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Working Party on Transport Statistics

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

Possible reorganization of transport statistics publications

Note by the secretariat

I. Summary

1. The Working Party on Transport Statistics (WP.6) of the United Nations Economic Commission for Europe (UNECE) is currently tasked with producing two biennial publications. Currently one publication (Inland Transport Statistics for Europe and North America (ABTS)) focuses on official transport statistics while the other publication (Statistics for Road Traffic Accidents in Europe and North America (RAS)) focuses on official road safety statistics. Official data also currently comprise the full set of transport data published by UNECE on its website as well.

2. A shortcoming of these data is that there are often substantial gaps in official data provided by member States. Analysis of such incomplete data is difficult and sometimes even impossible and decreases the value of these publications to data users. These data gaps are particularly noticeable when attempting to use the database to answer research questions about modal choice for passengers and freight or making comparisons with region-wide averages (which cannot be calculated without data for all countries).

3. To address these shortcomings, the secretariat proposed and investigated the feasibility of the following option for reorganizing the current transport statistics publications:

- Combine the two current official statistics publications into one publication covering all official statistics collected by UNECE.
  An additional benefit of this consolidation is that the new publication would present data more efficiently by eliminating the repetition of some indicators currently present in both publications (see Annex for details on current publications).

- Create a new database focusing on several principal transport indicators. A provisional list of indicators would be aligned with the Transport Statistics Infocards[1]. The database would use the official data already collected as a starting point and make additional estimates through research on publicly available datasets. These new data would be published online and as the core of a new publication which could contain additional analyses (see Annex for details on proposed new publication structure).

4. After an investigation of the data availability for 12 principal transport indicators, the secretariat found that while data are available for the majority of countries, there is a lack of publicly available data to fill gaps in time series. It is not recommended at this time to create a publication with estimation without further consideration of modeling methods to fill the existing data gaps.

II. Investigation results

5. In early 2018, the secretariat began its investigation of the availability of public data to fill existing data gaps. The first step in the process was to assess the current data availability in the UNECE database. This assessment focused on the following indicators (based on those published in the Infocards):

Road

1. Road traffic accidents with injuries
2. Fatalities in road traffic accidents
3. Injuries in road traffic accidents
4. Number of passenger cars
5. Road vehicle-kilometres
6. Road passenger-kilometres
7. Road tonne-kilometres

Rail

8. Rail passenger-kilometres
9. Rail tonne-kilometres

Inland waterways

10. Inland waterway tonne-kilometres

Overall

11. Modal split of freight traffic (by tonne-kilometres)
12. Modal split of passenger traffic (by passenger-kilometres)

6. To fill certain gaps in the official data available, simple extrapolations and interpolations were first added. This supplementary data fills only gaps where data trends are reasonably consistent on each endpoint (in the case of interpolation) or in the most recent years (in the case of extrapolation). The table and figures below provides a view of the average data availability for ECE member States over the most recent 5 years including these imputed data. In addition to the average number of countries with data over this period, the

[1] www.unece.org/trans/main/wp6/infocards.html.

average percentage of countries and the average proportion of population and gross domestic product (GDP) of the countries with data are also shown.

Average data availability of selected indicators, 2012-2016

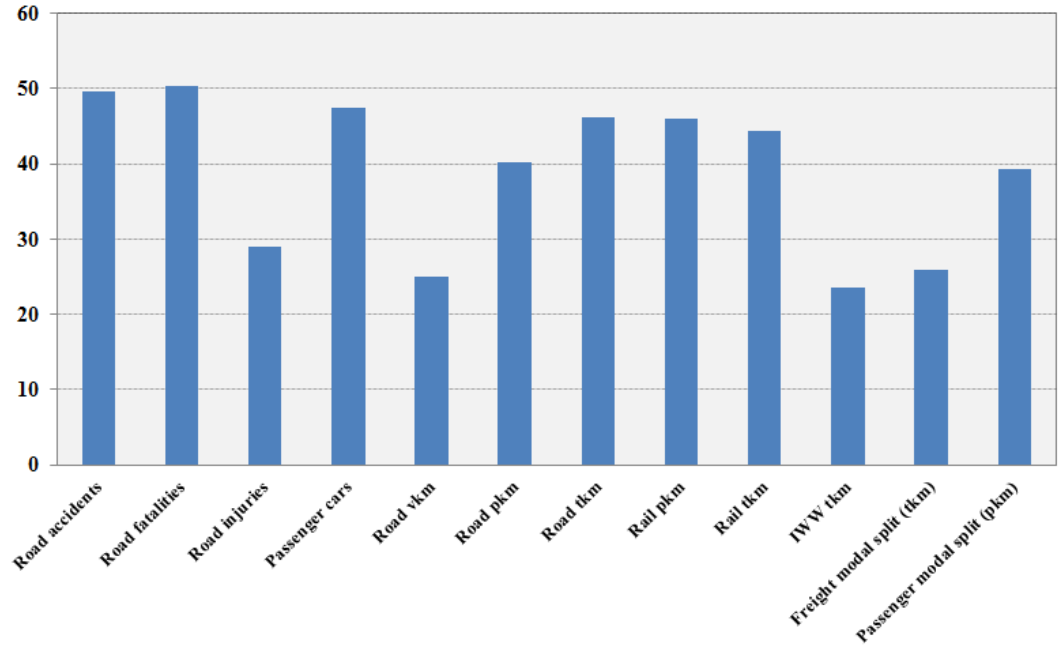
	Average percentage of:			
Indicator	Average number of countries	ECE member States	2016 population	2016 GDP (USD)
Road traffic accidents with injuries	50	88.6	98.0	99.2
Fatalities in road traffic accidents	50	90.0	98.4	99.6
Injuries in road traffic accidents	29	51.8	47.8	43.9
Number of passenger cars	47	84.6	93.6	99.5
Road vehicle-kilometres	25	44.6	64.7	78.1
Road passenger-kilometres	40	71.8	92.7	93.1
Road tonne-kilometres	46	82.5	95.6	98.7
Rail passenger-kilometres	46	90.2	97.5	98.3
Rail tonne-kilometres	44	87.1	93.2	93.8
Inland waterway tonne-kilometres	24	54.9	75.6	85.5
Modal split of freight traffic (tonne-kilometres)	26	46.1	69.7	78.9
Modal split of passenger traffic (passenger-kms)	39	70.0	91.8	92.0

Notes: data availability refers to official transport data available in the ECE transport statistics database as well as interpolation and extrapolation for data series when trends are consistent. Only 51 member States have railway networks. Only 43 member States have inland waterway networks.

7. While no indicators had full data availability, road traffic accidents, fatalities in road traffic accidents, rail tonne-kilometres, and number of passenger cars had nearly complete data sets, with high data availability for road tonne-kilometres and rail passenger-kilometres as well. For other indicators data availability was much lower, notably for inland waterway tonne-kilometres and road vehicle-kilometres. The modal split indicators each had significant data gaps with more availability for passenger-kilometres than for tonne-kilometres.

Figure I

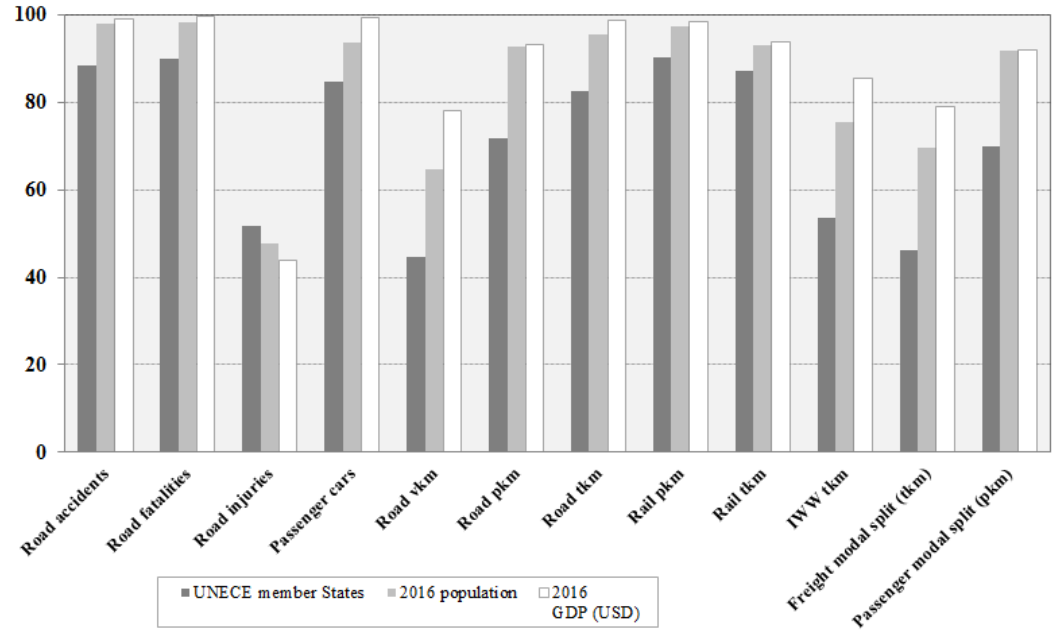
Average number of countries with available data for various transport indicators, 2012-2016



Notes: data availability refers to official transport data available in the ECE transport statistics database as well as interpolation and extrapolation for data series when trends are consistent. Only 51 member States have railway networks. Only 44 member States have inland waterway networks.

Figure II

Average percentage of ECE members States, 2016 population, and 2016 GDP (USD) with available data for various transport indicators, 2012-2016



Notes: Data availability refers to official transport data available in the ECE transport statistics database as well as interpolation and extrapolation for data series when trends are consistent. Only 51 member States have railway networks. Only 44 member States have inland waterway networks.

8. Addressing the remaining data gaps could encompass substantial staff time. To investigate the time required for such tasks, pilot estimations were conducted for 3 countries with varying levels of data availability in the current ECE statistical database — Belgium, Serbia and Ukraine. Data for Belgium were mostly complete with gaps only in 2016 where data had not yet been updated for most indicators, in passenger-kilometres (both rail and road), and in rail tonne-kilometres. Data for Serbia were similarly complete with data missing for both 2015 and 2016 for most indicators and additional unexplained breaks in series for rail tonne-kilometres and road passenger-kilometres. Lastly, data for Ukraine were less comprehensive, with no data provided since 2012 for passenger cars, passenger-kilometres (road and rail), and tonne-kilometres (road, rail and inland waterways) and no data provided since 2008 for road vehicle-kilometres.

9. The secretariat reviewed the websites of each country's national statistical office as a first priority with data from international organizations used where data in national statistical offices were not available. In the case of Belgium and Serbia, no additional data or explanations for breaks in data series were found on their respective national statistical office website. For Ukraine, the State Statistics Service provided substantial data on passenger-kilometres and tonne-kilometres for road and rail which had not been previously provided to the secretariat through the Web Common Questionnaire (WebCoQ). However, important data gaps still remained for Ukraine in passenger cars and road vehicle-kilometres after this investigation.

10. A major finding through this investigation was the lack of publicly available data on transport. Sources for each country were difficult to find beyond the national statistical offices, the International Transport Forum (ITF) and Eurostat (for Belgium). The World Bank has discontinued its publication of motor vehicle per capita figures and its rail tonne-kilometres data are similar to data provided by the ITF. As ITF and Eurostat share data with the secretariat through the web common questionnaire (WebCoQ), very few new data were found through their databases.

III. Conclusions

11. Though data availability is strong for many indicators, it is evident that significant data gaps will remain even after research with external data sources and simple imputations. To remedy these issues, a supplementary simple questionnaire to countries could be useful. However, the secretariat sent a similar simple questionnaire to ECE member States as part of the 2015 regional study of ECE on CO_2 emissions from the transport sector and received responses from only 12 countries each of which already had comparably high levels of data availability. In addition, a supplementary questionnaire which repeats data requests from WebCoQ goes against the principle of decreasing response burden on countries.

12. Another option is to develop a suite of statistical models for the relevant indicators. These models could be based on common variables such as GDP per capita, population or other variables that are likely to be available even in countries with low data availability. Undertaking the task of developing these models would be a long-term project and require peer reviews of their robustness.

13. The Working Party is requested to take note of this investigation and provide a view on the utility of continuing efforts toward such a reorganization considering the lack of data availability and requirement for more sophisticated statistical modelling to fill data gaps. The secretariat also welcomes any additional proposals from the Working Party for reorganizing the existing publications.

Annex

I. Current ECE transport statistics publications

A. Inland Transport Statistics for Europe and North America (ABTS)

1. This publication (formerly titled the Annual Bulletin on Transport Statistics for Europe and North America) provides a series of transport statistics tables for the 56 member States of ECE. It is issued in accordance with the recommendation of the Inland Transport Committee at its first session that the Transport Division should publish regularly the most recent available data on transport for as many countries within the ECE region as possible.

2. The publication brings together statistical information on all the modes of transport covered by the Inland Transport Committee (Road and Road Safety, Rail, Inland Waterways) for all member States of the ECE region. A short summary is provided at the start of each chapter to provide some key figures on each sector, followed by detailed data on each of the statistics sub-categories.

Table 1
Tables in 2017 edition of the Inland Transport Statistics for Europe and North America (ABTS)

General statistics	
	Population and area of country
Road transport	
1.	Road infrastructure at 31 December
2.	Road vehicle fleet in the country at 31 December - By vehicle category
2 (a).	Road vehicle fleet in the country at 31 December - By age group
2 (b).	Road vehicle fleet in the country at 31 December - By fuel type
2 (c).	Goods road transport equipment at 31 December - By load capacity
3.	New road vehicle registrations during the year - By vehicle category
3 (a).	New road vehicle registrations during the year - By fuel type
3 (b).	New goods road vehicles registered during the year - By load capacity
4.	Road traffic indicators (Passenger and good vehicles)
5.	Goods road vehicles operated for hire or reward
Railway transport	
6.	Employment in principal railway enterprise(s)
7.	Networks at 31 December
8	. Mobile equipment at 31 December
9.	Tractive vehicle movements
10.	Train movements

11.	Hauled vehicles movements of trains
12.	Passenger transport
13.	Goods transport (excluding empty privately-owned wagons)
Inland waterways	
14.	Navigable inland waterway regularly used for transport at 31 December
15.	Inland waterway vessels in service at 31 December, by carrying capacity and year of construction
16.	Goods transport by type of transport and vessel on national territory
Oil pipeline transport	
17.	Oil pipeline infrastructure and volume of transport

B. Statistics of Road Traffic Accidents in Europe and North America (RAS)

3. This publication contains the basic statistics on road traffic accidents provided by the Governments of member States of ECE. The statistics in this document are limited to road traffic accidents involving personal injury, and exclude accidents where only damage to vehicles is reported.

4. Statistics for Road Traffic Accidents in Europe and North America is divided into three basic parts with an annex. The first part sets out charts and summary tables on the overall situation and developments in road traffic accidents and casualties in ECE countries. The second part provides detailed statistics on road traffic accidents and includes the details of accidents such as location, time of occurrence, road condition, personal injuries and deaths. The third part shows background statistics on countries' vehicle fleets, estimates of vehicle-kilometres run and estimates of population by age group. The annex contains definitions.

Table 2
Tables in 2017 edition of the Statistics of Road Traffic Accidents in Europe and North America (RAS)

Summary tables	
	A. Road traffic accidents: 2005-2015
	B. Number of persons killed in road traffic accidents: 2005-2015
	C. Number of persons injured in road traffic accidents: 2005-2015
	D. Road Traffic Accident Profile for 2015: Area, Population and Accidents
Road safety	
	1. Road traffic accidents by location, time of occurrence and road condition
	2. Road traffic accidents involving personal injury by nature of accident
	3a. Persons killed or injured in road traffic accidents by category of user and age group 3b. Persons killed or injured in road traffic accidents by gender
General statistics	
	4. Road vehicle fleet
	5. Estimated vehicle-kilometres run
	6. Estimates of population and distribution by age group, 2015

II. Possible reorganization

A. Motivation

5. The current ABTS and RAS publications each contain official statistics exclusively (i.e. data collected directly from countries through questionnaires). These data are reliable in the sense that the ECE secretariat can communicate directly with data providers to clarify any quality issues with these data. In addition, data are normally consistent with data disseminated by countries on their own website and in their own publications since data are published as provided.

6. However, there are limitations with restricting published data to official data only. The primary flaw is that there are frequently data gaps where countries either do not provide data or provide unrealistic data that cannot be verified. These data gaps limit the range of analysis that can be conducted on major transport indicators. They also limit the utility of other ECE products such as the Transport Statistics Infocards given that sometimes only outdated or incomplete data are available.

7. Noting the importance of both publishing official data and providing full data sets of top-level transport indicators for analysis the two ECE publications could be reconfigured to provide a better service to member States.

B. Official statistics publication

8. A first new publication could combine the ABTS and RAS publications in one place where all official statistics on transport collected by ECE can be disseminated. Summary tables found in the RAS would be relocated to a separate publication.

Table 3
Proposed tables in the official transport statistics publication

General statistics	
	Population and area of country
Road transport	
	1. Road infrastructure at 31 December
	2. Road vehicle fleet in the country at 31 December - By vehicle category
	2 (a). Road vehicle fleet in the country at 31 December - By age group
	2 (b). Road vehicle fleet in the country at 31 December - By fuel type
	2 (c). Goods road transport equipment at 31 December - By load capacity
	3. New road vehicle registrations during the year - By vehicle category
	3 (a). New road vehicle registrations during the year - By fuel type
	3 (b). New goods road vehicles registered during the year - By load capacity
	4. Road traffic indicators (Passenger and good vehicles)
Road safety	
	5. Road traffic accidents by location, time of occurrence and road condition
	6. Road traffic accidents involving personal injury by nature of accident
	7 (a). Persons killed or injured in road traffic accidents by category of user and age group
	7 (b). Persons killed or injured in road traffic accidents by gender
Railway transport	
	8. Networks at 31 December
	9. Mobile equipment at 31 December
	10. Tractive vehicle movements
	11. Train movements
	12. Hauled vehicles movements of trains
	13. Passenger transport
	14. Goods transport (excluding empty privately-owned wagons)
Inland waterways	
	15. Navigable inland waterway regularly used for transport at 31 December
	16. Inland waterway vessels in service at 31 December, by carrying capacity and year of construction
	17. Goods transport by type of transport and vessel on national territory
Oil pipeline transport	
	18. Oil pipeline infrastructure and volume of transport

C. Estimation publication

9. The second publication would provide full time series for selected indicators. This publication would use official data collected for several principal indicators used to track transport activity in countries. The principal indicators shown below would be based at first on the indicators published in the Transport Statistics Infocards.

Road

1. Road traffic accidents with injuries (also severity)
2. Fatalities in road traffic accidents (also rate per inhabitant, per passenger car)
3. Injuries in road traffic accidents
4. Number of passenger cars (also motorization rate)
5. Road vehicle-kilometres
6. Road passenger-kilometres
7. Road tonne-kilometres

Rail

8. Rail passenger-kilometres
9. Rail tonne-kilometres

Inland waterways

10. Inland waterway tonne-kilometres

Overall

11. Modal split of freight traffic (by tonne-kilometres)
12. Modal split of passenger traffic (by passenger-kilometres)

10. Additional graphs visualizing trends over time and relationships between different indicators would be included along with a more in-depth examination of such findings.

11. The development of an estimation database would represent the majority of time spent on this project. Several decisions would be required on the scope of the database, including the indicators included, the length of time series, the countries included (for example, are microstates such as Monaco and San Marino excluded? Do we estimate countries such as Uzbekistan with very low data availability?), and the frequency of updates.

12. In principle, this database could be added as an additional set of indicators in the existing PC-Axis database. These indicators would be made available on the ECE website as separate cubes clearly indicated as estimated data (vs official data for other data cubes).

Table 4

Proposed tables in the estimated transport statistics publication

Road safety	
	1. Road traffic accidents: 2005-2015
	2. Number of persons killed in road traffic accidents: 2005-2015
	3. Number of persons injured in road traffic accidents: 2005-2015
	4. Road Traffic Accident Profile for 2015: Area, Population and Accidents
Transport	
	5. Passenger cars and motorization rate: 2005-2015
	6. Freight and passenger traffic by transport mode: 2005-2015
General statistics	
	7. Population and distribution by age group, 2015
	8. Gross domestic product: 2005-2015

13. An inventory of available data sources and the priority given to each based on their reputed consistency and reliability would also be developed. Special priority would be given to investigating countries with substantial data gaps to assess whether these data are available either on national statistics office websites or are published by other international organizations. In some cases, sources may be identified through work already done on the ForFITS regional assessment exercise conducted in 2015. Where data are not available from any source or data are not consistent between sources, estimates would be required. As noted earlier, interpolation or extrapolation of existing trends may be appropriate in some cases. If extensive estimation is required, statistical modelling also may be appropriate based on common variables such as GDP per capita, population or other variables that are likely to be available even in countries with low data availability.