Road traffic measurement and its Importance for SDG Monitoring

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8-10 December 2020

Overview

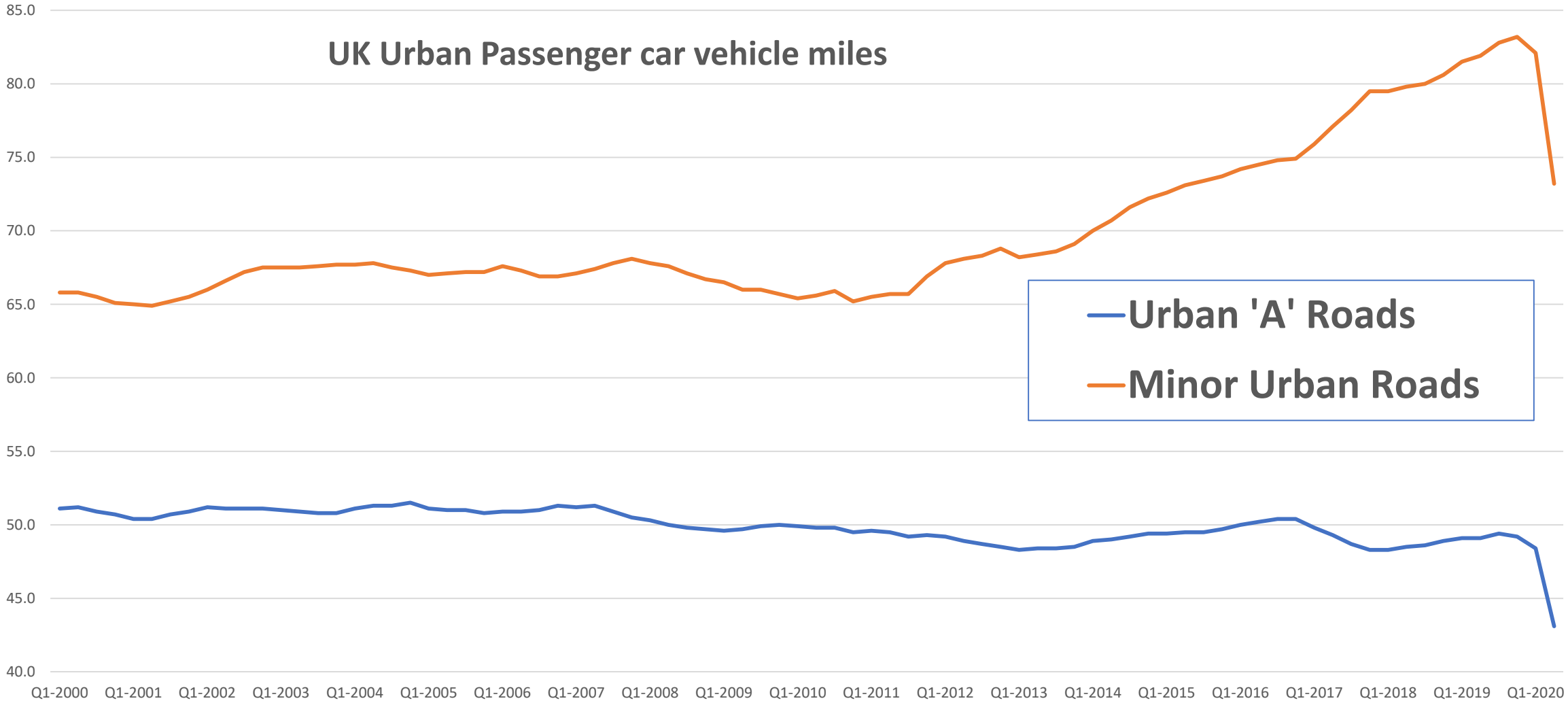
- What do we want to know and **why**?
  - EEI
  - Congestion
  - Accessibility
  - Trade
  - Mobility (including commuting patterns)

    - Comparison between:
      - cars, buses, trams, trains, cycling, flying
      - trucks, freight trains, barges, tankers, pipelines
    - Benchmark for safety data
- Traffic counts (specific locations)
- Vehicle-km (national average, broken down by vehicle type and perhaps location)
- Passenger-km
- Tonnes and tonne-km

Road traffic: three main areas

- Motor vehicle movements on national territory (**vehicle km**), by vehicle type
  - Gives local and national insights…AADT, total use of road network.
  - Combine with passenger-km to calculate occupancy rates.
  - Combine with fuel consumption to calculate vehicle efficiency.
  - How to collect? Odometer readings and/or traffic cameras (manual or automatic, constant or seasonal)
- Goods transport by national vehicles by road (tonnes carried and **tonne-km**)
- Passenger transport on national territory by road (**passenger- km**)

Where traffic happens matters



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Traffic (www.gov.uk/government/organisations/department-for-transport/series/road-traffic-statistics)

Goods transport

- E.U. regulations ask countries to produce data under the residency principle, meaning trucks registered in your country (whether operating in your country or elsewhere).
- Provides understanding of transport sector, can be compared with rail and waterway quantities to see how goods moved.
- How to collect? Eurostat Road Freight Statistics Methodology: Survey HGV operators with a stratified sample, asks the weight of goods and distance travelled. A few hundred vehicles monitored each week.
- As Eurostat has micro data, territorialized figures can be produced (excluding non-E.U. vehicles).

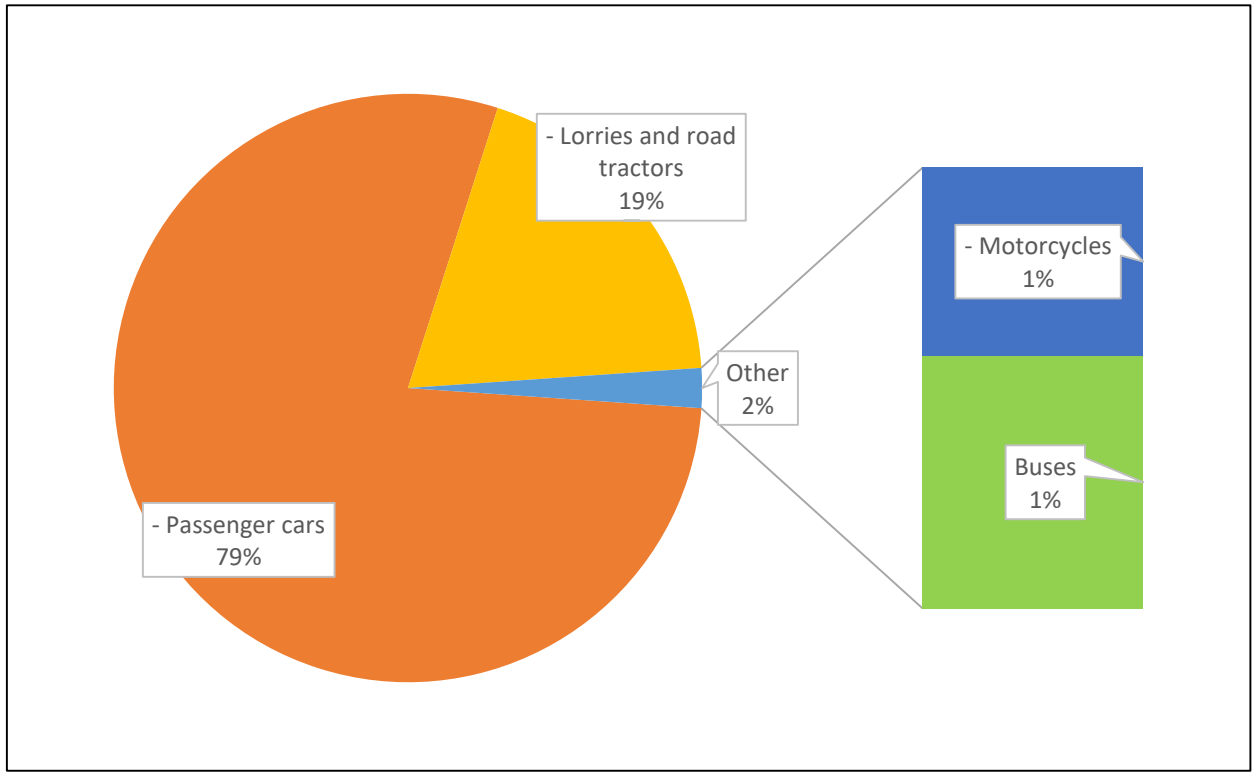
Road traffic: Passenger Km

- Passenger transport on national territory by road (passenger km) split by passenger cars, buses, 2 wheelers. Private drivers included, taxi drivers excluded.
- Data used for modal split calculations, commuting trends, analysis of travel patterns, access to jobs and education, carbon intensity of total travel.
- No EU regulation and no admin data sources, so probably the biggest area where European transport statistics could be improved.
- How to collect? National travel/household surveys normally required. New technology/big data potential for data production in the future.

*Guesstimation: vehicle km * 1.6?*

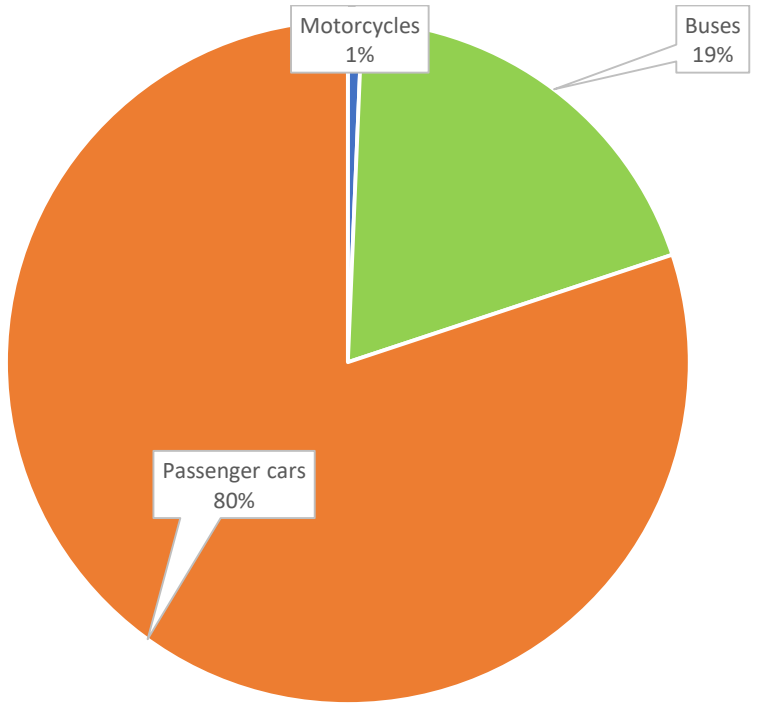
Examples from UNECE Data: Denmark

Vehicle-km



Vs.

Passenger-km



Bus transport less than 1% of vehicle-km, but 19% of passenger-km (and likely even greater % of journeys).

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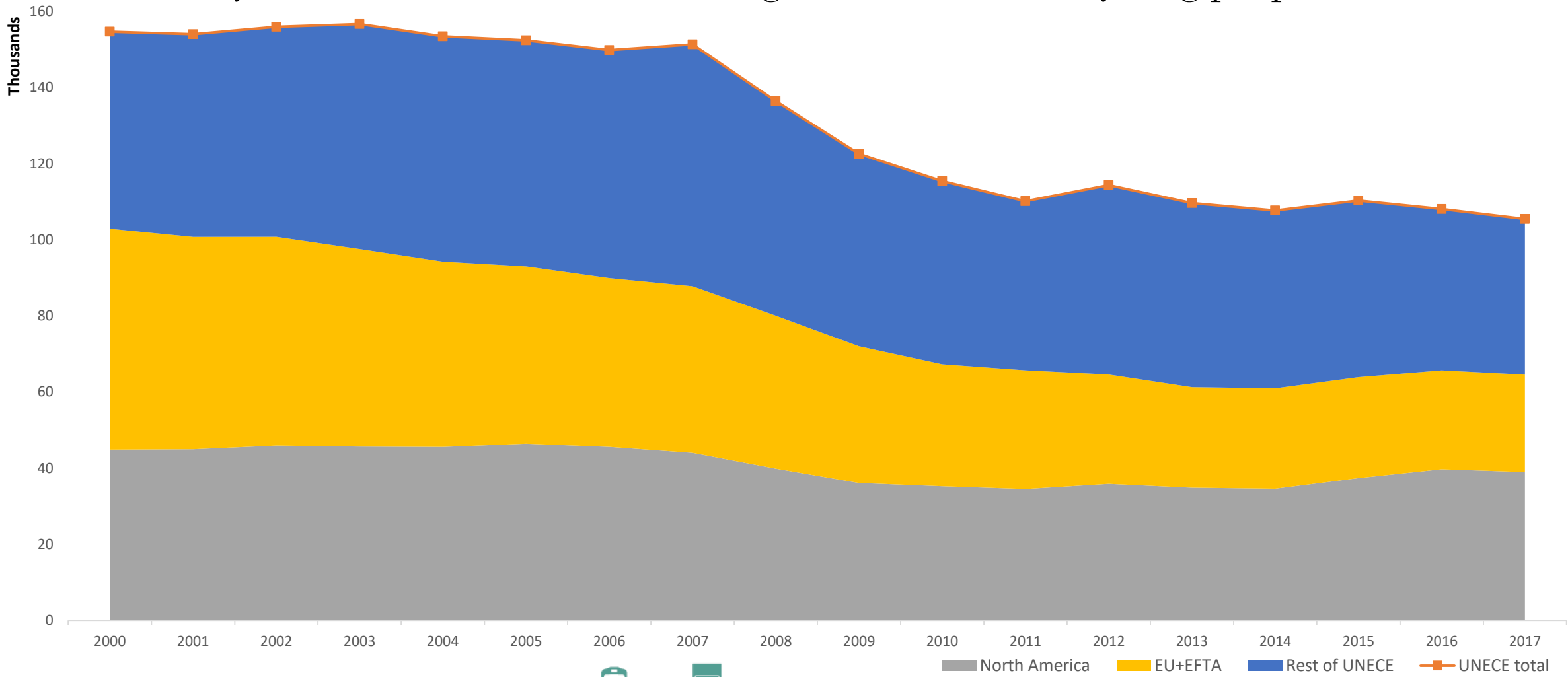
- Road deaths in UNECE: ~8% reduction per year 2007-2010, but then flat.
- Positive trend masks **huge** differences (x10) between countries.
- Globally, road traffic fatalities are leading cause of deaths in young people



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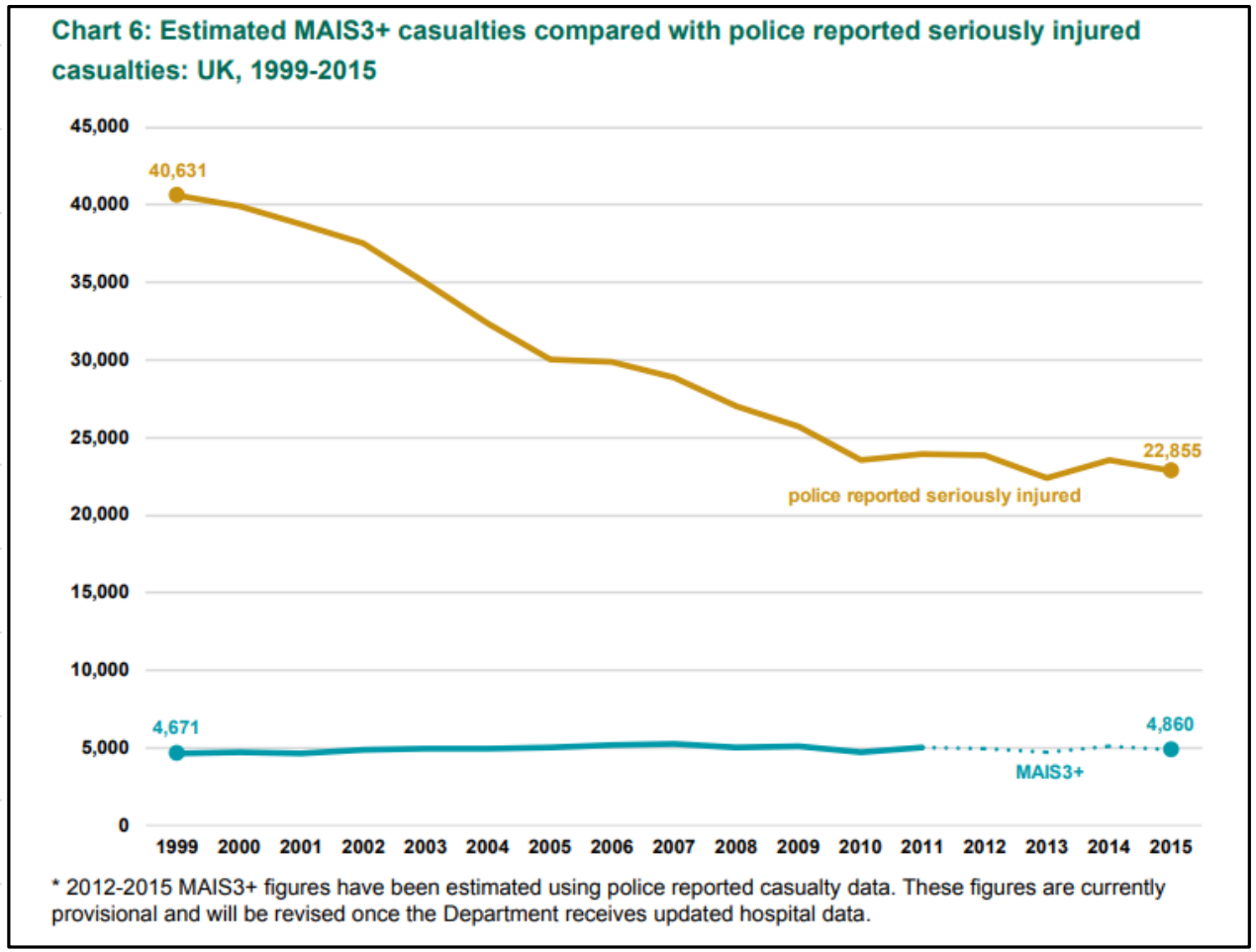
Road safety: collecting the data

Police data: collected at the scene. Minor accidents (and sometimes fatal ones) may be underreported or lost. Using police officers to determine injury severity is imperfect. Typically use 30 day definition but this depends on country (and relies on accurate police follow-up).

Hospital data:

Can still under-report accidents in some countries. May over-report due to accident-victims dying from e.g. pneumonia a year after an accident.

UK injuries example

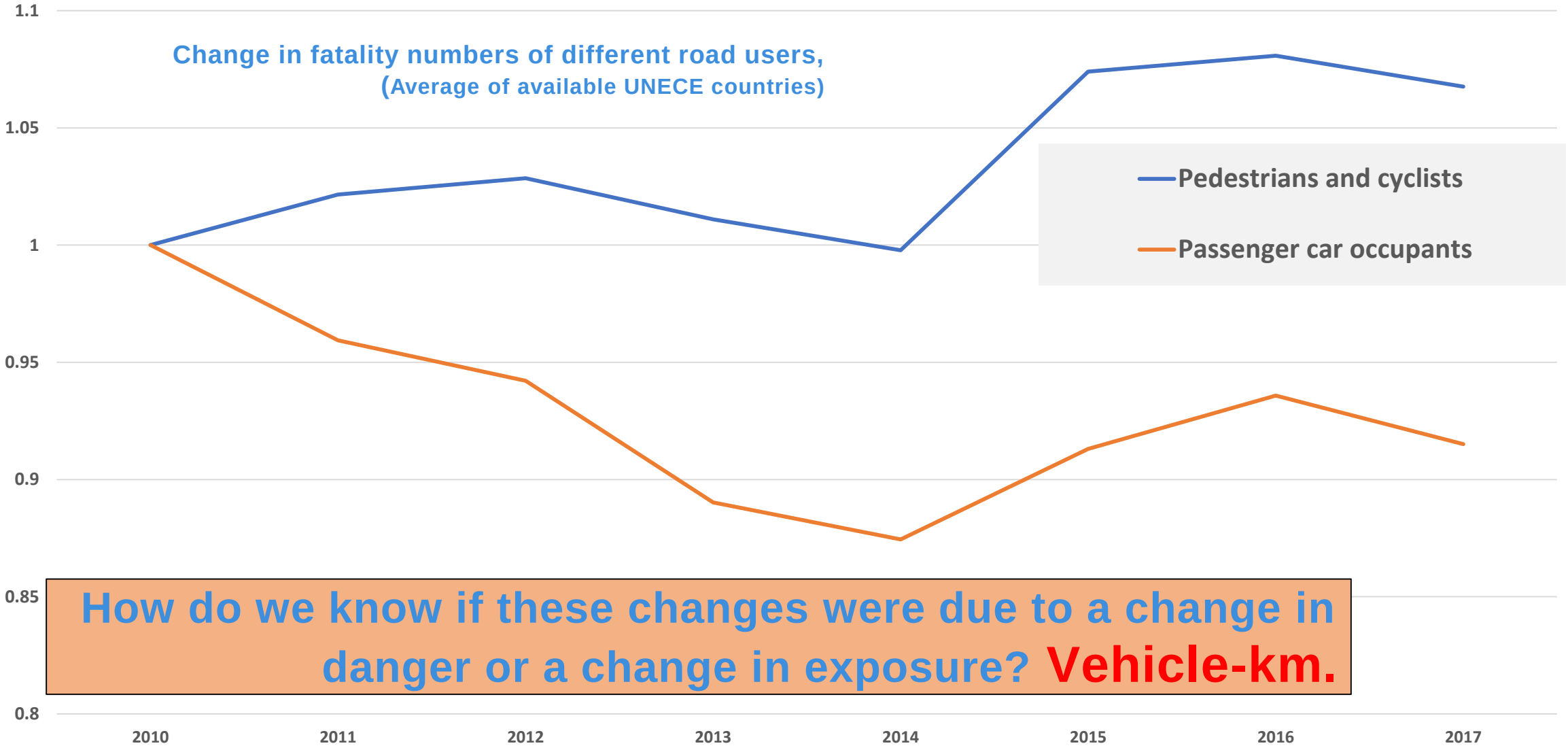


Data for 2015 onwards use 30 day definition. Up to 2014, only deaths at the crash scene were included.

Note: cyclists made up a greater proportion of the MAIS3+ data than the police data (well documented reason: under-reporting of cycling injuries in police data)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/556648/rrcgb2015-03.pdf

Monitoring SDG 3.6.1: No-one Left Behind



How do we know if these changes were due to a change in danger or a change in exposure? Vehicle-km.

German truck toll index

- Not strictly vehicle-km, but a good proxy (for goods vehicle-km) that can be calculated quickly (within a few days) and cheaply.
- See presentation at https://wiki.unece.org/pages/viewpage.action?pageId=109352183

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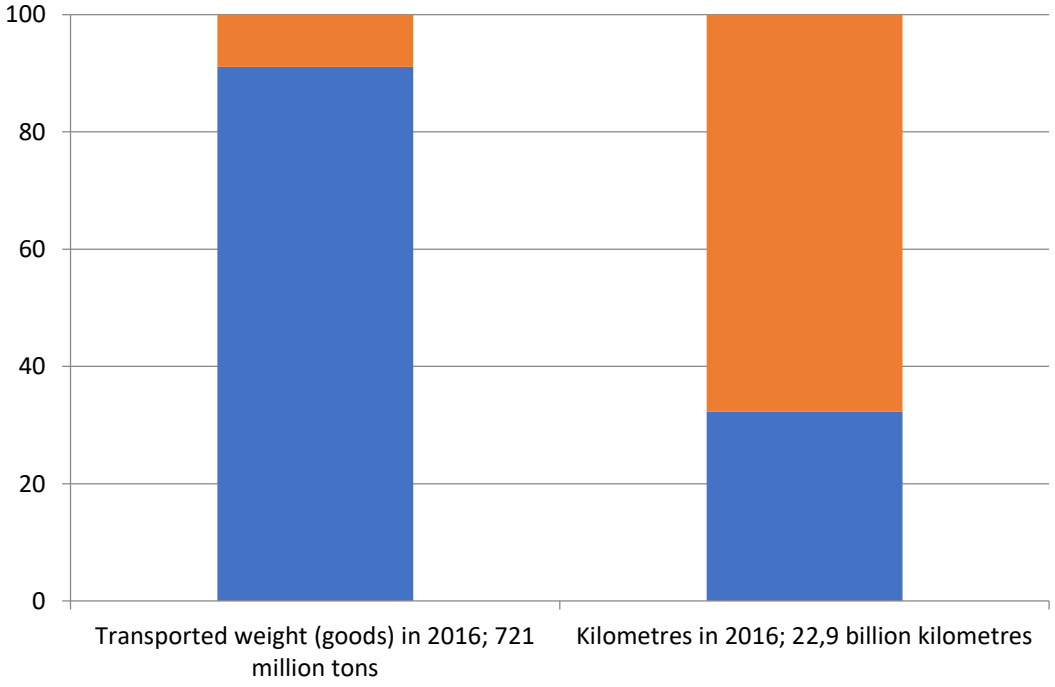
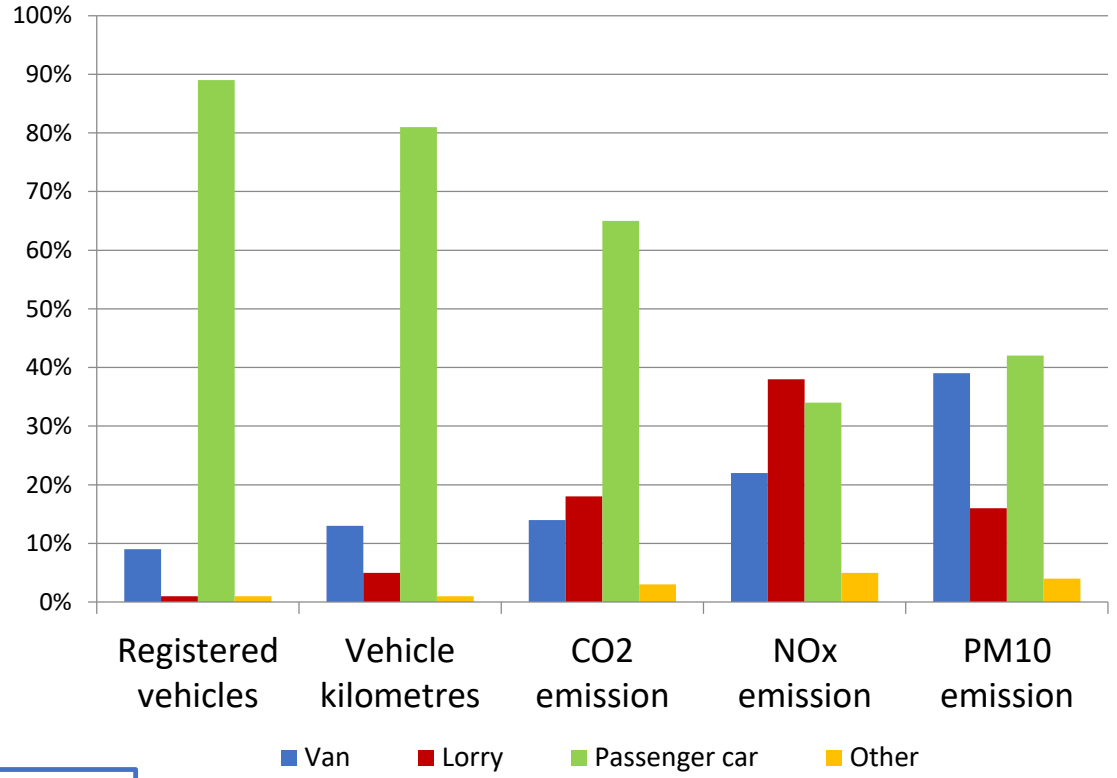
Relationship of vehicle-km and other metrics

Light Goods Vehicles have seen strong growth in most countries. They carry insignificant tonne/tonne-km quantities. But what about vehicle-km, climate heating gases, local pollutants, urban congestion, road safety, dangerous parking, noise etc.?





Both graphs from CBS Netherlands.

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Vehicle-km and SDGs

- SDG 3: Vehicle-km is the most important denominator for road safety comparisons across e.g. modes.
- SDG 9: Resilient infrastructure: is increasing vehicle-km on (e.g.) urban roads considered progress?
- SDG 11: Sustainable cities. Vehicle-km needed for understanding of public transport use, local air pollution etc.
- Energy & Climate Change: vehicle-km allows us to see if cars are getting dirtier.

Summary

- Vehicle-km are crucial to better understand road safety, modal split, sustainable cities, trade, economic activity, poverty reduction, access to jobs, sustainable energy and climate action…if we want to measure sustainable development, we need vehicle-km.
- Important to consider strengths and weaknesses of different data collection methods.