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O.T4.1 Position Paper on the Effects of the COVID-19 pandemic on the status of road safety

THEMATIC AREA 5 (TA5): TRANSPORT SAFETY AND COVID-19

RADAR – Risk Assessment on Danube Area Roads

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1. Introduction

The RADAR project (Risk Assessment on Danube Area Roads) aimed at fostering infrastructure-based safety assessments of roads and at bringing about improved safety levels in the Danube region. RADAR's Road Safety Expert Group focused on six *Thematic Areas* (TA), one of them being "TA5 - Transport safety and COVID-19". This position paper presents the key results of an international literature analysis on the impacts of COVID-19 on mobility, behaviour and safety as well as related information and data from the Danube region, collected through a questionnaire distributed in the RADAR consortium. It puts forward a set of recommendations for remedial safety interventions, targeted at decision-makers and stakeholders in Danube Area countries: state governments, ministries & agencies, local governments and road authorities. The full report (76 pages) is available at http://www.interreg-danube.eu/approved-projects/radar.

The COVID-19 pandemic and the related measures to contain and reduce its spread in countries all over the world had extensive impact on many areas of our lives. Staying at home requirements, closures of educational institutions, non-essential businesses and events, working from home restrictions and travel bans are characterizing the period since March 2020 when the World Health Organization declared COVID-19 a world-wide pandemic (Vingilis et al. 2020; ETSC 2020, ITF 2021). These measures together with *social distancing*, i.e., reducing interactions between individuals to slow down the spread of the virus, have led to a sharp decline in economic and social life and in some areas even to a complete standstill (de Vos 2020).

The implementation of containment measures at the beginning or the first wave of the pandemic in March and April 2020, i.e., mostly very stringent lockdowns in many countries, and also the re-introduction of (parts of) these measures at the beginning of the following waves of the spread of the pandemic (e.g. autumn 2020 in Europe) also had traffic impacts and changed the number and types of out-of-home activities people performed, and how people reached these activities (Boroujeni, Saberian & Li 2021; de Vos 2020). Overall, traffic volumes and mobility activities have dropped, and this also had impacts on traffic safety, as with the reduction of traffic volumes exposure to road traffic accidents was reduced (Katrakazas et al. 2020, Yannis et al. 2020). However, effects of COVID-19 and the related containment measures have been varied in several countries: because of the reduction in traffic volumes, streets became less crowded, potentially increasing opportunities for speeding and stunt driving (Vingilis et al. 2020). In addition, as social distancing has also influenced travel mode choice, some transport modes – particularly individual means of transport – have been used to a greater extent (e.g. passenger cars) than others (e.g. public transport), which might also affect road safety (de Vos 2020; Campisi et al. 2020, ITF 2021). As schools switched to distance learning, in several countries also a distinct focus on teaching and catching up on the core subjects was observed, resulting in less children receiving traffic safety and mobility education (ETSC 2021).

It can be assumed that some effects of COVID-19 and related containment measures are temporal and that travel demand will rise again when the measures are lifted – which will also have impacts on traffic safety (de Vos 2020). However, some of the changes may be structural and long lasting, e.g., people might still fear social contact when travelling even after social distancing rules are no longer in force, which might affect activity participation and travel. **Therefore, the development of road safety strategies in relation to the new reality of COVID-19 and considering the respective changes are needed** (Vingilis et al. 2020; de Vos 2020).

2. Effects of COVID-19 on mobility: transport volume, trips and travel behaviour

A **reduction in mobility, transport volumes and the number and distance of trips** was observed during the first wave of the pandemic in March and April 2020 in countries in Europe, North America and Asia. The reduction was noted for all transport modes, but for **public transport with particularly high reductions** of 80 to 90% (e.g. in Switzerland, the United Kingdom, and cities like Paris and Prague) compared to pre-pandemic levels. The intensity of the reduction in mobility, i.e., number and distance of trips, was **related to the strictness of the measures** taken by governments to contain the COVID-19 pandemic.

While an overall reduction in the number of trips was noted during the first wave of the pandemic, the **share of short trips was higher** during spring 2020 and also in the summer months compared to 2019 (e.g. for the USA).

After the **first wave** of the pandemic during May 2020 and during the summer months when containment measures were lifted, mobility and transport volumes increased again. High increases (faster recoveries) were observable for walking, cycling (e.g. UK) and driving. However, **public transport still lags behind** its level before the pandemic because of working from home or transport mode shifts to individual transport modes like driving, cycling (or walking), resulting also in **comparatively more vulnerable road user travel on the urban and suburban system** (PIARC 2020). However, in cities (e.g. Paris) that experienced a strong decrease in public transport traffic during the first lockdown, traffic levels of public transport also recovered faster than in cities that experienced a low decrease in public transport traffic during the first lockdown (e.g. Berlin). With respect to changes in cycling traffic, in European countries, but also in the USA and Canada, **cycling levels particularly increased on weekends**.

During the **second wave** of the pandemic in autumn 2020, mobility of all transport modes again decreased (with stronger reductions for public transport than for walking or driving), however these reductions were **not in the same intensity** as during the first wave of the pandemic.

The **higher shares in individual mobility**, i.e. driving, cycling and walking, compared to the public transport share **may possibly prevail** even after the pandemic has passed, as (a share of) people who shifted from public transport to cycling or the car during the pandemic may continue to do so. Indeed, for the USA, a consumer study found that 45% of the respondents reported that they intend to use public transport and ride hailing less than previously, even after the pandemic (Consulting.us 2021). However, effects seem to be mixed as surveys (e.g. from Germany) indicate a return to a similar modal share like before the pandemic.

3. Effects of COVID-19 on road crashes and road fatalities

For the whole year 2020 compared to 2019, a **reduction of road fatalities** was observed in most of the 27 EU member States with the largest reductions (25% or more) in Bulgaria, Hungary and Italy. In contrast, Estonia, Latvia, Ireland and Finland recorded an increase in fatalities.

A **reduction of the number of road crashes and fatalities** was particularly noted during the first wave of the pandemic in March and April 2020 in most countries in Europe and North America. However, **some countries in Europe** also experienced small **increases in road**

fatalities, with the latter also being linked to less stricter containment measures (e.g. in Sweden) but, interestingly, Germany also experienced an increase in fatalities in April 2020 compared to April 2019, although containment measures were in place and mobility was reduced.

The **reduction in road fatalities** during the first wave of the pandemic in most countries in Europe and in the USA was **often not in proportion to the decrease in traffic volume,** resulting in a **higher fatality rate** and a higher fatal collision risk. This also applies to most of the countries in the Danube area, with the exception of Hungary.

The **reduction of non-fatal crashes** during the first wave of the pandemic in March and April 2020 was **around the same extent as the decrease in traffic volume** or even higher (for the USA, Spain and the UK). However, the number of crashes quickly rebounded during the summer months in 2020 when containment measures were lifted and this increase in crashes was higher than the increase in traffic volume in the same period, resulting in a higher collision rate.

Overall, in most countries (e.g. the UK, the Netherlands, Germany, Czech Republic, Moldova), the **reduction in the number of road crashes** was **higher than the reduction in the number of casualties, KSI (killed & seriously injured) casualties and road fatalities,** with the latter decreasing the least or even increasing.

For the USA, an increase in the number of road fatalities (as well as for the fatality rate) was observable between July and September 2020 in comparison to the same period 2019.

During the **second wave** of the pandemic in Europe in October, November and December 2020, the number of fatalities (e.g. in the EU, Slovenia, Croatia, Czech Republic), road crashes (e.g. Germany) and **road victims** (e.g. the Netherlands, France) again **decreased** compared to the same months 2019.

Detailed analysis of road fatalities and casualties with regard to different road user types both for the whole year 2020 (e.g. in Germany, Austria, Switzerland and France) as well as only during the period from March to June 2020 (e.g. in the UK) indicate **higher reductions** in the number of **fatalities and casualties** for **pedestrians and cars,** while only **smaller reductions or** even **increases** are reported for **bicyclists**. However, it should be noted that an **increase in bicycle traffic** was noted during these periods in most of the countries. In contrast, particularly in Hungary and Croatia, the number of cyclist fatalities reduced considerably in 2020 compared to 2019. For the USA, an increase in pedestrian fatalities per 1 billion vehicle miles travelled (VMT) in the first half of 2020 compared to 2019 was noted, i.e., no corresponding reduction in pedestrian deaths in relation to the reduction in VMT.

Overall, **reductions** for the different road user types were **higher for all casualties compared to KSI casualties or fatalities**.

Regarding different age groups, **higher reductions** for all casualties, KSI casualties (e.g. in the UK), as well as for injuries and fatalities (e.g. in Germany, Moldova) are reported particularly for the **age group under 15 years,** while lower reductions are reported for the age group 25 to 65 years. For the latter, however, results from the Netherlands also indicate (higher) reductions. Results for the elderly (age group 65+) are mixed with amongst the highest reductions for all casualties and KSI casualties in the UK, but lowest reductions for injuries and fatalities in Germany and for road victims in the Netherlands. In Hungary, Slovenia and France interestingly for the age group under 18 years smaller reductions or even increases in the number of fatalities and injuries in 2020 compared to 2019 were observed.

For the UK, **higher reductions** with regard to all casualties and KSI casualties are reported for **women in comparison to men** and with regard to different times of day, **higher reductions** are reported for **morning peak hours**, while reductions were lower for the time between noon and 3 pm.

With regard to different road types, for Hungary, the **lowest reduction in the number of fatalities** in 2020 compared to 2019 was observed on **rural roads**, and similarly, for the USA a **higher fatality rate for rural** (collector, arterial) **roads** in particular was noted. However, for France the lowest reduction in the number of fatalities in 2020 compared to 2019 was recorded on motorways.

For the USA, **higher shares for fatal single-vehicle-crashes** during March to June 2020 were recorded.

4. Effects of COVID-19 on risky driving behaviour: speeding, drink driving, driving while using a mobile phone, failure to use seatbelt

Especially during the first wave of the pandemic in March and April 2020 an **increase of speeds** of vehicles was observed in countries in Europe (e.g. Greece, Austria, Slovakia), in North America (e.g. Canada, USA) and Asia (e.g. Japan).

For **mean speeds**, overall, only **small increases** were noted in most countries (e.g. USA, Slovakia, Croatia), but results for Austria and the Netherlands indicate that the proportion of speeders and in particular **extensive speeders** with significant higher speeds **increased**. Speeding seems to have increased in particular before the beginning of the COVID-19 related curfews (e.g. in the Netherlands), as people were speeding home quickly to get home in time, which also increased the number of casualties during this time. In addition, the number of speed violations / speeding fines (e.g. in Canada, Northern Ireland and Croatia) but also the **share of speeding-related fatalities** (e.g. USA, Austria, Switzerland and Hungary), speeding-related serious injuries (e.g. Hungary) and speeding-related accidents involving personal injury (e.g. Germany) increased - or decreased less than for other accident causes (e.g. in the Czech Republic). However, also noticeable reductions in the share of speeding-related fatalities (e.g. in Moldova and Slovenia) were noted.

Another risky driving behaviour that seems to have increased during the COVID-19 pandemic is **not wearing the seat belt** while driving: in the USA, the share of passenger vehicle unrestrained occupant fatalities experienced a considerable increase during March to June 2020 in comparison to the same period 2019 and also survey results indicate that some drivers were more likely not to wear a seat belt. However, for Croatia and Moldova also reductions in violations with regard to seatbelt use were observed.

Regarding **drink driving**, data on traffic violations but also accident statistics and surveys indicate that there tends to be only a slightly influence of COVID-19. For some regions and countries, drink driving rather decreased during the first wave of the pandemic (e.g. Queensland, Australia) or for the whole year 2020 compared to previous years (e.g. in the Moldova and Hungary), whereas in other regions a (slight) increase of the share of collisions (e.g. Germany, California, USA) or severe injuries (e.g. Switzerland) due to drink driving was noted – however, for Switzerland and Moldova the share of the number of fatalities in which alcohol was the main

cause decreased. Survey results also suggest that especially some drivers (presumable **young males** on restricted licenses), were **more likely** to drink & drive than before the pandemic.

For driving while **distracted**, e.g. using a mobile phone while driving, although increases in mobile phone use were observed in some countries (e.g. Greece) and in surveys a small share of drivers reported that they were more likely to drive distracted, results on the share of fatalities related to distracted driving (e.g. for Austria and Moldova) but also on the number of offences for using handheld mobile phones while driving (e.g. for the Czech Republic) **do not seem to indicate a particular increase** during the pandemic. However, effects seem to be mixed as results for Switzerland indicate a (slight) increase in the share of the number of fatalities and severe injuries in which distraction was the main accident cause and also for Moldova and Croatia increases in the number of violations for distracted driving/ mobile phone use were noted.

5. Conclusions and recommendations

In conclusion, some of the current observations in the aftermath of the COVID-19 pandemic – at least for some countries – are as follows:

- the number of road crashes and fatalities as well as mobility, transport volumes and the number and distance of trips decreased; occasionally, an increase of shorter trips was noted.
- the number of injuries was reduced at similar rates as kilometres driven.
- the number of fatalities was reduced less than the reduction rate of kilometres driven (hence fatality risk increased); some countries even reported an increase of fatalities on rural roads.
- a comparatively higher share of vulnerable road user travel was noted on the urban and suburban system, and the number of cyclist (but usually not pedestrian) fatalities partly increased.
- after the first lockdown, the use of public transport did not recover as fast as other transport modes.
- the impact of the 2nd lockdown on mobility was less severe than the 1st.
- average driving speeds increased slightly – whereas the share of extensive speed violations increased more substantially.
- the share of inadequate speed as prime causal crash factor increased, especially for fatal crashes.
- the share of killed car occupants not using the seatbelt increased.
- for alcohol and distraction as primary crash causes, little change was noted.

It therefore appears timely and necessary for the restoring and further decreasing of road risk levels in the Danube Area to bring forward a set of recommendations targeted at decision-makers and stakeholders at various levels in the individual countries: at national and regional level as well as in the respective road authorities.

The set of recommendations hereunder has also been included in a set of major Outputs of the RADAR project, the Danube Infrastructure Road Safety Improvement Strategy (DIRSIS) and the country-specific Danube Infrastructure Road Safety Improvement Action Plans (DIRSIAP).

5.1. Recommendations for state governments/ministries/agencies

- *to review the default **speed limit for rural roads** and consider adaptations where necessary (possibly only on sub-sets of the network, e.g. roads with narrow cross-sections, or roads with vulnerable road user traffic), with a view to preventing collision forces that humans cannot survive or would cause serious injury.*
- *to take gradual steps to implement a **Safe System**, with emphasis on rural roads, so that they eventually become self-explaining and forgiving to human error.*
- *to provide police forces and other **enforcement** entities with adequate **resources** and legal precautions for re-instated & intensified and effective speed enforcement; this may include section (average speed) controls – also on rural roads*
- *to consider tougher **legal sanctions for excessive speed violations**, such as higher/ income-dependent fines, licence withdrawal, and confiscation of vehicles.*
- *to encourage the use of **seatbelts** in passenger cars through awareness and enforcement measures.*

5.2. Recommendations for local governments

- *to put high priority on **enforcement and educational & awareness-raising** activity to curb inappropriate speeds.*
- *To consider the implementation of local safe zones (**30 km/h**) around educational and medical institutions, area-wide 30 km/h limits in urban areas (potentially excluding major urban thoroughfares) and other traffic calming measures*
- *to help making the increased usage levels of **active mobility** (walking, cycling) sustainable by providing them with safe facilities and an adequate share of road space.*
- *to set the necessary promotive steps to re-establish the modal share of **public transport** – by far the safest and most sustainable transport mode – at least to pre-pandemic levels.*

5.3. Recommendations for road authorities

- *to establish an **evidence base to prioritise infrastructure investments** based on safety indicators: crash locations, traffic flows, speed levels, road infrastructure design & safety data.*
- *to make sure that for each road **construction**, **reconstruction** or **maintenance** project, the implementation of **Safe System** principles is considered.*

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