



# ACCESSIBILITY

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# WHY ACCESSIBILITY?

- “A measure of the spatial separation between human activities” (Morris et. al., 1979)
  - How difficult is it to get from Point A (where I am) to Point B (where I want to go)?
  - Hence, it is a function of both land-use and transport characteristics.
- The above isn't the only definition of accessibility – everyone has a different one.
  - In this project, we consider Geurs & Ritsema van Eck (2001)'s definition of how “land-use and the transport system enables individuals or goods to reach activities or destinations by means of (a combination of) transport mode(s)”.

# WHAT IS THE ACCESSIBILITY TOOL?

- Developed by Sun et. al. (2017), the tool uses:
  - geographical zone data;
  - land use data for each zone (such as number of residents or employees);
  - and travel time matrices (between each zone) for one or more modes and/or times
- to determine the number of residents or employees (or whatever data is loaded) accessible within a user specified timeframe from each geographical zone.

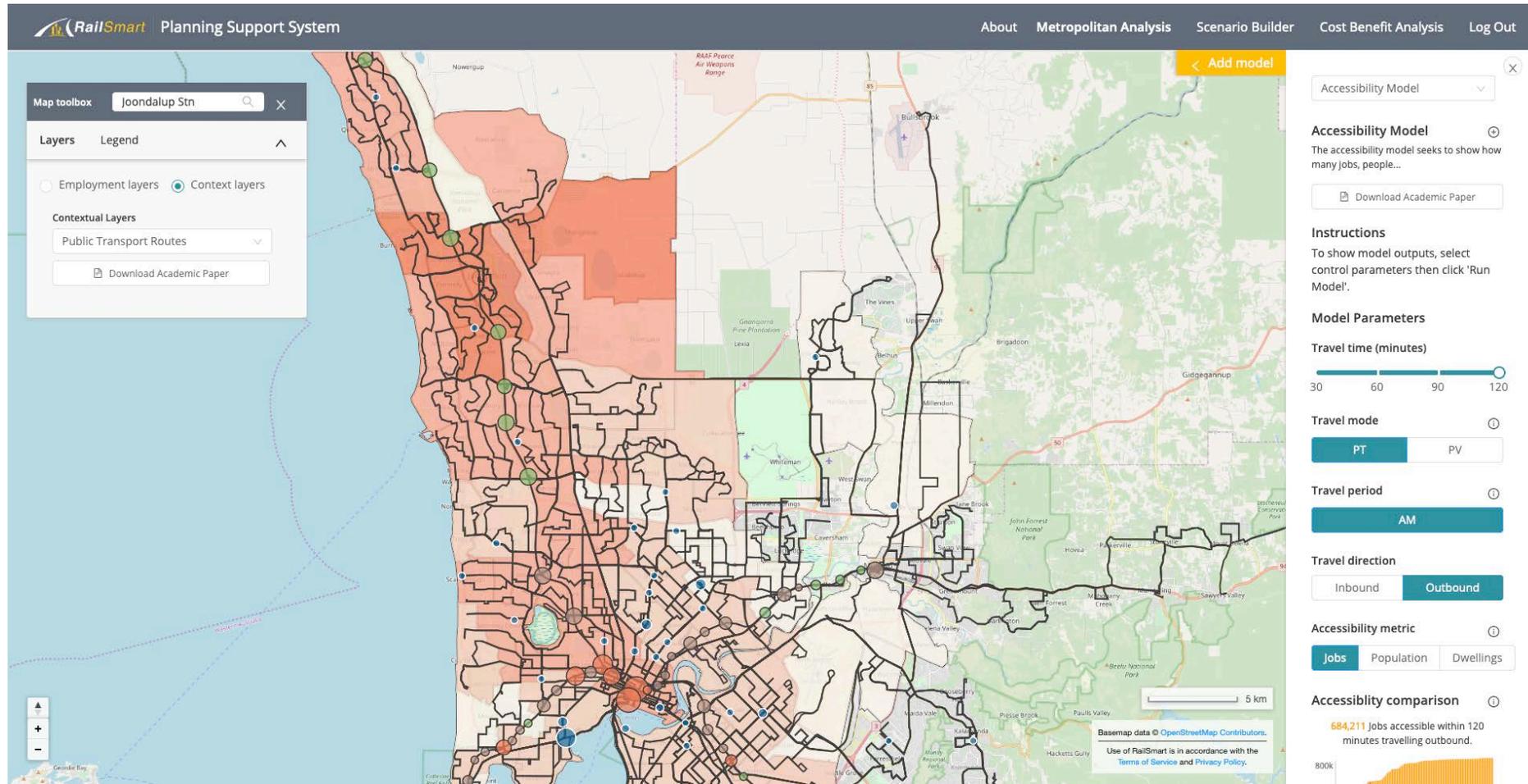
# RAILSMART EVOLUTION

- As part of RailSmart, the design of the tool was adjusted to better integrate with other 'station-centric' tools that formed the Planning Support System.
  - Accessibility is measured not from zone-to-zone but from station-to-zone;
  - As such, the choropleth map functions as somewhat of an analog to an isochrone, showing the travel time to each zone from the selected station;
  - While remaining in an API-based architecture, the system was adjusted to precompute and cache accessibility data due to the high computational load;

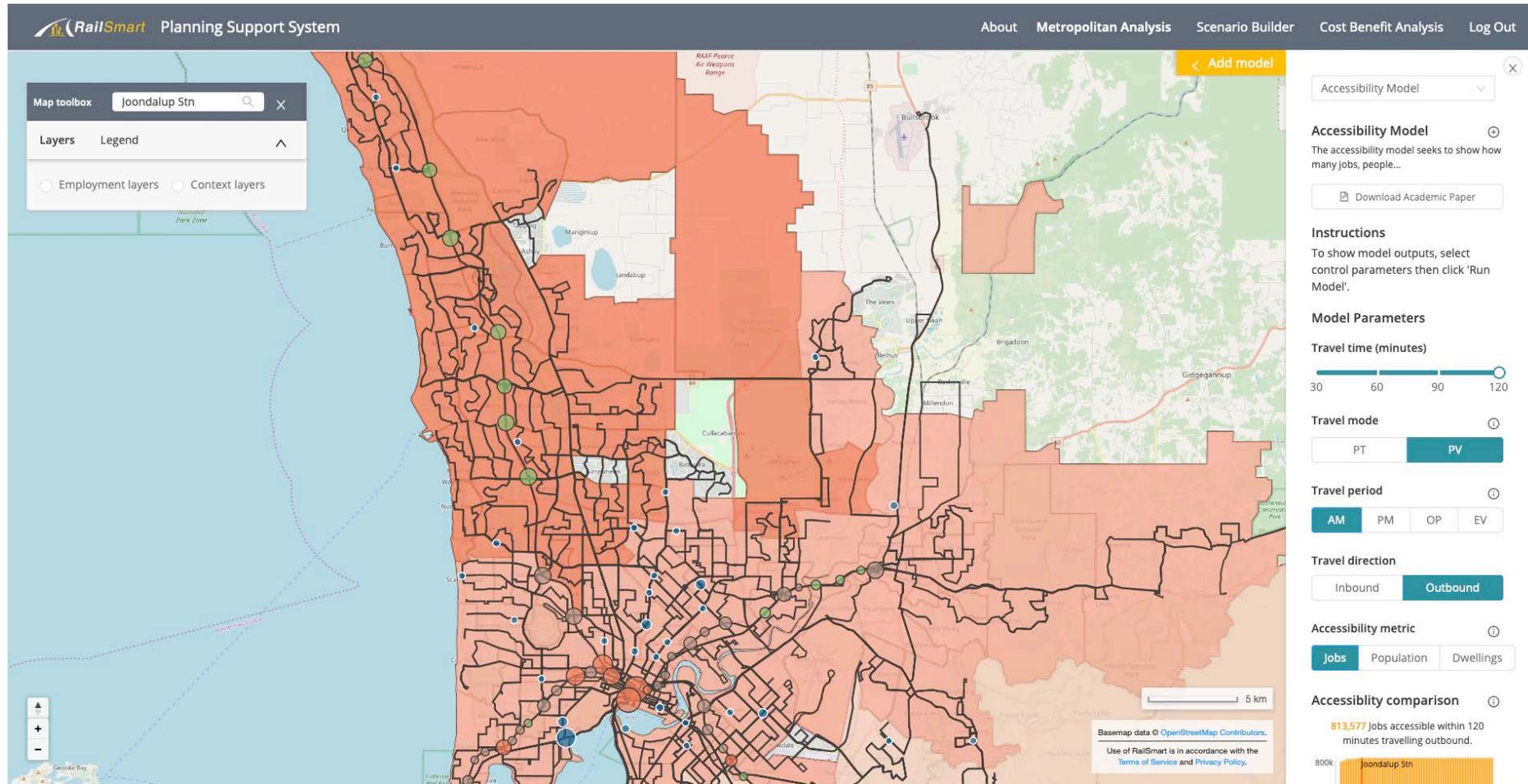
# RAILSMART EVOLUTION

- This information is displayed in an interactive dashboard format that integrates with other tools.
  - The sum is more than its parts; for example, details about station land use are presented through the Node-Place Analysis (Olaru et. al., 2019) that is simultaneously displayed with the results;
  - The Public Transport routes displayed in the dynamic GIS layer component (Reed & Robson, 2019) also provide context to understanding how the spatial aspect of PT service provision can influence accessibility through travel time.

# ACCESSIBILITY IN ACTION: PUBLIC TRANSPORT



# ACCESSIBILITY IN ACTION: PRIVATE TRANSPORT



# SO WHAT?

- The tool is great to determine PT ‘black spots’ throughout the City.
  - It would be expected that as distance increases, so does travel time – however, zones around the same distance can have vastly different travel times.
- Integration with other tools is where the power lies.
  - This ensures that the results can be understood in context, e.g. by providing an overlay of PT routes when interpreting PT travel time.

# WHAT'S NEXT?

- Other PT accessibility metrics:
  - Time and Distance to Park and Ride, High Frequency Buses etc.
- Land use accessibility metrics:
  - Time and Distance to activity centres, not just railway stations.
- Smaller geographic scale (such as SA1) to illustrate at a finer detail.
- More consideration of different times of the day:
  - Also considering a probabilistic model to determine based on 'wait' time at the start of the journey.

# QUESTIONS AND ANSWERS

- Thankyou for your attendance and for listening.
- Questions that you don't wish to ask right now:
  - Accessibility tool itself: Chao Sun, [chao.sun@uwa.edu.au](mailto:chao.sun@uwa.edu.au);
  - RailSmart changes and integration: Tristan Reed, [tristan.reed@curtin.edu.au](mailto:tristan.reed@curtin.edu.au).