

Bridge to Somewhere:

*Development Effects of Auckland's
Northern Motorway Extensions*

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The Harbour Bridge leads to Auckland's Northern Motorway – and then ...



Outline

- We estimate benefits of Auckland's Northern Motorway extensions post-1990 to Orewa
- Use change in land values (after controlling for other factors) as summary indicator of value
 - Modern UK/US methodology (e.g. Crossrail)
- Also examine population, employment & income changes
- Compare estimated benefits with project costs to measure net benefit (& B:C)



History

- Auckland Harbour Bridge opened 1959
- Sporadic M'way extensions afterwards
- Major extensions started in 1990s
 - Opened up Albany
 - Extended to Orewa (Silverdale)
 - MUL causes gap in development
- Bus-lane is a later development
- Extension now being constructed to Puhoi

North Shore & Rodney



North Shore



Methodology & Caveats

- Firms & households pay to locate in areas with good amenities & transport links
- Reflected in increased land value above what would otherwise have occurred
- So measure this “abnormal” increase
- 3 cases where B/Cs not all internalised:
 1. Costs may be borne elsewhere (e.g. by central government)
 2. Extension may reduce attractiveness of other localities
 3. Extension may increase attractiveness of other localities
- We adjust for these effects

Main Approach

- Deflate land values (per ha) by average Akld values; so dealing with *relative* value changes
- Estimate effect of (changing) distances from M'way exits on values, controlling for shifts in sub-regional influences & area characteristics
 - Non-linear; with effects limited to 7km
 - Plus effects on northern towns & existing exits
- Calculate values with & without new exits
- Difference gives benefit of extension (in \$2004)
- Compare with discounted costs

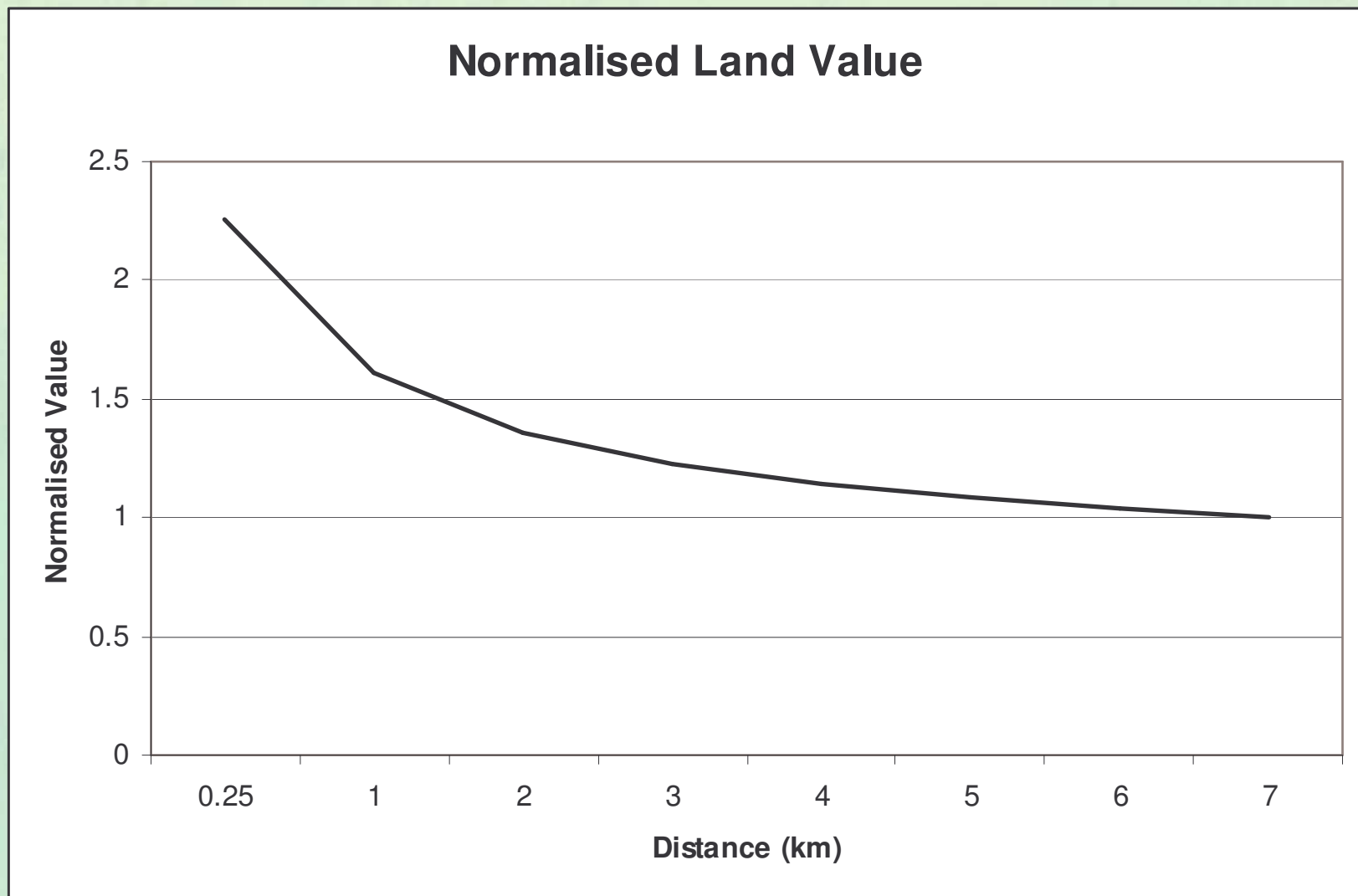
Approach (cont)

- Values cover all meshblock areas in Rodney & Nth Shore within MUL (& outlying towns) over 3 waves, 6 yrs apart (1992, 1998, 2004)
- Distinguish main North Shore areas from:
 - Orewa/Whangaparoa
 - Wellsford & 'Warkworth' respectively
 - Areas within 2km of existing exits
- Econometric equations estimated with alternative techniques to test robustness

Additional Information

- Population & employment rose very strongly near new exits & in northern towns
 - Growth strongly exceeded Auckland region growth
 - Especially strong growth in Orewa/Whangaparoa
 - Also in & around Warkworth/beaches (but not Wellsford)
 - And in vicinity of Albany
- Incomes grew strongly in northern towns
 - Albany incomes didn't quite keep pace with Auckland
 - Wealthy people wish to live near coast; not necessarily near CBD

Estimated Land Value Gradient (Distance from Nearest Motorway Exit)



Benefit Calculations

- We estimate benefits:
 - including possible loss of benefit in areas near existing exits
 - including & excluding northern town benefits
 - using data with & without 1998
 - using two estimation approaches (OLS, spatial lag)
- Most conservative benefit for Rodney & North Shore is \$2.3 billion (in 2004 \$'s)
- cf estimated discounted costs of \$0.366 billion
 - discounted forward to 2004 @ 10% real
- Implies $B:C > 6$ (even after cost over-runs)
- Some estimates give $B:C$ near 20

Context

- New infrastructure can have major local effects
 - These effects can be measured through land prices
- Northern M'way has had huge development impact
 - both near the new exits & to the north, with large B:C's
- Same methodology being applied in other studies:
 - Zoning impacts; e.g. of Auckland's MUL (large effects – see WP)
 - Canterbury irrigation (highly variable effects; pricing implications - see WP)
 - Auckland rail upgrades (to come)
- Also examining:
 - broadband impacts;
 - rural emergency service provision;
 - Auckland accessibility & productivity;
 - exporter location around infrastructure ; ...

Extra Information

Variable and Area (1)	1991	1996	2001	2006	% Δ 1991 to 2006
POPULATION (2)					
Inner Treatment North Shore MBs	57129	67221	77085	89814	57%
Outer Treatment North Shore MBs	75300	83022	86454	94050	25%
Other North Shore MBs	18156	19638	18885	19200	6%
Orewa/Whangaparoa	20799	26496	31164	37431	80%
Warkworth & Related Areas	5571	6237	7095	7827	40%
Wellsford	1719	1653	1740	1665	-3%
Waitakere and Manukau City	363003	409842	451947	515412	42%
Auckland Region	943776	1068645	1158891	1303068	38%
EMPLOYMENT (3)					
Inner Treatment North Shore MBs	28527	34749	39045	47622	67%
Outer Treatment North Shore MBs	36201	41505	42777	49473	37%
Other North Shore MBs	8601	9915	9501	10434	21%
Orewa/Whangaparoa	7998	11178	13257	17628	120%
Warkworth & Related Areas	1923	2412	2949	3465	80%
Wellsford	585	645	741	732	25%
Waitakere and Manukau City	148650	177540	194118	230190	55%
Auckland Region	404709	488334	533856	627834	55%