THE GREEN HOUSE

WYNBERG SCHOOLS TRANSPORT

Initial analysis of transport patterns and baseline GHG emission calculations

SURVEY RESPONSE RATE

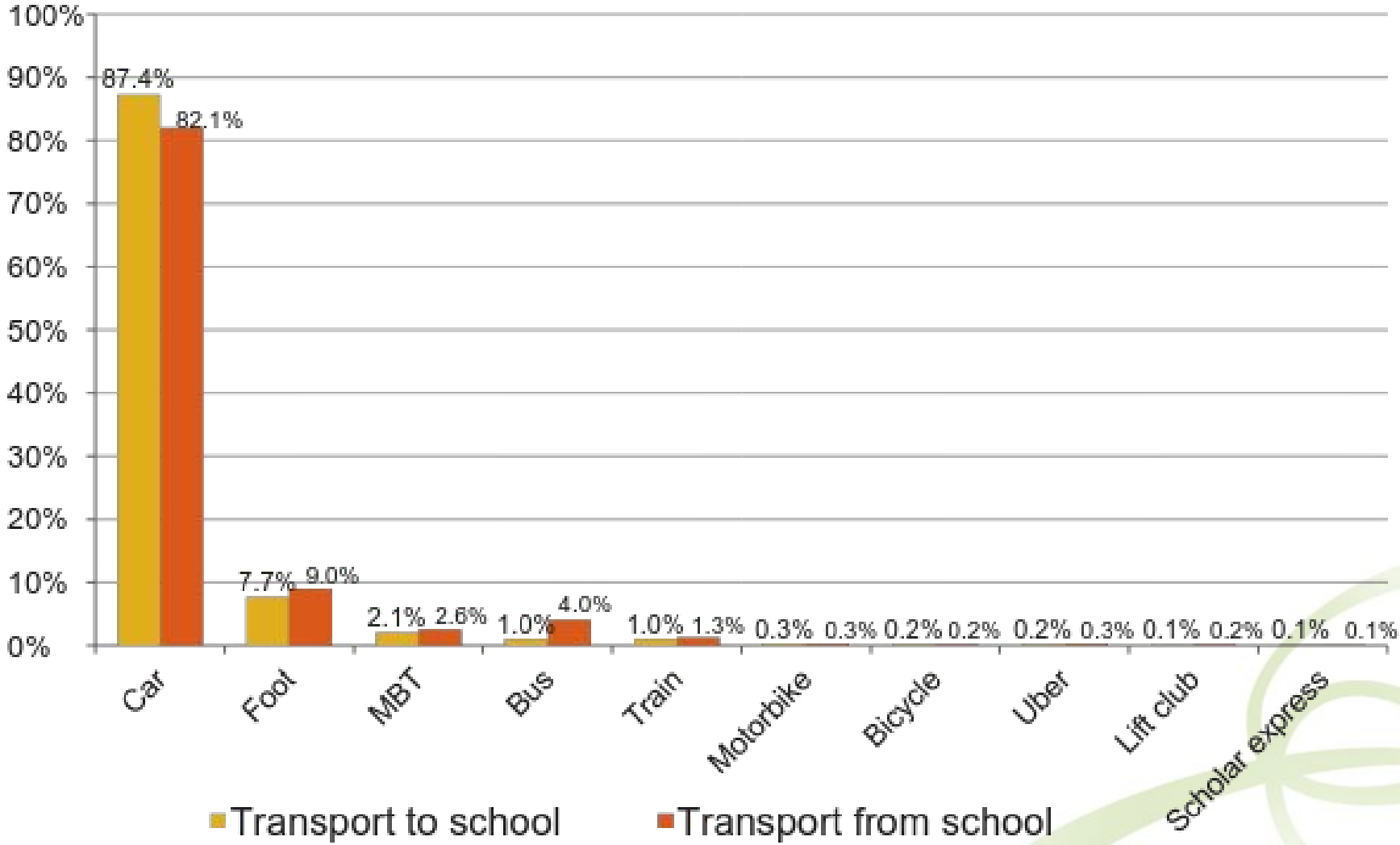
- Higher response rate from Girls' school
- Filtered to remove non-sensical responses and updated the data to fill gaps where possible
- However a fair number were incomplete even after updating
  - Most common issue was lack of distance and GPS data
  - Particularily in Boys' school data

	Number of learners	Number of surveys submitted	No distance data	No transport mode	Number of complete surveys
Wynberg Boys	852	511 (60% response rate)	131	6	378 (73% completion rate)
Wynberg Girls	934	768 (82% response rate)	47	4	721 (94% completion rate)

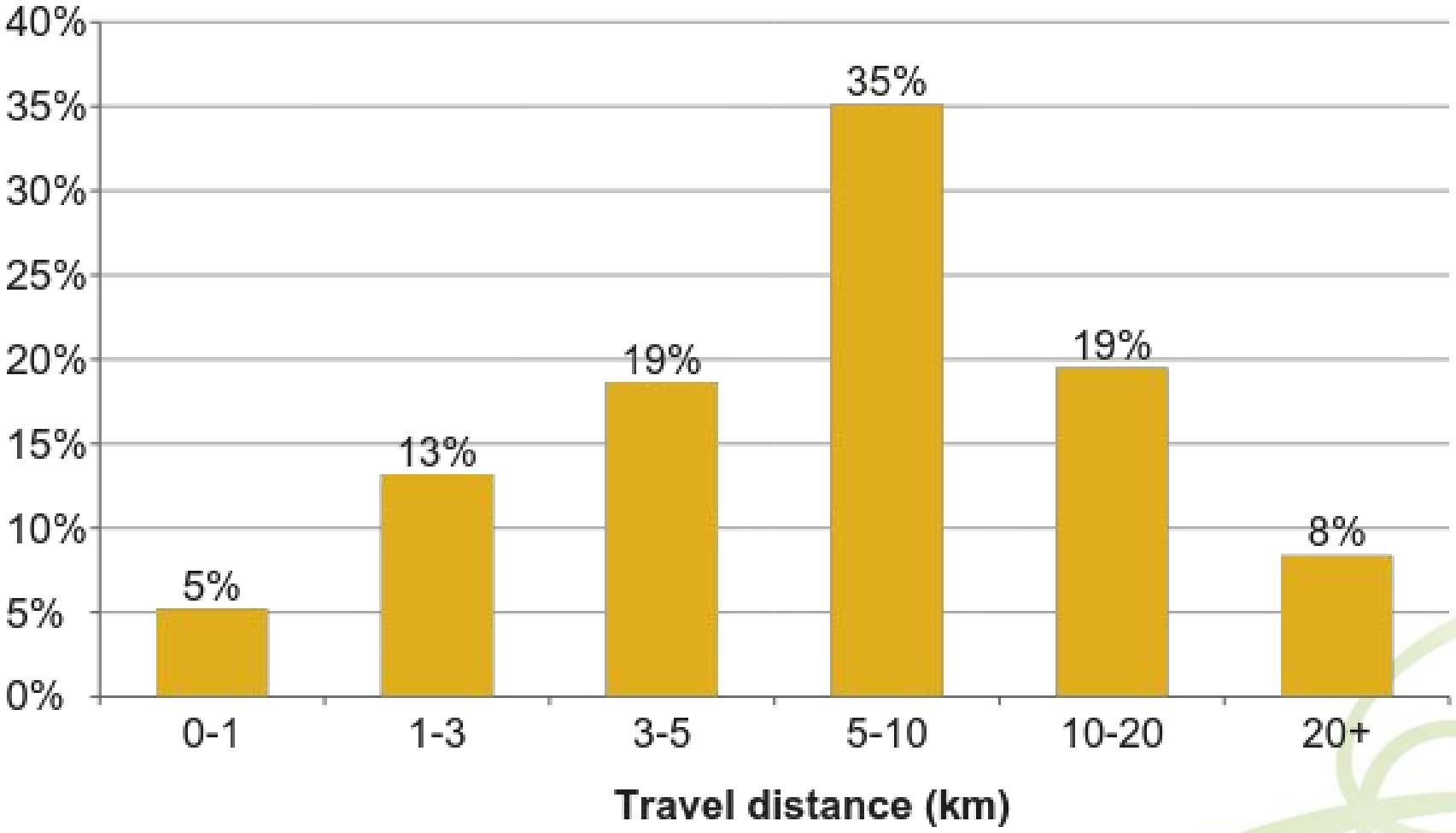
FILTERING AND UPDATING

- Non-sensical responses
- Distance
  - Obvious mistakes corrected – metres entered instead of km.
  - Missing distances were added from GPS data where available
  - Distances over 50 km were checked against GPS data and discarded where unreasonable (Over 75 km)
  - Distance over 3 km for foot travel were checked against GPS data and discarded where unreasonable (Over 10 km)
  - Car trips under 300m were checked against GPS data
- Transport mode
  - Where either to or from transport mode was missing this was added if it could reasonably be assumed from other questions (e.g. if you walked 800m to school it is likely that you would walk home)

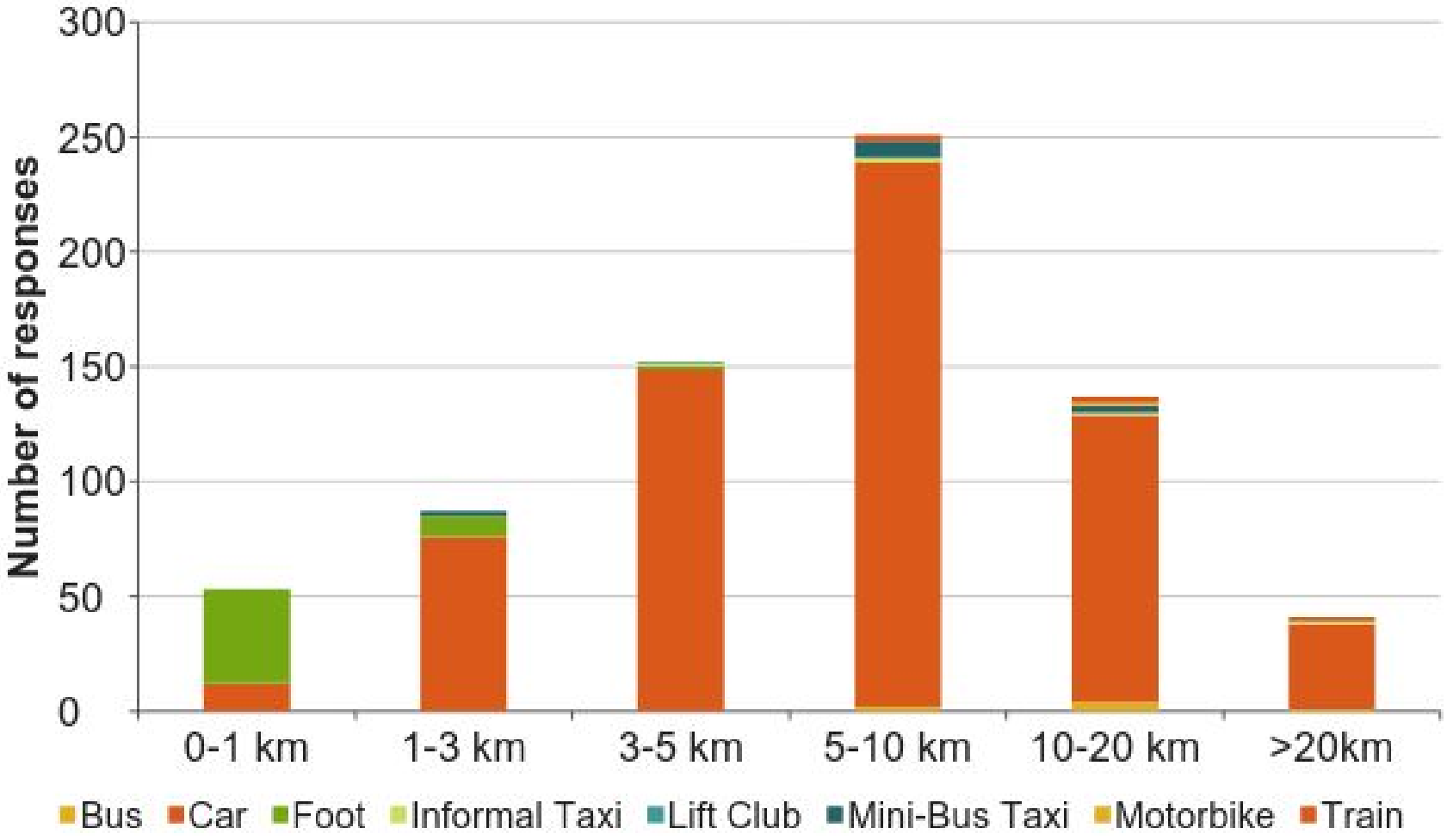
MODE OF TRANSPORT



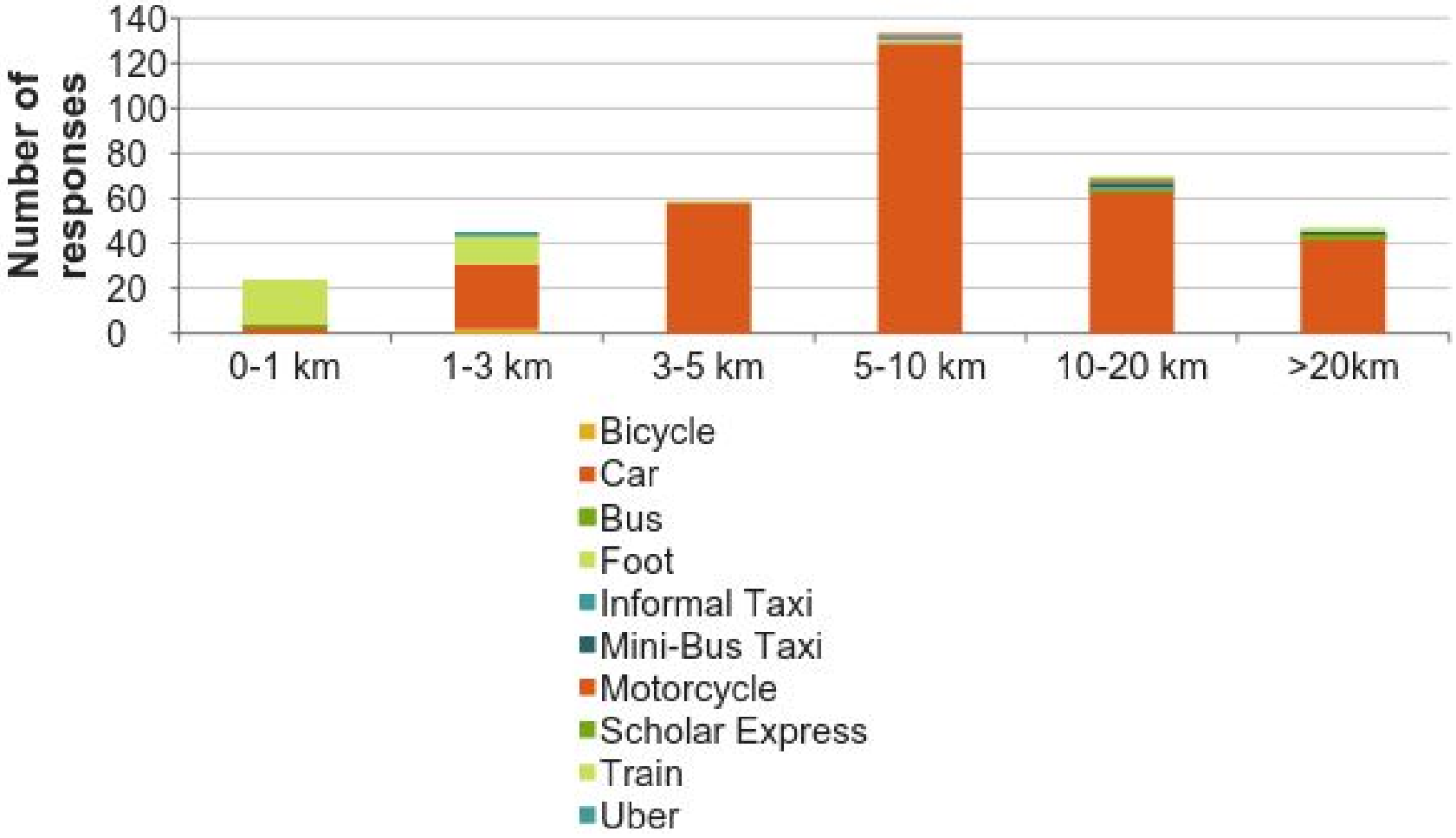
TRAVEL DISTANCE



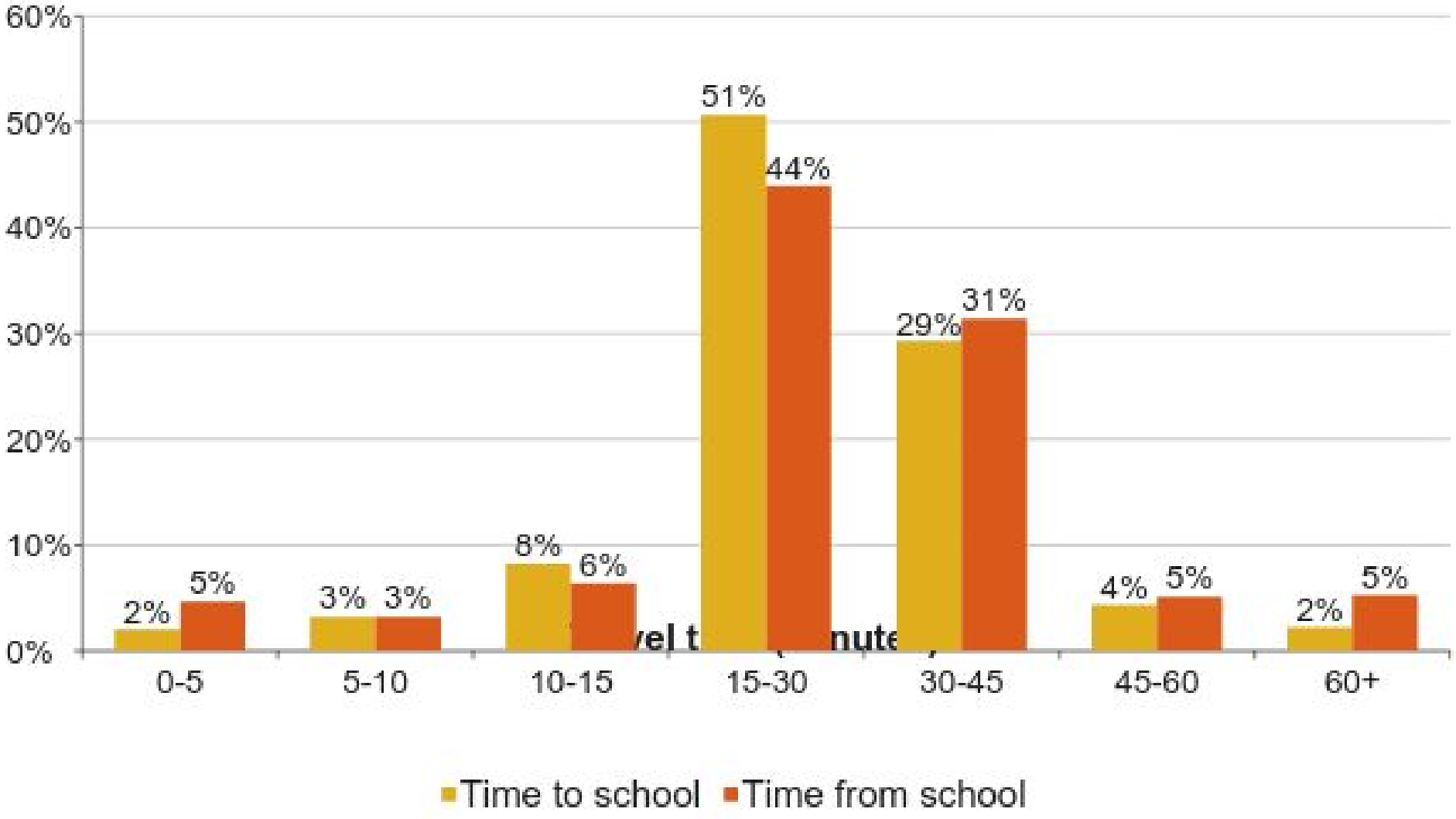
MODE BY TRAVEL DISTANCE (WG)



MODE BY TRAVEL DISTANCE (WB)



TRAVEL TIME


60%
50%
40%
30%
20%
10%
0%
2%
5%
3%
3%
8%
6%
51%
44%
29%
31%
4%
5%
2%
5%
0-5
5-10
10-15
15-30
30-45
45-60
60+
Time to school
Time from school

EMISSION CALCULATIONS

- Utilised the complete surveys to estimate the total emissions from the schools
- Assumptions required:
  - How much of the trip can be allocated to transport to/from school?
  - Accounting for occupancy (sharing emissions between passengers) – currently the whole trip allocated to learner
  - Values scaled up for whole Wynberg Boys' and Girls' High Schools)
- Emission factors and occupancies used presented on next slide

EMISSION FACTORS

Transport mode	Occupancy	Emission factor kg CO_2/passenger km
Car / Uber	variable	0.193 (per km)
Motorbike	1	0.121
Mini-bus taxi and informal taxi	14	0.023
Bus	25	0.036
Train	Reflecting CT train occupancies	0.018
Scholar express	25	0.036
Lift club	6	0.032
Foot	n/a	0
Bicycle	n/a	0

DISTANCE ASSUMPTIONS

- Car distance to school
  - Trips where “Return Home” the distance was doubled
  - Trips where go “Somewhere Else” or similar the distance was used as is
  - In other cases a scaling factor of 1.5 was used
- Car distance from school
  - Trips where the to school trip returned home were assumed to originate at home again
  - Other trips were assumed to be part of another commute and therefore no emisisons occurred getting to the school
  - The trip home was assumed to be entirely for the purpose of fetching the student in the case of “Return Home”
  - Other trips half the distance home was assumed to account for the school portion of the trip

SUMMARY OF EMISSIONS

	Number of survey responses from school	Number of students	Total emissions for trips to school (tonnes CO_2e/day)	Total emissions for trips from school (tonnes CO_2e/day)	Total emissions (tonnes CO_2e/year)
Wynberg Boy's	375	852	1.8	1.5	651.2
Wynberg Girl's	719	934	1.7	1.4	626.7
TOTAL	**1,094**	**1,786**	**3.6**	**2.9**	**1,277.9**

	Total emissions calculated from cars (kg CO_2e/day)	Percentage of total emissions
Wynberg Boy's	1.45	99.4%
Wynberg Girl's	2.43	99.0%
Combined	3.88	99.1%

WHAT COULD IMPROVE EMISSION CALCULATIONS

- Knowing number of people in car on the trip to school who are dropped off (e.g. siblings)
- Knowing whether car trip is dedicated would happen anyway
  - Is the car trip just to drop/fetch children and then back home
  - Is the “somewhere else” on same route as school
  - Is the car coming from work/other or home to fetch from school
- Knowing breakdown of vehicle types at the school
  - Recommend survey of car types

EFFECT OF PEOPLE WITHIN 3 KM WALKING TO/FROM SCHOOL

	Students within 3 km	Students within 3 km using cars	Emissions from students using cars from less than 3 km (tonnes CO_2e/year)	Percentage of total emissions
Wynberg Boy's	17%	7%	12.6	1.9%
Wynberg Girl's	19%	12%	20.3	3.2%
Combined	18%	10%	32.9	2.6%