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How good is pedestrian fatality data?

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ABSTRACT

Accurate data on pedestrian fatalities is of utmost importance to public health officials, transportation planners, police, and policy-makers. It is used to make strategic decisions about when and where to invest scarce resources to reduce preventable deaths and improve safety for all modes. We analyzed data from one year of pedestrian deaths in New Jersey, the US state with the highest share of pedestrian deaths, and found the data unreliable and inconsistent. Roughly one fifth of the 157 pedestrian deaths reported in New Jersey in 2012 should not be classified as a pedestrian, based on reporting definitions required by the National Highway Traffic Safety Administration (NHTSA), as well as based on common definitions of pedestrians by policy-makers and planners. This is further compounded by some records in NHTSA's Fatality Analysis Reporting System (FARS) that are not included in the state database. NHTSA's definition of a pedestrian is also sorely lacking for conducting analyses of safety issues. We discuss the data problems we identified and also link this to alternate definitions of how to classify pedestrian fatalities. Implications for research and planning are discussed and we emphasize the need to both improve data collection and management at the state level, as well as for NHTSA to reconsider how they define and track pedestrian fatalities.

1. Introduction

Pedestrian fatalities account for a large fraction of crash fatalities in the state of New Jersey. In 2012, reported pedestrian fatalities accounted for 26.5 percent of all crash fatalities, the highest proportion in the nation.¹ The high rate is largely because New Jersey is an urbanized state with a relatively high share of pedestrian travel. In 2014, there were 168 pedestrian fatalities, according to the Fatality Analysis Reporting System (FARS) from the National Highway Traffic Safety Administration (NHTSA). Reducing the number of pedestrian fatalities is an important public health and safety objective. But for decision-makers and analysts to design effective policies to improve public safety, they need high quality and reliable data on both causes and locations, which are consistent with how planners view pedestrians.

We examined original police reports for all New Jersey pedestrian fatalities reported in 2012 and linked these to both the state maintained database (Plan4Safety) and the FARS data.² We evaluate these pedestrian deaths as researchers and planners and found multiple issues with the state database and the definitions used by NHTSA. Findings suggest that about 20 percent of the reports of a “pedestrian” fatality are either questionable or flat out wrong. Two problems with NHTSA definitions are that they exclude crashes

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E-mail address: rnoland@rutgers.edu (R.B. Noland).¹ Excluding the District of Columbia.² FARS data is based on police reports compiled by the states.<http://dx.doi.org/10.1016/j.jth.2017.04.006>

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that do not occur on a “public trafficway,” and define pedestrians as *any* person outside a vehicle.³ Additionally, we found that the state database includes some pedestrian fatalities that are not transmitted to the FARS data, while the FARS data includes incidents that we could not identify in the police reports or in the state database.

In the following, we first discuss how transportation planners typically define pedestrians, compared to NHTSA's definition, and follow this with a discussion of concerns over the quality of the safety data. We then examine how this definition has or has not been applied in the traffic safety literature. This is followed by a presentation of the specific issues we identified in New Jersey's 2012 data. We conclude with recommendations for improving data collection and classification practice and discuss the implications of incorrect and poorly defined data.

1.1. Defining pedestrians

What or who is a pedestrian? Perhaps unsurprisingly, there are a variety of ways to define the word pedestrian. Before the end of the 19th century, the word was generally used as an adjective synonymous with dull or prosaic. The romantic poet William Wordsworth was among the first to use the word to describe travel on foot in the eighteenth century (Jarvis, 1997). The *Oxford English Dictionary*, defines a pedestrian (noun) as “A person who goes or travels on foot, esp. as opposed to one who travels in a vehicle; a walker; one who walks as a physical exercise or in athletic competition.”

The dictionary definition is consistent with how transportation planners think about pedestrians: people who are traveling on foot from one location to another or for recreation. A recent textbook on transportation engineering defines the pedestrian mode as “Walking as a means of origin-destination travel” (Vanek et al., 2014, p. 286). Walking can be purposeful and fulfill utilitarian needs by providing access to destinations but can also be for leisure or recreation (e.g., exercise or “dog walking”). Pedestrian trips may also constitute part of a longer journey that includes another mode of travel, especially a transit trip. Pedestrian travel generally takes place on public roads, but may also include portions that are on private property, such as across parking lots. More broadly, all travelers are pedestrians at one point in their journey, although this may not be the primary mode they use, or in the case of a vehicle breakdown, it is not their intended mode of travel. As walking offers a host of health and environmental benefits, most planners, public health practitioners, and communities see pedestrian activity as something to be encouraged. It is however not without risks, most notably the risk of being injured or killed by a motorized vehicle.

In contrast to the above definitions, NHTSA provides a narrower definition of pedestrians. This definition is notable because it is the one used by the states for reporting and transmitting data to the FARS database. This data, in turn, is used by policy-makers, researchers and safety advocates. NHTSA defines a pedestrian as:

... any person on foot, walking, running, jogging, hiking, sitting or lying down who is involved in a motor vehicle traffic crash. Also, a traffic crash is defined as an incident that involves one or more vehicles where at least one vehicle is in transport and the crash originates on a public trafficway. Crashes that occurred exclusively on private property, including parking lots and driveways, [are] excluded (National Highway Traffic Safety Administration, 2014).

The NHTSA definition is centered on the motor vehicle, not the pedestrian. The focus of the definition is on the location of the motor vehicle, not the pedestrian. In contrast with how transportation planners and laypeople use the word, the NHTSA definition ignores the motivation of the “pedestrian”, and whether they were engaged in traveling from an origin to a destination, and includes victims who are sitting or lying down in the road, thus muddling the meaning of “pedestrian”. The definition also specifically excludes all fatalities that occur on private property, although NHTSA does provide estimates of motor-vehicle fatalities off the trafficway (National Highway Traffic Safety Administration, 2016).

USDOT (2012), in the *Model Minimum Uniform Crash Criteria*, provides a formal standardized definition that is recommended for states to implement. A pedestrian is defined as “A person who is not an occupant of a motor vehicle in transport or a pedalcyclist. Includes a person who is adjacent to the motor vehicle regardless of their actions” (USDOT, 2012, p.86). There is nothing in this definition that excludes people walking off the “public trafficway”.

A study conducted for NHTSA in the 1990s developed a disaggregation of pedestrian crash types based on data from six states (Stutts et al., 1996). A sample of police reports of pedestrian crashes in each state were analyzed in detail. Of note, some of the subdivided crash types reported in the study included: “pedestrian struck by driverless vehicle”,⁴ “suicide”, “assault with vehicle”, and “sitting/leaning/clinging to vehicle”. About nine percent of the pedestrians in the sample were also struck while not on a roadway. Many of these categories seem to conflict with the definition specified by NHTSA.

Why does this matter? First, planners are typically concerned with encouraging more pedestrian activity, both to reduce motorized travel and also for its public health benefits. Second, how we define pedestrians has an effect on the number of people who are counted as pedestrian deaths. The definition used by NHTSA means that some people killed or injured by motor vehicles may not have been *traveling* as pedestrians. For example, some are motorists who are killed or injured standing outside a disabled vehicle. Likewise, someone gardening in front of their house who is hit by an out of control car is not a pedestrian in the definition used for planning purposes. The different definitions used in recording fatalities versus those used by planners creates a distorted impression of the relative risk of walking as a transportation mode compared to using a motor vehicle and may lead planners and policy-makers

³ NHTSA does evaluate “non-traffic” crashes that occur off the public trafficway, mainly to assess the magnitude of the problem. These are based on estimates and cannot be linked to state data (National Highway Traffic Safety Administration, 2016).

⁴ These were not automated vehicles, rather these are typically runaway vehicles hitting people.

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