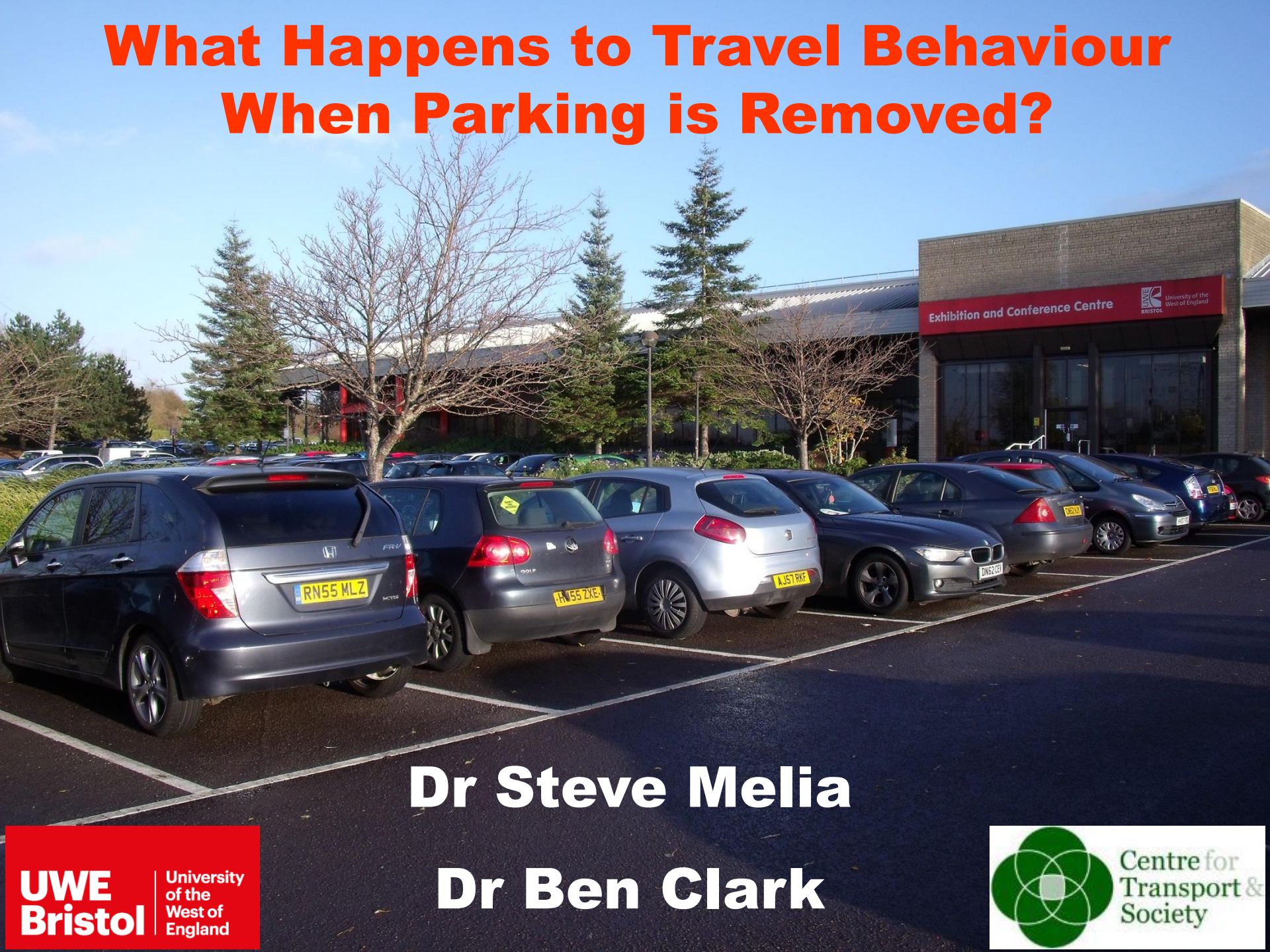
What Happens to Travel Behaviour When Parking is Removed?



Dr Steve Melia

Dr Ben Clark

UWE Bristol | University of the West of England

Centre for Transport & Society

What does the literature tell us?

- **Change in parking availability can influence modal choice** (Cairns et al., 2010, Chatterjee et al., 2016, Petrunoff et al., 2015 – hospital site)
- **More use of stated preference than natural experiments**: focus on cost and elasticities (Rye et al., 2006, Kelly and Clinch, 2006, Hensher and King, 2001)
- **Campus studies: cost and availability of parking** influence decisions to drive (Riggs, 2014, Whalen et al. 2013: both used cross-sectional data)
- **Aggregate studies of parking capacity and land use** (Weinberger, 2012, Melia, 2014) or hypothetical modelling (McCahill and Garrick, 2014): gradual change over time

So Broadly:

- Parking cost and availability does make a difference. Parking restraint at a destination reduces driving to *that destination*

BUT:

- No evaluations of how parking restraint at a destination affects:
  - Travel for other purposes
  - Car ownership
  - Licence holding

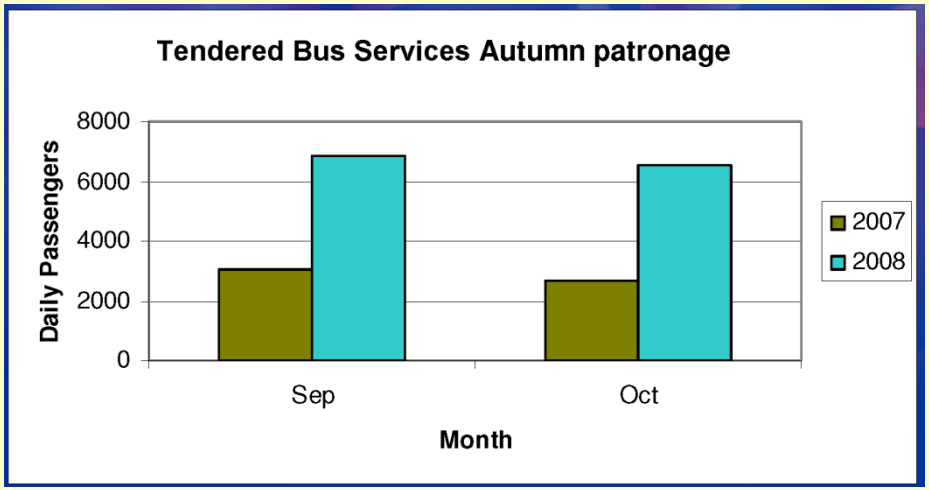
Expansion – planning conditions constrain parking

Needed: a Superhuman Travel Planner

Steve Ward
UWE's first travel planner 2006 - 14

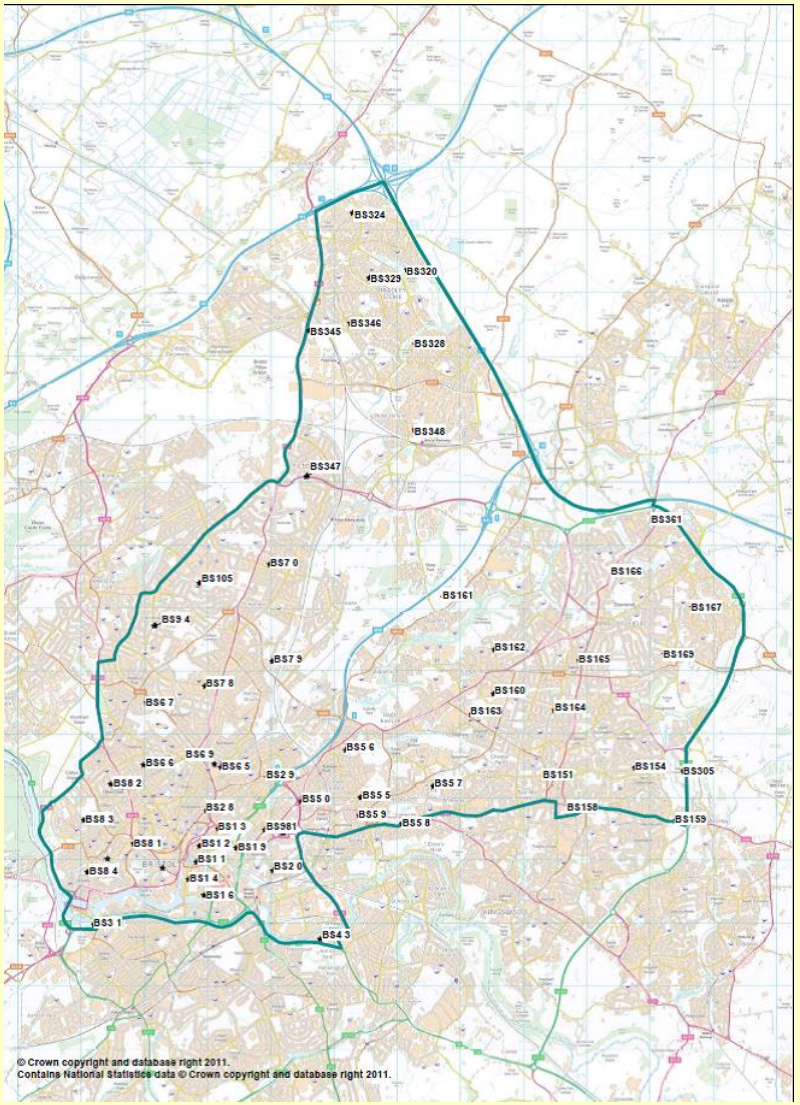
Early Changes

- £1m investment in tendered bus services
- 2008: £79 charge for staff parking permit
- 75p daily student charge
- Smaller improvements for cycling



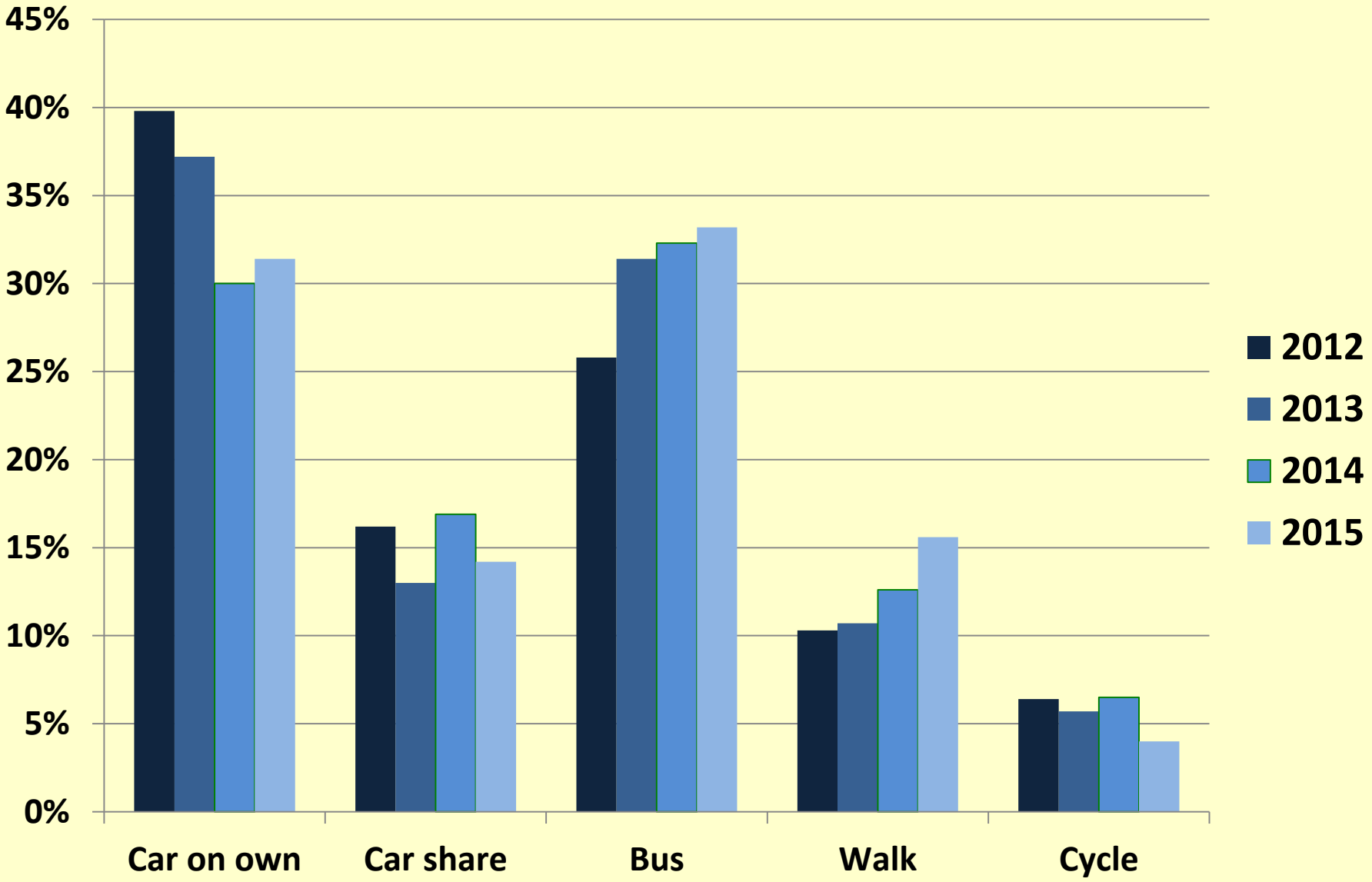
The Big Change: 2013

- All undergraduates in **Exclusion Zone** starting after Sept. ineligible to park on campus (few exceptions)
- Student parking permits £119 or £3 per day
- Staff permits 0.3% then 0.45% of salary
- £5 per day for visitors



Exclusion Zone (term-time addresses)

Annual One-day Cordon Counts

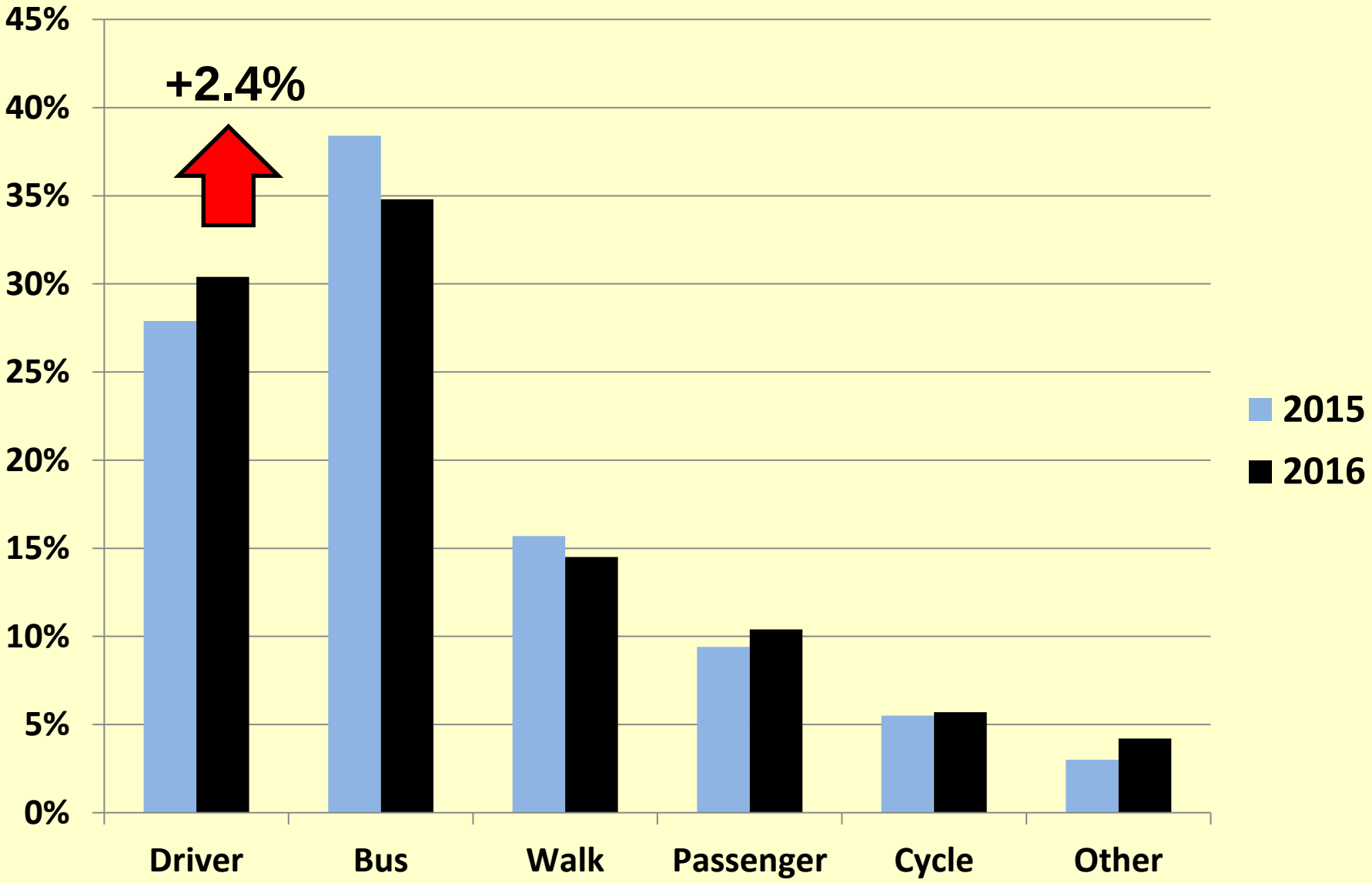


Methodology

- Two matched cohorts of 3rd year modules: 2015 (last year with permits) and 2016. **927** responses
- In-lecture surveys: close to 100% response (but limitations on range of questions).
- Anonymous: care to avoid response biases
- Separate observations of overspill parking

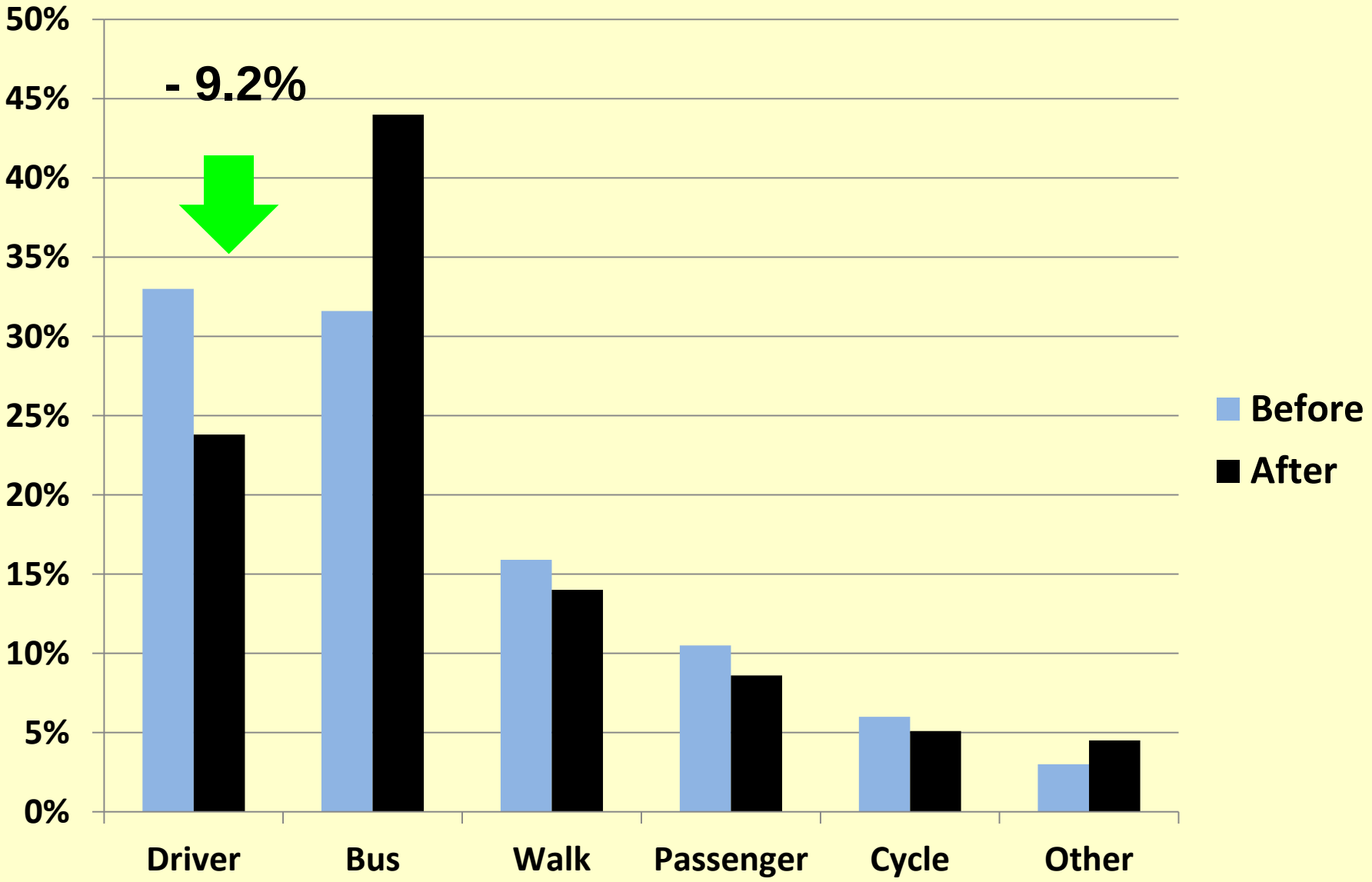
An unexpected finding:

(by survey wave)



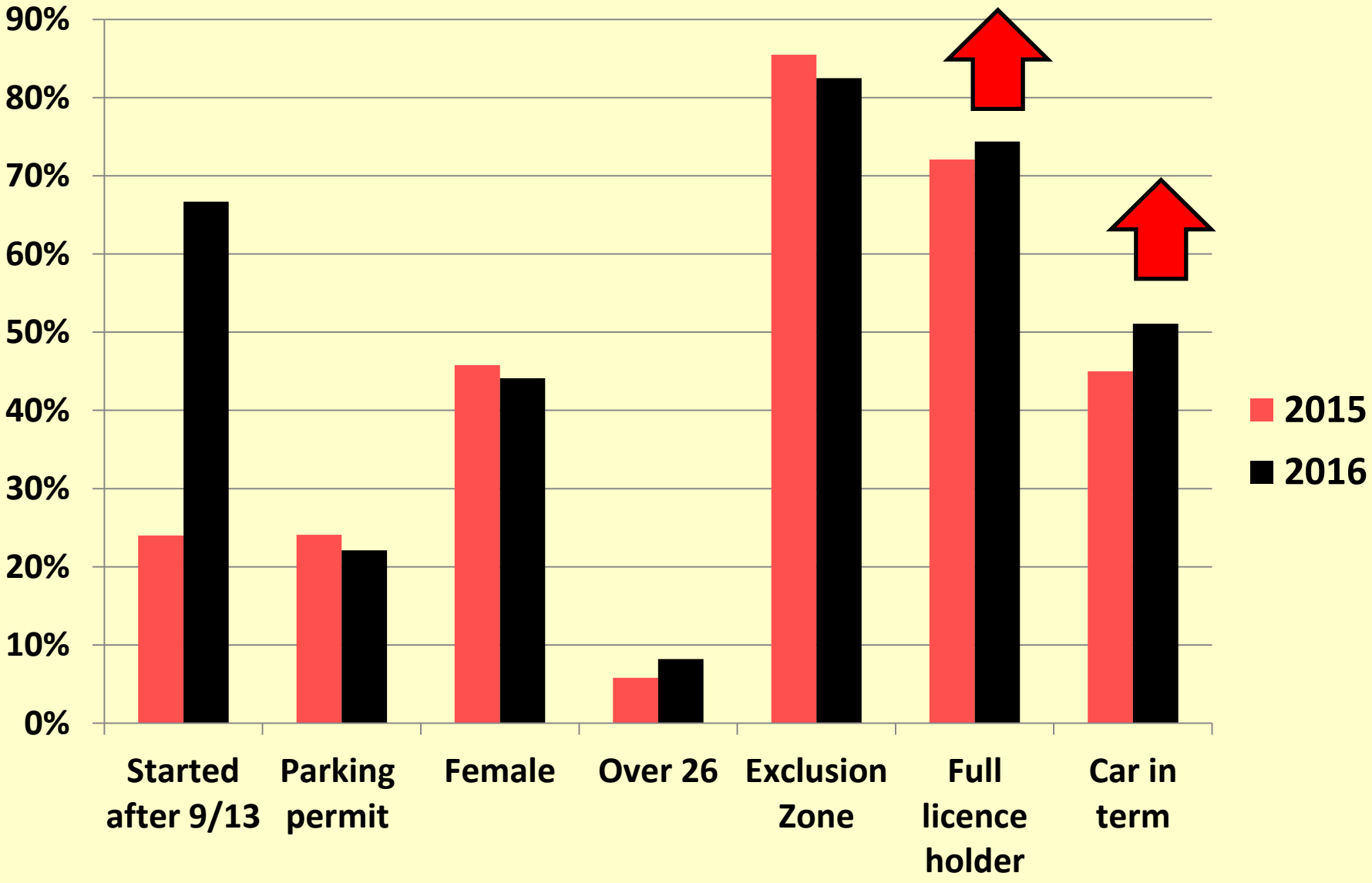
But, By Start Date

(before or after September 2013)



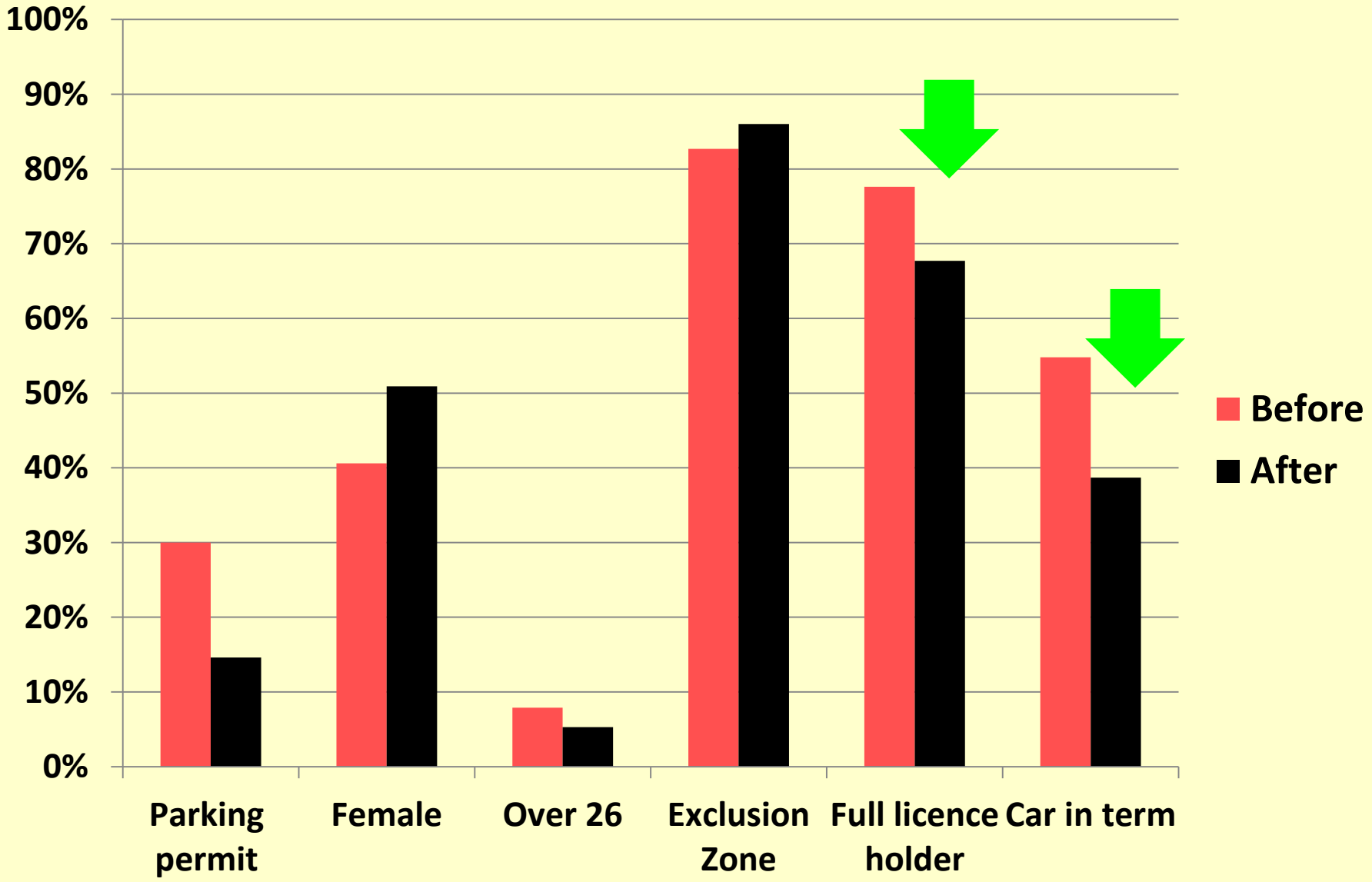
Why?

Characteristics of the 2 Waves

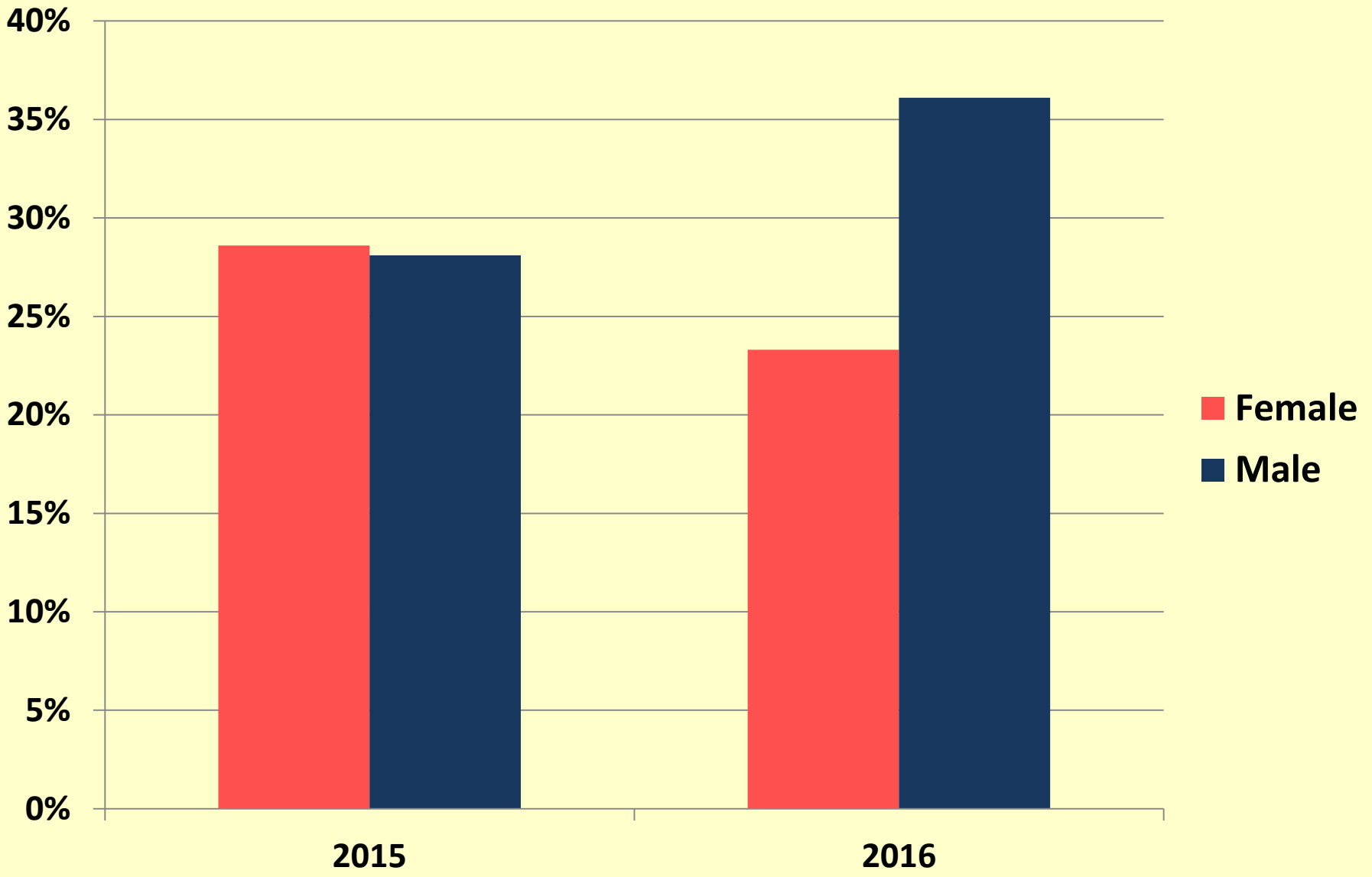


But, By Start Date

(before or after September 2013)



Gender Difference for First Time
(% driving to campus today)



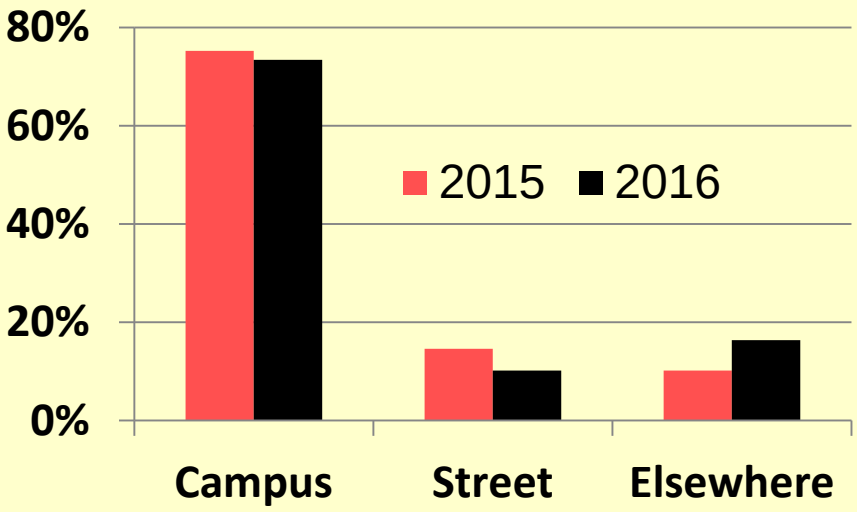
Binary Logistic Regression Odds Ratios

Independent Variables:	After Sept 13	2016 Wave	Exclusion Zone	On Campus
Dependent variables:				
Drive to campus today	0.502**	1.519*	0.135**	0.000
Public Transport today	1.767**	0.653*	2.976**	0.075**
Normally drive to campus	0.508**	1.749**	0.136**	0.000
Last trip: driven	0.640*	1.610*	0.237**	0.055**
Car available in term	0.410**	1.733**	0.238**	0.098**
Car available in holidays	0.377**	1.679**	0.312**	0.527*
Licence-holding	0.655*	1.292	0.455**	0.532*

* Significant at 95% confidence level, ** 99% confidence level

(age and gender, also included; age was insignificant in all cases, gender was insignificant in most cases)

Where Did the Drivers Park?



- Some enforcement problems on campus

Overspill parking survey estimates:

- 108 on streets
- 70 in retail car park

Other Explanations for More Driving in 2016

- 8% fall in price of unleaded petrol (national evidence of modal shift towards driving, away from buses)
- On-campus parking now more convenient for students able to use it (including 12 who parked illegally on campus)
- Has the policy freed up road space for others to take their place?

Conclusions

- Policy broadly seems to have worked (though national environment unhelpful)
- Restraint at the destination also reduces:
  - Car ownership
  - Licence-holding
  - Driving for other purposes
- Previous policies had already reduced driving amongst Bristol-based students, so impact not as large as expected
- Overspill parking small compared to modal shift
- Gender difference: males more likely to park off campus and to break parking rules
- ‘Sticks’ are needed to make ‘carrots’ effective

References

- Cairns, S., Newson, C. and Davis, A. (2010) Understanding successful workplace travel initiatives in the UK. Transportation Research Part A: Policy and Practice. 44 (7), pp. 473-494.
- Hensher, D.A. and King, J. (2001) Parking demand and responsiveness to supply, pricing and location in the Sydney central business district. Transportation Research Part A: Policy and Practice. 35 (3), pp. 177-196.
- Kelly, J.A. and Clinch, J.P. (2006) Influence of varied parking tariffs on parking occupancy levels by trip purpose. Transport Policy. 13 (6), pp. 487-495.
- McCahill, C. and Garrick, N. (2014) Parking Supply and Urban Impacts. In: Ison, S.G. and Mulley, C., eds. (2014) Parking: Issues and Policies. Bingley,West Yorkshire: Emerald Insight, pp. 33-56.
- Melia, S. (2014) Carfree and Low Car Development. In: Ison, S.G. and Mulley, C., eds. (2014) Parking: Issues and Policies. Bingley,West Yorkshire: Emerald Insight, pp. 213-234.
- Petrunoff, N., Rissel, C., Wen, L.M. and Martin, J. (2015) Carrots and sticks vs carrots: Comparing approaches to workplace travel plans using disincentives for driving and incentives for active travel. Journal of Transport & Health. 2 (4), pp. 563-567.