

# Chapter 11

## A Territorial Dimension Can Be Useful for Managing Long-Term Regional Road Safety

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### ABSTRACT

*Analysis of road crashes at the local level is necessary for targeting and implementing effective countermeasures. This chapter presents a contribution to this task. It describes the research carried out in Piedmont, Italy, where an exploratory approach has been used to link road crash data with information about the spatial characteristics of urban settlements. The analytic strategy is developed in three steps. First, fine-grained spatial data for road crashes, land use, traffic counts, and population distribution are linked by GIS methods. Second, a selection of the data is implemented at the municipality level and processed through a cluster analysis to identify territorial accident profiles. Finally, to show their analytic potential, one case study is discussed that considers road segments as main observation units.*

### INTRODUCTION

A new mobility and transportation plan has been recently laid out in the Piedmont region of northwest Italy (Piedmont Region, 2018). The plan is oriented around sustainability targets, including a long-term time horizon that adheres to a “vision zero

DOI: 10.4018/978-1-5225-7927-4.ch011

approach” to road safety (Belin, Tillgren, & Vedung, 2012). The plan focuses on the involvement of stakeholders and customized interventions at the sub-regional level.

The territorial lens leveraged by the plan helps to sharpen road safety problems in the local areas. On a conceptual ground, it stimulates a deeper understanding of the complex nature of these problems and refines the concepts originally proposed by Rumar (1999). This author suggested that road safety problems can be articulated according to three levels:

1. **First Order Problems:** Made apparent from the way we analyze accident and injury data. Examples of these problems include speed which are too high in built areas; alcohol and drugs are found too frequent in driving; road standards are inadequate; road safety for vulnerable road users is very low; accident risk for young drivers is too high. Adopting a more adequate territorial lens can help assess the severity of a situation in an area. The accident counts and their features have to be investigated, considering the geographical and spatial morphology of settlements.
2. **Second Order Problems:** Not immediately evident from the statistics they are revealed from a closer inspection of first order problems. These problems typically stem from the inadequacy of road traffic legislation, road safety education and/or control of road conditions. Solutions to these type of problems may make the countermeasures meant to solve first order problem redundant. Thus, the territorial dimension is more substantial for these types of problems. Since these problems are under the responsibility of several government institutions, addressing them requires attention at the extending and overlapping of the different spatial jurisdictions.
3. **Third Order Problems:** General in character and deal with the underlying conditions of road safety. These problems may concern the organization and management of road safety work and affect the values and knowledge of road safety for citizens. At this level, the territorial dimension also has a more encompassing role. It becomes a tool for supporting the exchange of information and sharing evidence about the social costs of road accidents, as well as the implemented countermeasures and their effectiveness. Additionally, local information about accidents helps raise awareness about the value of road safety by citizens and decision makers.

This chapter addresses the stronger role of using the territorial lens in managing road accidents. A methodological approach is suggested for profiling territorial situations of road accidents at the local level. The Piedmont region is used as a case study.

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