

# FACTOR AFFECTING DEMAND FOR HEALTHCARE SERVICES IN THAILAND

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## ABSTRACT

The objective of this study was to present the factors affecting demand for outpatient services in Thailand. The data used in this study included 76 provinces in Thailand except of Bangkok during the period between 2011 and 2015. The fixed effects and random effects regression were used as the main model to clarify factors affecting demand for outpatient services. It was found that demand for outpatient services increased continuously. There was only one factor affecting the use of outpatient services in Thailand, elderly people aged over 60 years. The outpatient services were not influenced by the other factors: Gross Province Product, population, the number of physician per the number of hospitals.

**Keywords:** 1) Outpatient 2) Health Service 3) Demand in Health Service 4) Thailand

## 1. Introduction

Health is always the most important factors for human lives and human productivity. Unsurprisingly, health care including health insurance is huge industry across the world. In Thailand, the health services have been classified into 3 level: primary care, secondary care and tertiary care. Health care delivery system in Thailand includes both private and public sectors. There were 23% of hospital and medical establishment with beds provided by private sector and 77% by public sector. In total, Thailand had 1,355 hospital and medical establishment with beds with the number of total bed of 150,839 bed through the country (Strategy and planning division, 2017). In the public sector the largest agency is the Ministry of Public Health (MOPH) with more than 65% of all hospitals and bed across the country (Sakunphanit).

There are several factors indicating demand for health services: demographic including aging society; socioeconomic factors such as income, marital status etc. and behavioral factors such as a consumption of alcohol and cigarette etc. (Handerson, 2009). In Thailand, there has been a serious concern about aging society since the number of older people have been growing: in 2020 it has been projected that the people aged more than 60 would be 25.3 percent of total population and in 2050 would be 52.6% (Organization). The life expectancy at birth have increased from 66.3 year in 2005 to 72.6 year in 2025 in males and from 72.7 to 78.1 in females (Organization).

Information from the Ministry of Public Health, Thailand indicates an increasing in the number of outpatient visits (Figure 1). The data shows that the number of outpatient

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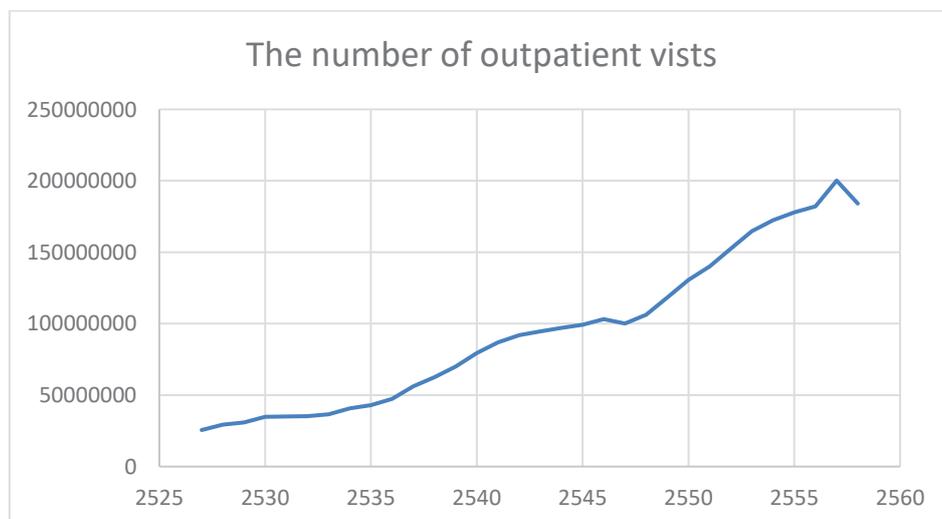
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visits has increases continuously from 1985 to 2015. In addition, during the period between 2002 to 2015 the number of outpatient visits increased dramatically.



**Figure 1:** The number of outpatient visits in hospitals under Ministry of Public Health from 1985 to 2015.

Since the importance of outpatient services this study has aim at identification of factors affecting demand for health services in term of outpatient visits in Thailand using panel data analysis.

## 2. Literature Review

### The demand for health services

Healthcare services are economic goods as other products. Therefore, the demand for health services shows the relationship between prices and quantities of a healthcare product for example outpatients services or inpatient services. However, there are a three points making health services different from the others (Suksirysereekul, 2008).

1. Demand for health services can be influenced by physicians due to imperfect information.
2. Preferences of patients may not be relevant to the demand for healthcare services.
3. The demand for healthcare services relates to the level of severity of diseases.

There are several factors determining the demand for healthcare services (Handerson, 2009; Suksirysereekul, 2008).

1. Prices: the law of demand for healthcare services states that quantity purchased varies inversely with price. In other words, the higher the price, the lower the amount of healthcare services people are willing to buy at a certain price.
2. Income: the lower income, the lower quantity of healthcare services demanded.
3. Health status: the more people in a country have perfect health status, the lower the quantity demanded.
4. An investment in health status including behavioral factors relevant to health status: for example, the more people consume alcohol, the more people require healthcare services.
5. Physician factors: this factor should take into consideration as demand for healthcare services influenced by physicians.

### 3. Research Methodology

This study is quantitative analysis using panel data or cross-sectional time series data. Panel data are repeated cross-section over time; the individual or units can be firms, persons, state or countries, for example. The data used for this study is secondary data collected by the Ministry of Public Health (MOPH), the Office of the National Economic and Social Development Board (NESDB) and Department of Provincial Administration (DOPA). The provincial data except of Bangkok during the period between 2011 and 2015 was used as panel data for this study. The data collected included outpatient visit (from MOPH), population by ages (from DOPA), Gross Provincial Product or GPP (from NESDB) and the number of physicians (from MOPH).

The dependent variable of this study was the number of outpatient visits per province (OPD). The independent variables included:

- Provincial population or POP (persons)
- Gross domestic products or GPP (million baht)
- The ratio of physicians per hospitals or Med/HOS (persons per a hospital)
- The number of people aged over 60 year or OP678 (persons)

We used regression model for panel data analysis as the main research method for this study. In this study we focused on two techniques for analyzing panel data: fixed effects and random effects. The decision on fixed or random effects were performed using Hausman test where the null hypothesis is that the preferred model is random effects. The Stata statistical program was used.

The basic model of this study were:

$$\text{Model 1: } OPD_{it} = \alpha_1 + \alpha_2 POP_{it} + \alpha_3 GPP_{it} + \alpha_4 Med_{it}/HOS_{it} + \alpha_5 OP678_{it} + u_{it}$$

And

$$\text{Model 2: } OPD_{it} = \alpha_1 + \alpha_2 GPP_{it} + \alpha_3 Med_{it}/HOS_{it} + \alpha_4 OP678_{it}/POP_{it} + u_{it}$$

### 4. Results

**Table 1:** Health situation in terms of outpatient services in Thailand

Year	Outpatient visits (visits/year)	Outpatient visits (visits/province)		New outpatient visits (visits/province)		outpatient visits (visits/person)	
		Mean	SD	Mean	SD	Mean	SD
2011	140,442,945	1,847,933	1,338,348	485,911	376,736.5	3	3.95
2012	141,264,907	1,858,749	1,311,856	468,364	327,563.9	2	0.80
2013	148,994,961	1,960,460	1,385,921	494,382	398,448.9	3	0.86
2014	161,248,811	2,121,692	1,691,759	602,490	439,597.2	3	1.16
2015	158,555,602	2,086,258	1,754,970	543,338	543,337.9	3	2.29

**Table 2:** The results from panel regression analysis

Variable	Model 1		Model 2	
	Fixed effect regression	Random effect regression	Fixed effect regression	Random effect regression
GPP	0.2999	2.2355*	0.3980	2.7597*
POP	0.0937	1.2879*		
MED/HOS	48211.95	2112421.1*	56,034.86	185,791.9*
OP678	10.3287*	4.4555*		
OP678/POP			12,100,000*	14,400,000*
Constant	701670.3	-167569	839,185.5*	116,678
No.of observation	380	380	380	380
no.of group	76	76	76	76
Prob > chi2		0.0000		0.0000
Porb>F	0.0009		0.0000	
Hausman test				
Chi2	4.87		6.81	
Prob>chi	0.0273		0.0332	

Note: \* statistical significance at the 95 confidence level

The results from Table 1 shows that there has been an upward tern in outpatient visits over the last 5 years by 13% (from 140,442,945 in 2011 to 158,555,602 in 2015). Each province had about 1.8 million visits to 2.1 million visits including 500,000-600,000 new outpatient visits. Additionally, on average 1 Thai person went to hospitals for outpatient services by 3 times per year. The Table 2 indicates the results from regression model and it shows that fixed effect regressions are suitable for both models. Both models indicated that elderly people was only one factor affecting the number of outpatient services: if the number of people over the age of 60 differed by one person (the other factors did not differ), the number of outpatient services will differ by 10 visits, on average; if the ratio of people over the age of 60 per total population differed by one unit (the other factors did not differ), the number of outpatient services will differ by 12,100,000 visits, on average.

## 5. Conclusions

The main concern form this study is that the aging society has been the important factor affecting an increasing in healthcare services. Under the limited healthcare resources especially in terms of human resource for health (Phanthunane, Pannarunothai, & Pagaiy, 2017), the Ministry of Public health need to be aware of this message. This study has some limitations. There are the other factors have not taken into the model such as behavioral factors and family history. The models need to be tested for the main assumptions of econometrics. Even if the results from this study consistent to the other studies, the model should be developed taken into account our limitations mentioned previously.

## 6. References

- Handerson, J. W. (2009). **Health Economics and Policy** (4<sup>th</sup> ed.). USA: South Western Congage Learning.
- World Health Organization, **Older population and health system: a profile of Thailand**. Retrieved from [http://www.who.int/ageing/projects/intra/phase\\_one/alc\\_intra1\\_cp\\_thailand.pdf](http://www.who.int/ageing/projects/intra/phase_one/alc_intra1_cp_thailand.pdf)
- Phanthunane, P., Pannarunothai, S. and Pagaiy, N. (2017). Requirement and supply prejection of selected specialists in Thailand in 2021. **Malaysian Journal of Public Health Medicine**, 17(2), 70-79.
- Sakunphanit, T. **Thailand: Universal health care coverage through pluralistic approaches**. Retrieved from [http://www.ilo.org/wcmsp5/groups/public/---ed\\_protect/---soc\\_sec/documents/publication/wcms\\_secsoc\\_6612.pdf](http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---soc_sec/documents/publication/wcms_secsoc_6612.pdf)
- Strategy and planning division, M. o. P. H. (2017). **Report on public health resource Nonthaburi: Ministry of Public Health**. Retrieved from [http://bps.moph.go.th/new\\_bps/sites/default/files/report-gis60\\_07Sep18.pdf](http://bps.moph.go.th/new_bps/sites/default/files/report-gis60_07Sep18.pdf).
- Suksirysereekul, S. (2008). **Health economics**. Bkk: Chulalonglorn University press.