

Measuring the impact of the lockdown on Irish traffic



There has been a 70% decrease in traffic in Ireland since public health measures were introduced by the Government to curb the spread of Covid-19. This briefing note (April 2020) explores the impact of the lockdown.

Overview

After almost 7 weeks of Government restrictions first introduced in March 2020, with the Irish population limited to leaving their houses only for reasons deemed essential, we are still waiting to get out the other side of the Covid-19 pandemic. While it is clear that there has been a large drop in movement around the country, the level of activity is difficult to quantify. Based on our analysis of road traffic data, there has been a 70% drop in vehicle volumes since this time last year. However, there are signals that vehicle volumes are higher now (at time of writing 29 April 2020) than they were a fortnight ago, when legislation was first introduced to help Gardaí enforce the restrictions.

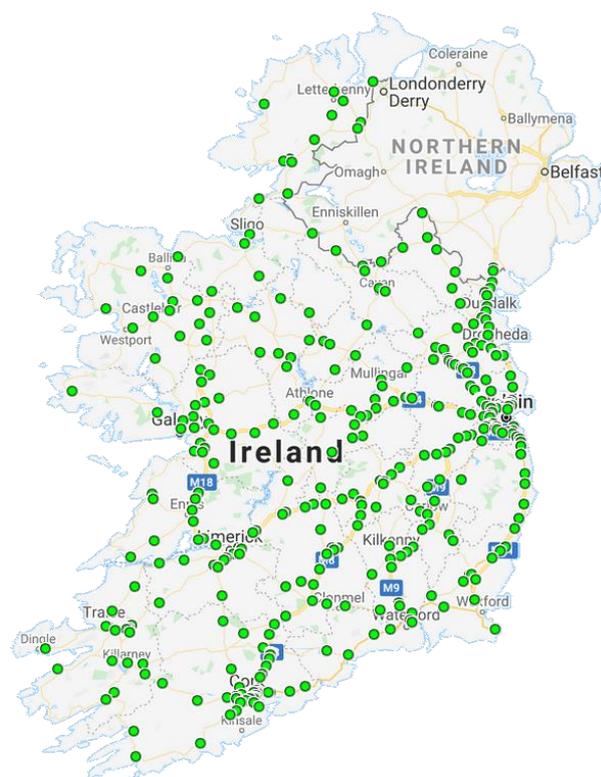
Our analysis is based on traffic counters. Traffic counters in Ireland are loops buried under the road surface, somewhat similar to an upside-down metal detector that you can drive over. They instantaneously measure the number of vehicles passing over them. This data is constantly collected by the National Roads Authority (NRA) from almost 400 different sites spanning across the Republic of Ireland. The adjacent screenshot, taken from the NRA's website, shows the location of the traffic counters around Ireland.

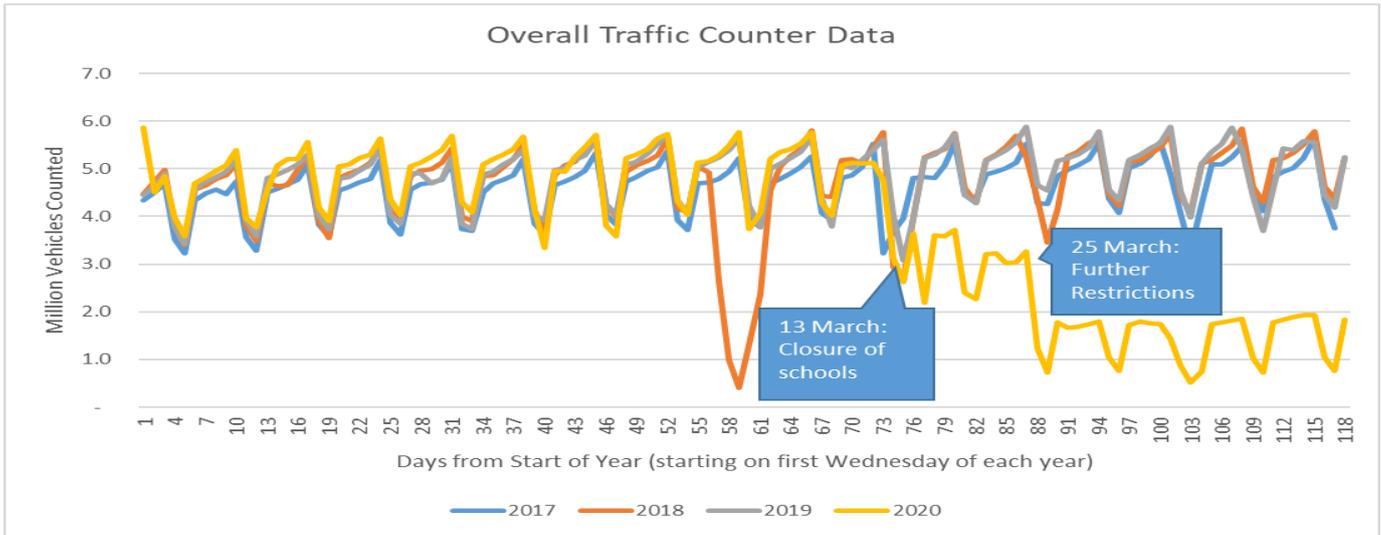
Traffic counter data from 2017 to 2020 was analysed to get insights into road usage (<https://www.nratrafficdata.ie/>).

Some data cleansing was required. Traffic counters, like anything else, do have service issues from time to time. In addition, changes in road networks, such as the opening of new roads, can make the traffic counter data inconsistent over time. Any traffic counters with significant data outages over the last 3 years were excluded.

Traffic by Day

The number of vehicles recorded by the selected counters over time was reviewed against previous years. Traffic is heavily dependent on the weekday, so the previous years' data was adjusted so that a comparison of all years, starting on the first Wednesday of January, could be made. The graph below shows that comparison by year and days since the first Wednesday of the year.





The key takeaways from the graph are:

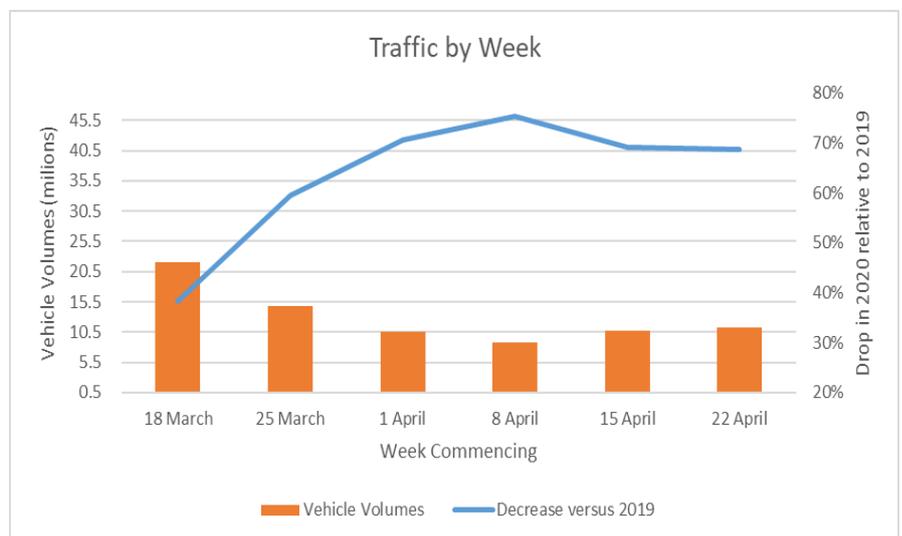
- Traffic volumes in January and February 2020 were approximately 3% higher than the same period in 2019.
- Traffic volumes dropped by circa 35% relative to 2019 after the schools closed on 13 March 2020.
- Traffic volumes dropped by circa 70% relative to 2019 after the further restrictions were announced from 25 March 2020.

There is also a noticeable dip in 2018 from 28 February to 4 March. This was caused by Storm Emma.

How has traffic changed since the restrictions?

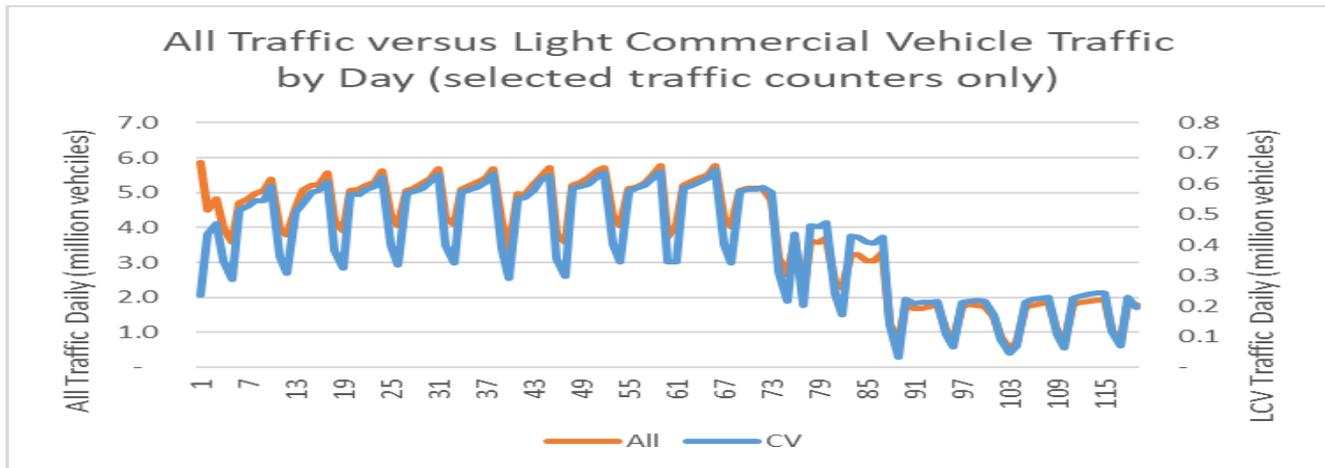
The overall drop between 2019 and 2020 road traffic volumes from 18 March onwards was circa 64%, peaking in the week commencing 8 April and with a 70% drop in the most recent week (week commencing 22 April) relative to 2019.

Road usage dropped suddenly when schools were closed, but usage continued to drop up to and including the week commencing 8 April. New Garda enforcement powers came into place on 8 April, which is likely to have contributed to the drop in that week. This week also included Easter Sunday, and the bank holiday on Monday 13 April. In 2019, the week containing the Easter bank holidays weekend had 2.5% less vehicles recorded than the surrounding weeks.



Since 8th April there has been a gradual increase in vehicle volumes on the roads. While traffic is still down circa 70% from the 2019 equivalent, traffic volumes are up 27% between the week commencing 8 April and the week commencing 22 April. Some increase since then would be expected due to Easter.

Change by Road Type and Vehicle Type



The traffic counters are predominantly placed on motorways and on other main roads. Motorways have seen a decrease of 67%, while national and regional roads included in the traffic counter statistics have seen decreases of 61% and 57% respectively since 18 March. This may be consistent with the 2km restrictions, as more journeys are likely to be made on local roads. Shopping is more likely to be at local shops.

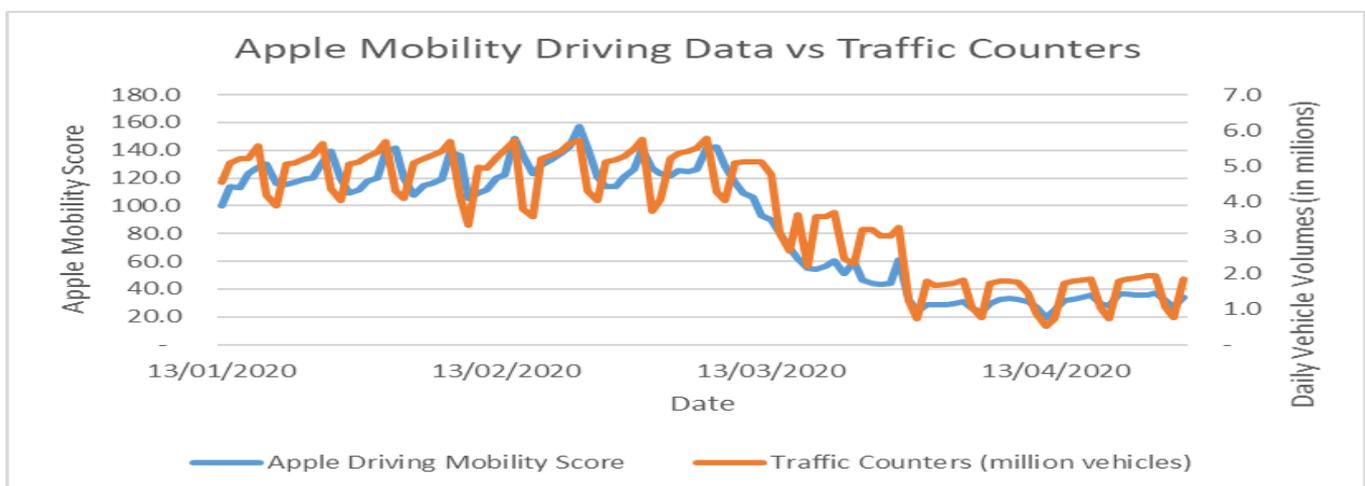
The traffic counters do not show much difference between Dublin and the rest of the country. Volumes in Dublin are down 63%, while volumes in the rest of the country are down 64% since 18 March.

The traffic counters also allow us to distinguish between different kinds of vehicles. The traffic counters measure the amount of metal passing above them and the number of axles. That allows them to estimate the type of vehicle passing. The graph above shows the traffic counter data for all vehicles ("All") versus light commercial vehicles ("CV").

The slowdown has had a smaller impact on light commercial vehicles. This is likely partly due to the continued delivery services that are vital to essential services. Average vehicle numbers in April 2020 are 65% lower than January and February 2020 for light commercial vehicles, while they are 70% lower for all vehicles.

How accurate is this data?

Often several traffic counters are placed on the same road, e.g. a car travelling the length of the M50 could be counted 15 times. While traffic counters (owned and operated by the NRA) are spread across Ireland, they tend to be focussed at motorways and main roads and may not necessarily reflect the overall traffic data across Ireland. It is useful to compare the results from the traffic counter analysis against other data sources.



Apple has also released aggregated mobility data indices from 13 January onwards (<https://www.apple.com/covid19/mobility>). These mobility indices are segmented into driving, walking and transit journeys and are derived from requests for directions. When the Apple driving data is overlaid against the traffic counter data, it shows that the figures are reasonably consistent. This is illustrated in the graph above.

In aggregate, Apple mobility data has seen a bigger drop in requests for directions than that recorded by the traffic counters. That drop may be due to the lack of a need for directions when making local trips or indeed the socio-economic differences between Apple users and vehicle drivers in general. It is likely that there are differences as well due to the emphasis of driving counters on major roads.

Exposure measures and impact on motor accidents

It is difficult to get real time data for accidents and/or insurance claims for accidents. Total driving miles of the population gives a full exposure measure when trying to estimate accident statistics. We use other exposure measures (such as petrol consumption, or number of registered cars on the road) as proxies to total driving miles. Typically this data is not available in real time to allow further analysis.

However the volumes of vehicles on the roads measured by traffic counters are down by 70%. Most motor accidents involve more than one vehicle, so the number of road accidents may have decreased by even more than this.

Conclusions

Traffic volumes appear to have dropped by 64% in the period from 18 March to end April 2020, but the latest week (to end April) appears to have a decrease of 70% relative to a similar time frame in 2019. The road traffic counters provided by the National Roads Authority give a daily view on traffic. As restrictions change over time, these can be monitored to gauge how quickly vehicles return to our roads.

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