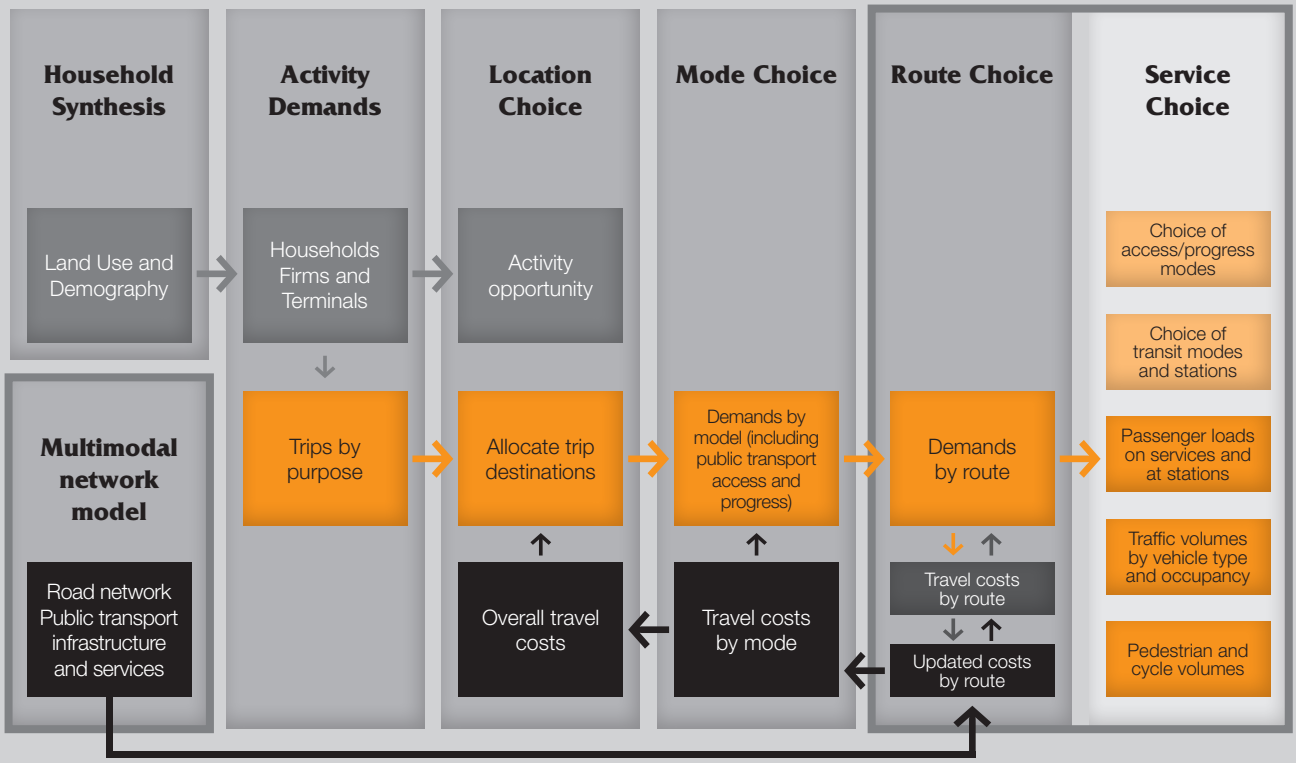
ZENITH TRAVEL MODEL

Technical Overview

Zenith is a travel modelling system developed by Veitch Lister Consulting, which has been used extensively for transport planning in Australian cities and regions. The model builds upon the four-step modelling process and is implemented in the OmniTRANS software package.



Extensive coverage

Zenith models are available for eight Australian cities and cover over 90 per cent of the Australian population.

Multi-modal

Developed to respond to the challenges of land use and transport planning in Australian cities, Zenith provides accurate forecasts of multimodal trips, including where car, walk or bicycle is used to access public transport. This is crucial in planning for growth areas, where high frequency services may only be provided along certain corridors. It also reflects competition between modes and stops in areas where several choices are available.

Sophisticated travel market segmentation

Zenith uses a highly detailed approach to travel market segmentation, which reflects how different household characteristics are likely to impact on trip productions. It also reflects how these are likely to vary depending on the purpose of each trip. The models incorporate eight home based trip purposes, six non-home based trip purposes, and segment other special generators including airport travel, special recreation travel, commercial vehicles and visitor trips. The models further refine home based trip purposes by household car ownership, based on observations that households with limited private motor vehicle access are likely to display identifiable destination and mode choice decision-making behaviours.

Multiple time periods

All Zenith models include at least three time periods. These time periods are estimated from household travel surveys to reflect travel during an average weekday, with assignment for morning, evening and off-peak periods. This ensures the models provide accurate information on the performance of the transport system under peak loads and with off-peak service levels. It can also be used to derive estimates of demand on a weekly or annual basis. This is critical for accurate forecasting of environmental outcomes, and long term traffic and revenue from toll roads and road pricing schemes.

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Advanced Features

Zenith models include a number of advanced features that give it an unrivalled capability in modelling existing and future travel demand.

Toll choice

Zenith models are each fitted with a sophisticated traffic assignment algorithm that uses travel market segmentation to determine the likelihood of different segments to use a tolled route. This algorithm allows the presence of tolls to influence the choice of route not only in terms of competition between tolled and untolled roads, but between tolled roads as well. This feature is becoming increasingly critical as the scale of the toll road network expands in Australia's east coast capital cities.

Public transport modelling

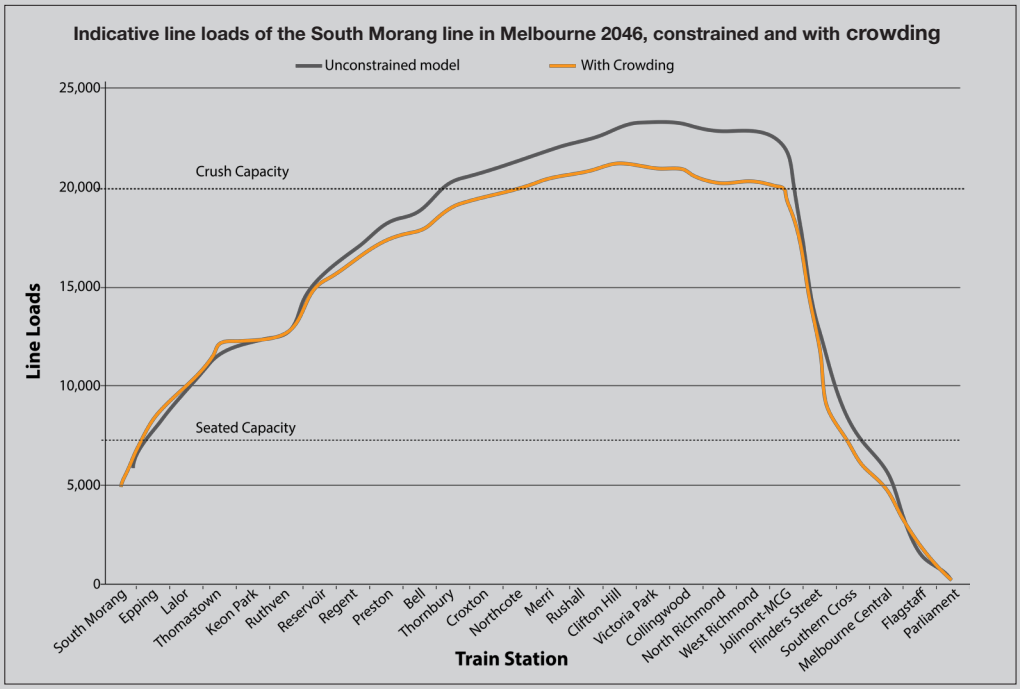
The public transport component of Zenith incorporates a number of processes, generating a powerful simulation of journey options. These processes:

- Provide multiple options for zone access to and from the public transport system;
- Accurately reflect the ranges of choices available to a person once they have entered the system, including whether to alight a service at a particular stop and, if so, whether to wait for another service or walk to a different stop; and
- Account for different decisions being made by people arriving at a given stop at different times of day.

The transport network is also comprised of the pedestrian networks used to interchange within large stations or between proximal stops.

The costs of overcrowding on public transport are becoming more problematic in Australian cities. Zenith models incorporate these costs, which in turn affects trip-makers' choice of destination, mode, route and stop. Value of time factors are adjusted based on levels of discomfort due to overcrowding, with different valuations assigned not only on the crowdedness of the vehicle, but whether a journey is likely to be made seated or standing. As a result, the model can be used to assess the likely demand and economic benefit of capacity increasing transit projects.

The crowding model also links outward and return journeys. This accounts for the fact that passengers at the end of a train line might be guaranteed a seat for the inbound AM journey, but may have to stand for their return journey.



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