Virtual Conference
2nd & 3rd March

Road Safety GB Conference
JOINING THE DOTS...

Impact of COVID-19 on driver behaviour in Greece and selected countries

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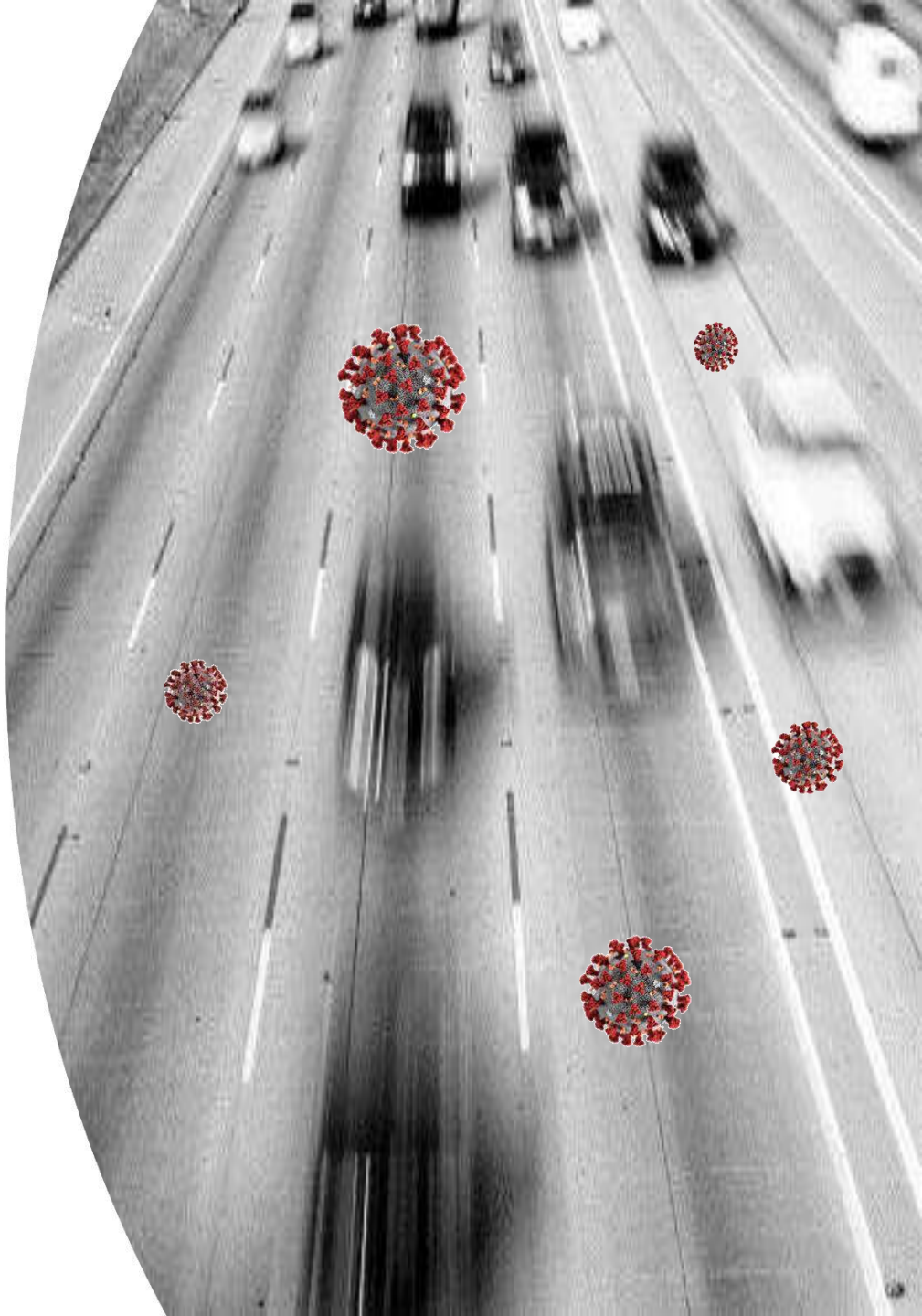
Introduction

- COVID-19 was declared as a pandemic on the beginning of March 2020 (WHO, 2020).
- Movement restrictions to everyday life activities resulted to significant decrease of traffic volumes and mobility activities (Clarke, 2020; Google LLC, 2020).
- But what was the pandemic effect on driver traffic and safety behaviour and on road accident numbers and rates?



Data Collection (1/4)

- OSeven Driving Behavior Analytics (https://www.oseven.io/) has provided a representative subset of trips during 2020 from its database for Greece, KSA (Kingdom of Saudi Arabia), Cyprus and Brazil.
- Data from smartphone sensors (e.g. GPS, accelerometer data, and gyroscope data) are collected using the smartphone applications technology that has been developed by OSeven.
- This data are processed by OSeven using filtering, signal processing, machine learning algorithms and safety/eco scoring models.

Data Collection (2/4)

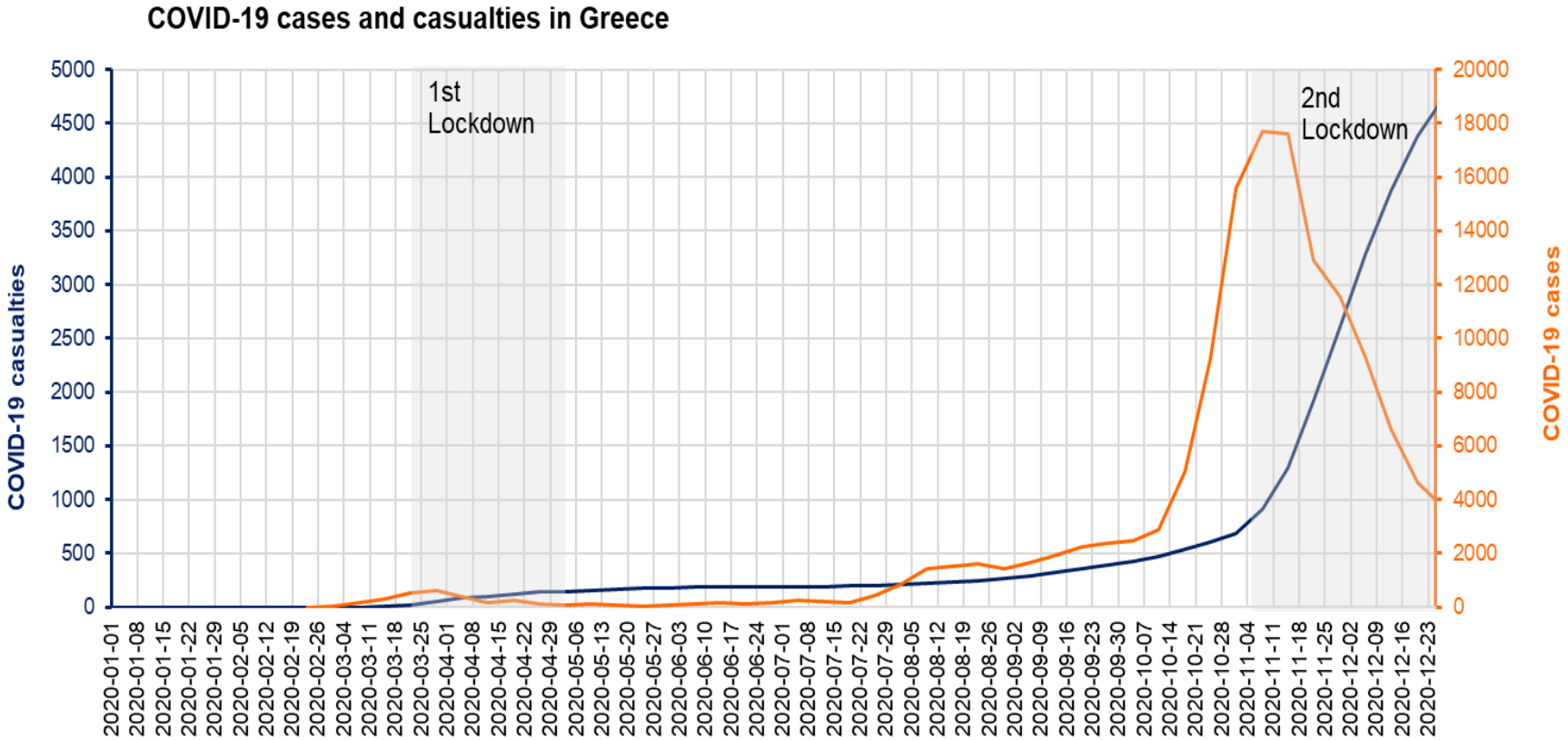
- Driving indicators of the analyzed data

Indicator	Unit
Total duration	sec
Total distance	km
Driving duration	sec
Risky hours driving	km
Harsh acceleration	-
Harsh braking	-
Speeding duration	sec
Average speeding	km/h
Average total speed	km/h
Average driving speed	km/h
Mobile phone usage duration	sec

(Source: OSeven)

Data Collection (3/4)

- COVID-19 related data
- Evolution of total deaths and cases due to COVID-19

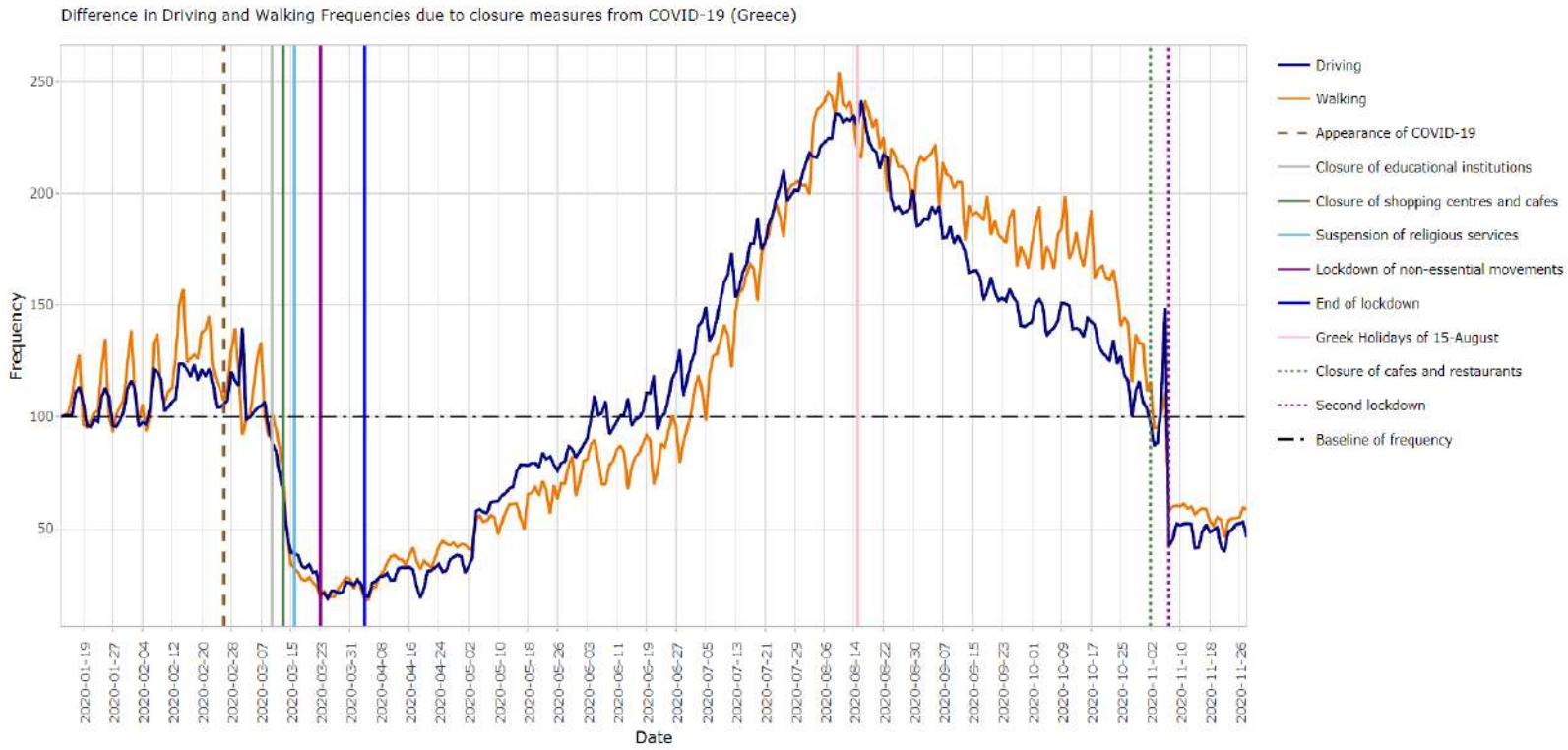


(Sources: Greek Government

Driving and Walking Frequencies (1/2)

- **Greece:** From the beginning of March and especially after the initiation of the lockdown in the middle of the month, a 62% reduction of people driving and a 58% reduction of people walking was observed. After the end of the first lockdown, driving and walking volumes were increased at a steady rate.

- **Cyprus:** No available data

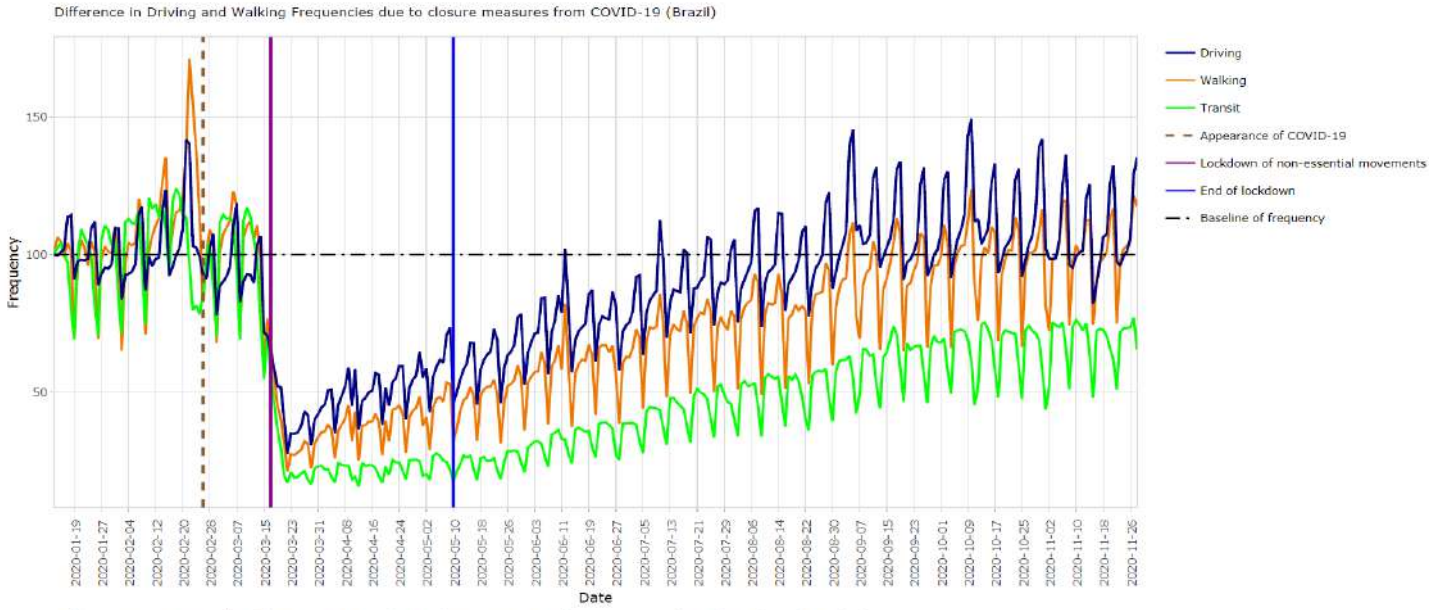


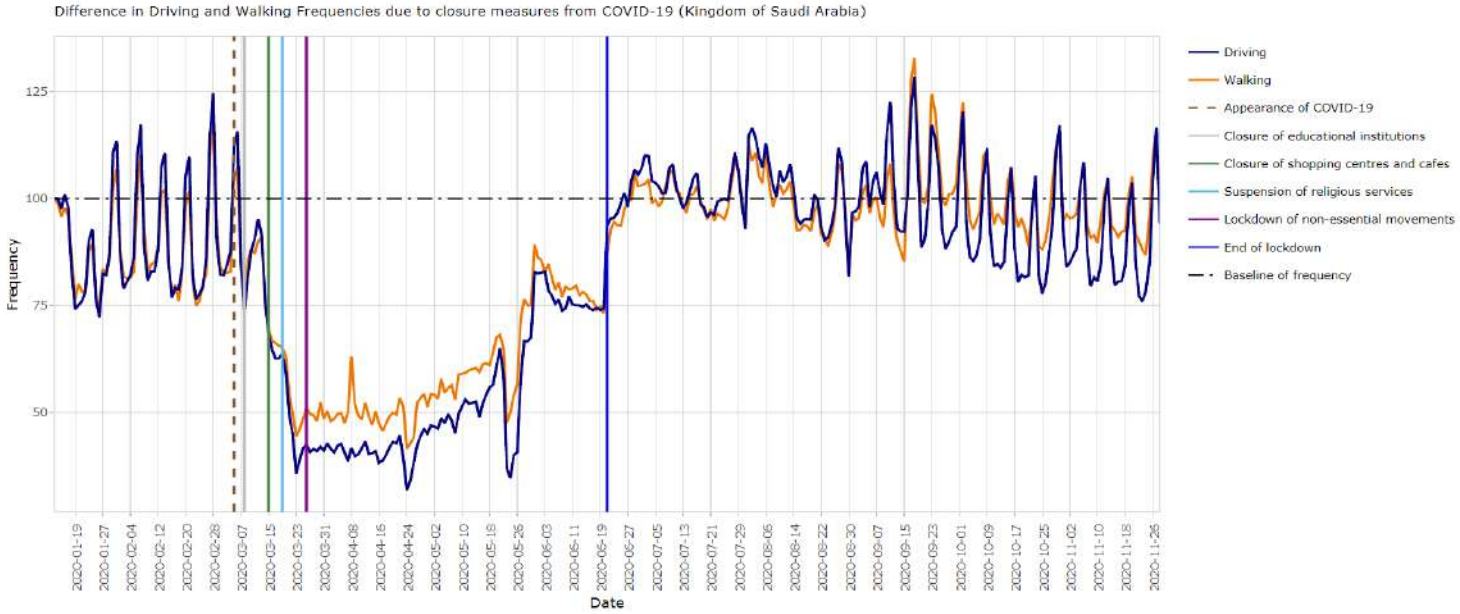
(Source: Apple)

Driving and Walking Frequencies (2/2)

- **Brazil:** During the lockdown period, a 50% reduction of people driving, a 62% reduction of people walking and a 77% decrease on people taking public transit was observed compared to the baseline. Afterwards, driving, walking and public transit volumes were increased at a steady rate.

- **KSA:** A 56% and 47% reduction for driving and walking respectively, was observed. After the lockdown, people walking and driving adapted immediately to baseline frequencies.



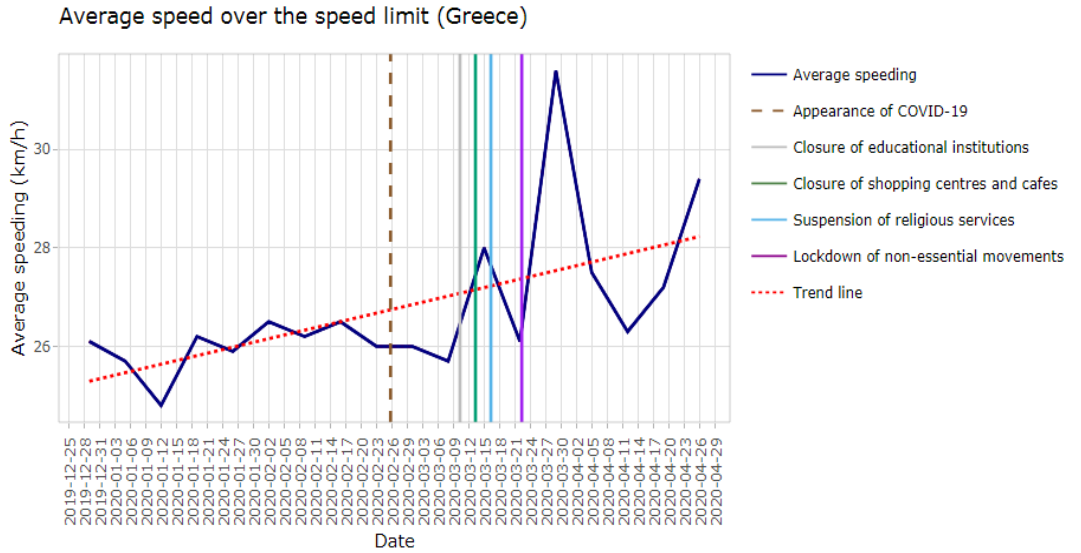


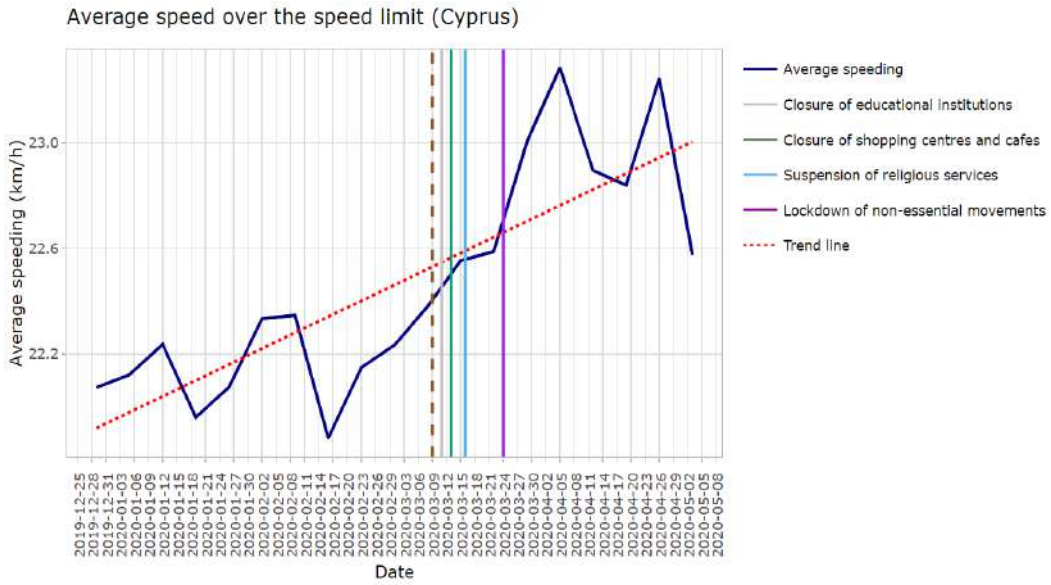
(Source: Apple)

Average Speeding (1/2)

- **Greece:** In March a 2% spike in average speeding compared to a normal period in February and a 7% increase was found in April.

- **Cyprus:** A 1% increase in average speeding was found in March compared to February, while a 4% increase in April.



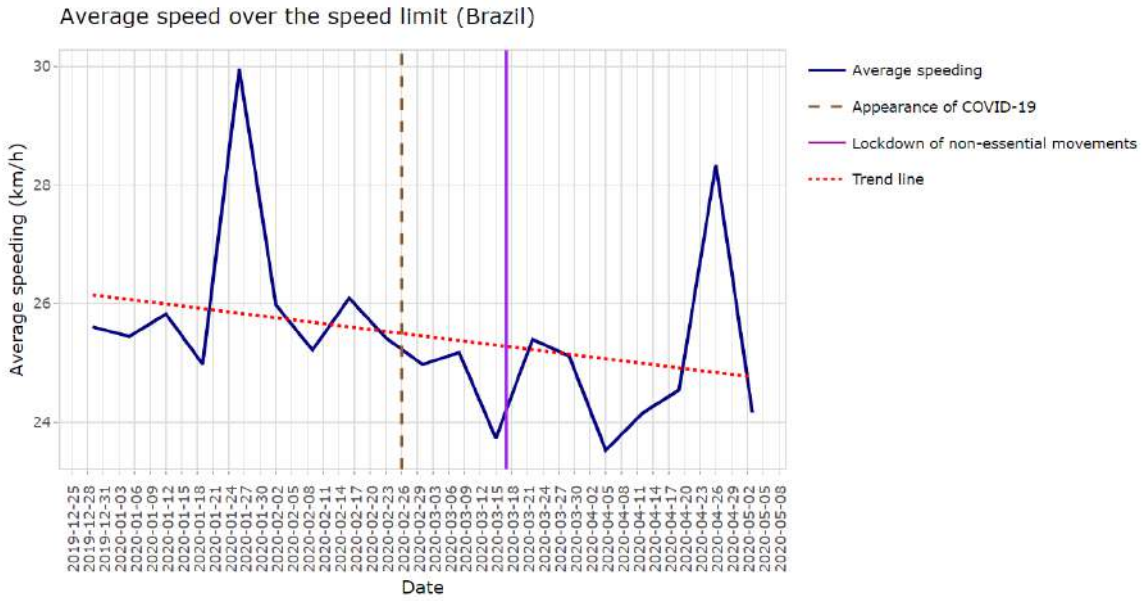


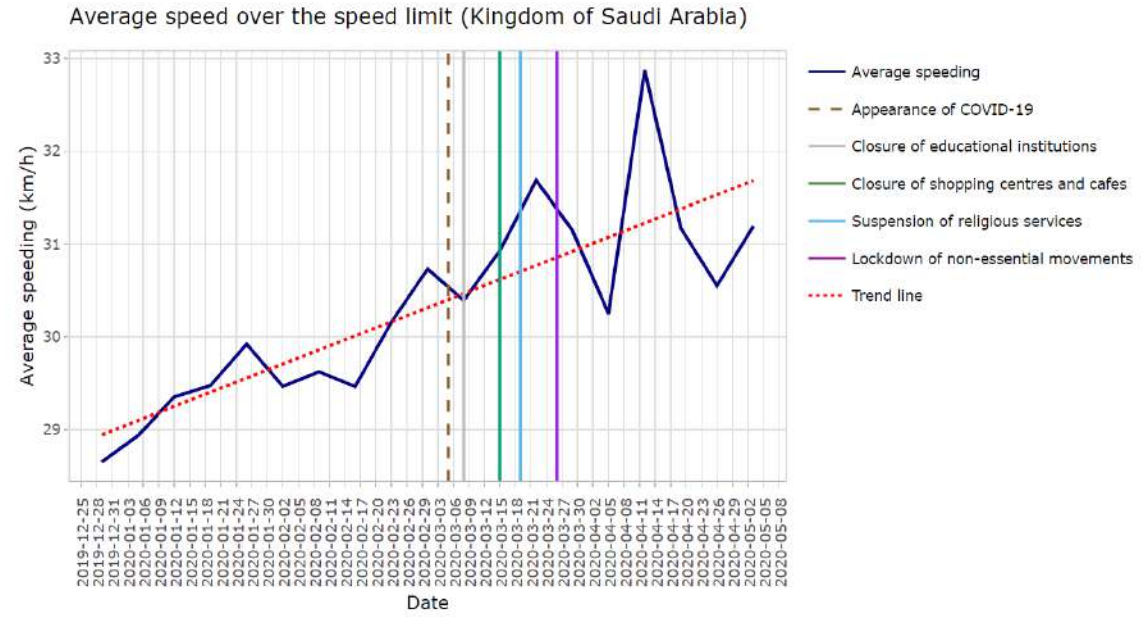
(Source: OSeven)

Average Speeding (2/2)

- **Brazil:** In March a 3% reduction in average speeding compared to a normal period in February and a 2% decrease was found in April.

- **KSA:** A 4% increase in average speeding was found in March compared to February, while a 5% increase in April.

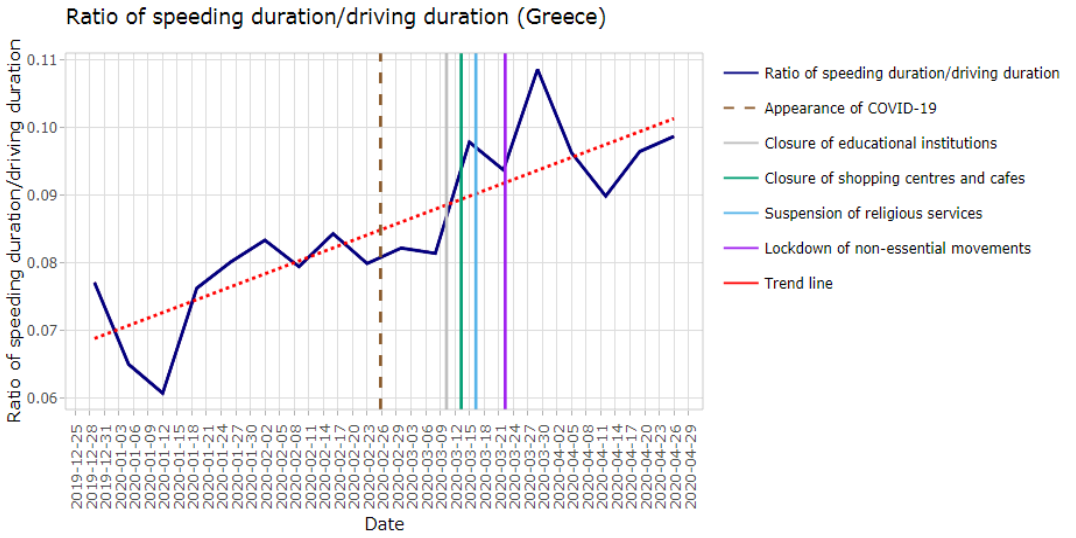


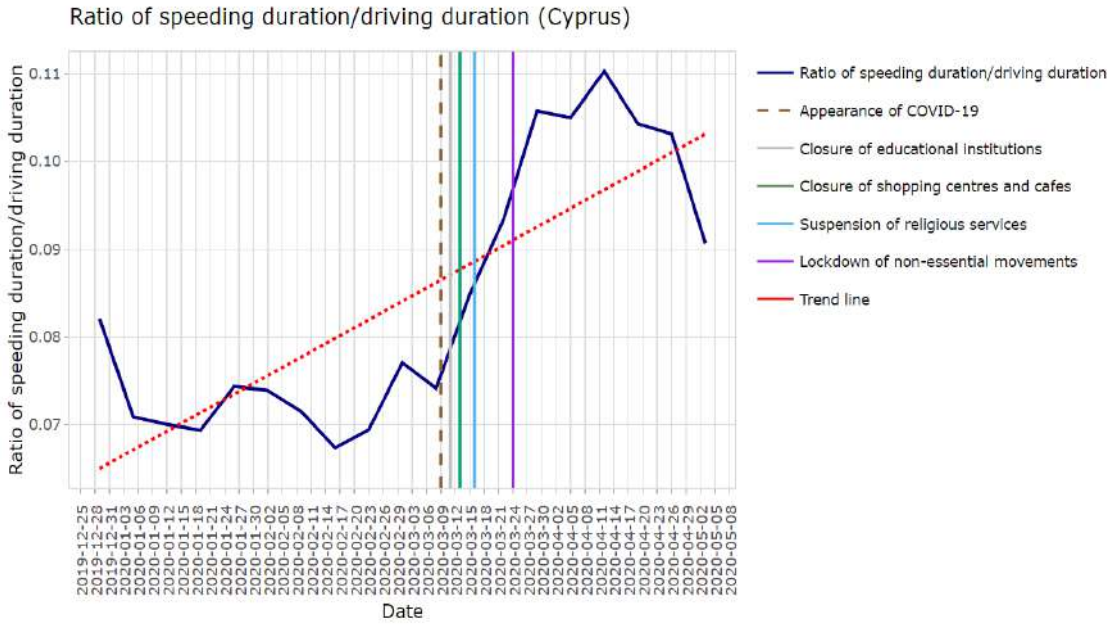


(Source: OSeven)

Ratio of speeding duration/ driving duration (1/2)

- **Greece:** In March a 7% increase was observed and an 18% increase in April.
- **Cyprus:** A 24% increase in March compared to February was identified, while a 50% spike was found in April.

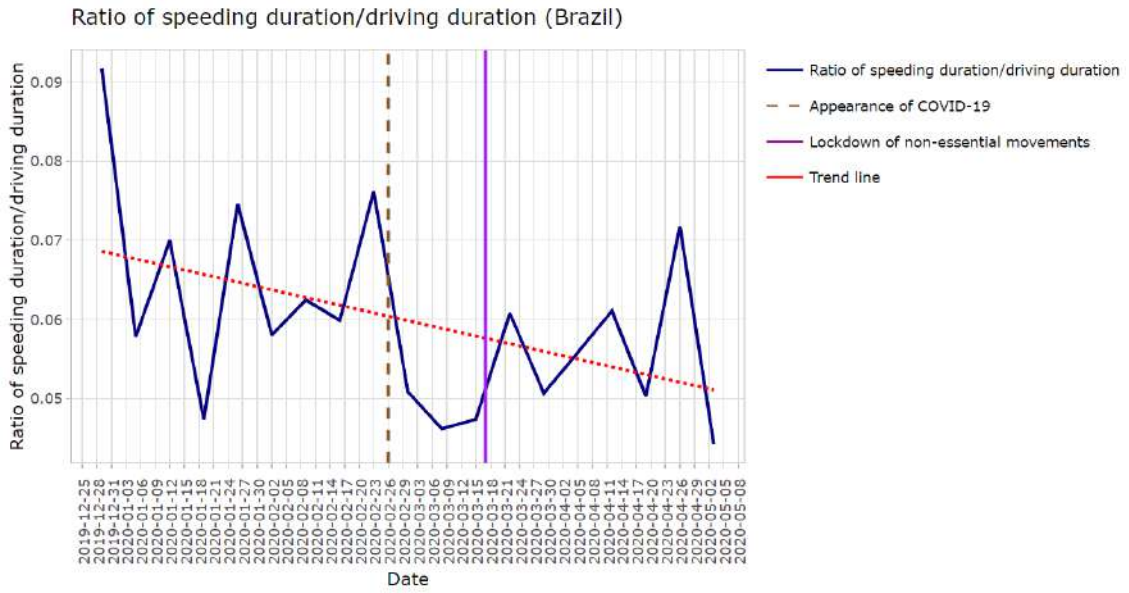


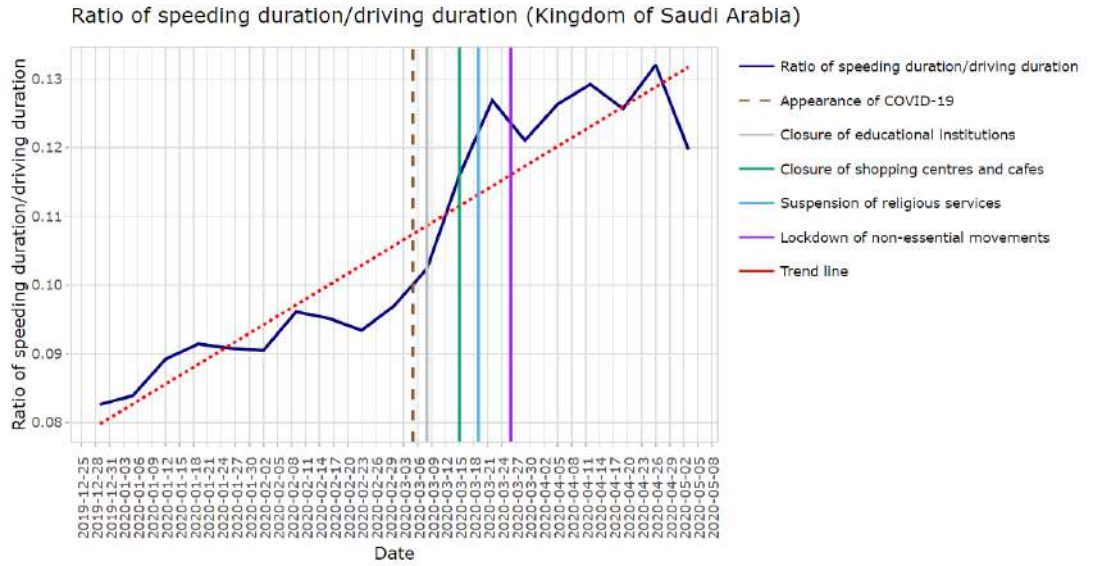


(Source: OSeven)

Ratio of speeding duration/ driving duration (2/2)

- **Brazil:** In March a 20% decrease was observed and a minor 7% increase was identified in April compared to February.
- **KSA:** A 14% increase in March compared to February, while a 36% in April.

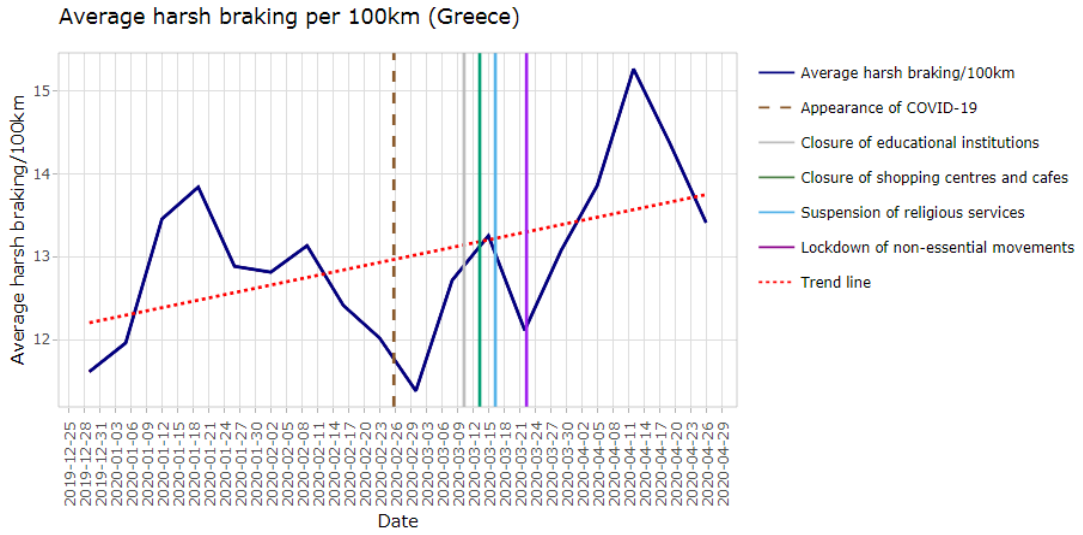


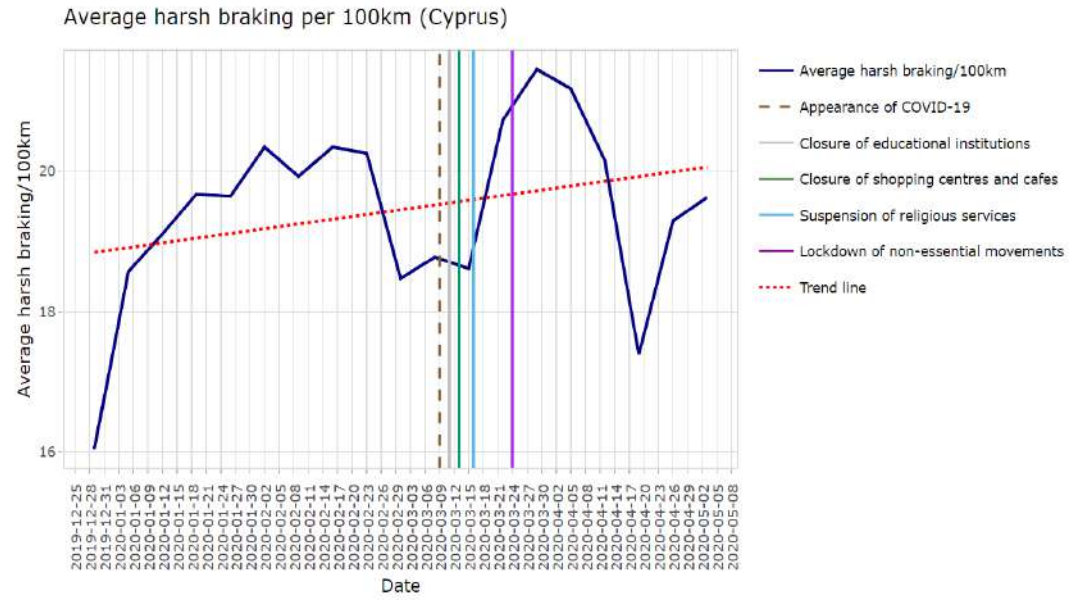


(Source: OSeven)

Harsh Braking/100km (1/2)

- **Greece:** Data showed a minor decrease of 3% during March but a 12% increase in April, compared to February.
- **Cyprus:** Data showed a minor decrease of 3.5% during April compared to February, while a change of -3% was identified in March compared to the previous months.

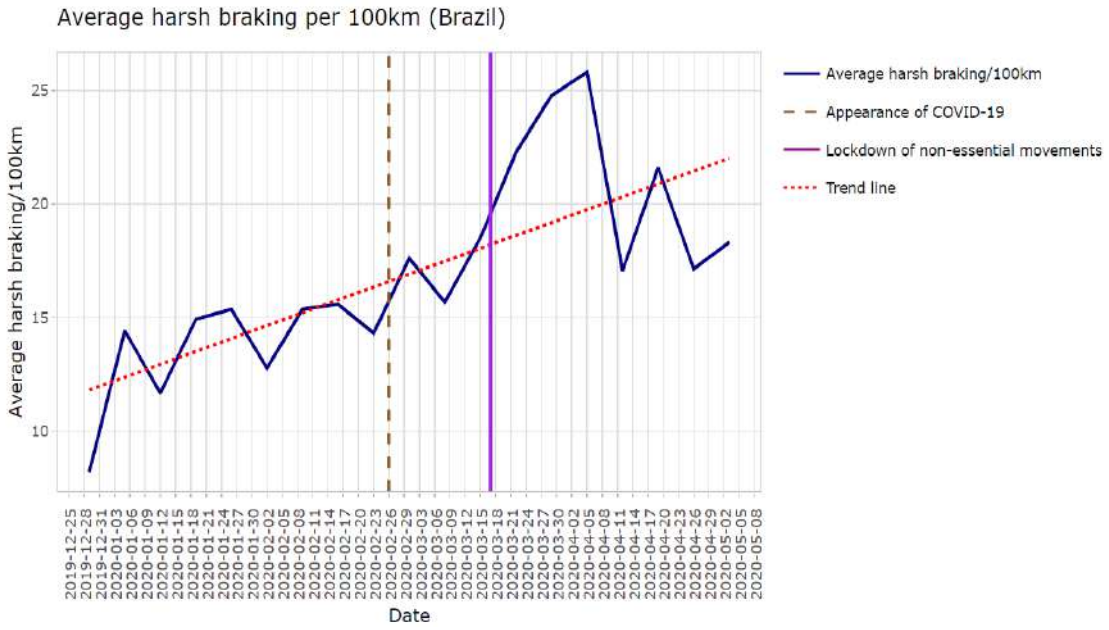


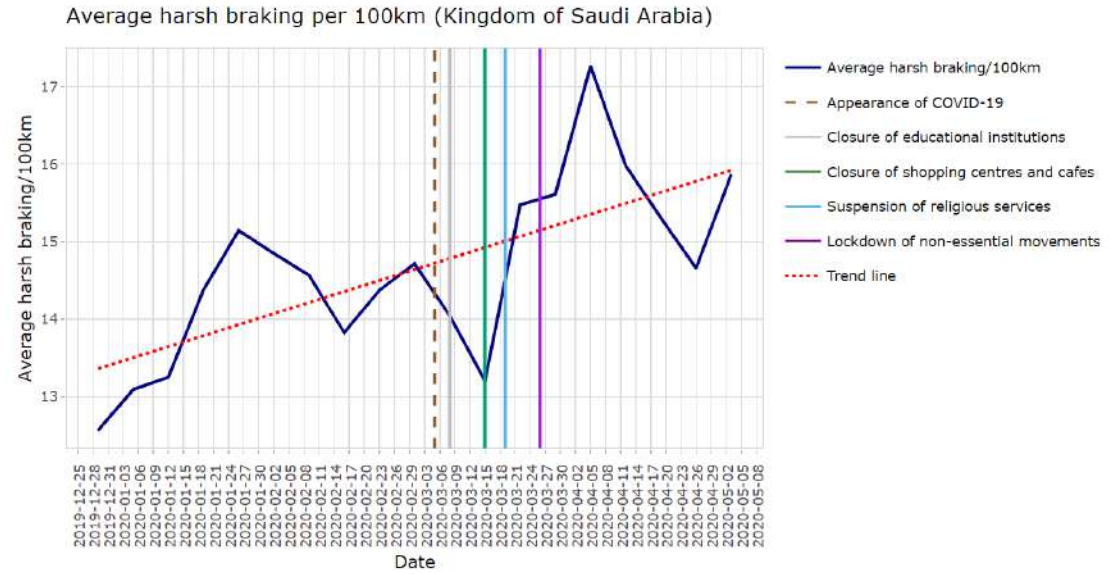


(Source: OSeven)

Harsh Braking/100km (2/2)

- **Brazil:** Data showed a great increase of 41% during April compared to February, while a change of 36% was identified in March compared to the previous months.
- **KSA:** Only a 0.31% increase was found in March compared to February, while a 10% increase in April.





(Source: OSeven)

Results Summary (1/3)

Measurement	Change compared to February	
	March	April
Greece		
Average speeding	↑	2%	7%
Speeding duration/driving duration	↑	7%	18%
Average total speed	↑	6%	11%
Average driving speed	↑	4%	6%
Harsh accelerations /100km	–	-6%	5%
Harsh braking /100km	–	-3%	12%
Total duration	↓	-33%	-68%
Driving duration	↓	-31%	-74%
Total distance	↓	-29%	-65%
Mobile phone usage duration/driving duration	–	-1%	21%
Cyprus		
Average speeding	↑	2%	4%
Speeding duration/driving duration	↑	23%	50%
Average total speed	↑	8%	14%
Average driving speed	↑	3%	8%
Harsh accelerations /100km	↓	-9%	-9%
Harsh braking /100km	↓	-3%	-4%
Total duration	↓	-43%	-76%
Driving duration	↓	-41%	-74%
Total distance	↓	-39%	-73%
Mobile phone usage duration/driving duration	↑	5%	5%

Results Summary (2/3)

Measurement		Change compared to February	
		March	April
Brazil			
Average speeding	↓	-3%	-2%
Speeding duration/driving duration	↓	-20%	-7%
Average total speed	↓	-2%	-3%
Average driving speed	↓	-3%	-5%
Harsh accelerations /100km	↑	52%	59%
Harsh braking /100km	↑	36%	41%
Total duration	↓	-19%	-48%
Driving duration	↓	-19%	-47%
Total distance	↓	-23%	-49%
Mobile phone usage duration/driving duration	↑	11%	51%
KSA			
Average speeding	↑	4%	5%
Speeding duration/driving duration	↑	14%	36%
Average total speed	↑	5%	8%
Average driving speed	↑	4%	7%
Harsh accelerations /100km	↑	3%	11%
Harsh braking /100km	↑	0.31%	10%
Total duration	↓	-33%	-75%
Driving duration	↓	-32%	-75%
Total distance	↓	-30%	-73%
Mobile phone usage duration/driving duration	↑	11%	42%

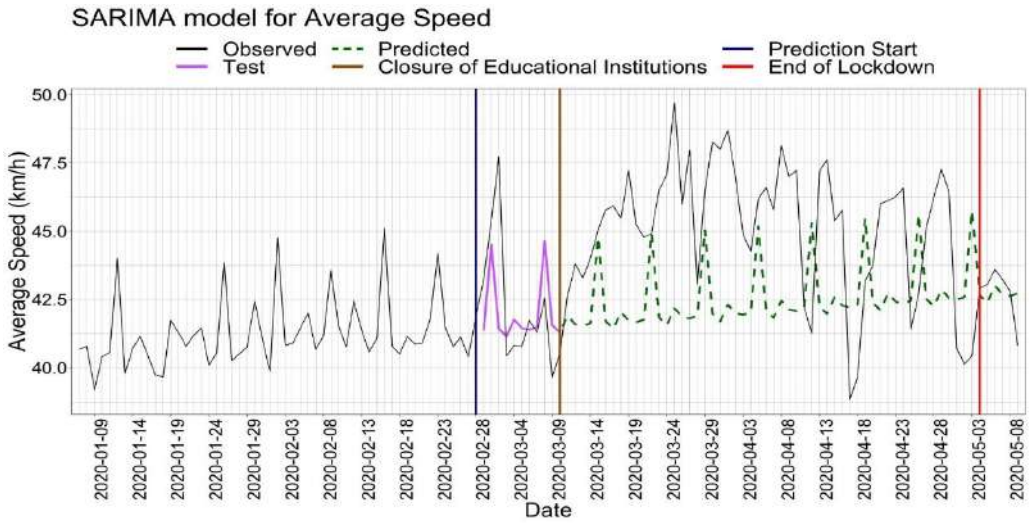
Results Summary (3/3)

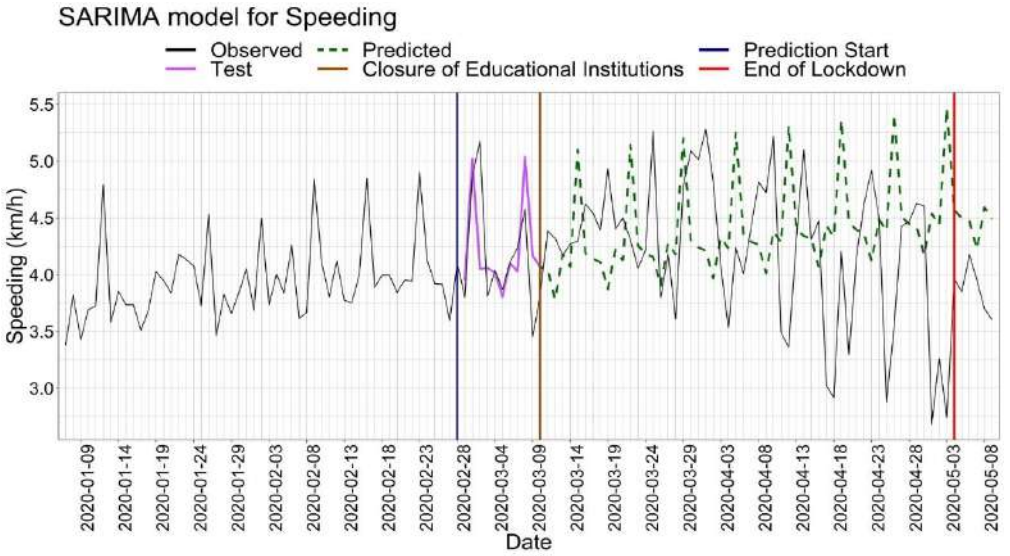
Measurement	Greece	Cyprus	KSA	Brazil
Average speeding	↑	↑	↑	↓
Speeding duration/driving duration	↑	↑	↑	↓
Average total speed	↑	↑	↑	↓
Average driving speed	↑	↑	↑	↓
Harsh accelerations /100km	↑	↓	↑	↑
Harsh braking /100km	↑	↓	↑	↑
Total duration	↓	↓	↓	↓
Driving duration	↓	↓	↓	↓
Total distance	↓	↓	↓	↓
Mobile phone usage duration/driving duration	↑	↑	↑	↑

Quantifying the impact of COVID-19 using time-series models (1/2)

Comparison between normal evolution and COVID-19 period data

- Higher **speed** values up to 7.5 km/h more than the "normal" time-series evolution
- Increased **speeding** during March, but gradual decrease until the end of lockdown



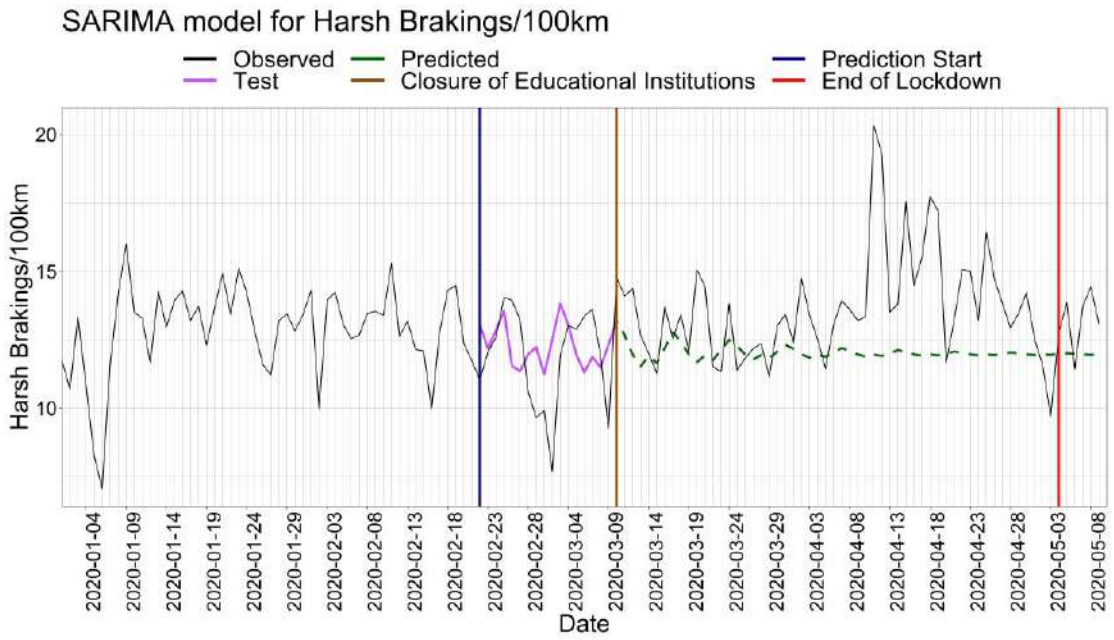


(Source: OSeven)

Quantifying the impact of COVID-19 using time-series models (2/2)

Comparison between normal evolution and COVID-19 period data

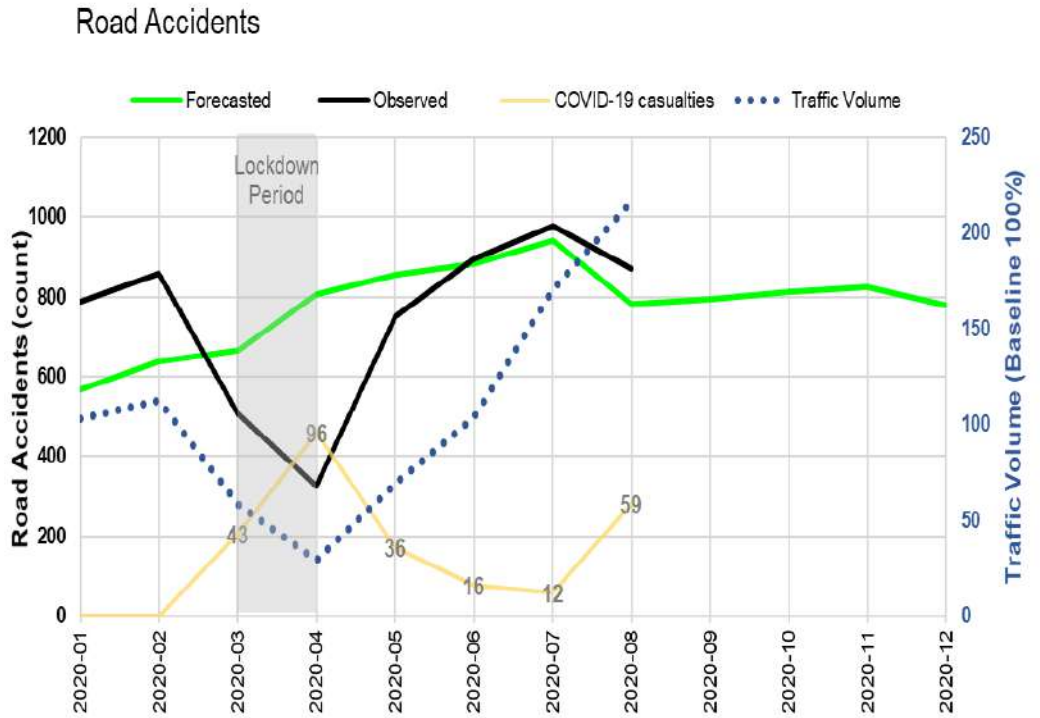
- Values for harsh brakings/100km were much higher than the forecasted values

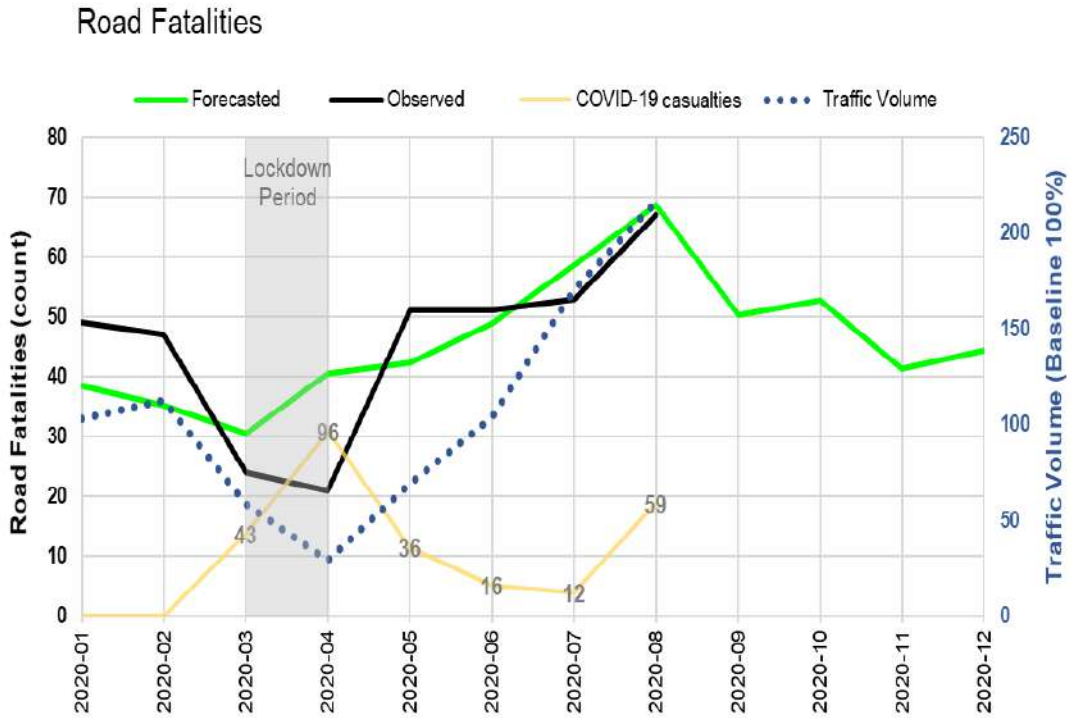


(Source: OSeven)

Road Traffic Accidents and Fatalities in Greece

- A significant reduction was found in road traffic accidents in Greece after the COVID-19 pandemic, compared to 2019.
- Accidents and fatality rates are disproportionate with regards to the decrease of traffic volume
- During the lockdown period and after a month, fatality rates were significantly increased

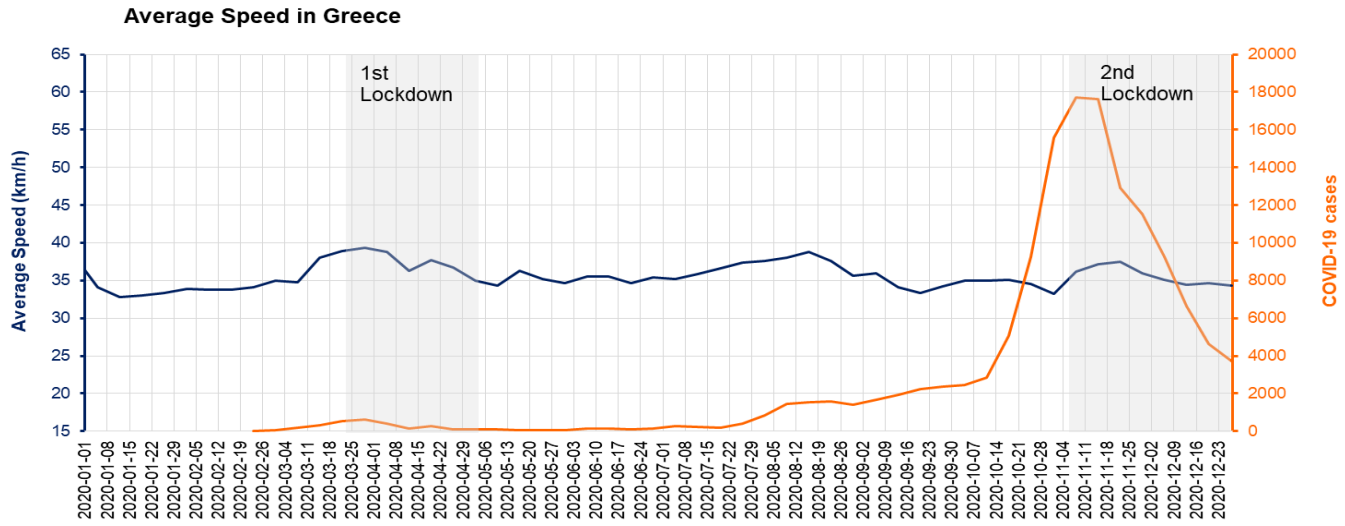


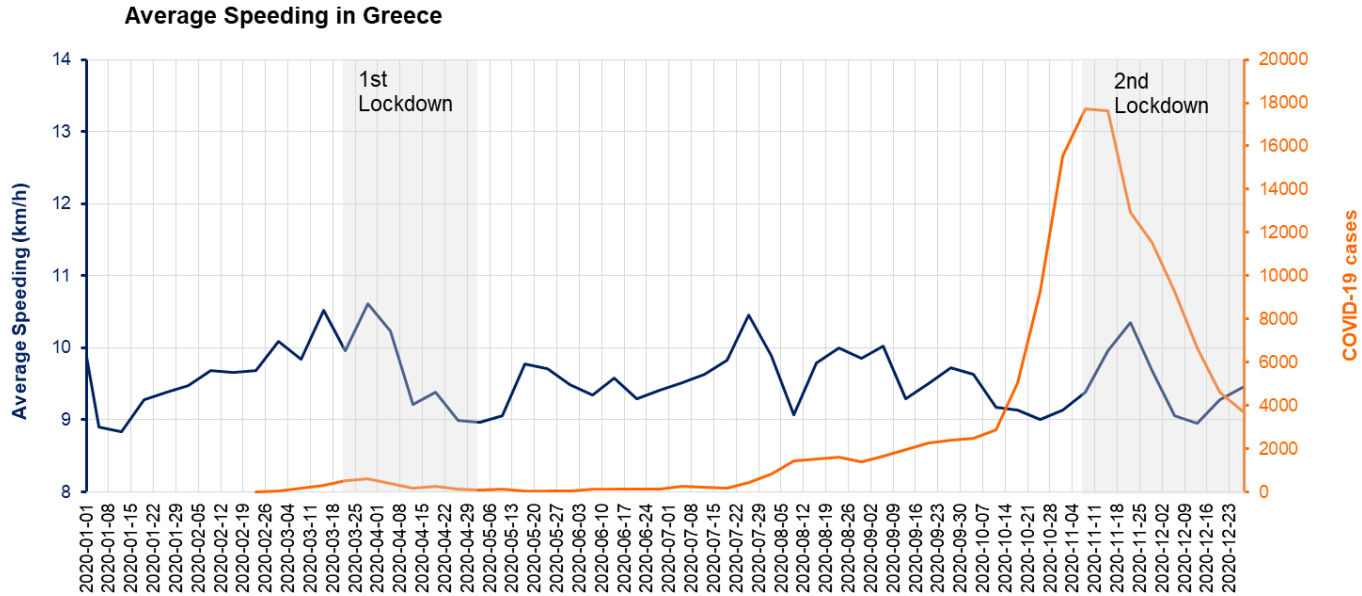


Driving behavior during the whole 2020 (1/2)

- **Speed:** During the second lockdown period, a 6% decrease in average speed was identified in Greece compared to the first one. **No change** was identified during the 2nd lockdown compared to the period between the lockdowns.

- **Speeding:** A negligible 1% reduction in average speeding was identified during the second lockdown. There was **no change** in average speeding compared to the period between the first and the second lockdown.



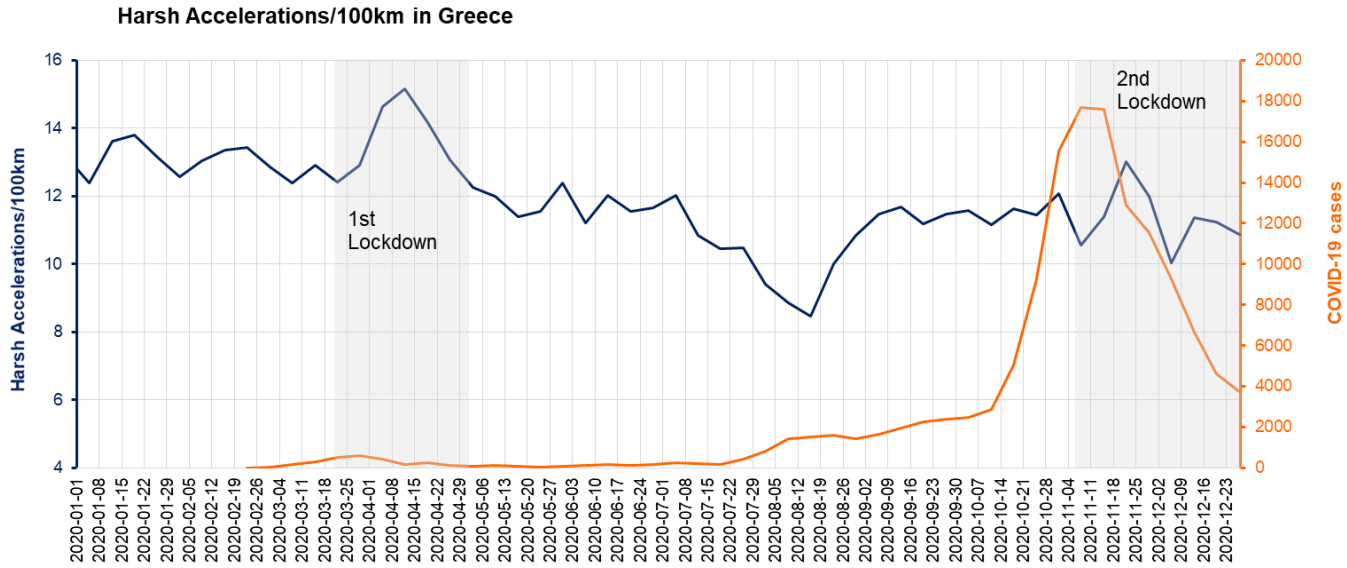


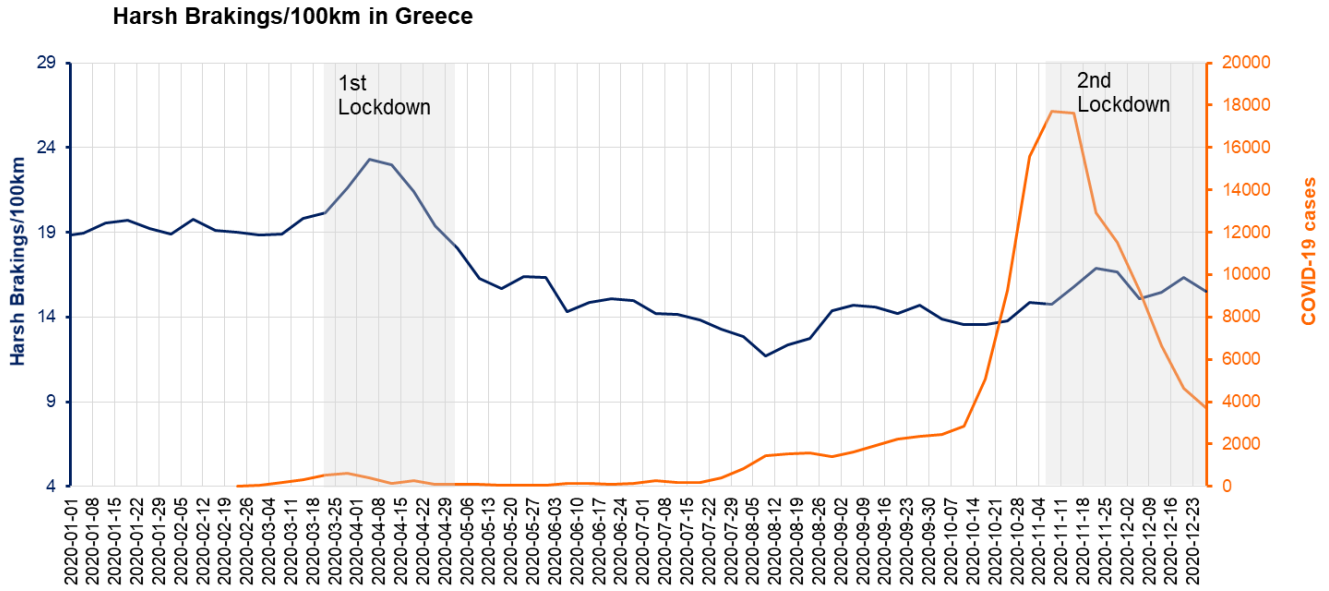
(Source: OSeven

Driving behavior during the whole 2020 (2/2)

- **Harsh accelerations:** When the restrictions on movements and business activities were gradually lifted, harsh acceleration events dropped by 18%. During the 2nd lockdown 17% fewer harsh accelerations per 100km were identified in Greece in comparison with the first one.

- **Harsh brakings:** an average 10% increase in harsh brakings per 100km was found during the second lockdown period compared to the period between the first and the second lockdown.



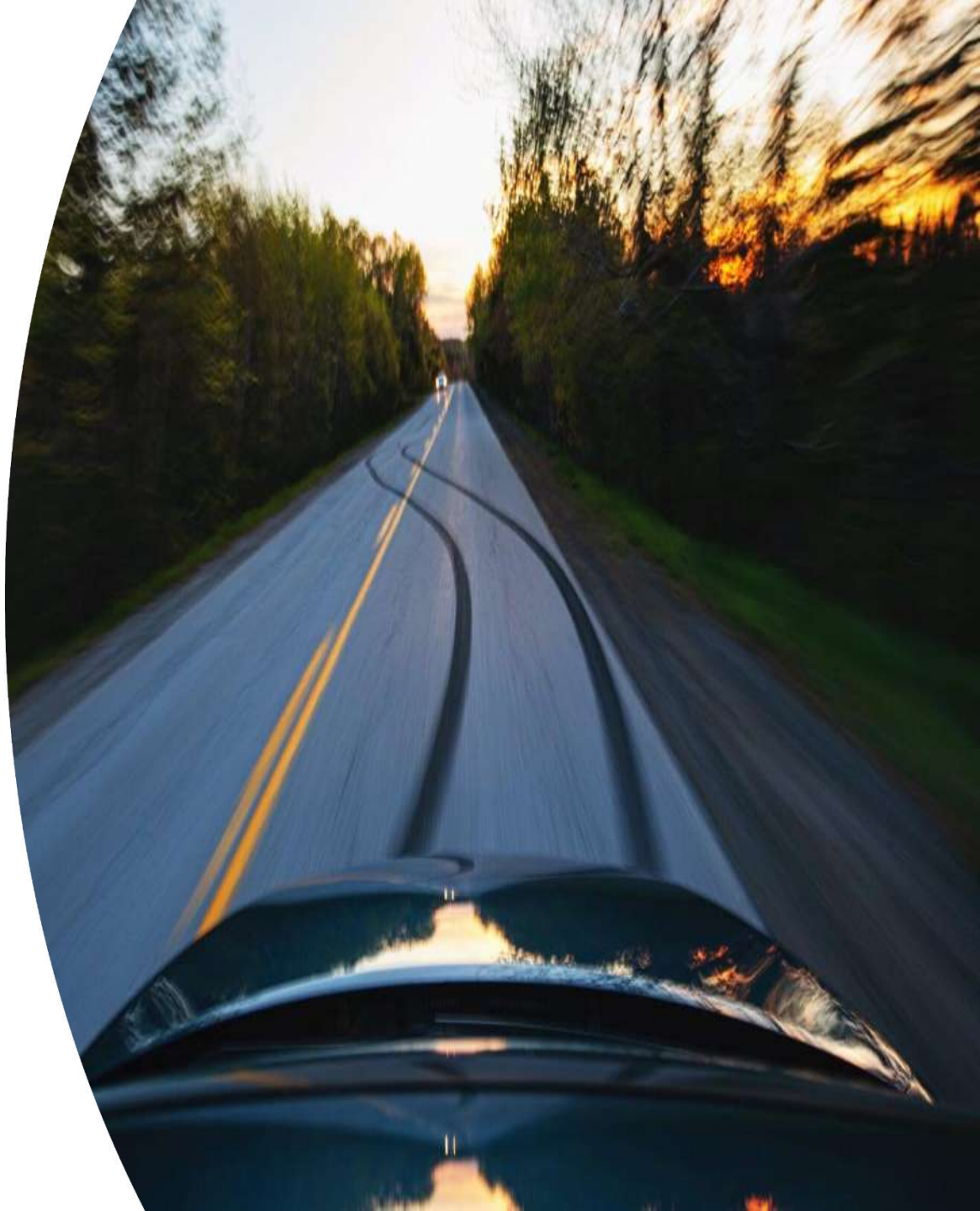


(Source: OSeven)

Conclusions (1/2)

- Average Speed, ratio of Speeding Duration per Driving Duration and Speeding were increased (except for Brazil). This indicates that with fewer vehicles on city streets, slightly more drivers are blowing the speed limit.

- Mobile phone usage duration during driving was increased during lockdown in most countries.



Conclusions (2/2)

- Higher speeds and more frequent harsh events were demonstrated in Greece compared to the normal evolution.
- The fatality rate per accident was increased compared to conditions without COVID-19
- Driving behavior was similar between the period of the 2nd lockdown and the period between containment measures, although stricter measures were imposed.

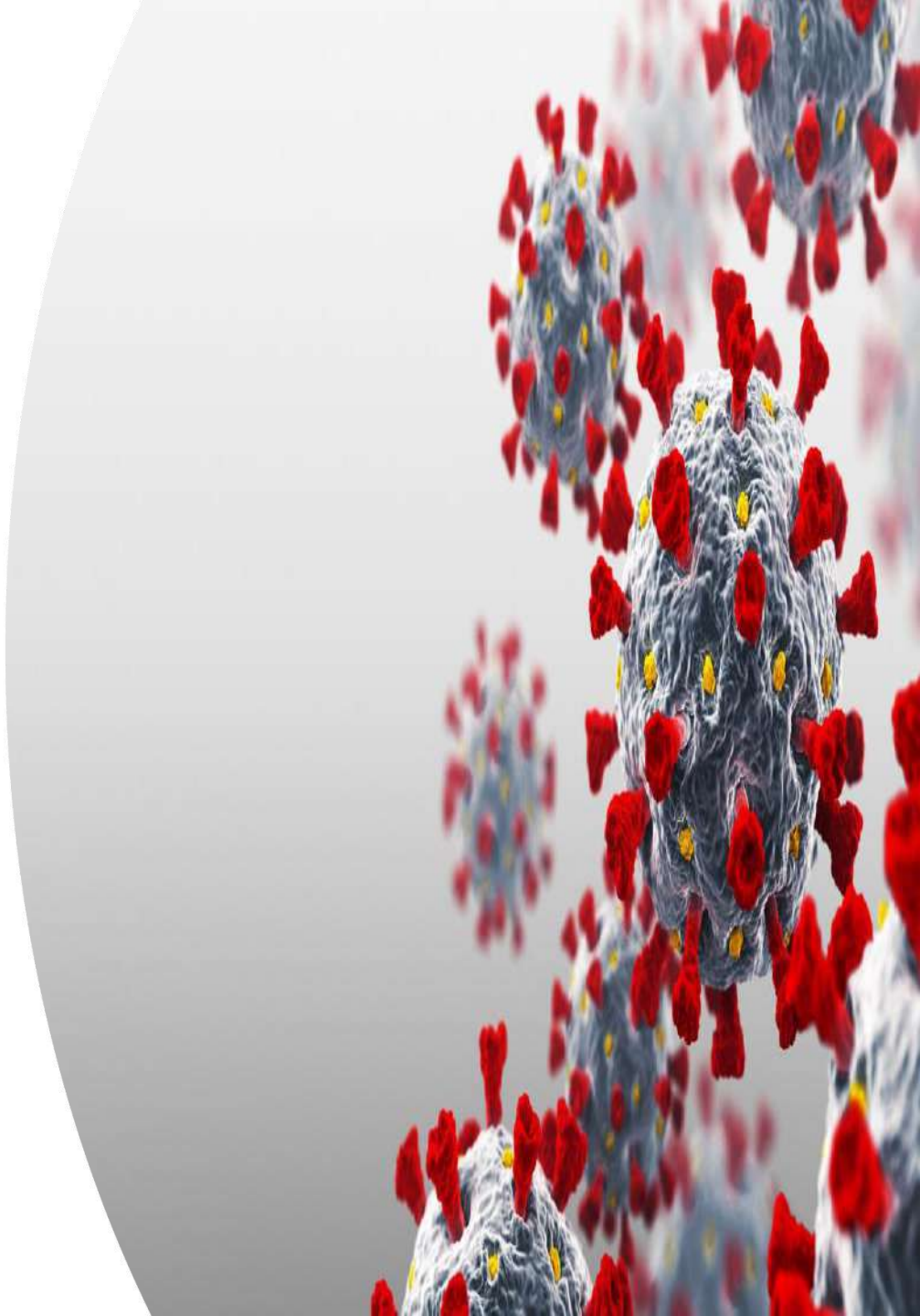
Proposals

Focus should specifically be given by policymakers to the major traffic killers (speeding being the most important) and to measures bringing results quickly. For instance, these measures could concern:

- New speed limits applying to all roads horizontally (with important benefits also for the environment):
  - 30 km/h in urban areas (50 km/h in major urban axes), similar to the practices applies in major European cities (ETSC, 2020; ITF, 2020)
  - 50 km/h at rural roads
  - 80 km/h at major interurban roads
  - 100 km/h on motorways

Open issues

- A more in-depth understanding of how the pandemic various mobility restriction phases affected driver behaviours and road safety.
- Close attention must be paid to these indicators to determine if there is a continued effect of pandemic restrictions on road safety.
- The impetus that COVID-19 is placing on temporary or permanent infrastructure to facilitate pedestrian and cyclist traffic (to meet physical distancing recommendations), is yet another positive result of this crisis.
- Great open challenges:
  - Are the new social responsibility patterns during the Covid-19 pandemic, will inspire new social responsibility patterns for the road accidents pandemic?
  - Are Authorities and Citizens ready for a new and safer behavior for safer roads and for all?



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