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Traffic speed trends on Queensland roads, 2021-2022

A report for the Department of Transport and Main Roads (Qld)

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Disclaimer

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Road traffic speed and speeding trends since 2020 have been affected by lockdowns and movement restrictions, which have impacted differently in urban and regional areas. In addition, there has been enduring changes in travel behaviour due to work-from-home arrangements, as well as flooding and significant road works across the road network. Understanding the determinants of speed and speeding compliance is important for designing road safety initiatives to continue to improve road safety outcomes for the community.

This years' *Traffic Speed Trends Report* prepared for the Department of Transport and Main Roads (TMR) combines analyses of traffic performance in Queensland across two years between 2021 and 2022. This report highlights changes in patterns of traffic speed and compliance over the last couple of years when Queensland was subject to a series of snap lockdowns before gradually winding back various restrictions that affected road usage.

The analysis provides data-driven evidence of the extent to which traffic trends have gone back to pre-pandemic levels, which will help inform the design and implementation of future road safety initiatives.

Applying the methodology used in previous reports, GPS probe data provided by HERE Technologies is used to analyse trends in traffic performance in 2021 and 2022, across urban and regional roads in Queensland. Box E.1 provides a summary of the four key metrics examined in this analysis of traffic performance.

Box E.1: Speed metrics for the Queensland road network

Average speed – average hourly speed across each road segment within a geographic area and for arterial and local roads.

Percentage of speed limit (POSL) – average speed divided by the posted speed limit, which allows speed performance comparisons to be made between areas with different speed zone configurations. The higher the POSL, the closer to the speed limit drivers are travelling on a road segment.

Speed compliance – measure of the extent of compliance with posted speed limits, which is calculated as the proportion of roads by length in an area where there were no incidences of speeding.

Margin in excess of speed limit – the severity of speeding in an area or for arterial and local roads, which provides insights on how the severity of speeding has been changing.

State-wide average speed decreased significantly in 2021 and slightly further in 2022

After two consecutive years of decreases in 2021 and 2022, average speed in Queensland reached the lowest level since 2016 (Figure E.1). Average speed in 2022 was 6.1km/h lower than average speed in 2016, which is driven by:

- decreases in average speed across high-speed zones; and
- an increase in the number of observations in low-speed zones relative to that in high-speed zones.

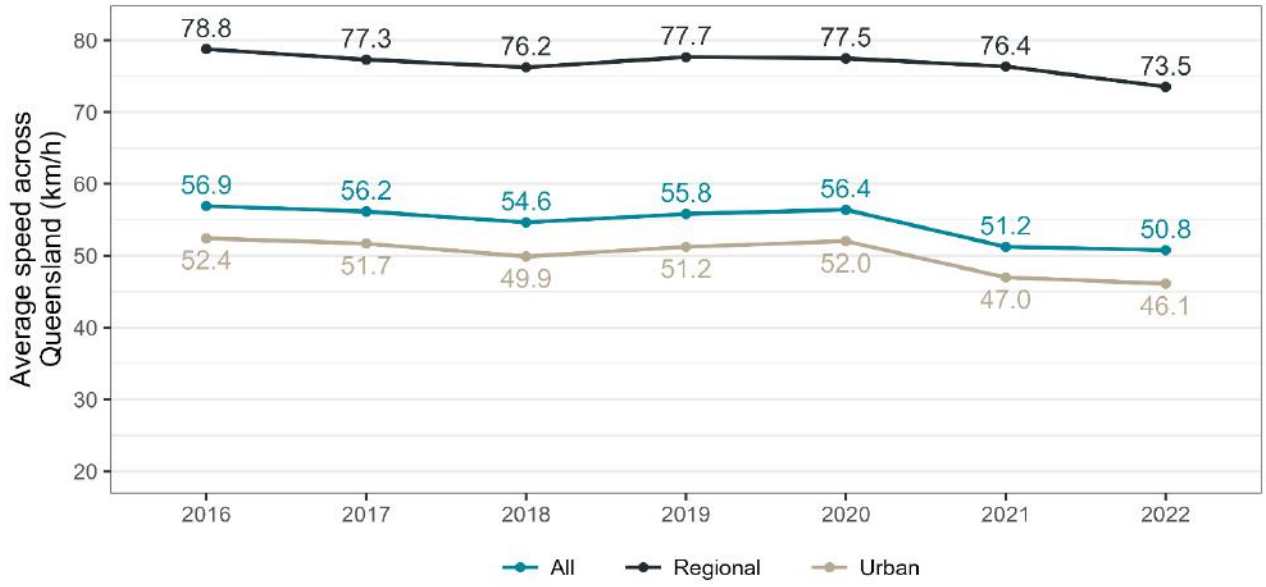
These trends are particularly evident in urban areas where average speed was lower, and decreased at a faster rate, than the state-wide average speed. Average speed in regional areas remained higher than that in urban areas across all key speed zones, which reflects the extent of congestion in urban areas.

There is a key distinction in the trend of POSL (or average speed) between urban and regional areas. The decreases in the overall POSL in urban and regional areas were driven by different forces. Specifically:

- the decrease in POSL in urban areas was due to decreases on arterial roads; whereas
- the decrease in POSL in regional areas was due to decreases on local roads.

Plausible explanations for these trends include major roadworks on arterial roads in urban areas and increased flows of visitors to regional Queensland.

Figure E.1: Average speeds across Queensland, 2016 to 2022



Compliance with speed limits improved in 2021 and 2022 compared to 2020

Overall, speed limit compliance improved in Queensland in 2021 before worsening in 2022 (Figure E.2). However, compliance in 2022 remained above the level in 2020.

The increase in compliance in 2021 was particularly driven by significant improvements in 40km/h and 80km/h zones. In comparison, the worsening in compliance in 2022 was driven by decreases in all key speed zones.

Speeding was categorised into ranges based on the margin by which the speed limit was exceeded:

- up to ten per cent over the speed limit (low-level speeding);
- between ten per cent and 20 per cent over the speed limit (moderate speeding); and
- more than 20 per cent over the speed limit (excessive speeding).

Overall, the combined proportion of compliance and low-level speeding decreased in the last two years. Low-level speeding decreased in 2021 when compliance increased; and low-level speeding increased in 2022 when compliance decreased. The increase in low-level speeding in 2022 was driven by significant increases in the highest speed zones of 100km/h and 110km/h.

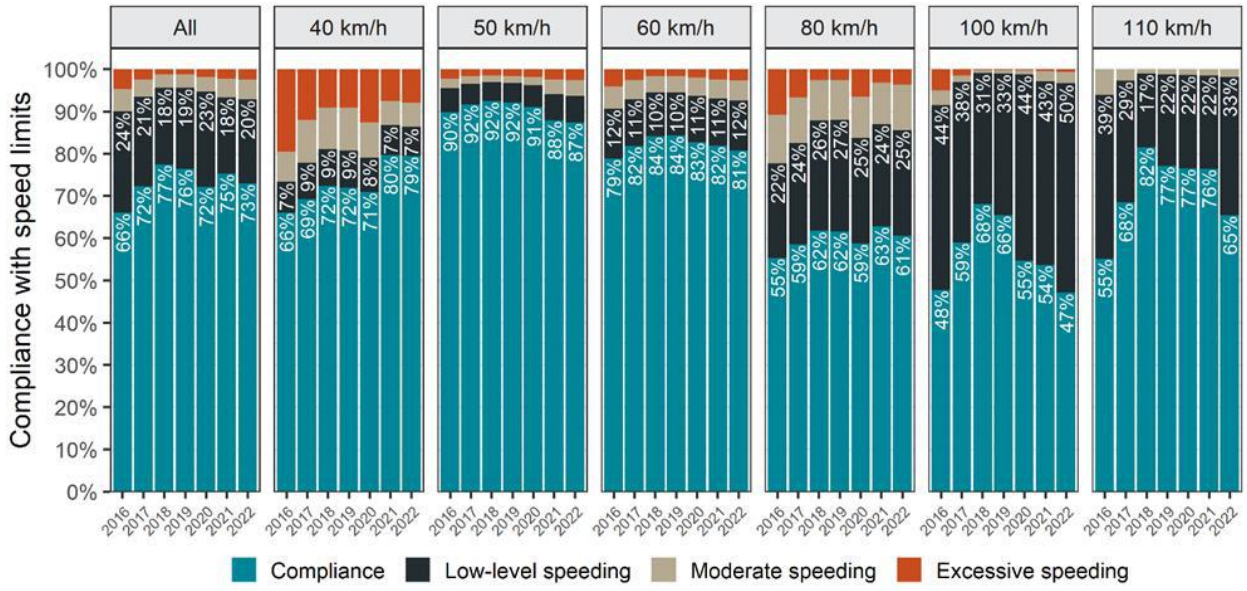
The slight increases in moderate and excessive speeding might be concerning from a road safety perspective, which warrants continued monitoring in future speed surveys. Despite the overall increases in excessive speeding, there were significant reductions in excessive speeding on 40km/h and 80km/h roads in 2021. It is worth noting that these were the zones with the worst rates of excessive speeding in 2020.

These state-wide trends are representative of those in urban areas due to higher traffic volume in these areas. The key distinctions in the trends of regional areas, compared to state-wide (and urban) trends, includes that:

- the increase in compliance in 2021 in regional areas did not continue into 2022 – rather, the compliance level fell back to the level observed in 2020;
- there was a significant improvement in compliance in 110km/h zones in 2021 that was not observed in the state-wide (or urban) trends – however, the increased compliance did not continue into 2022.

In general, excessive speeding was more frequent in regional areas, compared to urban areas. Compliance in regional areas in 2022 reached its lowest level since 2016, whereas compliance in urban areas remained well above its lowest recorded level.

Figure E.2: Compliance with speed limits in Queensland, by speed zones, 2016 to 2022



Average speed when speeding increased slightly across all key speed zones in 2021 and 2022

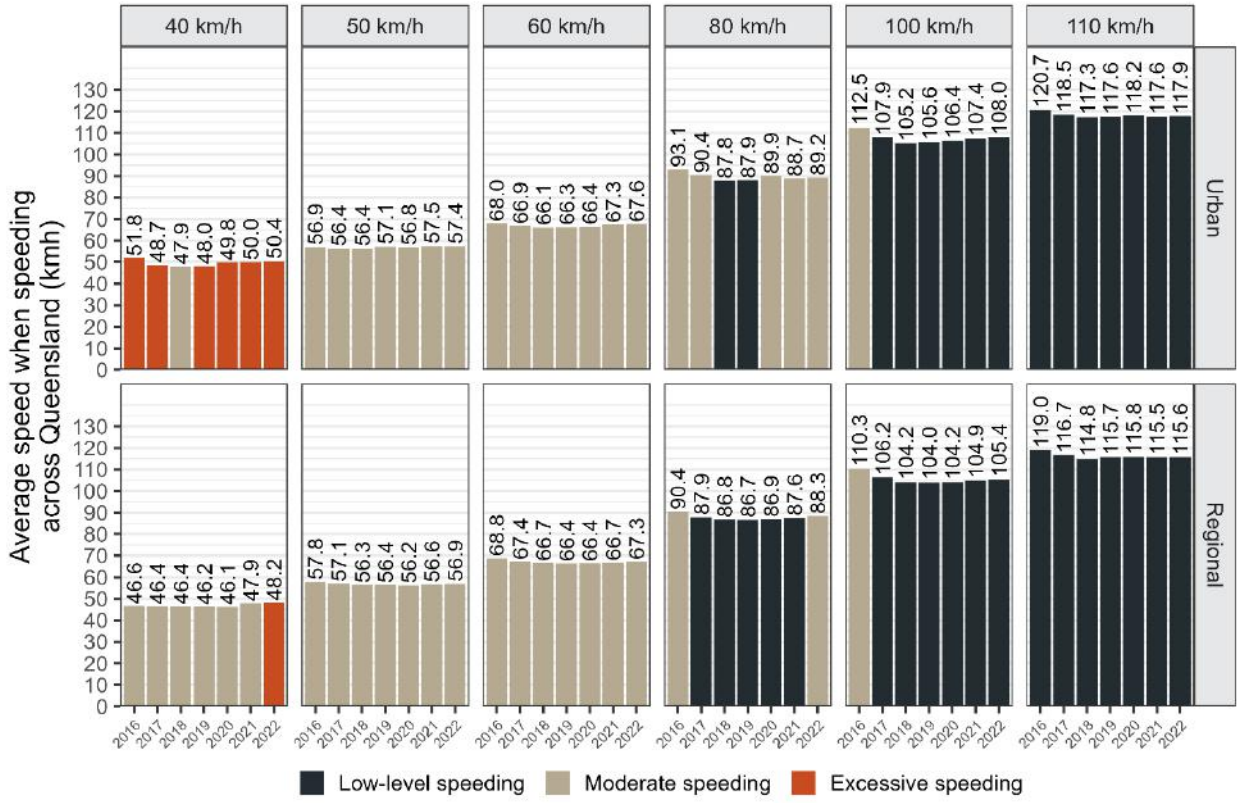
The increase in the frequency of moderate and excessive speeding is accompanied by an increase in average speed when speeding across most key speed zones (except for 80km/h and 110km/h zones). This occurred in 40km/h zones as well, even though the frequency[1] of excessive speeding decreased significantly on these roads (Figure E.3). This implies that while there were less incidents of speeding on 40km/h roads, drivers who sped travelled even faster. Proportional to the speed limit, 40km/h zones remain the worst roads in terms of speed when speeding.

[1] Frequency of speeding is defined as the proportion of hours in a year in which average speed observed across vehicles in the sample data on a road was higher than speed limit. It should be noted that the HERE speed probe data do not provide observed speeds at an individual level.

These state-wide trends are representative of those in urban areas. In regional areas, average speed when speeding increased in all key speed zones. It should be noted that this occurred in the context of higher inter-state traffic in regional Queensland.

However, the extent of speeding in urban areas remained higher than the corresponding regional values in all key zones and across both years, as was the case in 2020. This suggests that the most severe incidents of speeding tend to have occurred in the urban network.

Figure E.3: Average speeds when speeding in Queensland, by speed zones, urban and regional, 2016 to 2022



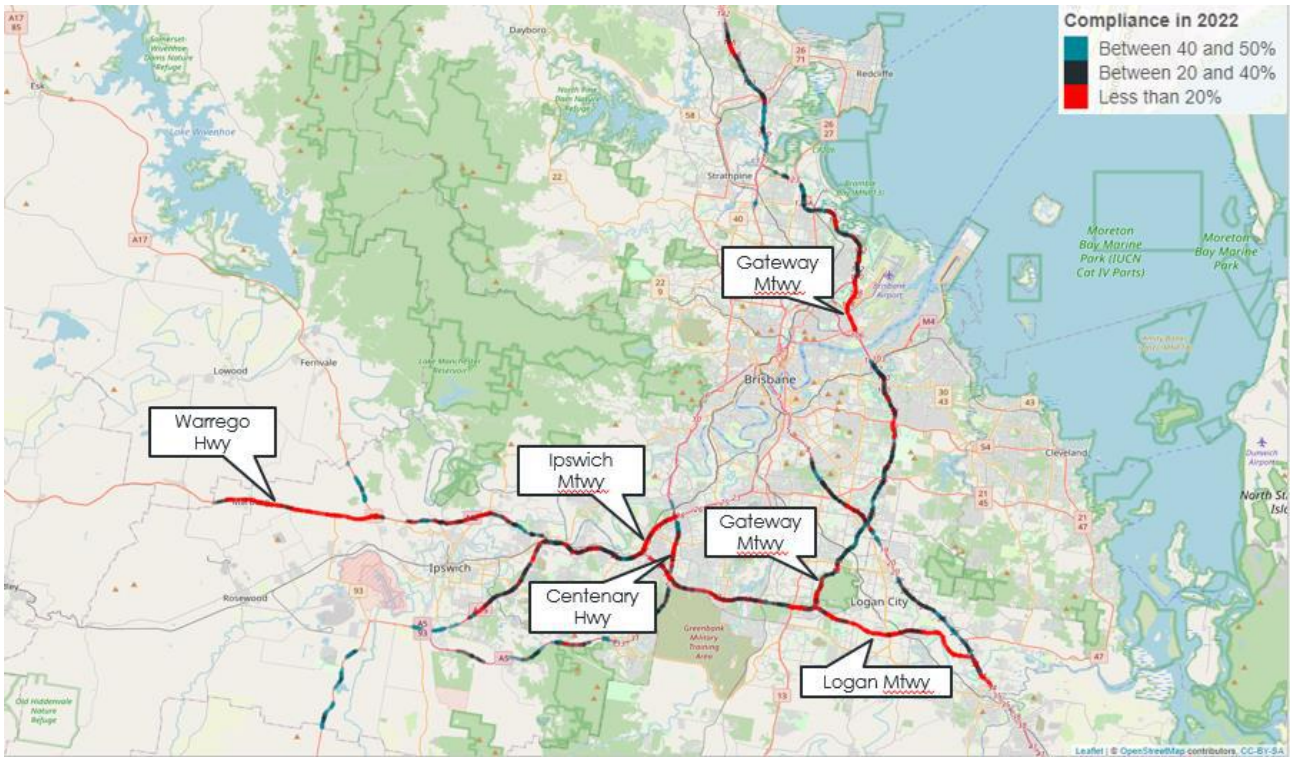
Compliance across 100km/h zones in Greater Brisbane remained below 50 per cent in 2022

Consistent with the state-wide trend, average speed in Greater Brisbane decreased significantly in 2021 and slightly further in 2022. However, average speed in Greater Brisbane decreased at a faster rate than the state-wide average.

Compliance in Greater Brisbane improved in 2021 before worsening slightly in 2022. However, compliance in Greater Brisbane exceeded the state-wide level for the first time since 2016 (by 1.2 percentage points). Despite the decreases in compliance across all speed zones in 2022, compliance levels remained above those in 2016, except for the 100km/h zones. At 42 per cent in 2022, compliance in 100km/h zones was the only level below 50 per cent across all speed zones.

In addition, POSL in most areas along the Logan Motorway, Gateway Motorway, Ipswich Motorway and Centenary Highway in Greater Brisbane decreased in the last two years. It follows that compliance along parts of these routes increased, which reverses the decrease in compliance in 2020. However, compliance along these segments remained below 50 per cent in 2022 (Figure E.4).

Figure E.4: Compliance less than 50 per cent in 100km/h zones along major motorways and highways in Greater Brisbane, 2022



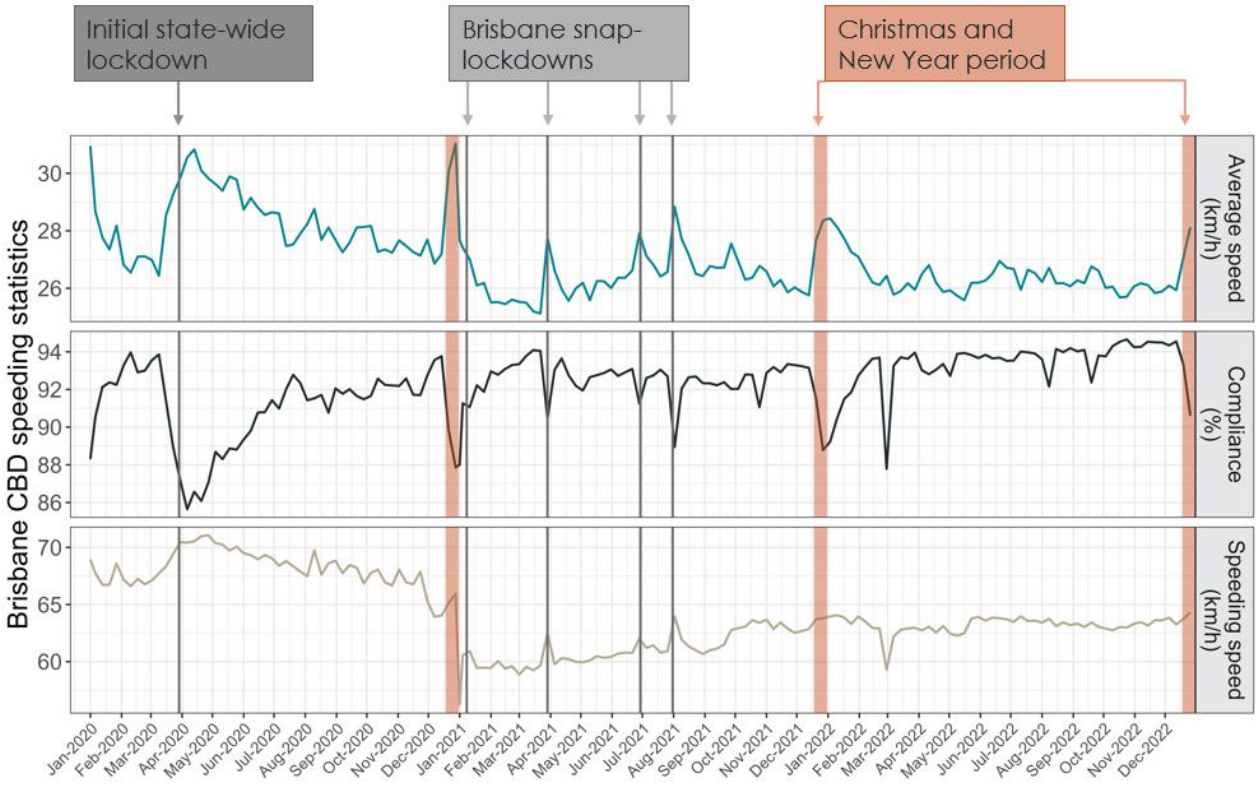
Working-from-home arrangements remained adopted by office workers in 2022

A supplementary analysis of weekly traffic performance in the Brisbane CBD between 2020 and 2022 allows inferences to be made about the trend of working-from-home over this period. The analysis suggests that working-from-home arrangements were implemented promptly in anticipation of official lockdown orders in April 2020 (Figure E.5). The trend of working-from-home reached its peak during the official state-wide lockdown in 2020 before gradually subsiding following the easing of restriction.

This is followed by the short-term increases in average speed and speed when speeding (coupled with sharp decreases in compliance) throughout 2021 as a result of a prompt response to lockdown orders, even though the lockdown period was announced to be short.

Going into 2022, working-from-home remained an option for office workers to be taken for a number of days per week. Average speed in 2022 remained higher than the pre-pandemic level across all speed zones in the CBD and stabilised in the absence of prolonged lockdown or snap movement restrictions.

Figure E.5: Average speed, compliance and average speed when speeding in Brisbane CBD, 2020 to 2022



Drivers are found to reduce speed around roadworks and flash flooding

Another supplementary analysis of the impact of roadworks and flooding on travel speed across Queensland has led to insights that:

- when the duration of roadworks increases by one hour, travel speed is expected to decrease by 0.3 per cent; and
- when the duration of flash flooding increases by one hour, travel speed is expected to decrease by 0.4 per cent.

These estimates are statistically significant at the 0.1 per cent level (ie, $\alpha = 0.1$ per cent). This means that there is only a 0.1 per cent chance that these observed estimates from the data are due to chance rather than capturing real reductions in travel speed. The analysis controls for key characteristics of the road that might also affect observed speeds such as the speed limit, road type (local or arterial) and location (urban or regional), as well as time of the observed speed (weekday or weekend, and whether it is a public holiday). A gamma regression model was selected to account for the non-negativity of observed daily speed.

These results could be used to inform the prioritisation of investments or programs that seek to reduce the duration of road works or the impact of floods, by quantifying the economic benefits to road users of avoiding the associated speed reductions.

1. Introduction

Understanding trends in road traffic speed and speeding is critical to managing road safety in Queensland. Since 2016, the Department of Transport and Main Roads (TMR) has used GPS speed probe data provided on licence by HERE Technologies (HERE).[2]

Since the first COVID-19 case was recorded in Queensland in January 2020, traffic speed trends in Queensland have been affected by lockdowns and movement restrictions, followed by intermittent periods of no restrictions. Traffic speed trends were affected by a state-wide lockdown in 2020. However, in 2021 and 2022, most movement restrictions were targeted to urban areas that were locally affected by short periods of COVID-19 outbreaks.

This years' *Traffic Speed Trends Report* combines analysis of traffic performance in Queensland across two years between 2021 and 2022. This provides an opportunity to contrast how travel speeds and speed compliance differed in 2021 and 2022, and to construct a holistic narrative of traffic performance as Queenslanders came out of the heavily disrupted year of 2020, went through a series of snap lockdowns in 2021, and gradually trended back to pre-pandemic patterns in 2022.

This *Traffic Speed Trends Report 2021-2022* is the fourth[3] speed trends report compiled for TMR by HoustonKemp. It follows the same methodology used in previous reports that shed light on traffic metrics over various regions by examining hourly speed observations across roads within each of these regions, weighted by the observed traffic volume on each road.

Box 1 provides a brief description of the traffic metrics reported on, as well as the geographic boundaries[4] for which these traffic metrics were examined.

In addition to the standard annual reporting of traffic metrics across Queensland, supplementary analyses of several matters of particular interest to TMR were conducted, including:

- an analysis of traffic trends specifically to Brisbane CBD between 2020 and 2022, to provide data-driven evidence of working-from-home arrangements over this period; and
- an estimate of the extent to which road users slowed down in response to roadworks and flooding.

HERE speed probe data was augmented with a roadworks and flooding dataset provided by TMR, to conduct the latter supplementary analysis. The wealth of information recorded in the roadworks and flooding dataset is acknowledged, and estimating how road users behave around roadworks and in the event of flooding is only one of the many case studies that can be undertaken with this dataset. An example of other use cases includes predictive analysis of travel speed in a near real-time manner, taking into account various road conditions and weather events.

[2] Detailed description of HERE data is provided in appendix A1.1.

[3] See HoustonKemp, *Traffic speed trends on Queensland roads* for analyses of speed trends in earlier years. Available at https://www.tmr.qld.gov.au/safety/road-safety/road-safety-strategy-and-action-plans/road-safety-research-reports#traffic, accessed 22 May 2023.

[4] Despite HERE data having hundreds of millions of observations across the road network, there are areas, particularly in regional Queensland, where coverage might not be adequate to provide a complete representation of the traffic speeds or trends on the roads. Information on network coverage and data adequacy has been included as part of the reporting of the road speed results at a local government area (LGA) level.

Box 1.1: Speed metrics and definitions

Speed metrics for urban and regional areas across Queensland are presented, based on the Significant Urban Area definitions provided by the Australian Bureau of Statistics.[5]

In addition, results for arterial and local roads, based on road classes provided by HERE, are provided. Arterial roads are typically designed for high volume, high speed travel through and between major metropolitan areas, cities and towns, whereas local roads tend to be designed for a lower volume of traffic, travelling inside and between neighbourhoods.[6] Specifically, for this report, arterial roads are defined as HERE road functional classes 1, 2 and 3 (where the speed limit exceeds 50km/h)..[7]

The key speed metrics that are reported on are:

Average speed – average hourly speed across each road segment within the area and road classification. Differences in average speed between areas can be a result of different speed zone configurations and so this metric is best used to understand changes in speed performance for a given area or road over time.

Percentage of Speed Limit (POSL) is calculated by dividing the observed average speed for each road segment within the area and road classification by the posted speed limit. This measure normalises between areas for differences in speed zones and so is best used to measure differences in speed performance between areas and roads. The higher the POSL, the closer to the speed limit drivers are travelling on a road segment.

Speed compliance measures the proportion of roads by length in an area where there were no incidences of speeding. Changes in the percentage of speed compliance provides an indication of changes in the incidence of speeding over time.

Margin in excess of speed limit measures the severity of speeding in an area or road classification. Changes in the speeding margin provides insights on how the severity of speeding has been changing.

This years' *Traffic Speed Trends Report* includes the 40km/h speed zone as one of the key speed zones in all aspects of the analysis. This provides a more holistic understanding of traffic performance by speed zones, considering the findings in one of the supplementary analyses in the *Traffic Speed Trends Report 2020* that there were distinct traffic patterns in 40km/h zones that warrant a separate glance from other key speed zones.

There is one important caveat in the comparison of traffic trends, particularly between 2020 and 2022, in this report. This caveat is driven by findings that between 2020 and 2021 there was an increase in the number of vehicle observations in lower speed zones relative to observations in faster speed zones. It should be noted that this is a characteristic of the HERE speed probe data.

In particular, between 2020 and 2021, there was a 63 per cent decrease in the number of HERE data vehicle observations in Queensland from around 21 billion to just under 8 billion observations. This decrease did not affect each key speed zone uniformly (ie, there were significant shifts in the proportion of observations in

[5] See ABS, *Australian statistical geography standard (ASGS) volume 4*, cat. no. 1270.0.55.004, available at http://www.abs.gov.au/ausstats/abs@.nsf/mf/1270.0.55.004. See appendix A1.2 for a complete description of urban and regional areas.

[6] See appendix A1.2 for a more detailed definition of arterial and local roads.

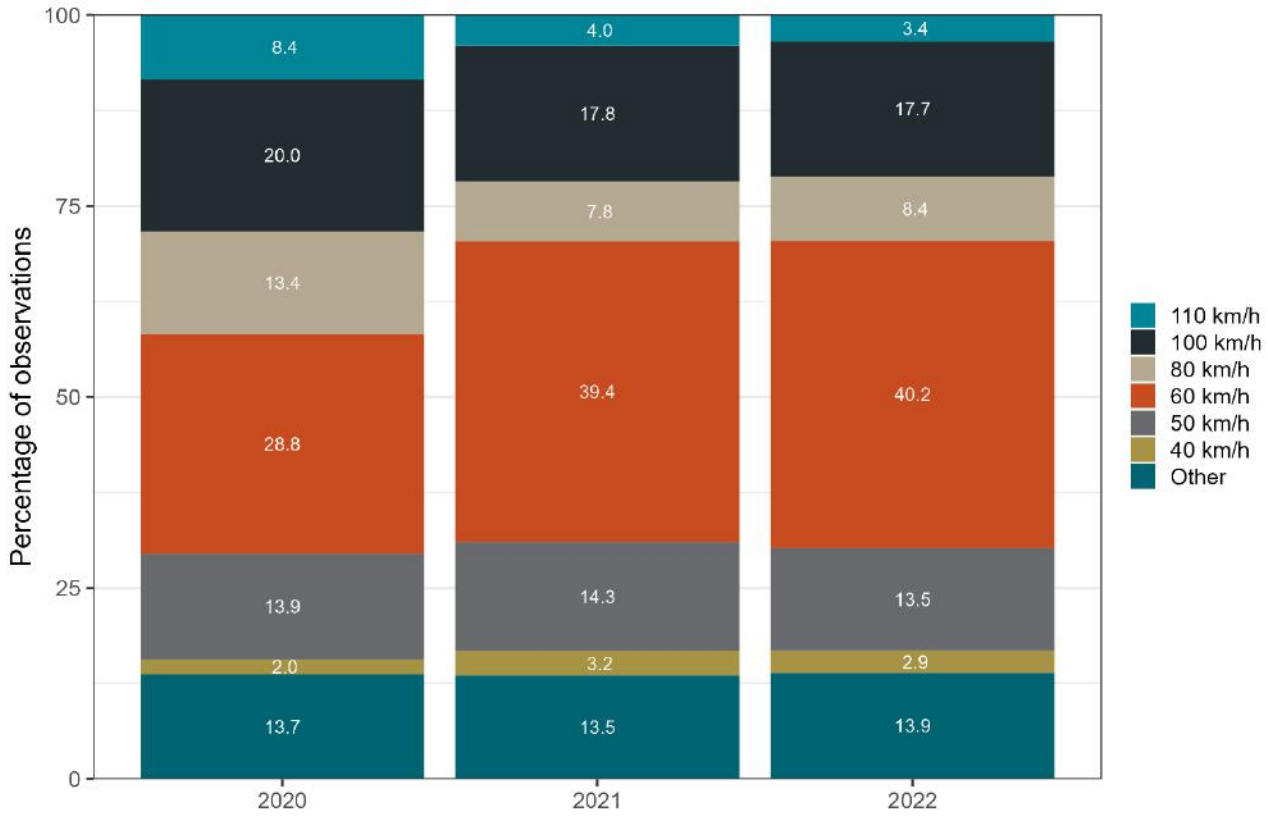
[7] This definition differs from the definition of arterial roads used in other reports. Specifically, arterial roads are sometimes defined with reference to HERE road functional classes 1 and 2 only. It follows that the results in this report may differ from other published results reflecting differences in the road definitions used.

each key speed limit category). Figure 1.1 presents the changes in the proportion of observations by speed zones between 2020 and 2022.

It should be noted that between 2020 and 2021, the proportion of observations in each of the 80km/h, 100km/h and 110km/h zones fell by an average of four percentage points. These decreases are made up for by increases in slower speed zones of 40km/h, 50km/h and 60km/h. The increase in 60km/h zones was the most significant with an increase of 10.6 percentage points between 2020 and 2021.

A key implication of this change in relative vehicle observations is that a decrease in state-wide average speed between 2020 and 2021 is not necessarily a result of decreases in average speed in some parts of the network. For example, take an extreme scenario where the average speed travelled in each individual speed zone remained unchanged between 2020 and 2021. The increase in the weights of lower speed zones in the state-wide average will drag down the state-wide average because travel speeds in slower speed zones are lower. As a consequence, it is important to interpret state-wide changes alongside their decomposition by speed zones, so as to accurately identify the causes of change as being changes in the underlying driving speeds, changes in the patterns of road use in the network, or some combination of both.

Figure 1.1: Percentage of HERE vehicle observations in Queensland by speed zones, 2020-2022



Source: HoustonKemp analysis of HERE speed probe data.

In the remaining sections of this report, key trends in traffic performance are set out, with numeric details provided in boxes. In particular, this report is structured as follows:

- section 2 presents results of speed performance for Queensland as a whole;
- section 3 presents results of speed performance for Greater Brisbane;
- section 4 presents results of speed performance for local government areas across Queensland;
- section 5 presents results of the analysis of the trend of working from home between 2020 and 2022; and

- section 6 presents results of the estimation of the extent to which road users slowed down in response to roadworks and flooding.

The report is structured with boxes that delve into the numeric details of traffic performance. Readers interested in the main high-level narrative of traffic performance can focus on the main text and refer to the charts for the purpose of reinforcing the narrative. Skipping the text in boxes will not disrupt the logical flow of the narrative.

Appendix A1 describes the traffic count weighting methodology that is used in this year's analysis. Appendix A2 sets out the count-weighted summary speed data tables.

2. Road speed performance across Queensland

Average speed and POSL

- Average speed in Queensland decreased significantly in 2021 before decreasing slightly further to 50.8km/h in 2022, which is the lowest level since 2016.
- The state-wide trend in average speed was primarily representative of the trend in urban areas. Average speed in urban areas decreased at a higher rate than the average for the whole of Queensland.
- The significant decrease in state-wide average speed in 2021 was primarily driven by the decrease in average speed in high-speed zones and 40km/h zones, offset by increasing average speed in other low-speed zones. In addition, the reweighting effect from high to low-speed zones also contributed to the overall decrease in average speed.
- In comparison, the slight decrease in state-wide average speed in 2022 was an outcome of opposing trends across all key speed zones.
- POSL exhibited a very similar trend to that of average speed. In addition, we observed reduction in POSL between 2020 and 2022 on arterial roads in urban areas and local roads in regional areas, which can be plausibly explained by roadworks occurring on arterial roads and increased traffic flow of visitors into regional Queensland in 2021 and 2022.

Compliance and speeding statistics

- Compliance with speed limits improved in 2021 before worsening in 2022 to 73 per cent. However, compliance in 2022 remained above the level observed in 2020.
- The improvement in compliance in 2021 was primarily driven by a significant increase in compliance in 40km/h zones, and slight increase in compliance in 80km/h zones. Compliance fell in all other key speed zones, particularly the high-speed zones of 100 and 110km/h. The worsening in compliance in 2022 was driven by decreases in compliance across all key speed zones.
- Overall, the combined proportion of compliance and low-level speeding decreased in the last two years, which means the combined proportion of moderate and excessive speeding increased. This trend was particularly evident in 50, 60 and 100km/h zones. On the other hand, 40km/h zones had significant improvements in the combined proportion of compliance and low-level speeding.
- These trends were particularly evident in urban areas. In regional areas, improvements in the combined proportion of compliance and low-level speeding were observed in some key speed zones in 2021, but were not sustained in 2022.

Average speed when speeding

- Average speed when speeding rose in most key speed zones across the two years. Speeding in low-speed zones remains the most severe, relative to the speed limit.
- The increases in average speed when speeding were driven by increases in the severity of low-level speeding in all key speed zones. These increases were offset by decreases in the severity of moderate and excessive speeding in all key zones, excluding 40km/h and 50km/h zones. In these zones, average speed when speeding at an excessive level increased between 2020 and 2022.

2.1 Average speed in Queensland decreased significantly in 2021 and slightly further in 2022

Average speed in Queensland decreased for two consecutive years and reached the lowest level since 2016 (Box 2.1). The decreases followed a period of steady increases between 2018 and 2020. Average speeds in 2021 and 2022 were lower than the pre-pandemic levels, which can likely be attributed to two main effects:

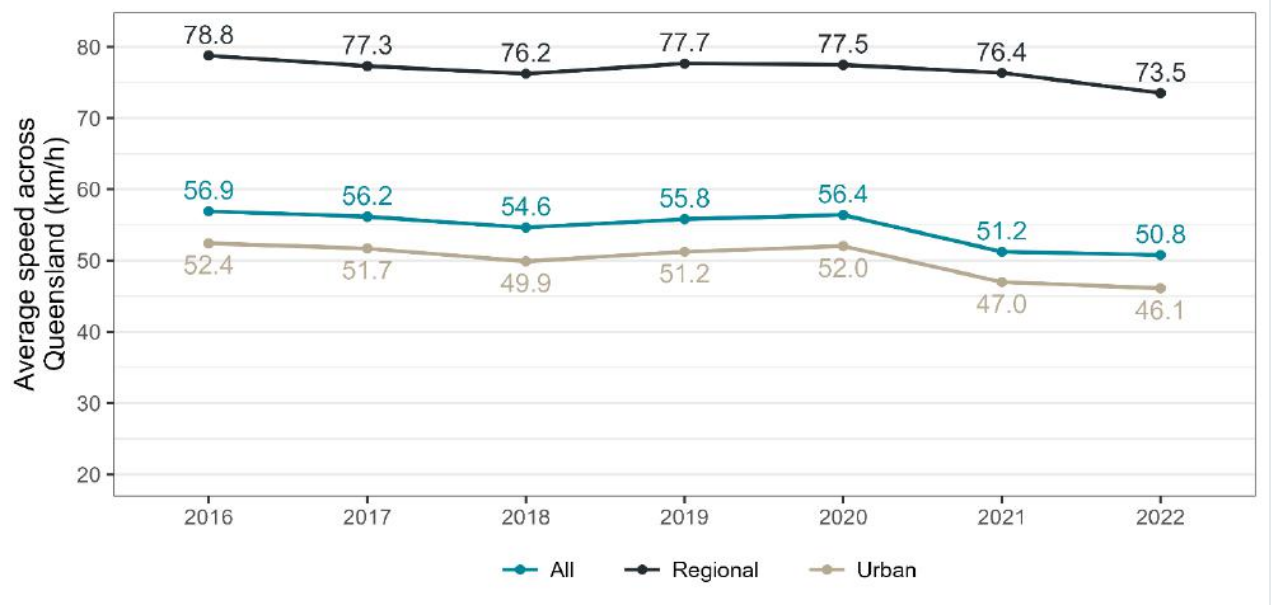
- the subsiding of COVID-19 related movement restrictions that brought traffic speeds back to pre-pandemic levels; in addition to
- the reweighting effect to lower speed zones as explained in section 1.

The state-wide trend in average speed was primarily representative of the observed trend in urban areas. This is because there were more vehicles travelling in urban than regional areas, which leads to speed observations in urban areas having a higher weight in the state-wide average. The decreasing trend of average speed in urban areas was more significant than observed for the whole of Queensland.

Average speed in regional areas was higher than in urban areas given that a greater proportion of regional roads have high speed limits, with a particularly high proportion of 100km/h roads. In terms of trends, average speed in regional areas also declined in 2021 and 2022. However, whereas average speed in urban areas experienced a sharper decrease in the first year compared to the second year, the reverse was true in regional areas.

Box 2.1: Average speeds across Queensland, 2016 to 2022

Average speed decreased significantly in 2021 and slightly further in 2022. In particular, by the end of 2021, average speed in Queensland was 51.2km/h – a decrease of 9.2 per cent compared to 2020. By the end of 2022, average speed in Queensland was 50.8km/h – a further decrease of 0.9 per cent compared to 2021.



Note: Values rounded to one decimal place.

Trends in average speed in Queensland are representative of those in urban areas. However, average speed in urban areas decreased at a faster rate than the state-wide average. In particular, urban average

speeds decreased by 9.7 per cent in 2021 and 1.8 per cent in 2022, compared to 9.2 per cent and 0.9 per cent respectively across the state.

On the other hand, average speed in regional areas experienced a relatively more modest decline of 1.4 per cent in 2021, compared to 9.7 per cent experienced by urban areas. However, in 2022, regional average speed decreased by 3.7 per cent – a faster rate of decline than the urban rate of 1.8 per cent.

Overall, the decrease in state-wide average speed in 2021 was a result of decreases in most key speed zones (Box 2.2). This was particularly evident in high-speed zones with speed limits of 80km/h or faster, which is partly due to the impact of major roadworks taking place on arterial roads. Average speed in 40km/h speed zones also decreased, albeit to a lesser extent.

It should be noted that the overall decrease in average speed in 2021 was greater than the average speed decrease in any individual key speed zone. This occurs as a result of the reweighting to lower speed zones described in section 1.

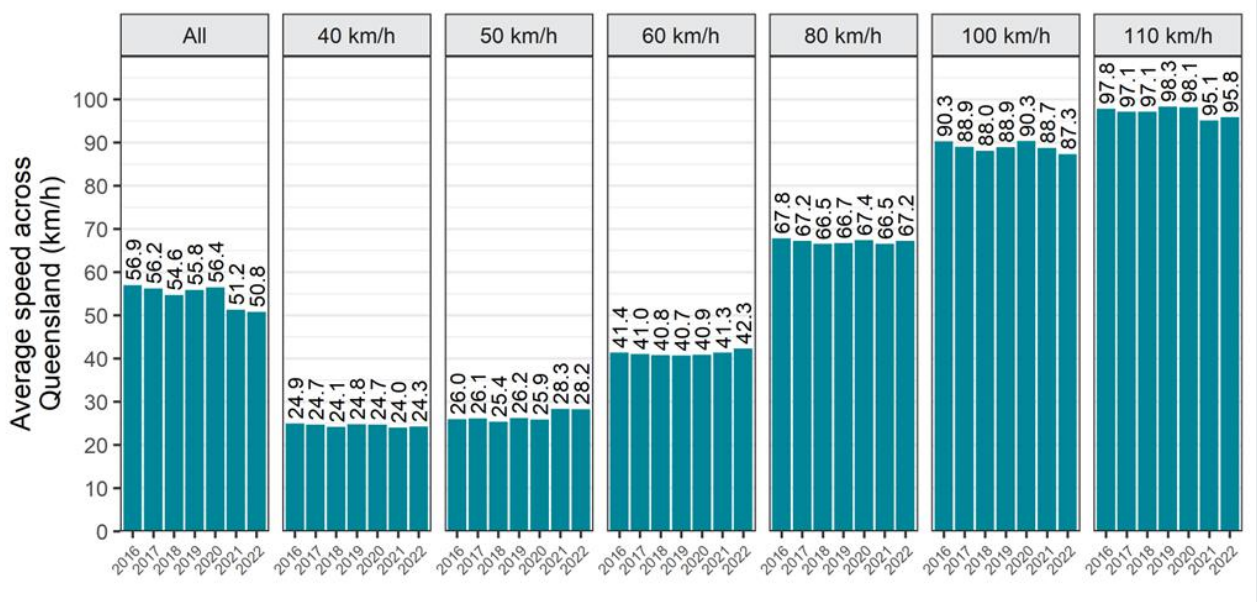
The slight decrease in the state-wide average speed in 2022 is accompanied by opposing trends across speed zones.

Box 2.2: Average speeds across Queensland, by speed zones, 2016 to 2022

The decrease in state-wide average speed in 2021 was the result of reductions in 40km/h zones and the high-speed zones, with the largest decline of 3km/h observed in 110km/h zones.

Conversely, average speed rose in 50km/h and 60km/h zones, particularly in the former where average speed rose 2.5km/h to 28.3km/h in 2021.

The slight decrease in state-wide average speed in 2022 was accompanied by opposing trends across individual speed zones. Average speeds rose in 40km/h, 60km/h, 80km/h and 110km/h roads, with the largest increase being 0.7km/h in 110km/h zones. Meanwhile, average speed decreased slightly in 50km/h zones and to a greater extent in 100km/h zones, resulting in a slight decrease across the state.



Note: Values rounded to one decimal place.

Decomposing trends in average speed further by urban and regional areas suggests that trends in urban areas are similar to the state-wide trends. That is, in 2021, there were significant decreases in average speed in high-speed zones and relatively less evident decrease in 40km/h zones (Box 2.3).

In comparison, average speed in regional areas also decreased in high-speed zones, except for 110km/h zones, and increased in 40km/h zones. It should be noted that the sharp reduction in 110km/h zones in urban areas in 2021, and the increase in these zones in regional areas in 2022, resulted in average speed in these zones in regional areas being greater than those in urban areas for the first time since 2016.

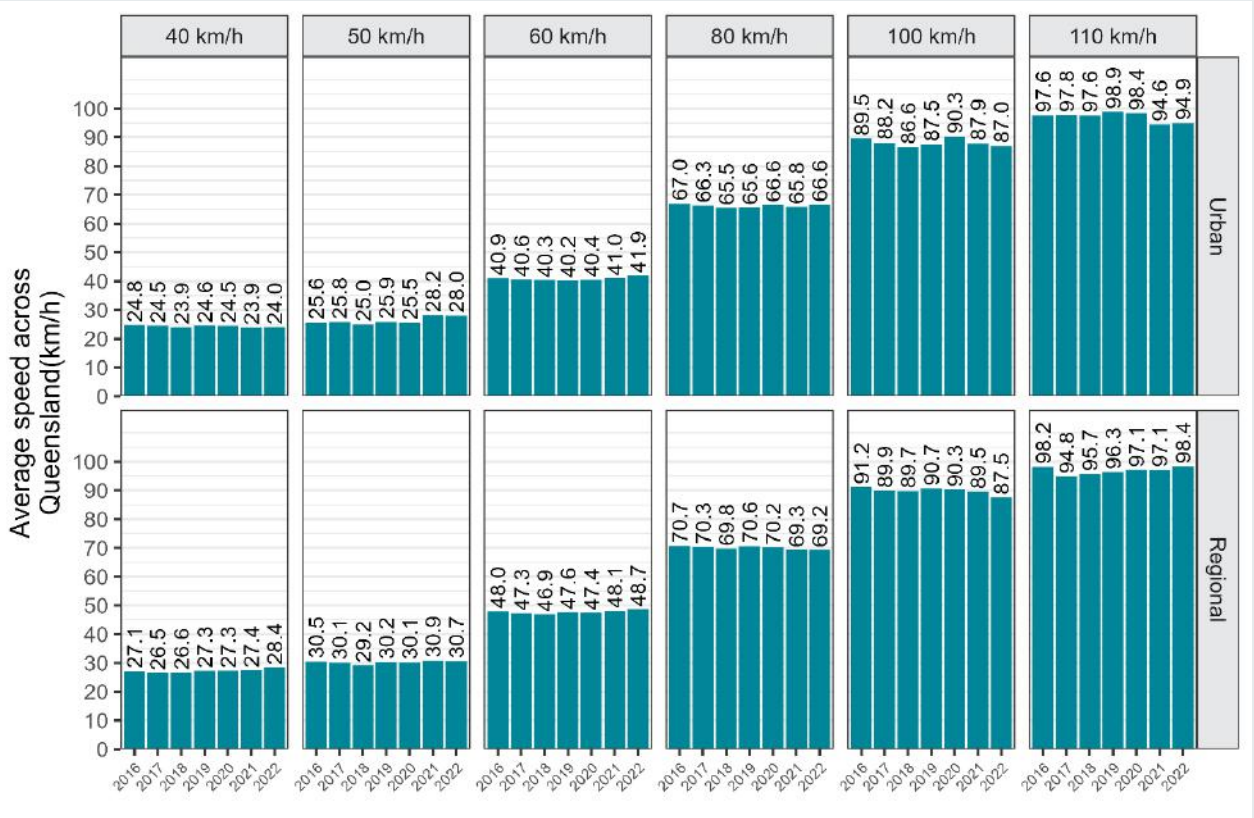
Concurrently, average speed in all other key zones remained higher in regional than in urban areas. This is consistent with the common understanding that urban traffic performance is subject to more congestion than in regional areas.

Box 2.3: Average speeds in Queensland, by speed zones, urban and regional areas, 2016 to 2022

State-wide trends were representative of those in urban areas. In 2021, average speed in urban areas decreased across high-speed zones, with the largest decline of 3.8km/h in 110km/h zones.

Average speed in regional areas also decreased across high-speed zones, except for 110km/h zones, where average speed remained relatively unchanged before increasing by 1.3km/h in 2022. This resulted in higher average speeds in regional areas, compared to urban areas, across all key speed zones.

Trends in 40km/h zones differed across urban and regional areas. While average speed on 40km/h roads decreased in urban areas, it increased in regional areas.



Note: Values rounded to one decimal place.

2.2 Percentage of speed limit decreased on arterial roads in urban areas, and local roads in regional areas

POSL exhibits very similar trends to average speed, such that it decreased significantly across Queensland in 2021 before decreasing slightly further in 2022. This was the lowest POSL level observed in Queensland since 2016, with POSL in regional and urban areas also individually reaching their lowest level in 2022 (Box 2.4).

Most observations in relation to trends in average speed, as set out in section 2.1, are also observable from the perspective of POSL. Therefore, POSL was examined further, by arterial and local roads, to draw insights into the factors that contribute to the differences in traffic trends in urban and regional areas.

The decrease in POSL (or average speed) in urban areas is driven by two distinct forces:

- a decrease in POSL on arterial roads in urban areas; and
- an increase in the proportion of observations on local roads between 2020 and 2021, and POSL values on local roads being lower in absolute terms.

The former driver was particularly evident in 2021, when there was a significant decrease in POSL on arterial roads. The latter driver played a role in both 2021 and 2022.

On the contrary, the decrease in POSL (or average speed) in regional areas was driven by:

- a decrease in POSL on local roads in regional areas; and
- an increase in the proportion of observations on local roads between 2020 and 2021, and POSL values on local roads being lower in absolute terms.

The second driver was the same as that for urban areas. However, the first driver was reversed, such that POSL decreased on arterial roads in urban areas, but decreased on local roads in regional areas. Plausible explanations include:

- major roadworks on arterial roads in urban areas that reduced travel speeds;
- increased congestion on arterial roads in urban areas due to increased vehicles on these roads as movement restrictions eased; and
- increased traffic volume on local roads in regional areas due to increased flows of short- and long-term visitors to regional Queensland.

In summary, decrease in POSL was observed on arterial roads in urban areas and local roads in regional areas, possibly with distinct reasons. In one of the supplementary analyses, the impact of roadworks on driver behaviour is examined in detail, with the results outlined in section 6.

Box 2.4: POSL in Queensland, urban and regional areas, arterial and local roads, 2016 to 2022

POSL exhibits very similar trends to average speed, such that it decreased significantly across Queensland from 74.2 per cent to 72.1 per cent in 2021, and slightly further in 2022 to 72 per cent.

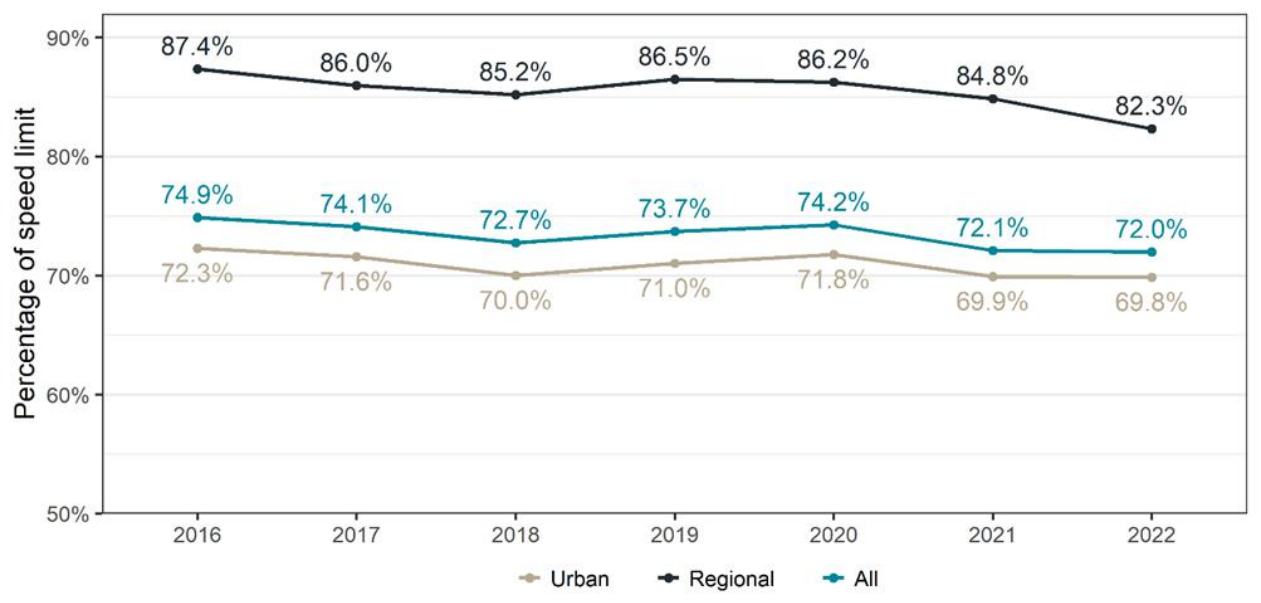
The significant decrease in POSL in urban areas in 2021 was driven by arterial roads, which decreased by two percentage points in 2021. This is offset by an increase of 1.4 percentage points on local roads.

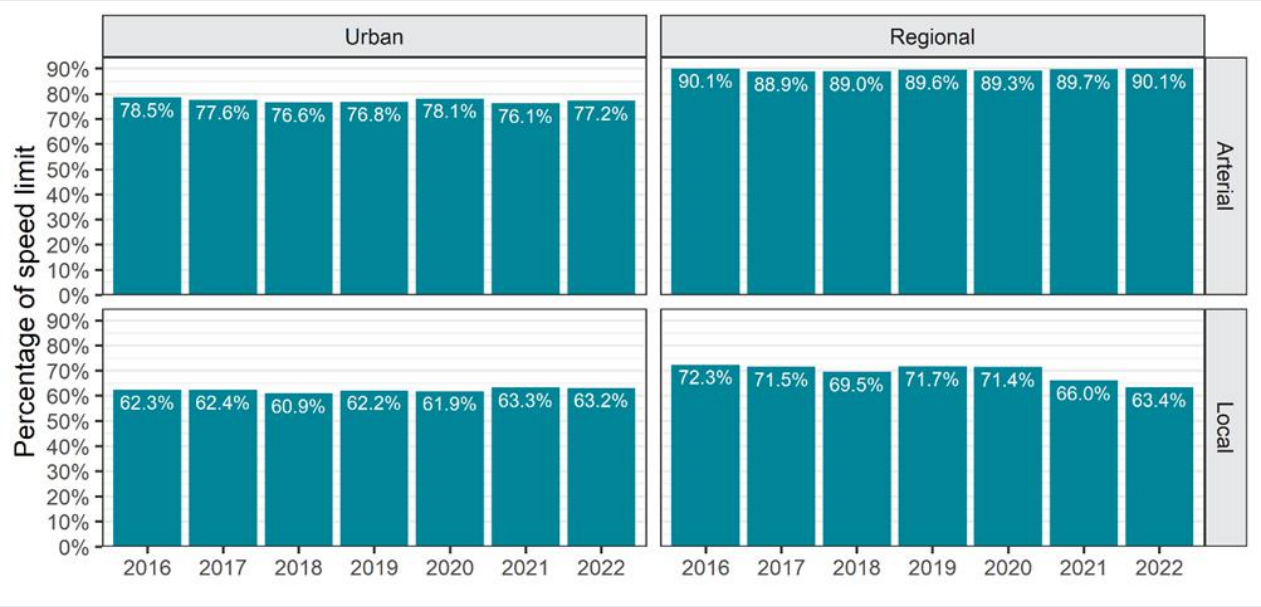
The proportion of observations on local roads in urban areas, relative to all urban observations, rose by 9.1 percentage points between 2020 and 2021, and by 0.2 percentage points between 2021 and 2022.

These contributed to a decrease of 1.8 percentage points in POSL in urban areas in 2021, and a further 0.1 percentage points in 2022.

The significant reductions in POSL in regional areas in 2021 and 2022 were driven by local roads, which decreased by 5.4 percentage points in 2021 and a further 2.6 percentage points in 2022. These were offset by slight increases of 0.4 and 0.3 percentage points on arterial roads in 2021 and 2022, respectively.

The shift of relative observation frequency from arterial to local roads further contributes to the decrease in POSL in regional areas. The proportion of observations on local roads in regional areas, relative to all regional observations, rose by 2.7 percentage points between 2020 and 2021, and by 0.3 percentage points between 2021 and 2022.





Note: Values rounded to one decimal place.

In summary, average speed and POSL exhibited similar trends across Queensland in 2021 and 2022. The key observations were that:

- average speed and POSL decreased significantly in 2021, which was driven by:
  - decreases on arterial roads in urban areas and local roads in regional areas;
  - an upward shift in the relative proportion of observations in low-speed zones, which generally have lower average speed and POSL; and
- average speed and POSL decreased slightly in 2022, which was driven by opposing trends across speed zones.

2.3 Compliance with speed limits improved in 2021 and 2022 compared to 2020

Overall, speed limit compliance improved in Queensland in 2021, before worsening in 2022 (Box 2.5). However, compliance in 2022 remained above the level in 2020. In general, compliance with speed limits was higher in low-speed zones compared to high-speed zones.

In particular, speed limit compliance in Queensland rose by 3.2 percentage points in 2021. This increase was driven by:

- increases in compliance in 40km/h and 80km/h zones; and
- the shift in the proportion of observations from high to low-speed zones, with low-speed zones typically having higher rates of compliance with the speed limit.

In comparison, compliance decreased by 2.4 percentage points in 2022, which was driven by reductions in all key speed zones. While lower speed zones exhibited only minor decreases, the reductions were more pronounced in faster zones, particularly in 100km/h and 110km/h zones. With 100km/h speed zone compliance falling to 47 per cent in 2022, compliant drivers are now in the minority on these roads. Compliance remained highest in 50km/h zones across both years, as has been the case since 2016.

To determine what drove the overall change in speed limit compliance, speeding was categorised into ranges based on the margin by which the speed limit was exceeded. These ranges were:

- up to ten per cent over the speed limit (low-level speeding);
- between ten per cent and 20 per cent over the speed limit (moderate speeding); and
- more than 20 per cent over the speed limit (excessive speeding).

Low-level speeding

Overall, low-level speeding had opposing trends to compliance. That is, when compliance increased in 2021, low-level speeding decreased, and when compliance decreased in 2022, low-level speeding increased. Moreover, the combined proportion of compliance and low-level speeding decreased slightly in 2021 and 2022.

The decrease in low-level speeding in 2021 was a net outcome of reductions in some speed zones and increases in other speed zones. It was observed that the overall reduction of five percentage points was greater than the change in any individual speed zone, which can be again explained by the relatively larger volume of vehicles observed in lower speed zones in 2021, where the proportion of low-level speeding is lower.

The increase in low-level speeding in 2022 was driven by significant increases in the highest speed zones of 100km/h and 110km/h. These values are almost identical to the size of the compliance reductions in these speed zones in 2022, indicating that drivers were substituting compliance with low-level speeding, rather than with moderate or excessive speeding.

Moderate and excessive speeding

Consistent with the slight decrease in the combined outcome of compliance and low-level speeding, slight increases in both moderate and excessive speeding were observed over the last two years. The largest increases in moderate speeding occurred in 50km/h and 100km/h zones. The increases in moderate and excessive speeding are concerning from a road safety perspective and warrant continued monitoring in future speed surveys.

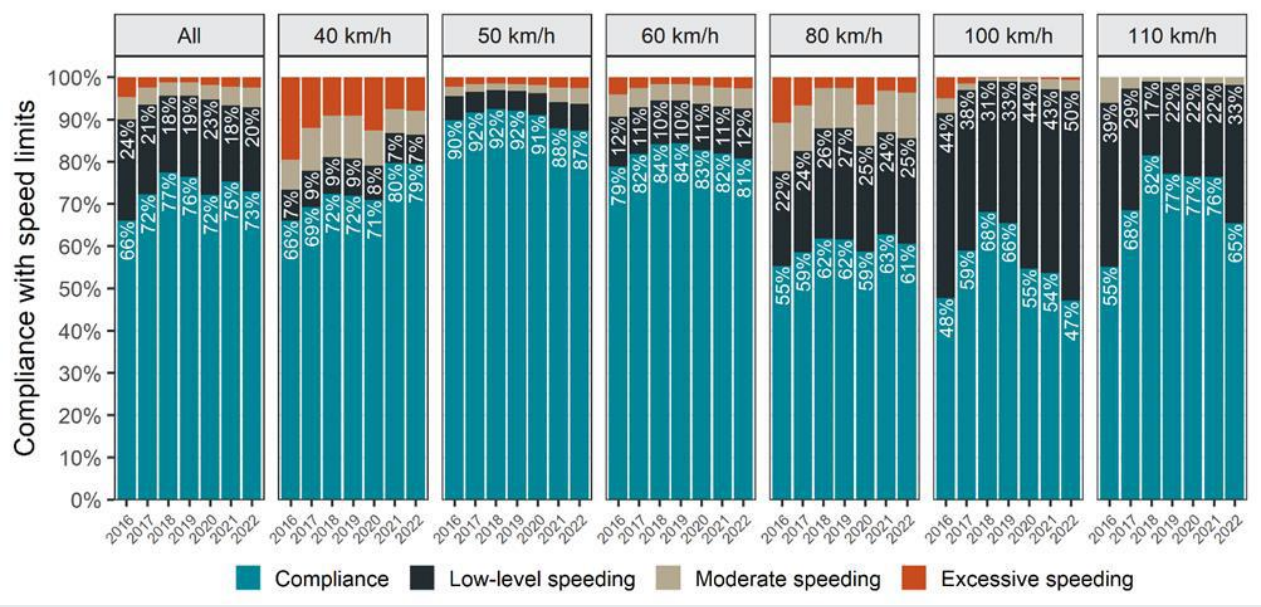
Despite overall increases in excessive speeding, there were significant reductions in excessive speeding in 40km/h and 80km/h zoners in 2021. It is worth noting that these were the zones with the worst rates of excessive speeding in 2020.

Box 2.5: Compliance with speed limits in Queensland, by speed zones, 2016 to 2022

Speed limit compliance in Queensland rose from 72 per cent in 2020 to 75 per cent in 2021, and decreased to 73 per cent in 2022.

The 3.2 percentage point increase in speed limit compliance in Queensland in 2021 was due to increases in compliance of 8.7 percentage points in 40km/h zones and 4.1 percentage points in 80km/h zones. Meanwhile, compliance declined in all other key speed zones, with the most significant reduction being 3.1 percentage points in 50km/h zones.

On the contrary, compliance fell in all key speed zones in 2022, particularly in 100km/h zones (down 6.7 percentage points) and 110km/h zones (down 10.9 percentage points). At 47 per cent in 2022, compliance on 100km/h roads fell slightly below the level in 2016, where compliant drivers were also in the minority on these roads.



Note: Values rounded to one decimal place.

Low-level speeding:

- decreased in 2021 due to opposing trends across speed zones, with the most significant decrease of one percentage point occurring in 40km/h zones; yet

- increased in 2022 due to increases in 100km/h and 110km/h zones by 6.2 and 10.6 percentage points, respectively.

Slight increases were observed in moderate speeding over the last two years, rising 0.8 percentage points in 2021 and a further 0.3 percentage points in 2022. The largest increases were observed in 2021, particularly in 50km/h zones (1.6 percentage points) and 100km/h zones (1.4 percentage points), though these were offset by a 2.7 percentage point reduction in 40km/h zones.

Similar to moderate speeding, slight increases were observed in excessive speeding over the last two years, rising 0.5 percentage points in 2021 and a further 0.2 percentage points in 2022.

Significant improvement in excessive speeding occurred in 40km/h and 80km/h zones in 2021. In particular, excessive speeding frequency fell from 12.6 per cent to 7.5 per cent in 40km/h zones and from 6.5 per cent to 3.2 per cent in 80km/h zones in 2021.

Further analysis of compliance by urban and regional areas suggests that overall, compliance levels in urban areas remain higher than their regional counterparts (Box 2.6). This likely reflects, in part, higher levels of congestion experienced on urban roads.

In terms of trends, compliance in urban and regional areas exhibited largely similar patterns to the state-wide observations. That is, compliance in urban and regional areas exhibited slight improvement in 2021 before decreasing in 2022. The combined outcome of compliance and low-level speeding in urban and regional areas also decreased in 2021 and 2022.

The extent of reductions in compliance differed in urban and regional areas:

- reductions in compliance in regional areas in 2022 were greater than the state-wide average, with compliance in 2022 reaching its lowest level since 2016; whereas
- compliance on urban roads fell slightly in 2022, but remained well above its lowest recorded level.

This reduction was mainly driven by declining compliance on arterial roads in both urban and regional areas in 2022.

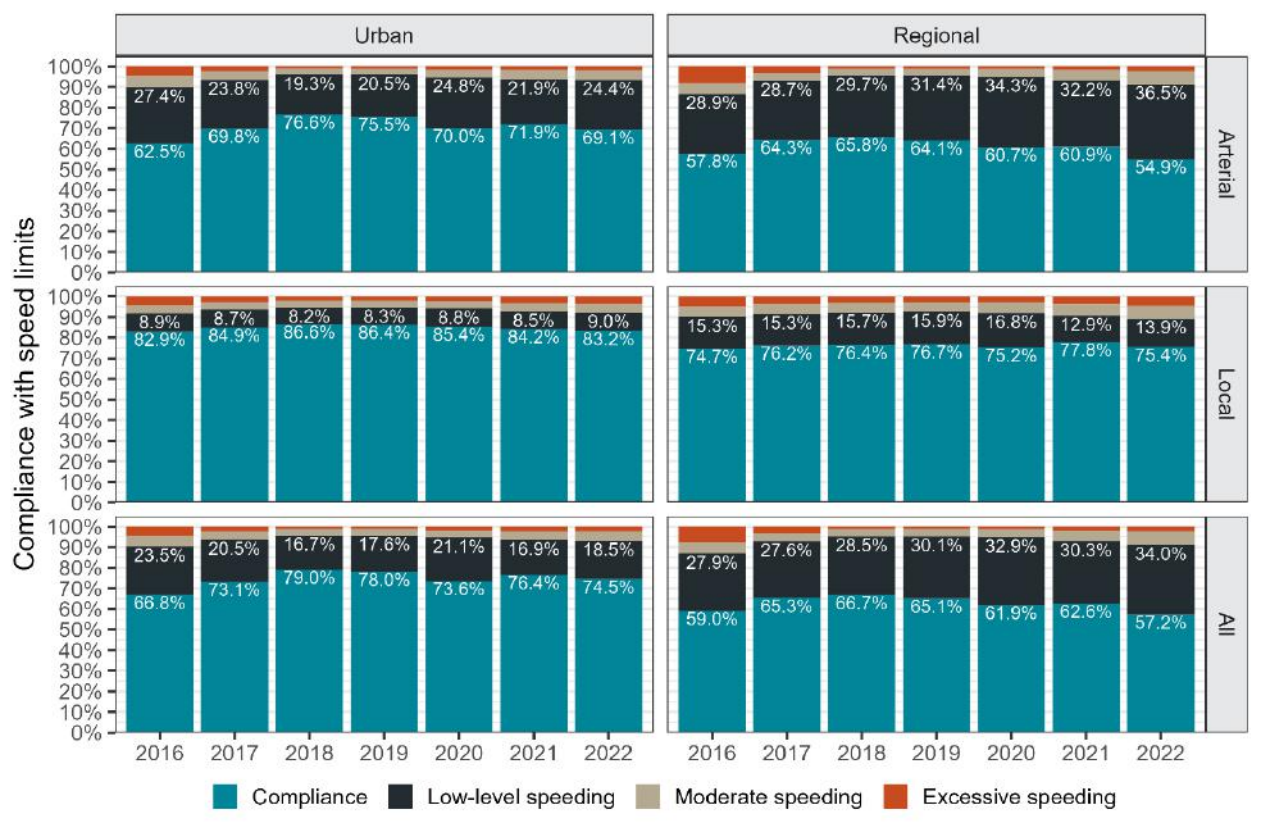
Similar to the state-wide trends, the combination of moderate and excessive speeding became slightly more prominent across both road types in urban and regional areas in 2021 and 2022.

Box 2.6: Compliance with speed limits in Queensland, urban and regional, arterial and local roads, 2016 to 2022

Consistent with state-wide trends, compliance in urban and regional areas exhibited slight improvements in 2021, before worsening in 2022.

The increase in compliance in 2021 was more evident in urban areas, with an increase of 2.8 percentage points compared to 0.7 percentage points in regional areas. However, the reduction in compliance in 2022 was more evident in regional areas, with a decrease of 5.4 of percentage points compared to 1.9 percentage points in urban areas.

In addition, the reduction of 5.4 percentage points in compliance in regional areas in 2022 was larger than the decrease in the state-wide average. The reduction in compliance in regional areas was driven by declining compliance on arterial roads, falling six percentage points from 60.9 per cent to 54.9 per cent between 2021 and 2022.



Note: In urban areas of Queensland, local and arterial roads make up 87.2 and 12.8 per cent of all roads respectively. In regional areas of Queensland, local and arterial roads make up and 67 and 33 per cent of all roads respectively.

Further decomposition of compliance and speeding trends in urban and regional areas by speed zones suggests that compliance was higher in urban areas, compared to regional areas, across all speed zones, with the exception of 100km/h and 110km/h speed zones (Box 2.7). In other words, regional compliance levels in 100km/h and 110km/h zones were better than in 100km/h and 110km/h zones in urban areas. Given the nature of GPS speed probe data, it is not possible to quantify how much of the observed differences between urban and regional findings is due to greater congestion on urban roads, compared to meaningful differences in driver behaviour and attitudes between urban and regional areas.

In general, trends in compliance in urban and regional areas were largely similar. However, two differences were observed:

- the increase in compliance in 40km/h zones was sustained in urban areas, whereas in regional areas compliance increased in 2021 before returning to similar levels observed in 2020; and
- the significant increase in compliance in 110km/h zones in regional areas in 2021 did not occur in urban areas.

It should be noted that the significant reduction in excessive speeding in 40km/h and 80km/h zones, as set out earlier, was only observed in urban areas. In regional areas, the frequency of excessive speeding in these two speed zones increased in 2021 and 2022.

Notwithstanding, the relative levels of compliance and speeding between urban and regional areas remain largely unchanged in the last two years. For instance, the prevalence of excessive speeding was higher in regional areas across all key speed zones. Furthermore, 40km/h, 50km/h and 110km/h zones in regional areas now exhibit higher rates of excessive speeding than in 2016.

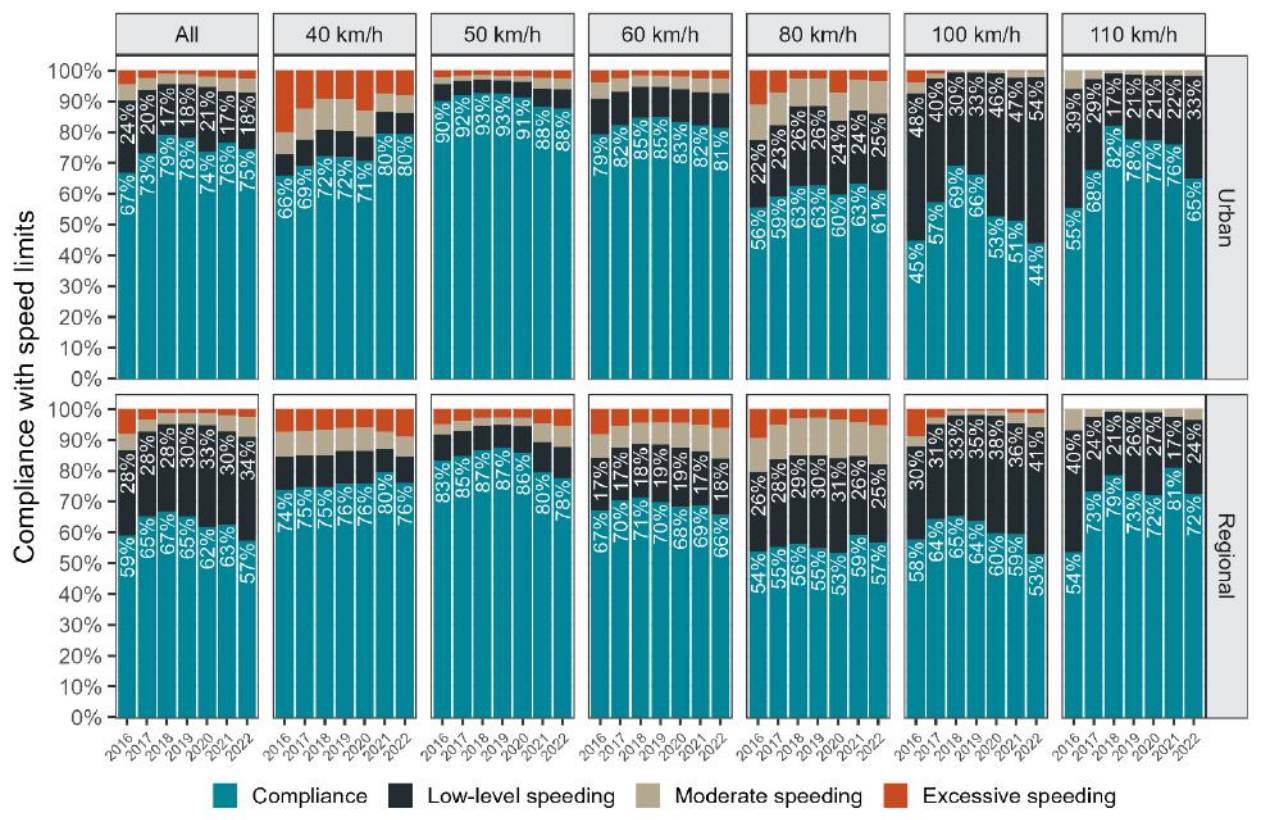
Box 2.7: Compliance with speed limits in Queensland, by speed zones, urban and regional, 2016 to 2022

The higher compliance in urban areas compared to regional areas occurred across all speed zones except for 100km/h and 110km/h zones. In particular, compliance in regional areas in 100km/h and 110km/h zones were better than those in urban areas, by 9.1 percentage points and 7.7 percentage points, respectively, in 2022.

The increase in compliance in 2021 occurred in both urban and regional areas, with both driven by increased compliance in 40km/h zones. However, while this increased compliance remained at the same level in 2022 for urban areas, compliance fell back to the level observed in 2020 in regional areas.

In addition, regional areas experienced a significant improvement in 110km/h zone compliance of 8.9 percentage points in 2021, while urban compliance in the same speed zone fell by 1.2 percentage points. 110km/h trends in these areas realigned in 2022, falling by 11.2 and 8.5 percentage points in urban and regional areas, respectively.

Consistent with state-wide trends, the combined proportion of moderate and excessive speeding increased over the last two years in both urban and regional areas, with this proportion in regional areas remaining higher than that in urban areas (by 1.8 percentage points in 2022).



Note: Values rounded to one decimal place.

The analysis of compliance through different dimensions has provided insights into various trends by speed zones and geographical locations. In summary, while there were opposing trends in compliance and low-level speeding between 2021 and 2022, the combined outcome of compliance and low-level speeding decreased in 2021 and 2022, which means there arose a potentially concerning trend of increased moderate and excessive speeding. These trends occurred in both urban and regional areas.

The increases in moderate and excessive speeding are, in general, more common in low-speed zones, particularly in regional areas. An exception lies in 40km/h zones, where moderate and excessive speeding decreased in 2021, particularly in urban areas, where the decrease was significant and sustained into 2022.

2.4 Average speed when speeding increased slightly in almost all key speed zones in 2021 and 2022

Average speed when speeding increased in all key speed zones between 2020 and 2022, with the exception of 80km/h and 110km/h zones (Box 2.8).

In 40km/h zones, the increase in average speed when speeding occurred in the context of decreased frequency of excessive speeding, particularly in urban areas. This implies that while there were fewer incidents of speeding on 40km/h roads, drivers who were speeding travelled even faster. It is worth noting that since 2020, the average speed when speeding on 40km/h roads falls into the category of excessive speeding, and the average speed when speeding is on a rise. This remains a concerning feature of 40km/h roads that warrants continued monitoring in future speed surveys.

The average speed when speeding also increased between 2020 and 2022 in 50km/h, 60km/h and 100km/h zones, with the increases representing a greater frequency of moderate and excessive speeding across these zones. This implies that not only were there more occurrences of moderate and excessive speeding, but drivers who exceeded the speed limit did so to a greater extent. However, the 'average' speeding driver in these zones did so at either low or moderate levels.

Box 2.8: Average speeds when speeding in Queensland, by speed zone, 2016 to 2022

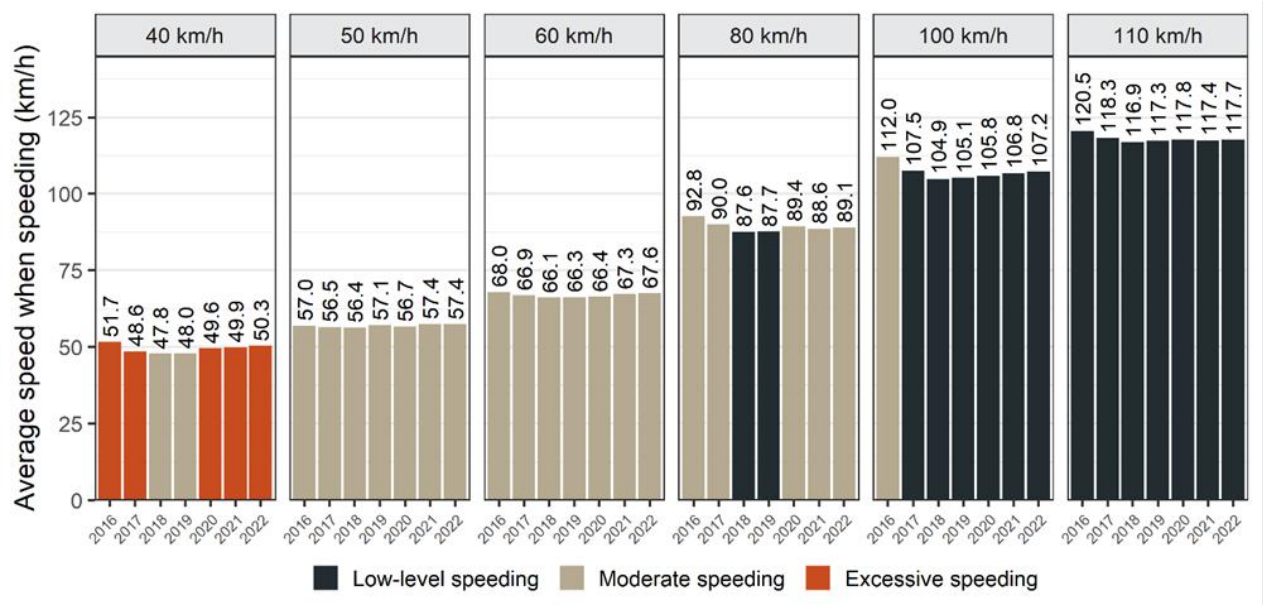
Average speed when speeding in 40km/h zones increased across both 2021 and 2022 despite significant reductions in the frequency* of moderate and excessive speeding in 2021. In 2022, average speed when speeding in 40km/h zones increased to 50.3km/h, compared to 49.6km/h in 2020.

Average speed when speeding in 50km/h, 60km/h and 100km/h zones also increased when there were increases in the frequency of moderate and excessive speeding. Average speed when speeding increased from 2020 to 2022 by 0.7km/h, 1.1km/h and 1.4km/h in these zones, respectively.

There were reductions in average speed when speeding between 2020 and 2022 in 80km/h and 100km/h zones. While average speed when speeding decreased slightly in 100km/h zones (by 0.1km/h), it decreased to a greater extent in 80km/h zones (by 0.3km/h) between 2020 and 2022.

There was no change to the classification of average speed when speeding in any key speed zone between 2020 and 2022. Proportional to the speed limit, 40km/h zones remain the worst roads in terms of average speed when speeding, while speeding in 100km/h and 110km/h zones is typically low-level.

** Frequency of speeding is defined as the proportion of hours in a year in which average speed observed across vehicles in the sample data on a road was higher than speed limit. It should be noted that the HERE speed probe data do not provide observed speeds at an individual level.*



Note: Values rounded to one decimal place.

Further, examining average speed when speeding by urban and regional areas reinforces that state-wide trends are representative of those in urban areas (Box 2.9).

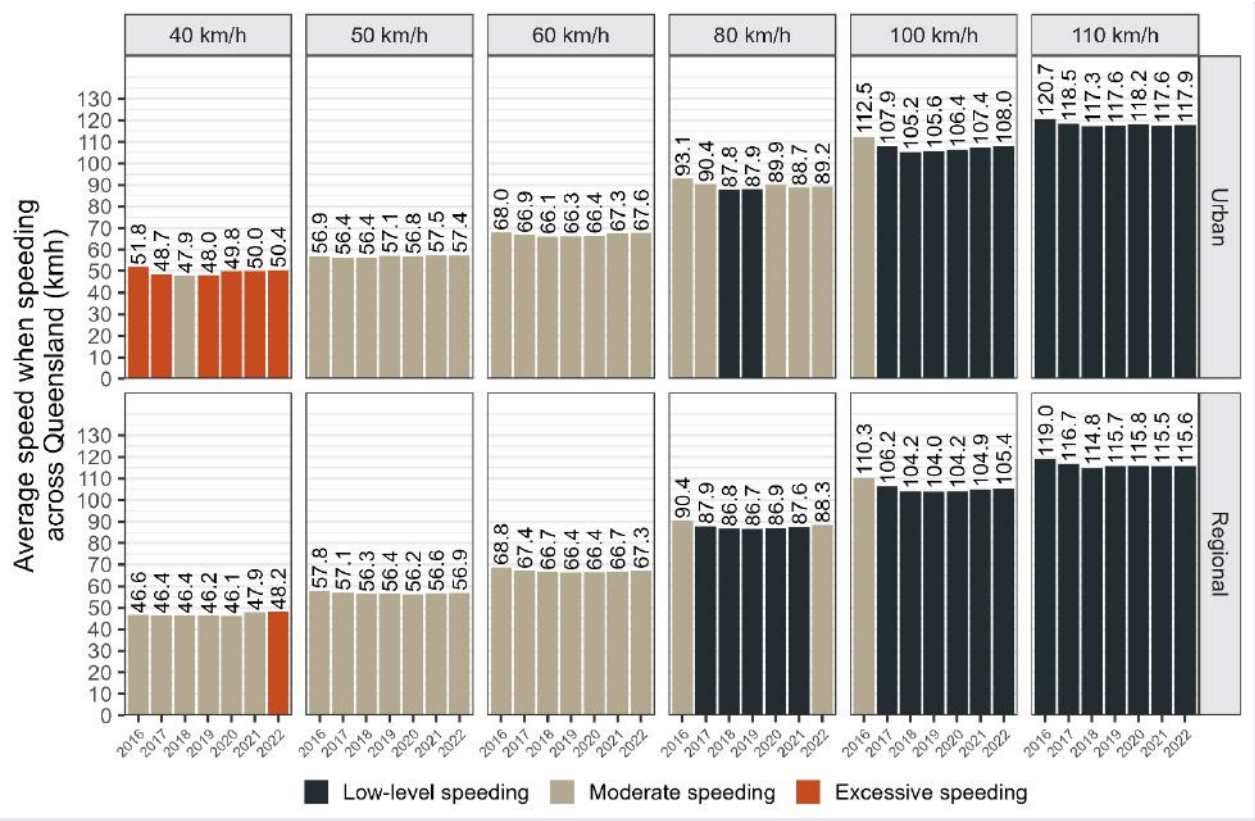
On regional roads, average speed when speeding exhibited similar trends to those in urban areas, except for 80km/h zones where average speed when speeding decreased in urban areas yet increased in regional areas.

Comparing average speed when speeding between urban and regional areas, it should be noted that the extent of speeding in urban areas remained higher than the corresponding regional values in all key zones and across both years, as was the case in 2020. The difference in average speed when speeding between urban and regional areas was the largest in the 100 and 110km/h zones, although before 2020 average speed when speeding in these zones was relatively similar across urban and regional areas.

Box 2.9: Average speeds when speeding in Queensland, by speed zone, urban and regional, 2016 to 2022

Trends of average speed when speeding across speed zones in urban areas were consistent with the state-wide trends. Average speed when speeding increased in 40km/h, 50km/h, 60km/h and 100km/h zones, with the greatest increase occurring in 100km/h zones (by 1.6km/h) between 2020 and 2022.

Average speed when speeding increased across all key speed zones in regional areas across 2021 and 2022, with the exception of 110km/h zones in 2021. The greatest two-year increase occurred in 40km/h zones, with a 2.1km/h increase.



Note: Values rounded to one decimal place.

The proportion of average speed when speeding that fell in each of the three categories of speeding was also examined (Box 2.10). Across all key speed zones, the average speed when speeding at the low-level increased, while the average speed when speeding moderately decreased between 2020 and 2022. The greatest increase in low-level speeding, and decrease in moderate speeding, both occurred in 40km/h zones.

Average speed when speeding that was excessive increased in 40km/h and 50km/h zones, particularly the former which rose by 1.4 per cent over the two-year period. Coupled with the observation above that the average speed when speeding at the low level increased as well in 40km/h zones, it can be inferred that the increase in the overall average speed when speeding in 40km/h zones (as previously observed in Box 2.8) was driven by increases in the average speeds of low-level and excessive speeding. It should be noted that this occurred in the context of decreases in the frequency of excessive speeding in 40km/h zones. The increase in the severity of excessive speeding occurred in 40km/h zones across both urban and regional areas, whereas the increase in 50km/h zones occurred in urban areas only.

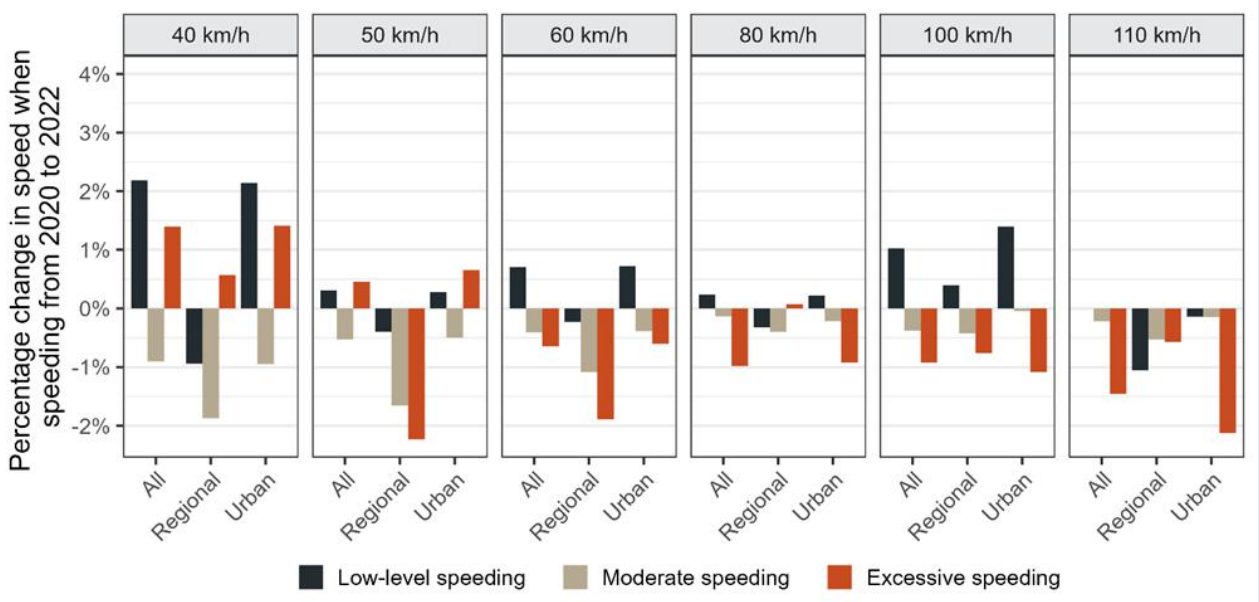
Box 2.10: Percentage change in average speed when speeding in Queensland, by speed zone, 2020 to 2022

Across all key speed zones, the average speed when speeding at low levels increased, while the average speed when speeding at moderate levels decreased, between 2020 and 2022.

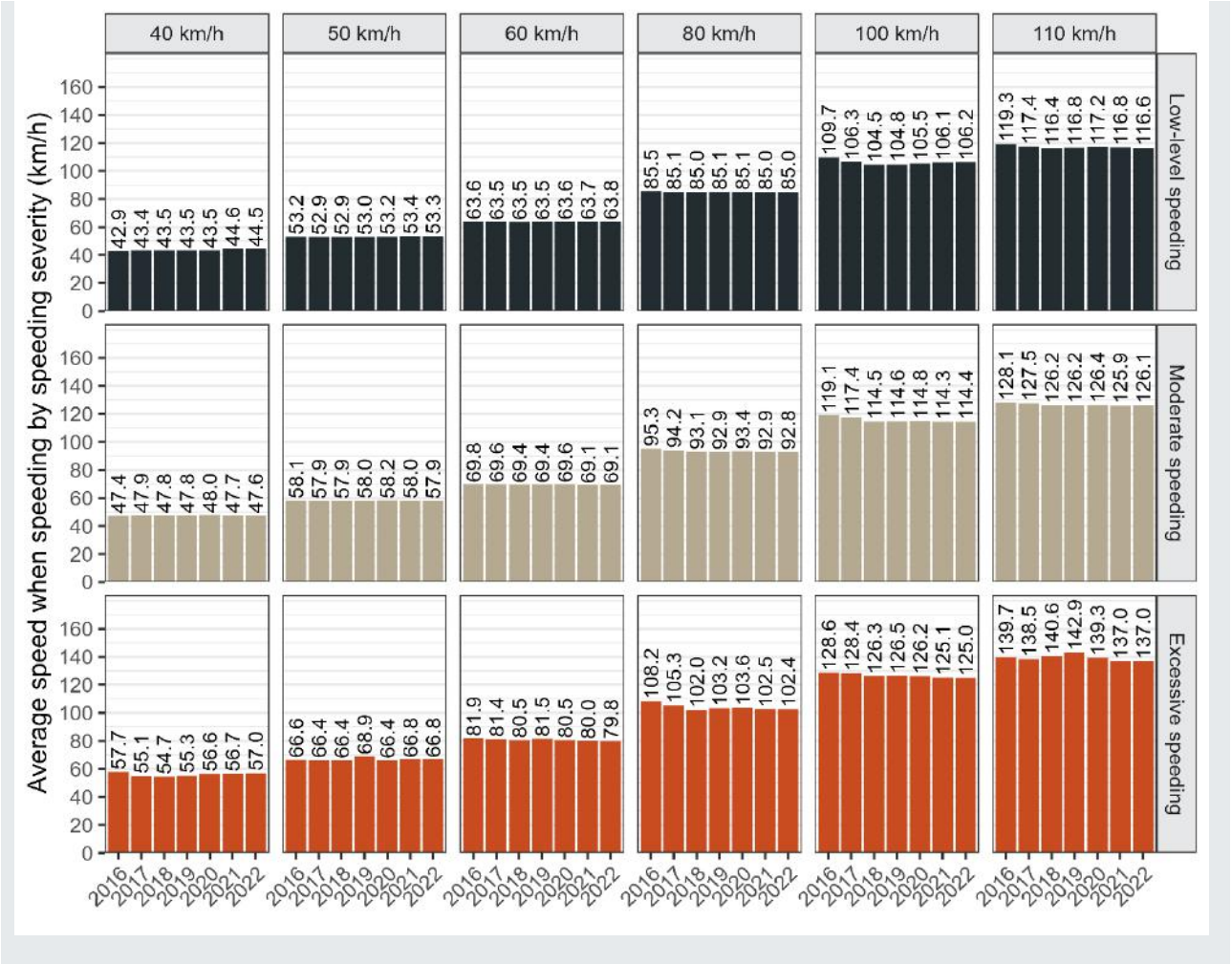
The greatest change occurred in 40km/h zones, where average speed when speeding at low levels increased by 2.2 per cent, and average speed when speeding at moderate levels decreased by 0.9 per cent.

The average speed when speeding at excessive levels increased in 40km/h and 50km/h zones, with the greatest increase occurring in 40km/h zones, with a 1.4 per cent increase.

The increase in the extent of excessive speeding in 40km/h zones occurred consistently in both urban and regional areas.



The chart below shows average speed when speeding values by category of speeding across Queensland in each key speed zone of interest.



In summary, the increases in average speed when speeding in 40km/h and 50km/h zones in 2021 and 2022 were due to increases in the extent of low-level and excessive speeding. In the other speed zones, the increases in average speed when speeding were due to increases in the extent of low-level speeding only.

Particularly in 40km/h zones, there appears to be concerning signs of increasing excessive speeding severity, even though the frequency of excessive speeding decreased.

2.5 The least safe roads in Queensland were concentrated in the Brisbane LGA

Consistent with previous speed surveys, the 'worst' performing roads in Queensland were identified to help inform safety initiatives. The 'worst' performing roads were defined by referencing to two metrics, namely:[8]

- the frequency of non-compliance with speed limits when speeding in excess of 10 per cent above the speed limit;[9] and
- the margin by which the speed limits were exceeded.[10]

Table 2.1 and

[8] Road segments where the number of non-compliant hours was less than 365 (ie, equivalent to one hour of data for each day) and the speed limit is less than 40km/h are also disregarded.

[9] These are the moderate and excessive non-compliance metrics defined in section 2.3 above.

[10] For example, the speeding margin of a driver travelling at 55km/h on a 50km/h road is 5km/h.

Table 2.2 present the ten worst performing roads in Queensland in 2021 and 2022, respectively. In both 2021 and 2022, Stanley Street in South Brisbane was the worst performing road. Marquis Street in Greenslopes, Frizzo Road in Buderim, Stafford Road in Kedron, Meckiff Street in Upper Mount Gravatt, Mulgrave Street in Gin Gin, and Thornbill Drive in Flagstone also featured in both years.

On Queensland's ten worst roads in 2021, the speeding margin when speeding that exceeded 10 per cent of the speed limit ranged from 23.6 to 74.7 per cent of the speed limit. Further, between 13.4 and 86.2 per cent of observations on these roads were classified as instances of moderate or excessive speeding. Speed limits were generally lower on roads for which speeding occurrences and margins were particularly high, with only one of the worst ten roads containing a speed zone greater than 60km/h.

The worst roads in 2022 were largely similar in their characteristics to those in 2021, since seven roads are common to both years. The speeding margin when speeding that exceeded 10 per cent of the speed limit ranged from 22.6 to 73.7 per cent of the speed limit on these roads, while between 19.6 and 93.8 per cent of observations on these roads were classified as moderate or excessive speeding. Two roads contained speed zones of 80km/h, while all other roads consisted only of slower zones. Consistent with observed trends set out previously, the majority of worst performing roads were situated in urban areas, with five and six out of ten worst roads located in the Brisbane LGA in 2021 and 2022, respectively. However, it should be noted that none of the 10 worst performing roads in 2020 were in Brisbane LGA.

Appendix A2.3 provides a list of the 100 'worst' roads in Queensland in 2021 and 2022, applying the same ranking criteria as set out above.

Table 2.1: Worst performing speed safety roads in Queensland, 2021

Rank	Street name	Statistical area level 2	Local government area	Speed limits	Urban/regional
1	Stanley Street	South Brisbane	Brisbane	10km/h, 40km/h, 50km/h, 60km/h	Urban
2	Morayfield Road	Caboolture - South	Moreton Bay	10km/h, 50km/h, 60km/h	Urban
3	Marquis Street	Greenslopes	Brisbane	50km/h, 60km/h	Urban
4	Queen Street	Brisbane City	Brisbane	40km/h, 50km/h	Urban
5	Stafford Road	Kedron - Gordon Park	Brisbane	50km/h, 60km/h	Urban
6	Meckiff Street	Upper Mount Gravatt	Brisbane	50km/h	Urban
7	Thornbill Drive	Flagstone (West) - New Beith	Logan	40km/h	Urban
8	Mulgrave Street	Gin Gin	Bundaberg	50km/h, 60km/h, 80km/h	Regional
9	Frizzo Road	Buderim - South	Sunshine Coast	60km/h	Urban
10	Brisbane Road	Goodna	Ipswich	60km/h	Urban

Table 2.2: Worst performing speed safety roads in Queensland, 2022

Rank	Street name	Statistical area level 2	Local government area	Speed limits	Urban/regional
1	Stanley Street	South Brisbane	Brisbane	10km/h, 40km/h, 50km/h, 60km/h	Urban
2	Marquis Street	Greenslopes	Brisbane	50km/h, 60km/h	Urban
3	Frizzo Road	Buderim - South	Sunshine Coast	60km/h	Urban
4	Stafford Road	Kedron - Gordon Park	Brisbane	50km/h, 60km/h	Urban
5	Thornbill Drive	Flagstone (West) - New Beith	Logan	40km/h	Urban
6	Toowoomba Road	Pittsworth	Toowoomba	60km/h	Regional
7	Mulgrave Street	Gin Gin	Bundaberg	50km/h, 60km/h, 80km/h	Regional
8	William Street	Brisbane City	Brisbane	40km/h, 50km/h	Urban
9	Meckiff Street	Upper Mount Gravatt	Brisbane	50km/h	Urban
10	Port Drive	Brisbane Port - Lytton	Brisbane	40km/h, 50km/h, 60km/h, 80km/h	Urban

Note: To calculate the rankings of the worst performing speed safety roads in Queensland, data was first grouped by road name and SA2. The number of instances where drivers exceeded the speed limit by more than ten per cent and the average speeding margin by which the speed limits were exceeded in these instances was then calculated. To calculate the final rankings, greater weight was placed on the number of instances of speeding to identify those roads where speeding is most common.

3. Road speed performance in Greater Brisbane

- In general, state-wide traffic trends are representative of those in Greater Brisbane for the same reason as that for urban areas. It follows that the observations of traffic trends for Greater Brisbane are similar to those observed for Queensland overall.

Average speed and POSL

- Average speed in Greater Brisbane declined at a faster rate than in Queensland across both 2021 and 2022.
- Average speeds in Greater Brisbane were generally slightly higher than the state-wide levels on faster roads, but lower on slower roads. However, POSL in Greater Brisbane remained lower than POSL for the whole of Queensland.
- More than 80 per cent of SA2 areas in Greater Brisbane had average speeds below 50km/h. Areas with the lowest average speeds were generally located in Brisbane.
- Average speed and POSL both fluctuated significantly between 2020 and 2021, before stabilising in 2022.

Compliance and speeding statistics

- Compliance with speed limits in Greater Brisbane exceeded rates observed for Queensland overall for the first time since 2016. Compliance increased significantly in 40km/h zones in 2021 and remained stable in 2022.
- SA2 areas closer to the inner Brisbane region were generally more compliant, while the least compliant areas were located further west and south in Greater Brisbane.
- The combined proportion of moderate and excessive speeding increased slightly in the last two years, except for in 40km/h and 80km/h zones.

Average speed when speeding

- Average speed when speeding continued to rise across most key speed zones in 2021 and 2022, surpassing the whole of Queensland in all zones.
- Average speed when speeding in 40km/h zones rose to 130 per cent of the speed limit (51.8km/h) in 2022, the highest of all key speed zones. This suggests the degree of excessive speeding in 40km/h zones worsened even though the frequency of compliance increased significantly on 40km/h roads.

3.1 Average speed in Greater Brisbane decreased at a faster rate than Queensland across 2021 and 2022

In this analysis, Greater Brisbane is defined as the area covering the following Statistical Areas Level 4 (SA4s): Brisbane Inner City, Brisbane – North, Brisbane – West, Brisbane – East, Brisbane – South, Moreton Bay – South, Moreton Bay – North, Logan – Beaudesert, and Ipswich.

Overall, average speed in Greater Brisbane exhibited similar trends to those of the whole of Queensland in the last two years (Box 3.1). That is, average speed in Greater Brisbane decreased significantly in 2021 and slightly further in 2022.

Consistent with previous years, average speed in Greater Brisbane remained lower than the overall average speed in Queensland, partly due to the prevalence of lower speed zones.

However, average speed in Greater Brisbane decreased at a faster rate than Queensland in the last two years, which widened the difference in average speeds between Greater Brisbane and Queensland overall.

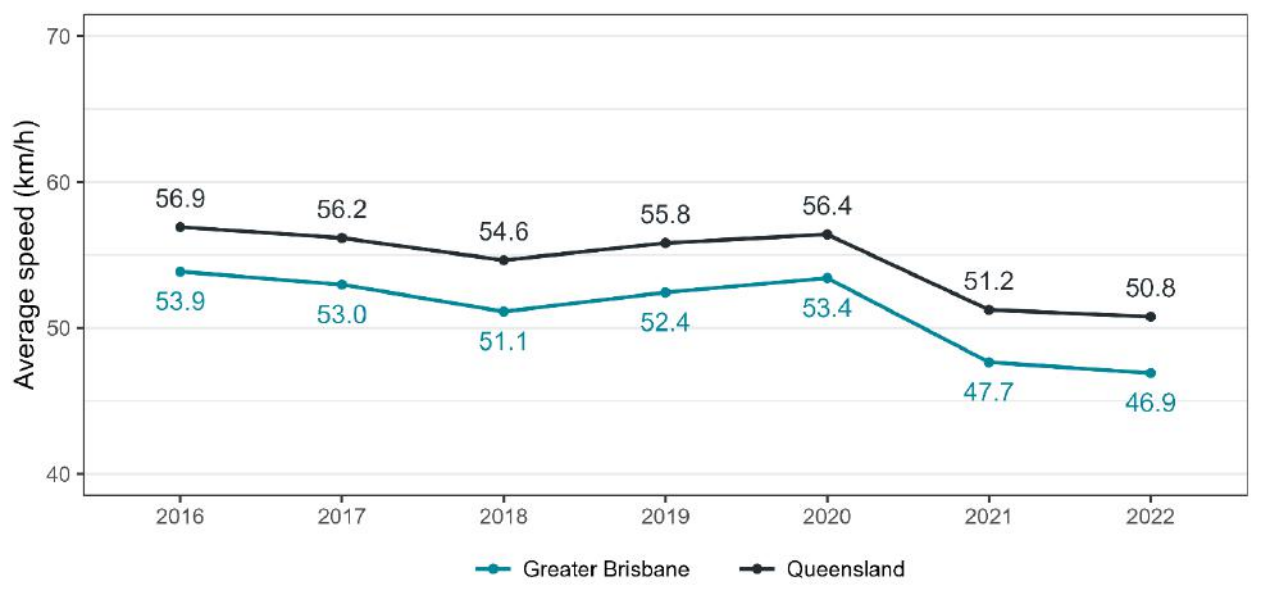
Similar to the overall average speed in Queensland, by 2022 the average speed in Greater Brisbane was lower than the level in 2016.

Box 3.1: Average speed in Greater Brisbane and Queensland, 2016 to 2022

Average speed in Greater Brisbane decreased significantly in 2021 and slightly further in 2022. In particular, average speed in Greater Brisbane fell 10.8 per cent to 47.7km/h in 2021, and a further 1.5 per cent to 46.9km/h in 2022.

These rates are faster than the 9.2 per cent and 0.9 per cent experienced in Queensland in 2021 and 2022, respectively.

In 2022, average speeds in Greater Brisbane remained approximately 3.9km/h lower than those across Queensland. This gap increased from the 3.1km/h difference in average speed between Greater Brisbane and Queensland in 2016.



Note: Values rounded to one decimal place.

Even though the overall average speed across Greater Brisbane fell in both 2021 and 2022, average speed by speed zones experienced opposing trends of increase and decrease over the last two years, except for 100km/h and 60km/h zones, which experienced reductions and increases, respectively, in both years (Box 3.2).

The significant reduction in average speed in 2021 was driven by decreases in 40km/h and 100km/h zones, which were offset by a sharp increase in 50km/h zones. As was the case with Queensland overall, relatively

more drivers in Greater Brisbane were observed on low speed roads, which contributed partially to the decrease in the overall average speed.

While the overall average speed in 2022 was below the level in 2016, average speeds in 50km/h and 60km/h zones were above their previous peak levels from 2016.

Although Greater Brisbane overall experienced lower average speeds than Queensland, this was not the case for all individual speed zones. Specifically:

- average speeds in Greater Brisbane exceeded state-wide levels in 80km/h and 100km/h zones, by average magnitudes of 0.4km/h and 0.3km/h, respectively; whereas
- average speeds in Greater Brisbane were lower than state-wide levels in all other key speed zones, with the largest difference in 2022 being a disparity of 1km/h in 60km/h zones.

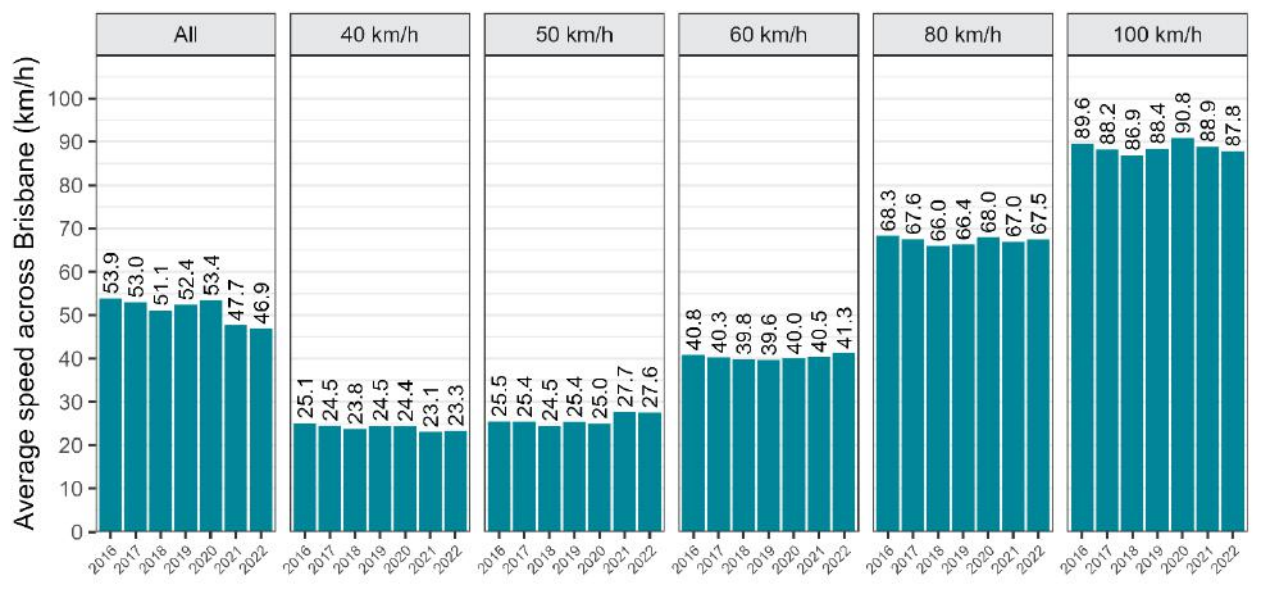
Overall, the direction and magnitude of average speed changes are consistent between Queensland and Greater Brisbane across key speed zones in both years.

Box 3.2: Average speed in Greater Brisbane, by speed zone, 2016 to 2022

Across speed zones, average speeds experienced a mix of increases and decreases in the last two years, with the exception of 60km/h and 100km/h zones. In 60km/h zones, average speed increased in both years, with average speed increasing by 1.3km/h between 2020 and 2022. Meanwhile, 100km/h zones experienced a reduction in average speed in both years, with average speed decreasing by 3km/h between 2020 and 2022.

In 2021, the significant reduction in the overall average speed was driven by 4.5 per cent and 3.5 per cent reductions in 40km/h and 100km/h zones, respectively.

In contrast, 50km/h zones experienced a sharp increase in average speed, rising 10.9 per cent in 2021, before remaining stable in 2022.



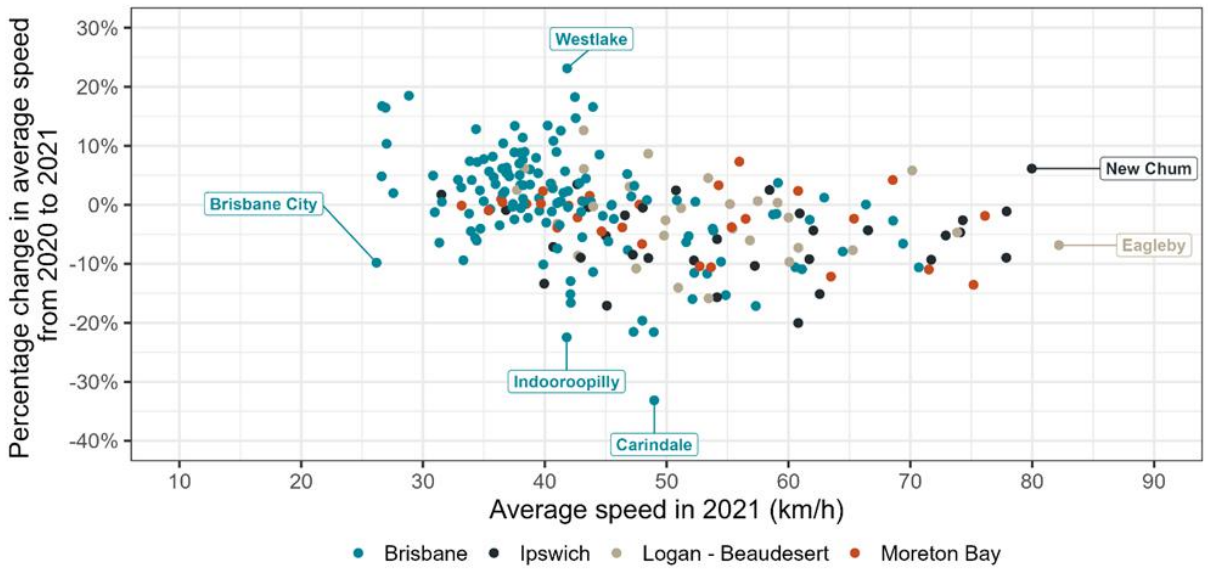
Note: Values rounded to one decimal place.

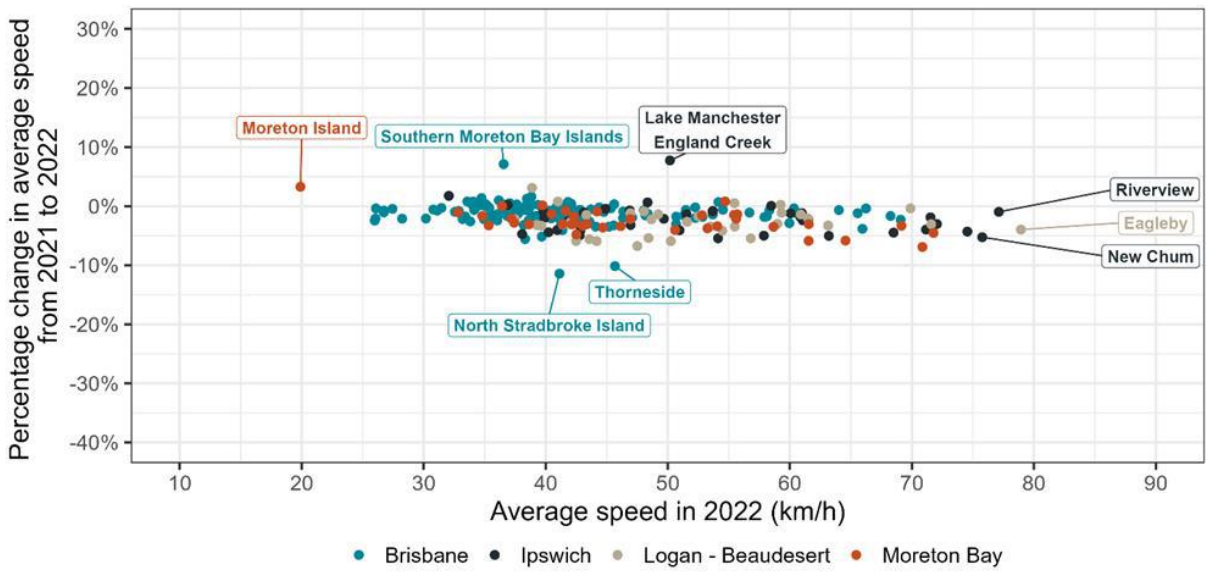
By 2022, average speed across all key speed zones was below the corresponding levels in 2016, except for those in 50km/h and 60km/h zones, where average speeds were 2.1 and 0.4km/h higher, respectively, than their levels in 2016. In contrast, overall average speed was 7km/h below 2016 levels.

Further analysis of average speed by SA2 areas in Greater Brisbane suggests that 53 per cent of SA2 areas experienced reductions in average speed in 2021 (Figure 3.1), which helps to explain the overall reductions in average speed observed in Greater Brisbane in 2021. The largest reductions in average speeds were recorded in Carindale (33.2 per cent), followed by Indooroopilly (22.5 per cent). Brisbane City remained the SA2 with the lowest average speed in 2021. A more detailed analysis of traffic trends in Brisbane City is undertaken in the supplementary analysis discussed in section 5.

The largest percentage increase in 2021 was recorded in Westlake at 23 per cent.

Figure 3.1: Average speed and percentage change in average speed in Greater Brisbane, by SA2 areas, 2020 to 2021 and 2021 to 2022





Note: Several new SA2 areas were introduced in 2021, and appear only in the second plot, e.g., Moreton Island.

Examination of average speed by major regions of Greater Brisbane (which includes Brisbane, Ipswich, Logan – Beaudesert and Moreton Bay) suggests that Brisbane was the most volatile area, containing the ten largest percentage increases and four largest percentage decreases in average speed by SA2 area in 2021.

In contrast, 2022 was far more stable than the preceding year. No SA2 recorded a percentage change in average speed of more than 11.5 per cent in either direction, although average speeds did fall in 85 per cent of SA2 areas. Across both years, more than 80 per cent of SA2 areas had average speeds below 50km/h.

3.2 Percentage of speed limit in Greater Brisbane remained lower than that in Queensland

Consistent with the trend in average speed, POSL in Greater Brisbane decreased significantly in 2021 and slightly further in 2022 (Box 3.3). POSL in Greater Brisbane declined at a faster rate than that for all of Queensland.

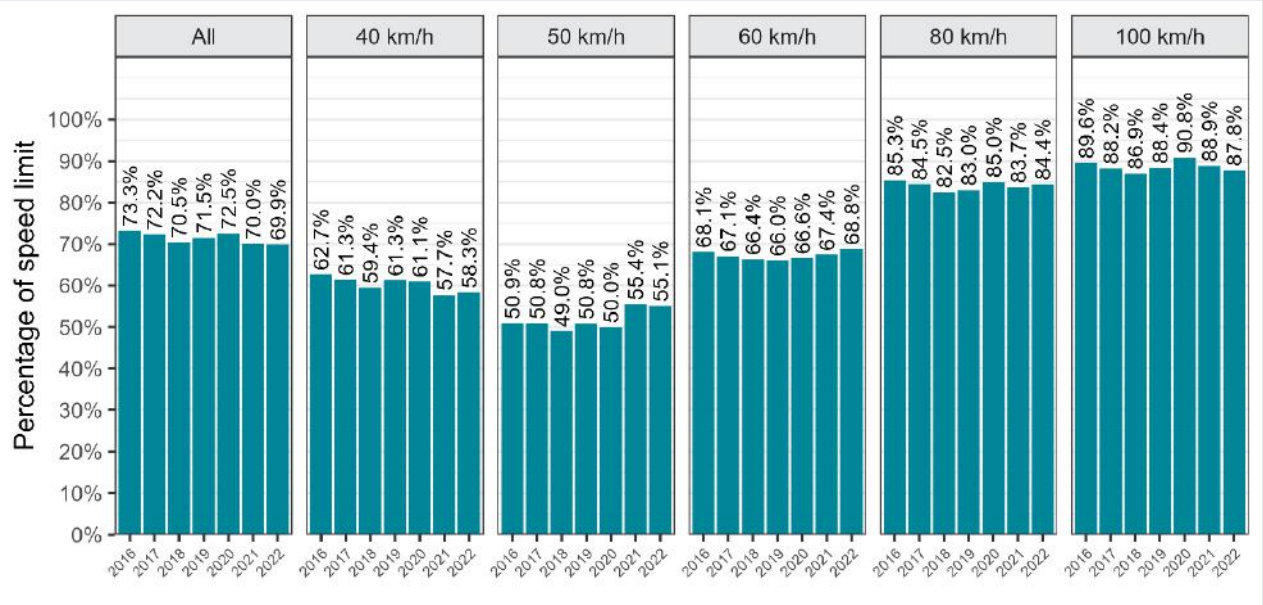
Overall, POSL remained lower in Greater Brisbane than in Queensland across both years. This difference was driven by:

- POSL in lower speed zones with limits of 40km/h, 50km/h and 60km/h in Greater Brisbane was on average 1.8 percentage points lower than state-wide levels; and
- the greater prevalence of low-speed roads (where POSL is generally lower) in Greater Brisbane as compared to all of Queensland.

This is consistent with previous observations that it is, in general, more congested in Greater Brisbane than in Queensland on average.

Box 3.3: Percentage of speed limit in Greater Brisbane, by speed zone, 2016 to 2022

POSL in Greater Brisbane decreased in the two years, falling 2.5 percentage points from 72.5 per cent in 2020 to 70 per cent in 2021 before remaining relatively stable in 2022. By way of comparison, POSL in Queensland declined by 2.2 percentage points in 2021.



Note: Values rounded to one decimal place.

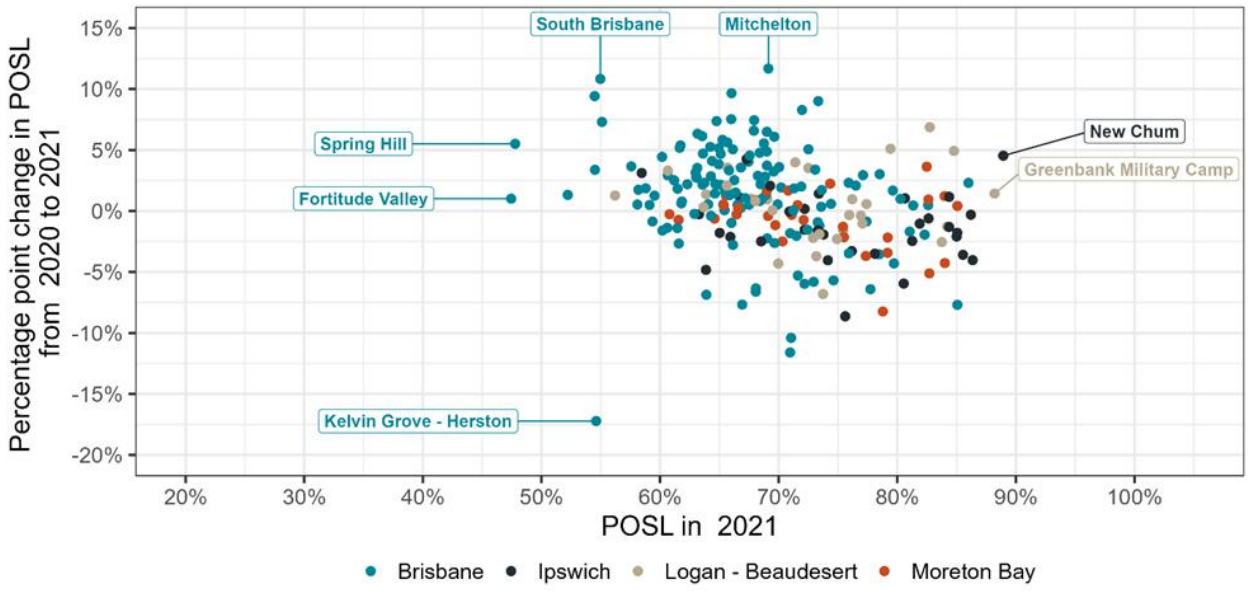
Overall, POSL in Greater Brisbane was lower than that in all of Queensland by 2.1 percentage points in both 2021 and 2022.

Across low-speed zones of 40km/h, 50km/h and 60km/h, POSL in Greater Brisbane was on average 1.8 percentage points lower than state-wide levels in 2022. In contrast, across higher speed zones of 80km/h and 100km/h, POSL in Greater Brisbane was on average 0.5 percentage points higher than state-wide levels in 2022.

Figure 3.2 presents POSL and percentage point change in POSL by SA2 areas in Greater Brisbane in 2021 and 2022. The SA2 analysis suggests that 62 per cent of SA2 areas in Greater Brisbane experienced a POSL increase in 2021, while 55 per cent of SA2 areas experienced a POSL decrease in 2022. The magnitudes of these changes were far greater in 2021, with an average change (in absolute terms) of 3 percentage points, compared to an average change of 0.9 percentage points in 2022.

Areas with lowest POSL were typically located in the Brisbane region, with the eight SA2 areas with the lowest POSL in 2021, and ten of the eleven areas with lowest POSL in 2022, located in Brisbane. Spring Hill and Fortitude Valley (both located in Brisbane's inner city) sat below 50 per cent in POSL in both years.

Figure 3.2: POSL and percentage point change in POSL in Greater Brisbane, by SA2 area, 2020 to 2021 and 2021 to 2022



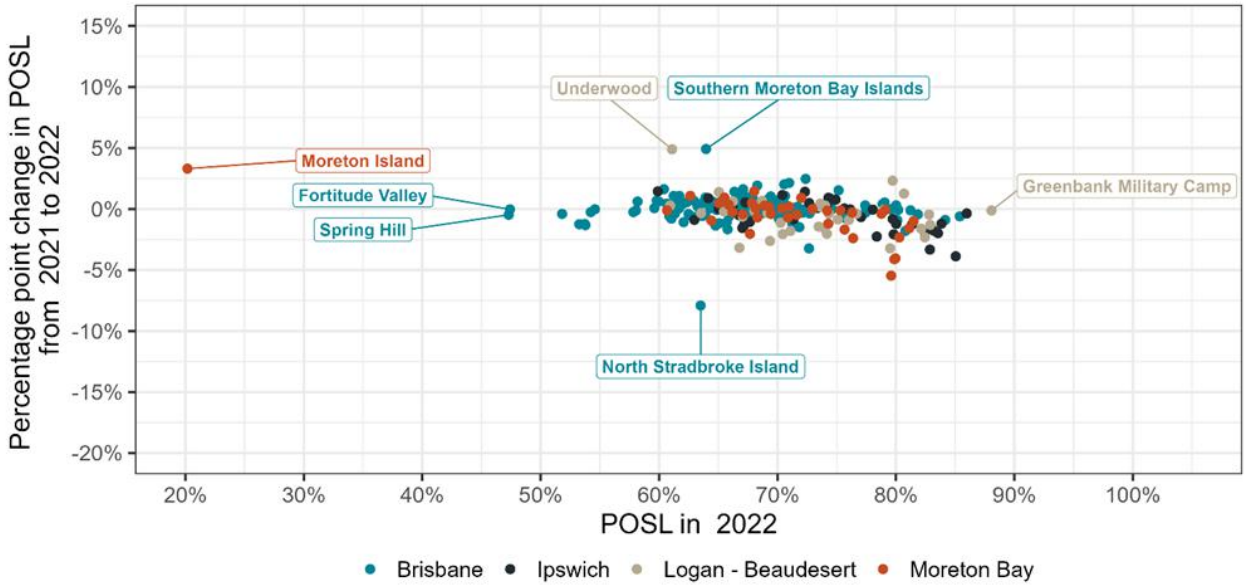
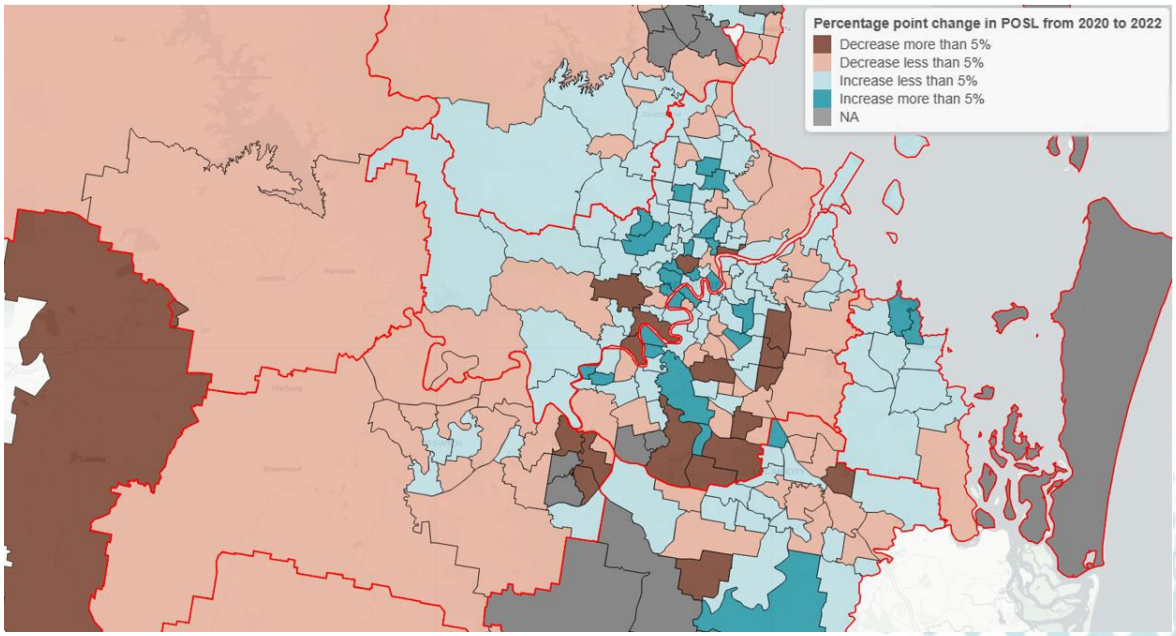


Figure 3.3 presents the percentage point change in POSL between 2020 and 2022 (inclusive of the effect of change in 2021) in a spatial map of SA2 areas in Greater Brisbane. The following findings were observed:

- most SA2 areas in the inner Brisbane region experienced increases in POSL to varying extents; and
- SA2 areas along the Logan Motorway, Ipswich Motorway and Centenary Highway on the southern border of the Brisbane metropolitan area, and those along the Gateway Motorway experienced significant reductions in POSL between 2020 and 2022.

With regards to the latter observation, the SA2s with significant reductions in POSL between 2020 and 2022 were Pallara-Willawong, Parkinson-Drewvale (through Logan Motorway), Calamvale-Stretton, Carindale, Mansfield, Wishart (through Gateway Motorway), Goona, Camira-Gailes (through Ipswich Motorway), and Springfield (through Centenary Highway). It should be noted that these areas had significant increases in POSL in 2020, which suggests that traffic trends in these areas may have returned to pre-pandemic levels.

Figure 3.3: Percentage point change in POSL in Greater Brisbane, by SA2 areas, 2020 to 2022



3.3 Compliance increased across Greater Brisbane between 2020 and 2022, driven by 40km/h zones and SA2 areas in the Brisbane region

Similar to the overall trend in Queensland, compliance with speed limits in Greater Brisbane increased in 2021 before decreasing slightly in 2022 (Box 3.4). However, compliance with speed limits in Greater Brisbane exceeded that in Queensland overall for the first time since 2016 (by 1.2 percentage points).

The improvement in compliance in 2021 was driven by a significant increase in 40km/h zones, which climbed 14.5 percentage points in 2021 and remained stable at approximately 82 per cent in 2022. Compliance in 80km/h zones also increased in 2021, which contributed to the increase in the overall Greater Brisbane compliance rates in 2021.

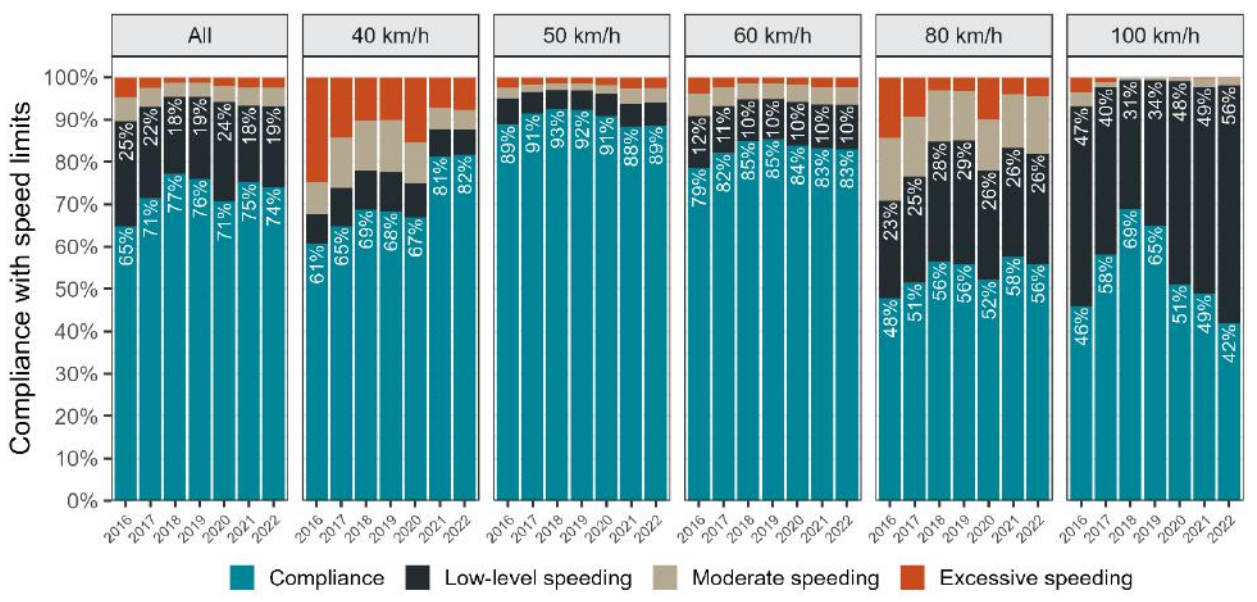
The slight reduction in compliance in 2022 was driven by significant decreases in the relatively faster speed zones (80km/h and 100km/h zones), while compliance remained stable in the other speed zones. In particular, compliance in 100km/h zones fell below 2016 levels for the first time, with compliance in 2022 below 50 per cent on 100km/h roads.

Overall, the change in compliance across 2021 and 2022 was largely offset by the change in low-level speeding, although the combined proportion of compliance and low-level speeding slightly decreased in the last two years. On the other hand, the proportion of excessive speeding increased in 2021 and 2022, which is consistent with the observed state-wide trend.

The overall trend of increasing excessive speeding in Greater Brisbane was observed in 50km/h, 60km/h, and 100km/h zones. On the contrary, the frequency of excessive speeding decreased significantly in 40km/h and 80km/h zones, in the context of significant improvement in compliance in these speed zones.

Box 3.4: Compliance with speed limits in Greater Brisbane, by speed zone, 2016 to 2022

Compliance with speed limits in Greater Brisbane rose from 70.6 per cent in 2020 to 75.2 per cent in 2021. In 2022, compliance declined slightly to 74.1 per cent, but exceeded the level of compliance across Queensland for the first time, which fell to 72.9 per cent.



Note: Values rounded to one decimal place.

There was significant improvement in compliance in 40km/h zones in 2021, increasing by 14.5 percentage points and remaining stable in 2022.

In 2022, the slight reduction in overall compliance was driven by decreases in 80km/h and 100km/h zones. In particular, compliance in 100km/h zones decreased by seven percentage points in 2022, as compliance fell below the levels observed in 2016 for the first time.

Overall, the combined proportion of compliance and low-level speeding decreased by one percentage point in the last two years. The reduction led to increases in the proportion of moderate and excessive speeding.

The average rate of excessive speeding across key speed zones increased slightly in both years, by a total of 0.3 percentage points. This overall trend of increasing excessive speeding was observed in 50km/h, 60km/h and 100km/h zones, with the most significant increase in excessive speeding occurring in 50km/h zones (by 0.8 percentage points) between 2020 and 2022.

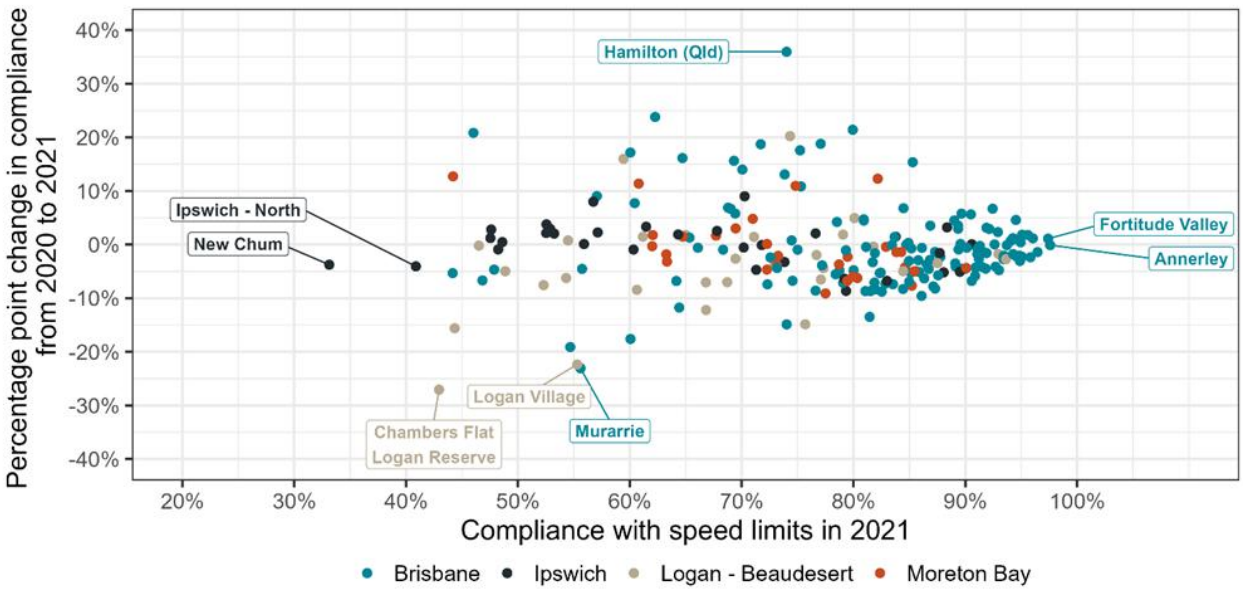
Reductions in excessive speeding were observed in 40km/h and 80km/h zones, with the most significant decrease occurring in 40km/h zones (by 7.7 percentage points) between 2020 and 2022.

Figure 3.4 presents rates of compliance, as well as percentage point change in compliance, by SA2 area in Greater Brisbane in 2021 and 2022. It should be noted that similar to the trend in POSL, percentage point changes in compliance between 2020 and 2021 were far more significant than those between 2021 and 2022. The average absolute change in compliance across Greater Brisbane was 5.5 percentage points in 2021, compared to 2.1 percentage points in 2022.

Overall, between 2020 and 2022 (inclusive of changes in 2021), 66.5 per cent of SA2 areas in Greater Brisbane reported reduced compliance. Nonetheless, across both 2021 and 2022, compliance sat above 80 per cent in slightly fewer than half of these SA2 areas.

The Brisbane region was generally more compliant than other regions of Greater Brisbane. In both years, the ten most compliant SA2 areas were all located in the Brisbane region, while the three least compliant were not. Annerley was the most compliant SA2 area in both years with speed limit compliance of 98 per cent.

Figure 3.4: Compliance and change in compliance in Greater Brisbane, by SA2 areas, 2020 to 2021 and 2021 to 2022



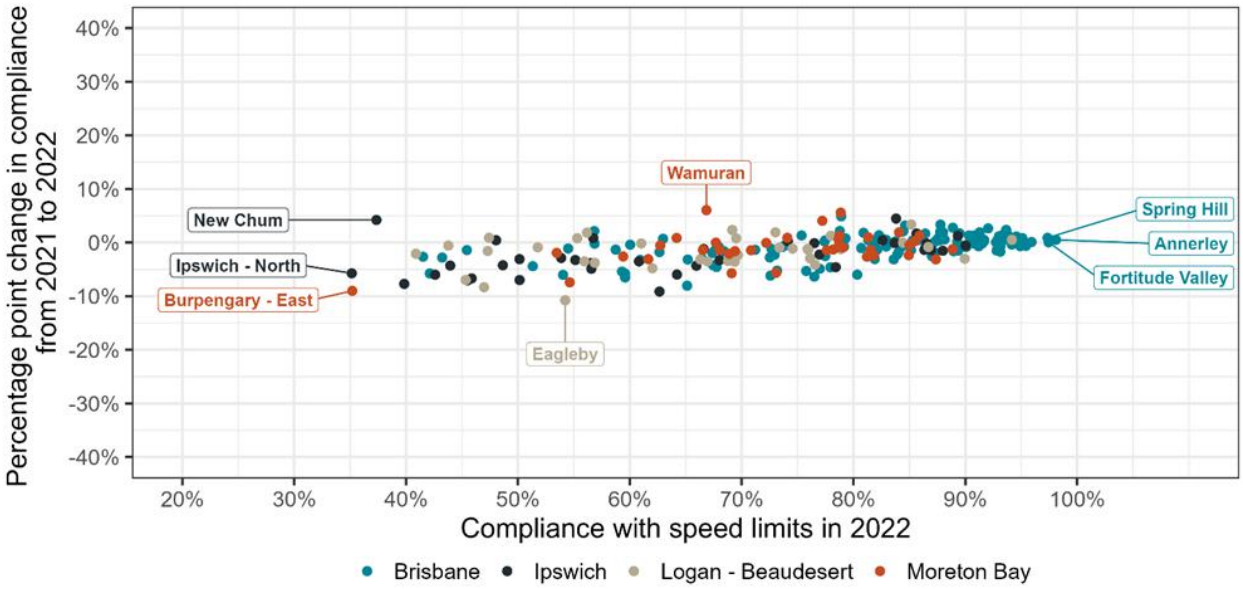


Figure 3.5 presents the geospatial distribution of compliance in Greater Brisbane in 2022, and the percentage point change in compliance between 2020 and 2022. It should be noted that:

- SA2 areas closer to the inner Brisbane region were generally more compliant, despite decreases in compliance in some of these SA2 areas in the last two years;
- the least compliant areas were located further west and south, where there were significant decreases in compliance between 2020 and 2022; and
- compliance improved in the areas with the largest decreases in POSL, as specified in section 3.2 (ie, those SA2 areas through which parts of Logan Motorway, Gateway Motorway, Ipswich Motorway and Centenary Highway lie).

Figure 3.5: Compliance and two-year percentage point change in compliance in Greater Brisbane, by SA2 areas, 2022

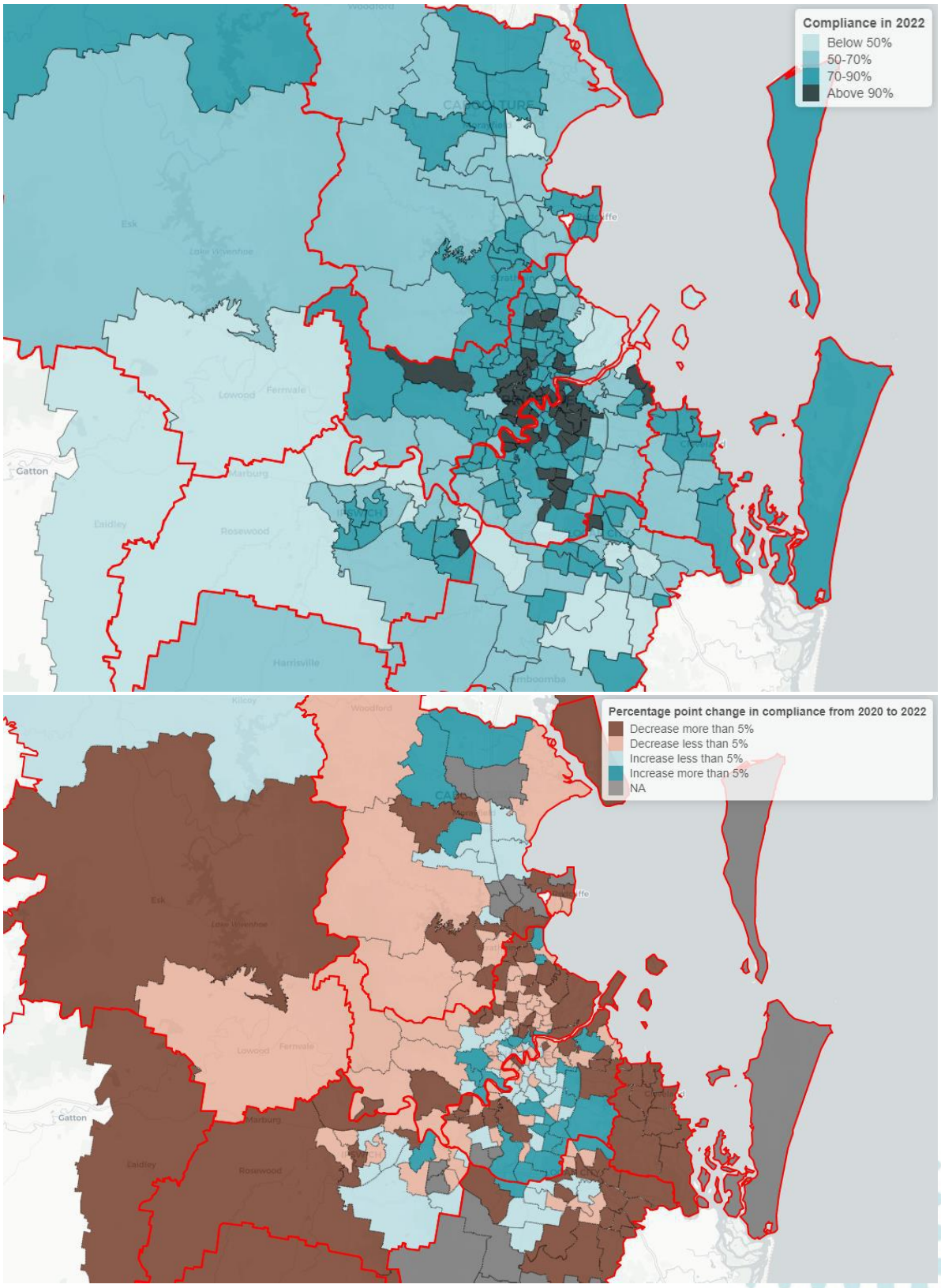
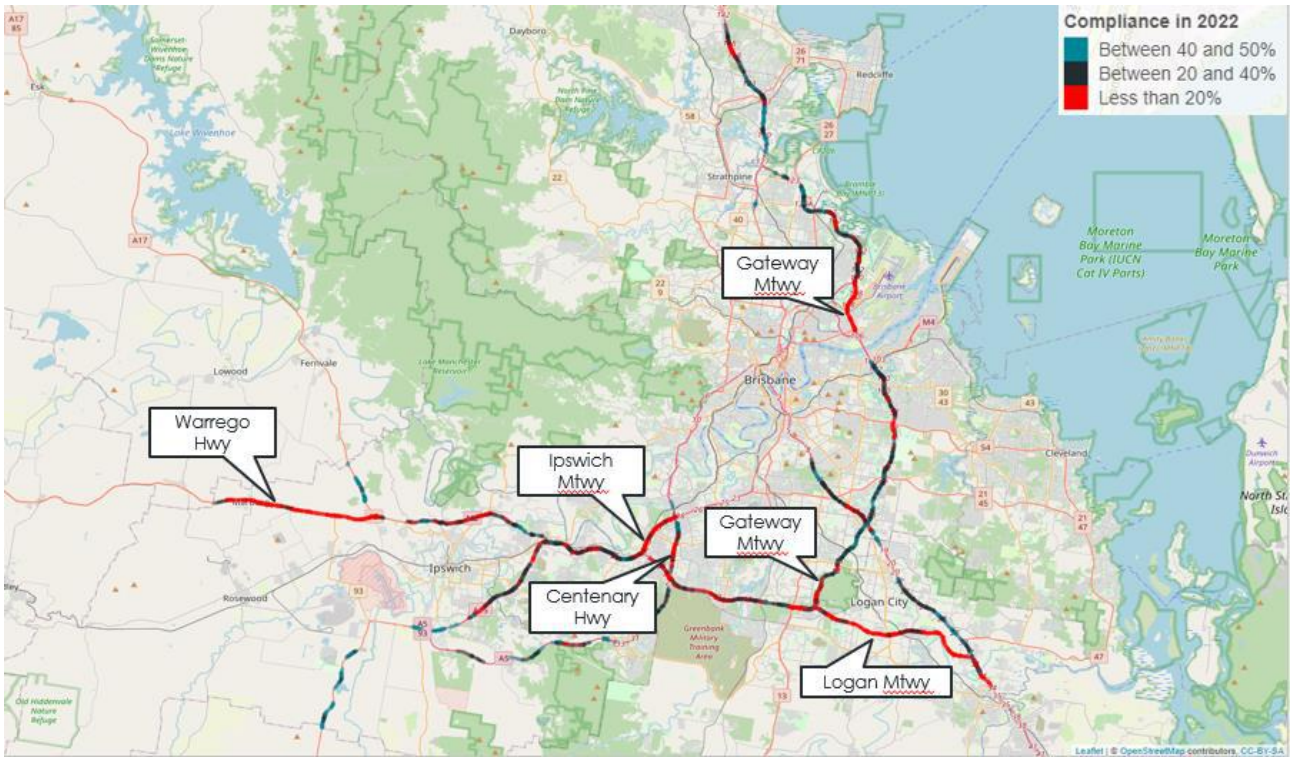


Figure 3.6 presents a map of compliance in 100km/h zones of less than 50 per cent along major motorways and highways around Greater Brisbane in 2022. Despite improvements in compliance along these major routes in Greater Brisbane in 2021 and 2022, compliance on most segments of these routes remained below 50 per cent, which helps to explain the low compliance levels observed in 100km/h zones overall in Greater Brisbane.

Figure 3.6: Compliance of less than 50 per cent in 100km/h zones along major motorways and highways in Greater Brisbane, 2022



3.4 Average speed when speeding in Greater Brisbane remained higher than the state-wide trend across 2021 and 2022

Between 2020 and 2022, average speed when speeding increased in all key speed zones, except for 80km/h zones, with the largest increase being observed in 100km/h zones (Box 3.5).

Across all key speed zones, average speed when speeding remained higher in Brisbane than across all of Queensland. This suggests that even though drivers in Greater Brisbane travelled at a lower speed on average, when exceeding the speed limit they did so at higher speeds than other Queensland drivers.

Average speed when speeding remained most severe in 40km/h zones in Greater Brisbane, such that:

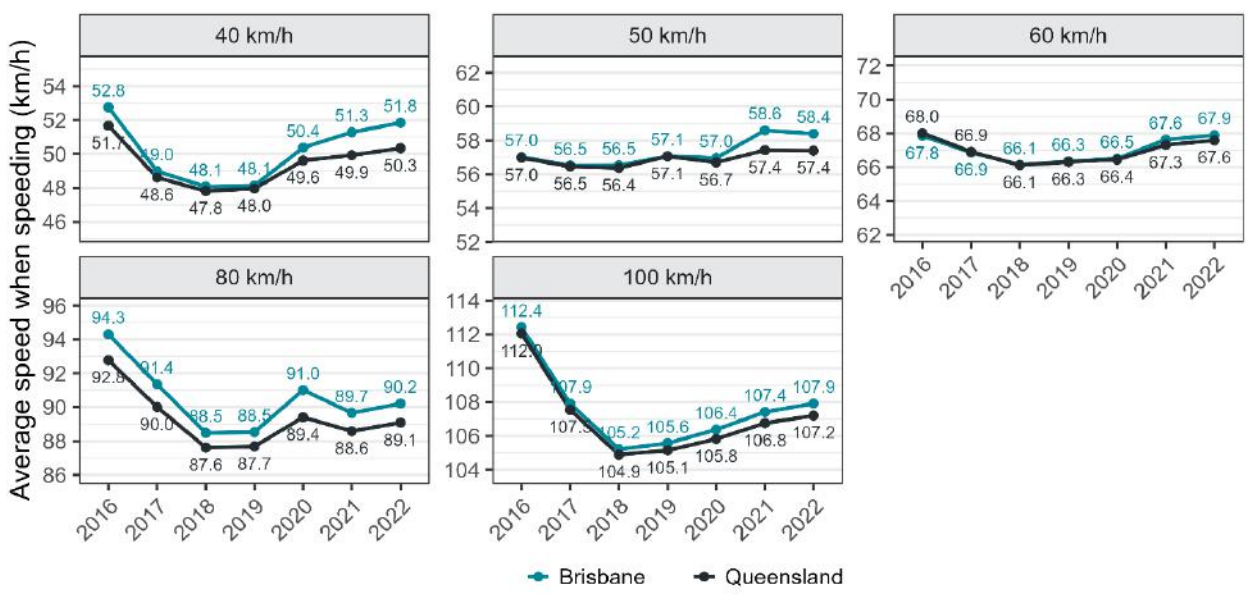
- the difference with the average speed when speeding in Queensland was the largest across all key speed zones in 2022; and
- average speed when speeding relative to the speed limit was highest in 40km/h zones, rising to 130 per cent of the speed limit (51.8km/h).

The worsening of average speed when speeding in 40km/h zones occurred despite compliance on 40km/h roads improving significantly in the last two years. This suggests that while more drivers were complying with speed limit, those drivers who continued to exceed the speed limit did so to a greater extent.

Box 3.5: Comparison of average speed when speeding, Brisbane and Queensland, 2016 to 2022

Average speed when speeding increased in all key speed zones between 2020 and 2022, except for 80km/h zones which fell by 0.8km/h. The largest increase was observed in 100km/h zones, rising 1.5km/h over the two years.

These trends in average speed when speeding across key speed zones were in line with those observed for Queensland overall, though average speed when speeding in Greater Brisbane remained above the level in Queensland. The greatest difference was in 40km/h zones where average speed when speeding in Greater Brisbane was 1.5km/h above the state-wide level in 2022.



Note: Values rounded to one decimal place.

Similar to the analysis undertaken on average speed when speeding in Queensland, a further decomposition of the increase in average speed when speeding with reference to the three categories of speeding (low-level, moderate and excessive) was conducted (Box 3.6).

Consistent with the trends observed for Queensland overall, the increases in average speed when speeding across all key speed zones were driven by:

- the increases in average speed when speeding at a low level in all speed zones; and
- the increase in average speed when speeding at an excessive level in 40km/h and 50km/h zones.

The increases in average speed when speeding at a low level mostly occurred in urban areas across all speed zones, and regional areas in 100km/h zones only. The most significant increase in average speed when speeding at a low level occurred in 40km/h zones in urban areas.

The degree of excessive speeding generally rose in 40km/h and 50km/h zones, and fell in all faster speed zones. The most severe increase was in 40km/h zones, where average speed when speeding at excessive levels increased by 3.8 per cent over the two years.

These observations reinforce the mixed dynamics in 40km/h zones where the frequency of compliance increased significantly in the last two years, yet the speeding behaviour of drivers who continued exceeding the speed limit worsened, particularly in the excessive speeding category.

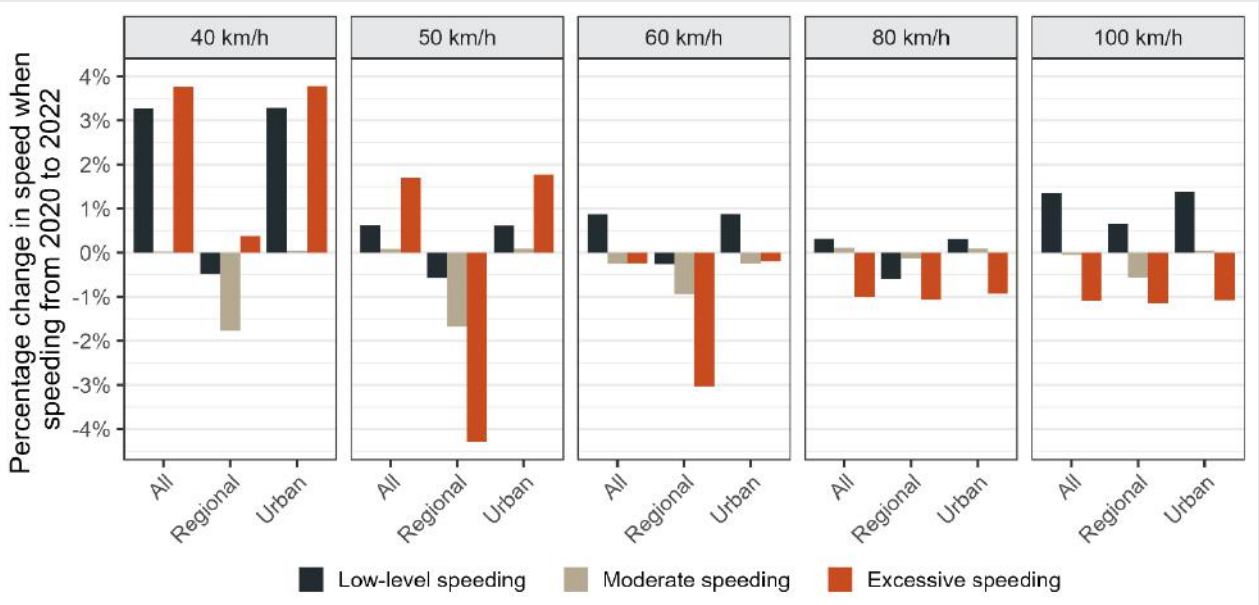
In terms of moderate speeding, there were either insignificant or very small reductions in the average speed when speeding at moderate levels in Greater Brisbane. This is in contrast to the decreasing speed when speeding at a moderate level in Queensland overall.

Box 3.6: Percentage change in average speed when speeding in Greater Brisbane, urban and regional, 2020 to 2022

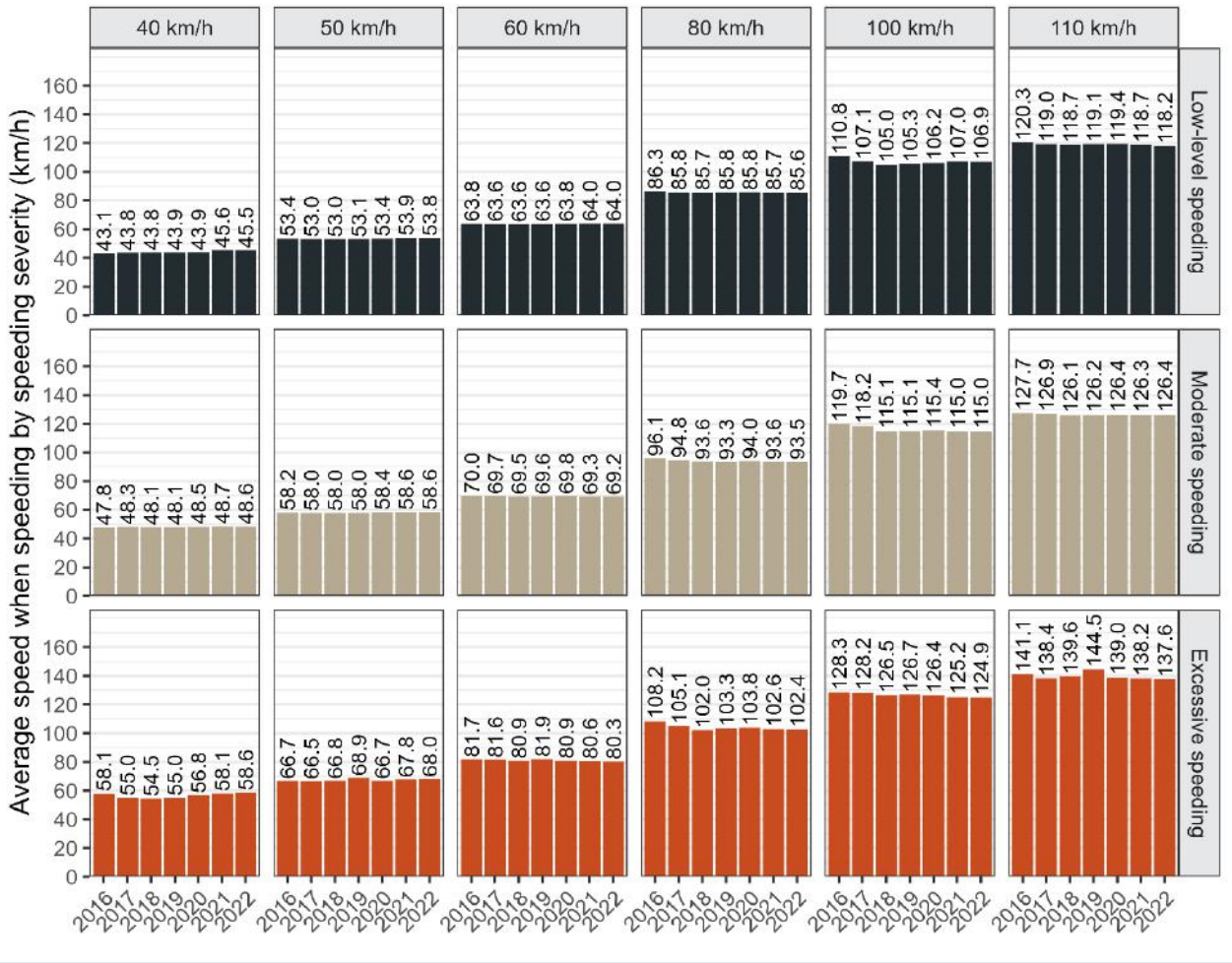
The extent of low-level speeding in urban areas increased in all key speed zones in Greater Brisbane, particularly 40km/h zones, where the speeding margin increased by 3.3 per cent between 2020 and 2022.

The degree of excessive speeding rose in 40km/h and 50km/h zones, but fell in all faster speed zones. Average speed when speeding excessively in 40km/h zones increased from 56.8km/h to 58.6km/h between 2020 and 2022, which is the largest percentage increase across all key speed zones.

The severity of moderate speeding declined in all key speed zones in regional areas, by an average of one per cent between 2020 and 2022. Urban areas experienced almost no change in the extent to which drivers sped at moderate levels.



The chart below displays the reported speed for each category of speeding severity and each key speed zone.


40 km/h
50 km/h
60 km/h
80 km/h
100 km/h
110 km/h
Low-level speeding
Moderate speeding
Excessive speeding
Average speed when speeding by speeding severity (km/h)
0
20
40
60
80
100
120
140
160
2016
2017
2018
2019
2020
2021
2022
43.1 43.8 43.8 43.9 43.9 45.6 45.5
53.4 53.0 53.0 53.1 53.4 53.9 53.8
63.8 63.6 63.6 63.6 63.8 64.0 64.0
86.3 85.8 85.7 85.8 85.8 85.7 85.6
110.8 107.1 105.0 105.3 106.2 107.0 106.9
120.3 119.0 118.7 119.1 119.4 118.7 118.2
47.8 48.3 48.1 48.1 48.5 48.7 48.6
58.2 58.0 58.0 58.0 58.4 58.6 58.6
70.0 69.7 69.5 69.6 69.8 69.3 69.2
96.1 94.8 93.6 93.3 94.0 93.6 93.5
119.7 118.2 115.1 115.1 115.4 115.0 115.0
127.7 126.9 126.1 126.2 126.4 126.3 126.4
58.1 55.0 54.5 55.0 56.8 58.1 58.6
66.7 66.5 66.8 68.9 66.7 67.8 68.0
81.7 81.6 80.9 81.9 80.9 80.6 80.3
108.2 105.1 102.0 103.3 103.8 102.6 102.4
128.3 128.2 126.5 126.7 126.4 125.2 124.9
141.1 138.4 139.6 144.5 139.0 138.2 137.6

4. Road speed performance across Queensland local government areas

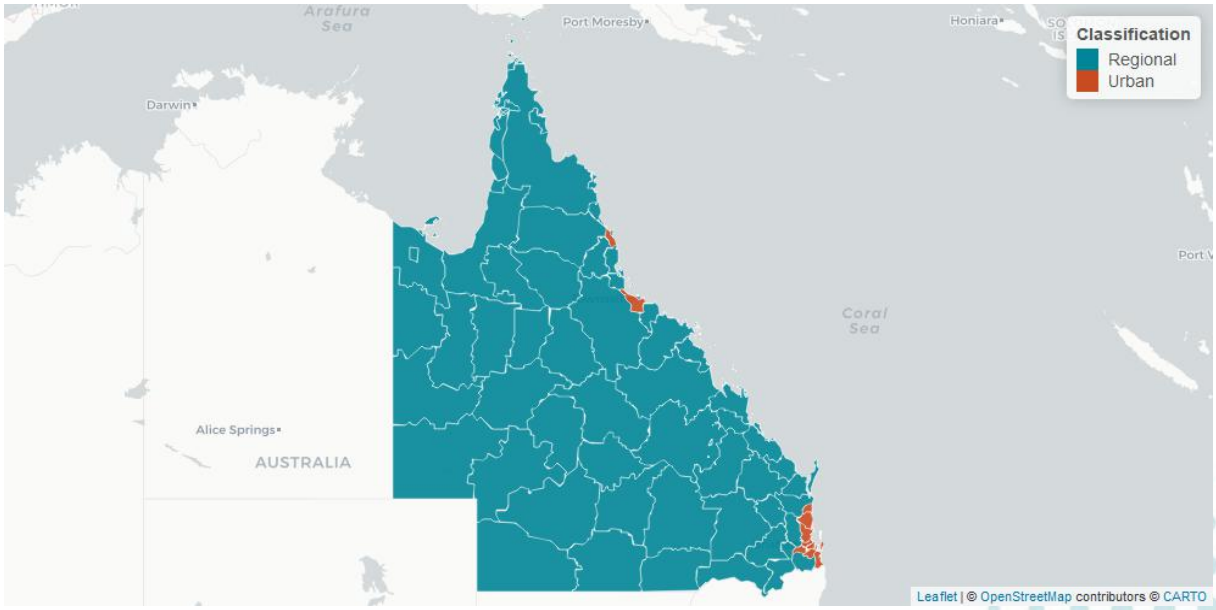
- POSL decreased in 82.2 per cent of Local Government Areas (LGAs) between 2020 and 2022.
- The most significant POSL decreases occurred in Far North Queensland LGAs. Across the state, only 11 LGAs decreased by more than 10 percentage points.
- Compliance with speed limits fell in 68.5 per cent of LGAs from 2020 to 2022.
- However, on average, the extent of increase in those LGAs with improved compliance was greater than the extent of decrease in those LGAs with worsening compliance.
- The eight LGAs which recorded the highest compliance levels in 2022 also correspond exactly to the LGAs which recorded the lowest levels of POSL in the same year.

To help identify differences in road speed performance across Queensland, all speed metrics were investigated across each Local Government Area (LGA) in Queensland. This section sets out the high-level results of the traffic performance across Queensland LGAs.

4.1 Classification of local government areas into urban and regional

There are 78 LGAs in Queensland, with classification of regional and urban LGAs as presented in figure 4.1. An LGA is defined as urban if 50 per cent of the road network (measured in kilometres) within the LGA is designated as urban.[11]

Figure 4.1: Classification of local government areas between regional and urban in Queensland

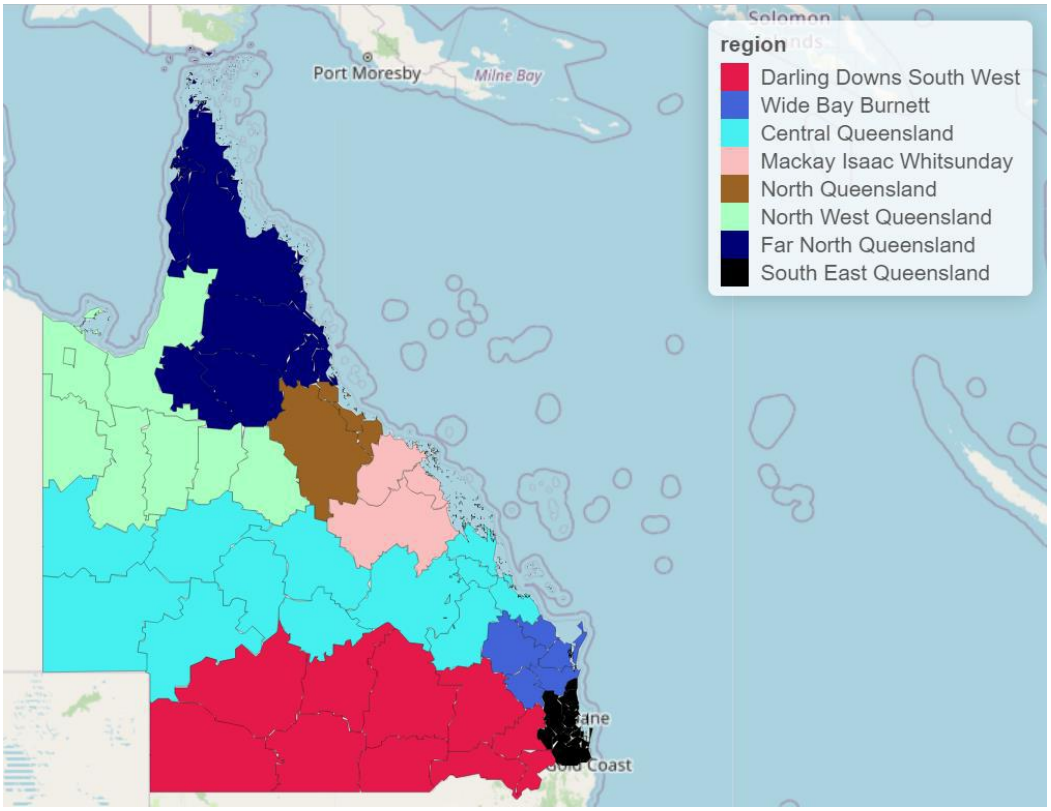


[11] See ABS, *Australian statistical geography standard (ASGS) volume 4*, cat. no. 1270.0.55.004, available at http://www.abs.gov.au/ausstats/abs@.nsf/mf/1270.0.55.004. See appendix A1.2 for a complete description of urban area.

According to this definition, ten LGAs are considered urban – Brisbane, Moreton Bay, Gold Coast, Sunshine Coast, Logan, Townsville, Ipswich, Cairns, Redlands and Noosa. The remainder of the LGAs are defined as regional.

In addition, LGAs are grouped by a higher geographic level (ie, region) as presented in figure 4.2. Specifically, LGAs are grouped into one of the following regions: Far North Queensland, North Queensland, North West Queensland, Mackay Isaac Whitsunday, Central Queensland, Wide Bay Burnett, Darling Downs South West, and South East Queensland.

Figure 4.2: Classification of local government areas into regions



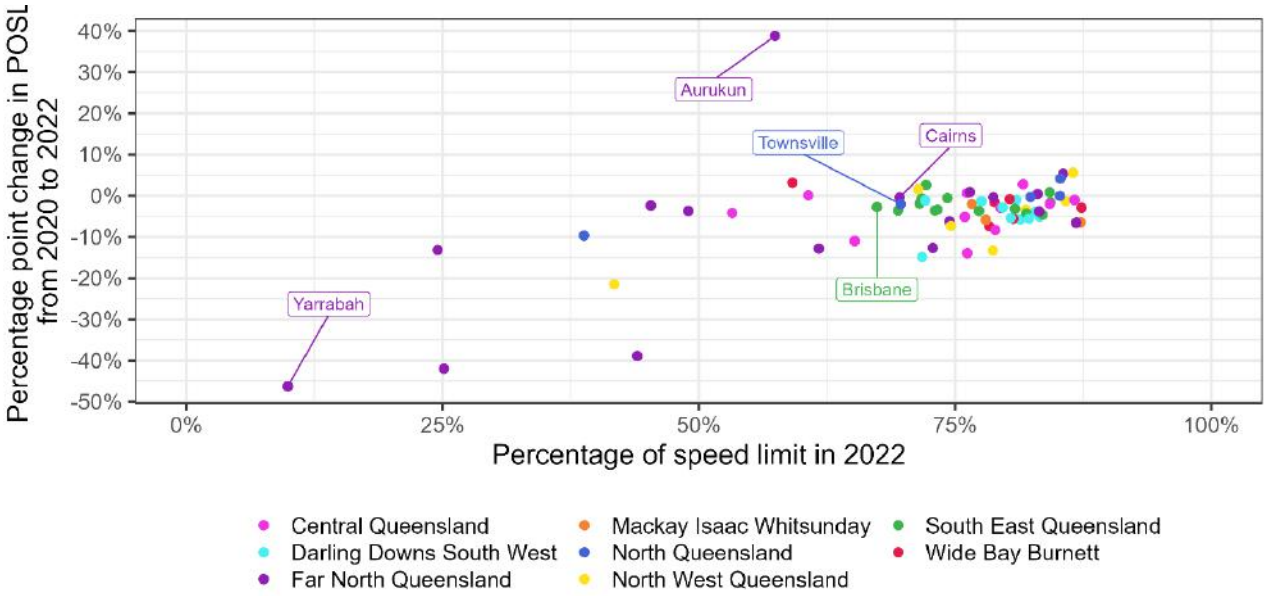
4.2 Percentage of speed limit decreased in most local government areas between 2020 and 2022

POSL decreased in 82.2 per cent of LGAs between 2020 and 2022 (Figure 4.3). In 2022, the maximum observed POSL level among all LGAs was 87.5 per cent, with 71.4 per cent of LGAs having a POSL above 70 per cent.

Of the LGAs for which POSL increased, the greatest was a 38.8 percentage point change in Aurukun. Aurukun had reported a POSL level below 25 per cent in each year from 2017 to 2020, but in 2021 climbed significantly to a level more consistent with the rest of the state. Excluding Aurukun, no other LGA experienced a POSL increase of more than six percentage points.

The most significant POSL decreases occurred in Far North Queensland LGAs, namely Yarrabah, Torres and Napranum, which each reported a POSL decrease of at least 38.9 percentage points. Far North Queensland also contained the six LGAs with the lowest POSL levels in 2022. Across the state, only 11 LGAs decreased by more than 10 percentage points.

Figure 4.3: POSL and two-year percentage point change in POSL in Queensland, by local government area, 2022



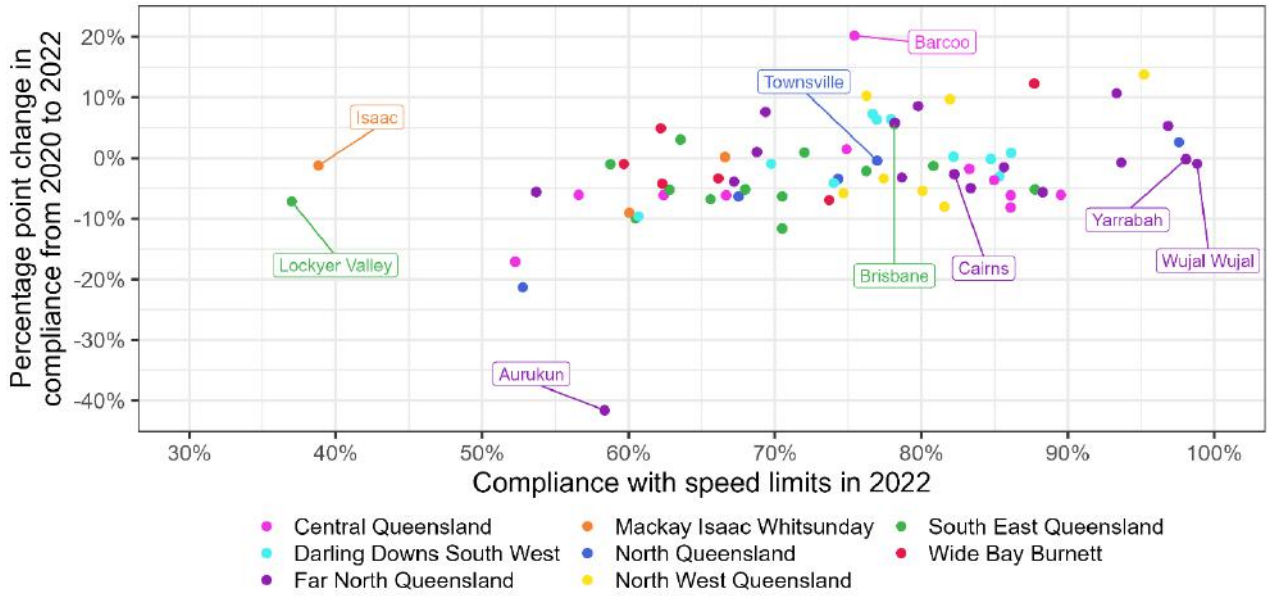
Note: POSL data is unavailable in 2020 for Lockhart River, Mapoon, Pormpuraaw and Torres Strait Island LGAs, all of which are excluded.

4.3 Compliance with speed limits decreased in the majority of local government areas

Compliance with the speed limit fell in 68.5 per cent of LGAs from 2020 to 2022 (Figure 4.4). However, on average, the extent of increase in those LGAs with improved compliance was greater than the extent of decrease in those LGAs with worsening compliance. Additionally, some of the largest LGAs (by volume of observations), such as Brisbane, Ipswich and Moreton Bay, experienced increases in compliance. This suggests that even though compliance decreased in the majority of LGAs, the extent of decreases was more than offset by the extent of improvements in some of the largest LGAs. Therefore, at a state-wide level, compliance was observed as having improved between 2020 and 2022.

The largest compliance decrease occurred in Aurukun (41.6 percentage points), which was also the LGA with the largest POSL increase. The eight areas which recorded the highest compliance levels in 2022 also correspond exactly to the areas which recorded the lowest levels of POSL in the same year.

Figure 4.4: Speed limit compliance and two-year percentage point change in compliance in Queensland, by local government area, 2022



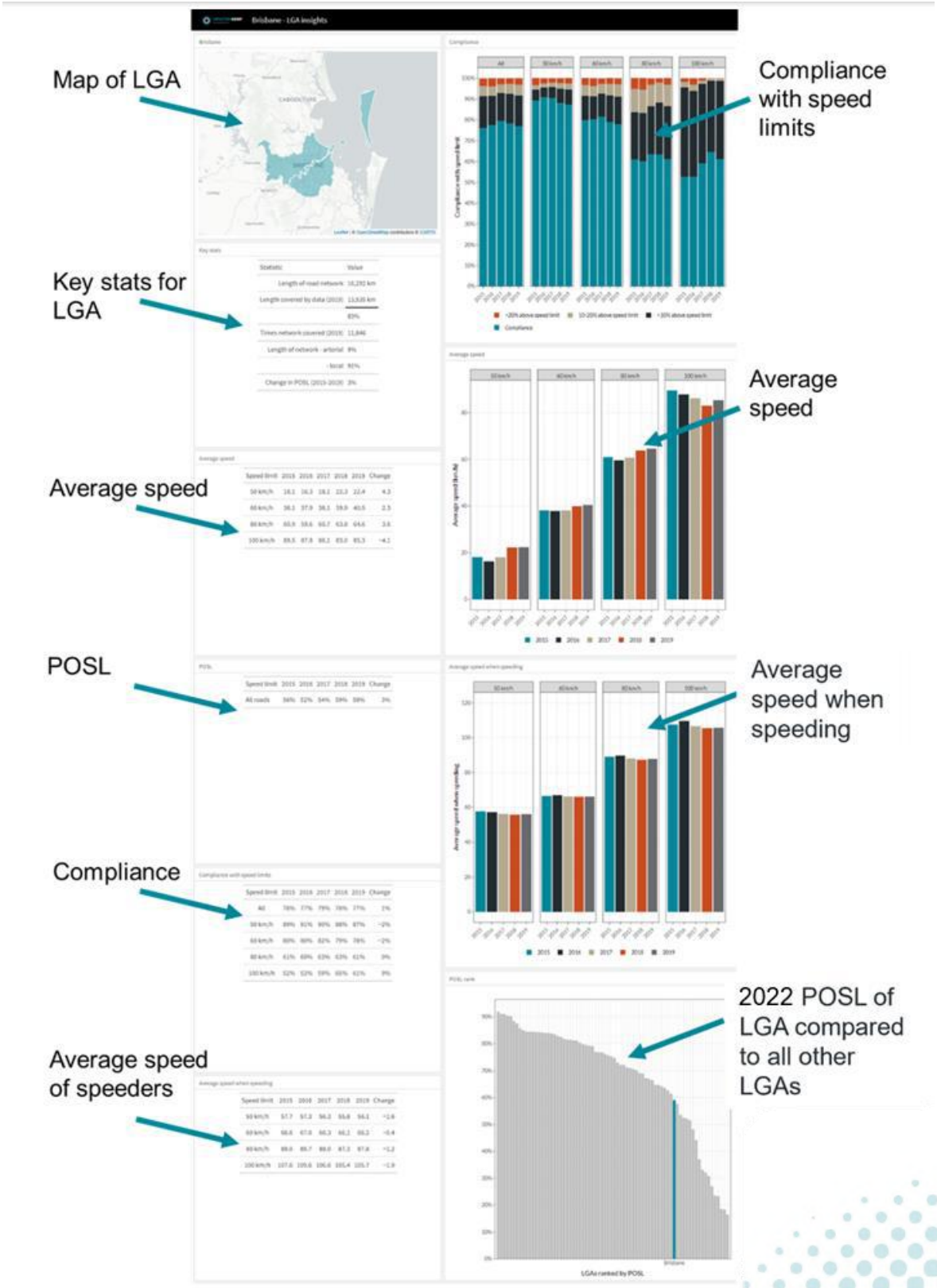
4.4 Individual local government area results

For each LGA, an information page summarising road performance over time was prepared. The page included:

- four charts, comprising of:
  - compliance with the speed limit;
  - average speed;
  - average speed when speeding; and
  - percentage of speed limit ranking, which ranks each LGA by percentage of speed limit in 2022;
- four data tables, which show:
  - average speed;
  - percentage of speed limit;
  - compliance with the speed limit; and
  - average speed when speeding;
- key stats for the LGA, including the length of the road network and what proportion of the network is comprised of arterial roads; and
- a map of the LGA.

Figure 4.5 below shows an example information page for Moreton Bay. One-page summaries have been separately provided to TMR for each LGA.

Figure 4.5: Example local government area speed performance summary



5. Data-driven evidence of working from home trends in the Brisbane CBD

Working-from-home became common for many people during the COVID-19 pandemic. During tightened periods of movement restrictions, working-from-home arrangements changed traffic flows across the road network, with associated implications for speed and speed compliance. As movement restrictions have gradually eased, working-from-home has been retained as an alternative to in-person work for many people compared to the circumstances prior to the pandemic.

The extent to which working-from-home arrangements remained in place by the end of 2022 is of interest from a traffic speed and compliance performance perspective. To this end, traffic data can be used to examine speed performance, particularly in the Brisbane CBD area, to infer how the trend of working-from-home has progressed with phases of movement restrictions, and the extent to which office workers have begun returning to offices up until the end of 2022.

This analysis is an extension of the analysis conducted in the speed survey for 2020 to understand the impact of COVID-19 movement restrictions on traffic performance in the whole of Queensland. In comparison, this analysis is restricted to the Brisbane CBD and provides in-depth analysis into various aspects of traffic performance in the CBD. The main objective of this analysis is to make substantiated inferences about the trend of working-from-home from examining traffic performance in the CBD.

5.1 Boundary and features of the Brisbane CBD

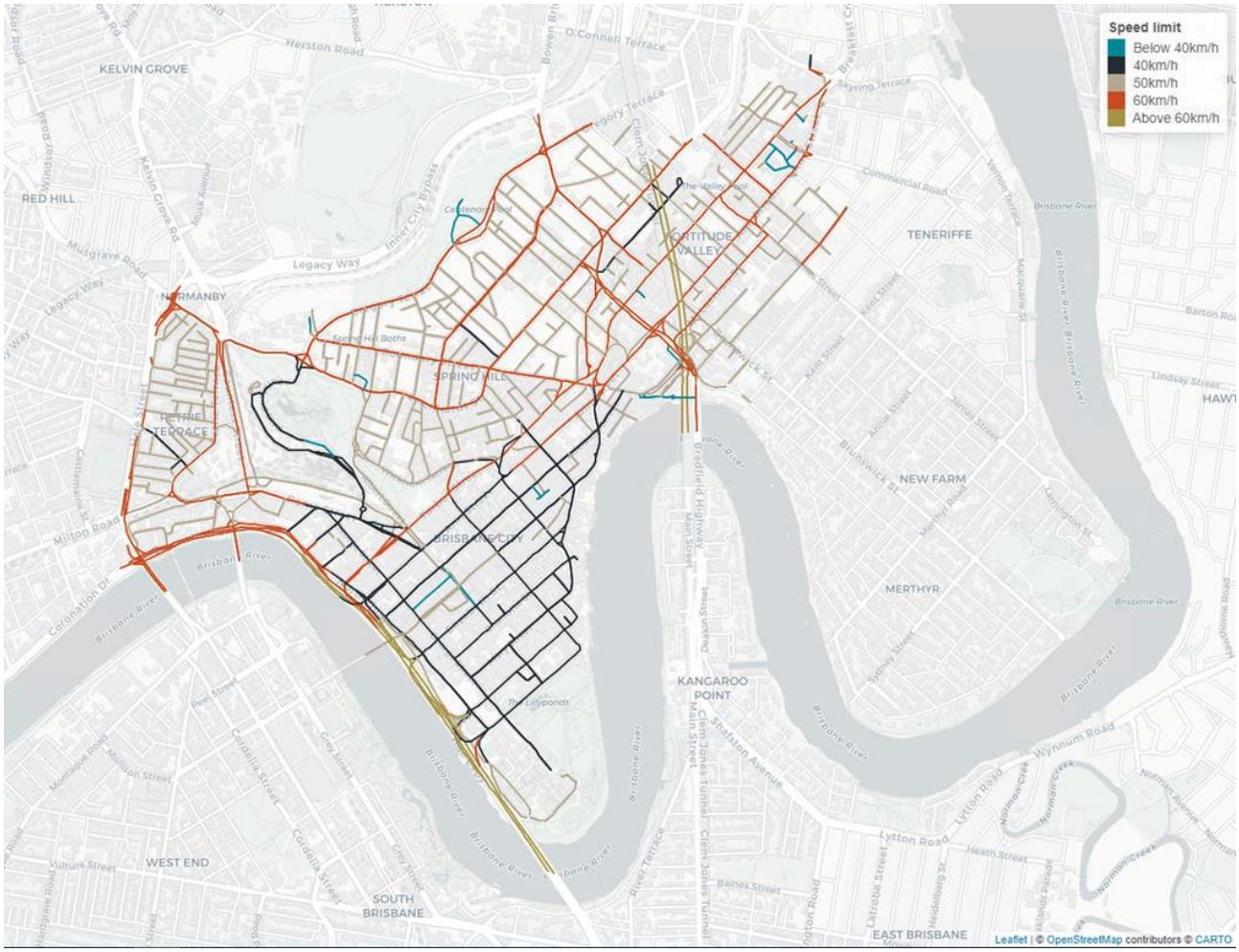
For the purposes of this analysis, the Brisbane CBD is defined as consisting of the SA2 areas of Brisbane City, Fortitude Valley and Spring Hill. Figure 5.1 shows the physical boundaries of the Brisbane CBD according to this definition, as well as the composition of speed zones within this area.

Roads in the CBD are primarily 40km/h, 50km/h and 60km/h zones, with a small number of 80km/h zones connecting the CBD to the rest of Brisbane. Most 40km/h zones are located in the Brisbane City SA2. Many of these roads, such as Adelaide Street and Edward Street, connect major retail and hospitality centres in the CBD, which encourage large amounts of pedestrian activity. Conversely, roads in Fortitude Valley and Spring Hill service a variety of residential and services-based areas, and subsequently have faster speed limits in general.

Main roads that are relatively less busy, yet still form the major connecting routes around the CBD, such as Boundary Street, are designated with 60km/h speed limits, with the majority of local roads in the CBD having a 50km/h speed limit.

There are very few speed observations in the speed zones below 40km/h. These zones make up an insignificant portion of the road network in the Brisbane CBD and are therefore excluded from this analysis.

Figure 5.1: Links in Brisbane CBD by speed limit



Source: HoustonKemp analysis of speed zones provided in HERE speed data. Speed zones below 40km/h are excluded from the traffic trend analysis due to their insignificance in the make-up of the road network in the Brisbane CBD.

Table 5.1 sets out the main periods of lockdown and movement restrictions in Queensland in general, and in the Brisbane region in particular. This timeline is useful in explaining the changes in traffic performance in the Brisbane CBD, which are outlined in detail in the following sections.

Table 5.1: Timeline of major lockdown and movement restrictions in Queensland, 2020 to 2022

Period	Main event
29 March 2020	State-wide lockdown imposed in Queensland
2 May 2020	Official end of state-wide lockdown, remaining restrictions eased gradually over the next several months
8 – 11 January 2021	3-day snap lockdown in Brisbane
29 March – 1 April 2021	3-day snap lockdown in Brisbane
29 June – 2 July 2021	3-day snap lockdown in Brisbane, coinciding with the reintroduction of some restrictions
31 July – 8 August 2021	10-day snap lockdown in Brisbane
20 August 2021	Easing of restrictions in Queensland leading up to Christmas in 2021, remaining largely unrestricted until the end of 2022

Note: This table includes events which impacted movement within Queensland, omitting events relating to border restrictions.

5.2 Methodology and caveat in the interpretation of traffic trends

In this analysis, the standard metrics of average speed, compliance and average speed when speeding for the Brisbane CBD are examined.[12] These metrics are calculated using the same formulas as those in the standard analysis set out in previous sections. However, these metrics are calculated on a weekly level between 2020 and 2022 to provide more granular insights into the trend of working-from-home.

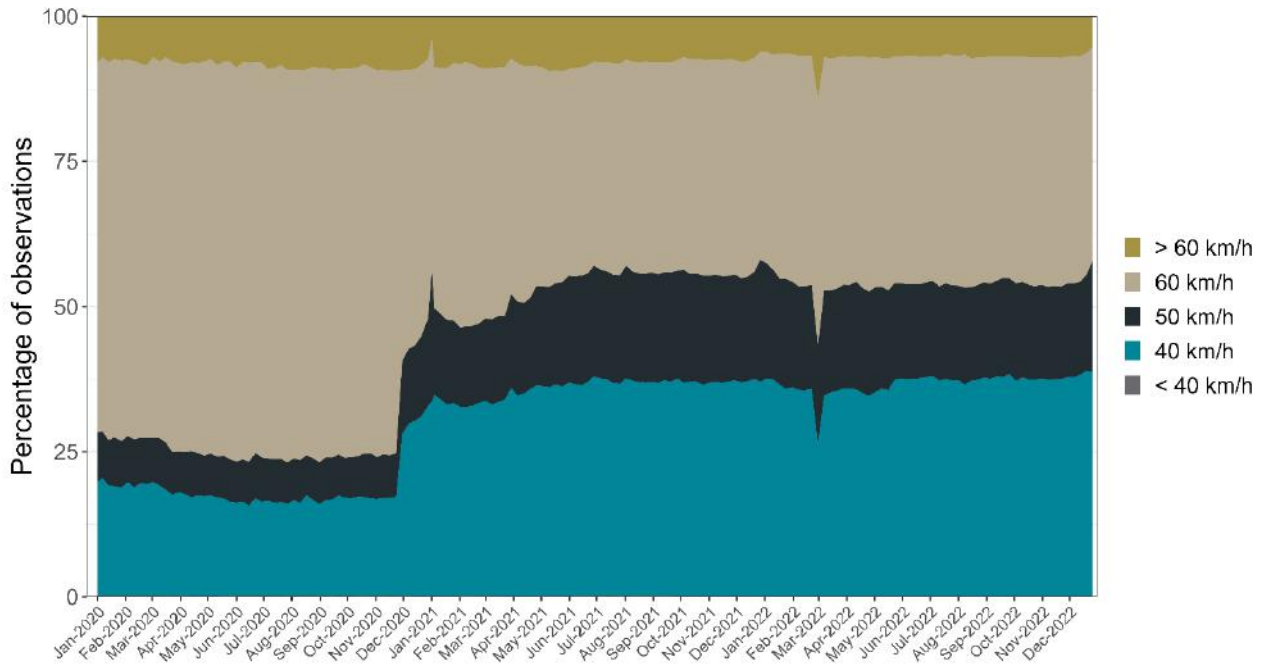
Since the purpose of this analysis is to make inferences about the trend of working-from-home, the calculation of weekly metrics is restricted to include weekday speed observations only. Notwithstanding, this does not completely isolate traffic flows that are caused by people commuting for work from casual visitors to the CBD for shopping and hospitality services. However, it remains appropriate to make inferences regarding the trend of working-from-home for the following reasons:

- during periods of tightened movement restrictions, it is likely that traffic flows into the CBD were primarily due to commuting for work; and
- during periods of eased movement restrictions, it is reasonable to assume that traffic flows due to commuting for work were a 'leading' driver of the traffic in the CBD during weekdays.

Therefore, when traffic performance in the CBD during the peak and easing periods of the COVID-19 pandemic are examined, it remains suitable to make inferences about the evolution of working-from-home arrangements. It is reasonable to assume that a reduction in travel speed in the CBD during weekdays can be attributed to an increase in trips to the CBD for work purposes.

As explained in section 1, a significant increase in the number of observations in low speed zones, relative to the number of observations in high speed zones, would contribute to a decrease in average speed. Figure 5.2 provides a weekly breakdown of the count of speed observations by speed zones in the Brisbane CBD.

Figure 5.2 Change in percentage of observations by speed limit, Brisbane CBD, 2020-2022



[12] To the extent that the focus of this analysis is to shed light on the *trends* of traffic performance, POSL exhibits similar trends to those of average speed due to POSL being defined as a ratio of average speed to speed limit.

It should be noted that there was an increase in the number of observations in the 40km/h and 50km/h zones, relative to the number of observations in 60km/h zones, starting from December 2020 and lasting until the end of 2022. In particular, the proportion of observations in zones with a speed limit of 50km/h or below increased by 15.9 percentage points in December 2020. This will explain some key traffic trends observed in Brisbane CBD that are set out in subsequent sections.

During a short period at the end of February 2022, there was a decrease in the number of observations in low-speed zones (ie, 40km/h zones) relative to those in high-speed zones. This was caused by a period of severe weather in Brisbane, which reduced traffic flows on local roads in the Brisbane CBD. The relative proportion of observations in each speed zone resumed to previous levels shortly after the severe weather event subsided.

As traffic metrics at an aggregated level are obtained with a volume-weighting methodology, the change in the proportion of observations across speed zones (ie, reweighting effect) is crucial to the interpretation of traffic trends observed at an aggregated CBD-wide level. When comparing trends of a particular metric between 2021 (or 2022) and 2020, it is worthwhile noting that any change can be attributed to both the underlying *change* and the increased representation of the *level* of the given metric in low-speed zones (ie, 40 and 50km/h zones).

With this caveat in mind, it is important to examine traffic trends at an aggregated level across the CBD and disaggregated level by speed zones. The different aspects conveyed by each of these levels of examination lie in that:

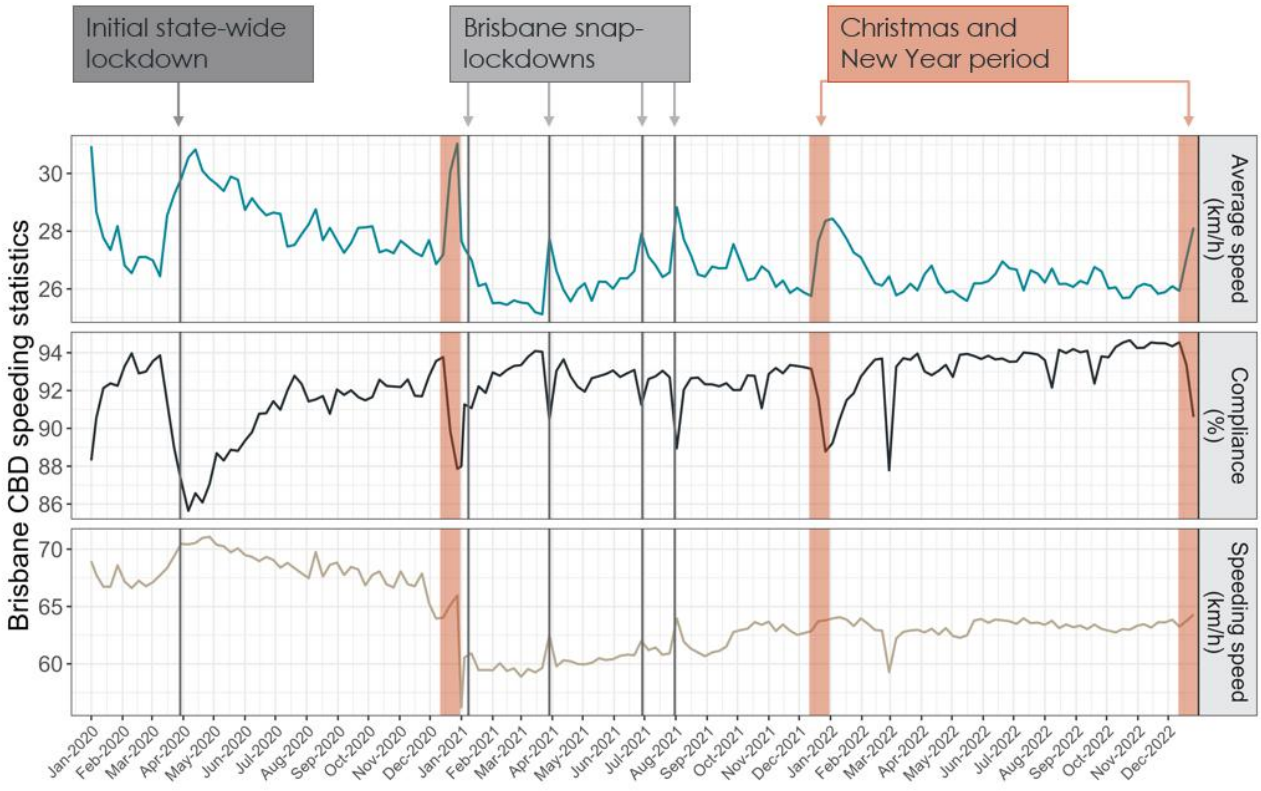
- the aggregated metrics convey the ‘average’ (or ‘expected’) traffic speed experienced by a driver in the CBD – taking into account that when there was an increase in the proportion of drivers in low-speed zones, the ‘average’ (or ‘expected’) travel speed experienced by the given driver would be lower; whereas
- the disaggregated metrics by speed zone provide insights into the trend in traffic performance for each speed zone, which eliminates the reweighting effect and provides clarity around the underlying traffic trends in different portions of the road network in the CBD.

Aggregated and disaggregated results of traffic performance are discussed in detail in subsequent sections, which are structured to set out the evolution of traffic performance in the CBD from 2020 to 2022.

5.3 Working-from-home arrangements were implemented prior to a state-wide lockdown in April 2020

Figure 5.3 presents the aggregated metrics of average speed, compliance and average speed when speeding from 2020 to 2022, annotated with the timing of major movement restrictions and end-of-year holiday periods. Figure 5.4, Figure 5.5, and Figure 5.6 present the disaggregated metrics of average speed, compliance and average speed when speeding respectively, by speed zones and between 2020 and 2022 with similar annotations of the timing of movement restrictions and holiday periods.

Figure 5.3: Average speed, compliance and average speed when speeding in Brisbane CBD, 2020 to 2022



Overall, weekly traffic trends in the Brisbane CBD suggests that working-from-home arrangements were implemented promptly in anticipation of a state-wide lockdown order. For instance, when a state-wide lockdown took effect in Queensland on 29 March 2020, average speed had risen sharply even prior to the official imposition of restrictions, while compliance had fallen significantly in the preceding weeks. Average speed when speeding also rose slightly in the lead up to the official lockdown. In particular, there was:[13]

- a sharp increase of 2.8km/h in average speed;
- a decrease of 4.9 percentage points in compliance; and
- the slight increase of 1.7km/h in average speed when speeding.

These trends were driven primarily by speed zones above 60km/h, which lie on segments of the Pacific Motorway (M3), connecting the CBD with outer suburban areas. These observations of faster travel speeds, reduced compliance and faster speeding margins suggest that there were fewer vehicles travelling into the CBD from other suburban areas in the lead up to the official lockdown. These trends can be attributed to increasing rates of working-from-home arrangements as government advice developed, and new public health practices were introduced, amidst uncertainty around the pandemic.

[13] Calculated by comparing metrics for the week beginning 9 March 2020 to the week beginning 23 March 2020

Figure 5.4 Average speed by speed zones in Brisbane CBD, 2020 to 2022

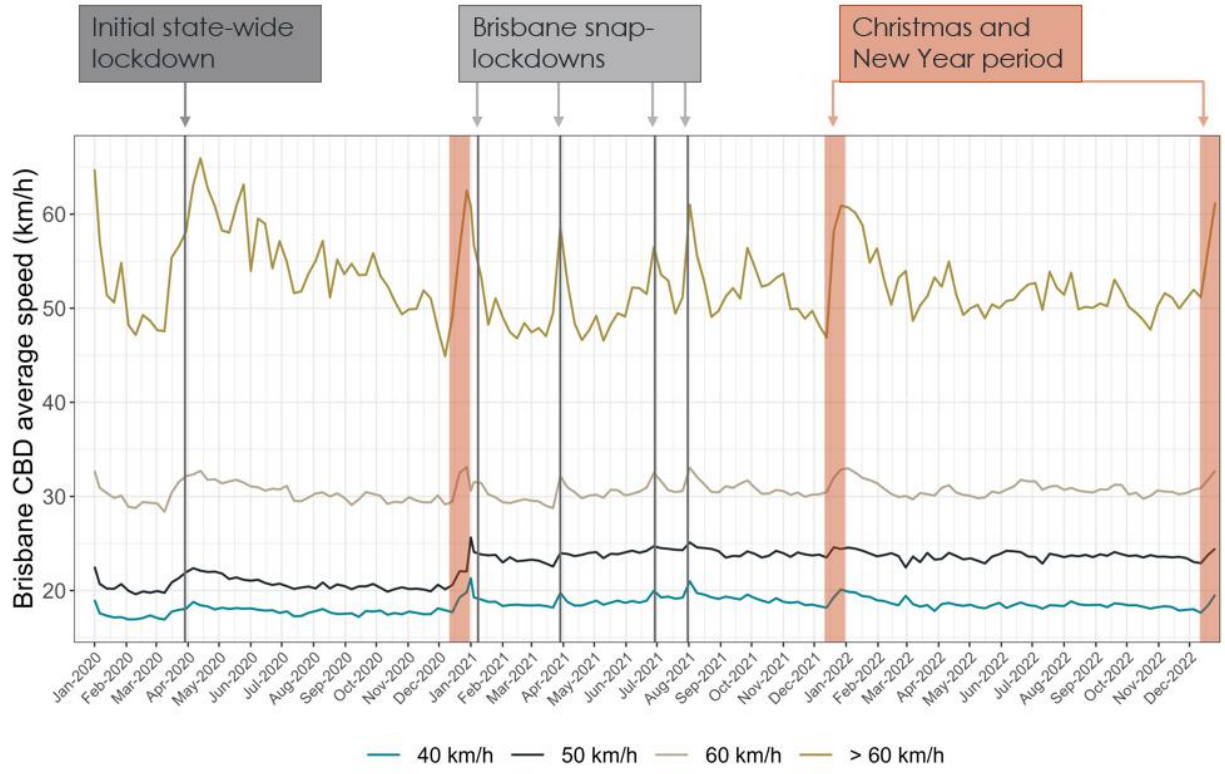


Figure 5.5 Compliance by speed zones in Brisbane CBD, 2020 to 2022

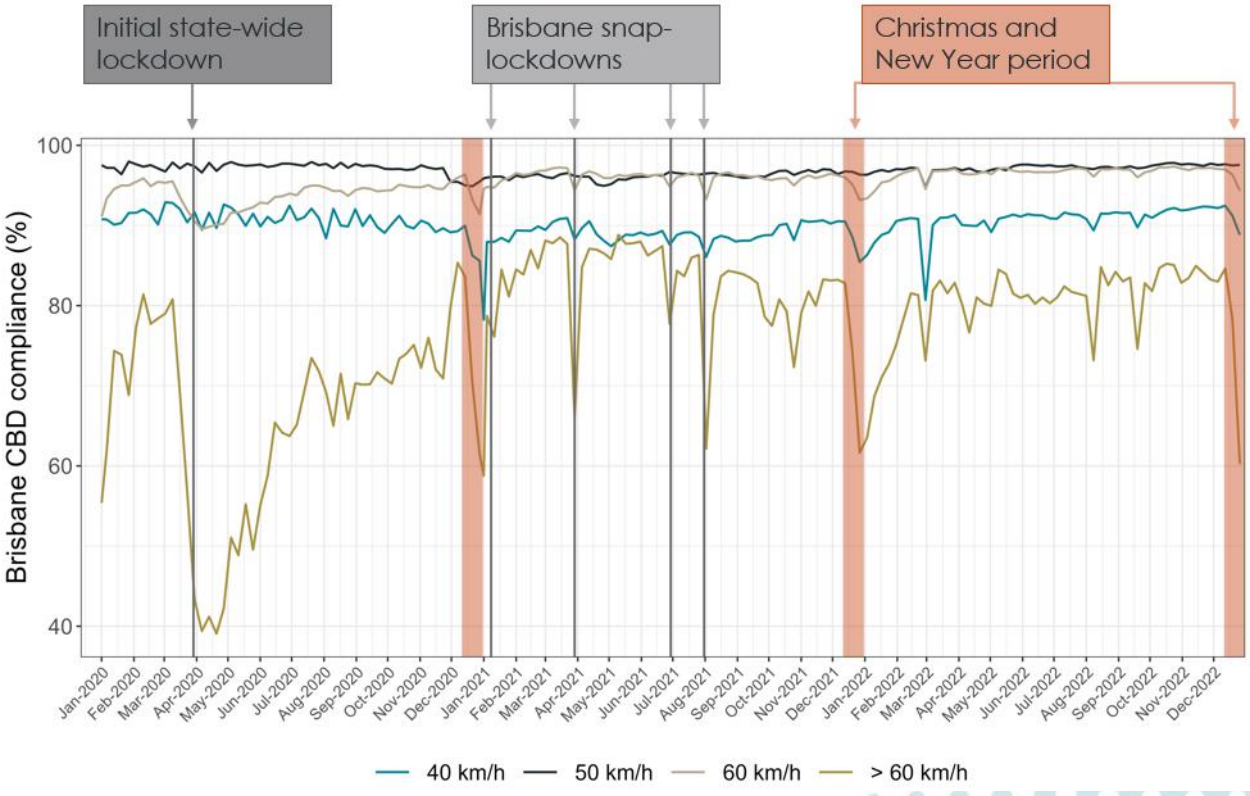
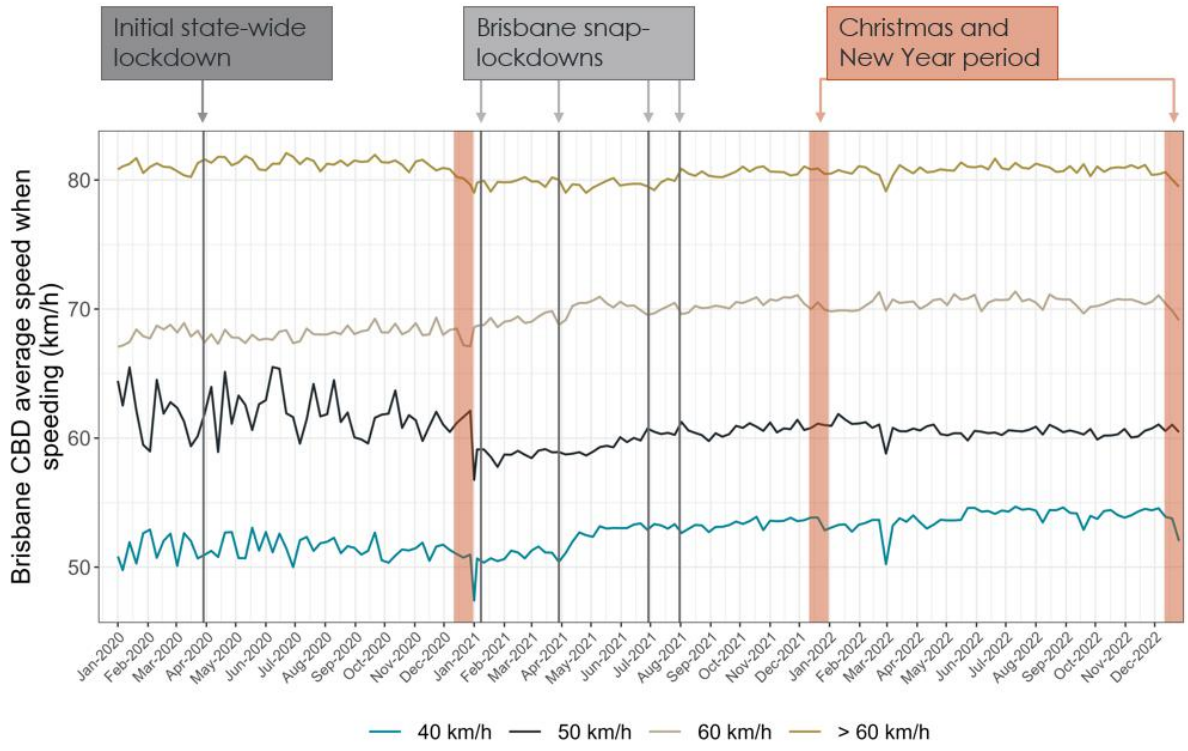


Figure 5.6: Average speed when speeding by speed zones in Brisbane CBD, 2020 to 2022



In the several weeks at the beginning of the initial state-wide lockdown in March and April 2020, traffic metrics continued to trend in a manner that reflects even fewer vehicles in the CBD. That is:

- average speed continued to increase;
- compliance with the speed limit continued to decrease; and
- average speed when speeding continued to increase.

These trends suggest that working-from-home arrangements were increasingly adopted as more movement restrictions were introduced or existing restrictions were tightened following the initial weeks of lockdown.

Several weeks prior to the official end date of the state-wide lockdown in May, traffic metrics started to reverse and head back to pre-pandemic levels. This aligns with the incremental unwinding of movement restrictions throughout 2020. By the end of November 2020:

- average speed was three per cent above the pre-pandemic level;
- compliance was one per cent below the pre-pandemic level; and
- average speed when speeding had decreased below the pre-pandemic level by 2.5 per cent.

Pre-pandemic levels are calculated from speed observations during February 2020.

That the CBD-wide average speed remained above, and compliance remained below, pre-pandemic levels by the end of November 2020 suggests that there were fewer vehicles in the CBD compared to the pre-pandemic level, and that working-from-home arrangements were still in place even when the official state-wide lockdown in 2020 ended due to uncertainty around how the pandemic would pan out, as well as businesses and organisations adapting to more flexible working arrangements experienced during the height of the pandemic.

With regards to disaggregated metrics, average speed and compliance on the main roads connecting the CBD with other suburbs (ie, roads above 60km/h speed limits) were the most volatile over the course of the 'recovery' from the official end of the lockdown in May until the end-of-year holiday period in 2020. On the contrary, trends on roads in the inner city were relatively more stable over the course of 'recovery' in 2020. However, average speed when speeding on roads in the inner-city were more volatile than those in higher speed zones over this period.

During the end-of-year holiday period, traffic metrics exhibited typical characteristics of this holiday period. That is, average speed and average speed when speeding increased significantly, and compliance decreased significantly. This was the result of business shutdown periods, leading to even fewer workers in the CBD and making it easier to travel faster and exceed the speed limit. Throughout the holiday period, CBD-wide average speed rose from 27.2km/h to 31km/h, and compliance declined from 93.8 per cent to 87.9 per cent. These were the most extreme average speed and compliance values reported since the end of the state-wide lockdown.

In summary, the analysis highlights the negative road safety impact of working-from-home arrangements that were implemented promptly in anticipation of official lockdown orders in April 2020. The trend of working-from-home reached its peak during the official state-wide lockdown in 2020 before gradually subsiding following the easing of restrictions. However, working-from-home arrangements remained in place at the end of 2020, as uncertainty around how the pandemic would unfold remained.

5.4 Working-from-home arrangements were responsive to snap lockdowns throughout 2021

Throughout 2021, several snap lockdowns were imposed in Queensland and characterised by very short timeframes between an announcement and its implementation.

The first snap lockdown was enforced on 8 January 2021 and did not appear to have had any major impact on traffic outcomes. This was because the snap lockdown occurred shortly after the end-of-year holiday period, and therefore traffic performance was still reflective of low CBD traffic volumes that are characteristic of this holiday period.

In contrast, the three subsequent snap lockdowns (in March, June, and July respectively) coincided with:

- significant spikes in average speed;
- significant decreases in compliance; and
- slight increases in average speed when speeding.

These deviations from the trend are likely caused by sudden increases in working-from-home in response to movement restriction orders. Additionally, the week associated with the longest snap lockdown (July) recorded the most extreme values across all three speed statistics of any full week in 2021.

Significant increases in average speed and decreases in compliance during snap lockdowns were driven by roads with speed limits above 60km/h

During the week with the longest snap lockdown in July 2021, average speed increased, and compliance decreased, in all individual speed zones in the CBD. Overall, CBD-wide average speed increased by 2.3km/h and compliance decreased by 3.8 percentage points across all speed zones. By comparison, average speed on roads above 60km/h increased by 9.8km/h and compliance decreased by 24.2 percentage points, while average speed and compliance in other speed zones were less volatile during this week, with average speed increasing by 1.7km/h on average and compliance decreasing by 1.8 on average.

These observations provide data-driven evidence of the negative road safety impact of prompt adoption of working-from-home arrangements in response to lockdown orders, even though the lockdown period was announced to be short.

For most parts of 2021, the CBD-wide average speed when speeding rose steadily and was less volatile than average speed when speeding in 2020, with the exception of the period between the final week of 2020 and the first week of 2021. During this week, average speed when speeding fell drastically by 9.8km/h.

Significant reductions in average speed when speeding at the end of 2020 were driven primarily by the reweighting effect

There were two main drivers of the significant reduction in average speed when speeding between the final week of 2020 and the first week of 2021. Specifically, these were:

- the reductions in average speed when speeding in 40km/h and 50km/h zones, by 3.6km/h and 5.4km/h, respectively; and
- the reweighting effect to 40km/h and 50km/h zones when the number of observations in these zones increased relative to those in the higher speed zones.

This instance illustrates the importance of examining aggregated and disaggregated metrics at the same time to have a holistic understanding of traffic trends, particularly when the relative change in the number of observations in some speed zones is larger compared to others. In this instance, the reduction in the aggregated average speed when speeding appears much more significant than the largest decrease in an individual speed zone, because the aggregated average also captures the increased observations in low-speed zones.

The reweighting effect was sustained until the end of 2022, which explains the persistent lower level of average speed when speeding throughout 2021 and 2022. Average speed and compliance were also affected by this reweighting effect, but the significant changes in average speed and compliance on roads above 60km/h offset this reweighting effect.

In summary, traffic performance throughout 2021 was characterised by short-term increases in average speed and average speed when speeding, coupled with sharp reductions in compliance, as a result of a prompt response to snap lockdowns throughout the year. It is reasonable to attribute the reduced number of vehicles on roads to the increased uptake of working-from-home during the periods of snap lockdowns.

5.5 Working-from-home arrangements stabilised throughout 2022 with some level of returning to office

In 2022, traffic trends exhibited significant stabilisation in the absence of prolonged lockdowns and snap movement restrictions. The CBD-wide average speed was 26.4km/h in 2022, with no average speed in any week deviating from the annual average by more than 2.1km/h. In comparison, the largest deviation of average speed in any week in 2020 and 2021 from the respective annual averages were 2.7 and 2.3km/h.

Table 5.2 provides a comparison of average speeds throughout 2022 with pre-pandemic levels in 2020, where the pre-pandemic levels are taken from speed observations in February 2020.

Table 5.2: Comparison of travel speed, 2022 and pre-pandemic level in 2020

Average speed (km/h)	Pre-pandemic in 2020	Annual average in 2022	Difference (positive values represent increases)
CBD-wide	26.9km/h	26.2km/h	-0.7km/h
By speed zones			
40km/h zones	17.1km/h	18.4km/h	1.3km/h
50km/h zones	19.8km/h	23.6km/h	3.8km/h
60km/h zones	29.1km/h	30.6km/h	1.5km/h
Above 60km/h zones	48.3km/h	51.1km/h	2.8km/h

Note: Pre-pandemic levels are calculated from speed observations in February 2020, and averages in 2022 are calculated from speed observations between February and November 2022. January and December are excluded due to the potential confounding effect from the end-of-year holiday period.

Average speeds in each individual speed zone in 2022 were higher than pre-pandemic levels in 2020. This reinforces the common perception that working-from-home remained an option for office workers in 2022, and office workers opted to continue working-from-home for a number of days per week.

The decrease in CBD-wide average speeds, in the face of increases across all speed zones in the CBD, reflects the reweighting effect to lower speed zones that has prevailed since the end of 2020. This, once again, reinforces the importance of examining disaggregated metrics to develop a holistic understanding of the underlying trends in traffic performance, particularly when a reweighting effect is present.

Compliance levels in each individual speed zone in 2022 were also higher than pre-pandemic levels in 2020. On aggregate, CBD-wide compliance was 0.3 percentage points higher in 2022 than during February 2020. This suggests that there was a slight improvement in compliance in the Brisbane CBD as workers gradually commuted back to offices in the area.

A severe weather event in late February 2022 in Brisbane led to a decrease of 5.9 percentage points in compliance in the CBD in one week. Following this event, compliance recovered and followed an increasing trend for the remainder of 2022, excluding the Christmas holiday period.

There has been an upward trend in CBD-wide average speed when speeding since 2021, yet levels have remained significantly lower than pre-pandemic levels. However, as explained earlier, this was due to the reweighting effect that has occurred since the end of 2020. To isolate this reweighting effect, decomposing the CBD-wide metrics by speed zones reveals that:

- average speed when speeding in 40km/h and 60km/h zones in the CBD in 2022 were higher than pre-pandemic levels; whereas
- average speed when speeding in 50km/h in the CBD in 2022 were lower than pre-pandemic levels.

Average speed when speeding on roads with a speed limit above 60km/h in the CBD in 2022 remained similar to pre-pandemic levels, even though average speed on these roads increased. This reflects a maximum extent to which drivers could speed in the CBD even when there were fewer vehicles on roads.

In summary, traffic performance in the CBD in 2022 were relatively more stable than the preceding couple of years and followed the prevailing trajectory set in 2021. Compared with the pre-pandemic levels in February 2020:

- average speed in 2022 was higher in all speed zones;
- compliance in 2022 was higher in all speed zones; and
- average speed when speeding in 2022 exhibited a mixture of trends across all speed zones.

The higher average speed in 2022 across speed zones, compared to pre-pandemic levels, implies that office workers still opted to work-from-home to some extent, which suggests that working-from-home might have emerged from the pandemic as an enduring feature of work arrangements into the future.

Overall, this analysis has offered in-depth insights into the evolution of working from home over different phases of the COVID-19 pandemic, ranging from anticipation of lockdown to easing of movement restrictions between 2020 and 2022. Inferences made regarding trends of working-from-home are consistent with common perceptions and anecdotal evidence, which corroborates the validity of using HERE speed data to seek reliable insights into traffic performance over both a short and long timeframe.

6. Impact of roadworks and flooding on travel speed

Understanding drivers' behaviour in response to various disrupted driving conditions is valuable from a road safety perspective. In this analysis, a deeper understanding is sought regarding how traffic speed, and speed compliance, changes around roadworks and in the event of flooding. To this end, HERE speed probe data was augmented with roadworks and flooding data, provided by TMR, which covers the entire state of Queensland.

This section outlines:

- the key characteristics of roadworks and flooding events in Queensland, and the methodology used to combine the HERE speed probe data with the roadworks and flooding data;
- the econometric framework adopted to estimate the impact of roadworks and flooding on traffic speed; and
- the interpretation of the estimates and observations for improvements in the analysis.

6.1 Characteristics of roadworks and flooding incidents in Queensland

TMR has a comprehensive tracking record of roadworks and flooding incidents in Queensland.[14] For each incident, the following key information is available in the data:

- description of the incident;
- start and end dates of the incident;
- duration of the incident;
- road (or roads) that were affected by the incident; and
- spatial geometry of the incident provided in either 'point' form (ie, a single pair of coordinates), or 'line' form, which specify the coordinates of multiple points that form a road affected by the incident.

It should be noted that most of the roadworks data (68 per cent) is recorded in the form of 'line' events, while the majority of flooding data (74 per cent) are recorded in the form of 'point' events. This is consistent with the nature of these types of road disruptions, since roadworks can be characterised by the exact affected roads in advance. Comparatively, it is difficult to identify the exact area of impact of a flood, as it cannot be determined in advance and conducting site visits are typically difficult during a flood.

Figure 6.1 presents two maps of roadworks and flooding incidents that impacted roads in Queensland during 2021 and 2022. As can be seen, and as might be expected, roadworks were far more prevalent than flooding events, with over ten thousand roadwork 'incidents' recorded in the data having impacted roads in Queensland in 2021 or 2022. In contrast, fewer than 500 flooding 'incidents' were recorded in the data.

The duration of roadworks varied widely, ranging from less than one day to two whole years. Some of the most major roadworks spanning over the last two years include:[15]

- Varsity Lakes to Tugun upgrade – Pacific Motorway;

[14] Records of roadworks and flooding incidents between 2016 and 2022 were provided to assist with this analysis.

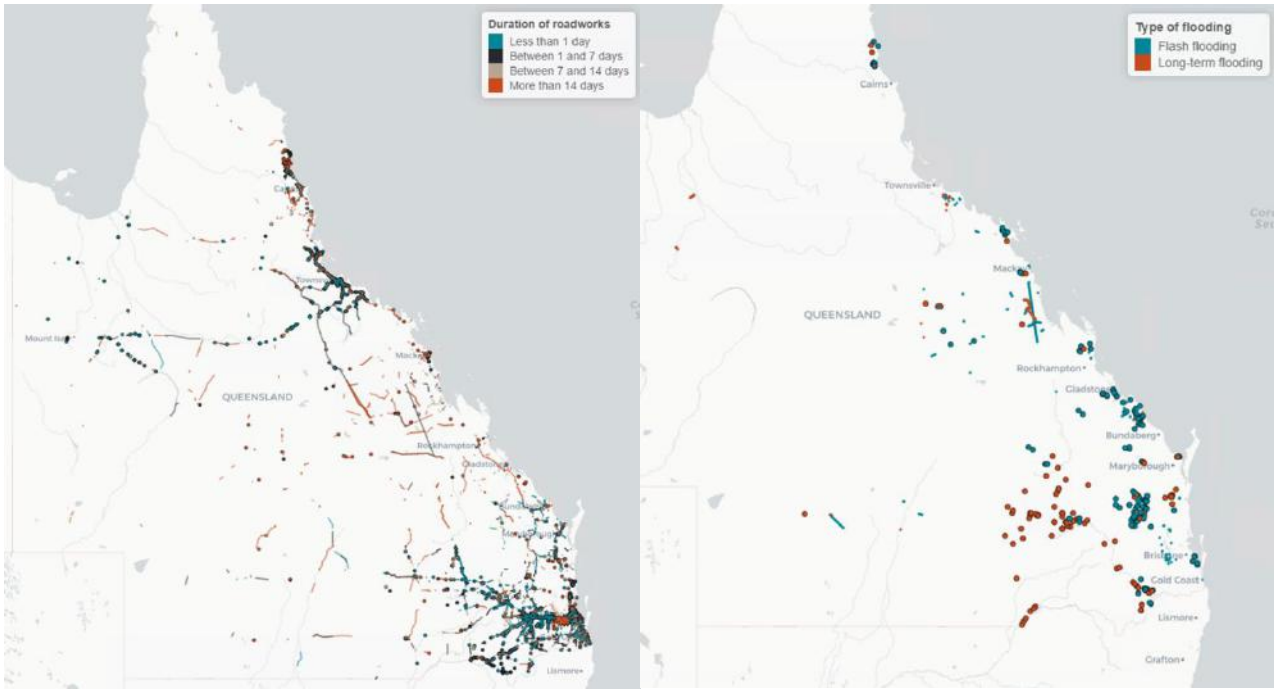
[15] For more information, see: https://www.tmr.qld.gov.au/projects/pacific-motorway-m1-varsity-lakes-to-tugun-upgrade, https://www.tmr.qld.gov.au/projects/kennedy-developmental-road-the-lynd-to-hughenden-upgrade, https://www.tmr.qld.gov.au/projects/bruce-highway-proserpine-bowen-emu-creek-to-drays-road-various-locations-widen-formation

- The Lynd-Hughenden upgrade – Kenned Developmental Road; and
- Proserpine-Bowen upgrade – Bruce Highway.

There are two types of flooding in the data – flash flooding and long-term flooding. Some of the most major flooding incidents occurring in the last two years were:

- the flooding incident that led to the Granite Creek Road closure for 161 days; and
- the flooding incident that led to the Bloomfield Track closure for 90 days.

Figure 6.1: Location of roadworks and flooding events, by roadworks duration and flooding type



Source: HoustonKemp analysis of roadworks and flooding data provided by TMR.

Using the spatial geometry of roadworks and flooding incidents reported in the data, each incident was matched to the 'closest' link in the HERE data. In this way, each road link will not only have travel speed information (from HERE traffic speed data), but also information about roadworks and flooding (if any) affecting the link. Each 'point' incident is matched to the HERE link on which the 'point' incident lies, and each 'line' incident is matched to all HERE links which wholly or partially intersect with the 'line' event in a parallel manner.

After matching, it was possible to calculate the following variables for each link in the network:

- the daily average speed;
- the number of hours in a day that the link was affected by roadworks;
- the number of hours in a day that the link was affected by flash flooding; and
- the number of hours in a day that the link was affected by long-term flooding.

This process resulted in 450.7 million data points covering all links and all dates in 2021 and 2022 with available speed observations. Using all these data points in an econometric model would lead to lengthy processing time. Therefore, a random sample of these data points was utilised to obtain a smaller, yet still representative, sample. The random sampling was undertaken with the following criteria:

- retain links with either roadworks or flooding event in the sample; and
- randomly sample approximately 9.5 per cent of the unaffected links.

At the end of the random sampling, a sample of 71.8 million data points was obtained, which was used in an econometric model to estimate the impact of roadworks and flooding on travel speed.

6.2 Applying a gamma regression model to estimate the impact of roadworks and flooding on drivers' speeds

The central objective of this analysis is to estimate the impact of roadworks and flooding on travel speed. To this end, a gamma regression model was applied, which was used to explain observed daily speed of a road by reference to the duration of roadworks and flooding on the given road, taking into account the key characteristics of the road such as the speed limit, road type (local or arterial) and location (urban or regional), as well as time of the observed speed (weekday or weekend, and whether it was a public holiday).

In technical terms, the model sought to explain average speed on a link at a given day (the *dependent variable*) with *explanatory variables* including duration of roadworks and flooding, characteristics of the link, and characteristics of the day. The model sought to estimate a *coefficient* for each of the explanatory variables to capture the impact of each explanatory variable on the dependent variable.

A classic model that is commonly used is linear regression. However, it was not appropriate to use the classic linear regression model in this particular circumstance, since daily observed speeds cannot have negative values. A classic linear regression can only be used if the dependent variable can take both positive and negative values.

To account for the non-negativity of daily observed speed, a variation of the classical linear regression was applied – a gamma regression model, which involves transforming the non-negative dependent variable with a log function to render a transformed dependent variable that can have positive and negative values. The transformed dependent variable will then be *regressed* against the explanatory variables to obtain estimates of the coefficients for the explanatory variables, which convey the impact of each explanatory variable on the dependent variable.

Table 6.1 sets out the key differences in the interpretation of the coefficients in a gamma regression model and that in a linear regression model. Due to the log-transformed dependent variables, coefficients in a gamma regression model are interpreted as percentage change in the dependent variable for each unit change in an explanatory variable.

Table 6.1: Comparison of classic linear regression and gamma regression

Classic linear regression model	Gamma regression model
$y_i = \beta_0 + \beta_1 * x_{1i} + \beta_2 * x_{2i} + \varepsilon_i$	$\log(y_i) = \beta_0 + \beta_1 * x_{1i} + \beta_2 * x_{2i} + \varepsilon_i$
Coefficient of an explanatory variable is interpreted as the change in the dependent variable when there is an increase in the explanatory variable by one unit.	Coefficient of an explanatory variable is interpreted as the **percentage** change in the dependent variable when there is an increase in the explanatory variable by one unit.
For example, for each unit increase in variable x_1, y is expected to increase by β_1 units.	For example, for each unit increase in variable x_1, y is expected to: • increase by $\exp(\beta_1) - 1$ per cent (if β_1 is positive); or • decrease by $1 - \exp(\beta_1)$ per cent (if β_1 is negative).

A gamma regression model that takes into account the complete list of explanatory variables identified as relevant determinants of average speed is specified as follows:

$$\log(average.speed_{i,t}) = \beta_0 + \beta_1 * roadworks_{i,t} + \beta_2 * flash.flooding_{i,t} + \beta_3 * long.term.flooding_{i,t} + \beta_4 * under.forty_i + \beta_5 * forty.fifty_i + \beta_6 * seventy.eighty_i + \beta_7 * over.eighty_i + \beta_8 * regional_i + \beta_9 * local_i + \beta_{10} * weekend_t + \beta_{11} * holiday_t + \varepsilon_{i,t}$$

where:

- $Average.speed_{i,t}$ denotes the daily average speed of link i on day t;
- $roadworks_{i,t}$ denotes the number of hours link i was affected by roadworks on day t;
- $flash.flooding_{i,t}$ denotes the number of hours link i was affected by flash flooding on day t;
- $long.term.flooding_{i,t}$ denotes the number of hours link i was affected by long-term flooding on day t;
- $under.forty_i$ takes value of 'one' if link i has speed limit below 40km/h, and 'zero' otherwise;
- $forty.fifty_i$ takes value of 'one' if link i has speed limit between 40 and 50km/h, and 'zero' otherwise;
- $seventy.eighty_i$ takes value of 'one' if link i has speed limit between 70 and 80km/h, and 'zero' otherwise;
- $over.eighty_i$ takes value of 'one' if link i has speed limit above 80km/h, and 'zero' otherwise;
- $regional_i$ takes value of 'one' if link i is in regional area, and 'zero' if link i is in urban area;
- $local_i$ takes value of 'one' if link i is a local road, and 'zero' if link i is an arterial road;
- $weekend_t$ takes value of 'one' if day t is Saturday or Sunday, and 'zero' otherwise;
- $holiday_t$ takes value of 'one' if day t is a public holiday, and 'zero' otherwise;
- $\varepsilon_{i,t}$ is the error term that represents unexplained variation in average speed of link i on day t.

The coefficients associated with $roadworks$, $flash.flooding$, and $long.term.flooding$ are the main coefficients that denote the expected percentage change in travel speed corresponding to a one hour increase in the duration of roadworks, flash flooding and long-term flooding respectively. For example, $1 - \exp(\beta_1)$ represents the expected percentage change in average speed if roadworks are prolonged by one hour.

These effects of roadworks, flash flooding and long-term flooding are appropriately captured only if other determinants of travel speed are accounted for. In particular, the effect of speed limit on travel speed is captured through categorical (or dummy) variables to denote whether speed limit is below 40km/h, between 40km/h and 50km/h, between 70km/h and 80km/h, or over 80km/h. Speed limits between 50km/h and 60km/h can be represented by assigning 'zero' values to all the above categorical variables. That the effect of speed limit on travel speed is captured through these categorical variables, as opposed to a continuous variable, is to reflect the fact that speed limits are discrete, rather than continuous.

Taking into account features, such as urban or regional and road type (local or arterial), recognises that there are inherent differences in drivers' behaviour across geographic locations and road types, as evidenced in analyses discussed earlier. In the same manner, taking into account day features, such as weekends and holidays, recognises the common perception that travel speed is inherently different across these day types.

Data obtained after the random sampling process was used in the gamma regression model to obtain estimates of the coefficients. These estimates were obtained by using a least squares methodology, which produces estimates of coefficients such that the difference (in square terms) between the observed speeds and the predicted speeds is minimised.

The model specification was statistically tested to ensure it was an appropriate model for the purpose of explaining impacts of roadworks and flooding on travel speed. In section 6.3 below, the estimates of coefficients for the gamma regression model are outlined, followed by diagnostic tests around the model specification to verify that the gamma regression model was an appropriate model specification.

6.3 Drivers reduced their speed around roadworks and flash flooding, but the effects of long-term flooding are more ambiguous

Estimates of coefficients in the gamma regression model

The estimated coefficients of the gamma regression model were as follows:

$$\log\left(\widehat{average.speed}_{i,t}\right) = \\ = 3.80 - 0.003 * roadworks_{i,t} - 0.005 * flash.flooding_{i,t} + 0.001 * long.term.flooding_{i,t} \\ - 1.07 * under.forty_i - 0.39 * forty.fifty_i + 0.31 * seventy.eighty_i + 0.58 * over.eighty_i \\ + 0.11 * regional_i - 0.12 * local_i + 0.05 * weekend_t + 0.05 * holiday_t$$

where:

- $\widehat{Average.speed}_{i,t}$ denotes the predicted travel speed on link i on day t; and
- the other variables are as described in section 6.2.

Table 6.2 sets out the detailed statistics of the estimated coefficients. It should be noted that the coefficients corresponding to $roadworks$ and $flash.flooding$ are highly statistically significant. As set out in Table 6.1, the interpretation of the coefficients are as follows:

- when the duration of roadworks increases by one hour, travel speed is expected to decrease by 0.3 per cent (ie, $1 - \exp(-0.003) = 0.003$); and
- when the duration of flash flooding increases by one hour, travel speed is expected to decrease by 0.4 per cent (ie, $1 - \exp(-0.005) = 0.004$).

Table 6.2: Gamma regression model results

	Estimated coefficient	Standard error	t-value	p-value
(Intercept)	3.80	0.00009	40186.07	< 2e^{-10} (***)
$roadworks$	-0.003	0.000007	-375.96	< 2e^{-10} (***)
$flash.flooding$	-0.005	0.0007	-6.87	< 2e^{-10} (***)
$long.term.flooding$	0.001	0.0006	1.80	0.07 (.)
$under.forty$	-1.07	0.0003	-3771.64	< 2e^{-10} (***)
$forty.fifty$	-0.39	0.0001	-3496.86	< 2e^{-10} (***)
$seventy.eighty$	0.31	0.0001	2613.27	< 2e^{-10} (***)
$over.eighty$	0.58	0.0001	4981.35	< 2e^{-10} (***)
$regional$	0.11	0.00009	1123.80	< 2e^{-10} (***)
$local$	-0.12	0.0001	-1206.57	< 2e^{-10} (***)
$weekend$	0.05	0.00008	574.06	< 2e^{-10} (***)
$holiday$	0.05	0.0002	228.22	< 2e^{-10} (***)

*Note: '***' Indicates significance at the 0.1 per cent level. '.' Indicates significance at the 10 per cent level, but not at the 5 per cent level.*

The positive coefficient corresponding to $long.term.flooding$ was not statistically significant. This suggests that the true impact of long-term flooding on travel speed cannot be adequately captured with the existing

data. This is likely due to the limited number of observations available for flooding events, and the tendency of drivers to avoid flood affected roads where possible. In section 6.4, it was explained in detail how these estimated coefficients are likely to be underestimated (or not fully captured) by drawing from insights into the data used in the regression model.

The regression model specification also allows for estimation of the impact of key road characteristics on travel speed, accounting for other control variables. The exponential-transformed estimate of the intercept was interpreted as the expected travel speed in the base case that was represented by all variables in the regression taking 'zero' values. In this regard, the base case corresponds to a 60km/h, arterial link located in an urban area and unaffected by roadworks or flooding on a non-holiday weekday. In this base case, travel speed was expected to be 44.84km/h (ie, $\exp(3.8) = 44.84$).

Travel speed on a link in a regional area with the same characteristics in all other aspects as the base case was expected to be 11.2 per cent higher (ie, $\exp(0.11) - 1 = 0.112$), compared to the base case.

Travel speed on a link similar to the base case link on a non-holiday weekend was expected to be 4.9 per cent higher (ie, $\exp(0.05) - 1 = 0.049$), compared to a non-holiday weekday. Travel speed on a similar link on a holiday weekend would also be 4.9 per cent higher.

Diagnostic test of the gamma regression model

It is necessary in statistical analysis to examine different aspects in the model output to determine whether it is a good 'fit' for explaining the relationship between the chosen explanatory variables and the dependent variable.

Analysis of the *residuals* of a model is a common practice in assessing the quality of a model. Residuals are the differences between the observed dependent variable and the predicted value for the dependent variable. In this specific case, residuals are defined as, for each link i and day t:

$$\log\left(average.speed_{i,t}\right) - \log\left(\widehat{average.speed}_{i,t}\right)$$

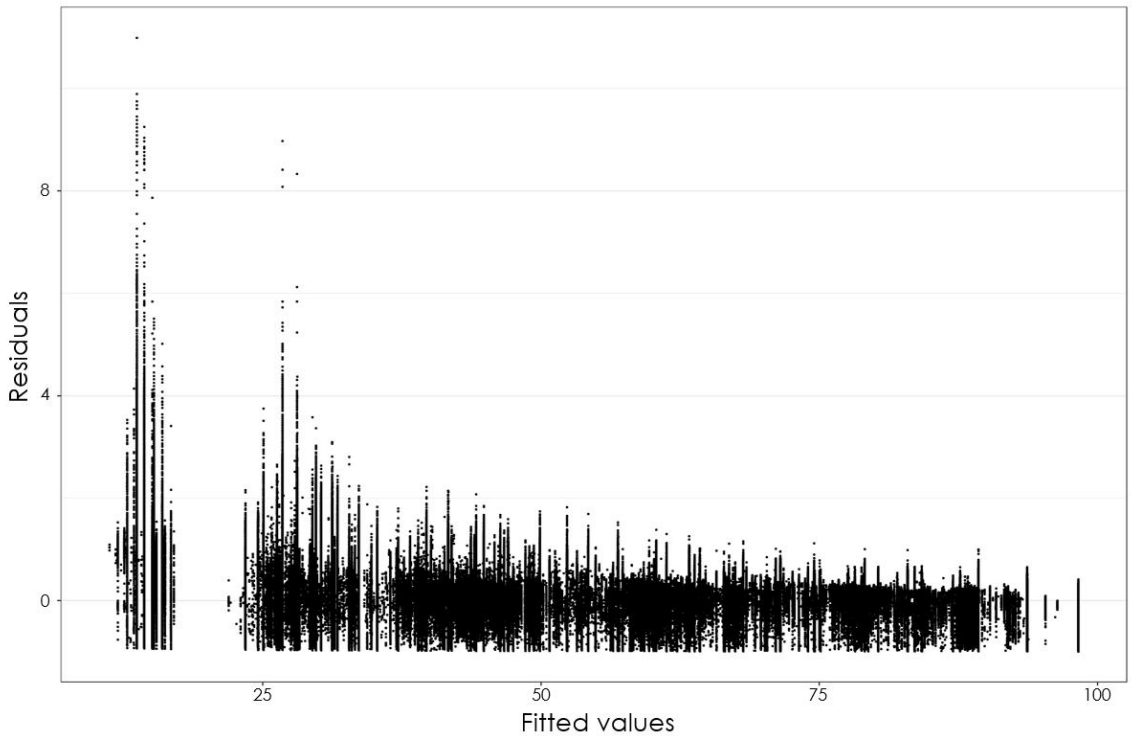
Residuals capture the variation in the dependent variable that is not explained by the explanatory variables. A good model is one that minimises the sum of residuals across all data points (ie, one that captures as much of the variation in the dependent variable as possible with the chosen explanatory variables).

However, it is almost impossible to capture all variation in the dependent variable with the chosen explanatory variables, due to 'white noise' that may impact the outcome of the dependent variable. A good model that captures the systematic impact of explanatory variables on the dependent variables would give rise to 'random' white noise.

Random white noise can be visually inspected with a residual plot. Figure 6.2 presents the residual plot of the gamma regression model that was applied. It was observed that there is some degree of randomness in the residuals produced by the gamma regression model, in that the points in the residual plot appear to scatter across both sides of the horizontal zero line. This suggests that there was an equal and random chance of over- and under-predicting, especially in the case of predicting travel speed in high-speed zones.

However, it should be noted that the extent of under-prediction (ie, positive residuals) is greater than that of over-prediction (ie, negative residuals) in the case of predicting travel speed in low-speed zones. This is due to the fact that it was more likely in low-speed zones to observe a speeding incident with excessive speeding margin above the average limit-compliant speed expected of drivers in that speed zone. In general, a speeding incident would result in a prediction being an under-prediction, and the greater magnitude of under-prediction in low-speed zones, compared to that in higher speed zones, reflects that it was more likely to observe an excessive speeding incident in low-speed zones than in higher speed zones.

Figure 6.2: Residuals of the gamma regression model



Overall, the residual plot demonstrates a reasonable extent of random positivity and negativity, which is a sought-after characteristic of a regression model that adequately explains the variation in the dependent variable with the selected explanatory variables. This means that the gamma regression model, as specified above in this section, was a good fit and provided reliable insights into the impact of roadworks and flooding on travel speed.

Thus, in summary, the model showed that:

- when the duration of roadworks increases by one hour, travel speed is expected to decrease by 0.3 per cent; and
- when the duration of flash flooding increases by one hour, travel speed is expected to decrease by 0.4 per cent.

These results represent sample estimates of the true impact of roadworks and flooding on travel speed. The true impact would be captured if all information is available, eg, exact travel speeds of all vehicles, which is challenging from a practical perspective. Depending on how representative the sample data is of true travel speeds, roadworks and flooding incidents, the sample estimates of the impact of roadworks and flooding on travel speed might deviate from the true extent of the impact. In this instance, it is recognised that the sample estimates, as set out above, are likely to have under-estimated the true extent of the impact of roadworks and flooding on travel speed. That is, it is likely that the average speed reductions associated with roadworks and flash flooding events are greater than those captured by the model. We set out the rationale behind this in section 6.4.

It should be noted that this problem of under-estimation is not a result of the process of random sampling to obtain a smaller dataset than what is available in the HERE speed data. The entirety of the HERE speed dataset is still a sample in its nature. It follows that even if the entire HERE speed dataset had been used in the regression, the coefficients would still be likely to be under-estimation, to the extent that the causes of under-estimation, as set out in details in section 6.4, still hold.

Notwithstanding, the sample estimates of the impact of roadworks and flash flooding on travel speed are found to be statistically significant. In summary, the data provides strong evidence that Queensland drivers respond positively, from a road safety perspective, to roadworks and flash flooding events, such that they reduce their speeds. The finding that the estimates are likely to be an underestimate of the true impacts of these incidents on average speeds is even more encouraging.

6.4 The sample estimates likely understate the true extent of the impact of roadwork and flooding on drivers' speed

There are three main reasons for the potential under-estimation of the true extent of the impact of roadworks and flooding on travel speed.

First, the end date of each roadwork event in the data appears to be the planned end date, rather than the actual end date.[16] It follows that in situations where roadworks extend beyond the anticipated time frame, the model treats some instances of travel speed affected by roadworks as the converse. This limits the ability of the model to distinguish between traffic outcomes on roads with and without roadworks. Should the actual end dates of roadworks be recorded in the data, the estimated coefficient corresponding to $roadworks$ in the regression model would be more negative and remained statistically significant.

Second, the process of matching flooding incidents that are recorded as 'point' events with only the closest HERE links may exclude those links that were affected by flooding in real life. This would prevent the model from fully capturing the impact of flooding on travel speed. It follows that the coefficients corresponding to $flash.flooding$ and $long.term.flooding$ may be biased towards zero in the sample estimation.

Finally, the process of matching roadworks incidents may lead to multiple events being matched to a single link at any given point in time. For instance, a link affected by two distinct roadwork events spanning over the same day is treated by the model as affected by 48 hours of roadworks on that day. Assuming that travel speed declined more significantly in response to an initial roadwork or flooding event and the impact of concurrent events are limited, the impact on travel speed of a road with one event is likely to be similar to the impact on a road with multiple overlapping events. However, the duration of roadworks is recorded to be multiples. Therefore, it is difficult for the model to ascribe longer duration of events to travel speed variation, which leads to the coefficients corresponding to $roadworks$ being biased towards zero in the sample estimation.

There is potential scope for more in-depth analyses to refine the sample estimation of the impact to make sure it is as close as possible to the true impact in the whole population of travel speed. The following main areas for more advanced analysis are identified:

- identify the actual end dates of roadworks and incorporate them into the roadworks and flooding data;
- map flooding incidents to floodplain data – this will help broaden the matching of flooding incidents so that each flooding 'point' event is not only matched to the closest HERE links but also to potential affected links nearby; and
- undertake advanced spatial analysis to identify overlapping roadwork events and apply additional criteria for matching these overlapping events to speed observations, so as to account for the decreasing margin of impact of concurrent roadworks on travel speed.

These areas of improvement can be a subject of an advanced analysis in the future. Notwithstanding, the existing methodology has led to reasonable and well-tested results that offer valuable initial insights into traffic speed outcomes in response to disrupted driving conditions. In particular, the analysis finds that the

[16] For instance, the data regarding the Mackay Northern Access Upgrade of the Bruce Highway reports an end date of March 2022. However, the project was not completed until October 2022 as per https://www.tmr.qld.gov.au/projects/mackay-northern-access-upgrade-construct-additional-lanes

impact of roadworks and flash flooding on travel speeds are statistically significant at the 0.1 per cent level (α = 0.1 per cent). In particular:

- when the duration of roadworks increases by one hour, travel speed is expected to decrease by 0.3 per cent; and
- when the duration of flash flooding increases by one hour, travel speed is expected to decrease by 0.4 per cent.

That these estimates are statistically significant at the 0.1 per cent level means that there is only a 0.1 per cent chance that these observed estimates from the data are due to chance rather than capturing a real reduction in travel speeds. It can be reasonably concluded from this analysis that drivers are observed to have reduced speed around roadworks and in the event of flash flooding.

Finally, these results could be used to quantify the economic benefits of programs or activities that seek to reduce the duration of roadworks or flooding events. It follows, that this is likely to be a useful area for further investigation to assist with the evaluation of program priorities for TMR.

A1. Speed survey methodology

A1.1 Description of the HERE speed probe data

HERE Technologies is a leading global navigation system mapping company, developing open location platform technologies that enable people, enterprises, and cities to harness the power of locational information and create innovative solutions.

Originally founded as NAVTEQ more than 30 years ago, the company transforms information from devices, vehicles, infrastructure and other sources into real-time location information. Currently majority owned by a consortium of German automotive companies, the company provides mapping and location services to some of the largest automotive companies in the world (such as BMW, Mercedes, Hyundai, Volkswagen and Toyota).

HERE traffic speed data is built on a database of over one trillion GPS data points, and is available across all roads in 57 countries, including the entirety of Australia. TMR has a licence to use HERE's traffic speed data for the Queensland road network for the period 2014 to the present.

The HERE speed data is provided at a road link level across the entire road network, inclusive of highways, arterial roads, and local roads. A road link is defined as the length of road between any two intersections, and so the link length depends on the specific topography of the road network.

For each road link, speed data is available on five, 15 and 60-minute intervals, and for each direction of traffic flow, as appropriate. The specific data fields contained within the HERE traffic speed dataset include:

- average speed;
- confidence indicator;
- minimum and maximum speeds;
- standard deviation of speeds;
- length of the link;
- speed limit;
- vehicle type, ie, passenger vehicle (car) or truck;[17]
- sample count; and
- speed percentiles, in five per cent bands.

HERE data currently has more than one million road links defined across the Queensland road network. Road links are categorised into functional classes ranging from Class 1 (high volume, maximum speed traffic) to Class 5 (very low volume of traffic). Full descriptions are available in Table A1.1 below.

[17] Vehicles are classified based on the supplier of the GPS probe data. For example, all of supplier A's GPS probes would be classified as the same type of vehicle (eg, trucks), regardless of the actual vehicle type.

Table A6.4.1: Definition of all road functional classes

Functional road class	Functional road class description
1	These roads are meant for high volume, maximum speed traffic between and through major metropolitan areas. There are very few, if any, speed changes. Access to this road is usually controlled.
2	These roads are used to channel traffic to Main Roads (FRC1) for travel between and through cities in the shortest amount of time. There are very few, if any speed changes.
3	These roads interconnect First Class Roads (FRC2) and provide a high volume of traffic movement at a lower level of mobility than First Class Roads (FRC2).
4	These roads provide for a high volume of traffic movement at moderate speeds between neighbourhoods. These roads connect with higher Functional Class roads to collect and distribute traffic between neighbourhoods.
5	These roads' volume and traffic movements are below the level of any other road.

Source: HERE Technologies

A1.2 Geospatial and time dimensions for the speed survey

The availability of traffic speed data at a road link and five-minute time period, gives us flexibility to choose the geospatial and time aggregation dimensions for reporting within the speed survey. Given the objectives for the survey and its current format, the following data is aggregated:

- Greater Brisbane;
- urban and regional areas;
- local government areas (LGA);
- roads with the same speed limits; and
- calendar year.

It is argued that this approach strikes the best balance of reporting detail to provide wide coverage of traffic speed trends across the Queensland network. That said, the speed survey results provide insights to inform subsequent, more detailed investigations of speed on point-to-point routes or other geospatial areas, as required.

HERE speed data is available for five-minute, 15-minute and 60-minute periods. The analyses discussed in this report have used the 60-minute aggregated data provided by HERE to generate the proposed yearly metrics for the speed survey. This approach decreases the volume of data that needs to be managed, while also minimising the number of missing observations on less busy roads. It is argued that 60-minute intervals are more than appropriate for the purposes of the annual speed survey.

For the purposes of classifying geographical areas as urban or regional, the Significant Urban Area (SUA) structure of the Australian Statistical Geography Standard (ASGS) are used.[18] Significant Urban Areas are defined as significant towns and cities of 10,000 people or more. They are based on the Urban Centres and

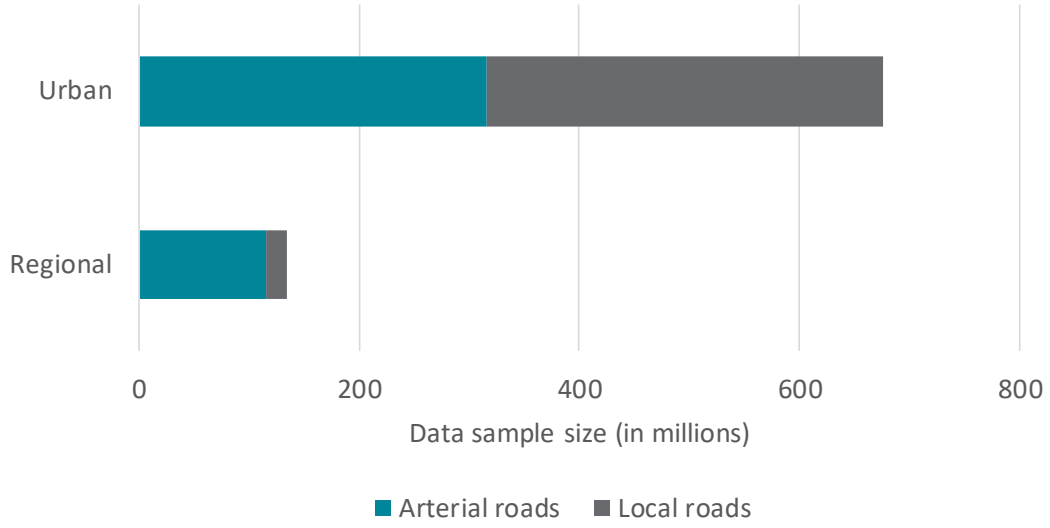
[18] See ABS, *Australian statistical geography standard (ASGS) volume 4*, cat. no. 1270.0.55.004, available at http://www.abs.gov.au/ausstats/abs@.nsf/mf/1270.0.55.004.

Localities (UCL), but are defined by the larger Statistical Areas Level 2 (SA2s). A single SUA can represent either a single Urban Centre or a cluster of related Urban Centres.

Based on this definition, urban areas include Brisbane, Bundaberg, Cairns, Emerald, Gladstone – Tannum Sands, Gold Coast – Tweed Heads, Gympie, Hervey Bay, Highfields, Mackay, Maryborough, Mount Isa, Rockhampton, Sunshine Coast, Toowoomba, Townsville, Warwick and Yeppoon.

Over the analysis period, on average, urban areas represent 83 per cent of the observations. Figure A1.2 illustrates the average size of the dataset for each road classification within the geographical area groupings and road type (arterial or local).

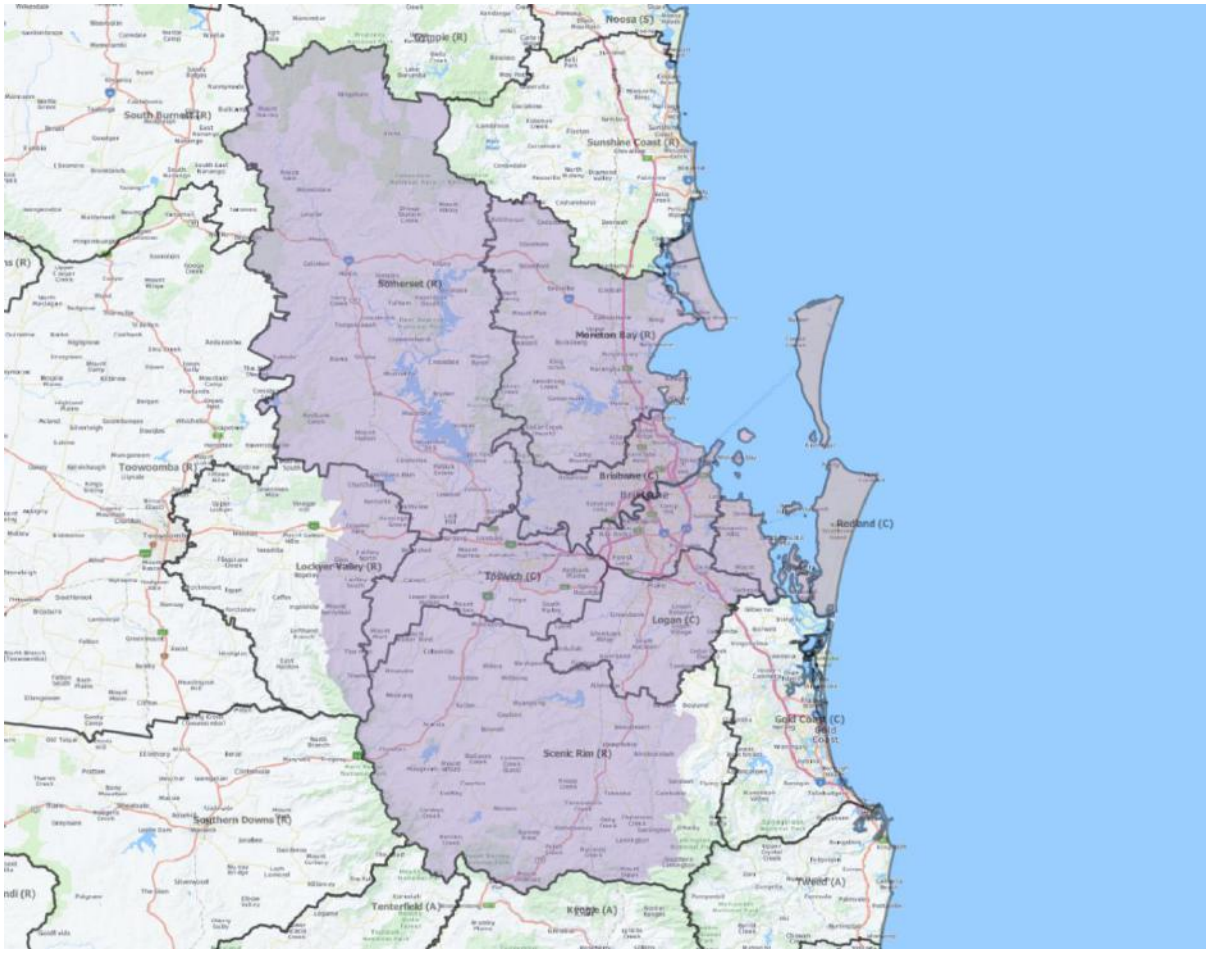
Figure A1.1: Data sample sizes across urban and regional areas, 2017



In addition to the aggregations described above, for the completeness of the report, summarised metrics for Greater Brisbane using the Australian Statistical Geography Standard (ASGS) have been provided. Specifically, the Greater Capital City Statistical Area (GCCSA) captures a much wider area than the LGA definition and provides a more accurate picture of the road network for the capital city.[19] The GCCSA definition for Greater Brisbane is used, as it is consistent with how other agencies report speed performance results for capital cities.

[19] See ABS, *Australian statistical geography standard (ASGS) volume 1*, cat. no. 1270.0.55.001, available at http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/1270.0.55.001.

Figure A1.2: Greater Brisbane compared to local government area definitions



A1.3 Traffic speed survey metrics

Four key speed metrics for the survey are reported, namely:

- average speed;
- percentage of speed limit;
- compliance with speed limit; and
- average speed when speeding

When aggregating road performance (other than vehicle count) over more than one link, individual link values should be weighted. The authors have previously developed a weighting methodology for BITRE, whereby individual links are weighted according to the average number of vehicles travelling on the link.[20]

Previous analyses identified that volumes exhibit strong daily and hourly trends and are influenced by holiday periods.[21] It follows that any traffic volume weighting approach should take these trends into consideration.

[20] HoustonKemp, *Road speed weighting methodology report*, November 2019.

[21] HoustonKemp, *Road speed weighting methodology report*, November 2019, p 8.

The formula used to weight one link is set out in equation 1 below. The weights applied to each link for the remaining metrics are based on data for the period 1 January 2018 to 31 December 2018.[22]

Equation 1: Weighting function for a link for a given hour / day of week / holiday status combination

$$f(l,h,d,H) = \frac{\sum_{t \in T_{hdH}} vehicle\_count_{l,t}}{weekdays(d,H)}$$

where:

- l is a road link;
- h is an hour of the day, eg, 7am;
- d is a day of the week, eg, Wednesday;
- H indicates whether the day represents a public or school holiday, eg, 'not a public or school holiday';
- T_{hdH} is the set of all one hour periods of time in the 2018 calendar year that have hour h, day of the week d and holiday status H;
- $vehicle\_count_{l,t}$ is the count of vehicles reported by HERE on link l during period t; and
- $weekdays(d,H)$ is the number of occurrences of weekday d in the 2018 calendar year, with respect to holiday status H.

Average speed

HERE data provides an average speed of all vehicles for a road link. To calculate an average speed across a geographic area and a period of time, eg, for one of the cities for one week, average speeds are aggregated, weighting by an estimate of the total amount of time motorists spend on each link. The aggregation is a two step process, ie:

1. calculate an average speed for a link for each hour (0 to 23), day of the week and holiday status across the period of interest, weighting by the travel time on the link; and then
2. aggregate these average speeds across the road network of interest, weighting the average speeds calculated in step one by the relative number of vehicles observed, on average, on each link.

Equation 2 sets out the formula to estimate average speed for a given link for a given hour / day of week / holiday status combination, ie, step one above.

Equation 2: Average speed of a link over a period and for a given hour / day of week / holiday status combination

$$Speed(l,T,h,d,H) = \frac{\sum_{t \in T_{hdH}} (speed_{l,t} \times travel\_time_{l,t})}{\sum_{t \in T_{hdH}} (travel\_time_{l,t})}$$

where:

[22] See HoustonKemp, *Road speed weighting methodology report*, November 2019.

- l is a road link;
- T is a period of time over which to calculate average speed, eg, the two week period from 2 March 2020 to 15 March 2020;
- h is an hour of the day, eg, 7am;
- d is a day of the week, eg, Wednesday;
- H indicates whether the day represents a public or school holiday, eg, 'not a public or school holiday';
- T_{hdH} is the set of all one hour periods in T that have hour h, day of the week d and holiday status H, ie, based on the examples above, this would be the set containing the periods from 7am to 8am on Wednesday 4 March 2020 and Wednesday 11 March 2020;[23]
- t is a one hour period of time from the set T_{hdH}, eg, the period from 7am to 8am on Wednesday 4 March 2020;
- $\text{speed}_{\text{l,t}}$ is the observed average speed recorded by HERE on link l during the one hour period t;
- $\text{travel\_time}_{\text{l,t}}$ is the implied travel time along link l during the one hour period t, calculated as the length of the link divided by the observed average speed recorded by HERE; and
- $Speed(l, T, h, d, H)$ is the average speed for the link, for a given hour / day of week / holiday status combination, weighted by travel time.

In the case where the period of time T is a single week (or shorter), this step is redundant as there is at most one record for each hour / day of week / holiday status combination. However, this step allows for aggregation over multiple weeks, when required.

Equation 3 sets out the formula to estimate average speed for a geographic area across a time period, ie, step two above.

Equation 3: Average speed for a geographic area over a time period

$$Area\_Speed(A, T) = \frac{\sum_{l \in A} \sum_{h \in hours} \sum_{d \in days} \sum_{H \in holiday\_status} Speed(l, T, h, d, H) \times f(l, h, d, H)}{\sum_{l \in A} \sum_{h \in hours} \sum_{d \in days} \sum_{H \in holiday\_status} f(l, h, d, H)}$$

where:

- A is a geographic area, eg, Greater Brisbane;
- T is a period of time over which to calculate average speed, eg, the two week period from 2 March 2020 to 15 March 2020;
- l is a road link in the geographic area A;
- $hours$ is the set of all hours of the day, ie, hour 0 to hour 23, and h is an hour of the day;
- $days$ is the set of all days of the week, and d is a day of the week;
- $holiday\_status$ is a two-element set indicating whether a day is a public or school holiday, or not, and H indicates whether the day represents a public or school holiday, or not;

[23] In mathematical terms, $T_{hdH} = \{t \in T | \, hour(t) = h, \; day\_of\_week(t) = d, \; holiday\_status(t) = H\}$.

- $Speed(l,T,h,d,H)$ is the average speed for the link, for a given hour / day of week / holiday status combination, weighted by travel time, ie, that which is calculated in step one;
- $f(l,h,d,H)$ is the vehicle count weight for link l for a given hour / day of week / holiday status combination, set out above; and
- $Area\_Speed(A,T)$ is the average speed for the geographic area and period, weighted by travel time and vehicle count.

Percentage of speed limit

The methodology for the POSL metric is the same as the average speed metric, with speed replaced by POSL, ie, average speed divided by the speed limit, at each step of the calculation. The formulae for calculating average POSL are set out at equation 4 below.

Equation 4: POSL for a link and for a geographic area

$$POSL(l,T,h,d,H) = \frac{\sum_{t \in T_{hdH}} \left(\frac{speed_{l,t}}{speed\_limit_l} \times travel\_time_{l,t} \right)}{\sum_{t \in T_{hdH}} \left(travel\_time_{l,t} \right)}$$

$$Area\_POSL(A,T) = \frac{\sum_{l \in A} \sum_{h \in hours} \sum_{d \in days} \sum_{H \in holiday\_status} POSL(l,T,h,d,H) \times f(l,h,d,H)}{\sum_{l \in A} \sum_{h \in hours} \sum_{d \in days} \sum_{H \in holiday\_status} f(l,h,d,H)}$$

where:

- $speed\_limit_l$ is the speed limit for a link l;
- $POSL(l,T,h,d,H)$ is the POSL for the link, for a given hour / day of week / holiday status combination, weighted by travel time;
- $Area\_POSL(A,T)$ is the average speed for the geographic area and period, weighted by travel time and vehicle count; and
- all other variables and functions have the same interpretation as for equation 2 and equation 3.

Compliance with speed limits

The HERE probe data provides data on the speed distribution for each road link, for the given time period, ie, hour. From this data, the proportion of hours where part of the distribution exceeds the speed limit can be estimated. This would be a measure of the frequency of time periods whereby a portion of traffic is speeding.

It is proposed to calculate an incidence of speeding by using the 85th percentile of speed distribution compared against the speed limit for each link within a defined area, as using the length of those links, calculate the proportion of speeding roads. The methodology for estimating the proportion of speeding roads is set out below.

The proportion of speeding roads is then calculated as set out in equation 5.

Equation 5: Proportion of speeding roads

$$Proportion\ of\ speeding\ roads_{time\ period(t)}^{area(link)} = \sum_{link=1}^{n} \frac{C(hours) \times f(l,h,d,H)}{m \times \sum_{link=1}^{n} f(l,h,d,H)}$$

Where:

- *C(hours)* is the number of hours *t* across the *time period* where the *average speed (85th percentile)* for a *link* is greater than the speed limit for that *lin*k;
- *m* is the total number of hours within the *time period;* and
- *length* is the length of each *link* within the *area*.

Compliance with speed limits is the proportion of roads, by length, where there were no incidences of speeding. Compliance with speed limits is simply calculated as set out in equation 6.

Equation 6: Compliance with speed limits

$$Compliance\ with\ speed\ limits^{area(link)}_{time\ period\ (t)} = 1 - \ Proportion\ of\ speeding\ roads^{area(link)}_{time\ period(t)}$$

Compliance with speed limits allows comparisons to be made between areas taking into account the relative length of roads between the areas.

Finally, it is also proposed to decompose this metric into proportions based on the observed number of hours where the 85th percentile speed is:

- up to ten per cent over the link speed limit;
- ten to 20 per cent over the link speed limit; and
- more than 20 per cent over the link speed limit.

Average speed when speeding

The methodology for the average speed when speeding metric is the same as for average speed, with average speed replaced by the average of 85th percentile speed and maximum speed (and may be segmented into excess speeding categories).

$$average\ speed\ when\ speeding(l,T,h,d,H) = \frac{\sum_{t\in T_{hdH}}\left(0.5 * (speed(85th) + max\ speed) \times travel\_time_{l,t}\right)}{\sum_{t\in T_{hdH}}\left(travel\_time_{l,t}\right)}$$

$$Area\_average\_speed\_when\_speeding(A,T) = \frac{\sum_{l\in A}\sum_{h\in hours}\sum_{d\in days}\sum_{H\in holiday\_status} average\ speed\ when\ speeding(l,T,h,d,H) \times f(l,h,d,H)}{\sum_{l\in A}\sum_{h\in hours}\sum_{d\in days}\sum_{H\in holiday\_status} f(l,h,d,H)}$$

where:

- *max speed* is the maximum speed on the link;
- *speed(85th)* is the average speed of the 85th percentile;
- *t* is an hour within the *time period; and*
- all other variables and functions have the same interpretation as for equation 2 and equation 3.

A2. Summary speed tables

A2.1 Queensland summary speed tables

Table A.1: Average speed, urban, regional and all areas, local, arterial and all roads, Queensland, 2016 to 2022

Speed limit	Area	Road type	2016	2017	2018	2019	2020	2021	2022
All	All	All	56.9	56.2	54.6	55.8	56.4	51.2	50.8
All	All	Arterial	67.7	67.0	66.6	66.7	67.5	63.3	64.8
All	All	Local	36.6	36.5	35.3	36.3	36.2	36.1	35.9
All	Regional	All	78.8	77.3	76.2	77.7	77.5	76.4	73.5
All	Regional	Arterial	84.2	83.0	83.2	83.6	83.3	83.6	84.0
All	Regional	Local	49.5	48.9	47.6	49.0	48.7	48.6	47.9
All	Urban	All	52.4	51.7	49.9	51.2	52.0	47.0	46.1
All	Urban	Arterial	63.0	62.3	61.5	61.8	63.0	58.0	58.9
All	Urban	Local	35.5	35.4	34.0	35.1	35.1	35.2	34.6
40km/h	All	All	24.9	24.7	24.1	24.8	24.7	24.0	24.3
40km/h	All	Local	24.9	24.7	24.1	24.8	24.7	24.0	24.3
40km/h	Regional	All	27.1	26.5	26.6	27.3	27.3	27.4	28.4
40km/h	Regional	Local	27.1	26.5	26.6	27.3	27.3	27.4	28.4
40km/h	Urban	All	24.8	24.5	23.9	24.6	24.5	23.9	24.0
40km/h	Urban	Local	24.8	24.5	23.9	24.6	24.5	23.9	24.0
50km/h	All	All	26.0	26.1	25.4	26.2	25.9	28.3	28.2
50km/h	All	Local	26.0	26.1	25.4	26.2	25.9	28.3	28.2
50km/h	Regional	All	30.5	30.1	29.2	30.2	30.1	30.9	30.7
50km/h	Regional	Local	30.5	30.1	29.2	30.2	30.1	30.9	30.7
50km/h	Urban	All	25.6	25.8	25.0	25.9	25.5	28.2	28.0
50km/h	Urban	Local	25.6	25.8	25.0	25.9	25.5	28.2	28.0
60km/h	All	All	41.4	41.0	40.8	40.7	40.9	41.3	42.3
60km/h	All	Arterial	42.1	41.5	41.1	41.0	41.4	42.0	43.0
60km/h	All	Local	40.4	40.4	40.3	40.2	40.2	40.5	41.5
60km/h	Regional	All	48.0	47.3	46.9	47.6	47.4	48.1	48.7
60km/h	Regional	Arterial	48.8	47.9	47.6	48.2	48.1	49.5	50.2
60km/h	Regional	Local	45.9	45.8	45.4	46.1	45.9	45.0	46.0
60km/h	Urban	All	40.9	40.6	40.3	40.2	40.4	41.0	41.9
60km/h	Urban	Arterial	41.5	40.9	40.5	40.4	40.8	41.5	42.4

60km/h	Urban	Local	40.1	40.2	40.0	40.0	40.0	40.3	41.3
80km/h	All	All	67.8	67.2	66.5	66.7	67.4	66.5	67.2
80km/h	All	Arterial	68.5	67.9	67.2	67.3	68.1	67.2	68.1
80km/h	All	Local	63.8	63.4	62.7	63.5	63.2	63.6	64.0
80km/h	Regional	All	70.7	70.3	69.8	70.6	70.2	69.3	69.2
80km/h	Regional	Arterial	71.5	71.2	70.8	71.4	70.9	70.4	70.7
80km/h	Regional	Local	65.5	65.0	63.9	65.8	65.6	64.1	64.5
80km/h	Urban	All	67.0	66.3	65.5	65.6	66.6	65.8	66.6
80km/h	Urban	Arterial	67.6	67.0	66.1	66.1	67.3	66.3	67.3
80km/h	Urban	Local	63.4	63.0	62.3	62.9	62.6	63.5	63.8
100km/h	All	All	90.3	88.9	88.0	88.9	90.3	88.7	87.3
100km/h	All	Arterial	90.7	89.4	88.8	89.4	90.9	90.3	90.4
100km/h	All	Local	77.6	76.9	73.9	76.6	75.8	67.1	63.4
100km/h	Regional	All	91.2	89.9	89.7	90.7	90.3	89.5	87.5
100km/h	Regional	Arterial	92.0	90.8	91.1	91.7	91.3	91.6	91.7
100km/h	Regional	Local	78.9	78.0	74.7	77.6	76.9	69.6	65.3
100km/h	Urban	All	89.5	88.2	86.6	87.5	90.3	87.9	87.0
100km/h	Urban	Arterial	89.8	88.4	86.9	87.7	90.6	89.0	88.8
100km/h	Urban	Local	73.8	73.3	70.6	73.3	72.5	60.5	56.7
110km/h	All	All	97.8	97.1	97.1	98.3	98.1	95.1	95.8
110km/h	All	Arterial	97.8	97.1	97.2	98.3	98.1	95.2	95.9
110km/h	All	Local	60.0	62.1	61.4	62.5	61.4	62.1	59.6
110km/h	Regional	All	98.2	94.8	95.7	96.3	97.1	97.1	98.4
110km/h	Regional	Arterial	98.2	94.8	95.7	96.3	97.1	97.1	98.4
110km/h	Regional	Local	67.3	65.9	64.7	66.9	64.4	18.2	21.1
110km/h	Urban	All	97.6	97.8	97.6	98.9	98.4	94.6	94.9
110km/h	Urban	Arterial	97.7	97.8	97.6	98.9	98.4	94.7	95.1
110km/h	Urban	Local	59.3	61.7	61.0	62.1	61.1	63.3	61.3

Table A.2: Percentage of speed limit, urban, regional and all areas, local, arterial and all roads, Queensland, 2016 to 2022

Speed limit	Area	Road type	2016	2017	2018	2019	2020	2021	2022
All	All	All	74.9%	74.1%	72.7%	73.7%	74.2%	72.1%	72.0%
All	All	Arterial	81.1%	80.1%	79.5%	79.7%	80.6%	79.0%	80.2%
All	All	Local	63.1%	63.1%	61.7%	63.0%	62.7%	63.5%	63.2%

All	Regional	All	87.4%	86.0%	85.2%	86.5%	86.2%	84.8%	82.3%
All	Regional	Arterial	90.1%	88.9%	89.0%	89.6%	89.3%	89.7%	90.1%
All	Regional	Local	72.3%	71.5%	69.5%	71.7%	71.4%	66.0%	63.4%
All	Urban	All	72.3%	71.6%	70.0%	71.0%	71.8%	69.9%	69.8%
All	Urban	Arterial	78.5%	77.6%	76.6%	76.8%	78.1%	76.1%	77.2%
All	Urban	Local	62.3%	62.4%	60.9%	62.2%	61.9%	63.3%	63.2%
40km/h	All	All	62.4%	61.7%	60.4%	61.9%	61.8%	60.1%	60.7%
40km/h	All	Local	62.4%	61.7%	60.4%	61.9%	61.8%	60.1%	60.7%
40km/h	Regional	All	67.8%	66.3%	66.5%	68.2%	68.3%	68.6%	71.1%
40km/h	Regional	Local	67.8%	66.3%	66.5%	68.2%	68.3%	68.6%	71.1%
40km/h	Urban	All	61.9%	61.3%	59.8%	61.4%	61.2%	59.7%	60.1%
40km/h	Urban	Local	61.9%	61.3%	59.8%	61.4%	61.2%	59.7%	60.1%
50km/h	All	All	51.9%	52.2%	50.8%	52.5%	51.7%	56.6%	56.5%
50km/h	All	Local	51.9%	52.2%	50.8%	52.5%	51.7%	56.6%	56.5%
50km/h	Regional	All	61.0%	60.1%	58.3%	60.5%	60.2%	61.7%	61.3%
50km/h	Regional	Local	61.0%	60.1%	58.3%	60.5%	60.2%	61.7%	61.3%
50km/h	Urban	All	51.2%	51.6%	50.1%	51.8%	51.0%	56.4%	56.1%
50km/h	Urban	Local	51.2%	51.6%	50.1%	51.8%	51.0%	56.4%	56.1%
60km/h	All	All	68.9%	68.4%	67.9%	67.8%	68.1%	68.9%	70.5%
60km/h	All	Arterial	70.2%	69.1%	68.5%	68.3%	68.9%	70.0%	71.6%
60km/h	All	Local	67.3%	67.4%	67.2%	67.1%	67.0%	67.5%	69.2%
60km/h	Regional	All	79.9%	78.8%	78.2%	79.3%	79.0%	80.2%	81.1%
60km/h	Regional	Arterial	81.3%	79.9%	79.3%	80.3%	80.1%	82.5%	83.6%
60km/h	Regional	Local	76.5%	76.3%	75.7%	76.9%	76.5%	75.0%	76.6%
60km/h	Urban	All	68.2%	67.6%	67.2%	67.0%	67.4%	68.3%	69.8%
60km/h	Urban	Arterial	69.2%	68.2%	67.5%	67.3%	68.0%	69.2%	70.7%
60km/h	Urban	Local	66.9%	66.9%	66.7%	66.6%	66.6%	67.2%	68.9%
80km/h	All	All	84.7%	84.0%	83.1%	83.4%	84.2%	83.2%	84.0%
80km/h	All	Arterial	85.6%	84.9%	84.0%	84.1%	85.2%	84.0%	85.1%
80km/h	All	Local	79.8%	79.3%	78.4%	79.4%	78.9%	79.5%	79.9%
80km/h	Regional	All	88.4%	87.9%	87.2%	88.3%	87.7%	86.6%	86.6%
80km/h	Regional	Arterial	89.4%	89.0%	88.5%	89.3%	88.6%	88.0%	88.4%
80km/h	Regional	Local	81.9%	81.2%	79.9%	82.3%	82.0%	80.1%	80.6%
80km/h	Urban	All	83.7%	82.9%	81.9%	82.0%	83.2%	82.3%	83.3%
80km/h	Urban	Arterial	84.6%	83.7%	82.6%	82.7%	84.2%	82.9%	84.1%
80km/h	Urban	Local	79.3%	78.8%	77.9%	78.7%	78.2%	79.4%	79.7%

100km/h	All	All	90.3%	88.9%	88.0%	88.9%	90.3%	88.7%	87.3%
100km/h	All	Arterial	90.7%	89.4%	88.8%	89.4%	90.9%	90.3%	90.4%
100km/h	All	Local	77.6%	76.9%	73.9%	76.6%	75.8%	67.1%	63.4%
100km/h	Regional	All	91.2%	89.9%	89.7%	90.7%	90.3%	89.5%	87.5%
100km/h	Regional	Arterial	92.0%	90.8%	91.1%	91.7%	91.3%	91.6%	91.7%
100km/h	Regional	Local	78.9%	78.0%	74.7%	77.6%	76.9%	69.6%	65.3%
100km/h	Urban	All	89.5%	88.2%	86.6%	87.5%	90.3%	87.9%	87.0%
100km/h	Urban	Arterial	89.8%	88.4%	86.9%	87.7%	90.6%	89.0%	88.8%
100km/h	Urban	Local	73.8%	73.3%	70.6%	73.3%	72.5%	60.5%	56.7%
110km/h	All	All	88.9%	88.2%	88.3%	89.3%	89.2%	86.4%	87.1%
110km/h	All	Arterial	88.9%	88.3%	88.3%	89.4%	89.2%	86.5%	87.2%
110km/h	All	Local	54.6%	56.5%	55.8%	56.8%	55.8%	56.4%	54.2%
110km/h	Regional	All	89.3%	86.2%	87.0%	87.6%	88.3%	88.2%	89.4%
110km/h	Regional	Arterial	89.3%	86.2%	87.0%	87.6%	88.3%	88.3%	89.5%
110km/h	Regional	Local	61.2%	59.9%	58.8%	60.9%	58.6%	16.6%	19.2%
110km/h	Urban	All	88.8%	88.9%	88.7%	89.9%	89.4%	86.0%	86.3%
110km/h	Urban	Arterial	88.8%	88.9%	88.8%	89.9%	89.5%	86.1%	86.4%
110km/h	Urban	Local	53.9%	56.1%	55.5%	56.5%	55.5%	57.6%	55.8%

Table A.3: Compliance with speed limits, urban, regional and all areas, local, arterial and all roads, Queensland, 2016 to 2022

Speed limit	Area	Road type	Type	2016	2017	2018	2019	2020	2021	2022
All	All	All	Compliance	65.98%	72.23%	77.47%	76.42%	72.10%	75.31%	72.92%
All	All	Arterial	Compliance	61.93%	69.05%	75.07%	73.81%	68.59%	70.64%	67.30%
All	All	Local	Compliance	82.59%	84.54%	86.05%	85.89%	84.88%	84.03%	82.98%
All	Regional	All	Compliance	59.01%	65.25%	66.71%	65.13%	61.85%	62.58%	57.16%
All	Regional	Arterial	Compliance	57.77%	64.34%	65.77%	64.06%	60.71%	60.94%	54.90%
All	Regional	Local	Compliance	74.71%	76.16%	76.42%	76.69%	75.23%	77.80%	75.43%
All	Urban	All	Compliance	66.80%	73.14%	79.00%	78.03%	73.60%	76.43%	74.52%
All	Urban	Arterial	Compliance	62.51%	69.77%	76.65%	75.48%	69.97%	71.86%	69.11%
All	Urban	Local	Compliance	82.92%	84.92%	86.57%	86.36%	85.35%	84.17%	83.20%
40km/h	All	All	Compliance	66.10%	69.24%	72.34%	72.03%	70.95%	79.64%	79.45%
40km/h	All	Local	Compliance	66.10%	69.24%	72.34%	72.03%	70.95%	79.64%	79.45%
40km/h	Regional	All	Compliance	73.67%	74.69%	74.70%	75.65%	75.71%	79.68%	75.89%
40km/h	Regional	Local	Compliance	73.67%	74.69%	74.70%	75.65%	75.71%	79.68%	75.89%

40km/h	Urban	All	Compliance	65.77%	68.97%	72.20%	71.84%	70.70%	79.64%	79.51%
40km/h	Urban	Local	Compliance	65.77%	68.97%	72.20%	71.84%	70.70%	79.64%	79.51%
50km/h	All	All	Compliance	89.80%	91.72%	92.36%	92.17%	91.02%	87.90%	87.35%
50km/h	All	Local	Compliance	89.80%	91.72%	92.36%	92.17%	91.02%	87.90%	87.35%
50km/h	Regional	All	Compliance	83.31%	84.81%	86.76%	87.40%	85.86%	79.62%	77.51%
50km/h	Regional	Local	Compliance	83.31%	84.81%	86.76%	87.40%	85.86%	79.62%	77.51%
50km/h	Urban	All	Compliance	90.18%	92.15%	92.75%	92.50%	91.36%	88.09%	87.63%
50km/h	Urban	Local	Compliance	90.18%	92.15%	92.75%	92.50%	91.36%	88.09%	87.63%
60km/h	All	All	Compliance	78.85%	81.83%	84.16%	84.35%	82.78%	81.91%	80.79%
60km/h	All	Arterial	Compliance	77.06%	80.49%	83.31%	83.54%	81.64%	80.41%	79.56%
60km/h	All	Local	Compliance	82.50%	84.44%	85.74%	85.85%	84.86%	84.22%	82.63%
60km/h	Regional	All	Compliance	67.12%	70.34%	71.21%	69.85%	68.31%	68.89%	65.64%
60km/h	Regional	Arterial	Compliance	67.35%	71.32%	73.11%	70.68%	69.11%	66.48%	63.38%
60km/h	Regional	Local	Compliance	66.41%	67.18%	65.35%	67.22%	65.65%	76.94%	72.71%
60km/h	Urban	All	Compliance	79.26%	82.27%	84.70%	84.95%	83.37%	82.20%	81.20%
60km/h	Urban	Arterial	Compliance	77.44%	80.90%	83.81%	84.17%	82.26%	80.81%	80.11%
60km/h	Urban	Local	Compliance	82.91%	84.89%	86.33%	86.38%	85.37%	84.32%	82.79%
80km/h	All	All	Compliance	55.33%	58.53%	61.71%	61.54%	58.72%	62.78%	60.50%
80km/h	All	Arterial	Compliance	53.71%	56.78%	60.00%	59.99%	56.88%	61.01%	58.63%
80km/h	All	Local	Compliance	72.11%	75.16%	76.68%	75.25%	74.77%	75.87%	73.26%
80km/h	Regional	All	Compliance	53.86%	55.38%	56.31%	54.83%	53.27%	59.16%	56.65%
80km/h	Regional	Arterial	Compliance	53.38%	54.94%	55.81%	54.48%	52.92%	59.08%	56.53%
80km/h	Regional	Local	Compliance	64.41%	63.22%	63.15%	60.04%	58.31%	59.99%	57.68%
80km/h	Urban	All	Compliance	55.56%	59.04%	62.66%	62.72%	59.69%	63.20%	61.02%
80km/h	Urban	Arterial	Compliance	53.76%	57.10%	60.77%	61.01%	57.62%	61.24%	58.92%
80km/h	Urban	Local	Compliance	72.65%	76.17%	78.16%	76.85%	76.49%	77.26%	74.87%
100km/h	All	All	Compliance	47.69%	59.00%	68.12%	65.52%	54.66%	53.69%	47.04%
100km/h	All	Arterial	Compliance	47.38%	58.68%	67.86%	65.26%	54.28%	53.10%	46.17%
100km/h	All	Local	Compliance	82.28%	87.45%	87.35%	85.89%	85.68%	86.64%	85.17%
100km/h	Regional	All	Compliance	57.67%	64.23%	65.34%	63.66%	59.70%	59.38%	53.01%
100km/h	Regional	Arterial	Compliance	57.19%	63.77%	64.79%	63.14%	59.13%	58.62%	51.90%
100km/h	Regional	Local	Compliance	80.27%	82.99%	83.36%	82.02%	81.62%	82.04%	80.62%
100km/h	Urban	All	Compliance	44.72%	57.24%	69.17%	66.22%	52.67%	51.20%	43.94%
100km/h	Urban	Arterial	Compliance	44.51%	57.00%	69.00%	66.05%	52.41%	50.73%	43.28%
100km/h	Urban	Local	Compliance	84.64%	93.11%	93.79%	92.20%	91.91%	92.44%	91.83%
110km/h	All	All	Compliance	55.13%	68.43%	81.55%	77.15%	76.51%	76.39%	65.45%

110km/h	All	Arterial	Compliance	55.12%	68.42%	81.54%	77.14%	76.50%	76.34%	65.37%
110km/h	All	Local	Compliance	99.56%	99.62%	99.68%	99.51%	99.36%	99.56%	99.58%
110km/h	Regional	All	Compliance	53.54%	73.34%	78.57%	73.48%	72.03%	80.96%	72.47%
110km/h	Regional	Arterial	Compliance	53.53%	73.34%	78.56%	73.48%	72.02%	80.96%	72.47%
110km/h	Regional	Local	Compliance	98.43%	98.86%	98.91%	98.54%	98.27%	100.00%	100.00%
110km/h	Urban	All	Compliance	55.33%	67.74%	82.01%	77.70%	77.22%	76.03%	64.81%
110km/h	Urban	Arterial	Compliance	55.32%	67.73%	82.00%	77.69%	77.21%	75.97%	64.72%
110km/h	Urban	Local	Compliance	99.61%	99.64%	99.71%	99.56%	99.42%	99.55%	99.58%
All	All	All	<10% above speed limit	23.98%	21.28%	18.13%	19.17%	22.57%	18.00%	19.93%
All	All	Arterial	<10% above speed limit	27.59%	24.45%	20.81%	22.05%	26.24%	23.03%	25.93%
All	All	Local	<10% above speed limit	9.12%	9.01%	8.55%	8.67%	9.21%	8.61%	9.18%
All	Regional	All	<10% above speed limit	27.90%	27.62%	28.46%	30.13%	32.95%	30.33%	34.01%
All	Regional	Arterial	<10% above speed limit	28.90%	28.65%	29.71%	31.44%	34.33%	32.21%	36.50%
All	Regional	Local	<10% above speed limit	15.26%	15.29%	15.70%	15.88%	16.76%	12.91%	13.89%
All	Urban	All	<10% above speed limit	23.51%	20.45%	16.67%	17.61%	21.05%	16.92%	18.50%
All	Urban	Arterial	<10% above speed limit	27.41%	23.81%	19.31%	20.45%	24.82%	21.88%	24.39%
All	Urban	Local	<10% above speed limit	8.87%	8.73%	8.17%	8.30%	8.84%	8.51%	9.04%
40km/h	All	All	<10% above speed limit	7.24%	8.63%	8.67%	8.76%	8.04%	7.08%	6.84%
40km/h	All	Local	<10% above speed limit	7.24%	8.63%	8.67%	8.76%	8.04%	7.08%	6.84%
40km/h	Regional	All	<10% above speed limit	10.82%	10.38%	10.40%	10.86%	10.79%	7.43%	8.60%
40km/h	Regional	Local	<10% above speed limit	10.82%	10.38%	10.40%	10.86%	10.79%	7.43%	8.60%
40km/h	Urban	All	<10% above speed limit	7.08%	8.54%	8.57%	8.65%	7.89%	7.08%	6.81%
40km/h	Urban	Local	<10% above speed limit	7.08%	8.54%	8.57%	8.65%	7.89%	7.08%	6.81%
50km/h	All	All	<10% above speed limit	5.68%	4.87%	4.53%	4.54%	5.20%	6.14%	6.34%
50km/h	All	Local	<10% above speed limit	5.68%	4.87%	4.53%	4.54%	5.20%	6.14%	6.34%
50km/h	Regional	All	<10% above speed limit	8.51%	8.30%	7.79%	7.58%	8.58%	9.66%	10.26%
50km/h	Regional	Local	<10% above speed limit	8.51%	8.30%	7.79%	7.58%	8.58%	9.66%	10.26%
50km/h	Urban	All	<10% above speed limit	5.52%	4.65%	4.30%	4.33%	4.98%	6.07%	6.23%
50km/h	Urban	Local	<10% above speed limit	5.52%	4.65%	4.30%	4.33%	4.98%	6.07%	6.23%
60km/h	All	All	<10% above speed limit	11.80%	11.12%	10.31%	10.09%	10.92%	11.07%	11.74%
60km/h	All	Arterial	<10% above speed limit	12.83%	11.93%	10.90%	10.63%	11.63%	12.02%	12.55%
60km/h	All	Local	<10% above speed limit	9.70%	9.53%	9.21%	9.10%	9.63%	9.61%	10.54%
60km/h	Regional	All	<10% above speed limit	17.20%	17.14%	17.54%	18.69%	19.04%	17.46%	18.39%
60km/h	Regional	Arterial	<10% above speed limit	15.65%	15.67%	15.48%	17.32%	17.66%	18.56%	19.25%
60km/h	Regional	Local	<10% above speed limit	21.99%	21.87%	23.85%	23.00%	23.62%	13.82%	15.73%
60km/h	Urban	All	<10% above speed limit	11.62%	10.89%	10.00%	9.73%	10.59%	10.93%	11.56%

60km/h	Urban	Arterial	<10% above speed limit	12.72%	11.77%	10.67%	10.30%	11.33%	11.83%	12.32%
60km/h	Urban	Local	<10% above speed limit	9.39%	9.21%	8.79%	8.71%	9.26%	9.55%	10.45%
80km/h	All	All	<10% above speed limit	22.35%	23.96%	26.14%	26.51%	25.03%	24.13%	25.07%
80km/h	All	Arterial	<10% above speed limit	22.94%	24.64%	27.19%	27.44%	25.80%	25.11%	26.01%
80km/h	All	Local	<10% above speed limit	16.23%	17.51%	16.97%	18.22%	18.31%	16.86%	18.62%
80km/h	Regional	All	<10% above speed limit	25.80%	28.38%	28.91%	30.38%	30.87%	25.68%	25.38%
80km/h	Regional	Arterial	<10% above speed limit	26.12%	28.83%	29.60%	30.99%	31.40%	26.19%	25.85%
80km/h	Regional	Local	<10% above speed limit	18.74%	20.33%	19.44%	21.52%	23.31%	20.75%	21.32%
80km/h	Urban	All	<10% above speed limit	21.82%	23.24%	25.65%	25.83%	23.99%	23.95%	25.02%
80km/h	Urban	Arterial	<10% above speed limit	22.43%	23.92%	26.75%	26.79%	24.76%	24.98%	26.04%
80km/h	Urban	Local	<10% above speed limit	16.05%	17.27%	16.70%	17.88%	17.79%	16.52%	18.34%
100km/h	All	All	<10% above speed limit	43.83%	37.95%	30.91%	33.50%	44.08%	43.36%	49.57%
100km/h	All	Arterial	<10% above speed limit	44.10%	38.25%	31.16%	33.74%	44.45%	43.93%	50.41%
100km/h	All	Local	<10% above speed limit	12.36%	10.83%	11.94%	13.40%	13.52%	11.70%	12.82%
100km/h	Regional	All	<10% above speed limit	30.26%	30.99%	32.71%	34.50%	38.15%	36.07%	41.09%
100km/h	Regional	Arterial	<10% above speed limit	30.60%	31.39%	33.23%	34.99%	38.69%	36.76%	42.08%
100km/h	Regional	Local	<10% above speed limit	13.93%	14.92%	15.72%	17.14%	17.41%	15.71%	16.66%
100km/h	Urban	All	<10% above speed limit	47.86%	40.30%	30.23%	33.11%	46.42%	46.55%	53.97%
100km/h	Urban	Arterial	<10% above speed limit	48.06%	40.52%	30.40%	33.28%	46.68%	47.01%	54.61%
100km/h	Urban	Local	<10% above speed limit	10.53%	5.63%	5.83%	7.33%	7.56%	6.65%	7.18%
110km/h	All	All	<10% above speed limit	38.78%	28.83%	17.43%	21.60%	22.11%	22.06%	32.71%
110km/h	All	Arterial	<10% above speed limit	38.79%	28.84%	17.43%	21.61%	22.12%	22.11%	32.79%
110km/h	All	Local	<10% above speed limit	0.35%	0.29%	0.21%	0.34%	0.46%	0.35%	0.37%
110km/h	Regional	All	<10% above speed limit	39.70%	24.29%	20.72%	25.56%	27.04%	16.68%	24.19%
110km/h	Regional	Arterial	<10% above speed limit	39.70%	24.29%	20.72%	25.56%	27.05%	16.68%	24.19%
110km/h	Regional	Local	<10% above speed limit	1.35%	0.92%	0.83%	1.24%	1.45%	0.00%	0.00%
110km/h	Urban	All	<10% above speed limit	38.66%	29.47%	16.91%	21.00%	21.33%	22.49%	33.48%
110km/h	Urban	Arterial	<10% above speed limit	38.67%	29.48%	16.92%	21.01%	21.34%	22.54%	33.57%
110km/h	Urban	Local	<10% above speed limit	0.31%	0.27%	0.19%	0.30%	0.41%	0.36%	0.37%
All	All	All	10-20% above speed limit	5.28%	3.99%	3.17%	3.18%	3.52%	4.35%	4.66%
All	All	Arterial	10-20% above speed limit	5.59%	4.06%	3.11%	3.11%	3.49%	4.53%	4.85%
All	All	Local	10-20% above speed limit	4.01%	3.75%	3.39%	3.43%	3.63%	4.02%	4.32%
All	Regional	All	10-20% above speed limit	5.15%	3.90%	3.52%	3.53%	3.88%	5.13%	6.33%
All	Regional	Arterial	10-20% above speed limit	5.16%	3.81%	3.39%	3.42%	3.76%	5.09%	6.34%
All	Regional	Local	10-20% above speed limit	5.08%	4.96%	4.92%	4.67%	5.27%	5.56%	6.28%
All	Urban	All	10-20% above speed limit	5.30%	4.00%	3.12%	3.13%	3.47%	4.28%	4.49%

All	Urban	Arterial	10-20% above speed limit	5.65%	4.09%	3.07%	3.06%	3.44%	4.46%	4.63%
All	Urban	Local	10-20% above speed limit	3.97%	3.69%	3.31%	3.36%	3.55%	3.99%	4.26%
40km/h	All	All	10-20% above speed limit	7.19%	10.06%	9.93%	10.16%	8.46%	5.79%	5.73%
40km/h	All	Local	10-20% above speed limit	7.19%	10.06%	9.93%	10.16%	8.46%	5.79%	5.73%
40km/h	Regional	All	10-20% above speed limit	8.13%	8.06%	8.29%	7.47%	7.61%	5.70%	6.68%
40km/h	Regional	Local	10-20% above speed limit	8.13%	8.06%	8.29%	7.47%	7.61%	5.70%	6.68%
40km/h	Urban	All	10-20% above speed limit	7.15%	10.16%	10.03%	10.31%	8.50%	5.79%	5.72%
40km/h	Urban	Local	10-20% above speed limit	7.15%	10.16%	10.03%	10.31%	8.50%	5.79%	5.72%
50km/h	All	All	10-20% above speed limit	2.21%	1.71%	1.56%	1.62%	1.92%	3.51%	3.74%
50km/h	All	Local	10-20% above speed limit	2.21%	1.71%	1.56%	1.62%	1.92%	3.51%	3.74%
50km/h	Regional	All	10-20% above speed limit	3.36%	3.06%	2.61%	2.38%	2.71%	6.04%	6.72%
50km/h	Regional	Local	10-20% above speed limit	3.36%	3.06%	2.61%	2.38%	2.71%	6.04%	6.72%
50km/h	Urban	All	10-20% above speed limit	2.15%	1.62%	1.49%	1.56%	1.86%	3.46%	3.65%
50km/h	Urban	Local	10-20% above speed limit	2.15%	1.62%	1.49%	1.56%	1.86%	3.46%	3.65%
60km/h	All	All	10-20% above speed limit	5.32%	4.51%	3.86%	3.87%	4.35%	4.53%	4.83%
60km/h	All	Arterial	10-20% above speed limit	5.84%	4.85%	4.04%	4.06%	4.66%	4.85%	5.06%
60km/h	All	Local	10-20% above speed limit	4.25%	3.84%	3.54%	3.51%	3.80%	4.03%	4.48%
60km/h	Regional	All	10-20% above speed limit	7.51%	6.95%	6.74%	7.19%	8.13%	8.67%	9.77%
60km/h	Regional	Arterial	10-20% above speed limit	7.69%	6.88%	6.51%	7.36%	8.22%	9.47%	10.52%
60km/h	Regional	Local	10-20% above speed limit	6.99%	7.16%	7.44%	6.65%	7.84%	5.98%	7.42%
60km/h	Urban	All	10-20% above speed limit	5.24%	4.42%	3.74%	3.73%	4.20%	4.43%	4.69%
60km/h	Urban	Arterial	10-20% above speed limit	5.77%	4.76%	3.91%	3.90%	4.48%	4.72%	4.87%
60km/h	Urban	Local	10-20% above speed limit	4.18%	3.76%	3.43%	3.42%	3.69%	4.00%	4.43%
80km/h	All	All	10-20% above speed limit	11.46%	10.84%	9.62%	9.36%	9.73%	9.89%	10.78%
80km/h	All	Arterial	10-20% above speed limit	11.94%	11.42%	10.13%	9.82%	10.21%	10.50%	11.48%
80km/h	All	Local	10-20% above speed limit	6.48%	5.33%	5.13%	5.28%	5.55%	5.43%	6.02%
80km/h	Regional	All	10-20% above speed limit	10.95%	11.27%	11.78%	12.00%	12.68%	10.97%	12.65%
80km/h	Regional	Arterial	10-20% above speed limit	11.00%	11.27%	11.76%	11.92%	12.65%	10.86%	12.65%
80km/h	Regional	Local	10-20% above speed limit	9.80%	11.21%	12.11%	13.20%	13.17%	12.06%	12.63%
80km/h	Urban	All	10-20% above speed limit	11.53%	10.77%	9.24%	8.89%	9.21%	9.77%	10.53%
80km/h	Urban	Arterial	10-20% above speed limit	12.09%	11.44%	9.83%	9.43%	9.75%	10.45%	11.32%
80km/h	Urban	Local	10-20% above speed limit	6.25%	4.84%	4.37%	4.44%	4.76%	4.85%	5.34%
100km/h	All	All	10-20% above speed limit	3.46%	1.51%	0.77%	0.78%	1.00%	2.42%	2.78%
100km/h	All	Arterial	10-20% above speed limit	3.48%	1.51%	0.77%	0.78%	1.00%	2.44%	2.81%
100km/h	All	Local	10-20% above speed limit	1.80%	0.78%	0.55%	0.55%	0.63%	1.36%	1.65%
100km/h	Regional	All	10-20% above speed limit	3.39%	2.01%	1.56%	1.45%	1.71%	3.59%	4.70%

100km/h	Regional	Arterial	10-20% above speed limit	3.43%	2.03%	1.58%	1.47%	1.73%	3.65%	4.80%
100km/h	Regional	Local	10-20% above speed limit	1.50%	0.91%	0.73%	0.68%	0.79%	1.87%	2.24%
100km/h	Urban	All	10-20% above speed limit	3.48%	1.34%	0.48%	0.52%	0.72%	1.91%	1.79%
100km/h	Urban	Arterial	10-20% above speed limit	3.49%	1.34%	0.48%	0.52%	0.72%	1.93%	1.80%
100km/h	Urban	Local	10-20% above speed limit	2.16%	0.61%	0.27%	0.34%	0.39%	0.71%	0.78%
110km/h	All	All	10-20% above speed limit	6.08%	2.73%	1.02%	1.25%	1.37%	1.53%	1.83%
110km/h	All	Arterial	10-20% above speed limit	6.08%	2.73%	1.02%	1.25%	1.37%	1.54%	1.83%
110km/h	All	Local	10-20% above speed limit	0.08%	0.09%	0.11%	0.13%	0.17%	0.09%	0.05%
110km/h	Regional	All	10-20% above speed limit	6.74%	2.36%	0.70%	0.94%	0.91%	2.28%	3.23%
110km/h	Regional	Arterial	10-20% above speed limit	6.74%	2.36%	0.70%	0.94%	0.91%	2.28%	3.23%
110km/h	Regional	Local	10-20% above speed limit	0.22%	0.21%	0.24%	0.21%	0.25%	0.00%	0.00%
110km/h	Urban	All	10-20% above speed limit	6.00%	2.78%	1.07%	1.29%	1.44%	1.47%	1.70%
110km/h	Urban	Arterial	10-20% above speed limit	6.00%	2.78%	1.07%	1.29%	1.44%	1.48%	1.70%
110km/h	Urban	Local	10-20% above speed limit	0.07%	0.08%	0.10%	0.13%	0.17%	0.09%	0.05%
All	All	All	>20% above speed limit	4.76%	2.50%	1.22%	1.23%	1.81%	2.34%	2.49%
All	All	Arterial	>20% above speed limit	4.88%	2.44%	1.00%	1.02%	1.68%	1.81%	1.92%
All	All	Local	>20% above speed limit	4.27%	2.71%	2.01%	2.01%	2.28%	3.33%	3.52%
All	Regional	All	>20% above speed limit	7.93%	3.23%	1.30%	1.22%	1.32%	1.96%	2.49%
All	Regional	Arterial	>20% above speed limit	8.17%	3.20%	1.14%	1.08%	1.20%	1.77%	2.26%
All	Regional	Local	>20% above speed limit	4.95%	3.59%	2.96%	2.76%	2.75%	3.73%	4.40%
All	Urban	All	>20% above speed limit	4.39%	2.40%	1.21%	1.24%	1.88%	2.37%	2.49%
All	Urban	Arterial	>20% above speed limit	4.43%	2.33%	0.98%	1.01%	1.77%	1.81%	1.87%
All	Urban	Local	>20% above speed limit	4.24%	2.67%	1.96%	1.98%	2.26%	3.32%	3.50%
40km/h	All	All	>20% above speed limit	19.46%	12.07%	9.05%	9.04%	12.56%	7.49%	7.98%
40km/h	All	Local	>20% above speed limit	19.46%	12.07%	9.05%	9.04%	12.56%	7.49%	7.98%
40km/h	Regional	All	>20% above speed limit	7.38%	6.87%	6.61%	6.02%	5.88%	7.19%	8.83%
40km/h	Regional	Local	>20% above speed limit	7.38%	6.87%	6.61%	6.02%	5.88%	7.19%	8.83%
40km/h	Urban	All	>20% above speed limit	20.00%	12.33%	9.20%	9.21%	12.91%	7.50%	7.97%
40km/h	Urban	Local	>20% above speed limit	20.00%	12.33%	9.20%	9.21%	12.91%	7.50%	7.97%
50km/h	All	All	>20% above speed limit	2.30%	1.71%	1.55%	1.68%	1.86%	2.44%	2.58%
50km/h	All	Local	>20% above speed limit	2.30%	1.71%	1.55%	1.68%	1.86%	2.44%	2.58%
50km/h	Regional	All	>20% above speed limit	4.82%	3.83%	2.84%	2.64%	2.84%	4.68%	5.51%
50km/h	Regional	Local	>20% above speed limit	4.82%	3.83%	2.84%	2.64%	2.84%	4.68%	5.51%
50km/h	Urban	All	>20% above speed limit	2.15%	1.58%	1.46%	1.61%	1.80%	2.39%	2.49%
50km/h	Urban	Local	>20% above speed limit	2.15%	1.58%	1.46%	1.61%	1.80%	2.39%	2.49%
60km/h	All	All	>20% above speed limit	4.03%	2.54%	1.67%	1.69%	1.95%	2.49%	2.64%

60km/h	All	Arterial	>20% above speed limit	4.26%	2.72%	1.76%	1.77%	2.07%	2.72%	2.83%
60km/h	All	Local	>20% above speed limit	3.55%	2.19%	1.51%	1.54%	1.71%	2.14%	2.35%
60km/h	Regional	All	>20% above speed limit	8.17%	5.57%	4.52%	4.27%	4.53%	4.98%	6.20%
60km/h	Regional	Arterial	>20% above speed limit	9.32%	6.12%	4.89%	4.64%	5.02%	5.49%	6.85%
60km/h	Regional	Local	>20% above speed limit	4.62%	3.79%	3.36%	3.13%	2.89%	3.26%	4.15%
60km/h	Urban	All	>20% above speed limit	3.89%	2.43%	1.55%	1.58%	1.84%	2.44%	2.54%
60km/h	Urban	Arterial	>20% above speed limit	4.07%	2.57%	1.61%	1.63%	1.93%	2.64%	2.70%
60km/h	Urban	Local	>20% above speed limit	3.52%	2.15%	1.45%	1.49%	1.68%	2.13%	2.32%
80km/h	All	All	>20% above speed limit	10.87%	6.67%	2.54%	2.60%	6.52%	3.20%	3.65%
80km/h	All	Arterial	>20% above speed limit	11.42%	7.16%	2.69%	2.75%	7.11%	3.38%	3.88%
80km/h	All	Local	>20% above speed limit	5.18%	2.00%	1.21%	1.25%	1.36%	1.84%	2.10%
80km/h	Regional	All	>20% above speed limit	9.39%	4.97%	3.00%	2.78%	3.17%	4.18%	5.33%
80km/h	Regional	Arterial	>20% above speed limit	9.50%	4.96%	2.84%	2.61%	3.03%	3.87%	4.98%
80km/h	Regional	Local	>20% above speed limit	7.05%	5.24%	5.31%	5.24%	5.21%	7.20%	8.37%
80km/h	Urban	All	>20% above speed limit	11.09%	6.95%	2.45%	2.56%	7.11%	3.09%	3.43%
80km/h	Urban	Arterial	>20% above speed limit	11.73%	7.54%	2.66%	2.77%	7.87%	3.33%	3.73%
80km/h	Urban	Local	>20% above speed limit	5.05%	1.73%	0.77%	0.83%	0.96%	1.37%	1.44%
100km/h	All	All	>20% above speed limit	5.02%	1.54%	0.20%	0.21%	0.26%	0.52%	0.61%
100km/h	All	Arterial	>20% above speed limit	5.04%	1.55%	0.20%	0.21%	0.26%	0.53%	0.61%
100km/h	All	Local	>20% above speed limit	3.56%	0.94%	0.16%	0.15%	0.16%	0.30%	0.37%
100km/h	Regional	All	>20% above speed limit	8.69%	2.77%	0.39%	0.39%	0.44%	0.95%	1.19%
100km/h	Regional	Arterial	>20% above speed limit	8.78%	2.81%	0.40%	0.40%	0.45%	0.97%	1.22%
100km/h	Regional	Local	>20% above speed limit	4.31%	1.17%	0.19%	0.16%	0.17%	0.38%	0.48%
100km/h	Urban	All	>20% above speed limit	3.93%	1.13%	0.12%	0.14%	0.19%	0.34%	0.30%
100km/h	Urban	Arterial	>20% above speed limit	3.94%	1.13%	0.12%	0.14%	0.19%	0.34%	0.30%
100km/h	Urban	Local	>20% above speed limit	2.67%	0.65%	0.11%	0.13%	0.14%	0.20%	0.20%
110km/h	All	All	>20% above speed limit	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%	0.02%
110km/h	All	Arterial	>20% above speed limit	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%	0.02%
110km/h	All	Local	>20% above speed limit	0.01%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%
110km/h	Regional	All	>20% above speed limit	0.02%	0.01%	0.01%	0.02%	0.02%	0.09%	0.11%
110km/h	Regional	Arterial	>20% above speed limit	0.02%	0.01%	0.01%	0.02%	0.02%	0.09%	0.11%
110km/h	Regional	Local	>20% above speed limit	0.00%	0.01%	0.03%	0.01%	0.02%	0.00%	0.00%
110km/h	Urban	All	>20% above speed limit	0.01%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
110km/h	Urban	Arterial	>20% above speed limit	0.01%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%
110km/h	Urban	Local	>20% above speed limit	0.01%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%

Table A.4: Average speed when speeding, urban, regional and all areas, local, arterial and all roads, Queensland, 2016 to 2022

Speed limit	Area	Road type	Type	2016	2017	2018	2019	2020	2021	2022
40km/h	All	All	All speeding	51.7	48.6	47.8	48.0	49.6	49.9	50.3
40km/h	All	Local	All speeding	51.7	48.6	47.8	48.0	49.6	49.9	50.3
40km/h	Regional	All	All speeding	46.6	46.4	46.4	46.2	46.1	47.9	48.2
40km/h	Regional	Local	All speeding	46.6	46.4	46.4	46.2	46.1	47.9	48.2
40km/h	Urban	All	All speeding	51.8	48.7	47.9	48.0	49.8	50.0	50.4
40km/h	Urban	Local	All speeding	51.8	48.7	47.9	48.0	49.8	50.0	50.4
50km/h	All	All	All speeding	57.0	56.5	56.4	57.1	56.7	57.4	57.4
50km/h	All	Local	All speeding	57.0	56.5	56.4	57.1	56.7	57.4	57.4
50km/h	Regional	All	All speeding	57.8	57.1	56.3	56.4	56.2	56.6	56.9
50km/h	Regional	Local	All speeding	57.8	57.1	56.3	56.4	56.2	56.6	56.9
50km/h	Urban	All	All speeding	56.9	56.4	56.4	57.1	56.8	57.5	57.4
50km/h	Urban	Local	All speeding	56.9	56.4	56.4	57.1	56.8	57.5	57.4
60km/h	All	All	All speeding	68.0	66.9	66.1	66.3	66.4	67.3	67.6
60km/h	All	Arterial	All speeding	68.0	67.0	66.2	66.4	66.5	67.5	67.8
60km/h	All	Local	All speeding	68.1	66.8	66.0	66.2	66.2	67.0	67.2
60km/h	Regional	All	All speeding	68.8	67.4	66.7	66.4	66.4	66.7	67.3
60km/h	Regional	Arterial	All speeding	69.6	67.9	67.1	66.7	66.8	66.8	67.4
60km/h	Regional	Local	All speeding	66.3	66.0	65.6	65.5	65.3	66.4	66.8
60km/h	Urban	All	All speeding	68.0	66.9	66.1	66.3	66.4	67.3	67.6
60km/h	Urban	Arterial	All speeding	67.9	66.9	66.1	66.3	66.5	67.5	67.9
60km/h	Urban	Local	All speeding	68.2	66.8	66.1	66.3	66.3	67.0	67.2
80km/h	All	All	All speeding	92.8	90.0	87.6	87.7	89.4	88.6	89.1
80km/h	All	Arterial	All speeding	92.9	90.2	87.7	87.8	89.6	88.7	89.3
80km/h	All	Local	All speeding	89.8	86.9	86.2	86.2	86.4	87.0	87.3
80km/h	Regional	All	All speeding	90.4	87.9	86.8	86.7	86.9	87.6	88.3
80km/h	Regional	Arterial	All speeding	90.4	87.9	86.7	86.6	86.8	87.4	88.1
80km/h	Regional	Local	All speeding	90.2	88.6	88.7	88.4	88.4	89.3	90.0
80km/h	Urban	All	All speeding	93.1	90.4	87.8	87.9	89.9	88.7	89.2
80km/h	Urban	Arterial	All speeding	93.4	90.6	87.9	88.0	90.2	88.9	89.4
80km/h	Urban	Local	All speeding	89.8	86.7	85.7	85.8	86.0	86.6	86.8
100km/h	All	All	All speeding	112.0	107.5	104.9	105.1	105.8	106.8	107.2
100km/h	All	Arterial	All speeding	112.1	107.5	104.9	105.1	105.8	106.8	107.2

100km/h	All	Local	All speeding	110.1	106.0	104.1	104.1	104.2	105.1	105.6
100km/h	Regional	All	All speeding	110.3	106.2	104.2	104.0	104.2	104.9	105.4
100km/h	Regional	Arterial	All speeding	110.3	106.2	104.2	104.0	104.2	104.9	105.4
100km/h	Regional	Local	All speeding	109.9	105.6	104.0	103.9	104.1	105.1	105.6
100km/h	Urban	All	All speeding	112.5	107.9	105.2	105.6	106.4	107.4	108.0
100km/h	Urban	Arterial	All speeding	112.5	107.9	105.2	105.6	106.4	107.4	108.0
100km/h	Urban	Local	All speeding	110.4	107.1	104.4	104.5	104.6	105.2	105.3
110km/h	All	All	All speeding	120.5	118.3	116.9	117.3	117.8	117.4	117.7
110km/h	All	Arterial	All speeding	120.5	118.3	116.9	117.3	117.8	117.4	117.7
110km/h	All	Local	All speeding	117.1	117.3	118.9	118.5	118.3	116.9	115.9
110km/h	Regional	All	All speeding	119.0	116.7	114.8	115.7	115.8	115.5	115.6
110km/h	Regional	Arterial	All speeding	119.0	116.7	114.8	115.7	115.8	115.5	115.6
110km/h	Regional	Local	All speeding	115.4	116.8	117.2	116.2	116.2	NA	117.0
110km/h	Urban	All	All speeding	120.7	118.5	117.3	117.6	118.2	117.6	117.9
110km/h	Urban	Arterial	All speeding	120.7	118.5	117.3	117.6	118.2	117.6	117.9
110km/h	Urban	Local	All speeding	117.4	117.4	119.2	118.9	118.7	116.9	115.9
40km/h	All	All	<10% above speed limit	42.9	43.4	43.5	43.5	43.5	44.6	44.5
40km/h	All	Local	<10% above speed limit	42.9	43.4	43.5	43.5	43.5	44.6	44.5
40km/h	Regional	All	<10% above speed limit	42.4	42.4	42.4	42.4	42.4	42.0	42.0
40km/h	Regional	Local	<10% above speed limit	42.4	42.4	42.4	42.4	42.4	42.0	42.0
40km/h	Urban	All	<10% above speed limit	42.9	43.5	43.5	43.5	43.6	44.6	44.5
40km/h	Urban	Local	<10% above speed limit	42.9	43.5	43.5	43.5	43.6	44.6	44.5
50km/h	All	All	<10% above speed limit	53.2	52.9	52.9	53.0	53.2	53.4	53.3
50km/h	All	Local	<10% above speed limit	53.2	52.9	52.9	53.0	53.2	53.4	53.3
50km/h	Regional	All	<10% above speed limit	52.7	52.7	52.6	52.6	52.7	52.4	52.5
50km/h	Regional	Local	<10% above speed limit	52.7	52.7	52.6	52.6	52.7	52.4	52.5
50km/h	Urban	All	<10% above speed limit	53.2	52.9	52.9	53.0	53.2	53.4	53.4
50km/h	Urban	Local	<10% above speed limit	53.2	52.9	52.9	53.0	53.2	53.4	53.4
60km/h	All	All	<10% above speed limit	63.6	63.5	63.5	63.5	63.6	63.7	64.1
60km/h	All	Arterial	<10% above speed limit	63.7	63.6	63.5	63.6	63.7	63.9	64.3
60km/h	All	Local	<10% above speed limit	63.4	63.4	63.3	63.4	63.4	63.4	63.6
60km/h	Regional	All	<10% above speed limit	63.1	63.1	63.1	63.1	63.2	62.8	63.0
60km/h	Regional	Arterial	<10% above speed limit	63.1	63.1	63.1	63.1	63.2	62.8	63.0
60km/h	Regional	Local	<10% above speed limit	63.0	63.0	63.1	63.0	63.1	62.8	63.0
60km/h	Urban	All	<10% above speed limit	63.7	63.5	63.5	63.5	63.7	63.8	64.1
60km/h	Urban	Arterial	<10% above speed limit	63.7	63.6	63.5	63.6	63.8	64.0	64.4

60km/h	Urban	Local	<10% above speed limit	63.5	63.4	63.4	63.4	63.4	63.4	63.6
80km/h	All	All	<10% above speed limit	85.5	85.1	85.0	85.1	85.1	85.0	85.3
80km/h	All	Arterial	<10% above speed limit	85.5	85.2	85.1	85.2	85.2	85.1	85.4
80km/h	All	Local	<10% above speed limit	84.3	84.0	84.0	84.0	84.2	84.1	84.3
80km/h	Regional	All	<10% above speed limit	84.1	84.1	84.1	84.1	84.3	83.8	84.0
80km/h	Regional	Arterial	<10% above speed limit	84.1	84.1	84.1	84.1	84.3	83.8	84.0
80km/h	Regional	Local	<10% above speed limit	84.0	84.0	84.2	84.2	84.5	84.1	84.2
80km/h	Urban	All	<10% above speed limit	85.7	85.3	85.2	85.3	85.3	85.1	85.5
80km/h	Urban	Arterial	<10% above speed limit	85.8	85.4	85.3	85.4	85.4	85.2	85.6
80km/h	Urban	Local	<10% above speed limit	84.3	84.0	84.0	84.0	84.1	84.1	84.3
100km/h	All	All	<10% above speed limit	109.7	106.3	104.5	104.8	105.5	106.1	106.6
100km/h	All	Arterial	<10% above speed limit	109.7	106.3	104.5	104.8	105.5	106.1	106.6
100km/h	All	Local	<10% above speed limit	104.1	103.5	103.4	103.4	103.5	103.7	104.0
100km/h	Regional	All	<10% above speed limit	104.4	103.7	103.4	103.4	103.5	103.5	103.9
100km/h	Regional	Arterial	<10% above speed limit	104.4	103.7	103.4	103.4	103.5	103.5	103.9
100km/h	Regional	Local	<10% above speed limit	103.6	103.4	103.3	103.3	103.4	103.7	104.0
100km/h	Urban	All	<10% above speed limit	110.6	107.0	105.0	105.4	106.2	107.0	107.6
100km/h	Urban	Arterial	<10% above speed limit	110.7	107.0	105.0	105.4	106.2	107.0	107.6
100km/h	Urban	Local	<10% above speed limit	105.0	103.8	103.5	103.6	103.7	103.7	103.8
110km/h	All	All	<10% above speed limit	119.3	117.4	116.4	116.8	117.2	116.8	117.2
110km/h	All	Arterial	<10% above speed limit	119.3	117.4	116.4	116.8	117.2	116.8	117.2
110km/h	All	Local	<10% above speed limit	114.0	113.7	114.3	114.5	114.6	114.1	114.2
110km/h	Regional	All	<10% above speed limit	117.4	115.5	114.4	115.3	115.4	114.1	114.2
110km/h	Regional	Arterial	<10% above speed limit	117.4	115.5	114.4	115.3	115.4	114.1	114.2
110km/h	Regional	Local	<10% above speed limit	113.5	113.7	113.5	114.1	114.1	NA	117.0
110km/h	Urban	All	<10% above speed limit	119.5	117.6	116.7	117.0	117.6	117.0	117.4
110km/h	Urban	Arterial	<10% above speed limit	119.5	117.6	116.7	117.1	117.6	117.0	117.4
110km/h	Urban	Local	<10% above speed limit	114.0	113.7	114.4	114.6	114.7	114.1	114.2
40km/h	All	All	10-20% above speed limit	47.4	47.9	47.8	47.8	48.0	47.7	47.6
40km/h	All	Local	10-20% above speed limit	47.4	47.9	47.8	47.8	48.0	47.7	47.6
40km/h	Regional	All	10-20% above speed limit	46.2	46.2	46.2	46.3	46.3	45.4	45.4
40km/h	Regional	Local	10-20% above speed limit	46.2	46.2	46.2	46.3	46.3	45.4	45.4
40km/h	Urban	All	10-20% above speed limit	47.5	48.0	47.8	47.8	48.1	47.7	47.6
40km/h	Urban	Local	10-20% above speed limit	47.5	48.0	47.8	47.8	48.1	47.7	47.6
50km/h	All	All	10-20% above speed limit	58.1	57.9	57.9	58.0	58.2	58.0	57.9
50km/h	All	Local	10-20% above speed limit	58.1	57.9	57.9	58.0	58.2	58.0	57.9

50km/h	Regional	All	10-20% above speed limit	57.7	57.7	57.7	57.8	57.8	56.7	56.9
50km/h	Regional	Local	10-20% above speed limit	57.7	57.7	57.7	57.8	57.8	56.7	56.9
50km/h	Urban	All	10-20% above speed limit	58.1	57.9	57.9	58.0	58.2	58.0	57.9
50km/h	Urban	Local	10-20% above speed limit	58.1	57.9	57.9	58.0	58.2	58.0	57.9
60km/h	All	All	10-20% above speed limit	69.8	69.6	69.4	69.4	69.6	69.1	69.3
60km/h	All	Arterial	10-20% above speed limit	69.9	69.7	69.4	69.5	69.7	69.2	69.6
60km/h	All	Local	10-20% above speed limit	69.6	69.4	69.3	69.3	69.4	68.8	69.0
60km/h	Regional	All	10-20% above speed limit	69.1	69.1	69.1	69.1	69.1	68.1	68.4
60km/h	Regional	Arterial	10-20% above speed limit	69.2	69.1	69.1	69.1	69.1	68.2	68.4
60km/h	Regional	Local	10-20% above speed limit	68.9	68.9	68.9	69.0	68.9	68.1	68.3
60km/h	Urban	All	10-20% above speed limit	69.8	69.6	69.4	69.5	69.7	69.1	69.4
60km/h	Urban	Arterial	10-20% above speed limit	69.9	69.7	69.5	69.5	69.8	69.3	69.6
60km/h	Urban	Local	10-20% above speed limit	69.6	69.4	69.3	69.3	69.4	68.8	69.0
80km/h	All	All	10-20% above speed limit	95.3	94.2	93.1	92.9	93.4	92.9	93.3
80km/h	All	Arterial	10-20% above speed limit	95.4	94.3	93.2	93.0	93.5	93.0	93.4
80km/h	All	Local	10-20% above speed limit	92.6	92.0	91.8	91.8	91.9	91.1	91.3
80km/h	Regional	All	10-20% above speed limit	92.2	92.0	91.8	91.7	91.8	91.1	91.4
80km/h	Regional	Arterial	10-20% above speed limit	92.2	92.0	91.8	91.7	91.8	91.1	91.4
80km/h	Regional	Local	10-20% above speed limit	91.9	91.9	92.1	92.1	92.3	91.4	91.6
80km/h	Urban	All	10-20% above speed limit	95.7	94.5	93.4	93.2	93.8	93.1	93.6
80km/h	Urban	Arterial	10-20% above speed limit	95.9	94.6	93.5	93.2	93.9	93.2	93.7
80km/h	Urban	Local	10-20% above speed limit	92.7	92.0	91.6	91.7	91.8	91.0	91.2
100km/h	All	All	10-20% above speed limit	119.1	117.4	114.5	114.6	114.8	114.3	114.3
100km/h	All	Arterial	10-20% above speed limit	119.1	117.4	114.5	114.6	114.8	114.3	114.4
100km/h	All	Local	10-20% above speed limit	116.4	115.1	114.0	114.0	114.0	113.2	113.4
100km/h	Regional	All	10-20% above speed limit	116.5	115.5	114.1	114.0	114.1	113.3	113.6
100km/h	Regional	Arterial	10-20% above speed limit	116.6	115.5	114.1	114.0	114.1	113.3	113.6
100km/h	Regional	Local	10-20% above speed limit	115.3	114.3	113.8	113.8	113.9	113.1	113.3
100km/h	Urban	All	10-20% above speed limit	119.9	118.3	115.1	115.2	115.4	115.1	115.4
100km/h	Urban	Arterial	10-20% above speed limit	119.9	118.3	115.1	115.2	115.4	115.1	115.4
100km/h	Urban	Local	10-20% above speed limit	117.3	116.6	114.8	114.6	114.6	113.5	113.7
110km/h	All	All	10-20% above speed limit	128.1	127.5	126.2	126.2	126.4	125.9	126.1
110km/h	All	Arterial	10-20% above speed limit	128.1	127.5	126.2	126.2	126.4	125.9	126.1
110km/h	All	Local	10-20% above speed limit	128.3	128.5	127.7	127.2	127.6	126.7	125.8
110km/h	Regional	All	10-20% above speed limit	128.4	128.0	126.2	126.1	126.1	125.2	125.4
110km/h	Regional	Arterial	10-20% above speed limit	128.4	128.0	126.2	126.1	126.1	125.2	125.4

110km/h	Regional	Local	10-20% above speed limit	127.1	128.7	128.6	127.4	126.0	NA	NA
110km/h	Urban	All	10-20% above speed limit	128.1	127.5	126.2	126.2	126.4	126.0	126.2
110km/h	Urban	Arterial	10-20% above speed limit	128.1	127.5	126.2	126.2	126.4	126.0	126.2
110km/h	Urban	Local	10-20% above speed limit	128.5	128.5	127.6	127.1	127.7	126.7	125.8
40km/h	All	All	>20% above speed limit	57.7	55.1	54.7	55.3	56.6	56.7	57.4
40km/h	All	Local	>20% above speed limit	57.7	55.1	54.7	55.3	56.6	56.7	57.4
40km/h	Regional	All	>20% above speed limit	56.2	55.7	55.9	56.1	56.1	56.1	56.4
40km/h	Regional	Local	>20% above speed limit	56.2	55.7	55.9	56.1	56.1	56.1	56.4
40km/h	Urban	All	>20% above speed limit	57.8	55.1	54.6	55.2	56.6	56.7	57.4
40km/h	Urban	Local	>20% above speed limit	57.8	55.1	54.6	55.2	56.6	56.7	57.4
50km/h	All	All	>20% above speed limit	66.6	66.4	66.4	68.9	66.4	66.8	66.7
50km/h	All	Local	>20% above speed limit	66.6	66.4	66.4	68.9	66.4	66.8	66.7
50km/h	Regional	All	>20% above speed limit	68.0	67.5	66.6	67.4	66.8	65.2	65.3
50km/h	Regional	Local	>20% above speed limit	68.0	67.5	66.6	67.4	66.8	65.2	65.3
50km/h	Urban	All	>20% above speed limit	66.4	66.3	66.3	69.1	66.3	66.9	66.7
50km/h	Urban	Local	>20% above speed limit	66.4	66.3	66.3	69.1	66.3	66.9	66.7
60km/h	All	All	>20% above speed limit	81.9	81.4	80.5	81.5	80.5	80.0	80.0
60km/h	All	Arterial	>20% above speed limit	81.7	81.4	80.6	81.4	80.5	80.1	80.2
60km/h	All	Local	>20% above speed limit	82.3	81.5	80.4	81.7	80.5	79.7	79.6
60km/h	Regional	All	>20% above speed limit	83.1	81.7	80.6	80.3	79.7	77.9	78.2
60km/h	Regional	Arterial	>20% above speed limit	83.2	81.6	80.3	80.0	79.6	77.7	78.1
60km/h	Regional	Local	>20% above speed limit	82.6	82.5	81.8	82.1	80.0	78.6	78.6
60km/h	Urban	All	>20% above speed limit	81.8	81.4	80.5	81.6	80.6	80.1	80.1
60km/h	Urban	Arterial	>20% above speed limit	81.5	81.4	80.7	81.6	80.6	80.2	80.4
60km/h	Urban	Local	>20% above speed limit	82.3	81.4	80.3	81.7	80.5	79.7	79.7
80km/h	All	All	>20% above speed limit	108.2	105.3	102.0	103.2	103.6	102.5	102.6
80km/h	All	Arterial	>20% above speed limit	108.3	105.3	102.0	103.2	103.6	102.5	102.6
80km/h	All	Local	>20% above speed limit	106.9	105.6	102.3	103.4	102.6	101.7	101.9
80km/h	Regional	All	>20% above speed limit	109.0	105.8	101.3	101.5	101.5	101.2	101.5
80km/h	Regional	Arterial	>20% above speed limit	109.0	106.0	101.3	101.6	101.5	101.2	101.5
80km/h	Regional	Local	>20% above speed limit	108.1	103.7	101.5	101.2	101.3	101.1	101.9
80km/h	Urban	All	>20% above speed limit	108.1	105.2	102.2	103.5	103.8	102.7	102.8
80km/h	Urban	Arterial	>20% above speed limit	108.2	105.2	102.1	103.4	103.8	102.7	102.9
80km/h	Urban	Local	>20% above speed limit	106.8	106.1	102.9	104.8	103.3	102.1	102.0
100km/h	All	All	>20% above speed limit	128.6	128.4	126.3	126.5	126.2	125.1	125.0
100km/h	All	Arterial	>20% above speed limit	128.6	128.4	126.3	126.5	126.2	125.1	125.0

100km/h	All	Local	>20% above speed limit	128.2	128.1	126.3	128.3	126.2	125.1	125.1
100km/h	Regional	All	>20% above speed limit	128.8	128.6	126.1	126.4	126.0	125.1	125.0
100km/h	Regional	Arterial	>20% above speed limit	128.8	128.6	126.1	126.4	126.0	125.1	125.0
100km/h	Regional	Local	>20% above speed limit	128.7	128.5	126.0	127.8	125.9	125.0	125.1
100km/h	Urban	All	>20% above speed limit	128.4	128.2	126.5	126.7	126.4	125.2	125.0
100km/h	Urban	Arterial	>20% above speed limit	128.4	128.2	126.5	126.7	126.4	125.2	125.0
100km/h	Urban	Local	>20% above speed limit	127.1	127.1	127.0	129.3	126.8	125.3	125.1
110km/h	All	All	>20% above speed limit	139.7	138.5	140.6	142.9	139.3	137.0	137.2
110km/h	All	Arterial	>20% above speed limit	139.7	138.5	140.6	142.9	139.3	137.0	137.2
110km/h	All	Local	>20% above speed limit	140.0	143.5	148.0	140.1	141.2	147.2	144.3
110km/h	Regional	All	>20% above speed limit	140.1	137.8	140.8	141.5	138.2	136.7	137.4
110km/h	Regional	Arterial	>20% above speed limit	140.1	137.8	140.8	141.5	138.2	136.7	137.4
110km/h	Regional	Local	>20% above speed limit	NA	141.0	148.0	140.7	139.0	NA	NA
110km/h	Urban	All	>20% above speed limit	139.6	138.8	140.4	144.2	140.0	137.2	137.0
110km/h	Urban	Arterial	>20% above speed limit	139.6	138.8	140.4	144.2	140.0	137.2	137.0
110km/h	Urban	Local	>20% above speed limit	140.0	143.7	NA	140.0	141.8	147.2	144.3

A2.2 Brisbane summary speed tables

Table A.5: Average speed, urban, regional and all areas, local, arterial and all roads, Brisbane, 2016 to 2022

Speed limit	Area	Road type	2016	2017	2018	2019	2020	2021	2022
All	All	All	53.9	53.0	51.1	52.4	53.4	47.7	46.9
All	All	Arterial	63.9	63.1	62.0	62.5	63.8	58.3	59.1
All	All	Local	35.9	35.5	34.1	35.2	35.2	35.0	34.4
All	Regional	All	73.9	73.0	71.1	73.1	72.4	71.9	68.1
All	Regional	Arterial	78.2	77.5	76.8	77.7	76.9	77.4	77.2
All	Regional	Local	46.2	46.5	44.6	46.9	46.3	44.0	44.1
All	Urban	All	53.1	52.2	50.3	51.6	52.7	47.0	46.2
All	Urban	Arterial	63.2	62.3	61.2	61.7	63.2	57.5	58.2
All	Urban	Local	35.7	35.3	33.9	35.0	35.0	34.9	34.2
40km/h	All	All	25.1	24.5	23.8	24.5	24.4	23.1	23.3
40km/h	All	Local	25.1	24.5	23.8	24.5	24.4	23.1	23.3
40km/h	Regional	All	29.3	27.2	26.5	30.1	29.4	28.5	29.3
40km/h	Regional	Local	29.3	27.2	26.5	30.1	29.4	28.5	29.3
40km/h	Urban	All	25.0	24.5	23.7	24.5	24.4	23.1	23.3
40km/h	Urban	Local	25.0	24.5	23.7	24.5	24.4	23.1	23.3
50km/h	All	All	25.5	25.4	24.5	25.4	25.0	27.7	27.6
50km/h	All	Local	25.5	25.4	24.5	25.4	25.0	27.7	27.6
50km/h	Regional	All	31.1	31.3	29.9	31.5	31.1	29.7	29.3
50km/h	Regional	Local	31.1	31.3	29.9	31.5	31.1	29.7	29.3
50km/h	Urban	All	25.4	25.3	24.4	25.3	24.9	27.7	27.5
50km/h	Urban	Local	25.4	25.3	24.4	25.3	24.9	27.7	27.5
60km/h	All	All	40.8	40.3	39.8	39.6	40.0	40.5	41.3
60km/h	All	Arterial	41.4	40.6	40.0	39.8	40.3	41.1	41.9
60km/h	All	Local	40.0	39.9	39.6	39.4	39.5	39.7	40.6
60km/h	Regional	All	48.1	46.7	46.7	47.0	46.2	49.5	50.5
60km/h	Regional	Arterial	48.5	47.0	47.2	47.4	46.6	50.4	51.3
60km/h	Regional	Local	45.5	45.0	44.4	45.2	43.9	45.3	48.2
60km/h	Urban	All	40.7	40.2	39.7	39.5	39.9	40.4	41.2
60km/h	Urban	Arterial	41.3	40.4	39.8	39.6	40.2	41.0	41.7
60km/h	Urban	Local	40.0	39.8	39.5	39.4	39.5	39.6	40.5
80km/h	All	All	68.3	67.6	66.0	66.4	68.0	67.0	67.5

80km/h	All	Arterial	69.1	68.4	66.8	67.1	69.0	67.7	68.4
80km/h	All	Local	63.0	62.4	61.5	62.2	61.7	63.2	63.7
80km/h	Regional	All	71.7	71.2	69.3	71.0	70.7	71.1	69.9
80km/h	Regional	Arterial	72.7	72.5	70.5	72.0	71.7	72.1	71.2
80km/h	Regional	Local	58.6	56.8	57.8	59.9	60.5	59.1	61.0
80km/h	Urban	All	68.0	67.3	65.7	66.0	67.7	66.7	67.3
80km/h	Urban	Arterial	68.8	68.1	66.4	66.6	68.8	67.4	68.1
80km/h	Urban	Local	63.1	62.6	61.7	62.3	61.8	63.3	63.8
100km/h	All	All	89.6	88.2	86.9	88.4	90.8	88.9	87.8
100km/h	All	Arterial	89.8	88.5	87.3	88.6	91.1	89.6	89.3
100km/h	All	Local	72.6	71.6	68.1	71.5	70.1	56.9	54.7
100km/h	Regional	All	88.5	87.7	86.2	87.9	86.9	86.0	82.5
100km/h	Regional	Arterial	90.1	89.3	88.5	89.6	88.6	88.1	87.1
100km/h	Regional	Local	66.3	67.4	63.9	67.4	66.5	63.1	59.0
100km/h	Urban	All	89.7	88.3	87.0	88.4	91.3	89.2	88.6
100km/h	Urban	Arterial	89.8	88.4	87.1	88.5	91.4	89.8	89.6
100km/h	Urban	Local	78.9	76.4	74.1	76.3	74.2	52.9	50.4
110km/h	All	All	101.1	100.4	99.7	101.0	100.6	92.6	91.1
110km/h	All	Arterial	101.1	100.4	99.7	101.0	100.6	92.6	91.1
110km/h	All	Local	NA	NA	49.0	NA	NA	NA	NA
110km/h	Urban	All	101.1	100.4	99.7	101.0	100.6	92.6	91.1
110km/h	Urban	Arterial	101.1	100.4	99.7	101.0	100.6	92.6	91.1
110km/h	Urban	Local	NA	NA	49.0	NA	NA	NA	NA

Table A.6: Percentage of speed limit, urban, regional and all areas, local, arterial and all roads, Brisbane, 2016 to 2022

Speed limit	Area	Road type	2016	2017	2018	2019	2020	2021	2022
All	All	All	73.3%	72.2%	70.5%	71.5%	72.5%	70.0%	69.9%
All	All	Arterial	79.3%	78.1%	76.9%	77.2%	78.8%	76.4%	77.3%
All	All	Local	62.4%	62.1%	60.4%	61.6%	61.4%	62.5%	62.3%
All	Regional	All	85.3%	84.3%	82.5%	84.5%	83.7%	83.4%	79.9%
All	Regional	Arterial	88.0%	87.1%	86.3%	87.3%	86.4%	87.1%	86.8%
All	Regional	Local	68.0%	67.8%	65.3%	68.6%	67.7%	64.4%	61.6%
All	Urban	All	72.8%	71.8%	70.0%	71.0%	72.0%	69.7%	69.6%
All	Urban	Arterial	78.8%	77.6%	76.4%	76.7%	78.4%	75.9%	76.8%

All	Urban	Local	62.4%	62.0%	60.3%	61.5%	61.3%	62.4%	62.4%
40km/h	All	All	62.7%	61.3%	59.4%	61.3%	61.1%	57.7%	58.3%
40km/h	All	Local	62.7%	61.3%	59.4%	61.3%	61.1%	57.7%	58.3%
40km/h	Regional	All	73.2%	68.0%	66.4%	75.2%	73.6%	71.2%	73.1%
40km/h	Regional	Local	73.2%	68.0%	66.4%	75.2%	73.6%	71.2%	73.1%
40km/h	Urban	All	62.6%	61.2%	59.3%	61.1%	60.9%	57.7%	58.2%
40km/h	Urban	Local	62.6%	61.2%	59.3%	61.1%	60.9%	57.7%	58.2%
50km/h	All	All	50.9%	50.8%	49.0%	50.8%	50.0%	55.4%	55.1%
50km/h	All	Local	50.9%	50.8%	49.0%	50.8%	50.0%	55.4%	55.1%
50km/h	Regional	All	62.1%	62.7%	59.7%	62.9%	62.1%	59.3%	58.7%
50km/h	Regional	Local	62.1%	62.7%	59.7%	62.9%	62.1%	59.3%	58.7%
50km/h	Urban	All	50.7%	50.7%	48.8%	50.6%	49.8%	55.4%	55.1%
50km/h	Urban	Local	50.7%	50.7%	48.8%	50.6%	49.8%	55.4%	55.1%
60km/h	All	All	68.1%	67.1%	66.4%	66.0%	66.6%	67.4%	68.8%
60km/h	All	Arterial	69.1%	67.6%	66.7%	66.3%	67.2%	68.5%	69.8%
60km/h	All	Local	66.7%	66.4%	66.0%	65.7%	65.9%	66.1%	67.6%
60km/h	Regional	All	80.1%	77.8%	77.8%	78.4%	77.0%	82.5%	84.2%
60km/h	Regional	Arterial	80.9%	78.3%	78.6%	78.9%	77.7%	83.9%	85.5%
60km/h	Regional	Local	75.9%	75.0%	74.0%	75.3%	73.2%	75.5%	80.4%
60km/h	Urban	All	67.9%	66.9%	66.2%	65.8%	66.5%	67.3%	68.6%
60km/h	Urban	Arterial	68.8%	67.4%	66.4%	66.0%	66.9%	68.3%	69.5%
60km/h	Urban	Local	66.7%	66.4%	65.9%	65.7%	65.8%	66.1%	67.6%
80km/h	All	All	85.3%	84.5%	82.5%	83.0%	85.0%	83.7%	84.4%
80km/h	All	Arterial	86.4%	85.5%	83.5%	83.9%	86.3%	84.7%	85.5%
80km/h	All	Local	78.7%	78.0%	76.8%	77.7%	77.1%	79.0%	79.6%
80km/h	Regional	All	89.6%	89.0%	86.6%	88.8%	88.4%	88.9%	87.4%
80km/h	Regional	Arterial	90.9%	90.6%	88.2%	90.0%	89.6%	90.1%	89.1%
80km/h	Regional	Local	73.2%	70.9%	72.3%	74.9%	75.7%	73.9%	76.3%
80km/h	Urban	All	85.0%	84.1%	82.1%	82.5%	84.7%	83.4%	84.2%
80km/h	Urban	Arterial	86.0%	85.1%	83.0%	83.3%	86.0%	84.3%	85.2%
80km/h	Urban	Local	78.9%	78.3%	77.1%	77.9%	77.2%	79.1%	79.8%
100km/h	All	All	89.6%	88.2%	86.9%	88.4%	90.8%	88.9%	87.8%
100km/h	All	Arterial	89.8%	88.5%	87.3%	88.6%	91.1%	89.6%	89.3%
100km/h	All	Local	72.6%	71.6%	68.1%	71.5%	70.1%	56.9%	54.7%
100km/h	Regional	All	88.5%	87.7%	86.2%	87.9%	86.9%	86.0%	82.5%
100km/h	Regional	Arterial	90.1%	89.3%	88.5%	89.6%	88.6%	88.1%	87.1%
100km/h	Regional	Local	66.3%	67.4%	63.9%	67.4%	66.5%	63.1%	59.0%

100km/h	Urban	All	89.7%	88.3%	87.0%	88.4%	91.3%	89.2%	88.6%
100km/h	Urban	Arterial	89.8%	88.4%	87.1%	88.5%	91.4%	89.8%	89.6%
100km/h	Urban	Local	78.9%	76.4%	74.1%	76.3%	74.2%	52.9%	50.4%
110km/h	All	All	91.9%	91.3%	90.7%	91.9%	91.5%	84.1%	82.8%
110km/h	All	Arterial	91.9%	91.3%	90.7%	91.9%	91.5%	84.1%	82.8%
110km/h	All	Local	NA	NA	44.6%	NA	NA	NA	NA
110km/h	Urban	All	91.9%	91.3%	90.7%	91.9%	91.5%	84.1%	82.8%
110km/h	Urban	Arterial	91.9%	91.3%	90.7%	91.9%	91.5%	84.1%	82.8%
110km/h	Urban	Local	NA	NA	44.6%	NA	NA	NA	NA

Table A.7: Compliance with speed limits, urban, regional and all areas, local, arterial and all roads, Brisbane, 2016 to 2022

Speed limit	Area	Road type	Type	2016	2017	2018	2019	2020	2021	2022
All	All	All	Compliance	64.83%	71.36%	77.13%	75.94%	70.62%	75.19%	74.05%
All	All	Arterial	Compliance	60.69%	68.04%	74.68%	73.19%	66.62%	69.96%	68.06%
All	All	Local	Compliance	81.51%	83.95%	85.72%	85.77%	84.86%	84.59%	83.99%
All	Regional	All	Compliance	55.55%	60.93%	64.24%	62.94%	63.35%	60.43%	56.03%
All	Regional	Arterial	Compliance	55.09%	60.38%	63.61%	62.31%	62.82%	59.55%	54.71%
All	Regional	Local	Compliance	73.36%	77.99%	79.22%	79.24%	78.99%	79.38%	77.09%
All	Urban	All	Compliance	65.05%	71.63%	77.47%	76.29%	70.82%	75.41%	74.35%
All	Urban	Arterial	Compliance	60.85%	68.29%	75.05%	73.54%	66.74%	70.18%	68.38%
All	Urban	Local	Compliance	81.53%	83.98%	85.75%	85.80%	84.88%	84.65%	84.09%
40km/h	All	All	Compliance	60.61%	64.81%	68.79%	68.26%	66.85%	81.33%	81.67%
40km/h	All	Local	Compliance	60.61%	64.81%	68.79%	68.26%	66.85%	79.64%	79.45%
40km/h	Regional	All	Compliance	87.56%	91.98%	92.19%	90.57%	92.99%	84.92%	79.46%
40km/h	Regional	Local	Compliance	87.56%	91.98%	92.19%	90.57%	92.99%	79.68%	75.89%
40km/h	Urban	All	Compliance	60.50%	64.67%	68.65%	68.15%	66.74%	81.32%	81.68%
40km/h	Urban	Local	Compliance	60.50%	64.67%	68.65%	68.15%	66.74%	79.64%	79.51%
50km/h	All	All	Compliance	88.74%	91.44%	92.51%	92.37%	90.91%	88.25%	88.56%
50km/h	All	Local	Compliance	88.74%	91.44%	92.51%	92.37%	90.91%	87.90%	87.35%
50km/h	Regional	All	Compliance	78.47%	80.31%	81.20%	82.39%	80.43%	78.10%	76.58%
50km/h	Regional	Local	Compliance	78.47%	80.31%	81.20%	82.39%	80.43%	79.62%	77.51%
50km/h	Urban	All	Compliance	88.81%	91.52%	92.60%	92.45%	91.00%	88.28%	88.60%
50km/h	Urban	Local	Compliance	88.81%	91.52%	92.60%	92.45%	91.00%	88.09%	87.63%
60km/h	All	All	Compliance	78.66%	82.06%	84.84%	85.34%	83.83%	83.26%	83.03%
60km/h	All	Arterial	Compliance	77.16%	80.92%	84.33%	84.94%	83.05%	82.08%	82.21%

60km/h	All	Local	Compliance	81.75%	84.31%	85.80%	86.08%	85.27%	85.20%	84.31%
60km/h	Regional	All	Compliance	69.49%	76.45%	76.84%	74.80%	76.13%	63.75%	61.54%
60km/h	Regional	Arterial	Compliance	70.36%	77.62%	78.14%	75.83%	76.71%	63.38%	61.18%
60km/h	Regional	Local	Compliance	50.80%	53.89%	56.10%	57.41%	64.86%	70.06%	65.87%
60km/h	Urban	All	Compliance	78.74%	82.12%	84.92%	85.44%	83.91%	83.34%	83.13%
60km/h	Urban	Arterial	Compliance	77.24%	80.97%	84.42%	85.07%	83.15%	82.19%	82.37%
60km/h	Urban	Local	Compliance	81.78%	84.36%	85.84%	86.12%	85.30%	85.21%	84.32%
80km/h	All	All	Compliance	47.76%	51.45%	56.47%	55.91%	52.14%	57.66%	55.89%
80km/h	All	Arterial	Compliance	45.95%	49.35%	54.51%	53.95%	49.64%	54.93%	53.12%
80km/h	All	Local	Compliance	67.90%	73.20%	75.11%	74.49%	75.38%	78.68%	75.48%
80km/h	Regional	All	Compliance	40.57%	46.22%	52.61%	46.02%	44.95%	43.90%	44.25%
80km/h	Regional	Arterial	Compliance	40.30%	45.77%	51.90%	45.16%	44.26%	43.39%	43.58%
80km/h	Regional	Local	Compliance	64.07%	74.29%	76.79%	76.07%	70.79%	76.50%	73.11%
80km/h	Urban	All	Compliance	48.10%	51.72%	56.67%	56.43%	52.52%	58.07%	56.30%
80km/h	Urban	Arterial	Compliance	46.24%	49.55%	54.66%	54.45%	49.95%	55.32%	53.50%
80km/h	Urban	Local	Compliance	67.92%	73.19%	75.08%	74.47%	75.44%	78.69%	75.50%
100km/h	All	All	Compliance	45.86%	58.08%	68.86%	65.01%	51.05%	48.86%	41.90%
100km/h	All	Arterial	Compliance	45.72%	57.93%	68.74%	64.88%	50.87%	48.65%	41.60%
100km/h	All	Local	Compliance	83.21%	93.44%	95.41%	95.45%	95.45%	96.78%	96.05%
100km/h	Regional	All	Compliance	53.55%	58.92%	62.26%	62.80%	63.83%	60.53%	54.37%
100km/h	Regional	Arterial	Compliance	53.29%	58.44%	61.71%	62.33%	63.49%	60.16%	53.67%
100km/h	Regional	Local	Compliance	95.07%	95.36%	95.64%	96.62%	96.80%	94.62%	94.43%
100km/h	Urban	All	Compliance	45.50%	58.03%	69.22%	65.13%	50.34%	48.22%	41.14%
100km/h	Urban	Arterial	Compliance	45.37%	57.90%	69.12%	65.01%	50.17%	48.03%	40.86%
100km/h	Urban	Local	Compliance	82.24%	93.09%	95.35%	95.22%	95.25%	97.10%	96.40%
110km/h	All	All	Compliance	37.26%	53.32%	63.01%	57.66%	57.44%	74.18%	68.46%
110km/h	All	Arterial	Compliance	37.26%	53.32%	63.01%	57.66%	57.44%	74.18%	68.46%
110km/h	All	Local	Compliance	NA	NA	100.00%	NA	NA	NA	NA
110km/h	Urban	All	Compliance	37.26%	53.32%	63.01%	57.66%	57.44%	74.18%	68.46%
110km/h	Urban	Arterial	Compliance	37.26%	53.32%	63.01%	57.66%	57.44%	74.18%	68.46%
110km/h	Urban	Local	Compliance	NA	NA	100.00%	NA	NA	NA	NA
All	All	All	<10% above speed limit	24.82%	21.70%	18.29%	19.49%	23.60%	18.09%	19.16%
All	All	Arterial	<10% above speed limit	28.60%	24.95%	21.02%	22.51%	27.66%	23.54%	25.40%
All	All	Local	<10% above speed limit	9.59%	9.33%	8.75%	8.74%	9.18%	7.87%	8.14%
All	Regional	All	<10% above speed limit	26.96%	29.86%	29.07%	30.38%	30.16%	30.94%	33.35%
All	Regional	Arterial	<10% above speed limit	27.42%	30.56%	29.95%	31.24%	30.88%	31.90%	34.75%
All	Regional	Local	<10% above speed limit	9.14%	8.38%	8.07%	8.01%	9.15%	9.38%	10.11%

All	Urban	All	<10% above speed limit	24.77%	21.49%	18.00%	19.20%	23.43%	17.91%	18.93%
All	Urban	Arterial	<10% above speed limit	28.63%	24.77%	20.72%	22.22%	27.55%	23.36%	25.18%
All	Urban	Local	<10% above speed limit	9.59%	9.33%	8.75%	8.74%	9.18%	7.85%	8.11%
40km/h	All	All	<10% above speed limit	7.06%	9.12%	9.24%	9.34%	8.19%	6.52%	6.05%
40km/h	All	Local	<10% above speed limit	7.06%	9.12%	9.24%	9.34%	8.19%	7.08%	6.84%
40km/h	Regional	All	<10% above speed limit	5.99%	4.42%	4.56%	5.42%	3.95%	5.87%	6.82%
40km/h	Regional	Local	<10% above speed limit	5.99%	4.42%	4.56%	5.42%	3.95%	7.43%	8.60%
40km/h	Urban	All	<10% above speed limit	7.06%	9.14%	9.27%	9.36%	8.21%	6.52%	6.04%
40km/h	Urban	Local	<10% above speed limit	7.06%	9.14%	9.27%	9.36%	8.21%	7.08%	6.81%
50km/h	All	All	<10% above speed limit	6.36%	5.08%	4.49%	4.50%	5.27%	5.54%	5.49%
50km/h	All	Local	<10% above speed limit	6.36%	5.08%	4.49%	4.50%	5.27%	6.14%	6.34%
50km/h	Regional	All	<10% above speed limit	10.97%	10.99%	9.42%	9.19%	10.50%	11.08%	11.07%
50km/h	Regional	Local	<10% above speed limit	10.97%	10.99%	9.42%	9.19%	10.50%	9.66%	10.26%
50km/h	Urban	All	<10% above speed limit	6.33%	5.04%	4.45%	4.46%	5.23%	5.52%	5.47%
50km/h	Urban	Local	<10% above speed limit	6.33%	5.04%	4.45%	4.46%	5.23%	6.07%	6.23%
60km/h	All	All	<10% above speed limit	12.21%	11.16%	10.01%	9.60%	10.40%	10.29%	10.46%
60km/h	All	Arterial	<10% above speed limit	13.26%	11.93%	10.44%	9.91%	10.90%	11.01%	10.97%
60km/h	All	Local	<10% above speed limit	10.06%	9.66%	9.22%	9.02%	9.49%	9.10%	9.66%
60km/h	Regional	All	<10% above speed limit	15.05%	13.34%	13.65%	15.40%	14.25%	18.41%	18.41%
60km/h	Regional	Arterial	<10% above speed limit	15.36%	13.65%	13.99%	15.82%	14.50%	18.62%	18.57%
60km/h	Regional	Local	<10% above speed limit	8.35%	7.42%	8.20%	8.28%	9.40%	14.74%	16.53%
60km/h	Urban	All	<10% above speed limit	12.19%	11.14%	9.98%	9.54%	10.36%	10.25%	10.42%
60km/h	Urban	Arterial	<10% above speed limit	13.23%	11.91%	10.39%	9.82%	10.84%	10.96%	10.91%
60km/h	Urban	Local	<10% above speed limit	10.06%	9.66%	9.22%	9.02%	9.49%	9.09%	9.66%
80km/h	All	All	<10% above speed limit	23.12%	25.09%	28.34%	29.16%	25.90%	25.72%	26.12%
80km/h	All	Arterial	<10% above speed limit	23.55%	25.64%	29.33%	30.16%	26.68%	26.98%	27.22%
80km/h	All	Local	<10% above speed limit	18.32%	19.41%	18.87%	19.69%	18.59%	16.04%	18.33%
80km/h	Regional	All	<10% above speed limit	29.13%	31.10%	27.50%	33.40%	34.80%	33.44%	28.64%
80km/h	Regional	Arterial	<10% above speed limit	29.29%	31.38%	27.93%	33.99%	35.34%	33.75%	28.95%
80km/h	Regional	Local	<10% above speed limit	15.44%	13.98%	12.80%	12.77%	14.99%	14.01%	15.34%
80km/h	Urban	All	<10% above speed limit	22.84%	24.78%	28.38%	28.93%	25.42%	25.49%	26.03%
80km/h	Urban	Arterial	<10% above speed limit	23.26%	25.32%	29.41%	29.94%	26.18%	26.75%	27.15%
80km/h	Urban	Local	<10% above speed limit	18.34%	19.46%	18.97%	19.79%	18.64%	16.05%	18.35%
100km/h	All	All	<10% above speed limit	47.36%	39.60%	30.54%	34.34%	48.04%	48.91%	56.16%
100km/h	All	Arterial	<10% above speed limit	47.49%	39.74%	30.66%	34.47%	48.22%	49.12%	56.46%
100km/h	All	Local	<10% above speed limit	11.16%	5.28%	4.33%	4.29%	4.29%	2.65%	3.21%
100km/h	Regional	All	<10% above speed limit	31.25%	36.02%	35.85%	35.68%	34.79%	36.15%	41.66%

100km/h	Regional	Arterial	<10% above speed limit	31.42%	36.43%	36.37%	36.13%	35.11%	36.50%	42.31%
100km/h	Regional	Local	<10% above speed limit	3.85%	4.36%	4.11%	3.16%	2.84%	4.30%	4.36%
100km/h	Urban	All	<10% above speed limit	48.11%	39.78%	30.25%	34.27%	48.78%	49.61%	57.05%
100km/h	Urban	Arterial	<10% above speed limit	48.24%	39.91%	30.35%	34.38%	48.95%	49.80%	57.32%
100km/h	Urban	Local	<10% above speed limit	11.76%	5.45%	4.38%	4.52%	4.50%	2.41%	2.96%
110km/h	All	All	<10% above speed limit	51.54%	40.37%	33.66%	38.44%	38.08%	23.42%	29.32%
110km/h	All	Arterial	<10% above speed limit	51.54%	40.37%	33.66%	38.44%	38.08%	23.42%	29.32%
110km/h	All	Local	<10% above speed limit	NA	NA	0.00%	NA	NA	NA	NA
110km/h	Urban	All	<10% above speed limit	51.54%	40.37%	33.66%	38.44%	38.08%	23.42%	29.32%
110km/h	Urban	Arterial	<10% above speed limit	51.54%	40.37%	33.66%	38.44%	38.08%	23.42%	29.32%
110km/h	Urban	Local	<10% above speed limit	NA	NA	0.00%	NA	NA	NA	NA
All	All	All	10-20% above speed limit	5.61%	4.34%	3.36%	3.34%	3.68%	4.31%	4.34%
All	All	Arterial	10-20% above speed limit	5.94%	4.44%	3.30%	3.27%	3.67%	4.60%	4.63%
All	All	Local	10-20% above speed limit	4.29%	3.96%	3.57%	3.57%	3.68%	3.91%	4.10%
All	Regional	All	10-20% above speed limit	7.76%	5.83%	5.23%	5.38%	5.29%	6.38%	7.75%
All	Regional	Arterial	10-20% above speed limit	7.83%	5.90%	5.29%	5.44%	5.31%	6.40%	7.82%
All	Regional	Local	10-20% above speed limit	4.94%	3.67%	3.80%	3.85%	4.65%	6.01%	6.71%
All	Urban	All	10-20% above speed limit	5.56%	4.30%	3.31%	3.28%	3.63%	4.28%	4.29%
All	Urban	Arterial	10-20% above speed limit	5.88%	4.39%	3.23%	3.20%	3.62%	4.56%	4.55%
All	Urban	Local	10-20% above speed limit	4.29%	3.96%	3.57%	3.57%	3.68%	3.89%	4.06%
40km/h	All	All	10-20% above speed limit	7.50%	11.85%	11.80%	12.30%	9.58%	4.82%	4.62%
40km/h	All	Local	10-20% above speed limit	7.50%	11.85%	11.80%	12.30%	9.58%	5.79%	5.73%
40km/h	Regional	All	10-20% above speed limit	3.55%	2.12%	1.89%	2.45%	1.80%	3.93%	5.16%
40km/h	Regional	Local	10-20% above speed limit	3.55%	2.12%	1.89%	2.45%	1.80%	5.70%	6.68%
40km/h	Urban	All	10-20% above speed limit	7.52%	11.90%	11.86%	12.35%	9.62%	4.82%	4.62%
40km/h	Urban	Local	10-20% above speed limit	7.52%	11.90%	11.86%	12.35%	9.62%	5.79%	5.72%
50km/h	All	All	10-20% above speed limit	2.47%	1.73%	1.48%	1.53%	1.92%	3.41%	3.29%
50km/h	All	Local	10-20% above speed limit	2.47%	1.73%	1.48%	1.53%	1.92%	3.51%	3.74%
50km/h	Regional	All	10-20% above speed limit	4.39%	3.81%	3.66%	3.29%	3.81%	6.54%	7.01%
50km/h	Regional	Local	10-20% above speed limit	4.39%	3.81%	3.66%	3.29%	3.81%	6.04%	6.72%
50km/h	Urban	All	10-20% above speed limit	2.46%	1.72%	1.46%	1.51%	1.91%	3.40%	3.28%
50km/h	Urban	Local	10-20% above speed limit	2.46%	1.72%	1.46%	1.51%	1.91%	3.46%	3.65%
60km/h	All	All	10-20% above speed limit	5.40%	4.43%	3.65%	3.59%	4.04%	4.10%	4.16%
60km/h	All	Arterial	10-20% above speed limit	5.87%	4.73%	3.72%	3.66%	4.24%	4.32%	4.25%
60km/h	All	Local	10-20% above speed limit	4.44%	3.84%	3.53%	3.46%	3.67%	3.75%	4.00%
60km/h	Regional	All	10-20% above speed limit	7.77%	5.87%	5.51%	6.05%	6.28%	10.92%	11.84%
60km/h	Regional	Arterial	10-20% above speed limit	7.81%	5.88%	5.47%	6.04%	6.24%	11.02%	11.92%

60km/h	Regional	Local	10-20% above speed limit	6.83%	5.56%	6.23%	6.07%	7.01%	9.16%	10.81%
60km/h	Urban	All	10-20% above speed limit	5.38%	4.42%	3.63%	3.56%	4.02%	4.08%	4.12%
60km/h	Urban	Arterial	10-20% above speed limit	5.85%	4.72%	3.69%	3.62%	4.21%	4.28%	4.20%
60km/h	Urban	Local	10-20% above speed limit	4.44%	3.84%	3.52%	3.46%	3.66%	3.75%	4.00%
80km/h	All	All	10-20% above speed limit	14.74%	14.12%	11.98%	11.59%	11.90%	12.63%	13.65%
80km/h	All	Arterial	10-20% above speed limit	15.37%	14.94%	12.70%	12.28%	12.63%	13.72%	14.88%
80km/h	All	Local	10-20% above speed limit	7.82%	5.59%	5.15%	5.00%	5.10%	4.27%	4.96%
80km/h	Regional	All	10-20% above speed limit	17.68%	17.48%	17.03%	18.29%	17.99%	18.12%	21.54%
80km/h	Regional	Arterial	10-20% above speed limit	17.76%	17.64%	17.33%	18.60%	18.22%	18.30%	21.86%
80km/h	Regional	Local	10-20% above speed limit	10.86%	7.91%	7.04%	7.37%	9.33%	6.64%	7.86%
80km/h	Urban	All	10-20% above speed limit	14.61%	13.94%	11.71%	11.23%	11.57%	12.47%	13.37%
80km/h	Urban	Arterial	10-20% above speed limit	15.25%	14.79%	12.43%	11.92%	12.31%	13.56%	14.60%
80km/h	Urban	Local	10-20% above speed limit	7.80%	5.57%	5.12%	4.97%	5.04%	4.26%	4.94%
100km/h	All	All	10-20% above speed limit	3.21%	1.28%	0.49%	0.52%	0.72%	1.89%	1.65%
100km/h	All	Arterial	10-20% above speed limit	3.21%	1.28%	0.49%	0.52%	0.73%	1.89%	1.65%
100km/h	All	Local	10-20% above speed limit	2.89%	0.68%	0.18%	0.19%	0.19%	0.40%	0.55%
100km/h	Regional	All	10-20% above speed limit	5.03%	2.33%	1.54%	1.20%	1.11%	2.70%	3.25%
100km/h	Regional	Arterial	10-20% above speed limit	5.06%	2.36%	1.56%	1.21%	1.12%	2.73%	3.29%
100km/h	Regional	Local	10-20% above speed limit	0.53%	0.20%	0.20%	0.16%	0.27%	0.83%	0.93%
100km/h	Urban	All	10-20% above speed limit	3.13%	1.22%	0.43%	0.48%	0.70%	1.84%	1.55%
100km/h	Urban	Arterial	10-20% above speed limit	3.13%	1.22%	0.43%	0.48%	0.70%	1.85%	1.55%
100km/h	Urban	Local	10-20% above speed limit	3.09%	0.77%	0.18%	0.19%	0.18%	0.34%	0.47%
110km/h	All	All	10-20% above speed limit	11.19%	6.30%	3.33%	3.90%	4.48%	2.40%	2.21%
110km/h	All	Arterial	10-20% above speed limit	11.19%	6.30%	3.33%	3.90%	4.48%	2.40%	2.21%
110km/h	All	Local	10-20% above speed limit	NA	NA	0.00%	NA	NA	NA	NA
110km/h	Urban	All	10-20% above speed limit	11.19%	6.30%	3.33%	3.90%	4.48%	2.40%	2.21%
110km/h	Urban	Arterial	10-20% above speed limit	11.19%	6.30%	3.33%	3.90%	4.48%	2.40%	2.21%
110km/h	Urban	Local	10-20% above speed limit	NA	NA	0.00%	NA	NA	NA	NA
All	All	All	>20% above speed limit	4.75%	2.61%	1.22%	1.23%	2.10%	2.41%	2.45%
All	All	Arterial	>20% above speed limit	4.78%	2.56%	1.01%	1.04%	2.05%	1.90%	1.91%
All	All	Local	>20% above speed limit	4.61%	2.76%	1.96%	1.92%	2.28%	3.63%	3.78%
All	Regional	All	>20% above speed limit	9.73%	3.38%	1.47%	1.30%	1.21%	2.25%	2.87%
All	Regional	Arterial	>20% above speed limit	9.66%	3.16%	1.16%	1.01%	1.00%	2.15%	2.73%
All	Regional	Local	>20% above speed limit	12.56%	9.96%	8.91%	8.90%	7.21%	5.23%	6.08%
All	Urban	All	>20% above speed limit	4.63%	2.59%	1.21%	1.23%	2.12%	2.41%	2.44%
All	Urban	Arterial	>20% above speed limit	4.64%	2.55%	1.00%	1.04%	2.08%	1.89%	1.89%
All	Urban	Local	>20% above speed limit	4.59%	2.73%	1.93%	1.89%	2.26%	3.61%	3.74%

40km/h	All	All	>20% above speed limit	24.83%	14.23%	10.17%	10.10%	15.38%	7.33%	7.66%
40km/h	All	Local	>20% above speed limit	24.83%	14.23%	10.17%	10.10%	15.38%	7.49%	7.98%
40km/h	Regional	All	>20% above speed limit	2.91%	1.49%	1.36%	1.56%	1.26%	5.29%	8.56%
40km/h	Regional	Local	>20% above speed limit	2.91%	1.49%	1.36%	1.56%	1.26%	7.19%	8.83%
40km/h	Urban	All	>20% above speed limit	24.92%	14.30%	10.23%	10.14%	15.44%	7.33%	7.66%
40km/h	Urban	Local	>20% above speed limit	24.92%	14.30%	10.23%	10.14%	15.44%	7.50%	7.97%
50km/h	All	All	>20% above speed limit	2.43%	1.75%	1.53%	1.60%	1.89%	2.80%	2.66%
50km/h	All	Local	>20% above speed limit	2.43%	1.75%	1.53%	1.60%	1.89%	2.44%	2.58%
50km/h	Regional	All	>20% above speed limit	6.17%	4.89%	5.72%	5.13%	5.27%	4.28%	5.34%
50km/h	Regional	Local	>20% above speed limit	6.17%	4.89%	5.72%	5.13%	5.27%	4.68%	5.51%
50km/h	Urban	All	>20% above speed limit	2.41%	1.73%	1.49%	1.57%	1.86%	2.80%	2.65%
50km/h	Urban	Local	>20% above speed limit	2.41%	1.73%	1.49%	1.57%	1.86%	2.39%	2.49%
60km/h	All	All	>20% above speed limit	3.73%	2.34%	1.49%	1.48%	1.73%	2.35%	2.36%
60km/h	All	Arterial	>20% above speed limit	3.71%	2.41%	1.51%	1.50%	1.81%	2.59%	2.56%
60km/h	All	Local	>20% above speed limit	3.75%	2.19%	1.45%	1.44%	1.57%	1.96%	2.03%
60km/h	Regional	All	>20% above speed limit	7.68%	4.34%	3.99%	3.76%	3.35%	6.93%	8.21%
60km/h	Regional	Arterial	>20% above speed limit	6.47%	2.85%	2.40%	2.31%	2.55%	6.98%	8.33%
60km/h	Regional	Local	>20% above speed limit	34.02%	33.13%	29.47%	28.23%	18.73%	6.04%	6.79%
60km/h	Urban	All	>20% above speed limit	3.69%	2.32%	1.46%	1.46%	1.71%	2.33%	2.33%
60km/h	Urban	Arterial	>20% above speed limit	3.68%	2.41%	1.49%	1.49%	1.80%	2.56%	2.52%
60km/h	Urban	Local	>20% above speed limit	3.72%	2.15%	1.41%	1.40%	1.55%	1.95%	2.02%
80km/h	All	All	>20% above speed limit	14.37%	9.34%	3.21%	3.35%	10.07%	3.99%	4.34%
80km/h	All	Arterial	>20% above speed limit	15.13%	10.07%	3.46%	3.61%	11.05%	4.37%	4.78%
80km/h	All	Local	>20% above speed limit	5.96%	1.80%	0.87%	0.82%	0.94%	1.02%	1.22%
80km/h	Regional	All	>20% above speed limit	12.62%	5.19%	2.86%	2.29%	2.26%	4.53%	5.57%
80km/h	Regional	Arterial	>20% above speed limit	12.65%	5.21%	2.84%	2.24%	2.19%	4.56%	5.61%
80km/h	Regional	Local	>20% above speed limit	9.62%	3.82%	3.37%	3.79%	4.90%	2.85%	3.69%
80km/h	Urban	All	>20% above speed limit	14.45%	9.56%	3.23%	3.40%	10.49%	3.97%	4.30%
80km/h	Urban	Arterial	>20% above speed limit	15.25%	10.35%	3.49%	3.69%	11.56%	4.37%	4.75%
80km/h	Urban	Local	>20% above speed limit	5.94%	1.78%	0.83%	0.78%	0.88%	1.01%	1.21%
100km/h	All	All	>20% above speed limit	3.57%	1.05%	0.12%	0.14%	0.18%	0.34%	0.29%
100km/h	All	Arterial	>20% above speed limit	3.58%	1.05%	0.12%	0.14%	0.18%	0.34%	0.29%
100km/h	All	Local	>20% above speed limit	2.74%	0.60%	0.08%	0.07%	0.07%	0.17%	0.19%
100km/h	Regional	All	>20% above speed limit	10.17%	2.73%	0.35%	0.32%	0.28%	0.61%	0.73%
100km/h	Regional	Arterial	>20% above speed limit	10.23%	2.76%	0.36%	0.33%	0.28%	0.62%	0.74%
100km/h	Regional	Local	>20% above speed limit	0.55%	0.08%	0.05%	0.06%	0.09%	0.25%	0.29%
100km/h	Urban	All	>20% above speed limit	3.27%	0.96%	0.10%	0.13%	0.18%	0.32%	0.27%

100km/h	Urban	Arterial	>20% above speed limit	3.27%	0.96%	0.10%	0.13%	0.18%	0.32%	0.27%
100km/h	Urban	Local	>20% above speed limit	2.92%	0.70%	0.09%	0.07%	0.07%	0.16%	0.16%
110km/h	All	All	>20% above speed limit	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
110km/h	All	Arterial	>20% above speed limit	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
110km/h	All	Local	>20% above speed limit	NA	NA	0.00%	NA	NA	NA	NA
110km/h	Urban	All	>20% above speed limit	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
110km/h	Urban	Arterial	>20% above speed limit	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
110km/h	Urban	Local	>20% above speed limit	NA	NA	0.00%	NA	NA	NA	NA

Table A.8: Average speed when speeding, urban, regional and all areas, local, arterial and all roads, Brisbane, 2016 to 2020

Speed limit	Area	Road type	Type	2016	2017	2018	2019	2020	2021	2022
40km/h	All	All	All speeding	52.8	49.0	48.1	48.1	50.4	51.3	51.8
40km/h	All	Local	All speeding	52.8	49.0	48.1	48.1	50.4	49.9	50.3
40km/h	Regional	All	All speeding	45.7	45.0	44.9	45.0	44.9	47.9	48.7
40km/h	Regional	Local	All speeding	45.7	45.0	44.9	45.0	44.9	47.9	48.2
40km/h	Urban	All	All speeding	52.8	49.0	48.1	48.1	50.4	51.3	51.9
40km/h	Urban	Local	All speeding	52.8	49.0	48.1	48.1	50.4	50.0	50.4
50km/h	All	All	All speeding	57.0	56.5	56.5	57.1	57.0	58.6	58.4
50km/h	All	Local	All speeding	57.0	56.5	56.5	57.1	57.0	57.4	57.4
50km/h	Regional	All	All speeding	57.5	56.9	57.8	57.7	57.4	56.1	56.5
50km/h	Regional	Local	All speeding	57.5	56.9	57.8	57.7	57.4	56.6	56.9
50km/h	Urban	All	All speeding	57.0	56.5	56.5	57.1	57.0	58.6	58.4
50km/h	Urban	Local	All speeding	57.0	56.5	56.5	57.1	57.0	57.5	57.4
60km/h	All	All	All speeding	67.8	66.9	66.1	66.3	66.5	67.6	67.9
60km/h	All	Arterial	All speeding	67.7	66.9	66.2	66.4	66.6	67.9	68.3
60km/h	All	Local	All speeding	68.3	66.9	66.1	66.2	66.2	67.1	67.2
60km/h	Regional	All	All speeding	68.6	67.5	67.2	66.8	66.5	67.3	67.8
60km/h	Regional	Arterial	All speeding	67.7	66.1	65.7	65.5	65.8	67.2	67.8
60km/h	Regional	Local	All speeding	79.7	81.1	79.8	79.5	75.4	67.6	67.6
60km/h	Urban	All	All speeding	67.8	66.9	66.1	66.3	66.5	67.6	67.9
60km/h	Urban	Arterial	All speeding	67.7	66.9	66.2	66.4	66.7	67.9	68.3
60km/h	Urban	Local	All speeding	68.3	66.8	66.0	66.2	66.2	67.1	67.2
80km/h	All	All	All speeding	94.3	91.4	88.5	88.5	91.0	89.7	90.2
80km/h	All	Arterial	All speeding	94.5	91.6	88.6	88.7	91.3	89.9	90.5
80km/h	All	Local	All speeding	90.0	86.8	85.9	85.8	86.1	86.4	86.7

80km/h	Regional	All	All speeding	91.6	88.5	87.7	87.2	87.3	88.1	89.0
80km/h	Regional	Arterial	All speeding	91.6	88.5	87.7	87.2	87.3	88.1	89.0
80km/h	Regional	Local	All speeding	92.6	89.0	88.5	88.7	88.9	87.8	88.2
80km/h	Urban	All	All speeding	94.4	91.5	88.5	88.6	91.2	89.7	90.3
80km/h	Urban	Arterial	All speeding	94.7	91.8	88.7	88.8	91.5	89.9	90.5
80km/h	Urban	Local	All speeding	90.0	86.8	85.9	85.8	86.0	86.4	86.7
100km/h	All	All	All speeding	112.4	107.9	105.2	105.6	106.4	107.4	107.9
100km/h	All	Arterial	All speeding	112.4	107.9	105.2	105.6	106.4	107.4	107.9
100km/h	All	Local	All speeding	111.2	107.6	104.4	104.3	104.6	106.0	106.2
100km/h	Regional	All	All speeding	111.5	106.5	104.6	104.3	104.4	105.1	105.6
100km/h	Regional	Arterial	All speeding	111.5	106.5	104.6	104.3	104.4	105.1	105.6
100km/h	Regional	Local	All speeding	107.3	103.5	103.5	104.1	105.2	106.2	106.5
100km/h	Urban	All	All speeding	112.5	108.0	105.3	105.6	106.5	107.5	108.0
100km/h	Urban	Arterial	All speeding	112.5	108.0	105.3	105.6	106.5	107.5	108.0
100km/h	Urban	Local	All speeding	111.2	108.1	104.6	104.4	104.5	105.9	106.1
110km/h	All	All	All speeding	121.6	120.1	119.4	119.7	120.1	119.4	119.8
110km/h	All	Arterial	All speeding	121.6	120.1	119.4	119.7	120.1	119.4	119.8
110km/h	Urban	All	All speeding	121.6	120.1	119.4	119.7	120.1	119.4	119.8
110km/h	Urban	Arterial	All speeding	121.6	120.1	119.4	119.7	120.1	119.4	119.8
40km/h	All	All	<10% above speed limit	43.1	43.8	43.8	43.9	43.9	45.6	45.4
40km/h	All	Local	<10% above speed limit	43.1	43.8	43.8	43.9	43.9	44.6	44.5
40km/h	Regional	All	<10% above speed limit	42.3	42.2	42.1	42.1	42.2	41.9	41.9
40km/h	Regional	Local	<10% above speed limit	42.3	42.2	42.1	42.1	42.2	42.0	42.0
40km/h	Urban	All	<10% above speed limit	43.1	43.8	43.9	43.9	43.9	45.6	45.4
40km/h	Urban	Local	<10% above speed limit	43.1	43.8	43.9	43.9	43.9	44.6	44.5
50km/h	All	All	<10% above speed limit	53.4	53.0	53.0	53.1	53.4	53.9	53.8
50km/h	All	Local	<10% above speed limit	53.4	53.0	53.0	53.1	53.4	53.4	53.3
50km/h	Regional	All	<10% above speed limit	52.7	52.7	52.7	52.7	52.7	52.3	52.4
50km/h	Regional	Local	<10% above speed limit	52.7	52.7	52.7	52.7	52.7	52.4	52.5
50km/h	Urban	All	<10% above speed limit	53.4	53.0	53.0	53.1	53.4	53.9	53.8
50km/h	Urban	Local	<10% above speed limit	53.4	53.0	53.0	53.1	53.4	53.4	53.4
60km/h	All	All	<10% above speed limit	63.8	63.6	63.6	63.6	63.8	64.0	64.3
60km/h	All	Arterial	<10% above speed limit	63.9	63.7	63.7	63.7	63.9	64.2	64.7
60km/h	All	Local	<10% above speed limit	63.6	63.5	63.5	63.5	63.5	63.5	63.7
60km/h	Regional	All	<10% above speed limit	63.2	63.1	63.1	63.1	63.2	62.8	63.0
60km/h	Regional	Arterial	<10% above speed limit	63.2	63.1	63.1	63.1	63.1	62.8	63.0
60km/h	Regional	Local	<10% above speed limit	63.3	63.2	63.2	63.2	63.3	62.8	62.9

60km/h	Urban	All	<10% above speed limit	63.8	63.7	63.6	63.7	63.8	64.0	64.3
60km/h	Urban	Arterial	<10% above speed limit	63.9	63.7	63.7	63.7	63.9	64.3	64.7
60km/h	Urban	Local	<10% above speed limit	63.6	63.5	63.5	63.5	63.5	63.5	63.7
80km/h	All	All	<10% above speed limit	86.3	85.8	85.7	85.8	85.8	85.7	86.1
80km/h	All	Arterial	<10% above speed limit	86.4	85.9	85.8	85.9	85.9	85.8	86.2
80km/h	All	Local	<10% above speed limit	84.6	84.2	84.2	84.2	84.3	84.2	84.5
80km/h	Regional	All	<10% above speed limit	84.6	84.5	84.6	84.6	84.9	84.5	84.4
80km/h	Regional	Arterial	<10% above speed limit	84.6	84.5	84.6	84.6	84.9	84.5	84.4
80km/h	Regional	Local	<10% above speed limit	84.3	84.1	84.1	84.1	84.1	83.6	83.7
80km/h	Urban	All	<10% above speed limit	86.4	85.8	85.7	85.8	85.9	85.8	86.1
80km/h	Urban	Arterial	<10% above speed limit	86.5	86.0	85.8	86.0	86.0	85.9	86.3
80km/h	Urban	Local	<10% above speed limit	84.6	84.2	84.2	84.2	84.3	84.2	84.5
100km/h	All	All	<10% above speed limit	110.8	107.1	105.0	105.3	106.2	107.0	107.6
100km/h	All	Arterial	<10% above speed limit	110.8	107.1	105.0	105.3	106.2	107.0	107.6
100km/h	All	Local	<10% above speed limit	106.0	104.3	103.6	103.5	103.8	103.6	103.8
100km/h	Regional	All	<10% above speed limit	105.0	104.2	103.9	103.8	103.9	104.1	104.6
100km/h	Regional	Arterial	<10% above speed limit	105.0	104.2	103.9	103.8	103.9	104.1	104.6
100km/h	Regional	Local	<10% above speed limit	103.6	102.6	102.8	103.1	103.7	103.7	103.8
100km/h	Urban	All	<10% above speed limit	110.9	107.2	105.1	105.4	106.3	107.1	107.7
100km/h	Urban	Arterial	<10% above speed limit	110.9	107.2	105.1	105.4	106.3	107.1	107.7
100km/h	Urban	Local	<10% above speed limit	106.0	104.5	103.8	103.6	103.8	103.5	103.8
110km/h	All	All	<10% above speed limit	120.3	119.0	118.7	119.1	119.4	118.7	119.3
110km/h	All	Arterial	<10% above speed limit	120.3	119.0	118.7	119.1	119.4	118.7	119.3
110km/h	Urban	All	<10% above speed limit	120.3	119.0	118.7	119.1	119.4	118.7	119.3
110km/h	Urban	Arterial	<10% above speed limit	120.3	119.0	118.7	119.1	119.4	118.7	119.3
40km/h	All	All	10-20% above speed limit	47.8	48.3	48.1	48.1	48.5	48.7	48.5
40km/h	All	Local	10-20% above speed limit	47.8	48.3	48.1	48.1	48.5	47.7	47.6
40km/h	Regional	All	10-20% above speed limit	46.2	46.2	46.2	46.3	46.2	45.3	45.4
40km/h	Regional	Local	10-20% above speed limit	46.2	46.2	46.2	46.3	46.2	45.4	45.4
40km/h	Urban	All	10-20% above speed limit	47.8	48.3	48.1	48.1	48.5	48.7	48.5
40km/h	Urban	Local	10-20% above speed limit	47.8	48.3	48.1	48.1	48.5	47.7	47.6
50km/h	All	All	10-20% above speed limit	58.2	58.0	58.0	58.0	58.4	58.6	58.5
50km/h	All	Local	10-20% above speed limit	58.2	58.0	58.0	58.0	58.4	58.0	57.9
50km/h	Regional	All	10-20% above speed limit	57.8	57.7	57.7	57.8	57.7	56.7	56.7
50km/h	Regional	Local	10-20% above speed limit	57.8	57.7	57.7	57.8	57.7	56.7	56.9
50km/h	Urban	All	10-20% above speed limit	58.2	58.0	58.0	58.0	58.5	58.6	58.5
50km/h	Urban	Local	10-20% above speed limit	58.2	58.0	58.0	58.0	58.5	58.0	57.9

60km/h	All	All	10-20% above speed limit	70.0	69.7	69.5	69.6	69.8	69.3	69.6
60km/h	All	Arterial	10-20% above speed limit	70.1	69.8	69.6	69.6	69.9	69.5	69.9
60km/h	All	Local	10-20% above speed limit	69.8	69.5	69.4	69.4	69.4	68.9	69.2
60km/h	Regional	All	10-20% above speed limit	69.1	69.0	69.0	69.0	69.0	68.2	68.4
60km/h	Regional	Arterial	10-20% above speed limit	69.1	69.0	69.0	68.9	69.0	68.2	68.4
60km/h	Regional	Local	10-20% above speed limit	69.3	69.3	69.3	69.3	69.3	68.1	68.2
60km/h	Urban	All	10-20% above speed limit	70.0	69.7	69.5	69.6	69.8	69.3	69.6
60km/h	Urban	Arterial	10-20% above speed limit	70.1	69.8	69.6	69.7	70.0	69.6	69.9
60km/h	Urban	Local	10-20% above speed limit	69.8	69.5	69.4	69.4	69.4	68.9	69.2
80km/h	All	All	10-20% above speed limit	96.1	94.8	93.6	93.3	94.0	93.6	94.1
80km/h	All	Arterial	10-20% above speed limit	96.2	94.9	93.7	93.4	94.1	93.7	94.3
80km/h	All	Local	10-20% above speed limit	92.9	92.1	91.7	91.7	91.8	90.8	91.1
80km/h	Regional	All	10-20% above speed limit	92.8	92.4	92.3	92.1	92.2	91.5	92.1
80km/h	Regional	Arterial	10-20% above speed limit	92.8	92.5	92.3	92.1	92.2	91.5	92.1
80km/h	Regional	Local	10-20% above speed limit	92.1	91.8	92.0	92.0	92.0	90.8	90.9
80km/h	Urban	All	10-20% above speed limit	96.3	94.9	93.7	93.4	94.1	93.7	94.2
80km/h	Urban	Arterial	10-20% above speed limit	96.4	95.0	93.8	93.5	94.2	93.8	94.4
80km/h	Urban	Local	10-20% above speed limit	92.9	92.1	91.7	91.7	91.8	90.8	91.1
100km/h	All	All	10-20% above speed limit	119.7	118.2	115.1	115.1	115.4	115.0	115.3
100km/h	All	Arterial	10-20% above speed limit	119.7	118.2	115.1	115.1	115.4	115.0	115.3
100km/h	All	Local	10-20% above speed limit	117.6	117.0	114.9	114.7	114.8	113.3	113.6
100km/h	Regional	All	10-20% above speed limit	118.2	117.1	114.7	114.6	114.6	113.8	113.9
100km/h	Regional	Arterial	10-20% above speed limit	118.2	117.1	114.7	114.6	114.6	113.8	113.9
100km/h	Regional	Local	10-20% above speed limit	114.1	113.9	113.7	113.7	113.8	113.1	113.3
100km/h	Urban	All	10-20% above speed limit	119.8	118.4	115.1	115.2	115.5	115.1	115.5
100km/h	Urban	Arterial	10-20% above speed limit	119.9	118.4	115.1	115.2	115.5	115.1	115.5
100km/h	Urban	Local	10-20% above speed limit	117.6	117.2	115.2	114.9	115.1	113.4	113.7
110km/h	All	All	10-20% above speed limit	127.7	126.9	126.1	126.2	126.4	126.3	126.5
110km/h	All	Arterial	10-20% above speed limit	127.7	126.9	126.1	126.2	126.4	126.3	126.5
110km/h	Urban	All	10-20% above speed limit	127.7	126.9	126.1	126.2	126.4	126.3	126.5
110km/h	Urban	Arterial	10-20% above speed limit	127.7	126.9	126.1	126.2	126.4	126.3	126.5
40km/h	All	All	>20% above speed limit	58.1	55.0	54.5	55.0	56.8	58.1	59.0
40km/h	All	Local	>20% above speed limit	58.1	55.0	54.5	55.0	56.8	56.7	57.4
40km/h	Regional	All	>20% above speed limit	55.4	55.8	56.2	57.9	55.9	56.6	56.1
40km/h	Regional	Local	>20% above speed limit	55.4	55.8	56.2	57.9	55.9	56.1	56.4
40km/h	Urban	All	>20% above speed limit	58.1	55.0	54.5	55.0	56.8	58.1	59.0
40km/h	Urban	Local	>20% above speed limit	58.1	55.0	54.5	55.0	56.8	56.7	57.4

50km/h	All	All	>20% above speed limit	66.7	66.5	66.8	68.9	66.7	67.8	67.9
50km/h	All	Local	>20% above speed limit	66.7	66.5	66.8	68.9	66.7	66.8	66.7
50km/h	Regional	All	>20% above speed limit	66.8	66.9	67.2	67.7	67.8	64.8	64.9
50km/h	Regional	Local	>20% above speed limit	66.8	66.9	67.2	67.7	67.8	65.2	65.3
50km/h	Urban	All	>20% above speed limit	66.7	66.5	66.8	69.0	66.7	67.9	67.9
50km/h	Urban	Local	>20% above speed limit	66.7	66.5	66.8	69.0	66.7	66.9	66.7
60km/h	All	All	>20% above speed limit	81.7	81.6	80.9	81.9	80.9	80.6	80.7
60km/h	All	Arterial	>20% above speed limit	81.3	81.4	80.9	82.0	81.0	80.8	81.0
60km/h	All	Local	>20% above speed limit	82.4	81.8	80.7	81.8	80.6	80.0	80.0
60km/h	Regional	All	>20% above speed limit	81.2	82.6	82.5	82.4	80.3	77.6	77.9
60km/h	Regional	Arterial	>20% above speed limit	79.8	79.1	78.2	78.3	78.3	77.6	77.9
60km/h	Regional	Local	>20% above speed limit	86.5	87.6	87.3	87.1	85.0	78.5	77.9
60km/h	Urban	All	>20% above speed limit	81.7	81.6	80.8	81.9	80.9	80.6	80.7
60km/h	Urban	Arterial	>20% above speed limit	81.3	81.5	81.0	82.1	81.0	80.9	81.1
60km/h	Urban	Local	>20% above speed limit	82.4	81.7	80.4	81.6	80.5	80.0	80.0
80km/h	All	All	>20% above speed limit	108.2	105.1	102.0	103.3	103.8	102.6	102.7
80km/h	All	Arterial	>20% above speed limit	108.2	105.1	102.0	103.3	103.8	102.7	102.8
80km/h	All	Local	>20% above speed limit	106.4	106.1	102.7	103.7	102.9	101.7	101.8
80km/h	Regional	All	>20% above speed limit	110.0	107.0	101.7	102.1	102.0	100.9	101.0
80km/h	Regional	Arterial	>20% above speed limit	110.0	107.0	101.7	102.1	102.1	100.9	101.0
80km/h	Regional	Local	>20% above speed limit	109.7	105.6	102.7	101.7	101.8	101.6	101.1
80km/h	Urban	All	>20% above speed limit	108.1	105.1	102.0	103.3	103.8	102.7	102.8
80km/h	Urban	Arterial	>20% above speed limit	108.2	105.0	102.0	103.3	103.8	102.7	102.9
80km/h	Urban	Local	>20% above speed limit	106.3	106.2	102.7	103.9	102.9	101.7	101.8
100km/h	All	All	>20% above speed limit	128.3	128.2	126.5	126.7	126.4	125.2	125.0
100km/h	All	Arterial	>20% above speed limit	128.4	128.2	126.5	126.7	126.4	125.2	125.0
100km/h	All	Local	>20% above speed limit	126.5	126.9	127.7	129.2	127.1	126.3	125.6
100km/h	Regional	All	>20% above speed limit	128.6	128.4	126.1	126.9	126.2	125.0	124.8
100km/h	Regional	Arterial	>20% above speed limit	128.6	128.4	126.1	126.9	126.2	125.0	124.8
100km/h	Regional	Local	>20% above speed limit	127.1	127.5	126.5	132.3	126.7	125.9	125.5
100km/h	Urban	All	>20% above speed limit	128.3	128.2	126.5	126.6	126.4	125.2	125.0
100km/h	Urban	Arterial	>20% above speed limit	128.3	128.2	126.5	126.6	126.4	125.2	125.0
100km/h	Urban	Local	>20% above speed limit	126.5	126.9	127.8	128.6	127.2	126.4	125.7
110km/h	All	All	>20% above speed limit	141.1	138.4	139.6	144.5	139.0	138.2	138.4
110km/h	All	Arterial	>20% above speed limit	141.1	138.4	139.6	144.5	139.0	138.2	138.4
110km/h	Urban	All	>20% above speed limit	141.1	138.4	139.6	144.5	139.0	138.2	138.4
110km/h	Urban	Arterial	>20% above speed limit	141.1	138.4	139.6	144.5	139.0	138.2	138.4

A2.3 Worst roads in Queensland, 2021-2022

Table A.9: Top 100 worst roads or road segments in Queensland, based on speeding metrics for 2021

Rank	Street name	Statistical area level 2	Local government area	Urban/regional
1	Stanley Street	South Brisbane	Brisbane	Urban
2	Morayfield Road	Caboolture - South	Moreton Bay	Urban
3	Marquis Street	Greenslopes	Brisbane	Urban
4	Queen Street	Brisbane City	Brisbane	Urban
5	Stafford Road	Kedron - Gordon Park	Brisbane	Urban
6	Meckiff Street	Upper Mount Gravatt	Brisbane	Urban
7	Thornbill Drive	Flagstone (West) - New Beith	Logan	Urban
8	Mulgrave Street	Gin Gin	Bundaberg	Regional
9	Frizzo Road	Buderim - South	Sunshine Coast	Urban
10	Brisbane Road	Goodna	Ipswich	Urban
11	Old Coach Road	Reedy Creek - Andrews	Gold Coast	Urban
12	Creek Street	Brisbane City	Brisbane	Urban
13	Boronia Road	Brisbane Airport	Brisbane	Urban
14	Annerley Road	Fairfield - Dutton Park	Brisbane	Urban
15	William Street	Brisbane City	Brisbane	Urban
16	Brisbane Road	Riverview	Ipswich	Urban
17	Pacific Highway	Loganholme - Tanah Merah	Logan	Urban
18	Adelaide Street	Brisbane City	Brisbane	Urban
19	Sunshine Beach Road	Noosa Heads	Noosa	Urban
20	Macarthur Pde	Main Beach	Gold Coast	Urban
21	Toowoomba Road	Pittsworth	Toowoomba	Regional
22	Swanbank Road	Ripley	Ipswich	Urban
23	Eastern Busway	Fairfield - Dutton Park	Brisbane	Urban
24	Burpengary Road	Burpengary	Moreton Bay	Urban
25	Turbot Street	Brisbane City	Brisbane	Urban
26	George Street	Brisbane City	Brisbane	Urban
27	Mount Cotton Road	Capalaba	Redland	Urban
28	Queens Wharf Road	Brisbane City	Brisbane	Urban
29	Sippy Downs Drive	Sippy Downs	Sunshine Coast	Urban
30	Central Avenue	Weipa	Weipa	Regional
31	Terminal Drive	Currumbin - Tugun	Gold Coast	Urban
32	Discovery Drive	North Lakes	Moreton Bay	Urban

33	Bayview Street	Runaway Bay	Gold Coast	Urban
34	K P Mcgrath Drive	Elanora	Gold Coast	Urban
35	Ipswich Road	Rocklea - Acacia Ridge	Brisbane	Urban
36	Robina Town Centre Drive	Robina - West	Gold Coast	Urban
37	Pitt Road	Burpengary	Moreton Bay	Urban
38	Anzac Avenue	Redcliffe	Moreton Bay	Urban
39	Boundary Street	Wilsonton	Toowoomba	Urban
40	Pacific Mtwy	Loganholme - Tanah Merah	Logan	Urban
41	Gilston Road	Nerang - Mount Nathan	Gold Coast	Urban
42	Graham Road	Morayfield - East	Moreton Bay	Urban
43	Hargreaves Road	Manly West	Brisbane	Urban
44	Gympie Ter	Noosaville	Noosa	Urban
45	Garnet Street	Noosa Hinterland	Noosa	Urban
46	Ragamuffin Drive	Coomera	Gold Coast	Urban
47	Eastern Busway	Woolloongabba	Brisbane	Urban
48	Railway Avenue	Strathpine - Brendale	Moreton Bay	Urban
49	Pacific Highway	Slacks Creek	Logan	Urban
50	Albert Street	Bethania - Waterford	Logan	Urban
51	Ney Road	Capalaba	Redland	Urban
52	Pimpama Jacobs Well Road	Jacobs Well - Alberton	Gold Coast	Regional
53	Pacific Highway	Shailer Park	Logan	Urban
54	Old Coach Road	Upper Coomera - North	Gold Coast	Urban
55	Lower King Street	Caboolture - East	Moreton Bay	Urban
56	Mayne Street	Maryborough Surrounds - South	Fraser Coast	Regional
57	Eagle Street	Brisbane City	Brisbane	Urban
58	Redland Bay Road	Capalaba	Redland	Urban
59	Inskip Point Road	Cooloola	Gympie	Regional
60	Airport Link Tunnel	Windsor	Brisbane	Urban
61	Pascoe Road	Ormeau (West) - Yatala	Gold Coast	Urban
62	Melbourne Street	South Brisbane	Brisbane	Urban
63	Emu Mountain Arterial Road	Peregian Beach - Marcus Beach	Noosa	Urban
64	Connors Road	Ooralea - Bakers Creek	Mackay	Urban
65	Wellness Way	Springfield Lakes	Ipswich	Urban
66	Ann Street	Brisbane City	Brisbane	Urban
67	Inner Northern Busway	Brisbane City	Brisbane	Urban
68	Sanctuary Drive	Sheldon - Mount Cotton	Redland	Urban
69	Tennyson Memorial Avenue	Yeronga	Brisbane	Urban

70	Boardman Road	Rothwell - Kippa-Ring	Moreton Bay	Urban
71	Northern Busway	Wooloowin - Lutwyche	Brisbane	Urban
72	Young Road	Narangba	Moreton Bay	Urban
73	Endeavour Boulevard	North Lakes	Moreton Bay	Urban
74	Main Street	Palmwoods	Sunshine Coast	Urban
75	Bridge Street	Wooloowin - Lutwyche	Brisbane	Urban
76	Henry Street	Woolloongabba	Brisbane	Urban
77	Alice Street	Brisbane City	Brisbane	Urban
78	Western Service Road	Buderim - South	Sunshine Coast	Urban
79	Nerang Street	Bethania - Waterford	Logan	Urban
80	Port Drive	Brisbane Port - Lytton	Brisbane	Urban
81	Mount Lindesay Highway	Boronia Heights - Park Ridge	Logan	Urban
82	School Of Arts Road	Redland Bay	Redland	Urban
83	Beaudesert Beenleigh Road	Wolffdene - Bahrs Scrub	Logan	Urban
84	Hannant Road	Lockyer Valley - East	Lockyer Valley	Regional
85	Boorah Road	Jimboomba - Glenlogan	Logan	Urban
86	Lutwyche Road	Windsor	Brisbane	Urban
87	Lipscombe Road	Deception Bay	Moreton Bay	Urban
88	Maine Road	Clontarf	Moreton Bay	Urban
89	Wyreema Cambooya Road	Cambooya - Wyreema	Toowoomba	Urban
90	University Way	Sippy Downs	Sunshine Coast	Urban
91	Ross River Road	Aitkenvale	Townsville	Urban
92	Whitewater Way	Coomera	Gold Coast	Urban
93	Port Of Brisbane Mtwy	Murarrie	Brisbane	Urban
94	Guineas Creek Road	Elanora	Gold Coast	Urban
95	King Street	Caboolture - West	Moreton Bay	Urban
96	Anzac Avenue	Rothwell - Kippa-Ring	Moreton Bay	Urban
97	Pimpama Jacobs Well Road	Pimpama - North	Gold Coast	Urban
98	Armstrong Road	Loganlea	Logan	Urban
99	Roma Street	Brisbane City	Brisbane	Urban
100	Ipswich Road	Oxley (Qld)	Brisbane	Urban

Table A.10: Top 100 worst roads or road segments in Queensland, based on speeding metrics for 2022

Rank	Street name	Statistical area level 2	Local government area	Urban/regional
1	Stanley Street	South Brisbane	Brisbane	Urban
2	Marquis Street	Greenslopes	Brisbane	Urban
3	Frizzo Road	Buderim - South	Sunshine Coast	Urban
4	Stafford Road	Kedron - Gordon Park	Brisbane	Urban
5	Thornbill Drive	Flagstone (West) - New Beith	Logan	Urban
6	Toowoomba Road	Pittsworth	Toowoomba	Regional
7	Mulgrave Street	Gin Gin	Bundaberg	Regional
8	William Street	Brisbane City	Brisbane	Urban
9	Meckiff Street	Upper Mount Gravatt	Brisbane	Urban
10	Port Drive	Brisbane Port - Lytton	Brisbane	Urban
11	Morayfield Road	Caboolture - South	Moreton Bay	Urban
12	Swanbank Road	Ripley	Ipswich	Urban
13	Central Avenue	Weipa	Weipa	Regional
14	Queen Street	Brisbane City	Brisbane	Urban
15	Brisbane Road	Goodna	Ipswich	Urban
16	Sunshine Beach Road	Noosa Heads	Noosa	Urban
17	Old Coach Road	Reedy Creek - Andrews	Gold Coast	Urban
18	Boronia Road	Brisbane Airport	Brisbane	Urban
19	Brisbane Road	Riverview	Ipswich	Urban
20	Illaweena Street	Calamvale - Stretton	Brisbane	Urban
21	Pacific Highway	Loganholme - Tanah Merah	Logan	Urban
22	Ragamuffin Drive	Coomera	Gold Coast	Urban
23	Ipswich Road	Rocklea - Acacia Ridge	Brisbane	Urban
24	Creek Street	Brisbane City	Brisbane	Urban
25	Inskip Point Road	Cooloola	Gympie	Regional
26	Cribb Road	Carindale	Brisbane	Urban
27	Burpengary Road	Burpengary	Moreton Bay	Urban
28	Mayne Street	Maryborough Surrounds - South	Fraser Coast	Regional
29	Adelaide Street	Brisbane City	Brisbane	Urban
30	Robina Town Centre Drive	Robina - West	Gold Coast	Urban
31	Western Service Road	Buderim - South	Sunshine Coast	Urban
32	Railway Avenue	Strathpine - Brendale	Moreton Bay	Urban
33	Mount Lindesay Highway	Boronia Heights - Park Ridge	Logan	Urban
34	Macarthur Pde	Main Beach	Gold Coast	Urban

35	Mount Cotton Road	Capalaba	Redland	Urban
36	Boundary Street	Wilsonton	Toowoomba	Urban
37	Boorah Road	Jimboomba - Glenlogan	Logan	Urban
38	University Way	Sippy Downs	Sunshine Coast	Urban
39	Terminal Drive	Currumbin - Tugun	Gold Coast	Urban
40	Hannant Road	Lockyer Valley - East	Lockyer Valley	Regional
41	Wyreema Cambooya Road	Cambooya - Wyreema	Toowoomba	Urban
42	Hargreaves Road	Manly West	Brisbane	Urban
43	Redland Bay Road	Capalaba	Redland	Urban
44	Gympie Ter	Noosaville	Noosa	Urban
45	Pacific Mtwy	Loganholme - Tanah Merah	Logan	Urban
46	Southeast Busway	South Brisbane	Brisbane	Urban
47	Moss Road	Wakerley	Brisbane	Urban
48	Roma Street	Brisbane City	Brisbane	Urban
49	Gilston Road	Nerang - Mount Nathan	Gold Coast	Urban
50	Anzac Avenue	Redcliffe	Moreton Bay	Urban
51	Bayview Street	Runaway Bay	Gold Coast	Urban
52	Pacific Highway	Shailer Park	Logan	Urban
53	Eastern Busway	Fairfield - Dutton Park	Brisbane	Urban
54	Wellness Way	Springfield Lakes	Ipswich	Urban
55	Garnet Street	Noosa Hinterland	Noosa	Urban
56	Days Road	Upper Coomera - North	Gold Coast	Urban
57	Inner Northern Busway	Kelvin Grove - Herston	Brisbane	Urban
58	Eagle Street	Brisbane City	Brisbane	Urban
59	Pascoe Road	Ormeau (West) - Yatala	Gold Coast	Urban
60	Mount Juillerat Drive	Redbank Plains	Ipswich	Urban
61	Sippy Downs Drive	Sippy Downs	Sunshine Coast	Urban
62	George Street	Brisbane City	Brisbane	Urban
63	Tennyson Memorial Avenue	Yeronga	Brisbane	Urban
64	Pitt Road	Burpengary	Moreton Bay	Urban
65	Ann Street	Brisbane City	Brisbane	Urban
66	Connors Road	Ooralea - Bakers Creek	Mackay	Urban
67	Emu Mountain Arterial Road	Peregian Beach - Marcus Beach	Noosa	Urban
68	Nerang Street	Bethania - Waterford	Logan	Urban
69	K P Mcgrath Drive	Elanora	Gold Coast	Urban
70	Discovery Drive	North Lakes	Moreton Bay	Urban
71	Wecker Road	Mansfield (Qld)	Brisbane	Urban

72	Old Coach Road	Upper Coomera - North	Gold Coast	Urban
73	Lytton Road	Wynnum West - Hemmant	Brisbane	Urban
74	Railway Pde	Geebung	Brisbane	Urban
75	Guineas Creek Road	Elanora	Gold Coast	Urban
76	Queens Wharf Road	Brisbane City	Brisbane	Urban
77	Illaweena Street	Parkinson - Drewvale	Brisbane	Urban
78	Hermitage Road	Wilsonton	Toowoomba	Urban
79	Port Of Brisbane Mtwy	Murarrie	Brisbane	Urban
80	Avalon Road	Sheldon - Mount Cotton	Redland	Urban
81	Anzac Avenue	Chambers Flat - Logan Reserve	Logan	Urban
82	Main Street	Palmwoods	Sunshine Coast	Urban
83	Albert Street	Bethania - Waterford	Logan	Urban
84	Creek Street	Mount Morgan	Rockhampton	Regional
85	Highlands Street	Yarrabilba	Logan	Urban
86	Allen Street	South Brisbane	Brisbane	Urban
87	Lucinda Drive	Brisbane Port - Lytton	Brisbane	Urban
88	Young Road	Narangba	Moreton Bay	Urban
89	Airport Link Tunnel	Windsor	Brisbane	Urban
90	Hotham Creek Road	Willow Vale - Pimpama (West)	Gold Coast	Urban
91	George Alexander Way	Coomera	Gold Coast	Urban
92	Gateway Mtwy	Eagle Farm - Pinkenba	Brisbane	Urban
93	Elizabeth Street	Brisbane City	Brisbane	Urban
94	Mount Lindesay Highway	Regents Park - Heritage Park	Logan	Urban
95	Pimpama Jacobs Well Road	Jacobs Well - Alberton	Gold Coast	Regional
96	Armstrong Road	Loganlea	Logan	Urban
97	Hamilton Road	Chermside	Brisbane	Urban
98	Endeavour Boulevard	North Lakes	Moreton Bay	Urban
99	Alice Street	Brisbane City	Brisbane	Urban
100	Maine Road	Clontarf	Moreton Bay	Urban

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