



HOUSTONKEMP
Economists

Understanding traffic performance during the Covid-19 pandemic using GPS probe data

A presentation at the Roads, Tolling and Technology conference 2022

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Agenda

1. Getting to know HERE data
2. High-level insights into traffic performances in Victoria before and after 2020
3. Detailed insights into the level of congestion in Melbourne's major areas and routes

Learning traffic insights from using HERE speed probe data

- HERE Technologies is a leading global navigation system mapping company, developing open location platform technologies
- The HERE traffic data are built on a database of over one trillion GPS data points, including the entirety of Australia
- The HERE traffic data consist of:
 - **the speed probe data** provided at a road link level across the entire road network, inclusive of highways, arterial roads, and local roads; 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 map data** that provides attributes of each road link such as speed limit, direction of travel, length of road, functional class, and geometry

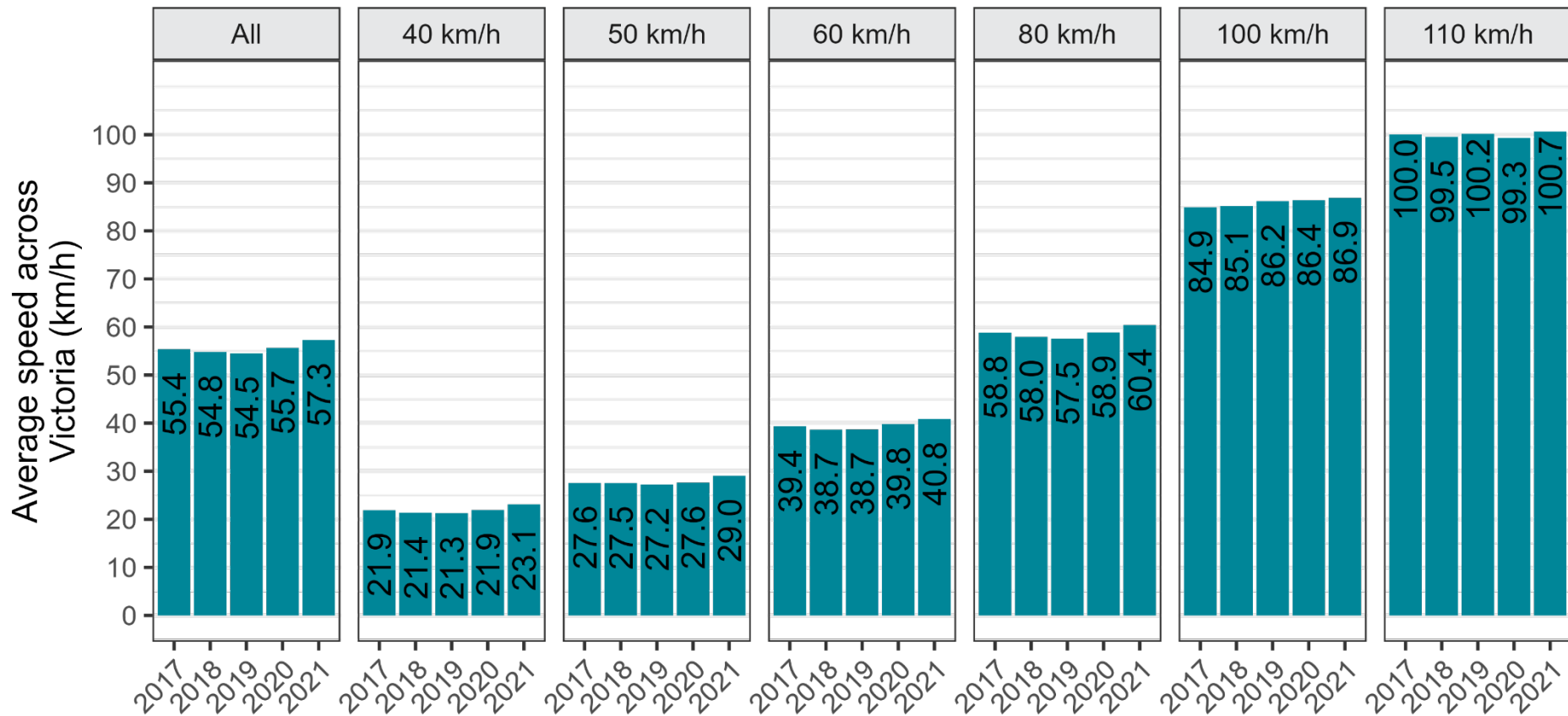
Metrics used in our analysis of traffic performance in Victoria

- **Average speed** is the average hourly speed across each road segment
- **Percentage of Speed Limit (POSL)** is calculated by dividing the observed average speed by the posted speed limit
- **Speed compliance** measures the proportion of roads by length in an area where there were no incidences of speeding
- **Margin in excess of speed limit** measures the average speed observed when there are incidences of speeding
- **Level of congestion** is measured as the proportion of travelling distance over which the observed average speed is less than 60 per cent of the posted speed limit

High-level insights into traffic performances in Victoria

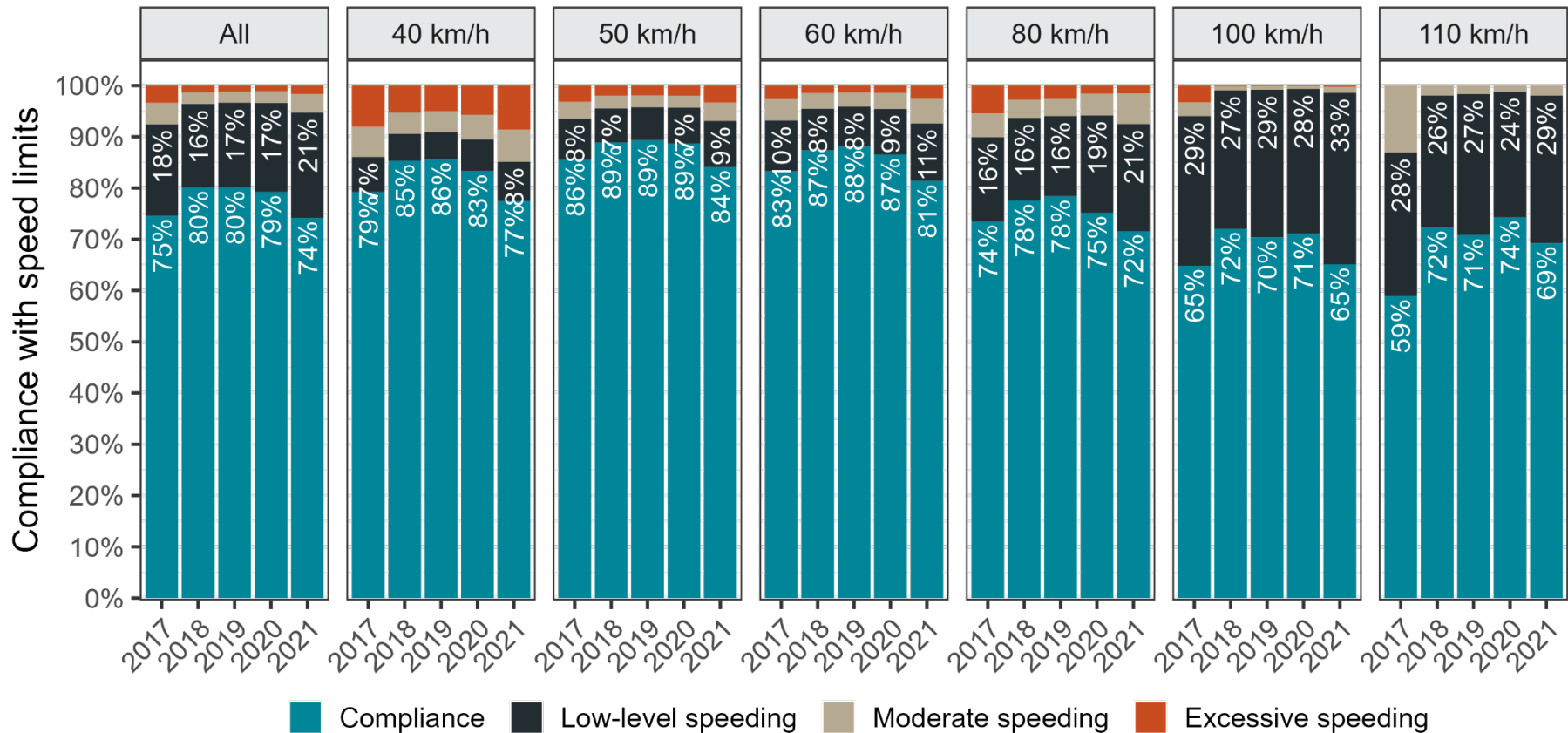
Before and after 2020

Average speed in Victoria increased in the two years affected by the COVID-19 pandemic



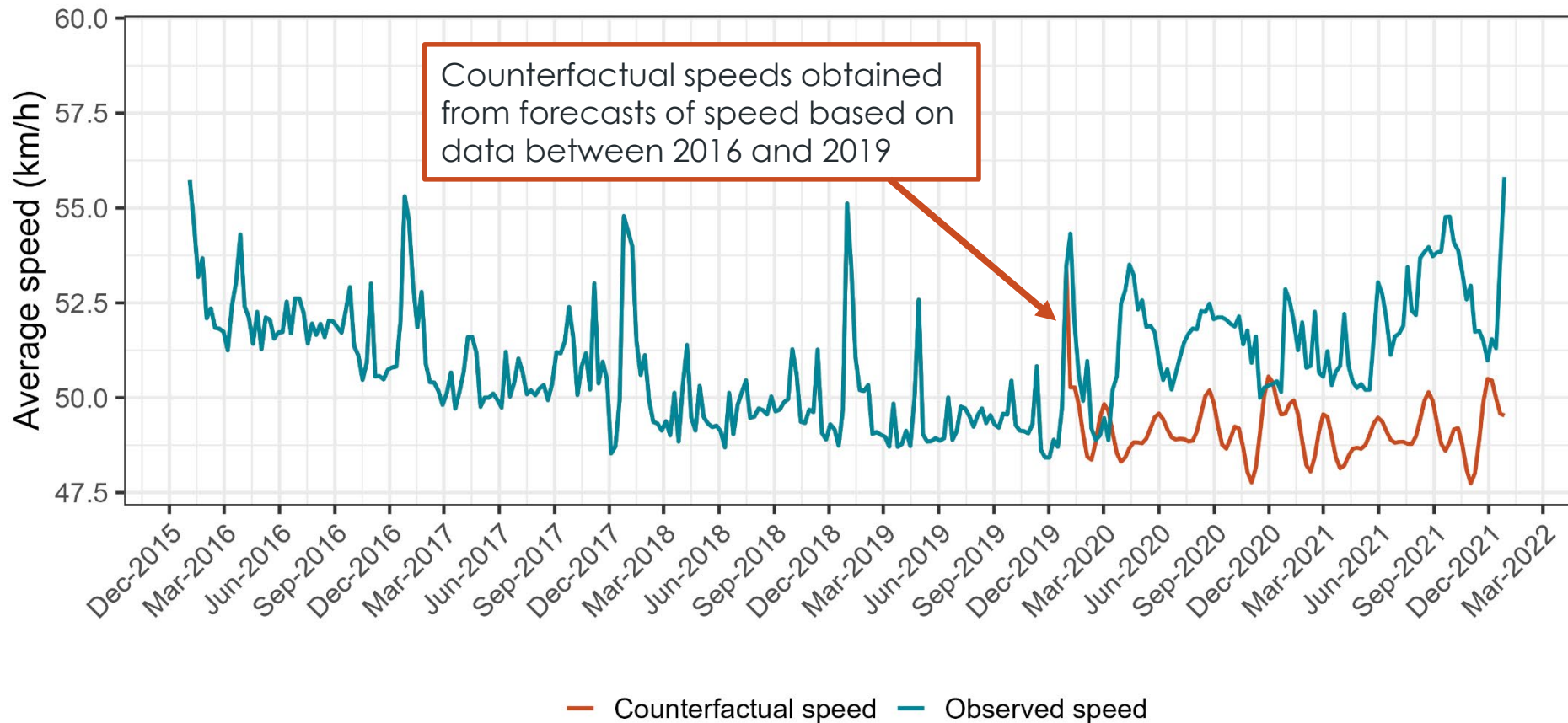
Source: HERE Technologies

Compliance with speed limits decreased significantly in 2021, with excessive speeding increased in the lower speed zones



Source: HERE Technologies

COVID-19 movement restrictions increased average speed in Greater Melbourne by 2.6 km/h



Source: HoustonKemp analysis of data from HERE Technologies

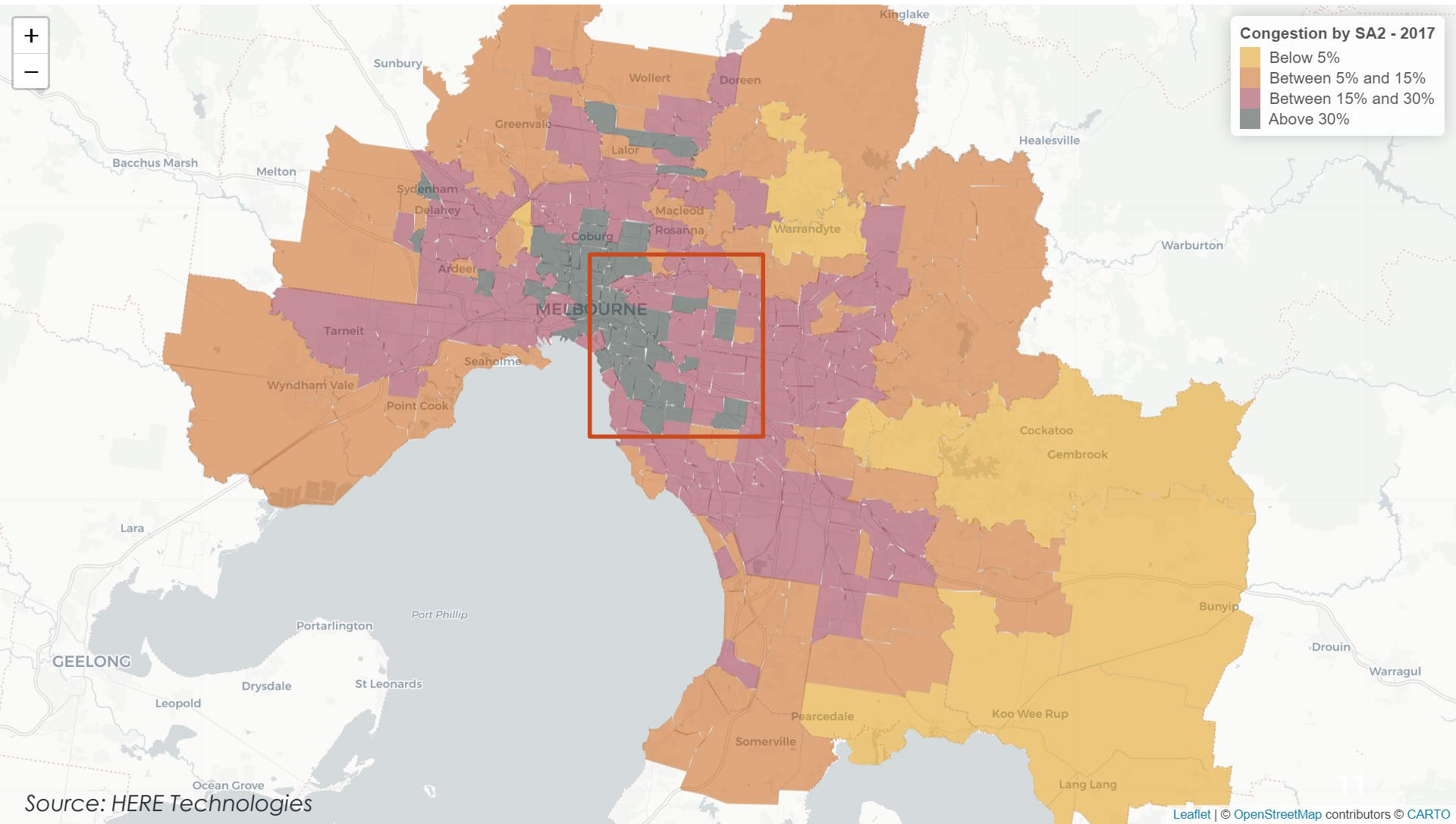
Detailed insights into the level of congestion

Melbourne's major areas and freight routes

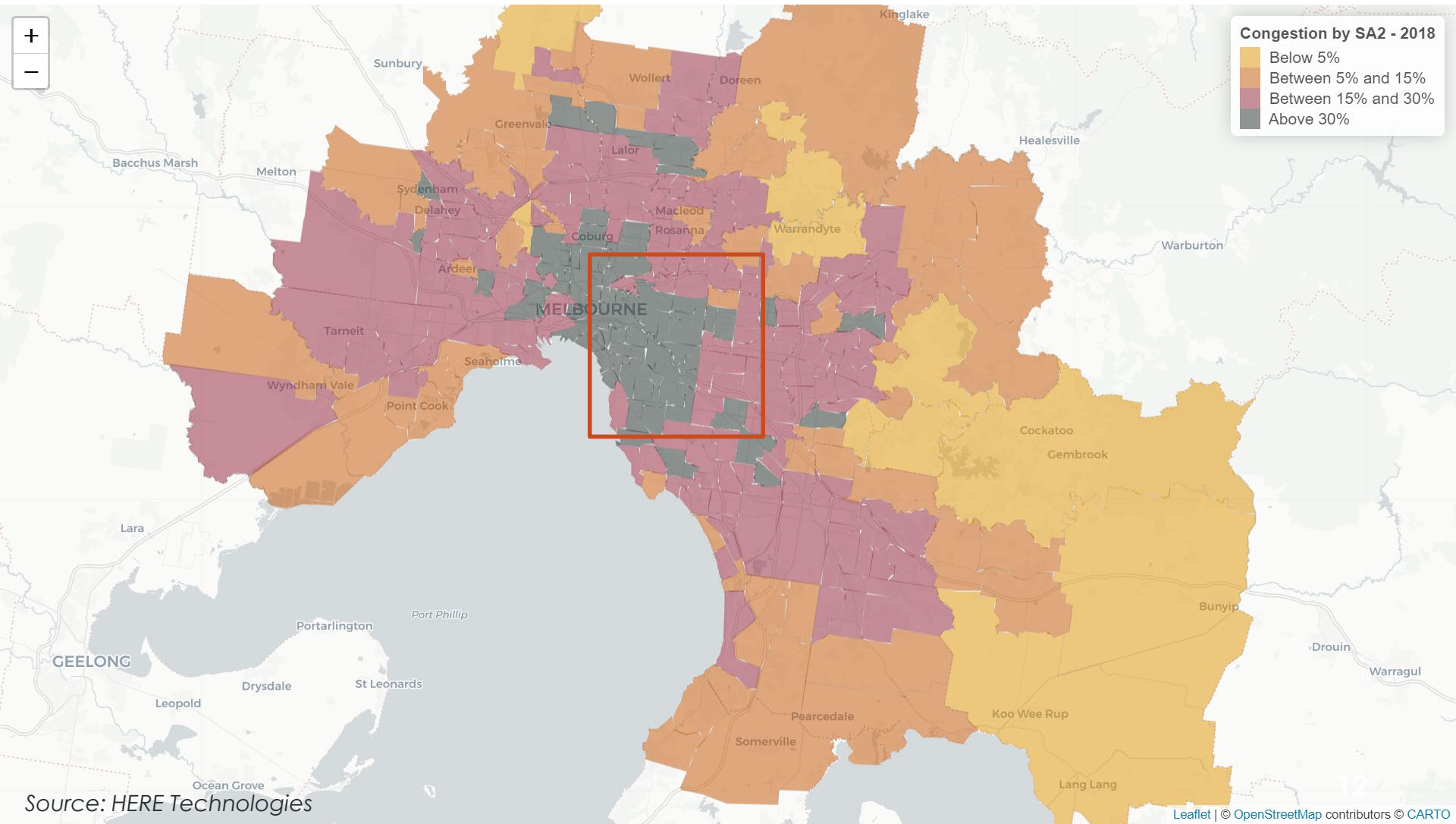
Congestion

- **Level of congestion for an individual link** is measured as the proportion of travelling distance over which the observed average speed is less than 60 per cent of the posted speed limit
- **Level of congestion for a SA2 (or a freight corridor)** is calculated from the level of congestion for all the links in the SA2 (or the freight corridor), weighted by the length of links
- Firstly, we examine the level of congestion of suburbs in the Greater Melbourne region, and observe the change in the level of congestion over time by reference to four levels of congestion:
 - above 30 per cent;
 - between 15 and 30 per cent;
 - between 5 and 15 per cent;
 - below 5 per cent

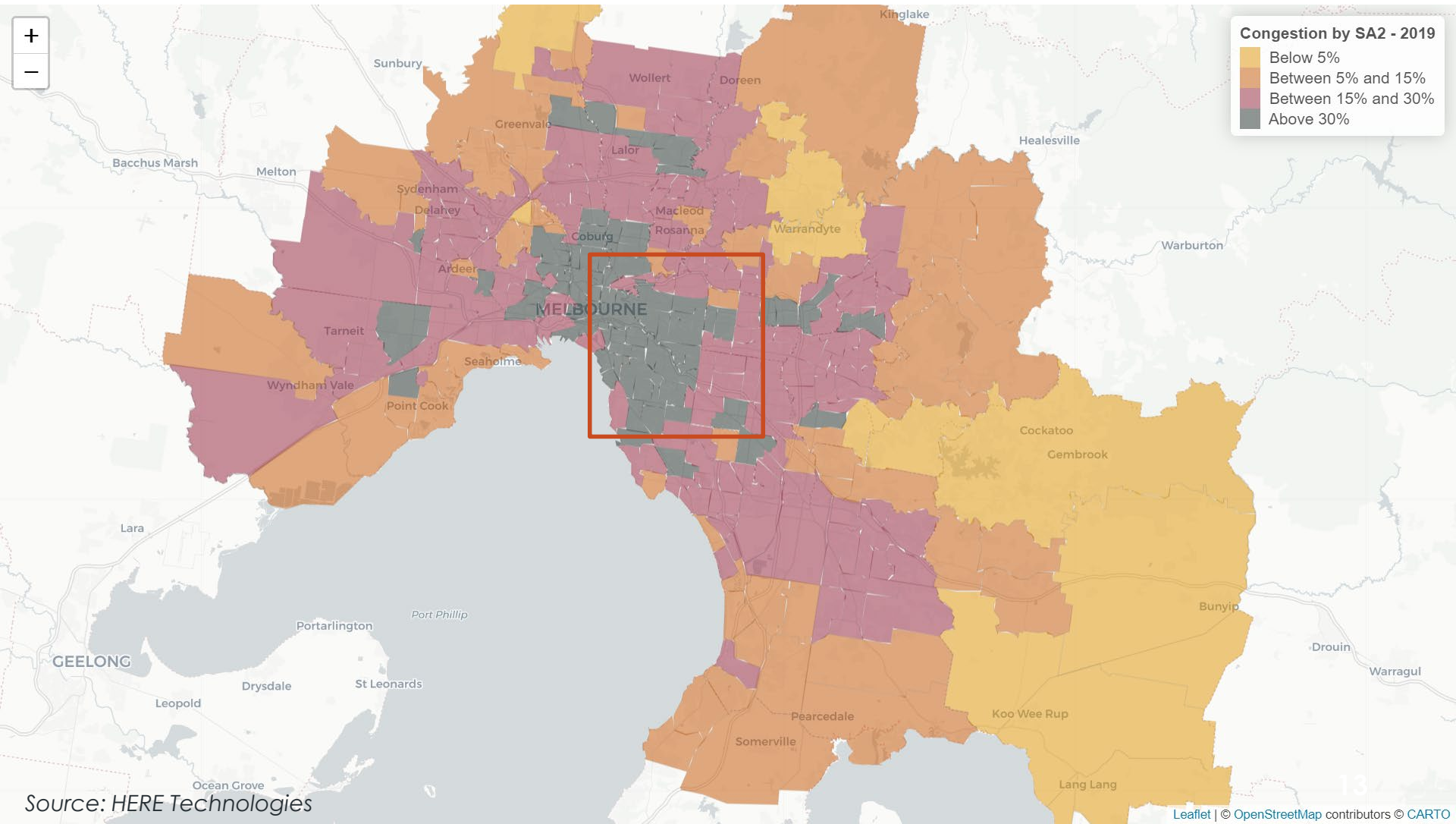
The level of congestion increased in the inner and south eastern Melbourne region between 2017 and 2019, before declining in 2020 and 2021



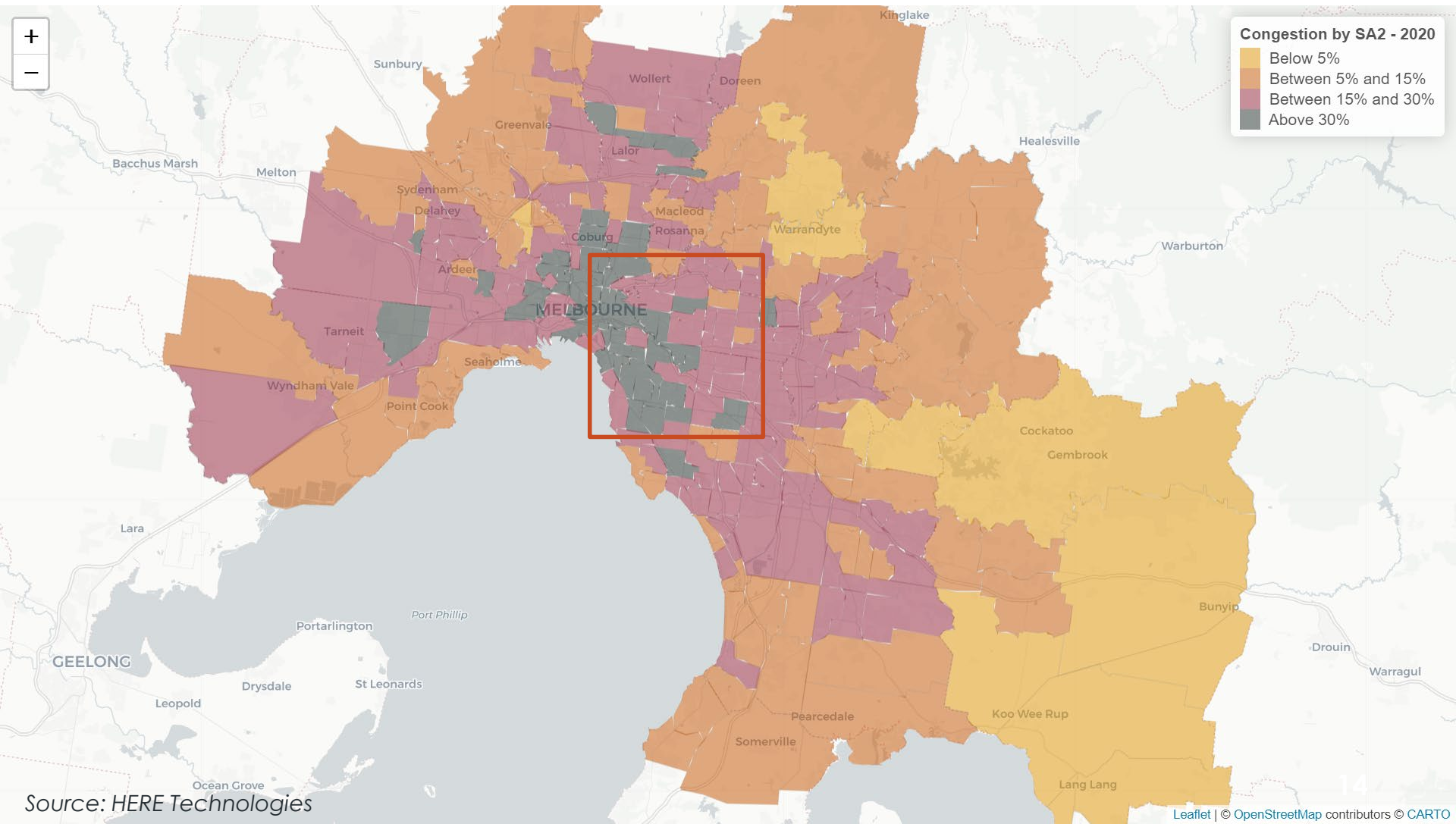
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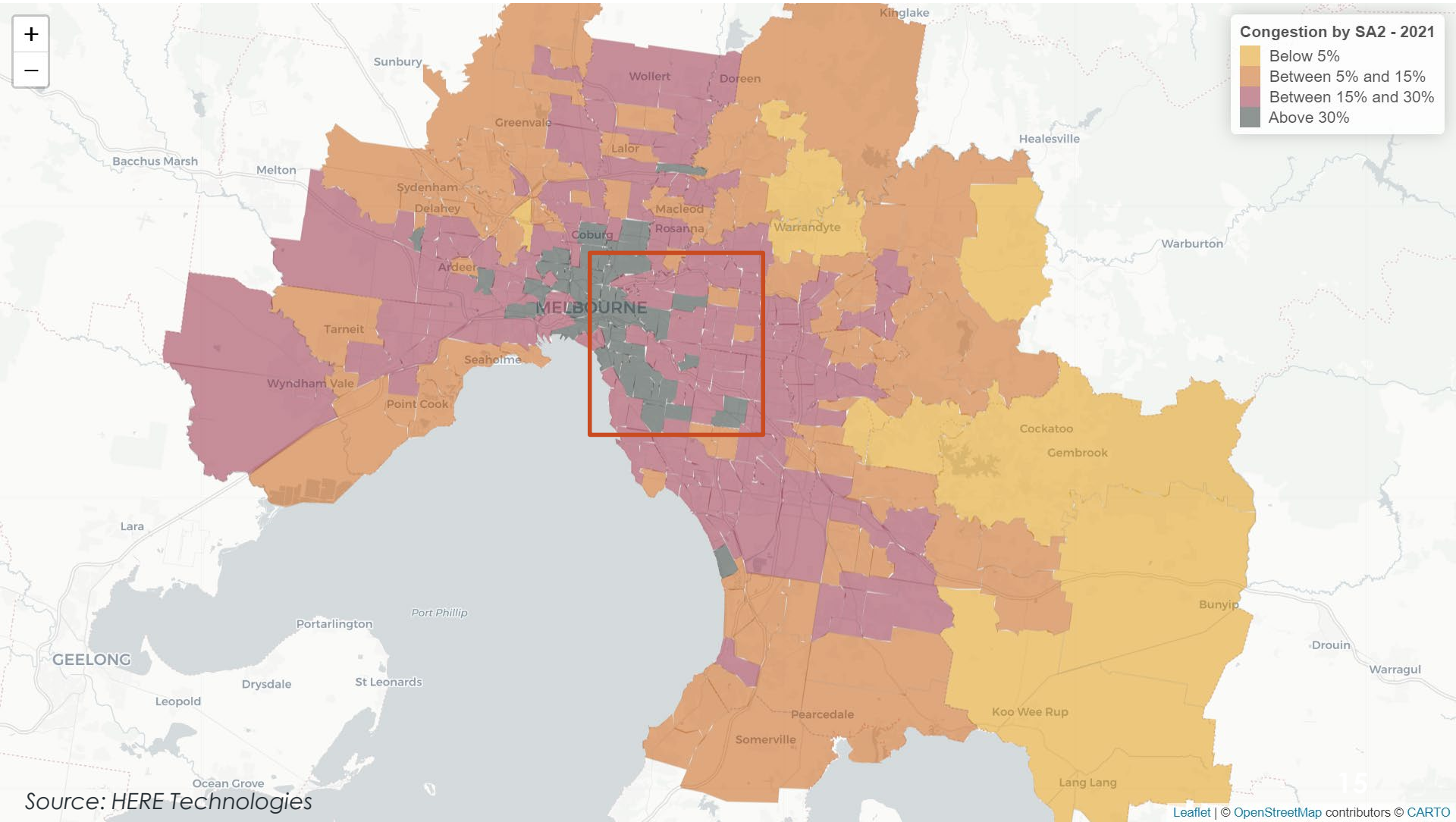
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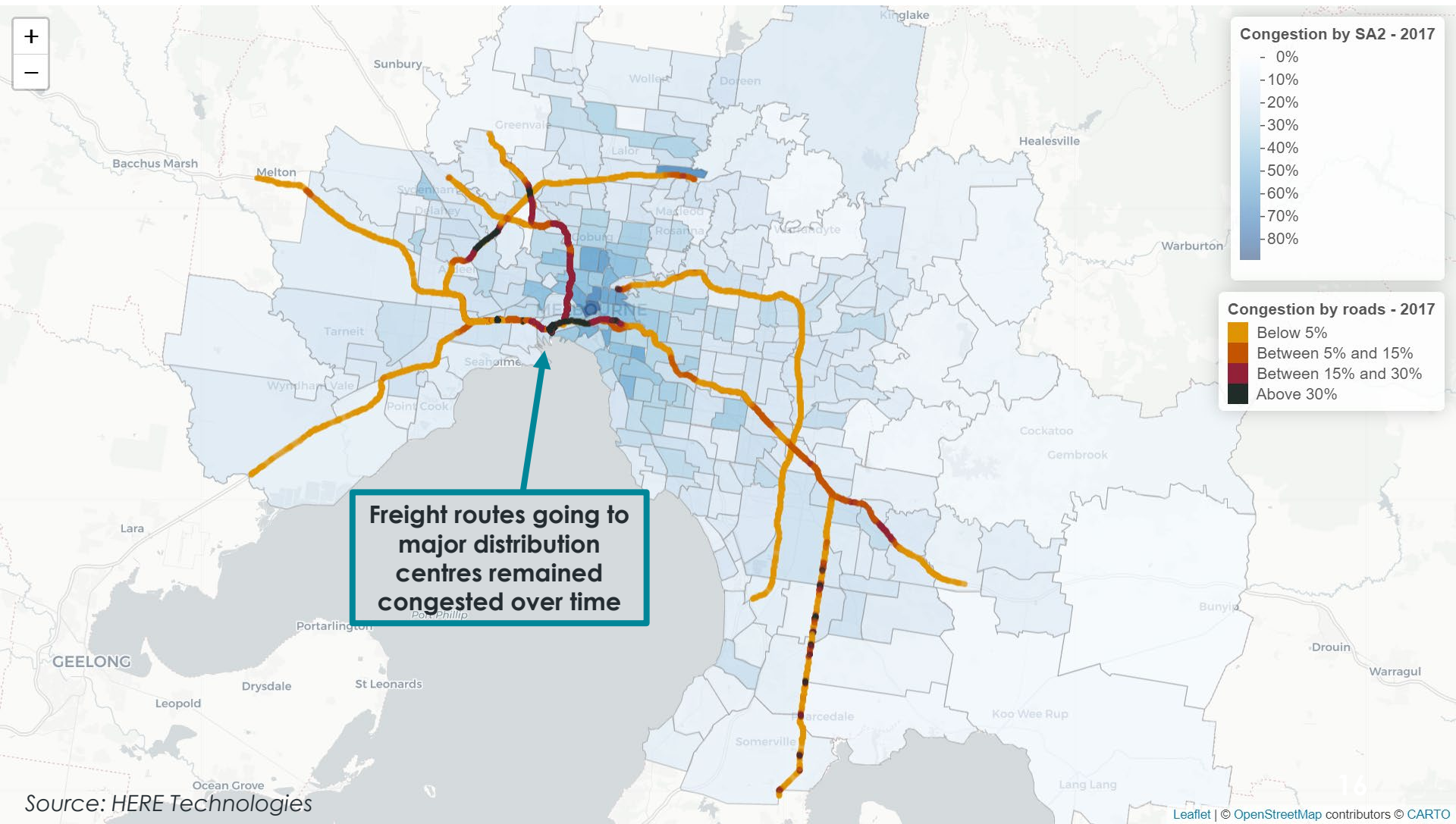


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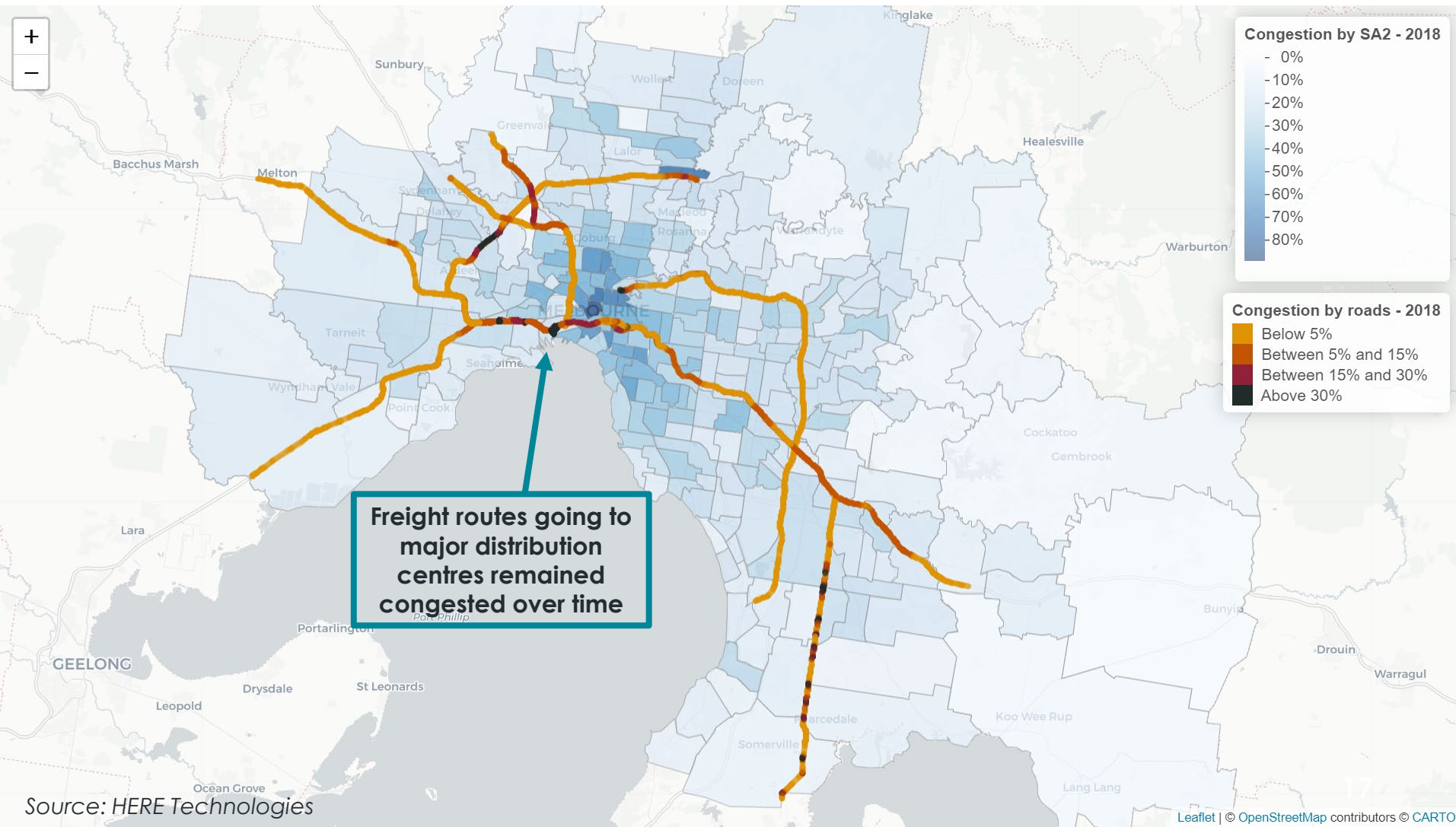


Source: HERE Technologies

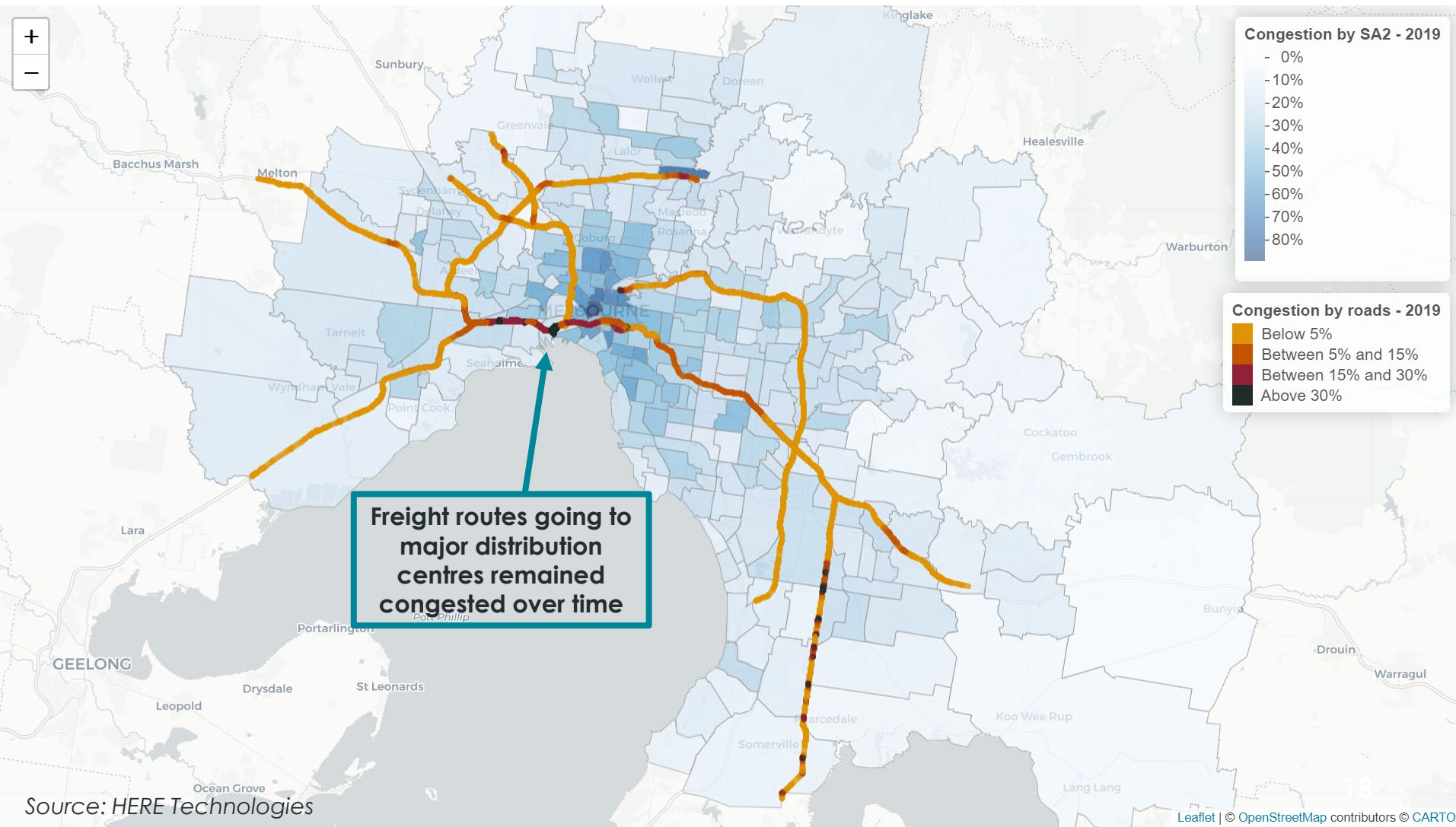
The freight routes connecting Port of Melbourne to the northern regions of Melbourne have become less congested over time



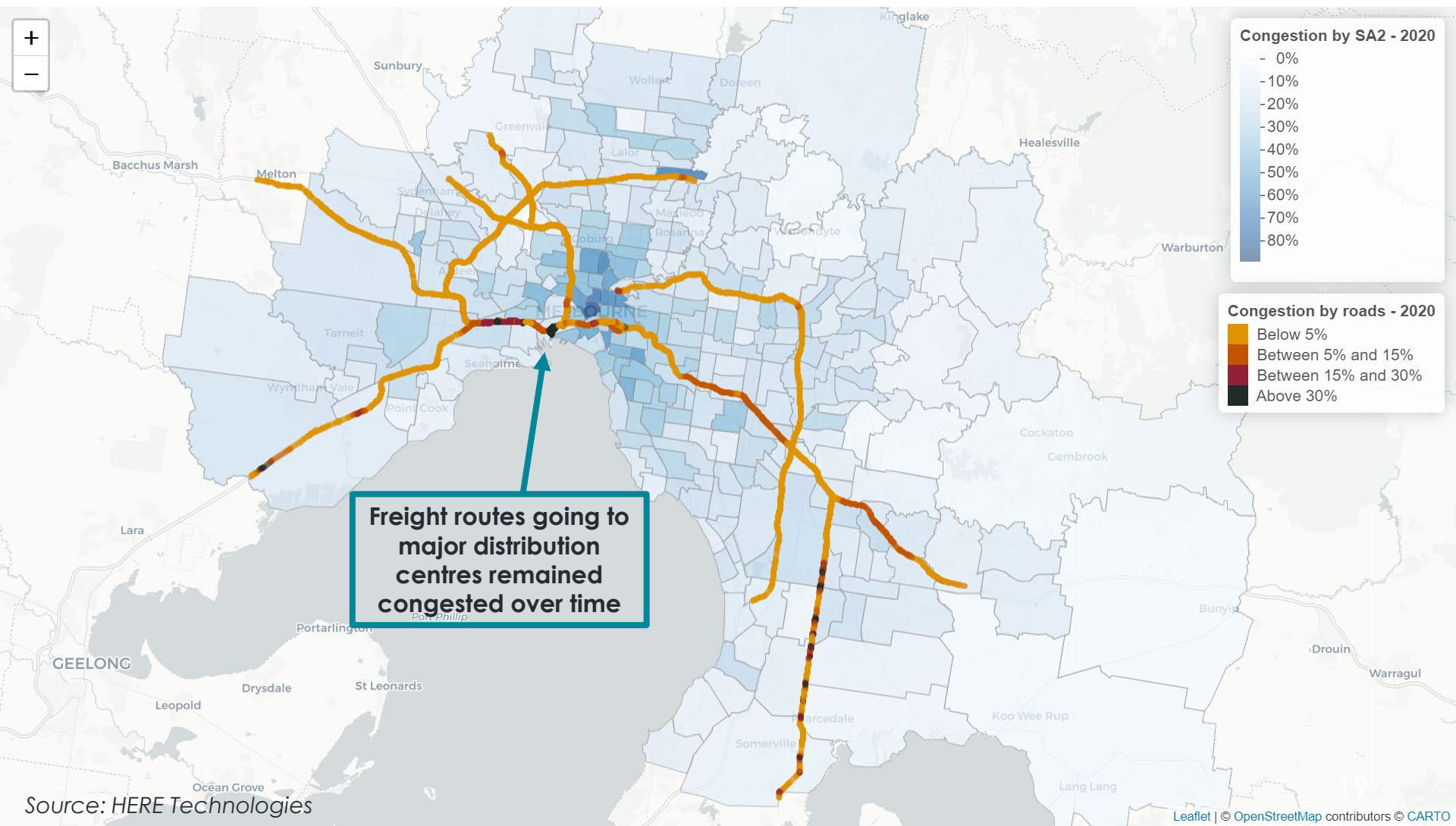
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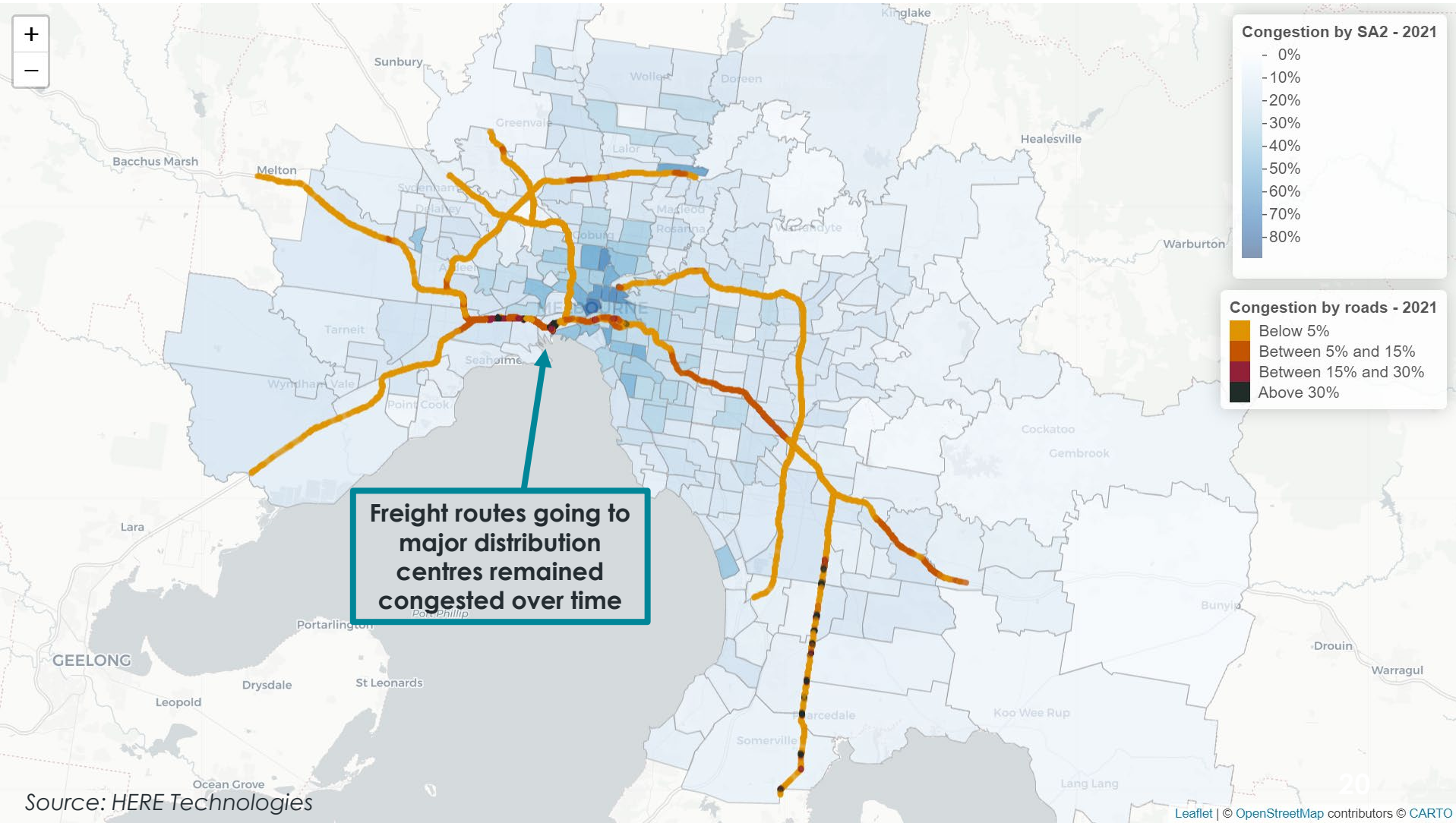
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Conclusions

- Understanding micro behaviour among traffic participants is becoming more and more important for infrastructure planning and policy evaluation
- To this end, the availability of speed probe data has offered valuable opportunities to gain insights into the state of traffic performance
- This presentation demonstrates the capabilities of utilising speed probe data to gain understanding of traffic trends in Victoria and Greater Melbourne at both high and detailed levels
- Our analyses show that Covid-19 induce movement restrictions caused changes in traffic trends in Victoria
- As working arrangements and commuting habits are resumed / retained / evolved, the availability of speed probe data will continue to play a crucial role in monitoring the change in traffic participants' behaviour over time, which will help inform policy planning and implementation



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