



Title	Noise Distribution in Various Zones(Report NO.1) : The Busy Street Noises in Tokyo
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Citation	北海道教育大学紀要. 第二部. A, 数学・物理学・化学・工学編, 33(1) : 11-17
Issue Date	1982-09
URL	<a href="http://s-ir.sap.hokkyodai.ac.jp/dspace/handle/123456789/6081">http://s-ir.sap.hokkyodai.ac.jp/dspace/handle/123456789/6081</a>
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## Noise Distribution in Various Zones Report No. 1 The Busy Street Noises in Tokyo

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竹内 茂：地域別騒音の場所的分布  
第1報 東京都内繁華街の騒音

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### Abstract

Busy street noises were measured in three areas of Tokyo : Asakusa in Taito-ku, Ginza in Chuo-ku and Kabukicho in Shinjyuku-ku.

The noises were measured at 10 different points along various streets in each of these areas during early Aug. 1981.

At each point, the sound level in dB(A) was measured by a sound level meter, 50 times at intervals of 5 seconds.

A median and a range were obtained statistically from these 50 pieces of data to represent the noise level distribution.

These procedures are in accordance with the Japanese Industrial Standard JJS Z-8731 "Methods of Measurement of sound levels".

The main results are as follow.

(a) Asakusa district : The sound level are generally low (63.4 dB(A) in average), being under 60 dB(A) ; the sound levels of Sushiya street, Gojyunoto street and Asakusa park were 55, 57 and 58 dB(A) respectively.

(b) Ginza district : This street is more bustling than those of other districts and the average sound level was 84.4 dB(A).

Mitsukoshi and Kabukiza had the highest sound level in the Ginza streets : 92 dB(A).

(c) Shinjyuku-Kabukicho district : This district is generally bustling ; the lowest values of the sound level were 67 dB(A) near the Mikado, Toho-Shinjyuku and Furin-Kwaikan, and highest values of the same are 81 dB(A) near the Ojyo, the most popular meeting place in Japan.

The average sound level in 72.3 dB(A) and the values at all sound points changed during the

day.

## 1. Introduction

The purpose of the present investigation is to measure the busy street noises in Tokyo.

In Tokyo therefore street noises were measured in three busy street complexes : Asakusa of Taito-ku, Ginza of Chuo-ku and Kabukicho of Shinjyuku-ku.

The noises were measured at 10 different points on each street during early Aug. 1981.

At each point the sound level in dB(A) was measured by a sound level meter, 50 times at intervals of 5 seconds.

A median and a range was obtained statistically from these 50 pieces of data to represent the noise level distribution.

These procedures are in accordance with the Japanese Industrial Standard JJS Z-8731 "Methods of Measurement of sound levels".

## 2. Result of investigation

Firstly let us examine the noise levels of Asakusa, a mass entertainment street with both cinema houses standing roof to roof, and Nakamise street with the Kwannon as its center.

Tab. 1 and Fig. 1 show an example of the detailed data and the average sound level at 10 different points by an arbitrary sampling method in the Asakusa district.

It proves to be the quietest place amongst the busy streets.

The measured results, which were obtained in the way described above, are shown in Tab. 1.

As in the lower part of Fig. 1 the central value of the sound levels are arranged in order increasing in magnitude as the black spots plot the measured values in the same figure.

Its solid lines move up and down to show the difference within a 90 % range.

A central solid line shows the average value of their central values and that its average sound level is 62.8 dB (A).

Both its lowest and highest points are shown by dotted lines ; the average values with

Tab. 1 Sound levels and conditions of the measuring points: Asakusa, Daito-ku

Zone		Category	
Commercial		Busy town	
Test No.	Time	Sound levels dB (A)	
		Median	90 % range
①	11.40	69	68~75
②	11.50	58	58~60
③	12.00	61	60~64
④	12.10	59	57~63
⑤	12.20	59	59~60
⑥	12.30	62	59~66
⑦	12.40	58	55~64
⑧	12.50	69	65~78
⑨	13.00	63	60~73
⑩	13.10	70	65~75

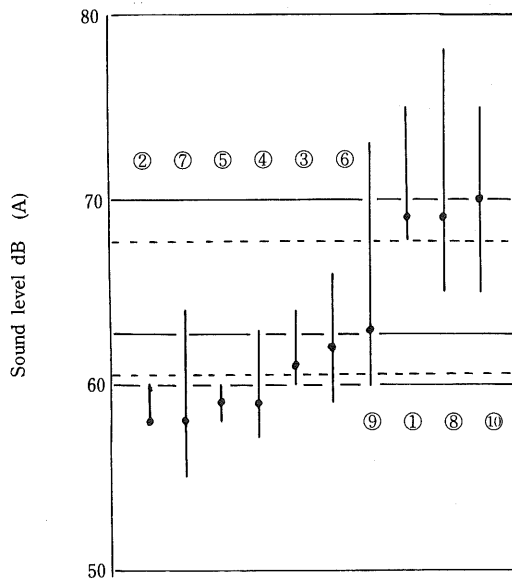
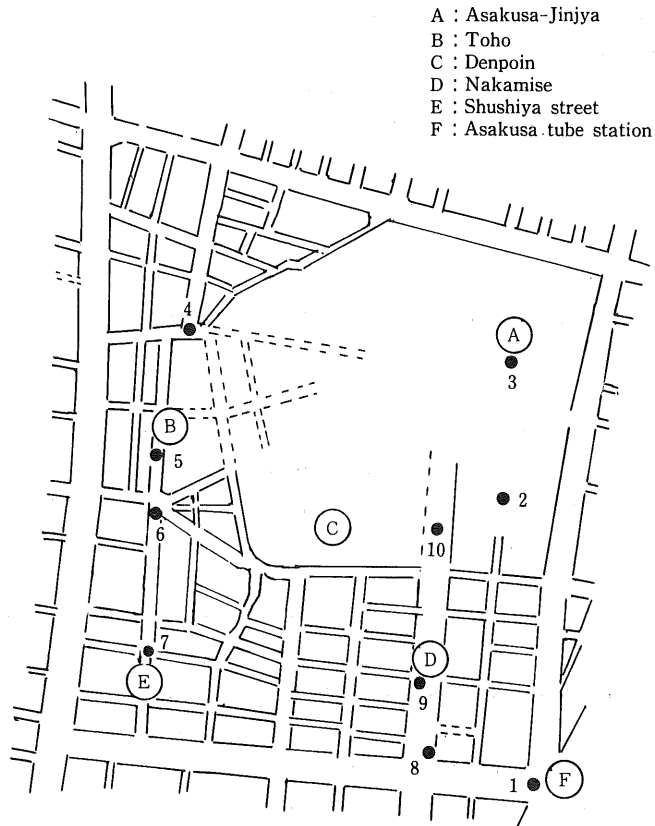


Fig 1 Examples of measurement at busy street : Asakusa, Daito-ku 10 measuring points and sound levels obtained.

both lower limit values and upper limit values within a 90% range are also shown.

Their average sound levels are shown as 67.8 and 60.6 dB(A) respectively.

In the upper of Fig. 1 a value from one to ten shows the position of the measured points, and the letters A to F are used to show the most important places in the Asakusa district.

Let us now examine the noise level of the so-called Ginza, a stylish and busy street which is famous as the show place of the latest Japanese fashions.

Tab. 2 and Fig. 2 offer an example of the detailed data and the average sound level at 10 different points in the Ginza district by means an arbitrary sampling method.

This shows that it is the busiest street for both vehicular traffic noises and speaker noises.

The measured results which were obtained in the way described above are shown in Tab. 2.

As in the lower part of Fig. 2, the central value of the sound levels is arranged in order increasing in magnitude as the black spots plot the measured values in the same figure.

Its solid lines move up and down and show the changing regions in a 90 % range.

A central solid line shows the average value of their central values and that its average sound level is 83.7 dB(A).

Both its lowest and highest points are shown by dotted lines ; the average values with both lower limit values and upper limit values, within a 90 % range are also shown.

Their average sound levels are shown as 89.2 and 80.2 dB(A) respectively.

In the upper part of Fig. 2 values from one to ten show the position of the measured points, and the letters A to G are used to show the most important places in the Ginza district.

Finally, let us examine the noise level of Shinjyuku-Kabukicho, a busy street that is credited with being the most popular meeting place in Japan.

**Tab. 2** Sound levels and conditions of the measuring points Ginza: Chuo-ku

Zone		Category	
Commercial		Busy town	
Test No.	Time	Sound levels dB (A)	
		Median	90 % range
①	13.10	83	73~87
②	13.20	86	82~92
③	13.30	84	81~92
④	13.40	85	80~91
⑤	13.50	80	79~86
⑥	14.00	84	80~88
⑦	14.10	85	82~90
⑧	14.20	85	84~89
⑨	14.30	82	80~88
⑩	14.40	83	81~89

**Tab. 3** Sound levels and conditions of the measuring points: Kabukicho, Shinjyuku-ku

Zone		Category	
Commercial		Busy town	
Test No.	Time	Sound levels dB (A)	
		Median	90 % range
①	12.00	74	70~83
②	12.10	74	69~80
③	12.20	73	69~81
④	12.30	67	67~70
⑤	12.40	69	68~70
⑥	12.50	81	76~89
⑦	13.00	71	70~75
⑧	13.10	68	68~76
⑨	13.20	67	67~76
⑩	13.30	70	70~82

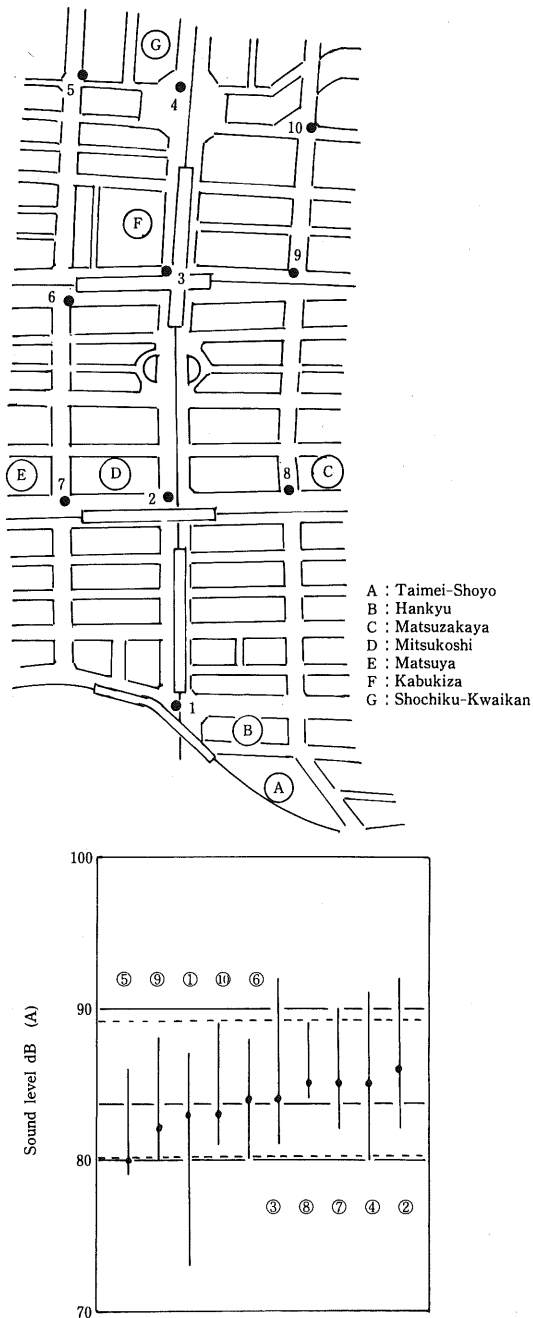


Fig. 2 Examples of measurement at busy street : Ginza, Chuo-ku 10 measuring points and sound levels obtained.

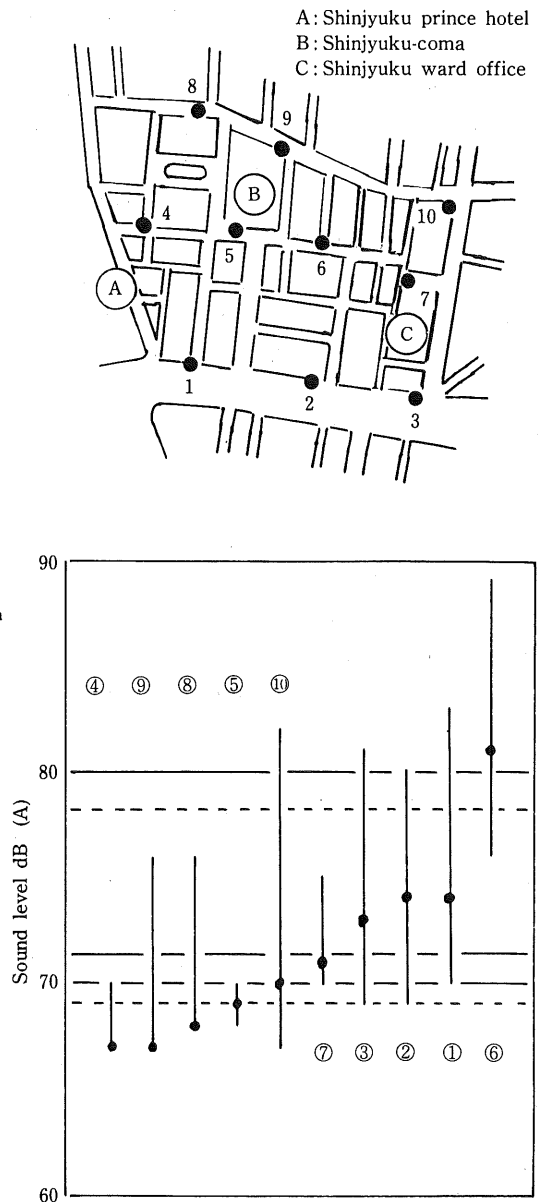


Fig. 3 Examples of measurement at busy street : Kabukicho, Shinjyuku-ku 10 measuring points and sound levels obtained.

Tab. 3 and Fig. 3 offer an example of the detailed data and the average sound level at 10 different point by an arbitrary sampling method. Shinjyuku-Kabukicho is shown as the noisiest place for both speaker noises and vehicular traffic noises.

The measured results which were obtained in the way described above are shown in Tab. 3.

As in the lower part of Fig. 3 the central value of the sound level are arranged in order increasing in magnitude as the black spots plot the measured values in the same figure.

Its solid lines move up and down to show the difference within a 90 % range.

A central solid line shows the average value of their central values and that its average sound level is 71.4 dB(A).

Both its lowest and highest points are shown by dotted lines ; the average values with both lower limit values and upper limit values within a 90% range are also shown.

Their average sound levels are shown as 78.2 and 69.1 dB(A) respectively.

In the upper part of Fig. 3 a value from one to ten shows the position of the measured points, and letters A to C are used to show the most important places in the Shinjyuku-Kabukicho district.

### 3. Discussion

#### a) Asakusa district

In this district the sound levels are generally low (63.4 dB(A) in average), often being under 60 dB(A).

For example the sound levels of Sushiya street, Gojyunoto street and Asakusa park are 55, 57 and 58 dB(A) respectively.

But the highest sound levels are above 70 dB(A) ; for example, the highest sound level of the busy Nakamise street is 73 dB(A) because of loud-speaker noises, while that of the Asakusa tube station is 75 dB(A) because vehicular traffic noises ; that of the busy Raimon street is 78 dB(A) similarly because of vehicular traffic noises.

#### b) Ginza district

The ginza streets are more bustling than those of other districts, and the average sound level was 84.4 dB(A).

Mitsukoshi and Kabukiza, which have the highest sound values in the busy Ginza streets, registered 92 dB(A).

Because of both speaker noises and vehicular traffic noises passing along the street in front of their measured points, it proved to be the noisiest area.

The central value of the sound levels is shown by the lowest value, 80 dB(A) near the Konwa plaza, and the highest value, 86 dB(A), near the Mitsukoshi store.

In this district the sound levels are generally higher, 80 dB(A), because the noises in the neighborhood enter uniformly into its district, Konwa plaza and Mitsukoshi showing only a

slight variation.

c) Shinjyuku-Kabukicho district

This district is generally bustling. The lowest value of sound level was 67 dB(A) near the Mikado, Toho-Shinjyuku and Furin-Kwaikan, while the highest value of sound level was 81 dB(A) near the Ojyo, because it is the most popular meeting place in Japan.

The average sound level was 72.3 dB(A) and all sound points changed during the day.

#### 4. Conclusion

The change of noise level within a 90 % range was measured according to the mean central values in three selected districts.

The Ginza, Shinjyuku-Kabukicho and Asakusa registered 83.7, 71.4 and 68.5 dB(A) ; the highest values of the same were 86, 89 and 70 dB(A) while the lowest values of the same were 80, 67 and 58 dB(A) respectively.

Taking the average sound level of each district, the Ginza district is shown to have the highest value and was 84.4 dB(A).

The Asakusa district is shown to have the lowest value : 63.4 dB(A).

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