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AN EFFECTIVENESS ANALYSIS  
OF LONG-TERM CARE PLANS  
IN UDON THANI PROVINCE

THE COSTS OF LOCKDOWN:  
ASSESSING THE EMPLOYMENT  
AND LIVELIHOOD IMPACTS  
OF LOCKDOWN IN THAILAND  
DURING THE COVID-19  
PANDEMIC



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# AN EFFECTIVENESS ANALYSIS OF LONG-TERM CARE PLANS IN UDON THANI PROVINCE\*

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## BACKGROUND AND RATIONALE

Thailand has moved toward becoming an aging society, with the proportion of the elderly population continually increasing every year. The United Nations projected that in 2020 Thailand would become an absolute aged society, in which

the proportion of the elderly, aged 60 years or older, will account for 30 percent of the total population (UN 2017). With deteriorating health and physical fitness, older persons are less able to take care of themselves than younger ones. In 2014, measured by the Barthel ADL (Activities of Daily Living) Index, approximately 16 percent of elderly persons in Thailand had inferior to deplorable health conditions and suffered from difficulties in helping themselves in respect of basic daily living activities, such as feeding themselves, dressing, bathing and using the toilet. More than 90 percent of elders must take care of themselves. In respect of older people living with caregivers, more than 90 percent of them are a spouse or offspring (Chandoevrit and Vajragupta 2017). In addition to the current situation of shrinking family size, there will inevitably be a shortage of family caregivers to assist the elderly with their daily living activities in light of the rising number of seniors living alone, from 7.7 percent in 2007 to 10.8 percent in 2017.

The Thai government realizes the importance of the elderly and is aware of the problems connected with aging. Therefore, the government is promoting a long-term care system aimed at supporting the elderly to be more self-reliant at some levels so that they do not fall into a dependency condition, and to provide dependent elderly persons with proper care in order to reduce the burdens of the elderly on themselves and their families. In fiscal year 2016, the government provided the National Health Security Office (NHSO) with a budget of 600 million baht to set up the Long-term Care System for Dependent Elderly (LTC) program under the national health security system. The LTC program targets the dependent elderly, defined in this study as bedridden and housebound elderly. For this study, older persons' dependency was evaluated by multidisciplinary primary care service teams and networks of sub-district health-promoting hospitals. Moreover, the LTC program is intended to enhance

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participation at the family, local and community levels in order to improve elderly persons' quality of life and well-being. In the first year, the budget was divided into two segments: 100 million baht for establishing a database and 500 million baht for providing long-term care services (NHSO 2016). The beneficiaries of the program are 100,000 dependent elderly persons, who receive on average about 5,000 baht per person per year. The program covers approximately 1,000 local administrative organizations (LOAs), including Bangkok.

Current regular long-term healthcare services do not provide a clear approach and a specific duration for in-home care for the aged. Regular services for the elderly follow needs which are informed and serviced by village health volunteers under the supervision of public health officers. The provision of care services is determined by the area-based context and local budget. In other words, regular long-term care for the elderly is not formatted and detailed systematically. Therefore, the LTC program imposes a rule requiring preparation of a systematic and concrete care plan for the elderly as the primary condition for budget disbursement.

The program/care manager will examine the elderly before they can receive services, prepare the care plan, evaluate the care services and adjust the plan according to the dependent elderly persons' condition and needs. The care plan comprises information about the elderly/service recipients, their health condition and need for healthcare services, pertinent health issues, forms of care services and the caregivers providing those services. In the care plan, the frequency, pattern and activity of healthcare services are determined, such as nursing services, physical therapy and providing advice on well-being depending on the health problems and the needs of the elderly. Then, the care plan will be carefully considered by the sub-committee on the promotion of long-term care for dependent elderly. If approved, LOAs will accordingly allocate the necessary budget

to the healthcare service units.

Therefore, under the care plan, long-term home care for the elderly is improved in that it is more systematic, matching the elderly persons' dependency levels and meeting the demands of the elderly persons and their families.

The article presents an analysis of the effectiveness of long-term care services for dependent elderly who participated in the LTC program under the NHSO administration compared with those who received regular services in Udon Thani Province.

## RESEARCH METHODOLOGY

This study applied cohort analysis in order to examine the change in the average Barthel ADL Index. The surveyed elderly were divided into two groups: a control group or the elderly who received regular services; and the intervention group or the elderly who were under the LTC program. The survey conducted two group pre-test-post-test designs at two time periods: October-December 2016 and April-May 2017.

The surveyed groups comprised the dependent elderly and their caregivers. According to the standards/criteria of the Department of Health, the dependent elderly were evaluated as housebound elderly and bedridden elderly according to their level of independence in the activities of daily living. This study did not include elderly persons with dementia. The Barthel ADL Index for bedridden elderly was less than or equal to 4, while the index for housebound elderly was between 5 and 11 (Department of Health 2014). In this study, elderly persons whose index was higher than 11 were categorized as socially engaged elderly.

In addition, both types of elderly persons were categorized into a control group and intervention group. The control group comprised the elderly who received regular care services and lived in areas which were not allocated an LTC budget. Thus, long-

term care services in these areas are specific to the local context and depend on limited resources. The intervention group was the elderly who joined the LTC program and lived in the areas funded with LTC budget to organize a proper long-term care system. This included an evaluation of the elderly, drawing up a care plan, following up caregivers' work and management of the sub-district LTC committee.

The sample size was determined using t-test analysis to compare the means of both surveyed groups, independently, under a two-tailed hypothesis. According to similar research, the study applied an effect size of 0.33 (Crocker et al. 2013) at the 0.05 significance level ( $\alpha$ ) and 0.80 power of the test ( $1-\beta$ ). As a result, the study obtained a sample size of 292 observations, which were representative of the total population at a 95 percent confidence interval. To prevent statistical discrepancy, however, this study increased the data by 40 percent and collected a total sample size of 405 observations.

### Tools for Data Collection

The research team designed the questionnaire for interviewing the elderly and their caregivers. Trained health officers from the Provincial Health Office in Udon Thani Province collected the data using the evaluation form for assessing an elderly person's degree of self-reliance concerning basic daily routines. LOAs and health officers facilitated the process of data collection from local hospitals. The questionnaire comprised five parts, as follows.

Part 1—preliminary data on the interviewee: including name, surname, age, sex, education, income, number of household members, caregiver, underlying disease, medical welfare scheme, awareness of the LTC program, social activities in which the elderly person participates.

Part 2—independence in activities of daily living: regarding the Barthel ADL Index, basic daily routines cover the following 10 activities: eating, grooming (face/teeth), transferring (bed to chair and

back), using toilet, being mobile on level surfaces, dressing, using stairs, bathing, maintaining bowel and bladder control. These activities were referred from a survey by the Department of Health (Department of Health 2014).

Part 3—care plan: to examine services and types of service each elderly person receives weekly.

Part 4—satisfaction with long-term care: to assess the satisfaction of the elderly persons and their caregivers in the long-term care system, three questions were asked of the elderly and two questions of the caregiver.

Part 5—participation from societal sectors: to review involvement and aid from stakeholders in a system for elderly persons' care. For instance, whether aid comes from within or outside the community, or from the private or public sector.

This article presents the data from Part 1 (partly) and Part 2 with the quantitative analysis.

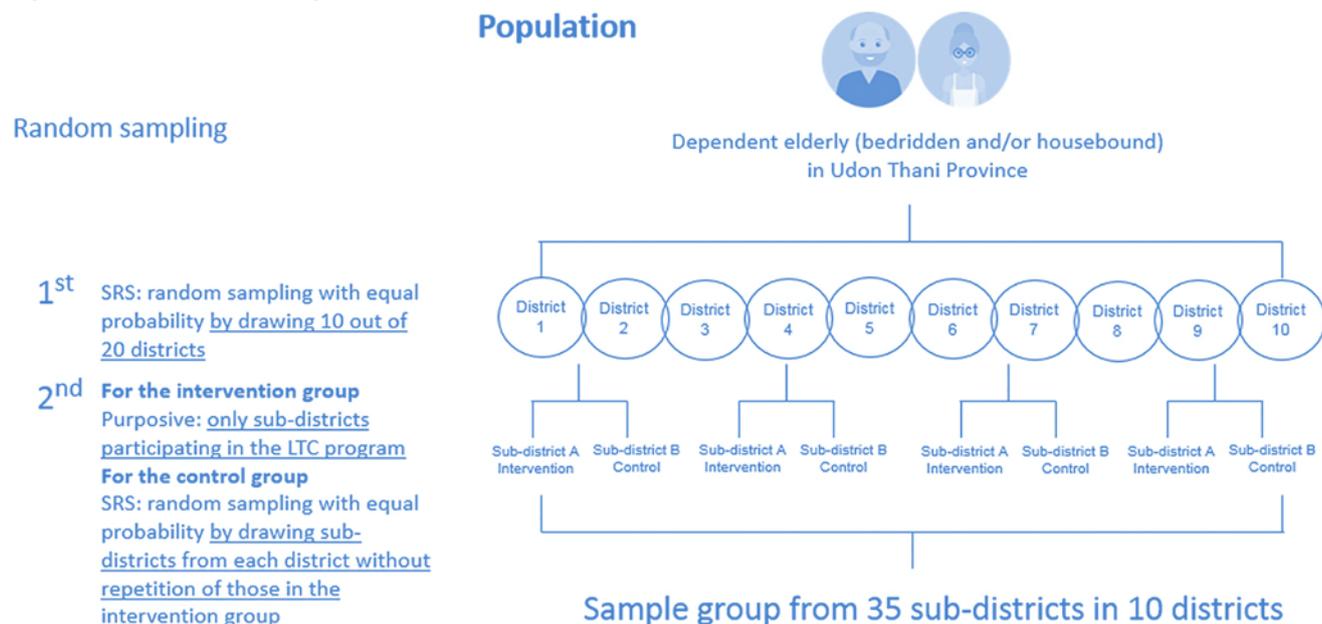
### Data Collection Method

This study applied the simple random sampling (SRS) probability technique to 35 sub-districts located in 10 districts in Udon Thani Province. All locations are independently distributed. The sampling methodology is shown in Figure 1.

The data were collected within two periods. Phase 1 was from October to December 2016 and phase 2 was from April to May 2017 after the elderly were provided with services for 4-6 months. The interview lasted approximately 15 to 25 minutes per person, depending on the interviewee's degree of attention and cooperation.

This study did not apply ethical conduct for research involving humans. Nevertheless, during the data collection process, the researchers clarified the objectives of the study and informed the interviewees about the benefits that the research results were expected to produce; the interviewees received the consent form before the interview.

Figure 1: Random sampling chart



Note: SRS = simple random sampling probability sampling method.

Table 1: Evaluation of long-term care system for dependent elderly (LTC) program efficiency

	Phase 1	Phase 2	Difference
Intervention group	$\bar{y}_0^I$	$\bar{y}_1^I$	$\bar{y}_1^I - \bar{y}_0^I$
Control group	$\bar{y}_0^C$	$\bar{y}_1^C$	$\bar{y}_1^C - \bar{y}_0^C$
Difference	$\bar{y}_0^I - \bar{y}_0^C$	$\bar{y}_1^I - \bar{y}_1^C$	$(\bar{y}_1^I - \bar{y}_0^I) - (\bar{y}_1^C - \bar{y}_0^C)$

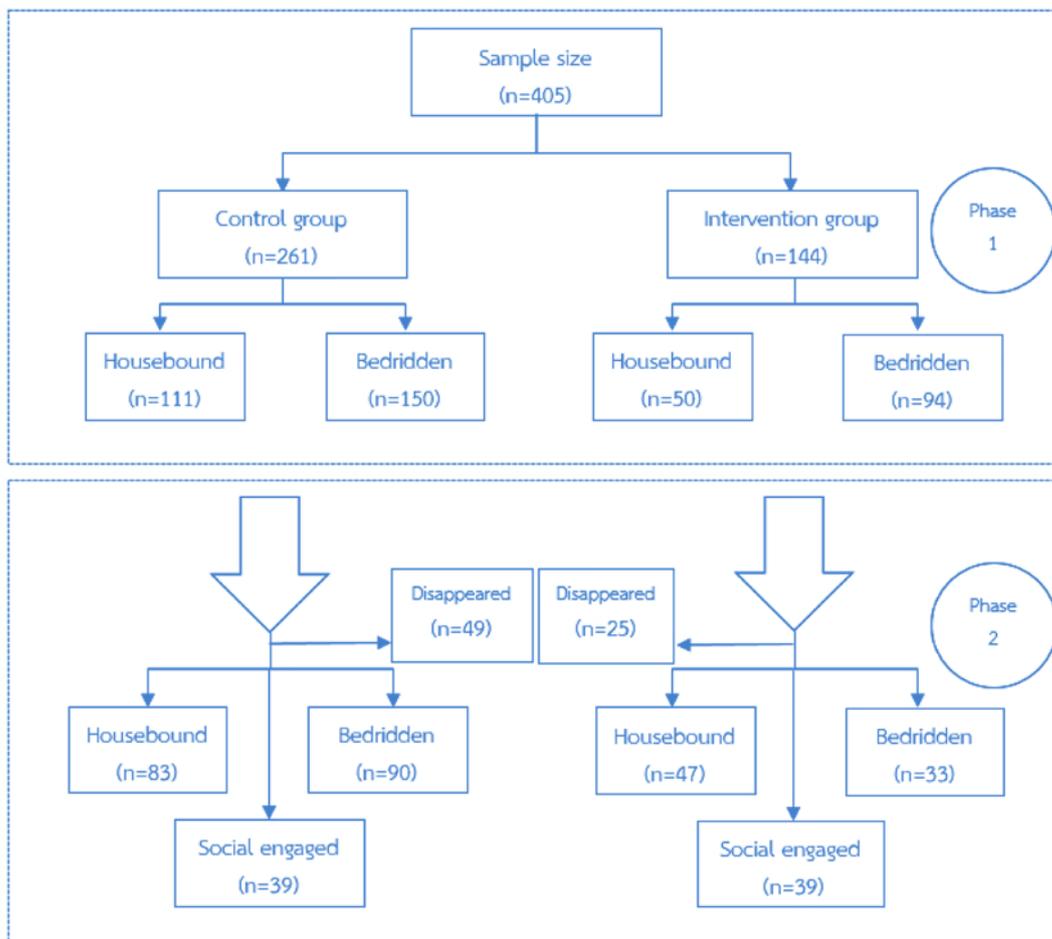
Note:  $\bar{y}_t^g$  = mean of Barthel ADL scores; g = sample group (I = intervention group, C = control group); and t = phase (0 = phase one and 1 = phase two).

## DATA ANALYSIS

This study analyzed the data with descriptive statistics, i.e., percentage, mean, standard deviation; and analytic statistics under two hypotheses. First, the Barthel ADL of the elderly were significantly improved after they had participated in the LTC program, and second, the Barthel ADL Index of the intervention group and control group were significantly different. This study also applied the difference in differences statistical technique to evaluate

the impact of the new program or policy by comparing changes before and after policy implementation and whether or not the program was still in process or had ended. To analyze changes, we calculated the means ( $\bar{y}_t^g$ ) of each group in different periods of the program (Albouy 1994; Bertrand, Duflo, and Mullainathan 2003) (where g is a sample group (I is an intervention group, and C is a control group) and t = phase) as shown in Table 1. This study used the 0.05 statistical significance level (p-value < 0.05) and statistics software Stata 15 to analyze the data.

Figure 2: Data collection method in phase 1 and phase 2



## RESULTS

### Characteristics of the elderly

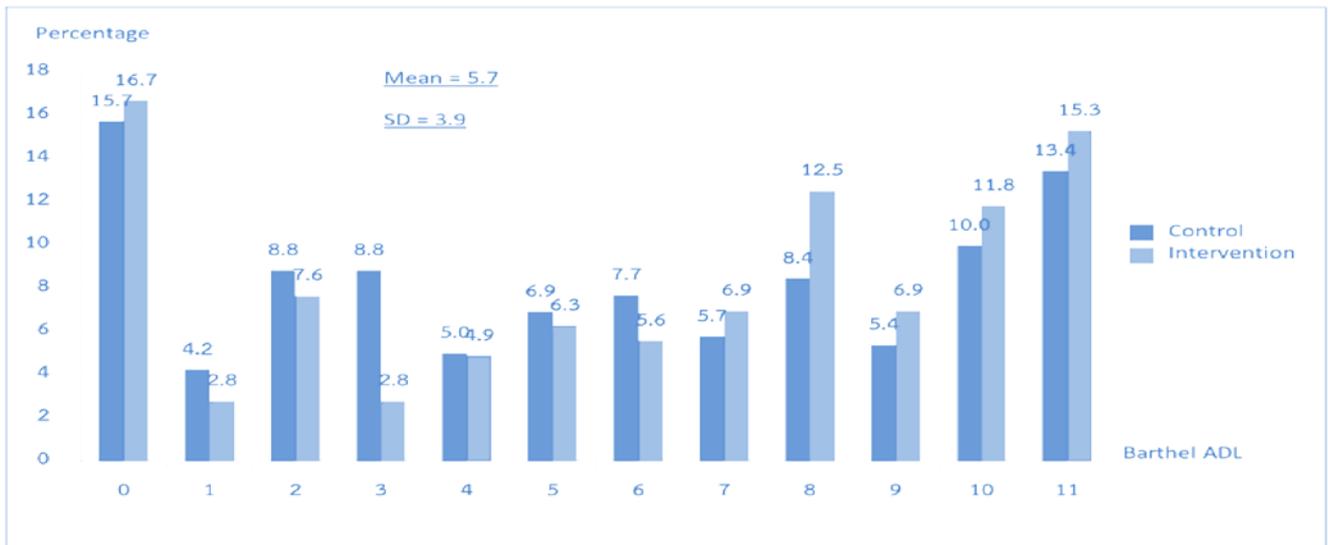
The study in phase 1 found that a sample group of 405 dependent elderly persons in both groups had similar characteristics. More than 60 percent were female and more than 45 percent were older than 80 years. More than 94 percent were educated at lower than or equal to the primary level and more than 50 percent had an annual household income of less than 100,000 baht per year.

More than 60 percent of the elderly had chronic health conditions, such as heart disease, diabetes, and high blood pressure. The proportion of the elderly with chronic health conditions in the housebound elderly group were slightly higher than those in the bedridden group. Almost all elderly

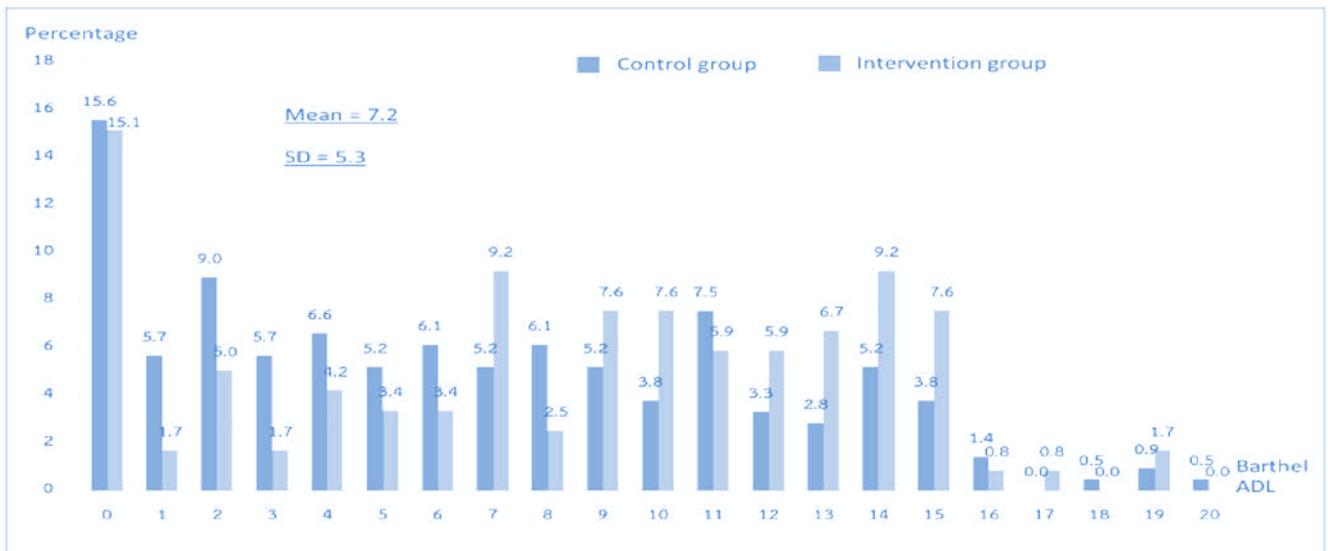
persons used the universal health coverage scheme for receiving hospital services. More than 75 percent of the elderly had 2-5 household members living in the same house. The study found a small proportion of elderly persons who were living alone and no elders in the bedridden group were living alone. The primary caregivers were “offspring” and “spouse” for about 85 percent of the caregivers. Moreover, most caregivers were female (75 percent), and aged 40-59 years old (52 percent); almost all of them lived in a house with the elderly person.

Figure 2 shows that during the data collection in phase 2 after the elderly persons received long-term care treatment for 4-6 months; the study lost 74 samples as some elderly persons passed away or were unable to be contacted. This resulted in an 18 percent reduction in the number of samples, and

**Figure 3: Percentage comparisons of the Barthel ADL scores of the intervention group and control group in phase 1**



**Figure 4: Percentage comparisons of the Barthel ADL scores of the intervention group and control group in phase 2**



the total number of the population decreased to 331 samples. However, the characteristics of the elderly in both phases were not substantially different.

**Effectiveness of long-term care services for the elderly**

Figure 3 shows that the mean and standard deviation of Barthel ADL scores in phase 1 are 5.7 and 3.9, respectively. After the dependent elderly had been treated with long-term care for 4-6 months, 78 people (39 in the control group and 39 in the

intervention group) had higher ADL scores such that bedridden and housebound elderly improved so that they were considered socially engaged elderly (ADL > 11). Figure 4 shows the average and standard deviation of ADL scores in phase 2, which are equal to 7.2 and 5.3, respectively. It should be noted that, in a range of high ADL scores, the proportion of the elderly in the intervention group was higher than that in the control group, meaning that the former group was likely to perform activities of daily living better than the latter group.

**Table 2: The average Barthel ADL Index classified by group**

	Phase 1			Phase 2		
	Control group	Intervention group	Total	Control group	Intervention group	Total
Mean	5.9	6.6	6.2	6.5	8.2	7.2
Standard deviation	3.9	3.7	3.8	5.1	5.3	5.2
Sample size (N)	212	119	331	212	119	331

**Table 3: Number and proportion of the elderly, by dependency level, in phase 1 and phase 2**

Elderly group			Phase 2			
			Bedridden	Housebound	Socially engaged	Total
Phase 1	Total	Bedridden	83 (73)	28 (25)	3 (2)	114 (100)
		Housebound	40 (18)	102 (47)	75 (35)	217 (100)
	Control group	Bedridden	62 (77)	18 (23)	0 (0)	80 (100)
		Housebound	28 (21)	65 (49)	39 (30)	132 (100)
	Intervention group	Bedridden	21 (62)	10 (29)	3 (9)	34 (100)
		Housebound	12 (14)	37 (44)	36 (42)	85 (100)

Note: The number in parentheses is a percentage.

Table 2 shows comparisons of evaluated performance on activities of daily living in the elderly receiving regular services and those in the LTC program. The mean ADL score for the control group in phase 1 was 5.9, while that for the intervention group was 6.6. In phase 2, the mean ADL scores for both groups increased to 6.5 and 8.2, respectively.

In addition to the change in the Barthel ADL Index, the study examined the change in the dependency level of the sample population. In phase 2, or after staying in long-term care for 4-6 months, the status of 25 percent of the bedridden elderly changed to housebound elderly, and 2 percent shifted to the socially engaged group. Also, 35 percent of

the housebound elderly moved upward to become socially engaged elderly. It is noteworthy that the proportion of the intervention group is higher than that of the control group at all levels of dependency. Nevertheless, 18 percent of the housebound elderly moved downward to become part of the bedridden group as their health conditions had deteriorated and most of them were in the control group. The results supported the findings that the long-term healthcare system under the LTC program is more effective than the regular services, as shown in Table 3.

Regarding the dependent elderly's performance on ADL (Table 4), tasks that the elder by person was unable to perform or mostly needed assistance were mobility (using stairs, moving around

**Table 4: Percentage of the elderly having trouble with activities of daily living classified by interview questions**

Activities of daily living	Phase 1			Phase 2		
	Control group	Intervention group	Total	Control group	Intervention group	Total
Eating fully prepared food	86.2	87.5	86.7	74.5	68.9	72.5
Grooming (washing face/teeth/hair/shaving) in the past 1-2 days	50.2	55.6	52.1	43.4	34.5	40.2
Transferring (bed to chair and back)	98.5	99.3	98.8	93.9	97.5	95.2
Personal toileting	95.4	90.3	93.6	84.4	73.1	80.4
Being mobile in a room/house	99.2	100.0	99.5	94.8	95.0	94.9
Dressing	78.9	75.0	77.5	77.8	60.5	71.6
Climbing stairs (1 level)	99.2	99.3	99.3	97.6	95.0	96.7
Bathing	77.0	63.9	72.3	65.6	55.5	61.9
Maintaining bowel control for the past week	83.1	84.7	83.7	75.0	64.7	71.3
Maintaining bladder control for the past week	87.0	89.6	87.9	85.4	76.5	82.2

**Table 5: Results from difference in differences analysis on the mean Barthel ADL, after controlling other factors**

Group	Phase 2 - Phase 1	
	Difference in mean ADL	Standard error of the mean
Control group (N=212)	0.6*	0.26
Intervention group (N=119)	1.6*	0.35
Difference-in-difference	1.0*	0.21

\* *p-value* < 0.05

in a room and home, getting into or out of bed, or transferring from bed to chair), using the toilet, controlling bowel/bladder, and eating. Receiving long-term care services enabled the older adults to perform daily routines better, especially in terms of eating, using the toilet, and maintaining bowel control. The proportion of troubled elderly in the intervention group declined more than those in the control group.

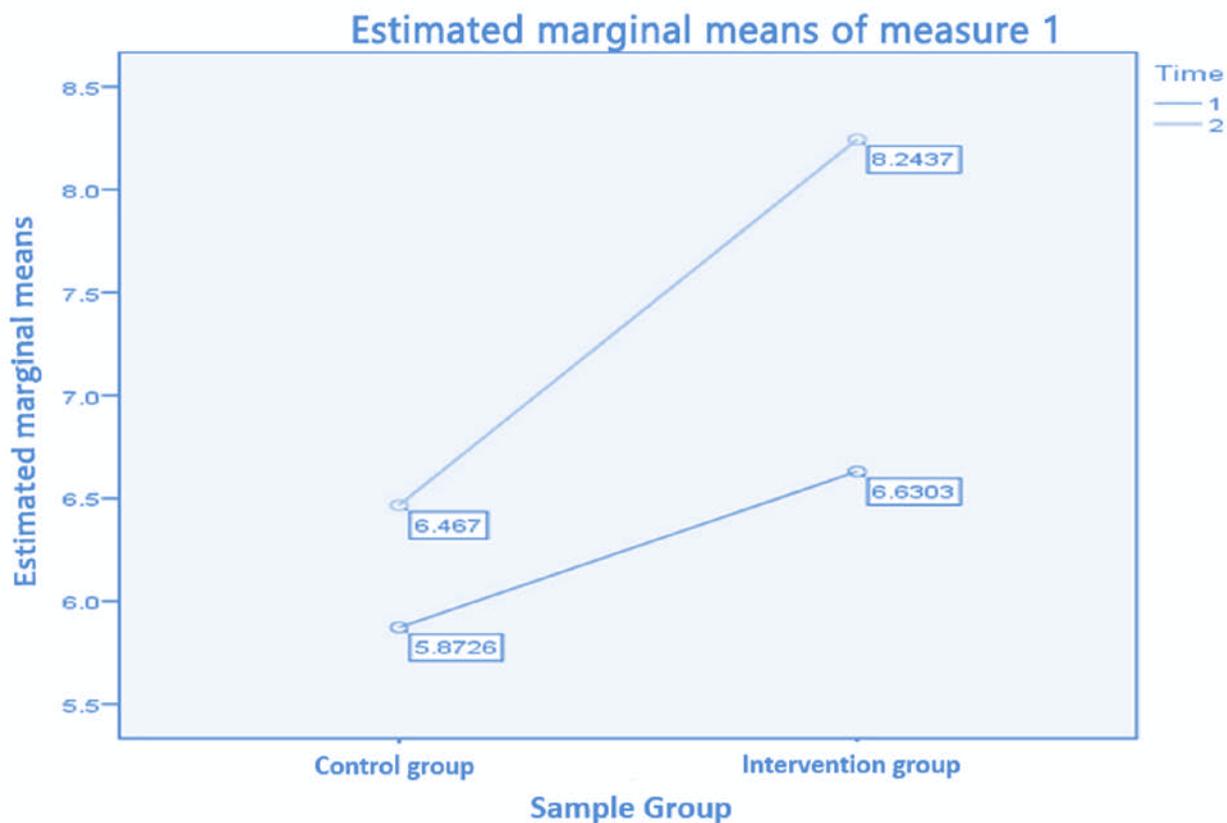
**Statistical analysis**

The results from difference in differences analysis showed that changes in the average Barthel

ADL of the sample (control and intervention groups) in both phases are statistically different at the 0.05 significance level. Changes in ADL scores of the intervention group were statistically higher than that of the control group at the 0.05 level of significance. It should be noted that the study controlled other variables (i.e. education, income, number of household members) that were likely to cause a direct and indirect effect on ADL scores. An increase of 1.0 score stated in Table 5 showed improvement from having participated in the LTC program and reflected in the unparalleled graphs of estimated marginal means shown in Figure 5.



Figure 5: Comparisons of mean ADL scores in phase 1 and phase 2 between the control group and intervention group



Note: Time 1 is phase 1 (before entering the LTC program) and Time 2 is phase 2 (after joining the LTC program).

## CONCLUSION AND DISCUSSION

The Long-term Care System for Dependent Elderly program, under the universal health coverage scheme, in 2016 organized the provision of long-term care services for dependent elderly persons in Udon Thani Province and the community so that those services were more systematic. It encouraged participation from various societal sectors in terms of collaboration and networking more intensively at the governmental, local and communal levels.

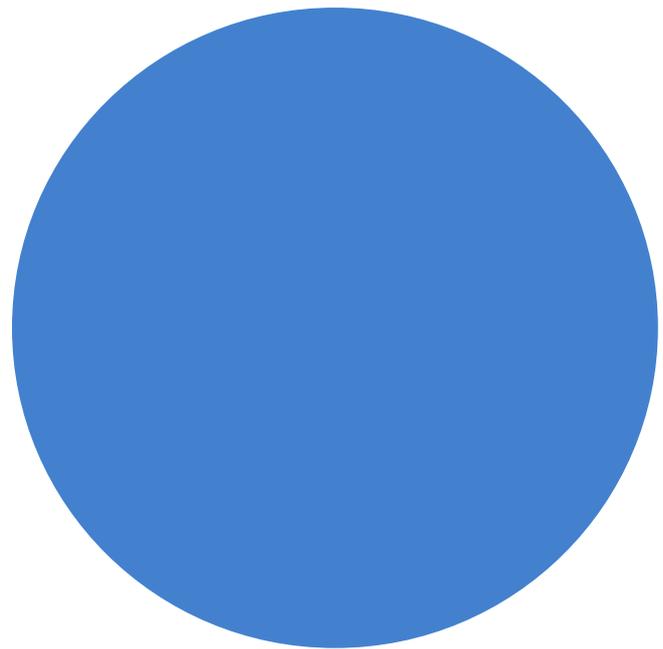
The elderly in the sample groups had higher capability to perform basic activities of daily living after they received the reorganized long-term care services from a care unit, both under regular services and under the LTC program. Dependent elderly in the intervention group who received long-term care

services from the LTC program had higher average Barthel ADL scores by 1.6 points, whereas the mean ADL of the control group receiving regular services rose by 0.6 points. A more considerable raise showed the effectiveness of care services under the LTC program as it substantially improved health conditions compared with regular services. The advantages of the LTC program are that it requires a clear care plan for the elderly, and it assigns health officers and caregivers to visit elderly persons at home regularly so that they can carefully guide them and suggest how to follow the care plan. Thus, the results meet the objectives identified in the care plan. Moreover, meeting and talking to the caregivers gave the elderly a feeling of warmth and prevented them from becoming lonely.

In addition, the LTC program reduced the

elderly persons' dependency level. The condition of bedridden elderly improved so that 10 of them were elevated to the status of housebound, and three became socially engaged. Thirty-six of the housebound elderly rose to the socially engaged group (Table 3). Regarding a study on long-term care at home for dependent elderly, the monthly expenditures for housebound elderly and bedridden elderly in Thailand were 9,667 and 19,129 baht per person, respectively (Chandoevwit and Vajragupta 2017). In terms of the monetary value of these expenditures, the LTC program created a savings in costs of 5.7 million baht per year. Therefore, the government investment of 720,000 baht in the LTC program for the pilot project in Udon Thani Province, which raised the Barthel ADL by 1 point above that of the regular care program, provided an eight-fold return on investment.

The result of this study was consistent with the outcome of the study entitled “Physician-led primary home care” in Sweden that followed-up patients after hospitalization. The study found that the patients who received extra care from regular services had a lower rate of hospitalization and had the ability to walk, which was significantly different from the patients under a regular service program. In the study entitled “The effects of a mindfulness-based lifestyle program for adults with Parkinson’s disease” in Australia, there was a change in ADL score in a group that received additional care for six months. They were healthier compared with a group receiving routine care, with a coefficient or elasticity ( $\beta$ ) of 0.23 at the statistical significance level of 0.05. Moreover, according to the study “Home nursing practice program to promote quality of life from stroke,” the results showed a significant increase in ADL of a sample group that received special long-term care at home; the results were measured at the 6th and 12th week after participation in the program. In contrast, a group receiving regular care had higher ADL only



in week 6 and no improvement after that (Melin, Hakansson, and Bygren 1993; Advocat et al. 2016; Khampolsiri, 2006).

However, since the LTC program was first launched and began working systematically in fiscal year 2016, there have been several limitations to implementation in the actual area. Many local health units were not ready to provide long-term healthcare services because of a shortage of personnel. There also was no care manager to prepare a care plan in order to disburse the relevant budget. Thus, the elderly in different areas do not receive the same level of services under the LTC program. The obstacles include limitations on rules and regulations, in particular, the budget regulations that impede the work in the actual area. Decision power on many issues stays at the policy level or depends on the National Health Security Office.

Furthermore, the criteria to implement the program are required to follow general rules and regulations that generalize the pattern of care services, which do not apply to different local areas. The LTC program is area-based, that is, the practice

is not the same in an urban and a rural area. As a result, the implementation of the program has not been entirely effective.

The study proves that the LTC program enhances the quality of life of the elderly, as shown by increasing their Barthel ADL scores and is also more effective than the regular long-term care services. Therefore, the government should extend the coverage of the LTC program to the elderly beyond the universal coverage scheme. Future research should apply other indicators in addition to the Barthel ADL Index to cover all dependent elderly in Thailand.

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# THE COSTS OF LOCKDOWN: ASSESSING THE EMPLOYMENT AND LIVELIHOOD IMPACTS OF LOCKDOWN IN THAILAND DURING THE COVID-19 PANDEMIC

*Putthiphan Hirunyatrakul\**

## *Abstract:*

Thailand is among the few countries in the world that successfully contained its national epidemic of COVID-19 infection. That success, however, has come with a high price tag as the country is heading into economic recession as a result of the stringent domestic lockdown between March and May 2020 and the continued closure of the country to international tourism. In deriving results from two joint COVID-19 economic impact surveys conducted by the National Statistical Office of Thailand, UNICEF Thailand, and TDRI between April 23 and May 18 (n = 14,287), the rate of unemployment (excluding civil servants) during the lockdown rose

to 19.5 percent, or approximately 6.5 million persons in the labor force, with economically active youth (15-24 years old) and non-standard workers bearing the greatest brunt of the adverse effects of the nationwide lockdown. Although the order closing public venues produced the most adverse impacts on the livelihood of respondents, a higher proportion of respondents, especially non-standard workers, could not adapt to the curfew. While the government has enacted a wide array of relief packages to cushion economic hardship among those affected, the 5,000-baht cash handout for informal workers was plagued with exclusion errors, although the system did improve with the expansion of coverage. The inability of micro-enterprises to access soft loans has remained a pressing issue. In moving toward post-lockdown recovery, the government should create a clear protocol of containment interventions to prepare for a possible second wave of local infection. It should ensure that relief packages reach the most marginalized segments of the economy in the short run and create an infrastructure of integrated social registry and time-efficient delivery mechanisms in the long run. Further, the government should increase public spending on social protection, especially with regard to vulnerable groups, and create employment opportunities that reflect structural changes in the post-pandemic labor market.

*Keywords:* COVID-19, lockdown, unemployment, containment measures, relief packages

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## INTRODUCTION

Thailand reported its first confirmed COVID-19 patient on January 13, 2020 (WHO 2020); Thailand was projected by epidemiologists to be the most at-risk country for COVID-19 outbreaks outside of China (Lai et al. 2020). Fast forward to July 2020, Thailand was among the few exceptional countries in the world that had successfully curbed community transmission of the coronavirus and did not register even a single COVID-19 fatality since June 2. Credit should be attributed to the country's strong healthcare system (the world's sixth best in terms of health preparedness for communicable diseases), dedicated community-based contact tracing conducted by more than a million village health volunteers, stringent lockdown measures and highly cooperative citizens in keeping personal hygiene and social distancing intact. Although Thailand has swiftly mitigated this public health crisis, its GDP sharply contracted by 8.1 percent (Bank of Thailand 2020) as a result of the domestic lockdown and shocks from the disrupted global supply chain; thus, the country was unable to avoid a pandemic-induced recession. The impact of the economic shock has reverberated across the society; however, that shock is "distributed differently over time, over geography, across economic sectors and between different groups including vulnerable groups" (Lee, 2020: 167). It is thus imperative to comprehensively assess the severity of the containment measures on employment and income loss, identify which groups were least able to adapt under the lockdown, and evaluate how effective and accessible the existing economic relief package is in lessening economic hardship for different groups of the total population. Without the development and widespread distribution of an effective vaccine, the threat of a second coronavirus outbreak will always linger. These insights will be valuable for the formulation of informed policies and concomitant

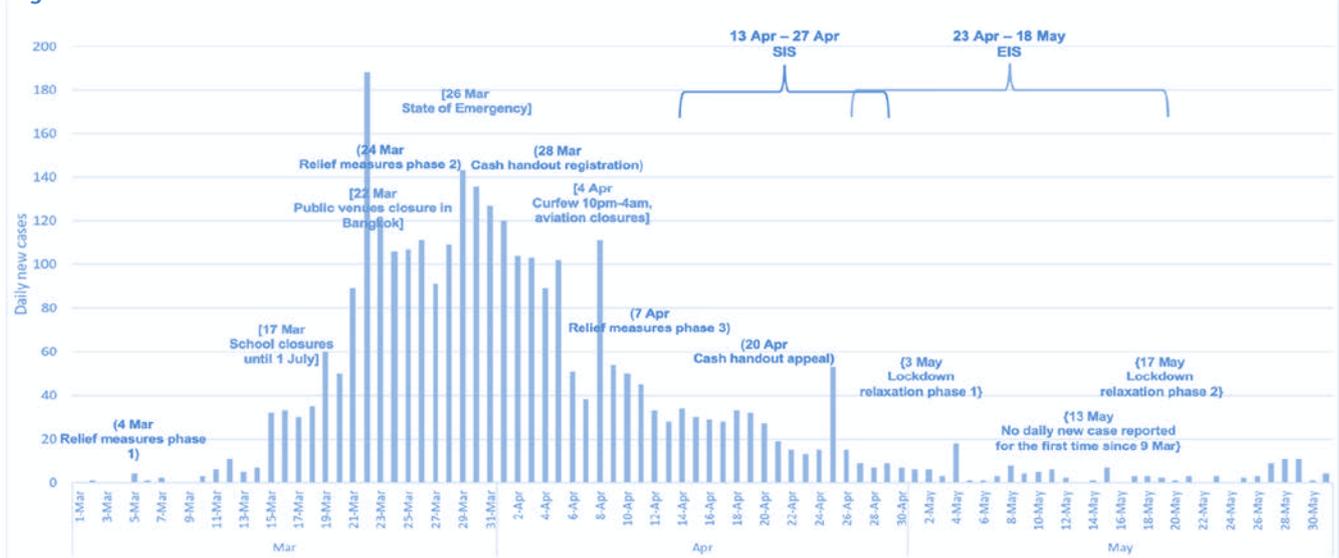
decision-making should there be a need for a second lockdown. This article will be presented in the following order: methodology, survey demographics, employment outlook, adaptability under lockdown, and effectiveness of relief measures. The article will conclude by recommending a set of policies derived from the results obtained.

## METHODOLOGY

To gain a better insight into the extent of the spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes COVID-19 infection, and the containment measures imposed by the government between March and May 2020 and their effects on people and their livelihood, the National Statistical Office of Thailand (NSO), in collaboration with UNICEF Thailand and Thailand Development Research Institute (TDRI), conducted two COVID-19 online surveys. The former survey was focused on social impacts; the latter, on economic impacts. The Social Impact Survey (SIS) surveyed 43,338 samples between April 13 and 27, 2020, while the Economic Impact Survey (EIS) surveyed 27,429 samples between April 27 and May 18, 2020. This article will take into account only the EIS, as the two surveys assessed vastly different demographic groups. In particular in the SIS, more than 70 percent of the respondents had a bachelor's or higher degree and 41 percent of them were from the Bangkok Metropolitan Region (BMR); in the EIS, the corresponding percentages were 44.1 percent and 19.5 percent respectively. Therefore, to avoid sampling inconsistency, it is better to examine SIS on another separate occasion.

Two "Cs" need to be kept in mind when assessing EIS results: context and caveat. For such a rapidly developing issue as the COVID-19 crisis, the context of the findings is essentially that Thailand had a vastly different outbreak trajectory from March to May (Figure 1). When the EIS was

Figure 1. Timeline of containment and relief measures



Note: Statistics on daily new cases are taken from Thailand's Department of Disease Control (<https://covid19.th-stat.com>). Text in [ ] = containment measures, in ( ) = relief measures, and in { } = lockdown relaxation phases; SIS = Social Impact Survey; EIS = Economic Impact Survey.

conducted, the context should be viewed as a period when the outbreak was virtually contained; the state of emergency had been in full effect for more than two months, and the re-opening of the economy was at an early stage. The next iteration of the survey is expected to yield notably different results as most economic activities will have resumed by the time the next survey is conducted. On the other hand, there are two main caveats for the EIS. First, of the 27,429 samples collected, 13,142 (47.9%) were civil servants and state enterprise employees who faced little or no job insecurity, a situation which distorts the results and gives a false sense of optimism pertaining to the severity of the COVID-19 crisis. Hence, the findings in this article will not include responses from that group so that the findings provide the most “accurate” depiction of the real situation. Second, a limitation of online surveys is that they can miss people at the bottom of the income distribution who do not have Internet access. Furthermore, since the EIS did not ask the respondent’s real income range, the survey could not ascertain whether the samples sufficiently represent the whole population in terms of income distribution. Therefore, figures from this article should not be “directly quoted” but

instead used for providing “directional insight” for policymaking. Likewise, this article will not dive deep into the impact of the crisis on vulnerable groups (i.e. children 0-6 years old, elderly persons, persons with disabilities, and bedridden persons) as extensive analysis can be found in Loetnithat and Jitsuchon (2020), using the same dataset.

## SURVEY DEMOGRAPHICS

After excluding civil servants and state enterprise employees, the available sample becomes 14,287 samples, 37.5 percent of whom are male and 62.5 percent are female (**Table 1**). The majority of the respondents are in the age range between 40 and 59 years old (32.8%) followed by those 25-39 years old (32.8%). The cut-off point for education level is whether or not respondents had at least a bachelor’s degree. Hereafter, references to those having a bachelor’s or higher degree will employ the term “high education;” to those who do not, “low education.” Unlike the SIS, which is disproportionately dominated by high education respondents, the EIS is more evenly distributed, albeit slightly skewed toward low education. Although the EIS was able to



**Table 1. Survey demographics**

Characteristics		n	Percentage
Sex	Male	5,360	37.5
	Female	8,927	62.5
Age group	0-14	62	0.4
	15-24	2,007	14.0
	25-39	4,687	32.8
	40-59	5,924	41.5
	≥ 60	1,607	11.2
Level of education	Low education	7,995	55.7
	High education	6,332	44.3
Region of residence during COVID-19 outbreak	BMR	2,784	19.5
	Central	2,125	14.9
	West	339	2.4
	East	919	6.4
	Northeast	4,520	31.6
	South	1,951	13.7
	North	1,649	11.5
Total		14,287	100.0

Note. *n* = number of samples, BMR = Bangkok Metropolitan Region.

**Table 2. Percentage change in mobility, by region, before and during COVID-19 outbreak**

Region <sub>bc</sub>	Region <sub>dc</sub>							Net mobility
	BMR	Central	West	East	Northeast	South	North	
BMR	<b>87.0</b>	2.8	0.5	1.3	5.7	1.7	1.0	-9.8
Central	0.9	<b>97.0</b>	0.1	0.4	0.8	0.2	0.6	3.0
West	1.8	0.9	<b>93.9</b>	0.3	1.5	0.9	0.6	3.0
East	1.2	0.5	0.1	<b>92.1</b>	5.6	0.3	0.1	-0.5
Northeast	0.6	0.1	0.1	0.3	<b>98.7</b>	0.2	0.0	4.9
South	1.0	0.4	0.3	0.1	0.6	<b>97.5</b>	0.3	1.4
North	1.3	0.9	0.2	0.2	0.3	0.4	<b>96.8</b>	-0.1

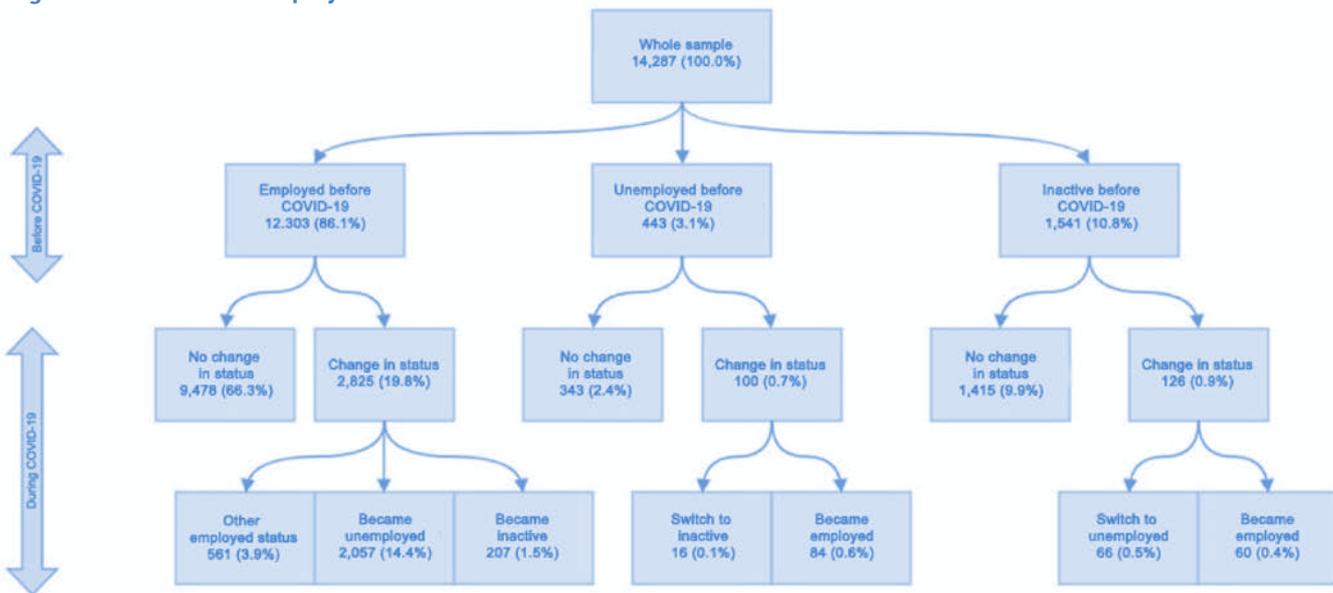
Note. <sub>bc</sub> = before COVID-19 outbreak; <sub>dc</sub> = during COVID-19 outbreak.

collect samples from all 77 provinces nationwide, regionally the distribution of samples is quite skewed toward provinces in the Northeast at 31.6 percent. BMR consists of Bangkok and five provinces in its vicinity: Nonthaburi, Nakhon Pathom, Pathum Thani, Samut Prakan, and Samut Sakhon; BMR came in second place at 19.5 percent.

Following the order issued on March 22 closing public venues in Bangkok, there was a large exodus of workers going back to the countryside, which subsequently resulted in a surge of COVID-19 cases found all over the peripheral provinces of Thailand (La Brosse and Lee 2020). In this survey,

8 percent of the respondents changed their province of residence amid the outbreak. As expected, BMR had the highest negative net mobility rate of -9.8 percent, as 13.0 percent of respondents who formerly used to stay in BMR migrated back to their domicile in the countryside, with the Northeast being the most common destination (**Table 2**). Respondents who were unemployed or furloughed during the outbreak (18.0%) were three times more likely to migrate than those who were fortunate enough to retain some form of employment (4.9%), with a significant chi-square test of independence ( $X^2 = 441.1$ ,  $df = 1$ ,  $p < 0.001$ ).

Figure 2. Overview of employment outlook



Note: % is the percentage of the whole sample.

Table 3. Unemployment outlook

	Before COVID-19	During COVID-19		
		Pre-relaxing	Phase 1-2	Total
Labor force in survey	12,731	7,038	5,597	12,635
Unemployed (lockdown)		1,339	782	2,121
Unemployment rate (lockdown)		19.0%	14.0%	16.8%
Unemployed (all)	440	1,497	964	2,461
Unemployment rate (all)	3.5%	21.3%	17.2%	19.5%

## EMPLOYMENT OUTLOOK AND INCOME CHANGE

Of the 14,287 samples, 86.1 percent were in some form of employment, 10.8 percent were in the inactive labor force (i.e. students, retirees, or individuals who were unable to work due to compromised physical/mental health condition), and lastly, 3.1 percent were unemployed before the outbreak materialized (Figure 2). In the days after the lockdown measures were instituted, employment fell to 71.2 percent of the labor force, which meant that unemployment dramatically spiked to 17.3 percent, and 11.5 percent of workers exited the labor force during the lockdown, which denoted a

456.7 percentage point (pp) and 6.3 pp gain in the proportion of net unemployed and inactive labor force respectively (Figure 2).

The unemployment rate before the COVID-19 outbreak as shown in Table 3 was 3.5 percent, which is suspiciously high when considering that the Labor Force Survey (LFS) always showed unemployment under 1 percent prior to the COVID-19 outbreak, but this may be due to bias in the small sampling size and the ambiguity of the wording in the question “Before COVID” which lacks time-precision. The more noteworthy figures are the unemployment rate during the lockdown (employed before the COVID-19 outbreak, unemployed during the lockdown) and the total unemployment rate (those

**Table 4. Binary logistic regression of unemployment during COVID-19 outbreak**

Variables	Coefficient	Standard error	p-value	OR [CI 95%]
<b>Sex (1=male, 2=female)</b>	.247	.052	.000	1.280 [1.156-1.417]
<b>Education (0=low, 1=high)</b>	-.027	.054	.618	.973 [.875-1.083]
<b>Age group (0=no, 1=yes)</b>				
15-24	.923	.120	.000	2.517 [1.988-3.186]
25-39	.271	.109	.013	1.312 [1.060-1.624]
40-59	.016	.107	.882	1.016 [.824-1.252]
<b>Work status before COVID (0=no, 1=yes)</b>				
Retired civil servants	-.640	.441	.146	.527 [.222-1.250]
Family business	1.144	.224	.000	3.138 [2.023-4.867]
Owners with ≥10 employees	1.779	.226	.000	5.922 [3.806-9.216]
Owners with <10 employees	2.018	.169	.000	7.521 [5.401-10.473]
Self-employed	1.735	.145	.000	5.672 [4.266-7.541]
Private-sector employees	1.597	.143	.000	4.938 [3.731-6.535]
Non-standard workers	2.839	.142	.000	17.103 [12.941-22.604]
<b>Constant</b>	-4.092	.195	.000	.017

*Note: Unemployed are excluded before COVID-19 (n = 13,785), OR = odds ratio, 95% CI = lower and upper bound of 95% confidence interval.*

unemployed before plus during the lockdown), which were 16.8 percent and 19.5 percent respectively. It is estimated that the labor force, excluding civil servants and state enterprise employees, according to the LFS totaled roughly 33.7 million persons; the estimated unemployment figures in the second quarter according to this survey were therefore between 5.66 million and 6.58 million persons. Nevertheless, the aggregate unemployment ratio dropped by 4.1 percent between the pre- and post-relaxing phase of the lockdown, inferring that unemployment, especially temporary force majeure, is highly responsive to lockdown-relaxing phases.

The binary logistic regression in **Table 4** illustrates which associated characteristics have higher odds of being unemployed during a COVID-19 outbreak. The sex of a person was positive and significant, which means that the odds for females to be unemployed during the lockdown were 1.28 times higher than that of males. The level of education was initially negative and significant, suggesting that the higher the education level one had

obtained, the lower were the odds of unemployment. However, when work status variables are included into the regression analysis, education becomes statistically insignificant, which infers that work status has more explanatory power than the former. Because age group and work status are non-binary categorical variables, the author has converted them into dummy variables for the purpose of calculation. The base case (category reference) for work status is inactive respondents, while for age group it is respondents older than 60. From the results, youth (15-24 years of age) and non-standard workers, which includes daily wage workers, on-call workers, and sub-contract workers, were the most positive and significant of their respective group, meaning that they had the highest odds of unemployment during lockdown. Given that three-quarters (74.9%) of non-standard workers in this survey did not have a bachelor's degree, it is fair to conclude that the statistics correspond with the public sentiment that inexperienced (i.e., youth, new graduates) and low-/semi-skilled laborers bore the greatest brunt

**Table 5. Percentage level of income change in comparison with the time before the COVID-19 outbreak**

	Decrease ≥50%	Decrease <50%	Unchanged	Increase <50%	Increase ≥50%
<b>Work status before COVID-19</b>					
Family business	40.7	41.2	15.7	1.6	0.8
Owners with ≥10 employees	48.9	32.0	18.0	0.7	0.4
Owners with <10 employees	53.9	36.8	8.0	0.9	0.4
Self-employed	44.6	38.6	15.5	0.9	0.4
Private-sector employees	30.2	34.8	33.4	1.3	0.3
Non-standard workers	47.4	41.8	9.1	1.0	0.7
<b>Region during COVID-19</b>					
BMR	38.1	30.7	29.9	1.2	0.1
Non-BMR	40.7	39.3	18.5	1.1	0.5
Total	40.2	37.5	20.7	1.1	0.4

*Note: Inactive, unemployed, retired civil servants and respondents younger than 15 years old (n = 11,803) are excluded.*

of unemployment resulting from the containment measures.

Regarding income change, 77.7 percent of employed respondents reported income loss: 40.2 percent lost more than half their income; 20.7 percent managed to retain their usual income; and only 1.5 percent were able to take the advantage of the pandemic to gain extra income (**Table 5**). Among entrepreneurs, micro-sized enterprises (having fewer than 10 employees) suffered the highest income loss at 90.7 percent as they were not as nimble as own-account entrepreneurs but at the same time were not as well endowed with resources as larger-size enterprises (more than 10 employees) to adapt their business strategies. Among workers, private-sector employees had the most income security of all employed groups as 33.4 percent reported unchanged income, contrary to non-standard workers, only 9.1 percent of whom remained unscathed from income loss caused by the lockdown.

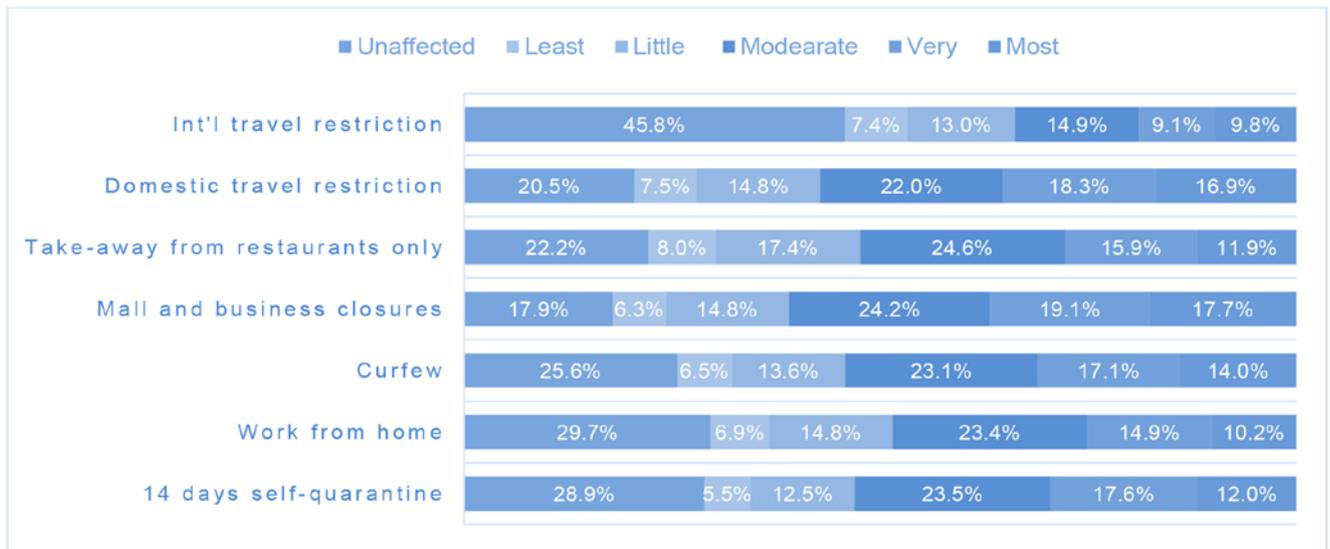
Although COVID-19 cases found in BMR accounted for more than 60 percent of Thailand's total confirmed cases, employed respondents in BMR reported a higher ratio of unchanged income and a lower ratio of income loss in comparison with non-BMR counterparts (**Table 5**). The finding is

consistent with a NIDA poll (2020) which revealed that respondents in Bangkok on average experienced less income loss than those living in other regions of the country. Two plausible explanations on why the level of income loss was less pronounced in BMR than other regions can be attributed to its responsiveness to the “new normal,” namely, working from home and so-called gig employment. First, 27.9 percent of BMR respondents worked from home regularly for more than two weeks, whereas only 17.5 percent of non-BMR respondents had that privilege. Second, food delivery had become a new norm for middle-class urban dwellers in Bangkok when dining-in was prohibited. The change in consumer behavior presented ample opportunity for furloughed/unemployed individuals in BMR to temporarily work as food delivery drivers for various platforms in order to substitute their income loss.

## ADAPTABILITY UNDER LOCKDOWN

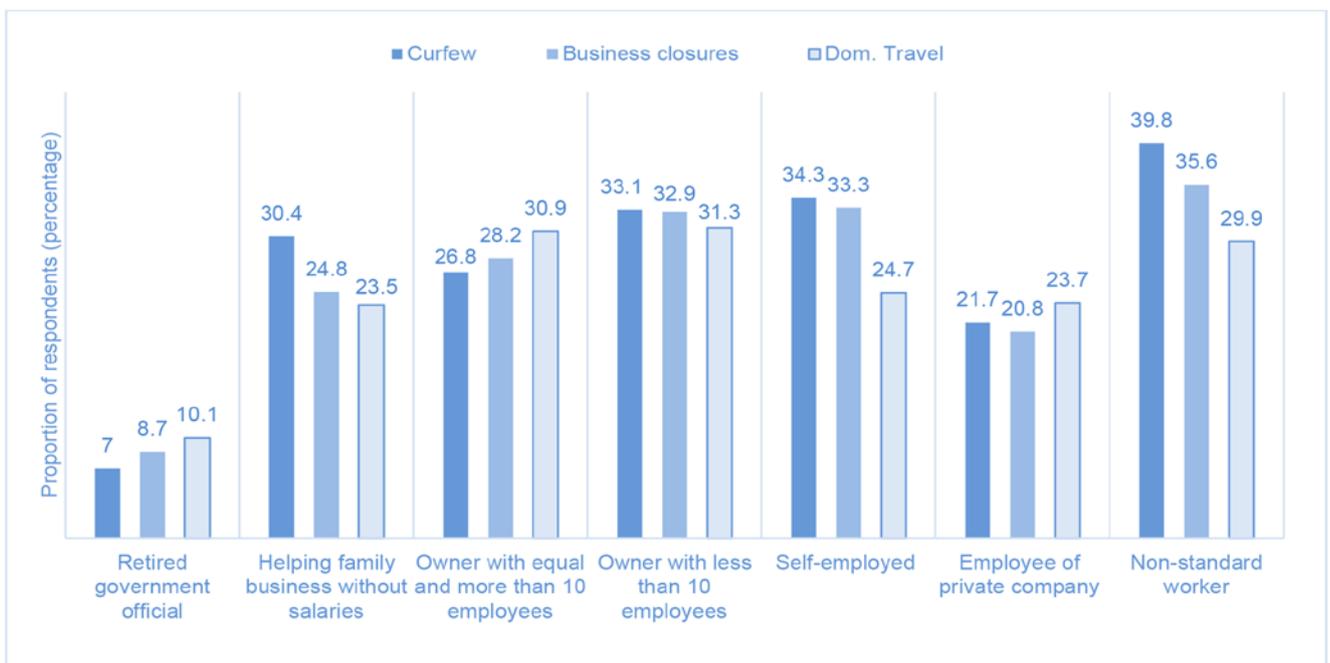
All containment measures inevitably caused inconvenience and adversely affected livelihoods in return for maintaining public health security. In **Figure 3**, among all containment measures imposed in March and April 2020, mall and business closures

**Figure 3. Severity of containment measures on livelihoods**



Note: Full samples (n = 14,287).

**Figure 4. Percentage of employed respondents who could not adapt**



affected the respondents' livelihoods the most, followed by domestic travel restrictions, and then the curfew from 10 p.m. to 4 a.m. International inbound and outbound travel restrictions were the least adversely affected measure. Furthermore, 57.3 percent of the respondents asserted that they could live comfortably without "getting on the edge" for no longer than three months, which meant no later than July, counting from the days the survey data

were collected. In incorporating these two factors, the measures taken by the Center for COVID-19 Situation Administration (CCSA) in setting the timeline for resuming all domestic economic activities, including night activities, for July but not lifting international restrictions was the right call, and corresponds with most of the respondents' preferences.

In **Figure 4**, non-standard workers were

**Table 6. Percentage of adverse effects of containment measures on employment and business activity**

	Unaffected	Suspended		Dismissed		Business closure	Reduced sales	Production shortage
		RS	NS	C	UC			
Retired civil servant	71.2	1.4	1.1	7.8	0.4	4.1	8.2	5.9
Helping family business	16.4	1.3	1.9	2.9	1.9	11.3	44.7	19.7
Owners with ≥10 employees	12.2	4.3	4.1	6.3	1.6	17.7	40.2	13.6
Owners with <10 employees	5.2	1.6	3.7	7.4	1.9	22.2	46.1	11.8
Self-employed	11.1	1.0	1.9	3.9	1.4	20.0	42.7	18.0
Private-sector employees	30.6	19.9	9.8	7.4	4.5	2.0	19.4	6.4
Non-standard workers	10.1	7.2	16.6	6.9	18.4	11.0	18.2	11.6
Total	19.9	8.9	7.4	6.1	5.4	11.3	29.2	11.9

Note: RS= reduced salaries, NS = no salaries, C = compensated, UC = uncompensated.

generally the least able to adapt to the containment measures, but inexplicably they were more adversely affected by the curfew than other groups, inferring a sizeable number of non-standard workers who could not adapt most likely worked on the night shift, which clashed with the curfew time. Moreover, although **Figure 3** indicates that mall and business closures affected livelihoods the most, a higher proportion of people could not adapt to the curfew than to the closure order, as shown in **Figure 4**. It is possible that in the daytime, even offices and department stores were closed; virtual conferencing, e-commerce and delivery service could act as viable alternatives for keeping businesses operating. Conversely, the mobility impasse during curfew time did not permit much leeway for alternatives for business operations, resulting in a higher proportion of affected respondents not being able to adapt to the curfew.

From **Table 6**, reduction in sales was the most prominent adverse effect of the COVID-19 crisis on employment and business activity, signifying that e-commerce and home delivery services were not enough to compensate the forgone in-store sales. There is also a visible pattern of adverse effects associated with employment status, as shown in **Table 6**. Enterprise owners of all sizes unanimously ranked reduced sales among their top two priority concerns. Among remunerated workers, private-

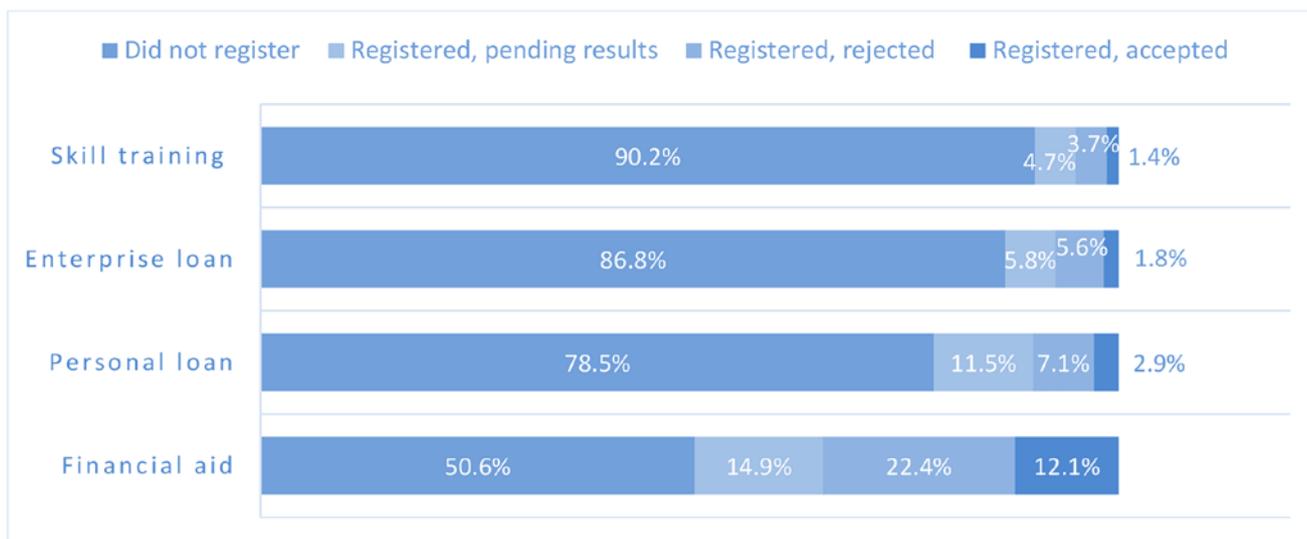
sector employees were the least affected, and of those who were, most were suspended with reduced salaries (19.9%). The non-standard workers, on the contrary, were mostly deprived of safety nets against job loss, as 18.4 percent were laid off without compensation, and 16.6 percent were suspended without pay. The pandemic thus utterly exposed the precarious nature of non-standard employment.

## EFFECTIVENESS OF RELIEF MEASURES

To offset the pandemic-induced economic crisis, the Thai government has launched a series of relief programs, each of which is aimed at serving a different purpose and a different group of recipients. At the time the EIS was conducted, the following measures were enacted: a 5,000-baht cash handout for affected workers and self-employed persons who were not in the social security system; extension of soft loans with an annual interest rate of 2 percent for small and medium-sized enterprises (SMEs); extension of soft loans with a monthly interest rate of 0.1 percent for the general public; a skills development and job creation scheme; and measures to alleviate living expenses, such as a 3 percent discount on electricity and water bills (for more details, see La Brosse and Lee 2020: 4-5).

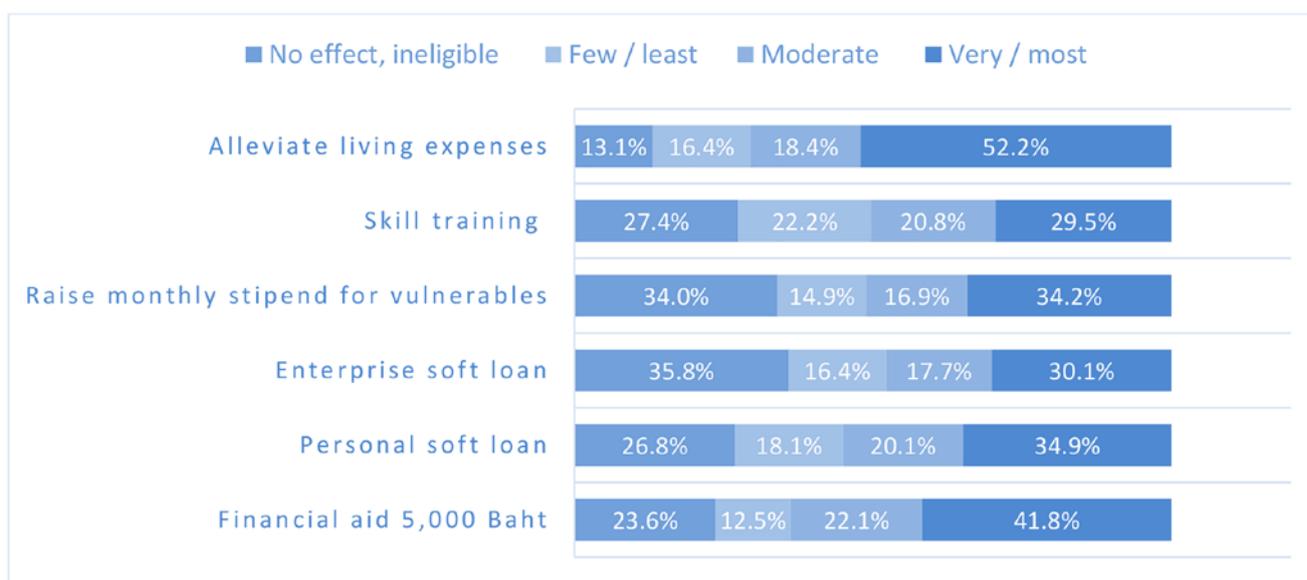
In **Figure 5**, cash handouts were the most commonly applied of all measures on the list, with

**Figure 5. Usage of economic relief package**



Note: Full sample size (n = 14,287).

**Figure 6. Effectiveness of relief measures**



Note: Full sample size (n = 14,287).

51.9 percent of the total sample registered in the scheme; the registration rate rose to 80.4 percent and 76.6 percent for non-standard workers and self-employed persons respectively. Conversely, the skills development scheme was the least commonly applied program, with a registration rate of only 10.2 percent. Regarding the effectiveness of the relief measures, **Figure 6** shows that more than half of the respondents considered universally applied living

expense alleviation schemes to be the most impactful measure in relieving their burdens, followed by the conditional 5,000-baht cash handouts. Raising the monthly stipend for vulnerable groups, such as the child support grant and state welfare card, ranked third in terms of burden relief but this measure had the second largest portion of ineligibility, as only verified low-income households could become beneficiaries.

**Table 7. Percentage of reasons why respondents did not get any state assistance**

Employment status <sub>bc</sub>	Did not need assistance		Needed assistance but did not register				Registered	
	Affected	Unaffected	Complex procedure	Ineligible	Unaware of the scheme	Did not know details	Rejected	Pending
Retired officials	9.2	46.3	2.9	34.6	1.0	1.6	0.8	3.5
Family business	10.1	11.4	8.8	19.1	4.5	9.3	20.2	16.5
Owners with ≥10 employees	11.4	11.8	8.8	31.3	4.4	5.1	12.5	14.7
Owners with <10 employees	12.6	6.5	10.5	20.8	4.8	6.9	19.0	18.9
Self-employed	5.5	8.8	9.7	12.6	5.2	10.2	23.0	25.1
Private-sector employees	6.5	16.5	7.0	37.4	3.6	6.0	12.8	10.2
Non-standard workers	3.8	6.2	9.3	12.4	7.6	9.6	27.3	23.9
Inactive	5.7	32.4	6.5	28.7	5.3	4.8	10.4	6.2
Unemployed	5.4	15.8	6.8	23.3	9.3	9.5	18.1	12.0
Total	6.3	14.9	8.1	24.1	5.0	7.6	17.7	16.3

Note. <sub>bc</sub> = before COVID-19.

**Table 8. Cash handout status**

Status	Appeal period		Post-appeal deadline		Total	
	n	(%)	n	(%)	n	(%)
Did not register	4,580	50.7	2,294	43.6	6,874	48.1
Registered, rejected	2,014	22.3	1,042	19.8	3,056	21.4
Registered, pending	1,347	14.9	493	9.4	1,840	12.9
Registered, accepted	1,089	12.1	1,428	27.2	2,517	17.6
Total	9,030	100.0	5,257	100.0	14,287	100.0

**Table 7** portrays the list of reasons why respondents had not received any benefit from relief programs (except universally applied programs). In general, private sector employees and owners with 10 or more employees mentioned ineligibility as the most common reason for not participating. On the contrary, self-employed persons and non-standard workers were the least likely to say that they did not need help, rather, they did not receive state assistance primarily because they were rejected when trying to claim a program's benefits. This survey question though has an important flaw as there is no option to skip it or make another appropriate choice for respondents who got accepted by one of the relief programs, which means that these respondents were forced to make a choice that did not match with their actual status.

In terms of eligibility confusion, the 5,000-baht cash handout attracted the most criticism over beneficiary coverage, and an error-prone administrative process. Originally, the plan was to cover only 3 million affected informal workers, but after a series of public outcries, the coverage later was expanded to 16 million recipients, and rejected applicants could file an appeal. Given the coverage adjustment, the percentage of successful registration is likely to go up over time as some of the initially rejected registrants passed the reassessment (Jitsuchon 2020).

Indeed, in **Table 8**, respondents who answered the survey by the post-appeal deadline (May 9–18) had a more than two times higher acceptance rate compared with those who did so during the appeal period (April 23–May 8), with a significant chi-

square test of independence ( $X^2 = 553.6$ ,  $df = 3$ ,  $p < 0.001$ ). Nevertheless, even the registrants who were self-employed and the non-standard workers who were unemployed during the lockdown, who should unquestionably have been the target beneficiaries of this relief program, still encountered a rejection rate (40.3%) higher than the acceptance rate (32.3%); the exclusion error is thus far from satisfactory. In times of crisis, the timing of assistance is of the essence; any delay or denial of assistance could be a matter of life or death for the recipients and their family members. Approximately 60 percent of respondents who were suspended without pay or laid off without compensation had at least one vulnerable group in their household. The continued lack of means to subsist is not only detrimental to the recipient's well-being but also to their helpless dependents. Their suffering could have been mitigated or at least ameliorated had there been more comprehensive and timely safety nets in place for such emergencies. Prompt responses though require well-coordinated delivery mechanisms and an integrated social registry.

## POLICY RECOMMENDATIONS

In line with the findings presented here, five policy recommendations emerge as the country moves toward the post-lockdown recovery stage.

**1. Investing in testing and tracing capacity as Thailand steadily opens the country, while creating protocols on containment steps to be put into place for a possible second wave.** As the risk of local transmission goes up in proportion to the degree to which Thailand opens the country (including welcoming foreign tourists), the government should invest in increased testing capacity to reach about 50,000 samples per day (Jitsuchon, 2020) and increase the number of checkup points, especially in high-risk areas. The incident in Rayong is a clear

indication that the government lacks well-defined protocols on containment steps in case a COVID-19 case is found outside the confines of state quarantine. Creating a protocol of containment interventions starting from mild to heavy, with full lockdown as the last resort, as well as communicating clearly to the public, are necessary measures to prevent another mass panic and negative economic repercussions as a result of the state's poor situation management.

**2. Using access to soft loans to leverage enterprise formalization.** Micro-sized enterprises (having fewer than 10 employees) reported greater income loss than larger enterprises (10 or more employees), yet the larger enterprises had a greater registration and acceptance rate for SME soft loans than smaller counterparts. This outcome infers an inaccessibility issue for informal micro-sized enterprises that may not have sufficient legal documentation or credit history with commercial banks. As a remedy, the government could create a separate scheme with a lower capped loan per customer, but as the government would remain more accountable for the risk of non-performing loans, it could thus incentivize banks and specialized financial institutions to take more risks in lending, under the condition that informal enterprises must begin the formalization process, including registering social insurance for their employees (if any) in a given time frame as soon as the soft loan is authorized.

**3. Promoting digital identification to ensure that state assistance reaches the most marginalized.** Thailand's high exclusion error on means-tested schemes in normal times and during an emergency is partly attributed to the lack of an "integrated social registry" that could swiftly identify the exact number of targeted vulnerable persons and their whereabouts, thus enabling policymakers to design appropriate measures and evaluate possible implementation gaps. Creating a protocol on



interoperability of databases across ministries, as recommended by the World Bank (2020), is a short-term priority. For a more innovative long-term approach, the government should actively promote nationwide digital identification (digital ID), which at least should entail personal information and the eligible social programs to which the person is entitled. In this context, utilization of a digital ID could streamline e-government services through the bypassing of multilayer authentication processes and allowing direct disbursement of government benefits (White, et al. 2019), hence, enabling prompt assistance as well as reducing the high margin of exclusion error.

**4. More encompassing and higher investment in social protection is needed post-COVID-19.** Social protection to cushion economic hardship is fundamentally crucial in the aftermath of a crisis. In the immediate-to-medium term, the numbers of working poor and near poor are expected to increase by 4.7 to 11.2 percent, respectively, of total employment, according to a conservative ILO (2020) estimation. This means that the 2021 fiscal budget should anticipate an upsurge in the number of households eligible for state welfare cards as well as child support grants; the same applies to the number of claimants likely under the universal health insurance scheme as unemployed persons lose their employment-tied social insurance benefits. Higher public investment in free mental health treatment for anxiety and depression should also be made as people are most likely continue to struggle to find economic security during the recovery period. Unfortunately, the revised financial year's budget allocation on existing social assistance programs still does not adequately reflect these changes.

**5. Creating employment opportunities with training and employment services programs that reflect shifting demand in the labor market.** The pandemic is de facto accelerating

digital transformation, even in predominantly non-technology industries. As such, reskilling or upskilling will be instrumental for laborers, especially semi-skilled workers who are at risk of being replaced by labor-saving technology, to stay relevant in the labor market. From the survey, the government-initiated job training scheme was underappreciated and underutilized. In-development job creation programs, such as industrial training in preparation for the Eastern Economic Corridor's new automation and robotic industries in addition to ICT skill training courses for 50,000 new graduates, should hold a better promise than the current scheme to create meaningful and future-proof employment opportunities suitable for the post-COVID-19 labor market, though actual implementation effectiveness remains to be seen.

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