



# 14th IC BEN Congress on Noise as a Public Health Problem



## Investigative research on awareness of noise and sound environment in Okinawa Prefecture

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### ABSTRACT

In recent years, the spread of the new coronavirus (COVID 19) has increased remote work and classes. As a result, there are more opportunities to do classes and work at home, and more time is spent at home. Therefore, we considered that there may be noises felt during remote work and classes at home, and new sounds that have become a concern. By investigating the position of noise as a pollution in Okinawa Prefecture, and investigating the noise that is worrisome among the noise, especially the noise that is worrisome during remote control, the current noise problem in Okinawa where the new coronavirus (COVID 19) is prevalent. investigated how they are perceived. A polling awareness survey was conducted on a total of 205 people, including students at the University of the Ryukyus, vocational school students, and residents of Okinawa prefectural housing. For his eight items, air pollution, water pollution, soil pollution, noise, ground subsidence, odors, radioactivity, and greenhouse gases, he rated importance on an 8-point scale and familiarity on a 7-point scale. I got it. Investigation of the sound environment in living at home A total of 250 students and residents were surveyed on the sound environment in their homes in the same manner as the position of noise in pollution. He was asked to make multiple selections from a total of 20 choices, 19 for sounds that bother him mainly in his daily life and sounds that bother him while remote control, and no sounds that bother him.

Keywords (6-4): Noise, COVID 19, Remote work, Pollution, A polling awareness survey, Sounds of concern

### 1 First of all

#### 1.1 Research background

Regarding environmental problems, research on the position of warming gas in addition to air pollution, water pollution, soil pollution, noise, ground subsidence, foul odor, and radioactive pollution has been conducted at Fukushima University. In Fukushima Prefecture, from the survey results that radioactivity was regarded as important due to the effects of the nuclear accident, it was considered that the items of pollution may differ depending on the region.

In recent years, the spread of the new coronavirus has led to remote work class increased.

This makes it possible to conduct classes and work at home. I had more opportunities to sleep and spent more time at home. Therefore, the house the noise you feel during remote work and classes at Consideration that there may be a sound that has become worrisome bottom. Also, last year's survey was limited to the area around Futenma, and there was some bias.

Therefore, it may be necessary to expand the scope of the investigation. I considered.

## 1.2 Research purpose

In Okinawa Prefecture, the noise caused by aircraft at US military bases has been taken up as a social problem. Therefore, the purpose of this study is to investigate the position of students living in Okinawa prefecture on pollution based on a questionnaire survey, and to investigate how noise as pollution is perceived in it.

To examine the position of noise as a pollution in Okinawa Prefecture.

Among those noises, there are some annoying sounds, especially during remote control.

By investigating the sounds of concern, the new coronavirus

How is the current prevalent noise problem in Okinawa the purpose is to investigate whether it is captured.

## 2. Research method

### 2.1 Positioning of noise pollution

University of the Ryukyus student, Okinawa Rehabilitation Institute Students, Okinawa prefectural housing (Nago, Kadena, Chatan, Ginowan, Pollution awareness among 205 residents of Naha and Yonabaru I did some research.

Air pollution, water pollution, soil pollution, noise, ground subsidence. The importance of his 8 items of odors, radiation and greenhouse gases on his 8-point scale and on familiarity on a 7-point scale. I got a price.

### 2.2 Sound environment survey for living at home

Students and Residents Similar to the Placement of Noise in Pollution A total of 250 people were surveyed about the sound environment in their homes.

Mainly sounds that bother you in your daily life and things that bother you while you are remote A total of 20, I was asked to select multiple options.

## 3. Survey results

### 3.1 Positioning of noise in pollution

#### 3.1(1) Areas with Airfields

Table 1 Statistics for each item in the area where the airfield is located

item	average ± standard deviation		average		Correlation coefficient
	Importance	Familiarity	Importance	Familiarity	
air pollution	5.80 ± 1.50	5.25 ± 1.44	6	6	-0.03
water pollution	6.38 ± 1.65	5.41 ± 1.67	7	6	0.22
soil pollution	4.47 ± 1.62	4.41 ± 1.77	5	4	0.17
noise	3.64 ± 2.81	5.95 ± 1.43	2	7	0.38
ground subsidence	3.52 ± 1.83	3.61 ± 1.67	3	4	0.14
foul odor	3.38 ± 1.90	4.52 ± 1.69	3	4.5	0.22
radioactive pollution	5.02 ± 2.48	3.33 ± 1.66	5	4	-0.05
warming gas	3.77 ± 2.07	5.02 ± 1.53	3	5	0.16

Water quality Pollution is rated high at 6.38, odor is 3.38, land subsidence is 3.52, and 3.64 for noise. Also, familiarity of 5.95 for noise and 5.41 for water pollution.

The evaluation is higher in order, and the evaluation for radioactivity is lower at 3.33.

### 3.1(2) Areas without airfields

Table 2 Statistics for each item in areas without airfields

item	average ± standard deviation		average		Correlation coefficient
	Importance	Familiarity	Importance	Familiarity	
air pollution	6.12 ± 1.68	4.99 ± 1.72	6.5	5	0.11
water pollution	6.18 ± 1.49	4.65 ± 1.99	6	5	0.1
soil pollution	4.30 ± 1.58	3.80 ± 1.80	4	4	0.1
noise	3.15 ± 2.15	5.63 ± 1.46	2.5	6	0.06
ground subsidence	3.52 ± 1.83	3.61 ± 1.67	4	3	-0.13
foul odor	3.38 ± 1.90	4.52 ± 1.69	3	4	0.08
radioactive pollution	5.02 ± 2.48	3.33 ± 1.66	5	2	-0.22
warming gas	3.77 ± 2.07	5.02 ± 1.53	4	5	0.16

Regarding the average importance of areas without airfields, water 6.18 for quality pollution and 6.12 for air pollution.

The lowest score is 3.09 for odor and 3.15 for noise. Flight Areas without airfields are less noisy than those with airfields. The average value of the importance of sound is rated lower. Also familiar in terms of the average noise level, the noise score is 5.63, which is high, and the emission score is 5.63. It has a low firing rate of 2.68.

Similar to the average importance of noise, the average familiarity of noise in areas without airports is lower than that in areas with airports.

### 3.2 Anxious sounds when living at home

#### 3.2(1) Areas with Airfields

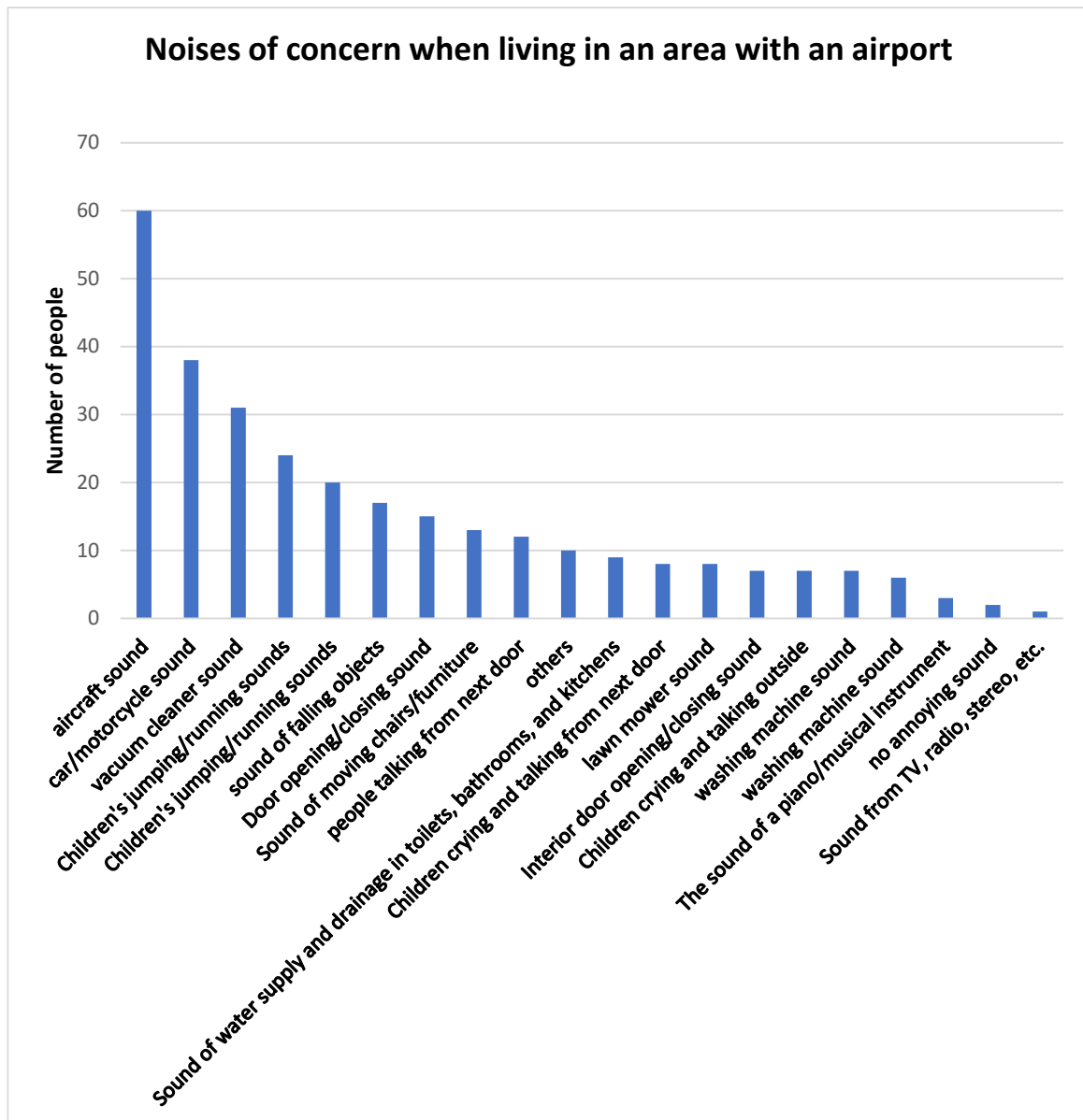


Fig. 1 Noises of concern when living in an area with an airport

Item Correlation coefficient the 20 selections in Fig. 1 are selected as sounds that are of concern in daily life.

I was asked to select multiple options. Aircraft sound received the most votes with 60 votes, followed by the second most votes. The sound of cars and motorbikes received 38 votes, and the third most popular was Footsteps from upstairs received 31 votes.

### 3.2(2) Areas without airfields

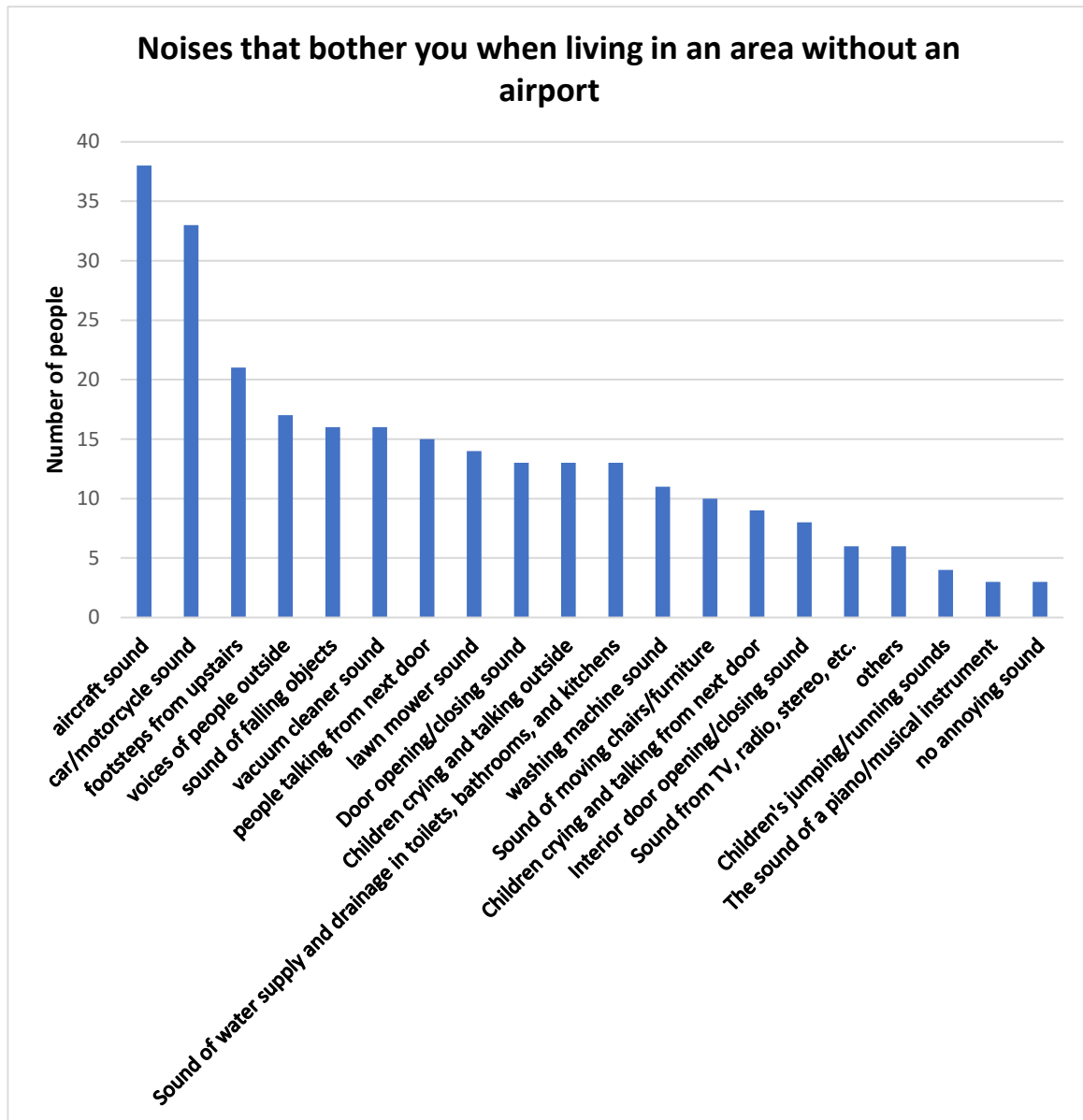


Fig. 2. Noises of concern when living in an area without an airport

The most common noise in daily life was aircraft noise with 38 votes, followed by motorbike noise with 33 votes, and third with footsteps from upstairs with 21 votes. there were. Compared to regions with airports, the difference between the top two was small.

### 3.3 Sounds of concern during remote work and classes

#### 3.3(1) Areas with Airfields

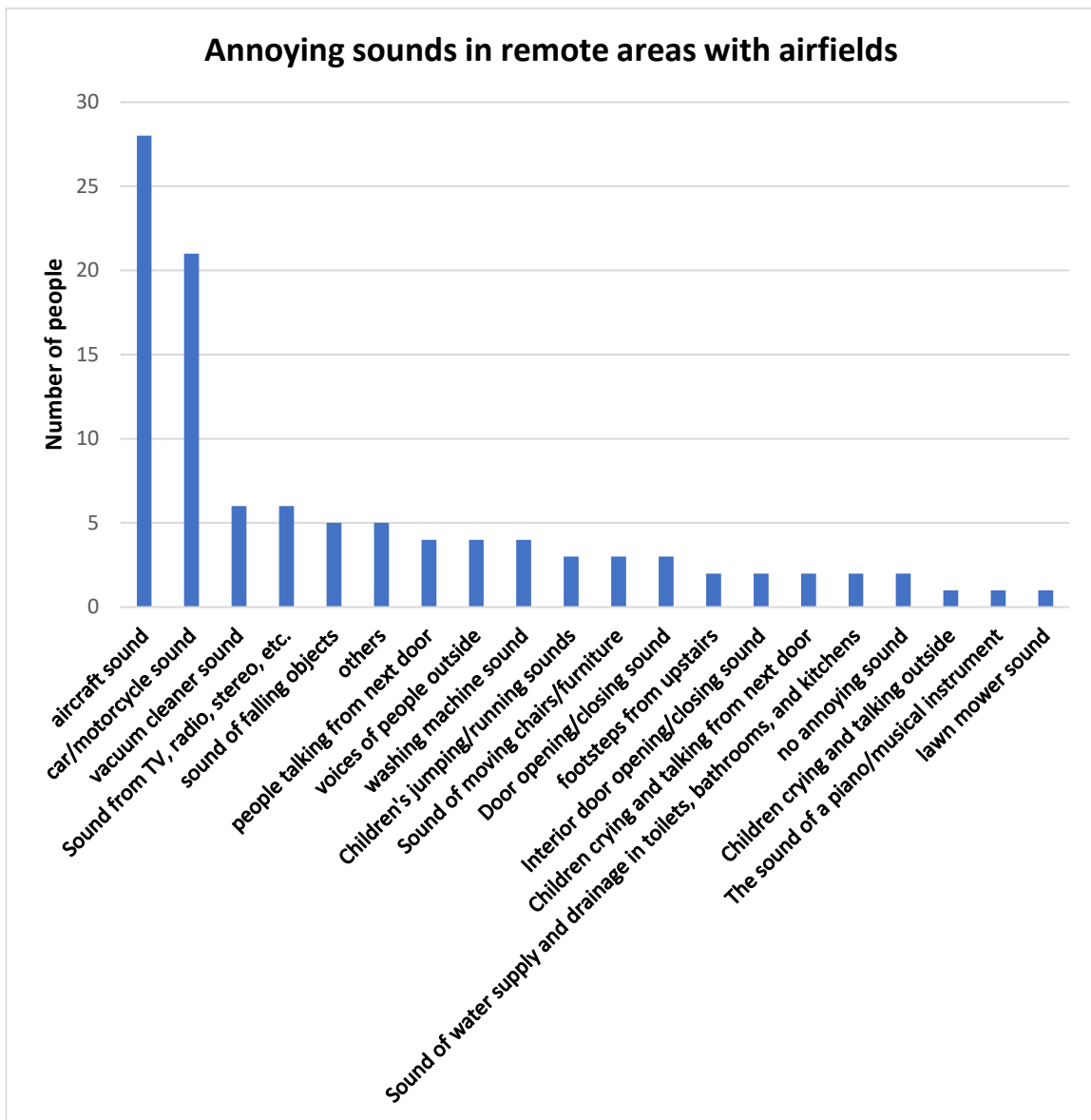


Fig. 3 Annoying sounds in remote areas with airfields

We asked the participants to select multiple sounds from the 20 choices in the above graph as the sounds that bothered them during remote work and classes. The sound that bothered him the most during remote work and class was the sound of an aircraft, with 28 votes. By sound he had 6 votes.

### 3.3(2) Areas without airfields

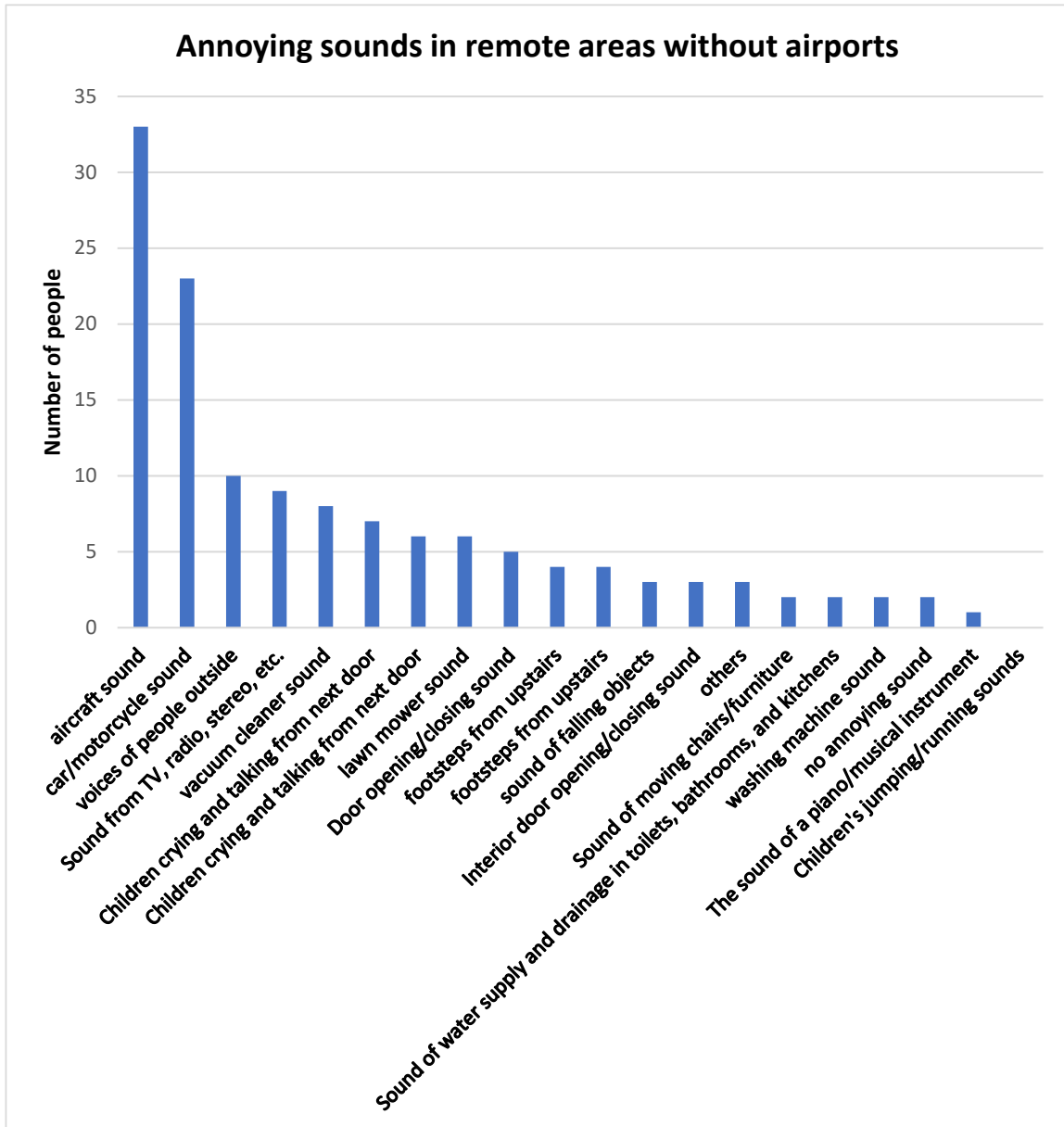


Fig. 4 Annoying sounds during remote operation in areas without airports

The most common sound that bothered me during remote work/class was aircraft noise with 33 votes, followed by car and motorcycle noise with 23 votes, and third most was people talking outside. 10 votes. When compared to the sounds that bother us in our daily lives, the top two were the same, but the results showed that the percentage of people who were concerned about the sounds of televisions, radios, etc. and vacuum cleaners while remote was high.

#### 4 Summary

In the Pollution Awareness Survey, the majority of survey respondents "The importance of pollution is low, but it is a familiar problem."

I thought. But it's not in an area with an airfield It was more important than the local area, and the familiarity was also high.

Sounds that bother you in your daily life, while remote Aircraft noise was the most annoying sound.

rice field. There is a U.S. military base in Okinawa, and fighter planes fly there.

It is thought that such a result was obtained from the fact that be. Also, in the remote mode, the following sounds are added to aircraft sounds and automobile sounds.

The sound of the vacuum cleaner, which was common in It can be said that it is the result of Pollution Awareness Survey and Concerns in Living Sounds, sounds that are worrisome during remote control Each has an airfield Since the range is wide and uneven even in the region, detailed I think that it is necessary to divide the region and investigate.

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