

## Passenger transport - increase in vehicle occupancy

The average number of people transported by a vehicle for each journey (origin to destination) is known as the vehicle occupancy rate. The vehicle occupancy rate lever increases the annual average percentage of occupied seats in vehicles. Increasing the vehicle occupancy rate reduces energy consumption for transport.

### Level 1

Level 1 assumes that vehicle occupancy rates remain constant from 2006 to 2050.

### Level 2

Level 2 assumes that by 2050 the percentage of seats occupied in all vehicles increases by 5%, except for the occupancy rate on the Gautrain, which increases by 10%. High speed trains world wide are thought to have high occupancy [1]. Bicycle and motorcycle occupancy rates remain unchanged.

### Level 3

Level 3 assumes that from 2006 to 2050 the average vehicle occupancy increases by 10% for public road vehicles, namely buses, the BRT and minibus taxis, and for the Metrorail. The percentage of occupied seats in cars and SUVs increases to 150% of the occupancy rate in 2006 by 2050. The percentage of occupied seats on the Gautrain trebles that of Level 1. This reflects findings in international literature, that high-speed rail has higher occupancy rates [1] than conventional rail systems.

### Level 4

Level 4 assumes that by 2050 an average of 60% of the available seats in cars and SUVs are occupied. This is assumed to be the upper limit of vehicle occupancy as it is not possible for all cars and SUVs to be fully occupied for each journey travelled.

Occupancy of minibus taxis reaches an upper limit of 95%, and buses and BRT run at an average occupancy of 78% of all available seats.

### Interactions with other choices

The extent to which people use private or public transport affects the impact of increasing vehicle occupancy rates on energy consumption for transport.



Restricted use traffic lanes encourage high vehicle occupancy

Source: <http://citytransport.info/Roads.htm>

Vehicle capacity and occupancy for Levels 1 to 4

Mode	Full capacity	2006	By 2050			
			Level 1	Level 2	Level 3	Level 4
car	4	1.4	1.4	1.6	2	2.4
SUV	4	1.4	1.4	1.6	2	2.4
motor cycle	1	1	1	1	1	1
Bus / BRT	40	25.2	25.2	27.2	29.2	31.2
Minibus taxi	18	14	14.4	15.3	16.2	17.1
Metro rail	100	10	10	15	20	25
Gautrain	321	32.1	32.1	64.2	96.3	128.4
bicycle	1	1	1	1	1	1

[1]. According to European Environment Agency (2010) (<http://www.eea.europa.eu/data-and-maps/indicators/occupancy-rates-of-passenger-vehicles/occupancy-rates-of-passenger-vehicles-1>), vehicle occupancy rate is the average number of passengers in a vehicle (cars, buses, trains, aircraft).