

Suvarnabhumi Airport : Noise Impact Compensation Management*

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Suvarnabhumi airport was constructed in urban area surrounding with 34 villages, 2 universities 10 schools and other kinds of buildings. More than six months after opening, affected residents still upset by the noise of airplanes over their houses. Their threat was met with a warning from airport authorities to release more than 100 balloons into the sky at night, delaying flights by more than two hours. Villagers refused to accept a cabinet resolution with say that the Airport of Thailand (AoT) will not buy houses located in areas with noise levels louder than 70 decibels. The airport agency will only repair the houses damaged by noise and offer some compensation to the owners. Residents have demanded that the AoT follow the previous deal to buy the houses, instead of repairing the damaged ones.

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It has been estimated that the AoT would have to spend 167 billion baht buying all the houses affected by airplane noise. That amount falls to about 13 billion baht if the AoT only repairs damaged houses and pays compensation to residents affected by the problem. The agency of AoT will take legal action against residents if they do anything to disrupt air traffic. Transport Minister attempted to cool down the angry residents and tried to find the best solution.

Historical Background

Prior to 1960, Thai government and Thai people had no idea about second international airport of Bangkok because Bangkok International Airport at Don Muang was the popular one at that time. In 1960, The government of Thailand prepared to formulate the **First National Economic Development Plan (1961-1966)** and hired the team of Litchfield Whiting Bourne and Associate Company from USA to study and formulate a 30-years city development plan named *Master Plan of Greater Bangkok Metropolitan Area (1960-1990)*. *One of important suggestions of the study was that Bangkok should has another commercial airport which separate civil aviation system from army aviation affair.*

In 1961, Thai government had reserved budget about 60 million baht for land acquisition and asked for technical aid from USOM. In the same year, Ital Thai Company Ltd. offered to study and survey a new Bangkok airport construction area without charge and any conditions.

In 1962, Thai government promulgated a law to surrender land area for construction and hired Ital Thai Company Ltd. and Comanie Industrielle De Paris to survey and design the new Bangkok airport. However, in 1963, the project was postponed because a lot of budget will be paid and some problems about engagement. Later, Thai government had hired many times and many companies to survey, design and construct the new Bangkok airport such as :

1971, Northrop Airport Development Corporation (NADC)

1976, Tippetts Abbett McCarthy Straton (TAMS)

1983, Netherland Airport Consultant Company (NACO).

In 1986, Thai government made decision to expand Bangkok International Airport at Don Muang instead of going on the new Bangkok airport development project. The Second Bangkok International Airport project had come to a sudden stop.

A Decade of Decision Making

Thailand used more than three decades for the first phase of the Second Bangkok International Airport project while Malaysia, Hongkong and Singapore used only a short period of time to construct their equivalent airports. Three major factors of time expansion of the project were :

- 1) big and complex project,
 - 2) awareness on conflict of interest and corruption in the process of construction,
- and
- 3) political changes.

The past studies and surveys on the Second Bangkok International Airport Project contributed a final alternative of airport site at Nong-Ngu-Hao in Bang Plee district, Samutprakarn province, 30 kilometers far from Bangkok in the east.

In 1991, the government of Prime Minister Anan Panyarachun made decision to go on the Second Bangkok International Airport project by formulating master plan and setting responsible organizations. Airport of Thailand Company (AoT) was assigned to responsible for the project. Then, “**Airport System Master Plan Study in Thailand : ASMPS Report**” which was studied by **Louis Berger International, INC.** was used for a guideline of the project development.

In 1996, Bangkok International Airport Company (Public) Ltd (BIA), a government's enterprise was established according to the study result of **Coopers & Lybrand Association Ltd** to responsible for overall construction control. For construction period, more than 30 private companies had involved in the airport construction project. Ten years later, in 2006, the new Bangkok airport construction was finished with the name of "Suvarnabhumi Airport".

So far, Thailand has been passed many obstructions about financial, investment, and construction management in order to establish "**logistics hub**" of Southeast Asia. The construction of Suvarnabhumi Airport brought about both positive and negative images. With airport area of 20,000 rai, it will expand form 2 runways to 4 runways in the future. By remaining airline members, passengers will be able to provide the convenient services and will strengthen the region's hub position, etc. At the same time, unsuitable designs, inconvenient facilities, noise impact protest, including corruption such as cases of CTX 9000 and King Power Company Ltd etc. are reflecting a negative image.

Project Investment and Sources of Fund

For Thailand, Suvarnabhumi Airport was classified a mega project. Total budget of the project was approximately 155,000 million baht. About 30,000 million baht was used for relevant airport activities such as transportation link and 125,000 million bath was used for

- construction	63.6%
- administration	2.4%
- financial	2.8%
- others	31.2%. (see Table 1)

More than a half of construction cost of the project used external loan. Proportion of budget for investment is as follows :

- 1) JBIC : Japan Bank for International Cooperation 73,000 million baht (58.4%),
- 2) Financial Institutes 2,000 million baht (1.6%), and
- 3) The Bangkok International Airport Company (Public) Ltd. 50,000 million baht (40%). (see Table 2)

Airport Facilities

Suvarnabhumi Airport was designed with capacity of 45 million passengers per year in the first phase (2006-2010) and up to 100 million passengers per year or more in 2025. Now, it has two runways and in 2012 it will increase to four runways. Maximum number of flight and passengers are shown in Table 3.

Aircraft parking site was designed for both existing technology and new generation of aircrafts. It will increase from 113 units at present to 192 units in the future. (see Table 4)

This high capacity caused by a lot of flights both domestic and international airlines. Most of flights have arrival and departure time in the morning, evening and at night which make serious noise impacts to people around the airport. (see Table 5)

Increasing of Population and Density around the Airport

Greater Bangkok is not only the capital city of Thailand, it is a multifunctional national capital in a pre-industry country. It also differs from western cities in the diffuseness of its suburbs. It is the dominant urban settlement in Thailand. Much of the urban expansion in Greater Bangkok is probably the result of the heavy exodus from rural areas, causing excessive population growth to the city. The urban center is magnet for the national population, inducing migration in numbers generally far above the capacity to employ.

Villagers think that airport will bring about economic growth and convenience for them. Many real property business companies try to show that their houses to be sold is very close to the airport. Some customers buy them without awareness of noise pollution. Therefore, during airport construction real estate business in area around the airport is very intensive.

Noise Impacts of Communities near Suvarnabhumi Airport

Due to the fact that Suvarnabhumi Airport was constructed in the urban area of Greater Bangkok which population has been gradually increased as mentioned before. In addition, Thai governments had no decisive policy on the location of the new airport until 1991. It consumed time almost 50 years for studies, approval, and construction. Such a long time, urbanization caused area around alternative sites of the new airport become a dense urban communities.

An Environmental Impact Assessment (EIA) Report illustrated noise contour (as shown in Figure 1) in terms of Noise Exposure Forecast (NEF). Noise contour which generated from simulation model composes of three zones: Zone 1 (NEF more than 40), Zone 2 (NEF =35-40) and Zone 3 (NEF=30-35). Preliminarily survey found that 3,745 buildings in 34 villages located in the three levels of noise contour.

In fact, noise contours are not static. Many external factors such as wind direction, temperature, departure and arrival direction of aircraft and others make noise contour change. Therefore, noise prevention and noise compensation are rather complex and difficult. Many kinds of building such as house, commercial store, warehouse, governmental office, school, religion place and others which separated in northern and southern sides of Suvarnabhumi Airport. (see Table 6). About 246 building in noise contour zone 1 will be compensated with buying both land and building to AoT. Six villages of about 1,015 households are in 35-40 NEF noise contour and 15 villages of about 1,976 households are in 30-35 NEF (see Table 7). These buildings have to be improved for noise prevention.

Another group of buildings which is very sensitive on noise impact are educational places. Two universities, namely, King Mongkut Institute of Technology Lart Krabang (KMITL) and Kirk University (KU) are located in the north and south of Suvarnabhumi Airport respectively. Three schools which are under responsibility of Bangkok Metropolitan Authority (BMA), namely, Lart Krabang School, Wat Plooksatha School and Wat Bamrungruan School are in noise impact area. (see Figure 2)

Noise Compensation Process

Prior to operating of Suvarnabhumi Airport, villagers in the noise contour area waited for compensation without anxious action. KMITL as the impacted organization from noise at NEF 30-35 level was the only one agency having movement for noise prevention and noise impact compensation.

In compensation process, the first thing to be prepared is criteria setting of noise compensation. Then, survey and identification of impacted buildings are undertaken. Listing of noise impacted households will be used for compensation management. In fact, AoT had not yet an exact criteria and method for compensation at that time. It has only a guideline that properties in the NEF more than 40 zone will be bought by AoT and buildings in the NEF 30-40 zone which was constructed before 2001 will be compensated.

AoT tried to find out a suitable and acceptable criteria of noise impact compensation. For land in Zone 1 (NEF more than 40), market price can be used for compensation. But for building compensation which is very complicated, AoT hope that KMITL's master plan for compensation will provide that criteria.

In 2002, AoT hired Team Consultant Company to study and formulate master plan for compensation of KMITL. According to criteria in the study AoT will spend KMITL 214.3 million baht for the first phase of noise prevention and 907.7 million baht for the second phase. *Administrators of AoT commented that this is a high compensation rate and it can not as the criteria of general compensation for other buildings.* Therefore, AoT had delayed spending

compensation to both KMITL and villagers because the AoT administrators was afraid of other building owners may refer that compensation criteria to their buildings.

Later, in 2006 AoT hired National Institute of Development Administration (NIDA) to set a building compensation criteria and formulate operational plan for noise impact compensation. The study finished in early 2007, then criteria for buildings compensation were used. However, compensation process has slowly undertaken because of dissatisfaction and protesting by some groups of impacted villagers.

A year and a half after Suvarnabhumi Airport operating, AoT spent compensation 220 million baht for buying 219 buildings in Zone 1 (NEF more than 40) and 182 million baht for improvement of 10 sensitive buildings in NEF 30-40 zone. A total amount of spent compensation is only 402 million baht.

Protesting Situation

KMITL was the first organization which has tried to follow up and paid awareness on noise impact of Suvarnabhumi Airport, while villagers in the noise impact zone just took action to complain and protest after the opening day of Suvarnabhumi Airport on September 28, 2006. KMITL asked for compensation from AoT many times although AoT administrator (Mr. Somchai) pledged to disburse 214.3 million baht to KMITL to install warning lights for aircraft and noise barriers at the campus. President of KMITL decided to protest together with the affected villagers. Mr. Siriwat, vice president of KMITL said *“The AoT’s attitude and way of handling communities around the airport is worrying. I believe AoT just doesn’t want to pay money. Even a state university like KMITL has been treated badly, so what will happen with poor people nearby?”* Later, in late 2007, AoT paid 250 million baht to KMITL with announcement that it is not for noise impact compensation but for educational and research support. After that villagers have been gradually companied and protested without KMITL.

After long and fruitless negotiations, Wanchart, a key leader of the 30 noise-affected villages, told a press conference on February 13, 2008 that *house owners will take the law into their own hands if their demands are still ignored by AoT. "We have waited more than one year and four months since the airport came in to operation. But we have not seen any results from our complaints. The AoT always distorts information and has never shown any sincerity towards us"*, said Prasert Boonkeaw, one of the residents affected by the noise pollution.

On February 17, 2008 Bangkok Post newspaper reported that angry residents released more than 100 balloons into the sky at night, delaying flights by more than two hours and costing the AoT more than 19 million baht in compensation to airlines affected by the delays. The incident was not reported by the media.

Lat Krabang Police Office had sent letters to all 32 communities around Suvarnabhumi Airport, warning them not to repeat the act. Police said *residents who disrupt air traffic will face criminal charges which involve fines of up to 14,000 baht or a jail term of six months to seven years.*

Chaisak Angkasuwan, head of the Civil Aviation Department, said his *Department had already alerted Aeronautical Radio of Thailand about the protest. The involved agencies will take legal action against residents if they do anything to disrupt air traffic and told the protesters to abandon their plan.*

Conflicts between noise affected villagers and AoT have not been yet closed. Disgruntled residents around Suvarnabhumi Airport have demanded quicker and fairer compensation for the impact of aircraft noise on their lives and for the AoT of find appropriate measures to curb the noise pollution before the third and fourth runways come into service. Up to April, 2008 there are 13 cases which affected residents prosecute to AoT and waiting for judging from court. This event caused AoT delaying noise impact compensation especially land and building.

Relvant Organizations and Groups of People.

Suvarnabhumi Airport is one of six international airports operated by AoT. Regarding to noise impact compensation, there are many relevant organization and groups of people which can be classified into 4 parts as follows:

- 1) Airway companies and passengers as a noise pollution maker;
- 2) Resident groups as a noise impact receiver;
- 3) AoT as an operator and benefit receiver; and
- 4) Governmental organization concerned, local administrative organizations and Tripartite Committee on Noise Impact Solving as a regulator.

These organizations and groups of people are an integral part for noise impact compensation management.

Next Steps

The minister of transportation have to discuss the issue with AoT and agencies concerned including the Tripartite Committee on Noise Impact Solving to finalize the compensation criteria. Affected residents intensified their favorable criteria which were not précisive rate, while AoT insisted the criteria according to the cabinet meeting resolution.

Operational plan for Noise Impact Compensation of Suvarnabhumi Airport should be implemented. Four strategies including 8 programs and 20 projects in the plan should be used to reduce negative attitude of the residents and adverse impact from noise pollution. For example, using data on percentage of people staying in each kind of building which varied to period of time for flight arrangement (see Figure 3 – 6).

Table 1: Proportion of Budget Used in Suvarnabhumi Airport Construction

Project Costs	Million Baht	%
1. Construction	79,475.0	63.6
2. Administration	2,937.5	2.4
3. Financial	3,537.5	2.8
4. Others	39,050.0	31.2
Total	125,000.0	100.0

Table 2: Sources of Fund of Suvarnabhumi Airport

Investment Sources of Fund	Million Baht	%
1. Japan Bank for International Cooperation (JBIC)	73,000	58.4
2. Financial Institutes	2,000	1.6
3. Bangkok International Airport Company (Public) Ltd.	50,000	40.0
Total	125,000.0	100.0

Table 3: Number of Runway, Maximum Flight and Passengers in Four Phases of Airport Development

Phase (Duration)	Number of Runway	Number of Flight/ hour	Number of Passenger (million/year)
Phase 1 (2006-2010)	2	78	45
Phase 2 (2011-2015)			
2011	3	79	58
2012	4	81	61
2013	4	81	64
Phase 3 (2016-2020)			
2016	4	81	73
Phase 4 (2021-2025)			
2021	4	93	94
2025	4	93	120

Table 4: Kind and Size of Aircraft and Number of Aircraft Parking Site

Kind of Aircraft	45 million passengers/year	100 million passengers/year
1. Boeing 737/A320	9	20
2. Boeing 747	44	60
3. MD 11/A300	57	86
4. New generation	3	26
Total	113	192

Table 5: Number of Passengers Classified by Type of Traveling

Type of Traveling	45 million passengers/year			100 million passengers/year
	International	Domestic	Total	
Passenger O+D	8,137	3,525	9,300	16,200
Transit	4,500	1,875	5,025	10,800
Total	12,637	5,400	14,325	27,000
Stay	1,012	-	1,009	1,800
Departure	7,582	3,780	8,595	16,200
Arrival	7,582	3,780	8,595	16,200
Average Flights/ hour	48.3	38.5	61.5	106.0

GEC analysis

Table 6: Land use Characteristic of Surrounding Area Classified by NEF

Number of unit	Northern side				Southern side				Total			
	NEF			Total	NEF			Total	NEF			Total
	>40	35-40	30-35		>40	35-40	30-35		>40	35-40	30-35	
1. Residential building	209	613	956	1,778	-	209	1,242	1,451	209	822	2,198	3,229
2. Commercial building	18	14	24	56	-	6	61	67	18	20	85	123
3. Warehouse	15	9	19	43	-	61	112	173	15	70	131	216
4. Governmental office	1	2	1	4	-	-	4	4	1	2	5	8
5. Education	2	2	11	15	-	9	24	33	2	11	35	48
6. Religion place	-	-	21	21	-	-	56	56	-	-	77	77
7. Others	1	3	1	5	-	27	12	39	1	30	13	44
Total	246	643	1,033	1,922	-	312	1,511	1,823	246	955	2,544	3,745

Table 7: Village Name Affected by Noise of Aircraft and Number of Household

Village Name	No. of Household
<u>35-40 NEF level</u>	
1. Monsinee	129
2. Lardkrabang Garden	40
3. Romsuk Village 4	140
4. Kahanakorn	600
5. Romrudee	50
6. Saran Wong	56
Total	1,015
<u>30-35 NEF level</u>	
7. Julmas Villa	90
8. Bang Chalong M 6	837
9. Thana Place	170
10. Thana City	100
11. Green Lake	100
12. Taihee Place	100
13. Landkrabang Soi 40	70
14. Lardkrabang Soi 42	50
15. Sinklau Kaha	20
16. Lardkrabang Soi 11	20
17. Sinthorn	100
18. Maccham Community	20
19. Plaook Satha Community	40
20. Sankaracha Community	150
21. Green Villay	109
Total	1,976
Grand Total	2,991



Figure 1 Noise Contour of Suvarnabhumi Airport

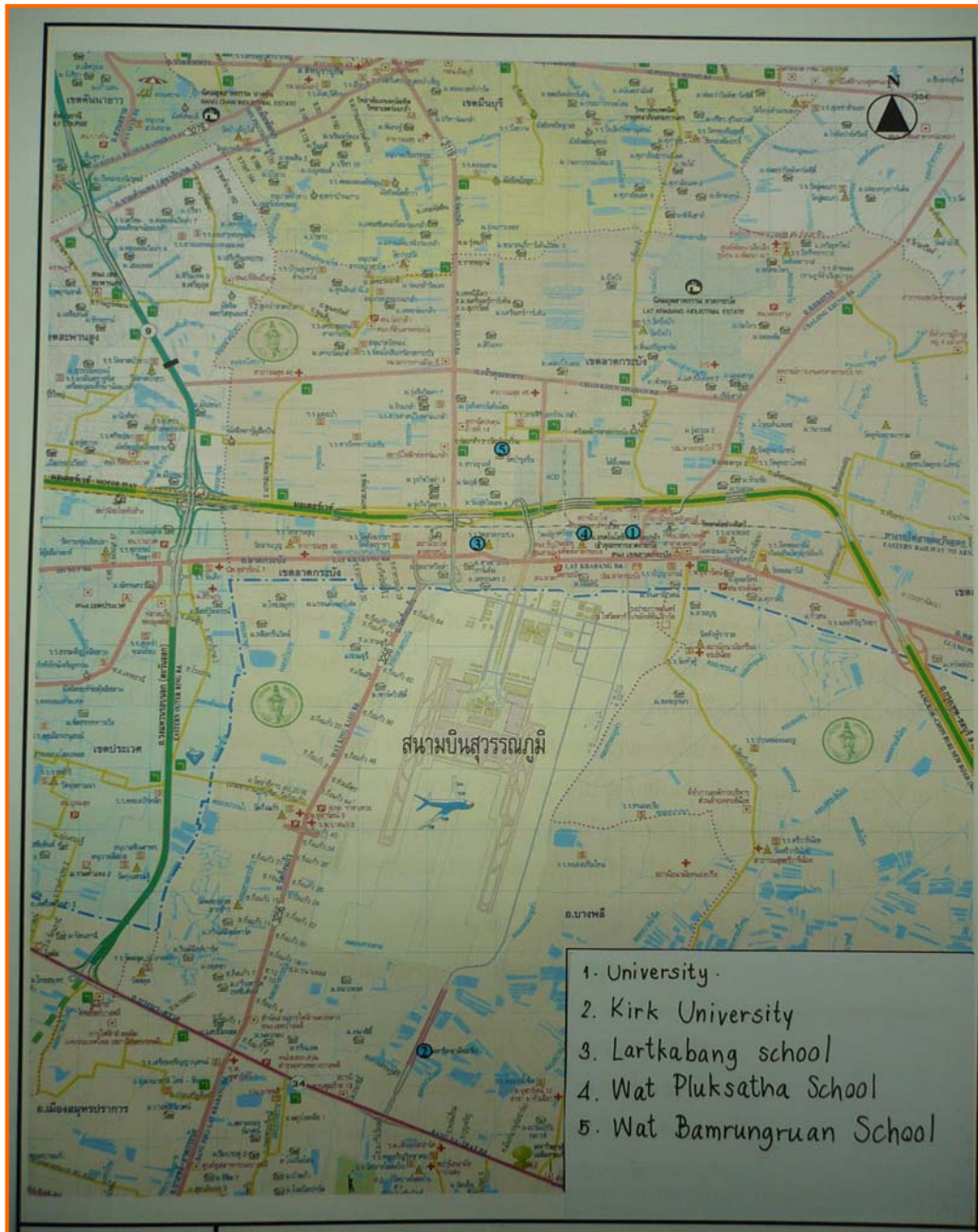


Figure 2 Location of Suvarnabhumi Airport and Surrounding Area

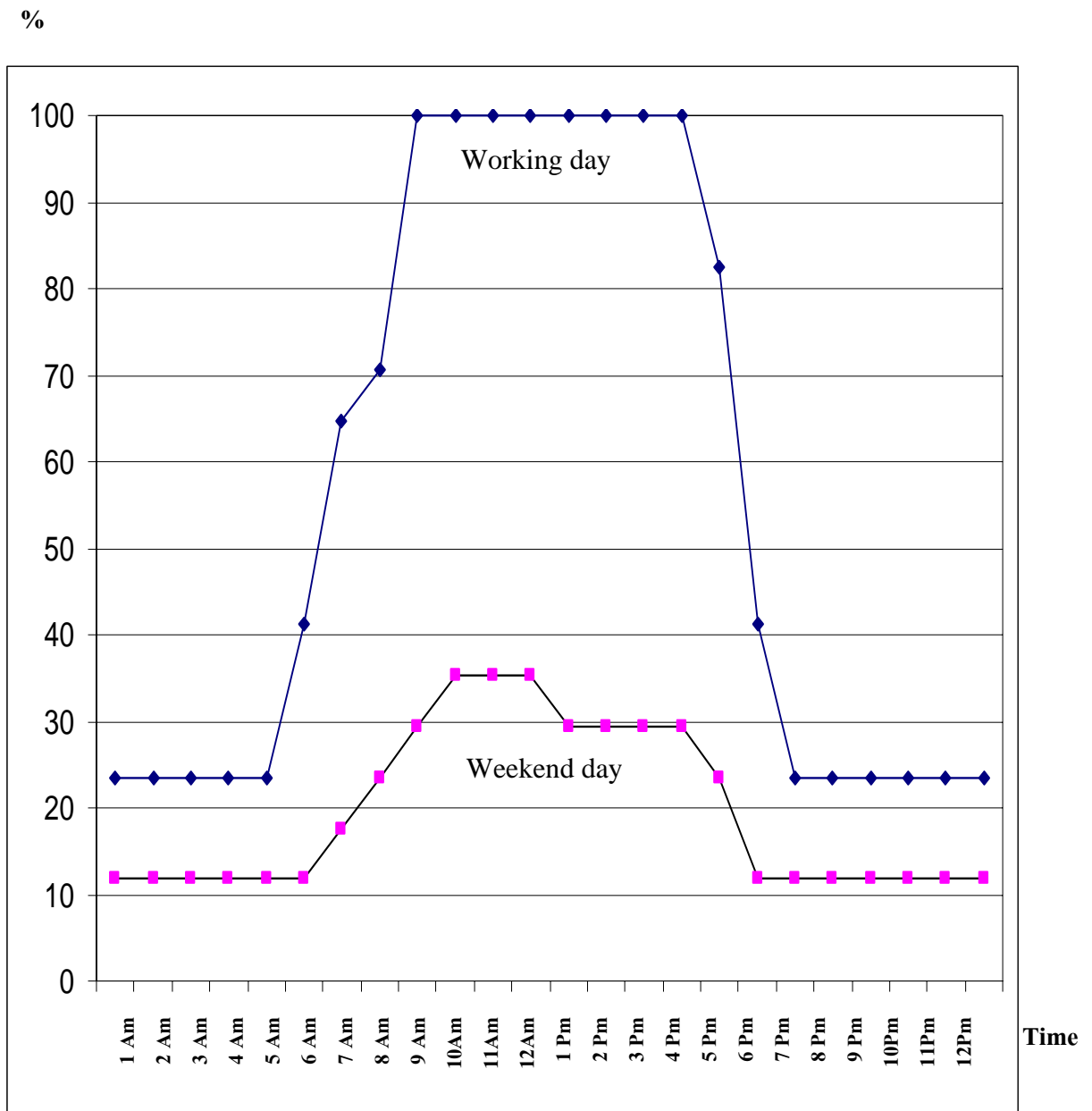


Figure 3 Percentage of people staying in educational building

%

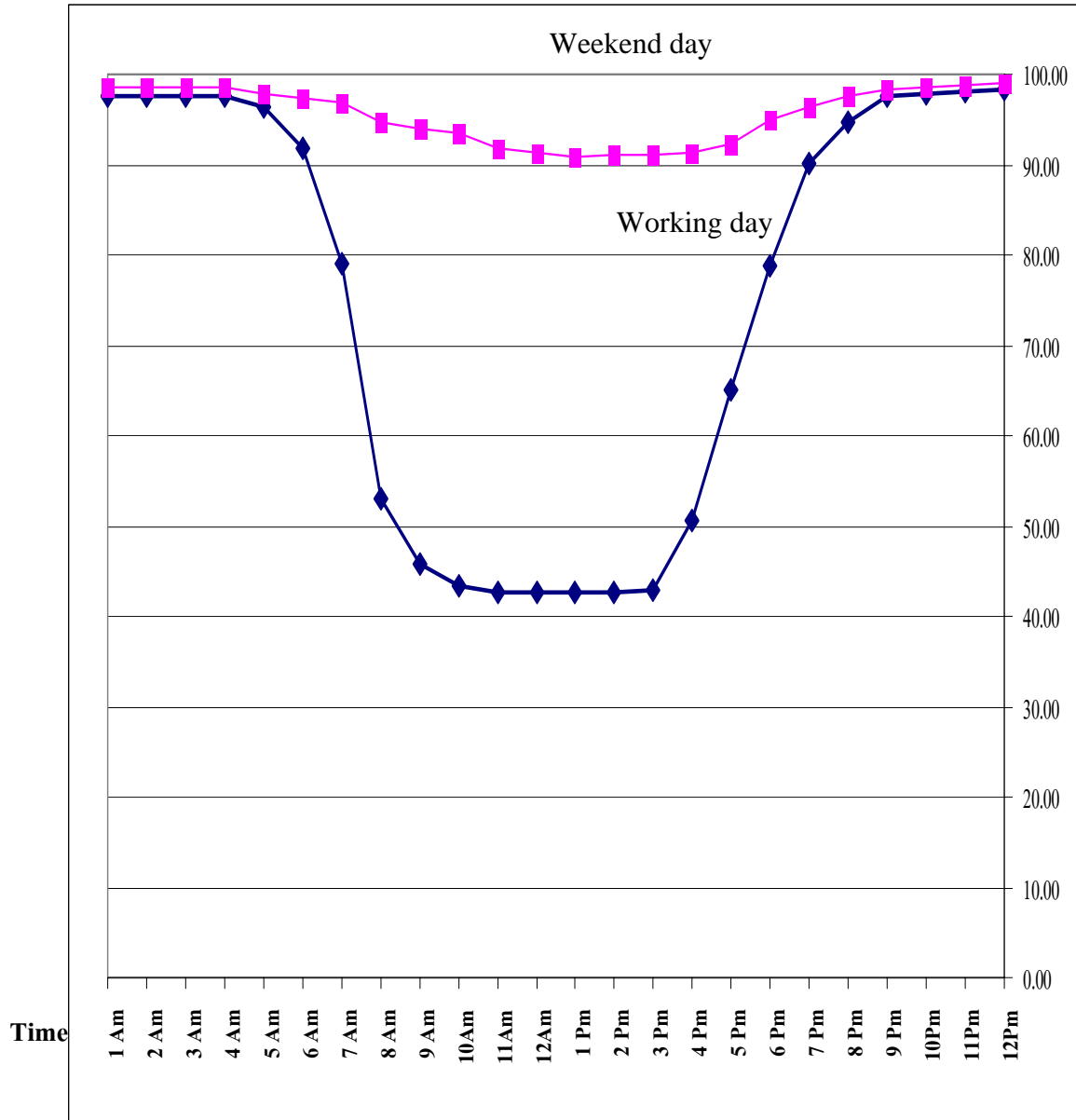


Figure 4 Percentage of people in their residence

%

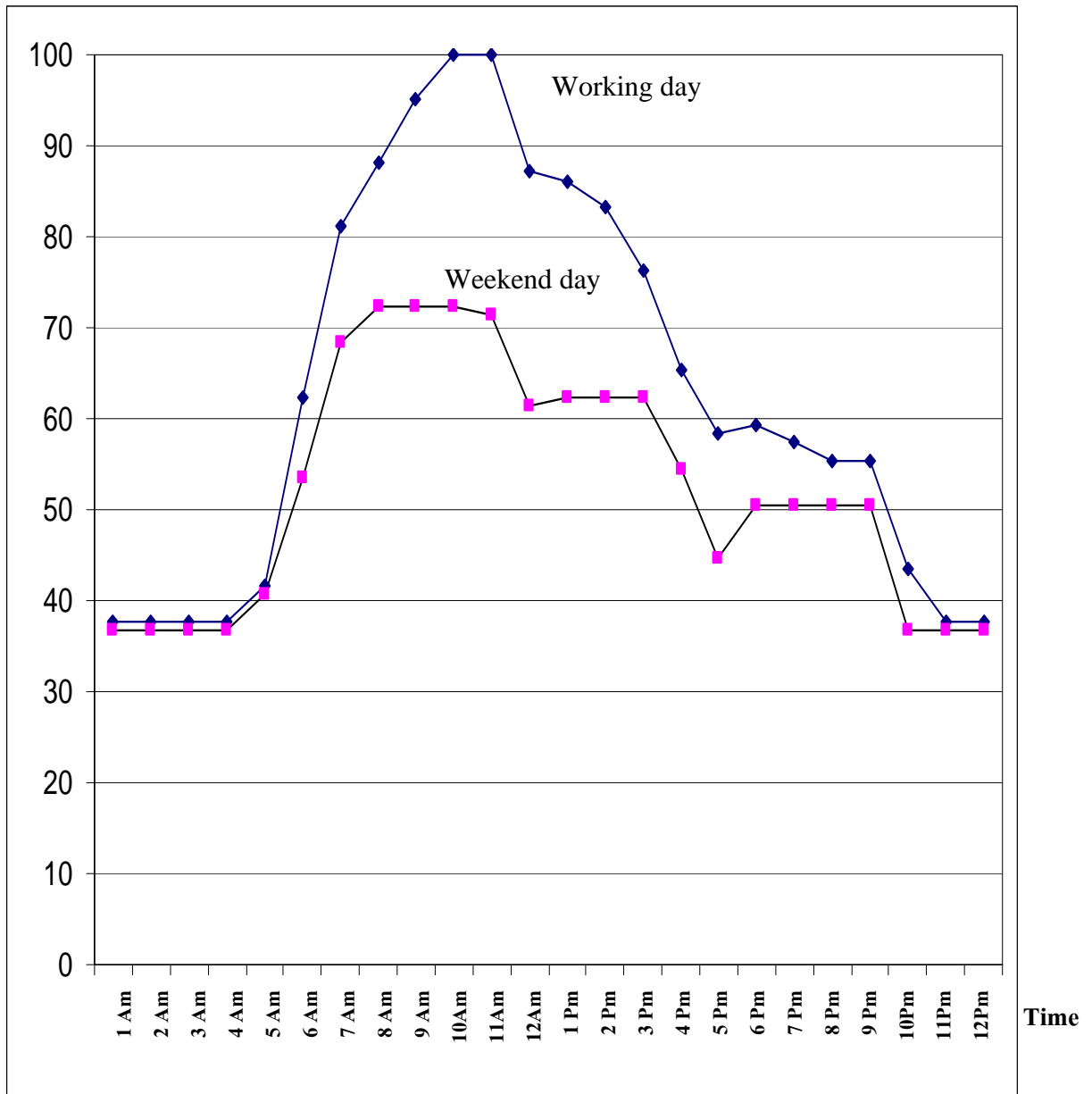


Figure 5 Percentage of people in hospital

%

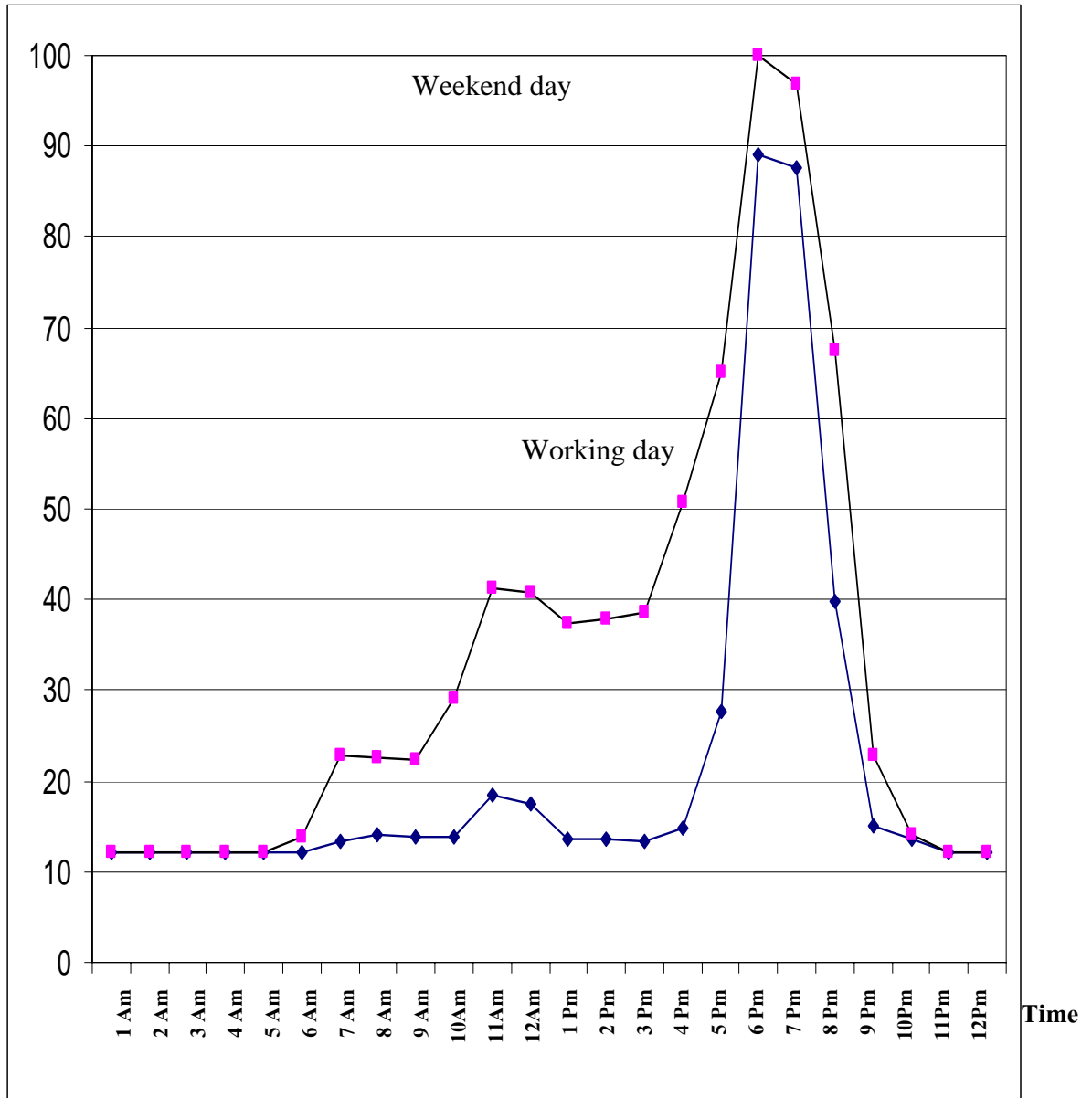


Figure 6 Percentage of people in Religion Place