Toward the promotion of increasing efficiency in traffic volume survey and introducing machine observation

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1. Situation of implementation of machine observation in general traffic volume survey The Ministry of Land, Infrastructure, Transport and Tourism conducts the Road Traffic Census once roughly every 5 years. The most recent census was conducted in autumn in FY 2021, and the results of the general traffic volume survey therein were published in June 2023¹⁾. The ratio of the section length according to each observation method in the traffic volume survey in FY 2021 is shown in Fig.1. In the FY 2021 survey, the ratio of the section length where machine observation was made became about 26% as a whole, resulting in an increase of about 12 points over the result in the FY 2015 survey, and machine observation was promoted. On the other hand, such ratio was about 75% on ordinary national highways (under the jurisdiction of the national government), whereas it was about 15% on roads managed by local governments, etc. Therefore, we are conducting studies about the problems in the case of further facilitating machine observation, and about the measures to solve such problems.



Fig.1: Ratio of the section length according to each observation method in the traffic volume survey¹⁾

2. Situation of response toward the solving of problems when facilitating the introduction of machine observation

Table 1 shows part of the results of questionnaire survey about the introduction of machine observation, etc. that was conducted with local governments after the results of survey in FY 2021 were published. Opinions have been expressed stating that although they feel that there are advantages in the introduction of machine observation such as reduction of personnel and improvements in measurement conditions, etc., there are problems such as shortage of information that is good for introduction and difficulties in machine procurement. Among them, as response to the point that detailed information about the implementation procedure for machine observation is unknown, it is considered to be effective to prepare a manual that has organized specific methods of implementation of machine observation and information, etc. required for survey preparation, and therefore we have just started to conduct a study of such manual.

 Table 1: Advantages of the introduction of machine observation and problems

メリット	課題			
 人手不足の状況である中、現地 調査員の確保が不要となり、調 査に必要な人員が削減できる。 調査員が異なるために生じる計 測データのばらつきがなくなり、 同じ条件で計測できる。 	 機械観測の実施手順に関する 詳細な情報が不明。 全国で同時期に調査するため、 機械をレンタルするのに苦慮。 5年に1度の調査のみのために 機械を購入するのは不経済。 			

As an example of the information that should be included in the manual, Table 2 shows the features of each technique of machine observation that was used in the FY 2021 survey, etc. Since multiple machine observation techniques are available, we would like to proceed with a study of such techniques, so that an optimum observation technique can be adopted based on the site conditions of the survey area and observation time range, etc. (Example: On a 2-lane road, optical observation near the ground can be employed.) **Table 2: Main techniques of machine observation**

and their features

	計測原理	設置 箇所	計測可能な 車線数	車種 判別	天候・夜 間の影響	歩行者・自 転車の計測
画像処理式	ビデオカメラ等で 車両を撮影して 画像処理する	高所	4車線 (4車線以 上可能な場 合がある)	2車種 (4車種 が可能 なもの がある)	影響を受 けやすい	可能とされて いるものが 多い
光 学 式	車両に赤外線等 を発射し、遮断・ 反射を検出する	高所、 地上 付近	1~3車線 (1センサー あたり)	2車種	影響を受 けにくい	計測対象外
電波式	車両に電波(マイ クロ波、ミリ波)を 発射し、遮断・反 射を検出する	高所	最大4車線 (1センサー あたり)	2車種	影響を受 けにくい	歩行者のみ 可能なもの がある

We would like to be engaged in the preparation of an effective manual, and the like, so that machine observation of the traffic volume will further be promoted in the next Road Traffic Census. **For detailed information, refer to the following:** 1) FY 2021 Road Traffic Census, General Traffic

1) FY 2021 Road Traffic Census, General Traffic Volume Survey, Summary Table, June 30, 2023 https://www.mlit.go.jp/road/census/r3/