

Speculative versus classical explanations of young adults' decline in auto-mobility: Results from Britain

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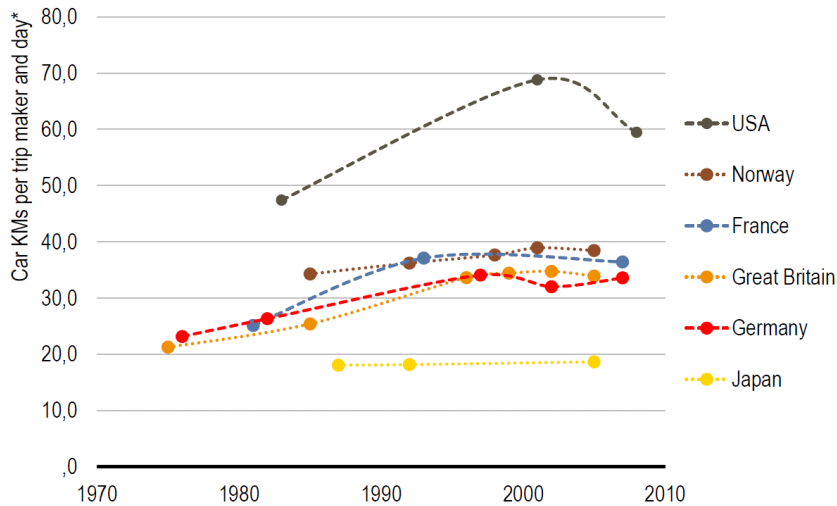
**Autos, People and Policies (Apps): Addressing the Issues of the New Millennium
Jan. 16th 2015**

Reporting on various studies undertaken in collaboration with: Qinyi Chen, Charilaos Latinopoulos, Peter Jones, Tobias Kuhnimhof, John Polak, Tom Worsley

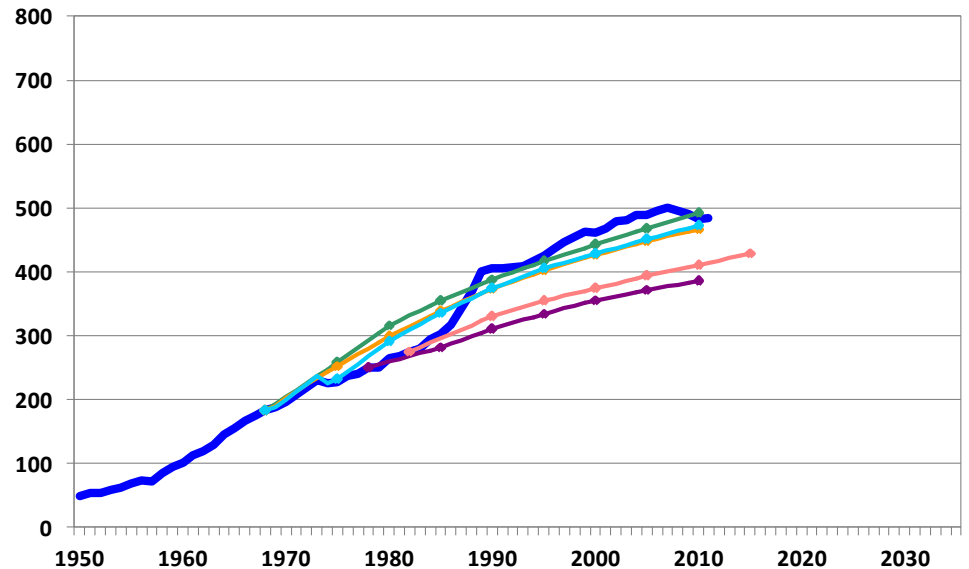
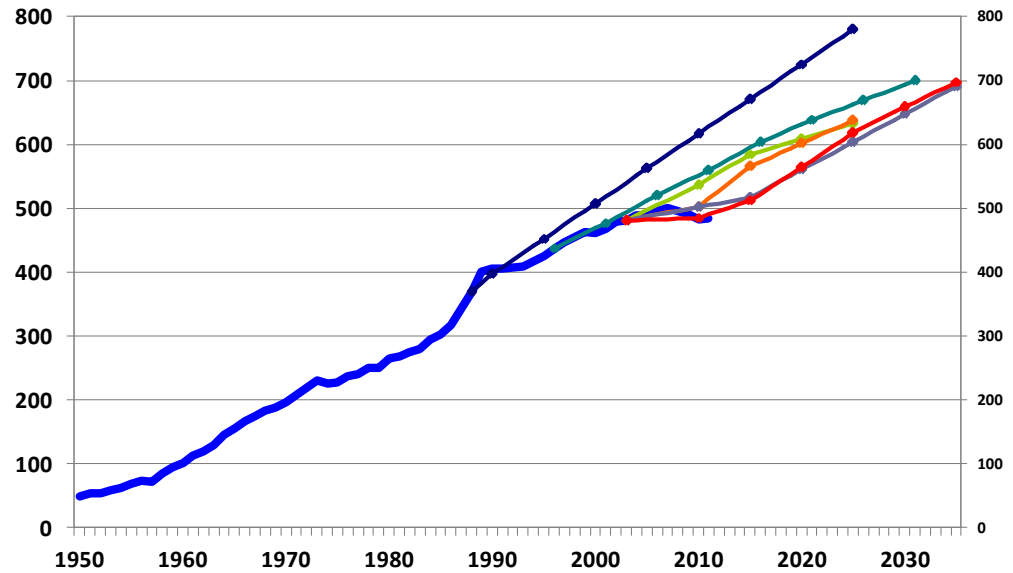
Research sponsored by: Imperial College, RAC Foundation, Independent Transport Commission, Office of Rail Regulation, Transport Scotland, Institute for Mobility Research, Welsh Assembly

'Peak Car'?

- **Public sector:** Future roads/rail policies & investments
- **Private sector:** How are markets for mobility (and those linked to it) changing?



Tobias Kuhnimhof: "Are young men responsible for Peak Car?"



Taro Hallworth, formerly DfT (now CCC)

Young people, esp. men, are the ones to watch

Average changes in car driving mileage according to ownership of the vehicle, by age group and among men and women, 1995/7–2005/7

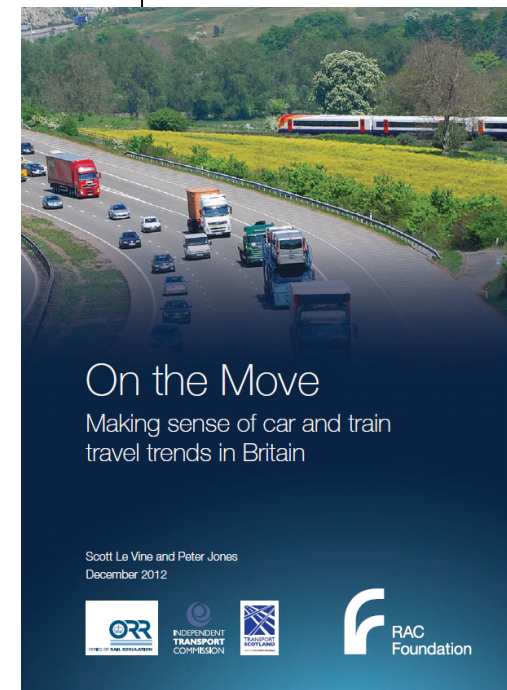


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Academic articles:

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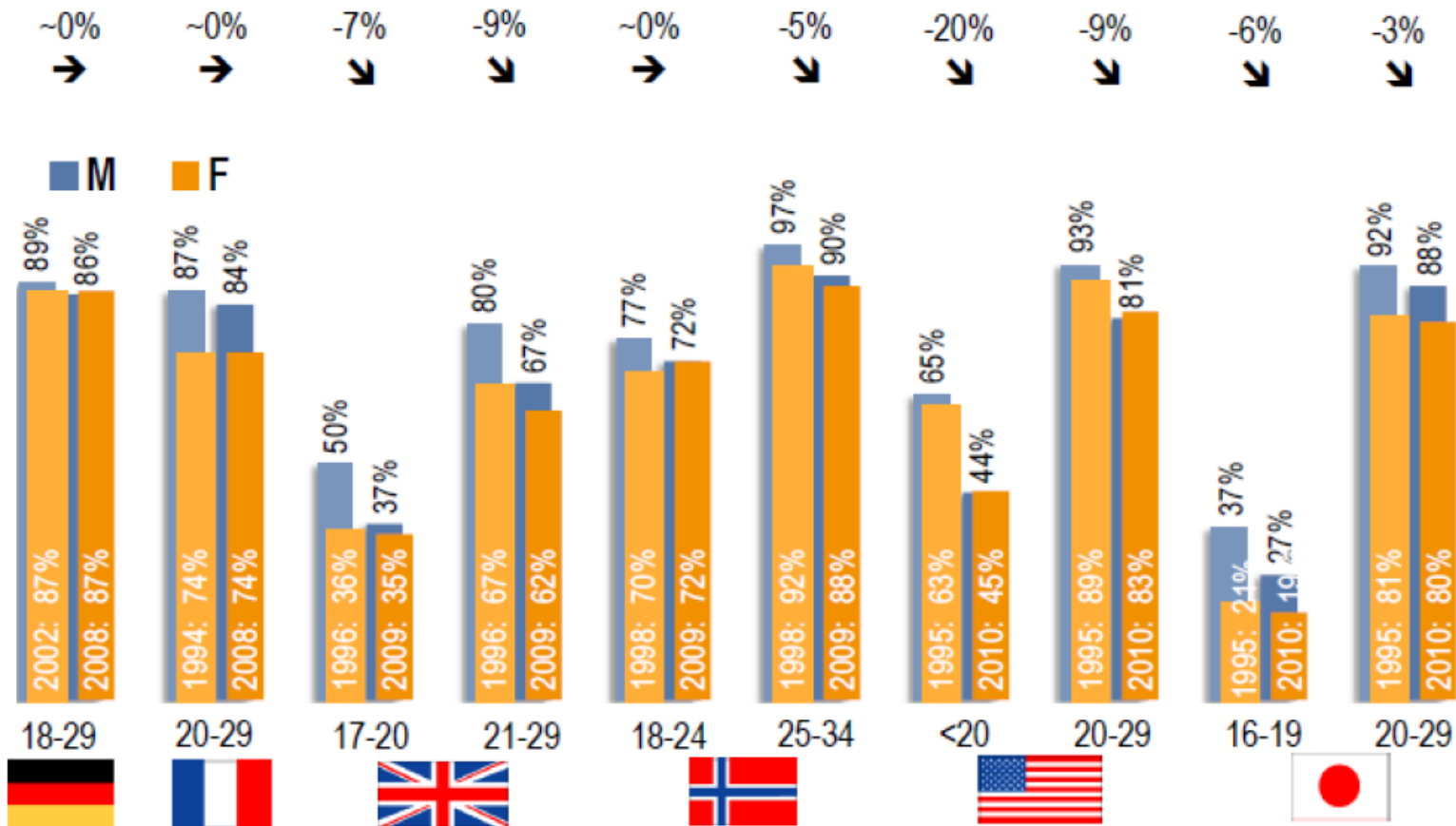
- Factors associated with young adults delaying and forgoing driving licences: Results from Britain
- What is the relationship between online activity and driving-licence-holding amongst young adults?
- Establishing the links between online activity and car use: Evidence from a combined travel diary and online-activity pseudo-diary data set
- Is growing environmental sensitivity responsible for the drop in young adults' licence-acquisition rates?
- The contribution of benefit-in-kind taxation policy in Britain to the 'Peak Car' phenomenon
- A tenuous result: re-analysis of the link between internet-usage and young adults' driving-licence holding



Headline trends (Int'l., #1)

The share of licensed drivers among young adults decreased after the 1990s in most study countries, especially for men.

ifmo



Quellen: FHWA, DfT, NPRA

Headline trends (GB)

- Young male licence-holding has fallen (but appears to now have stabilised), as has mileage per driver

- Each accounts for roughly half of their pre-recession 30% drop in car mileage

From 6,500 mi./year in 1995/7 to 4,500 in 2005/7 (across GB)

Full-licence holding (ages 17-29), GB

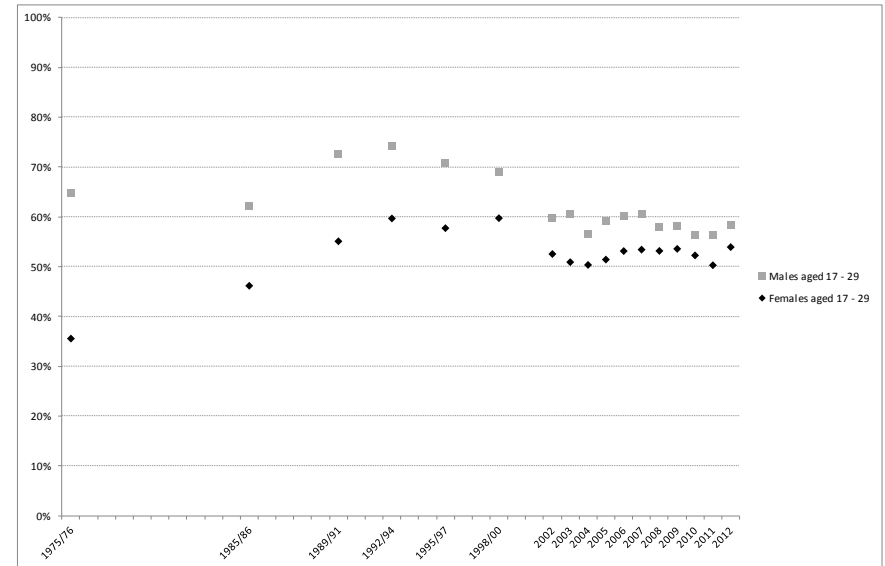
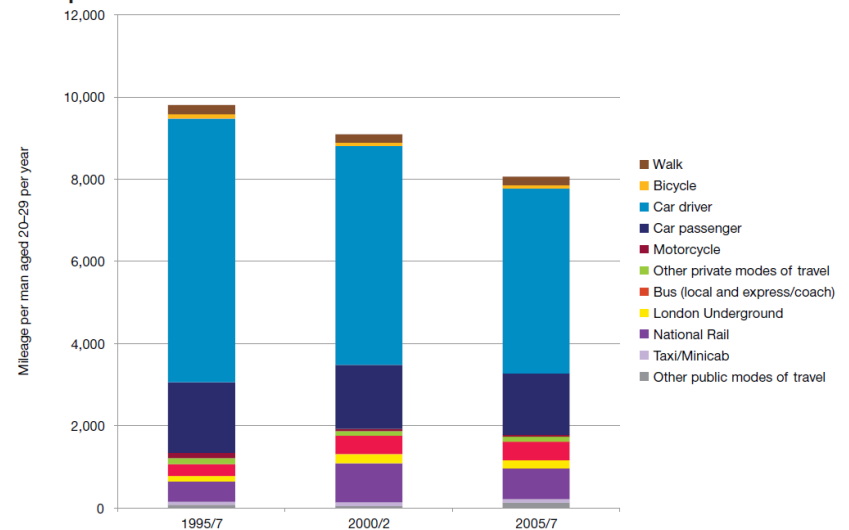


Figure 3.27: Average mileage by men in their 20s, by various modes of transport



Hypotheses for inc. in non-driving

1. The rise of phased licence-acquisition regimes (GDL)
2. Increased rates of participation in higher education
3. Decreased levels of economic activity (linked with #2)
4. Concentration of young adults in dense cities (where car-free lifestyles are most viable)
5. Modern information and communication technologies (online activity, texting, etc.)
6. Heightened environmental awareness among today's young adults
7. Historically-high levels of international migration
8. Deferred family formation

Hypotheses for inc. in non-driving

Let us categorise the hypotheses into two categories:

1. *Speculative* hypotheses (new and/or different relationships)

- Growing sensitivity to sustainability issues
- Impacts of new technology (Smartphones, Internet, etc.)
- Effects of internal & external migration

2. *Classical* hypotheses (relationships that we understand and have traditionally taken into account)

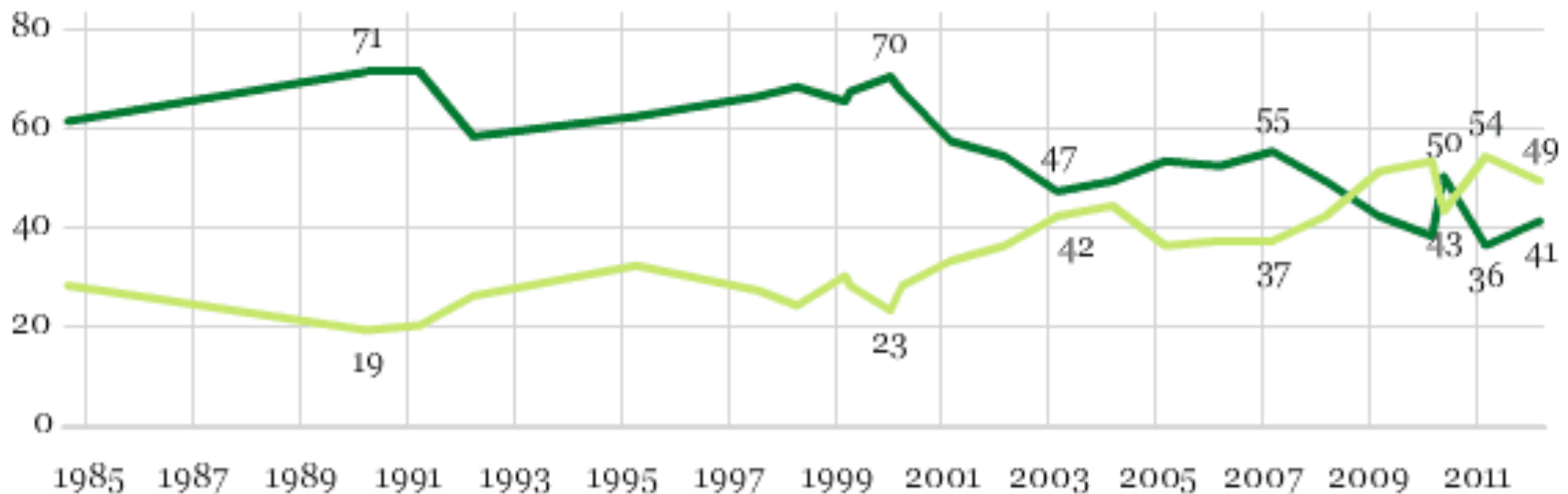
- Economic activity (GDP, employment, etc.)
- Prices (e.g. petrol/gasoline, public transport fares)

Trends in env't. sensitivity (US)

With which one of these statements about the environment and the economy do you most agree -- protection of the environment should be given priority, even at the risk of curbing economic growth (or) economic growth should be given priority, even if the environment suffers to some extent?

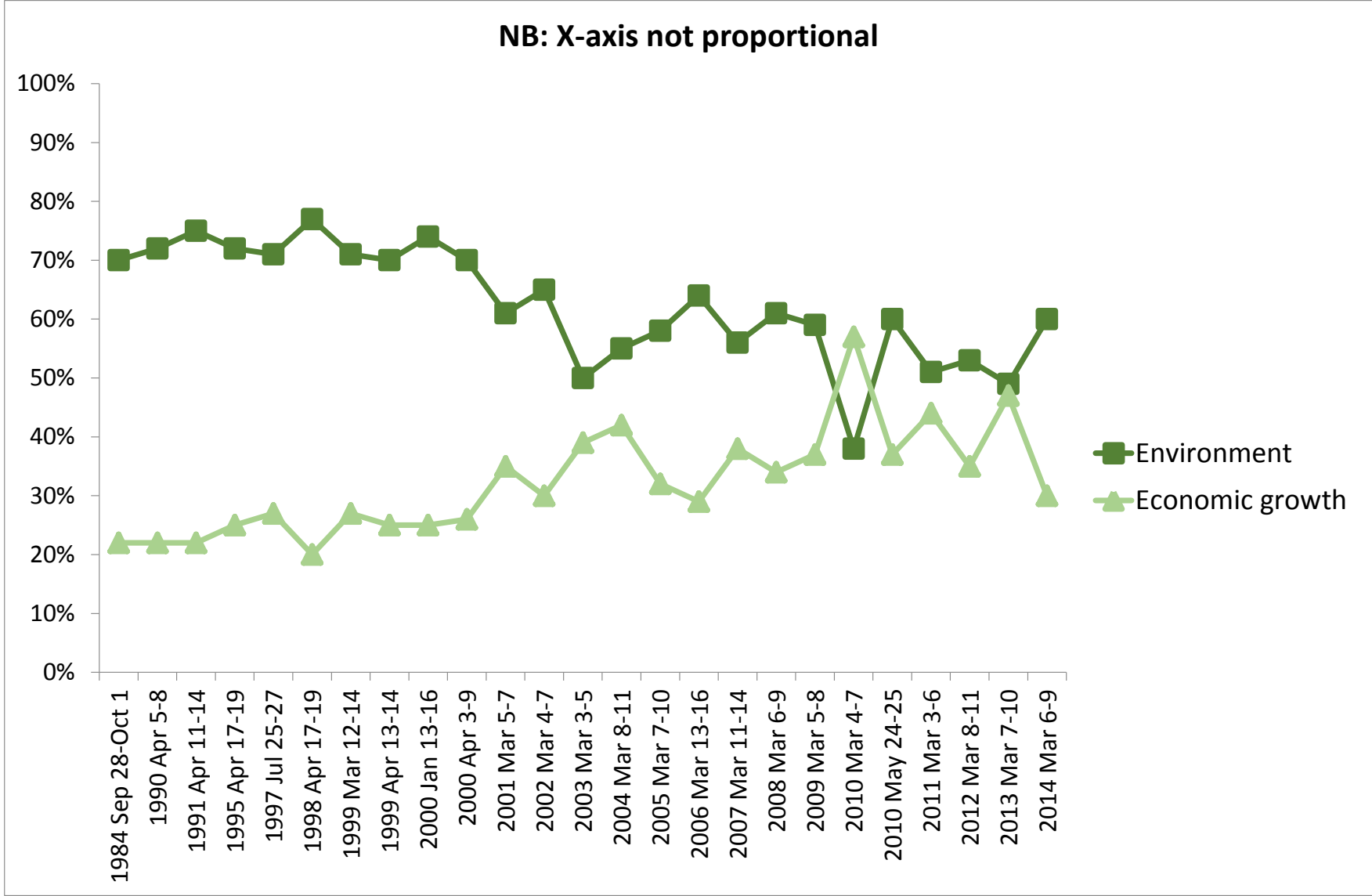
■ % Protection of the environment should be given priority

■ % Economic growth should be given priority



GALLUP®

As previous – but only ages 18-34



Trends in env't. sensitivity (GB)

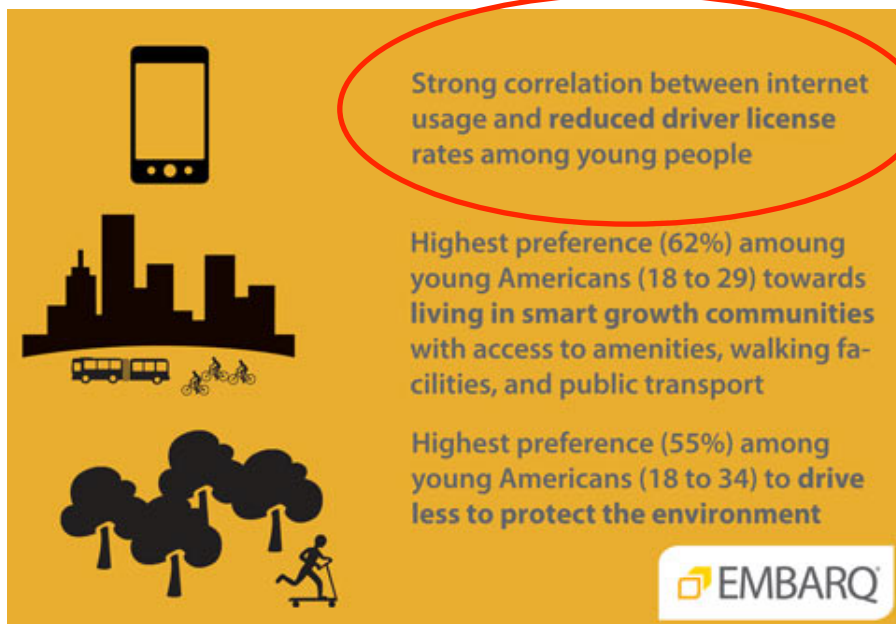
	2000 (n=972)	2010 (n=928)	Change in percentage points
18 to 34 years old	51%	34%	-18%
35 to 54 years old	54%	27%	-27%
55 to 64 years old	58%	29%	-29%
65+ years old	56%	21%	-35%

Table 1: Percentage of British adults indicating that air pollution from cars is “very” or “extremely” damaging to the environment, from British Social Attitudes Survey. (Reproduced from [7]: 103)

	2000 (n=972)	2010 (n=928)	Change in percentage points
18 to 34 years old	52%	48%	-3%
35 to 54 years old	49%	48%	-1%
55 to 64 years old	56%	43%	-13%
65+ years old	47%	28%	-19%

Table 2: Percentage of British adults indicating that the rise in the world’s temperature caused by climate change is “very” or “extremely” damaging to the environment, from the British Social Attitudes Survey. Reproduced from [7]: 103)

Electronic connectivity? (1)



Strong correlation between internet usage and reduced driver license rates among young people

Highest preference (62%) among young Americans (18 to 29) towards living in smart growth communities with access to amenities, walking facilities, and public transport

Highest preference (55%) among young Americans (18 to 34) to drive less to protect the environment

EMBARQ

The infographic features icons for a smartphone, a city skyline with a bus and bicycle, and trees with a person jogging.

<http://thecityfix.com/blog/on-the-move-younger-generation-mobility-trends-akshay-mani/young-generations-on-the-move-embarq/>



Research shows that teens in no hurry to be behind the wheel

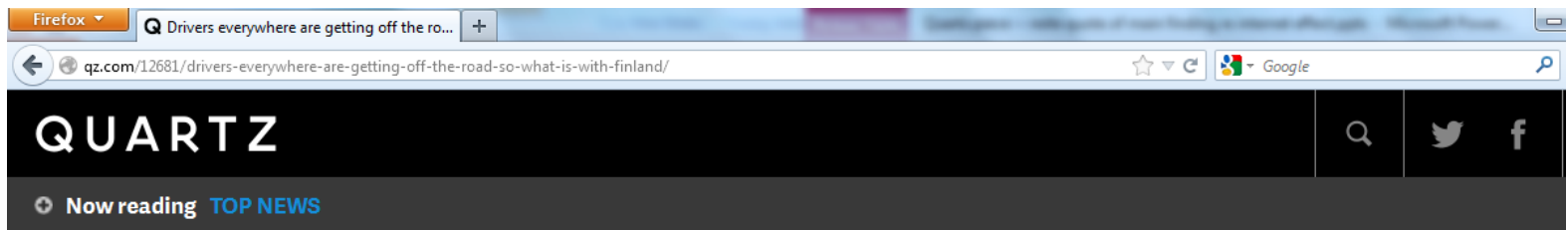
By Yamiche Alcindor, USA TODAY

Updated 3/15/2012 1:16 PM

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The frantic rush to get a license at 16 — once a staple in American adolescence — is disappearing as Internet access and stiffening driving rules have led teens to wait longer to beg for the keys.



Firefox Drivers everywhere are getting off the ro... +

qz.com/12681/drivers-everywhere-are-getting-off-the-road-so-what-is-with-finland/

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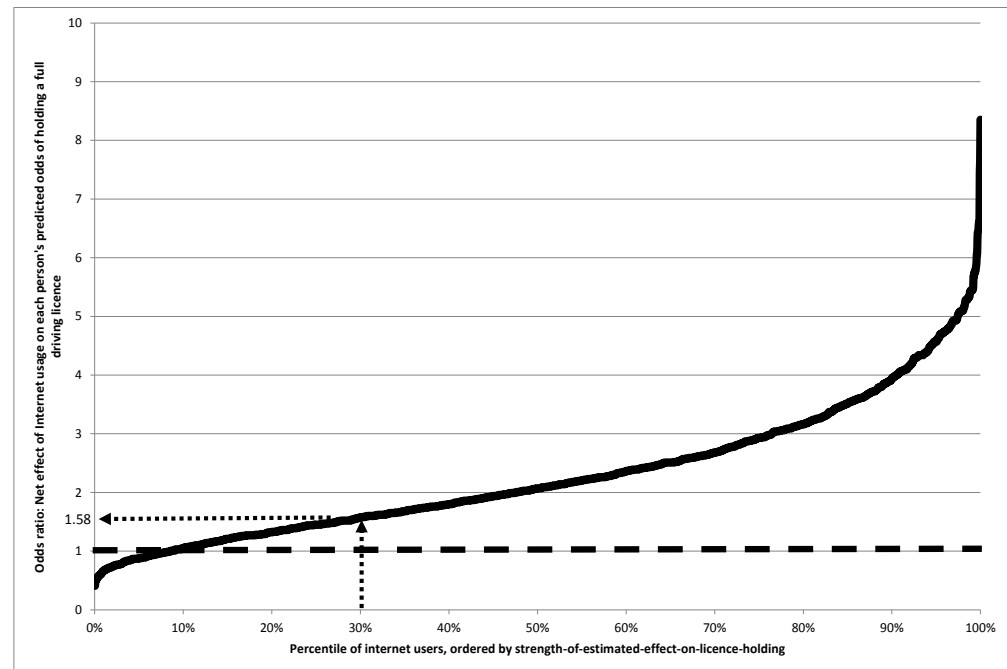
RACE TO THE FINNISH

Drivers everywhere are getting off the road. So what is with Finland?

I emailed Sivak asking how to understand the rise in driver's licenses in the seven countries, when the others showed declines. "Our main finding was that the countries that tended to have higher proportion of Internet users tended to have lower licensure rate of young persons (after controlling for a range of other variables, such as income, unemployment, etc.)," Sivak replied.

Electronic connectivity (2)

- Using data from Scotland (2005/6), we were unable to replicate cross-national results from Sivak & Schoettle (2012)
- We found a strong and statistically significant **POSITIVE** cross-sectional *ceteris paribus* relationship between internet usage and licence-holding/car-driving-mileage
- Others are now reporting similar empirical results suggesting *complementarity* between ICT use and physical mobility: Kroesen and Handy (2015), Taylor et al. (2014), Aguilera et al. (2012)



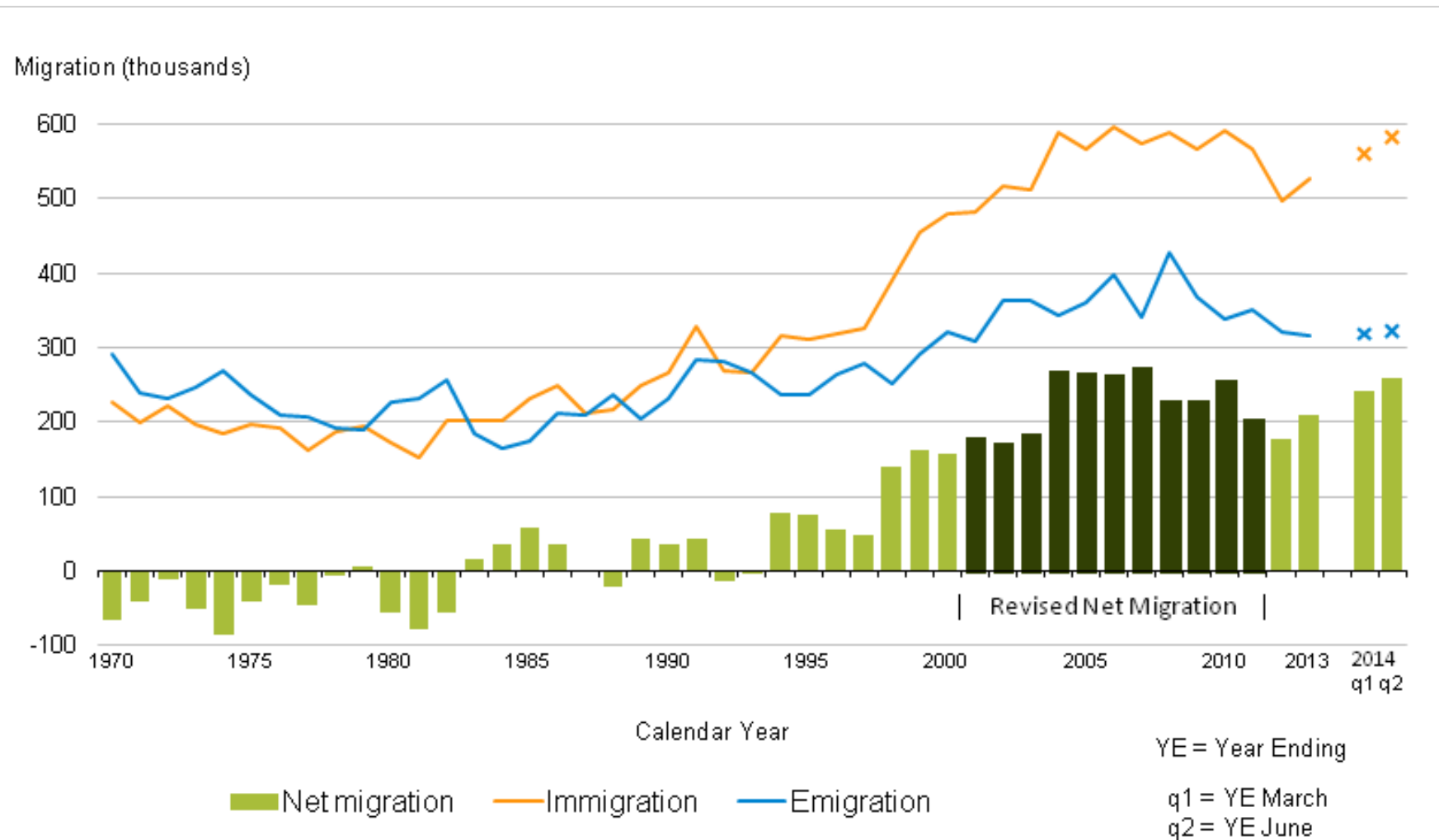
Migration (internal and external)

- Increasing share of Britain's young adults live in London (14% in 1995/7; 18% in 2005/7)
- Not surprisingly...
 - Living in London negatively associated with holding a licence
 - Status as an international migrant also negatively associated with holding a licence

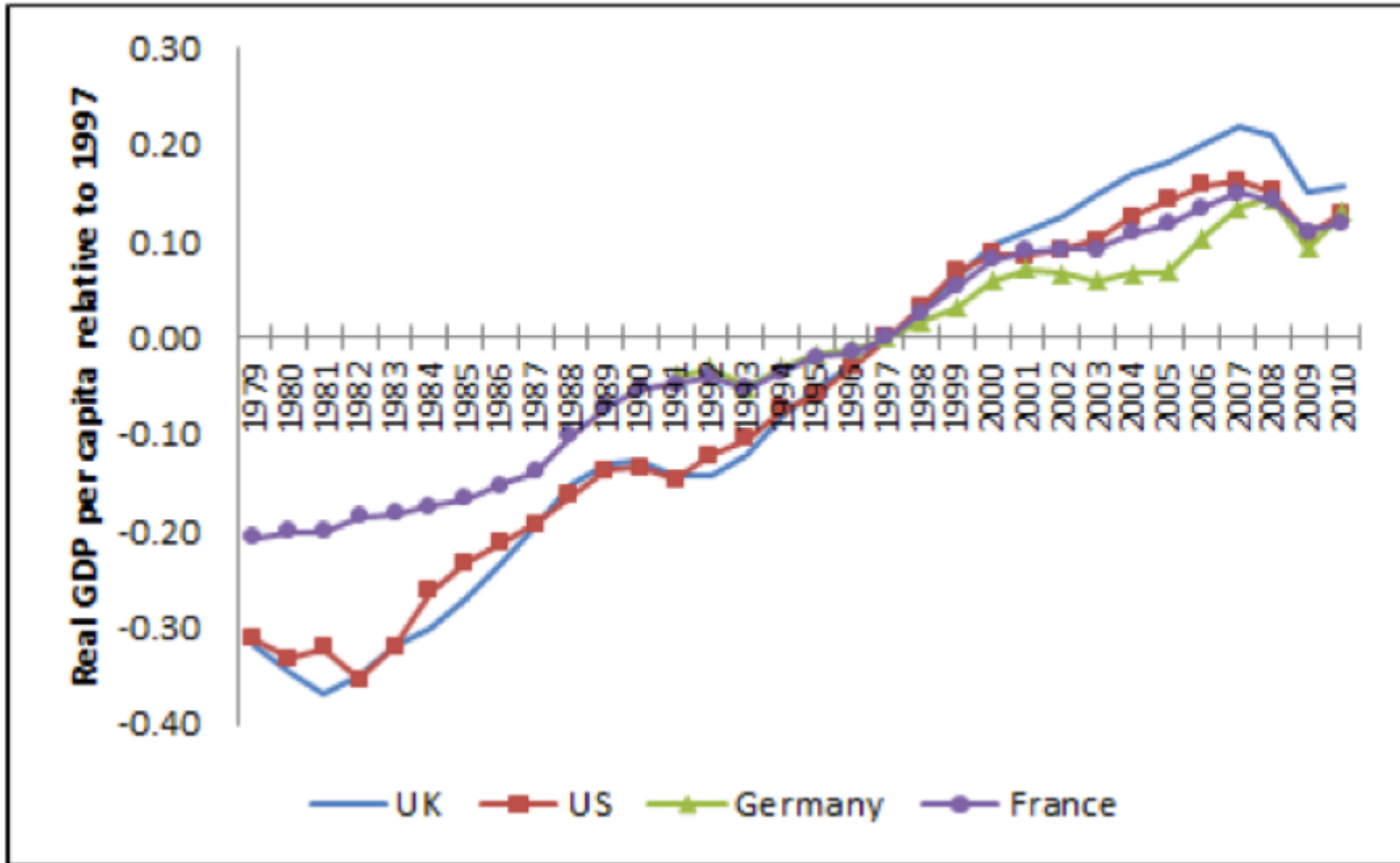
	Mean parameter estimate	Implied odds ratio	p-value
Intercept	-5.17	--	--
Male gender	0.125	1.13	0.12
Age	0.1307	1.14	<0.01
Employed	0.647	1.91	<0.01
Employed full time	0.406	1.50	<0.01
Holds degree or higher academic qualification	0.94	2.56	<0.01
Presence of children under age 16 in household, with oldest child at least 15 years younger than the young adult	-0.0839	0.92	0.48
Presence of an adult in the household at least 15 years older than the young adult	-0.322	0.72	<0.01
Born outside of the UK	-0.809	0.45	<0.01
Natural log of young adult's own personal income (British pounds)	0.202	1.22	<0.01
Natural log of income of other household members (British pounds)	0.0533	1.05	<0.01
Residence in London	-0.668	0.51	<0.01
Residence in other urban settlements	-0.121	0.89	0.51
Residence in rural areas	Fixed at zero for normalisation		
Natural log of population density of postcode sector (persons/hectare)	-0.140	0.87	<0.01
Walking time (minutes) to nearest public transport stop	0.02067	1.02	0.05
Null log-likelihood			-2,626.8
Final log-likelihood			-2,018.7
Rho-squared (McFadden's)			0.231
Adjusted rho-squared			0.226

Table 3: Estimation results from binary logistic regression model of whether a NTS respondent age 17-29 holds a full car driving licence

Migration (external)

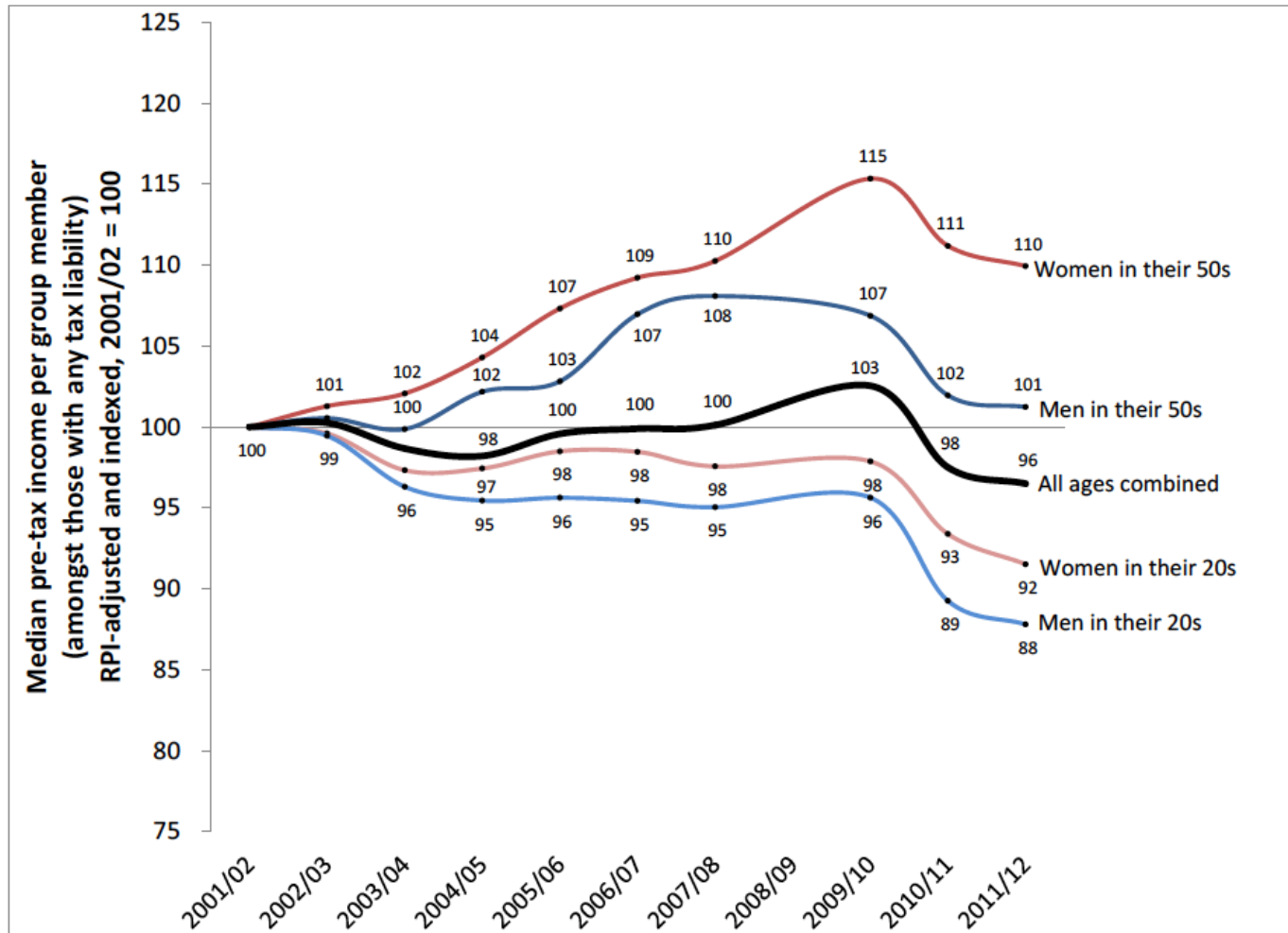


Economics (GB) – Trend in GDP



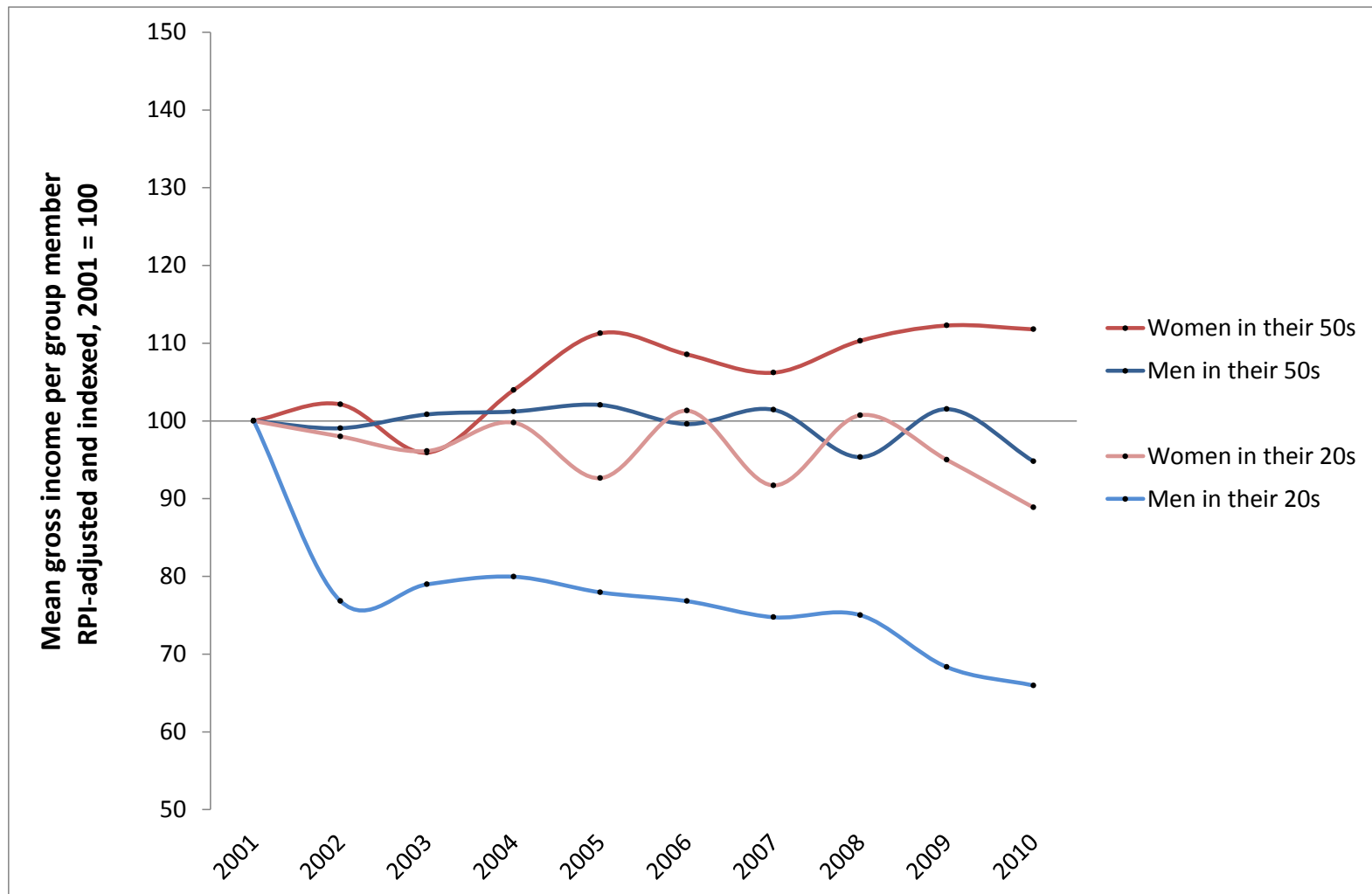
Economics (GB) – HMRC data

Figure 5.2: Changing distribution of real personal income over time, by age and gender groups



Economics (GB) – NTS data

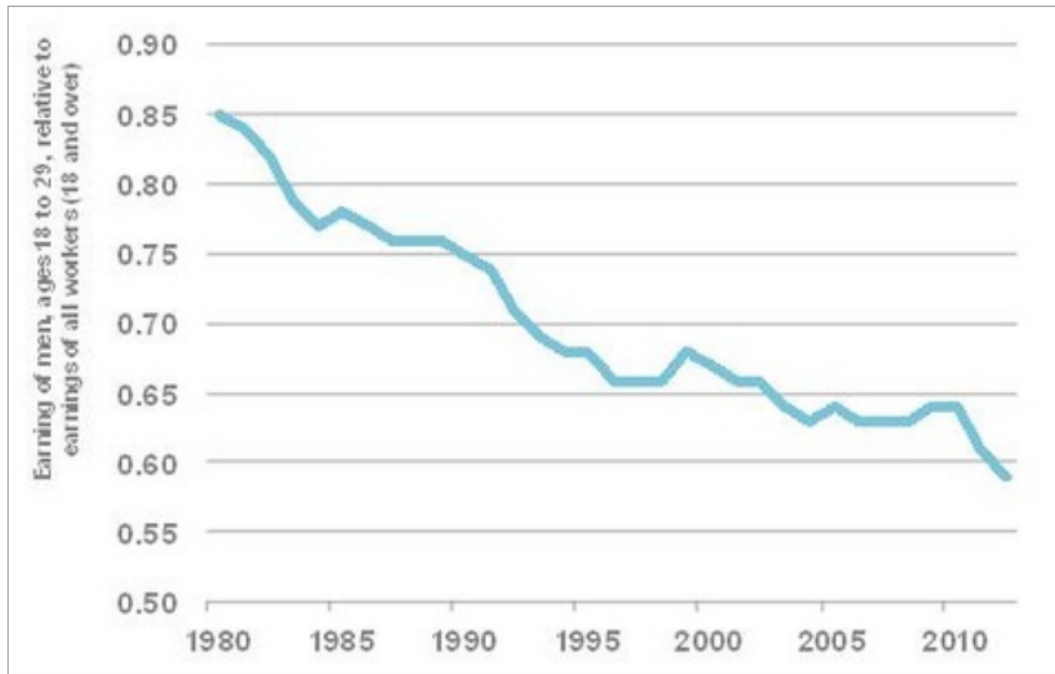
Figure 5.2: Changing distribution of real personal income over time, by age and gender groups



Economics (USA)

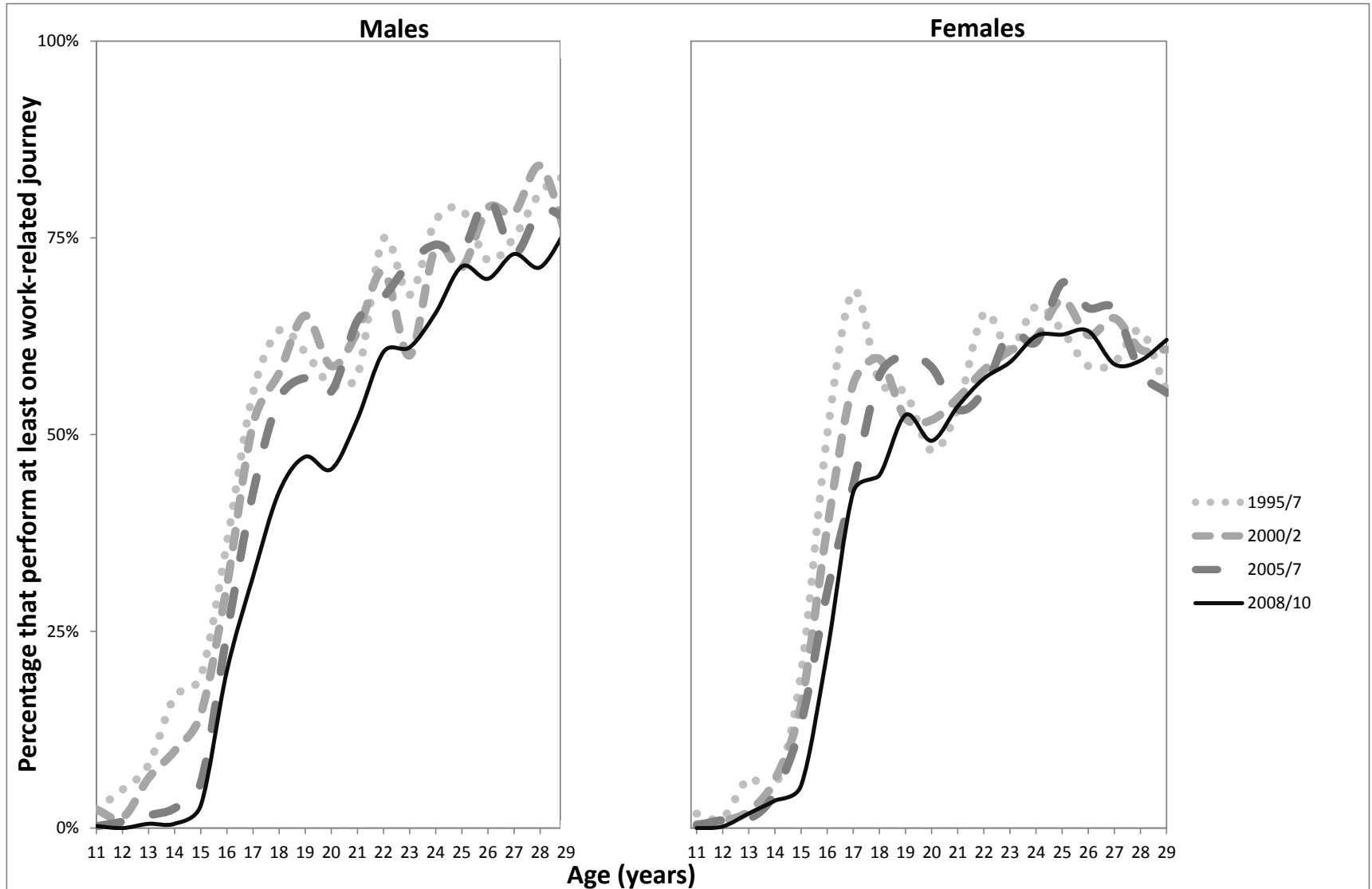


Young men have experienced the most substantial setbacks. As their access to blue-collar occupations has declined over the past 30 years, they have been left either unable to find work or are increasingly likely to work in food, personal service, sales and office support occupations that often pay low wages. In 1980, young men earned 85 percent of the average wage in the labor market; today, they earn only 58 percent of the average wage.



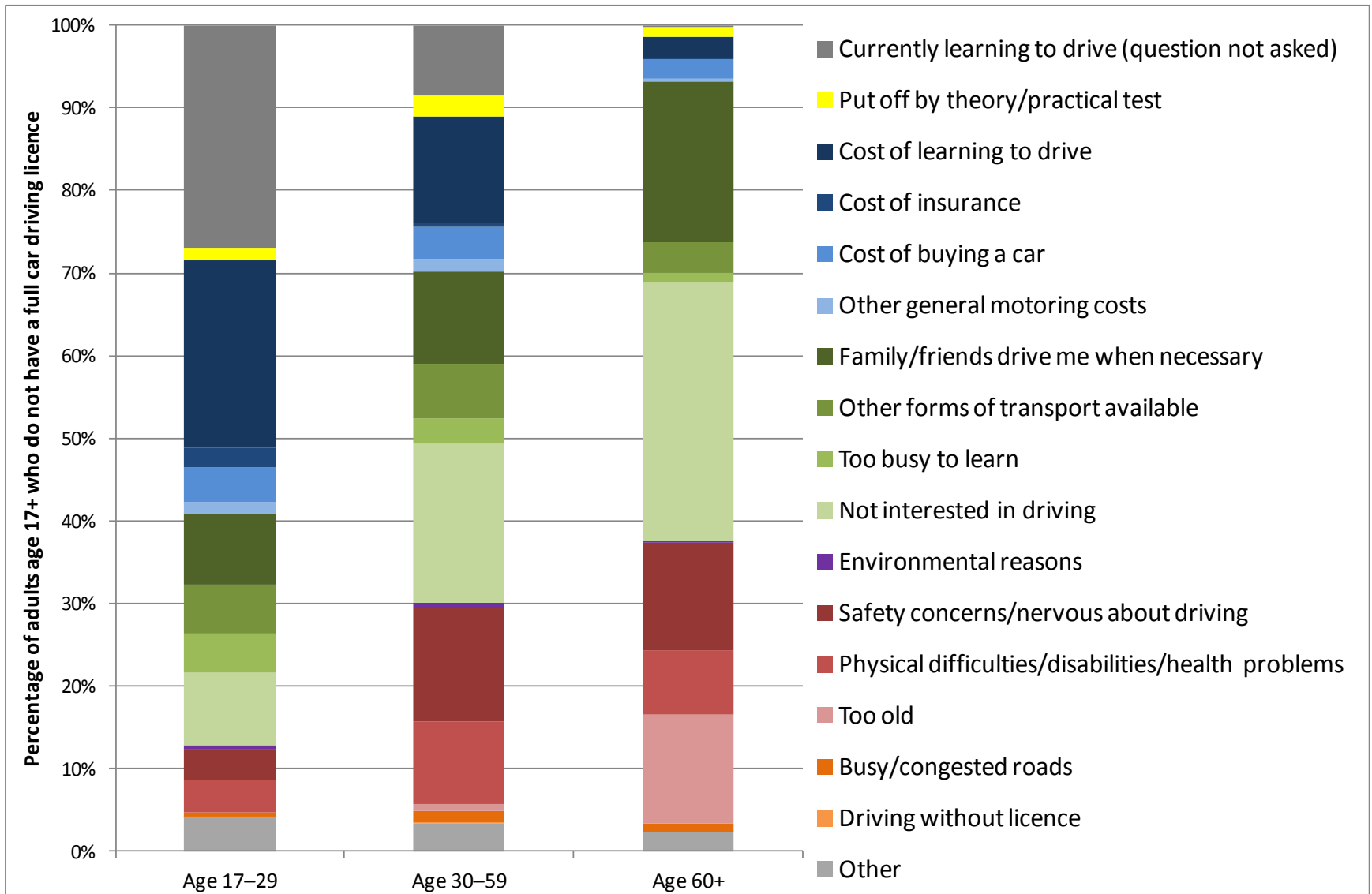
The enormous declines for young men are due in part to their failure to keep up with the growing skill premium in the labor market relative to young women. Young women began enrolling in college and earning college degrees at higher rates than men in the 1990s, and the gender gap has widened in the years since.

Drop in economic activity begins early in teenage years (GB again)



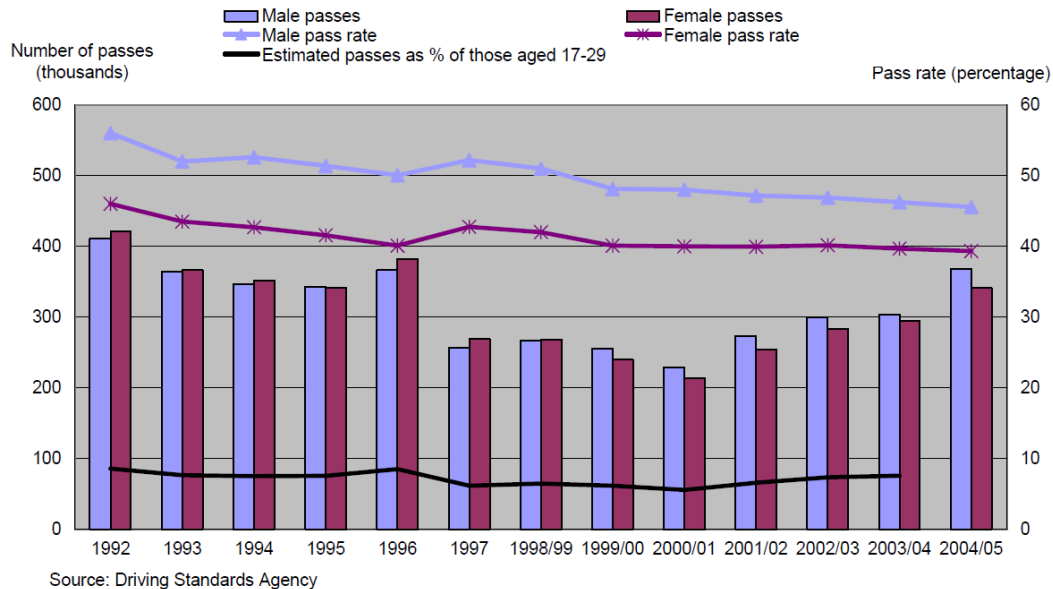
Analysis of *National Travel Survey* diary data

'Main' reasons for not driving, by age



Driving tests, lessons, insurance

Chart 5 Practical driving test passes and pass rates by gender 1992-2004/05



Barbara Noble: Why are some young people choosing not to drive? (2005)

- Average British young adult spends 1.7 years (20+ months) in 'learning to drive' status between ages 17 and 29
- Average test-passer has spent c.£1,000 on driving lessons
- Today's (2013/4) pass rates: 52% (theory test), 47% (practical test)
- 22 • Average cost of insurance for 17-year-old male (2012): \$5K/year

Conclusions & looking forward (1)

- **Speculative** hypotheses: Available evidence suggests attitudes-to-sustainability & online-activity are not associated with young adults' decreased 'auto-mobility' (but we must be cautious and open-minded)
- We need to better understand **New** manifestations of the **Classical** hypotheses:
- The puzzle is that young adults 'auto-mobility' fell during the 2000s despite rising GDP/capita. But *their* GDP/capita was not increasing – they've been in recession since 2001.
- The run-up in fuel prices in the 2000s affected all ages. But the increasing cost/difficulty of acquiring a driving licence disproportionately affected young people (older adults were 'grandfathered'). Similar for motor insurance.
- We *speculate* that a similar 'grandfathering' phenomenon from the run-up in British home prices may be associated with young people's concentration in urban flat-renting arrangements

Conclusions & looking forward (2)

- Nearly all analyses are cross-sectional, so provide limited insights into the time-trend and tell us nothing about the direction of causality ($A \rightarrow B$, or $B \rightarrow A$, or $A \leftrightarrow B$)
- Big, important research questions remain:
 - Are the 'new' manifestations of 'classical' hypotheses the whole story (in a statistical sense) – or is there still, after taking them into account, an 'X' factor that requires further explanation?
 - How trustworthy are the data? (e.g. has intentional misrepresentation of status/behaviour increased?)
 - Are they happy? What happens when they 'grow up'?
 - Have wider outcomes (labour force participation, housing, etc.) been impacted – if so, how and how are effects distributed across the population of young adults?