Using open-source data and transit network tools to improve our understanding of accessibility - a case study of the Sydney '30-minute city'

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Accessibility measures the opportunities that can be reached in a specified travel time - a significant metric for assessing the effectiveness of both transportation and land-use systems.

Planners, researchers and policymakers are concerned with the delicate balance of the amount of time the population needs to travel (the transport task) and strategic location of these opportunities (the land-use task). Visualising and understanding access to opportunities (such as schools, recreation, health and jobs) through a variety of transport modes (such as walking, public transport and car) across a city can enable stakeholders to make better decisions for cities to 'grow up' (consolidate) or 'grow out' (sprawl).

This research will discuss the development of a multi-modal Sydney '30 minute' accessibility index, focusing on lessons learned, methodology, open data sources and its output - a web-based, interactive planning tool. The research builds on previous studies on accessibility indices in Australia and recent international advances in transit-schedule data and GIS methodologies. With increases in computational capabilities, this builds on the theoretical frameworks of previous accessibility models and applies them at a much finer scale.

This research aims to further overcome several limitations of previous measures that focus on an origin-based definition of accessibility. It aims to consolidate a field which remains theoretical and methodologically inconsistent. Often studies utilise diverse geographical areas and techniques making it difficult to compare results across locations.

Further, this research will be applicable to multiple cities and could aid in the evaluation of alternate transport and land-use scenarios.