

# Assisting countries to Monitor the Sustainable Development Goals: Road Safety



## Motivation

Global leaders in 2015 adopted a set of 17 Sustainable Development Goals and 169 targets for 2030 that aspire to help humanity revert to a virtuous path of sustainability. Set up by the United Nations Statistical Commission, the [Inter-Agency Expert Group on Sustainable Development Goals](#) (IAEG-SDG) developed over 230 indicators to track progress on goal attainment, and designated custodians and partner agencies to lead the development of data for indicator measurement.

**Sustainable transport** and mobility are key elements in achieving the Sustainable Development Goals, as the mapping of UNECE Inland Transport Committee activities against the [Sustainable Development Goals](#) has shown. UNECE's Working Party on Transport Statistics (WP.6) has a well-established collection mechanism for official statistics that can feed into monitoring the transport-related goals, notably through goals 3, 9 and 11. This is reflected in UNECE's role as partner agency for indicators 3.6.1, 9.1.1, 9.1.2 and 11.2.1, and its key role within the [Sustainable Mobility for All](#) initiative.

## Background

Given the complexity of the task of monitoring indicators across many goals, and with indicators ideally broken down by gender, urban/rural, focus on vulnerable people etc., UNECE has decided to publish a series of short articles on how our existing transport statistics can be used to directly monitor transport-related SDG progress, and how these data can also feed in to provide insights into progress on many other goals. This paper focuses on UNECE's production of **road safety statistics**.



# Road Safety Statistics

Through its biennial road safety questionnaire and in collaboration with the European Commission’s CARE database, UNECE has for decades collected data on road traffic safety. These data are broken down by location, month, day of week, light condition, road condition, nature of accident as well as by road user characteristics such as gender and age. As the Sustainable Development Goals cite improving road safety as a definitive target (see SDG target 3.6) this report will provide an in-depth view of the road safety situation for road users in the UNECE region.

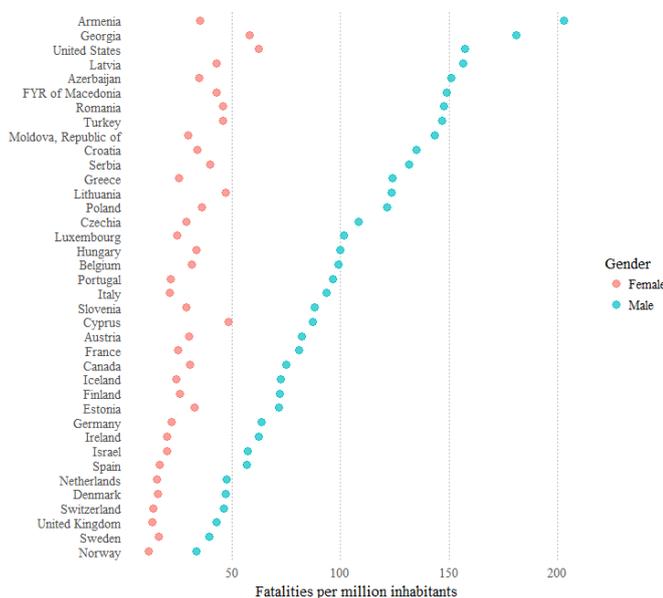
## Gender differences in road safety

The reported difference in fatality rates between genders is consistent and substantial for all countries reporting data (Figure 1). Specifically, data show that males have a higher fatality rate than females for all countries though these differences ranged by country. Armenia, Greece, Republic of Moldova, Portugal, Italy, Azerbaijan, and Luxembourg each reported a male fatality rate more than 4 times that of females (maximum of 5.8 times greater in Armenia), while only Cyprus reported a male fatality rate that was less than double that of females (1.8 time greater).

For each of the seven countries providing per capita data for driver fatalities in road traffic accidents the gender ratio was further skewed toward males (Figure 2). Azerbaijan reported a fatality rate for male drivers of over 250 times that of females (compared to 4.4 times greater when considering all fatalities) and both Turkey and the Republic of Moldova reported fatality rates for male drivers over 30 times higher than that of females (compared to 3.2 and 4.8 for all fatalities, respectively). The United States reported a milder increase in the gender ratio for drivers, 3.5 times higher for male drivers vs 2.5 times higher for males when considering all fatalities. A possible explanation for these

**Figure 1**

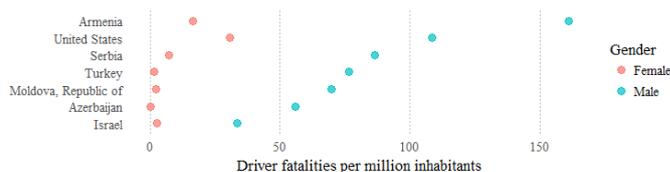
Fatalities in road traffic accidents per million inhabitants by country and gender, 2015 or most recent year



Note: Data for Canada, Sweden and Switzerland refer to 2014. Data for Ireland and FYR of Macedonia refer to 2013

**Figure 2**

Driver fatalities in road traffic accidents per million inhabitants by country and gender, 2015 or most recent year



increased differences is the low percentage of women who drive in some countries. Unfortunately, data on licensed drivers are not collected in the UNECE database at this point and harmonized data are not widely available in countries in the region. In addition, while time

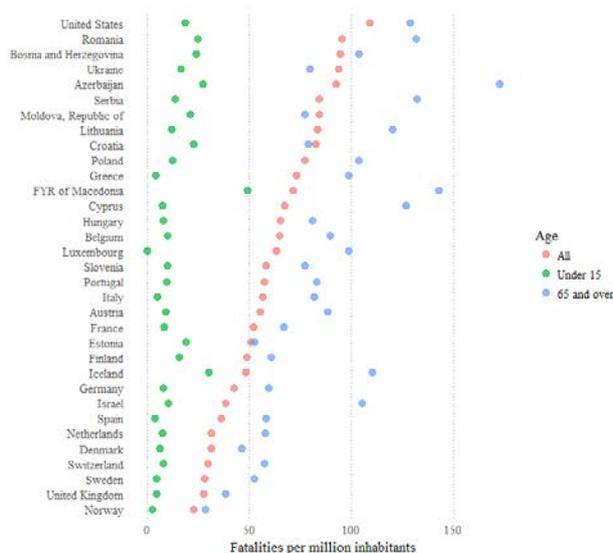
use data on travel reported by countries to the UNECE do not specify modes of transport or the function of the person travelling (driver or passenger), it is relevant that nearly all countries reporting these data show that men spend more time travelling.

## Road safety by age

Younger and older persons (defined as less than 15 and 65 and over, respectively, for this analysis) make up a substantial portion of road traffic accident fatalities (Figure 4). For countries in the UNECE region reporting data the proportion of younger persons in total fatalities ranges from 12.5 per cent in Iceland to 0.8 per cent in Greece (no fatalities for persons less than 15 were reported in Luxembourg). The reported proportion of older persons in total fatalities ranges from 37 per cent in Sweden to 10 per cent in Republic of Moldova. As some differences can be accounted for by differing demographics of countries, it is important to analyse the differences in fatality rates given the varying population of each age group in different countries.

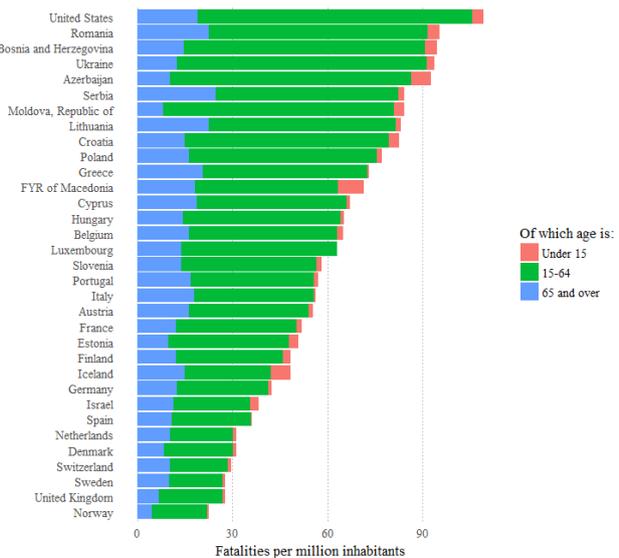
Analysing the available data in this manner (Figure 3) shows that of the countries in the UNECE region with available data, most report that younger persons have lower fatality rates than the overall fatality rate while the reverse is true for older persons.

**Figure 3**  
Fatalities in road traffic accidents per million inhabitants by country and age group, 2015 or most recent year



Note: Data for Sweden and Switzerland refer to 2014. Data for Bosnia and Herzegovina refer to 2013

**Figure 4**  
Fatalities in road traffic accidents per million inhabitants by country and proportion corresponding to various age groups, 2015 or most recent year



Note: Data for Sweden and Switzerland refer to 2014. Data for Bosnia and Herzegovina refer to 2013

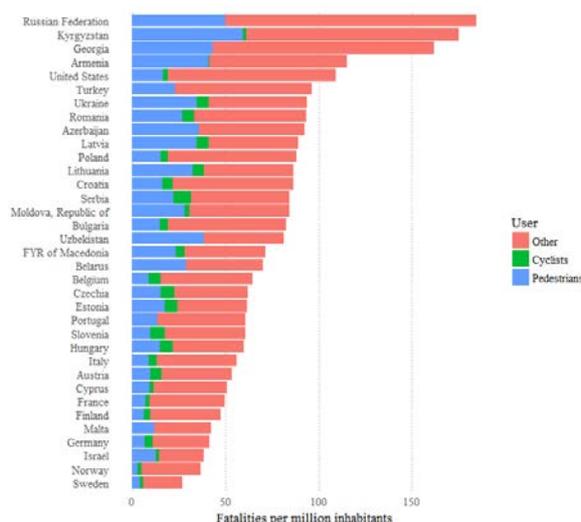
As always there are variations between figures reported by various countries. The former Yugoslav Republic of Macedonia and Iceland reported lesser differences between the under 15 population and the overall fatality rate (31 and 38 per cent lower, respectively) while Greece reported a fatality rate 95 per cent lower in the same comparison (Luxembourg did not report any fatalities for its under 15 population). For the 65 and over population, Israel, Iceland and the former Yugoslav Republic of Macedonia reported a fatality rate more than double that of the overall population. Conversely, Croatia, Republic of Moldova and Ukraine reported a fatality rate for older persons less than the overall rate.

## Road safety for vulnerable users

As younger and older persons are less likely to drive, a similar analysis focusing only on pedestrians is also informative (Figure 5). Though data from fewer countries in the UNECE region were available for this subset, the trend of higher fatality rates for older persons and lower fatality rates for younger persons remains for the nine countries with data available. The reported difference between the fatality rate for those under 15 and all ages narrowed for each of the countries with data available when focusing on pedestrians only while the difference with the fatality rate for those 65 and older and all ages increased – sometimes substantially – when focusing on the same.

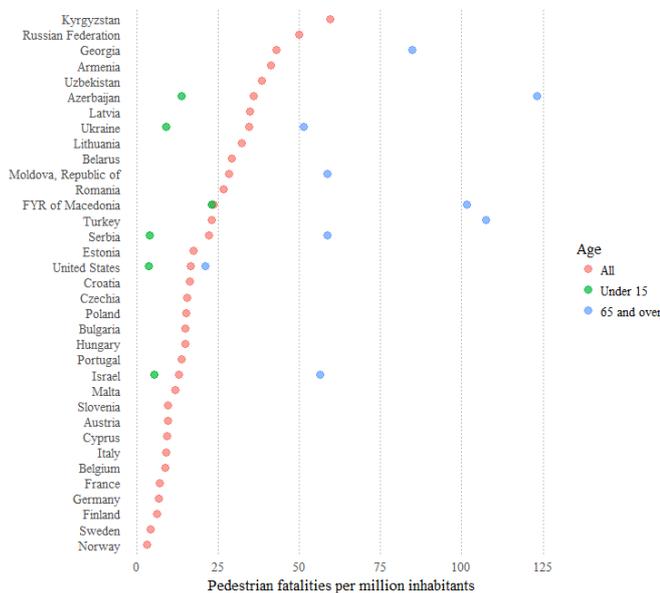
Cyclists and pedestrians make up a significant portion of the reported fatalities in countries in the UNECE region (Figure 6). The reported proportion of pedestrians in all fatalities ranges from over 40 per cent in Uzbekistan and Belarus to less than 10 per cent in Norway.

**Figure 6**  
Fatalities in road traffic accidents per million inhabitants by country and proportion corresponding to various road users, 2015 or most recent year



*Note:* Data for Kyrgyzstan and Russian Federation refer to 2014. Data for Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Slovenia and Sweden refer to 2013. Azerbaijan, Belarus, Georgia, Malta, Portugal, Russian Federation, Turkey and Uzbekistan did not report cyclist fatalities.

**Figure 5**  
Pedestrian fatalities in road traffic accidents per million inhabitants by country and age group, 2015 or most recent year



*Note:* Data for Kyrgyzstan and Russian Federation refer to 2014. Data for Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Romania, Slovenia and Sweden refer to 2013

For those reporting data on cyclist fatalities the proportion of cyclists in all road traffic accident fatalities ranges from over 12 per cent in Slovenia to less than 1 per cent in Armenia and Kyrgyzstan.

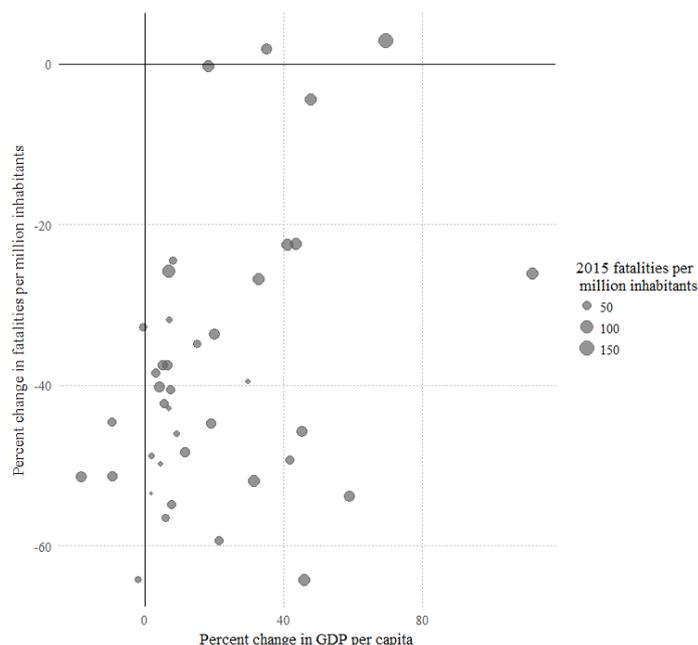
## Road safety trends

The available data on trends in road safety provide a direct link to SDG indicator 3.6.1 (halving the number of road traffic fatalities by 2020). In the UNECE region, almost all countries reported a decrease in fatality rate between 2005 and 2015. There is a slight tendency towards greater decreases in countries with lower increases in motorization rate (Figure 7). Notably, countries with large increases in their reported motorization rates were the only ones to report

increases (Georgia and the former Yugoslav Republic of Macedonia) or even decreases of less than 20 percent in fatality rate (Bosnia and Herzegovina and Albania). However, this tendency was not universal across the region as Belarus and Poland each reported an increase of almost 70 per cent in motorization rate and also a decrease in fatality rate of approximately 50 per cent. These examples show that improvements in road safety can take hold even as exposure to road risks increase through increased motorization.

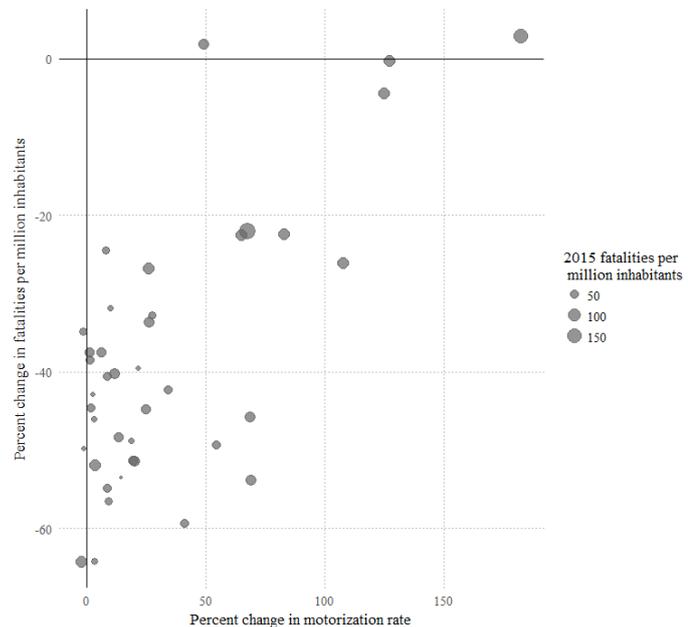
Unsurprisingly, a similar trend is observed when comparing changes in GDP per capita with changes in road traffic accident fatality rates between 2005 and 2015 (Figure 8). This tendency for fewer improvements in road safety for countries with high levels of economic growth is less pronounced than the similar trend for changes in motorization rate. Some countries such as Georgia reported a large increase in GDP per capita as well as a small increase in fatality rate, while other countries such as Azerbaijan reported both a large increase in GDP per capita and a substantial decrease in road traffic accident fatality rate

**Figure 8**  
Percent change in fatalities in road traffic accidents per inhabitant vs percent change in gross domestic product per capita (real purchasing power parity) by country, 2005 to 2015 or most recent year



*Note:* Data for Bulgaria, Belarus, Georgia, Ireland, Italy, Russian Federation, Serbia, Sweden and Switzerland refer to changes to 2014. Data for Bosnia and Herzegovina and Liechtenstein refer to changes to 2013. Turkey not shown due to change in definition of traffic accident fatality between 2005 and 2015.

**Figure 7**  
Percent change in fatalities in road traffic accidents per inhabitant vs percent change in motorization rate (passenger cars per inhabitant) by country, 2005 to 2015 or most recent year



*Note:* Data for Bulgaria, Belarus, Georgia, Ireland, Italy, Russian Federation, Serbia, Sweden and Switzerland refer to growth to 2014. Data for Bosnia and Herzegovina and Liechtenstein refer to 2013. United States not shown due to change in classification of passenger vehicles between 2005 and 2015. Turkey not shown due to change in definition of traffic accident fatality between 2005 and 2015.

both a large increase in GDP per capita and a substantial decrease in road traffic accident fatality rate (-26 per cent). Belarus, Republic of Moldova and Bulgaria also report both large increases in GDP per capita as well as large decreases in fatality rate (decreases of at least 20 per cent).

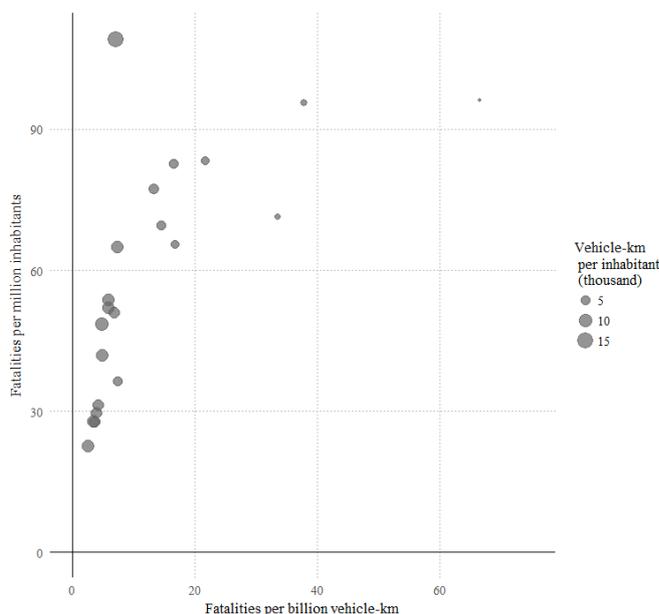
## Road safety relative to road traffic activity

While road traffic accident fatalities per inhabitant is a good measure of the overall level of risk from road transport for those living in a country, it does not always take into account the safety level of roads where there are differences in levels of road vehicle activity. Normalizing fatalities by passenger activity can help

contextualize some of the difference in fatality rate per inhabitant (Figure 9) between countries in the region. For example, the United States reports a fatality rate per inhabitant that is more than double that of Austria, but a fatality rate per passenger km only 25 per cent higher. Conversely, several countries such as Belarus and Bulgaria report large fatality rates per passenger kilometre (low passenger kilometre per capita ratios in each of these cases).

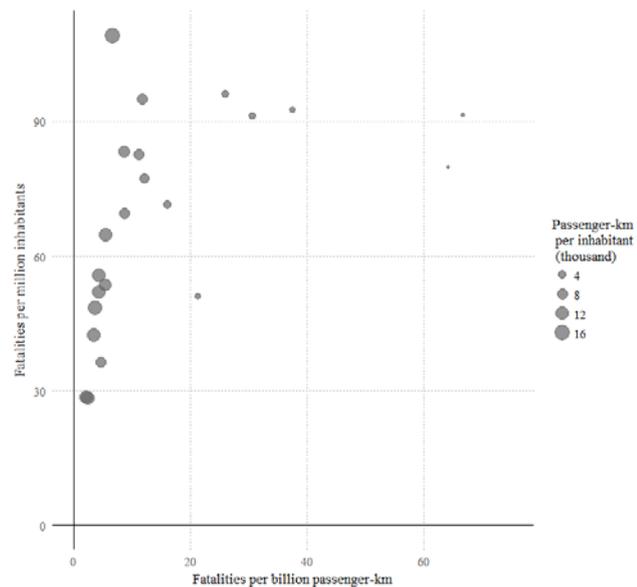
Normalizing fatalities by vehicle kilometres driven further narrows the difference in fatality rate for some countries and further highlights the relative safety of using roads in other countries (Figure 10). This is again evident in the example of the United States, where the reported vehicle kilometres driven per inhabitant is at least 50 per cent higher than any other country in the UNECE region reporting data. The United States reports a fatality rate per inhabitant nearly triple that of Spain, but a fatality rate per vehicle kilometre that is 4 per cent lower than that reported by Spain.

**Figure 10**  
Fatalities in road traffic accidents per million inhabitants vs fatalities by billion vehicle-kilometres by country, 2015 or most recent year



*Note:* Data for Ireland, Sweden and Switzerland refer to 2014. Data for Austria refer to 2013. Data for Bulgaria and Republic of Moldova not shown as passenger car vehicle-kilometers are not included in the case of Bulgaria and appear to exclude private passenger cars in the case of Republic of Moldova. Data for Belarus and Italy not shown as vehicle-km data is out of line with passenger car data.

**Figure 9**  
Fatalities in road traffic accidents per million inhabitants vs fatalities by billion passenger-kilometres by country, 2015 or most recent year



*Note:* Data for Albania, Bulgaria, Belarus, Italy, Norway and Tajikistan refer to 2014. Data for Austria, Belgium and Netherlands refer to 2013. Armenia, Montenegro, Republic of Moldova, Romania, Russian Federation, Serbia and Slovakia not shown as passenger car passenger-kilometers either not included or exclude private passenger cars.

by Spain. Conversely, several countries such as Turkey, Romania and the former Yugoslav Republic of Macedonia report high fatality rates given the vehicle kilometres driven (small vehicle kilometre per capita ratios in each of these cases).

## Transport-related SDG Measurement

By publishing these data, UNECE hopes to provide policy-makers in member States with the necessary information on all transport modes, to make informed decisions about how to make future transport systems safe, efficient, accessible and sustainable.

### Relevance to SDG 3

Understanding the differences in vulnerability of different users and contextualizing fatality rates given the

level of vehicle travel in countries is vital to developing the policies that can improve overall road fatality rates (3.6.1). Notably, the gender gap between male and female fatality rates is substantial and worthy of further investigation.

### Relevance to SDG 9



Passenger volumes (9.1.2) are a major factor in road safety. Countries expecting large increases in passenger volumes will need to manage this growth in a safe way in order to avoid corresponding increases in fatality rates. Differences in passenger volumes and overall vehicle kilometres run between countries can also offer insight into the type of policies that are likely to be effective in reducing road traffic fatality rates.



### Relevance to SDG 11

UNECE indicators on road safety also improve the understanding of the work needed to provide access to safe, affordable, accessible and sustainable transport systems (11.2.1). The increased fatality rate for older persons is of particular note and highlights a group for which access to safe transport systems should be improved.



## Interlinkages with other SDGs

Further to the three transport-related Sustainable Development Goals described above, these bus statistics can also provide insights into monitoring some other Goals, such as

1. *Goals 4 and 5 (quality education and gender equality):* improved road safety can increase access to education, work and opportunities to both sexes, and decrease avoidable tragedies where children are deprived of future opportunities due to road traffic accidents.
2. *Goal 8 (sustainable economic growth):* the economic loss due to road traffic accidents is substantial and can be curtailed with improvements in road safety.

## Other data sources to consider

As noted in the road safety by gender analysis, UNECE time use data give insights into travel patterns for different genders. Countries should consider incorporating gender splits into their national travel surveys to provide even more insights into gender/road safety issues through the analysis of passenger-km data.

In addition to the consideration of other data sources, member States are encouraged to improve the completeness, quality and comparability of their contributions to UNECE's existing database to allow for more multifaceted analyses.

## Road safety at the UNECE

The UNECE's Inland Transport Committee (ITC) has long been involved in road safety activities beginning with the establishment of an Ad Hoc Working Group on the prevention of road accidents in 1950. Today, the [Global Forum for Road Traffic Safety](#) (established in 1988 as the Working Party on Road Traffic Safety (WP.1)) focuses on improving road safety with a primary function to serve as guardian of the United Nations legal instruments aimed at harmonizing traffic rules. The Conventions

on Road Traffic and on Roads Signs and Signals of 1968 and other UNECE legal instruments that address the main factors of road accidents (road user behaviour, vehicle and infrastructure) are tangible contributors to improved global road safety. The UNECE also supports the development and promotion of best road safety practices and the organization of road safety weeks and other awareness raising events.

**The UNECE road safety statistics can be viewed at <http://w3.unece.org/PXWeb/en>.**

**Details of transport-related SDG capacity-building activities can be viewed at <https://www.unece.org/trans/transport-and-the-sustainable-development-goals.html>**

**For further information on how to collect transport statistics or to discuss training collaboration, please contact [Stat.Trans@unece.org](mailto:Stat.Trans@unece.org).**