

# Adding escort travel as a separate trip purpose – example for the West Midlands region in the UK

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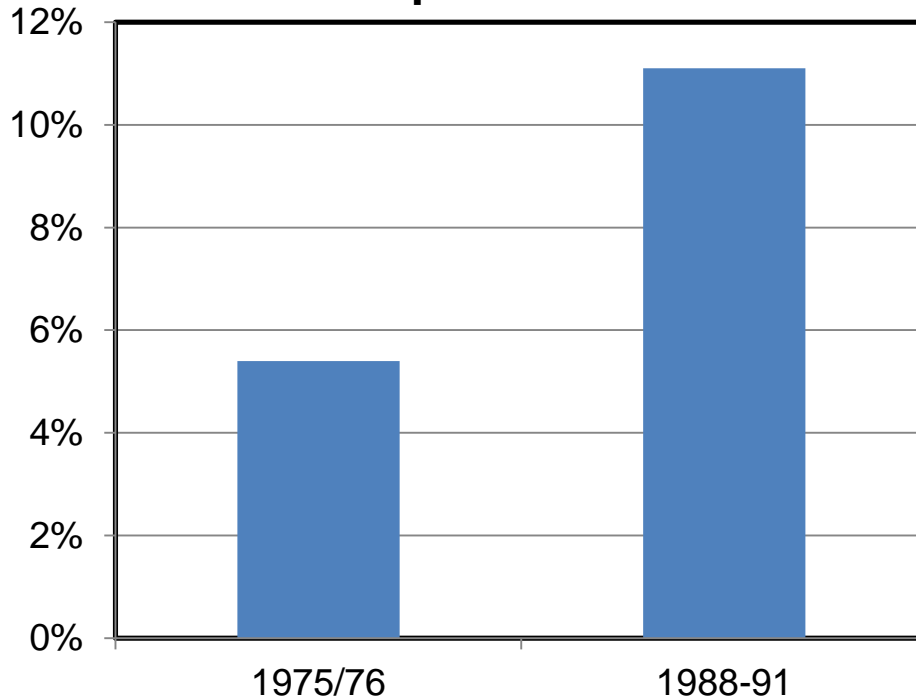


# Modelling escort trips – why bother?

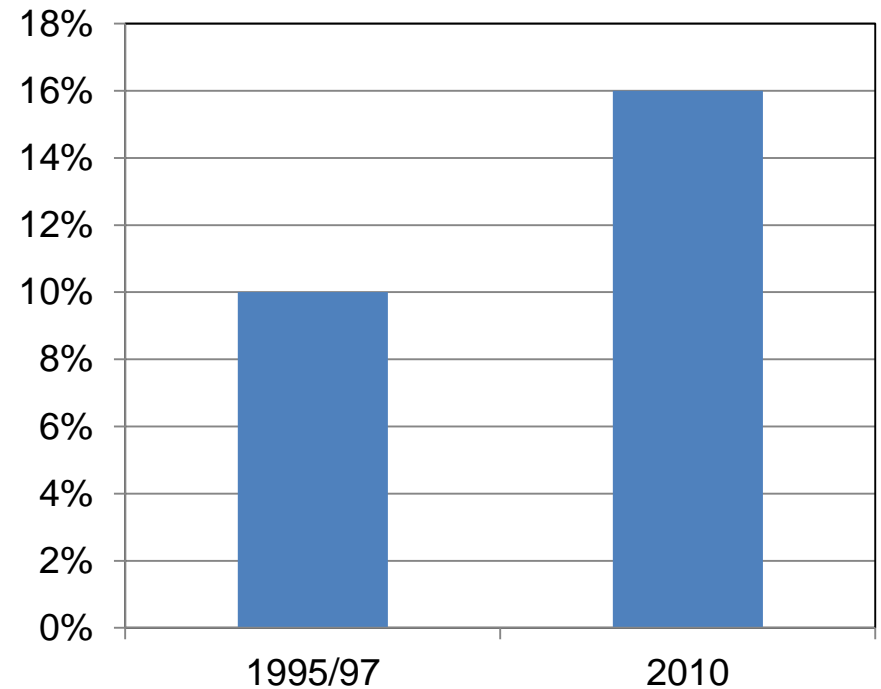
- Escort travel more than 10% of tours
- More than half of all detours made are for escort purposes
- Escort travel as a purpose growing over time
- The ‘school run’ now accounts for nearly a quarter of car driver trips by residents of urban areas during term time (NTS, 2010)

# Nationally, escort trips have increased in importance over time (NTS data)

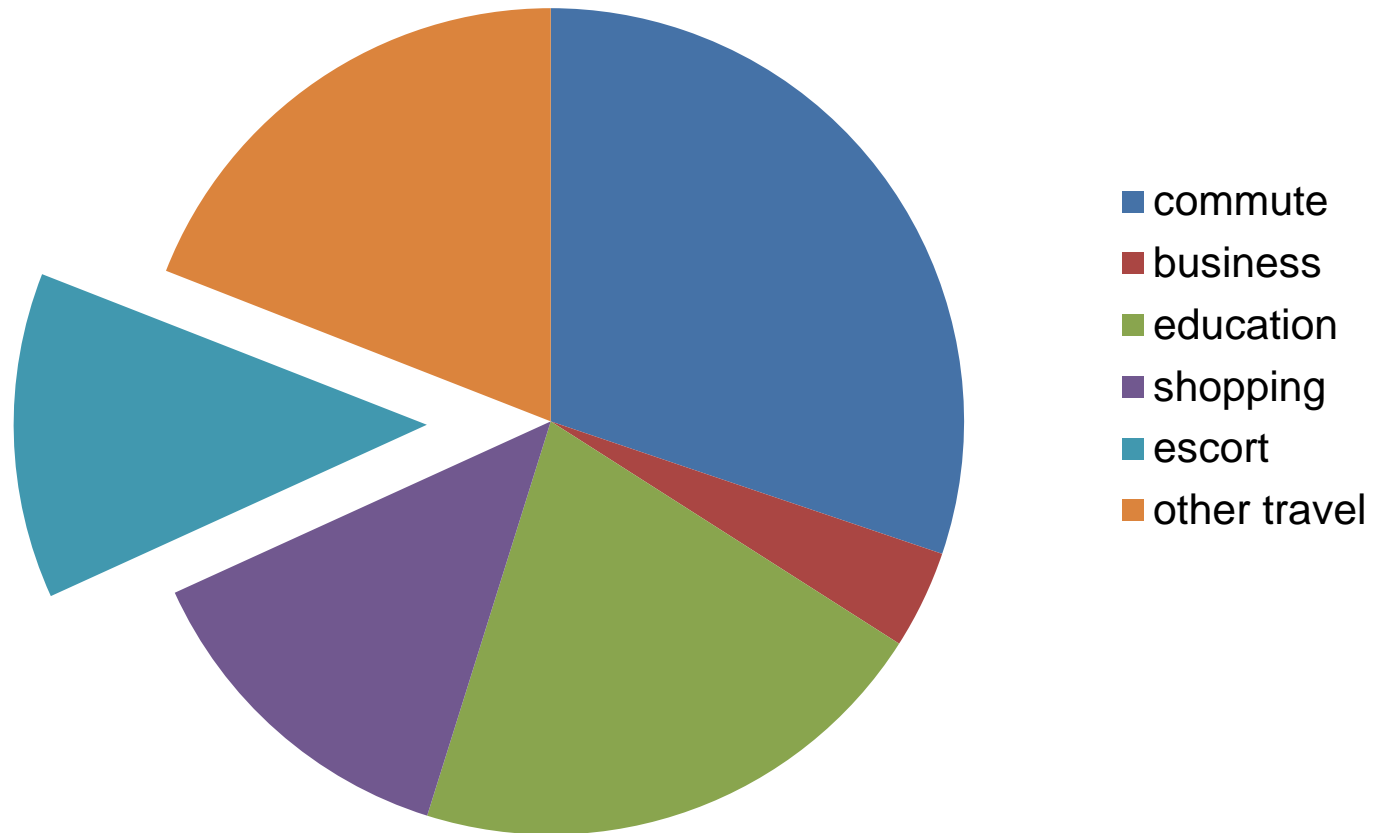
Share of trips that are escort



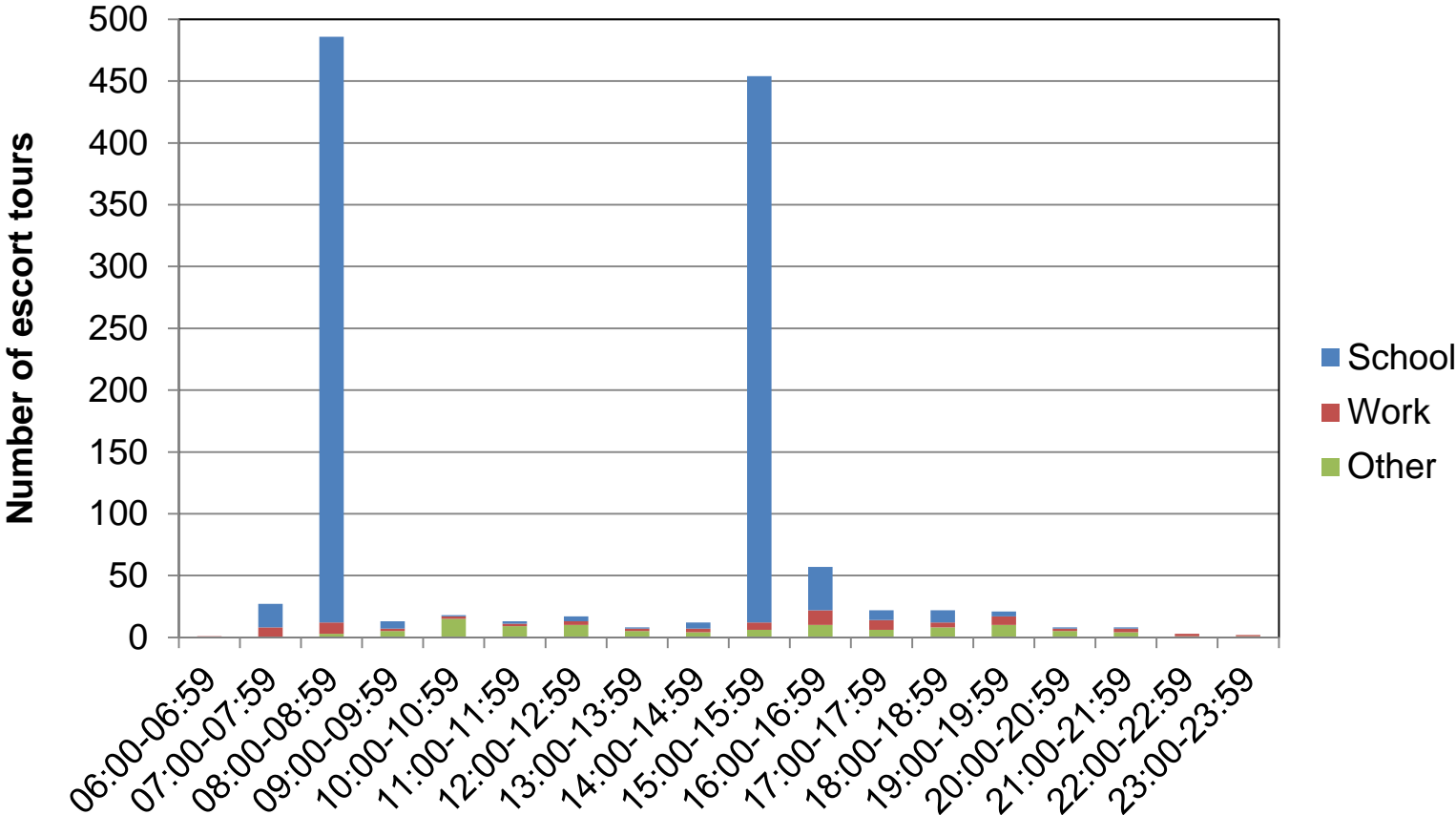
Share of 08:00-09:00 car trips that are escort education



# 13% of all tours in W Midlands are now escort tours (2009-12 data)



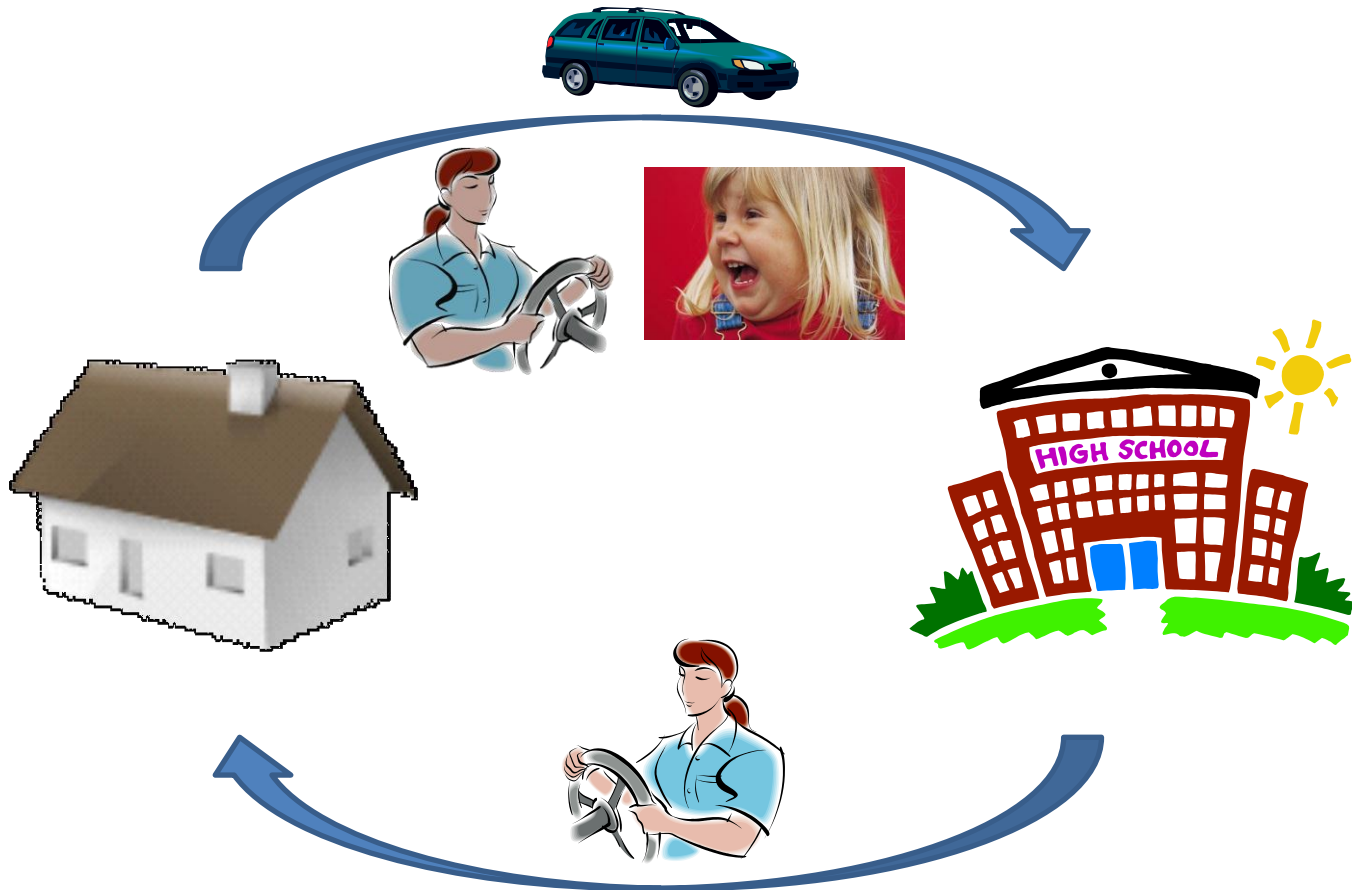
# Most of these escort tours are made before and after school



# Modelling escort travel as a group or individual decision

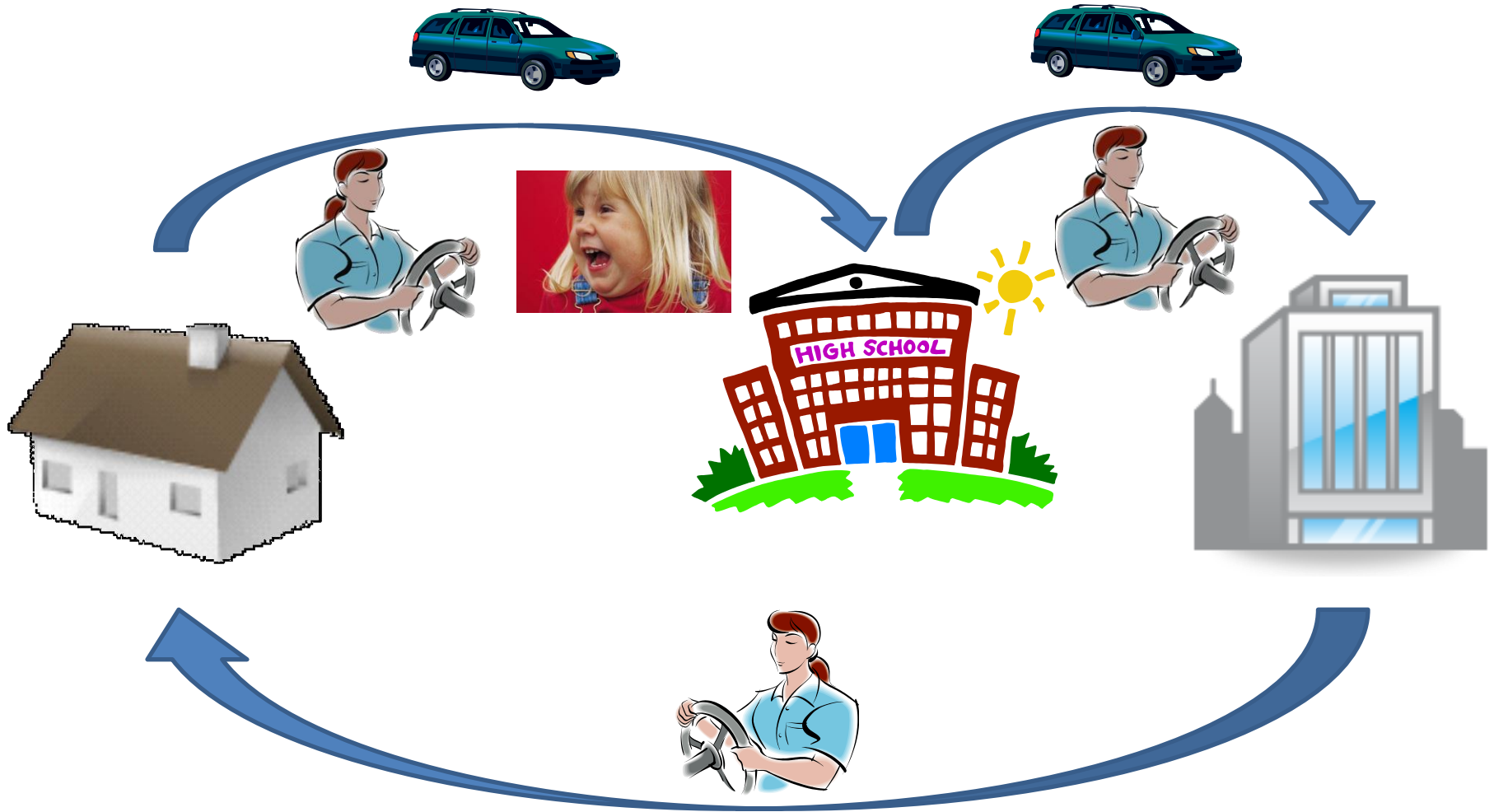
- *Group decision*
- Activity based framework
- Knowledge of travel needs of all other household members
- Complex model
- Concerns about acceptability in practice
- *Individual decision (by adults interviewed)*
- Tour based framework
- Family structure important input that can be accommodated
- Appropriate structure of choice model possible
- More easily accepted

# Choice model structure for escort tours





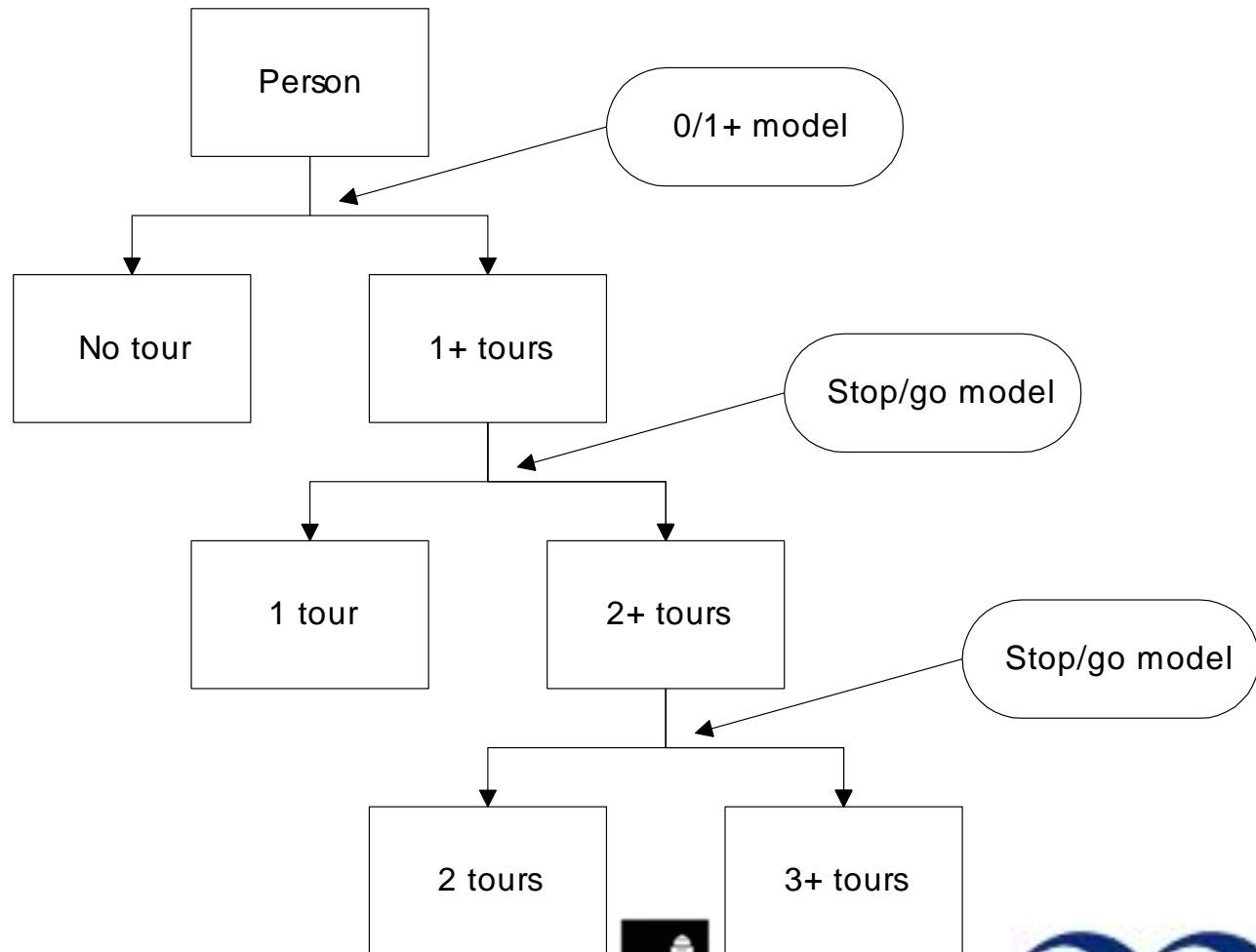
# Choice model structure for escort detours



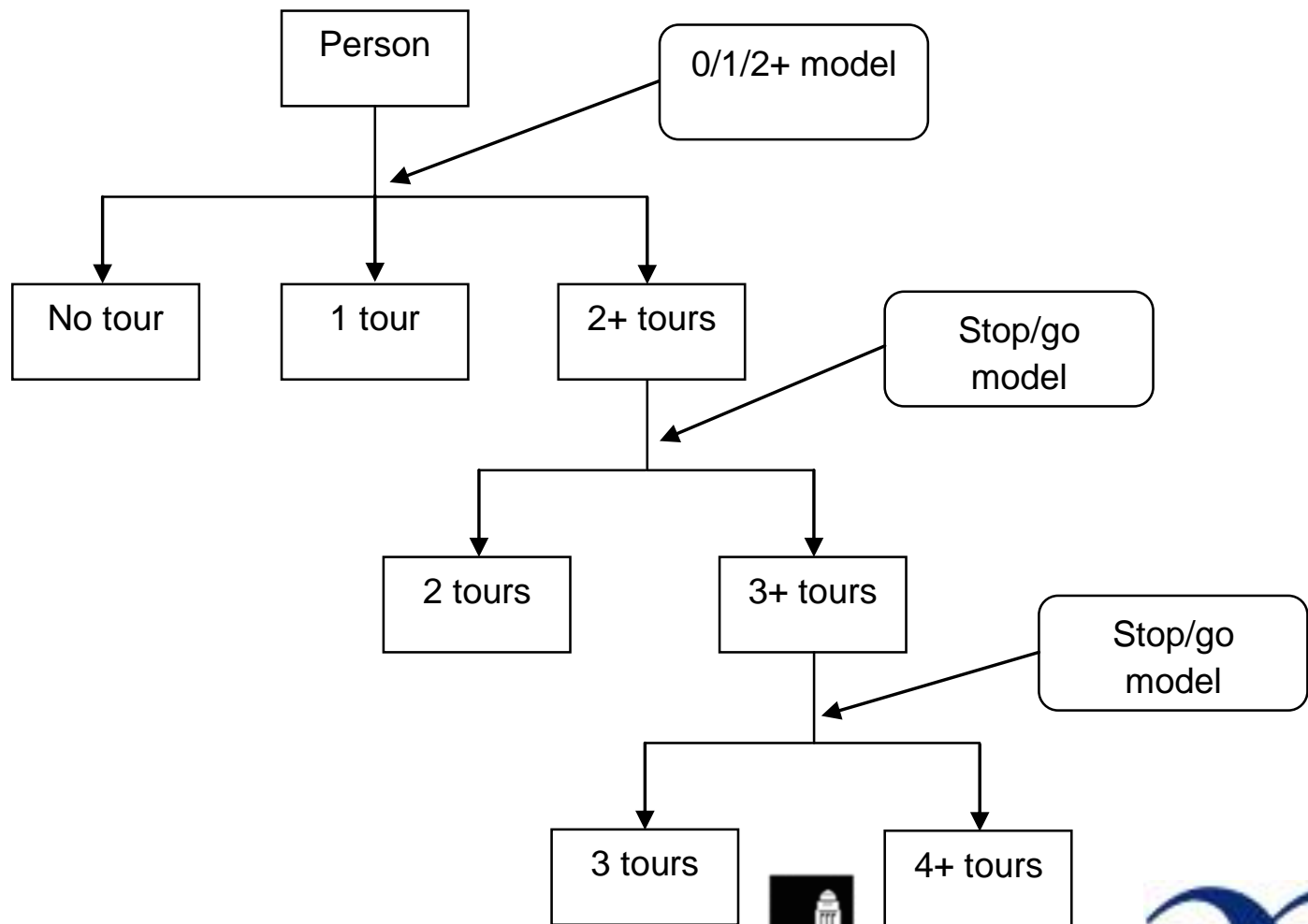
# School escort tours made more frequently than other escort tours

No of tours	School escort tours (adults in HHs with children)		Other escort tours (adults in all HHs)	
0	3,512	80.3%	10,570	97.8%
1	345	7.9%	191	1.8%
2	460	10.5%	45	0.4%
3	49	1.1%	6	0.1%
4	8	0.2%	1	0.0%
<b>Total adults</b>	<b>4,374</b>	<b>100.0%</b>	<b>10,813</b>	<b>100.0%</b>
<b>Total tours</b>	<b>1,444</b>	<b>n/a</b>	<b>303</b>	<b>n/a</b>

# Other escort frequency model structure



# School escort frequency model structure



# Who makes more escort trips (frequency model terms)

- *More school escort tours*
- Looking after the family
- Unemployed
- Females
- With (more) children
- Low income
- Aged 30-39
- High accessibility
- *More other escort tours*
- Looking after the family
- Males
- Aged 50 and above
- High accessibility

# Destination choice for escort tours

- School escort and other escort tours pooled to maximise sample sizes
- Multiple size variables account for different purposes escorted, and their relative importance – education dominates

Size term	Parameter
Total employment	1.0
Primary enrolments	29.6
Secondary enrolments	7.1
Population	0.3

# Mode choice for escort tours

- Again, school escort and other escort tours pooled to maximise sample sizes
- Walk constant for adults from households with children

Mode	School escort	Other escort
car driver	36.8 %	82.7 %
car passenger	2.3 %	6.0 %
bus	4.2 %	1.3 %
cycle	0.3 %	0.0 %
walk	56.3 %	9.0 %
other	0.1 %	1.0 %
<b>Total</b>	<b>100.0 %</b>	<b>100.0 %</b>

# Conclusions

- Necessary to include escort trips in travel demand model
- Tour-based model system can accommodate this
- Survey specification and quality management critical
- Frequency models should represent escort school and escort other separately
- Mode-destination models should take account of differences in mode share and destinations served – separate models if data allows
- Activity based modelling allows joint travel to be modelled explicitly, taking explicit account of scheduling and car availability constraints
- Findings elsewhere (Ho & Mulley, 2013) that joint household travel can account for more than half of home based tours