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## **Panel Survey and Study on Health, Aging, and Retirement in Thailand**

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## **An Overview**

The Health, Aging, and Retirement in Thailand (HART) project is a sister study of the Health and Retirement Study (HRS) at the Institute for Social Research (ISR), University of Michigan (National Institute on Aging [2007](#)) (See “[Health and Retirement Study](#)” (<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=%E2%80%9CHealth%20and%20Retirement%20Study%E2%80%9D>)). Since 2009, HART has been conducted through the collaborative efforts of researchers and faculty members from the Research Center, School of Applied Statistics, School of Development Economics, and School of Social Development, under the Center for Aging Society Research (CASR), National Institute of Development Administration (NIDA). There were two pilot HART surveys in 2009 and 2011 with research grants from the National Research Commission of Thailand (NRCT) and the Commission of the Higher Education (CHE), respectively. The baseline (Wave 1) national HART project began in 2014 and Wave 2 began in 2016. Both projects were supported by research grants from NRCT. The data collected from the national surveys in 2015 (Wave 1) and 2017 (Wave 2) are maintained in the data archive at the NIDA Intelligence and Information Center (NIDA IIC). The data are accessible by registration (<http://rc-demo.nida.ac.th/casr/> (<http://rc-demo.nida.ac.th/casr/>)).

The primary objective of the HART project is to create a national longitudinal and household panel dataset on aging in Thailand that can be harmonized with the HRS (and its sister studies). In doing so, the HART data support research on the aging

among Thai older adults from a multidisciplinary perspective and for advancing public policy to improve the quality of life and well-being of older adults in Thailand.

## Study Design and Features

HART is a biannual household panel survey designed to provide panel data on the multidisciplinary dimensions of aging in Thai older adults, including: (1) demographic characteristics, (2) family and transfers, (3) health and cognition, (4) employment and retirement, (5) income, (6) assets and debts, and (7) life expectations and life satisfaction.

The 5,600 households represent the national households from five regions and Bangkok and vicinity. Thirteen provinces were selected as a household panel in the baseline survey. In each household, one member aged 45 years or older is selected as the respondent.

The survey instrument used in the baseline study was a paper-and-pencil (PAPI) questionnaire. Most of the content included in the questionnaire was applied from the Korea Longitudinal Study of Aging (KLoSA) (See [“Korean Longitudinal Study of Ageing”](http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=%E2%80%9CKorean%20Longitudinal%20Study%20of%20Ageing%E2%80%9D) (<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=%E2%80%9CKorean%20Longitudinal%20Study%20of%20Ageing%E2%80%9D>)) and Chinese Health and Retirement Longitudinal Study (CHARLS) (See [“China Health and Retirement Longitudinal Study”](http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=%E2%80%9CChina%20Health%20and%20Retirement%20Longitudinal%20Study%E2%80%9D) (<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=%E2%80%9CChina%20Health%20and%20Retirement%20Longitudinal%20Study%E2%80%9D>)). Additional content in the questionnaires was developed to best suit the local context, especially with regards to family and transfers, health status, health care, and health care utilization. In Wave 2 of the survey, with technical assistance from HRS and the Survey Research Center (SRC) at ISR, the University of Michigan, the survey instrument was changed from PAPI to a computer-assisting personal interview (CAPI). Due to technical and logistical constraints, some contents from the questionnaire had to be modified by adapting to the HRS. Overall, however, the seven primary dimensions of the questionnaire remain the same in both surveys.

HART employs face-to-face interviewing methods. One eligible member aged 45 or older is selected from each panel household as a primary respondent. Spouses (at any age, if any) are also interviewed for data relevant to family, transfers, and finances. Proxy interviews from the spouse or family member from the household are also utilized for frail respondents. For the Wave 2 survey, a proxy for deceased respondents is contacted for an exit interview. If the proxy for the exit interview (a spouse or a family member) is aged 45 or older, he/she will be eligible to be included as a new respondent for that household. Panel members who move away from the survey area are not followed in the survey. There are no biomarker data collected in the field survey of HART.

## Sampling Strategy

## Sampling Plan for the Baseline HART Project

The target population of the HART project is based on households in Thailand and uses the following multistage stratified random sampling design.

**Stage 1:** There are six strata of regions: (1) Bangkok and vicinity (Nonthaburi, Samut Prakan, and Pathum Thani), (2) East, (3) Central except Bangkok and vicinity, (4) North, (5) Northeast, and (6) South.

In the first stratum, all provinces (Changwats) are selected. Bangkok is the capital of Thailand and Nonthaburi, Samut Prakan, and Pathum Thani are vicinities and they are located in the middle of Thailand with many more older adults than in other provinces.

In the second stratum, in the east of Thailand, there are only seven provinces; each has relatively small numbers of older people and covers small geographic areas. Therefore, only one province is selected at random.

All provinces in stratum 3–6 are considered to be a “large-size” province, if it consisted of more than 300,000 households, and a “small-size” province otherwise. In each stratum, two provinces are selected at random, one from the set of large-size provinces and the other from the set of small-size provinces.

Selected provinces from the first stage are exhibited in Table 1.

### Table 1

Number of households in selected provinces by region

Region	Large-size		Small-size	
	province	Number of households	province	Number of households
Bangkok and	Bangkok	2,334,126	–	–
Vicinity	Nonthaburi	506,548	–	–
	Samut Prakan	497,386	–	–
	Pathum Thani	446,121	–	–
East	–	–	Chanthaburi	193,307
Central	Petchabun	302,742	Sing Buri	67,911
Northeast	Khon Kaen	510,219	Surin	334,461
North	Chiangmai	650,667	Uttaradit	231,227
South	Songkhla	421,177	Krabi	141,027

Source: <http://www.dopa.go.th> (<http://www.dopa.go.th>). Retrieved on July 29, 2010

**Stage 2:** In each of the provinces obtained in stage 1, excluding Bangkok, the capital district (Amphoe Mueang) is purposively selected and another district is selected at random. For Bangkok, six districts are randomly selected.

**Stage 3:** In each of the districts obtained in stage 2, villages in rural areas or blocks in the urban areas are selected at random. Note that no rural area includes Bangkok nor capital districts for any of the provinces. Urban and rural areas are defined according to the Ministry of Interior.

**Stage 4:** In each of the villages or blocks obtained in stage 3, households having at least one member (aged 45 or older) are randomly selected. If there is more than one eligible unit in a household, only one is randomly selected.

## Sample Size

The statistical formula for calculating sample size ( $n$ ) in order that the error ( $e$ ) for estimating the population proportion by sample proportion is at most  $e = 0.0156$  with a confidence level at  $1 - \alpha = 0.99$ . For  $N = 21,143,975$ , the number of households is obtained (Department of Provincial Administration, Ministry of Interior, retrieved from [http://203.113.86.149/xstat/pop52\\_3.html](http://203.113.86.149/xstat/pop52_3.html)

([http://203.113.86.149/xstat/pop52\\_3.html](http://203.113.86.149/xstat/pop52_3.html)), on 29 July 2010).

$$n = \frac{p^* (1 - p^*) N Z_{\alpha/2}^2}{N e^2 + p^* (1 - p^*) Z_{\alpha/2}^2} = \frac{0.5 (1 - 0.5) (21143975) (2.326)^2}{(21143975) (0.0156)^2 + 0.5 (1 - 0.5) (2.326)^2} = 5556.4$$

The sample size is set at  $n = 5600$  households.

Since the number of households in the sampled provinces is different, especially those in Bangkok (see Table 1), the allocation that is proportional to size will not be appropriate. Thus, the sample sizes are redesigned as followed.

For each large province, the sample size of 600 households is selected. For each small province, the sample size of 400 households is selected. For Bangkok and vicinity, the total sample size of 1200 households is determined with the sample size of 600 for Bangkok and 200 households for each province in the vicinity. The redistributed household samples in the selected districts by region and province are exhibited in Table 2.

## Table 2

Number of sampled households per district and total sample size by region and province

<b>Region</b>	<b>Province</b>	<b>Number of districts selected</b>	<b>Number of sampled households per district</b>	<b>Total number of sampled households</b>
Bangkok and	Bangkok	6	100	600
Vicinity	Nonthaburi	2	100	200
	Samut Prakan	2	100	200
	Pathum Thani	2	100	200
East	Chanthaburi	2	300	400
Central	Petchabun	2	300	600
	Sing Buri	2	200	400
Northeast	Khon Kaen	2	300	600
	Surin	2	200	400
North	Chiangmai	2	300	600
	Uttaradit	2	200	400
South	Songkhla	2	300	600
	Krabi	2	200	400
Total number of sample households (Total sample size)				5600

## Major Findings

The following are some of the key results from the HART project:

**Family and intergenerational transfers.** Results from HART indicated that the family institution in Thailand remains strong despite extensive social changes in various aspects. About 66% of Thai older adults co-resided with at least one child. Although the proportions of cohabitation increased with parents' age, there was no significant difference between urban and rural residents. In addition, about 50% of non-cohabiting parents lived in the same Amphoe (district) as their children (Theerawanviwat [2014](#)).

About 80% of aged parents participated in resource transfers with their adult children. The proportion of parents as a “receive-only” was higher than that as a “give-only” role. The ratio of such proportions ranged from twofold in the young-old (aged 60–69) to tenfold in the oldest-old groups (aged 80+). The upward flow of resources to parents was mostly financial transfers; whereas the downward flow usually involved nonmonetary support (Anantanasuwong et al. [2018](#)). The estimated median monetary support received by older parents was 22,250 Baht per annum (approximately US\$ 700). Moreover, it was found that the amount of money received did not vary much with the number of living adult children (Theerawanviwat [2014](#)).

**Physical, mental health, and health insurance.** On the 0 (very poor) to 100 (excellent) scale, data from both HART waves (which are approximately 2 years apart) showed a decline of self-rated physical health status (Wave 1  $\bar{x} = 73.2$  and Wave 2  $\bar{x} = 71.10$ ), while it increased for mental health status (Wave 1  $\bar{x} = 80.7$  and Wave 2  $\bar{x} = 82.77$ ). The top three diagnosed illnesses of older adults, for both sex as well as for all geographical regions, were ranked as follows: hypertension, diabetes, and heart disease (Anantanasuwong et al. [2017](#), [2018](#)).

Cognitive tests, composed of three tasks, included: word recall, numeracy, and date memory which were only conducted in Wave 2. Using response times from paradata, Sakworawich and Chansathit ([2018](#)) found a decline of cognitive abilities on all tasks with age. However, they also found that older adults with higher education had a slower rate of cognitive deterioration than their counterparts. It was therefore concluded that education may be a key factor that can alleviate cognitive decline among older adults in Thailand. On the other hand, evidence for the impact of physical and mental health on such decline was inconclusive.

Regarding health service utilization, the HART data showed that approximately 50% and 55% of Thai older adults in Wave 1 and Wave 2, respectively, had an annual medical check-up. For those who did not, about 8 out of 10 stated that they had no health problem, and thus, there was no need to go for a medical check-up. Since most Thai older adults are covered by the Universal Health Coverage Scheme, only about 10% indicated the affordability of the check-up as a problem. This suggests that the utilization of annual medical check-ups in Thailand is more a matter of health norms and/or perceived health standards, rather than an economic issue.

Finally, it was also found that only 3.1% of older adults in Wave 1 and 7.5% of older adults in Wave 2 were covered by private health insurance. Data from Wave 1 showed that the average out-of-pocket health expenditure among older adults was approximately 747.45 Baht per year (approximately US\$ 24). According to measures of prevalence and intensity of catastrophic health care expenditures (CHE) suggested by WHO, Pettakon and Theerawanviwat ([2019](#)) found that the proportion of older

adults aged 60–69 facing CHE was estimated to be higher whereas the mean positive overshoot (MPO), as an intensity measure, among older adults aged 70–79 had been higher when compared with the other two age groups.

**Employment and health.** Satimanon and Satimanon (2017) used HART Wave 2 data to examine the relationship between BMI and older labor supply. Using Tobit models, the preliminary findings show that underweight and overweight older workers supply less work hours than normal-weight older workers, but the effects are not statistically significant. Other significant variables that increase working hours of older workers are living in municipal areas, self-evaluations of having worsening future financial status, annual income from business, debt, and the self-evaluation of health. Furthermore, respondents in Bangkok and in central and northern regions work more hours than respondents in northeastern region; as well as older adults who graduated from primary and secondary levels of education work more hours compared to older adults with no formal education. On the other hand, the factors that significantly influence respondents to work less are the age of respondents, being female, being widowed, the amount of welfare received from the government, and physical health problems (arms or legs).

**Mortality among older adults:** Drawing from exit interview data in HART Wave 2, Anantanasuwong (2018) examined the preliminary patterns of mortality among survey respondents. Results showed different structures of death among respondents in terms of geographic region, living area, age group, and gender – as well as place of death and work status before death. The causes of death were mainly from noncommunicable diseases (NCDs), such as diseases of the lungs, heart, kidneys, cancer, and hypertension, and other noncommunicable conditions. For financial management, the majority of the deceased respondents had no inheritance/will left behind, no debt burden, and no life insurance. The policy implications from the findings suggest that policies related to improving the socioeconomic equality in regional or urban-rural development, conducting preventive health programs, promoting older adult employment, strengthening family institutions, and improving financial literacy should receive greater focus to promote greater health and longer healthy life expectancy among older adults in Thailand.

## Future Plans

The future and sustainability of HART (Wave 3) will rest in continued researcher engagement and grant support. To support these objectives, the utilization and dissemination of HART research should be targeted to wider academic audiences and policy circles. To gain higher public recognition of the project's value, the quantity and quality of the studies should continue to improve, especially on the survey instruments and the national representation of the household panel.

Thus, in conducting Wave 3 of the HART with greater experience and lessons learned in the field, the research team will focus on revisions of survey questions to better reflect the current aging policies and contexts within Thailand – e.g., family ties and transfers, long-term and palliative care, employment, social security system, etc. Other considerations will focus on attrition (how to maintain or replace households in the panel) and the issues of weighting for the household samples. In addition, future efforts will be made for more scientific publications, as well as more domestic and



international seminars/conferences on the life course of older adults in Thailand. Furthermore, to facilitate wider academic study on aging with HART data, training programs on panel data will be organized for graduate students and researchers. Analytic training programs are especially crucial for stimulating the interests and innovations using HART data. Strengthening HART's relationship to the broader networks of HRS and its sister studies will continue to be an important direction for future work.

## Summary

HART is among the first national panel household surveys on the multidimensional aspects of aging among older adults in Thailand (See "[National Survey of Older Persons in Thailand](http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=%E2%80%9CNational%20Survey%20of%20Older%20Persons%20in%20Thailand%E2%80%9D)" (<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=%E2%80%9CNational%20Survey%20of%20Older%20Persons%20in%20Thailand%E2%80%9D>)). Since 2007, the HART project has been at the forefront of providing longitudinal data to better understand the life course processes of population aging and the quality of life of older persons in Thailand. Future research should further explore its capacity for cross-cultural and cross-national analysis. Greater awareness and utilization of HART data will be central to its success and sustainability.

## Cross-References

- [Aging Policy Analysis and Evaluation](http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=Aging%20Policy%20Analysis%20and%20Evaluation) (<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=Aging%20Policy%20Analysis%20and%20Evaluation>)
- [China Health and Retirement Longitudinal Study](http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=China%20Health%20and%20Retirement%20Longitudinal%20Study) (<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=China%20Health%20and%20Retirement%20Longitudinal%20Study>)
- [Health and Retirement Study](http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=Health%20and%20Retirement%20Study) (<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=Health%20and%20Retirement%20Study>)
- [Korean Longitudinal Study of Aging](http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=Korean%20Longitudinal%20Study%20of%20Aging) (<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=Korean%20Longitudinal%20Study%20of%20Aging>)

- [National Survey of Older Persons in Thailand](http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=National%20Survey%20of%20Older%20Persons%20in%20Thailand)  
(<http://link.springer.com/search?facet-eisbn=978-3-319-69892-2&facet-content-type=ReferenceWorkEntry&query=National%20Survey%20of%20Older%20Persons%20in%20Thailand>)

## References

Anantanasuwong D (2018) Mortality of the Thai elderly: preliminary findings from HART panel survey. In: The Asian conference on aging & gerontology 2018 Official conference proceedings. ISSN: 2432 – 4183. Art Center Kobe, Kobe, 08–10 June 2018. Organised by IAFOR in association with the IAFOR Research Centre at Osaka University and IAFOR's Global University Partners, pp 51–64

[Google Scholar](https://scholar.google.com/scholar?q=Anantanasuwong%20D%20%282018%29%20Mortality%20of%20the%20Thai%20elderly%3A%20preliminary%20findings%20from%20HART%20panel%20survey.%20In%3A%20The%20Asian%20conference%20on%20aging%20%26%20gerontology%202018%20Official%20conference%20proceedings.%20ISSN%3A%202432%20E2%80%93%204183.%20Art%20Center%20Kobe%2C%20Kobe%2C%2008%20E2%80%93%2010%20June%202018.%20Organised%20by%20IAFOR%20in%20association%20with%20the%20IAFOR%20Research%20Centre%20at%20Osaka%20University%20and%20IAFOR%20Global%20University%20Partners%2C%20pp%2051%20E2%80%93%2064) (<https://scholar.google.com/scholar?q=Anantanasuwong%20D%20%282018%29%20Mortality%20of%20the%20Thai%20elderly%3A%20preliminary%20findings%20from%20HART%20panel%20survey.%20In%3A%20The%20Asian%20conference%20on%20aging%20%26%20gerontology%202018%20Official%20conference%20proceedings.%20ISSN%3A%202432%20E2%80%93%204183.%20Art%20Center%20Kobe%2C%20Kobe%2C%2008%20E2%80%93%2010%20June%202018.%20Organised%20by%20IAFOR%20in%20association%20with%20the%20IAFOR%20Research%20Centre%20at%20Osaka%20University%20and%20IAFOR%20Global%20University%20Partners%2C%20pp%2051%20E2%80%93%2064>)

Anantanasuwong D, Theerawanviwat D, Siripanich P, Vichitthamaros P, Seenprachawong U, Teungfung R, Sakworwich A (2017) *Well-being of the elderly in Thailand*. Report No. 101275 to National Research Commission of Thailand. Bangkok, Thailand: Center for Aging Society Research, Research Center, National Institute of Development Administration. (in Thai)

[Google Scholar](https://scholar.google.com/scholar?q=Anantanasuwong%20D%2C%20Theerawanviwat%20D%2C%20Siripanich%20P%2C%20Vichitthamaros%20P%2C%20Seenprachawong%20U%2C%20Teungfung%20R%2C%20Sakworwich%20A%20%282017%29%20Well-being%20of%20the%20elderly%20in%20Thailand.%20Report%20No.%20101275%20to%20National%20Research%20Commission%20of%20Thailand.%20Bangkok%2C%20Thailand%3A%20Center%20for%20Aging%20Society%20Research%2C%20Research%20Center%2C%20National%20Institute%20of%20Development%20Administration.%20%28in%20Thai%29) (<https://scholar.google.com/scholar?q=Anantanasuwong%20D%2C%20Theerawanviwat%20D%2C%20Siripanich%20P%2C%20Vichitthamaros%20P%2C%20Seenprachawong%20U%2C%20Teungfung%20R%2C%20Sakworwich%20A%20%282017%29%20Well-being%20of%20the%20elderly%20in%20Thailand.%20Report%20No.%20101275%20to%20National%20Research%20Commission%20of%20Thailand.%20Bangkok%2C%20Thailand%3A%20Center%20for%20Aging%20Society%20Research%2C%20Research%20Center%2C%20National%20Institute%20of%20Development%20Administration.%20%28in%20Thai%29>)

Anantanasuwong D, Theerawanviwat D, Siripanich P, Vichitthamaros P, Seenprachawong U, Teungfung R, Sakworwich A, Iyavarakul T, Satimanon T (2018) *Well-being of the elderly in Thailand: Wave 2*. Report No. 184017 to National Research Commission of Thailand. Bangkok, Thailand: Center for Aging Society Research, Research Center, National Institute of Development Administration. Manuscript (in Thai)

[Google Scholar](https://scholar.google.com/scholar?q=Anantanasuwong%20D%2C%20Theerawanviwat%20D%2C%20Siripanich%20P%2C%20Vichitthamaros%20P%2C%20Seenprachawong%20U%2C%20Teungfung%20R%2C%20Sakworwich%20A%2C%20Iyavarakul%20T%2C%20Satimanon%20T%20%282018%29%20Well-being%20of%20the%20elderly%20in%20Thailand%3A%20Wave%202.%20Report%20No.%20184017%20to%20National%20Research%20Commission%20of%20Thailand.%20Bangkok%2C%20Thailand%3A%20Center%20for%20Aging%20Society%20Research) (<https://scholar.google.com/scholar?q=Anantanasuwong%20D%2C%20Theerawanviwat%20D%2C%20Siripanich%20P%2C%20Vichitthamaros%20P%2C%20Seenprachawong%20U%2C%20Teungfung%20R%2C%20Sakworwich%20A%2C%20Iyavarakul%20T%2C%20Satimanon%20T%20%282018%29%20Well-being%20of%20the%20elderly%20in%20Thailand%3A%20Wave%202.%20Report%20No.%20184017%20to%20National%20Research%20Commission%20of%20Thailand.%20Bangkok%2C%20Thailand%3A%20Center%20for%20Aging%20Society%20Research>)

earch%2C%20Research%20Center%2C%20National%20Institute%20of%20Develop  
ment%20Administration.%20Manuscript%20%28in%20Thai%29)

National Institute on Aging (2007) Harmonization on aging surveys and cross-national studies on aging: executive summary. Prepared by Jinkook Lee from National Institute on Aging Scientific Meeting on Harmonization of Aging Surveys and Cross-national Studies of Aging, Chiangmai, 24 ~ 27 Feb 2007. Behavioral and Social Research Program. March. Retrieved from [https://www.nia.nih.gov/sites/default/files/d7/meeting-report\\_5.pdf](https://www.nia.nih.gov/sites/default/files/d7/meeting-report_5.pdf) (https://www.nia.nih.gov/sites/default/files/d7/meeting-report\_5.pdf)

Pettakon S, Theerawanviwat D (2019). Risk of catastrophic health expenditures among Thai elderly. *KKU Res J*, 19(3), July – September, 2019. (in Thai) [Google Scholar](https://scholar.google.com/scholar?q=Pettakon%20S%2C%20Theerawanviwat%20D%20%282019%29.%20Risk%20of%20catastrophic%20health%20expenditures%20among%20Thai%20elderly.%20KKU%20Res%20J%2C%2019%283%29%2C%20July%20%E2%80%93%20September%2C%202019.%20%28in%20Thai%29) (https://scholar.google.com/scholar?q=Pettakon%20S%2C%20Theerawanviwat%20D%20%282019%29.%20Risk%20of%20catastrophic%20health%20expenditures%20among%20Thai%20elderly.%20KKU%20Res%20J%2C%2019%283%29%2C%20July%20%E2%80%93%20September%2C%202019.%20%28in%20Thai%29)

Sakworawich A, Chansathit K (2018). Cognitive decline among the elderly in Thailand: multi-theories perspective [Supplemental article]. In D. Anantanasuwong, et.al. *Well-being of the Thai Elderly in Thailand: Wave 2* (pp. 39 - 58). Report No. 184017 to National Commission of Thailand. Bangkok, Thailand: Center for Aging Society Research, Research Center, National Institute of Development Administration (NIDA). Manuscript (in Thai)

[Google Scholar](https://scholar.google.com/scholar?q=Sakworawich%20A%2C%20Chansathit%20K%20%282018%29.%20Cognitive%20decline%20among%20the%20elderly%20in%20Thailand%3A%20multi-theories%20perspective%20%5BSupplemental%20article%5D.%20In%20D.%20Anantanasuwong%2C%20et.al.%20Well-being%20of%20the%20Thai%20Elderly%20in%20Thailand%3A%20Wave%202%20%28pp.%2039%20-%2058%29.%20Report%20No.%20184017%20to%20National%20Commission%20of%20Thailand.%20Bangkok%2C%20Thailand%3A%20Center%20for%20Aging%20So%20ciety%20Research%2C%20Research%20Center%2C%20AoNational%20Institute%20of%20Development%20Administration%20%28NIDA%29.%20Manuscript%20%28in%20Thai%29) (https://scholar.google.com/scholar?q=Sakworawich%20A%2C%20Chansathit%20K%20%282018%29.%20Cognitive%20decline%20among%20the%20elderly%20in%20Thailand%3A%20multi-theories%20perspective%20%5BSupplemental%20article%5D.%20In%20D.%20Anantanasuwong%2C%20et.al.%20Well-being%20of%20the%20Thai%20Elderly%20in%20Thailand%3A%20Wave%202%20%28pp.%2039%20-%2058%29.%20Report%20No.%20184017%20to%20National%20Commission%20of%20Thailand.%20Bangkok%2C%20Thailand%3A%20Center%20for%20Aging%20So%20ciety%20Research%2C%20Research%20Center%2C%20AoNational%20Institute%20of%20Development%20Administration%20%28NIDA%29.%20Manuscript%20%28in%20Thai%29)

Satimanon T, Satimanon M (2017) Relationship of BMI and elderly labor supply: evidence from Thailand. In: The Proceedings of the 12th international conference on the regional innovation and cooperation in Asia (RICA), Guangzhou, 23–25 Nov 2017, pp 303–321

[Google Scholar](https://scholar.google.com/scholar?q=Satimanon%20T%2C%20Satimanon%20M%20%282017%29%20Relationship%20of%20BMI%20and%20elderly%20labor%20supply%3A%20evidence%20from%20Thailand.%20In%3A%20The%20Proceedings%20of%20the%2012th%20international%20conference%20on%20the%20regional%20innovation%20and%20cooperation%20in%20Asia%20%28RICA%29%2C%20Guangzhou%2C%202023%E2%80%9325%20Nov%202017%2C%20pp%20303%E2%80%93321) (https://scholar.google.com/scholar?q=Satimanon%20T%2C%20Satimanon%20M%20%282017%29%20Relationship%20of%20BMI%20and%20elderly%20labor%20supply%3A%20evidence%20from%20Thailand.%20In%3A%20The%20Proceedings%20of%20the%2012th%20international%20conference%20on%20the%20regional%20innovation%20and%20cooperation%20in%20Asia%20%28RICA%29%2C%20Guangzhou%2C%202023%E2%80%9325%20Nov%202017%2C%20pp%20303%E2%80%93321)

Theerawanviwat D (2014) Intergenerational transfers and family structure: evidence from Thailand. *Ageing Int* 39(4):327–347

[CrossRef](https://doi.org/10.1007/s12126-014-9199-6) (https://doi.org/10.1007/s12126-014-9199-6)

[Google Scholar](http://scholar.google.com/scholar_lookup?title=Intergenerational%20transfers%20and%20family%20structure%3A%20evidence%20from%20Thailand&author=D.%20Theerawanviwat&journal=Ageing%20Int&volume=39&issue=4&pages=327-347&publication_year=2014) (http://scholar.google.com/scholar\_lookup?title=Intergenerational%20transfers%20and%20family%20structure%3A%20evidence%20from%20Thailand&author=D.%20Theerawanviwat&journal=Ageing%20Int&volume=39&issue=4&pages=327-347&publication\_year=2014)

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