security, being socially excluded, living in a bad environment, and lacking access to clean water and good public health.[1] The United Nations Development Programme (UNDP) views poverty as a lack of opportunity, a lack of options for well-being or having good health, including the lack of freedom and self-respect. The World Bank defines poverty as having insufficient resources and decreased bargaining power.[2]

Homeless person lying on a city street

There are two concepts for measuring poverty. First, there is the measure of tangible assets such as cash, in-kind or liquid assets, and whether these are enough for a person or family to make ends meet. If not, that is an indicator of "absolute poverty." A second perspective is the level of one's wealth in relation to others in society and, if it is less, then that can be called relative poverty.[3, 4, 5] The World Bank has long studied poverty using the concept of absolute poverty. It is also the global institution which defines the International Poverty Line, or IPL that categorizes the poor and enables cross-national comparisons of the level of poverty. If people's income or consumption falls below the poverty line, they are considered the poor.

Initially, the IPL was set at $1 per day. Then, in 2008 it was increased to $1.25 per day and, in 2015, it was increased further to $1.9 per day. According to the World Bank data, the proportion of the poor (using the IPL of $1.9 per day) has declined steadily over time. The proportion poor of the global population declined from 36.2 percent in 1990 to 27.7 percent in 2000, 16.0 percent in 2010, and 9.2 percent in 2017 (Figure 1). Applying the IPL of $1.9 per day to Thailand, the proportion poor of the Thai population was 19.3 percent in 1981, 2.4 percent in 2000 and only 1.1 percent in 2002. Since then, the proportion of the poor in Thailand has not reached even 1 percent (Figure 1).

Figure 1: Proportion of the population in the world and Thailand classified as "Poor" based on the IPL of $1.9 per day: 1990-2017



Source: World Bank (https://data.worldbank.org/topic/poverty)

Poverty in Thailand

In Thailand, the agency responsible for calculating the country's poverty line is the Office of the National Economic and Social Development Council (NESDC), which defines poverty as "Economic poverty, which includes the lack of potential for earning a living, lack of education, lack of resources, lack of land for cultivation, lack of group/political participation, lack of information, lack of occupational knowledge, lack of access to government services and assistance, and having a heavy dependency on others."

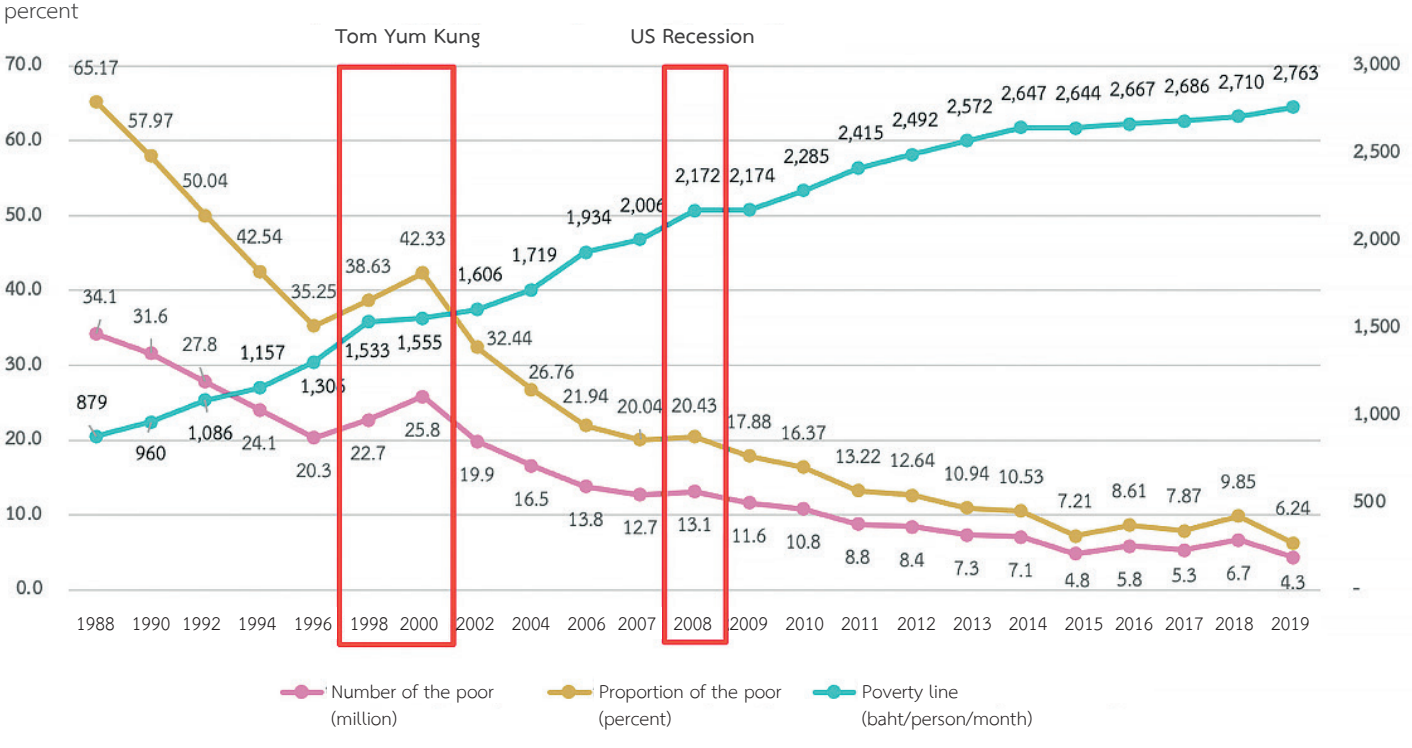
The NESDC Poverty Scale uses the same concept of absolute poverty as the World Bank by calculating the poverty line or the minimum essential expenditure on basic consumption for survival which comprises a food poverty line and a non-food poverty line (There are nine expenditure categories, including housing, household expenses, wages for persons providing household services, clothing, footwear, personal expenses, medical expenses, travel and communication expenses, and educational expenditures). The data from the National Household Socio-Economic Survey of the National Statistical Office can be used to calculate the poverty line.[6]

The situation of poverty in Thailand is trending in a favorable direction. The poverty line has been raised every year from 879 baht per person per month in 1988 to 1,533 baht per person per month in 1998, and to 2,172 and 2,710 baht per person per month in 2008 and 2018, respectively. In 2019, Thailand's poverty line rose to 2,763 baht per person per month. When considering the number and proportion of the poor, there has been a noticeable decline over the past three decades. In 1988, Thailand had 34.1 million poor people, or 65.2 percent of the total population, while in 1998 the number of poor Thais fell to only 22.7 million, or 38.6 percent of the total population. Subsequently, the number of poor Thais fell to 13.1 million (20.4 percent) and 6.7 million (9.9 percent) in 2008 and 2018, respectively. In 2019, the number of the poor fell to only 4.3 million (6.2 percent).

According to the above data, Thailand has been very successful in addressing poverty, starting in 1988.[7] In 2019, Thailand is considered to have been successful in tackling poverty according to the 12th National Economic and Social Development Plan, which set a target of no more than 6.5 percent of poor citizens by 2021.[8]

However, the number of poor people in Thailand in the past has also increased in some periods. This was especially the case during macro-economic crises, such as in 1998 and 2000, when the "Tom Yum Kung" recession battered Thailand. That calamity increased the number of Thai poor to 22.7 million and 25.8 million, respectively. In 2008, the number of the poor rose to 13.1 million after the US banking melt-down spread globally.[9] Thai poverty rose again from 5.8 million in 2016 to 6.7 million in 2018 due to lower economic growth in Thailand (2.7 percent per year), causing household incomes and consumption to decline. The Thai economy is heavily dependent on foreign tourism. Thus, when other countries are in recession, tourism to Thailand declines accordingly. Global warming and climate change are also drivers of poverty in the agriculture sector. In Thailand the poorest citizens are mostly engaged in agricultural occupations.[10, 11, 12]

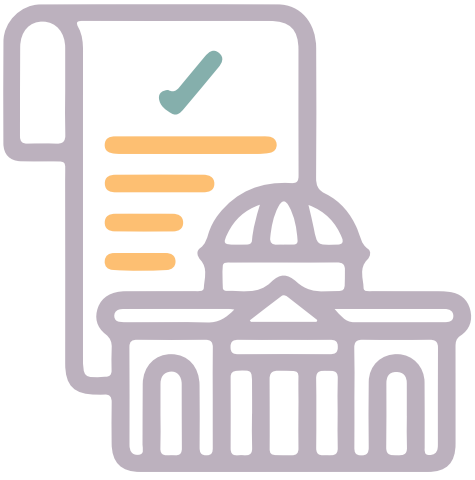
Figure 2:
Number and proportion of people below the poverty line: 1988–2019



Source: NESDC

Government policy to address poverty

The 12th National Economic and Social Development Plan has established strategies to promote fairness and reduce inequality. The development approach is to increase the opportunity for the lowest 40 percent of income earners to have access to quality government services, improve their career prospects, expand access to quality education for disadvantaged children and youth, provide health services to the target population in remote areas, create opportunities to own arable land, and raise income generally. The NESDC strategy also includes fiscal policies to reduce social inequality and target the lower-income groups to ensure access to adequate and appropriate social welfare and government services in terms of education and public health. The policy calls for more community capacity building, community-based economic development, and strengthening the financial foundation according to the "Sufficiency Economy Philosophy" so that all communities can be self-reliant and have the right to manage capital, land, and resources within the community.



At present, Thailand has integrated poverty alleviation efforts to end poverty across all dimensions under the framework of the 20-year National Strategy (2017-2036) and the 12th National Economic and Social Development Plan (2017-2021), by adopting the Sufficiency Economy Philosophy as a development guideline.[13] The government has allocated budget to address poverty and income inequality in FY 2018 as follows: Budget expenditures according to the poverty alleviation strategy, reduce inequality and create growth from within with a budget of 331,920.5 million baht; budget expenditures to be allocated directly to the priority areas through implementation of an integrated plan to promote the development of provinces and provincial groups with a budget of 24,996.4 million baht; and implementation of an integrated work plan to promote decentralization to local administrative organizations (LAO) with a budget of 262,646.8 million baht. In addition, the government as allocated 46 billion baht for the Civil State Fund for Grassroots Economy and Society to help low-income people and farmers registered in the State Welfare Registration Program.

At present, there are 11.4 million people who have met the eligibility criteria for state welfare registration. The government has divided the assistance into two phases: The first phase provides assistance through the mechanism of a "state welfare card." The card can be used only for the purchase of essential consumer goods, educational products, and agricultural raw materials from the Blue Flag Shop and other participating outlets as prescribed by the Ministry of Commerce. There is income-based assistance criteria. Those who earn no more than 30,000 baht per year will receive 300 baht per person per month. Those who earn more than 30,000 baht per year but not more than 100,000 baht per year will receive 200 baht per person per month. There is also a discount limit for the purchase of cooking gas at 45 baht per person per

month. The fare limit for BMTA buses, e-ticket system/metro trains is 500 baht per person per month. The fare limit for the provincial bus fare is 500 baht per person per month, and the SRT train fare limit is 500 baht per person per month. The second phase is to provide assistance to low-income earners through "Measures to improve the quality of life for those who have a state welfare card" that will enable low-income people to be self-reliant by focusing on creating job opportunities, vocational training, access to education basic necessities, and access to financial resources in the formal system, among others.[14]

However, the past implementation of the State Welfare Registration Program still had some flaws that the government has to correct in order to keep the database of low-income earners accurate, complete, and current. Mr. Somchai Jitsuchon, academician of theThailand Development Foundation, has pointed out two shortcomings of the program: First, there are still people who are not really poor who qualify for the welfare card. At the same time, there are genuinely poor people who do not register for the card. Secondly, the responsible agencies need to continuously update the database to keep information current and accurate.[15]

One project that is likely to be useful in tackling poverty and inequality is the development of a data management system from the Thai People Map and Analytics Platform (TPMAP), which will help identify poverty at the individual, household, community, district, provincial, and national level, enabling policies and projects to be designed to address problems on the spot and more directly steer resources to the target group.[16]

COVID-19 and poverty

The recent and sudden COVID-19 epidemic has had a huge impact on the Thai economy, causing a spike in unemployment. More vulnerable Thais are at risk of falling into a cycle of poverty than ever before. The epidemic has also affected the livelihood and illnesses. World Bank President David Malpass said that global extreme poverty will increase from 88 million to 115 million and to 150 million in 2020 and 2021, respectively.

Although Thailand has been successful in addressing poverty in the past, it is expected that the COVID-19 epidemic may trap those people at the margins of the poverty line, known as "vulnerable groups." In 2019, an estimated 5.4 million people were at risk of becoming poor if they suffered a costly illness, became unemployed, or suffered an accident. It is almost certain that many of these people in fragile circumstances will have fallen below the poverty line in 2020.[17] This is in line with the NESDC report showing that Thailand still has fragile households who are at risk of becoming poor households when affected by the COVID-19 epidemic. The estimated total of these vulnerable Thai households is about 1.2 million households, consisting of 600,000 *households that rely on income from other persons outside the household*, including 270,000 households who are economically inactive, 30,000 elderly households and 60,000 skipped generation households. There were an estimated 470,000 *lower-income households* whose members worked in occupations at risk of disappearing, such as in the tourism sector and the self-employed. There were about 50,000 *agricultural households with no arable land or little land to cultivate*.

In addition, the survey by the Office of Thailand Science Research and Innovation (TSRI) also reflects the impact of the COVID-19 epidemic on the urban poor in many ways, with the city poor being affected by the government's COVID-19 epidemic harsh prevention and containment measures. Some of these measures caused employers to lay off workers temporarily or permanently (18.9 percent), while another 18 percent had their workhours or work days reduced. The survey found that 60.2 percent of urban poor lost all or most of their regular income, while 31.2 percent lost half their income. It was also found that the self-employed poor ended up unemployed. Merchants had reduced sales, and 33.8 percent had to borrow money or pawn household items in order to make ends meet.[18]

After the COVID-19 epidemic, individuals were affected both in the form of layoffs or reductions in work hours/days. Some establishments have stopped doing business at all and may not return. Therefore, the government has issued remedial measures to alleviate such suffering. There are important measures aimed at helping and alleviating the suffering of the people, such as the "No-one-left-behind program" to help the groups of employees. The campaign targets those workers not covered by the Social Security System by giving a monthly subsidy of 5,000 baht for three months. Welfare cards were distributed for the lower-income, including poor children, the elderly, and the disabled, who received 1,000 baht per month for three months. There were measures to help with temporary debt settlement, measures to refund/reduce electricity and water bills, and cash subsidies for farmers in the amount of 15,000 baht per family.[19] However, some groups of people with genuine need were unable to access assistance because there is a limit on the number of people who are eligible, and participants must register through the specified website only. Thus, the government poverty alleviation program still has serious gaps in coverage which must be addressed.

Slum community along the railroad tracks in the city

Poverty....inequality.... accessibility

The Thai government is keenly aware of the problem of population poverty and has taken action to alleviate poverty through various roadmaps and strategies. These programs have helped improve the poverty situation significantly. However, there remain issues of inequality, which can lead to relative poverty and social unrest. For example, there is unequal access to quality education, disparities in access to career opportunities and advancement, disparities in accessing capital and financial resources, unequal access to health and medical services, and inequality in accessing the justice system, among many others. In the past, the Thai government has set up a registration program for people to receive state welfare. The government has compiled a database of 11.4 million low-income people who are eligible for some form of assistance. But it is imperative to continually update and verify the accuracy of the database. It is believed that there are still people who are genuinely poor and desperately need help from the state, but who are not yet included in the state welfare registration program. In addition, the spread of the COVID-19 pandemic continues to adversely affect millions of vulnerable people who are at risk of falling into a perpetual cycle of poverty and debt.

“Drink and Drive” Road crimes

The World Health Organization (WHO) has reported that, in 2018, Thailand had a road traffic death rate of 32.7 per 100,000 inhabitants which is the highest in Southeast Asia and ranked 9th out of 175 member countries around the world. Thailand had 22,491 deaths, an average of 60 per day, mostly to people between the ages of 15-29, who are in the labor-force-entry years. Of these, motorcyclists led the fatalities at 74 percent of the total accident, or about 16,600 per year.

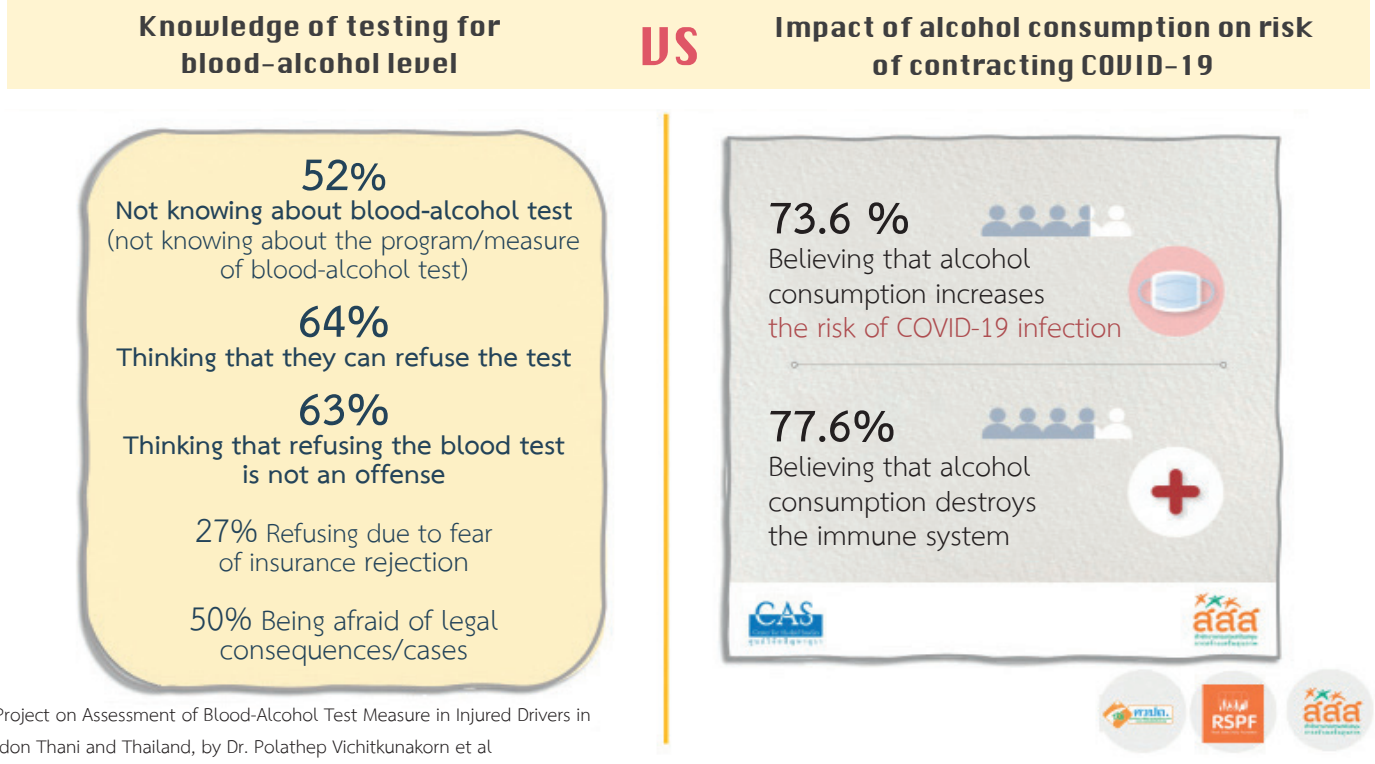
Drink driving and traffic accidents

Data from the Road Safety Center found that, during important festivals such as New Year’s and Songkran during 2016-2019, the accident rate was 146 percent higher than during normal times when there were 191 incidents per day. By contrast, festive season accidents reached an average of 470 per day. There is a daily average of 2,354 injuries and deaths during the seven dangerous days (around Songkran), which is 136 percent higher than the normal range (998 injuries and fatalities per day). This information is consistent with the online system of the Division of Public Health Emergency Management, which found that, during the Songkran festival of 2019, during the seven days of danger (April 11-17, 2019) there were 30,745 injuries and 517 deaths in vehicle-related accidents. “Motorcycles” accounted for more than 24,377 injuries (79.3 percent) of the total number, with “drinking and driving” behavior being the main cause of more than 40 percent of all accidents.

It is reasonable to think that checkpoints and law enforcement would appear to be important measures to help curb the scale of the drink-driving problem. But a public opinion poll conducted by JS100[1] (Thai traffic radio station) during the Songkran festival found that 69 percent never saw a police checkpoint, 94 percent have never been asked to stop for an alcohol check, and 35 percent were unaware that drivers under age 20 who had a blood-alcohol level of more than 20 milligram percent are considered illegal. When asked about the measures for blood alcohol testing at the hospital when going for treatment after an accident, most respondents were unaware that a blood test is done. They also did not know that, if the blood-alcohol level exceeds 50 milligram percent, accident insurance companies will not cover damage to drivers who exceed the legal limit.

The above data is consistent with the data from a study in Udon Thani Province[2] about the perception of blood-alcohol testing measures. The sample was vehicle drivers who had an accident and had to go to the emergency room of a local hospital. Only half were aware that a blood test was required for people involved in road accidents. Of concern is that more than half thought they had the right to refuse a blood test, and that refusing to give a blood sample is not a criminal offense. They also did not believe that refusing to provide a blood sample would be considered a sign of guilt of drink-driving. This shows that there needs to be more public education on "drink-driving." All vehicle drivers need to be aware of both health risks and legal liability. Prevention is not as effective as it should be. When comparing the level of perception of blood-alcohol screening, which has been implemented since 2017, with perceived risk of COVID-19, the survey found that the respondents felt there was a greater risk of catching COVID-19 due to consumption of alcohol, than being screened for alcohol when driving.

Figure 1: Comparing the knowledge of testing for blood-alcohol level and impact of alcohol consumption on risk of contracting COVID-19



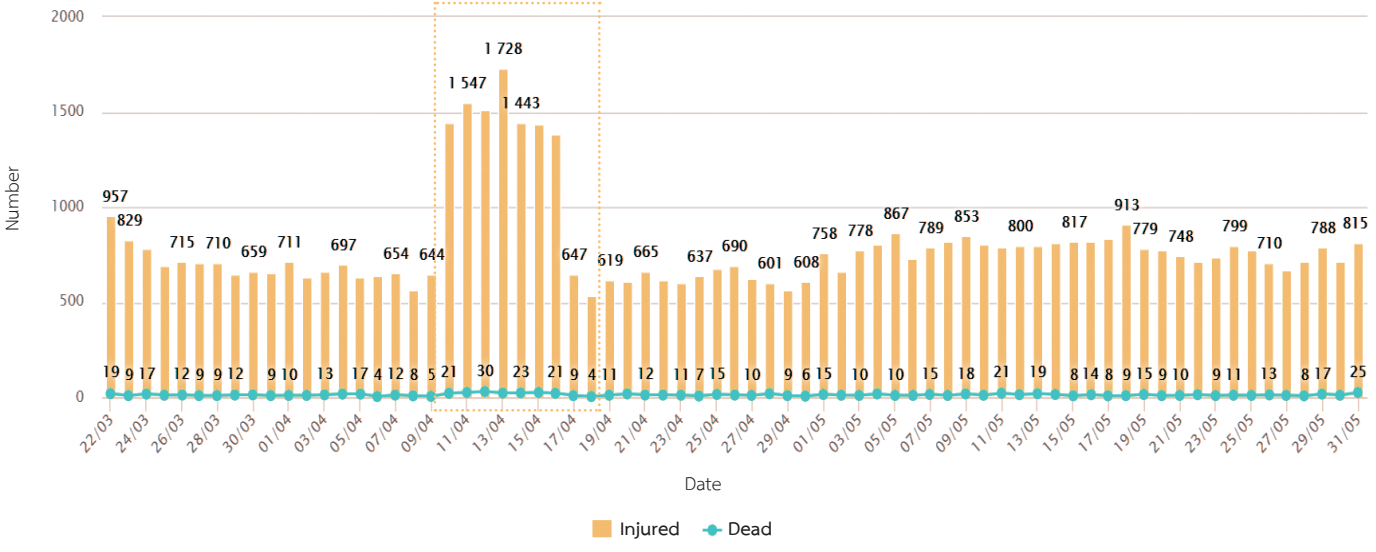
*Project on Assessment of Blood-Alcohol Test Measure in Injured Drivers in Udon Thani and Thailand, by Dr. Polathep Vichitkunakorn et al

COVID-related lockdowns reduced traffic accidents

Due to the sudden outbreak of COVID-19, on March 22, 2020, the Bangkok Metropolitan Administration (BMA) announced the closure of department stores and other places of crowded economic activity including entertainment venues. This resulted in a large number of workers returning to their hometowns in the provinces. Next, the government announced Decree on Public Administration in Emergency Situations, No. 1, effective from March 26 - April 30, 2020, which had a pronounced impact on population movement, and reduced inter- and intra-provincial travel. The authorities began to set up COVID-19 checkpoints to collect travel data. Subsequently, additional provisions were issued in Emergency Decree No. 2, which included a "curfew between the hours of 10 p.m. to 4 a.m." That further reduced traffic volume at night, resulting in a significant reduction in accident statistics during the period between March 26 - April 9, 2020.[3]

However, during April 10-16, 2020 , the number of injuries and fatalities increased significantly again, though not as much as in 2019. This shows that, despite the enactment of the Emergency Decree and prohibiting the sale of alcoholic beverages during this period, there was still a lot of drink-driving during Songkran. This may be the result of many people's return to their hometowns in the previous weeks, and the inability to resist celebrating at home during Songkran.

Figure 2:
Number of injuries and death between March 22 and May 31, 2020

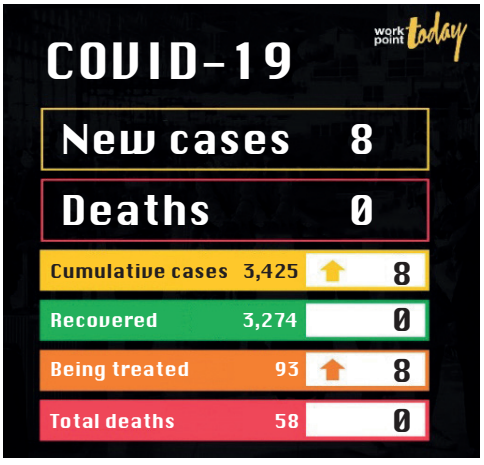


Source: Division of Public Health Emergency Management, Ministry of Public Health

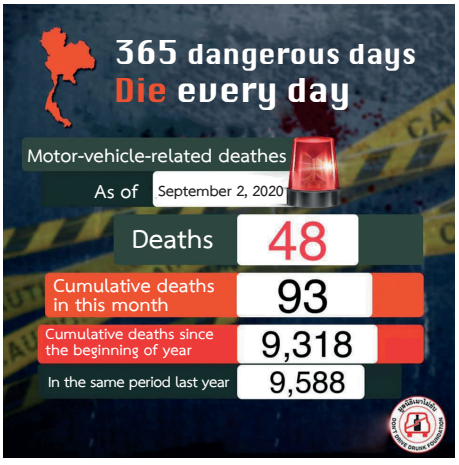
In the 1st wave of the COVID-19 outbreak, Thailand took six months to control the epidemic. Without additional new infections in the country on September 2, 2020, the domestic epidemic was then controlled to zero new cases for 100 days.[4] While Thailand justifiably announced an important victory in controlling the COVID-19 situation from the 1st wave of spread, on the same day of that announcement the number of injuries and fatalities from road accidents remained a serious problem, as at least 48 people died from road accidents on September 2, 2020.[5]

Addressing the problem of drink-driving

Thailand has been continually trying to amend its laws to curb the situation of drink-driving over the past several decades to fill gaps and raise the level of deterrence to drink-driving. This includes defining legal limits of alcohol based on breathalyzer readings, penalties for refusing to take the alcohol test, and stipulating conditions for insurance coverage.



Picture: https://workpointtoday.com/covid-19-today-11



Picture: https://www.ddd.or.th/StatisticsOfDeathAndInjuries 11

Key issues that are driving the laws related to drink-driving include the determination of the legal limit for the amount of alcohol in the blood of vehicle operators of not more than 50 milligrams per cent in 1994. Later in 2017, the Ministerial Regulation No. 21 (2017) revised the Land Traffic Act, B.E. 2522, with the following important amendment: The limitation of alcohol content in drivers not exceeding 20 milligrams per cent in four groups: 1) Drivers under 20 years of age; 2) Drivers with provisional licenses; 3) Drivers with other types of licenses that are not interchangeable; and 4) Drivers whose licenses have been suspended or revoked. In addition, in the same year, the Office of Insurance Commission has amended the claim payment conditions to be more in line with the law. That is, if the driver of a vehicle in an accident has an alcohol level of more than 50 milligram per cent, that person will not be covered by insurance. Before, the limit to the blood-alcohol level was 150 milligrams per cent.

After that, the Road Safety Research Center has started a project to support the blood-alcohol testing of all accident drivers during the Songkran festival. They joined forces with the Department of Disease Control and the Royal Thai Police to operate road checks. Subsequently, the Road Safety Fund sponsored blood testing through the Department of Disease Control, which has been carried out throughout the year since 2017. Still, there are many gaps in implementation, such as drawing blood from unconscious drivers, which technically cannot be done without the consent of the injured person.

In 2017, the Royal Thai Police submitted a draft amendment to the Land Traffic Act with the purpose to amend and improve the main content of the law so that it is more appropriate and in line with the current situation of road accidents, social conditions, and technology. The goal was to create a systematic and sustainable road safety system, focusing on closing important gaps. There are three outstanding issues in addressing drink-driving: (1) Measures to check the blood-alcohol of drivers who are in a state of inability to give consent; (2) Prohibition of courts to suspend convictions for repeat offenders for drink-driving, and imposing additional penalties for offenders for drink-driving in some manner; and (3) Amending the fines under the road traffic law in accordance with the petty offenses under the Criminal Code. However, most of the public is not aware that the Land Traffic Act is being revised, and this new draft is about to be considered by the Cabinet, and is likely to come into effect soon.

Addressing the problem

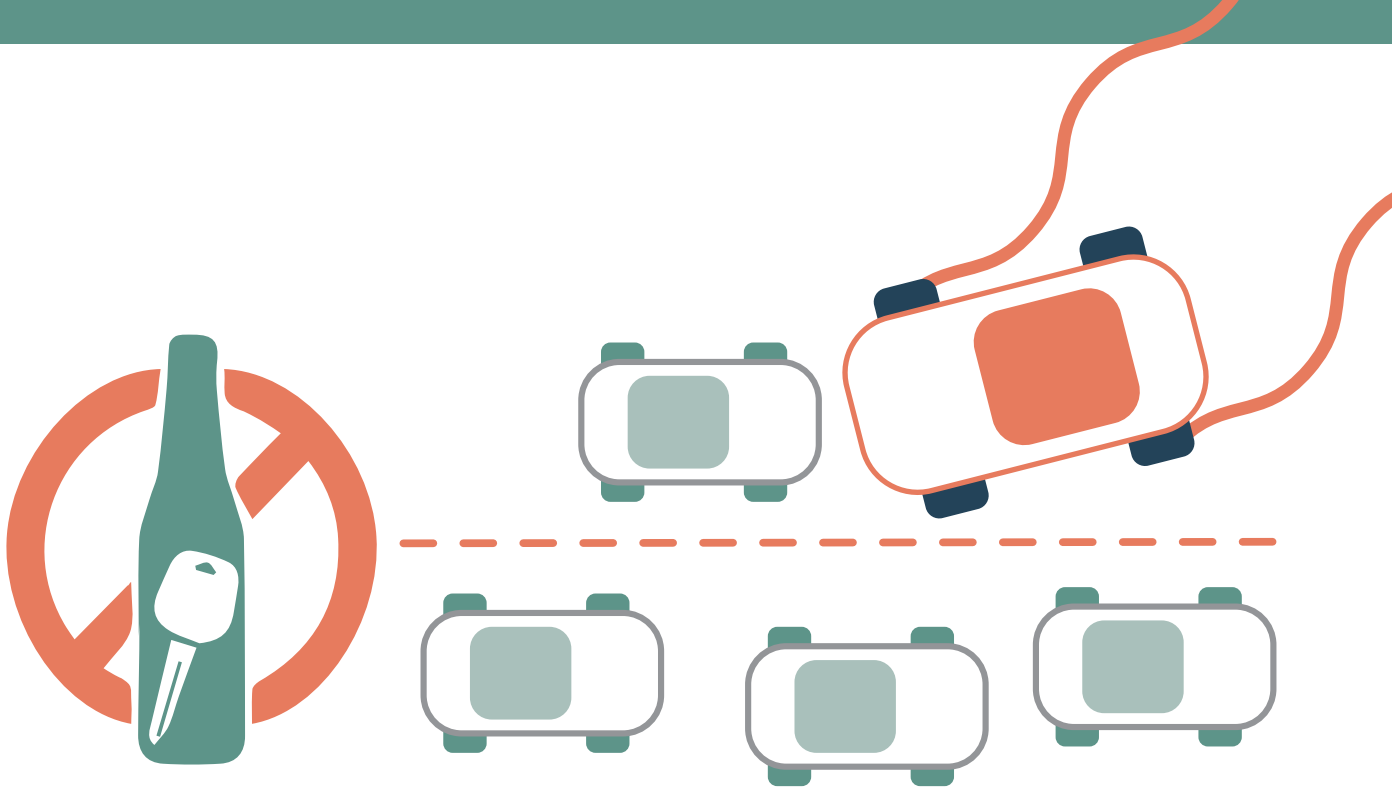
Attempts to amend the law relating to the issue of drink-driving on Thailand in the past was more of a strategy of "filling gaps." While policy resolutions may sometimes be resolved, they are not transmitted to implementers quickly and efficiently. That is reflected by the statistics of injuries and fatalities from road accidents in each festival of every year. The level of casualties tends to remain constant and has not decreased as expected.

Thailand's implementation of the policy of a "Decade of Safety" under the Moscow Declaration was found to be at the "moderate" level, especially the operations to deal with the problem of drink-driving. That is in accordance with the WHO Quality Assessment Document concerning "The status of Thailand in the 12 Global Goals for Road Safety."[6] Goal 9 is to reduce the number of drink-driving-related road accident injuries and deaths by half, and reduce the number of injuries and deaths related to the use of other psychotropic substances by 2030. Despite a number of measures, "enforcement" has not been as effective due to lack of quality information, resource constraints, and lack of adequate human resource training.

Picture: https://www.thaihealth.or.th

From the study of economic costs attributable to road accidents, it was found that the average cost per person can be divided into the following: Outpatient medical expenses of approximately 1,591 baht/patient, inpatient costs of 23,357 baht/patient, the cost of damage of 11,668 baht/vehicle in an accident, and indirect costs such as the cost of loss of productivity of the deceased in the amount of more than 3,669,475 baht/person, etc.[7] As for the impact on social costs, it was found that, each year, Thailand has to bear the social cost of the damage caused by drink-driving of over 30 billion baht.[8] Those calculations do not include indirect costs such as medical expenses, opportunity costs, or disability for victims of the drink-driving of others, which can be difficult to assign a value to.

While waiting for improvements in national policy and laws, the most effective approach is probably to address the problem of drink-driving locally. This means confronting the problem as concerned citizens, and exploiting local mechanisms to help manage the situation. One example is the case of Nan Province where Dr. Pongthep Wongwatcharapaiboon, Deputy Director of Nan Hospital, tried to solve the problem drink-driving by collaborating with Mr. Warawut Kanthawet, Director of the Nan Provincial Probation Office. They brought a group of cases who were convicted of drink-driving offenses to join a remedial process with the concept of exponential learning theory. In this process, the accident victims of drink-driving met and let the drink drivers learn about the consequences of their actions. They learned about the hardships of those directly affected by the drink-driving of others. This approach found that the number of repeat offenders entering probation again was rare. The confrontation with victims of their drink driving seem to flip a switch among these felons, and they reformed themselves to refrain from drink-driving ever again.



After addressing the problem at the “downstream”, Nan Province then turned to dealing with the problem at the “upstream” as well. Dr. Pongthep went to work with the community and the administrators of Muang Nan District Office. The first task was to proactively control the sale of alcoholic beverages to youth under age 20 years. The focus was on youth drink-driving after parties and celebrations. In addition, the program instituted a process whereby, when a road accident occurs and alcohol is involved, the local village headman and Kamnan (sub-district chief) have to visit the perpetrators and patients who are victims of drink-driving at Nan Hospital, together with representatives from district administration and public health office. This method is a form of indirect compulsion in order for the local government officials closest to the community to take ownership of the problem of the residents in their area of jurisdiction. They will then be more conscientious to discourage and deter risk behaviors and drink-driving as well. This approach is both proactive and defensive, with a sensitivity to the situation combined with the power to coordinate with the area to create a community movement. This way, the entire community takes ownership of the problem and the solution.

Summary

Communications and government measures play a very important role in controlling road accidents. However, the data so far suggest that Thailand still needs to improve its management system in every aspect of road accidents. In order to correct and prevent accidents effectively and quickly, the government must recognize the importance of this problem, and must continually improve policy measures based on systematic data management. The most promising sustainable solution to drink-driving and road accidents is probably the decentralization of the role of the state down to the province, district, and sub-district levels, in order for the locality to be the host and champion to manage the solution. The central agencies provide policy, academic, technology and resource support to enable various sectors at the local level to implement. That way, the locality will be able to tailor the response to local conditions and context. Although the structure of the Road Safety Research Center has both a centralized and decentralized components, there are still too many gaps in coverage. This makes the work incomplete and not responsive enough. Local mobilization, as in the case of Nan Province, is probably the most viable mechanism to help deal with the problem of drink-driving, and is a more efficient approach given their proximity to the problem and ability to rely on local networks to help implement sustainable solutions.

Violence against students

Problems and solutions

The popular Thai news about brutal acts[1] of a teacher's assistant in a private school caused the society to question the quality and standards of teachers in schools. They questioned why education personnel have such a lack of ethics that they can physically harm students who are only kindergartens. It is shocking that such behavior has happened so many times. There are many teachers and staff in that school who have physically abused children as well. This shows that such assaults are normative. Worse still, the school director seemed to condone the abuse by saying that corporal punishment for misbehaving or non-performing students was a traditional part of learning.[2] The violence against children in such schools reinforces the frequent news that there have been abuses as well as harassment of students in various ways in Thai schools. Thus, it is reasonable for Thai society to question why teacher's abuse of students is considered acceptable.

There is the old Thai adage "If you love the cow, tie her up; If you love the child, hit him." Another expression is that "The rod creates good adults out of children." These sayings reflect traditional attitudes and way of thinking of Thai society since past generations that regarded hitting a child as a show of caring and love. They made hitting a part of child learning. The feeling was that "knuckle-rapping" can make good learners and, for many generations, Thai society accepted the theory that an adult's hitting children is acceptable, and that this is the way of life and the way of society.[3, 4, 5, 6] However, more recently, what may have once been minor rap on the hands of a child, has morphed into various forms of violent beatings that teachers use to threaten students with and actually carry out. Because the teacher is in a position of authority in Thai culture, most students and their families had to accept this, despite their displeasure. As Thai society became more aware of human rights and the universal rejection of various forms of violence against children, the Ministry of Education issued a ban on hitting students in school. Still, the tradition persists, as there are regular reports of beatings and violence against students, sometimes captured on cell phone video as empirical proof. Why should this practice continue to exist? A systematic analysis of these issues will help determine future solutions. This article will consider the context and feasibility of the Thai education model, concepts and roles of teachers, including the attitude that society confers on education and teachers to better understand what has happened, and lay out guidelines for solving this problem.

Changing teacher-student relationship

In the past, Thai society honored parents as a child's first teachers. Later, with the development of formal education and full-time teachers, professional standards were instituted that became accepted by society as part of the educational system. In the past, if studying the context of the way of life through the chronicles,[7] literature,[8] and lore,[9] the Thai student-teacher relationship was deeper than just an imparting of knowledge. That is, in the past, many students had to go live with teachers, and help and work with teachers in various ways. Before a student would go to live with the teacher, the parents or guardians had to perform a ceremony of surrendering their child to the teacher by bringing flowers, offerings, and even money, implying that their child was to become a disciple of the teacher for book knowledge, ethics training, and life learning. When living with the teacher, the child adopted the lifestyle, thinking, and self-practice. Therefore, in this respect, what the teacher imparted to the student was not mere academic knowledge. The student also acquired guidelines on how to live and behave properly. By contrast, in the modern education system, the teacher is a service provider, and the students and parents are the clients. Plus, the fact that students no longer live in the confines of the teacher's home means that the traditionally close relationship has weakened considerably.

The writings of HRH Prince Damrong Rachanuphap, the study of Prof. Nidhi Eawsriwong,[10] and the work of other scholars[11], show that the Wai Kru ceremony was paying homage to higher learning and/or to deceased teachers (Phi Khru), not a living teacher. Later, in 1941, the Wai Kru ritual was changed to become a state policy that required all schools to follow.[12] As a policy of the state, the Wai Kru ritual changed from paying homage to a supernatural entity to a pledge of piety to a living

Picture: https://thematter.co/science-tech/school-of-violence-and-overlooked-crisis/9409

teacher or teachers. The Wai Kru process was made to look more sacred.

This had the effect of elevating the teacher's status to be much higher than the students. This changed the dynamic in the teacher-student relationship and led some teachers to misuse the status and power given to them by society. They inferred the power to punish students in their care. From the news reports in the media, it can be seen that that there are many different forms of student abuse, and it has expanded to include various forms of assault and battery, such as whipping,[13] ordering to stand and sit repeatedly,[14] kicking,[15] punching,[16] and other forms of corporal punishment.[17, 18] In addition, there are many cases where teachers or schools use their powers to force students to perform such non-academic acts as making purchases, or issuing rules and regulations which the students must adhere to, under penalty of non-compliance.[19, 20, 21, 22] Failure to comply will result in students being treated unfairly or stigmatized. As such, the dimension of punishment is transformed into the domination or abuse of power from teachers and schools to the impressionable youth.

The Ministry of Education and regulations on disciplinary action with students

Currently, the Ministry of Education uses the 2005 ministerial regulation on the disciplining of students as a framework for punishing students who misbehave. The regulations stipulate that punishment is intended for learning purposes only and has no other intention. The regulation sets out principles and methods for punishing students in the following ways: (1) Admonishment; (2) Probation; (3) Deduction of grades for behavior; and (4) Performing remedial activities to reform. **The regulation stipulates that no harsh means are to be used, such as bullying, punishing with anger or with vengeance. The teacher must take into account the age of the student in determining the severity of the punishment**. Punishing a student is for the purpose of correcting bad habits and delinquent behavior of the student, and to make them feel guilty and reform. **In addition, the regulation also stipulates that the school administrator or the person assigned by the school administrator has the ultimate authority to decide whether and how to punish a student.**

Therefore, when considering the Ministry of Education regulations, it is found that hitting is not condoned as a form of disciplining a student. Nevertheless, as noted, hitting is still a common punishment for students in Thai schools today. Will teachers and schools recognize and reject this form of discipline, or fail to comply with the regulations set by the Ministry of Education?

Bruises on student after punishment

Social mobilization in response to a teacher's assault on students

In the case of the teacher named "Joom," the parents of the abused student filed both civil and criminal law suits against the teacher. The teacher was found guilty and sentenced to prison for assault. The parents were awarded damages as per the civil suit as well.[23] In addition, a group of parents filed complaints with the Ministry of Education, and petitioned the school to take responsibility in such cases.

Also, the incident of a teacher's assistant abusing a student in a private kindergarten school made the headlines. This incident sparked widespread outrage in society, both from the students' parents and social networks, asking for punishment for the accused teacher and school. There was also a petition to have the Ministry of Education taking measures to prevent such problems from happening in the future. Dr. Kanokwan Wilawan, Deputy Minister of Education held many meetings with the consortium of student parents and school representatives to explore ways to address the problem.[24] Initially, the Ministry of Education resolved to examine the professional license of all teachers in the schools under its jurisdiction. Accordingly, the Office of the Private Education Commission ordered that teachers' professional licenses be inspected in private schools across the country because it was found there are a number of teachers in various private schools (including "Joom") who were practicing without a professional license.[25]

The incident of the teacher physically assaulting the student led to further investigations into other matters. Many parties are of the opinion that part of the cause of this problem is due to the growing and thriving private education business in Thailand. That is, parents are willing to pay for their children to study with teachers that are advertised as top quality. This is especially the case with international schools, and this is creating an oversized demand for teachers and educational personnel, since this has become big business. Some schools which could not recruit qualified teachers fast enough, took a gamble on recruiting unlicensed teachers to fill gaps and also increase profits since they could pay the unlicensed teachers less.' That was the case with the private school where Joom taught.[26, 27]

Lessons learned on health reform to address the problem of teacher's abuse of students

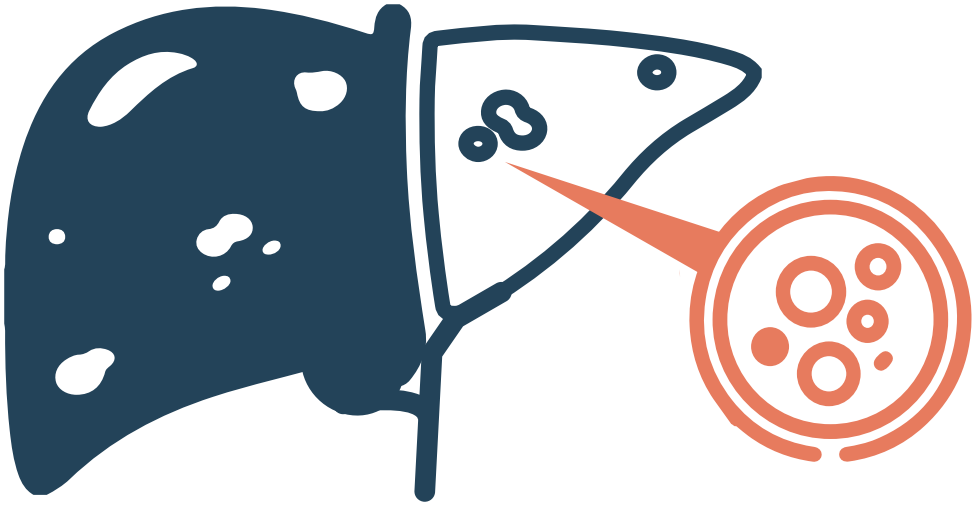
Thailand's health system reform has become a global success story. This led to the conclusion that the success was based on bringing all stakeholders, including the people, community and Civil Society, to participate in the provision of health services and setting health policies at each level. The argument was that if the process is participatory, with the host community taking ownership of the challenge, then they will work with society to monitor, promote, and sustain quality implementation. This also has the effect of reminding the personnel in the system to be alert at all times since they know the community is watching. Similarly, developing guidelines to prevent physical abuse in schools should be a participatory process, with the community fully involved in the management of education, in partnership with the school. In other words, the burden of caring for and managing education should not be placed solely on the teachers and schools. The family, community, and other stakeholders must be involved to help facilitate, manage and seriously monitor the education service of teachers and schools.

Although there is currently a law requiring the administration of educational institutions to bring the community and society to participate in educational administration,[28] **the implementation is still stuck at the policy level. Thus, at the time of this report, representatives of community and Civil Society are not actively involved in how children are being taught and treated at school**. In the health sector, volunteers, host communities, and Civil Society were all actively involved in the reform effort. In the education sector, however, the traditional deference of Thais toward teachers and schools means that parents and communities are very reluctant to interfere with classroom activities because the teacher and school still retain a higher perceived status. Accordingly, the administrators and teachers of the school implicitly know that they have a monopoly on all operations within their domain, without interference from parents, guardians, the community and Civil Society.

Still, local stakeholder's participation is the only viable approach to a sustainable solution. The initial action should be small steps to bring community and Civil Society to participate in educational management at the operational level, while working the way up to the policy level. Today, there are examples of some schools that involve parents and host communities in their operations, such as the school lunch program.[29] That approach has had tangible results since school operations are more transparent, verifiable, and produce a quality outcome, i.e., nutritious lunch meals for students. Therefore, there should be practical steps to engage parents, guardians and other stakeholders in the community and society to become more involved with teachers and schools than is the case today.

Summary

Today, Thai society is questioning the quality and standards of teachers in schools. Why do teachers lack professional ethics to the point where they think it is acceptable to use corporal punishment in the classroom? In the past, minor raps on a student's knuckles may have been part of the practice of cultivating well-behaved and attentive children. Historically, Thai parents even turned their children over to the teacher to live and learn in close proximity to the teacher, which conferred great latitude to the teacher on how to discipline the child student. However, at present, the physical punishment that is occurring in some schools has morphed into a sadistic perversion, and there is a wide variety of forms of abuse that teachers commit against students. Even though the Ministry of Education has issued regulations prohibiting hitting students, it appears that this form of corporal discipline is still prevalent and frequent. Today, social networks have urged the Ministry of Education to come up with systemic measures to prevent teachers and schools from abusing students. That said, the long-term solution is to involve the parents, community and other stakeholders in society to participate in the management of education from the operational/daily teaching level, and eventually work their way up to the policy level. This would ensure that school operations are transparent, accountable, and able to provide quality education for students.



Liver cancer...

The Grim Reaper takes down Thais

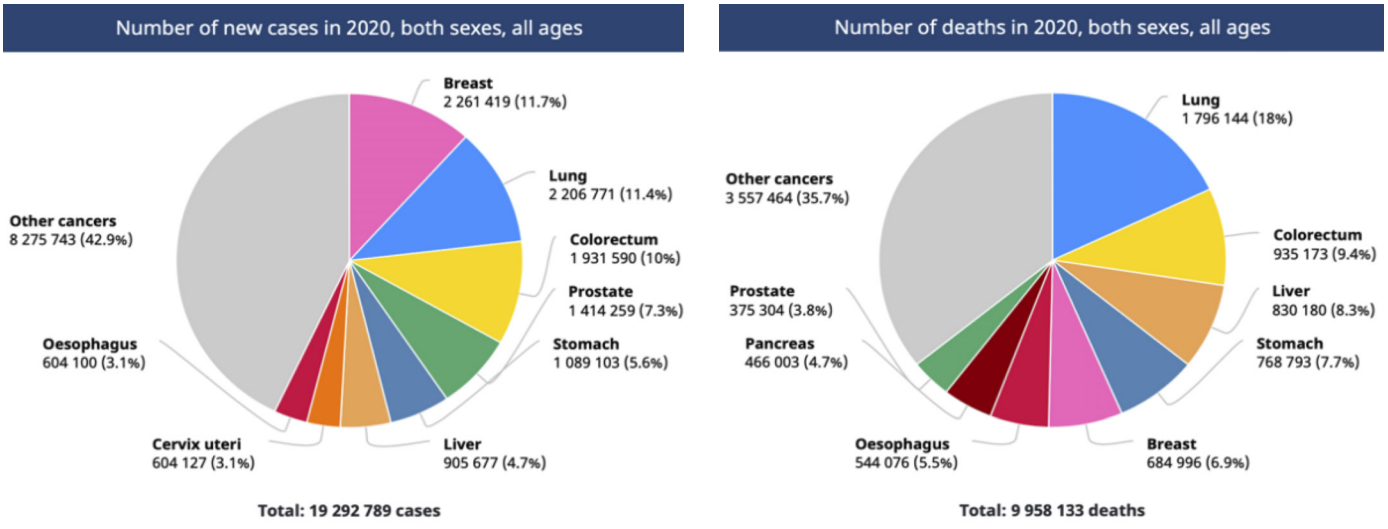
Throughout the past 20 years, cancer has been the number one cause of death for Thais in almost every year. Moreover, the trend of morbidity and mortality from cancer is increasing every year. If classified by type of cancer, Thais died of liver and bile duct cancer the most, and males had 2.5 times the mortality rate for these cancers than females. Thailand has a liver cancer incidence of 22.6 per 100,000 inhabitants, which is the 6th highest in the world. This article will discuss the situation of liver and bile duct cancer, cancer risk factors, and the policies and strategies to address liver and bile duct cancer in Thailand.

What is liver cancer?

Cancer is a group of diseases caused by the uncontrolled growth of body cells or cells which quickly divide until becoming an abnormal lump, causing lack of blood to nourish the organ until the death of normal cells in the lump. Currently, there are more than 100 types of cancer.[1] Due to the continuous increase in morbidity and mortality from cancer, more people are becoming aware of the danger of cancer and the need to address antecedents and health care. Therefore, ever since 2007 the World Health Organization (WHO) designates February 4 of every year as "World Cancer Day".[2]

The International Agency for Research on Cancer (IARC) of the WHO expects 19.3 million new cancer cases worldwide to occur in 2020 and nearly 10 million cancer deaths. In other words, about one in six deaths worldwide is caused by cancer. The top five causes of death from cancer worldwide are lung cancer, colon cancer, liver cancer, stomach cancer and breast cancer, respectively. Liver cancer accounts for 0.83 million deaths, or 8.3 percent of all cancer deaths.[3]

Figure 1: Estimates of the global number of new cases of liver cancer in 2020



Source: WHO, 2020

Liver cancer is caused by cells in the liver that multiply abnormally and eventually develop into cancerous cells. Alternatively, cancer cells from a primary site outside the liver can invade the liver to cause secondary liver cancer.[4] The two types of liver cancer that are most common in Thailand[5, 6, 7] are the following:

Hepatocellular carcinoma (HCC): This type of cancer is caused by infection with the hepatitis B and C viruses and in patients with cirrhosis. HCC accounts for 95 percent of liver cancers in Thailand.

Cholangiocarcinoma (CCA): This type of cancer is caused by a liver fluke found in freshwater fish which are eaten raw, such as pickled fish or fresh fish. Ingestion of certain foods that contain potassium nitrate (saltpeter), which is a carcinogen, can also cause CCA. This type of cancer is most common in the northeast and north regions of Thailand.

Risk factors and causes of liver cancer

Due to differences in risk behaviors in combination with diet, environment, and other factors, the incidence and prevalence of cancer varies in different regions of the world. In Europe and the Americas, liver cancer comprises only 3 percent of all cancers. In Asia, liver cancer can be as high as 40 percent of all cancer types. The main risk factors and causes of liver cancer include infection with hepatitis B and C, which can be transmitted through blood, transmission from mother to fetus, and unprotected sex. When hepatitis B and C enters the body, it may lead to chronic hepatitis, which then may progress to liver cancer. It was also found that regularly consuming alcohol to excess, having fatty liver disease, eating foods containing aflatoxin, eating foods containing saltpeter, or eating undercooked freshwater fish are predisposing factors for liver cancer.[8]

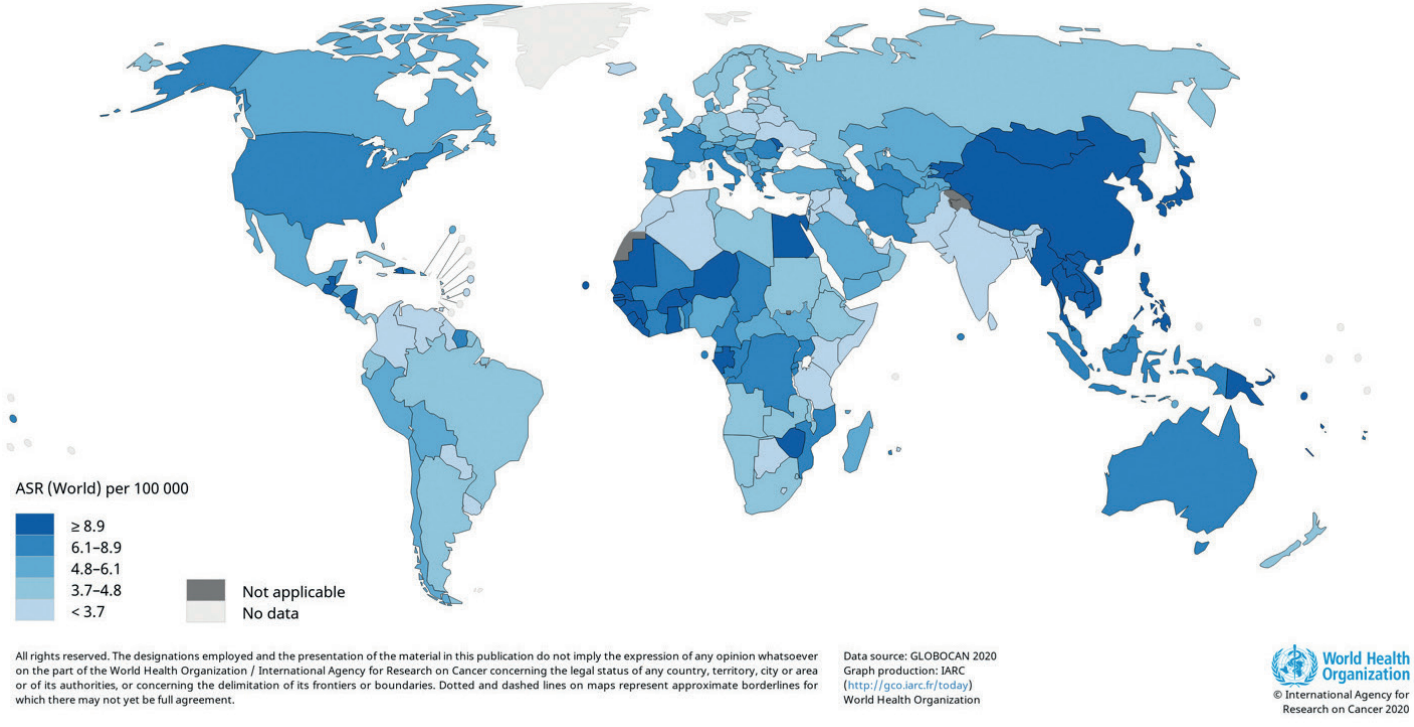
Liver cancer is asymptomatic in the early stages. Dr. Jinda Rojanamethin, Director of the National Cancer Institute, noted that the initial symptoms of people with liver cancer are abdominal distension, flatulence, frequent indigestion, fatigue, weight loss, right ribcage pain, jaundice, yellowing of the whites of the eyes, enlarged abdomen, and swelling in both legs, and/or feeling a lump in the abdomen. Anyone who has one or more of these symptoms should consult a doctor for a thorough diagnosis.[9]

Situation of liver cancer in Thailand

WHO estimates and projections for liver cancer in 2020 use the age-adjusted standardized rate (ASR) to compare the incidence of cancer in each country. It was found that the incidence of liver cancer was highest in Asia, where Mongolia has the highest incidence rate among countries with 85.6 per 100,000 inhabitants. Incidence in Egypt was 34.1 per 100,000 inhabitants, and Laos was 24.4 per 100,000 inhabitants which ranked 6th in the world.

In Thailand, the number of deaths from liver and bile duct cancer increased from 13,419 (21.3 per 100,000 population) in 2007 to 16,288 people (24.8 per 100,000 population) in 2019.[10, 11] In addition, more than 70 percent of the deaths of liver and bile duct cancer were among men. However, the number of deaths from this disease for both men and women is likely to continue to increase. Male cases increased from 9,459 in 2007 to 10,874 and 11,594 in 2013 and 2019, respectively. Female cases increased from 4,133 in 2007 to 4,541 and 4,694 in 2013 and 2019, respectively. In 2019, more than 60 percent of liver cancer deaths were found in the population age 60 years or older, and more than 40 percent of the deaths from this disease were in the northeast.[12]

Figure 2:
WHO estimates of incidence of liver cancer in 2020



Source: WHO, 2020

Policy and strategies of the Thai government to address liver cancer

Cancer has been the main cause of death for Thais since 1999. Therefore, in order to prevent and control the disease, the Thai National Cancer Institute and related agencies have developed a cancer prevention and control plan. The first plan was launched in 1997 and was subsequently reviewed and revised to produce the 2013-2017 plan in 2013 to be consistent with the Thai context at that time. At present, Thailand is implementing the cancer prevention and control plan for 2018-2022 to align with the current situation and be in accordance with the Service Plan for 2018-2022. The plan consists of seven strategies as follows: Primary Prevention, Secondary Prevention, Tertiary Prevention and treatment, Patient Care/palliative care, Cancer Informatics, Cancer Control Research, and Strengthening organizational competence in prevention and cancer control (Capacity Building).[13]

Although the National Cancer Prevention and Control Plan for 2018-2022 primarily sets out guidelines for overall cancer prevention and control, implementation strategies are not separated by type of cancer. That said, two strategies provide guidelines for the control and prevention of liver and bile duct cancers, and clearly define activities to support the strategy to address liver and bile duct cancer.

Strategy 1: Prevention of cancer

1. Guidelines for the control and prevention of HCC include the administration of hepatitis B vaccine in newborns to prevent hepatitis on an ongoing basis. There is Hepatitis C infection prevention education and warnings about consumption of food contaminated with aflatoxin. There are continuous campaigns to change values to reduce excessive alcohol consumption. The strategy includes preventing exposure and reducing the risk of occupational and environmental carcinogens, and education about dangerous chemicals that cause liver cancer, including controlling occupational risk factors or finding substitutes to reduce the risk of exposure to carcinogens.

2. Guidelines for the control and prevention of CCA include preventive surveillance, reduced consumption of undercooked freshwater fish, integrated and systematic control and elimination of liver fluke disease, supervision of community and local sewage to ensure it is hygienic and in accordance with public health laws, and promotion of awareness and change in hygiene behaviors.

Strategy 2: Early cancer detection

1. HCC: Training of community leaders and Village Health Volunteers (VHVs) on liver cancer, and early liver cancer screening in men aged 50 and female age 40 years or older. If there is a family history of HCC, then early detection may begin at the ages of 30-35.

2. CCA: Training of community leaders and VHVs on early detection of CCA, such as ultrasound examination of the liver and upper abdomen. There is monitoring of patients with a history of liver fluke infection. Training of doctors at regional and provincial hospitals. Establishment of a referral system for people with abnormal ultrasound screening results for diagnosis and treatment, and support for cooperation with the private sector and Civil Society/community.

It can be seen that the National Cancer Prevention and Control Plan for 2018-2022 has established guidelines for control and prevention of liver and bile duct cancer. This includes activities for early detection of these cancers. The plan reflects the intention to reduce morbidity and mortality from liver and bile duct cancer, as well as other cancers in Thailand. The 12th National Health Assembly has observed that no specific budget earmark has been allocated for implementation of the National Cancer Prevention and Control Plan for 2018-2022. In addition, the Assembly also suggested that the government, private sector, and Civil Society need to work together more intensively to create a systematic program of preventive measures to address cancer that is effective and sustainable.[14] However, because liver cancer does not show symptoms in the initial stages, people may ignore prevention or early detection. Therefore, relevant agencies, including the public, private and Civil Society sectors, should produce educational media and disseminate that to the public and target risk groups so that there is better awareness and action to address the problem.

Summary

Thailand has long faced cancer morbidity and mortality, and the trend for liver cancer is increasing. Agencies in both the public and private sector have formulated policies, plans and strategies to reduce morbidity and death from liver cancer and develop new treatments to be more efficient, including campaigns to increase knowledge of the cause of the disease, prevention, and treatment guidelines. Nevertheless, there is a steady increase in morbidity and mortality from liver and bile duct cancer. Accordingly, the focus must be on reducing risky behaviors as well as eating hygienic food and engaging in regular exercise. Those behaviors are a way for the individual to prevent cancer and various diseases by boosting the immune system and reducing preventable morbidity. At the same time, the government, private sector, and Civil Society should intensify collaboration to create model preventive measures and sustainable solutions to the cancer challenge.

Picture: https://old.khonkaenlink.info/home/news/6083.html

Land bridge Gulf of Thailand - Andaman,

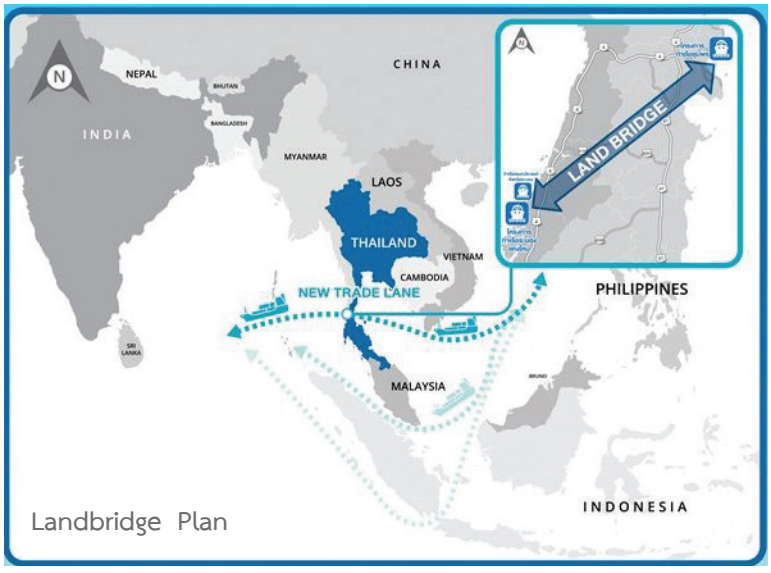
a 20-year mega-project plan

One of the infrastructure development projects that has generated widespread interest both in Thailand and abroad is the so-called "Economic bridge connecting the Gulf of Thailand – Andaman Sea" or the development of infrastructure to create a transportation link between the ports on the Gulf of Thailand and Andaman Sea. The government is advocating for this project to boost the development of the Southern Economic Corridor (SEC), which is a group of the upper-south provinces, namely Chumphon, Ranong, Surat Thani, and Nakhon Si Thammarat. The vision is also to connect the transport and communication links of the Eastern Economic Corridor (EEC) project that has been shaping up to be a magnet for investment to enhance development and Thailand's economy according to the 20-year national strategy.[1]

But the land-bridge concept is not a new project by the government of Gen. Prayut Chan-ocha (after the election), but a project that has been resurrected from the past. Actually, a land-bridge project has been pursued by governments of many eras. This article will take the reader back to the beginning of past projects, followed by a brief discussion of the conflict between local people and government development policies, the connection of this project to the Kra Isthmus (Thai Canal) proposal, and a return to the current policy to revive this project, as well as the perspectives of various groups and sectors on its potential impacts.

"Landbridge" from era to era

"Landbridge," which the Thai government calls "'Economic Bridge," is not a new project proposed by the current government. It was first considered during the era of Gen. Chatchai Chunhavan as Prime Minister. The record of the Cabinet meeting in Hat Yai District, Songkhla Province on March 4, 1989 explains that the original idea was to develop a route between Khanom District, Nakhon Si Thammarat Province and the city of Krabi. Later in 1993, the Cabinet approved the official development master plan for said link called the Sustainable Development of Southern Economic Areas by 2007.[2]



Picture: https://www.busandtruckmedia.com/27538

However, the plan was met with heavy opposition from citizens, businessmen, academics and Civil Society who saw that such a route would destroy the environment and tourism. The government therefore adjusted the plan by proposing a new route between Pak Bara Port, Satun Province and Chana District, Songkhla Province. However, this new route met the same force of opposition by communities in the lower-south region. It can be said that this "Economic Bridge" project has been the trigger for conflict between the people and the government in the development of infrastructure in the southern region of Thailand ever since.[3]

As for the Gulf of Thailand-Andaman Economic Bridge, the current government has focused on the development of the upper-south sub-region by choosing to develop a transit route between Chumphon-Ranong deep sea port instead. On September 15, 2020, the Cabinet gave a green light to the Office of Transport and Traffic Policy and Planning (OTP) to conduct a feasibility study for an investment development model of the concept, and an environmental assessment of the development of transportation infrastructure to link the Gulf of Thailand with the Andaman Sea. This was seen to be under the Southern Economic Corridor master plan, with a budget of 68 million baht. In addition, there was a directive from the Ministry of Transport to relevant agencies to study the development of Ranong and Chumphon deep sea ports, double-track railways, and high-speed motorways by using a model of private investment in government plans (Public-Private Partnership, or PPP).[4]

Then, on September 29, 2020, the Cabinet approved a budget of 74.7 million baht for the State Railway of Thailand (SRT) to conduct a survey to produce a design and environmental impact report on the construction of the Chumphon-Deep Sea Port-Ranong railway project covering a distance of 120 kilometers. Previously, in 2017, the OTP had hired a consultant to study the economic, engineering, and environmental suitability of the aforementioned railway route.[5] At present, the Ranong deep sea port has been developed into a container terminal. Therefore, there is the idea to develop the port in Chumphon along the same lines.[6] The development plan of the land bridge connecting Ranong-Chumphon calls for an intermodal transportation process to haul goods from a port via a double-track railway or container car via motorway and deposit said goods to another port.

What is interesting is that many view the push for the Ranong-Chumphon Economic Bridge as a replacement of the Kra Isthmus or "Thai Canal" concept. The Thai Canal would have been a massive undertaking to essentially cut a water link in the narrowest part of Thailand between the Gulf and the Andaman Sea. An extraordinary commission was appointed in 2006 to consider the Kra Isthmus Canal concept, and there was a push to present the idea to the Cabinet of PM Gen. Prayut in 2020 as well. But the economic bridge project of the OTP took precedence because the estimated budget for the Kra Isthmus Canal had now ballooned to two trillion baht, with potential for an enormous adverse impact on the marine environment on both ends of the Isthmus because of the extended period of digging and dredging. Other risks may occur including security[7] and local conflicts. Furthermore, there were significant physical limitations of the canal due to unequal sea levels of the Gulf of Thailand and Andaman Seas, and that meant that a special set of locks would have to be created to equalize the water level.[8]

However, the Subcommittee on the Study of Thai Canal Excavation came to the view that a land bridge concept would, in the end, be less cost-effective or appropriate than the canal concept. The Subcommittee is also conducting opinion polls on the different approaches. This impasse leaves only two areas in the south to come on board, namely Phatthalung and Songkhla Provinces, since the canal concept has already been approved in principle by Krabi, Trang, and Nakhon Si Thammarat Provinces. The belief is that, creation of Thai Canal together with the development of the SEC will result in a greater capacity for ships and be a larger interface overall, in the same way that Singapore is. By contrast, the land bridge approach may not be feasible since it would incur unacceptable costs from the multiple transfer of goods among transportation modes.[9] Mr. Kongrit Chantarik, Executive Director of the Thai National Shippers' Council has made the point that the land bridge and the Thai Canal concepts cannot be compared because there have been no definitive economic and trade value-added studies of the two approaches.[10] Nevertheless, the stronger advocacy of the land bridge suggests that, at least with the current government, the Thai canal proposal is not likely to move forward.

The impact of "Landbridge"

On the one hand, the development of a large infrastructure project such as Landbridge is expected to have a positive impact on economic growth and domestic employment. On the other hand, the impact of the mega-project on society, way of life, and environment may be a net negative if the project does not take sustainability into account. The most noticeable positive impact of an east-west link between the Gulf of Thailand and the Andaman Sea is on international trade. This will help reduce the volume and congestion of ships traveling through the Strait of Malacca. It also saves up to two and a half days of transportation time, especially when transporting large volumes of oil.[11,12] In addition to commercial benefits there should be a positive effect on tourism as well because of more travels between the Gulf and Andaman coasts.[13]

That said, the development of the landbridge is bound to adversely affect the surrounding environment by causing pollution of various types such as leakage of oil from ships that would damage the marine environment. That would also depress eco-tourism and marine tourism to the subregion. The arrival of large merchant ships could lead to a decline in fish populations at sea and adversely affect the way of life of local fishermen whose only livelihood is coastal fishing and aquaculture. Therefore, developments that benefit one group of people can lead to disadvantage and resistance from another. Thus, these potential impacts have to be weighed against promise of benefits in order to arrive at the optimal solution.

Various views of "Landbridge"

Although "Landbridge" is a project that is supported by many groups, especially among members of the current coalition government, some people think that the landbridge will not be cost-effective given the volume of goods entering through the ports that are under development. Mr. Thanit Sorat, Vice Chairman of the Employers' Confederation of Thai Trade and Industry (ECONTHAI) observed that the amount of cargo in the southern region each year is not enough to attract merchant ships. The evidence for this can be seen from the financial losses of Ranong Port. In terms of time saved, even if the transportation distance is shortened without having to go around the Straits of Malacca, the cost of loading the goods on/off the ships and the cost of transporting the goods from one side of the isthmus to the other by truck might be prohibitive.[14]

In addition, Mr. Thanit also commented that most of Thai export products are in the eastern sub-region. The Ranong port itself is located on mountainous terrain and, thus, not suitable for large truck traffic. He also felt that the project is unlikely to attract foreign investment due to the high logistics costs and the limited domestic market. Moreover, the political uncertainty in Thailand may motivate foreign investors to move their production base from Thailand to neighboring countries such as

Picture: https://mgronline.com/south/detail/9600000025669

Protests against the Landbridge

Vietnam, Bangladesh, and Indonesia. Meanwhile, Assoc. Prof. Wanchai Rattanawong, Director of the Logistics Research and Development Institute of the University of the Thai Chamber of Commerce questioned landbridge's adequacy to accommodate ships and cargo as well as the potential of Ranong Province to support large cargo ships.[15]

In this regard, the government should first answer the question whether or not Thailand needs a transportation system between the Andaman Sea and the Gulf of Thailand. What will be the benefit for Thailand? What are the comparative benefits of landbridge vis a vis other mega-projects in the south, including the Thai Canal concept? Which groups of people will benefit and lose from the project? If the trade-offs cannot be clearly defined, then it would seem futile to continue to advocate for such mega-projects and continually re-route the proposed corridor to avoid public opposition.

In the past, the "Landbridge" project was still a Satun-Songkhla economic bridge, and ignited violent opposition. The main reason for this was the lack of transparency, and lack of participation of those who would be truly affected by a degraded environment and health status. The multiple project proposals were not well connected under the Southern Area Development plan, and there was a lack of public relations about the various projects to stakeholder groups. In addition, local people were not given the opportunity to play a role in planning and deciding on projects, among other failures.[16] All of this has caused villagers, academics and Civil Society to doubt the intentions of the advocates for these mega-projects, leading to a general distrust of outside developers coming in. Local resistance movements were born such as the "Walk with Love from the Mountains to the Sea", a distance of 101 kilometers from Khao Khuha, Songkhla Province, to Pak Bara Port, Satun Province. The purpose of the Walk was to increase awareness of the public of the potential impact of the proposed developments on the natural resource base. The "Walk with Love" event extended over a period of six days, followed by an open forum to hear informed opinions.[17] Another local mobilization was the gathering of the Chana Rak Tin network on March 11, 2020 at Suan Kong Beach, Na Thap Subdistrict, Chana District, Songkhla Province, to question the government plans for the "Songkhla Deep Sea Port 2" which would be part of the Songkhla-Satun economic bridge (Landbridge) and the "Chana City of Advanced Industrial Project of the Future." The network read a statement on "Stop the humiliating project of the Southern Border Provinces Administrative Center "Chana City of Advanced Industrial Project of the Future."[18]

An appropriate way forward

Resistance to the "Landbridge" project proposal in the past reflected local opposition to the development of heavy industry, which brings up the image of Map Ta Phut which has a concentration of gas separation plants, power plants, and deep sea ports. In the document titled "Songkhla-Satun, Steps to Heavy Industry" organized by the "Stop the Songkhla-Satun Development Working Group" argued against the idea of the area becoming a heavy industrial sub-region by citing information from various sources to show how past governments intentionally misrepresented the mega-projects, such as Map Ta Phut. The consequences were serious damage to the environment and health. The people in the south did not want a replication of that experience if the Landbridge project were to proceed.[19] Therefore, in considering the "Landbridge" Chumphon-Ranong proposal, Gen. Prayut's government needs to learn lessons from the past and operate transparently with cooperation from people in the area and various stakeholders as follows:

(1) There should be a thorough cost-benefit study and review of the project. The government should not rush any analytical process, especially in the Environmental and Health Impact Assessment. If that assessment does not produce clear results, then there is the danger of proceeding recklessly, with long-term adverse impacts. The one-year study that was conducted was too short a duration to thoroughly review the relevant trade-offs. Some processes may have been neglected or conducted superficially. There may have been too little public participation or tapping into the voice of those who would actually be affected. In addition, the cost-effectiveness analysis is a process that should be conducted most carefully. This is because many parties doubt that the land-bridge concept will bring the promised economic benefits. It may be a wasteful use of the public taxes. This is even more important in the context of the economic downturn caused by the COVID-19 pandemic.

(2) It is imperative to provide equal and complete information to all groups of stakeholders. It can be seen that, in the past, the ruling government at the time did not disclose complete information about project development. People are reminded of the case of Map Ta Phut by the proposal to bring heavy industry into a Songkhla-Satun landbridge, and the danger of repeating the mistakes of Map Ta Phut. That experience caused major conflicts with local people, academics and Civil Society, leading to resistance to various development projects and erosion of trust in central government mega-projects. If the development plan truly takes into account *sustainability*, it will not include heavy industrial development. Instead, the focus will shift to the development of logistics to link trade within the region only. In any case, the government should disclose all relevant information to the public so that all groups of stakeholders can access and monitor progress, and be fully transparent as a way to regain trust in large development initiatives.

(3) There should be opportunities for development from the bottom up. Each area has different economic potential. Therefore, people in the southern region should have the opportunity to express their opinions on the province's visibility. They should be allowed to propose development projects that are suitable for the context of the area. There should no longer be a top-down approach to central government mega-projects. Forcing people to embrace those projects can have a long-term negative impact on how people view the state. Therefore, the state should allow the people in the area to have a say in determining their own future. This will be one way to restore trust and reduce conflict.

Apportion to the Landbridge

Formation of "approach slab" of Economic Bridge: Will it really happen?

"Landbridge" or "Economic Bridge" is not a new project initiated by Gen. Prayut's government. Instead, this concept has been pursued by many governments in the past. Each time around, the proposal was opposed by the people in the local area as well as academics and independent organizations. That is because the development of large-scale infrastructure can adversely affect livelihoods and the environment. Moreover, in the past, there was no clear process of public participation. Ultimately, there was suspicion that the government was using short-cuts to meet the interests of the political and economic powerful minority. For the current government the "New-Route Landbridge" proposal has become a big issue in terms of the economy, society, and environment of the country. Therefore, the government has to learn lessons from the past and operate with transparency, while relying on the cooperation of people in the area and various stakeholders by studying and reviewing the project proposal in detail. The government must provide equal and complete information to all groups and allow for development from the bottom up in tandem.

The problem of missing children

in the Thai social context

Studies of the problem of missing children in Thailand have found that the most common cause of missing children is voluntarily runaways from home. That reason accounts for 77 percent of all causes of missing children and reflects the fragility of the Thai family institution today. Nevertheless, the family is still considered a foundational institution of society. Other reasons for missing children are retardation, cerebral palsy, intellectual disability, mental disorder, and those who become lost and are unable to find their way back home. Awareness about missing children in Thailand is like a tidal wave. When the situation is severe, like when a storm strikes, society will be alert to the problem. But when the wind quiets down, so does public interest. When there is a new storm, there will be another alert, followed by waning interest. Yet, the problem of missing children persists, from year to year. Furthermore, it is not yet clear how to address the problem, and that points to the need to establish an agency whose full-time function is to investigate cases of missing persons, including children.

The case of Nong Chompoo: A wave that has crashed ashore with still no resolution

The disappearance of Nong Chompoo, a 3-year-old girl from her residence in a community in Mukdahan Province on May 11, 2020 sparked outrage about the chronic problem of missing children in Thailand. After three days of disappearance, the search team found Chompoo's naked body, lying dead on a wooded hill on the outskirts of the village about two kilometers away from where she disappeared. The death of Nong Chompoo caused almost all media outlets and platforms to track the progress of the case until it has become a saga that persisted for many months.

The search for a missing child

The intensity of interest in this case may be because it was one of the first sensational crime events after the government lockdown to contain the spread of COVID-19 in many provinces across the country. In other words, the public had been starved of crime stories for months, and reporters were keen to rebuild readership after the lull of lurid news. The interest in the case also permeated Chompoo's home community where it is assumed the perpetrator came from or had been to. All this speculation drowned out any concern about the genuine underlying problem: Why do children go missing in Thailand? However, that issue is not as titillating as trying to discover the perpetrator of such a heinous crime.

Subsequently, on October 2, 2020,[1] Pol. Gen. Suwat Chaengyodsuk, the Commander-in-chief of the Royal Thai Police announced progress of Nong Chompoo's case. He reported that the police had conducted 384 interviews, identified 120 persons of interest who were interviewed in-depth, and conducted 13 consultations with experts. The police logged 113 pieces of evidence, and the DNA samples were compared to that of 154 witnesses and persons of interests. Overall, the investigative reports totaled 918 pages. Based on the location on Phu Lek Fai Mountain where Nong Chompoo's body was found , it was assumed that the 3-year-old did not walk there by herself. In addition, 36 strands of hairs of Nong Chompoo were found on the side of her corpse which had appeared to be cut off by a knife or sharp object. Therefore, it was assumed that the perpetrator had taken Nong Chompoo to the place her body was found. However, at the time of the press announcement, the evidence was insufficient to issue an arrest warrant for anyone.[2] The questions still lingered: Why was Nong Chompoo taken from her home/neighborhood? Why was her body found on a wooded hill? Who would perpetrate such a heinous act on an innocent child?

Understanding the problem of child abduction in Thailand

In the past 15 years, the problem of child abduction in Thailand is usually unrelated to organized crime, child trafficking, or gangs of kidnappers seeking ransom. Instead, most of the child abductions were isolated events, perpetrated by someone the child knew but also possibly a stranger whom the child trusted for some reason.

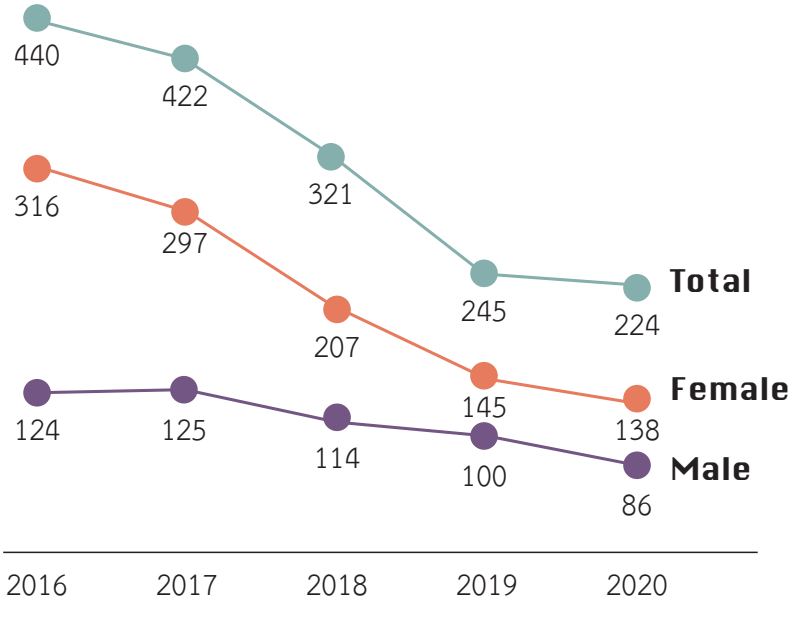
Based on past investigations, child abductors often have a non-permanent address, and they may live semi-nomadic lives without a fixed domicile. Some of them are ex-felons who have been convicted of sex crimes or other criminal offenses. The child abductors in Thailand can be classified into two types based on motive: (1) The first group is those who kidnap children for sex acts, and both girls and boys are targets of these predators. (2) The second group is those who have a deranged affection for a particular child and want the child for his/her own possession. This later group is further divided into two sub-groups: (1) The first group is persons who kidnap a newborn out of desire to have a child. They actually intend to raise the child as their own. These perpetrators are usually women with miscarriages or unable to have children naturally. (2) The second group kidnaps the child for companionship. The perpetrators of this type are often mentally ill or cognitively disabled without a peer group or friends, and feel socially isolated. This latter group does not intend to harm or sexually abuse the child. They see the child more as an animate doll to play with. But, clearly the abduction itself harms the child psychologically, and the abductor is probably not aware enough to protect the child from harm by others or from accidents. Children at risk of being abducted are usually in the age range of 3-10 years, which is an age when a child is gullible, trusting of adults, and easy to deceive, and not strong enough to physically resist.

Situation of missing children in Thailand

In some lurid cases, the story of a missing child may capture the headlines and the attention of the nation. However, most cases do not become newsworthy. The Mirror Foundation compiles statistics on missing children data, and they report that, in the last five years, there has been a decrease in the number of missing children reported each year. In 2020, a total of 224 missing children were reported, of which 86 were boys and 138 were girls. Of this total, 204 children were found alive (91 percent), while 20 are still missing.[3]

The problem of missing children in Thailand is similar to that of other countries such as the United States, where the most common cause of missing children is voluntarily runaways. In 2020, 177 children ran away from home, accounting for 77 percent of missing children. 27 children, or 13 percent, were found missing including children with retardation, intellectual disability, mental disorder, and those who became lost and were unable to find their way back home.[4] There are some cases of child abduction each year, but these are the minority of cases. Nevertheless, international guidance advises that any time a child goes missing, the first assumption must be that it is a case of abduction or that the child is in mortal danger. That way, the response is more likely to be immediate and thorough.

Table 1: Reports of missing children in 2016-2020



Source: Mirror Foundation

The children who voluntarily leave home and are reported missing are mostly between the ages of 10 and 15 years.[5] That is because adolescence and pre-adolescence is a transition period of a youth characterized by rebelliousness, respecting the peer group more than parents or elders, and an age when they may have acquired enough like skills to believe they can take care of themselves. The reason why a youth may run away from home is often domestic strife and violence – both physical and mental. Youth may be beaten and/or relentlessly scolded or scorned, and disparagingly compared with other youth. Sometimes, parents/guardians confiscate a youth's cell phone or electronic device as punishment, without reasons or agreed protocol, thus driving the child away.

Another factor that drives children to leave home and the safe confines of the family is being persuaded by someone they have met online or through social media. Teenagers and pre-teens are naturally curious and want to try out new experiences. There is no communication on sex education between parents and children or both parents may be working outside the home, and there is no chaperone to oversee or overhear whom the child is talking with. Generation gap may be a factor. Some parents send their child to live with the child's grandparents that have different lifestyles. In some families, members may talk differently to each other and, therefore, children prefer talking with outsiders. This makes it easier for children to trust new friends on online platforms. With underlying family problems, all it takes is one altercation to motivate these youth to seek a quick exit from an undesirable home situation.

Thai society views the problem of voluntary runaways as distinct from child abduction. That double standard also extends to law enforcement agencies, which have a direct responsibility to be notified of and trace missing children. Accordingly, the authorities give less importance to children who seem to have voluntarily run away from home since they may view that as an internal family matter, or that the youth will reconsider in a few days' time and return home on their own. This indifference to what actually may be a case of abduction is a major obstacle to child protection.

Picture: https://ktiv.com

Vulnerability of the family: Factors which predispose a child to go missing

When an adolescent voluntarily runs away from home, that usually "reflects a broken home or a family that is on the verge of collapse." This is of serious concern since Thai culture still considers the family as a foundational institution of society. One also has to realize that there are usually external factors that are putting intolerable strains on the parents/guardians or other breadwinners of the household. The pandemic affects the employment and financial security. The family then becomes an environment that is permeated with tension and anger – through no fault of the child or his parents/guardians. Often, marriage cannot survive these strains and one spouse may leave the household as a separation or prelude to divorce. This further diminishes any hope for warmth and love in the household. The youth will naturally seek out sympathetic peer groups or older people they meet online, hoping for the love and attention that is absent at home. Some youth make a final decision to run away.

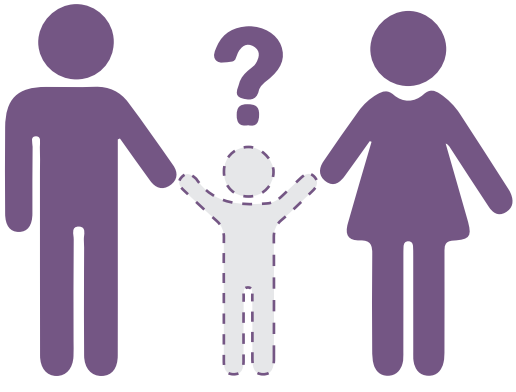
Today in Thailand, there are more families that are single-parent households and skipped-generation households (in which the parents leave the child with grandparents or older relatives of the child to free up the parents to take jobs in the city). There will be the inevitable generation and communication gap, and the older generation is not savvy enough to be able to know when their grandchild is becoming dangerously involved with people or groups on the internet or through social media. Grandparents are complicit if they simply let the child amuse themselves on electronic devices all day long instead of interacting

with them in constructive activities. This puts children at risk of being easily seduced or influenced by outsiders. If the child or youth feels disparaged or underappreciated at home, they may create a virtual world online where there is warmth, love, and respect – however artificial or imaginary. Predators will spot these vulnerable youth and groom them into talking about sex. At that point, it becomes most likely that the child will be entering an abusive situation or worse.

Impact of missing children

The impact of missing children – whether from abduction, kidnapping, voluntarily fleeing the home, or getting lost somewhere – cuts across many dimensions. As soon as parents realize that their child has gone missing, they may have to take leave from work and lose income. Many of them have to meet with police and join the search. This can entail expenditure of considerable time and money. Some families will go into debt to cover the cost of the search or to offer a reward. Those debts will only serve to worsen the family's economic hardship and further increase household tension, even if the child is found. Inevitably, parents and others in the household will trade blame for who is responsible for the child going missing. This friction, too, could precipitate separation or divorce of the parents, regardless of the fate of their child.

What too often gets overlooked in a crisis of the missing child is the health and safety of the child, during and after the disappearance. While the worst outcome is, of course, death from murder or accident, returned youth who are sexually abused. Some female youth become impregnated by their abductor or peers they meet during their escapade. That can lead to unsafe pregnancy termination and serious health



consequences. Some youth are photographed against their will when they are put in comprising positions, engaging in sex acts, or exposing themselves. These photos or videos can then be used to blackmail the youth into not reporting the abduction and abuse, and returning to the abuser whenever he beckons. Worse, the photos and video, if uploaded to the internet, are there permanently to haunt the youth for life. Thus, one careless decision can generate the promise of a lifetime of hurt and harm for vulnerable, runaway youth.

At the macro level, the prevalence of missing children is a drain on the economy, of the familyand state resources. The costs can be enormous. There is the case of the disappearance of a 2-year-old boy in from a sugarcane plantation in Suphanburi Province in 2018. Thousands of people were mobilized to join in the search, and even a helicopter was hired to search. Machinery was contracted to dig wells and deploy divers to search underwater for the boy.[6] If one calculates the cost of all the searches that go on in the wake of a missing child, the value can be considerable – especially when one considers that these are preventable situations. Thus, one needs to compare the cost of search and rescue/recovery with the cost of preventing childhood runaways and abductions.

Managing the problem of missing children

When looking back at how the missing children cases are handled in Thailand, the management of the process is not as effective as it could be. Action tends to mirror the prevailing social trends and norms. For example, any case of a missing child that attracts news outlets and makes the headlines will also receive the greatest investment of time and resources to resolve. By contrast, any case that is not sensational will attract only pro forma response by government and the authorities. Some police may even refuse to accept a report of a missing child. They may cite an arbitrary time window for the parents/guardians to wait until 24 hours. In fact, there is no law that says that the police cannot act before a 24-hour period has elapsed. This is serious, because with each passing hour that a child goes missing, the chance of recovering them alive and unharmed

declines. Even though the Royal Thai Police command center has issued repeat official notices that instruct police stations to receive and investigate missing persons reports immediately without conditions, the police station can still choose to ignore such a report citing competing demands and priorities.

"Bus...searching for missing children," a tool for clues to missing children

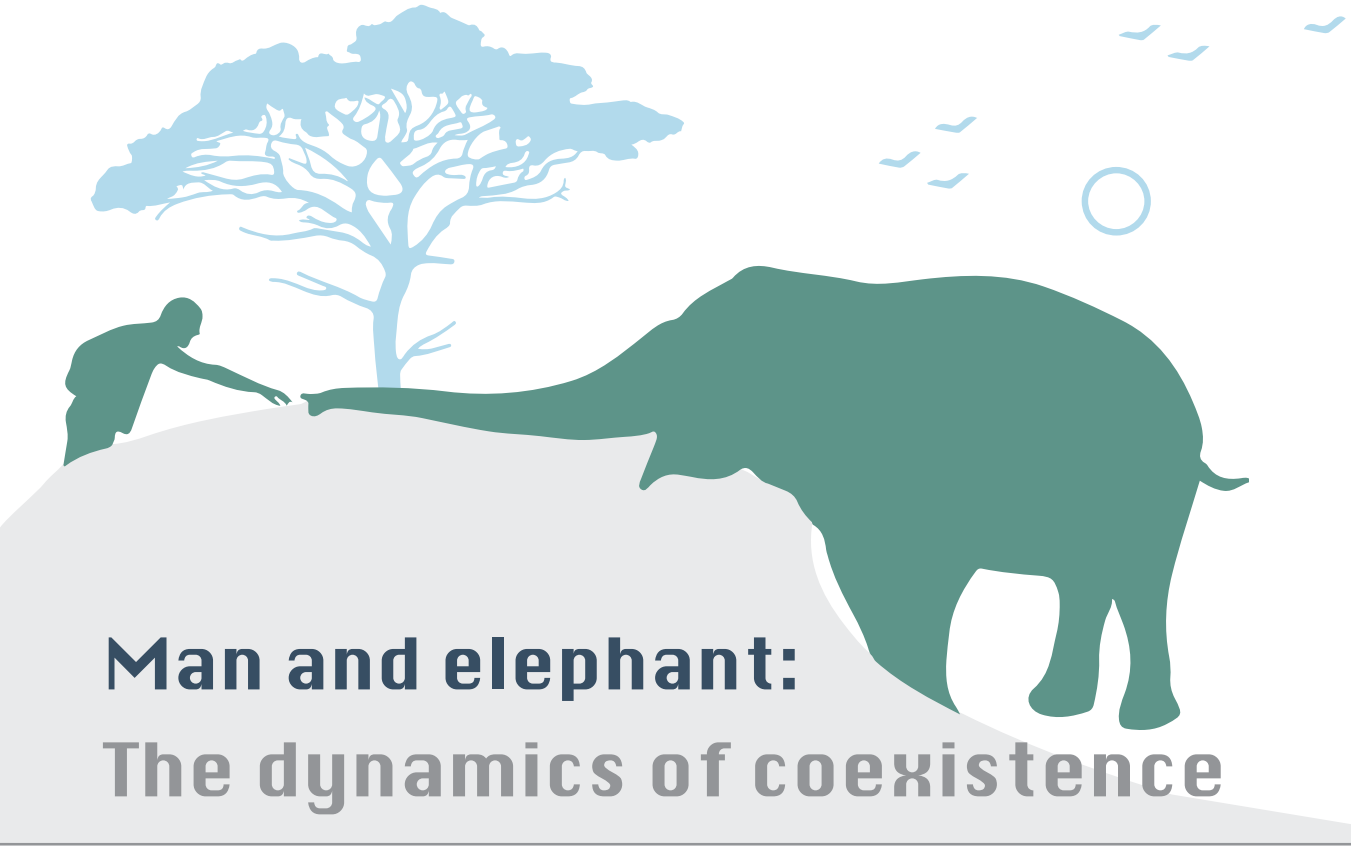
Picture: https://www.thairath.co.th/news/local/687931

The structure of the management of missing persons cases of the Royal Thai Police is in the form of a management committee which acts as a policy oversight board. However, this committee does not exert much authority, and may only meet once a year. Thus, at the operational level there is no agency with the direct mandate to investigate missing persons cases. There are only the Anti-Human Trafficking Division and the Child and Women Welfare Division which have staff to investigate cases of missing children when there is suspicion of human trafficking or a criminal offense. However, in 2015, the Cabinet approved the establishment of a committee to develop a notification and tracking system for missing persons, anonymous cases, and anonymous cadavers, to be housed in the Central Institute of Forensic Science as secretariat and lead agency. The first task is to consolidate the database of missing people, anonymous persons, and unidentified cadavers into a single database throughout the country to help match cases with evidence, and get a more accurate picture of the actual situation.[7]

In addition to the process of receiving missing persons reports, the investigating officer should coordinate immediately after receiving the report. However, one obstacle to a timely response is that there is usually only once copy of the missing person's report on file. That copy is not automatically shared with the other relevant units. This is one reason families of missing persons feel they are not getting the help they deserve, and many have complained to the media or NGOs such as the Mirror Foundation or the Pavena Foundation for Children and Women, etc., to lobby for a better response. Therefore, NGOs and the media can play a key role as an intermediary in coordinating assistance until the government can improve its systems to be more efficient and effective. Until that day, these non-government entities can continue to help perform data analysis, coordination, and fact-finding to publicize information on missing persons to help mobilize communities and society to take the problem more seriously.

Conclusion

The problem of missing children and missing people is a concern for everyone, and it is not the duty of any one agency alone. The family institution is the first line of defense to prevent this problem. But the family alone cannot always withstand external pressures that may boil over and lead youth to seek solace and love outside the home. People in the community need to play a bigger role in surveillance and prevention of child abduction and runaway. When an abnormal situation is found, the clues/leads must be reported to the relevant authorities. The society is, therefore, a key player in helping to prevent the problem of missing children and missing people. On the other hand, it is imperative that the government creates an agency with the full-time function to tackle the problem of missing children/persons. Such an agency should be staffed with persons with the knowledge and expertise in the prevention and response. There should be a systematic and reliable database. The Royal Thai Police should assign an agency to handle all missing person cases like in overseas. In addition, Thailand should enact laws that directly address the management of the missing-persons problem. There needs to be clear specification of roles, responsibilities, authority, and guidelines for the relevant agencies. There should be a clear process for dealing with missing persons, anonymous persons, and unidentified cadavers since they are parts of the same problem.



Man and elephant:
The dynamics of coexistence

"...Almost every night, I had to keep wild elephants from invading my land in to eat corn. In the morning I had to go to work on the farm. I rarely sleep. It's been three or four months now. Last month, someone was hurt by one of these intruder elephants..." The murmur of people near the wild elephant sanctuary. Today, the sound echoes again. Currently, there are wild elephants living outside of the forest in 51 out of 71 forest preserves, accounting for 71 percent of the total conservation area.

In the past, humans considered elephants to be useful animals. Thai kings transported elephants for use by the army. Villagers rode elephants as their vehicles. Foreign investors brought elephants as bribes to get forest concessions. As a result, elephants have become part of the way of life of people near natural forests in all regions of Thailand. Later, animal conservation activists pushed for laws to make elephants a protected species. However, as humans multiplied and expanded their farms, they penetrated the forest preserve area. The elephant is a large herbivorous animal that needs a wide grazing area. Thus, the intersection of man and animal is causing confrontation and loss of life and property of villagers near the forest.

In fact, it is not only Thais which faces the problem of wild elephants eating crops and disturbing people. Other countries, such as Cambodia, Myanmar, Laos, Indonesia, and Malaysia also experience problems with wild elephants roaming outside the forest. It is not just the Asian wild elephant (*elephas maximus*) that strays out of the forest; the African elephant is also prone to confrontation with human settlements. Therefore, the problem of wild elephants and other wildlife bumping up against humans has become a global environmental and conservation issue that affects human life, property, the local economy and the way of life of people in those areas between. The key question is this: *How can we balance the needs of wild elephants and people today?*

Elephant herds and humans: The situation of wild elephants in Thailand and neighboring countries

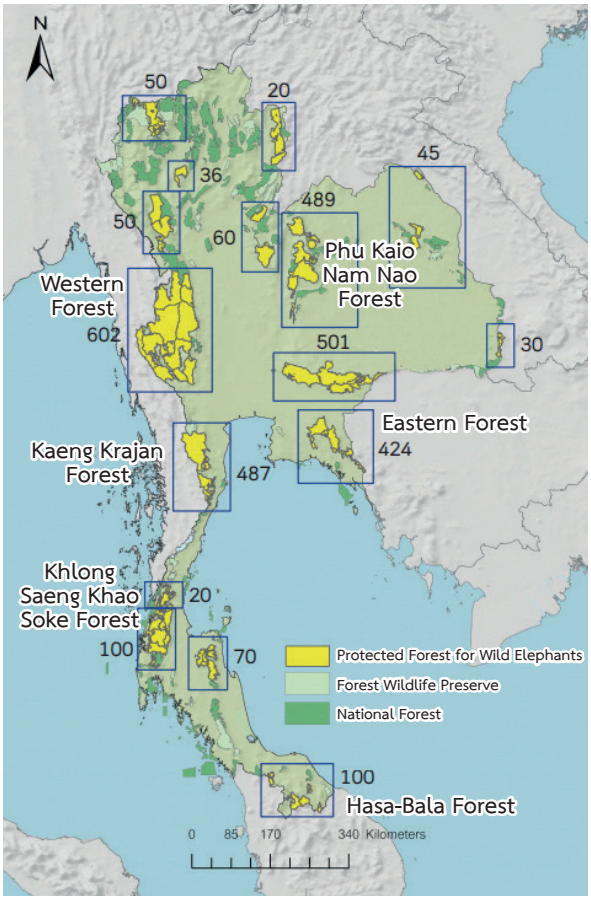
There are currently 3,000-3,500 wild elephants in Thailand which, if classified according to the International Union for Conservation of Nature's Red List of Threatened Species, the Asian wild elephant populations in 13 Asian countries are considered endangered. The threat to these animals is largely from the reduction of forest area due to the expansion of human habitation and farming of arable land until more and more agricultural areas surrounds the forest. There is also the problem of poaching of elephants in Myanmar to get their tusks and leather to make beads, necklaces, and auspicious amulets. In some countries, wild elephants are on the verge of extinction, especially in Vietnam, where an estimated 100-130 individuals remain alive.[1] As a result, a panel of experts on Asian wild elephants has classified this group of elephants as critically endangered, as the population of wild elephants in countries in Cambodia, Laos, Indonesia and Myanmar is on a steady decline.[2] (See Figure 1)

Figure 1: Number of wild elephants in Asia by country

Source: Asian Elephant Species Specialist Group (AsESG) Thailand Forum, 2017

Thailand is in a better situation given its population of wild elephants than many other countries. The forested area with the highest number of wild elephants is in western Thailand, followed by the Dong Phayayen-Khao Yai Forest, Phu Khiao-Nam Nao Forest, Kaeng Krachan-Kui Buri Forest, and forests in eastern Thailand (Figure 2). This is the result of intensive wildlife conservation, and the Thai wild elephant population has been relatively stable over the past decade. Indeed, there have been reports of elephant population increases in some protected areas, such as the eastern forest, and Dong Phayayen-Khao Yai Forest.

Figure 2: Number and distribution of wild elephants in Thailand by forest



Source: Asian Elephant Species Specialist Group (AsESG) Thailand Forum, 2017

Nevertheless, there are external pressures on the ecosystem of the elephant's natural habitat, and that may force a decrease in habitable area. There is an increasing imbalance between the human population and habitats of wild elephants since it is not possible for elephants to reduce the size of their grazing area. Increasingly, wild elephants are surrounded by human settlements and farms, thereby confining herds of elephants to ***islands of forest with no way out***. Some new settlements have been erected right on top of the routes which wild elephants have traveled for food for many generations. When parts of those routes are replaced by community farmland, dams, or roads, these elephants have to search for new places to forage in a shrinking landscape. The population of wild elephants in parts of the north, south, and northeast regions of Thailand, is less than 50 individuals, and that is not enough to sustain a lineage. The changes made to ecosystem have contributed to confrontation between men and wild elephants as well as threat to wild elephants' survival and humans' quality of life.

Confrontation between man and elephant: The threat to life, property and well-being

Conflict between people and wild elephants in Thailand is a new phenomenon where elephants are starting to forage on cropland. The first cases of this were reported 20 years ago at the Salakpra Wildlife Sanctuary, Kanchanaburi Province and Kuiburi National Park, Prachuap Khiri Khan Province. Some affected farmers went so far as to poison pineapples, which the encroaching elephants ate and died as a result. That incident created widespread public awareness of this phenomenon of confrontation between humans and elephants. After those initial cases, there were more reports over time about wild elephant encroachment on cropland in all regions of the country. At present, the conflict is becoming more violent, and people and wild elephants have suffered losses. From 2012 to 2018, a study by the

A wild elephant dies from electrocution from an electric fence in Kuiburi National Park

Thailand Research Fund found that Thailand has an increasing number of incidents involving human and wild elephant injuries and/or deaths every year. During that period, there were 25 elephant deaths due to conflict with humans, and 45 human deaths due to conflict with wild elephants. 25 percent of the human casualties were caused by startling an elephant at close range (e.g., throwing firecrackers), while nearly 72 percent of elephant deaths were caused by contact with electrified fences. The conflict between humans and wild elephants has spread to more than 43 provinces in Thailand, and the highest prevalence of violent interactions is in the eastern and western forests.[3] When looking at the Asian region as a whole, human-elephant conflict has resulted in the deaths of an average 600 people/year and 450 elephants/year, which can be considered an alarming number of casualties.[4]

In terms of the damage to agricultural crops, rice, corn, pineapple, and cassava are common targets of invading wild elephants. Elephants also encroach on langsat and durian fruit orchards in the east and south regions, and can push over and destroy the fruit trees. In the case of durian, this is a very costly proposition since one durian tree can generate 40,000 baht per year for the farmer. In addition, houses and huts near the fields and orchards may also be damaged by foraging elephants. Elephants will eat the crops planted near the house or even break into a house to eat salt, fish sauce, or shrimp

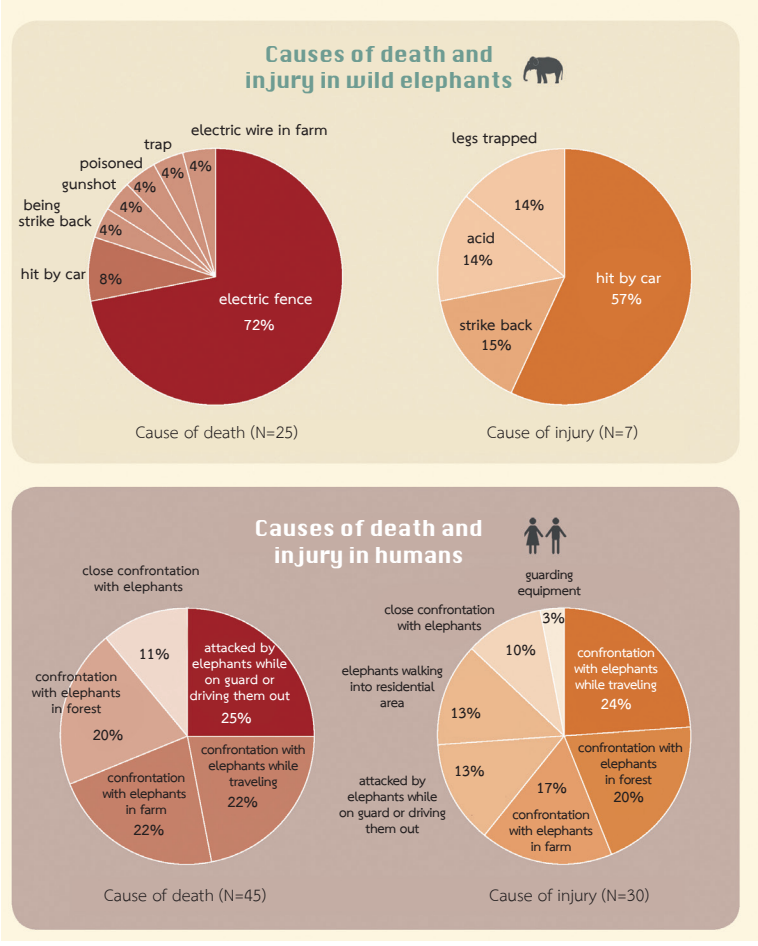
paste too. This can be especially frightening to people, especially in homes where older persons and young children live. In some areas, elephants may stay for as long as three months, foraging on community farmland. In other cases, elephants encroach during the entire harvest season, which can last up to six months. In those cases, villagers need to post 24-hour guards to protect the fields. This harassment is also affecting the physical and mental health of affected farmers who see their livelihood threatened by such a powerful force of nature. In fact, the extent of these adverse effects on the economy and health of farmers who have to confront wild elephants has not been systematically researched, studied, or monitored in Thailand.

The hidden bond: The root of the problem

Is the increase in wild elephant and crop decline the result of elephants in captivity being released? What is causing wild elephants to leave their home in the forest? These are questions that both ordinary people and scientists are asking in the search for the origin of the problem. From research both at home and abroad, there is evidence that it is **the spread of agricultural land adjacent to the forest that is both decreasing forest cover and attracting foraging elephants. For proper survival and reproduction, elephants need a grazing area of 10-100 square kilometers.**[5, 6]

These factors are pushing elephants to seek out more agricultural crops outside of the forest than in the past. However, the reasons why wild elephants leave forest areas vary according to environmental conditions and human behavior that is affecting the ecosystem. Research in Thailand and abroad has produced evidence that the probability of human-elephant conflict is higher in agricultural areas with artificial wells near forests. Elephants also have a natural attraction

Figure 3: How humans and elephants cause injury and death to each other



Picture by Pichet et al, 2018

to certain foods and plants that are commonly cultivated in Thailand such as bananas and sugar cane. The change in land condition and usage is also pushing humans and elephants closer together. As noted above, some new settlements are constructed on top of elephant migration routes. Climate change is affecting the probability that people and wild elephants with cross paths. For example, lower rainfall means elephants need a larger radius for foraging.[7]

It can be concluded that the human-dominated landscape is transforming forests into areas for agriculture and cultivation for human food production. That said, elephants and very intelligent and have the ability to adapt and learn, and can survive in proximity to human settlements despite the risks ('high risk, high gain' hypothesis). At times, it seems that the wild elephants are adapting to human activity so rapidly that they are undergoing a form of self-domestication in order to survive and reproduce. This phenomenon is being observed in many places around the world wherever elephants and humans are numerous.

Solution: The dynamics of peaceful co-existence

The Thai government, by virtue of its Department of National Parks, Wildlife and Plant Conservation has adopted a strategy to manage wild elephants in nature preserves by improving the habitat of wild elephants through creation of sustainable food and water resources in the forest areas to deter elephants from leaving. Pilot projects using this approach are being implemented first in areas where people are severely affected by wild elephants, such as the eastern forest, Phu Khiao-Nam Nao forest, and the western forest area. The human threat factor focuses on qualitative reconnaissance on wildlife presence and threat databases. The Thai National Park Service is trying out various forms of defensive lines such as semi-permanent fences, electrified fences, and ditches. In 2020, fences were built to protect wild elephants in many areas. In addition, wild elephants are monitored by attaching satellite-tracking collars to study the movement of wild elephants, to better understand their behavior, and to identify ecological factors that will lead to the design of sustainable management of forests that is suitable for wild elephants.

However, the government cannot solve this problem alone. Human-driven geosocial factors and are more complex than the knowledge of ecology and biology. In managing humans, there are issues of feelings, values, beliefs, and culture, and the historical attitudes of the people and society toward elephants. A sustainable solution will first require that the human stakeholders agree on the way forward. Unfortunately, at present, some people want to eradicate the population of elephants in Thailand to end the problem permanently. Other people love elephants as they might love a pet animal. But who will tend elephants if they are domesticated? How, will owners prevent the elephants from marauding houses and human structures and cropland?

At present, Civil Society, NGOs, academic institutions, the private sector, researchers, and villagers are joining forces to forge a solution to human-elephant conflict. The people who have been victims of wild elephant destructive behavior are also included in the brainstorming of solutions. Some villages have tried to set up volunteer groups to monitor the movement of wild elephants and deter them from coming too close to the community. Examples of these groups are the Phu Luang Forest Elephant Monitoring Volunteer Group in Loei Province, and the Kanchanadit Wild Elephant Monitoring Group in Surat Thani Province. The community is trying to create a system to control and support the wild elephants by themselves. There is also a group of people monitoring wild elephants in Khao Yai and Khao Soi Dao National Parks in Chanthaburi Province. NGOs such as the World Wildlife Fund (WWF), the Wildlife Conservation Society (WCS), and the Zoological Society of London (ZSL) have undertaken both research and development projects to create a wild elephant management system. This involves construction of a semi-permanent fence line to limit the movement of elephants outside the forest, and an early warning system from wildlife camera traps. The research involves collection of systematic data on the behavior of wild elephants together with the attitudes and behavior of people and the agencies in the area. The aim of the research is to design an optimal model of peaceful coexistence between people and wild elephants.[8] This is a participatory research process that lets the host community collect information and brainstorm approaches on how humans can live in harmony with wild elephants over the long term. Such a grassroots approach offers the promise of more sustainable solutions that are tailored to the locality.[9]

One of the key factors that communities discovered in creating a system to resolve human-elephant conflict is that the management of wild elephants must be networked. Plus, the system must create engagement with people on many levels so that many groups can join forces to share effective methods and exchange knowledge. The Phu Luang Wildlife Research Station worked with community leaders gather form

Picture: https://www.benarnews.org/thai/news/TH-elephants03132017121853-.html

networks around Phu Luang Forest to study wild elephants, and synthesize that information with more secure surveillance data. They concluded that networking has led to greater acceptance and adoption by the community of safe and peaceful methods to coexist peacefully with wild elephants.

Another finding of the research is that the changing agricultural landscape is one of the root causes of the problem. Researchers in Thong Pha Phum of Kanchanaburi Province conducted an inventory of plants that wild elephants do not eat and which are resistant to the destruction of wild elephants. They then experimented with plant modifications in small plots. The Thong Pha Phum Research Team and the Seub Nakhasathien Foundation discovered more than 20 plants that wild elephants do not eat in that area. They then proposed that farmers switch to cultivation of selected coffee and turmeric plants as cash crops which the wild elephants will not go near. Another approach was tried out by the research team in the Khao Yai National Forest to link conservation of the wild elephants with ecotourism. The researchers first collected data on the foraging area of wild elephants and wild animals outside the forest area to designate locations where tourists could safely observe these animals in the wild while keeping the animals confined to a limited area on the perimeter of the forest. This is a form of community-based wildlife tourism.

Ultimately, there has to be a balance between the needs of wild elephants and people. One project that is leading the way in this direction is the Forest Conservation and Restoration Project in Kui Buri National Forest Preserve. This is a Royal initiative in Prachuap Khiri Khan Province based on King Rama IX's work. It is like a light that points toward the heart of the solution to the problem of people and wild elephants based on academic principles and local participation. At the same time, the Phatcharasuthakachanurak Project under Royal Patronage is creating a balanced habitat for people and wild elephants. The management area is divided into three sections: 1. The elephant area; 2. The elephant resting area; and 3. The community area. The Project applies the concept of elephant shelter and buffer area to demonstrate an understanding of elephant behavior, while also focusing on quality of life of people and the welfare of wild elephants to create harmonious coexistence in a limited area of forest.

The bond between the Kui people and elephant

Picture: https://www.artofit.org/image-gallery/807833251911666913/เรื่องเล่าระหว่างทาง-กุย-ตำนานคนเลี้ยงช้าง

In the light of coexistence

Historically in Thailand, elephants were always part of the way of life of people who lived near forests in all regions of Thailand. However, with human population growth and expansion of farmland into forested areas, it was inevitable that there would be conflict between humans and wild elephants. The result has been loss of life and property for humans, while loss of habitat and life for elephants. There is still a long way to go until the problem is solved, but today there are communities, state agencies, NGOs, and researchers in various fields who are trying out strategies for sustainable solutions so that humans and wild elephants can co-exist peacefully. Research is adding to the knowledge base of elephant behavior and discovering elephant preferences and aversions. Researchers are also listening more intently to the voices of the people to define an optimal balance through innovative ecological design that takes into account elephants, people, and future climate fluctuations. The ultimate goal, which is in sight, is a land of peace and harmony between people and wild elephants.

4 Outstanding Accomplishments for Health

International praise for Thailand's response to COVID-19

Although Thailand was the first country to diagnose a case of COVID-19 outside of China in early 2020, Thailand was also able to effectively contain the epidemic in the first wave of outbreaks. This success prompted the international community to praise Thailand in 2020 as a country that has effectively dealt with the threat of COVID-19. In July 2020, the Global COVID-19 Index (GCI), a collaboration of the World Health Organization (WHO), the Ministry of Science, Technology and Innovation, Malaysia, PEMANDU Associates, and the Sunway Group ranked Thailand as the top country recovering from COVID-19 (Recovery Index) out of 180 countries/territories worldwide with an overall score of 82.27. Thailand was also ranked in the top five countries in the world for mitigating the epidemic. The GCI considers various dimensions of the response to pandemic. However, Thailand's score for the Recovery Index and the Severity Index, has declined after the country suffered new waves of spread of COVID-19, starting in late 2020. Accordingly, as of March 14, 2021, South Korea rose to the top of the GCI rankings, followed by China, Iceland, and Singapore; Thailand ranked 13.th

In addition, at the closing ceremony of the 73rd Session of the World Health Assembly, Dr. Tedros Adhanom Ghebreyesus, Director-General of WHO praised Thailand as an excellent example of how the government and society worked together to thwart the spread of COVID-19 even when there was no vaccine. This achievement is no coincidence because, over the past 40 years, Thailand has invested heavily in its public health infrastructure. There is a network of more than one million village health volunteers who monitor and manage the health situation and services at the local level. In addition, the WHO Director-General also recommend that member countries follow the example of Thailand.


Picture: https://www.freepik.com

Then, in late January 2021, the Lowy Institute (an independent academic organization for policy, economic and strategic research based in Sydney, Australia) produced a ranking of 98 countries to reflect effectiveness of their response to COVID-19. The ranking was based on a combined score across the following six indicators of COVID-19: (1) Number of confirmed cases; (2) Number of confirmed deaths; (3) Number of confirmed cases per million population; (4) Number of deaths per million population; (5) Number of confirmed cases as a proportion of the number of diagnostic tests; and (6) Number of diagnostic tests per 1,000 population. Among these 98 countries, Thailand ranked 4th with a score of 84.2, while New Zealand had the top score (94.4), followed by Vietnam (90.8), Taiwan (86.4), Thailand (84.2), and Cyprus (83.3).

“The Gold Card” Policy for treatment anywhere: Part 2 of “30 baht cures all diseases”

Picture: https://siamrath.co.th/n/187356

On October 5, 2020, the National Health Security Board approved a proposal to **“Upgrade the national health insurance system according to the policy of the Minister of Public Health to ensure that people who are entitled to participate in the universal health coverage scheme (Gold Card) can obtain essential health care from any participating provider. “** This policy was given the slogan as: **“Gold Card for treatment everywhere”,** whereby outpatients can receive treatment at participating primary care units anywhere in the Bangkok Metropolitan Region, starting from November 1, 2020 onwards. Inpatients could receive treatment from any outlet in Bangkok starting from January 1, 2021. The next phase of implementation will expand the policy to the health zones outside of Bangkok. Mr. Anutin Charnvirakul, Deputy Prime Minister and Minister of Public Health, called this 30-baht everywhere policy Part 2 of the Gold Card scheme to provide universal health coverage. The enhanced service is for general illnesses and not for critically ill patients, and the eligible services are those which can be provided by all primary care units. The Minister said that the plan, starting in Bangkok, is to cover all provinces in the country with the new policy by 2022.

In this regard, the Board has resolved to improve the health service system by simplifying the steps, and correcting various problems that hinder access to services by Gold Card beneficiaries as summarized below:

1. Patients can receive services from participating health care providers anywhere in the Gold Card system according to the policy of “30 baht, treat everywhere.” Implementation of the policy is starting with primary care services only. The policy was initially piloted in the Bangkok Metropolitan Region and the Health Region 9 (Nakhon Ratchasima, Chaiyaphum, Buriram, and Surin Provinces), starting on November 1, 2020.

2. Inpatients do not have to go back to pick up their referral slip. Formerly, Gold Card patients who were admitted to hospitals had to return (or have a relative return) to their assigned primary care facility to renew the referral for inpatient care. This was an inconvenience and potentially interrupted the need for continuous treatment and monitoring. It was particularly burdensome for patients who lived in another province. Thus, the National Health Security Office (NHSO) has changed the rules so that inpatients can continue to receive treatment in accordance with the attending physician’s determination without the need for a renewed referral. Plus, the only proof of identification is the patient’s national ID card.

3. Cancer patients can go for treatment wherever a participating facility has the capacity to treat them. The NHSO will present cancer patients with a certificate and a history (which attests to the validity of their condition) who can then process their transfer of treatment facility via one of three channels: (1) Calling the NHSO hotline (#1330); (2) NHSO application on a smart phone; or (3) Contacting the desired treatment provider directly.

4. Patients can transfer service providers immediately without having to wait 15 days. In the past, Gold Card holders had to complete a 15-day wait period while their request to change providers was processed. However, the NHSO has installed an advanced information technology system which now links participating providers in real-time so that a patient’s history and referral authorization are immediately accessible The service transfer is also possible via NHSO application.

Thai massage is listed as a World Cultural Heritage

Picture: https://www.posttoday.com/world/609069

On December 12, 2019, the 14th Meeting of the Intergovernmental Joint Committee on the Parties to the UNESCO Convention on the Conservation of Intangible Cultural Heritage was held in Bogota, Colombia. The Committee resolved to endorse and announce that Thai traditional massage ('Nuad Thai') will be added to the List of Intangible Cultural Heritage. The Thai Department of Cultural Promotion of the Ministry of Culture had proposed Nuad Thai to be considered for UNESCO recognition in 2019. Thailand joined the UNESCO Convention on the Preservation of Intangible Cultural Heritage on June 10, 2016, along with 170 member countries. "Nuad Thai" is part of the Thai heritage, and is the second intangible relic that has been registered with UNESCO, after the "Khon" drama art form, which was added to the list in 2018. As defined by UNESCO, **intangible cultural heritage** refers to knowledge, customs, traditions or practices of all forms, both international and domestic, which were created and passed down from generation to generation, whether verbally or by any other means, over an extended period of time. The heritage can be developed and changed through the process of accumulating knowledge and applying it.

The 2019 UNESCO Intangible Cultural Heritage of Humanity bulletin summarized the value of Thai massage as follows: "Thai massage is the science and art of traditional medicine which uses massage to help treat various ailments without drugs. Thai massage relies on applying pressure at various points of the body to adjust the balance and structure of the body to treat diseases that are believed to be caused by impeded blood flow. The unique form of Thai massage originated from the wisdom of taking care of people's health in an agrarian society. Skills and knowledge in Thai massage have been passed down from generation to generation and developed into a systematic body of knowledge."

"Nuad Thai" is part of the Thai way of life that has been carried on since ancient times. It is mentioned in the annals from the reign of King Borom Trai Lokanat and the reign of King Narai the Great (1656-1688). Up until the present day, there have been many adaptations of Nuad Thai, and its beneficial effects have been verified by scientific studies. Nuad Thai is now formally part of the Thai Alternative Medicine system. Nuad Thai is offered in local communities by trained practitioners, and promoted in the workplace as a stress-reduction technique. Massage for health can be found in both public and private sector service providers. Thai hospitals offer massage therapy. At present, the Department of Thai Traditional and Alternative Medicine is responsible for recording and supporting the application of Thai traditional medicine in Thai massage for health benefits. The Department has prepared a strategic plan to promote and develop Thai massage for the period of 2020-22 (First Plan). In accordance with the criteria of UNESCO, the key approach is to create a standard of Thai massage in terms of knowledge, curricula, and service systems so that the practice is accepted at the community level, by hospitals, and the health establishment, both domestic and international. Thai massage is also important for job creation and as a secondary career, while ensuring that this traditional wisdom is preserved and not lost to future generations.

ThaiHealth wins the "Nelson Mandela" award for being a global model of a health promotion organization

On January 26, 2021, the Thai Health Promotion Foundation (ThaiHealth) was selected by the WHO Executive Committee to receive the world's second Nelson Mandela Award for Health Promotion. ThaiHealth was recognized as an organization dedicated to promoting health of the population over the past 20 years. Internationally, this award is given to a person or organization that is dedicated to health promotion, and a plaque presentation ceremony will be held during the 74th session of the World Health Assembly in May 2021.

Picture: https://www.thaihealth.or.th

Dr. Suwajee Good, regional consultant for health promotion and social determinants of the WHO South-East Asia Reginal Office (WHO-SEARO) issued the following congratulatory remarks: "*Thank you to the staff of the Thai Health Promotion Foundation, network partners, Village Health Volunteers, the Healthy Community Network, Health Promotion Hospitals, and all participating health personnel that provide value to health promotion and management of health determinants. These efforts are helping to make Thai health promotion work to be recognized around the world...*"

The Nelson Mandela Award for Health Promotion was created as an initiative of a group of health ministers of WHO member states in Africa in remembrance of Nelson Mandela, former President of South Africa, who played an important role in the prevention of HIV/AIDS. WHO presented this award for the first time in 2020.

Prof. Dr. Prakit Vathesatogkit, Secretary-General of the Action on Smoking and Health Foundation Thailand and former Secretary-General of the International Health Promotion Fund Network (World Health Promotion Foundation), said that the 20-year track record of the Thai Health Promotion Foundation and its health promotion work attracted the admiration of WHO-SEARO, which wants to promote the example of ThaiHealth to other countries around the world. ThaiHealth can serve as a mentor to similar organizations.. ThaiHealth has spearheaded successful campaigns to impose taxes on harmful consumer products such as cigarettes, and regularly conducts campaigns to promote abstinence from alcohol during Buddhist Lent. ThaiHealth works tirelessly to create a health-promoting environment, including road safety and healthy diets. There are a number of countries that have successfully replicated the ThaiHealth model, and now have health promotion funds, including Malaysia, Tonga, Mongolia, South Korea, Vietnam, and Lao PDR.

In this regard, ThaiHealth was established in accordance with the Health Promotion Foundation Act, B.E. 2544 . Through its public awareness campaigns and community-based interventions, ThaiHealth has been able to reduce alcohol and tobacco consumption, while building the capacity of Thai communities and organizations in all sectors to promote health education and research for health promotion. ThaiHealth supports over 2,000 health promotion projects and activities each year, covering a wide range of health issues, such as tobacco and alcohol control, road safety, healthy food consumption, and promoting physical activity, among many others.

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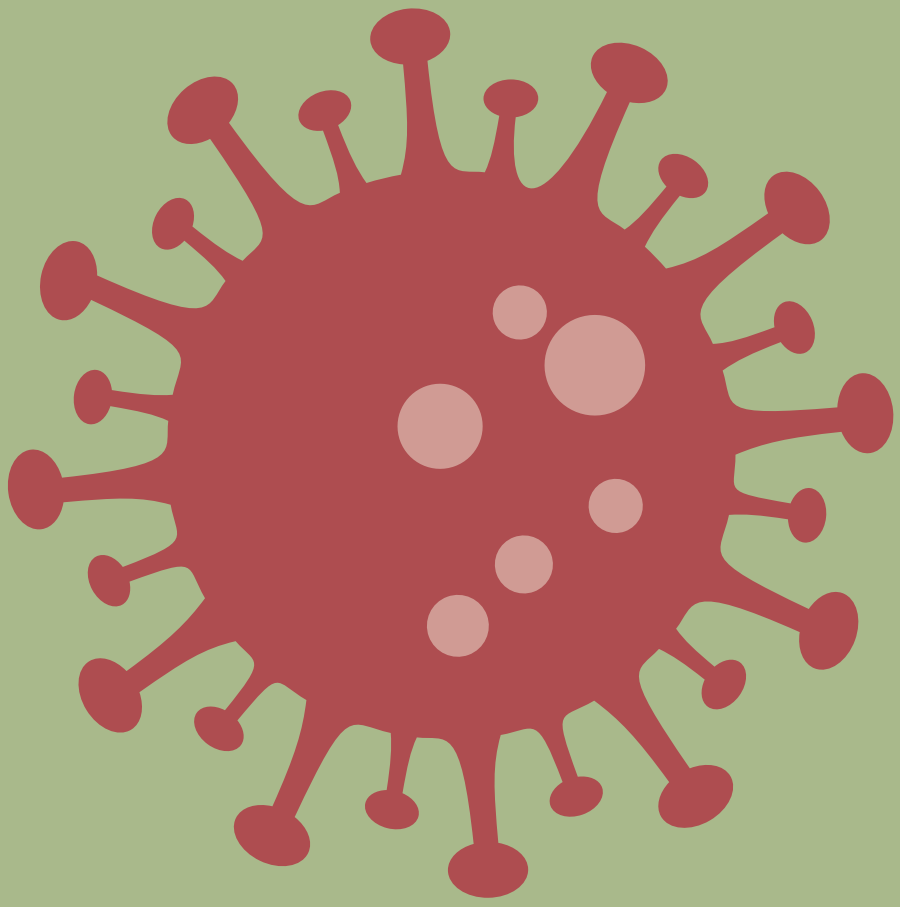
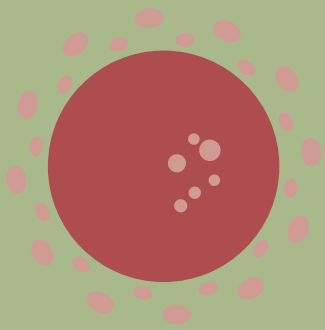
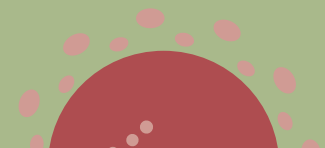




COVID-19

The Virus that Shudders the World



The Magga, one of the Four Noble Truths,

and at the "Heart of Buddhism"

consists of:

***Samma ditthi* (right view), *Samma sankappa* (right thought),**

***Samma vaca* (right speech), *Samma kammanta* (right conduct),**

***Samma ajiva* (right livelihood), *Samma vayama* (right effort),**

***Samma sati* (right mindfulness),**

and *Samma smadhi* (right concentration).[1]

It should be noted that the Eightfold Path begins with Samma ditthi (right view) since it is an important starting point. If Ditthi (in Pali) or theory (in Sanskrit) is incorrect, it tends to lead to mistakes, failures, and can create problems.

The sudden emergence of the COVID-19 epidemic that has affected nearly every country, simultaneously, around the world, including Thailand throughout the year 2020, is a good example of this Noble Truth. A clear example is the United States, which is the most advanced country in terms of science, technology, innovation, and economy, but it turned out to be a country where the epidemic was most severe. The US has had the highest number of COVID-infected people and the most deaths because of the leader's Miccha ditthi (false view) and using Miccha ditthi in problem solutions. Meanwhile, COVID-19 struck Thailand just as that country was struggling to emerge from the "Middle income trap" and the country's politics are still in a whirlwind of a "vicious cycle" that alternates between dictatorship and unstable democracy. Yet, by contrast to others, more advanced countries, Thailand was able to contain and prevent first wave of the spread of COVID-19 effectively. Thailand became a model for the world, and was recognized and praised by the Director-General of the World Health Organization (WHO). Even if Thai politics and administration are weak and the economy is not strong, the country has been able to avoid the severe health impacts of the pandemic. For most of 2020, Thailand ranked at or near the top of countries in the world for indices of containment of the COVID-19 epidemic. However, the weakness of the political and administrative system has led to a new wave of epidemic spread at the end of 2020.

Situation of the COVID-19 epidemic

1.1

From the initial spark to a global pandemic

Although there is no definitive proof of the origin of the pandemic, and there has been fake news, it is widely accepted in the academic community that the emergence of COVID-19 in its present form occurred somewhere in Wuhan City of Hubei Province, in the People's Republic of China. The city has a population of about 11 million, with the following sequence of important events:[2]

31 December 2019

China officially announced and reported the outbreak of severe pneumonia of unknown cause to the WHO.

Jan 2020

4 **WHO** began sending messages via Twitter that there was an outbreak of pneumonia in Wuhan.

12 WHO announced COVID-19 as an **emerging infectious disease.**

13 Thailand reported the world's first case found outside China in a 61-year-old female tourist from China who arrived at Bangkok from Wuhan on January 8, 2020.

16 Japan reported its first case of COVID infection in a 30-year-old Chinese tourist.

17 The US began inspection measures for passengers from Wuhan at three major airports.

18 Thailand confirmed the second case from China.

20 South Korea reported their first case in a Chinese national; there was no relationship with the Huanan, Seafood Wholesale Market; COVID-19 is considered to be transmissible from person-to-person.

21 WHO confirmed that the **disease can be transmitted from person-to-person.**

27 Cambodia, Germany, and Sri Lanka confirmed their country's first case of infection.

25
- Malaysia announced its first four confirmed cases.
- Australia reported its first three cases.
- France reported its first three cases.
- Canada reported its first confirmed cases.

COVID-19 had now spread rapidly across two continents, Europe and Australia.

24
- Japan and the United States confirmed their second cases.
- Nepal confirmed its first case.
- China confirmed 444 new cases, bringing the total to 1,287, of which 237 were in critical condition and 41 died.

23 Singapore reported its first case of COVID-19 from China; Vietnam reported two new cases from China.

31 United Kingdom, Russia, Sweden and Spain have confirmed the country's first eases of infection.

29
- 4 families of infected people entered the United Arab Emirates.
- Finland reported first case.

The number of confirmed cases in China had risen to 7,711, with a total of 7,816 cases worldwide, with 170 deaths.

Mar

27 Tedros Adhanom Ghebreyesus, Director-General of the WHO, traveled to Beijing to meet with public health experts and high-ranking Chinese officials.

28 Director-General of the WHO met with Chinese President Xi Jinping.

29 An international health emergency was announced the next day.

30 WHO announced a "Public Health Emergency of International Concern (PHEIC).

31 The US declared the outbreak a public health emergency. The United Kingdom, Russia, Sweden and Spain had confirmed the country's first cases of coronavirus.

11 WHO announced COVID-19 as a "Global Pandemic."

1.2

Origin of COVID-19 in China

The onset of the epidemic in China occurred quite suddenly, sparking a variety of actions as follows:

11 Chinese scientists cracked the genetic code of the novel coronavirus, and name 2019-nCoV (2019-novel Coronavirus), as published in the GenBank.

Jan 2020

7 China declared the cause of the pandemic as a **new strain of coronavirus (novel Coronavirus).** The speed of identification of the causative virus is due to the Chinese experience of with SARS; China has sophisticated virological diagnostic potential by upgrading its laboratories to have a biosafety level 4 (BSL4), which is the highest level.

Dec 2019

8 The first patient with severe pneumonia was hospitalized; other persons were found with similar severe symptoms; the rapid increase in cases qualified the spread to be classified as an Outbreak of Severe Acute Respiratory Syndrome; an official statement and report was submitted to the World Health Organization on December 31, 2019.

23

China announced the shutdown China started Wuhan City from 10.00 am.

- started building a 1,000-bed field hospital which was completed in 10 days; 4 days later, one more field hospital with 1,600 beds, was completed in 12 days
- China mobilized help for both medical and public health personnel, medicines, and medical supplies; personal protective equipment (PPE); China's experience with the SARS outbreak in 2002 gave them know-how when they built a 1,000-bed field hospital in Beijing to cope with SARS;
- Doctors nurses and hospital staff wore double layers of PPE and were on duty for six hours each (they avoided meals and bathroom breaks for efficiency and reduced risk of infection when removing PPE); strict epidemic prevention and control measures were taken.[3]

Feb

24

China announced the closure of 13 additional cities, with 41 million people affected.

12

WHO officially called the

Coronavirus Disease-2019, abbreviated as COVID-19,

meaning it is a disease caused by coronavirus which first occurred in 2019; the pathogen is technically referred to as SARS-Coronavirus-2 abbreviated as SARS-CoV-2, which means this is a second coronavirus, which is similar to the virus that causes SARS.

Apr

8

The outbreak in China was contained in Wuhan, and China officially announced the reopening of Wuhan.

The COVID-19 outbreak in China has some important points to consider:

1.2.1 Brief details of the epidemic in China
1.2.2 Has China dealt with the epidemic properly?
1.2.3 Was the WHO action appropriate?
1.2.4 Did this epidemic occur because humans eat bats?
1.2.5 Naming of the disease and pathogen

1.2.1 Brief details of the epidemic in China

China started conducting an outbreak investigation of COVID-19 in December 2019. After reporting the outbreak to the WHO, there were the following noteworthy events:[4]

Jan 2020

1 The results of the investigation revealed that patients with pneumonia-like symptoms were connected to the Huanan Seafood Wholesale Market in Wuhan City.

3 Reported cases increased to 44.

9 First patient with this disease died from respiratory failure (Reported on January 11, 2020) in a 61-year-old man with a history of buying food at the Huanan Market.

15 Reports of a second death in a 69-year-old man who died from myocardial infarction, abnormal kidney function, and many organs were severely damaged.

19 Number of confirmed cases rose to 204, including one in Shenzhen, two in Beijing; number of deaths increased to 3.

21 **WHO confirmed that the disease could be transmitted from person-to- person; number of patients increased to 222.**

22 The number of cases was revised to 580, according to the China National Health Commission, with 17 deaths, all from Hubei Province.

23 **China announced the lockdown of Wuhan City.**

Li
Wenliang

"Warning"
of an "unexplained deadly disease"
outbreak

TEDROS
Ghebreyesus

WHO's "painful" experience

"Root"
of the outbreak was probably the Huanan Seafood Fresh Market, with the primary reservoir of the original virus in "bats."

1.2.2 Has China dealt with the epidemic properly?

In the 2002-2003 SARS epidemic, China was accused of initially "covering up" the outbreak, causing the disease to spread to Hong Kong, and then around the world.

However, the situation is not really comparable with the 2019 outbreak of COVID-19. During the two decades since SARS, China has progressed economically until it has the second largest gross domestic product (GDP) after the United States among countries in the world. China's GDP has overtaken Japan for many years. At the same time, the economic development meant that the Wuhan International Airport had flights to all parts of the globe, meaning that COVID-19 could spread silently throughout the world before anyone would notice. This is especially frightening because this is a respiratory disease, which can spread from human-to-human by direct contact, and can be spread by asymptomatic carriers.

Although China reported the outbreak to the WHO relatively quickly (i.e., since the first case was found on December 8, 2019), the outbreak was officially reported to the WHO on December 31, 2019. Still,

that speed of response must be considered fairly fast because, since the first patient was found, there must be a large enough increase in the number of cases to qualify the spread as an "outbreak." When an ophthalmologist named Dr. Li Wen Liang issued a "warning" of an "unexplained deadly disease" outbreak on social media, he was prosecuted. The outbreak cover-up was reaffirmed by the US, especially when later Dr. Li. Wen Liang contracted COVID-19 and died on February 7, 2020. This made the origin of the virus and response even more newsworthy around the world.

Indeed, although China is ruled by a single political party in what is known as "Democratic Centralism," China has a "decentralized" political and administrative system. Thus, more than half of total government budget is held by the provincial and local governments (compared to only 25 percent of the budget of local government organizations in Thailand). The initial "response" to COVID-19 was in the hands of the Hubei Provincial Government and Wuhan Municipality, and those entities may not have been adequately prepared with a sudden outbreak like this. People in the epicenter were in a dire situation, especially those infected and patients with severe symptoms. The general public and frontline clinical staff had to face a terrible threat of contracting the disease, suffering its effects, and being burdened with the cost of relatively expensive medical care.

Eventually, the central government stepped in to deal with the problem by mobilizing technical, resource, and management assistance, and announced a policy of free treatment for COVID-19 patients on January 23, 2020. That announcement coincided with the closure of Wuhan.

In sum, the fact that China reported the outbreak of COVID-19 to WHO on December 31, 2019, one day after the online warning from Dr. Li. Wen Liang, reduced the sentiment that China was deliberately concealing the outbreak from the world.

1.2.3 Was the WHO's action appropriate?

As for the WHO, when it received an official report on the outbreak of an emerging infectious disease, it had to be careful and not rush to declare a "public health emergency." That reluctance may be because of WHO's experience of abrupt warning to limit international travel in the wake of the 2002 SARS outbreak. Many airports had to close and air travel declined to a trickle causing economic and social hardship for many countries.

Public sentiment became negative toward a perceived over-reaction by the WHO. That said, the SARS epidemic ended without doing much damage: There were only 8,096 cumulative cases and only 774 deaths and, since August 2003, no more cases of this disease have been reported. In retrospect, perhaps the action by WHO to warn against international travel was a key factor in limiting spread. In any case, WHO seemed to have been chastened by the experience and, thus, had become more conservative about announcing international health emergencies.

WHO's "painful" experience with SARS was repeated with the 2009 influenza epidemic, in which the WHO declared a public health emergency. It was later implied that WHO buckled under the pressure from pharmaceutical and vaccine companies aiming

to "sound the alarm" for commercial gain. As a result, an independent committee was set up to formally investigate the allegations. The committee concluded that the allegations were baseless but, once again, this further prompted the WHO to be more cautious.

When making important decisions about disease outbreaks, WHO relies on a panel of global experts, and it can be expected that they will make a balanced decision in a timely way. Yet, WHO has to "bear the brunt" of any blow-back. In the case of COVID-19, the WHO representative in China contacted the National Health Commission of China on January 2, 2020 to offer assistance from the WHO and request more information about the infected cases. After that, an international public health emergency was declared by WHO on January 30, 2020 after confirmation of the disease outside of China, including Thailand (January 13, 2020), the United States (January 21, 2020), and France (January 24, 2020). WHO declared COVID-19 to be a global pandemic on March 11, 2020 after the disease had spread to almost every continent around the world.

The WHO declaration is therefore a step-by-step procedure. Each time there is an explanation with clear evidence and rationale. Inevitably however, the issue of WHO's action became politicized, especially in the USA, where President Donald Trump alleged that WHO was under the undue influence of China, and could not be trusted. Under Trump's orders, the US then cut its financial support to WHO and withdrew its membership from the global health organization.

1.2.4 Did this occur because humans "bizzarely" eat bats?

After COVID-19 started to spread widely throughout the world, there were panicky responses and people assumed that the "root" of the outbreak was probably the Huanan Seafood Market, with the primary reservoir of the original virus in bats. There was a doubt whether it is because some people eat bats. Then people jumped to the unproven conclusion that COVID-19 somehow made the transition from animals to humans.

In fact, humans evolved from being herbivores to eating both animals and plants (omnivorous) since ancient times. Plants store less energy than animal meat and, thus, herbivorous animals need to spend a very long time eating each day. This can be seen from the adult elephants that spend most of the day eating plants. When humans evolved to eat meat, and shifted from eating raw food to cooked food, this caused the digestive organs to adapt, shrink and, as a result, allow the brain to develop more. In addition, eating meat allowed humans to obtain energy directly from meat, reducing the time needed to find food, opening the way for building civilizations.[5]

For survival, humans consume various kinds of animals including bats. Alfred Russell Wallace's survey of the Malay Islands documents a tribe on

the island of Celebes which consumes many types of seasoned chicken, roasted, braised and fried wild boar, and **braised bat meat**, in addition to rice and potatoes and vegetables ...."[6]

Of course, eating meat would make it possible to contract animal diseases directly from prey. SARS was traced to bats (via civet cats) from a species of bat in a cave in Yunnan Province of China. Avian influenza was traced to wild fowl, with the outbreak source in Hong Kong. HIV is presumed to have spread from monkeys in central Africa to humans about a hundred years ago, then spread to the US and became the global epidemic 40 years ago.

Indeed, because humans and animals are in the same "kingdom", the "Animal Kingdom", "zoonosis" may occur from time to time. Even though humans may not eat the meat of some wild animals, it could still catch disease from animals. Eating wild animals is not the only cause of the "emerging disease" such as the COVID-19. Also, the increased proximity of humans and animals (e.g., crowded pig farms) increases the chance for a mutant strain of swine flu that changes to be able to infect humans, as in the case of the "Swine Flu" in 2009.

It cannot be said that the COVID-19 pandemic originated because of "over exploitation of the nature", or because of "globalization." Actually, COVID-19 more resembles "Spanish flu" which is a respiratory infection which can be contracted easily and silently.

When the Spanish flu broke out at the end of World War I, the world's population was about 1.7 billion people, or about 4-5 times less than the present. Also, there was no international commercial air travel at that time either. Still, the disease spread widely, and was much more severe and deadly than COVID-19, causing about 500 million cases and about 50 million deaths. The world experienced 2-3 waves of the disease that lasted about three years before subsiding. The virus that causes Spanish flu never disappeared, but mutated to a more benign form and has become seasonal, and only occasionally epidemic in nature. Changes in human behavior do not necessarily cause these pandemics. Instead, it is a random mutation of the pathogen, that makes it suddenly more contagious for humans.

It can be assumed that these animal-borne pathogens will continue to arise and infect human populations with varying degrees of lethality. Thus, global society can never let its guard down since the threat will persist indefinitely.

1.2.5 Naming of the disease and pathogen

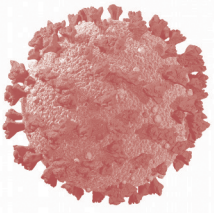
The origin of the "Spanish" flu epidemic during 1917-1919 is believed to actually have been in the United States and spread to Europe by US soldiers who fought in the late WWI.[7] The disease then spread to warring countries, including Germany, England, France and Italy, who tried to cover up the epidemic so as not to discourage the troops or encourage enemies. In WWI, Spain had declared her neutrality and there was no need to hide the spread of the disease in that country. Thus, that epidemic was named the "Spanish Influenza." This is also a misnomer for another reason: The pathogen which causes the Spanish Influenza was first thought to

be a bacteria *(Haemophilus influenzae)*. Later, it was found that the true cause was a virus, thus naming Influenza Virus; *Haemophilus influenzae* was believed to have found in patients only as complications of the disease.

The 2009 Swine flu epidemic was traced to Mexico, and occasionally referred to as "Mexican Flu." Naming these pandemics by the presumed country of origin creates an unreasonable "stigma" for the country and its people. In fact, these pathogens can arise anywhere in the world today. However, it is important to determine the origin so that the mechanism the virus uses to seed a pandemic can be understood in order to develop prevention measures. However, as long as global society continues to coin stigmatizing names for these viruses means that countries may be inclined to conceal to emergence of an epidemic in the initial stages when aggressive prevention and transparency are of paramount importance in controlling spread.

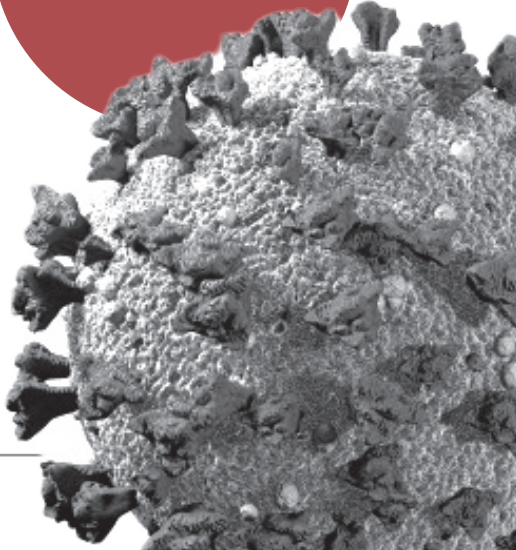
Based on this principle, the WHO, via its panel of experts, has an academic naming convention to reflect the causative agent and year of disease. Thus, the disease was named Coronavirus Disease-2019, with the abbreviation as COVID-19. And the pathogen that causes it is named Severe Acute Respiratory Syndrome-Coronavirus-2, with the abbreviation as SARS-CoV-2.

The discovery that the COVID-19 virus is genetically similar to the SARS virus allowed scientists to expand their knowledge in testing, treatment and prevention, especially in vaccine research and development. There was no medicine that could prevent or cure the COVID-19. Chinese scientists also tried treating SARS with an HIV drug (Lopinavir-Ritonavir), but that was only partially effective.



Naming the disease
in order to reflect the pathogen and year of the disease emergence

COVID-19



02

Control and prevention of the epidemic

In controlling a disease outbreak, it always stats with indentifying its cuase and appropriately deals with it. Recent advances in science have shown that, effectively counteracting pathogens requires knowledge of molecular biology. That expertise helped China quickly determine that the causative agent of the new disease was a coronavirus. At the heart of controlling this fast-spreading disease was opening the door for scientists around the world to participate as collaboratively as possible. Chinese scientists first sequenced the genetic code of the COVID-19 virus, and then put that information in the public domain to help with the development of therapies and vaccines.

2.1

Disclosure of the genetic code of the pathogen

It is fortunate for mankind that the outbreak first occurred in China. That is because China has great progress in sciences, technology, economy and society. Furthermore, with the stable political situation, the Chinese leader can remain in power for life, removing the two-term limit on the presidency.

Advances in science and technology, especially in medicine and public health, enabled China to detect and confirm the cause of the new disease quickly. They announced this discovery publicly on January 7, 2020, and the genetic sequence of the virus was logged into the World Genetic Code Bank as 2019-CoV on January 11, 2020.

Identifying which pathogen causes a disease must follow Koch Postulates, which consists of four principles: (1) The agent must be shown to be

presented in every cause of the disease by isolation in prime culture; (2) The agent must not be found in cases of other disease; (3) Once isolated, the agent must be capable of reproducing the disease in experimental animals; and (4) The agent must be recovered from the experimental disease produced.

These principles were developed by F.G. Jacob Henle, modified by Robert Koch in 1877, and expanded again in 1882, hence the formal name "Henle-Koch Postulates."

China quickly decided to release the genetic code for the pathogen, and that was the right decision academically, economically, socially, and ethically from a humanitarian standpoint, because it allowed the world to start inventing tools and reagents to rapidly diagnose infection, and develop therapies and vaccines. That transparency enabled organizations and businesses to take immediate action on all fronts to combat the virus. Countries quickly developed a diagnostic reagent and eventually produced a range of vaccines that are licensed for emergency use. The speed in developing the COVID-19 vaccines was remarkable. From January 11, 2020, it took just less than six months for the development and authorization of the first vaccines. In June 2020 China was the first country to begin vaccinations (with CanSinoBIO), followed by Russia in August 2020 after only phase 2 testing in humans (Sputnik-5 vaccine). The UK was the first country in the West to approve a vaccine (Pfizer-BioNTech), and the first recipient was Margaret Keenan, age 90 years, on December 8, 2020.[8]

In fact, the discovery of pathogen and the genetic code of pathogen is a valuable intellectual property. Such was the case with the discovery of the virus that causes AIDS by French scientist Françoise Barré-Sinoussi together with Luc Montagnier of the Pasteur Institute. This led to a lawsuit with Robert Gallo of the US Institute of Virology questioning who first discovered the virus, and prompting the governments of two countries, France and the United States, to mediate a joint-ownership declaration and sharing of the patents and royalties that resulted.

China must have foreseen that the "value" of a pathogen discovery patent and its genetic code would be incomparable with the "value" of the discovery for the knowledge base of mankind. Importantly, China was also aware that if it did not promptly reveal its discovery, then some unscrupulous scientists in a developed country would soon claim credit for the discovery.

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2.2

Principles and methods on controlling the epidemic

Buddhism is all about the human condition and solutions to disruptions to tranquility and equilibrium. This wisdom is encapsulated in the Four Noble Truths, namely Dukkha, Samudaya, Nirodha, and the Magga: (1) All beings experience pain and unhappiness *(dukkha)* during their lifetime; (2) The origin *(samudaya)* of pain and misery is due to a specific cause; (3) The cessation *(nirodha)* of pain and suffering can be achieved; (4) By following the "Eightfold Path."

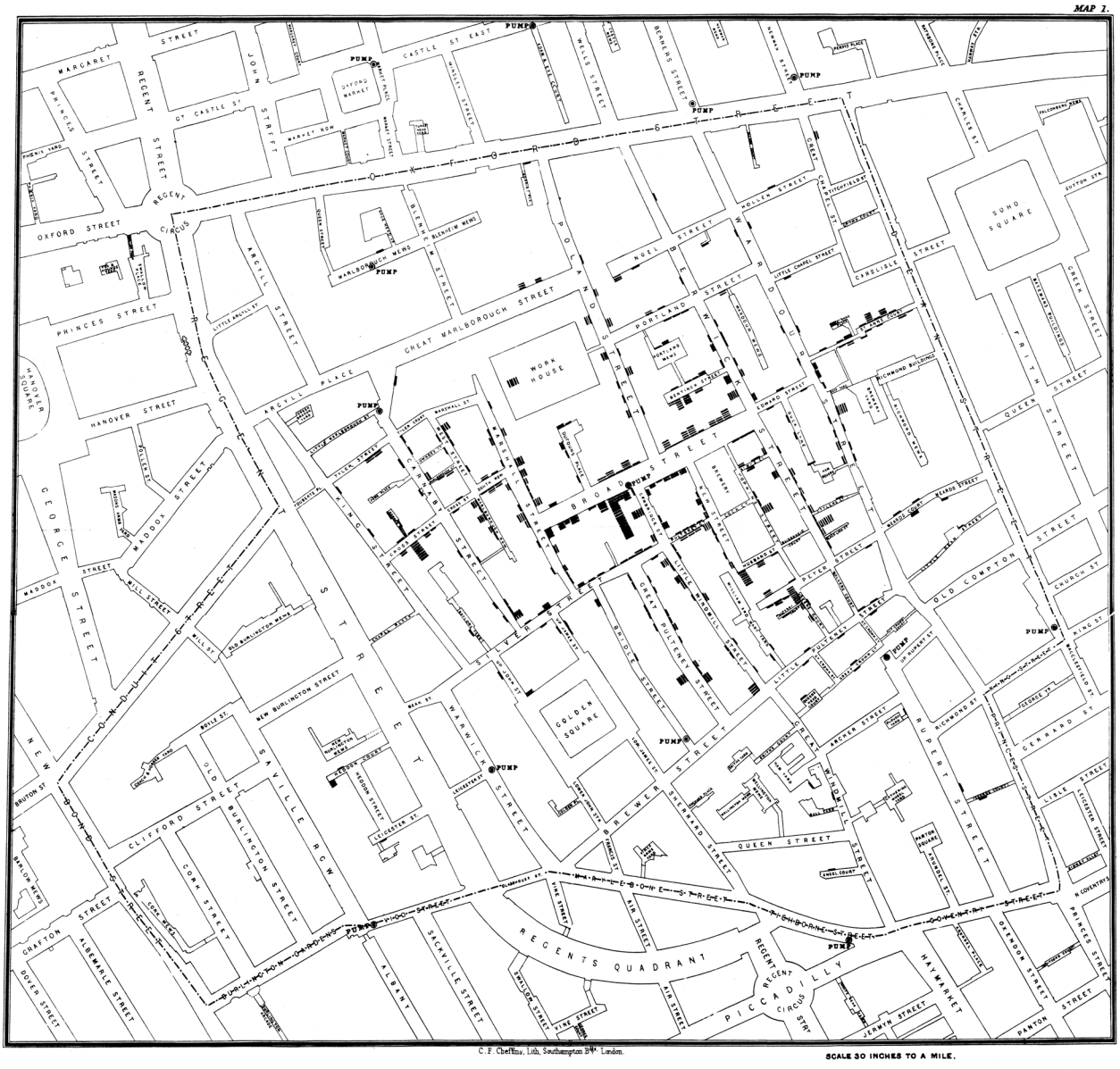
Humans have a long history in combatting disease and epidemics. An important milestone in overcoming epidemics was the discovery of "Germ Theory" by three prominent scientists: (1) Louis Pasteur, who discovered that microbes cause disease and discovered an effective rabies vaccine; (2) Joseph Lister, who discovered antiseptic properties of carbolic acid, and (3) Robert Koch, who was able to use a microscope to visualize the pathogenic microorganisms and is the theorist behind the "Koch's postulates."

Another important epidemiological milestone was the finding by John Snow about the origin of the cholera epidemic in the Soho area of London in the mid-19th century. Snow deduced that the spread of cholera did not occur in the form of "random" or "homogeneous distribution," but instead was related to certain determinants, such as the water supply stations with different disinfection properties. Snow's discovery in 1854 helped to end the cholera epidemic which was killing about 200 persons per day and 600 in total. Snow used the method of mapping sources of transmission and, in that respect, he is considered the "father of epidemiology" (Picture 1).

Discovery of disease vectors, rats for example, were found to be important carriers of the plague. That discovery is invaluable to management of sanitation and cleanliness. The discovery that mosquitoes carry malaria led to a variety of treatment strategies and structural preventive measures. The discovery of the different stages of transmission of disease led to the creation of a quarantine system, which was initially applied to the control of ships before permitting them to dock. Initially, a 40-day quarantine was required and, hence, the term comes from the Latin word *quarantena*.

Discovery of the world's first safe and effective vaccine was made by Edward Jenner for smallpox. That achievement led to efforts to find vaccines against other scourges such as rabies, plague, diphtheria, whooping cough, and tetanus. The discovery of the first antibiotic, penicillin, brought the world into the modern drug era, and antibiotics are then an important tool in the fight against almost every epidemic.

Important experience in epidemic control and prevention is the cornerstone of infectious disease control principles and methods. Such was the success in eliminating smallpox. The fight has continued to overcome emerging diseases such HIV, bird flu, SARS, MERS, and the 2009 swine influenza and, from that experience, it is possible to summarize the lessons, principles, and methods for controlling the outbreak of infectious diseases, especially emerging diseases, as follows:



Picture 1: John Snow's 1854 Map of the London Soho Cholera Outbreak
Source: https://commons.wikimedia.org/wiki/File:Snow-cholera-map-1.jpg

2.2.1 There needs to be a clear definition of a disease or outbreak as to whether it is an existing disease that has returned to become epidemic (re-emerging disease) or a new pathogen (emerging disease), followed by the need for clear guidelines for diagnosing patients accordingly.

The definition of "patient" is: (1) Suspected case, that refers to a patient with symptoms and history of exposure; (2) A probable case is defined as a patient whose symptoms and history meet the definition, and the results of clinical investigations such as X-rays, blood tests, etc., are supportive; and (3) Confirmed cases are those that are probable and pethagen or its fragments are deteced.

2.2.2 Principles of proactive disease control

This refers to early detection or early recognition, and prompt response to prevent widespread outbreaks before spread becomes difficult to control or uncontrollable.

The degree of contagion of a pathogen is the main determinant of speed of spread. This helps judge whether it spreads easily and how quickly it must be controlled.

The rate of transmission from person-to-person for each disease is different, depending on the route of transmission, and certain properties of contagion. Diseases that spread most rapidly are those that are transmitted through the respiratory system, especially when carriers have no symptom or mild symptoms and can travel and mix with groups of people. The rate of spread of a pathogen is given the measure called the "Reproduction number," and abbreviated as "R zero" (zero not the letter O). R0 refers to how many susceptibles an index case will infect on average. When the value of R0 is much more than 1, then transmission will continue widely.

The main principle of epidemic control is to stop the epidemic in the narrowest circle of transmission possible. Individual prevention involves limiting contact to as few people as possible. The next step is to control furthermore contacts of cases. However, if the circle of transmission becomes too large, then it is more and more dificult to control community spread.

Initially, COVID-19 spread rapidly and widely in the US, Italy, Iran, England, India, etc., and the first victims to succumb were older persons and those with underlying conditions which made them vulnerable to infection and clinical illness. Initially, medical systems were not prepared for the rapid spread of this potentially fatal infection. The supplies of medical equipment, such as ventilators, were insufficient for the growing demand. People in nursing homes and those without access to critical care died preventable deaths.

2.2.3 Containment of disease

The principle of containment of disease includes the following measures: (1) Bringing patients into "isolation," which, in principle, must be an appropriate place until the pathogen disappears or the patient is no longer contagious; (2) If there is a drug or vaccine available, then these therapies must be given to people who are likely to come into contact with a patient in a specified radius, as appropriate. This principle was first developed during vaccination against smallpox to people within a specified radius; it was also applied to the administration of antibiotics to people in the proximity of a case of cholera; (3) Contact cases who may be infected should be screened for infection, and they should enter a "quarantine" facility for a period of twice the incubation period of the disease. In the early stage of an epidemic, every contact case must be traced, screened kept in quarantine, to the greatest extent possible.

2.2.4 Adequate preparation of premises and equipment for patients and contact cases

Preparation of adequate facilities and equipment for patients and contacts by forecasting need should be done according to principles, and factoring in changing circumstances. In addition to the locations, tools, equipment, and personnel, there has to be a rigorous system to prevent disease transmission in place. Personal Protective Equipment (PPE) must be provided to personnel appropriately and adequately.

03

China's battle and victory

The beginning of the COVID-19 epidemic occurred in China. The western world then called a "mysterious, suspected pneumonia," which spread rapidly. The mortality rate was quite high. Waging this disease battle and trade war against the US at the same time, China still could defeat the disease while the US faced a dismal defeat. Thus, it is interesting to study the China lesson carefully.

3.1

Situation of early outbreak and outbreak discovery

The first cases emerged around a seafood market in central Wuhan City, and that led to speculation that the virus had an animal host, mutated, and jumped to humans (animal-to-human transmission, or zoonosis).

The South China Morning Post newspaper in Hong Kong said the first patient from Hubei Province was 55 years of age, and was diagnosed on November 17, 2019. However, the first officially-reported case was a 57-year-old woman who experienced the onset of symptoms on December 10, 2019. Laboratory tests confirmed that she was infected with the COVID-19. The academic term for this individual is "Patient Zero" and is considered the starting point of the pandemic. That first case did not have a history of traveling to the Huanan Seafood Market, but subsequent patients

did have a history of going to or being exposed to that market. This led to popular – but unproven -- speculation that the source of the disease came from a species of bat that is used as an ingredient in recipes of some traditional Chinese medicines.

The Shanghai City Health Commission received samples from a patient with idiopathic pneumonia from the Wuhan City Center for Disease Control and Wuhan Central Hospital. There, it was confirmed that the disease was caused by a new coronavirus.

The heroic figure who is credited with discovering this pathogen is Zhang Jixian, Director of the Department of Respiratory Diseases at Hubei Provincial Hospital of Integrated Chinese and Western Medicine. A veteran of the fight against SARS in 2003, she was on "high alert" for such an outbreak that was not "very noticeable" until December 26, 2019, when a pair of elderly patients who lived near the hospital presented with fever and cough. The results of a computed tomography (CT scan) of the lungs showed an abnormal shadow, which was different from other known viral pneumonia patients. Dr. Zhang examined the couple's son and found similar symptoms. On the same day, a patient connected to the Huanan Seafood Market came to see Dr. Zhang and presented with a similar syndrome.

On December 28 and 29, 2019, three other patients who had been to the Huanan Seafood Market presented at the hospital with similar symptoms. The hospital then reported these cases to the municipal and provincial health offices. Public health authorities ordered the Wuhan Center for Disease Control and Jianghan Disease Control Center to work with Jinyindan Hospital, to conduct an epidemiological investigation on seven patients on December 29, 2019. Six patients were transferred to Jinyintan Hospital, an infectious disease hospital, while one patient requested not to be transferred.

On December 30, 2019, the Wuhan Center for Disease Control issued a letter notifying all hospitals in the area to report symptomatic patients. It called for reporting "all cases of pneumonia of unknown cause and correlation with the Huanan Seafood Market," and advised appropriate treatment for these patients. The reports published in the Beijing News said that the authorities were investigating the disease, with experts from the National Health Commission. However, the rumors and speculation on social media started to spread widely.

That same day the Wuhan police warned "eight people to stop spreading rumors" to prevent "spreading false news." All eight were doctors from Wuhan Hospital, and one was the ophthalmologist Li Wen Liang, who received a summons from the police on January 3, 2020.

Later, Dr. Li Wen Liang was among the first cohort of Chinese infected with COVID-19, and he died on February 7, 2020. Still, Dr Li Wen Liang is widely regarded by the public as discovering the outbreak and was lauded as a "whistleblower."

Officially, however, Dr. Doctor Zhang Zhixian and Dr. Zhang Dingyu are hailed by the Hubei provincial government as the discoverers of this emerging infectious disease outbreak.

3.2

Implementation of epidemic controls

Actions were taken in the first phase of the response, starting on December 31, 2019, when the Wuhan Center for Disease Control officially announced the outbreak of an unknown pneumonia associated with the Huanan Seafood Market.

Nearby Henan Province banned travelers from Wuhan from entering Henan Province. Later, a ditch was dug to block the road linking Hubei Province. A garbage truck was parked to block the inter-provincial road, with a sign saying *"Going home when you are sick is showing disrespect for parents."* This was actually an illegal act, and the Ministry of Transport informed the local government to remove the barrier and signs. The policy at the time was to try to contain the virus without having to close roads, keeping the internet up and traffic running, and allowing transport of essential and emergency supplies.

The following is a timeline of key events:

January 1, 2020: Experts from the National Health Commission travelled to Wuhan and the Jianghan County Public Health Office and Market Administration Bureau to order the closure of the Huanan Seafood Market. Officers and police took control of the operation on the same day. However, by that time,

COVID-19 had already spread to many provinces in China.

January 21, 2020: The government issued a warning to ban the cover-up of the disease.

January 22, 2020: The situation in Hubei Province was declared a Level 2 public health emergency.

January 23, 2020: The situation in Zhejiang Province was declared the highest level of emergency, Level 1.

The "highest level" of public health emergency declaration allowed the provincial government to fully devote its resources to control the disease, manage inspections, deploy treatments, declare epidemic zones, and impose compulsory measures restricting certain rights of the people to disseminate news and reports in order to maintain order in society.

Guangdong and Hunan Provinces announced the same measures.

Wuhan City announced the lockdown of the city.

January 24, 2020: Hubei Province and 13 other provinces declared a state of public health emergency at the highest level.

January 25, 2020: The start of Chinese New Year; many cities announced the suspension of celebrations.

The Financial Times newspaper referred to the COVID-19 epidemic as "China's Chernobyl" in the midst of a trade war with the United States, the anti-government movement in Hong Kong, and an outbreak of African swine flu which was causing pork shortages.

January 26, 2020: The government announced the postponement of the New Year's holiday until February 2, 2020. School openings were also postponed. All provinces were granted the authority to decide on the further postponement of holidays as appropriate.

Various sporting events including the selection of athletes for the Olympics were indefinitely postponed. Many international events scheduled to be held in China were shifted to other countries instead. The Miss Universe 2020 pageant, scheduled to be held on March 8, 2020, was postponed indefinitely. Tourism was suspended. The auspicious date for marriage registration on February 2 was canceled.

January 29, 2020: All provinces declared the highest level of public health emergency. The Tibetan Autonomous Region announced the same measure on that day after finding its first confirmed case of COVID-19 in a male who travelled from Wuhan to Lhasa by train during January 22-24.

3.3

Using "extreme measure" of a city-wide lockdown

Control of new infectious disease epidemics sometimes requires strong measures. This is especially true when the potential damage is huge and widespread, and there is no effective treatment or vaccine in hand. Thus, strict and air-tight measures need to be taken so that the disease can be controlled. These measures may seem "cruel" or draconian as they severely affect the way of life of the people. As in the case of the avian influenza epidemic in Hong Kong in 1997, when the virus was traced to chickens and ducks, the Hong Kong government ordered the mass slaughter of fowl in breeding/egg-laying sites before the Chinese New Year. This action was correct at the time since the virus had not yet spread outside of Hong Kong. The culling of the chicken and duck farms bought time for scientists to study, research, and create a body of knowledge on the virus. A key figure in the swift and decision action of Hong Kong was Dr. Margaret Chan, who received the Prince Mahidol Award for her work, and later the director of the WHO. Later, there was a second wave of spread Avian flu virus in 2004, which affected many countries. Containment measures changed to a focus on eliminating free-range chickens and ducks, i.e., requiring only enclosed breeding facilities. Also, effective surveillance and prevention helped to snuff out that epidemic.

Another outbreak of disease, later named Nipah virus, occurred in Malaysia, and began with the death of a large number of pigs. Later, it was found that the disease could be transmitted to humans, and was classified as an emerging infectious disease that was serious and severe. The Malaysian government took drastic measures by slaughtering all the pigs that carried the disease. It was further discovered that the original animal source of Nipah was the fruit bat. The harsh government measures contained the outbreak before it could advance further.

COVID-19 is an emerging disease that is easily transmitted from person-to-person. The rapid spread causes governments to impose "harsh containment and prevention measures." The first example of this was, appropriately, in Wuhan City where the government ordered an entire lockdown of the city. Other cities followed suit.

The city lockdown began with the closure of public transport services, government offices, entertainment venues, shops, etc. Subsequently, people were ordered confined to their dwelling.

Wuhan announced its lockdown starting on January 23, 2020, but residents were still able to leave their homes at that time. Some stores remained open until February 12, after which time leaving home was strictly prohibited. The government announced eight actions as follows:

1) Strictly close the residential area;
2) It is strictly forbidden to carry out activities that involve gatherings;
3) Strict supervision of returnees;
4) Strict supervision of public places;
5) Strict home isolation for those with symptoms;
6) Strictly control the transmission of information;
7) Strictly supervise the environment of living quarters and rented rooms;
8) Encourage everyone to strictly abide by the rules.

Housing providers were also instructed to "care for tenants and spot abnormalities. If there is an outbreak and it is not immediately reported, then legal action could be taken against the landlord or the responsible agency."

People were allowed to venture out of their domicile if they had received a license to do so, as follows:

1) One license is issued per family;
2) Each family can send one person out once every three day;
3) The license must be presented when entering and exiting the residential area.

As of February 25, 2020, more than 30,000 people in China were confirmed to be infected. On February 26, 2020, 3,387 medical staff were infected, 22 of whom died on duty.[9]

3.4

China's success[10]

From January 1 to December 31, 2020, the following is the tally of cumulative COVID-19 infections and deaths by selected countries:

	COVID (cases)	Death (persons)
USA	20,216,991	350,778
India	10,267,283	148,774
Brazil	7,619,970	193,940
England	2,432,888	72,548
Italy	2,083,689	73,604
Germany	1,710,992	33,172
China	87,071	4,634
Thailand	6,884	61

As for treatment of COVID-19, there is no drug that has been proven to be safe and effective. Only Remdesivir has been registered by the US FDA as a COVID-19 therapy, but only for emergency use, and it is not widely accepted as effective.

At the time of this report, there was no approved vaccine that is safe and effective and registered for general use. Some vaccines were registered for emergency use at the end of 2020, but they are not yet widely available to the global population due to limited quantities, and these are also limited to "emergency use only."

Based on trends of illness over the past year (2020), COVID-19 is similar to influenza. Compared to the Spanish flu pandemic, the world's population at the time was about 1.7 billion, with an estimated 500 million cases and 50 million deaths.

At that time, advances in science were still in their infancy, and the world had still not yet entered the era of globalization. Mostly, people traveled only by land and by boat. No commercial airlines existed. Thus, there were certain natural breaks that limited the potential for broader spread. Once the caseload reached 500 million cases, that may have been the "saturation point" when sufficient number of susceptibles had been infected and acquired natural immunity (herd immunity). But the virus that caused the Spanish flu pandemic has not died out completely. Instead, it is now in a more benign form and appears as "Seasonal Flu." The viral mutations are a form of an antigenic drift. But when the virus has a relatively high rate of mutation (antigenic shift), it can cause pandemics. The Spanish flu is a strain of H1N1, and the 2009 influenza was also a strain of H1N1.

At the beginning of December 2019, the outbreak of COVID-19 began. Then, WHO released an official announcement on December 31, 2019. China declared the cause of the pandemic as a new strain of coronavirus on January 7, 2020. Chinese scientists released the genetic sequence of the virus to the public domain on January 11, 2020.

January 11, 2020 was an important "milestone" as scientists could start developing drugs and vaccines to combat the virus. The vaccine trial process, which normally takes many years, was accelerated and tried in humans since March 12, 2020. The US National Institutes of Health (NIH) partnered with the Moderna Inc. was able to produce an effective candidate vaccine after only 60 days.

That said, most of the world had no therapies or vaccines to fight the spread of COVID-19 which was starting to ravage whole cities and countries. Some countries have been able to contain and prevent spread of COVID -19 even in the absence of these therapies and vaccines.

The first country to achieve this was China, and that is fitting since that is where the first outbreak erupted. China was shocked by how rapidly COVID-19 was spreading, with increasing caseloads from tens, to hundreds, to thousands, and tens of thousands in a very short time. Unfortunately, the first casualties of the Chinese epidemic were the clinical and health personnel who were "Front line warriors," and more than 3,000 were infected and 22 died.

As noted, China took the approach of administering "strong medicine" to contain spread by "locking down" Wuhan, a city of 11 million, and instituting other draconian measures that were, nevertheless, effective starting at 10 am. on January 23, 2020 (two days before the Chinese New Year). Public transportation, government offices and shops were gradually closed. People were prohibited from staying outside their homes if not necessary. Other effective and "amazing" measures include the following:

Announcing the construction of a 1,000-bed field hospital, with a request for permission from the municipality on January 23; it took only 60 hours, using 60 architects to complete the concept basic, and detailed design and 7,000 workers schedule to work 24 hours a day, covering an area of 33,900 square meters in the midst of the cold weather. Construction was completed in just 10 days.

The facility had to be fitted with utilities, beds, medical equipment, and supplies, with creation of infection and sterile zones which are segregated. It has to have a central air conditioning system with one-way airflow. Air is disinfected before ventilation to the outside. The floor is well waterproofed throughout an area of 50,000 square meters. There is a drainage system for both wastewater and rainwater. There is a wastewater treatment system, and wastewater is disinfected with chlorine twice before being released into the public drainage system. A parallel team of personnel from outside provided complete support of medicines, food, and other supplies. The IT system is a 5G system to support medical equipment, including medical examinations, treatment, medical records, and complete data transmission. The hospital was able to open on time on February 2, and on February 4

it was able to accommodate 1,000 beds. By February 13, the first patient recovered and returned home.

The hospital was named "Hua Shen Shan" meaning "Fire God Mountain" as a "trick" to defeat this deadly disease, i.e., "it will die in high temperature."

During the construction of the 1,000-bed field hospital, the situation clearly indicated that more would be needed. Therefore, it was decided to build another 1,600-bed field hospital on the opposite bank of the river. That was completed within 12 days, and open on February 8.

On January 23, it was announced that all COVID -19 patients were to be treated for free, and those who had paid before that could request a refund.

Throughout the country, doctors, nurses and other personnel were mobilized to help in Wuhan. Overseas Chinese in many countries around the world made donations to Wuhan.

Supplies of PPE were mobilized, such as N95 masks, goggles, hats, gloves, clothing, shoes, which must be worn in double layers to prevent infection from patients. Doctors and nurses caring for COVID patients must wear protective equipment at all times and be "on duty" in 6-hour shifts instead of 8 hours. That is because, when wearing PPE, the staff were not allowed to eat meals or go to the bathroom except in case of necessity. Applying and removing PPE must be done according to strict precautionary principles. Some nurses had to work in shifts for more than a month, and many did not have the opportunity to return home. When relatives came to visit, they had to greet each other from a distance to prevent infection.

During the first wave of COVID-19 in China, 3,000 doctors, nurses and health workers were infected, about two-thirds of whom were infected at home. Most hospital infections were in the early stages. But after rigorous, correct and thorough use of PPE, the rate of infection was reduced significantly.

Finally, after 76 days of intense "fighting" on the battlefield, China was able to declare victory by formalizing Wuhan's "re-opening" ceremony on April 8, 2020 (the number 8 is Chinese auspicious number).

After that, China was able to send aids to hard-hit countries such as Italy and Iran. On the boxes of aid items, there was a three-line poem in three languages: Chinese, English, and a local language:

We come from the same sea
Leaves from the same tree
Flowers from the same garden

Later on, China reported sporadic new COVID-19 infections, but those flare-ups were controlled quickly. China even succeeded in testing almost 10 million people in some cities. Even though there were no drugs or vaccines at the time, China was at the forefront of intensive research and development of medicines and vaccines, declaring that if they discover a safe and effective vaccine, it will be distributed to people around the world regardless of commercial interests.

Some “Pollyannas” misunderstand, and argue that the COVID-19 outbreak occurred because people are destroying or encroaching upon nature. That is a complete misunderstanding.

Italy, Iran and the UK

The 2019 novel coronavirus has no legs, no wings, and can only “float” through the air from cough and sneeze as far as two meters. But even with that short-range of transmission potential, the disease could spread widely and rapidly around the world in a few months because of asymptomatic carriers, travelling by land, water, and air.

In the period when there was no airplane, the Spanish flu was also able to travel across oceans and continents, partially fueled by the troop movements of the many nations fighting WWI.

Some “Pollyannas” misunderstand, and argue that the COVID-19 outbreak occurred because people are destroying or encroaching upon nature. That is a complete misunderstanding. The Spanish flu spread around the world in an era when the world’s population was about five times less, and travel and transportation were still much slower than today.

COVID-19 began to spread internationally from Wuhan because Wuhan is one of the busiest aviation hubs in the world, given its strategic location in China. If you look at the map of the flight routes from Wuhan City in 2019, you will see air routes to all the major cities around the world as well as Bangkok, another aviation hub of the world.

After the first wave of spread in China, secondary outbreaks occurred in Italy and Iran, where cases and fatalities soared. The situation worsened to the level that the mortuaries could not keep up with the demand since the end of February 2020.

Later, studies showed that the first case of COVID-19 in Italy occurred in December 2019. The transmission was almost certainly due to an infected passenger on one of the daily flights from Wuhan to Italy. As noted, COVID-19 had already been spreading as early as November, 2019, and China officially detected the first case on December 8, 2019. The disease had already stepped over the “natural barrier”, from animals to humans. Thus, there must have been ample time to advance to human-to-human infection. It was possible that the disease had had spread to a certain extent since November 2019. However, the evidence could be traced back only to December 8, 2019.

Since December 2019, the disease has spread for generations from 1 to 2 to 4 to 8 and increased to hundreds, thousands and tens of thousands. This made it easy to contact and spread widely.

At the time that China reported this "emerging" disease to the WHO (which was formally announced on December 31, 2019), there was no surveillance system in place to document reported cases of the disease. Thus, the first official reports of COVID-19 in Italy were not logged until around mid-February 2020, at which time the epidemic was already likely to be widespread. Once the confirmed cases were reported, and testing was done on a wider scale, the number of cases rose sharply to the hundreds, thousands, and tens of thousands in just over a week.

COVID-19 causes the most serious illness among "vulnerable groups" such as the elderly and people with underlying medical conditions such as diabetes, heart disease, kidney disease, and obesity. These are the persons at risk of becoming seriously ill, hospitalized, and dying from COVID-19.

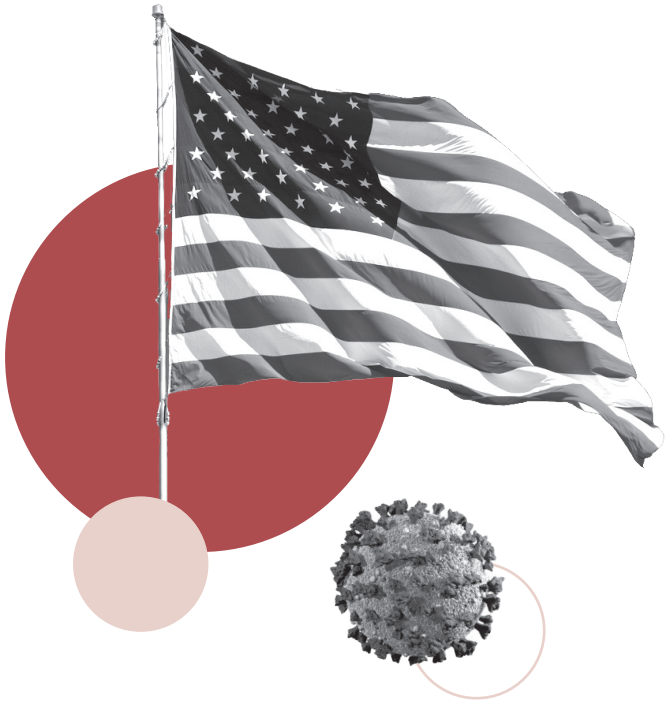
Still, **Italy** is a developed country in Western Europe, and the basic health service system is reasonably good. Hospitals, beds, ICU rooms, and medical equipment (e.g., ventilators) are available for standard health needs. But no one was prepared for the influx of infections and hospitalizations, and supplies and equipment were soon depleted.

What is more, unlike in Wuhan, China, Italy does not have the capacity to "build" a 1,000- or 1,600-bed field hospital in just 10 or 12 days. In addition, it cannot mobilize tens of thousands of medical personnel in time. As a result, many patients did not receive adequate and timely care, assistance and treatment. This situation resulted in the "rapid increase" of deaths that funeral homes could not keep up.

Iran was in a similar situation. Iran also has religious practices that may have contributed to transmission of COVID-19 among its population of Muslims.

Later, the **British** faced a similar threat from COVID-19, but it was accused of having a "deviant response" by floating a policy of letting the population acquire "herd immunity" by not keeping spread in check. The herd immunity "concept" was proposed by a health adviser to Prime Minister (PM) Boris Johnson, who had recently won national election. Initially, the PM was quite enthusiastic about such a policy. However, the results were disastrous, and the UK quickly became the country with the highest rate of COVID-19 infections in Europe and the highest mortality rate. As of December 31, 2020, there were 2,432,888 COVID-19 cases and 72,548 deaths in the UK. Totally, COVID-19 case-mortality rate rose to 2.98 percent (deaths made up 4.11 percent as of November 9, 2020). By the end of 2020, mutation caused the faster spread. The COVID-19 epidemic in the UK showed no signs of abating and led to the lockdown until the beginning of 2021.

It is noteworthy that the UK PM Boris Johnson also contracted the virus, became seriously ill and was admitted to ICU, where he had to be on a ventilator for two days. He survived despite having obesity. Perhaps that "nearly fatal experience" altered the PM's cavalier attitude toward the pandemic.



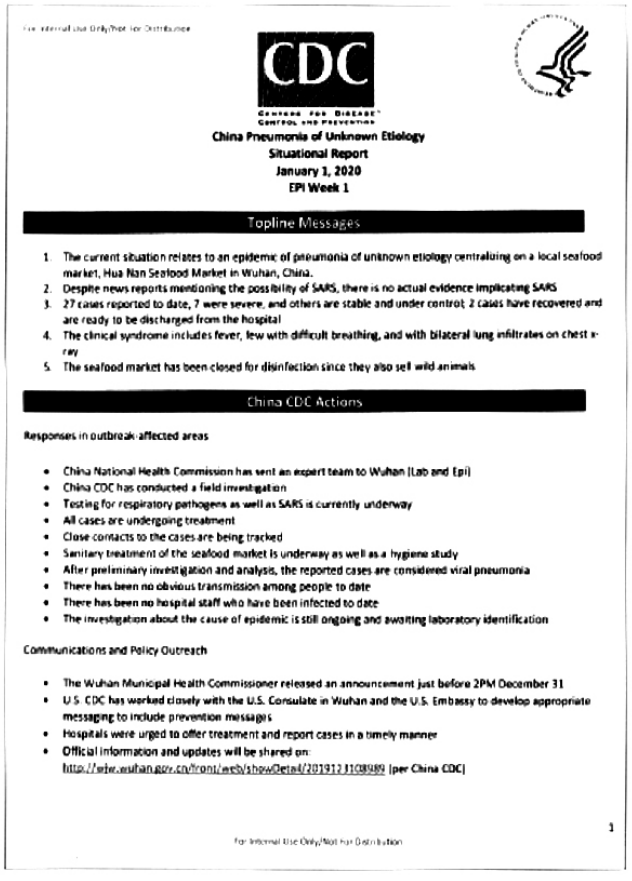
05

The United States of America

An interesting case study in the response to COVID-19 is the United States, which has some of the world's leading health and medical institutions. The National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC), are global leaders in understanding and preventing disease. So, how did the US become the country with the highest number of infections and COVID-19 deaths? The US ranked top "disgracefully" for months and this became a significant reason for President Donald Trump's loss in the election. He combatted the COVID-19 in his own ways such as announcing that there was a very effective medicine and forcing India to export drugs to the US without caring about 1,300 million Indian people that would suffer from medicine shortage. Trump pushed the hydroxychloroquine that had no effect against the COVID-19, but causing more deaths among patients.

By stark contrast, a country like New Zealand, the female prime minister has achieved great success in the fight against COVID-19, and that helped her win re-election. New Zealand was the first country that celebrated the New Year.

The United States should have led the world in the fight against the COVID-19 epidemic, the way it had with the fight against HIV, SARS, MERS, Ebola, and the 2009 flu, among other emerging diseases. Instead, President Trump acted as a "gangster" who started fights with everyone, ignoring "academic and evidence-based proof." In his thought, I am "the best," "everyone must obey me" and "You will be fired if opposing me." The mainstream media is out of his attention. He prefers conveying his "powerful" messages via online media to the world, especially his American "fan club." These reasoned for the US's failure in dealing with the COVID-19 pandemic, making the US the top highest country with infected cases and deaths for months.



CDC

China Pneumonia of Unknown Etiology
Situational Report
January 1, 2020
EPI Week 1

Topline Messages

1. The current situation relates to an epidemic of pneumonia of unknown etiology centralizing on a local seafood market, Hua Nan Seafood Market in Wuhan, China.
2. Despite news reports mentioning the possibility of SARS, there is no actual evidence implicating SARS
3. 27 cases reported to date, 7 were severe, and others are stable and under control; 2 cases have recovered and are ready to be discharged from the hospital
4. The clinical syndrome includes fever, few with difficult breathing, and with bilateral lung infiltrates on chest x-ray
5. The seafood market has been closed for disinfection since they also sell wild animals

China CDC Actions

Responses in outbreak-affected areas

- China National Health Commission has sent an expert team to Wuhan (Lab and Epi)
- China CDC has conducted a field investigation
- Testing for respiratory pathogens as well as SARS is currently underway
- All cases are undergoing treatment
- Close contacts to the cases are being tracked
- Sanitary treatment of the seafood market is underway as well as a hygiene study
- After preliminary investigation and analysis, the reported cases are considered viral pneumonia
- There has been no obvious transmission among people to date
- There has been no hospital staff who have been infected to date
- The investigation about the cause of epidemic is still ongoing and awaiting laboratory identification

Communications and Policy Outreach

- The Wuhan Municipal Health Commissioner released an announcement just before 2PM December 31
- U.S. CDC has worked closely with the U.S. Consulate in Wuhan and the U.S. Embassy to develop appropriate messaging to include prevention messages
- Hospitals were urged to offer treatment and report cases in a timely manner
- Official information and updates will be shared on: http://wjw.wuhan.gov.cn/front/web/showDetail/2019123108989 (per China CDC)

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On January 1, 2020, New Year's Day, the Centers for Disease Control and Prevention began producing a series of detailed daily reports about the spread of an epidemic through Wuhan, China, and beyond. "The current situation relates to an epidemic of pneumonia of unknown etiology [cause] centralizing on a local seafood market, Hua Nan Seafood Market in Wuhan, China," the first report states. "There has been no obvious transmission among people to date."

Picture 2: Report of the Situation of COVID-19: US Centers for Disease Control and Prevention, January 1, 2020. Note that the bulletin still refers to *"China Pneumonia of Unknown Origin"*

Source: Bob Woodward. (2020). Rage. London: Simon & Schuster UK Ltd

As a results, as of December 31, 2020, the United States had 20,216,991 reported cases of COVID-19 and 350,778 deaths, five times more than all the Americans who died in the Vietnam War.

By having capabilities, the US should have led the prevention and control the COVID-19. There are highly competent agencies and resources: The National Institutes of Health (NIH); The Centers for Disease Control and Prevention (CDC), the world's best facility for disease control; abundant resources including money and equipment; and academic institutes with globally recognized experts. The US has Dr. Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases, who keeps communicating the correct information to people.

China's first declaration of the cause of the pandemic as a new strain of coronavirus on January 7, 2020 and the genetic sequence of the virus to the public on January 11, 2020 was an opportunity for the US to grasp to optimize its available resources and address the disease. The US might succeed in controlling at early stage together with vaccine development. Instead, the US's action was to compel the public and repeatedly announce that it was the "world's number one" and would not fall into such horrible situation.

Scientific evidences proved that the COVID-19 epidemic had already invaded the US since January 2020. Trump and his followers took pride in rejecting the scientific advice of the nation's experts

and dissolved the Global Health Intelligence Unit under the US National Security Council since May 2018. Later, CDC faced huge budget cuts. Being negligent and slowly responding to the disease since the year's beginning, Trump invented a reason that he tried not to scare people. As a consequence, less than 500 people countrywide went through the COVID-19 test by CDC in February 2020 which was the "perfect period" of pandemic containment.

When China issued an official WHO statement and report on COVID-19 on December 31, 2019, and Thailand reported the first COVID-19 case outside China, the US CDC made its first official report on the pandemic publicly available (Pictures 2 and 3).

The CDC strongly promotes the epidemic control principle of "early recognition and prompt response" because the spread of pathogens can rapidly become "exponential" the more that R0 exceeds 1. Thus, early disease control is of paramount importance to prevent an outbreak from becoming "uncontrollable," especially for respiratory infections, in which pathogens multiply exponentially and spread widely and rapidly.

The CDC is also the source of the epidemic control principle: "Containment of Disease" which calls for conducting "testing and tracing" and "testing and tracking," and "isolation" for surveillance or "quarantine," as needed (Quarantine restricts people who are exposed to a contagious disease to see if they become infected. Isolation means separating infected person with a contagious disease to prevent spreading infection).

The US's early neglect of the urgency to track, screen, isolate, and quarantine has rapidly escalated the epidemic situation just as had happened in Italy. Now, the disease is penetrating deeper into high-risk groups, including the elderly, people with underlying diseases, and especially the poor without health insurance. This dynamic is causing a large number of critically ill patients to overwhelm any hospital's capacity to bear, resulting in so many preventable deaths that funeral services could not keep up. At that moment, a funeral was not only the ritual, but strict preventive measures especially wearing PPEs that still in short supply.

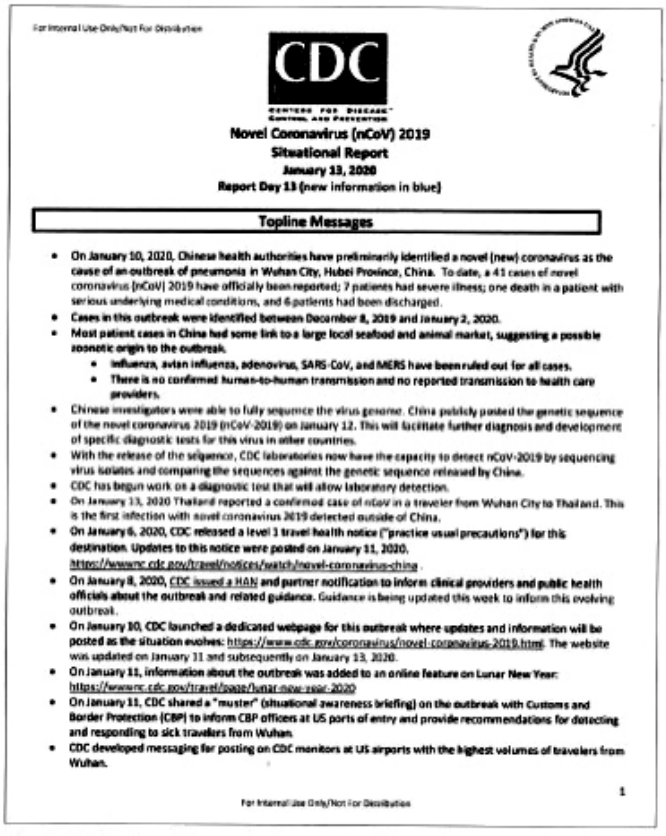
Sadly, the failure of disease prevention and control in the United States occurred after the lockdown measures in Wuhan on January 23, 2020. The world witnessed China's success and the reopen of Wuhan on April 8, 2020. Unlike the US, its supreme leader showed failures for many months. Instead of "knowing wisely" and "revising policies" to "address" the problem appropriately, Trump made up "excuses" and pinned the blame on China. He even stood up to WHO's bias and declared a stop to the subsidy and membership. However, Trump's failures later became a costly lesson that led people to 'vote against' his presidency eventually.

On November 7, 2020, Joe Biden, the soon-to-be President of the United States (at that time), gave a victory speech in Delaware where he had served as their senator for many terms (he was born in Pennsylvania). Biden swore to be the President of the United States for all Americans, whether they

are from a liberal state or a conservative state. He urged the nation to come together to alleviate problems. He failed to win once and thus knew a defeated person felt. He ended his speech with the words of his father: "Don't lose faith," while his mother encouraged Joe to "Spread the faith."

Joe Biden announced an intention to solve the COVID-19 and he succeeded it in a fast and easy way. The announcement of triumph over the disease was made on the days with over a hundred thousand deaths. On January 8, 2021, the death toll rose to about three hundred thousand. It was in winter that normally brings the influenza (different from countries in the tropical climate zone where the influenza peaks in the rainy season). Biden's inauguration took place on January 20, 2021 and the pandemic subsided as effective vaccines got approved and people received vaccination.

While Trump has been defeated by COVID-19, a similar-style president in Brazil remains in office. Now Brazil ranks third in the world for COVID-19 infections and deaths, after the United States and India. As of December 31, 2020, Brazil had reported 7,619,970 cumulative COVID-19 infections and 193,940 deaths. By contrast, New Zealand, which practiced strong control measures from the start of the pandemic, has reported only 1,626 COVID-19 infections and 25 deaths. Taiwan is another example with a strong and effective response to COVID-19. Only 577 Taiwanese were infected, seven died, and the female president, Tsai Ing-wen, was overwhelmingly re-elected. Taiwan is also extremely quick to react when any new cases of COVID-19 are reported. Strict measures and tight control during the pandemic in 2020 demonstrates the success of Taiwan.



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CDC

CENTERS FOR DISEASE CONTROL AND PREVENTION

Novel Coronavirus (nCoV) 2019
Situational Report
January 13, 2020
Report Day 13 (new information in blue)

Topline Messages

- On January 10, 2020, Chinese health authorities have preliminarily identified a novel (new) coronavirus as the cause of an outbreak of pneumonia in Wuhan City, Hubei Province, China. To date, a 41 cases of novel coronavirus (nCoV) 2019 have officially been reported; 7 patients had severe illness; one death in a patient with serious underlying medical conditions, and 6 patients had been discharged.
- Cases in this outbreak were identified between December 8, 2019 and January 2, 2020.
- Most patient cases in China had some link to a large local seafood and animal market, suggesting a possible zoonotic origin to the outbreak.
  - Influenza, avian influenza, adenovirus, SARS-CoV, and MERS have been ruled out for all cases.
  - There is no confirmed human-to-human transmission and no reported transmission to health care providers.
- Chinese investigators were able to fully sequence the virus genome. China publicly posted the genetic sequence of the novel coronavirus 2019 (nCoV-2019) on January 12. This will facilitate further diagnosis and development of specific diagnostic tests for this virus in other countries.
- With the release of the sequence, CDC laboratories now have the capacity to detect nCoV-2019 by sequencing virus isolates and comparing the sequences against the genetic sequence released by China.
- CDC has begun work on a diagnostic test that will allow laboratory detection.
- On January 13, 2020 Thailand reported a confirmed case of nCoV in a traveler from Wuhan City to Thailand. This is the first infection with novel coronavirus 2019 detected outside of China.
- On January 6, 2020, CDC released a level 1 travel health notice ("practice usual precautions") for this destination. Updates to this notice were posted on January 11, 2020. https://wwwnc.cdc.gov/travel/notices/watch/novel-coronavirus-china .
- On January 8, 2020, CDC issued a HAN and partner notification to inform clinical providers and public health officials about the outbreak and related guidance. Guidance is being updated this week to inform this evolving outbreak.
- On January 10, CDC launched a dedicated webpage for this outbreak where updates and information will be posted as the situation evolves: https://www.cdc.gov/coronavirus/novel-coronavirus-2019.html. The website was updated on January 11 and subsequently on January 13, 2020.
- On January 11, information about the outbreak was added to an online feature on Lunar New Year: https://wwwnc.cdc.gov/travel/page/lunar-new-year-2020
- On January 11, CDC shared a "muster" (situational awareness briefing) on the outbreak with Customs and Border Protection (CBP) to inform CBP officers at US ports of entry and provide recommendations for detecting and responding to sick travelers from Wuhan.
- CDC developed messaging for posting on CDC monitors at US airports with the highest volumes of travelers from Wuhan.

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The CDC Situational Report for January 13 alerted officials that "Thailand reported a confirmed case of nCoV in a traveler from Wuhan City to Thailand. This is the first infection with novel coronavirus 2019 detected outside China."

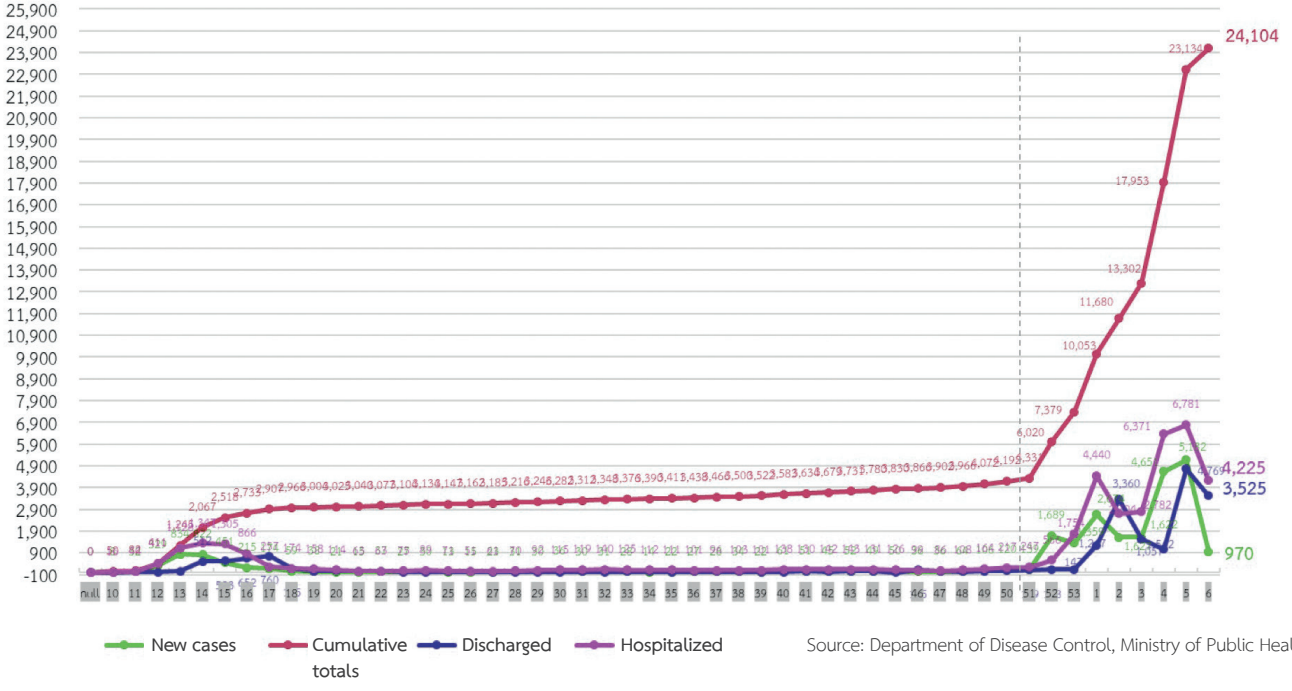
Picture 3: Report of the Situation of COVID-19: US Centers for Disease Control and Prevention, January 13, 2020. Report of the first case of this emerging disease in Thailand, known as Novel Coronavirus (nCoV) 2019

Source: Bob Woodward. (2020). Rage. London: Simon & Schuster UK Ltd., page 23

06

The Case of Thailand

COVID-19 infection in Thailand by new cases, cumulative totals, discharged cases and hospitalized cases, as of February 11, 2021



Source: Department of Disease Control, Ministry of Public Health

When China officially reported the COVID-19 outbreak on December 31, 2019, Thailand started making preparations the next day, January 1, 2020, and began "monitoring" arrivals at four international airports starting on January 3. The sequence of important events is as follows:

Jan 13, 2020 Thailand announced the first confirmed case of COVID-19 infection who was a Chinese woman visiting from Wuhan and the first case of COVID-19 in the world outside of China

Jan 22, 2020 The Ministry of Public Health (MOPH) announced an upgrade of prevention to occur around the time of Chinese New Year's festival.

Jan 27, 2020 The Prime Minister set up the Prime Minister Operations Center (PMOC) to deal with the disease situation.

Jan 30, 2020 WHO declared a "Public Health Emergency of International Concern (PHEIC)."

Jan 31, 2020 Thailand diagnosed the first case of domestic spread of COVID-19 in a Thai taxi driver who had taken Chinese passengers on trips in Bangkok.

Feb 2, 2020 Rajavithi Hospital announced the use of the HIV drug (Lopinavir-Ritonavir) with one COVID-19 patient. China also tried this therapy with COVID-19 patients with mixed results.

Feb 4, 2020 Start of the "big cleaning week;" 138 Thais who had gone through quarantine in Wuhan returned to Thailand.

Feb 14, 2020 A Thai medical worker was infected. The Director-General of the Department of Health recommended the use of cloth masks.

Feb 20, 2020 The Prime Minister met the preparatory committee to control the epidemic, announcing guidelines for the campaign to "separate, stop, avoid, close."

Feb 26, 2020 The MOPH declared COVID-19 a dangerous communicable disease according to the Communicable Diseases Act of 2015.

Mar 2, 2020 The National Health Security Board included COVID-19 treatment in the benefits package for the National Health Security System (Gold Card).

Mar 4, 2020 The MOPH issued an announcement that COVID-19 was an emergency illness, and cases could seek medical treatment in any medical facility.

Mar 5, 2020 The MOPH announced the list of countries that were dangerous communicable diseases zones.

Mar 6, 2020 The MOPH, together with relevant agencies, organized a quarantine system for workers returning from South Korea. The term "State Quarantine" began to be used. Boxing matches were held at Lumpinee Boxing Stadium which were identified as the epicenter of a COVID-19 outbreak (cluster) with more than 4,500 people at risk.

Mar 7, 2020 The cumulative number of infected people around the world reached 100,000.

Mar 11, 2020 WHO declared a global pandemic; the Thai government banned the export of sanitary masks after fears of domestic shortages.

Mar 12, 2020 The Thai government established the "Centre for COVID-19 Situation Administration (abbreviated in Thai as CCSA).

Mar 16, 2020 Buriram Province announced the closure of the city to control the disease.

Mar 17, 2020 The Cabinet issued a directive to close schools, and cancel Songkran festivities; people were urged to consider working from home between March 18-31, 2020.

Mar 19, 2020 Deans of many medical faculties called on the government to implement lockdown measures to keep people at home.

Mar 21, 2020 Bangkok announced the closure of 26 types of places, causing a large number of people to return to the family home in the provinces, causing "more population movement."

Mar 23, 2020 The Thai Ministry of Interior ordered the closure of 18 border checkpoints in 17 provinces across the country.

Mar 24, 2020 The government announced the Royal Decree on Public Administration in Emergency Situations, effective from March 26 – April 30, 2020.

Mar 25, 2020 Total COVID-19 infections reached 400,000 people worldwide; Thailand opened a field hospital at Thammasat University, Rangsit Campus; but very few people needed to be admitted.

Mar 26, 2020 Closure of the Bannang Sata Hospital, Pattani Province because of an infection in the hospital; many hospital staff and personnel had to enter the quarantine system; thus, there was a shortage of staff; staff from nearby hospitals came to help substitute for those in quarantine.

Mar 31, 2020 The State Railway of Thailand announced the suspension of 22 commercial trains from April 11, 2020.

Apr 2, 2020 The government announced a curfew as part of the Emergency Decree.

Apr 5, 2020 The Ministry of Interior ordered all provinces to prepare quarantine facilities in their province.

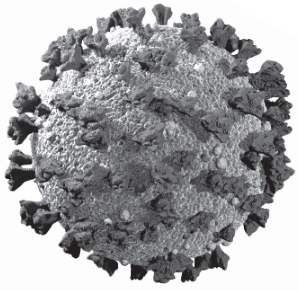
Apr 6, 2020 His Majesty the King and the Queen of Thailand donated medical equipment to various hospitals for the care of COVID-19 patients.

Apr 9, 2020 The MOPH enacted a policy to allow resupply of essential medicines by mail and drug prescriptions of up to two months.

Apr 27, 2020 The government announced the extension of the Emergency Decree for another month until May 31.

Apr 30, 2020 CCSA announced relaxation of six COVID-19 containment measures starting May 3, 2020.

With these and other measures, Thailand was able to control the spread of COVID-19 quite well. However, they caused considerable socio-economic impacts.



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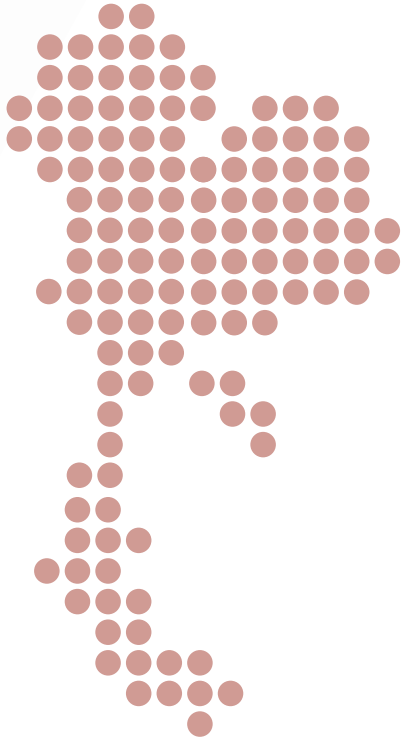
Impact of COVID-19 on Thailand



If you compare the severity of the number of infections and deaths of the Spanish flu that occurred about 100 years ago during 1918-1919 with COVID-19 occurring in 2020, based on the number of infected people and deaths, whether looking at the total number of cases or per population, it is hard to say that COVID-19 comes even close to the Spanish flu. At the time of the Spanish flu pandemic, Thailand's population was only about 8 million, but about 2 million Thais were infected, or a quarter of the total population, resulting in 80,000 deaths.[11] At the end of 2020, Thailand had a population of approximately 67 million, with approximately 6,884 COVID-19 infections and 61 deaths. But the impact on the societies of the two pandemics cannot easily be compared just by numbers of causalities. The COVID-19 pandemic is occurring in a very different contextual environment than the Spanish flu. The COVID-19 pandemic is occurring in an era where the pulse of society resonates with the intensity of online and offline meetings and exchanges. Accordingly, the fear of the spread of the virus has crippled Thai society across multiple sectors of the economy, society, education, public health, and the environment. This, despite the fact that Thailand's countermeasures against COVID-19 have been praised by the Director of WHO[12] and many other organizations.[13]

6.1.1 Economic impact

Thai society's fear of COVID-19 began with a **"fear of death"** resulting from the extensive information dissemination about this new virus from both the Centre for COVID-19 Situation Administration (CCSA),[14] established on March 12, 2020 and the various media on all platforms. The information described the ease of spread of the virus and speed of the epidemic in other countries. It became clear soon, that COVID-19 was air-borne and could be transmitted by asymptomatic carriers, thus making it a ubiquitous, invisible threat. The news from other countries of how they failed to contain the epidemic was eagerly consumed by people in Thailand. Then, with the harsh lock-down measures, many Thais became gripped by **"fear of starving to death."** The lockdown began with the Cabinet's resolution to close the places which might attract crowds of people. This resulted in the closure of many businesses in the entertainment industry, as well as cancellation of concerts, exhibitions, and mass religious activities. The lock downs began in Thailand on March 18, 2020 and extended for two weeks. Later the Bangkok Metropolitan Administration's (BMA) Communicable Disease Control Committee, chaired by the governor of Bangkok, presided over the closure of 26 types of establishments, from large to small enterprises, and from business owners to wage earners. This was followed by the announcement of similar measures in suburban provinces around Bangkok and other provinces with large metropolitan areas. The cluster outbreak that was traced to Lumpinee Boxing Stadium spurred further closures, taking effect from March 22 (the day when the daily new infection count peaked at 188) until April 12.[15] This was compounded by the government's order to cancel or postpone Songkran (Thai New Year's) festivities. This caused considerable dismay and confusion. Songkran is one of the most awaited holidays when Thais from all over the country plan for a family reunion. Songkran festivities generate income for people, but sadly were ended by the pandemic. In addition, the closures of markets and malls meant that there was panic buying and hoarding of household necessities for fear of stock-outs. On March 26, 2020, the government announced its slogan for this period of the response as *"Stay home, stop the disease for the nation."* The thrust of the public relations campaign was to reduce non-essential travel.

Economic tensions escalated when the government announced a national curfew from 10 p.m. to 4 a.m., effective 3 April. This was the death knell for nearly all night time entertainment venues, and severely curtailed the labour force and supply chain that depended on that huge sector of the Thai economy. The ripple effect impacted on a wide range of industries, from food & beverage, performance/entertainers, and passenger transport (i.e., taxis), among countless others. Tourist destinations and provinces that used to be crowded and bustling with foreign visitors (particularly Chinese tourists) had to virtually shut down overnight, starting in late January. The government cancelled 'visa on arrival' (VOA) for persons from 18 countries and one special economic zone and stay permit within 30 days, effective starting on March 13,[17] for persons from three countries. Closure of the country to outsiders was complete by April 3, when the Civil Aviation Authority of Thailand effectively closed the entire airspace.[18] The increasing restriction on travel, both international

and domestic, was having the effect of stranding people wherever they may have been when the border closures and lock downs came into effect. Many Thais and expats with families in Thailand were stranded outside of Thailand with no means to return any time soon.[19]

In the Travel and Tourism Competitiveness Report for 2017 by the World Economic Forum, Thailand ranked 3rd among countries for dependence on the tourism industry.[20] According to data from the Ministry of Tourism and Sports, the tourism industry accounted for 17.65 percent of the entire Thai GDP, with a growth rate of more than 10 percent per year. For the most recent year with data, there were 37 million foreign tourists and 158.51 million Thai tourist person-trips.[21] Thus, the plunging of the country into a virtual quarantine has had a deleterious effect on the tourism-based economy that is hard to calculate.

In terms of the broader picture of the economic impact of the COVID-19 crisis, one indicator is the adverse impact on the employment of 21 million Thai workers, more than half of the 37-million labor force. These workers experience reduced working hours, wage reductions, and temporary termination of employment – which holds the risk of permanent job termination if the employer's business cannot recover according to the new normal.[22] To assess the impact from both the lockdowns and voluntary social distancing in greater detail, it is useful to apply the Flexible Work Location Index, and the Physical Proximity Index, by different occupation. It is found that the groups that are most likely to be affected are those in the trade sector, food and hotel businesses, education, and personal services. The second most affected groups are occupations in agriculture, fisheries, and factory machinery operators. The least affected occupations are high-skilled occupations like programmer, legal and financial consultant, and those in management positions.[23] If looking at the age groups of workers affected by COVID-19, a survey of 14,287[24] workers across the country found that the workers age 15-24 years were impacted the most, which can be considered the group that just graduated from school and were starting to enter the labor market. These individuals were possibly least prepared with the least safety net to cope with the sudden and severe contraction of the economy and society.

The layoffs and reductions in wages during lockdown and national quarantine have caused a massive amount of domestic spending and foreign-currency to disappear from the economy. As a result, in the first quarter of 2020, the Thai economy declined by 1.8 percent,[25] the worst economic contraction since the 2011 flood disaster, while in the second quarter it fell 12.2 percent.[26] The Thai National Statistical Office (NSO) reported that, for 2019, nearly 60 percent of Thai households (approximately 12.7 million households) had savings of less than three months of normal expenses, and up to seven million households had only one month of savings.[27] The fall of economy in the second quarter had been forecasted. While department stores and markets began to open up again toward the middle of 2020, and online commerce was an alternative channel for unemployed people to make a living, the savings of so many people on the margins of the economy had probably been depleted. Plus, the uncertainty of the future caused people to spend less, even if they had discretionary income. The government launched a financial assistance scheme called "Rao Mai Ting Gun" (No one will be left behind) and this included relief cash

payments to those who had lost jobs. From the forecast of the National Economic and Social Development Council (NESDC), the Thai economy for the whole year of 2020 was likely to be negative at 7.8 percent. Furthermore, the proportion of Thais living below the poverty line had been declining since 2018 (from 9.85 percent or about 6.7 million people, to 6 percent, or about 4.3 million people in 2019). However, due to COVID-19 and the containment response, the proportion in poverty surely increased in 2020.[28]

The Thai government has tried various measures to stimulate the economy, both at the macro and micro levels.[29, 30] These measures include extending the period of filing personal income tax returns to the end of August, extending the time for other types of tax filings such as corporate income, excise tax, withholding tax deduction, and tax return for entrepreneurs. The government allowed for delaying payments, and reducing household utilities/Internet/telephone bills. The government supported entrepreneurs to organize training in debt moratorium and debt restructuring for SMEs, soft loans, and a cash relief payment of 1,000 baht per month for 3 months for the destitute and the handicapped. The "Rao Mai Ting Gun" scheme provided 5,000 baht per month for 3 months. There were special measures to help farmers and measures to stimulate tourism, such as the project "Rao Tiew Duay Gun" (We travel together). There was the "Gum Lang Jai" (Encouragement) project to support for medical personnel and village health volunteers (VHVs) to take pleasure excursions to give them a break from the stress and dangerous work in battling COVID-19 on the front lines. There were measures to stimulate people's consumption such as the "Kon La Krueng" (Go half) Project, and the "Shop Dee Mee Kheun" (Shopping and cash back) Project, among others.

Based on a survey of 699 CEOs by Price Waterhouse Coopers, the authors concluded that the outlook for the Thai economy is unlikely to be booming anytime soon. Seventy one percent believe businesses are trending more toward working remotely, 61 percent believe there will be more use of telecommuting. And accordingly, office space will be downsized, and 76 percent believe that businesses will shift more rapidly toward automation. Given the increasing barriers and costs of international travel, 39 percent believe that the production base of some industries will be relocated to the country of origin (onshoring), and 65 percent believe that business activities will be characterized by more insourcing and higher nationalism.[31]

One of Thailand's key economic goals in its 20-year National Strategy (to be completed by 2040) is to raise Gross National Income per capita to $12,535 per year, to leap over the middle income trap, and transition into a higher-income country. This means that Thailand has to maintain economic growth of at least 5 percent per year during that period. However, with the dark cloud of COVID-19 hanging above, Thailand may have to try much harder to achieve such high levels of growth in the years ahead.

Picture: https://money.kapook.com/view233832

6.1.2 Health impact

The impact of COVID-19 on Thai public health was first felt in the frontline response to the COVID-19 situation. This has required relevant agencies to focus on the preparation and management of medical and public health resources to deal with the various COVID-19 outbreaks. In Phase 1, the first 3 months of spread, it was found that hospitals strained to mobilize resources to fully care for COVID-19 patients. In some parts of the country, the caseloads were increasingly steadily since anyone testing positive for COVID-19 had to be admitted to a clinical facility. This meant that treatment and care for people with non-COVID conditions had to be postponed or canceled altogether. This presented real hardship for those with chronic diseases that require regular check-ups, dental patients, and patients requiring surgery. Some hospitals used creative ways to dispense medicines for patients with chronic diseases such as diabetes, high blood pressure, and psychiatric disorders by sending resupply by mail.[32] Those patients could return to the hospital for check-ups once the outbreak abated. The National Health Security Office (NHSO) together with Thailand Post Co. arranged delivery of medicines to patients with chronic non-communicable diseases and Gold Card holders to reduce congestion in the hospital and lower the risk of introducing COVID-19 into the hospital. Since April 8, 2020, 111 hospitals arranged 27,992 deliveries of medicines to patients by mail. Classified by disease group, these included high blood pressure (7,128 deliveries) followed by diabetes (4,838), HIV (792), asthma (743), and chronic obstructive pulmonary disease/emphysema 629 (data as of May 10, 2020).[33]

COVID-19 infection among health personnel

As of April 2020, 102 medical personnel were infected with COVID-19, of whom 65 percent were infected on-the-job, 20 percent were infected from the home community, and 15 percent had no identified source of infection. Half of the infected health staff had contact with patients who had not disclosed their risk for COVID-19 when being attended to at the hospital. In many small hospitals, doctors, nurses and personnel were at risk when caring for COVID-19 patients due to inadequate protective equipment, especially masks and PPEs. Wissanu Krea-ngam, Deputy Prime Minister, announced that, on March 30, the Ministry of Commerce had arranged for 11 mask factories to produce 2.3 million sanitary masks per day, with distribution to government officials and medical personnel. However, surveys found that many medical personnel had not received these free supplies of masks, and there were continuous reports of PPE shortages. As a result, medical personnel in many hospitals adapted their procedures. For example, hospitals created a rule to use protective clothing only for patients who test positive for COVID-19, organize the examination of patients in the quarantine room once every 4-5 days, and use a video call method on other days. These measures were necessary to conserve limited supplies of PPE. When attending patients who were at risk but whose COVID-19 test results were not yet available, the doctors and nurses wore raincoats as the protective gear. [34] Subsequently, the Central Committee on Prices of Goods and Services issued an announcement on April 2 prohibiting the export of sanitary face masks outside the country until June 30, 2020. Subsequently, the ban on exports of masks was extended to February 3, 2021.

Development of the services system

Building a temporary field hospital is important if the country is to require quarantine for all persons testing positive for COVID-19, regardless of symptoms. In Thailand, the first field hospital was the 308-bed field hospital at Thammasat University. It opened for service on March 25, 2020 through the cooperation of Thammasat University Hospital and five medical schools, namely the Faculty of Medicine of Thammasat University, Faculty of Medicine of Chulalongkorn University, the Faculty of Medicine Siriraj Hospital, the Faculty of Medicine Ramathibodi Hospital (Mahidol University), and the Faculty of Medicine Vajira Hospital.[35] In December 2020, there was a large outbreak of COVID-19 in Samut Sakhon Province. Accordingly, two field hospitals were set up in that province.[36]

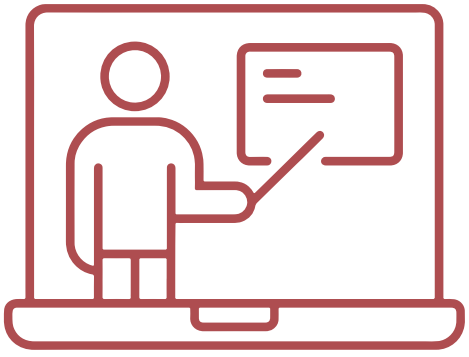
The prolonged and unpredictable COVID-19 epidemic has forced relevant sectors to rethink the Thai health care system, not only at the national level, but also at the regional and provincial levels by designing a service system that can effectively support patients at all levels, whether they are critically ill, acute patients, or patients with a chronic condition. The intent is to find a way to ensure continuous treatment of all patients in need, not just those with COVID-19.

6.1.3 Impact on the education sector

The United Nations Educational, Scientific and Cultural Organization (UNESCO) reported that, as of April 16, 2020, 191 schools in countries around the world had to close due to COVID-19. In these schools, 91 percent of students had to stop their lessons altogether. School closures affected students differently, but the impact was most severe for poor children, disadvantaged children, children from single-parent families, children of migrant workers, and ethnic minority children.[37] In Thailand, COVID-19 affected various groups of children, particularly the poor, the disadvantaged, the disabled and those from migrant families. For them, besides education, schools also gave them care physically, mentally and socially.

The Thai Ministry of Education announced on March 17, 2020 that all public and private educational institutions -- both formal and informal -- under the jurisdiction of the Ministry of Education would be closed from March 18, 2020 until further notice.[38] On April 7, 2020, the Thai Cabinet announced the postponement of the first semester of the new-school year May 16 to July 1, 2020. Therefore, schools and students had to adopt new formats of learning if they wanted to continue their formal education during the period of closures.

As the epidemic receded in most parts of the country, the Ministry of Education issued guidance that schools could reopen for in-class learning (on site) if there was no epidemic spread of COVID-19 in that locality. Schools in areas with risk for COVID-19 were to use distance learning (on air), using the Foundation for Distance Education via Satellite under Royal Patronage. On May 18, 2020, the first day of online classes was



opened, from kindergarten to Grade 12. This included vocational and non-formal education classes. However, the online learning encountered problems with erratic internet connections and lack of access to the DLTV system. Students had difficulty keeping pace with the speed of instruction. People said a lot about online learning in social media and made #onlinelearning the first trending hashtag in Twitter.[39]

Studies have confirmed the unpreparedness of online teaching in Thailand, and the adverse impact on those involved. The Faculty of Education and Development Sciences of Kasetsart University conducted a survey of teachers and found that many students could not access online learning when needed. The reasons for non-compliance include lack of a personal computer (66 percent), lack of an internet connection at home (57 percent), and/or lack of a smartphone (36 percent). The teachers in the survey estimated that, overall, only 45 percent of eligible students were able to adequately learn online. The NSO survey on the social impact of COVID-19 found that 60 percent of parents were concerned their children were unprepared to study online, mainly because of the lack of a personal computer or electronic device. In addition, most parents did not have time or IT skills to help their child hook up to the platform. Many homes did not have stable internet. Those findings are consistent with the information of the Equitable Education Fund which found that only 53 percent of students in Thailand had a computer at home. When divided by socioeconomic status, it was found that 91 percent of the wealthiest students had computers at home, compared to only 17 percent in lower-income families.[40] The study of the Thailand Development Research Institute (TDRI) confirmed that the obstacle of education management during COVID-19 was lack of preparedness.[41] These shortcomings are not new, but have been festering in the Thai education system for decades. This is especially the case regarding access to teaching equipment and materials and the inadequacy of teachers who do not have knowledge and expertise in using modern IT.

In response to COVID-19, the Ministry of Education postponed the opening of Semesters 1 and 2 in 2020, and reassigned students among schools to reduce congestion. Accordingly, Semester 1/2020 started on July 1, 2020 and extended to November 13, 2020, for a total of 93 days with a 17-day semester break. Semester 2/2020 started on December 1, 2020 and extended to April 9, 2021, totaling 88 days plus a semester break of 37 days from April 10, 2021. That makes a total of 181 days, out of the required 200 days of study in an academic year. Thus, schools have to offer make-up classes in compensation. In Academic Year 2021, classes will start as usual on May 17, 2021.[42] For those schools using distance learning, the Ministry of Education will support 80 percent, and the other

20 percent will be the responsibility of the schools and teachers to design accordingly.

Children of non-Thai migrant workers in Thailand had their education disrupted during the COVID-19 situation due to school closures. Some migrant children had returned to their home country before the international border closures and were still unable to return to Thailand by July 1, 2020. Children enrolled in the Migrant Learning Centers (MLC) were also greatly affected. Thus, many of these children had to learn from home/community. The Department of Health of the MOPH requires assurances of child safety (according to 44 items of criteria) for those enrolled in MLCs, and that issue becomes a matter for the Migrant Education Coordination Center (MECC) together with the MLC to determine when it is safe enough to open again.[43]

In many provincial areas, there has been an adjustment in the education schedule during COVID-19 where teachers play an important role. Some teachers formed ad hoc groups such as the "Grab Mae Kru" group, which is a gathering of teachers in Uthai Thani Province. The teachers conduct field visits to monitor the well-being of students, and deliver nutritious meals to the child's home and conduct some home-based instruction. Teachers in Uttaradit Province visit students' homes to deliver and collect homework books.[44]

The COVID-19 epidemic has imposed many challenges to the Thai education system across all dimensions, especially inadequate adjustment to the fast and changing world.

6.1.4 COVID-19 and environmental change

As noted, the lockdown measures around the world are resulting in a significant reduction in global economic activity. Information from the International Energy Agency (IEA) estimates that by the end of 2020, global energy demand will have dropped by 6 percent, the highest contraction in 70 years. That said, this is also resulting in reductions in carbon dioxide emissions, a major cause of global warming. In Thailand during the lockdown period between March - April 2020, the Pollution Control Department of the Ministry of Natural Resources and Environment reported that the average PM 2.5 particulate matter in Bangkok and surrounding provinces was below the hazardous threshold, and fell by 17 percent compared to the same period in 2019. They attributed this to reduced travel and emissions-production activities. The lack of tourists also helped improve ecosystems. For example, the carambola turtles have returned to lay their eggs on the beaches in Phuket and Phang Nga Provinces on the Andaman Sea coast. In addition, marine resources such as coral and seagrass have grown more strongly due to the reduction in human marine activity, and reduction of the discharge of wastewater into the seas by communities and hotels along the coast. This is improving the quality of sea water. The natural phenomena of bio-recovery is being found in many places in Thailand, such as Phu Sang National Park of Phayao Province, where rare plants and trees have returned to flourish, and rare wildlife can be seen again, such as flying squirrels, wild boars, and rare butterflies.[45] It was also found that cities (which have been popular tourist destinations in the past) are experiencing reductions in solid waste. In Bangkok, waste dropped from the pre-COVID-19 level of 10,560 to 9,370 tons

Picture: https://announcement.ph/jail-time-for-six-years-for-customers-who-cancel-food-delivery-orders/

per day (down 11 percent). In Phuket, solid waste decreased from 970 to 840 tons per day (13 percent reduction). In Nakhon Ratchasima Province the solid waste decreased from 240 to 195 tons per day (decrease of 19 percent). In Pattaya City of Chonburi Province, solid waste decreased from 850 to 380 tons per day (for a whopping 55 percent reduction).

However, staying at home has led to an increase in online food delivery orders. As a result, household plastic waste has increased by 15 percent, or 6,300 tons per day. Thailand produces 2 million tons of plastic waste per year, or about 5,500 tons per day. In Bangkok, the amount is as high as 1,500 tons per day. Food waste and wet waste in Bangkok have decreased because of the slowdowns and closures of restaurants, hotels and shopping malls. Information from the Bureau of the Environment of the BMA found that potentially-infectious waste such as PPE increased.[46] That finding is in line with a study by the Thailand Environment Institute which found that the waste generated from discarded, used sanitary masks has increased to about 1.5 – 2 million pieces per day. That figure includes both hygienic masks that are disposed of properly through waste separation. But there are also masks that are not disposed of properly, i.e., mixed with general community waste.

The situation of energy consumption during the COVID-19 period found that overall electricity consumption decreased by 3.9 percent in almost every sector, but especially in the industrial and business sectors.[47] The use of electricity during the night both in the household, industry, transportation, business, and public electrical system markedly decreased. This reduction in electricity consumption on a macro scale reduces excessive use of energy resources, and thereby reduces pollution which will certainly have a positive effect on the environment.

The COVID-19 outbreak has also affected environmental and climate talks. The 26th UN Climate Change Conference (COP 26) scheduled for November 9-19, 2020 in Glasgow, UK, has been postponed to the middle of 2021.[48] Meanwhile, the COVID-19 situation is allowing developing countries to delay their contribution to reducing greenhouse gas emissions, because the budget that was earmarked for those efforts have been diverted to the fight against COVID-19.

6.1.5 COVID-19: How the virus reflects Thai society

The COVID-19 situation can be like a ray of light passing through a prism, splitting into shades of color, and revealing what colors make up the ray. In the same way, this crisis helped clarify various aspects of Thai society that might not be clearly visible in normal circumstances; and, of course, all the aspects revealed so far were both good and bad. The positives reflect the social capital that helps protect the integrity of Thai society when in difficult circumstances. However, the negatives are a social liability that impairs the peace and happiness of the population.

The image of this calamity will be long remembered as a time when Thai society was shuddering from the fear of an invisible, killer plague, with no idea when it would be over. The harsh response to the epidemic added 'salt to the wound' by forcing millions out of work or to a lower economic position. For many, they are first realizing the old Thai expression: "Having no rice to fill in the pot." Yet, in previous times of crisis (e.g., the "Tom Yum Kung financial meltdown, and the 2011 flood disaster) Thais have shown their ability to help others generously. In the wake of COVID-19, many platforms have emerged for people to help those in dire circumstances. For example, there is the "Pansuk Pantry" initiative which was one of the first Thai models for donations, and which has become a symbol of kindness in the COVID-19 crisis.

The Pansuk 'cabinet' looks like a small pantry made of simple materials about the height of an adult. It has shelves for dried food packaging and essential supplies. These were placed in public areas, and those in need can take a pantry and, perhaps, pay the kindness forward when they are better off. There were first five kiosks. The first one was placed in front of the Prajak Bakery at the entrance of Sukhumvit Soi 71 and other three cabinets in different areas in Bangkok. The other was created in Rayong Province, under the Pantry Sharing Project with the slogan *"Only take what you need, share with others your extraxs"* The Project was a collaboration of Mr. Supakrit Kulachatwichit and the "It Noi" (small brick) group, a group of friends practicing the Dharma together.[49] The Project was inspired by Jessica McClard's Little Free Pantry project in the US. At first, people were concerned that both the pantry and supplies in it would be stolen. But, that did not happen, and the idea went viral through social media and other channels. Thousands of pantries were soon created, and the government took note and joined in. Later, the concept was expanded beyond the Pansuk Pantry, to include offerings and supplies for those who have suffered from COVID-19 in various ways. Some replications used a boat instead of a cabinet-shaped pantry. That idea was spearheaded by a monk, Reverend Pornthep Panyawaro, Asst. Abbot of Lat Peng Temple, Nang Takian Subdistrict,

• Pansuk Pantry

Picture: https://www.posttoday.com/social/local/623176

Picture: https://www.thailandstack.com/post-5881-เมรุปันสุข-สุขใจทั้งผู้ให้และผู้รับ

Samut Songkhram Province. His "Pansuk Boat" was packed with rice and dried foods which the temple had received as alms from community residents. Others made "Pansuk Coffins", using a coffin in stead of a box to contain essential supplies and placed in public spaces. The idea was not only to share food and supplies but also reminds the people of their mortality. These Pansuk activities spread to many provinces, including Chonburi, Saraburi, Korat, and Buriram. In one case, a so-called "Meru Pansuk" (Meru means crematorium) was created to host funerals in Phanom Thuan District of Kanchanaburi Province, in which many people donated essential supplies instead of wreaths.

There was a movement to help villagers redeem the equipment they had pawned so that they could resume their livelihoods. That was seen as a better way to help than just providing cash or pantry hand-outs. This idea was the brainchild of Mr. Chaiwat Chuenkosoom, Governor of Loei Province. Even better, this redemption of pawned equipment was done anonymously, and the recipients were merely told to pay it to the society when they were back on their feet. Other governors took note and started replicating the idea in Phitsanulok, Udon Thani, Lamphun, among other provinces. Business owners also joined in to help those who suddenly found themselves in a crisis.

In addition, alms stalls were set up to distribute food and necessities during the lockdown period. The hardest hit by the lockdown were those day-wage-earners with little or no savings. Most of the alms stalls are operated by temples, shrines and places of religious worship. The Thai Supreme Patriarch issued a directive through Somdej Phra Maha Wirawong, Secretary of the Supreme Patriarch, on March 23, instructing temples across the country to help set up alms stalls to the best of their ability but it was not compulsory.[50] Following that initiative, private sector agencies, politicians, and small businesses (e.g., restaurants) helped prepare food for the alms stall initiative.

TV and movie celebrities solicited donations to help villagers in economic difficulty. The twin actors Bin and Ekaphan Banluerit were among the first pop stars to do this. The activity involved consolidating donations of food and cash and then implementing a careful system of identifying those most in need and providing assistance directly to them. The public was confident that the "Actors' Group" were honest and would ensure the neediest were helped because they had already done this before during the damaging floods in the northeast region in September 2019. This effort was praised on social media for its transparency, speed, and ability to provide assistance

without delays or bureaucracy. There was also a group of cooks from Top Chef Thailand to help distribute rice meal boxes to communities around Bangkok.[51]

The cooperation of civil society such as the network "Mobilizing citizens' power to fight COVID-19"[52] was spearheaded by the Community Organizations Development Institute (CODI) together with network partners. That is another example of Thai social capital that has played a key role in improving the adverse impact of the COVID-19 epidemic and containment measures. The enthusiasm of the VHVs has been highly regarded as an important mechanism for surveillance of travellers from high-risk areas when entering the locality. One case of VHV action was shared widely on social media. In that case, the VHVs had advised a group of men who had returned from Bangkok to their home community in Chiang Mai that they needed to go into quarantine for two weeks. The men refused and, what is more, they got together to drink alcohol and make a ruckus every evening. This occurred on March 23, 2020.[53] The experience in Chiang Mai prompted locals in other communities to stand together in solidarity with the importance of quarantine and refraining from risk behavior for COVID-19 spread. They had the 24-hour guard during the curfew and campaigned for use of masks and, prevention and control of infection.

Strong and supportive relationships between family members play a critical role in providing psychological and financial support during the COVID-19 crisis. Most of the families around Thailand probably had a relative or close friend who was suddenly laid off from their job or had reduced income. Many may not have been hired back, even after announcing the easing of COVID containment measures. It is assumed that a significant number of Thais who returned home before the travel restrictions have stayed at home. At least there, they need not fear rejection. Together, the family can work and share together and conserve costs and resources until they can find a more permanent solution. It was the provinces and rural areas of Thailand where the economic impact of COVID-19 was significantly less than in cities. Plus, there is a lower cost of living than in the city as well.

The negative image of Thai society that arose during the COVID-19 crisis coincides with the positive image. This may reflect the mix of good and bad in society, while various forms of "shared happiness" are spreading. That said, there are news reports of selfishness of people in society. For example, some people who did not need it took goods and supplies from the Pansuk Pantry with the intent to resell.[54] Others might have tried to raise funds via the internet through sham causes or selling bogus treatments for COVID-19.[55] People hoarded sanitary masks and then resold these when supply was scarce and demand was high.[56] Scammers offered the help to the elderly by withdrawing cash from ATM machines and taking away the money. There were reports of some entertainers who held concerts without requiring prevention among the attendees.[57]

6.2

New outbreaks at the end of 2020

The Thai COVID-19 epidemic situation was remarkably well under control – that is until December, 2020.

Dec 2020

2 The MOPH reported that six Thais who had been working in Tachilek, Myanmar and returned via Mae Sai were infected with COVID-19, but did not remain in quarantine.

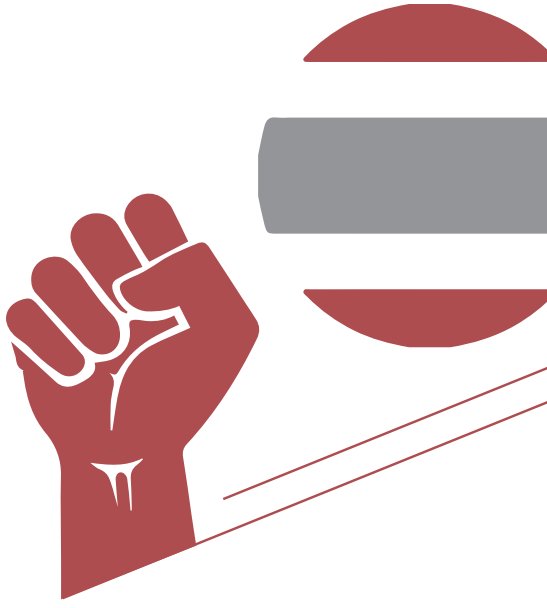
17 The opening ceremony of the National Health Assembly was held at the Conference Room of the Communications Authority of Thailand. At this event at tape of the speech was shown of the WHO Director-General's speech praising the success of control and prevention of COVID-19 in Thailand.

The same evening, authorities in Samut Sakhon Province announced that a 67-year-old woman, the owner of a fish raft, had been infected with COVID-19. Initially, 18 contacts of the woman had to go into quarantine. The source of the infection was not immediately determined. Nevertheless, the shrimp market decided to close for one day and the fish raft was also closed for three days.

18 Talay Thai Market, a major marine product distribution center in Samut Sakhon Province was badly impacted. Few shoppers visited the market despite its far distance from the infected market.

19 Samut Sakhon Province found 13 more COVID-19 cases linked to shrimp market. That same evening, 516 cases of coronavirus cases were reported among Burmese workers in/around the market areas. That number was 43 percent of the 1,192 people who were screened.

After that, the outbreak was found to spread out along spokes to different parts of the country. The outbreak was declared "the 2nd wave" of COVID-19 spread in Thailand. Another outbreak was reported among patrons of casinos in Rayong and nearby provinces.



6.3

Thailand's success

As of Friday, December 31, 2020, Thailand had logged a cumulative total of 6,884 cases of COVID-19 and 61 deaths. This placed Thailand as ranked 219th in the world (counting the number of countries, territories, islands, ships, etc., reporting). In the first months of the pandemic, Thailand actually ranked 2nd "and was censured by the Thai media for the "worst response" due to the fact that the "Chinese visitor to Bangkok was the first diagnosed case of COVID-19 outside of China."

However, the censure from the Thai media for that lapse in control turned into admiration as Thailand scaled up the rankings (of best response) and was hailed by world-class institutions like Johns Hopkins University as one of countries with the best practice.

In fact, Thailand was highly successful in disease prevention, but it was not as successful as it should have been in solving socio-economic impacts of the containment measures and avoiding political and administrative problems in maintaining prevention resources. For example, in the early stage of the Thai response, there were many problems with the management of the supply of sanitary masks which became a scandal for quite a long time.

Thailand's success in preventing COVID-19 is not accidental, nor is it about "luck." Furthermore, it cannot be said that its success was due primarily to the skill of the government.

For Thailand to succeed in disease prevention, there are several important factors to consider, including the reform of the country's public health system and systematic disease control and prevention systems which have been in place for decades before COVID-19 arrived.

First

The creation and development of the "disease surveillance" system has been an integral part of the MOPH epidemiology agencies for more than half a century. One of the key players in the development of this system is Dr. Suchart Jetanasen, a graduate of the School of Public Health of Harvard University (the alma mater of H.R.H. the Prince Mahidol of Songkhla).

The Thai disease reporting system uses a nationwide 506 Report Form, and the MOPH produces a "Weekly Disease Surveillance Report, patterned after the US CDC report which is the Morbidity and Mortality Weekly Report (MMWR) or currently changed to the Weekly Epidemiological Surveillance Report (WESR). The year 2020 was the 51st year in which this report has been published. In the past 30 years, Division of Epidemiology received the first minicomputer and it was used for printing this report. Data processing was run at 5 pm. and the computer printed out the result at midday of the next day. The system provides fundamental information on case reports, outbreaks, prevention and control of communicable diseases including the emerging infections such as HIV, SARS, MERS and COVID-19.

Second

After the events of October 14, 1973, the government of Prof. Sanya Thammasak, with Prof. Udom Posakrishna as Minister of Public Health, and Prof. Dr. Sem Pringpuangkaew, Deputy Minister of Public Health reformed the structure of the MOPH in a big way. The Department of Communicable Disease Control (DCDC) was established based on the foresight that communicable diseases would be a major public health challenge for Thailand in the near future. Division-level agency would not be able to have enough resources to tackle the problem, so the division was upgraded to department. Later, the mandate of the DCDC was further expanded to encompass both communicable and non-communicable diseases. By the time COVID-19 arrives, the Department has been the "major force" in handling new emerging diseases including COVID-19.

Third

There was an advocacy movement to draft the Thai Constitution, B.E. 2517 to have a provision that "Prevention and control of harmful contagious diseases must be offered free of charge to the people" (Article 92, para 3). That provision has remained in every subsequent version of the Constitution, including the Constitution, B.E. 2560 in Article 47, para 3, "A person shall have the right to the prevention and elimination of harmful contagious diseases by the State free of charge." It is the right and can be considered an unconditional right like many Constitutional rights that are often prefaced by the statement: "as provided by law"

This provision is important, because China itself has announced its measure to fight COVID-19 on January 23, 2020, as a "D-Day" justifying its closure of the entire city of Wuhan. China also made treatment for COVID-19 free for everyone. By contrast, libertarian forces in the US prevented the country from even implementing such simple measures to protect all people that encountered the "financial barrier." This significantly resulted in the failure to control the COVID-19 spread.

At the meeting to consider the response to COVID-19, the two sub-committees of the NHSO cited the above Article of the Constitution, ensuring that all parties concerned realize the responsibility of the state to protect the rights of the people under this Article. Immediately, the NHSO gave a directive for proactive outreach screening of populations in crowded buildings (e.g., prisons, slum communities, factories) and that helped to control the spread in the first three quarters of the year.

Fourth

The MOPH has been continuously developing disease control specialists according to the US CDC curriculum via the Field Epidemiology Training Program, which was first launched in 1980. Currently, Thailand has hundreds of its own specialists in this field, and Thai epidemiologists have long been recognized regionally and globally. MOPH experts met in early January 2020 and resolved to set up COVID-19 screening at four of Thailand international airports: Suvarnabhumi, Don Muang, Chiang Mai, and Phuket Airports, starting on January 3. The first case from China was found on January 8, and the official announcement was made on January 13. This "proactive approach" to case screening and "isolation" is at the heart of epidemic control.

Fifth

Special units for rapid disease control, known as the "Surveillance and Rapid Response Team" (SRRT), had been set up all the way down to the district level, ever since the Avian influenza epidemic in 2005. The SRRTs have continued to function up to the time of emergence of COVID-19, and this helps make the response timely and tailored to the local situation.

Sixth

Primary health care in Thailand has been an important part of the MOPH service structure. Since the 60's and 70's, the MOPH had been trying out different models of a community-based health volunteer system in many areas, such as Saraphi District, Chiang Mai; Non Thai District, Nakhon Ratchasima; Ban Phai District, Khon Kaen, Chana District, Songkhla; the DIEDS Project, the Lampang Project; etc. Eventually, these experience were; consolidated into the village health volunteer (VHV) and Village Health Communicator (VHC) systems. These were merged into the present-day VHV under Dr. Arthit Ourairat, Minister of Public Health in 1994.

VHVs have been an important force in controlling and preventing COVID-19. The VHVs were especially helpful after the BMA issued confusing declarations of an impending lockdown of Bangkok, causing many "panicked" workers to flee back to the family home in the provinces. The local VHVs then "reached out" to help the returnees with "self-quarantine" or "surveillance" to maintain the safety of the village and prevent outbreaks.

Seventh

Thailand has developed a public health service system by steadily expanding the construction of hospitals in all provinces since the first policy was inaugurated under the government of Field Marshal Plaek Phibunsongkhram. Next, during the administration of Gen. Prem Tinsulanonda, district hospitals in all districts and health centers in all sub-districts were constructed. The birth of sub-district health promotion hospitals (or health centers previously) took place when Mr. Jurin Laksanawisit was the Minister of Public Health in 2010. This expansion of clinical facilities has been accompanied by the roll-out of training of medical specialists under the guidance of the Medical Council of Thailand since 1973. At the time of this report, Thailand has been able to provide effective care for symptomatic COVID-19 patients: The COVID case fatality rate is only 0.89 percent, while the global rate is 1.4 percent, the US rate is 1.74 percent, and the case fatality rate in the UK is about 2.98 percent.

Eighth

There have been amendments to the Communicable Disease Act, B.E. 2558 to allow the provincial governor to have the power to prescribe disease control measures as appropriate, based on the recommendations of the Provincial Communicable Disease Committee. In the previous version of the law, control measures were centralized.

This devolution of authority meant that provinces could respond more quickly to an outbreak and tailor prevention and control measures to the local capacity and context.

Ninth

The local government system developed since the reign of King Rama V and the local administrative system underwent major reforms in 1994 and in 1997 with the new version of the Thai Constitution which required the enactment of the Determining Plans and Process of Decentralization to Local Government Organization Act. This devolution of control is no less important a contribution to the control and prevention of COVID-19 than was the mobilization of the nation's army of VHVs.

The decentralized structure of Thailand's administrative system was an important factor for the country's ability to control and prevent outbreaks of COVID-19 during the first three quarters of 2020. That response attracted the admiration from around the world. However, the central government made three significant missteps in the response: (1) Mismanagement of masks caused panic and turned the shortage of PPE into a crisis; (2) Some in power believed the predictions of some "academics" who warned that the Thai caseload of COVID could explode to 350,000 cases, while the bona fide disease control experts estimated only a maximum of 25,000 cases. Still, the specter of hundreds of thousands of infections led to the "lock-down" policy that was probably overkill. While it is true that new cases of COVID-19 declined to a trickle in most of 2020, the national quarantine, lockdowns, and curfews are estimated to have cost the economy of about 500 billion baht per month for about three months, causing Thai GDP to shrink by almost 10 percent; and (3) Lack of remedial measures: 'Good governance' principles call for effectiveness, efficiency, and transparency. But the Thai government wielded the authority to take drastic measures such as declaring a state of emergency and using ad hoc provisions of law to issue central directives. While this control had the effect of minimizing inter-agency "squabbling and power grabs," it also allowed the government to portray the response and situation to its liking through effective spokespeople.

The weakness of the Thai political system is one factor in the uncontrolled second wave of COVID-19 spread in December 2020. From the beginning of the epidemic among Myanmar migrant workers in Samut Sakhon Province, it was found that the outbreak was caused by the underground "trafficking" of migrant labor from Myanmar into Thailand to fill labor shortages. The MOPH and the Ministry of Labor were caught flat-footed because they did not see this coming, and did not proactively prevent disease among the hundreds of thousands of migrant workers moving in and around the country. The migrants were allowed to settle in dense housing conditions without adequate sanitation. There was a lack of strong and comprehensive health education and disease control measures which could have nipped the outbreak in the bud. As a result, the Samut Sakhon outbreak fanned out via spokes to other provinces and regions of the country as shrimp traders carried the infection far and wide, eventually covering more than half the country. Later, the epicenter of another outbreak was traced to gambling establishments in Rayong and nearby provinces. This reactive approach of the government reflects the weakness of the political system. Thus, to ring in the new year of 2021, the celebrations were quiet and lonely. Even the annual auspicious rituals such as the popular "Prayer cross over the year" event at various temples across the country had to be scrapped.

Vaccine
is the most powerful weapon

7.1 Vaccines

Weapon to combat the deadly disease

Basic measures to combat an emerging infectious disease with a potentially-severe impact like COVID-19 are primarily: (1) Personal hygiene, which includes maintaining cleanliness, washing hands frequently, and avoiding contact with sick people; (2) Correct use of sanitary masks and avoid putting unclean hands on the face, mouth, nose, and eyelids; (3) Social distancing must be exercised by being careful not to spread or contract the disease. These measures force humans to adapt and violate both the nature and the habit of being a social animal that relies on close relationships with family, peers, and co-workers in the community, society, both in daily life, work, and recreation. Humans therefore need to find tools or "weapons" to fight a disease like COVID-19. The main tools are: (1) Vaccines to prevent the disease from infecting or progressing to illness; and (2) Medicines to treat prayers infected.

The most powerful weapon against a disease like COVID-19 is a vaccine. The challenge is how to quickly find a safe and effective vaccine, and how to distribute it widely and equitably. For most infectious disease, "herd immunity" can be achieved in 60-70 percent of over seven billion population.

In most cases, developing a safe and effective vaccine takes years if not decades. On average, it might take 10-15 years to develop a vaccine for a new pathogen. Historically, the fastest development of a vaccine was for mumps, which took about four years in the 1960s. There are several steps in vaccine development: (1) The research process in the laboratory. This begins with (1.1) forming concepts, (1.2) creating a vaccine in the laboratory, and (1.3) testing it with pathogens in the laboratory. When a vaccine candidate is found to have satisfactory results, the next phase is step (2). This involves animal testing. This starts from (2.1) tests in small mammals, generally using mice. When the candidate vaccine is found to

have satisfactory results, the next phase is step (2.2) Tests in mammals closest to humans, i.e. macaques. The next step after the satisfactory result is (3) tests of the vaccine in humans, and consists of three steps: (3.1) Phase 1 human testing, involves a small sample of, ten people. The objective is to see if the vaccine has any toxic effects, and to determine a safe dose. In the next step (3.2), a Phase 2 human trial is conducted with 100-200 volunteers, with the objective to see if the vaccine can stimulate immunity and to what level. If the results are satisfactory, the next stage is step (3.3) This is the Phase 3 human trial to prove whether the vaccine can actually prevent disease. There are two types of objectives of a vaccine: To prevent infection (primary objective) and, if infected to prevent disease or progression of disease (secondary objective).

Any experiment in humans has to follow strict ethical guidelines to ensure that rights must be protected. The safety and health of the research subjects is of paramount concern. Also, participants in vaccine trials must be clearly informed of the risks and benefits. Volunteers who become infected during a trial should be able to receive treatment at no charge.

Phase 3 human trials often require a large number of volunteers depending on the incidence of the pathogen in the population. The sample size can be in the thousands, tens of thousands, or even hundreds of thousands of subjects to enable statistically-significant calculations of efficacy of the vaccine.

China, the United States and Europe, as well as the WHO, have set targets for vaccine development based on the success of other vaccines, especially the flu vaccine. At a minimum, candidate vaccines should be able to prevent primary infection in half the subjects when challenged with exposure to the virus. About 30-50 thousand human subjects are involved in each vaccine trial.

Unless there is a special emergency situation, WHO guidance prescribes that a vaccine trial must take at least 18 months to ensure that it is safe and effective.[58]

7.1.1 The race to develop a COVID-19 vaccine

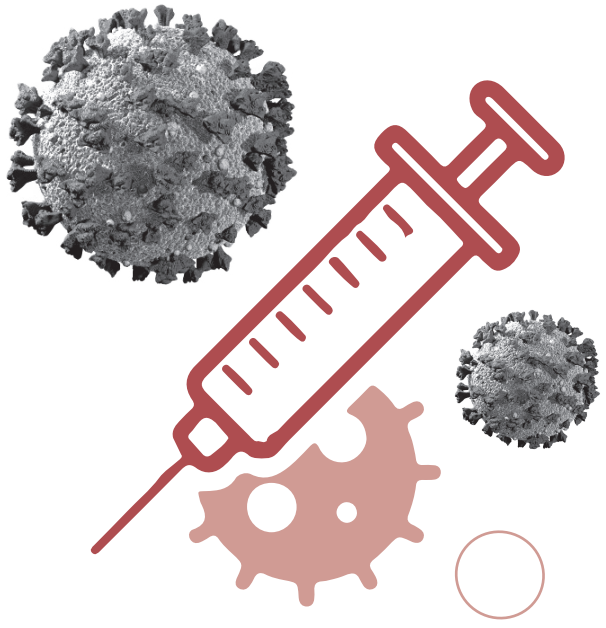
The Spanish influenza epidemic at the end of World War I lasted about three years and killed about 50 million people around the world. Thus, 18 months to develop a new vaccine is too long a wait since the pathogen may have already done too much damage by that time. There are delays, even after a vaccine is developed, due to packaging, storage, distribution and other logistical considerations. Vaccine research, development, production and distribution should be faster for all people with no "financial barrier."

For example, the US has taken urgent measures on vaccine development through its "Operation Warp Speed" which is a collaboration between the US Departments of Health and Defense. The US also pledged, in advance, to purchase supply by any company which produced a safe and effective COVID-19 vaccine. At the current pace of development, there should be a number of effective vaccines available for distribution and administration by the end of 2020. At first, when there is limited supply, vaccine manufacturers will hasten the production for

vaccination in all adults in 2021. When the efficacy and safety of vaccines are ensured, children can have vaccinated.[59] The US NIH initially provided $1 billion to Moderna Inc. for vaccine research and development and, on August 11, 2020, the US government added another $1.5 billion as advance orders for 100 million doses of the vaccine.

WHO has played an important role in accelerating the development and distribution of vaccines. At the beginning of May 2020, it raised $8.1 billion and initiated the COVID-19 Vaccine Global Access (COVAX) program to coordinate global vaccine development. WHO linked this to the COVID-19 Vaccine Access Accelerator Program in collaboration with GAVI (the Global Alliance for Vaccine and Immunization) and the Coalition for Epidemic Preparedness Innovations (CEPI). WHO hopes to achieve the equitable development, production, and distribution of vaccines to all countries around the world, and has a target of 20 percent coverage of the vaccine for most vulnerable populations in 2021.

The CEPI project has cooperated with international public health organizations and vaccine development companies to raise another $2 billion to work with private companies, governments, charities and civil society organizations on vaccine development and logistics. At the time of this report, CEPI started research and development of eight candidate vaccines. The governments of the UK, Canada, Belgium, Norway, Switzerland, Germany and the Netherlands have contributed $918 million to CEPI. In May 2020, the Bill and Melinda Gates Foundation donated another $250 million to CEPI.



The Global Research Collaboration for Infectious Disease Preparedness (GloPID-R) works closely with the WHO to prioritize funding for COVID-19 vaccine research by tracking research progress and information to avoid duplication of effort. The International Severe Acute Respiratory Syndrome and Emerging Diseases Association collects, processes and distributes information about COVID-19 research to inform public health policymakers about vaccine distribution.

On June 4, 2020, a teleconference took place in London with representatives of public and private sectors from 52 countries in the G7 and G20 groups. Fully 35 country leaders pledged $8.8 billion to support partners in preparing COVID-19 vaccines for 300 million children in developing countries through 2025. The major sponsors of this initiative include the Bill and Melinda Gates Foundation ($1 billion), and the UK Government ($2.1 billion). Other vaccine development initiatives are being sponsored by the EU, China, France, and Canada.

In the field of vaccine development, the research and registration procedures were streamlined, including (1) Accelerating the conclusions at each stage; (2) Integrating Phase I and II human trials; and (3) Conducting the research design as an "adaptive design" by collecting data for consideration and conclusions. In the case of favorable results, the process can be accelerated even more quickly. However, if there is an unfavorable result, the research and trials are terminated as soon as possible (so called Solidarity trial).

Registration of vaccines is to be expedited as a "rolling review." In the case of the US FDA, all the relevant information for consideration is submitted up front especially for emergency use, rather than by a time-consuming step-by-step review.

For vaccine production in the US, companies or developers may consider starting production without waiting for the trials to be completed and the candidate vaccine is FDA certified. Instead, the production process can be started from the Phase 2 and 3 trials stage.

In addition to the cooperation and synergies of international organizations, academics and leaders from countries mentioned above, the key factors that have made the development of the COVID-19 vaccine successful and faster than any vaccine in history are as follows: (1) China's ability to decipher the genetic code of COVID-19, and publish that in the public domain on January 11, 2020; and (2) The fundamentals of the SARS and MERS vaccine can be applied to development of the COVID-19 vaccine. In March 2020, a vaccine for MERS was developed, and is a DNA vaccine. It has undergone Phase I trials, and three other candidates are in Phase I human trials as viral vector vaccines.

7.1.2 Vaccines on the near horizon

COVID-19 vaccine research and development scientists have designed every possible vaccine that could be used to combat this deadly disease. These approaches can be broadly divided into 5 groups and 10 platforms as follows:

Group 1: Genetic vaccines

These are vaccines that introduce the genes of the coronavirus into the human body to stimulate immunity. Both RNA and DNA a re available, such as the vaccines of BioNTech-Pfizer, Moderna, India's Sydus Cadilla, Imperial College London-Morningside Ventures, and the Chula CoV-19 vaccine in Thailand.

Group 2: Viral vector vaccines

These are a vaccine that uses the genetically-modified virus to carry the coronavirus genetic material into the human body. Vaccines injected into cells activate the proteins of the virus to induce immunity, such as the Chinese CanSino Biologics vaccine, the Russian SputnikV vaccine, and the UK's Oxford. AstraZeneca vaccine.

Group 3:
Protein-based vaccines

These vaccines use coronavirus proteins that do not contain genetic material. Some use whole protein, others use protein fragments, some use protein fragments or nanoparticles, such as the Novavax vaccine being developed by an institute in Maryland (US), Canada's Medicago vaccine, the Anhui Zhifei Longcom Co.'s vaccine of the Chinese Academy of Medical Sciences, the vaccine of the Finlay Vaccine Institute in Havana, Cuba, the vaccine of the Vector Institute in Russia, and a vaccine by South Korea's SK Bioscience.

Group 4:
Inactivated or attenuated coronavirus vaccines

These are vaccines that use a killed or weakened coronavirus and inoculates that in the subject. These include China's Sinopharm vaccine of the Wuhan Institute of Biological Products, the Chinese Sinovac vaccine of Biotech, and the Covaxin vaccine of the Indian Medical Research Council and National Institute of Virology together with Bharat Biotech, a vaccine company of Erciyes University of Turkey.

Group 5:
Pre-existing vaccines used for new purposes (Repurposed vaccines)

These include the BCG vaccine on which the Murdoch Children's Research Institute in Australia is currently conducting Phase 3 trials to see how effective it might be against COVID-19. There are many institutions in many countries conducting research studies of this nature.

As of September 2020, the different types of vaccines that are being researched for effectiveness against COVID-19 are as follows:

Molecular platform	Total no. of candidates	No. of candidates in human trials
Non-replicating viral vector	31	4
RNA-based	31	3
Inactivated virus	14	3
Protein-subunit	76	3
DNA-based	19	0
Replicating viral vector	21	0
Virus-like particle	13	0
Live attenuated virus	4	0
Total	209	13

Vaccine candidates by stage of testing in humans and registration status (as of December 8, 2020)

Phase 1	Phase 2	Phase 3	Approved for limited use	Approved for general use
41	17	13	7	0

7.1.3 Vaccines approved for limited use

(as of December 8, 2020)

7.1.3.1 **Pfizer-BioNTech vaccine** This was the first vaccine that held promise of being an important weapon in the battle against COVID-19. On November 9, 2020, a press release cited "preliminary data" that this vaccine could provide 94-95 percent protection against COVID-19.

This vaccine is an mRNA vaccine, and it entered human trials for Phase 1/2 in May 2020. Tests on two versions of the vaccine were found to induce both humoral antibody and intracellular immunity: T cells. The vaccine code BNT162b2 was found to have fewer side effects, including fever and fatigue. This was chosen for the Phase 2/3 trial on July 27, 2020 in 30,000 volunteers in the US, Argentina, Brazil, and Germany. In an interim analysis, the vaccine caused side effects (mild to moderate). On September 12, 2020, the testing was extended to 43,000 volunteers in the United States. In October, Pfizer was authorized to test the vaccine in 12-year-olds, the first COVID-19 vaccine that was allowed to be tested in children of that age.

In September, Dr. Albert Bourla (Chairman of Pfizer) declared that full data from the Phase 3 trial would be achieved in October 2020. However, President Trump urged upon available vaccines before the election day (November 3, 2020). Dr. Bourla then announced on October 27, 2020, the insufficient number of infected volunteers and thus not possible to analyze the results. On November 8, 2020, Pfizer announced the results of the Phase 3 trial as follows: The vaccine was 95 percent effective in preventing infection in 94 volunteers, instead of 164 volunteers as initially estimated. Among those age 65 years or older, the vaccine was 94 percent effective and with no serious side effects.

The UK approved the vaccine for emergency use on December 2, becoming the first such approved vaccine from a Western country. The UK administered the first injection on December 8, 2020 for a 90-year-old woman (Figure 5). The company applied for registration for emergency use to the US FDA on November 20, 2020 and the India FDA on December 7, 2020. The company expects to produce 120 million doses.

Picture 5: Margaret Keenan, age 90, receives the COVID-19 vaccine developed by Pfizer-BioNTech after approval for emergency by the UK FDA

Source: https://thestandard.co/receiving-the-worlds-first-pfizer-covid-19-vaccine/

7.1.3.2 **NIH Moderna vaccine** This was developed in Boston, Massachusetts, USA, with nearly $1 billion in funding from the US NIH. It is similar to the Pfizer-BioNTech mRNA vaccine. Trials in humans started in March 2020 and Phase 3 testing in 30,000 volunteers was launched on July 27, 2020. The trials would be ended when 196 volunteers were found infected. On November 16, 2020, the company announced the results that the vaccine was found 94.1 percent effective, or 80 percent higher than expected. The final results were released on November 30, 2020. One hundred eighty five recipients of the placebo were infected and only 11 recipients of the trialed vaccine found infected, without any serious side effects. Immunity is maintained for more than 3 months, and Moderna applied for approval for testing in subjects age 12-18 years on December 2, 2020.

The NIH awarded an additional $1.5 billion on August 11, 2020 as an advance order of 100 million doses if the vaccine was found to be safe and effective. The company subsequently secured contracts to sell 160 million doses of the vaccine with the European Union, as well as contracts with Canada, Japan and Qatar.

7.1.3.3 **Oxford-AstraZeneca vaccine** This vaccine uses the virus to carry the genetic material of the coronavirus into cells, codenamed ChAdOx1. The Phase 1 trial in humans was commenced in March 2020 in the UK. A total of 510 volunteers in the UK were recruited for Phase 1/2 research starting on March 23, 2020. Phase 2/3 trials were conducted in the UK and India, and subsequently expanded to Brazil, South Africa, and the United States.

On September 6, 2020, there was a short pause because one volunteer was diagnosed with transverse myelitis. Four days later, the UK FDA allowed further testing, but the US FDA delayed granting approval until October 23, 2020. On October 24, 2020 there were reports in Brazil that a volunteer had died, but there was no pause as had occurred in the UK. The deceased subject was believed to have been in the placebo group.

On November 19, 2020 the results of the Phase 2/3 studies were published. Subjects were reported in three age groups: 160 subjects age 18-55 years, 160 age 56-69 years, and 240 subjects age 70+. No serious adverse reactions were reported, and the results showed that the immunity in the elderly was not different from those in the 18-55-year age group.

On November 23, 2020, results of an interim analysis of 131 volunteers infected with COVID-19 from tests in the UK and Brazil were announced. Surprisingly, the group who received the half-dose showed 90 percent effectiveness against COVID-19, while those who received the full dose had only 62

percent effectiveness. The initial explanation was that people who received a half-dose vaccination had an immune response that mimicked natural exposure. Later, it was found that there was a manufacturing error in the half-dose formulation. The half-dose recipients were those under 55 years in Phase 1. Eventually, when the data were sorted out, the efficacy of this vaccine was lower than that of Pfizer-BioNTech and Moderna. Subsequently, and due to the previous result errors, AstraZeneca shares fell.

Nevertheless, the company settled a sell deal with many countries. Since May 2020, the US made an advance purchase of this vaccine in the amount of $1.2 billion. Thailand has a purchase contract by receiving production technology transfer. When fully up-to-speed, the company expects to produce 2 billion doses a year.

During Phase 3, the trial vaccine became insufficient for a period. Therefore, the volunteers received the second dose four months after the first dose. It turned out that their immunity was neither less nor more than the immunity in those receiving the second dose four weeks after the first one. Following the approved registration for emergency use in the UK, a second dose was prescribed at four months after the first dose because of two reasons: people should receive at least one dose of the vaccine; and one dose provided high enough immunity for adequate protection.

7.1.3.4 **CanSino-Biologics vaccine** This vaccine uses an adenovirus-borne mechanism, codenamed Ad5, which was researched and developed in collaboration with the Chinese Academy of Military Medical Sciences in Biology. The results of Phase 1 studies in humans were published in May 2020, and results of Phase 2 in July. It was found that the vaccine can stimulate immunity well. The Chinese Army approved the vaccine as a "specially-needed drug" on June 25, 2020. This was the world's first COVID-19 vaccine approved for a special case registration. At that point, Phase 3 trials were outsourced to Saudi Arabia, Pakistan, and Russia. The reason for outsourcing the trial was that China had almost no new COVID-19 infections (no third wave) and, thus, could not prove effectiveness in natural conditions.

7.1.3.5 **Sputnik5 vaccine of Russia** This is a virus-borne vaccine like that of AstraZeneca and CanSino Biologics. Research and development was conducted in the Gamaleya National Center of Epidemiology and Microbiology using two adenoviruses as vectors. Human research began in June, and President Vladimir Putin announced the registration on August 11, before completion of Phase 3 trials. The name was changed from Gam-COVID-Vac to Sputnik5. The vaccine received a "conditional registration certificate" based on the results of a Phase 2/3 trial which started with 2,000 volunteers and expanded to 40,000 in Belarus, United Arab Emirates, and Venezuela. Sputnik5 entered Phase 2/3 trials in India on October 17, 2020.

On September 4, 2020, the results of Phase 1/2 trial were published. On November 11, findings indicated that the vaccine was 92 percent effective in 20 infected people in Phase 3 trial. Researchers also conducted an analysis in 39 infected people and found the similar result. However, scientists questioned about these results. At that moment, none of trial results was published in any international standard journal.

7.1.3.6 **Vaccines of the State Research Center of Virology and Biotechnology, also known as the Vector Institute** This vaccine is made from the protein of COVID-19. President Putin announced conditional registration on October 14, 2020, after the vaccine was tested in Phase 1/2 trials. Phase 3 trials were expected to begin at the end of 2020.

7.1.3.7 **SinoPharm vaccine of China** This vaccine made from dead virus, and developed by the Wuhan Institute of Biological Products. The vaccine was tested in Phase 1/2 trials. Phase 3 trials were outsourced to the United Arab Emirates in July 2020, then extended to trials in Morocco and Peru.

The United Arab Emirates approved the vaccine for registration on September 14, 2020 and only for use in public health personnel and government officials. China also issued the vaccine to be widely used by government officials, health workers, and some specific groups. By November 2020, nearly 1 million people were injected with the vaccine, and the company applied for registration on November 25, with Phase 3 testing not yet complete.

7.1.3.8 **Sinovac Biotech vaccine** This inactivated virus vaccine is called CoronVac. Phase 1/2 trials in 743 volunteers were conducted starting in June 2020, and results published in a medical journal in November. Phase 3 trials began in July 2020 in Brazil, later in Indonesia and Turkey.

The Chinese government approved the vaccine for emergency use in July. In October, Jiaxing City in the east of China made the vaccine available to people at high risk which included the medical staff, port and airport inspectors, and civil servants. On October 19, officials in Brazil said the Sinovac vaccine was the safest among the five candidate vaccines tested for Phase 3 in Brazil. However, on November 5, the Brazilian government announced a suspension of the Phase 3 trial because of an adverse event; two days later, the trial resumed.

The manufacturer of the vaccine stated that it was planning to produce 200 million doses in 2020, and would continue to produce 600 million doses a year thereafter. It has a contract to deliver at least 400 million doses to Indonesia by March 2021, and to deliver worldwide, including the US, in early 2021.

7.1.4 Research and development of COVID-19 vaccines in Thailand

Thailand has researched and developed vaccines to be able to produce in-country. The National Vaccine Institute together with the National Research Council of Thailand (NRCT) has provided funding to support research and development of vaccines in Thailand. The funding supports six projects in the amount of 20.9 million baht for Phase 1 trials, while 355 million baht was allocated for Phase 2 trials from the central government budget. Testing of an mRNA vaccine candidate was being conducted by the Faculty of Medicine, Chulalongkorn University. There is funding for development of a primate research center worth 35 million baht for vaccine testing in monkeys.

There are a number of Thai agencies currently researching COVID-19 vaccine candidates, including Chulalongkorn University, Mahidol University, the National Science and Technology Development Agency (NSTDA), and the Government Pharmaceutical Organization (GPO). One private company in Thailand (BioNet Asia Company Limited) is also conducting its own vaccine research (Table 1).

The three most advanced Thai vaccines are as follows: (1) mRNA vaccine of the Chula Vaccine Research Center of the Faculty of Medicine, Chulalongkorn University. Phase 1/2 trials are scheduled for April 2021, and a factory

Table 1: COVID-19 vaccine research and development in Thailand

No.	Molecular Platform	Research and development by:
1.	mRNA	Chula Vaccine Research Center, Chulalongkorn University in partnership with the University of Pennsylvania
2.	Virus-Like Particle : VLP	Faculty of Medicine Siriraj Hospital, Mahidol University in collaboration with the Thai GPO
3.	Virus-Like Particle : VLP	National Science and Technology Development Agency (NSTDA)
4.	Plant-based subunit	Baiya Phytopharm Co., Ltd., in partnership with the Faculty of Pharmaceutical Sciences, Chulalongkorn University
5.	Protein subunit	Chulalongkorn University with the GPO
6.	Protein subunit	Faculty of Science, Mahidol University
7.	DNA	BioNet-Asia Company
8.	DNA	Chula Vaccine Research Center, Chulalongkorn University
9.	Inactivated	Center for Vaccine Development, Mahidol University
10.	Egg-based, whole chimeric Newcastle Disease Virus (NDV)	GPO in collaboration with Dynavax and PATH
11	Adenoviral vector	NSTDA
12	Live attenuated	NSTDA

Source: Department of Medical Sciences, Ministry of Public Health

in California, USA has been contracted to produce 10,000 doses. If successfully produced, the production technology will be transferred to Thailand so that it can be produced locally. In this endeavor, the Center has collaborated with BioNet-Asia to continue production. The goal is to start production in Thailand by the end of 2021; (2) DNA vaccine of BioNet-Asia, funded by Australia, and is in Phase 1 trials in Australia. This is expected to be implemented in January-February 2021. The vaccine has not yet been approved in Australia; and (3) Vaccine from plant subunits. This is a vaccine made from tobacco leaves, and is being developed by Baiya Phytopharm Co., Ltd. together with the Faculty of Pharmaceutical Sciences, Chulalongkorn University. On December 14, 2020, the company entered to a memorandum of agreement with GPO and KinGen Biotech Company (that has collaborated with King Mongkut's University of Technology Thonburi

under theThai-Korea Cooperation) to research, develop and produce tobacco-based vaccines. Phase 1 trials are expected to conduct in June 2021. The full results of the development of all three Thai vaccines is expected to be available around the end of 2021 or mid-2022.

Other prototype vaccines in Thailand are currently undergoing animal studies. The protein subunit candidate vaccine of the Faculty of Science of Mahidol University provides a good level of immunity based on testing at the Institute of Biological Products, Department of Medical Sciences. As for the intracellular vaccine, the serum of the experimental animals receiving the prototype vaccine is being sent for testing of immunosuppression at the Institute of Biological Products. The inactivated vaccine being studied by the Center for Vaccine Development of Mahidol University is pending approval of funds from the National Vaccine Institute.

7.1.5 Cooperation with foreign countries to provide opportunities for faster vaccination

Thailand has negotiated to obtain production technology transfer from AstraZeneca (in cooperation with Oxford University, England) for a Thai manufacturer, namely Siam Bioscience Co., Ltd to produce the vaccine locally. This company will be a vaccine manufacturer for Thailand and the Thai-manufactured vaccine could be exported to other countries under the conditions the company has agreed to with the UK entities. The National Vaccine Institute has been allocated a budget from the Thai government in the amount of 600 million baht and from a donation of another 100 million baht from the Siam Cement Group (SCG) to support capacity building so that Siam Bioscience Co., Ltd. is fully prepared to receive technology transfer for viral vector vaccine production from AstraZeneca.

7.1.6 Import of vaccines for use in Thailand

On September 23, 2020, the MOPH, via its Committee for Advocacy of COVID-19 Vaccines for Thai People, has approved the provision of vaccines for Thais. It is assumed that each Thai (66 million people) will need to receive two doses of vaccine. Therefore, imports of the vaccine are pre-booked in 2021 as follows:

(1) Cooperation between AstraZeneca and Thailand, 20 percent of population (26 million doses) was approved by the Cabinet on November 17, 2020, with approved budget for Fiscal Year 2021 in the amount of 6,049,723,117 baht. The National Vaccine Institute would contract the advance procurement for vaccines under the budget of 2,379,430,600 baht. Department of Disease Control would make a contract for the purchase and administration of vaccines. Upon the supplier's confirmed procurement, the remaining budget or 3,670,292,517 baht would be paid. Contracts were signed between AstraZeneca, the National Vaccine Institute, and Department of Disease Control on November 27, 2020.

(2) Procurement from the COVID-19 Vaccine Global Access Program (COVAX) for 20 percent of the requirement (26 million doses).

(3) Direct purchase with manufacturers through bilateral agreements for 10 percent of population (13 million doses). There will be a comparison of vaccine quality and price of vaccines in order to negotiate the procurement of vaccines for use in 2021.

Another 30 percent of population (39 million doses) will be procured after the proposal was approved by the Committee for Procurement of COVID-19

Vaccines for Thais on December 29, 2020. The Expert Working Group on Coronavirus Vaccination, produced a plan for administration of vaccine by priority groups on December 18, 2020, and that plan was approved by the Advisory Committee on Immunization Practice on December 21, 2020.

The implementation of the COVID-19 vaccine program of Thailand is characterized by "aim for excellence" and the strategy to "turn crisis into opportunity." The three goals of the program are as follows: (1) Providing adequate vaccines to the people comprehensively; (2) Developing the potential of the country in research, development and production of vaccines (which is sophisticated technology) and which Thailand is lagging behind the rest of the world; and (3) Being able to earn income from the country by producing and selling vaccines to various countries, especially in ASEAN. However, at the time of this report, it appears that Western countries have jumped ahead with emergency registration for the most promising vaccines, and there are plans to distribute these to many countries, including those in ASEAN. Not only Singapore with available vaccines in the country, Indonesia which is higher populated but less economically developed than Thailand has already received vaccine imports ahead of Thailand. India, the country with 1.3 billion population and very poor economy, has also approved COVID-19 vaccine. Thus, the Thai government becomes "nervous" and needs to expedite the vaccine import process in early 2021.

7.2 Medicines

The initial outbreak of COVID-19 in China was characterized by a severe acute respiratory disease similar to SARS. Thus, treatment of cases was like any other disease in that category, i.e. (1) Specific treatment, e.g., antibiotic or antiviral; (2) Symptomatic treatment such as oxygen, use of a ventilator, and antipyretic drugs; and (3) Palliative treatment such as saline solution.

7.2.1 Efforts to develop a therapy for COVID-19

When it was found that the cause of the disease was the coronavirus (similar to SARS), drugs that have been used to treat viral diseases were tried out, including antiviral drugs for SARS, avian influenza, and HIV, and other drugs, such as hydroxychloroquine (an antimalarial drug).

Characteristics of drug selection are in accordance with the treatment principles of the medical profession, which is to introduce medicines that are thought to be effective, and then conduct "experiment." If a therapy seems likely to be safe and effective, then more formal research is conducted to produce credible evidence (i.e., double-blinded, randomized-controlled trials). At the time of this report, no therapy for COVID-19 has been found to be reliably effective. The only drug approved by the US FDA for severe cases is remdesivir. That approval is based on research at the US National Institute of Allergy and Infectious Diseases. Studies found that remdesivir could reduce the length of hospital stay for severely ill patients from 15 days to 11 days. However, few countries accept it as a standard treatment because other research studies did not obtain favorable results.

There have been attempts to use alternative medicine and herbs to treat COVID-19, but no credible results have been reported as being safe and effective.

7.2.2 Case Study: President Trump's Treatment for COVID-19[60]

The globally watched case is the treatment for President Donald Trump.

It was "believable" that President Donald Trump contracted and fell ill with COVID-19 in early October 2020.

Using the word "believable" because news from various sources caused doubts among people about his illness.

Firstly, for 3.8 years in his presidency, people "spotted his lies" more than 20,000 times. Because of this, Twitter placed warnings on Trump posts for spreading COVID-19 misinformation and said "It violates the site's rules about spreading misleading and potentially harmful information related to COVID-19. The tweet is in the public's interest, so it will remain accessible but engagements will be limited."

Secondly, Trump tweeted on October 2, 2020 that doctors diagnosed him with COVID-19 on October 1, and that he was hospitalized the next day. On October 5, Trump was discharged from hospital, despite Trump being in a high-risk category, i.e., age 74 and weighing about 110 kilograms (244 pounds). It was unbelievable for such a rapid recovery, particularly when compared with the UK Prime Minister Boris Johnson who fought the coronavirus two days in ICU despite his much younger age.

The physician who attended Trump for his COVID-19 infection was Dr. Sean Conley. Trump was diagnosed with COVID-19 on October 1, 2020. At the time of admission to the hospital, Trump had a high fever, and his blood oxygen concentration had dropped on October 2.

However, on October 5, 2020 at 2:37 pm. Trump tweeted "I'm leaving Walter Reed Hospital today at 6:30 pm; feeling great, don't be afraid of COVID, don't let it take over your life."

At 3:00 pm., the physician team announced that the president's condition had improved unexpectedly well and he insisted on discharge. Dr. Conley said that, although the president's condition was very concerning, he would be taken care by the world's best physicians 24 hours and every day.

Only minutes before 7.00 pm, Trump returned to the White House.

On October 6, 2020, Dr. Conley said the president was doing well and had a nice sleep. He had no symptom of illness today. The event "Make America Great Again" in Flagstaff, Arizona, was cancelled.

On October 7, 2020, Trump stayed at White House. Dr. Conley told the press that Trump did not have the fever for four days and any symptom for over 24 hours. The oxygen was not necessary and the blood test result demonstrated the coronavirus antibodies. Trump kept posting his election campaign in Twitter while Twitter added warning messages, but not deleting Trump's posts.

On October 8, 2020, Dr. Conley announced Trump's normal health checkup and that Trump would join public events on October 10, just 10 days after COVID-19 diagnosis.

On October 9, 2020, Trump talked on the phone with Maria Bartiromo from Fox Business that he was a perfect physical specimen, he would knock it and he did not think himself a spreader. However, for Dr. Anthony Fauci, Trump made a "premature conclusion."

On October 10, 2020, Dr. Conley released the 4th statement that Trump would end the isolation as he was "no longer considered a transmission risk to others." And that Trump showed no sign of illness 10 days after diagnosis and no fever over 24 hours" (based on CDC's criteria). However, special care would be needed after he headed back to work.

At the White House lawn, a hundred of supporters listened to Trump's 15-minute speech. He made at the balcony saying he was very fine and the coronavirus spread was "disappearing."

Trump's posts on Twitter went on along with Twitter warning messages regarding spreading misleading and potentially harmful information related to COVID-19.

In his talk with Fox News, he would start campaigning as "he had immunity," "the President was in good shape to fight virus." **He did not say "his result was negative."**

On October 12, 2020, Trump prepared his election campaign in Sanford, Florida. It was because of the poll that had showed Trump's increasingly lower popularity rating than Joe Biden.

US citizens questioned about the US Senate in relation with Trump's nomination of Amy Coney Barrett as the judge on the Supreme Court.

It is an interesting to note what kind of treatment Donald Trump, an obese 74-year-old with COVID-19 infection, received to have such such a speedy recovery and returned to normal life with such bursting energy.

7.2.3 Eight therapies used to treat Trump for COVID-19

When Donald Trump fell ill with COVID-19 and was admitted to the US Army's Walter Reed Hospital, some tried to make the case that Trump would not receive any better treatment than the average American COVID-19 patient. The facts seem to say otherwise, as summarized below:

USA is the powerful capitalism country with citizens from numerous races, ethnicities, beliefs, religions and extreme gaps in economic status. Karen Weintraub concluded the treatment for Trump as in the article title in the USA Today on October 7, 2020, that "Donald Trump's COVID-19 treatment is similar to the average American hospitalized with coronavirus. Only faster." She wrote the sub-headline "Trump received mostly the same treatment as anyone would get for COVID-19, except for one experimental drug and the speed of his care."

First, Trump was diagnosed much faster (a few days faster) than the average American since he was tested on a regular basis. While Americans had to wait for the result many days, he knew about it within 24 hrs. after having fatigue on the way back to Washington DC after an election campaign event in Minnesota on October 1, 2020.

Second, Trump was hospitalized quickly, i.e., within 48 hours of his diagnosis. However, the vast majority of Americans infected with COVID-19 could not possibly hope to be hospitalized that fast. Instead, most are advised via telemedicine to stay home, observe symptoms, take paracetamol and antipyretics, and observe whether they have difficulty breathing.

Trump's blood oxygen level fell to about 80 percent on October 2 and 3. His oxygen level rose to normal at 95-97 percent on October 6.

Most Americans do not know about their blood oxygen level, except some who have the measurement device in their home. Thus, the average case is much more likely to be hospitalized only after the level goes below 94 percent or difficulty breathing occurs.

Third, Trump received an immune-boosting drug called regeneron, a monoclonal antibody for treating COVID-19. This drug has two antibodies. The first one is antibody from serum of the recovered patient. The other one comes from genetically engineered mices.

Trump received the drug within 48 hours of the onset of pre-hospitalization symptoms. The drug is still in study and is not registered with the US FDA, and Trump's doctors were able to obtain this therapy under an appeal for "compassionate use." Only ten other COVID-19 patients had received this drug on an experimental basis, and procurement usually takes weeks.

This drug has not been priced. Therefore, Trump and others received the drug for free. This type of drug is costly, but "volunteers" in drug trial receive some honorarium.

The benefit of the drug is that it has the potential to prevent progression of disease to more serious symptoms.

Fourth, the drug remdesivir is the first antiviral drug that the US FDA has registered for use in COVID-19 patients. Originally, the drug was developed to treat Ebola. But studies have shown that it can reduce the length of hospital stay for severe COVID-19 patients by about four days. Other countries have not yet registered this drug because of mixed results from clinical trials. Plus, the drug must be given intravenously, and may have life-threatening side effects for some individuals.

Remdesivir is usually only prescribed for severely ill patients. Trump only had moderate symptoms when he was admitted to Walter Reed Hospital, but his doctors decided to give him the first dose immediately after admission, and then for five straight days (the last dose was given at White House). The normal price the private insurance company pay to the hospital is 520 USD/dose. For the government, the company charges 390 USD.

Most COVID-19 hospitalized Americans are prescribed this drug.

Fifth, the drug dexamethasone is a steroid that has been used to treat COVID-19 patients with low blood oxygen levels or requiring a ventilator. It is not used early in infection because it might not be effective at that stage, and has the potentially-harmful effect of suppressing the immune system The main effect of this drug in patients with COVID-19 is to reduce inflammation of the lungs. Trump received this drug on October 3, three days after the onset of symptoms. But there was no information regarding his oxygen level and explanation of why Trump was given this therapy so early in the course of disease. In regular cases, this drug is prescribed 6 milligrams. Dr. Roger Shapiro, a specialist in infectious disease, pointed out that the drug's benefit is to reduce the death rate in critically ill patients (one in three patients). It is not surprising why Trump was prescribed this drug on the second day of hospitalization.

In addition to the three drugs mentioned above Trump also received other drugs.

The fourth drug is zinc, which helps the body's immune system to fight off germs, bacteria, and viruses. Zinc is normally an essential mineral for the body and is available as a dietary supplement. But there is no evidence that zinc helps treat COVID-19, and the US FDA has issued a warning letter to some companies that claim zinc reduces the risk of COVID-19. Trump received zinc probably out of an abundance of caution and the belief that it could do no harm.

The fifth drug is vitamin D which is good for bones. However, there is no evidence that vitamin D is good for treating COVID-19. The US FDA also warned the company about the claim to treat COVID-19. Trump was probably given this vitamin merely because of his advanced age.

Trump received a **sixth drug** with the brand name Famotidine (generic name Pepcid) that has been studied in COVID-19 patients in New York. However, there are no conclusive findings about the beneficial effect of this drug for treating COVID-19.

Trump received a **seventh drug**, melatonin, as a sleep aid. Researchers from the University of Mansoura in Egypt believe the drug reduces viral infections in obese and diabetic people because it has anti-oxidant effect which helps adjust immunity and reduce inflammation. Trump probably got this drug because he is obese.

Finally, Trump also received **aspirin,** because of its potentially beneficial effect for people with heart disease (because it prevents blood clotting). Studies found that COVID-19 can cause blood clots in some patients. Trump likely got the drug because he has mild heart disease, and as a precautionary therapy to prevent blood clots.

All in all, Trump was diagnosed and treated better and faster than the average American COVID-19 patient. He was given drugs that exceeded the standard of general treatment, namely regeneron, remdesivir, and dexamethasone. Other medications and supplements that "may" have been useful include zinc, vitamin D, antacids, melatonin, and aspirin.

Conclusion

Buddhism teaches us that all things are Anicca (impermanent); they arise, stand, and extinguish. Happiness, suffering, and life challenges are transient. So is COVID-19.

COVID-19 is a natural disaster that is afflicting humans all over the world. It is the disease transmitted from animals to humans and vice versa. This is because both humans and animals live in the same "kingdom," i.e., "animal kingdom".

COVID-19 is not caused by nature encroachment by humans or humans eat animals. Despite living in the world together, humans and animals have a natural "barrier" that prevents easy transmission of disease. Nonetheless, germs may cross the "barrier" sometimes, like the coronavirus-2019 and its spread resembles the Spanish flu a hundred year ago.

Yet, COVID-19 genetic code can be traced to natural virus mutation and the virus somehow jumped to humans as believed by the majority of scientists. People even believed in a fake news, created by the US, that it is a human-created disease. The Wuhan lab was conducting tests for various types of artificial viruses. On the other side, the Chinese side believed these viruses were "imported" as part of the US's military exercise.

The new emerging disease called COVID-19 is one among "human's tragedies." As of December 31, 2020, COVID-19 had killed 1,813,389 people worldwide. The global economy has stagnated, millions have lost jobs, and marginalized populations are being pushed into poverty because of the pandemic.

But a coin always has two sides

The reduced human activity as part of the containment of COVID-19 has been a boost for nature. The sky is actually bluer today because of COVID-19. PM2.5 dust has dropped, there are cleaner seas and forests. Many wild flora and fauna have returned and are flourishing. People are more supportive and compassionate of each other by sharing food and necessities.

When the Spanish flu pandemic occurred, the world population was about 1.7 billion, and about 500 million became ill with the flu, and about 50 million died.

At the end of 2020, COVID-19 pandemic outbreak, since first documented on December 8, 2019, has spread to 340 countries/territories/islands, generating 83,135,180 million lab-confirmed cases, and 1,813,389 million deaths. This is truly a calamity that has shocked the world during the past 10-11 months News were repeatedly shared every day, through both online and offline media.

But compared to the Spanish flu, COVID-19 has not yet wreaked as much damage in the time available – though it might still do so. The world's population is now over 7 billion, and the 83 million confirmed infections represent about 1.09 percent of the world's population. By contrast, the Spanish flu sickened about 500 million people, or about 29 percent of the world population at that time. Furthermore, the actual number of Spanish flu infections was likely more than double the official number. Plus, the advancement of information systems and medical care today makes it possible to control and prevent the spread of an epidemic such as COVID-19 much better than before.

In the Spanish flu era, humans and nature were in harmony. Causes and prevention of diseases were difficult to be known. Cure and treatment relied heavily upon natural ways. That is why the death rate grew up to 10 percent. Different from the COVID-19, the infection rate and death rate are 30 times and seven times respectively less than the Spanish flu. This illustrates the greater "advancement" of today's world than the past.

Such prosperity is both the advancement of science and the progress of humanitarianism.

In some respects, it is fortuitous that COVID-19 was first discovered in China, with its academic excellence and extremely-prepared virologist experts with the leader who can be called "statesman" and the "great man." As soon as the first case was diagnosed on December 8, 2019, Wuhan scientists were able to sequence the genetic code of COVID-19 and shared that information with the world (on January 11, 2020).

The Chinese vision benefits the humanity greatly. The world would have further delayed the start of vaccine research and development, and rapid diagnostic kits, if the Chinese had acted like a nationalism state or pursued its own benefits and concealed the virus's genetic code.

The first vaccine proceeded at record speed through lab and animal trials into human trials only 52 days after the genetic code of COVID-19 was revealed on January 11, 2020.

On November 9, 2020, the BioNThech-Pfizer had developed a vaccine that was more than 90 percent effective against infection (according to the interim analysis), quickly followed by the Boston-Moderna and Oxford-AstraZeneca vaccines. The UK approved Pfizer vaccines for emergency case and the first Pfizer recipient was a 90-year old woman. Later, the US, EU and other countries granted Pfizer the approval.

The fast development of COVID-PCR test kit represents the preventive action based on the principles "rapid identification and immediate response," "containment of disease," and testing and tracing or tracking. Thus, only one percent was found infected before vaccine availability.

Also, some unscrupulous political leaders see no advantage in embracing prevention and control of COVID-19. Trump, as an example leader, is a reason for the US's high infection and death. A historically incredible number of American voters showed up and paved the way to Joe Biden's victory as a "punishment" for Trump. In Biden's speech, he would lead the country and be the world's "honored" leader to bring harmony and solutions to the COVID-19 pandemic.

Similar to the Spanish flu, the COVID-19 can jump to humans and will co-exist with humans for the long years to come. Maybe, it would be a season disease or an epidemic that could be tackled by humans.

Thus, it is clear that COVID-19 is not "afraid" of the power of humans to combat it, but instead the knowledge, honesty, wisdom, and consciousness of mankind. As stated in the hand-writing message in ink by His Majesty King Chulalongkorn which was given to the library of His Highness Price Kromakhun Bidayalabh Bridhyakorn, the founder of the House of Sonakul[61] as follows:

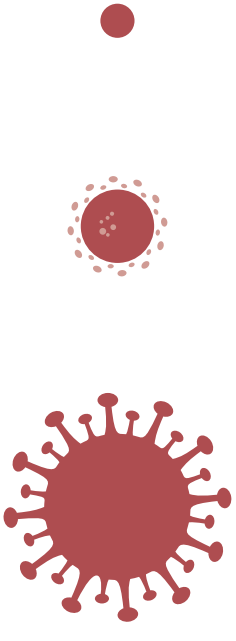
Knowledge is comparable to strength,

Hoesty is like the armor,

Wisdom and a weapon are alike,

Consciousness shields agaist enemies at war.

Criteria for Topic Selection:
Thai Health 2021 Report



01

Health Indicators

Process of Selection

- Selection of key issues for health indicators was based on the recommendation of the ThaiHealth Direction Committee in collaboration with the project Working Team
- There was coordination with agencies which have prepared the required scorecard data on an annual basis, and requesting an up-date of that information
- There was a time frame for completing the articles. The Working Team is primarily responsible for each category. The authors know the writing method, the objectives of presenting each indicator category, and preliminary time requirements for research and creating content
- The next step was to draft the content of health indicators
- Brainstorming sessions were conducted to consider the draft article metrics, the suitability of coverage of content, and metric redundancy through the meeting of the Thai Health Report Working Team and the Direction Committee
- Qualified persons were assigned to review each of the Health Indicators entries and an overview of all categories, and provide advice for improvement

Criteria for the ordering of content

- The Working Team searched for the key messages of the category to be presented so that the content is not scattered in the presentation
- For the statistics about each selected indicator, the focus of the report is on annual data to present trends, including the latest survey results to compare the current situation
- The report places an emphasis on presentation formats and content that are eye-catching, easy to read, and accessible to readers of all ages and backgrounds

02

10 Outstanding Situations on health and wellbeing and 4 Outstanding Accomplishments for Health

This report includes ten noteworthy phenomena that occurred during the year, and four "best practices" which benefit the health of the Thai people, abbreviated as "Outstanding Situations on health and wellbeing 10+4"

Criteria for selection of Outstanding Situations on health and wellbeing

- The milestone occurred during 2020. Or, it could be something reported before but which has had significant developments or changes, and it is a lesson that reflects Thai society
- It is an issue that has a significant impact on the health of Thai people across a wide range. The impact includes security as well
- It is a policy that affects population health that is in effect or the result of an intervention that occurred in 2020
- It is a new phenomenon
- It is a highly prevalent occurrence during the year

Criteria for ordering the content

- The Working Team conducted a survey of opinions from the ThaiHealth Direction Committee members using a Likert scale; the rating scale was divided into 5 ratings, which were: Most (score = 5), Very (Score = 4), Moderate (Score = 3). Low (Score = 2) and Lowest (Score = 1 Point)
- The Team conducted an analysis of frequency of occurrent to rank importance

Criteria for selection of 4 "Outstanding Accomplishments for Health"

The "Outstanding Accomplishments for Health" topics were selected based on degree of success for an invention, an advancement in health science, or a discovery of a new approach that benefits the health of the Thai population as a whole.

03

Special Theme of this year's report

Each year, the report of Thai health features one of two types of special topics: A specific target group or a special subject. The type of topic may alternate from year to year. The origin of the story may be selected from the 10 milestones highlighted earlier, or it could be an in-depth discussion of one of the health indicators.

The key criteria for selecting a special theme for the report are as follows:

1. It is a matter of policy importance
2. It is useful to the public
3. It is a story with a variety of issues and perspectives

Process of implementation

1. The ThaiHealth Direction Committee meets to select a special topic each year
2. The ThaiHealth academic team sets the framework of the special section
3. The Working Team then contacts an expert or experts on the issue to collect preliminary information, and assemble background documentation
4. The ThaiHealth Report Working Team compiles the relevant content which is academically appropriate for public consumption, and double-checks the content with academics and experts on the issue
5. The Working Team invites experts to review the draft special section and offer suggestions for improvement

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10 Outstanding Situations on Health and Wellbeing

1. New generation of political activism: From flash mob to the People's Party 2020

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8 'Cabinet's resolution to open an extraordinary session of the Parliament 26-27 October 63'. (October 20, 2020). *Posttoday*. Retrieved January 1, 2021: from https://www.posttoday.com/politic/news/635989
9 "Jurin" insists that the council meeting is not in vain, has concluded to amend the constitution - set up a solution to find a solution'. (October 28, 2020). *Voice TV*. Retrieved January 1, 2021: from https://www.voicetv.co.th/read/qkFUf4lth
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14 'Teachers sign a petition to support the group of students "Thammasat will not tolerate it"'. (12 August 2020). *Thairath*. Retrieved January 26, 2021: from https://www.thairath.co.th/news/politic/1908879.
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20 '14 October: An ideological battle to change the structure and a new ending'. (13 October 2020). *Prachachat*. Retrieved January 1, 2021: from https://www.prachachat.net/politics/news-536431.
21 'Looking through history "Raja Nationalism" and Thongchai Winichakul'. (August 7, 2019). *BBC News Thai*. Retrieved January 1, 2021: from https://www.bbc.com/thai/thailand-49231878.

2. Smog and wildfires in the North: Sustainable management approaches

1 Examples of these studies are land use modifications and agricultural supply chain design to reduce smog – Nan Province. Thailand without smog: Looking at policies and solutions. Spatial classification of combustion areas For Surveillance and Prevention of Open-Air Burning: A Case Study of Chiang Mai, Lamphun and Mae Hong Son Provinces. Monitoring of open burning in northern Thailand For evaluating emissions and movement of air pollutants for smog management planning.
2 Sutthinee Dontri. (2019). *Thailand without smog: looking at policies and solutions*. Final research report. Research project "Thai people 4.0". Bangkok: National Research Office.
3 Geo-Informatics and Space Technology Development Agency (Public Organization). (2020). *Summary report on the situation of forest fires and smog from satellite data for the year 2020*. Bangkok: Geo-Informatics and Space Technology Development Agency (Public Organization).
4 Arisara Charoenpanyanet. (2020). *Transboundary dust and climate conditions. Lecture papers for the 2nd International Tai Yai Studies Conference presented at Mae Hong Son Community College*. 4-6 September 2020. (Document not published)
5 Akanat Wantanasombat. (26 February 2017). Untying the knot of transnational capital and cross-border toxic fumes. *TCIJ*. Retrieved 20 December 2020: from https://www.tcijthai.com/news/2017/26/scoop/6792
6 Thai media often cite the rankings of IQAir's 'AirVisual' application with headlines like 'AirVisual': "Chiang Mai smoke is the number 1 in the world" or "Number 1 in the country" which actually uses real-time data in each period -- not an average of 24 hours. For example, the 'Air4Thai' application reported by the Pollution Control Department. and ranks only the main cities which has less than a hundred cities in the world in which Thailand has only Chiang Mai and Bangkok. IQAir AirVisual's 2019 World Air Quality Report ranks cities with the worst average air quality in the world and regions. Chiang Mai is not the city with the worst air pollution condition in both ASEAN (1st place is South Tangerang, Indonesia) and Thailand (1st place is Nakhon Ratchasima). Chiang Mai is 372th in the world out of a total of 4,680 ranks. https://www.iqair.com/world-most-polluted-cities
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8 Bureau of Fire Prevention, Suppression and Control, Forest Fire Control Division. (2020). *Annual Report 2019*. Retrieved December 20, 2020: from https://www.dnp.go.th/forestfire/web/frame/2563/fire_report2562.pdf
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10 Referring to the Air4Thai application by the Pollution Control Department, the data are not real-time data, but data from the historical average of the last 24 hours, and from too few measurement stations. The data can't be used to view the actual air condition at that location; the AQI used is below international standard limits, and there is no "very severe" level (purple), etc.
11 Academics recommend 'Clean Air Law' restructuring - Establishment of the Environmental Protection Agency. (February 18, 2019). *Green News*. Retrieved March 14, 2021: from https://www.facebook.com/greennewsagency/posts/2513814905358498
12 The Thai Chamber of Commerce raises the flag in support of the Clean Air Act. (17 July 2020). *Prachachat*. Retrieved March 14, 2021: from https://www.prachachat.net/economy/news-492960
13 "Clean Air Network" meets "Chuan" to submit the draft Act "Overseeing Clean Air Management". (3 August 2020). *Ecological Restoration Foundation*. Retrieved March 14, 2021: from https://resourcecenter.thaihealth.or.th
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15 ThaiHealth supports Chiang Mai smoke problem solutions: Aiming to create good health for Thai people in all aspects. (17 August 2020). *Matichon*. Retrieved January 20, 2021: from https://www.matichon.co.th/lifestyle/news_2305883
16 Try it out! Solving forest fires, dust, smoke in a new way: Talk to the governor. What is the #Chiang Mai Model? (January 6, 2021). *Thecitizen*. Retrieved January 20, 2021: from https://thecitizen.plus/node/38418
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3. Looking at the process of criminal justice through the case of "Boss"

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2 Boss Yoowitthaya: Chronology of events in the past 8 years in the case of the Red Bull heir who killed a policeman. (12 August 2020). *BBC NEWS Thai*. Retrieved January, 3 2021: from https://www.bbc.com/thai/thailand-53732678.
3 Relive the past when a celebrity caused a car crash and an accident that no one wants to happen!. (22 March 2017). *Thairath*. Retrieved January 3, 2021: from https://www.thairath.co.th/news/507788
4 Sia Benz gives 45 million baht to family of Deputy Superintendent's wife. (24 May 2019). *Posttoday*. Retrieved January 3, 2021: from https://www.posttoday.com/social/general/590046
5 Open a summary of the results of fact-checking and legal issues, set 'Wicha Mahakun' as chairman of the non-suing order 'Boss Yoovidhya'. (September 1, 2020). *Thaipost*. Retrieved January 4, 2021: from https://www. thaipost.net/main/detail/76153
6 Boss Yoowitthaya: Chronology of events in 8 years of the case of the Red Bull's heir who killed a policeman, Ibid.
7 Boss Vorayuth "Chuwit" case revealed that he asked for justice to settle the matter 13 times before succeeding on the 14th try! (14 August 2020). *Thansettakij*. Retrieved January 4, 2021: from https://www.thansettakij.com/content/politics/445555.
8 The National Broadcasting and Telecommunications Commission (NSTDA) confirmed that the prosecutor ordered not to indict "Boss Vorayuth" after he crashed and killed the police officer, and requested that all arrest warrants be withdrawn. (24 July 2020). *Manageronline*. Retrieved January 4, 2021: from https://mgronline.com/crime/detail/9630000075942.

9 Letter No. Mor. Mor. Kor. 2525/2563 dated July 24, 2020
10 'Secretary of the Election Commission of Thailand' calls for the Prime Minister to investigate and punish the person who helped 'Boss Yoovidhya'. (25 July 2020). *Mgronline*. Retrieved January 4, 2021: from https://www.thansettakij.com/content/ normal_news/443298
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4. The poverty problem in Thailand: Has it improved or worsened?

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4 Somchai Jitsuchon and Jiraporn Prangpraphan. (2013). *A complete report on the study of policy issues on poverty and income distribution*. Bangkok: Thailand Development Research Institute
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6 Office of the National Economic and Social Development Council. (2020). *Report of the situation analysis of poverty and inequality in Thailand in 2019*. Office of the National Economic and Social Development Council
7 'Covid' has made the problem of poor people more severe around the world. The World Bank is concerned about Thai farmers. (24 October 2020). *Bangkokbiznews.* Retrieved November 20, 2020: from https://www.bangkokbiznews.com/news/detail/904793
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11 The World Bank reveals that more than 6 million Thais are in poverty. (5 March 2020). *Mgronline.* Retrieved November 21, 2020: from https://mgronline.com/stockmarket/detail/9630000022255
12 The World Bank reveals that Thais are increasingly poor and uequal. (March 5, 2020). *Posttoday.* Retrieved November 22, 2020: from https://www.posttoday.com/world/616836
13 The Prime Minister is satisfied with the poverty alleviation effort after the total number of poor people fell to 4.3 million in 2019 from 6.7 million in 2018. (31 October 2020). *Infoquest.* Retrieved December 12, 2020: from https://www.infoquest.co.th/2020/45163
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15 Somchai Jitsuchon. (25 January 2018). NCPO Poverty Policy *TDRI*. Retrieved December 21, 2020: from http://tdri.or.th/2018/01/state-welfare-card/
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19 What are the measures to alleviate the impact of COVID-19? (24 April 2020). *Kapook*. Retrieved December 23, 2020: from https://covid-19.kapook.com/view224897.html

5. "Drink and Drive"

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6 World Health Organization. (2020). *Review of Thailand's status using the Voluntary Global Goals Framework for Risk Factors Affecting Road Safety and Service Mechanisms.* Nonthaburi: World Health Organization in Thailand
7 Kanthiya Pradubboon, Puttan Pantunen, and Chayanin Pratumsuot. (2014). Research on the Economic Cost Analysis of Road Accidents. In the group of insurers in the social security system, 2011. *Journal of Business Administration Economics and Communication*, 9 (2), 108-123.
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6. Violence against students: Problems and solutions

1 The front of society has collapsed. "Teacher Joom" lacks conscience, hurting kindergarten students. (4 October 2020). *Thairath*. Retrieved January 13, 2021: from https://www.thairath.co.th/news/local/bangkok/1944711
2 A collection of outstanding speeches, Mr. Piboon Yongkamon, founder of Sarasas Affiliated School. (October 1, 2020). *Kaijeaw*. Retrieved January 13, 2021: from https://kaijeaw.com/Khun Piboon-Yongkamol/
3 In a society where the debate about punishing students by hitting has always been, there are supporters of the opposition. Reasons why teachers continue to hit students or physically abuse students is because there are still many teachers and parents that also have the idea that "The stick builds the nation." They support hitting because it is seen as a way to focus the attention of students. It is one of the teaching processes to instill a sense of discipline in students, which is necessary for teaching and learning
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Article 40 There shall be a Basic Education Institution Committee. Higher education institutions below the degree level and vocational education institutions of each school to perform duties of directing and promoting, supporting the affairs of educational institutions, consisting of representatives of parents, representatives of teachers, representatives of community organizations, representatives of local government organizations, Alumni representative of the school representatives of monks and/or representatives of other religious organizations in the area and who are qualified

Higher education establishments lower than a degree level and vocational education institutions may have additional members as required by law.

Number of Directors, Qualifications, Criteria, Nomination Methods, Selection of Chairman and Directors tenure and resignation shall be as prescribed in the Ministerial Regulations.

The administrator of the educational institution shall be a member and secretary of the educational institution committee.

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