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Economic Commission for Europe

Inland Transport Committee

Working Party on Transport Statistics

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Dissemination of transport statistics by the United Nations
Economic Commission for Europe

Transport Statistics Dissemination: Data Stories and visualisation

Note by the secretariat

Summary

This document highlights the efforts made by the Working Party on Transport Statistics to modernise transport statistics data dissemination, in order to provide the best possible evidence base for transport policy decision makers, through the production of data stories. It presents two data stories produced over the last year, on road safety and inland waterways, as well as plans for a further product relating to the transport-related Sustainable Development Goals. The secretariat hopes that this provokes discussions between member States on best practices in conveying key messages on transport statistics to different stakeholders.

I.   Background

1.   The Working Party on Transport Statistics (WP.6) continues its activities in providing key data to inform the Inland Transport Committee (ITC) and member States on developments in the inland transport sector, as well as to facilitate the work of other Working Parties and individual member States through evidence-based policy making. In line with the Inland Transport Committee Strategy to 2030, part of this is to modernize data dissemination activities. Transport Statistics Infocards have, since 2017, provided country profiles containing main transport indicators for each member State. At the session of the ITC in 2021, the ITC was informed of how this has been modernised into an interactive dashboard. Dashboards are useful to present several top-level transport indicators in one place. However, in some instances there is a need to present several graphs, together with a compelling narrative, to accurately convey a complex issue to non-subject matter specialists. This document describes the data stories produced by the secretariat and potential for further products.

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II.   What is a Data Story?

2.   The way statistics are used in both journalism and research has seen a near constant flux in recent years. Indeed, the very concept of data journalism is relatively new, while research and analysis continues to evolve through the easier processing and wrangling of large and complex datasets. One online resource[1] defines a data story as having three elements: data, visualization, and narrative. While traditional statistics dissemination has normally had some of these, recent advancements in data storytelling have harnessed improved data visualization techniques, typically involving better user interaction. This can include, for example, graphs that allow users to hover over values to see a pop-up box or message, the ability to highlight specific years or countries, or to switch between two complementary series. This more interactive data presentation is complemented by the graphs being animated and text boxes moving dynamically as the user navigates down the page, utilising a "scrollytelling" approach.

III.   Secretariat Approach

3.   In order to experiment with this format and to fulfil the ITC strategy to 2030[2] in supporting new technologies and innovations, the secretariat of WP.6 together with colleagues from the UNECE statistics division has started to produce data stories on transport in order to showcase potential in this approach and improve data-based transport policy decisions.

4.   There are many ways to produce the functionality inherent in data stories, relating to both the production of the graphs and the construction of the web page. The secretariat has made use of open-source data science tools for this task, in order to minimise costs as well as tap into a flourishing open-source community. Thus, the data stories already produced have been designed in a Python-powered data science environment, enabling production in a Web 2.0 compliant format. A "Mobile First" approach is followed to enable users to read data stories on mobile devices at the same level of quality.

IV.   Road Safety Data Story

5.   The first story produced is titled "Road Safety in the UNECE Region. What do the Data Say? Explore the Region's Progress Towards the 2020 Target" and starts with a large photo to accompany introductory text (figure 1).

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[1] https://online.hbs.edu/blog/post/data-storytelling.

[2] https://unece.org/transport/publications/itc-strategy-until-2030#:~:text=The%20Strategy%20provides%20strategic%20objectives,to%20new%20technologies%20and%20innovations.

Figure 1
Introduction to road safety data story

ROAD SAFETY IN THE
UNECE REGION

WHAT DO THE DATA SAY?
EXPLORE THE REGION'S
PROGRESS TOWARDS THE
SDG 3.6 TARGET

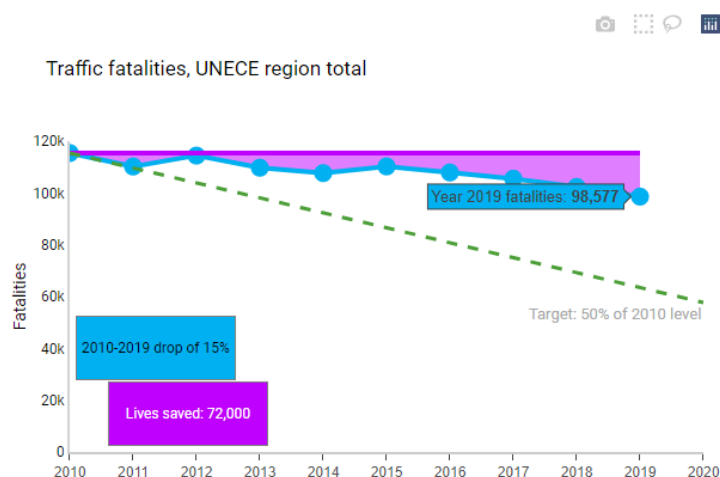By UNECE Transport 👥 Alex BLACKBURN
1 July 2022
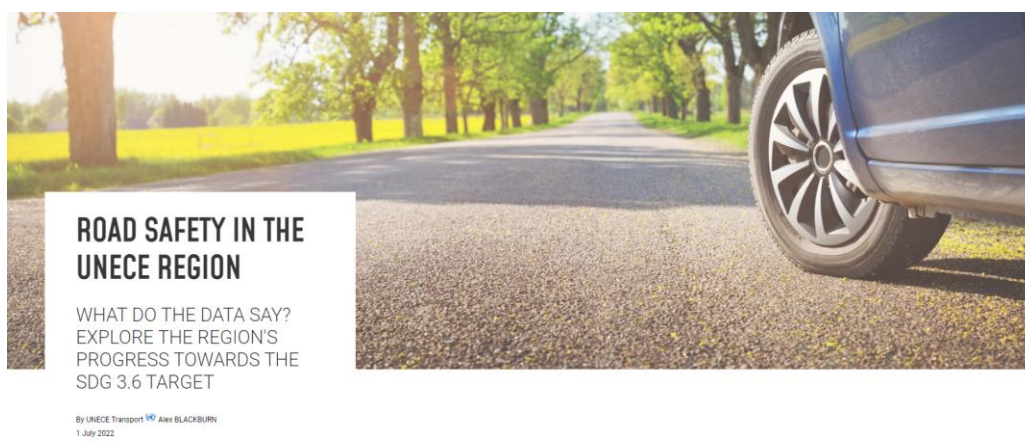
The original Sustainable Development Goal target 3.6 aimed to
halve road fatalities in the decade to 2020, but this was not met by
any region (and very few countries). With the new Decade of Action
on Road Safety (2021-2030) enshrining the resolve of the

6.   From here, the scrollytelling begins when the user scrolls down and after some introductory text, the first message is delivered. The animated interactive graph then starts, and the user is shown the statistics showing the decline in fatalities since 2010 in the ECE region, that is impressive but not enough to meet the 3.6 target (figure 2). A pop-up box also highlights that due to reductions made since 2010, 72 000 people are alive today.
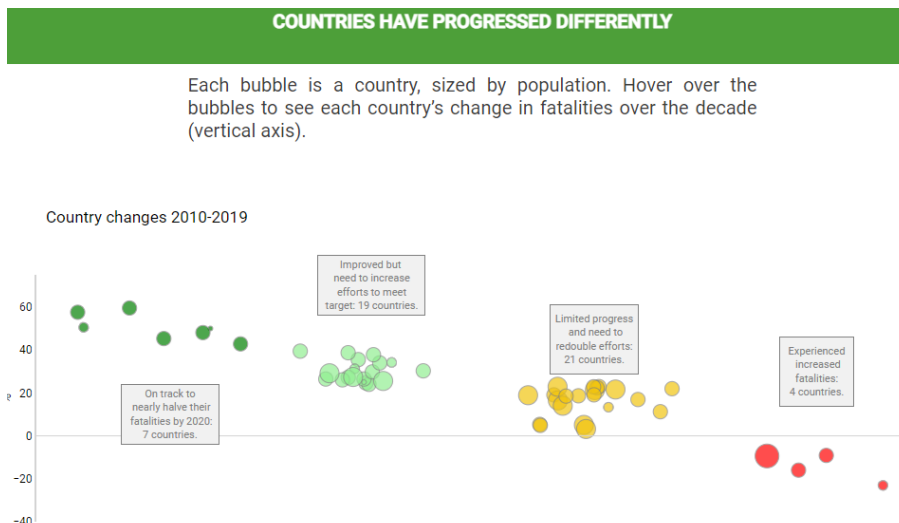
Figure 2
Line graph of total UNECE fatalities from 2010

FATALITIES HAVE DECREASED, BUT NOT FAST ENOUGH

Traffic fatalities, UNECE region total

Year 2019 fatalities: 98,577

Target: 50% of 2010 level

2010-2019 drop of 15%

Lives saved: 72,000

7.   Message two of the story is that countries are on very different pathways in terms of progress towards this target. For this graph countries were divided into four categories: those on track: those who are close to achieving the target; those whose progress has stagnated, and those who are going backwards in experiencing increased fatalities (figure 3). Again, the reader can hover over any bubble to see which country it refers to, with the size of the bubble proportional to population.

Figure 3
Comparison of changes in fatalities since 2010 across UNECE countries

COUNTRIES HAVE PROGRESSED DIFFERENTLY

Each bubble is a country, sized by population. Hover over the bubbles to see each country's change in fatalities over the decade (vertical axis).

Country changes 2010-2019

Improved but need to increase efforts to meet target: 19 countries.

Limited progress and need to redouble efforts: 21 countries.

Experienced increased fatalities: 4 countries.

On track to nearly halve their fatalities by 2020: 7 countries.

8.　　　After additional explanation in the text of differences between countries, the story continues with its third graph, exploring differences in fatality changes for different types of road user, with available data showing worrying trends in fatalities for pedestrians and cyclists compared to passenger car occupants (figure 4).

Figure 4
Comparing fatality trends for car occupants and vulnerable road users

Fatality changes by road user*

Vulnerable road users   Car occupants

* Based on 36 available UNECE countries
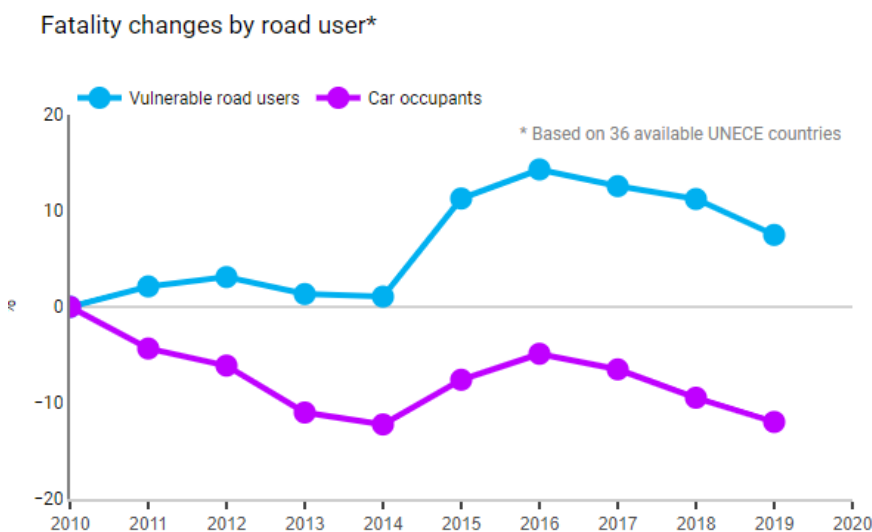
9.　　　After a further graph highlighting the age and sex breakdown of fatalities, the data part of the story concludes with a comparison of UNECE fatalities per million inhabitants against the rest of the world. The article concludes by highlighting what solutions UNECE and the ITC has available, namely the legal instruments on road safety.

V.　　Further Projects

10.　　　Following the road safety data story, the secretariat started work on a new visualisation project concerning inland water freight. The process is described in more detail in ECE/TRANS/WP.6/2023/10. This story does not follow the same structure of the road safety data story; it is less about giving key policy messages, and more about highlighting the value that statistics in geospatial format can provide. The story can be viewed at https://w3.unece.org/Stories/2023/01/inland_waterway_freight/. The most notable thing

about this approach is the use of the map, which responds to the user scrolling by zooming to different regions in Europe and providing commentary, through text boxes and highlighting specific locations on the inland waterway network (figure 5).

Figure 5
Screenshot of the inland waterway data story

11.   As set out in ECE/TRANS/WP.6/2023/1, the secretariat plans to expand the concept of the data stories into a micro-site looking at the transport-related Sustainable Development Goals. For the purposes of visualisation, this will combine the graphs and photos with descriptive text, both about the global indicator set and how countries are measuring sustainable transport in their countries.

VI.   Discussion and Concluding remarks

12.   It is worth highlighting that the graphs used in the data stories are not at all complex. Simple line graphs and bubble graphs, correctly annotated, provide the required information and enable users to interact with the figures increases the message impact. Similarly, the messages and accompanying text are brief. The goal of the data story is not to be a complex deep dive, but rather a summary of key messages for policy makers. The full datasets that underpin the stories remain available for browsing and download through the ECE statistics site[3].

13.   Following the publication of the first data story, the process has been automated, so that future data stories can be produced much more quickly once the text and graphs are chosen.

14.   The secretariat would welcome feedback on these first data stories and can produce future ones based on the needs of member States. Countries are encouraged to share their own experiences with ways to capture the attention of readers and policy makers when disseminating their transport statistics.

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[3]   https://w3.unece.org/PXWeb/en.