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Lessons from High Speed Rail

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12 November 2013

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o How do we evaluate transport investments in the UK?

o Case studies: HS1, HS2, other major investments

o How should we evaluate transport investments?

o Lessons Learnt – applications to Aviation
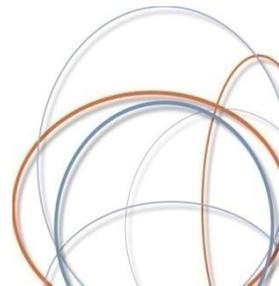
o **Standard transport benefits**

– Time savings, frequency, reliability, safety improvements

o **Wider Economic Impacts**

– Agglomeration – businesses more productive through being closer together

– Move to More Productive Jobs – commuters can take more productive jobs

– Guidance derived from Crossrail – commuter link – not suitable for longer distance investments of this scale and magnitude

o **Restricted Regeneration impacts**

– Getting currently unemployed people into work

o **NO new activity or net additional economic activity**
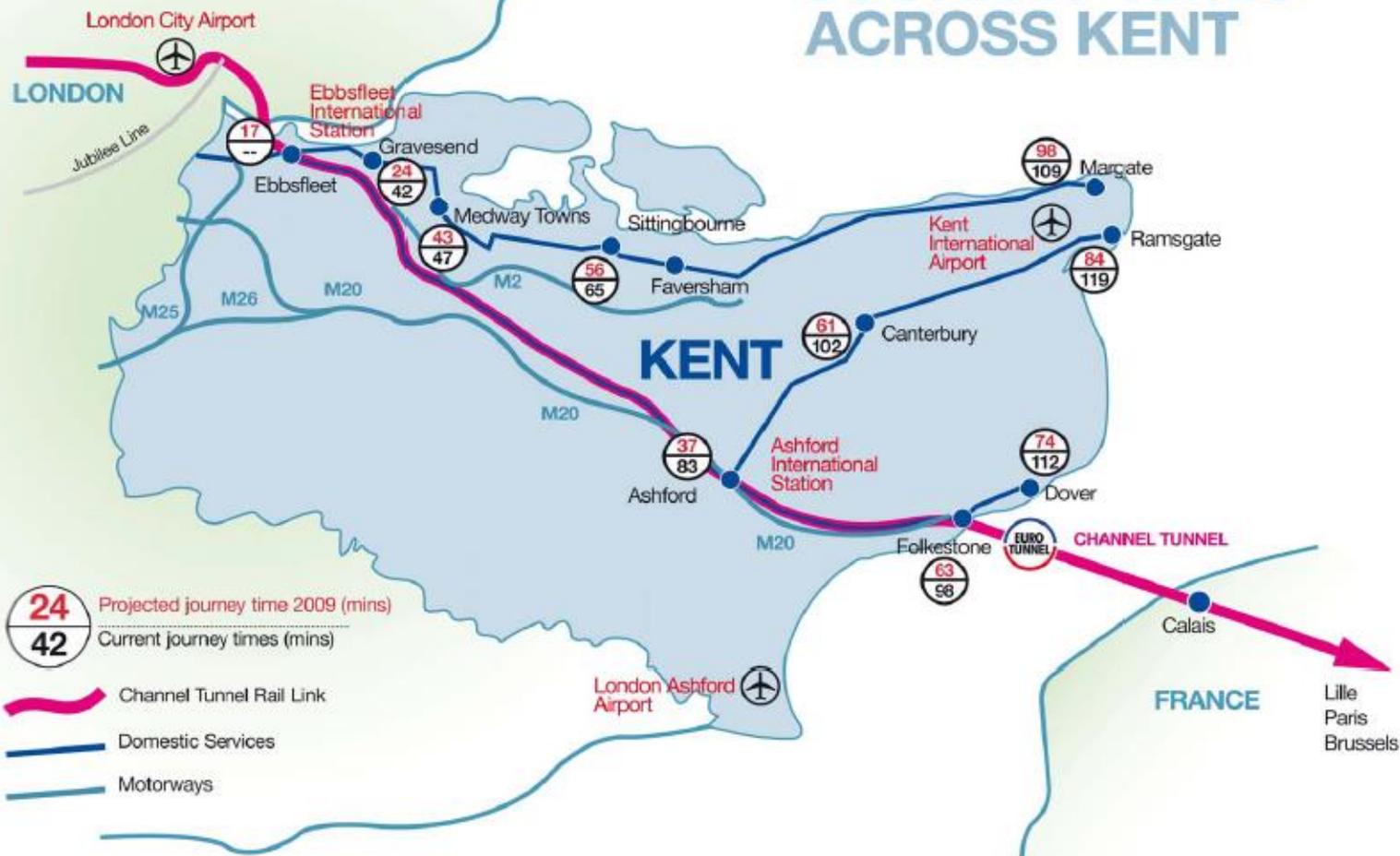
o BCR 1.7 including standard & WEIs

o WEIs doubled the BCR

o 15,000 homes & 70,000 jobs, £4.4bn GDP per annum

o If only 5% of these 'additional': £10bn of regeneration benefits (60yr NPV)

o Estimated house price increases from HS1

Increases in median house price due to HS1

20,000 to 30,200	(3)
10,000 to 20,000	(9)
6,000 to 10,000	(18)
4,000 to 6,000	(14)
3,000 to 4,000	(12)
2,000 to 3,000	(18)
1,000 to 2,000	(27)
500 to 1,000	(14)
0 to 500	(9)

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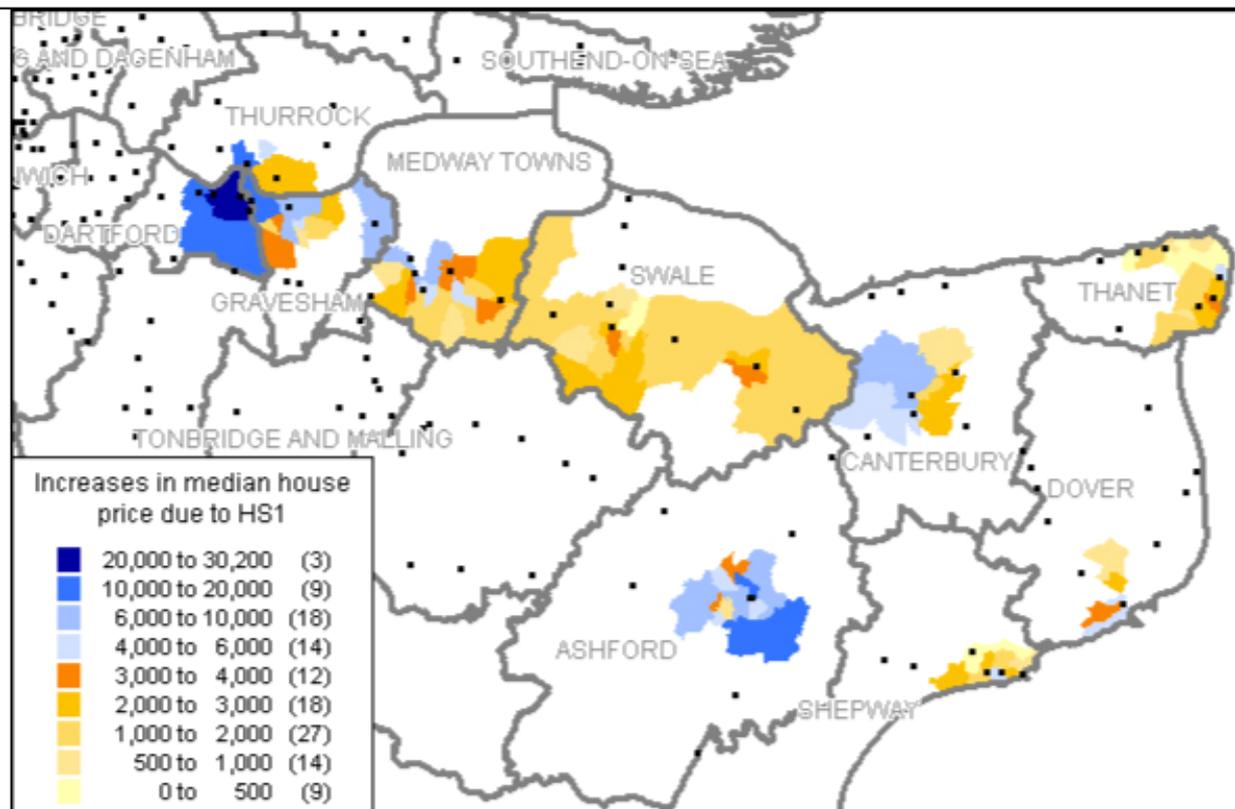
o Y Network - Phase 1 London-Birmingham; Phase 2 north west to Manchester and north east to East Midlands & Leeds

o Objectives are relieving capacity constraints, reducing journey times & transforming the economic geography of the UK

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o Standard transport benefits: BCR 1.8

o WEIs increase this to 2.3

o Sensitivities see the BCR rise to 2.8-4.5

- Central scenario has demand growth stopping in 2036 (3 years after opening)

- Sensitivities have demand growth continuing to 2040 and 2049

- Case tested for different Values of Time and found to be robust

o New evidence suggests benefits of £15bn per annum

- BUT doesn't account for other factors (eg skills, land cost etc)

- Still doesn't capture step change impacts – all activity levels are the same, they are just more productive

- Capacity release still poorly understood – freight & commuter
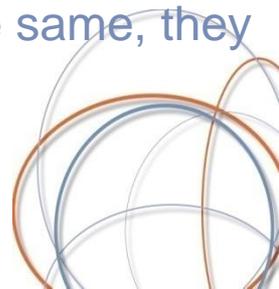
o WEIs dramatically changed the case for Crossrail & NLE

Scheme / Benefit type	NLE	Crossrail	HS1	HS2
Conventional BCR	1.5	2.0	0.9	1.8
BCR including WEIs	3.0 (central) up to 9.0	3.1 (central) up to 3.5	1.8	2.3 up to 4.5
WEIs additionality to BCR	1.5-7.5	1.1-1.5	0.9	0.5

o WEIs impact is much larger for commuter routes

o Jubilee Line didn't pass the test for BCR but benefits have far exceeded what they were predicted to be

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o Demand typically exceeds forecasts

o Property values around stations up to 67% higher

o Cities connected to line grow population and employment ~20-30% faster

o Huge development around stations (eg Lyon 43% increase)

o In some areas uplifts of 30-50% have been seen in land values (eg Lyon 35% increase)

o Studies broadly suggest that HSR has 1-3% impact upon overall GDP growth

o Can create new commuter cities (eg Vendome)

o Can transform tourism (eg Lleida 15% increase)
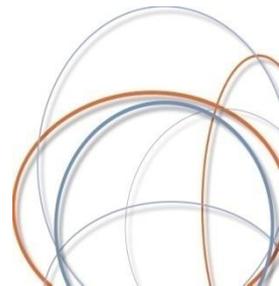
Connectivity & Activity

o Relationship now accepted (most famous evidence Eddington)

o Better accessibility ~ higher employment and more residents

o There is feedback – causation does not run in one direction
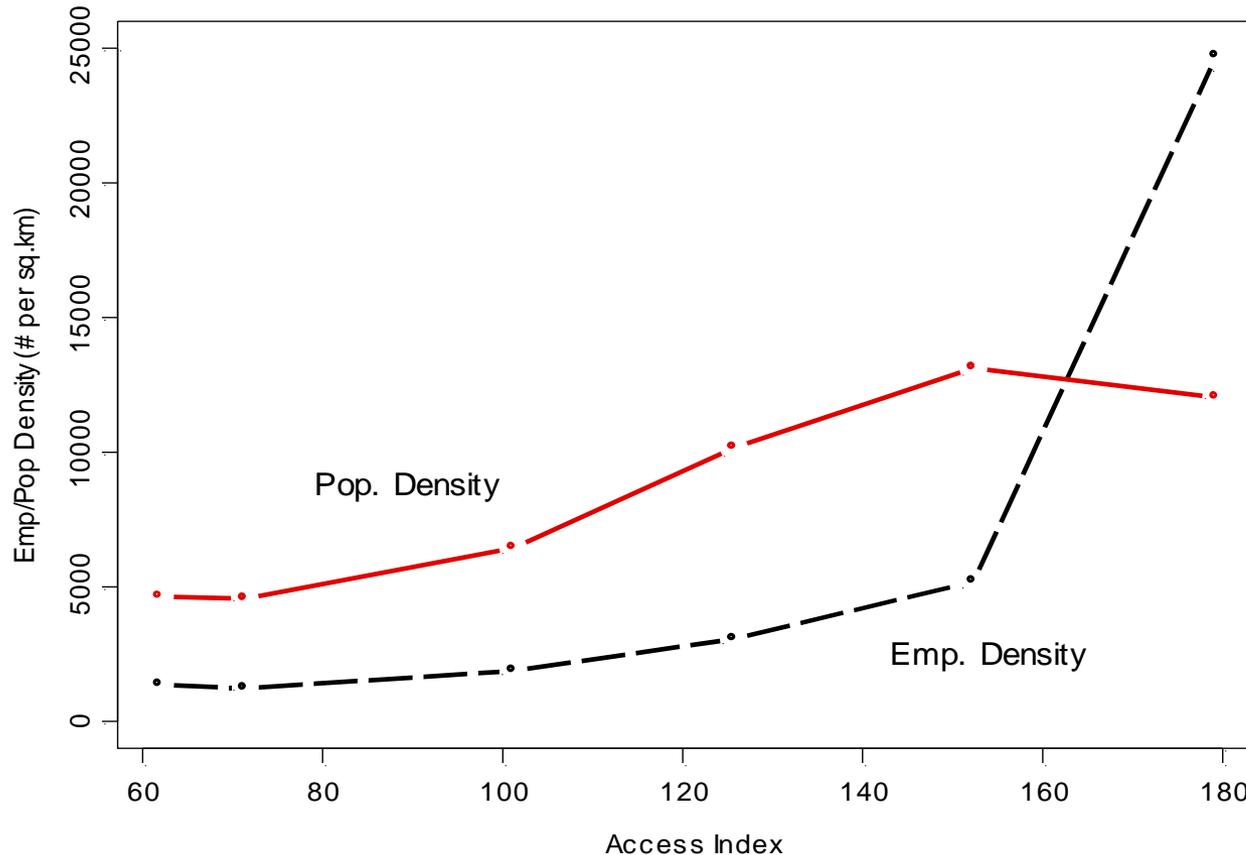
More trips & Employment growth

o Simple, but powerful

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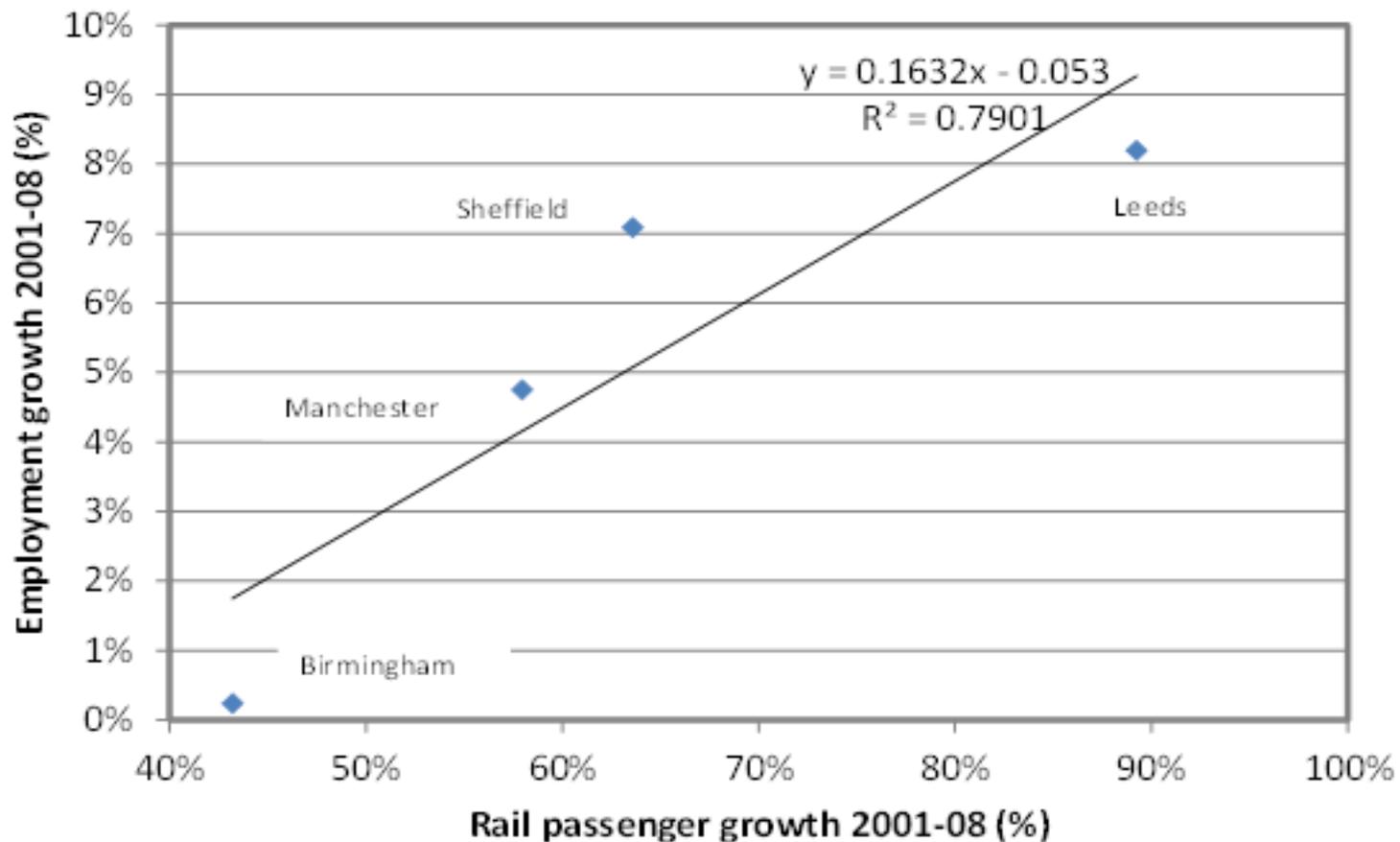
o Potential for the future to be different from the past

o Potential for step change to occur

o Potential for net additional activity

o Run scenarios and sensitivities

o A suite of models rather than one black box to try to capture everything
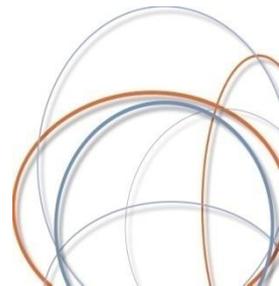
o Think about potential for Step Change

– The possibility that the future is different from the past – both scale and speed

o Think of it as a cohesive investment

– Eg Parkway station, link to cities; City station, link to commuter areas; UPE, surface access link; Airports' links to catchment

o Understand the goals before starting evaluation

– HS2 started badly due to focus on time savings when case was about capacity & transformation; Aviation, hub airports will be different from others (eg Heathrow v Stansted)

o Better metrics of accessibility needed

– HS2 too focused on time savings, people within 45mins etc; World Bank & IATA measures useful here

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o Importance of public & political support
- Understand your audience

o Models only as good as the data/assumptions underpinning them
- Test sensitivities of results to assumptions & be transparent about this – no black boxes
- This is particularly important when step changes (ie dramatic differences from past trends) are being considered

o There isn't necessarily one perfect model solution
- May need several approaches to provide reassurance and support on the potential magnitude of benefits
- May need different models for different types of investment

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Thank you!

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