



Transport and economic growth

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- ▶ Transport and economic growth:
 - Policy
 - Theory
 - Empirical evidence
 - What's going on?
 - Other impacts of transport investment
 - What else could we invest in?



10. There are 3 key strategic outcomes that we must focus on to achieve this vision. They are to:

- **Improve journey times and connections**, to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety;
- **Reduce emissions**, to tackle the issues of climate change, air quality and health improvement which impact on our high level objective for protecting the environment and improving health; and
- **Improve quality, accessibility and affordability**, to give people a choice of public transport, where availability means better quality transport services and value for money or an alternative to the car.

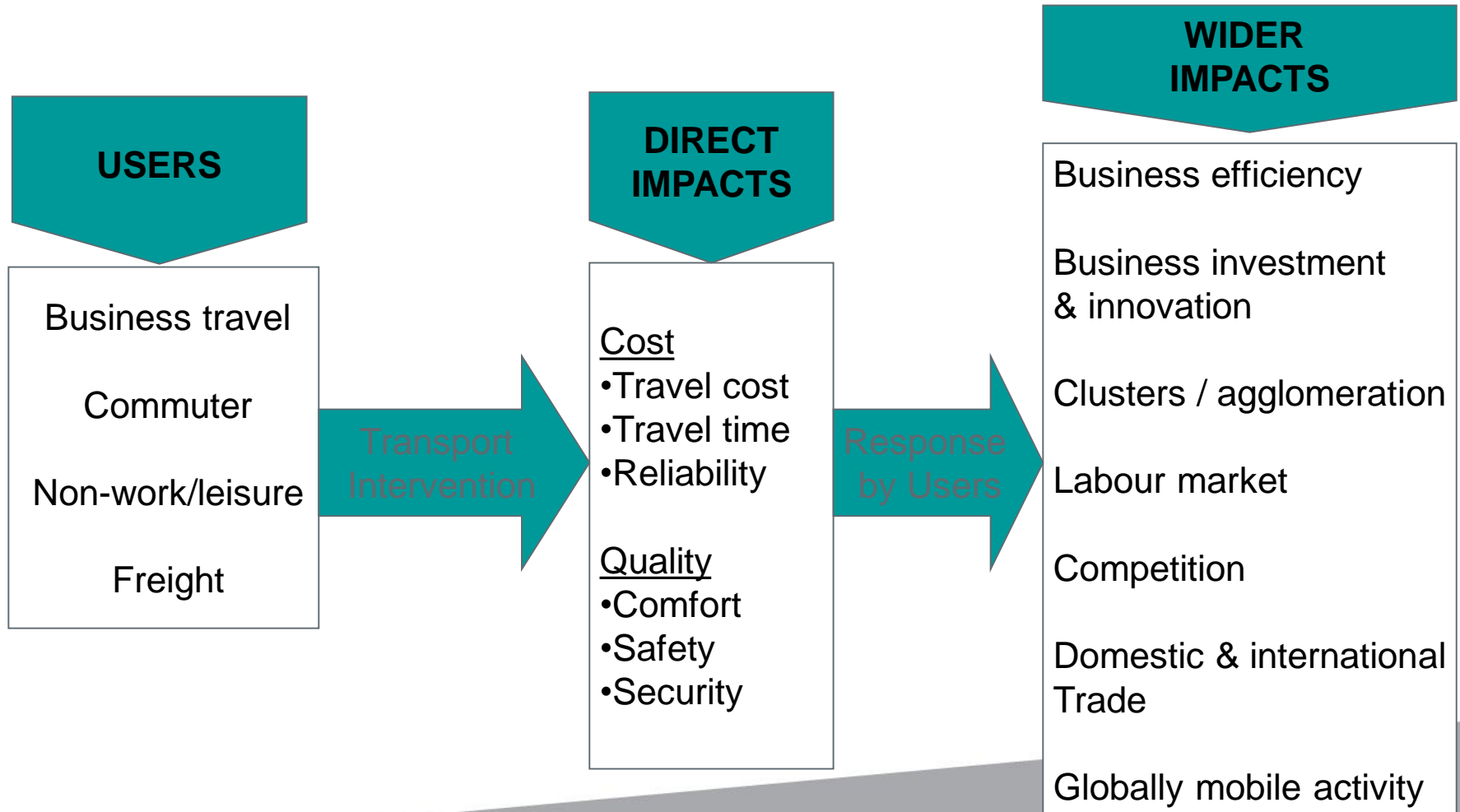


**Similar arguments
for City Deal
investments now**

Why investment in transport should increase overall economic growth

- ▶ Greater factor productivity
 - New road or rail increases accessibility
 - Accessibility reduces transport costs
 - Costs of production decrease so more is produced, more cheaply
 - Market share and competitiveness increase
- ▶ Access to better paid jobs
- ▶ Larger labour pool for employers
- ▶ Agglomeration effects

Eddington Report – Micro Drivers of Productivity

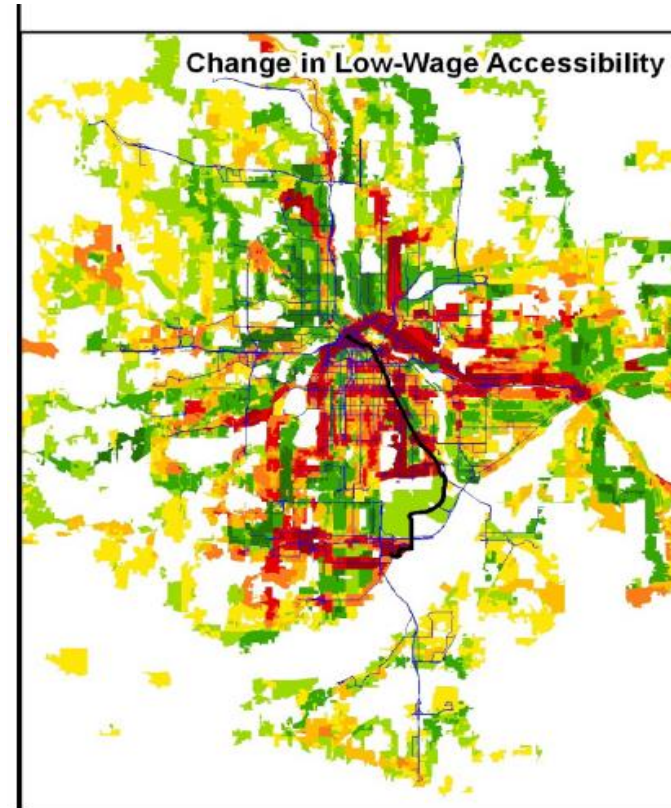


Agglomeration

- Agglomeration economies: positive externalities due to spatial concentration of economic activity
- “Firms derive productivity advantages from locating in close proximity”
 - Larger or pooled labour market
 - Knowledge interactions
 - Specialisation
 - Sharing of inputs and outputs
- ▶ **Wider economic benefits of transport improvements: if transport increases agglomeration it should increase productivity**

Labour markets

- Better accessibility – access to more jobs/staff
- People get (better) jobs – reduced benefits, increased tax take, higher wages... But:
 - For poor/PT dependent – is lack of transport main barrier? – many empirical US studies found no impact of better PT on low income employment
 - Could find no empirical studies on impact on employment overall





- ▶ Inward investment (FDI) – major business investment into one area from overseas
- ▶ 2016 study of 5 GB regions change in GDP over time:
 - Only in West Midlands manufacturing road infra important
 - Elsewhere – tax, labour costs, education, market size
- ▶ Central European countries:
 - 2009 study concluded IT and telecoms infrastructure more impntnt than transport
 - 2016 study – market size, education, governance, corruption index most important



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But is transport investment enough?

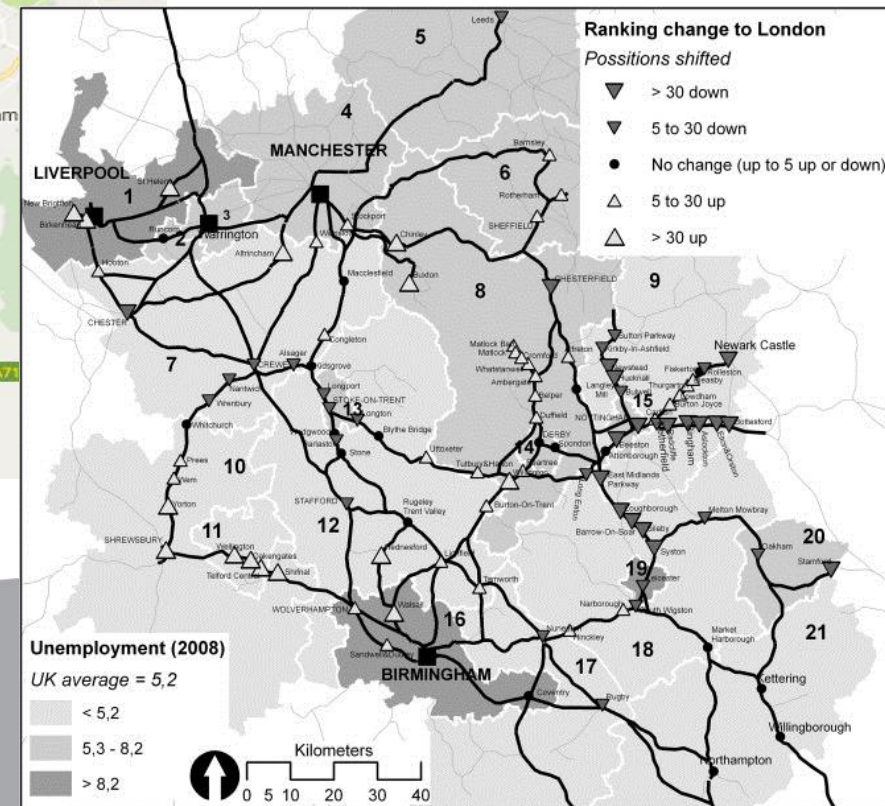
- ▶ Effects of improved accessibility confusing:
 - Some areas grow when congestion high e.g. London
 - Some areas grow without transport investment e.g. Pendle (East Lancs); Inverness
 - Some areas have transport investment but do not grow (Humberside – Humber bridge)
- ▶ Transport investment may help structurally strong economy to grow but not enough in weak economy
- ▶ Structurally strong economies can grow without major transport investment (Ireland in 1990s/2000s)
- ▶ Removing bottlenecks in strong economies may allow faster growth (if congestion then managed)

Possible counterintuitive effects?



- ▶ Two way road effect
- ▶ Accessibility in one area improved at expense of another

Sánchez-Mateos, Héctor S. Martínez, and Moshe Givoni (2012)



Empirical evidence – economic growth in specific localities

- ▶ Skye bridge – toll removal – effects positive on some sectors, negative on others
- ▶ Borders Rail – tourism nights up in Borders – but down in rest of Scotland
- ▶ New rail stations attract new housing – but is it net growth?
- ▶ 2015 meta review found 2-3 rigorous empirical evaluations showing impact of roads at local level (up to 20km from road):
 - No clear impact on jobs
 - Positive effect on GVA – 0.4%
 - Positive effect on productivity and wages – 0.2%

Empirical evidence – economic growth in entire countries

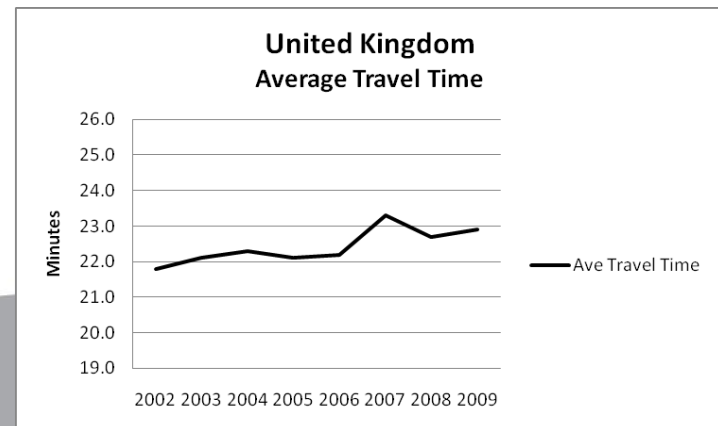
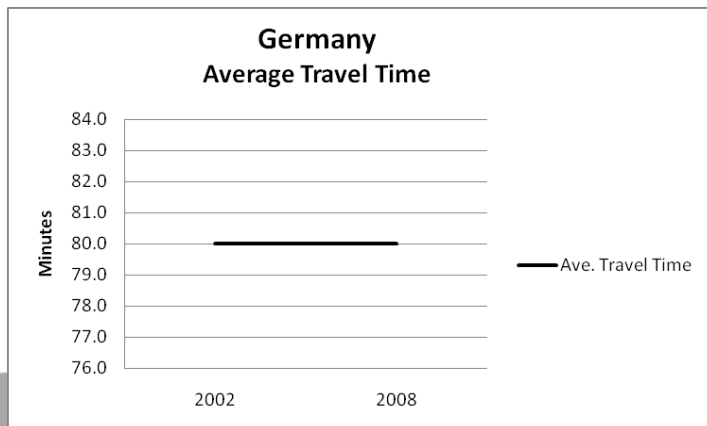
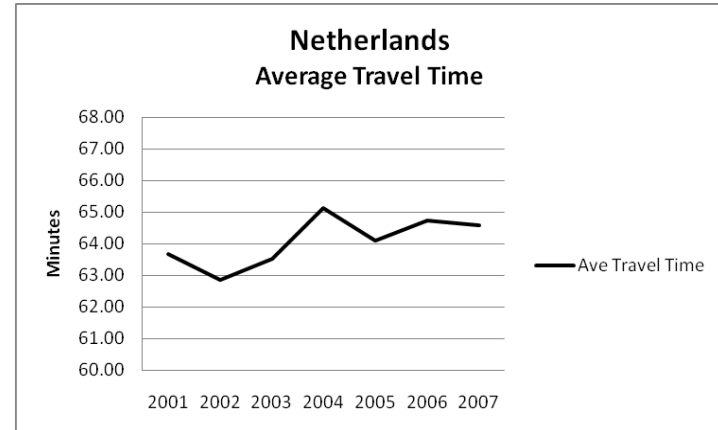
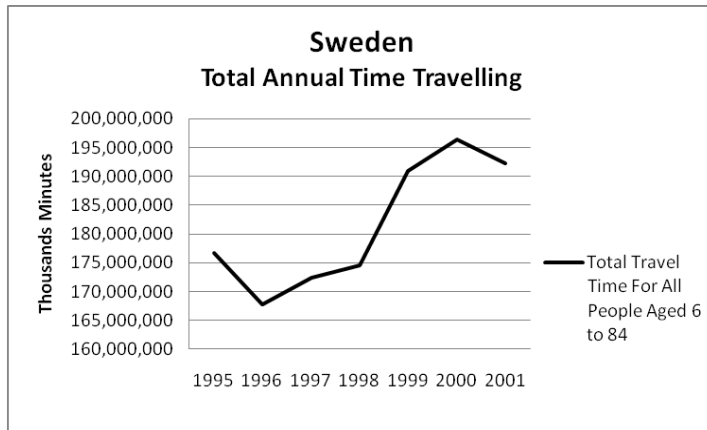
- ▶ *Considering developed countries like Scotland with developed transport networks:*
- ▶ **There is no high quality empirical evidence that transport infrastructure investment will boost economic growth of a country overall**
- ▶ *(Finding of review by What Works Centre for Local Economic Growth (WWCEG), 2015 (link on last slide))*

Does new surface transport infrastructure help increase GDP?

- SACTRA (1999)
 - *‘Empirical evidence of the scale and significance of such linkages is weak and disputed.’*
- Eddington (2006)
 - Relieve bottlenecks – rather than providing entire new lengths of infrastructure.
 - Emphasis on charging – otherwise new infrastructure only slows rate at which congestion worsens
 - Emphasis on agglomeration benefits, based on Graham (2006)

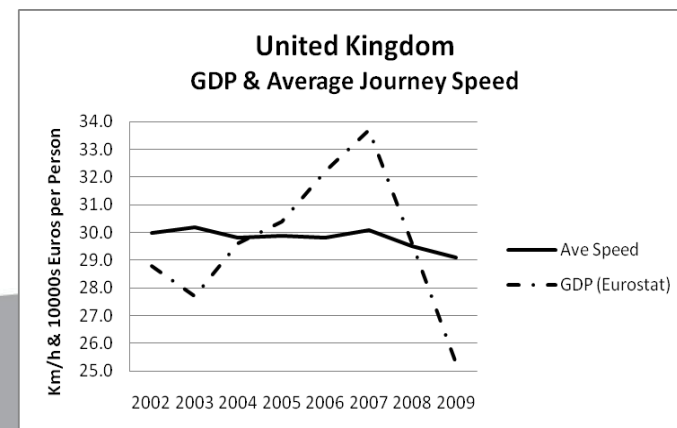
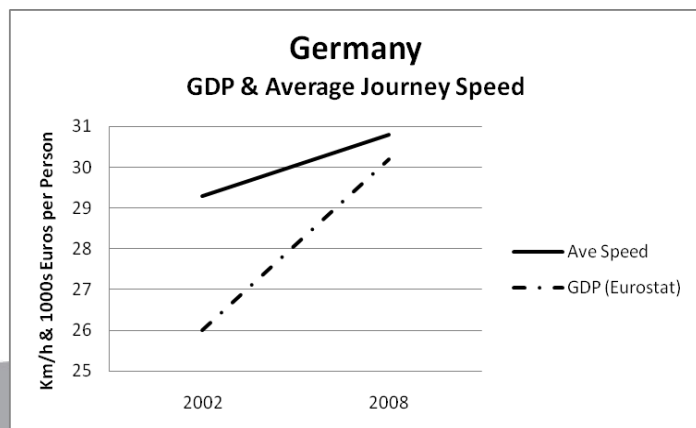
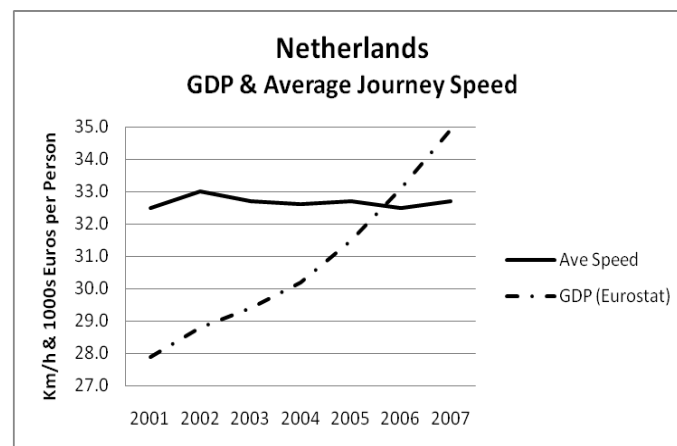
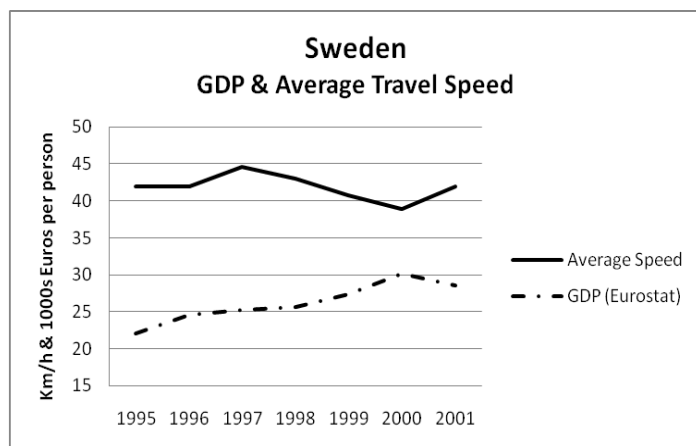
Journey times, time spent travelling and economic growth

► Journey times -



Journey times, time spent travelling and economic growth

► GDP & average journey speeds -



Journey times, time spent travelling and economic growth

- ▶ Any link between journey times, time spent travelling and economic growth - extremely weak.
- ▶ Average speed of personal travel remained remarkably constant (with exception of change in Germany between 2002 and 2008).
- ▶ Economic growth rates show no correlation with changes in average speed
- ▶ Countries travelling fastest are not most wealthy

What's going on?

- ▶ Why might links between transport investment and economic growth be difficult to establish empirically?
- ▶ Factor productivity:
 - For most companies - transport small part of cost of production (<5%)
 - Labour and plant much more important
 - But can be 70% of transport costs in terminals (loading and unloading)
- ▶ So much other “noise” in economy (GDP effect of Forth Bridge closure)
- ▶ Ex-post evaluations – very few, poor quality, no control groups
- ▶ Very difficult to establish causality, additionality

Difficulties with agglomeration effects



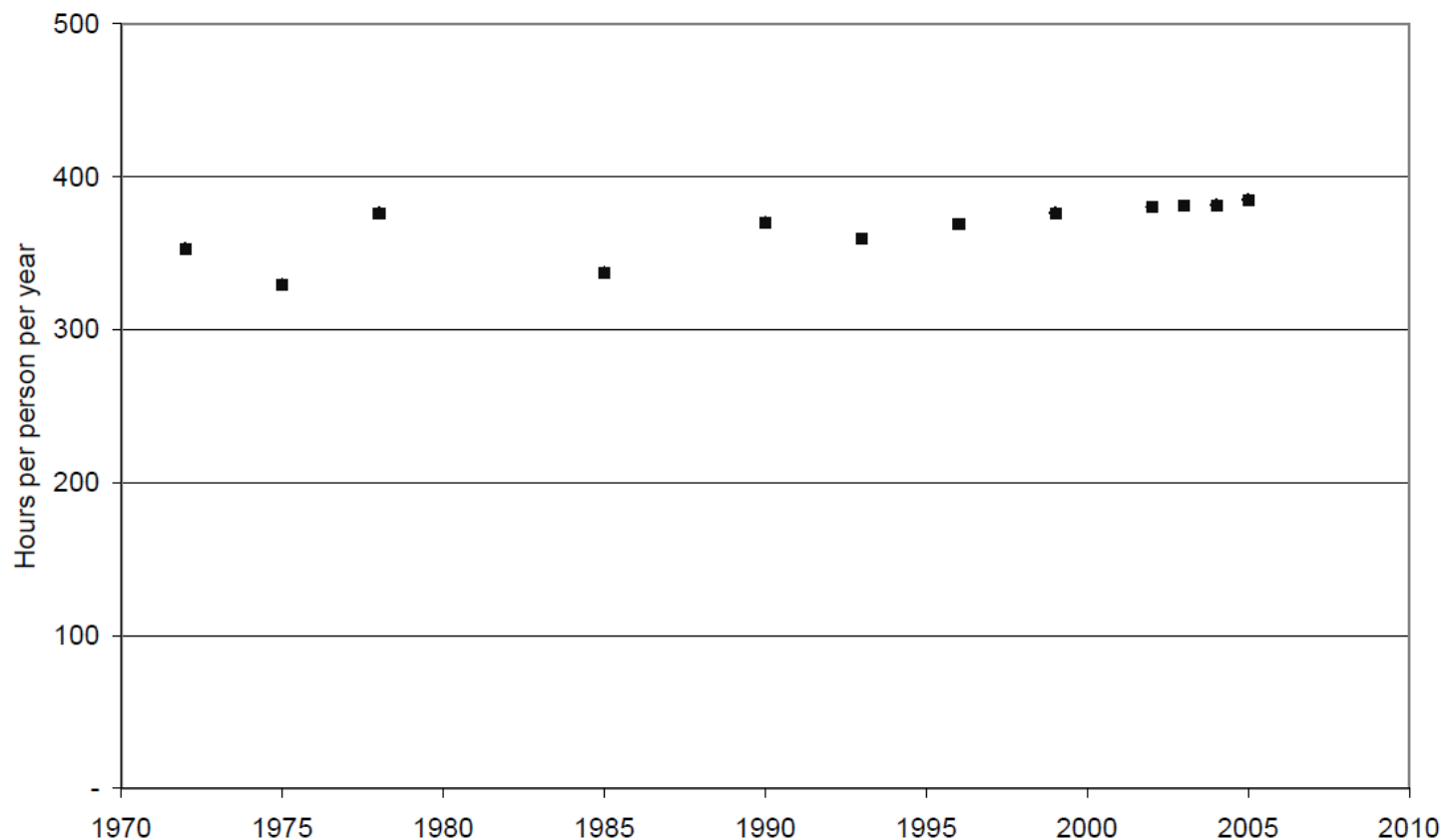
► Graham and Dender (2010):

- Predicting how much job density will increase as result of transport investment
- Many factors affect agglomeration - difficult to unpick effect of accessibility
- Agglomeration economies fall quickly with distance
- Found no relationship between accessibility and productivity over wide range of empirical data
- “For transport appraisal, this implies that the use of conventional point elasticity estimates [of density/productivity relationship] could be highly misleading.”



Other impacts of transport investment

Travel time per person per year - constant

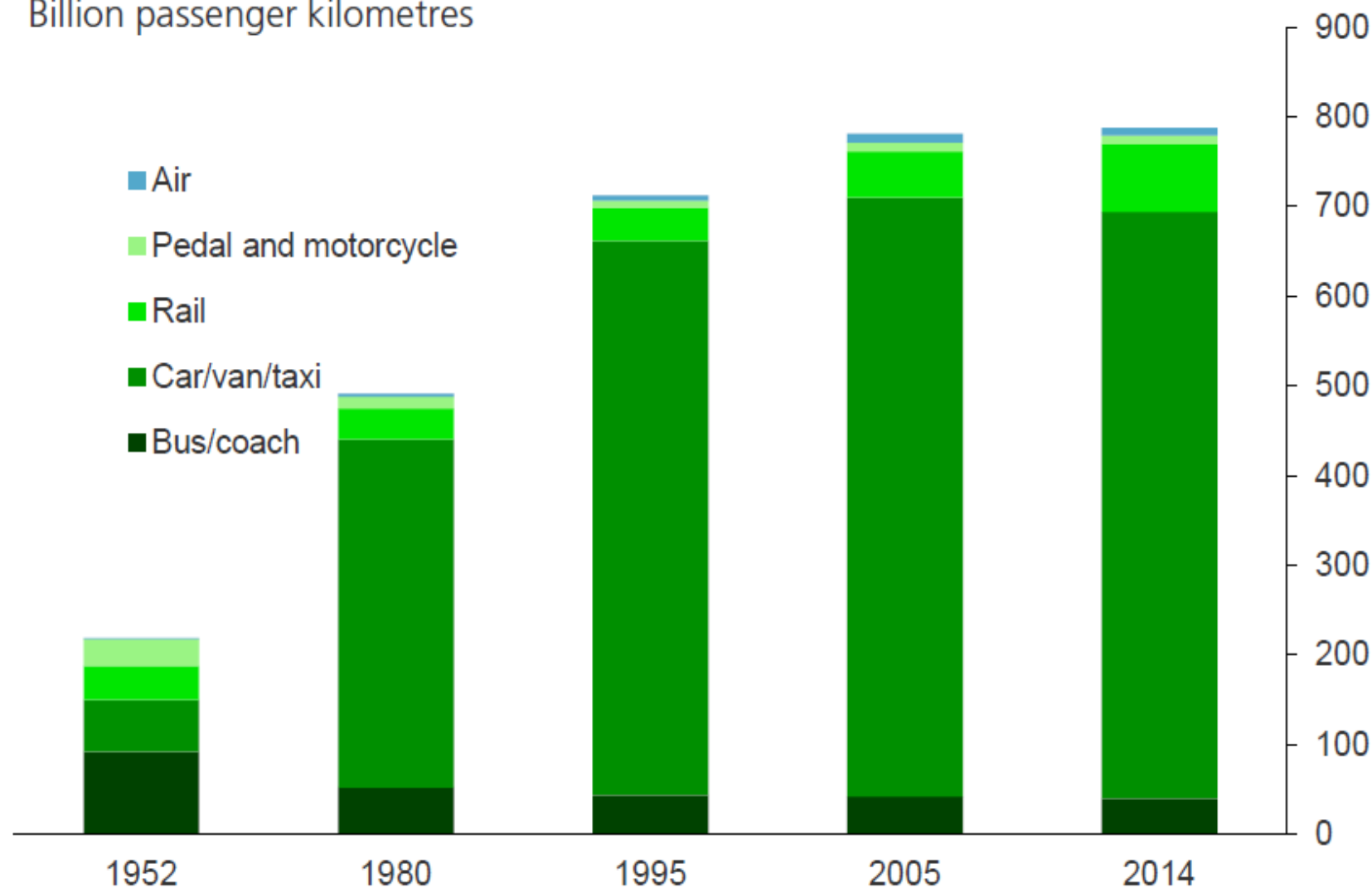


Average travel time (hours per person per year) - DfT

Passenger transport by mode, Great Britain

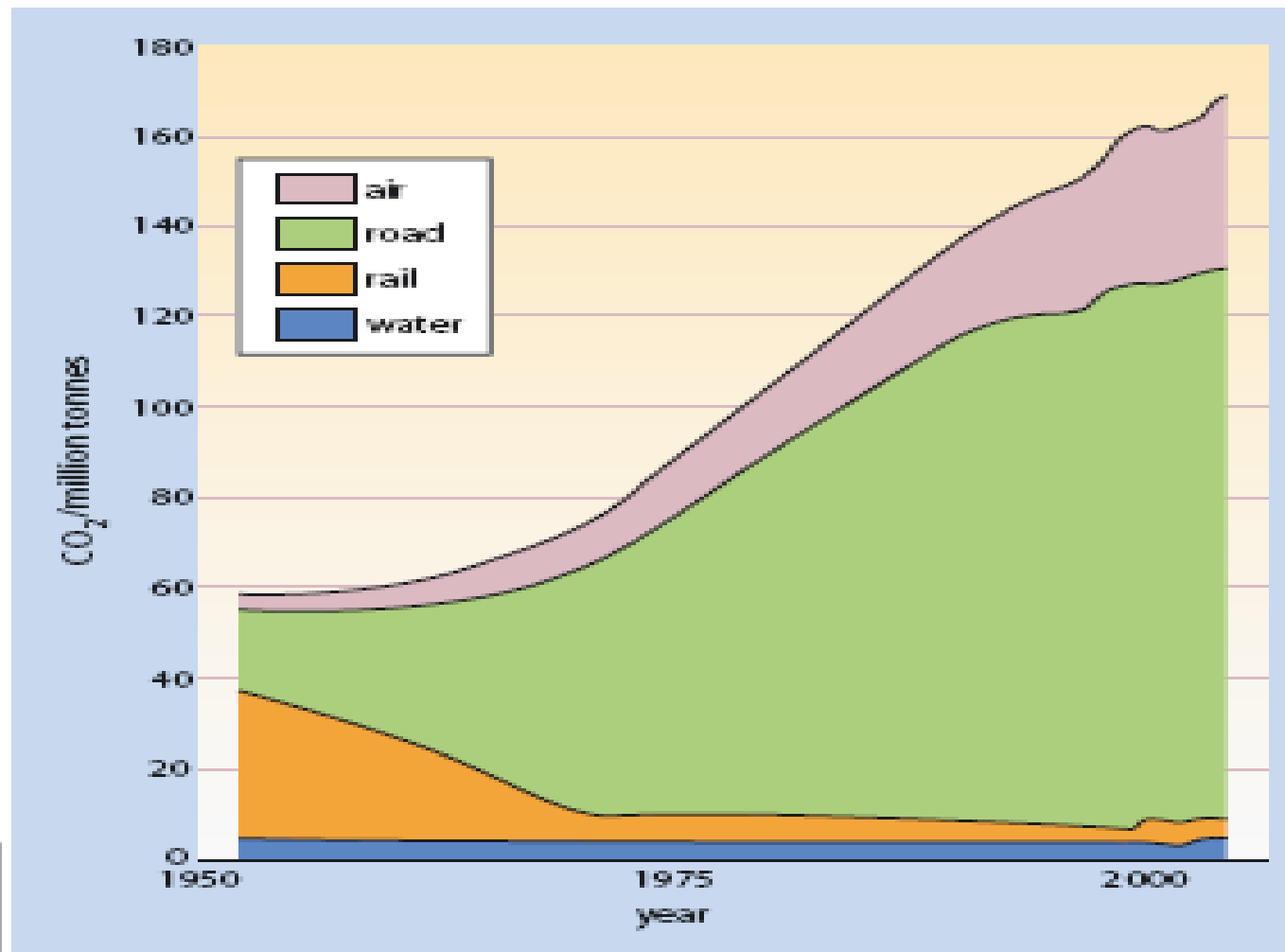
Billion passenger kilometres

- Air
- Pedal and motorcycle
- Rail
- Car/van/taxi
- Bus/coach



UK transport CO₂ emissions 1952-2004

(source: DTI)



.. ..Has investment reduced time spent travelling? ..

- Investments in big transport schemes don't cut our total time travelling. Instead, results:
 - People travelling further
 - Larger number of potential destinations
 - Changes in land values
 - 'Urban sprawl'
- Are 'time savings' reasonable proxy for economic benefits of greater accessibilityor....
- Do 'time savings' over-emphasise actual economic development benefits? (Wenban-Smith (2011))

Public spending in other areas? ..

- ▶ For developed economies key factors:
 - (Corporation) tax rates
 - Regulatory framework
 - Education system and level
 - IT and comms infrastructure
 - At regional level, grants/subsidies
 - (Housing?)
- ▶ Tspt infrastructure important only if many industries in country dependent on transport (e.g. Very agricultural country)



- Impacts of transport investment on economic growth – empirical evidence suggests these:
 - Limited
 - Poorly understood
 - Not necessarily additional
- Other areas of public spending may have bigger impacts
- But read reports for yourself (next slide) and have a real debate with expert advisors and politicians before assuming that your new road or rail station will automatically create jobs

Thank you for listening

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Two very good recent summaries of literature on this topic:

<http://www.transport.govt.nz/assets/Uploads/Our-Work/Documents/edt-contribution-of-transport-lit-review.pdf>

http://www.whatworksgrowth.org/public/files/Policy_Reviews/15-07-01-Transport-Review.pdf