E-Road and E-Rail Censuses and Visualization

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Overview

- Census background
- 2015 E-Road status
- 2015 E-Road interactive map
- Future improvements
- Tool potential applications
- Examples of other traffic visualizations
- E-Rail status and challenges
- 2020 E-Road and E-Rail recommendations
E-Censuses background

• Unique quinquennial data collection surveying infrastructure information and traffic levels on the E-Road network

• E-Road network defined in European Agreement on Main Traffic Arteries (AGR) (the TEN-T core network roughly agrees with this)
E-ROAD Tables

• Total length of E-Roads by width and number of carriageways and lanes
• E-Road sections’ average annual daily traffic (AADT)
• Counting posts on E-Roads
• Distribution of motor traffic by vehicle category (A, B, C, D)
  • Two wheelers, passenger and light goods vehicles, heavy vehicles, buses and coaches
• Specific AADT (traffic at night, holidays, peak hours)
E-ROAD Census Status

• Data for 21 countries received:
  • Austria, Azerbaijan, Belarus, Bulgaria, Croatia, Czechia, France, Georgia, Germany, Hungary, Latvia, Lithuania, FYR Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, Sweden, Turkey, United Kingdom

• Data quality ranged from basic E-Road infrastructure information, to comprehensive AADT levels for different vehicle types and multiple years

• Some countries didn’t fill in the census but pointed us to the right data
### Traffic Census 2015

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<th>Map</th>
<th>Shapefiles</th>
<th>Documentation</th>
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Interactive Map

unece.org/trans/main/wp6/e-roads_maps.html
Getting the Data

- Data seem to be typically produced by infrastructure managers rather than NSOs.
- Communication within government necessary to obtain the data. (Offer statistics expertise in exchange?)
Future Improvements

• Add more countries!
• Include non-AGR countries (Canada, USA)?
• Consider creating separate layers for HGV traffic (plus night traffic, peak traffic, holiday traffic?)
• Add number of lanes in shapefile to get a better idea of congestion and infrastructure levels
Potential Uses

• Visualizing access to international roads and measuring country connectivity (e.g. Euro-Asian links)
• Quantifying key border crossings (500 trucks a day = $X of trade per year)
• Identification of international traffic hotspots and (with E-Rail and E-IWW networks) potential for modal switching
• Combining with accident data to identify motorway accident hotspots (fatalities per AADT level)?
• Quantifying long distance bus traffic (but would need more data either in the Shapefile or table 7)
Country traffic visualisation examples
Denmark: necessary data but unmapped
Note: principally modelled/estimated from surveys rather than measured with cameras
Netherlands

http://research.cbs.nl/verkeerslus/
Mapping IWW and rail traffic and potential for switching

• Measurement of congestion
• From E-Road census, calculation possible if peak traffic and lane numbers were given (but “congestion” can be measured many different ways)

Ireland

https://www.nratrafficdata.ie/c2/gmapbasic.asp?sgid=ZvyVmXU8jBt9PJE$c7UXt6
Switzerland

- Measurement of people rather than vehicles (but private transport likely strongly based on direct measurement)
United Kingdom

Figure 7: Connectivity Corridors - containers (Road and Rail)

Figure 11: Delay on the Strategic Road Network: December 2016

2015 E-Rail Census

• Started in 2005, data collected in cooperation with Eurostat
• Data harder to come by. Censuses received for 10 countries
• Shapefiles even harder (impossible) to come by
• Data for many EU countries is pending from Eurostat
• Data should be easier to produce in theory (could even use timetables if measurement not possible?)
• Passenger/freight clearer to split; trains will be identified as such (may even travel on separate tracks).
(Not ready for dissemination)

https://unece.maps.arcgis.com/apps/webappviewer/index.html?id=a3b54fd4f3b2454d82240182fbefd090
2020 E-Road recommendations

• Recommendations largely unchanged since 2015
• Main change: replace requirement for paper maps with Shapefiles
  • Label Shapefile variable names in a way easy to understand in English, or provide data definitions
• In addition: ask for 2+1 road infrastructure as a memo item
• Recommendation to use same segments as previous years if possible
• Any interest in shapefiles by traffic type, to e.g. visualize bus traffic?
Largely agree with 2015 census

Requirement for Shapefiles. If no Shapefiles are available, at least provide the coordinates of start and end points (which legislation requires for EU countries, but are not always provided)

UNECE put incorrect deadline. EU regulation 91/2003 (Annex G) specifies 30 June 2022 as deadline
Conclusions

• E-Road and E-Rail censuses are useful infrastructure data sets for international traffic
• Further analytics possible across countries, e.g. % of E-Roads that are classed as motorways, and number of lanes
• Mapping the traffic results provides extra value and has many applications (to be explored)
• Previous census recommendations have been drafted with help of country experts. There’s still time if interest.
• Check with infrastructure agencies for data available. With necessary data, producing Shapefiles is straightforward