

Trends and basic figures of pedestrian traffic fatalities in urban areas in the OECD countries

E. Papadimitriou, T.Hughes, G.Yannis

Background

- ▶ **Despite the fact that pedestrian road traffic casualties in the OECD countries present a constantly decreasing trend, the number of pedestrians involved in road accidents in several countries and as a whole is still unacceptable and illustrates the need for even greater efforts with respect to pedestrian safety.**
- ▶ **In 2006 there were more than 78,000 fatalities in road traffic accidents in 23 OECD countries, out of which more than 11,000 were pedestrians, and out of which more than 7,500 occurred in urban areas.**

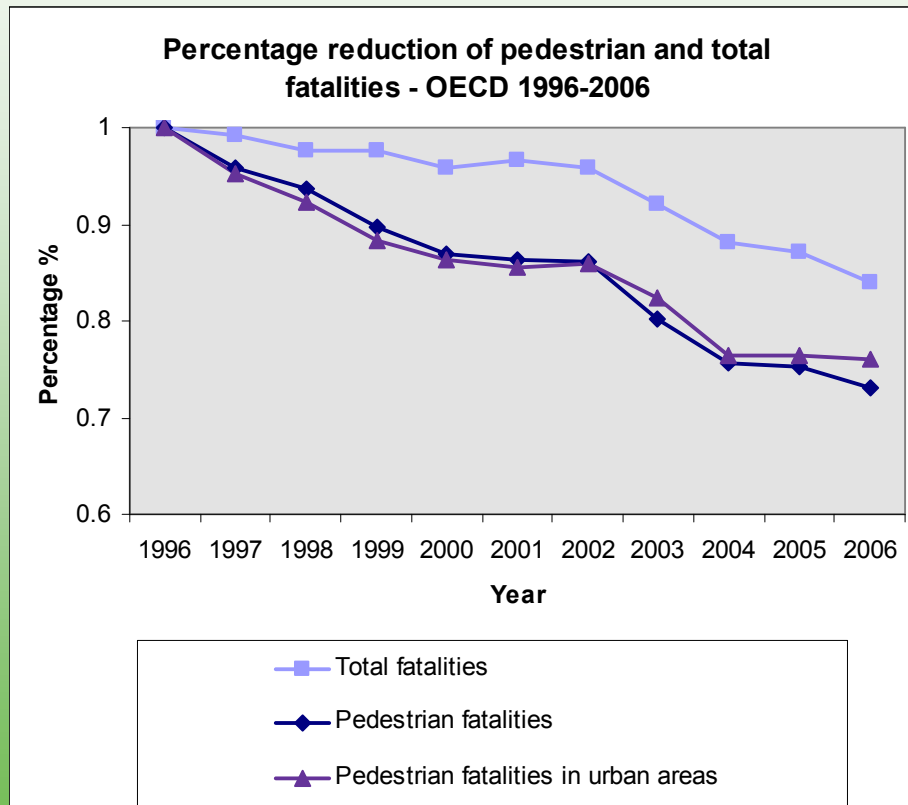
Objectives

- ▶ **The objective of this research is the analysis of existing data issues on pedestrians' safety in urban areas, at national and international level.**
 - To present pedestrian safety data for the creation an overall picture on the current potential for pedestrians' road safety analysis in urban areas in OECD countries.
 - To identify the main questions of pedestrian safety data needs, availability and quality.

Methods and data

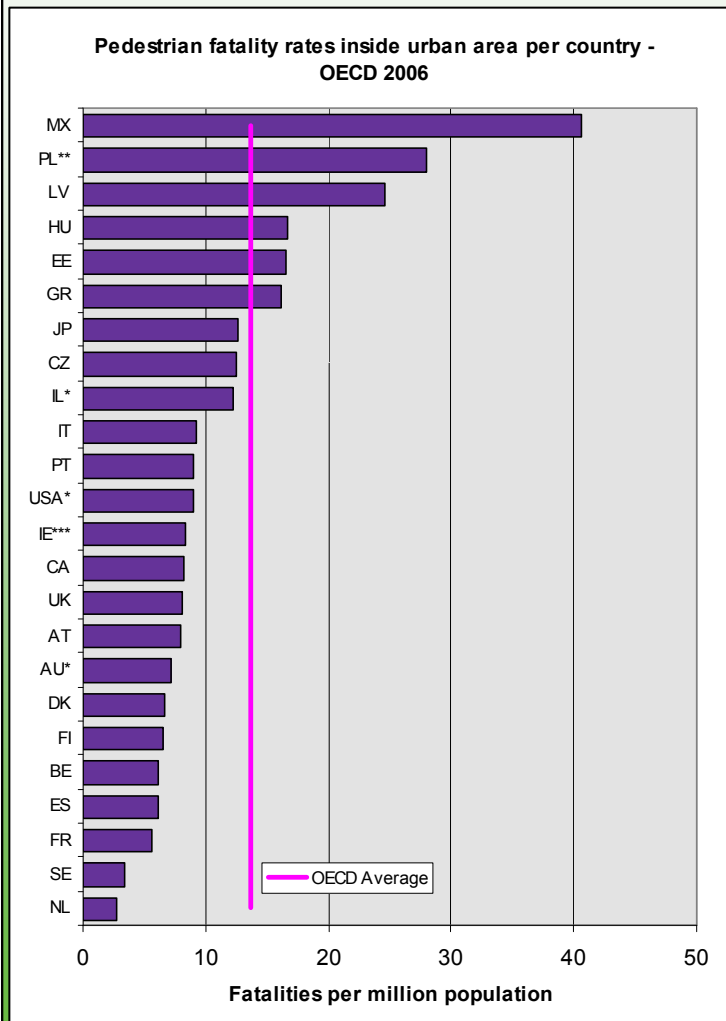
- ▶ **Pedestrian fatalities data were extracted from the CARE database for year 2006 or for the last available year, for 20 EU countries (AT, BE, CZ, DK, EE, ES, FI, FR, GR, HU, IE (2003), IT, LU, LV, MT, NL, PL (2005), PT, SE, UK).**
- ▶ **Data for 6 more OECD countries (AU, CA, IL, JP, MX, USA) were collected by means of a questionnaire.**
- ▶ **Population data were extracted from the Eurostat and OECD databases for the period 1991-2006.**
 - **The variables considered include person age and gender, month, inside / outside urban area, road lighting conditions.**

Trends of pedestrian safety data



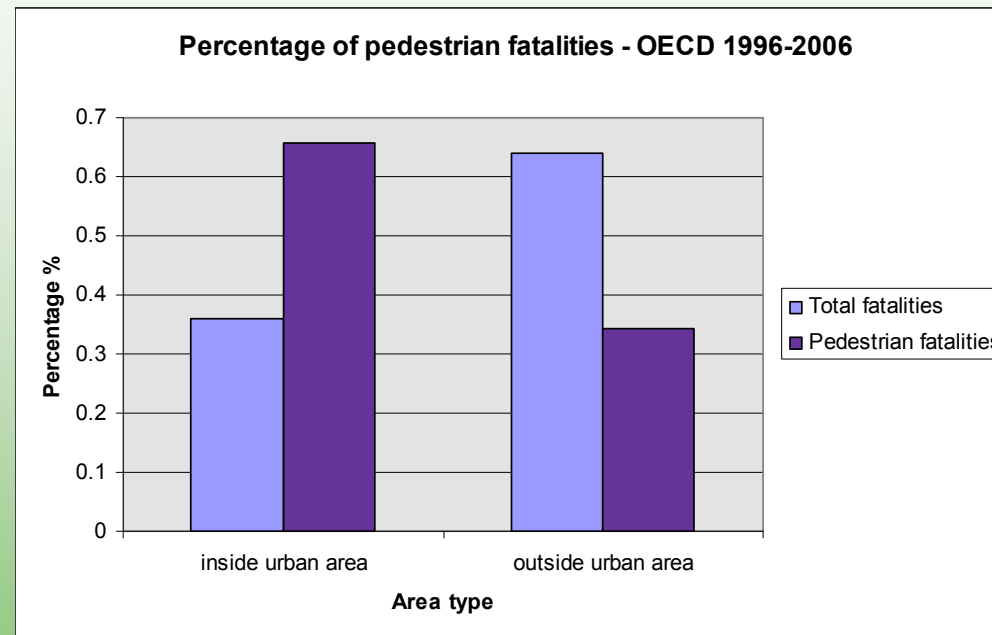
- Pedestrian fatalities in the OECD countries present a more significant decrease than total fatalities during the last decade.
- However, during the last five years, the reduction of pedestrian fatalities inside urban areas is somewhat lower than the reduction of total pedestrian fatalities.

Country comparisons



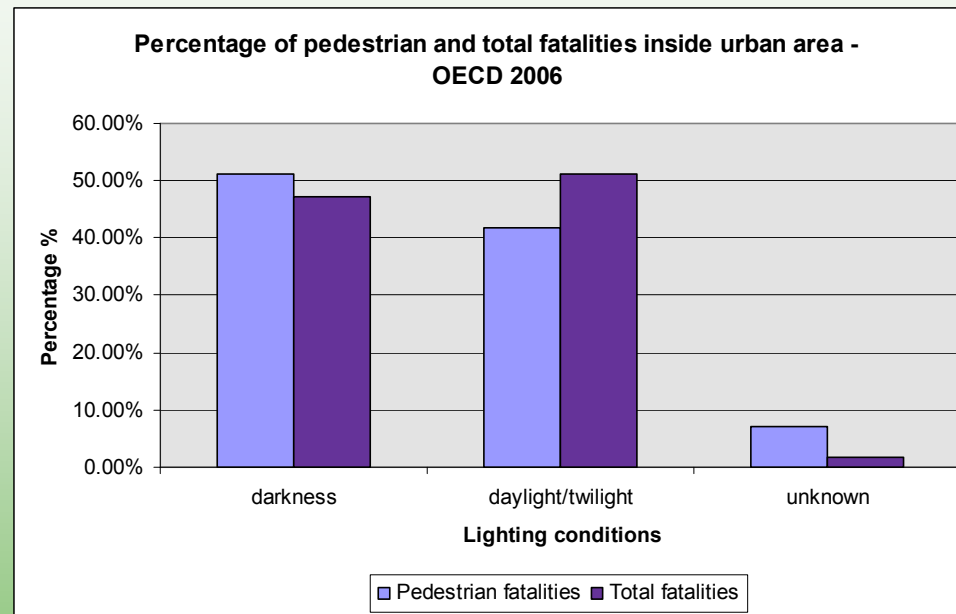
- The fatality rates range from 2 to 10 in northern and western EU countries, USA, Canada and Australia, from 10 to 15 in southern European countries and Japan, and from 12 to 30 in the EU New Member States.
- In southern EU countries, increased risk may be due to increased exposure of pedestrians, as a result of favorable climate, whereas in new Member States, it is associated with increased exposure of pedestrians due to low motorization.

Effect of area type



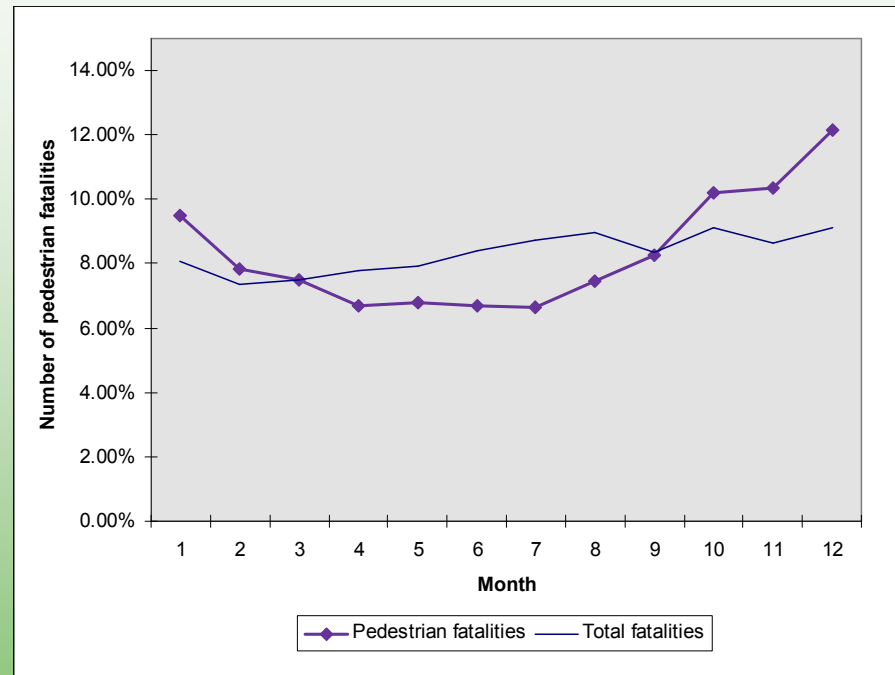
- Most of all fatalities occur outside urban areas, but around 70-80% of reported pedestrian fatalities happened in urban areas
- Most of the population live in urban areas, and also those who live in urban areas, walk more than people living in rural areas.

Effect of lighting conditions



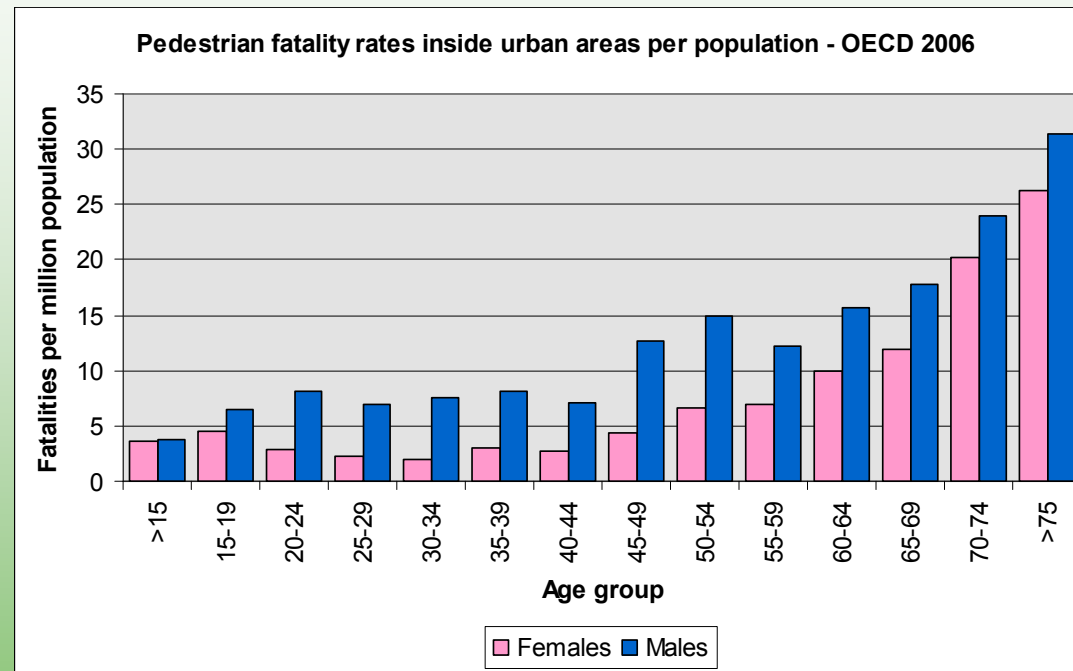
- The majority of all fatalities inside urban area occur at daylight, but the majority of pedestrian fatalities inside urban area occur at darkness, despite the reduced exposure of pedestrians at night.
- There is a non-negligible proportion of unknown values for lighting conditions; still, darkness appears to be a risk factor for pedestrians.

Seasonality



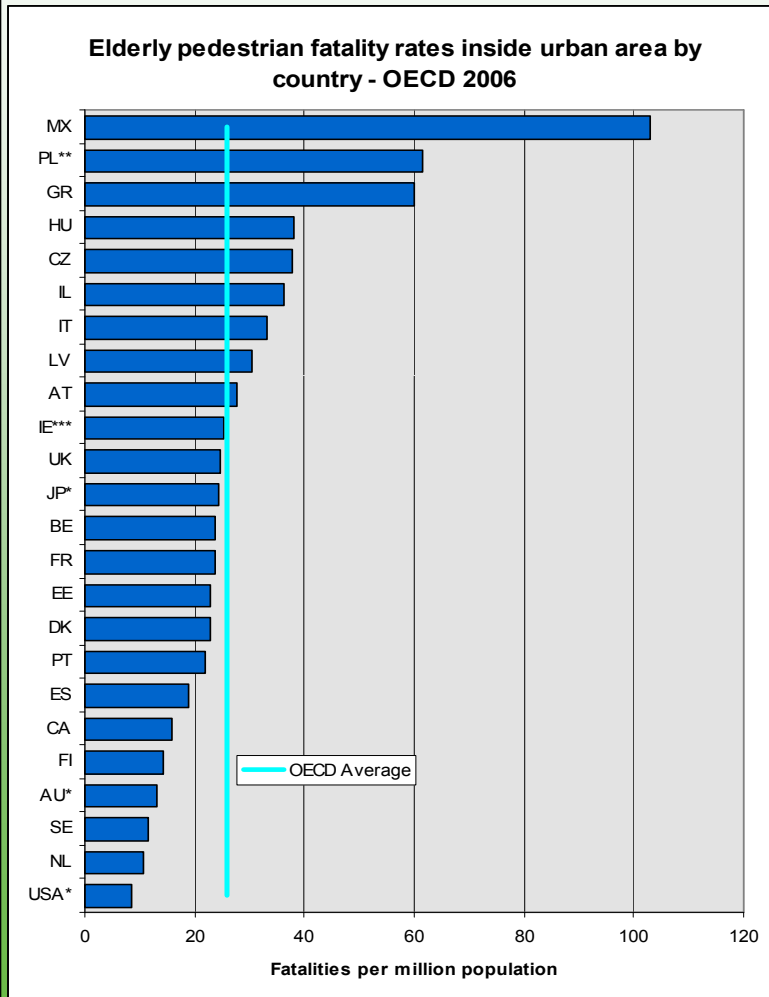
- The total fatalities inside urban areas peak during the spring / summer period, but pedestrian fatalities inside urban areas peak during the fall / winter period.
- Possibly due to poor lighting conditions and adverse weather.

Effect of age and gender



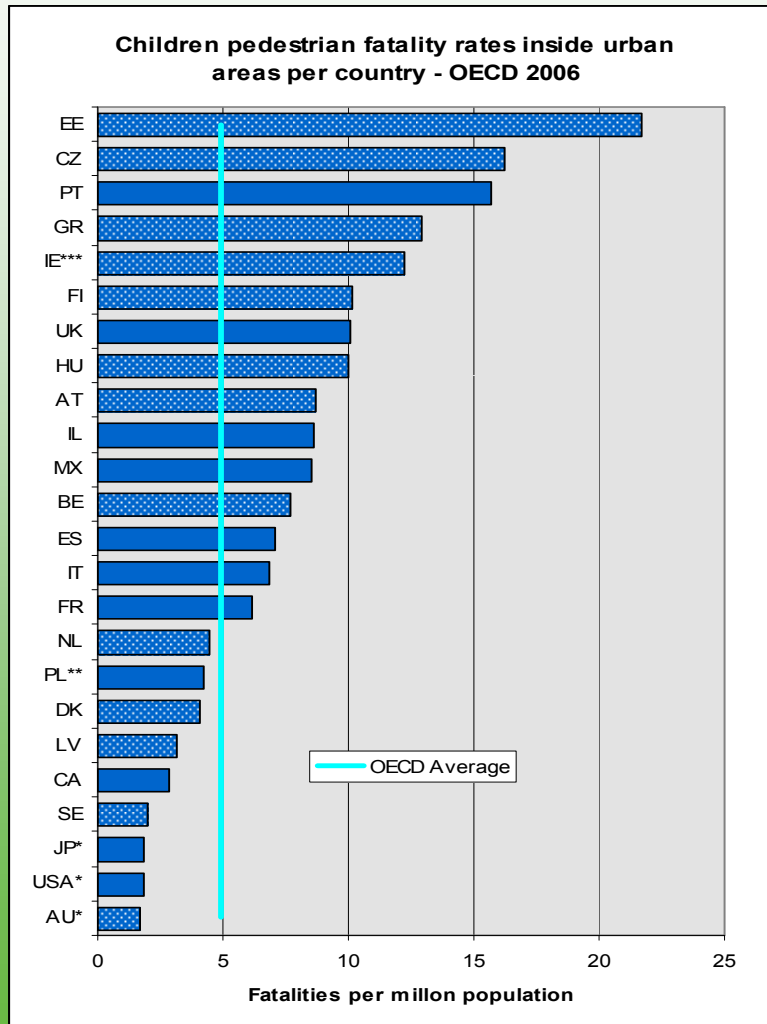
- Male pedestrians have higher fatality rates than females, possibly due to differences in behaviours of males compared to females.
- Fatality rates are increased for elderly pedestrians (>70 years old), and become more balanced between males and females.

Elderly pedestrians



- The overall classification of countries does not change substantially as regards fatality rates of elderly pedestrians inside urban area
- However, Greece, Austria and the UK present increased fatality rates for elderly pedestrians, compared to their respective total rates.
- On average, 25 elderly pedestrian fatalities per population are observed in urban areas in the OECD countries.

Children pedestrians



- On average, 5 children pedestrians per million inhabitants were killed inside urban areas in the examined OECD countries
- Finland, Austria and the UK present increased children pedestrian fatality rates.
- Due to the small sample of children pedestrian fatalities inside urban areas, the average for the period 2003-2006 was taken.

Macroscopic pedestrian safety data issues

- ▶ **Pedestrian safety data are gathered in international data files (IRTAD, CARE etc.)**
- ▶ **These data files are useful and accessible data sources, as a result of several decades of important data collection efforts.**
- ▶ **However, several issues need to be addressed as regards the availability and quality of the data:**
 - **Definitions and data comparability**
 - **Injury under-reporting**
 - **Mobility and exposure data**

Definitions and comparability

- ▶ **The definition of a *pedestrian road accident* is not harmonized at international level.**
 - For example, pedestrian injuries from vehicle - pedestrian road accidents are usually included, but pedestrian injuries resulting from falls may or may not be included.
- ▶ **Lack of common international definition of *pedestrians***
 - For example, the CARE definition:
 - "Person on foot, pushing or holding bicycle (except DK), pushing a pram or pushchair, leading or herding an animal (except AT, DK), riding a toy cycle on the footway (except AT), on roller skates, skateboard or skis (except AT). Does not include person in the act of boarding or alighting from a vehicle (except DK, ES)".

Injury under-reporting

- ▶ **There is a common international definition of road accident fatality (i.e. within 30 days from the accident), but no such common definitions for injuries (serious and slight).**
- ▶ **In recent studies, it is proposed that injury severity should be assessed on the basis of medical information, such as the MAIS (Maximum Abbreviated Injury Scale) and the length of stay at the hospital.**
- ▶ **Injury under-reporting is increased for pedestrian injuries.**

Mobility and exposure data

- ▶ **The lack of exposure data, which would allow for risk estimates, concerns all types of road users, but it becomes even more critical as regards pedestrians.**
- ▶ **Some countries perform travel / mobility surveys, providing the number of pedestrian trips performed and the time spent in traffic as pedestrians.**
- ▶ **However, these results are not available in international databases.**
- ▶ **Important effort would be required in order to achieve comparability of the data from these surveys**
 - **Differences in frequency, representativity, sample size, survey design etc.**

Synthesis

- ▶ **The macroscopic pedestrian safety data are useful for monitoring overall trends and figures, as well as for setting priorities for policy making.**
- ▶ **However, they can not provide insight on the understanding of factors, mechanisms and interactions within the system, resulting in pedestrian accidents in urban areas.**

While international analyses allow each country to learn from others, the differences in culture, traffic laws, urban form and walking conditions mean that each country needs to analyze its own situation in more detail.

Recommendations

- ▶ **On the basis of the above, several recommendations can be outlined with respect to macroscopic pedestrian safety data.**
 - **Harmonization of more variables related to pedestrian accidents in the national databases, according to standard definitions**
 - **Harmonization of pedestrian accident and injury definitions (what is a pedestrian, a pedestrian road accident etc.).**
 - **Use of medical data for cross-checking pedestrian injury severity in relation to a common definition.**
 - **Collection of pedestrian mobility / exposure data at national and international level according to standard definitions.**