

# Motorcycle Recycling Flow in Japan : the number of End-of-Life motorcycles (ELMCs)

Takumi Yamane<sup>1\*</sup>, Mami Kimura<sup>1</sup>, Yutaka Asazuma<sup>2</sup>

1: Tokyo City University, 3-3-1, Ushikubonishi, Tsuzuki-ku, Yokohama, Kanagawa 224-8551, Japan

2: Hokkai-Gakuen University, 4-1-40, Asahi-machi, Toyohira-ku, Sapporo, Hokkaido 062-8605, Japan

\*corresponding author: g1762079@tcu.ac.jp

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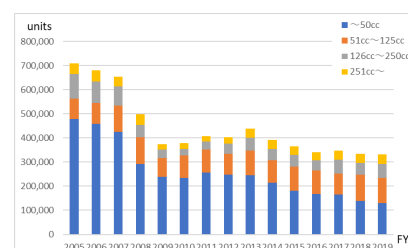
## INTRODUCTION

Motorcycles are one of the most familiar means of transportation. However, there is not enough research after the end of use. A lot of research has been done on automobiles (four-wheeled vehicles), such as domestic resource recycling flow research and policy proposal research on recycling systems. Compared to this, there is less research on motorcycles, and the overall picture of recycling is unknown. Therefore, we refer to the number of motorcycles sales and owned, and the voluntary recycling system (VRS). This research aims to clarify the flow of End-of-Life motorcycles (ELMCs) in Japan.

## MATERIALS AND METHODS

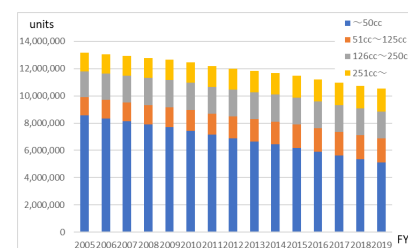
### Motorcycles sales and owned (in use)

In Japan, the types of motorcycles are regulated by the " Road Transport Vehicle Act " and the " Road Traffic Act ". The Road Transport Vehicle Act is used for automobile inspection, registration, notification, and compulsory insurance, and the Road Traffic Act is used for driver's license. According to the Road Transport Vehicle Act, automobiles must be "registered" in the vehicle registration file before they can be used, but motorcycles are not subject to "registration". Therefore, it is not possible to estimate the number of ELMCs from the registration system. Then, how to estimate the number of ELMCs. In this study, the number of ELMCs is estimated from the number of motorcycles sales and owned (in use) in the "World Motor Vehicle Statistics". Figure 1 shows changes



**Figure 1 sales**

Source: Created from World Motor Vehicle Statistics.



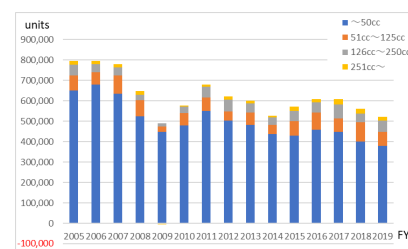
**Figure 2 owned (in use)**

Source: Created from World Motor Vehicle Statistics.

in the number of motorcycles sales. In FY2019, the number of motorcycles sales in Japan is about 330,000units. In the exhaust class, the most sales motorcycles are 50cc, followed by 51cc-125cc motorcycles. Figure 2 shows changes in the number of motorcycles owned (in use). In FY2019, a total of about 10.5 million units are owned, and the most owned exhaust class is 50cc (about 5.1 million units).

### End-of-Life motorcycles (ELMCs)

Figure 3 shows changes in the number of ELMCs. The number of ELMCs is estimated by the number of motorcycles sales and owned. That is, ELMCs is estimated by "(owned at the end of the previous FY) + (sales at the period of the current FY) - (owned at the end of the current FY)".

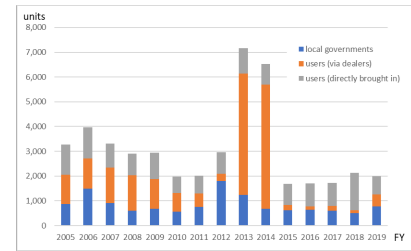


**Figure 3 ELMCs**

## RESULTS AND DISCUSSION

### Voluntary recycling system (VRS)

In October 2004, VRS for used motorcycles was launched in Japan. The points of this system are as follows. (1) The role of the motorcycle manufacturer is to set up a collection place and a processing/recycling facility by itself or by the commission. (2) When a car sold after the recycling network is put into operation is discarded, it will be collected without recycling fees. (3) The collection location is a collection center and a recycling system registered dealer, and the dischargers are local governments and users. Figure 4 shows the number of voluntarily recycled motorcycles from 2005 to 2019. The number of collected motorcycles in FY2019 was 2,004 that is 769 from local governments, 491 from users (via registered dealers), and 743 from users (directly brought in).

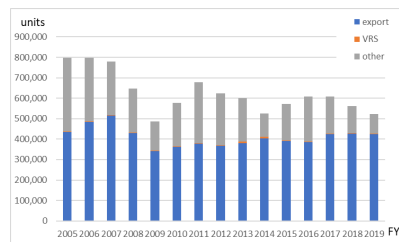


**Figure 4**  
**the voluntary recycling system**

Source: Created from the Japan Automobile Recycling Promotion Center, 2019 report.

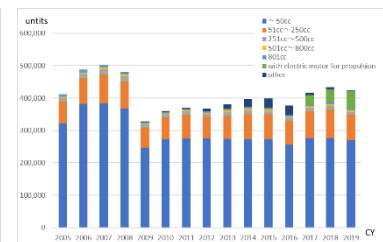
### Details of ELMCs

In Figure 3 above, it is estimated that about 520,000 ELMCs will be generated annually in FY2019. Of these, about 2,000 units were collected by the voluntary recycling system. What is the difference between 520,000 and 2,000? We evaluated the number of used motorcycles exported in the trade statistics. Figure 5 shows details of ELMCs from 2005 to 2019. In FY2019, about 420,000 units were exported. Therefore, ELMs were about 520,000 units, of which about 2,000(0.4%) were recycled by the voluntary recycling system, exports were about 420,000(81.4%), and others (unknown) were about 95,000(18.3%). Figure 6 shows details of exported units from CY2005 to CY2019. In CY2019, exports were about 420,000 units, of which about 50cc were about 270,000(63.7%).



**Figure 5 Details of ELMCs**

Source: Created from Figure 3 and Trade Statistics of Japan Database.



**Figure 6 Details of EX**

Source: Created from Trade Statistics of Japan Database.

## CONCLUSION

The purpose of this study was to clarify the flow of ELMCs in Japan. As a result, it was clarified that about 520,000 ELMCs were generated annually, of which about 0.4% was the voluntary recycling system and about 81% was the export. It was understood that the voluntary recycling system functions as a safety net even for mass outbreaks such as those in FY2013 and FY2014. It was found that about 63.7% of exports are 50cc. The results of this study will provide an important factor in policy-making for motorcycle recycling not only in Japan but also in other countries in the future.

## ACKNOWLEDGEMENT

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## REFERENCES

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