

Identification of Lifestyle Adaptation Due to Aircraft Noise in Ahmad Yani International Airport and Surrounding

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Abstract - Noise is one of the most common items used by aircraft around the world, there are About 50,000 commercial flights each day around the world and 3 million people traveling. In the operational of aviation in Ahmad Yani International Airport Semarang, an airplane can make some noise. The noise is a sound that unwanted in a place and time scale, it can make some disturbance that influence human freshness and health. Particularly for Residents whom living very close by the airport such as Graha Padma and Tambakharjo. It is commonly believed that people adapt rather easily to noise. This research reviews the available data, finding little evidence that any adaptation occurs in community close by airport. However, is open to alternative interpretations. The present study, examining reactions noise effect from the airport daily operations on residents near by the airport and how they can adapting with the

aircraft noise in them daily lifestyle. First of all, we measured the noise inside Graha Padma and Tambakharjo in 23 points using apparatus sound level meter, Taking into consideration different locations, times and days. We classification this area into three, most affected area, affected area and low affected area according to the levels of noise. We took 30 random samples of people taking into consideration different times, days, age, gender and distance. This study wants to suggest that the airport should take a bigger role to minimize the noise and people whom living around the airport should follow some steps to adapting or avoid the aircraft noise.

Keywords: Noise, community, adaptation and Ahmad Yani Airport Semarang.

I. Introduction

Air transportation generates numerous economic and social welfare benefits. Airports and their expansions are associated with direct, indirect induced effects as well as catalytic impacts on regional and national economies and accessibility are important factors determining competitiveness of (regional and national) economies in an increasingly globalised world. On the other hand there are numerous environmental and health impacts related to the growing demand for air transport. Since the projected annual growth rates of numbers of passengers are about 5% in the next 20 to 25 years.

The continuing growth of the aviation sector has raised questions of appropriate valuation and treatment of external costs (e.g. human and environmental health). In the context of transport markets, a distinction of externalities into positive (external benefits) and negative (external costs) is appropriate. Large infrastructure projects like airports cause various external effects, associated especially with the provision of transport services and facilities, the need of constructing transport infrastructure as well as related production of vehicles or raw materials. Air traffic and associated ground side traffic contribute to local and global noise and air pollution. Despite a large body of research on the economic effects the demand for more information about the economic effects of pollution and noise exposure is increasing.

Effects on human and environmental health as well as on property values, land use planning constraints and spatial and social polarization are issues of importance, requiring

further scientific work. People who live close to airports or under flight paths can often feel strongly about the disturbance to their lives from noise. Addressing their concerns is important for a successful effect include general distraction, speech interference and sleep disturbance which can lead to annoyance and complaints. People who live close to airports or under flight paths can often feel strongly about the disturbance to their lives from noise. Addressing their concerns is important for a successful effect includes general distraction, speech interference and sleep disturbance which can lead to annoyance and complaints. Noise is defined by the World Health Organization (WHO) as unwanted sound. Physically, there is no difference between sound and noise. The difference is one of human perception and is subject to individual variability.

In the modern world, particularly in urban environments noise pollution is an everyday occurrence. This isn't to say we should or do resign ourselves to noise presence. The Nature of Noise is A sound wave carries with it a certain energy in the direction of propagation the sound becomes audible because of energy which originates at the source of the sound vibrations and which is transported by the sound waves The changes in air pressure. Most airport related noise is created by aircraft approaching or taking-off, Aircraft noise occurs when air passes over the plane's body and wings, from moving engine parts and by air being expelled from the engine at high speed.

Achmad Yani International Airport used to be a military airbase for the Indonesian Army. It opens for commercial flights after the joint decree between Chief of the Air Staff,

Minister of Transport, and the Army Chief of Staff on 31 August 1966. Since 1 October 1995, the management of the airport was transferred to PT AngkasaPura I and this marked the start of the fully commercial function of the airport until now. Expansion of the airport was commenced in 2004, done in phases starting with the addition to the length of the runway to accommodate safer landing of wide bodied airplanes. The airport gained its international status in August 2004 with its inaugural flight from Semarang to Singapore, as mentioned in the Minister's Decree No. 64/2004 on 10 August 2004.

This justifies the level of attention given to finding solutions to this problem by numerous air transport system stakeholders, including aircraft manufacturers, airports, airlines and air navigation service providers. Noise is unavoidable consequence of air traffic but it can be reduced in a number of ways, including changing community lifestyle to avoid or adaptation:

- A. Increasing flights operation which leads to increased noise.
- B. The noise impact direct and indirect on the health of people surrounding the airport.
- C. Increasing complaints from residents nearby airport of the growing high noise and the absence of a final solution to them.

II. Theoretical Background

Traditional environmental mitigation to aircraft noise has not embraced public health interventions at these airports, nor at most airports in the world. The issue of community health and well-being has been ignored, possibly because 'health' has been interpreted widely as just only the absence of disease. As defined by the World Health Organization (WHO, 1948), "Health is not only the absence of disease but also including a state of complete physical, mental, and social well-being". Environmental noise, including aircraft noise, not only causes annoyance (as extensively documented in the literature, see for example, Kyrter, 1995) but contributes in a statistically significant way to stress and hypertension in people living in noise-affected areas around airports.

Conducted in metropolitan Minnesota, USA, (Meister and Donatelle, 2000), a postal questionnaire sample measured general health outcomes, perceived stress, noise sensitivity, and noise annoyance. After controlling for potential confounding factors, analysis of covariance revealed that all health measures (general health, sense of vitality, mental health) were significantly worse in areas exposed to high aircraft noise. Stress and noise annoyance were also found to be significantly worse. Another study conducted around Schiphol Airport in the Netherlands explored the association between sleep medication and use of medication for cardiovascular disease and exposure to aircraft noise (Franssen, et al, 2004). A planned study designed by the Hypertension and Exposure to Noise near Airports (HYENA) consortium proposes a study of 6000 people who have lived near one of six major European airports for at least five years. (Jarup et al, 2005). The

funding of such a large study provides further evidence that health status is affected by aircraft noise.

In particular, the case of Barcelona airport has demonstrated that the lack of trust between parties, the impossibility of predicting noise exposure, the absence of opportunities for civil society to speak and difficult access to information foster annoyance and the mobilization of the communities that live around the airport. Furthermore, the Barcelona airport case study has shown that, in such a situation, communities do not always adopt a simple oppositional attitude based on selfish complaints that could be classified as NIMBY behavior.

Gavà Mar residents have evolved into more proactive behavior, which could be classified as post- NIMBY. They have also been one of the keys in proposing technical solutions that found the balance between the airport needs and the community needs. Thus, neighboring residents appear to be a basic stakeholder to be taken into consideration in any airport planning or operating decision, not in a passive manner but rather in an active one.

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Annoyance

Annoyance is a multifaceted psychological concept including both evaluative and behavioral components (Guski, Schuemer, & Felscher-Shur, 1999), used to describe negative reactions to noise such as disturbance, dissatisfaction, displeasure, irritation, and nuisance (Guskiet al., 1999, Ouis, 2002). Annoyance is the most widespread, subjective response to noise (Cohen and Weinstein, 1981). The amount of the annoyance response explained by the sound level is generally thought to be small to moderate (Kroesen et al., 2008, Le Masurier et al., 2007, van Kempen and van Kamp, 2005). Acoustic factors such as noise source, exposure level and time of day of exposure only partly determine an individual's annoyance response: many non acoustical factors such as the extent of interference experienced, ability to cope, expectations, fear associated with the noise source, noise sensitivity, anger, and beliefs about whether noise could be reduced

by those responsible influence annoyance responses (WHO, 2000).

Table 1: % annoyed and % highly annoyed at various noise exposure levels (Lden) for aircraft, road traffic, and rail traffic (taken from the European Commission Working Group on Dose-Effect Relations, 2002).

Table .1

Lden	Aircraft		Road traffic		Real traffic	
	%A	%HA	%A	%HA	%A	%HA
45	11	1	6	1	3	0
50	19	5	11	4	5	1
55	28	10	18	6	10	2
60	38	17	26	10	15	5
65	48	26	35	16	23	9
70	60	37	47	25	34	14
75	73	49	61	37	47	23

Recent studies propose that the Miedema curves underestimate aircraft noise annoyance, suggesting that aircraft noise annoyance around major airports in Europe may have increased in recent years (Babischetal. 2009, Schreckenberget al., 2011). The HYENA study was able to compare annoyance responses.

Annoyance and Aviation Noise

Annoyance remains the single most significant effect associated with aviation noise. Community annoyance is the aggregate community response to long-term, steady-state exposure conditions. However, to adequately support government noise policy-making efforts, it is necessary to synthesize the large amount of data contained in journal articles and technical reports to develop a useful exposure-response relationship. Significant research has occurred since the 1985 aviation effects report was published.

There is no current research to suggest that there is a better metric than DNL to relate to annoyance. However, there remains significant controversy over the use of the dose-response annoyance curve first developed by Schultz and then updated by others. Although the curve is presented as a smooth definitive relationship between DNL and annoyance, there is an extraordinary amount of scatter in the data used to develop the curve. Investigations that report a distinct percentage of the population that will be highly annoyed at a given DNL may incorrectly be interpreted as having a more precise meaning than should be assumed from the data, given such a large amount of scatter.

Furthermore, more recent research tends to support the idea that the dose-response curves are different for aircraft, road, and rail noise sources. An area of research that remains to be investigated is the relationship between single-event noise levels and annoyance. The expanding use of airport noise monitoring systems, flight tracking systems, and geographic information systems (GIS) may make the evaluation of annoyance and single-event noise a prime area for examination

Sound and Noise

Physically, there is no distinction between sound and noise: sound is a sensory perception evoked by physiological processes in the auditory brain. The complex patterns of sound waves is perceptually classified as "Gestalts" and are labeled as noise, music, speech, etc. Consequently, it is not possible to define noise exclusively on the basis of the physical parameters of sound. Instead, it is common practice to define noise simply as unwanted sound. However, in some situations noise may adversely affect health in the form of acoustical energy.

Effective Perceived Noise Level (EPNL)

This scale, expressed in EPNdB is defined as a unit of perceived noise that 'takes into account the actual sound energy received by a listener, the ears' response to that sound energy, the added annoyance of any pure tones or "screeches" in the noise, and the duration of the noise. The EPNL has been adopted by the Federal Aviation Administration (FAA) as a measure of the noise emission level of individual jet aircraft.

Types of Noise

A number of studies have concluded that equal levels of different noise types lead to different annoyance (Hall et al. 1981; Griffiths 1983; Miedema 1993; Bradley 1994a; Miedema&Vos1998). For example, equal LAeq, T levels of aircraft noise and road traffic noise will not lead to the same mean annoyance in groups of people exposed to these noises.

This may indicate that the LAeq, T measure is not a completely satisfactory description of these noises and perhaps does not completely reflect the characteristics of these noises that lead to annoyance. Alternatively, the differences may be attributed to various other factors that are not part of the noise characteristics (e.g. Flindell&Stallen 1999). For example, it has been said that aircraft noise is more disturbing, because of the associated

fear of aircraft crashing on people's homes (cf. Berglund & Lindvall 1995).

Measuring Airport Noise

The perception and impacts of airport noise must be defined in order for them to be studied. Accordingly, a number of noise measurement methods are used by noise engineers. The impact of airport noise and those related perceptions are typically delineated by "noise contour lines" that vary from airport to airport, depending upon the size of the airport, prevalent wind directions, topography, and so forth. By measuring noise contours, a standard can be derived whereby the impact of noise from different airports can be compared. Noise is unwanted sound.

By that definition, the sound emanating from jet aircraft is considered noise to most people. The real estate professional needs to assess the market's perceptions towards airport noise, knowing that those perceptions are then translated into sales prices when the properties are sold and other indications of market values. While most agree that excessive noise is bothersome, it is a subjective issue. For example, what is more annoying: single firecracker or five motorcycles driving by at one-minute intervals? Is one motorcycle at 73 dB for 5 seconds more or less annoying than a jet at 68 dB for 27 seconds? Moreover, is the noise more annoying during the day or at night? If at night, how much more annoying is it? In an effort to answer these questions, there has been a proliferation of noise measurement terms, techniques, and acronyms.

To add to the confusion, there are ongoing debates over the merits of each approach. In an effort to provide at least some clarification of these issues, it is important to note that each of the noise measurement systems is scientifically designed to measure the level of noise, not the measure of annoyance. To illustrate this issue, noise measurement methods measure noise in somewhat the same way the volume of water in a river can be measured. For example, the total gallons flowing past a certain point per day, the speed of the river, the volume between two points at a specific period in time, the peak levels, and so forth.

However, these measurement techniques are not intended to measure flood-related damage, which in turn cause annoyance. The techniques themselves are only designed to measure noise.

III. Methodology

On the northwest areas from Ahmed Yani international Airport because they are more affected by Airport daily

operations. Taking into consideration, study areas which does not increase distance than 1 Mile (1.60934 km) from Airport runway, and will classify those areas under study into three levels according to the damage from aircraft noise. The study area will be from the airport runway to the Raya Semarang-Kendal street, the estimated distance are 1800m and 1500m length, width around 800m.

The surface area around 1279 km². And will be divided into several sections, so the distance between the measurements around 680m². The noise measurements in residential areas only. Has been selected these areas as a target for study according to the following:

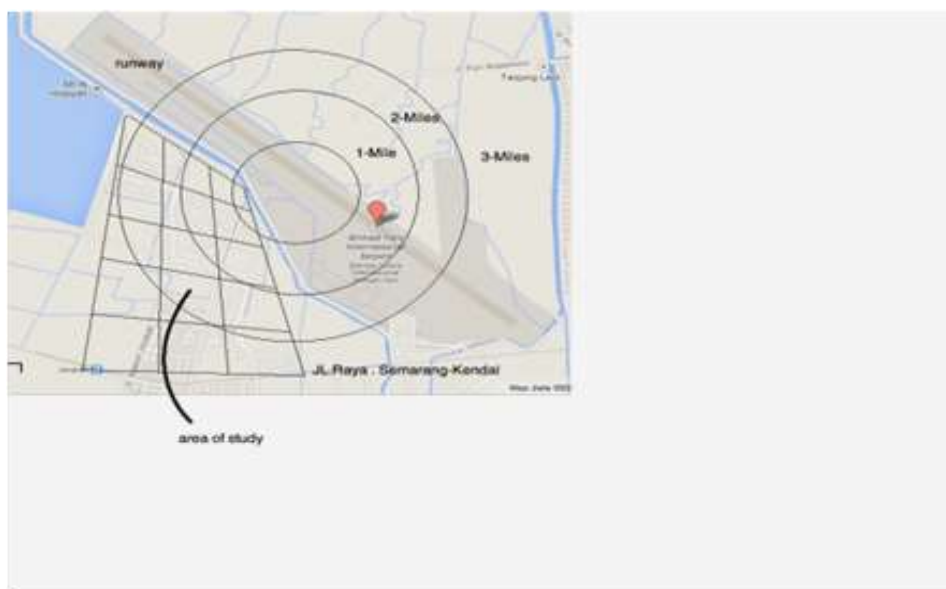
- a) The areas surrounding the airport about 1-Mile, 2-Miles distances, the noise level are 65, 60-55 respectively.
- b) Departing aircraft creates more than twice the amount of noise as an arriving aircraft.
- c) All the departure aircrafts at Achmad Yani international airport, flying to the northwest airport direction

Phenomenon

- Aircraft noise level.
 - a. Using apparatus sound level meter to determine the noise level in the study areas.
 - b. Decibel (A)

The most common measurement in environmental noise is the dB (A) level. It can be measured with a simple Sound Level Meter having an A-weighting filter to simulate the subjective response of the human ear. The dB (A) level is used to report ambient noise and noise intrusions.

- Compare the noise level.
 - a) Compare the airport noise level with the Ministry Health of Indonesia
- Identify the areas into three classifications.
 - a) Departing aircraft creates more than twice the amount of noise as an arriving aircraft. (Darren Muldoon 2003).
 - b) According to the figure (1).
- Identification of lifestyle adaptation to three categories.
 - a) Know the life way of people living around the airport, from questionnaires and questions



IV. Analysis and Result

Residential Area (Graha Padma and Tambakharjo)

The Noise Measurement Result.

We measured the aircraft noise inside residential area Graha Padma and Tambakharjo for several days, different times and points. Generally, we found very high levels of noise if we compare these noise levels with what the Ministry of Health (Indonesia 1996) determined.

The Ministry of Health (Indonesia 1996) determined the levels of noise inside the residential area on (55 db) and what we have seen, the levels of noise in study area are more higher than the healthy levels, the noise levels are between (86.1 db – 57.1db). So we could see the hugely levels of noise very easily and seemed in area (A) around (30 db) more than what the Ministry of Health has been determined. However in other areas (B) and (C), the noise levels stile higher than the healthy noise levels.

Has been classified this area into three various categories according to the noise levels. (A) Most affected area, (B) affected area and (C) low affected area. The Figure (2) shown contour of noise levels.

Area (A) Most Affected Area

This Area is located at around 180m distance from the airport runway, and it is Considered the closest area to the airport in terms of distance and most affected by noise, the level of noise in this area ranges from (86.1 db -

70.0 db).this area is the last part of Graha Padma and the closest to the airport .

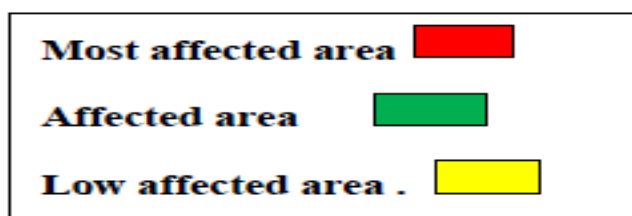
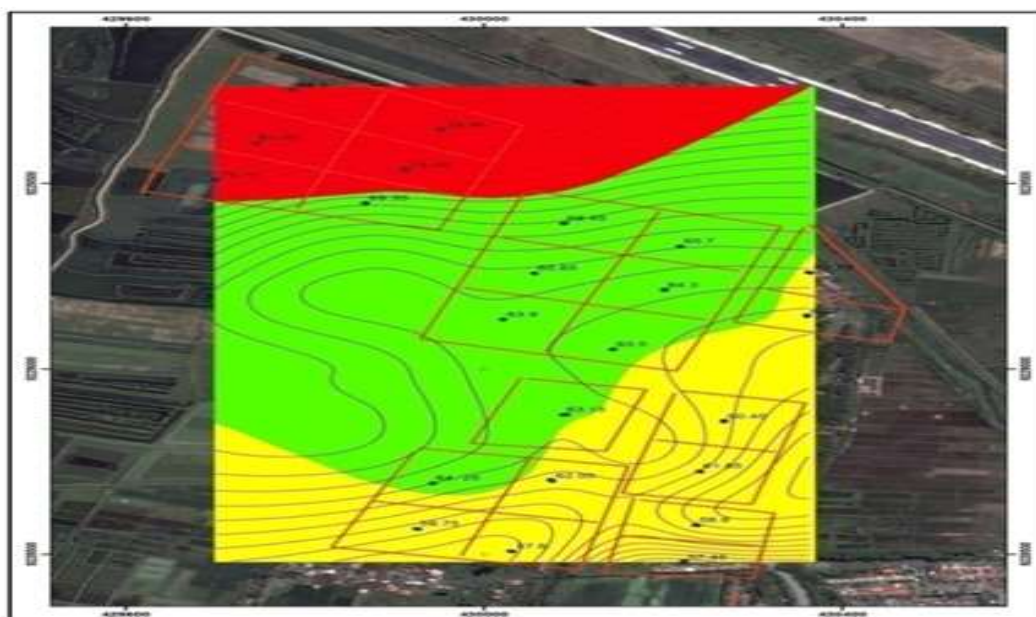
Area (B) Affected Area

This Area is located at around 500m distance from the airport runway. it is Considered the medium area to the airport in terms of distance and noise affect . The level of noise in this area ranges from (70.0 db – 63.0 db). This area is located on middle of Greaha Padma.

Area (C) Low Affected Area

This Area is located at more than 700m distance from the airport runway. it is Considered the farthest area from the airport in terms of distance and low affected by airport noise . The level of noise in this area ranges from (63.0 db – 57.45 db) .This area is located on Graha Padma and Tambakharjo.

We measured the aircraft noise inside residential area for four days. Two days to make measured all points and two days more to make sure there are no mistakes on the noise levels measurement in every single point. We followed airport daily operations schedule to known the time for every departure plane from the airport because this research focusing on departure aircraft only. We selected only one aircrafts type Boeing 737 (B 737) due it has biggest number of flit operations in Achmad Yani International airport according to the flit schedule and also it has medium size if we compare it with the other aircrafts on the schedule.



General Overview of the Respondents

We have been taken random samples from residents whom living in Graha Padma and Tambakharjo, these samples taken in different distance, time and day including weekend to make sure these samples comprised all segments of society as students, workers, jobless, retired and housewife. Also we taken similar number of gender (male -female) to see who more affected by aircraft noise. We taken samples in different distance to see which Category is more affected by aircraft noise. The

gender, age and the distance from the airport shown below on figure (3), figure (4), figure (5) respectively. The age of the respondent.

This survey aimed difference ages such as young, youth, medium ages and seniors, asked them about the disturb from the airport noise effect. A lot of people in this area affected by airport noise no matter they are young, youth, medium ages or seniors every single day on different distance. However, there are age categories more affected by the noise than the others such as young people and seniors in all different distances. Shown on Figure (1).

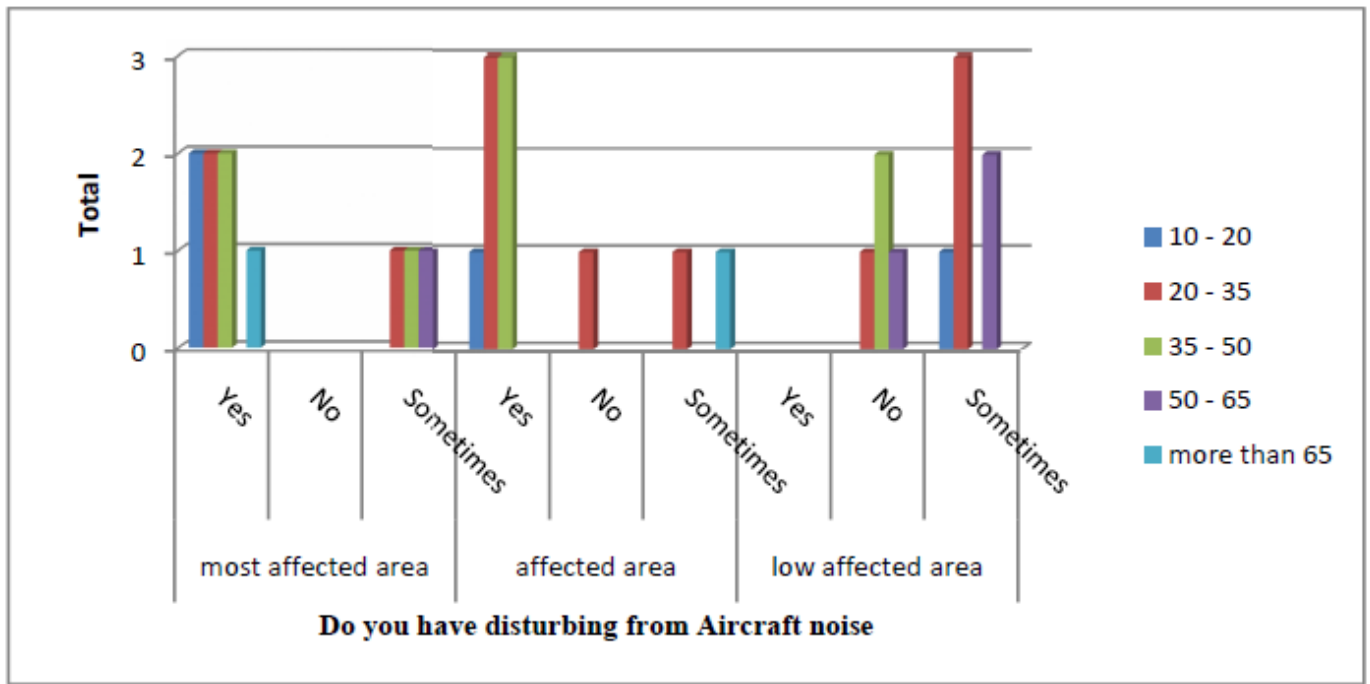


Figure (1). Shown the compare of the age and the disturb from aircraft noise.

On (figure 2) We compared the age with what possible to the people to do to adapting with aircraft noise effect when they want to study or relax home .we have seen a lot of ideas and each idea is difference with the other depending on the ages .we found youth category such as 10 – 20 years old , using headphone to avoid the aircraft noise and when they relaxing home and the other

categories such as 20 -35 and 35 -50 ,some of them prefer to set far from airport and use the opposite room or using TV to decrease the high level of aircraft noise .However , old people often they do not care about the airplane noise affect so we have seen this category living normally with the noise

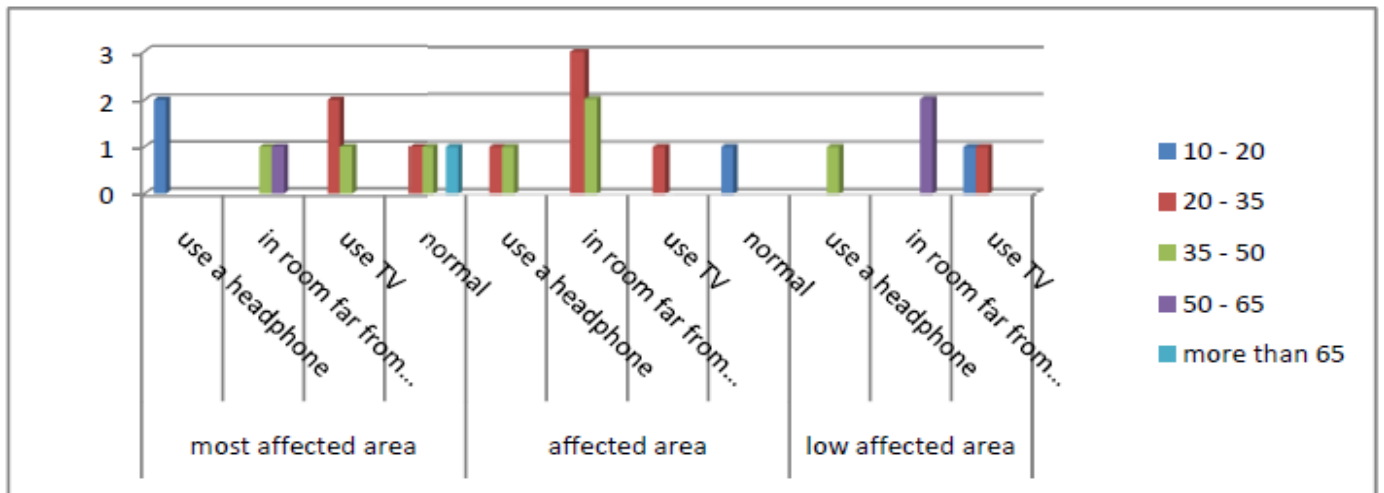


Figure (2). The age and how people do when they feel disturb and want to stay home.

The Level of Education of the Respondent

For any problem the most important thing is the aware the value of the problem then we can make the solution depend of the problem .what we have seen from this survey a lot of people have no idea about the aircraft noise and what it could mad for them health or daily lifestyle . In (figure 10) , we compared the level of

education of residential who living near by airport on area (A) ,(B) and (C) with how much they aware to the impact of aircraft noise and what it could make probably for them health or an indirect effect on the daily work efficiency.

What we have seen on the figure below, people who has little education such as primary school and junior high

school almost they don't know about the noise problems or what it can mad for them health and often they don't care about .However, people has high education such as high school they know it is effectible to the human health but often they don't care .100% percent of the respondent how has high education such as university is aware of this problem.

The Distance from the Airport

The distance from the airport is very significant to people who live near by the airport. we could seen very clearly that residents living closely to the airport are more affected by the aircrafts noise .However in other distances people are also affected by airport noise everyday and every time but by varying degrees . All distances at the site of the study area is considered has very high noise level if we compared with the levels Health Care stipulated from the Ministry of Health in Indonesia.

The Health Status

The aircraft noise could affect in all different segments of society, especially those who are ill ,the effect of airplane noise will be a multiplier and seriously .We compared the health status of respondent with the disturb from aircraft noise impact , Particularly if the disease has direct or indirect related to the aircraft noise such as stress , headache , blood pressure and heart disease . We do not found many samples of illness people in this survey, but what we have been gotten from them almost affected by aircraft noise as we seen clearly on the figure below.

Living Period in Noisy Area

The long living period in the noisy area sometimes could make people more adapting to the airport noise effect, because the daily sound of the plane become normal to them perhaps .However , what we have been seen , the airline noise affected everyone on residential area that surrounding to the airport no matter how long they living in ,but some of these population could not adapting with the noise as easy as people who has long living period in noisy area . we could seen the residential who has long period living in airport surrounding , low disturb by the noise such as (from born and more than 10 years) and people who has short period living surrounding the airport such as (more than 2years , 2 -5 , 5 - 10) are more disturbing by aircraft noise.

The aircraft noise could effect the health of people and also the period of living in noisy area could make the impact more high ,there are some diseases related to the impact of aircraft noise such as stress , headache , blood pressure and the heart disease generally . There are people who are more susceptible to the influence of the noise and these people are the illness. We compared the illness related to the affect of aircraft noise and living period in noisy area such as area (A), (B) and(C). we could seen very clearly ,people living for long time in near by the airport such as from born and more than 10 years usually have some disease related to the aircraft noise damage and this an index is very dangerous and scary .However the other residents who living for short time comparing with the others such as 2 -5 and 5 -10 years ,they also feel the same disease but by low rates.

V. Conclusion

The questions	More affected area (A)	Affected area (B)	Low affected area (C)
1.The age ,gender and the distance from the airport	Including different ages and similar gender, this area is the closest area to the airport.	Including different ages and similar gender, this area is the medium dimension from the airport.	Including different ages and similar gender, this area is the furthest distance from the airport.
2.The age and the disturb from the airport noise	The aircraft noise disturb everyone ,however the yang and the very old people are more disturb by the aircraft impact.	The aircraft noises disturb almost everyone in this area including youth and medium ages.	In this area people sometimes feel disturb by aircraft noise and if we compare this area with the other areas will see people low affected by aircraft noise.
3. The age and when people feel disturb and they want to relax or study at house.	In this area, the residents using different way to avoid the aircraft noise impact and each generation has different idea.	In this area, the residents using different way to avoid the aircraft noise impact and each generation has different idea.	In this area ,the residents using different way to avoid the aircraft noise impact and each generation has different idea
4. The gender and the sensitive from aircraft noise.	In this area, we could see the female or women more sensitive to the aircraft noise than male or men.	In this area ,we could seen the male or men more sensitive to the aircraft noise than female or women .however ,the highs number of female fee sensitive to the aircraft noise .	In this area, we could see the female or women more sensitive to the aircraft noise than male or men.
5. The gender and periods of annoyance.	The women are more annoyance by airport noise affect in this area and we could seen very clearly the periods almost at night ,from (20:00)	We could see the similar numbers of genders have annoyance by the aircraft noise but the different is the period of annoyance.	In this area also women more annoyance by aircraft noise but the time of annoyance is different.

	until (5:00).		
6. The level of education and the aware of the problem of loud aircraft noise affect.	people who has little education almost they don't know about the noise problems .people has high education they know it is effectible	people who has little education almost they don't know about the noise problems .people has high education they know it Is effectible	people who has little education almost they don't know about the noise problems .people has high education they know it is effectible
7. The level of education and the spend of holiday and weekend.	The categories have high education are often spend the holiday and weekend out the noisy area due more aware for the damage of aircraft noise affect.	The categories have high education are often spend the holiday and weekend out the noisy area due more aware for the damage of aircraft noise affect.	The categories have high education are often spend the holiday and weekend out the noisy area due more aware for the damage of aircraft noise affect.
8. The level of education and how people do when they feel disturb and want to sleep.	The residents who has high education usually has more ways to sleep and different than people who has little education.	The residents who has high education usually has more ways to sleep and different than people who has little education.	The residents who has high education usually has more ways to sleep and different than people who has little education.
9. The level of education and the idea to avoid the aircraft noise affect.	The residents who has high education usually has more ideas and different than people who has little education.	The residents who has high education usually has more ideas and different than people who has little education.	The residents who has high education usually has more ideas and different than people who has little education.
10. The distance from the airport and the disturb from the aircraft noise.	The residents in this area feels more disturb by the airport daily operation due the distance to the airport are very close.	The residents in this area feels disturb by the airport daily operation due this area are close to the airport.	The residents in this area feels low disturb by the airport daily operation than the other areas due the distance to the airport is little pit far.
11. The distance from the airport and the level of annoyance.	The residents in this are feels high level of annoyance because they living very close to the airport and the level of noise in this area are so high.	The residents in this area feel high level of annoyance because they living close to the airport and the level of noise in this area are high.	The residents in this area feels low level of annoyance because they living far little pit to the airport and the level of noise in this area is low.
12. The distance from the airport and the house material quality to decrease the noise affect.	The residents in this area has modern houses and from them point they think it is enough to decrease or avoid the aircraft noise affect.	The residents in this area has modern houses and from them point they think it is enough to decrease or avoid the aircraft noise affect.	The residents in this area feels that the material of them houses is not enough to decrease the aircraft noise affect because it is too old.
13. The distance from the airport and the reason to spend the holiday and weekend out.	Most of the residents in this area want to spend the holiday out of noisy area and the reason almost annoyance from the airport operations.	Most of the residents in this area want to spend the holiday out of noisy area and the reason almost annoyance from the airport operations.	Some of the residents in this area want to spend the holiday out of noisy area and the reason almost annoyance from the airport operations.
14. Health status and the disturb from aircraft noise	All residents in this area feels disturb by aircraft noise including the people who feel diseased or unwell sometimes.	All residents in this area feels disturb by aircraft noise including the people who feel diseased or unwell sometimes.	Some of the residents in this area feels disturb by aircraft noise .however, the people who feels diseased or unwell sometimes they feels more disturbing.
15. Living period in this area and the disturb from the aircraft noise.	In this area, people who live for long time or from born feels more disturb by airport daily operations than people who live for short time.	In this area, people who live for short time feels more disturb by airport daily operations than people who live for long time.	In this area, people who live for long time or from born feels more disturb by airport daily operations than people who live for short time.
16. Living period and if the illness related to the aircraft noise.	The residents who living for long time or from born, they describe the ill as related to the aircraft noise such as stress.	The residents who living for long time , they describe the ill as related to the aircraft noise such as heart disease.	The residents who living for long time or from born, they describe the ill as related to the aircraft noise such as stress and blood pressure.
17. Living period and reason to live far from the airport.	In this area , the residents how living for long period , they do not care to live far away from the noisy area ,however people whom living for short time want to leaves this area .	In this area, the residents how living for short period, they have reason to live far away from the airport due they care about them health.	In this area, t he residents feels little disturb so some of them want to leaves this area but the others have no reason to leave it presently.

Recommendation

For the government

1. Providing information to the public whom living on airport surrounding, about the seriousness of the noise damage and the consequent health of the noise problems, particularly for children and very old people.
2. Establishment of an independent regulator to protect those affected by aviation noise consists of a number of residents, government officials and a number of airport staff to convergence of views between modus operandi of the airport and the way people live and find a solution to adapt between them

For the Achmed Yani International Airport

1. Improving the aircraft fleet using Achmad Yani International Airport by following actions:
 - a. Negotiating with airlines to phase out the use of all older, noisier aircraft.
 - b. Encourage airlines to use quieter aircraft at Achmad Yani International Airport.
 - c. Setting tougher of noise standard, for the aircraft flying into the airport during the night.
2. Publishing annual noise contours for day, evening and night noise.

For the resident

If you live near an airport, or are planning to move near one, a good first step is to get specific details about aircraft noise levels in the neighborhood. You can do this by contacting your local airport for a copy of the noise contour (noise map) for your area. From there, you can compare your local noise contour to the contours. If you know the aircraft level noise in your neighborhood then you can decrease the level of aircraft noise by following some of steps below:

1. Preferably lack of slots in the wall because, both sound and energy can be transmitted through an open space in the wall.
2. A bedroom or living room with carpeting and soft furniture is likely to be quieter than having all hard surfaces.
3. Using earplugs. Earplugs are inexpensive, generally effective when you want to sleep or for relax home.
4. Soft surfaces. To help you decrease an aircraft noise, in your house should be an enemy of sound. This means that you should eliminate hard surfaces as much as possible. Hard surfaces do not absorb and stop sound; they reflect it. Strive for soft surfaces instead. If sound enters your bedroom from outside, soft surfaces can absorb much of the noise and lessen the amount that reaches your ears.

5. Sometimes it can be wise to use landscaping to reduce noise from disturbing your sleep; especially from aircraft noise. using deciduous shrubs to grow on and cover the fence will provide an added sound-deadening layer. Then a hedge of tall shrubs can be planted in front or behind the fence for an additional sound barrier.
6. Masking aircraft noises by using white noise machines, it is a device that produces a random sound and it could help you to disregard an aircraft noise during sleep.

References

1. Apndix J. Measuring Aircraft Noise, January, 2003.
2. Birgitta Berglund, Thomas Lindvall and Dietrich H Schwela. Guidelines for community noise, April 1999.
3. Bowles, A.E. Noise Basics and the Effect of Aviation Noise on the Environment.
4. Charlotte Clark and Stephen A Stansfeld. The Effect of Nocturnal Aircraft Noise on Health: a Review of Recent Evidence, September 2011.
5. Darren Muldoon .The impact of airport noise on residential property values: a case of the Portland – Hillisboro airport, June 2003.
6. Debra L. Miller, Secretary, Kansas DOT, Topeka. Effects of Aircraft Noise, 2008.
7. Dirk Schreckenber , Markus Meis , Cara Kahl , Christin Peschel and Thomas Eikmann, Aircraft Noise and Quality of Life around Frankfurt Airport, 2010.
8. Federal Interagency Committee on Aviation Noise. Effects of Aviation Noise on Awakenings from Sleep, June 1997.
9. Fedja Netjasov . Contemporary measures for noise reduction in airport surroundings, 20 March 2012.
10. Flavio Maldonado Bentes a, Tarcilene Aparecida Heleno b and Jules Ghislain Slama . Analysis of airport noise exposure Viracopos International Airport using geographic information systems, 2012.
11. H. W. Krohne. Stress and Coping Theories, 2002.
12. Keputusan an. menteri Negara lingkungan hidup , NO:KEP-48/MEIH/11/1996. Tentang bakutingkat kebisingan menteri Negara lingkungan hidup.
13. Les Frair . Airport noise modeling and aircraft scheduling so as to minimize community Annoyance, April 1983.
14. Ms. Jacqueline Sweatt-Essick. Land use compatibility and airports, 1998.
15. Paul L. Goldschagg . Using supplemental aircraft noise information to assist airport neighbors understand aircraft noise , 2013.

16. Pembanguan dan pelestarian lingkungan hidup banjar udara dengan rahmat tuhan yang maha ESA presiden republik Indonesia, NO40, 2012.
17. Pere Suau-Sanchez , Montserrat Pallares- Barbera and Valerià Paül . Incorporating annoyance in airport environmental policy: noise, societal response and community participation 2010.
18. Randall Bell, MAI. The Impact of Airport Noise on Residential Real Estate, 1999.
19. Roland Benedikter. Lifestyle, 2006