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French surveys of the delivery approach: From cross-section to diachronic analyses

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Abstract

This paper presents a diachronic analysis of two surveys carried out in the city of Bordeaux (France). The first one was performed in 1994, the second in 2013. The interest is that the second survey followed a very similar methodology as the first one performed twenty years previously. It allows us to identify invariant parameters of the complex urban goods movements system, and also to distinguish, for the parameters that have undergone significant changes, those resulting from changes in the city and those resulting from changes in logistics.

1. Introduction

This communication presents the first results of a survey performed during 2013 on goods transport in the city of Bordeaux. The interest of this survey is that it followed a very similar survey performed twenty years previously. Such successive surveys on urban passenger transport with questionnaires and standardized sampling rules have

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been available for more than thirty years. Regarding goods transport, this is the first time that we can perform intertemporal comparisons.

It should be borne in mind that, in the 1990s, the French government wanted to implement a vast national research program called "Goods in the City". Many attempts had been made previously (Ambrosini and Routhier, 2004, Allen et al. 2012). However, it was observed that they failed to elucidate the mechanisms of urban logistics in a suitable manner, which was attributable to the fact that they most often used a classical unit of observation: the transport of a certain weight between a point of departure and a destination.

This was undoubtedly pertinent for interregional transport but provided little help for understanding goods transport in urban areas, especially in terms of road occupancy, as every attempt in this direction had failed: they all came up against the obvious fact that a model simulating tons or tons-kilometres had little meaning when a ton of goods can sometimes be transported in a single batch. For example a pallet of mineral water, but it can also be transported in several thousand batches, for instance in the case of daily supplies of drugs to pharmacies. Hence the methodological choice which consisted in studying parking and trips in terms of road use for each movement (shipment or delivery) and for transport between two successive places of movement.

This research program planned the funding of three major surveys whose design was entrusted to the LET (Laboratoire d'Economie des Transports). These surveys were performed in France in 1995-1997 in the three cities of Marseille, Bordeaux and Dijon. The latter were chosen due to the variety of their sizes†, and also because their local authorities volunteered to participate in this research. A large number of publications (Patier & Routhier, 2009) were able to draw from this initial wave of surveys whose merit was above all to reveal the invariants between the results of the three cities involved, and to clearly identify the rare factors that appear to depend on the size of conurbations.

The recent survey on the urban area of Bordeaux followed a methodology very similar to the first one performed twenty years ago (the same survey method and establishment weighting procedure), allowing the diachronic analyses as we will explain in the section 2. Another survey was carried out recently: the "Paris region UGM survey" (Toilier et al, 2015) but it is not concerned by this paper.

One of the main dimensions of the comparison is relative to the evolution of the urban area of Bordeaux. This evolution will be described in the section 3 and, in order to compare the results of the two surveys, it will be explained the necessity to recalculate the weighting of the establishments of 1994, since the typology had evolved between the two survey campaigns.

Owing to this correctly weighted data basis, we will emphasize the invariance of the generation of movements in the section 4, and in a section 5 the change to be taken into account.

2. Survey methodology and diachronic comparison

The unit of observation is the movement, defined as the service provided to a given economic firm by a given vehicle, to deliver or pick up goods (or both at the same time).

The survey is based on three levels of data collections.

On the one hand, these surveys addressed establishments that shipped and received goods. They are used to characterize the establishments by variables that allow explaining the formation of goods flows (type of activities, type of premises, number of jobs, availability of a fleet of vehicles, etc.). All types of activities, all size of the firms are taken into account. The establishments are selected on the basis of an exhaustive file produced by the INSEE (French National Statistics institute), the SIRENE file. This file contains information that permits to build a representative sample regarding the activity, the number of jobs, and the geographic location.

The selection of establishments was done on the basis of stratification according to the activity performed by the establishment and its size (number of employees). The stratification had changed between the first survey in Bordeaux and that in 2013. The first had been built on the basis of a literature review and expert opinions, and comprised 66 groups (ST66); the second stemmed from the results of the first surveys that permitted refining

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† Marseille (1,050,000 inhabitants), Bordeaux (750,000) and Dijon (240,000).