

CHAPTER 69

Gauteng

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Gauteng is a landlocked province in South Africa, with three main metropolitan areas: the city of Johannesburg, city of Tshwane (formerly Pretoria) and Eurhuleni. Although the province covers less than 3 % of the country's surface, it is the country's economic hub and contributes a third of the country's GDP (Gross Domestic Product). The 2011 census reported a population of 12.2 million inhabitants, a quarter of the South African population.

The first Gauteng scenario was developed in 2008/9 and appeared in Fourie (2009) and Fourie and Joubert (2009). The population was synthesized from 2001 census data and travel demand was inferred from the 2003 NHTS (National Household Travel Survey). Initially, the network was created from a proprietary source made available for research purposes this has been replaced with a much richer OSM network.

Early comparisons already showed that the Gauteng MATSim scenario provided far more detailed results than the four-step models available at the time (Fourie, 2010). The scenario was also extended to include freight vehicles (Joubert et al., 2010).

With the introduction of an open-road tolling scheme referred to as the GFIP (Gauteng Free-way Improvement Project), the scenario was used to study the diversion patterns of different road user groups. The population was extended to included background traffic, in the form of public transport (buses and minibus taxis) and external through-traffic. This data was taken from Saturn O-D-matrices made available by the sponsor, the SANRAL (South African National Roads Agency Limited). The impact of the tolling scheme, using vehicle-specific values of time, and a complex toll pricing regime was reported in Nagel et al. (2014).

The most recent update to the synthetic population generation for the Gauteng scenario is documented on MATSim's <https://matsim.atlassian.net/wiki/display/MATPUB/South+Africa> Confluence site.

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