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The challenges of transportation/traffic statistics in Japan and directions for the future



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A B S T R A C T

In order to respond to new challenges in transportation and traffic problems, it is essential to enhance statistics in this field that provides the basis for policy researches. Many of the statistics in this field in Japan consist of “official statistics” created by the government. This paper gives a review of the current status of transportation and traffic statistics (hereinafter called “transportation statistics” in short) in Japan. Furthermore, the paper discusses challenges in such statistics in the new environment and the direction that statistics that should take in the future. For Japan’s transportation statistics to play vital roles in more sophisticated analyses, it is necessary to improve the environment that facilitates the use of microdata for analysis. It is also necessary to establish an environment where big data can be more easily used for compilation of official statistics and performing policy researches. To achieve this end, close cooperation among the government, academia, and businesses will be essential.

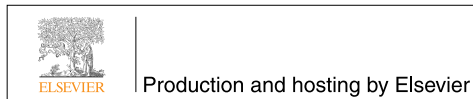
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1. Introduction

Recent economic development and globalization have sparked increased demand for the movement and transportation of people and goods, creating the demand for safe and secure methods of transportation and services that meet users’ needs for better quality and higher efficiency. Under such circumstances, the public and the private sectors

and academic institutions have to research the actual conditions of transportation and traffic to find appropriate solutions for addressing new challenges. Reliable statistical data on transportation and traffic play essential roles in supporting such research. In Japan, numerous kinds of government-provided transportation statistics provide a foundation for various studies and analysis. Due to the rapid changes in society and the economy, however, the issues surrounding transportation and traffic complicate matters further; demands for statistical data have become more sophisticated and diverse, and it has become increasingly vital for scientific researchers to get access to a broader range of statistics of higher quality.

Based on the above perspective, this paper explains the current transportation statistics in Japan and discusses approaches to creating data in the future. Official statistics created by the government play an important role in transportation statistics that researchers use for their analysis. The Statistics Act provides the basic framework of the official statistics of Japan, which comprises the transportation statistics [1].

In the following, I shall first explain the Statistics Act and the official statistical system. Next, I shall give a brief overview of Japanese transportation statistics. After laying out the main features and challenges of transportation statistics, I shall discuss possible directions for future improvements. More specifically, for existing official statistics, it is important to facilitate the use of microdata to make the most of their values. For developing new statistics, it is necessary to use big data as the data sources.

This paper aims to provide a basic reference for researchers looking to utilize the transportation statistics of Japan and makes proposals for further developments of Japanese transportation statistics. Although this discussion focuses on Japan, many of the issues that transportation statistics face are common worldwide; thus, I hope that this paper will contribute to the international debate on the improvement of transportation statistics.

2. The official statistical system and the Statistics Act

2.1. The official statistical system

The Japanese government creates various statistics about the Japanese society and economy, including transportation. In the official statistical system of Japan, the Statistics Bureau of the Ministry of Internal Affairs and Communications (MIC) serves as the core statistical agency, creating and publishing fundamental statistics, while individual ministries create and publish specialized statistics in their respective fields of jurisdiction. This kind of system for creating these statistics is called “decentralized statistics system.”¹ Fig. 1 shows the primary statistical agencies in Japan’s official statistics system (Fig. 1 here).

Under this system, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is the main organization for creation and publication of official statistics on the actual conditions of transportation and traffic services. In addition, several other government agencies create relevant statistical data to facilitate research and analysis of transportation and traffic.

The statistical agencies responsible for official statistics publish their output on their websites as well as via printed reports. However, it is a difficult task for anyone to search all the websites, and to gather necessary statistics across sectors from different ministries. To facilitate cross-sectoral searches, the Statistics Bureau of the MIC works with

¹ Examples of the decentralized statistical systems can be found in the United States and the United Kingdom. On the other hand, the case where a single central statistical agency creates most of the statistics is called “centralized statistical system”; Canada, Australia and the Netherlands, for example, adopt this type of system. The distinction between “centralized” and “decentralized” depends on the degree of concentration, and the borderline is not always clear.

² The description of the e-Stat in this paper is based on the Japanese website. The English website has a limited functionality, and not all the functions described here are available. (Portal Site of Official Statistics of Japan (English version): <http://www.e-stat.go.jp/SG1/estat/eStatTopPortalE.do>).

other ministries to provide a one-stop service at the Statistical Portal Site of the Japanese Government (e-Stat)² as for the entire official statistical system [2]. With the e-Stat system, users can take advantage of cross-sectoral access to statistics, for example, through the “Regional Statistics Database,” to perform crossover searches of various domains such as transportation statistics, demographic, and economic statistics and make a single comprehensive data set. Under a decentralized statistical system, there are measures that enable the use of unified statistical data across the government.

2.2. The Statistics Act

To ensure the reliability and utility of official statistics, it is essential to create and publish statistics under a government-wide uniform policy. For this purpose, the Statistics Act stipulates a common framework for all government statistics, including those on transportation. The first Statistics Act, enacted in 1947, set a clear policy of openness and truthfulness in official statistics with a view to prevent recurrence of the government’s information control that took place during the Second World War. Since then, the Statistics Act² provided the core framework for official statistics in Japan until the revision in 2007. As the time went by, however, some of its provisions fail to meet the changes in technology and user environment, and the Statistics Act was completely revised in 2007.

The section below summarizes the key features of the current Statistics Act.

The first feature is the basic philosophy on statistics. The Statistics Act defines the essential role of statistics as “critical information for the citizens in their rational decision making” (Article 1). The Act aims to contribute to the improvement of the economy and the living standards of the country’s citizens by developing statistics systematically and efficiently. To materialize the law’s goals, Article 3 stipulates four principles: (i) the systematic development of statistics, (ii) the assurance of neutrality and reliability, (iii) the provision of easy accessibility of statistics for citizens, and (iv) the protection of confidential matters concerning the populations surveyed. These principles are consistent with the “Fundamental Principles of Official Statistics,” which the United Nations adopted in 1994 as a common international norm for official statistics [3]. The basic principles of the Statistics Act apply to all official statistics, and each article of the Act stems from these principles.

The second characteristic is the protection of confidentiality of individual data obtained by statistical surveys. If respondents have fears about confidentiality of the data they provide, they will not answer survey questions truthfully, and reliability of statistics thus obtained will be lost. For this reason, the Statistics Act stipulates strict protection of confidentiality and prohibits the use of individual data for non-statistical purposes.

Third, the Act stipulates that the Minister of Internal Affairs and Communications is to designate “Fundamental Statistical Surveys” for creating particularly important statistics within the system of statistics. Individuals and companies are required to respond to the survey, if they are asked. Through the Fundamental Statistical Surveys, the Act aims to obtain statistics with high accuracy. This is a continuation from “Designated Statistical Surveys,” which the former Statistics Act defined. Fundamental Statistical Surveys comprise about 50 statistical surveys, such as “Population Census,” “Economic Census,” and, in the field of transportation, “Motor Vehicle Transportation Statistics.” Statistical surveys other than the Fundamental Statistical Surveys are categorized as “ordinary statistical surveys” which are not mandatory for respondents.

The fourth feature is the formulation of the master plan for statistical development and the establishment of the Statistical Commission as an advisory body. The government determines the master plan for government-wide statistical development as the cabinet decision about every five years. The Statistics Commission is to give advice to the Prime Minister and the Minister of Internal Affairs and Communications on such occasions as designating new Fundamental Statistical

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