

Pricing strategies for public transport
Part 3: Appendices
June 2016

Neil Douglas
Douglas Economics

NZ Transport Agency research report 565
Contracted research organisation – Douglas Economics

Abbreviations and acronyms

ADL	Alexander Dennis Ltd (buses)
ASC	alternative specific constant
AT	Auckland Transport
ATC	Australian Transport Council
AUC	Auckland
CHC	Christchurch
ECAN	Environment Canterbury
EEM	<i>Economic evaluation manual</i> (NZ Transport Agency 2010)
EEMV1	<i>Economic evaluation manual volume 1</i> (2010)
EEMV2	<i>Economic evaluation manual volume 2</i> (2010)
GWRC	Greater Wellington Regional Council
h	hour
IVT	in-vehicle time
PCIE	Pacific Consulting (now Douglas Economics)
PE	priority evaluator
RTI	real-time information
SDG	Steer Davies Gleave
SP	stated preference
SQI	service quality index
TfL	Transport for London
TP	transfer price
Transport Agency	New Zealand Transport Agency
UD	universal design
WTN	Wellington

Contents

- Appendix A: Bus and rail routes surveyed4
- Appendix B: User profile by aggregated route 17
- Appendix C: Discussion on ratings in customer market research..... 37
- Appendix D: Vehicle ratings by aggregated route 39
- Appendix E: Stop ratings by aggregated route 42
- Appendix F: Christchurch bus map..... 48
- Appendix G: Auckland bus map 49
- Appendix H: Station ratings..... 50
- Appendix I: Access and egress mode by station..... 53
- Appendix J: Car and bus facility ratings by access/egress mode 56
- Appendix K: 'Before and after' station ratings..... 57
- Appendix L: Stated preference attribute levels 60
- Appendix M: Stated preference balancing weights..... 61
- Appendix N: Calculation of confidence ranges 62
- Appendix O: Stated preference mean score graphs 63
- Appendix P: Standardisation of vehicle quality sensitivity 66
- Appendix Q: Standardisation of service interval sensitivity 70
- Appendix R: Income standardisation of response..... 73
- Appendix S: Stated preference passenger profile and trip, mode and city models..... 78
- Appendix T: Review of values of time, service intervals and mode constants 79
- Appendix U: Review of in-vehicle time, service interval and mode constants..... 81

Appendix A: Bus and rail routes surveyed

Tables A.1 to A.8 present the number of completed questionnaires and the number of bus and train services surveyed by route for Christchurch, Wellington and Auckland.

Twenty-four bus routes in Christchurch were surveyed, some of them only once. Route 3 Airport – Sumner, 5 Hornby – Southshore and the Orbiter were surveyed more than 10 times each. It should be noted that a reorganisation of the bus routes commenced in the final week of the survey. Therefore some of the routes no longer operate or have changed.

Forty-one Wellington bus routes were surveyed covering Wellington, Johnsonville, Porirua, Kapiti and the Hutt Valley. Several services were only surveyed once and the samples are therefore low. Bus routes operating in the Wairarapa were not surveyed. Seven bus services were surveyed more than 10 times including the premium quality and higher-priced Airport Flyer service. All five rail lines were surveyed: Johnsonville, Kapiti, Upper Hutt, Melling and the long-distance Wairarapa rail line. The ‘Capital Connection’ Wellington – Palmerston North rail service was not surveyed.

In Auckland, 123 bus routes and all five rail lines were surveyed. Three bus routes were surveyed 10 or more times: route 957 (Highbury to Birkenhead Wharf), the City Outer Link and the Northern Express. The Auckland ‘Airbus’ Express service which is provided commercially was not surveyed. Waiheke island services (five routes) operated by Fullers bus company were also not surveyed.

Table A.1 Christchurch bus routes surveyed

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
3	Airport to Sumner	AprtSmnr	196	23	9
5	Hornby to Southshore	HrbySshr	123	15	8
7	Halswell to Queenspark	HlswQPrk	59	8	7
8	Casebrook/Hoon Hay	CbrkHHay	34	4	9
9	Wairakei	Wairakei	4	1	4
11	Styx Mill/Westmorland	StyxWstM	23	2	12
12	Northwood/Murray Aynsley	NrwdMrry	3	2	2
14	Harewood/Dyers Pass	HrwdDyPss	4	1	4
15	Bishopdale/Beckenham	BshdBkham	38	3	13
17	Bryndwr to Huntsbury	BrydHntb	11	2	6
20	Burnside/Barrington	BrnsBrnt	27	6	5
21	Ilam to Mt Pleasant	IlamMtPl	40	5	8
23	Hyde Park to Woolston	HPrkWlst	3	2	2
28	Papanui to Lyttelton & Rapaki	PapnLytl	25	3	8
29	Airport to City via Fendalton	AprtFndl	7	2	4
40	Middleton to Wainoni	MdltWnoi	52	8	7
45	North Shore	NorthShr	15	2	8
60	Hillmorton to Parklands	HilmPrkl	24	7	3
81	Lincoln	Lincoln	44	6	7
83	Hei Hei	HeiHei	12	1	12

Appendix A: Bus and rail routes surveyed

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
84	Russley	Russley	14	2	7
88	Rolleston	Rollestn	17	2	9
90	Rangiora Direct	Rangiora	102	4	26
820	Burnham to Lincoln	BurnLncl	17	2	9
M	Metrostar	Metrostar	34	6	6
O	Orbiter	Orbiter	457	38	12
All		N= 24	1,385	157	9

Table A.2 Wellington bus and rail routes surveyed

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
1	Island Bay	IslndBay	181	14	13
2	Miramar	Miramar	63	5	13
3	Karori - Lyall Bay (Green Route)	KariLyLB	299	30	10
4	Happy Valley	HappyVly	57	3	19
5	Hataitai	Hataiti	26	2	13
6	Lyll Bay	LyllBay	18	1	18
7	Kingston	Kingston	80	6	13
8	Kowhai Park	KowhaiPk	51	6	9
9	Aro Street	AroSt	22	6	4
10	Newtown Park	NwtnPark	29	2	15
11	Seatoun	Seatoun	154	12	13
13	Mairangi	Mairangi	10	1	10
14	Wilton - Kilbirnie (Silver Route)	WltnKilb	201	26	8
17	Victoria University	VicUni	29	5	6
18	Campus Connection	CmpusCon	86	9	10
20	Mount Victoria	MtVic	35	4	9
21	Wrights Hill - Vogeltown	WrghtsHill	44	5	9
22	Mairangi - Southgate	MairngiS	59	7	8
23	Mairangi - Houghton Bay/ Southgate	MairngiH	71	9	8
24	Miramar Heights via Evans Bay	MiramarH	12	1	12
43	Khandallah - Strathmore (Blue Route)	KhndSt43	13	1	13
44	Khandallah - Strathmore (Blue Route)	KhndSt44	18	1	18
52	Johnsonville via Newlands	JvlWtn	62	7	9
54	Churton Park	ChurtnPk	201	26	8
55	Grenada Village	GrenadaV	9	1	9
56	Johnsonville via Paparangi	JvlvPapr	10	1	10
81	Eastbourne	Eastbrne	69	5	14
83	Eastbourne via Lower Hutt	EstbrnLH	69	7	10

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
91	Airport Flyer	AprtFlyr	282	23	12
110	Upper Hutt	UpprHutt	96	14	7
115	Pinehaven	Pinehvn	1	1	1
120	Stokes Valley	StksVlly	15	4	4
121	Valley Heights	VllyHgts	13	1	13
130	Naenae	Naenae	16	5	3
150	Western Hills	WestHlls	5	1	5
160	Wainuiomata North	WainuiON	31	5	6
170	Wainuiomata South	WainuiOS	18	2	9
211	Porirua - Wellington	PoriWtn	40	4	10
250	Paraparaumu-Raumati South	ParaRauS	17	3	6
260	Paraparaumu-Raumati Beach	ParaRauB	1	1	1
262	Para'mu-R'mati B'ch via Mazengarb Rd	ParaRauBM	9	4	2
W_J	Johnsonville rail line	JvllLine	590	49	12
W_K	Kapiti rail line	KapiLine	1,299	53	25
W_H	Hutt rail line	HuttLine	939	59	16
W_ML	Melling rail line	MellLine	265	14	19
W_Y	Wairarapara rail line	YrpaLine	290	12	24
Bus		N= 41	2,522	271	9
Rail		N= 5	3,383	187	18
All		N= 46	5,905	458	13

Table A.3 Auckland bus and rail routes surveyed

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
5	Britomart to Pt Chevalier via Westmere	BrtoPtCv	18	1	18
7	St Heliers to Pt Chevalier	StHlPtCv	68	4	17
8	New Lynn to Onehunga	NLynOneh	24	2	12
9	New Lynn to Sylvia Park via Blockhouse Bay Shops	NlynSylP	129	5	26
10	Wynyard Quarter to Onehunga via Unitec	WynOneH	38	6	6
11	St Lukes to Onehunga	StLkOneH	14	2	7
20	Britomart to Westmere via Wellington St	BrtoWstm	83	6	14
30	Britomart to Pt Chevalier via Williamson Ave	BrtoPtCh	79	5	16
80	Henderson to Westgate	HndrWgte	50	4	13
85	Britomart to Swanson	BrtoSwsn	19	1	19
87	Britomart to Ranui Via RSA Village	BrtoRnuV	81	6	14
90	Britomart to Ranui	BrtoRnui	48	7	7
92	Britomart to Albany	BrtoAlby	2	2	11

Appendix A: Bus and rail routes surveyed

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
97	Britomart to Ranui via Te Atatu South	BrtoTAtS	27	2	14
104	New Lynn to Avondale	NLynAvnd	10	2	5
113	Glendene to New Lynn via Great North Rd	GlndNLyn	85	8	11
121	Avondale to Te Atatu Peninsula to Britomart	AvndBrto	2	1	2
122	Henderson to Te Atatu Peninsula	HndrTeAt	8	1	8
130	Larnoch to Patiki Road via Henderson & New Lynn & Rosebank Rd	BrtoNLvH	74	4	19
131	Swanson to Britomart	SwnsBrto	18	1	18
135	Swanson to Patiki Road via Henderson And New Lynn	SwnsNLyn	133	7	19
136	Britomart to Ranui via New Lynn	BrtoNLvR	21	2	11
149	Sturges Rd to New Lynn	StrgNLyn	12	2	6
154	New Lynn to Henderson via Glen Eden	NLynGLEd	138	6	23
163	Henderson to Patiki Rd via Glen Eden And New Lynn	HndrNLyn	10	2	5
173	New Lynn to Titirangi South via Titirangi Beach	NLynTrgS	48	3	16
179	New Lynn to Atkinson Rd via Titirangi Village	NLynTrgV	9	2	5
181	Tanekaha to New Lynn via Takahe Rd and Seabrooke Ave	TnkhNLyn	4	1	4
189	New Lynn to Tanehaka via Astley Ave and Takahe Rd	NLynTnkh	13	1	13
191	Britomart to Blockhouse Bay via Taylor St	BrtoBlkB	2	1	2
193	Britomart to Green Bay via Taylor St and Blockhouse Bay	BrtoGBBB	16	1	16
198	Tanekaha to Britomart Express	TnkaBrtX	11	1	11
220	Midtown to St Lukes	MidTStLk	29	4	7
221	Midtown to Rosebank Rd	MidTRsbk	26	3	9
222	Midtown to Patiki Rd	MidTPtkR	61	8	8
223	Midtown to New Lynn	MidTNLyn	24	4	6
224	Midtown to Henderson via St Lukes and New Lynn	MidTHndr	57	6	10
227	Midtown to Avondale	MdtnAvnd	1	1	1
233	Midtown to New Lynn via Sandringham Rd and St Lukes (4-6pm)	MidTNLSL	77	6	13
258	Civic Centre to May Rd via flyover	CvcCMayR	26	2	13
267	Valley Rd to Civic Centre	VllyCvcC	22	3	7
277	Britomart to Waikowhai	BrtoWkwh	60	4	15
283	Britomart to Hospitals	BrtoHspt	17	2	9
287	May Road to Civic Centre via flyover	MayRCvcC	10	1	10
287	May Road to Civic Centre via Flyover	MayRCvcC	10	1	10
312	Civic Centre to Onehunga via Oranga	CvcCOneh	9	1	9

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
324	Papatoetoe to Onehunga via Massey Rd	PpttBrto	14	1	14
327	Manukau City Centre to Britomart via Massey Rd	MnukBrto	25	2	13
328	Manukau to Britomart via Mangere Centre (no stop at Rimu)	MnukBrTX	49	2	25
334	Otahuhu to Britomart via Massey Rd (no stop at Rimu Rd)	OthhBrTX	47	4	12
338	Onehunga Industrial via Ascot Park and Otahuhu	OnehOthh	8	1	8
344	Papatoetoe to Onehunga via Mangere Centre (no stop at Rimu Rd)	PpttMngr	4	1	4
347	Britomart to Manukau City Centre	BrtoMnuk	13	1	13
348	Manukau Centre to Britomart via Papatoetoe (no stop at Rimu)	MnkuPptt	103	8	13
351	Onehunga to Otahuhu continues as Route 757 to Britomart	OnehBrto	13	1	13
354	Otahuhu to Onehunga via Bader Dr	OthhOneh	39	2	20
375	Mangere Town Centre to Botany Town Centre	MngrBtny	6	1	6
380	Onehunga to Manukau City Centre	OnehMnuk	15	2	8
392	Newmarket to Te Papapa	NwmkTepp	16	2	8
428	Otahuhu to Manukau City Centre via Puhinui	OthhMnuC	11	1	11
447	Otahuhu to Manukau City Centre via Middlemore Hospital	OthhMnuH	21	4	5
454	Manukau City Centre to Clendon	MnukClnd	34	6	6
471	Pahurehure to Papakura	PhhrPpkr	4	1	4
472	Britomart to Red Hill	BrtoRedH	22	4	6
473	Britomart to Keri Hill	BrtoKriH	9	1	9
487	Otahuhu to Manukau City Centre via Otara	OthhOtra	24	3	8
497	Otahuhu to Manukau City Centre via Otara and Flat Bush	OthhMnuO	9	2	5
4849	Britomart to Henderson or TeAtatu (48 or 49)	BrtoHndr	2	1	2
500	Botany Town Centre to Britomart via Ti Rakau Dr	BtnyBrto	123	7	18
500s	Britomart to Cockle Bay (various)	BrtoCckB	47	2	24
501	Britomart to cockle Bay via Botany Town Centre	BrtoCkBB	10	1	10
512	Britomart to Mt Wellington via Ruawai Rd and Panama Rd	BrtoMtWI	4	1	4
522	Mt Wellington to Britomart via Panmure Town Centre	MtWIBrtP	26	2	13
550	Britomart to Cockle Bay via Newmarket	BrtoCckBN	13	2	7
550x	Britomart to Cockle Bay Express	BrtoCckBX	6	1	6
551	Britomart to North Park via Newmarket	BrtoNPrk	6	1	6

Appendix A: Bus and rail routes surveyed

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
560	Massey University to Glenfield	MasUGInf	6	3	2
561	Homai to Panmure via Cavendish Dr and Highbrook	HmaiPnmr	15	1	15
565	Botany Town Centre to Half Moon B via Gossamer Dr	BtnyHMnB	10	3	3
568	Manurewa East to Botany Town Centre via Otara and Homai	MnrwBtny	20	2	10
575	Half Moon Bay to Botany Town Centre	HMnBBtyC	16	4	4
580	Howick to Manukau City Centre via Botany and Sancta Maria	HwckMnuk	25	4	6
589	Botany Town Centre to Maraetai	BtnyMrti	1	1	1
595	Britomart to Glen Innes to Britomart	BrtoGLIn	7	1	7
605	Newmarket to Lucerne Rd via Benson Rd	NwmkLcrR	4	1	4
606	Civic Centre to Upland Rd via Lucerne Rd And Benson Rd	CvcCUplR	2	1	2
625	Britomart to Glen Innes and Glendowie College via Remuera Rd	BrtoGIGC	24	4	6
635	Britomart to Glen Innes via Parnell and Grand Dr	BrtoGIGD	15	4	4
645	Britomart to Glen Innes via Parnell and Remuera Rd	BrtoGIPr	9	2	5
655	Britomart to Glen Innes via Meadowbank and Parnell	BrtoGIMB	17	4	4
703	Britomart to Remuera via Portland Rd	BrtoRemu	10	4	3
715X	Glen Innes Express to Britomart	GlnlBrTX	9	1	9
717	Britomart to Otahuhu via Glen Innes and Panmure	BrtoOthG	27	3	9
745	Britomart to Glen Innes to Britomart.	BrtoGlnl	19	3	6
756	Britomart to Panmure via Mission Bay And Glen Innes	BrtoPnmr	3	1	3
757	Britomart to Otahuhu via Mission Bay And Glen Innes	BrtoOthM	49	7	7
767	Britomart to Glendowie	BrtoGlnD	9	1	9
771	St Heliers to Eastridge via Mission Bay	StHlErdg	4	1	4
875	Mayoral Dr to Browns Bay	MayDBrnB	31	3	10
879	Takapuna to Long Bay via Forrest Hill	TkpnLngB	36	4	9
880	Orewa to Army Bay to Orewa	OrwBORwa	25	3	8
881	Albany Station to Newmarket	AlbyNwmk	3	1	3
886	Orewa to Army Bay to Orewa	OrwaOrwB	18	3	6
887	Ostend to Matiatia Wharf	OstdMatW	19	4	5
891	Takapuna to Albany Station	TkpnAlby	44	5	9
911	Royal Oak Intermediate to Favona	RyLOFavo	31	3	10

Route #	Route description	Name code	No. q'aires	Services surveyed	Q'aires /service
915	Takapuna to Glenfield	TknpGlnf	32	4	8
922	Brightside Rd to Orewa College	BrtsOrwC	2	1	2
945	Botany Downs to Epsom Schools	BtnyEpsn	10	1	10
951	Glenfield Mall to Auckland University	GlnfAucU	9	1	9
954	Midtown to Wairau Rd	MidtWruR	23	4	6
955	Midtown to Bayview via Manuka Rd, limited stops	MidTBvw	37	5	7
957	Highbury to Birkenhead Wharf	HghBBrkW	81	15	5
962	Newmarket to Albany Station via Ponsonby	NwmkAlby	13	2	7
966	Newmarket to Beach Haven via Ponsonby	NwmkPnsb	18	2	9
971	Auckland University to Chatswood	AucUChtW	23	2	12
972	Auckland University to Beach Haven Wharf	AucUBHvn	8	2	4
973	Midtown to Beach Haven Wharf	MidTBchH	67	7	10
974	Beach Haven to Midtown via Aeroview Dr	BHvn	53	7	8
975	Verrans Corner to Takapuna	VrnCTkpn	22	4	6
CL	City Link	CityLink	43	4	11
IL	Inner Link	InnrLink	69	7	10
OL	Outer Link	OutrLink	82	10	8
NX	Northen Express	NorthnrX	143	12	12
E	Eastern rail line	EastLine	481	30	16
OH	Onehunga rail line	Onehnga	372	26	14
S	Southern rail line	SouthLne	286	12	24
W	Western rail line	WestLine	433	15	29
Bus		N= 123	3,699	384	10
Rail		N= 4	1,572	83	19
All		N= 127	5,271	467	11

Table A.4 Christchurch operators and routes surveyed

Operator	Route #	Route	Description	Q'aires
Go Bus	7	HlswQPrk	Halswell to Queenspark	59
	40	MdltWnoi	Middleton to Wainoni	52
	45	NorthShr	North Shore	15
	83	HeiHei	Hei Hei	12
	84	Russley	Russley	14
	90	Rangiora	Rangiora Direct	102
	All	na	na	254
Leopard Coachlines	5	HrbySshr	Hornby to Southshore	123
" " "	8	CbrkHHay	Casebrook/Hoon Hay	34

Appendix A: Bus and rail routes surveyed

Operator	Route #	Route	Description	Q'aires
Leopard Coachlines <i>cont</i>	12	NrwdMrry	Northwood/Murray Aynsley	3
" " "	15	BshdBkxm	Bishopdale/Beckenham	38
" " "	21	IlamMtPl	Ilam to Mt Pleasant	40
" " "	23	HprkWlst	Hyde Park to Woolston	3
" " "	60	HilmPrkl	Hillmorton to Parklands	24
" " "	81	Lincoln	Lincoln	44
" " "	88	Rollestn	Rolleston	17
" " "	820	BurnLncl	Burnham to Lincoln	17
" " "	O	Orbiter	Orbiter	457
" " "	All	na	na	800
Red Bus	3	AprtSmnr	Airport to Sumner	196
" " "	9	Wairakei	Wairakei	4
" " "	11	StyxWstM	Styx Mill/Westmorland	23
" " "	14	HrwdDyPss	Harewood/Dyers Pass	4
" " "	17	BrydHntb	Bryndwr to Hunstbury	11
" " "	20	BrnsBrnt	Burnside/Barrington	27
" " "	28	PapnLytl	Papanui to Lyttelton & Rapaki	25
" " "	29	AprtFndl	Airport to City via Fendalton	7
" " "	M	Metrostar	Metrostar	34
" " "	All	na	na	331

Table A.5 Wellington operators and routes surveyed

Operator	Route #	Route	Description	Q'aires
Airport Flyer	91	AprtFlyr	Airport Flyer	199
Go Wellington	1	IsIndBay	Island Bay	181
" " "	2	Miramar	Miramar	63
" " "	3	KariLylB	Karori - Lyall Bay (Green Route)	299
" " "	4	HappyVly	Happy Valley	57
" " "	5	Hataiti	Hataitai	26
" " "	6	LyallBay	Lyall Bay	18
" " "	7	Kingston	Kingston	80
" " "	8	KowhaiPk	Kowhai Park	51
" " "	9	AroSt	Aro Street	22
" " "	10	NwtnPark	Newtown Park	29
" " "	11	Seatoun	Seatoun	154
" " "	13	Mairangi	Mairangi	10
" " "	14	WltnKilb	Wilton - Kilbirnie (Silver Route)	191
" " "	17	VicUni	Victoria University	29

Operator	Route #	Route	Description	Q'aires
" " "	18	CmpusCon	Campus Connection	86
" " "	20	MtVic	Mount Victoria	35
" " "	21	WrghtsHill	Wrights Hill - Vogelstown	44
" " "	22	MairngiS	Mairangi - Southgate	59
" " "	23	MairngiH	Mairangi - Houghton Bay/Southgate	70
" " "	24	MiramarH	Miramar Heights via Evans Bay	12
" " "	43	KhndSt43	Khandallah - Strathmore (Blue Route)	13
" " "	44	KhndSt44	Khandallah - Strathmore (Blue Route)	18
Valley Flyer	13	Mairangi	Mairangi	1
" " "	14	WltnKilb	Wilton - Kilbirnie (Silver Route)	10
" " "	81	Eastbrne	Eastbourne	69
" " "	83	EstbrnLH	Eastbourne via Lower Hutt	69
" " "	91	AprtFlyr	Airport Flyer	83
" " "	110	UpprHutt	Upper Hutt	96
" " "	115	Pinehvn	Pinehaven	1
" " "	120	StksVlly	Stokes Valley	15
" " "	121	VllyHgts	Valley Heights	13
" " "	130	NaeNae	Naenae	16
" " "	150	WestHlls	Western Hills	5
" " "	160	WainuioN	Wainuiomata North	31
" " "	170	WainuioS	Wainuiomata South	18
Mana Coaches	52	JvIWtn	Johnsonville via Newlands	62
" " "	54	ChurtnPk	Churton Park	201
" " "	55	GrenadaV	Grenada Village	9
" " "	56	JvIvPapr	Johnsonville via Paparangi	10
" " "	211	PoriWtn	Porirua - Wellington	40
" " "	250	ParaRauS	Paraparaumu-Raumati South	17
" " "	260	ParaRauB	Paraparaumu-Raumati Beach	1
" " "	262	ParaRauBM	Para'mu-R'mati B'ch via Mazengarb Rd	9
Kiwi Rail	W_H	HuttLine	Hutt rail line	939
" " "	W_J	JvllLine	Johnsonville rail line	590
" " "	W_K	KapiLine	Kapiti rail line	1,299
" " "	W_ML	MellLine	Melling rail line	265
" " "	W_Y	YrpaLine	Wairarapa rail line	290

Table A.6 Auckland operators and routes surveyed

Operator	Route #	Route	Description	Q'aires
BirkenheadTransport	975	VrnCTkpn	Verrans Corner to Takapuna	22
" " "	974	BHvn	Beach Haven to Midtown via Aeroview Dr	53
" " "	973	MidTBchH	Midtown to Beach Haven Wharf	67
" " "	972	AucUBHvn	Auckland University to Beach Haven Wharf	8
" " "	971	AucUChtW	Auckland University to Chatswood	23
" " "	966	NwmkPnsb	Newmarket to Beach Haven via Ponsonby	18
" " "	957	HghBBrkW	Highbury to Birkenhead Wharf	81
" " "	955	MidTByvw	Midtown to Bayview via Manuka Rd limited stops	37
" " "	954	MidTWruR	Midtown to Wairau Rd	23
" " "	951	GlnfAucU	Glenfield Mall to Auckland University	9
" " "	915	TknpGlnf	Takapuna to Glenfield	32
" " "	193	BrtoG BBB	Britomart to Green Bay via Taylor St and Blockhouse Bay	16
" " "	191	BrtoBlkB	Britomart to Blockhouse Bay via Taylor St	2
" " "	97	BrtoTatS	Britomart to Ranui via Te Atatu South	15
Howick & Eastern Buses	589	BtnyMrti	Botany Town Centre to Maraetai	1
" " "	580	HwckMnuk	Howick to Manukau City Centre via Botany and Sancta Maria	25
" " "	575	HMnBBtyC	Half Moon Bay to Botany Town Centre	16
" " "	568	MnrwBtny	Manurewa East to Botany Town Centre via Otara and Homai	20
" " "	565	BtnyHMnB	Botany Town Centre to Half Moon Bay via Gossamer Dr	10
" " "	561	HmaiPnmr	Homai to Panmure via Cavendish Dr and Highbrook	15
" " "	551	BrtoNPrk	Britomart to North Park via Newmarket	6
" " "	550x	BrtoCkBX	Britomart to Cockle Bay Express	6
" " "	550	BrtoCkBN	Britomart to Cockle Bay via Newmarket	13
" " "	501	BrtoCkBB	Britomart to Cockle Bay via Botany Town Centre	10
" " "	500s	BrtoCckB	Britomart to Cockle Bay (various)	47
" " "	500	BtnyBrto	Botany Town Centre to Britomart via Ti Rakau Dr	123
" " "	136	BrtoNLvR	Britomart to Ranui via New Lynn	15
" " "	92	BrtoAlby	Britomart to Albany	7
Ritchies	NX	NorthnrX	Northern Express	143
" "	945	BtnyEpsn	Botany Downs to Epsom Schools	10
" "	922	BrtsOrwC	Brightside Rd to Orewa College	2
" "	911	RyIOFavo	Royal Oak Intermediate to Favona	31
" "	887	OstdMatW	Ostend to Matiatia Wharf	19
" "	886	OrwaOrwB	Orewa to Army Bay to Orewa	18
" "	880	OrwBORwa	Orewa to Army Bay to Orewa	25

Operator	Route #	Route	Description	Q'aires
Ritchies <i>cont</i>	560	MasUGInf	Massey University to Glenfield	6
" "	131	SwnsBrto	Swanson to Britomart	18
" "	130	BrtoNLvH	Larnoch to Patiki Road via Henderson, New Lynn and Rosebank Rd	46
" "	80	HndrWgte	Henderson to Westgate	27
Tranzit/PacTourways	380	OnehMnuk	Onehunga to Manukau City Centre	15
Urban Express	198	TnkaBrTX	Tanekaha to Britomart Express	11
" " "	154	NLynGIEd	New Lynn to Henderson via Glen Eden	3
" " "	104	NlynAvnd	New Lynn to Avondale	10
" " "	9	NlynSylP	New Lynn to Sylvia Park via Blockhouse Bay Shops	129
" " "	8	NLynOneh	New Lynn to Onehunga	24
Veolia	W	WestLine	Western rail line	433
" "	S	SouthLne	Southern rail line	286
" "	OH	Onehnga	Onehunga rail line	372
" "	E	EastLine	Eastern rail line	481
NZ Bus	OL	OutrLink	Outer Link	82
" "	IL	InnrLink	Inner Link	69
" "	CL	CityLink	City Link	43
" "	962	NwmkAlby	Newmarket to Albany Station via Ponsonby	13
" "	891	TkpnAlby	Takapuna to Albany Station	44
" "	881	AlbyNwmk	Albany Station to Newmarket	3
" "	879	TkpnLngB	Takapuna to Long Bay via Forrest Hill	36
" "	875	MayDBrnB	Mayoral Dr to Browns Bay	31
" "	771	StHIErdg	St Heliers to Eastridge via Mission Bay	4
" "	767	BrtoGlnd	Britomart to Glendowie	9
" "	757	BrtoOthM	Britomart to Otahuhu via Mission Bay and Glen Innes	49
" "	756	BrtoPnmr	Britomart to Panmure via Mission Bay and Glen Innes	3
" "	745	BrtoGlnI	Britomart to Glen Innes to Britomart.	19
" "	717	BrtoOthG	Britomart to Otahuhu via Glen Innes and Panmure	27
" "	715X	GlnIBrtX	Glen Innes Express to Britomart	9
" "	703	BrtoRemu	Britomart to Remuera via Portland Rd	10
" "	655	BrtoGIMB	Britomart to Glen Innes via Meadowbank and Parnell	17
" "	645	BrtoGIPr	Britomart to Glen Innes via Parnell and Remuera Rd	9
" "	635	BrtoGIGD	Britomart to Glen Innes via Parnell and Grand Dr	15
" "	625	BrtoGIGC	Britomart to Glen Innes and Glendowie College via Remuera Rd	24
" "	606	CvcCUplR	Civic Centre to Upland Rd via Lucerne Rd and Benson Rd	2
" "	605	NwmkLcrR	Newmarket to Lucerne Rd via Benson Rd	4
" "	595	BrtoGln	Britomart to Glen Innes to Britomart	7

Appendix A: Bus and rail routes surveyed

Operator	Route #	Route	Description	Q'aires
NZ Bus <i>cont</i>	522	MtWlBrnP	Mt Wellington to Britomart via Panmure Town Centre	26
" "	512	BrtoMtWl	Britomart to Mt Wellington via Ruawai Rd and Panama Rd	4
" "	4849	BrtoHndr	Britomart to Henderson or TeAtatu (48 or 49)	2
" "	497	OthhMnuO	Otahuhu to Manukau City Centre via Otara and Flat Bush	9
" "	487	OthhOtra	Otahuhu to Manukau City Centre via Otara	24
" "	473	BrtoKriH	Britomart to Keri Hill	9
" "	472	BrtoRedH	Britomart to Red Hill	22
" "	471	PhhrPpkr	Pahurehure to Papakura	4
" "	454	MnukClnd	Manukau City Centre to Clendon	34
" "	447	OthhMnuH	Otahuhu to Manukau City Centre via Middlemore Hosp.	21
" "	428	OthhMnuC	Otahuhu to Manukau City Centre via Puhinui	11
" "	392	NwmkTepp	Newmarket to Te Papapa	16
" "	375	MngrBtny	Mangere Town Centre to Botany Town Centre	6
" "	354	OthhOneh	Otahuhu to Onehunga via Bader Dr	39
" "	351	OnehBrto	Onehunga to Otahuhu continues as Route 757 to Britomart	13
" "	348	MnkuPptt	Manukau Centre to Britomart via Papatoetoe (no stop at Rimu Rd)	103
" "	347	BrtoMnuk	Britomart to Manukau City Centre	13
" "	344	PpttMngr	Papatoetoe to Onehunga via Mangere Centre (no stop at Rimu Rd)	4
" "	338	OnehOthh	Onehunga Industrial via Ascot Park and Otahuhu	8
" "	334	OthhBrTX	Otahuhu to Britomart via Massey Rd (no stop at Rimu Rd)	47
" "	328	MnukBrTX	Manukau to Britomart via Mangere Centre (no stop at Rimu)	49
" "	327	MnukBrto	Manukau City Centre to Britomart via Massey Rd	25
" "	324	PpttBrto	Papatoetoe to Onehunga via Massey Rd	14
" "	312	CvcCOneH	Civic Centre to Onehunga via Oranga	9
" "	287	MayRCvcC	May Road to Civic Centre via Flyover	10
" "	283	BrtoHspt	Britomart to Hospitals	17
" "	277	BrtoWkwh	Britomart To Waikowhai	60
" "	267	VllyCvcC	Valley Rd to Civic Centre	22
" "	258	CvcCMayR	Civic Centre to May Rd via Flyover	26
" "	233	MidTNLSL	Midtown to New Lynn via Sandringham Rd and St Lukes (4-6pm)	77
" "	227	MdtnAvnd	Midtown to Avondale	1
" "	224	MidTHndr	Midtown to Henderson via St Lukes and New Lynn	57
" "	223	MidTNLyn	Midtown to New Lynn	24
" "	222	MidTPtkR	Midtown to Patiki Rd	61
" "	221	MidTRsbk	Midtown to Rosebank Rd	26
" "	220	MidTStLk	Midtown to St Lukes	29
" "	189	NLynTnkh	New Lynn to Tanehaka via Astley Ave and Takahe Rd	13

Operator	Route #	Route	Description	Q'aires
NZ Bus <i>cont</i>	181	TnkhNLyn	Tanekaha to New Lynn via Takahe Rd and Seabrooke Ave	4
" "	179	NLynTrgV	New Lynn to Atkinson Rd via Titirangi Village	9
" "	173	NLynTrgS	New Lynn to Titirangi South via Titirangi Beach	48
" "	163	HndrNLyn	Henderson to Patiki Rd via Glen Eden and New Lynn	10
" "	154	NLynGIEd	New Lynn to Henderson via Glen Eden	135
" "	149	StrgNLyn	Sturges Rd to New Lynn	12
" "	136	BrtoNLvR	Britomart to Ranui via New Lynn	6
" "	135	SwnsNLyn	Swanson to Patiki Road via Henderson and New Lynn	133
" "	130	BrtoNLvH	Larnoch to Patiki Road via Henderson and New Lynn and Rosebank Rd	28
" "	122	HndrTeAt	Henderson to Te Atatu Peninsula	8
" "	121	AvndBrto	Avondale to Te Atatu Peninsula to Britomart	2
" "	113	GIndNLyn	Glen Eden to New Lynn via Great North Rd	85
" "	97	BrtoTatS	Britomart to Ranui via Te Atatu South	12
" "	92	BrtoAlby	Britomart to Albany	15
" "	90	BrtoRnui	Britomart to Ranui	48
" "	87	BrtoRnuV	Britomart to Ranui via RSA Village	81
" "	85	BrtoSwsn	Britomart to Swanson	19
" "	80	HndrWgte	Henderson to Westgate	23
" "	30	BrtoPtCh	Britomart to Pt Chevalier via Williamson Ave	79
" "	20	BrtoWstm	Britomart to Westmere via Wellington St	83
" "	11	StLkOneH	St Lukes to Onehunga	14
" "	10	WynOneH	Wynyard Quarter to Onehunga via Unitec	38
" "	7	StHIPtCv	St Heliers to Pt Chevalier	68
" "	5	BrtoPtCv	Britomart to Pt Chevalier via Westmere	18

Appendix B: User profile by aggregated route

Table B.1 Journey purpose by route and peak/non-peak

#	City	Mode	Route	Peak				Non-peak			
				Work	Educ	Other	N	Work	Educ	Other	N
1	CHC	Bus	Orbiter	50%	17%	33%	30	21%	10%	69%	412
2	"	"	North-South (11,12,13,15,17,20)	53%	17%	30%	47	26%	14%	61%	94
3	"	"	N.East-West (5,7,60,Metro Star)	39%	23%	39%	31	38%	11%	51%	202
4	"	"	West-S.East (21,23,28)	29%	11%	61%	28	24%	24%	53%	38
5	"	"	N.East-West (40,45)	25%	22%	53%	32	34%	6%	59%	32
6	"	"	Airport Sumner (3,29)	70%	14%	16%	43	27%	12%	60%	153
7	"	"	Outer West/S.West (81-84, 88,820)	80%	20%	0%	5	30%	10%	60%	97
8	"	"	Far North (90)	40%	40%	20%	15	12%	31%	57%	83
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	59%	9%	32%	124	49%	6%	45%	150
2	"	"	Uni/Mairangi (13,17,18)	51%	14%	35%	43	29%	44%	28%	80
3	"	"	Karori-L.Bay (3)	55%	7%	38%	86	29%	9%	63%	192
4	"	"	M'mar,S'toun (2,11)	50%	9%	41%	64	44%	7%	49%	148
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	64%	5%	31%	95	38%	9%	53%	161
6	"	"	Mair/W.Hill,MtVic (20-24)	73%	11%	17%	66	42%	18%	40%	149
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	83%	0%	17%	41	45%	10%	45%	89
8	"	"	E'bourne/Wainui (81,83,160,170)	81%	6%	13%	77	38%	9%	53%	105
9	"	"	Hutt (110-150)	73%	7%	20%	60	28%	4%	68%	82
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	59%	13%	29%	63	35%	11%	55%	255
11	"	"	Paraparaumu (250,260,262)	65%	4%	30%	23	50%	25%	25%	4
12	"	"	Airport Flyer (91)	62%	6%	32%	81	17%	6%	77%	194
1	WTN	Rail	Johnsonville	84%	6%	10%	372	42%	10%	48%	211
2	"	"	Kapiti	83%	2%	14%	530	41%	7%	52%	850
3	"	"	Hutt (including Melling)	86%	4%	11%	792	40%	12%	48%	349
4	"	"	Wairarapa	80%	4%	16%	169	17%	7%	76%	127
1	AUC	Bus	City Link,City Loop	58%	32%	10%	50	47%	3%	49%	59
2	"	"	Outer Loop	66%	26%	8%	38	37%	7%	56%	43
3	"	"	Northern Express	62%	21%	17%	29	47%	19%	35%	113
4	"	"	Central (5-11,20,30)	68%	19%	13%	97	28%	29%	44%	331
5	"	"	Central South (173-198)	74%	21%	4%	47	37%	31%	33%	52
6	"	"	West (48,49,80-97,104-163)	43%	35%	22%	229	31%	36%	33%	511
7	"	"	NW (220-233)	59%	17%	24%	101	24%	27%	49%	170
8	"	"	SW (258-287)	70%	5%	25%	57	21%	16%	64%	77
9	"	"	S.Manukau (300s)	39%	41%	20%	80	24%	21%	55%	257
10	"	"	Far S Papak (400s)	50%	40%	10%	10	25%	32%	42%	114

#	City	Mode	Route	Peak				Non-peak			
				Work	Educ	Other	N	Work	Educ	Other	N
11	"	"	E Bot/Howick (500s)	36%	46%	18%	140	23%	35%	42%	183
12	"	"	E Glen I (600s)	50%	31%	19%	52	37%	42%	21%	19
13	"	"	GI I v MisBay (700s)	55%	34%	11%	38	21%	56%	23%	91
14	"	"	CBD-N Shore (800-900s)	58%	35%	8%	66	34%	37%	29%	182
15	"	"	Intra N Shore (800-900s)	40%	31%	29%	80	27%	36%	37%	246
1	AUC	Rail	East line	59%	27%	13%	217	17%	27%	57%	249
2	"	"	South line	71%	15%	13%	84	28%	28%	44%	206
3	"	"	Onehunga line	79%	6%	15%	124	22%	9%	69%	244
4	"	"	West line	54%	32%	14%	175	18%	20%	62%	255
All	All	All	All	68%	14%	18%	4631	31%	18%	51%	7659

Table B.2 Gender by route and peak/non-peak

#	City	Mode	Route	Peak		Non-peak	
				Female %	N	Female %	N
1	CHC	Bus	Orbiter	55%	31	63%	398
2	"	"	North-South (11,12,13,15,17,20)	66%	44	49%	92
3	"	"	N.East-West (5,7,60,Metro Star)	62%	29	58%	201
4	"	"	West-S.East (21,23,28)	48%	29	49%	37
5	"	"	N.East-West (40,45)	53%	32	61%	33
6	"	"	Airport Sumner (3,29)	48%	42	57%	148
7	"	"	Outer West-S.West (81-84, 88,820)	80%	5	54%	99
8	"	"	Far North (90)	60%	15	52%	85
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	59%	123	57%	149
2	"	"	Uni/Mairangi (13,17,18)	52%	42	58%	76
3	"	"	Karori-L.Bay (3)	64%	88	58%	188
4	"	"	M'mar,S'toun (2,11)	49%	63	62%	146
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	38%	95	58%	153
6	"	"	Mair/W.Hill,MtVic (20-24)	58%	65	66%	150
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	48%	42	60%	89
8	"	"	E'bourne/Wainui (81,83,160,170)	62%	77	54%	107
9	"	"	Hutt (110-150)	61%	61	59%	79
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	59%	63	57%	253
11	"	"	Paraparaumu (250,260,262)	41%	22	0%	4
12	"	"	Airport Flyer (91)	57%	82	59%	192
1	WTN	Rail	Johnsonville	47%	365	53%	208
2	"	"	Kapiti	54%	527	56%	833
3	"	"	Hutt (including Melling)	54%	783	53%	341
4	"	"	Wairarapa	65%	167	66%	124

Appendix B: User profile by aggregated route

#	City	Mode	Route	Peak		Non-peak	
				Female %	N	Female %	N
1	AUC	Bus	City Link,City Loop	64%	50	54%	61
2	"	"	Outer Loop	56%	36	57%	42
3	"	"	Northern Express	47%	30	48%	112
4	"	"	Central (5-11,20,30)	54%	97	58%	338
5	"	"	Central South (173-198)	66%	47	41%	54
6	"	"	West (48,49,80-97,104-163)	61%	230	58%	515
7	"	"	NW (220-233)	63%	101	56%	167
8	"	"	SW (258-287)	46%	56	53%	75
9	"	"	S.Manukau (300s)	45%	82	57%	257
10	"	"	Far S Papak (400s)	64%	11	64%	116
11	"	"	E Bot/Howick (500s)	71%	140	63%	178
12	"	"	E Glen I (600s)	53%	49	53%	19
13	"	"	Gl I v MisBay (700s)	61%	38	53%	90
14	"	"	CBD-N Shore (800-900s)	61%	66	61%	187
15	"	"	Intra N Shore (800-900s)	60%	81	54%	262
1	AUC	Rail	East line	55%	199	57%	217
2	"	"	South line	57%	77	56%	199
3	"	"	Onehunga line	56%	117	50%	222
4	"	"	West line	61%	169	65%	228
All	All	All	All	56%	4568	57%	7524

Table B.3 Age group by route - peak period

#	City	Mode	Route	Peak					N
				<18	18-24	25-45	45-64	>64	
1	CHC	Bus	Orbiter	10%	45%	34%	7%	3%	29
2	"	"	North-South (11,12,13,15,17,20)	18%	26%	33%	3%	21%	39
3	"	"	N.East-West (5,7,60,Metro Star)	20%	16%	48%	4%	12%	25
4	"	"	West-S.East (21,23,28)	8%	31%	38%	8%	15%	26
5	"	"	N.East-West (40,45)	19%	35%	27%	8%	12%	26
6	"	"	Airport Sumner (3,29)	11%	31%	49%	6%	3%	35
7	"	"	Outer West/S.West (81-84, 88,820)	0%	75%	25%	0%	0%	4
8	"	"	Far North (90)	40%	7%	27%	13%	13%	15
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	8%	23%	56%	11%	2%	100
2	"	"	Uni/Mairangi (13,17,18)	3%	45%	42%	6%	3%	33
3	"	"	Karori-L.Bay (3)	1%	20%	53%	10%	15%	79
4	"	"	M'mar,S'toun (2,11)	7%	41%	44%	8%	0%	61
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	10%	23%	46%	9%	12%	82

#	City	Mode	Route	Peak					N
				<18	18-24	25-45	45-64	>64	
6	"	"	Mair/W.Hill,MtVic (20-24)	5%	36%	38%	16%	4%	55
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	0%	25%	53%	19%	3%	36
8	"	"	E'bourne/Wainui (81,83,160,170)	5%	32%	48%	10%	5%	60
9	"	"	Hutt (110-150)	2%	20%	53%	6%	18%	49
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	9%	23%	47%	17%	4%	53
11	"	"	Paraparaumu (250,260,262)	39%	17%	28%	11%	6%	18
12	"	"	Airport Flyer (91)	3%	21%	51%	11%	14%	72
1	WTN	Rail	Johnsonville	9%	13%	60%	15%	3%	295
2	"	"	Kapiti	6%	15%	47%	26%	6%	390
3	"	"	Hutt (including Melling)	4%	17%	59%	15%	4%	624
4	"	"	Wairarapa	4%	6%	51%	27%	12%	125
1	AUC	Bus	City Link,City Loop	11%	32%	45%	9%	2%	44
2	"	"	Outer Loop	16%	34%	44%	3%	3%	32
3	"	"	Northern Express	3%	45%	45%	7%	0%	29
4	"	"	Central (5-11,20,30)	23%	16%	49%	10%	1%	86
5	"	"	Central South (173-198)	0%	49%	44%	0%	7%	41
6	"	"	West (48,49,80-97,104-163)	14%	47%	29%	7%	2%	204
7	"	"	NW (220-233)	4%	44%	47%	2%	3%	98
8	"	"	SW (258-287)	2%	27%	65%	6%	0%	49
9	"	"	S.Manukau (300s)	32%	33%	27%	1%	7%	75
10	"	"	Far S Papak (400s)	30%	30%	40%	0%	0%	10
11	"	"	E Bot/Howick (500s)	16%	49%	28%	2%	5%	130
12	"	"	E Glen I (600s)	9%	37%	41%	9%	4%	46
13	"	"	Gl I v MisBay (700s)	18%	36%	36%	6%	3%	33
14	"	"	CBD-N Shore (800-900s)	2%	44%	37%	10%	7%	59
15	"	"	Intra N Shore (800-900s)	22%	37%	28%	9%	4%	76
1	AUC	Rail	East line	11%	39%	45%	4%	2%	193
2	"	"	South line	1%	35%	54%	6%	4%	72
3	"	"	Onehunga line	4%	17%	63%	14%	2%	109
4	"	"	West line	12%	42%	38%	6%	2%	158
All	All	All	All	9%	27%	48%	12%	5%	3,875

Table B.4 Age group by route - non-peak period

#	City	Mode	Route	Non-peak					N
				<18	18-24	25-45	45-64	>64	
1	CHC	Bus	Orbiter	20%	36%	21%	13%	10%	398
2	"	"	North-South (11,12,13,15,17,20)	12%	33%	22%	21%	13%	92
3	"	"	N.East-West (5,7,60,Metro Star)	18%	29%	34%	15%	6%	200

Appendix B: User profile by aggregated route

#	City	Mode	Route	Non-peak					
				<18	18-24	25-45	45-64	>64	N
4	"	"	West-S.East (21,23,28)	34%	34%	16%	8%	8%	38
5	"	"	N.East-West (40,45)	18%	27%	21%	21%	12%	33
6	"	"	Airport Sumner (3,29)	20%	32%	25%	16%	7%	151
7	"	"	Outer West/S.West (81-84, 88,820)	28%	26%	23%	10%	13%	98
8	"	"	Far North (90)	35%	13%	13%	10%	30%	84
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	10%	20%	41%	25%	3%	150
2	"	"	Uni/Mairangi (13,17,18)	8%	37%	37%	16%	3%	76
3	"	"	Karori-L.Bay (3)	12%	30%	24%	16%	18%	189
4	"	"	M'mar,S'toun (2,11)	10%	32%	34%	16%	7%	146
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	14%	21%	31%	23%	11%	150
6	"	"	Mair/W.Hill,MtVic (20-24)	11%	37%	33%	11%	9%	150
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	11%	25%	28%	26%	10%	89
8	"	"	E'bourne/Wainui (81,83,160,170)	9%	28%	33%	19%	11%	108
9	"	"	Hutt (110-150)	6%	23%	33%	18%	21%	80
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	18%	30%	27%	17%	8%	255
11	"	"	Paraparamu (250,260,262)	25%	0%	0%	50%	25%	4
12	"	"	Airport Flyer (91)	4%	27%	28%	26%	16%	195
1	WTN	Rail	Johnsonville	20%	16%	30%	21%	12%	211
2	"	"	Kapiti	14%	24%	27%	26%	11%	846
3	"	"	Hutt (including Melling)	12%	26%	34%	19%	9%	348
4	"	"	Wairarapa	8%	27%	20%	24%	20%	128
1	AUC	Bus	City Link,City Loop	0%	21%	51%	20%	8%	61
2	"	"	Outer Loop	12%	23%	49%	9%	7%	43
3	"	"	Northern Express	4%	47%	38%	9%	3%	112
4	"	"	Central (5-11,20,30)	22%	31%	26%	10%	10%	334
5	"	"	Central South (173-198)	4%	43%	19%	20%	15%	54
6	"	"	West (48,49,80-97,104-163)	19%	37%	26%	11%	6%	514
7	"	"	NW (220-233)	14%	38%	34%	10%	5%	167
8	"	"	SW (258-287)	11%	41%	27%	20%	1%	75
9	"	"	S.Manukau (300s)	16%	41%	22%	10%	11%	253
10	"	"	Far S Papak (400s)	20%	35%	26%	13%	5%	114
11	"	"	E Bot/Howick (500s)	11%	45%	29%	8%	7%	177
12	"	"	E Glen I (600s)	11%	74%	5%	11%	0%	19
13	"	"	Gl I v MisBay (700s)	12%	47%	28%	7%	6%	89
14	"	"	CBD-N Shore (800-900s)	6%	49%	31%	10%	4%	185
15	"	"	Intra N Shore (800-900s)	16%	46%	30%	3%	4%	263
1	AUC	Rail	East line	16%	43%	21%	10%	9%	240

#	City	Mode	Route	Non-peak					N
				<18	18-24	25-45	45-64	>64	
2	"	"	South line	12%	41%	19%	16%	12%	207
3	"	"	Onehunga line	16%	23%	44%	12%	5%	242
4	"	"	West line	22%	29%	28%	10%	12%	242
All	All	All	All	15%	32%	28%	15%	9%	7,610

Table B.5 Socio-economic status by route – peak period

#	City	Mode	Route	Emp	Std	HseP	Ret	Unemp	Total
1	CHC	Bus	Orbiter	58%	32%	0%	6%	3%	31
2	"	"	North-South (11,12,13,15,17,20)	56%	27%	2%	16%	0%	45
3	"	"	N.East-West (5,7,60,Metro Star)	43%	23%	10%	10%	13%	30
4	"	"	West-S.East (21,23,28)	54%	18%	4%	14%	11%	28
5	"	"	N.East-West (40,45)	38%	38%	6%	9%	9%	32
6	"	"	Airport Sumner (3,29)	79%	21%	0%	0%	0%	43
7	"	"	Outer West/S.West (81-84, 88,820)	80%	20%	0%	0%	0%	5
8	"	"	Far North (90)	40%	40%	0%	13%	7%	15
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	84%	14%	2%	0%	0%	122
2	"	"	Uni/Mairangi (13,17,18)	64%	29%	0%	2%	5%	42
3	"	"	Karori-L.Bay (3)	68%	17%	3%	10%	1%	88
4	"	"	M'mar,S'toun (2,11)	61%	31%	3%	0%	5%	64
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	77%	16%	2%	4%	1%	96
6	"	"	Mair/W.Hill,MtVic (20-24)	76%	17%	3%	2%	3%	66
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	88%	7%	0%	0%	5%	42
8	"	"	E'bourne/Wainui (81,83,160,170)	86%	12%	0%	0%	3%	77
9	"	"	Hutt (110-150)	80%	7%	3%	8%	2%	61
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	68%	29%	0%	2%	2%	63
11	"	"	Paraparaumu (250,260,262)	61%	39%	0%	0%	0%	23
12	"	"	Airport Flyer (91)	75%	10%	4%	12%	0%	84
1	WTN	Rail	Johnsonville	86%	12%	1%	1%	0%	371
2	"	"	Kapiti	88%	8%	1%	2%	1%	531
3	"	"	Hutt (including Melling)	89%	8%	1%	1%	1%	789
4	"	"	Wairarapa	91%	5%	1%	3%	0%	169
1	AUC	Bus	City Link,City Loop	52%	44%	2%	0%	2%	50
2	"	"	Outer Loop	61%	37%	0%	3%	0%	38
3	"	"	Northern Express	63%	30%	0%	3%	3%	30
4	"	"	Central (5-11,20,30)	66%	29%	2%	1%	2%	97
5	"	"	Central South (173-198)	70%	30%	0%	0%	0%	47
6	"	"	West (48,49,80-97,104-163)	49%	43%	4%	3%	2%	230

Appendix B: User profile by aggregated route

#	City	Mode	Route	Emp	Std	HseP	Ret	Unemp	Total
7	"	"	NW (220-233)	64%	31%	3%	2%	0%	101
8	"	"	SW (258-287)	78%	20%	2%	0%	0%	55
9	"	"	S.Manukau (300s)	35%	54%	1%	7%	2%	85
10	"	"	Far S Papak (400s)	55%	45%	0%	0%	0%	11
11	"	"	E Bot/Howick (500s)	35%	57%	3%	4%	1%	141
12	"	"	E Glen I (600s)	58%	34%	0%	4%	4%	50
13	"	"	Gl I v MisBay (700s)	50%	45%	3%	3%	0%	38
14	"	"	CBD-N Shore (800-900s)	55%	39%	2%	3%	2%	66
15	"	"	Intra N Shore (800-900s)	44%	51%	1%	4%	0%	81
1	AUC	Rail	East line	61%	36%	0%	1%	2%	211
2	"	"	South line	76%	20%	0%	2%	2%	82
3	"	"	Onehunga line	85%	12%	1%	2%	1%	125
4	"	"	West line	59%	39%	1%	1%	0%	170
All	All	All	All	73%	21%	1%	3%	1%	4,625

Table B.6 Socio-economic status by route - non-peak period

#	City	Mode	Route	Emp	Std	HseP	Ret	Unemp	Total
1	CHC	Bus	Orbiter	41%	33%	9%	9%	8%	398
2	"	"	North-South (11,12,13,15,17,20)	41%	29%	3%	12%	14%	92
3	"	"	N.East-West (5,7,60,Metro Star)	52%	30%	6%	6%	5%	202
4	"	"	West-S.East (21,23,28)	39%	45%	0%	8%	8%	38
5	"	"	N.East-West (40,45)	52%	24%	9%	12%	3%	33
6	"	"	Airport Sumner (3,29)	49%	33%	4%	8%	5%	150
7	"	"	Outer West/S.West (81-84, 88,820)	46%	28%	5%	13%	8%	98
8	"	"	Far North (90)	24%	35%	5%	31%	6%	84
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	72%	23%	2%	1%	1%	149
2	"	"	Uni/Mairangi (13,17,18)	38%	50%	9%	3%	0%	78
3	"	"	Karori-L.Bay (3)	41%	35%	2%	19%	2%	188
4	"	"	M'mar,S'toun (2,11)	60%	27%	3%	9%	2%	147
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	55%	29%	1%	11%	3%	153
6	"	"	Mair/W.Hill,MtVic (20-24)	57%	33%	3%	6%	1%	150
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	55%	27%	2%	13%	3%	88
8	"	"	E'bourne/Wainui (81,83,160,170)	61%	20%	2%	12%	5%	101
9	"	"	Hutt (110-150)	59%	11%	8%	16%	7%	75
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	54%	34%	2%	7%	3%	254
11	"	"	Paraparamu (250,260,262)	50%	0%	0%	25%	25%	4
12	"	"	Airport Flyer (91)	59%	19%	5%	14%	3%	195

#	City	Mode	Route	Emp	Std	HseP	Ret	Unemp	Total
1	WTN	Rail	Johnsonville	51%	32%	2%	11%	3%	211
2	"	"	Kapiti	62%	23%	2%	10%	4%	844
3	"	"	Hutt (including Melling)	57%	27%	3%	8%	5%	349
4	"	"	Wairarapa	54%	17%	4%	19%	7%	127
1	AUC	Bus	City Link,City Loop	61%	26%	3%	5%	5%	61
2	"	"	Outer Loop	43%	43%	0%	7%	7%	42
3	"	"	Northern Express	59%	36%	1%	2%	3%	111
4	"	"	Central (5-11,20,30)	35%	47%	5%	10%	3%	332
5	"	"	Central South (173-198)	39%	37%	7%	9%	7%	54
6	"	"	West (48,49,80-97,104-163)	36%	53%	2%	6%	3%	511
7	"	"	NW (220-233)	42%	51%	2%	4%	1%	168
8	"	"	SW (258-287)	45%	47%	4%	1%	3%	76
9	"	"	S.Manukau (300s)	35%	45%	4%	11%	5%	250
10	"	"	Far S Papak (400s)	30%	54%	3%	7%	6%	116
11	"	"	E Bot/Howick (500s)	37%	51%	3%	7%	3%	180
12	"	"	E Glen I (600s)	32%	63%	0%	0%	5%	19
13	"	"	Gl I v MisBay (700s)	21%	67%	4%	3%	4%	90
14	"	"	CBD-N Shore (800-900s)	41%	49%	4%	5%	1%	184
15	"	"	Intra N Shore (800-900s)	28%	58%	6%	3%	5%	262
1	AUC	Rail	East line	30%	53%	4%	8%	5%	239
2	"	"	South line	35%	45%	2%	12%	5%	205
3	"	"	Onehunga line	58%	33%	3%	4%	2%	240
4	"	"	West line	32%	48%	7%	12%	2%	242
All	All	All	All	46%	37%	4%	9%	4%	7,590

Table B.7 Occupation profile by route (percentage of employed excluding inadequately described)

#	City	Mode	Route	Peak				Non-peak			
				Manag /prof	Clerical /serv	Blue collar	N	Manag/ prof	Clerical /serv	Blue collar	N
1	CHC	Bus	Orbiter	33%	50%	17%	12	28%	58%	14%	128
2	"	"	North-South (11,12,13,15,17,20)	50%	50%	0%	14	14%	68%	18%	22
3	"	"	N.East-West (5,7,60,Metro Star)	30%	40%	30%	10	36%	49%	15%	86
4	"	"	West-S.East (21,23,28)	23%	69%	8%	13	27%	64%	9%	11
5	"	"	N.East-West (40,45)	10%	90%	0%	10	8%	46%	46%	13
6	"	"	Airport Sumner (3,29)	45%	52%	3%	29	35%	54%	11%	63
7	"	"	Outer West/S.West (81-84, 88,820)	25%	50%	25%	4	21%	41%	38%	29
8	"	"	Far North (90)	0%	100%	0%	5	6%	69%	25%	16
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	61%	34%	4%	93	65%	29%	6%	98

Appendix B: User profile by aggregated route

#	City	Mode	Route	Peak				Non-peak			
				Manag /prof	Clerical /serv	Blue collar	N	Manag /prof	Clerical /serv	Blue collar	N
2	"	"	Uni/Mairangi (13,17,18)	67%	33%	0%	24	58%	38%	4%	24
3	"	"	Karori-L.Bay (3)	65%	33%	2%	55	53%	39%	8%	66
4	"	"	M'mar,S'toun (2,11)	50%	47%	3%	38	60%	40%	0%	81
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	76%	22%	2%	59	62%	32%	5%	74
6	"	"	Mair/W.Hill,MtVic (20-24)	81%	19%	0%	47	61%	39%	0%	72
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	69%	31%	0%	36	72%	23%	5%	43
8	"	"	E'bourne/Wainui (81,83,160,170)	61%	37%	2%	62	38%	55%	7%	55
9	"	"	Hutt (110-150)	37%	51%	12%	43	29%	55%	16%	38
10	"	"	Churton Park/Jvll/Porirua (52-56,211)	57%	43%	0%	37	55%	41%	3%	123
11	"	"	Paraparaumu (250,260,262)	77%	23%	0%	13	100%	0%	0%	2
12	"	"	Airport Flyer (91)	52%	45%	3%	58	59%	30%	11%	102
1	WTN	Rail	Johnsonville	75%	23%	2%	287	69%	27%	5%	86
2	"	"	Kapiti	70%	29%	1%	406	59%	37%	4%	466
3	"	"	Hutt (including Melling)	64%	33%	3%	617	53%	44%	4%	167
4	"	"	Wairarapa	72%	27%	1%	138	59%	30%	11%	56
1	AUC	Bus	City Link,City Loop	64%	36%	0%	25	58%	39%	3%	31
2	"	"	Outer Loop	63%	37%	0%	19	53%	47%	0%	17
3	"	"	Northern Express	59%	41%	0%	17	48%	52%	0%	58
4	"	"	Central (5-11,20,30)	67%	29%	3%	58	48%	43%	8%	99
5	"	"	Central South (173-198)	58%	39%	3%	31	47%	53%	0%	17
6	"	"	West (48,49,80-97,104-163)	45%	45%	10%	96	43%	49%	8%	153
7	"	"	NW (220-233)	61%	39%	0%	57	53%	42%	5%	59
8	"	"	SW (258-287)	64%	33%	3%	39	61%	32%	7%	28
9	"	"	S.Manukau (300s)	46%	46%	8%	26	24%	57%	19%	70
10	"	"	Far S Papak (400s)	0%	75%	25%	4	27%	64%	9%	33
11	"	"	E Bot/Howick (500s)	41%	59%	0%	41	45%	48%	7%	56
12	"	"	E Glen I (600s)	52%	44%	4%	27	100%	0%	0%	4
13	"	"	Gl I v MisBay (700s)	72%	28%	0%	18	63%	25%	13%	16
14	"	"	CBD-N Shore (800-900s)	64%	33%	3%	33	54%	42%	5%	65
15	"	"	Intra N Shore (800-900s)	63%	34%	3%	32	33%	59%	9%	58
1	AUC	Rail	East line	56%	40%	4%	113	51%	42%	7%	55
2	"	"	South line	58%	40%	2%	57	43%	48%	10%	63
3	"	"	Onehunga line	68%	27%	4%	91	64%	30%	7%	107
4	"	"	West line	51%	43%	6%	88	48%	44%	8%	61
All	All	All	All	63%	34%	3%	2,982	50%	42%	7%	2,971

Table B.8 Average annual gross personal income by route

#	City	Mode	Route	Peak \$000				Non-peak \$000			
				Mean	St Dev	StE	N	Mean	St Dev	StE	N
1	CHC	Bus	Orbiter	33	23	4.1	31	30	25	1.2	426
2	"	"	North-South (11,12,13,15,17,20)	32	23	3.3	49	30	22	2.3	95
3	"	"	N.East-West (5,7,60,Metro Star)	35	30	5.5	31	29	23	1.6	209
4	"	"	West-S.East (21,23,28)	36	28	5.2	29	23	16	2.6	39
5	"	"	N.East-West (40,45)	28	25	4.2	34	25	14	2.5	33
6	"	"	Airport Sumner (3,29)	48	34	5.2	43	32	28	2.2	160
7	"	"	Outer West/S.West (81-84, 88,820)	27	16	7.3	5	25	23	2.3	99
8	"	"	Far North (90)	31	32	8.2	15	26	21	2.2	87
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	56	36	3.2	125	51	36	2.9	151
2	"	"	Uni/Mairangi (13,17,18)	45	36	5.6	43	31	25	2.8	82
3	"	"	Karori-L.Bay (3)	52	38	4.0	89	37	32	2.3	194
4	"	"	M'mar,S'toun (2,11)	47	38	4.8	64	43	36	2.9	152
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	57	39	4.0	97	42	36	2.8	165
6	"	"	Mair/W.Hill,MtVic (20-24)	57	39	4.8	67	37	33	2.6	154
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	59	36	5.4	44	45	34	3.6	89
8	"	"	E'bourne/Wainui (81,83,160,170)	58	40	4.5	77	38	31	3.0	110
9	"	"	Hutt (110-150)	49	33	4.2	61	38	29	3.2	85
10	"	"	Churton Park/Jvlle/Porirua (52-56,211)	46	37	4.6	63	34	29	1.8	260
11	"	"	Paraparamu (250,260,262)	50	47	9.7	23	53	45	22.5	4
12	"	"	Airport Flyer (91)	46	31	3.4	84	45	35	2.5	197
1	WTN	Rail	Johnsonville	61	38	2.0	373	42	37	2.5	213
2	"	"	Kapiti	59	37	1.6	533	47	35	1.2	858
3	"	"	Hutt (including Melling)	57	34	1.2	793	42	35	1.9	352
4	"	"	Wairarapa	71	36	2.7	170	44	36	3.2	129
1	AUC	Bus	City Link,City Loop	44	34	4.8	51	41	37	4.7	61
2	"	"	Outer Loop	49	35	5.7	38	38	31	4.7	44
3	"	"	Northern Express	40	32	5.8	30	39	30	2.9	113
4	"	"	Central (5-11,20,30)	48	35	3.6	98	34	30	1.6	355
5	"	"	Central South (173-198)	43	35	5.1	48	34	30	4.1	55
6	"	"	West (48,49,80-97,104-163)	35	30	1.9	234	30	28	1.2	526

Appendix B: User profile by aggregated route

#	City	Mode	Route	Peak \$000				Non-peak \$000			
				Mean	St Dev	StE	N	Mean	St Dev	StE	N
7	"	"	NW (220-233)	45	35	3.5	102	32	27	2.0	173
8	"	"	SW (258-287)	54	39	5.1	57	34	28	3.2	78
9	"	"	S.Manukau (300s)	35	32	3.4	88	27	23	1.4	273
10	"	"	Far S Papak (400s)	26	20	6.1	11	30	27	2.4	123
11	"	"	E Bot/Howick (500s)	30	25	2.1	142	34	29	2.1	187
12	"	"	E Glen I (600s)	41	33	4.6	52	26	18	4.1	19
13	"	"	Gl I v MisBay (700s)	35	25	4.0	39	27	27	2.8	91
14	"	"	CBD-N Shore (800-900s)	40	30	3.7	67	35	31	2.3	187
15	"	"	Intra N Shore (800-900s)	34	32	3.5	82	28	26	1.6	275
1	AUC	Rail	East line	45	37	2.5	218	31	29	1.8	253
2	"	"	South line	49	33	3.6	84	33	29	2.0	212
3	"	"	Onehunga line	60	37	3.3	126	45	36	2.3	246
4	"	"	West line	41	33	2.5	176	32	29	1.8	257
All	All	All	All	51	36	0.5	4,686	36	31	0.4	7,871

Table B.9 Frequency of use of bus and rail (%) by route and time period

#	C	M	Route	Peak				Non-peak				All			
				>1/W	>1/Y	<=1/Y	N	>1/W	>1/Y	<=1/Y	N	>1/W	>1/Y	<=1/Y	N
1	C	B	Orbiter	100%	0%	0%	8	85%	11%	4%	268	86%	11%	4%	276
2	"	"	North-South (11,12,13,15,17,20)	100%	0%	0%	17	87%	9%	4%	45	90%	6%	3%	62
3	"	"	N.East-West (5,7,60,Metro Star)	73%	3%	30%	15	81%	17%	2%	47	79%	16%	5%	62
4	"	"	West-S.East (21,23,28)	100%	0%	0%	4	100%	0%	0%	5	100%	0%	0%	9
5	"	"	N.East-West (40,45)	88%	5%	18%	8	82%	9%	9%	11	84%	11%	5%	19
6	"	"	Airport-Sumner (3,29)	78%	1%	24%	9	83%	14%	3%	63	82%	14%	4%	72
7	"	"	Outer W./S.West (81-84, 88,820)	na	na	na	0	50%	50%	0%	2	50%	50%	0%	2
8	"	"	Far North (90)	na	na	na	0	0%	100%	0%	2	0%	100%	0%	2
1	W	B	N.town,Isl. Bay,Happy Vly (1,4,10)	92%	4%	12%	85	84%	11%	5%	57	89%	8%	4%	142
2	"	"	Uni/Mairangi (13,17,18)	92%	3%	11%	25	89%	9%	2%	46	90%	8%	1%	71
3	"	"	Karori-L.Bay (3)	86%	2%	15%	37	86%	14%	1%	125	86%	12%	2%	162
4	"	"	M'mar,S'toun (2,11)	81%	2%	21%	21	80%	16%	4%	112	80%	16%	4%	133
5	"	"	Wltn-Kilb/Hat/Khand (5,14,43,44)	96%	2%	6%	49	87%	10%	3%	79	91%	8%	2%	128
6	"	"	Mair/W.Hill,MtVic (20-24)	86%	3%	17%	36	86%	13%	1%	71	86%	11%	3%	107
7	"	"	K'ton/Kowhai Pk/Aro V. (79)	90%	3%	13%	20	88%	12%	0%	60	89%	11%	0%	80
8	"	"	E'bourne/Wainui	100%	0%	0%	17	86%	12%	2%	50	90%	9%	1%	67

Pricing strategies for public transport: Part 3: Appendices

#	C	M	Route	Peak				Non-peak				All			
				>1/W	>1/Y	<=1/Y	N	>1/W	>1/Y	<=1/Y	N	>1/W	>1/Y	<=1/Y	N
			(81,83,160,170)												
9	"	"	Hutt (110-150)	91%	4%	13%	23	79%	21%	0%	29	85%	15%	0%	52
10	"	"	Chrtn Prk/Jvllle/Por (52-56,211)	85%	3%	19%	26	80%	17%	3%	101	81%	17%	2%	127
11	"	"	Paraparaumu (250,260,262)	na	na	na	0	na	na	na	0	na	na	na	0
12	"	"	Airport Flyer (91)	70%	2%	32%	10	47%	27%	26%	74	50%	26%	24%	84
1	W	R	Johnsonville	93%	3%	10%	277	81%	15%	4%	156	89%	9%	3%	433
2	"	"	Kapiti	90%	3%	13%	353	66%	25%	9%	490	76%	18%	6%	843
3	"	"	Hutt (including Melling)	88%	7%	19%	603	63%	33%	4%	234	81%	17%	2%	837
4	"	"	Wairarapa	83%	6%	23%	71	36%	47%	17%	112	54%	35%	11%	183
1	A	B	City Link,City Loop	100%	0%	0%	3	88%	0%	13%	16	89%	0%	11%	19
2	"	"	Outer Loop	100%	0%	0%	19	73%	9%	18%	22	85%	5%	10%	41
3	"	"	Northern Express	100%	0%	0%	17	86%	12%	2%	50	90%	9%	1%	67
4	"	"	Central (5-11,20,30)	88%	2%	15%	48	84%	10%	5%	146	85%	10%	5%	194
5	"	"	Central South (173-198)	97%	2%	5%	31	96%	4%	0%	23	96%	4%	0%	54
6	"	"	West (48,49,80-97,104-163)	94%	2%	8%	113	86%	10%	4%	246	88%	9%	3%	359
7	"	"	NW (220-233)	100%	0%	0%	32	83%	13%	5%	63	88%	8%	3%	95
8	"	"	SW (258-287)	91%	2%	11%	22	76%	14%	11%	37	81%	10%	8%	59
9	"	"	S.Manukau (300s)	92%	1%	9%	37	69%	20%	11%	117	75%	16%	9%	154
10	"	"	Far S Papak (400s)	75%	2%	27%	4	85%	10%	5%	41	84%	11%	4%	45
11	"	"	E Bot/Howick (500s)	98%	1%	3%	49	88%	9%	3%	97	91%	7%	2%	146
12	"	"	E Glen I (600s)	89%	6%	17%	36	83%	8%	8%	12	88%	8%	4%	48
13	"	"	Gl I v MisBay (700s)	100%	0%	0%	20	88%	12%	0%	42	92%	8%	0%	62
14	"	"	CBD-N Shore (800-900s)	94%	2%	7%	36	94%	4%	2%	97	94%	5%	2%	133
15	"	"	Intra N Shore (800-900s)	93%	2%	8%	45	93%	7%	1%	120	93%	7%	1%	165
1	A	R	East Line	88%	4%	16%	164	52%	36%	12%	192	69%	24%	8%	356
2	"	"	South Line	84%	4%	20%	67	61%	29%	10%	163	67%	25%	8%	230
3	"	"	Onehunga Line	85%	4%	19%	86	46%	42%	11%	185	59%	32%	9%	271
4	"	"	West Line	78%	5%	27%	82	57%	33%	10%	228	63%	30%	8%	310
			All	88%	5%	17%	1,703	60%	31%	9%	1,760	74%	21%	6%	3,463

Note: C = City; M = mode

Table B.10 Average onboard time (mins) by route and by time period

#	City	Mode	Route	Peak			Non-peak			All		
				Av	StD	N	Av	StD	N	Av	StD	N
1	CHC	Bus	Orbiter	19	11	29	19	13	373	19	13	402
2	"	"	North-South (11,12,13,15,17,20)	17	9	46	19	12	77	18	11	123
3	"	"	N.East-West (5,7,60,Metro Star)	19	9	27	21	12	180	21	12	207
4	"	"	West-S.East (21,23,28)	19	8	24	22	13	37	21	11	61
5	"	"	N.East-West (40,45)	22	10	28	24	12	26	23	11	54
6	"	"	Airport Sumner (3,29)	31	20	42	22	13	138	24	15	180
7	"	"	Outer West/S.West (81-84, 88,820)	42	28	5	24	14	84	25	16	89
8	"	"	Far North (90)	21	13	15	30	15	75	29	15	88
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	21	10	112	19	10	145	20	10	257
2	"	"	Uni/Mairangi (13,17,18)	18	8	36	15	9	75	16	9	111
3	"	"	Karori-L.Bay (3)	18	7	81	18	8	177	18	8	258
4	"	"	M'mar,S'toun (2,11)	18	10	59	19	12	139	18	11	198
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	20	8	91	17	7	150	18	8	241
6	"	"	Mair/W.Hill,MtVic (20-24)	20	9	58	17	8	144	18	8	202
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	19	7	42	16	10	84	17	9	126
8	"	"	E'bourne/Wainui (81,83,160,170)	32	18	75	25	13	100	28	16	175
9	"	"	Hutt (110-150)	26	13	59	21	14	77	24	14	136
10	"	"	Churton Park/Jvll/Porirua (52-56,211)	27	12	49	23	11	245	24	12	294
11	"	"	Paraparaumu (250,260,262)	13	6	21	15	5	3	13	6	24
12	"	"	Airport Flyer (91)	32	16	73	25	11	175	27	13	249
1	WTN	Rail	Johnsonville	18	6	339	17	7	199	18	6	538
2	"	"	Kapiti	36	18	497	34	18	804	35	18	1301
3	"	"	Hutt (including Melling)	26	11	758	30	16	330	27	13	1088
4	"	"	Wairarapa	64	23	145	73	26	120	68	25	265
1	AUC	Bus	City Link,City Loop	13	6	49	12	7	55	13	7	104
2	"	"	Outer Loop	21	12	37	24	15	41	23	14	78
3	"	"	Northern Express	26	11	27	22	9	106	23	9	133
4	"	"	Central (5-11,20,30)	21	11	93	20	13	315	20	13	408
5	"	"	Central South (173-198)	43	17	45	24	15	50	33	18	95
6	"	"	West (48,49,80-97,104-163)	31	18	221	33	20	488	32	19	709
7	"	"	NW (220-233)	21	11	97	23	13	162	23	12	259
8	"	"	SW (258-287)	21	9	54	22	11	73	22	10	127
9	"	"	S.Manukau (300s)	30	20	76	27	16	241	27	17	317
10	"	"	Far S Papak (400s)	24	8	10	24	16	108	24	15	118
11	"	"	E Bot/Howick (500s)	34	24	129	30	19	171	32	21	300
12	"	"	E Glen I (600s)	24	11	51	19	11	18	23	11	69
13	"	"	GI I v MisBay (700s)	24	14	38	21	11	86	22	12	124

#	City	Mode	Route	Peak			Non-peak			All		
				Av	StD	N	Av	StD	N	Av	StD	N
14	"	"	CBD-N Shore (800-900s)	28	13	66	26	11	175	27	12	241
15	"	"	Intra N Shore (800-900s)	23	14	77	19	12	248	20	13	325
1	AUC	Rail	East line	32	15	199	26	15	200	29	15	399
2	"	"	South line	35	16	80	35	18	190	35	18	270
3	"	"	Onehunga line	22	7	116	22	10	221	22	9	337
4	"	"	West line	37	14	167	30	15	206	33	15	373
All	All	All	All	28	17	4341	26	17	7112	27	17	11453

Table B.11 Average service interval (mins) by route and by time period

#	City	Mode	Route	Peak			Non-peak			All		
				Av	StD	N	Av	StD	N	Av	StD	N
1	CHC	Bus	Orbiter	15	6	25	14	7	377	14	7	402
2	"	"	North-South (11,12,13,15,17,20)	27	15	44	22	9	75	24	12	119
3	"	"	N.East-West (5,7,60,Metro Star)	18	7	28	19	8	175	19	7	203
4	"	"	West-S.East (21,23,28)	24	12	23	23	9	32	23	10	55
5	"	"	N.East-West (40,45)	24	8	26	23	8	26	24	8	52
6	"	"	Airport Sumner (3,29)	18	9	41	20	7	131	19	7	172
7	"	"	Outer West/S.West (81-84, 88,820)	18	6	3	26	15	91	26	14	94
8	"	"	Far North (90)	22	8	9	23	9	73	23	9	82
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	13	9	98	15	8	120	14	9	218
2	"	"	Uni/Mairangi (13,17,18)	17	7	34	23	12	66	21	11	100
3	"	"	Karori-L.Bay (3)	15	8	75	14	7	169	15	7	244
4	"	"	M'mar,S'toun (2,11)	14	7	49	15	9	119	15	9	168
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	22	12	89	25	9	139	24	10	228
6	"	"	Mair/W.Hill,MtVic (20-24)	31	14	53	29	13	129	29	13	182
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	19	13	42	28	19	79	25	17	121
8	"	"	E'bourne/Wainui (81,83,160,170)	21	10	69	28	15	87	25	14	156
9	"	"	Hutt (110-150)	24	16	56	17	7	72	20	12	128
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	26	14	45	29	12	227	28	12	272
11	"	"	Paraparaumu (250,260,262)	24	7	18	37	21	3	26	10	21
12	"	"	Airport Flyer (91)	20	12	72	17	8	150	18	10	222
1	WTN	Rail	Johnsonville	21	8	147	28	6	97	23	8	244
2	"	"	Kapiti	23	7	255	29	9	507	27	8	762
3	"	"	Hutt (including Melling)	23	8	435	28	7	194	25	8	629
4	"	"	Wairarapa	31	16	98	214	196	22	64	110	120
1	AUC	Bus	City Link,City Loop	12	7	49	12	4	50	12	6	99
2	"	"	Outer Loop	15	3	36	14	5	39	14	4	75
3	"	"	Northern Express	11	6	29	15	9	101	14	9	130

Appendix B: User profile by aggregated route

#	City	Mode	Route	Peak			Non-peak			All		
				Av	StD	N	Av	StD	N	Av	StD	N
4	"	"	Central (5-11,20,30)	19	10	89	28	16	288	26	15	377
5	"	"	Central South (173-198)	27	20	37	33	23	42	30	22	79
6	"	"	West (48,49,80-97,104-163)	28	21	199	31	19	447	30	20	646
7	"	"	NW (220-233)	17	10	90	20	11	140	19	11	230
8	"	"	SW (258-287)	14	9	52	23	11	64	19	11	116
9	"	"	S.Manukau (300s)	31	17	73	31	17	198	31	17	271
10	"	"	Far S Papak (400s)	23	9	9	27	16	96	27	16	105
11	"	"	E Bot/Howick (500s)	21	10	133	28	16	159	25	14	292
12	"	"	E Glen I (600s)	19	14	44	28	17	16	21	15	60
13	"	"	Gl I v MisBay (700s)	22	12	37	28	11	78	26	12	115
14	"	"	CBD-N Shore (800-900s)	22	12	57	26	12	168	25	12	225
15	"	"	Intra N Shore (800-900s)	26	14	72	31	12	242	30	13	314
1	AUC	Rail	East line	16	9	99	23	16	93	19	14	192
2	"	"	South line	19	11	35	23	14	60	22	13	95
3	"	"	Onehunga line	29	12	67	41	18	114	36	17	181
4	"	"	West line	18	8	106	23	12	75	20	10	181
All	All	All	All	22	12	3,147	25	22	5,630	24	19	8,777

Table B.12 Average wait time (mins) by route and by time period

#	City	Mode	Route	Peak			Non-peak			All		
				Av	StD	N	Av	StD	N	Av	StD	N
1	CHC	Bus	Orbiter	9.3	9	29	7.9	7	411	8.0	7	440
2	"	"	North-South (11,12,13,15,17,20)	8.1	9	49	8.3	7	93	8.2	8	142
3	"	"	N.East-West (5,7,60,Metro Star)	8.4	7	31	7.5	6	201	7.6	6	232
4	"	"	West-S.East (21,23,28)	4.9	5	24	5.8	5	39	5.5	5	63
5	"	"	N.East-West (40,45)	8.4	5	32	8.6	6	31	8.5	5	63
6	"	"	Airport Sumner (3,29)	6.9	5	42	8.1	8	150	7.9	8	192
7	"	"	Outer West/S.West (81-84, 88,820)	7.4	4	5	6.2	7	98	6.3	7	103
8	"	"	Far North (90)	15.2	11	15	10.5	8	84	11.2	8	99
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	3.6	3	119	5.3	4	148	4.5	4	267
2	"	"	Uni/Mairangi (13,17,18)	6.5	5	37	7.4	5	79	7.1	5	116
3	"	"	Karori-L.Bay (3)	7.3	7	84	5.7	4	185	6.2	5	269
4	"	"	M'mar,S'toun (2,11)	5.0	4	61	4.5	5	148	4.6	5	209
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	6.3	5	95	6.6	6	156	6.5	6	251
6	"	"	Mair/W.Hill,MtVic (20-24)	8.1	10	59	7.7	8	150	7.9	8	209
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	7.3	7	43	6.0	7	86	6.4	7	129
8	"	"	E'bourne/Wainui (81,83,160,170)	6.1	6	76	11.1	9	103	9.0	8	179

#	City	Mode	Route	Peak			Non-peak			All		
				Av	StD	N	Av	StD	N	Av	StD	N
9	"	"	Hutt (110-150)	5.9	4	60	7.5	6	80	6.8	5	140
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	6.9	7	49	9.3	8	254	8.9	8	303
11	"	"	Paraparaumu (250,260,262)	7.0	5	23	2.5	3	4	6.3	5	27
12	"	"	Airport Flyer (91)	6.7	5	77	6.6	7	192	6.6	6	269
1	WTN	Rail	Johnsonville	6.2	5	150	8.0	8	95	6.9	6	245
2	"	"	Kapiti	7.2	6	250	9.1	8	553	8.5	8	803
3	"	"	Hutt (including Melling)	6.3	5	436	8.0	7	204	6.9	6	640
4	"	"	Wairarapa	5.3	4	128	10.2	8	50	6.7	6	178
1	AUC	Bus	City Link,City Loop	5.4	4	51	6.3	7	60	5.9	5	111
2	"	"	Outer Loop	6.6	5	38	9.1	8	41	7.9	7	79
3	"	"	Northern Express	5.1	4	30	5.4	5	113	5.4	5	143
4	"	"	Central (5-11,20,30)	9.1	8	95	11.5	10	334	11.0	10	429
5	"	"	Central South (173-198)	11.6	11	48	10.8	9	53	11.2	10	101
6	"	"	West (48,49,80-97,104-163)	9.5	8	226	11.5	11	503	10.9	10	729
7	"	"	NW (220-233)	7.8	9	99	11.2	9	165	9.9	9	264
8	"	"	SW (258-287)	6.7	6	56	11.5	10	76	9.5	9	132
9	"	"	S.Manukau (300s)	15.1	14	81	14.7	13	259	14.8	13	340
10	"	"	Far S Papak (400s)	9.6	9	11	14.4	14	121	14.0	14	132
11	"	"	E Bot/Howick (500s)	8.9	8	138	10.9	10	183	10.1	9	321
12	"	"	E Glen I (600s)	5.2	4	51	12.5	11	18	7.1	8	69
13	"	"	Gl I v MisBay (700s)	8.1	5	39	9.3	8	89	8.9	8	128
14	"	"	CBD-N Shore (800-900s)	6.6	5	65	9.2	7	181	8.5	7	246
15	"	"	Intra N Shore (800-900s)	9.8	10	80	13.0	11	263	12.3	11	343
1	AUC	Rail	East line	9.1	7	109	13.9	10	128	11.7	9	237
2	"	"	South line	9.7	9	40	12.9	13	72	11.8	12	112
3	"	"	Onehunga line	8.5	9	67	13.3	12	143	11.8	11	210
4	"	"	West line	6.3	6	121	12.2	12	96	8.9	9	217
All	All	All	All	7.4	7	3419	9.5	9	6492	8.8	9	9911

Table B.13 Ticket type profile (%) by route and by time period

#	C	M	Route	Peak							Non-peak						
				Sngl	E_Crd	10T	Mnt	GC	Oth	All	Sngl	E_Crd	10T	Mnt	GC	Oth	All
1	C	B	Orbiter	13%	80%	3%	0%	0%	3%	30	28%	60%	0%	0%	10%	1%	410
2	"	"	North-South (11,12,13,15,17,20)	17%	63%	2%	0%	17%	17%	46	22%	60%	3%	0%	13%	2%	92
3	"	"	N East-West (5,7,60,Metro Star)	20%	70%	3%	0%	7%	7%	30	29%	64%	1%	0%	5%	2%	203
4	"	"	West-S East (21,23,28)	18%	64%	0%	0%	14%	18%	28	8%	76%	3%	0%	11%	3%	38

Appendix B: User profile by aggregated route

#	C	M	Route	Peak							Non-peak						
				Sngl	E_Crd	10T	Mnt	GC	Oth	All	Sngl	E_Crd	10T	Mnt	GC	Oth	All
5	"	"	N.East-West (40,45)	21%	64%	3%	0%	6%	12%	33	19%	63%	6%	0%	9%	3%	32
6	"	"	Airport Sumner (3,29)	23%	72%	5%	0%	0%	0%	43	24%	67%	0%	0%	8%	1%	156
7	"	"	Outer W/SWest (81-84, 88,820)	25%	75%	0%	0%	0%	0%	4	20%	55%	2%	1%	21%	1%	99
8	"	"	Far North (90)	13%	87%	0%	0%	0%	0%	15	13%	50%	8%	0%	27%	2%	86
1	W	B	N.town,Isl. Bay,Happy Vly (1,4,10)	21%	70%	1%	5%	2%	3%	124	20%	65%	1%	4%	4%	5%	150
2	"	"	Uni/Mairangi (13,17,18)	26%	67%	0%	5%	2%	2%	43	20%	70%	1%	3%	3%	4%	79
3	"	"	Karori-L.Bay (3)	22%	63%	0%	3%	12%	12%	86	20%	53%	2%	5%	17%	3%	192
4	"	"	M'mar,S'toun (2,11)	25%	63%	3%	2%	5%	8%	64	26%	60%	1%	4%	6%	3%	148
5	"	"	Wltn-Kilb/Hat/Khand (5,14,43,44)	20%	69%	1%	0%	8%	9%	95	26%	59%	1%	2%	9%	4%	160
6	"	"	Mair/W.Hill,MtVic (20-24)	11%	80%	3%	3%	2%	3%	66	22%	63%	2%	4%	7%	2%	149
7	"	"	K'ton/Kowhai Prk/Aro V. (7-9)	21%	74%	0%	2%	0%	2%	43	26%	58%	2%	1%	9%	3%	89
8	"	"	E'bourne/Wainui (81,83,160,170)	12%	73%	1%	13%	0%	1%	77	28%	46%	2%	5%	9%	10%	107
9	"	"	Hutt (110-150)	35%	60%	0%	0%	3%	5%	60	24%	48%	2%	1%	20%	5%	84
10	"	"	Chrtn Prk/Jvll/Por (52-56,211)	40%	25%	2%	6%	2%	27%	63	45%	8%	8%	3%	8%	29%	249
11	"	"	Paraparaumu (250,260,262)	41%	5%	0%	45%	0%	9%	22	50%	0%	0%	25%	25%	0%	4
12	"	"	Airport Flyer (91)	16%	51%	4%	15%	6%	15%	82	46%	30%	3%	4%	15%	4%	192
1	W	R	Johnsonville	9%	0%	46%	42%	1%	3%	368	31%	0%	35%	20%	12%	2%	211
2	"	"	Kapiti	12%	0%	46%	38%	2%	5%	528	34%	0%	29%	19%	10%	9%	841
3	"	"	Hutt (including Melling)	14%	0%	50%	33%	1%	2%	785	37%	0%	35%	14%	7%	7%	345
4	"	"	Wairarapa	11%	0%	64%	23%	0%	1%	169	52%	0%	24%	3%	16%	5%	127
1	A	B	City Link,City Loop	33%	59%	0%	4%	0%	4%	49	47%	33%	0%	7%	8%	5%	60
2	"	"	Outer Loop	47%	47%	0%	5%	0%	0%	38	40%	40%	2%	2%	2%	14%	43
3	"	"	Northern Express	47%	0%	10%	7%	0%	37%	30	46%	2%	10%	5%	4%	33%	112
4	"	"	Central (5-11,20,30)	39%	49%	2%	4%	0%	6%	98	48%	21%	5%	6%	12%	8%	328
5	"	"	Central South (173-198)	37%	46%	0%	4%	4%	13%	46	43%	28%	2%	11%	13%	2%	53
6	"	"	West (48,49,80-97,104-163)	44%	35%	2%	7%	2%	11%	227	50%	24%	7%	3%	6%	11%	506
7	"	"	NW (220-233)	25%	56%	1%	7%	3%	11%	102	44%	32%	1%	3%	7%	12%	169
8	"	"	SW (258-287)	27%	55%	0%	11%	0%	7%	55	54%	24%	4%	6%	3%	9%	78
9	"	"	S.Manukau (300s)	62%	21%	1%	2%	6%	14%	81	62%	19%	2%	1%	9%	7%	254
10	"	"	Far S Papak (400s)	78%	22%	0%	0%	0%	0%	9	60%	22%	4%	1%	6%	8%	114
11	"	"	E Bot/Howick (500s)	51%	6%	6%	8%	4%	28%	140	55%	11%	4%	4%	9%	16%	182
12	"	"	E Glen I (600s)	31%	42%	4%	12%	2%	12%	52	26%	58%	0%	0%	0%	16%	19
13	"	"	GI I v MisBay (700s)	44%	44%	0%	3%	5%	10%	39	52%	30%	0%	4%	7%	8%	91
14	"	"	CBD-N Shore (800-900s)	14%	15%	31%	2%	6%	38%	65	38%	2%	21%	5%	4%	31%	183

#	C	M	Route	Peak							Non-peak						
				Sngl	E_Crd	10T	Mnt	GC	Oth	All	Sngl	E_Crd	10T	Mnt	GC	Oth	All
15	"	"	Intra N Shore (800-900s)	47%	22%	0%	2%	2%	28%	81	62%	11%	8%	2%	3%	13%	261
1	A	R	East line	24%	39%	0%	14%	1%	24%	207	46%	19%	0%	3%	8%	24%	237
2	"	"	South line	15%	41%	1%	28%	2%	15%	82	33%	24%	0%	4%	12%	26%	203
3	"	"	Onehunga line	19%	56%	0%	16%	1%	9%	125	44%	33%	0%	5%	6%	11%	241
4	"	"	West line	29%	34%	0%	15%	1%	23%	175	45%	21%	0%	4%	11%	19%	247
			All	23%	28%	21%	19%	2%	9%	4605	38%	28%	9%	6%	9%	10%	7624

Table B.14 Average fare per trip (\$) by route and by time period

#	City	Mode	Route	Peak			Non-peak			All		
				Av	StD	N	Av	StD	N	Av	StD	N
1	CHC	Bus	Orbiter	2.53	0.60	20	2.46	1.07	93	2.47	1.00	113
2	"	"	North-South (11,12,13,15,17,20)	2.45	0.60	28	2.58	0.62	44	2.53	0.61	72
3	"	"	N.East-West (5,7,60,Metro Star)	2.56	0.54	10	2.45	0.71	130	2.46	0.69	140
4	"	"	West-S.East (21,23,28)	2.52	0.96	20	2.25	0.98	31	2.36	0.97	51
5	"	"	N.East-West (40,45)	2.29	0.78	19	2.24	1.10	18	2.26	0.94	37
6	"	"	Airport Sumner (3,29)	3.07	1.30	28	2.79	1.86	70	2.87	1.72	98
7	"	"	Outer West/S.West (81-84, 88,820)	2.40	0.46	5	2.19	1.06	89	2.20	1.04	94
8	"	"	Far North (90)	2.67	0.98	15	1.92	1.40	73	2.05	1.36	88
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	3.07	1.08	28	3.46	2.19	76	3.36	1.96	104
2	"	"	Uni/Mairangi (13,17,18)	2.73	1.08	18	2.66	1.72	25	2.69	1.47	43
3	"	"	Karori-L.Bay (3)	3.31	1.09	34	3.65	1.79	46	3.50	1.53	80
4	"	"	M'mar,S'toun (2,11)	3.09	1.81	37	3.36	2.83	24	3.20	2.25	61
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	3.67	2.00	37	2.63	1.24	62	3.02	1.64	99
6	"	"	Mair/W.Hill,MtVic (20-24)	2.83	1.13	18	3.12	1.80	59	3.05	1.66	77
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	3.65	0.72	14	2.40	1.80	22	2.88	1.59	36
8	"	"	E'bourne/Wainui (81,83,160,170)	5.75	2.79	50	5.05	2.53	47	5.41	2.68	97
9	"	"	Hutt (110-150)	3.52	1.85	33	3.70	2.17	40	3.62	2.02	73
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	3.55	0.92	37	3.62	1.43	148	3.61	1.34	185
11	"	"	Paraparaumu (250,260,262)	1.79	0.36	15	3.63	4.99	4	2.17	2.20	19
12	"	"	Airport Flyer (91)	7.37	2.51	50	7.19	3.49	96	7.25	3.18	146
1	WTN	Rail	Johnsonville	3.21	0.78	79	3.74	2.23	46	3.40	1.50	125
2	"	"	Kapiti	7.19	2.71	145	7.16	3.78	324	7.17	3.48	469
3	"	"	Hutt (including Melling)	4.68	1.82	157	5.70	2.69	106	5.09	2.26	263
4	"	"	Wairarapa	11.06	3.05	77	12.00	5.68	10	11.17	3.42	87
1	AUC	Bus	City Link,City Loop	2.18	2.32	32	1.64	0.67	33	1.90	1.70	65
2	"	"	Outer Loop	2.48	0.82	15	2.16	1.01	18	2.31	0.93	33

Appendix B: User profile by aggregated route

#	City	Mode	Route	Peak			Non-peak			All		
				Av	StD	N	Av	StD	N	Av	StD	N
3	"	"	Northern Express	5.08	0.86	12	4.09	1.81	48	4.29	1.70	60
4	"	"	Central (5-11,20,30)	2.48	1.06	45	2.61	1.84	157	2.58	1.69	202
5	"	"	Central South (173-198)	4.22	2.44	16	3.00	1.56	26	3.47	2.01	42
6	"	"	West (48,49,80-97,104-163)	4.10	2.23	94	3.55	2.12	230	3.71	2.16	324
7	"	"	NW (220-233)	2.71	1.10	59	3.01	1.74	94	2.90	1.53	153
8	"	"	SW (258-287)	3.20	1.73	30	2.95	2.14	33	3.07	1.94	63
9	"	"	S.Manukau (300s)	3.05	1.86	40	3.29	2.39	122	3.23	2.27	162
10	"	"	Far S Papak (400s)	3.08	1.45	4	3.15	2.27	64	3.15	2.22	68
11	"	"	E Bot/Howick (500s)	3.48	2.38	80	3.11	1.89	77	3.30	2.16	157
12	"	"	E Glen I (600s)	2.81	1.10	13	2.46	1.06	7	2.69	1.07	20
13	"	"	GI I v MisBay (700s)	3.11	1.27	17	3.06	1.69	43	3.08	1.57	60
14	"	"	CBD-N Shore (800-900s)	3.17	1.04	26	3.29	1.49	73	3.25	1.38	99
15	"	"	Intra N Shore (800-900s)	2.51	1.29	30	2.74	1.38	124	2.69	1.36	154
1	AUC	Rail	East line	4.77	2.02	36	4.21	3.06	47	4.46	2.66	83
2	"	"	South line	4.39	1.49	15	4.14	2.26	36	4.21	2.05	51
3	"	"	Onehunga line	3.78	0.82	37	3.63	2.41	45	3.70	1.86	82
4	"	"	West line	4.91	1.38	77	3.86	2.22	15	4.74	1.58	92
All	All	All	All	4.35	2.78	1,652	3.78	2.77	2,975	3.98	2.78	4,627

Table B.15 Average fare \$ per minute of onboard time

#	City	Mode	Route	Av fare \$/trip	Onboard time mins	Fare/min \$
1	CHC	Bus	Orbiter	2.47	19	0.13
2	"	"	North-South (11,12,13,15,17,20)	2.53	18	0.14
3	"	"	N.East-West (5,7,60,Metro Star)	2.46	21	0.12
4	"	"	West-S.East (21,23,28)	2.36	21	0.11
5	"	"	N.East-West (40,45)	2.26	23	0.10
6	"	"	Airport Sumner (3,29)	2.87	24	0.12
7	"	"	Outer West/S.West (81-84, 88,820)	2.20	25	0.09
8	"	"	Far North (90)	2.05	29	0.07
1	WTN	Bus	Newtown,Island Bay,Happy Valley (1,4,10)	3.36	20	0.17
2	"	"	Uni/Mairangi (13,17,18)	2.69	16	0.17
3	"	"	Karori-L.Bay (3)	3.50	18	0.20
4	"	"	M'mar,S'toun (2,11)	3.20	18	0.17
5	"	"	Wilton-Kilb/Hat/Khand (5,14,43,44)	3.02	18	0.17
6	"	"	Mair/W.Hill,MtVic (20-24)	3.05	18	0.17
7	"	"	Kingston/Kowhai Park/Aro Valley (7-9)	2.88	17	0.17
8	"	"	E'bourne/Wainui (81,83,160,170)	5.41	28	0.19

#	City	Mode	Route	Av fare \$/trip	Onboard time mins	Fare/min \$
9	"	"	Hutt (110-150)	3.62	24	0.15
10	"	"	Churton Park/Jvllle/Porirua (52-56,211)	3.61	24	0.15
11	"	"	Paraparaumu (250,260,262)	2.17	13	0.16
12	"	"	Airport Flyer (91)	7.25	27	0.26
1	WTN	Rail	Johnsonville	3.40	18	0.19
2	"	"	Kapiti	7.17	35	0.20
3	"	"	Hutt (including Melling)	5.09	27	0.19
4	"	"	Wairarapa	11.17	68	0.16
1	AUC	Bus	City Link,City Loop	1.90	13	0.15
2	"	"	Outer Loop	2.31	23	0.10
3	"	"	Northern Express	4.29	23	0.19
4	"	"	Central (5-11,20,30)	2.58	20	0.13
5	"	"	Central South (173-198)	3.47	33	0.11
6	"	"	West (48,49,80-97,104-163)	3.71	32	0.12
7	"	"	NW (220-233)	2.90	23	0.13
8	"	"	SW (258-287)	3.07	22	0.14
9	"	"	S.Manukau (300s)	3.23	27	0.12
10	"	"	Far S Papak (400s)	3.15	24	0.13
11	"	"	E Bot/Howick (500s)	3.30	32	0.10
12	"	"	E Glen I (600s)	2.69	23	0.12
13	"	"	Gl I v MisBay (700s)	3.08	22	0.14
14	"	"	CBD-N Shore (800-900s)	3.25	27	0.12
15	"	"	Intra N Shore (800-900s)	2.69	20	0.13
1	AUC	Rail	East line	4.46	29	0.15
2	"	"	South line	4.21	35	0.12
3	"	"	Onehunga line	3.70	22	0.17
4	"	"	West line	4.74	33	0.14
All	All	All	All	3.98	27	0.15

Appendix C: Discussion on ratings in customer market research

This appendix was written by Charles Sullivan.

C1 Measuring service quality in general

Research on service quality grew rapidly in the 1980s, following widespread recognition of the rapidly increasing importance of services in the economy. This resulted in careful distinctions being made between related concepts (the central concepts being service quality, customer satisfaction, and customer value), together with diverse ways of measuring such concepts (eg Rust and Oliver 1994). Large numbers of customer surveys about service quality and/or satisfaction have been conducted for banks, telephone companies, shops, airlines, and many other services for decades now. Such methods are also well established in public transport, with (Schaller 2005) providing a useful overview.

This study had to choose between several different broad options for customer ratings:

- satisfaction (eg very satisfied, dissatisfied)
- performance (eg very good, poor)
- expectations (eg much better than expected, worse than expected)
- improvement (eg slight improvement needed, much improvement needed)
- comparison with the ideal (eg compared with the ideal..., how would you rate...? With choices such as very good, poor)
- recommend (eg how likely are you to recommend ... to a friend? With choices such as very likely, unlikely).

Our choice of a performance scale (with endpoints of 'very poor' and 'very good') is common in service quality research. It also probably delivers results broadly similar to the other options. Despite strong arguments sometimes being made to favour one such option over another (eg see Reichheld 2003), for a *Harvard Business Review* article arguing strongly for the 'recommend' approach), factor analysis of results from several such scales suggests that they all measure the same underlying construct (MORI 2002).

All these ratings share the common weakness of being subjective rather than objective. That is, there is no direct way to know about such subjective states separate from what respondents tell us (in contrast to factual questions where respondents tell us how many cars they own etc). More subtly, with such subjective scales we have no way of assessing the extent to which a rating by person A of very poor is really equivalent to the same rating from person B (whereas if both report owning two cars, this does indicate equality in terms of some physical facts that can be checked independently).

C2 Rating scale choice

Further choices had to be made with respect to numbers of points on scales and labels used. A recent review of public transport satisfaction surveys for the NZ Transport Agency found consensus on best practice lacking across Australia, the UK, and North America. Widely varying scales were used, from 5-point to 10-point, and with a variety of labels (MartinJenkins 2011).

Hence, for this project we made our choices with an eye on previous public transport surveys and principles of good scale construction in general, but without making any claim that our choices were markedly superior to several alternatives. Given that strongly held views on number of scale points and appropriate labels are often heard, potential critics of the choices made here need to consider the empirical evidence as summarised in a major UK review of satisfaction measurement relating to public transport:

There are many different views as to the most appropriate scaling technique to use to measure customer satisfaction, and there are many different approaches. They all measure perceived performance (rather than absolute performance such as timetable data on numbers of departures or punctuality). We are not aware of any conclusive evidence which suggests, categorically, which is the most desirable method. (Bartram et al 2006)

C3 References

- Bartram P, M Bartram and G Bennett (2006) *Findings of a review of the National Passenger Survey: February 2006*. Manchester: Passenger Focus.
- MartinJenkins (2011) *Review: public transport customer satisfaction surveys*. Wellington: NZ Transport Agency.
- MORI (2002) *Public service reform: measuring and understanding customer satisfaction*. London, Office of Public Services Reform. Accessed 9 August 2014. www.ipsos-mori.com/researchpublications/publications/1202/Public-Service-Reform-Measuring-and-Understanding-Customer-Satisfaction.aspx.
- Reichheld, F (2003) The one number you need to grow. *Harvard Business Review* 81, no.12: 46–54.
- Rust, RT and RL Oliver RL (1994) *Service quality: new directions in theory and practice*. Thousand Oaks, California: Sage Publications.
- Schaller, B (2005) *On-board and intercept transit survey techniques: a synthesis of transit practice*. Washington, DC: Transit Research Board, Transit Cooperative Research Program.

Appendix D: Vehicle ratings by aggregated route

Table D.1 Overall vehicle rating by route

#	Cty	M	Route	OS	OnOf	Seat	Bag	SmQ	AC	Lght	C&G	Info	WIFI	Stff	Env	All
1	C	B	Orbiter	68%	76%	74%	64%	56%	58%	68%	59%	55%	33%	75%	58%	68%
2	"	"	North-South (11,12,13,15,17,20)	77%	75%	77%	70%	64%	70%	69%	68%	62%	36%	75%	62%	71%
3	"	"	N.East-West (5,7,60,Metro Star)	69%	79%	78%	69%	50%	60%	67%	58%	53%	28%	77%	53%	65%
4	"	"	West-S.East (21,23,28)	sample too small												77%
5	"	"	N.East-West (40,45)	72%	71%	72%	65%	69%	74%	77%	71%	65%	52%	79%	71%	64%
6	"	"	Airport Sumner (3,29)	68%	74%	69%	61%	46%	61%	65%	58%	48%	32%	69%	52%	66%
7	"	"	Outer W/S.West (81-84, 88,820)	sample too small												71%
8	"	"	Far North (90)	sample too small												70%
1	W	B	N'town,I.Bay,Happy V (1,4,10)	72%	76%	73%	61%	60%	63%	70%	70%	50%	37%	68%	60%	69%
2	"	"	Uni/Mairangi (13,17,18)	66%	75%	72%	62%	54%	62%	69%	66%	43%	25%	68%	49%	66%
3	"	"	Karori-L.Bay (3)	72%	75%	75%	64%	62%	64%	71%	74%	52%	41%	69%	60%	70%
4	"	"	M'mar,S'toun (2,11)	73%	78%	77%	67%	67%	69%	72%	75%	51%	33%	73%	60%	71%
5	"	"	Wilton-Kilb/Hat/Khd (5,14,43,44)	68%	74%	74%	61%	58%	63%	67%	70%	56%	34%	75%	56%	69%
6	"	"	Mair/W.Hill,MtVic (20-24)	72%	76%	75%	63%	59%	65%	69%	68%	51%	26%	68%	53%	68%
7	"	"	K'ton/Kowhai Park/Aro V (7-9)	70%	74%	75%	62%	61%	64%	69%	72%	48%	30%	68%	57%	69%
8	"	"	E'b'ne/Wainui (81,83,160,170)	71%	75%	72%	65%	59%	62%	67%	61%	48%	32%	74%	51%	69%
9	"	"	Hutt (110-150)	69%	76%	77%	59%	59%	65%	73%	73%	59%	32%	83%	62%	69%
10	"	"	C.Park/Jvll/Porirua (52- 56,211)	72%	77%	76%	65%	63%	64%	70%	74%	54%	32%	74%	59%	71%
11	"	"	Paraparaumu (250,260,262)	no rating survey												67%
12	"	"	Airport Flyer (91)	78%	81%	83%	74%	72%	75%	79%	78%	80%	70%	73%	65%	79%
1	W	R	Johnsonville	85%	84%	84%	79%	72%	80%	85%	87%	78%	44%	76%	66%	82%
2	"	"	Kapiti	74%	80%	73%	69%	69%	69%	79%	81%	70%	42%	75%	68%	76%
3	"	"	Hutt (including Melling)	81%	83%	80%	72%	76%	76%	82%	85%	76%	45%	76%	73%	79%
4	"	"	Wairarapa	78%	72%	72%	68%	63%	70%	78%	83%	69%	58%	81%	68%	78%
1	A	B	City Link,City Loop	83%	88%	86%	73%	74%	76%	81%	84%	81%	60%	85%	73%	79%
2	"	"	Outer Loop	86%	86%	82%	73%	70%	79%	83%	85%	89%	66%	82%	72%	83%
3	"	"	Northern Express	84%	87%	82%	73%	73%	76%	85%	89%	66%	45%	84%	72%	78%
4	"	"	Central (5-11,20,30)	71%	73%	74%	65%	62%	65%	72%	76%	56%	42%	72%	60%	71%
5	"	"	Central South (173-198)	75%	77%	77%	65%	61%	69%	69%	79%	54%	36%	73%	57%	70%
6	"	"	West (48,49,80-97,104-163)	73%	77%	74%	65%	64%	69%	73%	77%	58%	40%	73%	62%	71%
7	"	"	NW (220-233)	77%	79%	76%	66%	66%	73%	76%	78%	54%	43%	75%	62%	73%
8	"	"	SW (258-287)	73%	72%	66%	58%	65%	66%	74%	72%	48%	28%	70%	61%	68%

#	Cty	M	Route	OS	OnOf	Seat	Bag	SmQ	AC	Lght	C&G	Info	WIFI	Stff	Env	All
9	"	"	S.Manukau (300s)	65%	73%	67%	56%	55%	58%	65%	59%	52%	37%	73%	56%	65%
10	"	"	Far S Papak (400s)	66%	68%	68%	56%	52%	50%	56%	57%	40%	34%	69%	50%	63%
11	"	"	E Bot/Howick (500s)	72%	78%	75%	66%	65%	65%	72%	74%	55%	32%	75%	61%	69%
12	"	"	E Glen I (600s)	68%	80%	77%	66%	64%	67%	71%	74%	56%	35%	78%	63%	71%
13	"	"	Gl I v MisBay (700s)	71%	77%	75%	66%	60%	69%	76%	78%	52%	36%	75%	60%	68%
14	"	"	CBD-N Shore (800-900s)	70%	76%	75%	64%	64%	64%	72%	75%	53%	39%	75%	62%	70%
15	"	"	Intra N Shore (800-900s)	70%	77%	76%	67%	63%	65%	71%	74%	57%	40%	72%	62%	70%
1	A	R	East line	61%	69%	67%	58%	53%	59%	72%	69%	66%	42%	65%	52%	64%
2	"	"	South line	64%	71%	72%	66%	57%	64%	74%	72%	73%	47%	71%	58%	71%
3	"	"	Onehunga line	63%	71%	72%	65%	52%	64%	73%	73%	71%	44%	71%	52%	68%
4	"	"	West line	62%	68%	64%	58%	53%	63%	71%	70%	67%	41%	66%	55%	65%
All	All	All	All	72%	77%	74%	74%	64%	69%	75%	75%	64%	41%	73%	62%	72%

Table D.2 Overall vehicle rating by route – sample size

#	Cty	M	Route	OS	OnOf	Seat	Bag	SmQ	AC	Lght	C&G	Info	Wifi	Stff	Env	All
1	C	B	Orbiter	298	300	300	293	297	293	280	297	281	224	294	278	419
2	"	"	North-South (11,12,13,15,17,20)	57	60	59	59	60	58	55	58	51	40	59	53	134
3	"	"	N.East-West (5,7,60,Metro Star)	71	70	68	69	69	70	69	71	67	60	68	65	218
4	"	"	West-S.East (21,23,28)	12	12	12	12	12	11	11	12	10	7	12	11	67
5	"	"	N.East-West (40,45)	23	23	22	23	22	19	20	23	19	15	23	20	65
6	"	"	Airport Sumner (3,29)	69	72	71	70	72	70	64	71	67	56	72	72	185
7	"	"	Outer W/S.West (81-84, 88,820)	2	2	2	2	2	2	2	2	2	0	2	2	96
8	"	"	Far North (90)	2	3	2	3	3	3	3	3	1	1	3	2	96
1	W	B	N'town,I.Bay,Happy V (1,4,10)	141	142	142	142	141	139	140	142	131	90	142	131	269
2	"	"	Uni/Mairangi (13,17,18)	68	69	69	69	69	66	65	69	62	47	66	60	116
3	"	"	Karori-L.Bay (3)	166	165	164	161	161	163	159	160	151	110	159	145	267
4	"	"	M'mar,S'toun (2,11)	133	133	135	133	134	128	121	132	113	88	127	117	208
5	"	"	Wilton-Kilb/Hat/Khd (5,14,43,44)	130	130	129	129	129	127	125	126	118	93	127	119	240
6	"	"	Mair/W.Hill,MtVic (20-24)	110	113	113	109	111	111	110	111	100	71	109	95	214
7	"	"	K'ton/Kowhai Park/Aro V (7-9)	82	81	82	80	77	81	80	81	73	54	82	70	129
8	"	"	E'b'ne,Wainui (81,83,160,170)	71	69	68	68	68	69	66	69	61	44	67	60	178
9	"	"	Hutt (110-150)	52	55	54	52	53	53	53	52	47	25	52	46	139
10	"	"	C.Park/Jvllle/Porirua (52- 56,211)	127	128	126	126	128	127	124	126	114	75	124	106	312
11	"	"	Paraparaumu (250,260,262)	0	0	0	0	0	0	0	0	0	0	0	0	27
12	"	"	Airport Flyer (91)	87	86	84	85	85	87	86	86	86	65	86	78	275

Appendix D: Vehicle ratings by aggregated route

#	Cty	M	Route	OS	OnOf	Seat	Bag	SmQ	AC	Lght	C&G	Info	Wifi	Stff	Env	All
1	W	R	Johnsonville	434	435	433	428	434	431	431	429	430	254	428	377	572
2	"	"	Kapiti	843	839	843	838	839	833	836	835	802	523	830	774	1352
3	"	"	Hutt (including Melling)	834	839	836	830	838	827	831	834	821	524	823	740	1128
4	"	"	Wairarapa	181	183	185	183	185	180	183	180	177	125	185	141	288
1	A	B	City Link,City Loop	21	20	21	20	21	20	21	20	21	18	20	20	109
2	"	"	Outer Loop	41	41	40	40	40	41	40	40	41	32	39	37	78
3	"	"	Northern Express	68	67	67	67	67	68	65	68	64	54	68	64	137
4	"	"	Central (5-11,20,30)	209	210	209	203	205	210	201	207	192	155	211	200	418
5	"	"	Central South (173-198)	54	54	53	52	54	53	50	54	46	39	52	50	100
6	"	"	West (48,49,80-97,104-163)	377	377	377	370	375	376	368	372	358	308	373	362	727
7	"	"	NW (220-233)	96	95	96	95	96	96	93	96	91	79	97	94	264
8	"	"	SW (258-287)	60	60	60	60	59	60	59	59	55	48	58	57	131
9	"	"	S.Manukau (300s)	166	164	167	165	163	163	157	163	160	134	164	155	333
10	"	"	Far S Papak (400s)	51	49	50	45	48	47	44	48	46	40	47	48	119
11	"	"	E Bot/Howick (500s)	148	146	146	148	147	146	145	147	141	124	145	141	317
12	"	"	E Glen I (600s)	48	48	48	48	47	47	47	46	45	35	45	43	66
13	"	"	Gl I v MisBay (700s)	64	63	63	62	62	62	58	62	57	49	63	60	123
14	"	"	CBD-N Shore (800-900s)	138	137	136	136	138	134	135	133	131	117	136	127	246
15	"	"	Intra N Shore (800-900s)	178	178	175	175	173	176	172	174	172	149	178	171	333
1	A	R	East line	361	362	356	358	355	357	358	357	355	300	345	346	440
2	"	"	South line	229	230	232	229	230	227	230	230	224	177	226	217	287
3	"	"	Onehunga line	272	270	273	268	269	267	269	266	268	200	261	260	362
4	"	"	West line	309	309	309	308	308	307	308	309	305	248	298	292	406
All	All	All	All	6883	6889	6877	6877	6846	6674	6734	6820	6556	4897	6766	6306	11990

Appendix E: Stop ratings by aggregated route

Table E.1 Stop/station rating tabulations by aggregated route

#	Cty	M	Route	WP	Seat	Info	Lght	Cl&G	OnOf	PS	Toil	Stff	Ret	Tick	Car	Bus	All
1	C	B	Orbiter	52%	59%	55%	56%	64%	not asked								62%
2	"	"	North-South (11,12,13,15,17,20)	62%	60%	65%	64%	74%	" " "								63%
3	"	"	N.East-West (5,7,60,Metro Star)	58%	57%	54%	56%	72%	" " "								62%
4	"	"	West-S.East (21,23,28)	sample too small					" " "								64%
5	"	"	N.East-West (40,45)	54%	63%	69%	60%	71%	" " "								64%
6	"	"	Airport Sumner (3,29)	53%	58%	64%	54%	71%	" " "								63%
7	"	"	Outer W/S.West (81-84, 88,820)	sample too small					" " "								64%
8	"	"	Far North (90)	sample too small					" " "								64%
1	W	B	N'town,I.Bay,Happy V (1,4,10)	70%	60%	74%	69%	76%	not asked								71%
2	"	"	Uni/Mairangi (13,17,18)	56%	49%	69%	59%	77%	" " "								64%
3	"	"	Karori-L.Bay (3)	66%	60%	71%	63%	74%	" " "								69%
4	"	"	M'mar,S'toun (2,11)	61%	57%	71%	69%	77%	" " "								69%
5	"	"	Wilton-Kilb/Hat/Khd (5,14,43,44)	66%	61%	68%	61%	73%	" " "								66%
6	"	"	Mair/W.Hill,MtVic (20-24)	66%	61%	70%	63%	69%	" " "								63%
7	"	"	K'ton/Kowhai Park/Aro V (7-9)	64%	56%	73%	64%	63%	" " "								66%
8	"	"	E'b'ne/Wainui (81,83,160,170)	63%	59%	61%	57%	70%	" " "								65%
9	"	"	Hutt (110-150)	53%	55%	68%	58%	80%	" " "								63%
10	"	"	C.Park/Jvllle/Porirua (52-56,211)	58%	58%	66%	57%	72%	" " "								63%
11	"	"	Paraparaumu (250,260,262)	sample too small					" " "								64%
12	"	"	Airport Flyer (91)	62%	60%	68%	72%	76%	" " "								66%
1	W	R	Johnsonville	54%	50%	57%	60%	60%	74%	68%	26%	45%	39%	45%	59%	57%	63%
2	"	"	Kapiti	59%	53%	63%	63%	64%	73%	66%	45%	58%	53%	61%	62%	63%	68%
3	"	"	Hutt	57%	48%	56%	59%	58%	71%	59%	33%	51%	45%	54%	63%	64%	61%
4	"	"	Wairarapa	61%	48%	57%	65%	68%	73%	68%	48%	57%	45%	61%	70%	67%	64%
1	A	B	City Link,City Loop	60%	63%	70%	77%	66%	not asked								70%
2	"	"	Outer Loop	55%	56%	78%	59%	68%	" " "								69%
3	"	"	Northern Express	82%	76%	86%	84%	84%	" " "								81%
4	"	"	Central (5-11,20,30)	59%	59%	70%	61%	68%	" " "								62%
5	"	"	Central South (173-198)	66%	63%	71%	62%	70%	" " "								70%
6	"	"	West (48,49,80-97,104-163)	63%	62%	71%	66%	72%	" " "								68%
7	"	"	NW (220-233)	67%	62%	70%	65%	72%	" " "								66%
8	"	"	SW (258-287)	61%	57%	64%	66%	69%	" " "								64%
9	"	"	S. (300s)	55%	54%	60%	54%	59%	" " "								61%
10	"	"	Far S Papak (400s)	55%	47%	59%	58%	59%	" " "								60%
11	"	"	E Bot/Howick (500s)	66%	66%	69%	66%	75%	" " "								68%
12	"	"	E Glen I (600s)	74%	71%	75%	74%	76%	" " "								75%

Appendix E: Stop ratings by aggregated route

#	Cty	M	Route	WP	Seat	Info	Lght	CI&G	OnOf	PS	Toil	Stff	Ret	Tick	Car	Bus	All
13	"	"	Gl I v MisBay (700s)	65%	61%	72%	66%	61%	" " "								65%
14	"	"	CBD-N Shore (800-900s)	62%	61%	69%	68%	72%	" " "								67%
15	"	"	Intra N Shore (800-900s)	67%	63%	71%	65%	68%	" " "								68%
1	A	R	East line	59%	56%	64%	64%	68%	68%	68%	26%	45%	39%	45%	59%	57%	65%
2	"	"	South line	60%	60%	68%	66%	64%	72%	66%	45%	58%	53%	61%	62%	63%	68%
3	"	"	Onehunga line	62%	58%	69%	72%	77%	75%	59%	33%	51%	45%	54%	63%	64%	71%
4	"	"	West line	57%	56%	64%	66%	65%	71%	68%	48%	57%	45%	61%	70%	67%	63%
All	All	All	All	60%	56%	65%	63%	67%	72%	67%	40%	53%	37%	56%	57%	60%	66%

Table E.2 Description of aggregated bus stops

Aggregated stop	City	Description	Cat
Addington	CHC	Addington	3
Central ChCh	CHC	Central Christchurch including Hospital, Polytechnic, Hagley Park, Hereford St	2
Airport	CHC	Christchurch Airport	1
Aranui	CHC	Aranui	3
BfNCtRd	CHC	Belfast, Casebrook, Northcote, Redwood	3
BurnBish	CHC	Burnside, Bishopdale	3
CashBeck	CHC	Cashmere, Beckenham	3
Ch EXC	CHC	Christchurch Exchange central bus station	1
HalswllH	CHC	Halswell, Hoon Hay	3
Hornby	CHC	Hornby	3
Ilam	CHC	Ilam	3
LinwdPh	CHC	Linwood, Phillipstown	3
NewBrght	CHC	New Brighton	3
PapMeri	CHC	Papanui, Merivale	3
RangKaip	CHC	Rangiora, Kaiapoi	3
RedWool	CHC	Redcliffs, Mt Pleasant, Heathcote Valley, Woolston	3
Riccarton	CHC	Riccarton	3
RollTLin	CHC	Rolleston, Templeton, Lincoln	3
RussAvHe	CHC	Russley, Avonhead, Hei Hei	3
Shirley	CHC	Shirley	3
Sumner	CHC	Sumner	3
SydSprey	CHC	Sydenham, Spreydon	3
Wainoni	CHC	Wainoni	3
WalthOp	CHC	Waltham, Opawa	3
Churton Park	WEL	Churton Park	3
Courtenay Place	WEL	Courtenay Place	2
Lower Hutt	WEL	Lower Hutt	3

Aggregated stop	City	Description	Cat
Queensgate	WEL	Queensgate Shopping Mall Lower Hutt	2
Upper Hutt	WEL	Upper Hutt	3
Wel IC	WEL	Wellington Interchange / Bus Station, Railway Station	1
Airport	WEL	Wellington Airport	1
BrookMel	WEL	Brooklyn, Melrose	3
HatKilb	WEL	Hataitai, Kilbirnie	3
JvNITwPr	WEL	Johnsonville, Newlands, Tawa, Porirua	3
Karori	WEL	Karori	3
Kelburn	WEL	Kelburn including Victoria University Kelburn Campus	3
LambtonQ	WEL	Lambton Quay Wellington CBD	2
Manners	WEL	Manners Mall Wellington City	2
NewtMtC	WEL	Newtown, Mt Cook	3
NthWilt	WEL	Northland, Wilton	3
Parapara	WEL	Paraparaumu	3
PetAIEB	WEL	Petone, Alicetown, Eastbourne	3
SVTTSil	WEL	Stokes Valley, Silverstream, Taita, Trentham	3
SthBays	WEL	Southern Bays: Island Bay, Lyall Bay, Miramar, Ohiro Bay	3
Te Aro	WEL	Te Aro including Cuba St and Aro Valley	3
W_CSub	WEL	Wellington Central Suburbs	2
WadKhOH	WEL	Wadestown, Khandallah,	3
Willis	WEL	Willis St Wellington City	2
Cen Auc	AUC	Central Auckland City	2
Albert Street	AUC	Albert Street Auckland CBD	2
Britomart	AUC	Britomart Bus/Rail station	1
Custom St	AUC	Custom St Auckland CBD	2
Ellerslie	AUC	Ellerslie	3
Glenfield	AUC	Glenfield	3
Henderson	AUC	Henderson	3
K'Rd	AUC	Karangahape Road Auckland City	2
Mt Albert	AUC	Mt Albert	3
Mt Eden	AUC	Mt Eden	3
Mt Roskill	AUC	Mt Roskill	3
Pt Chevalier	AUC	Pt Chevalier	3
Queen St	AUC	Queen St Auckland CBD	2
Symonds St	AUC	Symonds St Auckland CBD	2
Victoria St	AUC	Victoria St Auckland CBD	2
Airport	AUC	Auckland Airport	1
Albany	AUC	Albany	1
Birkdale	AUC	Birkdale	3

Aggregated stop	City	Description	Cat
Birkenh	AUC	Birkenhead	3
BlckByTi	AUC	Blockhouse Bay, Titirangi	3
EpsomGL	AUC	Epsom, Greenlane (including Hospital)	3
Ponsonby	AUC	Ponsonby	3
GlenInn	AUC	Glen Innes	3
Glendene	AUC	Glendene	3
GreyLyn	AUC	Grey Lynn	3
Howick	AUC	Howick	3
ManPapa	AUC	Manurewa, Papakura	3
Mangere	AUC	Mangere	3
Massey	AUC	Massey	3
Mt Wel	AUC	Mt Wellington	3
NewLGIEd	AUC	New Lynn-Glen Eden	3
NorthShr	AUC	North Shore	3
NwRmPar	AUC	Newmarket, Remuera, Parnell	3
Onehunga	AUC	Onehunga	3
OtahETam	AUC	Otahuhu, East Tamaki	3
PakBotD	AUC	Pakuranga, Botany Downs	3
Panmure	AUC	Panmure	3
Takapuna	AUC	Takapuna	3
TeAtatu	AUC	Te Atatu	3

Table E.3 Attribute ratings and availability by aggregated bus stops

Bus stop	Shelter		Seating		Information			Rating R%			Av wait mins		Sample		
	Prov?	R%	Prov?	R%	TT?	RTI?	R%	C&G	Lght	All	Mins	StDev	CG	All	Wait
Addington	10%	13%	90%	45%	90%	0%	51%	54%	31%	49%	8.5	8.4	10	26	29
Central ChCh	78%	64%	87%	67%	72%	69%	67%	71%	72%	66%	7.9	6.0	33	109	110
Airport	-	-	-	-	-	-	-	-	-	58%	10.2	11.2	2	6	6
Aranui	-	-	-	-	-	-	-	-	-	65%	7.2	5.8	4	10	10
BfNCtRd	36%	40%	45%	44%	64%	27%	54%	44%	43%	46%	7.7	6.0	11	23	24
BurnBish	43%	39%	86%	68%	79%	36%	61%	58%	53%	57%	7.7	8.1	14	26	26
CashBeck	31%	30%	94%	66%	69%	50%	71%	65%	56%	67%	8.4	6.5	15	25	27
Ch EXC	88%	76%	82%	70%	82%	71%	66%	82%	67%	74%	7.7	7.1	36	111	117
HalswllH	-	-	-	-	-	-	-	-	-	45%	9.5	7.4	4	14	15
Hornby	67%	59%	75%	57%	83%	67%	48%	63%	58%	58%	8.3	6.8	13	40	43
Ilam	50%	45%	78%	56%	89%	56%	62%	62%	52%	63%	10.1	7.8	19	38	38
LinwdPh	64%	55%	80%	56%	77%	59%	47%	63%	51%	59%	8.8	6.9	65	111	113
NewBrght	-	-	-	-	-	-	-	-	-	72%	6.6	5.0	3	30	31
PapMeri	76%	57%	85%	60%	87%	72%	55%	74%	60%	63%	8.4	7.0	79	167	171
RangKaip	-	-	-	-	-	-	-	-	-	60%	12.0	8.9	2	29	30

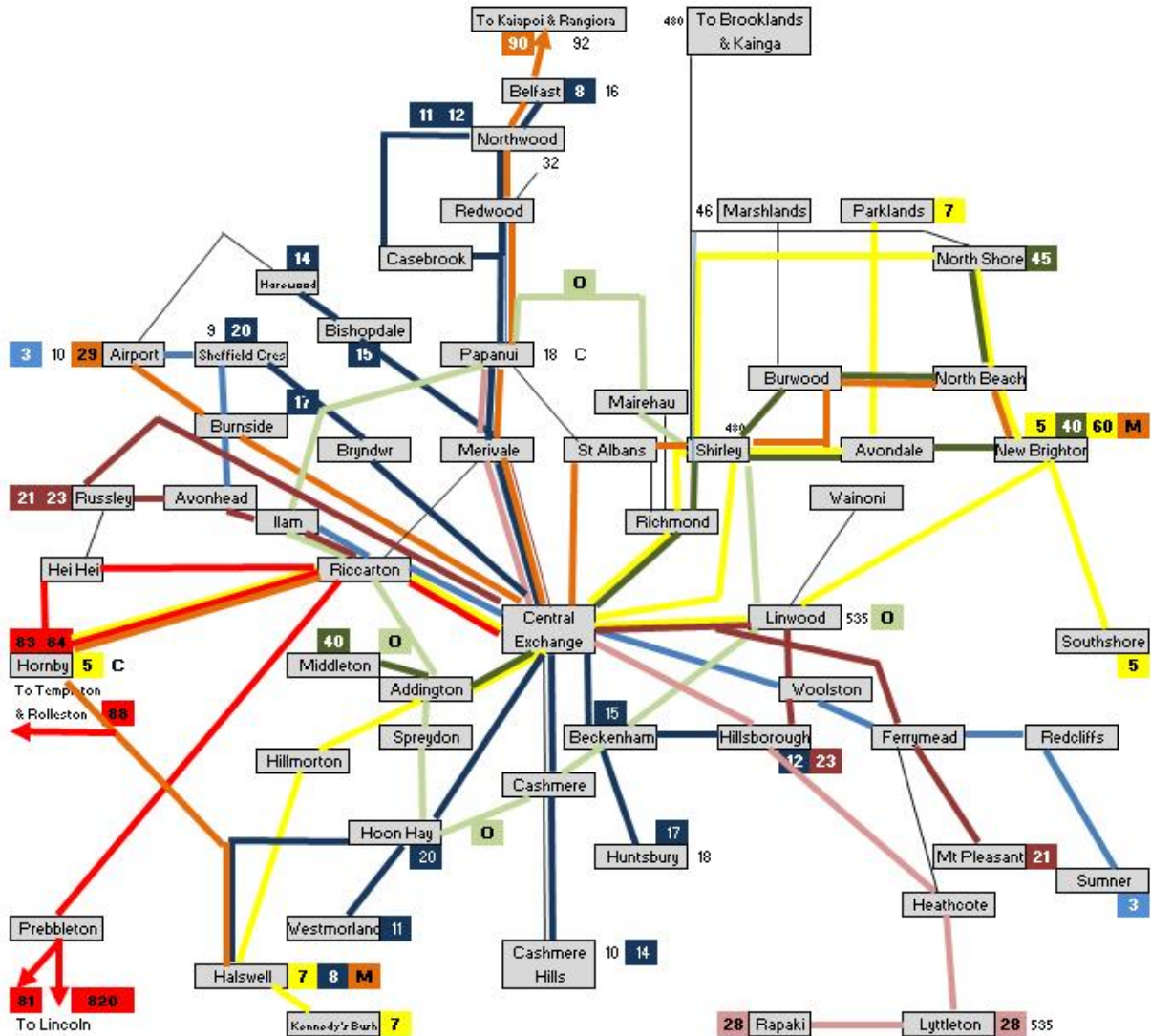
Pricing strategies for public transport: Part 3: Appendices

Bus stop	Shelter		Seating		Information			Rating R%			Av wait mins		Sample		
	Prov?	R%	Prov?	R%	TT?	RTI?	R%	C&G	Lght	All	Mins	StDev	CG	All	Wait
RedWool	63%	55%	89%	62%	93%	56%	67%	69%	45%	62%	8.1	8.8	27	66	70
Riccato	75%	55%	85%	58%	79%	59%	58%	67%	58%	63%	5.8	6.5	71	164	175
RollTLin	-	-	-	-	-	-	-	-	-	61%	9.1	9.1	4	22	25
RussAvHe	-	-	-	-	-	-	-	-	-	68%	9.8	11.0	6	18	18
Shirley	93%	64%	85%	59%	85%	67%	50%	70%	52%	63%	7.1	5.9	39	60	61
Sumner	35%	38%	76%	59%	100%	0%	72%	73%	56%	60%	4.9	4.5	17	36	35
SydSprey	61%	56%	68%	58%	58%	58%	66%	69%	56%	62%	8.9	7.4	36	70	70
WainAvon	-	-	-	-	-	-	-	-	-	54%	8.4	4.8	3	22	22
WalthOp	64%	46%	82%	58%	91%	36%	47%	69%	77%	60%	10.5	6.9	11	28	28
Churton Park	60%	41%	65%	37%	100%	5%	59%	66%	45%	46%	7.0	5.2	19	40	38
Courtenay Plce	95%	77%	92%	62%	93%	24%	74%	76%	73%	73%	7.6	6.6	59	189	189
Lower Hutt	71%	55%	69%	52%	84%	56%	60%	76%	57%	61%	8.9	7.7	44	98	99
Queensgate	100%	74%	100%	65%	100%	100%	47%	85%	69%	69%	7.0	5.6	21	64	62
Upper Hutt	90%	70%	70%	69%	80%	50%	68%	83%	71%	68%	7.6	8.1	10	29	29
Wel IC	97%	74%	90%	65%	97%	98%	79%	86%	77%	75%	5.7	6.1	87	176	171
Airport	84%	54%	84%	58%	84%	14%	76%	70%	75%	64%	4.2	4.1	33	87	84
BrookMel	77%	53%	64%	51%	64%	36%	62%	49%	42%	59%	5.2	3.5	21	36	34
HatKilb	81%	56%	85%	54%	91%	74%	59%	84%	63%	63%	5.4	4.8	53	99	95
JvNITwPr	87%	61%	79%	59%	85%	46%	67%	73%	52%	63%	8.7	9.2	49	117	110
Karori	75%	66%	91%	55%	91%	75%	74%	80%	62%	69%	5.7	4.4	53	95	95
Kelburn	89%	61%	89%	55%	95%	74%	79%	73%	60%	66%	6.3	6.2	18	52	53
LambtonQ	76%	65%	90%	63%	94%	12%	78%	71%	72%	67%	7.3	6.4	184	346	342
Manners	64%	58%	87%	58%	93%	41%	71%	75%	65%	63%	7.2	6.4	74	150	148
NewtMtC	72%	61%	70%	53%	84%	67%	64%	70%	55%	64%	4.9	3.7	87	122	120
NthlWilt	97%	72%	85%	65%	88%	21%	57%	67%	40%	61%	5.3	6.6	34	55	55
Parapara	-	-	-	-	-	-	-	-	-	64%	6.3	4.7	0	27	27
PetAIEB	76%	57%	71%	66%	88%	53%	76%	75%	65%	71%	5.8	5.0	16	64	64
SVTTSil	65%	52%	71%	51%	94%	41%	66%	78%	39%	58%	7.0	5.9	17	51	50
SthBays	79%	54%	85%	54%	91%	40%	63%	72%	54%	65%	6.0	7.6	48	77	77
Te Aro	69%	59%	85%	63%	87%	49%	72%	70%	61%	67%	6.6	5.7	38	60	59
W_CSub	69%	59%	87%	55%	89%	41%	68%	63%	62%	63%	7.2	7.7	55	117	111
WadKhOH	87%	61%	94%	53%	84%	35%	56%	68%	53%	63%	5.4	5.9	30	63	62
Willis	77%	70%	87%	58%	94%	16%	73%	71%	71%	65%	7.8	6.6	76	142	143
Cen Auc	80%	61%	86%	61%	83%	71%	69%	67%	66%	65%	10.1	10.0	130	279	280
Albert Street	76%	64%	94%	60%	84%	82%	68%	76%	70%	65%	9.5	10.8	62	115	117
Britomart	97%	72%	97%	65%	96%	88%	74%	77%	73%	73%	8.3	8.9	204	378	381
Custom St	72%	65%	93%	61%	100%	52%	69%	72%	68%	64%	8.7	8.6	29	66	63
Ellerslie	-	-	-	-	-	-	-	-	-	59%	7.8	6.5	9	16	17
Glenfield	90%	64%	90%	70%	88%	67%	72%	70%	66%	69%	10.1	6.9	40	79	79
Henderson	77%	56%	79%	65%	90%	61%	70%	78%	68%	66%	11.3	7.5	59	117	117
K'Rd	87%	64%	100%	64%	87%	93%	73%	70%	74%	69%	8.4	6.5	30	58	59

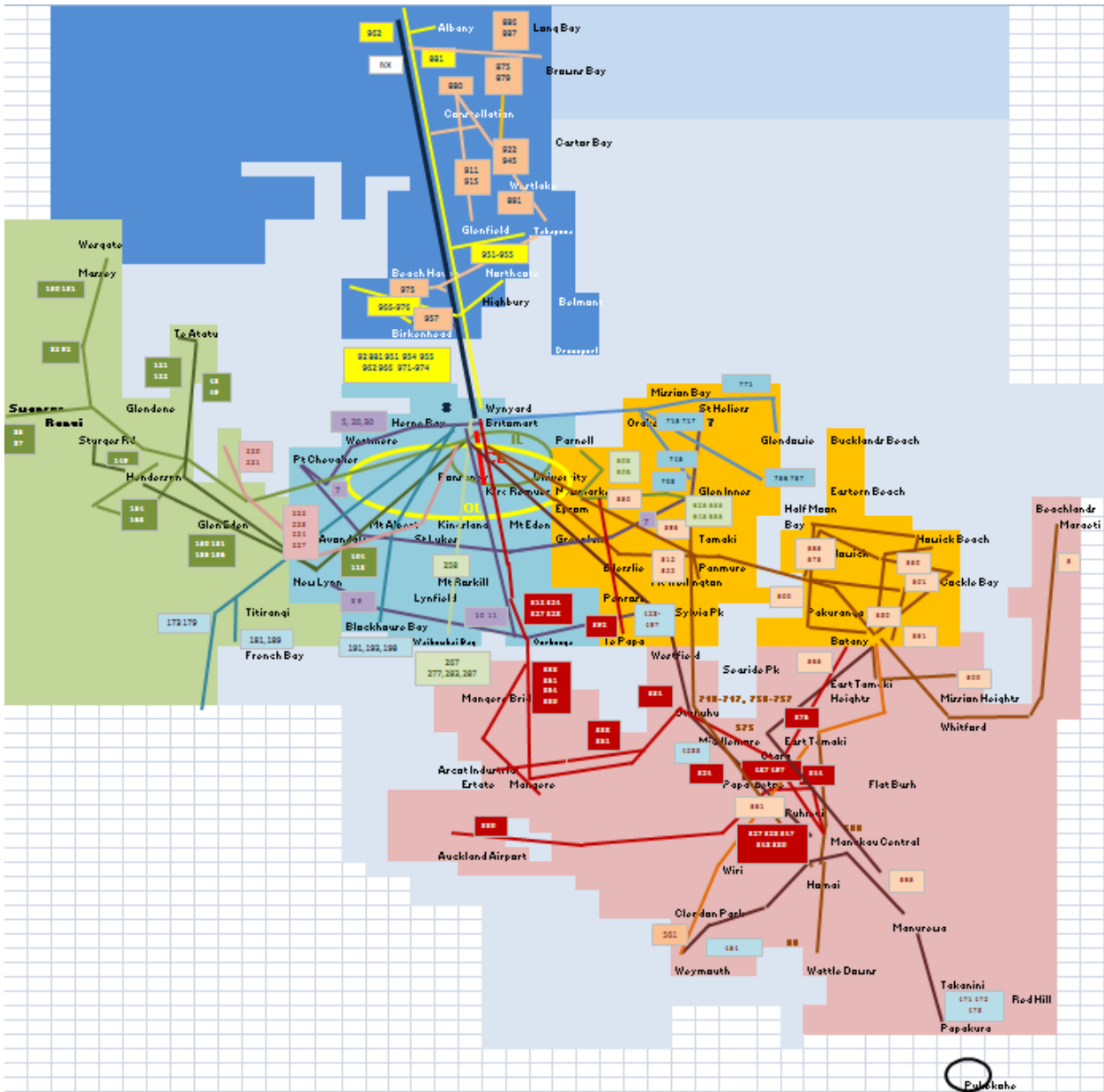
Appendix E: Stop ratings by aggregated route

Bus stop	Shelter		Seating		Information			Rating R%			Av wait mins		Sample		
	Prov?	R%	Prov?	R%	TT?	RTI?	R%	C&G	Lght	All	Mins	StDev	CG	All	Wait
Mt Albert	85%	64%	90%	66%	84%	65%	73%	71%	69%	66%	11.6	9.8	62	129	132
Mt Eden	75%	60%	90%	61%	85%	65%	76%	71%	55%	71%	10.4	10.3	20	47	46
Mt Roskill	62%	55%	62%	47%	67%	19%	58%	48%	46%	50%	14.8	8.4	21	36	35
Pt Chevalier	88%	62%	88%	58%	95%	67%	71%	72%	58%	63%	10.5	13.0	43	78	81
Queen St	90%	64%	99%	63%	92%	90%	73%	73%	72%	69%	7.9	7.9	79	161	162
Symonds St	94%	65%	94%	58%	88%	92%	72%	78%	63%	65%	8.6	6.6	68	156	155
Victoria St	78%	68%	92%	63%	95%	87%	69%	77%	75%	70%	7.7	7.5	61	139	143
Airport	-	-	-	-	-	-	-	-	-	81%	10.5	8.2	2	8	10
Albany	93%	79%	92%	76%	90%	81%	81%	80%	77%	80%	11.8	12.7	84	127	128
Birkdale	-	-	-	-	-	-	-	-	-	73%	8.2	7.7	8	12	12
Birkenh	85%	67%	85%	61%	85%	67%	68%	69%	62%	70%	10.5	7.4	38	72	72
BlckByTi	82%	63%	95%	60%	82%	18%	73%	67%	54%	64%	13.2	10.8	22	38	40
EpsomGL	88%	57%	94%	55%	67%	58%	67%	45%	43%	62%	11.5	10.8	33	70	69
GLPon	77%	52%	96%	57%	92%	35%	75%	63%	65%	65%	8.3	6.3	26	78	77
GlenInn	100%	63%	93%	60%	87%	47%	55%	69%	48%	56%	9.7	7.1	15	33	35
Glendene	85%	58%	85%	55%	78%	67%	61%	64%	52%	62%	11.4	8.5	26	47	47
GreyLyn	-	-	-	-	-	-	-	-	-	76%	8.9	8.3	8	12	12
Howick	57%	48%	71%	49%	71%	36%	69%	65%	52%	62%	10.2	6.5	14	33	34
ManPapa	68%	61%	74%	56%	74%	41%	64%	62%	56%	59%	14.2	13.3	35	82	85
Mangere	76%	55%	68%	58%	59%	22%	54%	52%	54%	55%	18.0	13.1	38	82	83
Manukau	97%	62%	97%	64%	83%	90%	65%	70%	66%	64%	13.3	14.4	30	89	90
Massey	74%	52%	70%	54%	78%	44%	76%	69%	60%	61%	11.9	12.7	27	46	46
Mt Wel	88%	65%	88%	71%	77%	35%	73%	66%	67%	69%	9.2	6.6	24	48	51
NewLGIEd	85%	66%	96%	67%	86%	54%	66%	74%	66%	69%	10.0	8.0	69	172	170
NorthShr	82%	61%	86%	60%	72%	40%	70%	56%	58%	65%	11.2	9.4	50	111	116
NwRmPar	49%	53%	35%	36%	68%	57%	77%	60%	67%	66%	8.6	8.1	36	76	79
Onehunga	71%	51%	85%	54%	88%	21%	57%	68%	57%	61%	12.2	9.9	34	74	78
OtahETam	91%	64%	86%	58%	77%	20%	47%	68%	60%	61%	16.1	14.1	34	78	77
PakBotD	87%	66%	87%	68%	90%	37%	74%	81%	63%	69%	11.5	11.0	30	71	71
PnMtWel	67%	50%	80%	47%	53%	40%	65%	55%	61%	60%	11.0	11.0	15	24	25
Takapuna	93%	77%	93%	69%	71%	86%	81%	68%	71%	76%	9.8	10.3	14	72	69
TeAtatu	67%	53%	75%	60%	75%	33%	68%	55%	41%	64%	14.6	12.7	11	25	24

Appendix F: Christchurch bus map



Appendix G: Auckland bus map



Appendix H: Station ratings

Table H.1 Ratings for Wellington stations

Station	Code	Attribute rating														Sample	
		WP	Seat	Plat	Onoff	Info	Lght	C&G	Toil	Stff	Ret	Tick	Car	Bus	All	WP	All
Wellington	WEL	67%	51%	68%	76%	69%	72%	69%	62%	67%	75%	72%	57%	70%	72%	399	976
Kaiwharawhara	KAI	31%	3%	63%	59%	9%	44%	67%	0%	0%	0%	0%	31%	38%	35%	4	6
Ngauranga	NGG	33%	33%	38%	42%	46%	33%	38%	4%	19%	6%	25%	6%	21%	29%	3	3
Petone	PET	71%	64%	76%	79%	75%	74%	72%	52%	71%	59%	71%	69%	74%	75%	61	66
Western Hutt	WES	64%	40%	57%	64%	44%	48%	60%	26%	25%	18%	11%	45%	46%	51%	22	31
Melling	MEL	40%	42%	51%	71%	49%	51%	67%	23%	44%	70%	69%	68%	66%	58%	106	124
Ava	AVA	31%	18%	28%	59%	35%	22%	16%	0%	21%	3%	17%	34%	29%	25%	11	14
Woburn	WOB	42%	39%	51%	54%	44%	52%	47%	6%	18%	3%	13%	62%	42%	46%	33	37
Waterloo	WAT	73%	63%	71%	76%	63%	68%	67%	48%	69%	55%	67%	71%	74%	71%	119	142
Epuni	EPU	63%	58%	68%	75%	69%	66%	57%	24%	35%	27%	27%	52%	47%	60%	13	15
Naenae	NAE	73%	75%	83%	86%	65%	72%	81%	32%	49%	18%	32%	69%	80%	76%	16	22
Wingate	WIN	47%	54%	53%	68%	49%	60%	37%	21%	50%	22%	31%	45%	44%	53%	14	16
Taita	TAI	50%	23%	45%	53%	46%	44%	30%	9%	20%	10%	14%	51%	54%	38%	27	35
Pomare	POM	55%	57%	44%	69%	45%	49%	41%	28%	30%	21%	21%	59%	55%	45%	10	13
Manor Park	MAP	na	na	na	na	na	na	na	na	na	na	na	na	na	25%	0	1
Silverstream	SIL	54%	43%	61%	74%	52%	59%	46%	11%	28%	13%	32%	57%	69%	50%	41	49
Heretaunga	HER	38%	40%	44%	51%	46%	49%	43%	3%	25%	0%	10%	19%	19%	39%	17	19
Trentham	TRE	55%	42%	55%	74%	44%	47%	46%	9%	21%	19%	22%	67%	64%	52%	51	64
Wallaceville	WAL	42%	39%	46%	70%	39%	44%	43%	5%	23%	13%	22%	68%	27%	43%	38	49
Upper Hutt	UPP	52%	39%	50%	69%	55%	53%	48%	19%	58%	25%	65%	68%	75%	51%	113	150
Featherston	FEA	50%	38%	64%	63%	46%	57%	63%	57%	57%	30%	60%	72%	71%	62%	30	66
Woodside	WOO	52%	45%	72%	77%	52%	70%	76%	44%	18%	5%	9%	81%	73%	60%	21	30
Matarawa	MAT	na	na	na	na	na	na	na	na	na	na	na	na	na	54%	1	3
Carterton	CAR	65%	51%	74%	75%	52%	60%	76%	38%	70%	46%	70%	74%	54%	60%	17	31
Solway	SOL	72%	56%	88%	88%	75%	63%	81%	0%	0%	0%	25%	81%	29%	63%	4	8
Renall St	REN	50%	52%	77%	89%	59%	64%	77%	17%	33%	13%	47%	41%	38%	56%	8	11
Masterton	MAS	72%	58%	66%	71%	63%	65%	65%	51%	69%	61%	73%	74%	63%	71%	42	51
Takapu Rd	TAK	47%	45%	59%	54%	46%	54%	61%	9%	25%	4%	22%	58%	41%	51%	22	22
Redwood	RED	50%	51%	77%	82%	56%	62%	67%	9%	31%	12%	28%	74%	38%	62%	20	21
Tawa	TAW	50%	37%	49%	58%	48%	43%	43%	13%	22%	15%	26%	52%	40%	41%	34	33
Linden	LIN	56%	51%	46%	70%	39%	44%	32%	9%	21%	9%	20%	27%	28%	40%	31	32
Kenepuru	KEN	43%	43%	63%	60%	55%	43%	25%	0%	0%	0%	41%	22%	17%	40%	5	5
Porirua	POR	65%	58%	67%	73%	69%	66%	62%	48%	69%	65%	72%	64%	73%	71%	172	214
Paremata	PAM	52%	51%	56%	64%	55%	54%	50%	29%	42%	37%	40%	64%	65%	58%	44	62
Mana	MAA	34%	43%	42%	71%	40%	46%	43%	7%	7%	9%	18%	65%	39%	40%	20	22

Appendix H: Station ratings

Station	Code	Attribute rating														Sample	
		WP	Seat	Plat	Onoff	Info	Lght	C&G	Toil	Stff	Ret	Tick	Car	Bus	All	WP	All
Plimmerton	PLI	52%	48%	63%	74%	49%	59%	73%	41%	51%	62%	64%	71%	39%	67%	27	32
Pukerua Bay	PUK	49%	48%	72%	79%	52%	57%	44%	8%	20%	8%	17%	58%	13%	55%	27	33
Paekakariki	PAE	48%	30%	51%	64%	44%	50%	65%	8%	20%	16%	13%	68%	53%	55%	28	35
Paraparaumu	PAP	62%	56%	73%	73%	65%	69%	71%	62%	68%	64%	74%	70%	73%	74%	130	211
Waikanae	WAI	57%	56%	76%	81%	74%	72%	83%	59%	75%	52%	75%	68%	78%	76%	104	141
Crofton Downs	CRO	43%	44%	71%	78%	53%	54%	61%	19%	30%	12%	21%	81%	35%	59%	31	30
Ngaio	NGO	64%	60%	77%	81%	47%	56%	60%	18%	30%	15%	28%	75%	50%	65%	40	42
Awarua St	AWA	52%	53%	62%	61%	47%	57%	59%	19%	28%	11%	17%	28%	34%	52%	30	33
Simla Crescent	SIM	56%	50%	70%	80%	56%	61%	57%	4%	14%	4%	14%	55%	52%	61%	34	34
Box Hill	BOX	58%	58%	72%	73%	49%	56%	59%	6%	11%	1%	10%	30%	34%	56%	15	15
Khandallah	KHA	66%	62%	75%	80%	60%	67%	73%	15%	40%	27%	28%	56%	48%	69%	33	38
Raroa	RAR	52%	50%	66%	73%	54%	52%	53%	10%	34%	10%	23%	58%	33%	55%	46	47
Johnsonville	JOH	47%	43%	65%	71%	56%	56%	56%	20%	57%	58%	66%	62%	75%	61%	117	140
All	ALL	58%	50%	64%	73%	59%	61%	61%	37%	53%	47%	55%	62%	63%	64%	2,231	3,274

Table H.2 Ratings for Auckland stations

Station	Code	Attribute rating														Sample	
		WP	Seat	Plat	Onoff	Info	Lght	C&G	Toil	Stff	Ret	Tick	Car	Bus	All	WP	All
Britomart	BRI	76%	55%	69%	71%	73%	73%	80%	63%	73%	64%	67%	61%	65%	77%	55	174
Newmarket	NEW	72%	68%	77%	80%	70%	79%	79%	71%	75%	56%	71%	64%	68%	79%	36	43
Remuera	REM	73%	67%	76%	78%	78%	71%	79%	42%	44%	34%	76%	45%	64%	74%	13	13
Greenlane	GRE	53%	67%	73%	68%	67%	74%	66%	38%	47%	34%	55%	42%	45%	72%	14	17
Ellerslie	ELL	61%	60%	74%	72%	62%	69%	75%	31%	49%	19%	58%	39%	58%	68%	50	58
Penrose	PEN	67%	56%	73%	71%	65%	68%	74%	49%	55%	33%	68%	51%	57%	68%	29	33
Otahuhu	OHU	61%	71%	75%	79%	63%	76%	71%	56%	64%	40%	61%	60%	51%	71%	10	10
Middlemore	MID	59%	62%	67%	67%	63%	65%	72%	33%	52%	32%	48%	46%	60%	63%	38	51
Papatoetoe	POE	54%	56%	69%	68%	64%	65%	65%	37%	53%	33%	50%	65%	60%	64%	60	66
Puhinui	PUH	47%	44%	62%	67%	64%	52%	45%	21%	36%	32%	60%	43%	46%	54%	15	19
Manukau	MAK	72%	66%	73%	73%	69%	71%	79%	47%	59%	39%	65%	61%	66%	71%	58	72
Homai	HOM	52%	57%	72%	78%	66%	61%	54%	24%	41%	39%	63%	76%	68%	63%	22	24
Manurewa	MAR	61%	62%	72%	75%	70%	69%	63%	38%	56%	45%	59%	68%	71%	67%	78	89
Te Mahia	TEM	54%	56%	58%	79%	42%	46%	46%	0%	0%	0%	50%	25%	50%	33%	3	3
Takanini	TAN	39%	38%	40%	60%	46%	50%	36%	27%	35%	19%	54%	42%	45%	41%	18	20
Papakura	PAK	66%	66%	76%	72%	67%	68%	73%	54%	67%	32%	62%	65%	70%	70%	74	75
Pukekohe	PKK	54%	52%	60%	63%	69%	56%	58%	38%	50%	27%	63%	54%	42%	60%	13	14
Orakei	ORA	56%	58%	85%	81%	75%	60%	85%	19%	33%	20%	71%	52%	59%	63%	6	8
Meadowbank	MEA	50%	47%	72%	63%	38%	69%	75%	31%	31%	6%	44%	28%	25%	59%	4	4
Glen Innes	GLI	57%	52%	64%	66%	70%	64%	65%	39%	48%	29%	51%	57%	54%	60%	23	27

Station	Code	Attribute rating														Sample	
		WP	Seat	Plat	Onoff	Info	Lght	C&G	Toil	Stff	Ret	Tick	Car	Bus	All	WP	All
Panmure	PNM	40%	30%	54%	40%	51%	38%	54%	17%	30%	16%	44%	40%	43%	44%	22	22
Sylvia Park	SYL	57%	48%	58%	63%	60%	63%	63%	48%	53%	48%	55%	59%	57%	64%	42	46
Te Papapa	TEP	55%	59%	75%	77%	62%	66%	79%	27%	44%	15%	66%	44%	43%	65%	30	33
Onehunga	ONE	57%	53%	71%	75%	72%	72%	75%	60%	63%	24%	63%	67%	64%	68%	121	142
Mt Eden	MTE	53%	50%	68%	74%	65%	64%	75%	27%	41%	7%	47%	23%	61%	51%	9	9
Kingsland	KIN	77%	68%	77%	81%	77%	76%	78%	65%	67%	50%	67%	68%	86%	75%	12	13
Morningside	MOR	56%	63%	50%	88%	56%	63%	75%	31%	25%	25%	69%	44%	50%	50%	2	3
Baldwin Ave	BAL	52%	35%	58%	65%	56%	58%	69%	53%	48%	50%	63%	40%	53%	67%	6	8
Mt Albert	MTA	47%	42%	55%	54%	36%	51%	46%	27%	22%	10%	44%	33%	54%	42%	12	15
Avondale	AVO	44%	49%	71%	72%	69%	71%	64%	21%	25%	18%	38%	36%	29%	61%	9	11
New Lynn	NWL	74%	74%	77%	77%	68%	71%	74%	57%	64%	50%	53%	57%	70%	73%	38	45
Fruitvale Rd	FRU	62%	61%	73%	70%	75%	75%	68%	38%	53%	22%	63%	65%	69%	66%	11	17
Glen Eden	GLE	53%	57%	73%	76%	72%	68%	70%	26%	44%	45%	56%	61%	64%	65%	25	39
Sunnyvale	SUN	55%	45%	72%	74%	71%	57%	64%	25%	58%	29%	70%	63%	44%	61%	14	23
Henderson	HEN	54%	55%	63%	64%	61%	64%	56%	40%	42%	37%	45%	46%	62%	63%	57	64
Sturges Rd	STU	57%	56%	71%	72%	70%	69%	71%	50%	49%	21%	56%	75%	51%	66%	30	44
Ranui	RAN	53%	56%	66%	70%	72%	66%	58%	48%	54%	48%	60%	60%	67%	61%	29	41
Swanson	SWA	68%	61%	74%	77%	65%	69%	76%	63%	57%	57%	66%	52%	66%	65%	15	27
Waitakere	WAK	36%	35%	54%	72%	39%	50%	58%	29%	36%	37%	54%	69%	25%	50%	14	21
All	ALL	60%	57%	69%	71%	66%	67%	69%	44%	54%	35%	59%	58%	61%	66%	1,117	1,443

* Grafton had no rating response

Appendix I: Access and egress mode by station

Table I.1 Wellington access/egress mode profile by train station

Station	Code	Access/egress mode								Obs
		Walk	Bike	Bus	Taxi	C&P	K&R	Trfr	Other	
Wellington	WEL	70%	2%	15%	2%	5%	3%	3%	0%	405
Kaiwharawhara	KAI	50%	-	-	-	-	50%	-	-	4
Ngauranga	NGG	67%	-	-	-	-	33%	-	-	3
Petone	PET	46%	2%	10%	-	30%	10%	2%	2%	61
Western Hutt	WES	77%	5%	-	5%	5%	5%	-	5%	22
Melling	MEL	38%	3%	1%	-	46%	12%	-	-	107
Ava	AVA	82%	-	9%	-	-	9%	-	-	11
Woburn	WOB	47%	3%	6%	-	41%	3%	-	-	34
Waterloo	WAT	42%	1%	8%	2%	38%	8%	-	2%	119
Epuni	EPU	100%	-	-	-	-	-	-	-	13
Naenae	NAE	94%	-	-	-	-	6%	-	-	16
Wingate	WIN	79%	-	7%	-	7%	7%	-	-	14
Taita	TAI	19%	4%	4%	-	70%	-	4%	-	27
Pomare	POM	70%	-	-	-	20%	10%	-	-	10
Manor Park	MAP	na	na	na	na	na	na	na	na	0
Silverstream	SIL	49%	-	2%	2%	32%	10%	-	5%	41
Heretaunga	HER	94%	-	-	-	6%	-	-	-	17
Trentham	TRE	65%	2%	4%	-	17%	10%	2%	-	52
Wallaceville	WAL	63%	-	-	-	29%	8%	-	-	38
Upper Hutt	UPP	35%	-	9%	1%	36%	17%	2%	1%	115
Featherston	FEA	30%	3%	17%	13%	30%	7%	-	-	30
Woodside	WOO	-	5%	19%	10%	43%	24%	-	-	21
Matarawa	MAT	100%	-	-	-	-	-	-	-	1
Carterton	CAR	24%	-	-	-	35%	35%	-	6%	17
Solway	SOL	-	-	-	-	50%	50%	-	-	4
Renall St	REN	75%	-	-	-	25%	-	-	-	8
Masterton	MAS	11%	-	2%	16%	31%	38%	-	2%	45
Takapu Rd	TAK	72%	-	-	-	24%	4%	-	-	25
Redwood	RED	48%	-	-	10%	29%	14%	-	-	21
Tawa	TAW	71%	-	6%	-	15%	9%	-	-	34
Linden	LIN	81%	-	-	-	10%	6%	-	3%	31
Kenepuru	KEN	100%	-	-	-	-	-	-	-	5
Porirua	POR	35%	1%	14%	2%	32%	14%	-	2%	176
Paremata	PAM	22%	-	24%	2%	29%	22%	-	-	45
Mana	MAA	45%	-	-	-	45%	10%	-	-	20

Station	Code	Access/egress mode								Obs
		Walk	Bike	Bus	Taxi	C&P	K&R	Trfr	Other	
Plimmerton	PLI	50%	4%	-	-	29%	18%	-	-	28
Pukerua Bay	PUK	89%	-	-	-	7%	4%	-	-	28
Paekakariki	PAE	46%	-	-	-	36%	18%	-	-	28
Paraparaumu	PAP	32%	2%	21%	1%	21%	20%	-	2%	136
Waikanae	WAI	34%	2%	11%	1%	28%	22%	1%	1%	109
Crofton Downs	CRO	65%	-	3%	-	23%	10%	-	-	31
Ngaio	NGO	85%	-	-	-	10%	5%	-	-	40
Awarua St	AWA	97%	3%	-	-	-	-	-	-	30
Simla Crescent	SIM	76%	-	-	-	21%	3%	-	-	34
Box Hill	BOX	88%	-	-	-	13%	-	-	-	16
Khandallah	KHA	85%	-	3%	-	12%	-	-	-	33
Raroa	RAR	85%	-	-	-	13%	-	-	2%	46
Johnsonville	JOH	68%	1%	3%	1%	17%	9%	-	1%	121
All	ALL	54%	1%	8%	2%	23%	10%	1%	1%	2,272

Table 1.2 Auckland access/egress mode profile by train station

Station	Code	Access/egress mode								Obs
		Walk	Bike	Bus	Taxi	C&P	K&R	Trfr	Other	
Britomart	BRI	61%	-	23%	-	2%	2%	5%	7%	56
Newmarket	NEW	75%	-	11%	-	8%	3%	3%	-	36
Remuera	REM	71%	-	7%	-	14%	7%	-	-	14
Greenlane	GRE	50%	-	-	-	21%	14%	-	14%	14
Ellerslie	ELL	66%	-	2%	-	28%	-	-	4%	50
Penrose	PEN	77%	-	-	-	10%	13%	-	-	30
Otahuhu	OHU	40%	-	10%	-	10%	40%	-	-	10
Middlemore	MID	64%	3%	3%	-	3%	21%	-	8%	39
Papatoetoe	POE	45%	2%	2%	-	28%	23%	-	-	60
Puhinui	PUH	87%	-	-	-	-	7%	7%	-	15
Manukau	MAK	47%	2%	12%	2%	2%	32%	3%	2%	60
Homai	HOM	32%	-	-	5%	14%	50%	-	-	22
Manurewa	MAR	41%	1%	15%	5%	20%	14%	3%	1%	79
Te Mahia	TEM	100%	-	-	-	-	-	-	-	3
Takanini	TAN	67%	-	-	-	-	22%	-	11%	18
Papakura	PAK	32%	-	4%	-	36%	24%	4%	1%	76
Pukekohe	PKK	50%	7%	-	-	21%	21%	-	-	14
Orakei	ORA	67%	-	-	-	17%	-	-	17%	6
Meadowbank	MEA	75%	-	-	-	25%	-	-	-	4
Glen Innes	GLI	69%	-	8%	-	8%	12%	-	4%	26

Appendix I: Access and egress mode by station

Station	Code	Access/egress mode								Obs
		Walk	Bike	Bus	Taxi	C&P	K&R	Trfr	Other	
Panmure	PNM	27%	-	9%	-	59%	5%	-	-	22
Sylvia Park	SYL	63%	-	2%	2%	19%	7%	-	7%	43
Te Papapa	TEP	90%	3%	-	-	3%	3%	-	-	30
Onehunga	ONE	58%	2%	2%	-	28%	9%	-	2%	127
Mt Eden	MTE	78%	-	-	-	22%	-	-	-	9
Kingsland	KIN	50%	-	-	-	42%	8%	-	-	12
Morningside	MOR	100%	-	-	-	-	-	-	-	2
Baldwin Ave	BAL	67%	-	17%	-	17%	-	-	-	6
Mt Albert	MTA	62%	-	-	-	23%	-	-	15%	13
Avondale	AVO	78%	-	-	-	22%	-	-	-	9
New Lynn	NWL	39%	-	21%	-	26%	11%	-	3%	38
Fruitvale Rd	FRU	90%	-	-	-	-	10%	-	-	10
Glen Eden	GLE	32%	-	12%	-	24%	28%	-	4%	25
Sunnyvale	SUN	71%	-	-	-	29%	-	-	-	14
Henderson	HEN	46%	2%	28%	2%	4%	9%	-	11%	57
Sturges Rd	STU	42%	3%	3%	-	32%	16%	-	3%	31
Ranui	RAN	72%	-	7%	-	14%	7%	-	-	29
Swanson	SWA	25%	6%	-	-	44%	25%	-	-	16
Waitakere	WAK	47%	-	7%	-	20%	13%	-	13%	15
All	ALL	55%	1%	7%	1%	19%	13%	1%	3%	1,140

Appendix J: Car and bus facility ratings by access/egress mode

Section 6.21 in the main report presented the relationship between the rating of car parking/set down facilities and car access share and the relationship between bus access facilities and bus access share. A logistic curve was fitted to predict the rating on the access share. It is possible to argue that the relationship should be the other way around with the provision of facilities measured via the rating influencing the access share. In other words, better car parking encourages more people to access the station by car and likewise for bus. Figures J.1 and J.2 present the relationships for car and bus respectively. Both graphs show a positive relationship. Car access share (car parkers plus ‘kiss and ride’) increases from a predicted 8% with a zero rating to 50% at an 80% rating. For bus, the vertical axis has increased in scale reaching only a 30% bus access share. As can be seen, there is a wide spread in the bus share.

Figure J.1 Car access share and bus access rating

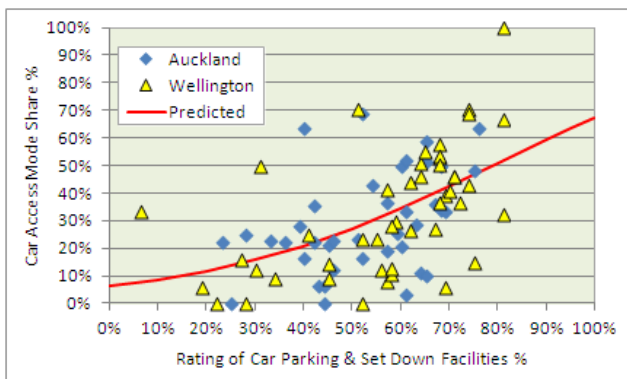


Figure J.2 Bus access share and bus access rating

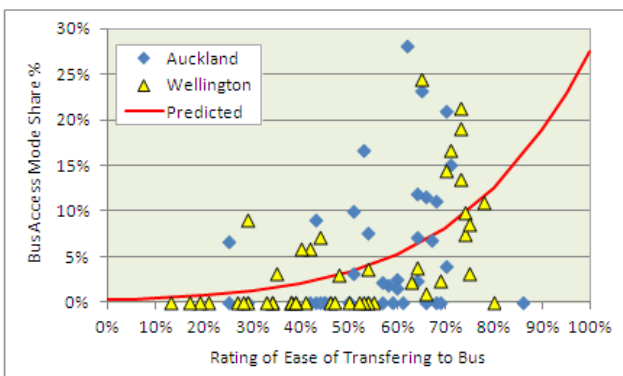


Table J.1 Estimated model

	Parameter Estimate		Standard Error		t value	
	Intercept	Slope	Intercept	Slope	Intercept	Slope
Car	-2.71	3.43	0.47	0.77	5.8	4.5
Bus	-5.82	4.85	0.65	1.05	9.0	4.6

Appendix K: 'Before and after' station ratings

Table K.1 Ratings of Wellington stations 2002-04 survey

Stat	Wthr Prot	Seat - ing	Plat Surf	Plat OnOff	Info	Light - ing	Clean & Graf	Toil- ets	Staff	Retail	Ticket	Car Park	Bus Stop	All	N (ALL)
PET1	50%	40%	48%	70%	55%	46%	46%	15%	62%	19%	57%	50%	46%	46%	108
PET2	64%	61%	64%	78%	75%	60%	73%	40%	72%	45%	66%	56%	54%	67%	78
WEL	58%	45%	53%	77%	67%	63%	54%	38%	60%	54%	62%	41%	58%	66%	735
WES	49%	19%	30%	71%	38%	30%	36%	6%	18%	11%	10%	41%	21%	39%	35
MEL	25%	23%	42%	68%	44%	33%	45%	8%	25%	13%	6%	58%	47%	45%	113
AVA	33%	31%	44%	72%	53%	38%	34%	15%	26%	11%	14%	43%	16%	38%	53
WOB	41%	40%	49%	72%	46%	43%	48%	9%	22%	9%	10%	60%	29%	47%	137
WAT	64%	55%	61%	75%	63%	67%	60%	38%	60%	46%	62%	60%	58%	67%	334
EPU	34%	19%	33%	65%	49%	34%	21%	7%	33%	3%	4%	34%	15%	31%	31
NAE	49%	31%	37%	66%	36%	43%	30%	11%	35%	15%	14%	34%	46%	32%	74
WIN	47%	52%	48%	75%	45%	48%	48%	16%	41%	16%	14%	24%	18%	54%	24
TAI	49%	29%	44%	70%	43%	37%	34%	9%	31%	13%	12%	50%	49%	39%	100
POM	45%	47%	38%	44%	36%	41%	47%	4%	27%	13%	11%	34%	27%	36%	7
SIL	40%	31%	47%	72%	45%	43%	36%	13%	28%	11%	12%	48%	48%	45%	66
HER	54%	51%	56%	74%	53%	55%	46%	16%	42%	11%	21%	47%	24%	49%	21
TRE	55%	36%	46%	57%	50%	38%	36%	8%	26%	10%	11%	66%	50%	46%	76
WAL	41%	35%	44%	68%	39%	38%	35%	3%	24%	5%	7%	67%	16%	42%	42
UPP	46%	40%	46%	67%	59%	49%	45%	23%	59%	26%	58%	57%	56%	55%	295
FEA	35%	25%	48%	50%	51%	49%	58%	44%	58%	13%	56%	57%	44%	53%	201
WOO	33%	26%	28%	26%	38%	40%	42%	23%	12%	2%	0%	49%	46%	41%	64
MAT	na	na	na	na	na	na	na	na	na	na	na	na	na	na	13
CAR	39%	29%	34%	35%	45%	52%	53%	10%	59%	22%	60%	49%	10%	52%	110
SOL	32%	28%	51%	38%	34%	34%	40%	5%	17%	3%	5%	49%	12%	44%	44
REN	44%	38%	57%	43%	57%	55%	38%	17%	25%	17%	20%	32%	22%	61%	18
MAS	56%	42%	52%	57%	55%	56%	54%	43%	60%	36%	57%	55%	24%	61%	171
TAK	40%	36%	49%	68%	53%	43%	52%	6%	22%	5%	6%	50%	18%	49%	73
RED	36%	36%	45%	49%	49%	43%	48%	9%	16%	6%	6%	63%	14%	48%	86
TAW	46%	34%	41%	71%	55%	43%	47%	5%	18%	4%	4%	56%	16%	47%	77
LIN	42%	36%	46%	70%	43%	39%	39%	9%	29%	11%	11%	28%	17%	42%	96
KEN	35%	56%	54%	75%	25%	52%	63%	23%	48%	13%	23%	21%	13%	52%	6
POR	60%	55%	58%	75%	68%	60%	60%	44%	64%	49%	66%	57%	58%	66%	283
PAM	47%	42%	46%	70%	59%	48%	45%	10%	27%	7%	8%	58%	47%	49%	91
MAA	38%	40%	55%	77%	60%	45%	65%	9%	10%	5%	5%	38%	10%	45%	23
PLI	36%	34%	49%	68%	54%	42%	50%	4%	23%	5%	6%	40%	16%	47%	66
PUK	39%	31%	42%	56%	49%	43%	48%	4%	22%	5%	5%	50%	15%	46%	53
PAE	34%	30%	44%	67%	47%	38%	48%	9%	18%	1%	3%	60%	19%	45%	77
PAP	42%	43%	55%	74%	60%	53%	58%	32%	66%	33%	62%	54%	54%	60%	373
WAI	14%	14%	47%	44%	34%	37%	49%	11%	61%	10%	49%	39%	19%	41%	60
CRO	47%	46%	47%	40%	56%	42%	49%	7%	24%	6%	5%	65%	15%	50%	97
NGO	53%	44%	56%	75%	59%	45%	50%	7%	29%	6%	7%	58%	15%	55%	85
AWA	47%	48%	48%	60%	59%	48%	47%	11%	30%	9%	12%	20%	12%	49%	85
SIM	48%	46%	55%	70%	58%	48%	54%	10%	28%	13%	16%	45%	27%	60%	81
BOX	49%	43%	41%	72%	54%	37%	45%	7%	24%	5%	7%	11%	9%	51%	44
KHA	54%	39%	52%	76%	64%	46%	43%	9%	31%	10%	13%	34%	25%	53%	68
RAR	53%	47%	51%	72%	58%	48%	51%	9%	38%	8%	11%	44%	17%	50%	86
JOH	39%	32%	52%	74%	60%	50%	51%	16%	52%	39%	56%	52%	58%	53%	386
AvS	44%	38%	47%	64%	51%	45%	47%	15%	36%	15%	23%	47%	29%	49%	46
AvSR	47%	40%	50%	68%	56%	50%	50%	23%	46%	26%	40%	50%	41%	55%	5246

Table K.2 Ratings of Wellington stations December 2012 survey

Stat	Wthr Prot	Seat - ing	Plat Surf	Plat OnOff	Light - Info	Clean ing & Graf	Toil- ets	Staff	Re- tail	Tick- et	Car Park	Bus Stop	All	N (WP)	N (ALL)	
PET1	71%	64%	76%	79%	75%	74%	72%	48%	68%	59%	71%	69%	71%	75%	61	66
PET2	71%	64%	76%	79%	75%	74%	72%	48%	68%	59%	71%	69%	71%	75%	61	66
WEL	67%	51%	68%	75%	69%	72%	69%	62%	67%	75%	72%	57%	68%	72%	399	976
WES	64%	40%	57%	64%	44%	48%	60%	26%	25%	18%	11%	45%	46%	51%	22	31
MEL	40%	42%	51%	71%	49%	51%	67%	23%	44%	70%	67%	67%	66%	58%	106	124
AVA	31%	18%	28%	59%	35%	23%	16%	0%	21%	3%	17%	34%	29%	25%	11	14
WOB	42%	39%	51%	54%	44%	52%	47%	6%	19%	3%	13%	62%	42%	46%	33	37
WAT	73%	63%	71%	76%	63%	68%	67%	48%	69%	55%	67%	71%	74%	71%	119	142
EPU	63%	58%	68%	75%	69%	66%	57%	24%	35%	27%	27%	53%	47%	60%	13	15
NAE	73%	75%	83%	86%	65%	72%	81%	32%	49%	18%	32%	69%	80%	76%	16	22
WIN	47%	54%	53%	68%	49%	60%	38%	21%	50%	22%	31%	45%	44%	53%	14	16
TAI	50%	23%	45%	53%	46%	44%	30%	9%	20%	10%	15%	51%	54%	38%	27	35
POM	55%	58%	44%	69%	45%	49%	41%	28%	30%	21%	21%	59%	55%	45%	10	13
SIL	54%	43%	61%	74%	53%	59%	46%	11%	28%	13%	32%	57%	69%	50%	41	49
HER	38%	40%	44%	51%	46%	49%	43%	3%	16%	0%	10%	19%	19%	39%	17	19
TRE	55%	42%	55%	74%	44%	48%	46%	9%	18%	19%	22%	67%	60%	52%	51	64
WAL	42%	39%	46%	70%	39%	44%	43%	5%	23%	13%	22%	68%	27%	43%	38	49
UPP	52%	39%	50%	69%	55%	53%	48%	19%	58%	25%	64%	66%	75%	51%	113	150
FEA	50%	38%	59%	63%	46%	57%	63%	57%	57%	30%	60%	72%	71%	62%	30	66
WOO	52%	45%	72%	60%	52%	70%	76%	44%	18%	5%	9%	81%	73%	60%	21	30
MAT	na	a	na	na	na	na	na	na	na	na	na	na	na	54%	1	3
CAR	65%	51%	74%	75%	52%	60%	76%	38%	70%	46%	70%	74%	54%	60%	17	31
SOL	72%	56%	88%	88%	75%	63%	81%	0%	0%	0%	25%	81%	29%	63%	4	8
REN	50%	52%	77%	89%	59%	64%	77%	17%	33%	13%	47%	41%	38%	56%	8	11
MAS	72%	58%	66%	71%	63%	65%	65%	51%	69%	61%	73%	74%	63%	71%	42	51
TAK	47%	45%	59%	54%	46%	54%	61%	9%	25%	4%	22%	58%	41%	51%	22	22
RED	50%	51%	77%	82%	56%	62%	67%	9%	31%	12%	28%	74%	38%	62%	20	21
TAW	50%	37%	49%	58%	48%	43%	43%	13%	22%	15%	26%	52%	35%	41%	34	33
LIN	56%	51%	46%	70%	39%	44%	32%	9%	21%	9%	20%	27%	28%	40%	31	32
KEN	43%	43%	63%	60%	55%	43%	25%	0%	0%	0%	41%	22%	17%	40%	5	5
POR	65%	58%	67%	73%	69%	66%	62%	48%	69%	65%	72%	64%	72%	71%	172	214
PAM	52%	51%	56%	64%	55%	54%	50%	29%	42%	37%	40%	64%	65%	58%	44	62
MAA	34%	43%	35%	71%	40%	46%	43%	7%	7%	9%	18%	65%	39%	40%	20	22
PLI	52%	48%	63%	74%	49%	59%	73%	41%	51%	62%	64%	64%	39%	67%	27	32
PUK	49%	48%	72%	79%	52%	57%	44%	8%	20%	8%	17%	58%	8%	55%	27	33
PAE	48%	30%	51%	64%	44%	50%	65%	8%	20%	16%	13%	68%	47%	55%	28	35
PAP	62%	56%	71%	73%	66%	69%	71%	62%	68%	64%	71%	69%	73%	74%	130	211
WAI	57%	56%	76%	81%	74%	72%	83%	59%	73%	52%	73%	68%	76%	76%	104	141
CRO	43%	44%	65%	78%	53%	54%	61%	15%	30%	12%	21%	81%	35%	59%	31	30
NGO	64%	60%	72%	76%	47%	56%	60%	18%	30%	15%	28%	75%	50%	65%	40	42
AWA	52%	53%	62%	61%	47%	57%	59%	19%	28%	11%	17%	28%	34%	52%	30	33
SIM	56%	50%	70%	80%	56%	61%	52%	4%	14%	4%	14%	55%	53%	61%	34	34
BOX	58%	58%	73%	73%	49%	56%	59%	6%	11%	1%	10%	30%	34%	56%	15	15
KHA	66%	62%	75%	80%	60%	67%	73%	15%	40%	27%	28%	56%	48%	69%	33	38
RAR	52%	50%	66%	73%	54%	52%	53%	10%	34%	10%	23%	58%	33%	55%	46	47
JOH	47%	43%	65%	69%	56%	56%	56%	20%	57%	58%	65%	61%	75%	61%	117	140
AvS	54%	49%	62%	71%	54%	57%	57%	23%	37%	26%	37%	59%	50%	57%	46	46
AvSR	58%	50%	64%	72%	59%	62%	62%	36%	51%	45%	53%	62%	61%	65%	2285	3330

Table K.3 Standard error of change in station ratings (2002-04 - December 2012)

Stat	Wthr Prot	Seat-ing	Plat Surf	of OnOff	Info	Light-ing	& Graf	Toil-ets	Staff	Retail	Ticket	Car Park	Bus Stop	All
PET1	3%	3%	3%	3%	4%	3%	3%	3%	4%	4%	4%	3%	4%	3%
PET2	3%	4%	3%	3%	4%	4%	3%	5%	4%	4%	5%	4%	5%	3%
WEL	1%	2%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%
WES	7%	7%	6%	6%	7%	6%	6%	8%	9%	6%	5%	8%	7%	5%
MEL	3%	3%	3%	3%	4%	3%	3%	4%	5%	3%	4%	4%	4%	3%
AVA	8%	6%	8%	9%	13%	8%	6%	4%	13%	4%	11%	12%	11%	6%
WOB	4%	4%	4%	4%	5%	5%	4%	3%	6%	2%	6%	5%	6%	4%
WAT	2%	2%	2%	2%	3%	2%	2%	3%	3%	3%	3%	2%	3%	2%
EPU	7%	8%	7%	6%	8%	8%	7%	9%	14%	12%	12%	9%	10%	7%
NAE	7%	6%	7%	7%	10%	6%	7%	11%	14%	9%	10%	7%	7%	5%
WIN	8%	9%	8%	7%	10%	8%	10%	12%	13%	13%	13%	10%	10%	7%
TAI	5%	5%	5%	5%	6%	6%	5%	5%	7%	5%	5%	5%	7%	5%
POM	14%	13%	12%	14%	14%	15%	14%	13%	19%	16%	16%	14%	12%	11%
SIL	5%	4%	4%	4%	5%	5%	5%	5%	7%	5%	7%	5%	5%	4%
HER	7%	8%	8%	9%	10%	9%	8%	7%	17%	6%	10%	10%	11%	7%
TRE	4%	5%	4%	5%	5%	5%	5%	4%	7%	5%	6%	4%	7%	4%
WAL	5%	5%	5%	5%	6%	5%	5%	3%	8%	5%	7%	5%	7%	5%
UPP	3%	3%	3%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%
FEA	4%	5%	7%	5%	5%	4%	5%	6%	5%	5%	5%	4%	4%	3%
WOO	6%	6%	5%	12%	8%	6%	5%	7%	8%	5%	9%	5%	6%	4%
MAT	na	na	na	na	na	na	na	na	na	na	na	na	na	10%
CAR	6%	4%	5%	6%	8%	8%	5%	13%	9%	8%	10%	6%	12%	4%
SOL	9%	9%	6%	10%	25%	13%	9%	2%	5%	2%	25%	9%	29%	7%
REN	8%	7%	10%	8%	10%	10%	8%	18%	34%	14%	18%	12%	16%	8%
MAS	4%	4%	4%	4%	5%	4%	4%	5%	5%	4%	4%	3%	5%	3%
TAK	5%	5%	4%	5%	6%	5%	5%	4%	8%	3%	8%	5%	5%	4%
RED	5%	6%	5%	5%	6%	5%	5%	6%	11%	7%	9%	6%	10%	4%
TAW	5%	5%	5%	5%	6%	5%	5%	5%	7%	6%	7%	5%	7%	6%
LIN	5%	5%	5%	4%	5%	5%	4%	5%	7%	5%	7%	5%	5%	4%
KEN	16%	19%	14%	11%	19%	12%	10%	15%	16%	13%	28%	19%	17%	10%
POR	2%	2%	2%	2%	2%	2%	2%	3%	2%	3%	2%	3%	3%	2%
PAM	4%	4%	4%	3%	5%	4%	4%	6%	7%	6%	7%	4%	5%	3%
MAA	8%	8%	10%	4%	8%	8%	7%	6%	7%	6%	9%	8%	10%	7%
PLI	5%	4%	5%	4%	6%	5%	5%	8%	8%	7%	6%	8%	7%	4%
PUK	6%	5%	5%	5%	6%	5%	6%	4%	8%	5%	7%	7%	8%	5%
PAE	6%	5%	5%	5%	6%	5%	5%	5%	7%	5%	5%	6%	9%	5%
PAP	2%	2%	3%	2%	2%	2%	2%	3%	2%	3%	3%	3%	3%	2%
WAI	4%	3%	3%	4%	4%	4%	3%	4%	5%	4%	5%	4%	4%	3%
CRO	4%	5%	7%	5%	6%	5%	5%	8%	8%	6%	7%	4%	8%	5%
NGO	5%	4%	6%	6%	6%	5%	5%	5%	7%	5%	7%	4%	6%	4%
AWA	4%	4%	4%	4%	5%	4%	4%	6%	7%	5%	6%	5%	6%	4%
SIM	4%	4%	4%	3%	5%	5%	6%	4%	7%	4%	6%	5%	6%	4%
BOX	7%	7%	5%	6%	10%	8%	8%	4%	10%	2%	9%	11%	9%	8%
KHA	4%	4%	4%	3%	5%	4%	4%	6%	8%	7%	7%	5%	7%	3%
RAR	4%	4%	4%	4%	5%	4%	4%	4%	7%	4%	6%	5%	6%	4%
JOH	3%	3%	2%	3%	3%	2%	2%	3%	3%	3%	3%	3%	2%	2%

Source: Douglas Economics

Appendix L: Stated preference attribute levels

Level	Dif mins A+B	B Level Onboard Time (mins)																					
		1 CBS	2 CBM	3 CBMO	4 CBMA	5 WBS	6 WBM	7 WBMH	8 WBVM	9 WBVL	10 WBAS	11 WBAM	12 WBAL	13 WRS	14 WRM	15 WRL	16 WRY	17 ALP	18 ABS	19 ABM	20 ARS	21 ARM	22 ARL
0	-8	20	27	27	32	12	27	32	22	42	17	27	42	12	27	42	72	15	20	35	20	27	42
1	-10	20	25	25	30	10	25	30	20	40	15	25	40	10	25	40	70	15	20	35	20	25	40
2	-15	25	25	25	30	10	25	30	20	40	15	25	40	10	25	40	70	20	25	40	25	25	40
3	-20	30	25	25	30	10	25	30	20	40	15	25	40	10	25	40	70	25	30	45	30	25	40
4	-5	15	25	25	30	10	25	30	20	40	15	25	40	10	25	40	70	10	15	30	15	25	40

Level	Dif \$ A+B	B Level Fare \$																					
		1 CBS	2 CBM	3 CBMO	4 CBMA	5 WBS	6 WBM	7 WBMH	8 WBVM	9 WBVL	10 WBAS	11 WBAM	12 WBAL	13 WRS	14 WRM	15 WRL	16 WRY	17 ALP	18 ABS	19 ABM	20 ARS	21 ARM	22 ARL
0	1	2	2	3	6	2	3	5	3	6	8	9	12	3	5	7	11	0.5	2	3	3	5	7
1	2	2	2	3	6	2	3	5	3	6	8	9	12	3	5	7	11	0.5	2	3	3	5	7
2	3	2	2	3	6	2	3	5	3	6	8	9	12	3	5	7	11	0.5	2	3	3	5	7
3	4	1	1	2	5	1	2	4	2	5	7	8	11	2	4	6	10	0	1	2	2	4	6
4	2	2	2	3	6	2	3	5	3	6	8	9	12	2	4	6	10	0.5	2	3	2	4	6

Level	SI Mins A+B	B Level SI mins		
		ALL	ALP	WRY
0	0	20	15	40
1	20	20	20	20
2	10	10	5	30
3	-10	30	30	50
4	-20	30	25	50

Appendix M: Stated preference balancing weights

The stated preference (SP) observations were weighted to balance the response over all 25 SP questions. The balancing weights were calculated for each of the 15 aggregated SP designs.

$$w_i = \frac{\sum n_i}{25n_i} \quad (\text{Equation M.1})$$

The weights are presented in table M.1. These were multiplied with the choice weights which were 1 except for the 52 'indifferent' responses which were included twice: once as a choice of service A and one as a choice of service B. A weight of one half was then applied to each 'observation'.

Table M.1 Stated preference balancing weights

#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	ALL
	CBS	CBM	CBMO	WBS	WBM	WVF	WBA	WRS	WRM	WRL	ABS	ABM	ARS	ARM	ARL	
1	0.943	1.02	1.086	0.959	1.037	0.899	1.014	0.983	1.044	0.943	0.985	0.921	0.97	1	1.19	0.976
2	1.07	0.94	1.011	1.117	0.974	1.033	1.014	0.993	1.044	1.063	1.01	1.039	0.97	0.938	0.9	1.024
3	0.926	1.02	1.086	0.971	1.055	0.899	1.037	0.964	1.044	0.926	0.975	0.918	0.91	1	1.19	0.972
4	1.078	0.96	1.047	1.101	0.974	1.079	0.973	0.993	1.054	1.063	1.014	1.035	0.97	0.938	0.9	1.025
5	1.108	1.04	1.011	1.078	0.966	1.079	0.973	0.983	1.065	1.063	1.036	1.032	1	0.938	0.9	1.031
6	1.123	1.02	1.011	1.093	0.981	1.104	0.993	1.024	1.006	1.087	1.032	1.032	1.07	0.938	0.9	1.037
7	1.108	1.02	1.011	1.093	0.966	1.104	0.973	1.003	1.006	1.063	1.025	1.028	1	0.938	0.9	1.027
8	0.905	1.02	1.086	0.953	1.012	0.971	1.037	0.993	0.978	0.934	0.958	0.915	1.03	1.071	1.16	0.965
9	0.932	1.02	1.086	0.959	1.046	0.899	1.037	1.024	0.987	0.952	0.981	0.924	1.03	1.071	1.19	0.978
10	1.1	0.96	0.977	1.049	0.966	1.104	0.993	0.973	1.025	1.063	1.025	1.035	1.03	0.938	0.9	1.022
11	0.943	1.02	1.086	0.977	1.029	0.916	0.993	1.014	0.987	0.961	0.981	0.918	0.94	1	1.19	0.975
12	0.984	1	0.916	0.965	1.012	1.033	1.014	1.069	0.905	1	0.999	1.043	1	1.071	0.99	1
13	1.015	1	0.916	0.959	1.004	1.033	1.014	1.08	0.905	1.01	1.006	1.07	1	1.034	0.99	1.009
14	0.966	0.98	0.888	0.947	0.997	1.033	1.037	1.035	0.913	0.99	0.978	1.043	1.03	1.034	0.99	0.989
15	1.092	1	0.977	1.063	0.966	1.056	0.954	0.993	0.978	1.063	1.014	1.028	1	0.938	0.88	1.015
16	0.921	1.02	1.086	0.942	1.012	0.916	1.014	0.955	1.054	0.926	0.971	0.918	1.03	1.071	1.16	0.968
17	1.1	0.98	0.916	1.063	0.952	1.056	0.954	1.003	0.961	1.063	1.01	1.02	1	0.938	0.88	1.01
18	1.078	0.96	1.011	1.101	0.966	1.056	0.954	1.014	1.044	1.063	1.017	1.043	0.97	0.909	0.9	1.025
19	0.978	1	0.946	0.965	1.012	0.991	1.014	1.014	1.006	0.97	1.01	1.059	0.97	1.034	0.97	1.004
20	0.916	1.04	1.086	0.959	1.021	0.899	1.014	0.955	1.044	0.926	0.985	0.921	1.03	1.071	1.19	0.972
21	0.978	0.98	0.888	0.959	1.004	1.033	0.993	1.014	0.978	1.01	0.995	1.07	1	1.034	0.99	1.003
22	0.996	1.02	1.011	0.983	1.029	1.012	1.014	1.024	1.015	1.031	1.032	1.055	1.03	1.071	0.99	1.023
23	0.89	1.02	1.086	0.909	1.004	0.899	0.954	0.936	1.065	0.909	0.951	0.909	1.07	1.034	1.11	0.95
24	0.984	1	0.977	0.977	1.012	0.991	1.014	1.014	0.996	1	1.014	1.047	1	1.034	0.97	1.007
25	1.003	1	0.916	0.953	1.021	1.033	1.037	0.973	0.953	1	1.01	1.07	1	1.034	0.99	1.006
ALL	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25

Appendix N: Calculation of confidence ranges

The confidence ranges for the relative valuations estimated by the stated preference survey were based on formulae in Yates (1981, pp187-190).

Most of the valuations were expressed as ratios either (i) as minutes of onboard time using the IVT parameter as the denominator or (ii) as dollar values using the cost parameter as the denominator. For a ratio, the variance of the estimate was calculated using equation N.1.

$$\text{Var}\left(\frac{\beta_1}{\beta_2}\right) = \left(\frac{\beta_1}{\beta_2}\right)^2 \left(\frac{\text{Var}(\beta_1)}{\beta_1^2} + \frac{\text{Var}(\beta_2)}{\beta_2^2} - 2\text{Cov}(\beta_1, \beta_2) \right) \quad (\text{Equation N.1})$$

Variance was the standard error of the parameter squared (see tabulations) and to calculate the covariance term which tended to be small by virtue of the experimental design, the parameter correlation coefficient (not tabulated in the report) was used:

$$\text{Cov}(y_1, y_2) = r \cdot (\text{Var}(y_1) \cdot \text{Var}(y_2)) \quad (\text{Equation N.2})$$

There were two fare variables; one for standard passengers (std) and an additive variable for passengers entitled to a fare discount (disc) either children or students as presented in the SP choice cards), equation N2. To calculate the variance of total fare sensitivity for discount passengers, equation N.3 was used.

$$\text{Var}(\beta_1 + \beta_2) = \text{Var}(\beta_1) + \text{Var}(\beta_2) + 2\text{Cov}(\beta_1, \beta_2) \quad (\text{Equation N.3})$$

The variance of a proportion used to estimate the weighted average value of time taking account the proportion of passengers entitled to (and not entitled) a discount fare.

$$\text{Var}(\text{Pr}_{DISC}) = \frac{(\text{Pr}_{DISC}) \cdot (1 - \text{Pr}_{DISC})}{N} \quad (\text{Equation N.4})$$

where N is the sample size (note for the concession proportion used in calculating the average value of time, the number of interviews (25/3) and not the number of SP observations was used.

The average value of time was a weighted sum of the values for standard fare passengers and discount fare passengers. The variance for a product was used to calculate the total variance of the estimate, equation N.5.

$$\text{Var}[\beta_1, \beta_2] = \beta_2^2 \text{Var}(\beta_1) + \beta_1^2 \text{Var}(\beta_2) + 2\text{Cov}(\beta_1, \beta_2) \quad (\text{Equation N.5})$$

All confidence ranges were calculated at the 95% level; to do this, the standard error (the square root of the variance) was multiplied by 1.96. To express the values of time in dollars per hour, the variances were multiplied by 60.

N1 Reference

Yates, F (1981) *Sampling methods for censuses and surveys*. 4th ed. New York: Macmillan.

Appendix O: Stated preference mean score graphs

Figure O.1 Service interval

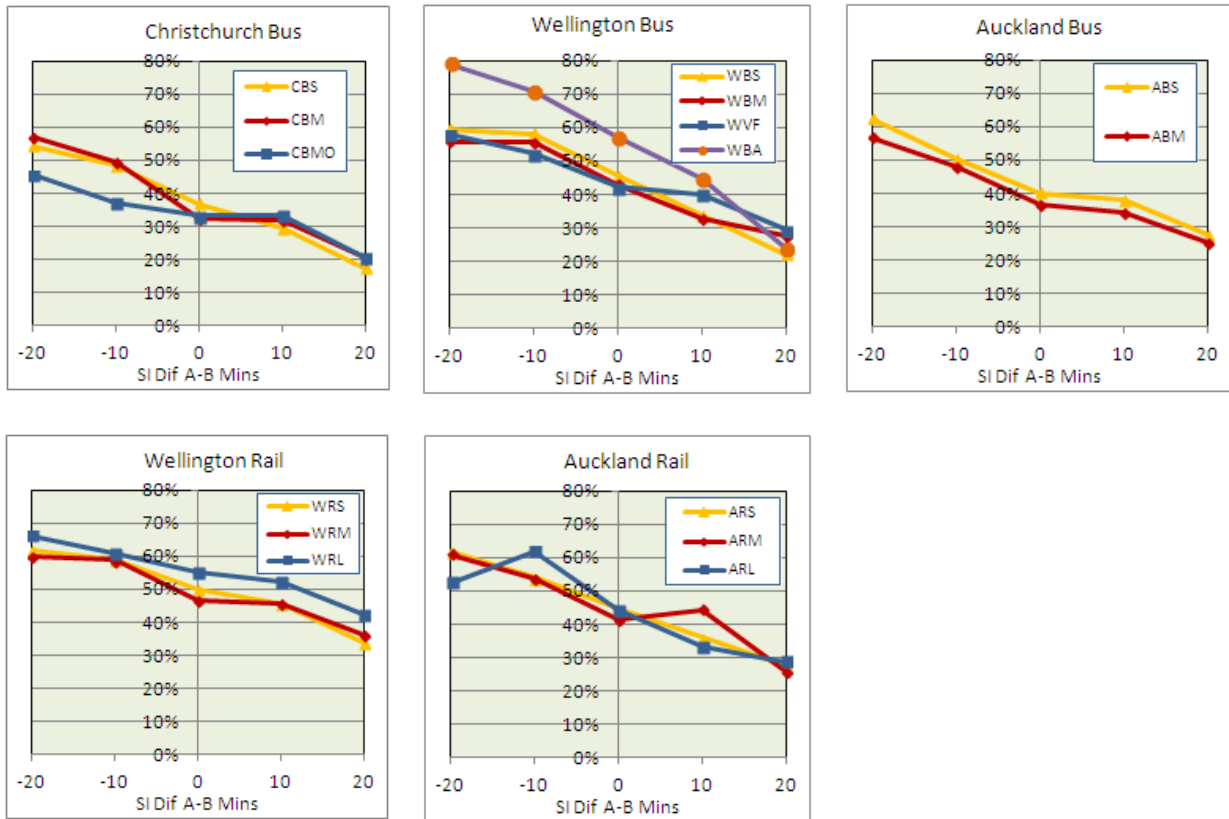


Figure O.2 In-vehicle time

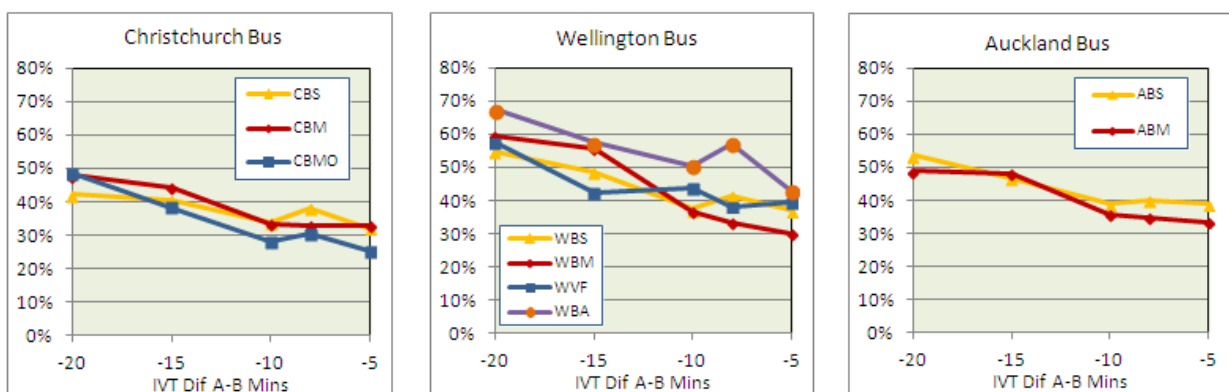


Figure O.2 In-vehicle time *continued*

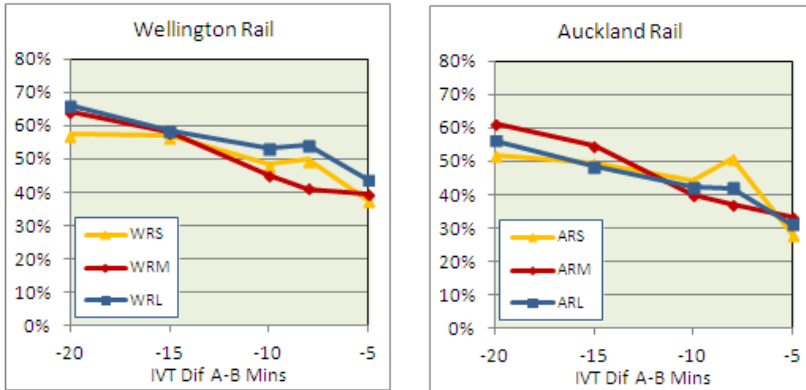


Figure O.3 Fare

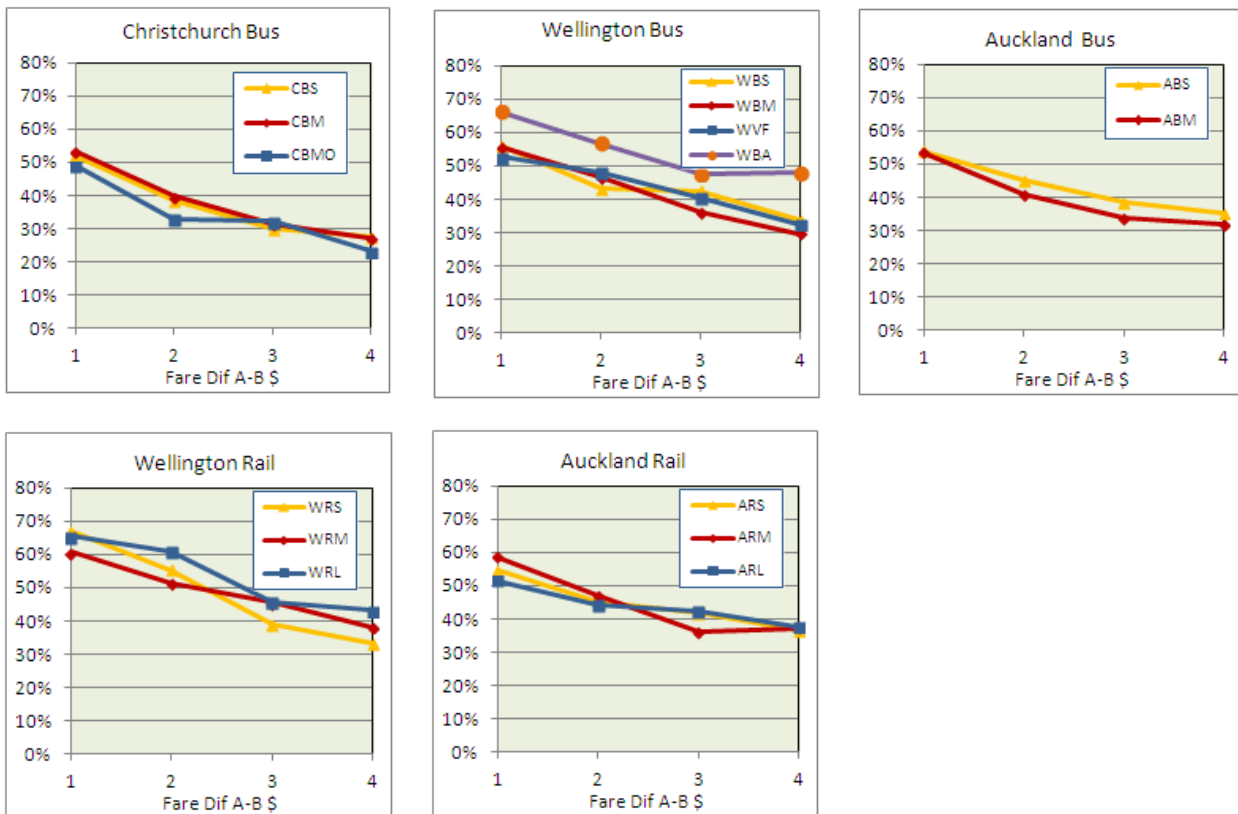


Figure O.4 Stop/station quality

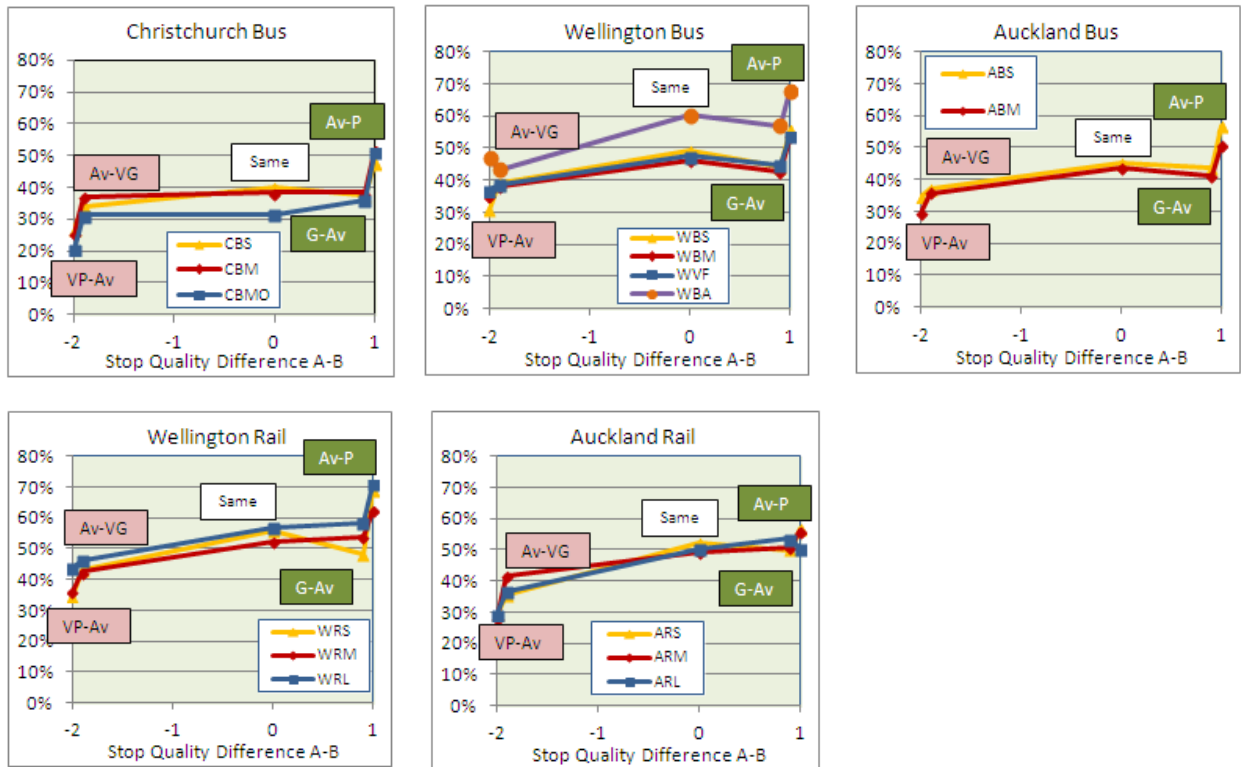
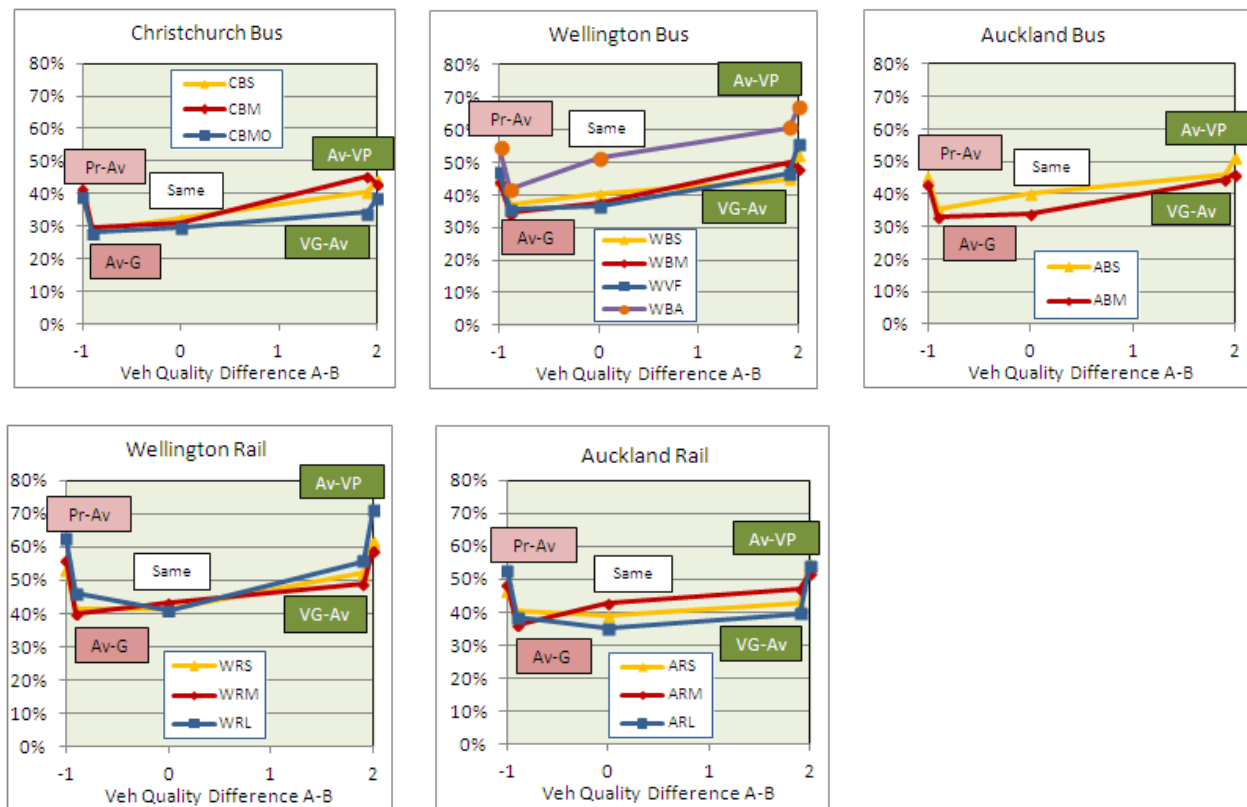


Figure O.5 Vehicle quality



Appendix P: Standardisation of vehicle quality sensitivity

P1 Introduction

Vehicle quality was modelled as an independent variable as described in section 8.23 and also interacting with in-vehicle time (IVT) difference as described in section 8.24. Modelled independently, vehicle quality was a 'total per trip' effect whereas when interacting with IVT it was on a per minute basis.

In both specifications, vehicle quality was standardised for trip length as described in section P2. In the interaction specification, the IVT difference still used the trip length standardisation function in order to introduce a 'flag-fall' component instead of assuming a proportional effect. Section P3 describes the approach.

P2 Respondent trip length

The only consistent effect was vehicle quality sensitivity increased with trip length. The effect was considered reasonable as it is to be expected that passengers making longer trips would value improved vehicle quality more than passenger making short trips.

Table P.1 presents the estimated parameters for five trip length categories.

Table P.1 Stated preference model parameters by trip length

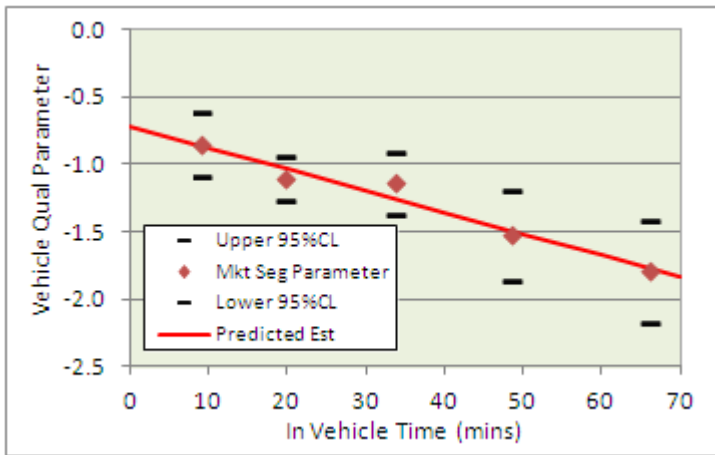
Parameter Estimates	Trip Length (In-vehicle time minutes)					All
	<15	15-29	30-44	45-59	60+	
SI Dif	-0.037	-0.039	-0.039	-0.040	-0.019	-0.036
IVT Dif	-0.053	-0.065	-0.069	-0.063	-0.041	-0.060
Fare Dif	-0.273	-0.393	-0.402	-0.394	-0.346	-0.360
Stop Qual Dif	-0.868	-1.005	-0.970	-0.894	-1.091	-0.959
Veh Qual Dif	-0.843	-1.096	-1.130	-1.514	-1.790	-1.143
Concession Fare Constant	-0.201	-0.659	-0.392	-0.976	-0.678	-0.539
Constant	-0.398	-0.321	-0.411	-0.262	0.011	-0.326
 t Values	<15	15-29	30-44	45-59	60+	All
SI Dif	18.5	39.0	19.5	13.3	6.3	36.0
IVT Dif	10.6	21.7	13.8	9.0	5.9	30.0
Fare Dif	10.5	21.8	15.5	10.6	8.9	32.7
Stop Quality Dif	11.3	19.3	13.1	8.4	9.2	29.1
Veh Quality Dif	7.0	13.5	9.7	9.0	9.4	22.4
Concession Fare Constant	2.0	9.6	4.7	7.6	4.2	13.1
Constant	4.4	5.4	4.7	2.1	0.1	8.6
Observations	9,121	16,229	7,778	3,761	2,976	39,865
Interviews	1,155	2,054	985	476	377	5,046
Relative Valuations	<15	15-29	30-44	45-59	60+	All
Av IVT mins	9	19.5	33.6	48.3	66	27
Service Interval / IVT (mins)	0.70	0.60	0.57	0.63	0.46	0.60
Stop Quality / IVT (mins)	16	15	14	14	27	16
Vehicle Quality / IVT (mins)	16	17	16	24	44	19
Value of Onboard Time \$/hr	11.65	9.92	10.30	9.59	7.11	10.00
Stop Quality \$/trip	3.18	2.56	2.41	2.27	3.15	2.66
Vehicle Quality \$/trip	3.09	2.79	2.81	3.84	5.17	3.18

For short trips (≤ 15 minutes) that took nine minutes on average, the sensitivity to vehicle quality was -0.838 and was the least sensitive. The parameter then increased in size to -1.79 for trips taking an hour

or longer. By contrast none of the other parameters moved in a consistent way with IVT. For example, the IVT parameter peaked in sensitivity at 30 to 44 minutes.

The vehicle quality parameter was ‘standardised’ to take account of the effect of trip length. Standardising the parameter involved three steps. The first step regressed the market segment vehicle quality parameter estimates against the average in vehicle times. Figure P.1 presents the data and the fitted equation. The regression was weighted in accordance with relative accuracy ($|t|$ values) of the five market segment results. The estimated equation is presented in equation P.1 with t values shown in brackets. As can be seen in the graph, the relationship was linear and positive. There was also a ‘constant’ indicating some aspects of vehicle quality such as ease of boarding/alighting and driver friendliness were independent of trip length.

Figure P.1 Vehicle quality sensitivity parameter with in-vehicle time (mins)



$$\beta_{VQ} = \delta_0 + \delta_{ivt}(IVT) \quad (\text{Equation P.1})$$

$$\beta_{VQ} = -0.718 - 0.016(IVT)$$

The second step standardised the equation for the average trip length in the SP data set. This was done by dividing equation P.1 by the estimate for the average trip length of 27 minutes.

$$VQ(IVT)_{STD} = \frac{-0.718 - 0.016(IVT)}{-0.718 - 0.016(27)} \quad (\text{Equation P.2})$$

The third step multiplied equation P.2 with the change in vehicle quality for each SP observation taking into account the IVT of that observation. Equation P.3 shows the estimation equation standardised for IVT on vehicle quality.

$$Pa = \frac{Z}{1 + Z} \quad (\text{Equation P.3})$$

where

$$Z = \exp\left\{\alpha + \alpha C + \beta_{si}\Delta SI + \beta_v\Delta V + \beta_f\Delta F + \beta_{sq}(1 - SQ^{0.7}) + \beta_{vqstd}\{VQ(IVT)_{STD}\}(1 - VQ_i^{0.65})\right\}$$

The effect of standardisation was to factor down the vehicle quality differences where the trips were shorter than the average and factor up the vehicle quality differences for longer trips but leave observations that took the average time unchanged. Standardised in this way, the adjustment had little effect on the parameter estimates of the overall model parameter but improved the goodness of fit. Table P.2 presents the standardised overall model with the non-standardised model alongside for comparative purposes.

The real advantage from standardisation was the ability to calculate a relative valuation for a specific trip length and by pivoting on the 27-minute estimate in table P.2 only the slope parameter of -0.016 (equation P.1) was required to be multiplied with the trip length difference and then added to the standardised vehicle quality parameter of -1.072. If a relative valuation expressed in IVT minutes is required, the number needs to be divided by the IVT dif parameter of -0.06 and if a fare valuation is required the number should be divided by the fare dif parameter of -0.365. Equation P.4 calculates the IVT relative valuation of very poor to very good vehicle quality at 13.3 minutes. The fare valuation would be \$2.19.

$$\beta_{VQ} / \beta_V = \frac{-1.072 - 0.016(10 - 27)}{-0.06} = 13.3 \text{ mins} \tag{Equation P.4}$$

Table P.2 Stated preference model parameters by trip length

Parameter Estimates	Standardised	Unstandardised
SI Dif	-0.037	-0.036
IVT Dif	-0.060	-0.060
Fare Dif	-0.365	-0.360
Stop Qual Dif	-0.958	-0.959
Veh Qual Dif - STD	-1.072	-1.143
Concession Fare Constant	-0.551	-0.539
Constant	-0.325	-0.326
 t Values		
SI Dif	37.0	36.0
IVT Dif	30.0	30.0
Fare Dif	33.2	32.7
Stop Quality Dif	29.0	29.1
Veh Qual Dif - STD	24.4	22.4
Concession Fare Constant	13.1	13.1
Constant	11.6	8.6
Observations	39,865	39,865
Interviews	5,046	5,046
Relative Valuations		
Av IVT mins	27	27
Service Interval / IVT (mins)	0.62	0.60
Stop Quality / IVT (mins)	16	16
Vehicle Quality / IVT (mins)	18	19
Value of Onboard Time \$/hr	9.86	10.00
Stop Quality \$/trip	2.62	2.66
Vehicle Quality \$/trip	2.94	3.18

It is recommended that the above approach is used for trips of up to 90 minutes. For trips longer than 90 minutes for which there were few observations, the 90 minute value should be used.

A lookup table although simple to create has not been not included in this section because the IVT parameter needs to be standardised for income and the service interval (SI) parameter for SI. Section 7.20 presents a look-up table after these three parameters have been standardised.

P3 Standardisation of vehicle quality and in-vehicle time

As section 8.24 described, the SP experiment allowed the sensitivity to vehicle quality to be related to the IVT. Equation 8.12 presented the estimation equation which included the vehicle quality term whereby the in vehicle times of each service (A and B) shown on the SP show cards were multiplied by their respective vehicle quality. Rather than assume a proportional relationship, in-vehicle times (IVT) were standardised by equation P.5 Thus the vehicle quality component in equation 8.12 became:

$$\beta_{vq} \left\{ \frac{-0.718 - 0.016(V_A)}{-0.718 - 0.016(27)} (1 - VQ_A^{0.65}) - \frac{-0.718 - 0.016(V_B)}{-0.718 - 0.016(27)} (1 - VQ_B^{0.65}) \right\} \quad (\text{Equation P.5})$$

Appendix Q: Standardisation of service interval sensitivity

A standardisation was undertaken of the SI parameter similar to that described in appendix P for vehicle quality.

Section 8.11 in the main report discussed the sensitivity of the SP response to the perceived SI.

The only consistent effect was declining SI sensitivity as service frequency reduced. Similar effects had been previously estimated, such as the system wide study of Sydney rail services by Douglas Economics (2004b).

None of the other SP parameters showed a consistent or strong effect. The fare parameter did increase in strength but by only 10% which was not considered sufficient to warrant standardisation.

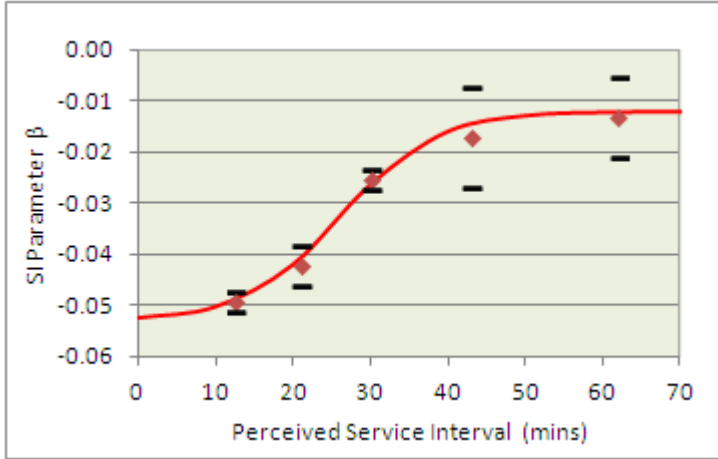
Table Q.1 presents the estimated SP parameters by SI category.

Table Q.1 Stated preference model parameters by service interval

Parameter Estimates	Perceived Service Interval (mins)					All
	≤15	16-29	30-35	36-59	60+	
SI Dif	-0.049	-0.042	-0.025	-0.017	-0.013	-0.036
IVT Dif	-0.067	-0.070	-0.055	-0.046	-0.052	-0.060
Fare Dif	-0.367	-0.372	-0.389	-0.401	-0.406	-0.360
Stop Qual Dif	-0.944	-0.878	-0.937	-0.839	-1.229	-0.959
Veh Qual	-1.068	-1.288	-1.182	-1.191	-1.315	-1.143
Concession Fare Constant	-0.525	-0.554	-0.427	-0.389	-0.864	-0.539
Constant	-0.373	-0.348	-0.255	-0.141	-0.139	-0.326
 t Values	≤15	16-29	30-35	36-59	60+	All
SI Dif	49.0	21.0	25.0	3.4	3.3	36.0
IVT Dif	22.3	11.7	13.8	3.5	5.2	30.0
Fare Dif	19.3	12.4	19.5	5.8	7.7	32.7
Stop Quality Dif	17.2	10.1	16.2	4.2	7.7	29.1
Veh Quality Dif	12.4	9.5	12.8	3.8	5.4	22.4
Concession Fare Constant	7.7	4.8	5.2	1.7	5.2	13.1
Constant	5.8	3.4	3.7	0.6	0.8	8.6
Observations	14,419	5,661	12,158	1,019	1,773	39,865
Interviews	1,825	717	1,539	129	224	5,046
Relative Valuations	≤15	16-29	30-35	36-59	60+	All
Av Service Interval (mins)	12.5	21	30	43	62	23
Service Interval / IVT (mins)	0.73	0.60	0.45	0.37	0.25	0.60
Stop Quality / IVT (mins)	14	13	17	18	24	16
Vehicle Quality / IVT (mins)	16	18	21	26	25	19
Value of Onboard Time \$/hr	10.95	11.29	8.48	6.88	7.68	10.00
Stop Quality \$/trip	2.57	2.36	2.41	2.09	3.03	2.66
Vehicle Quality \$/trip	2.91	3.46	3.04	2.97	3.24	3.18

Figure Q.1 graphs the SI parameter against the average SI for each category. The graph shows that for frequent services of no more than 15 apart (with an average SI of 12 minutes), the sensitivity to SI at -0.049 was at its most sensitive. The parameter then gradually reduced (ignoring sign) to -0.042 for services every 16–29 minutes but then weakened markedly so that by half-hourly services, the sensitivity to SI was -0.025. The decline in strength then flattened off to -0.017 at SIs of 36–59 minutes and to -0.013 for hourly or less frequent services.

Figure Q.1 Service interval sensitivity parameter with service interval (mins)



Standardisation followed the same three steps as outlined for vehicle quality in appendix P. Unlike vehicle quality, the standardisation curve was non-linear and followed a logistic shape as shown by the red line in figure Q.1. The curve which had limits of -0.012 (Min{SI}) and -0.053 (Max{SI}) set was fitted using robust estimation (NLOGIT) with observations weighted in accordance with their relative accuracy ($|t|$ value). The estimated parameters were -0.163 for δ_z with a $|t|$ value of 10 and -4.27 for δ_0 with a $|t|$ value of 13.5. Equation Q.1 shows the standardisation function.

$$\beta_{SI_{STD}} = \frac{\exp(\delta_0 + \delta_z Z)}{1 + \exp(\delta_0 + \delta_z Z)} = \frac{\exp(-4.27 - 0.163Z)}{1 + \exp(-4.27 - 0.163Z)} \quad (\text{Equation Q.1})$$

$$\text{where } Z = \frac{\beta_{SI} - \text{Min}\{\beta_{SI}\}}{\text{Max}\{\beta_{SI}\} - \text{Min}\{\beta_{SI}\}} = \frac{\beta_{SI} - 0.012}{-0.053 - 0.012}$$

The second step divided the standardised parameter by the β_{SI} parameter at the mean SI of 23 minutes which was -0.038 ($SI_{STD} = \beta_{SI_{STD}} / \beta_{SI}$).

The third step multiplied the change in SI for each SP observation (equation Q.2) with the standardisation factor SI_{STD} and re-estimated the regression equation.

$$Pa = \frac{Z}{1 + Z} \quad (\text{Equation Q.2})$$

Where

$$Z = \exp\left\{\alpha + \alpha C + \beta_{SI}\{SI(SI_{STD})\}\Delta SI + \beta_V \Delta V + \beta_f \Delta F + \beta_{sq}(1 - SQ^{0.7}) + \beta_{vqstd}(1 - VQ_i^{0.65})\right\}$$

Standardisation had the effect of reducing the SI differences for infrequent services and increasing the differences for frequent services with short SIs. Table P.2 presents the standardised overall model with the non-standardised model alongside for comparative purposes and shows the SI parameter to change from -0.036 to -0.038 and parameter accuracy to improve (as measured by the increase in the $|t|$ value from 36 to 38) but otherwise there was little change.

Table Q.2 Stated preference model parameters by trip length

Parameter Estimates	Standardised	Unstandardised
SI Dif	-0.038	-0.036
IVT Dif	-0.060	-0.060
Fare Dif	-0.362	-0.360
Stop Qual Dif	-0.964	-0.959
Veh Qual	-1.140	-1.143
Concession Fare Constant	-0.547	-0.539
Constant	-0.324	-0.326
t Values	Standardised	Unstandardised
SI Dif	38.0	36.0
IVT Dif	30.0	30.0
Fare Dif	32.9	32.7
Stop Quality Dif	29.2	29.1
Veh Quality Dif	22.4	22.4
Concession Fare Constant	13.0	13.1
Constant	8.5	8.6
Observations	39,865	39,865
Interviews	5,046	5,046
Relative Valuations	Standardised	Unstandardised
Av Service Interval (mins)	23	23
Service Interval / IVT (mins)	0.63	0.60
Stop Quality / IVT (mins)	16	16
Vehicle Quality / IVT (mins)	19	19
Value of Onboard Time \$/hr	9.94	10.00
Stop Quality \$/trip	2.66	2.66
Vehicle Quality \$/trip	3.15	3.18

As with vehicle quality, the main advantage from standardisation is the ability to calculate a relative valuation for a specific trip. However, the non-linear function makes the calculation a little more involved.

The formula below sets out the calculation of the relative SI/IVT valuation for a five-minute SI. The calculated relative valuation was 0.862.

$$\beta_{SI_{STD}} = \frac{\exp(\delta_0 + \delta_z SI)}{1 + \exp(\delta_0 + \delta_z SI)} = \frac{\exp(-4.27 - 0.163(5))}{1 + \exp(-4.27 - 0.163(5))} = 0.969 \tag{Equation Q.3}$$

(Equation Q.4)

$$\frac{\beta_{SI_{ALL}}}{\beta_{SI_{23}}} [Min\{\beta_{SI}\} + \beta_{SI_{STD}} (Max\{\beta_{SI}\} - Min\{\beta_{SI}\})] = \frac{-0.038}{-0.038} [-0.012 + 0.969(-0.053 - (-0.012))] = 0.052$$

$$Relative\ valuation = \frac{\beta_{SI}}{\beta_V} = \frac{-0.052}{-0.06} = 0.862 \tag{Equation Q.5}$$

Given the SI sensitivity parameter is constrained (between -0.012 and -0.053) the approach can be used with any values of SI.

As with vehicle quality, a look-up table although simple to create is not included in this section because the IVT parameter has yet to be standardised for income. Section 8.20 presents a look-up table after all three parameters have been standardised.

Q1 Reference

Douglas Economics (2004b) *Value of rail travel time*. Report to RailCorp NSW.

Appendix R: Income standardisation of response

R1 Introduction

Section 8.18 discusses the sensitivity of the attribute parameters with respect to personal income concluding that the sensitivity to IVT and also vehicle quality were affected in a consistent way. In this appendix, the parameters are standardised for income in a similar fashion to vehicle quality.

Two income standardisations were undertaken: the first was with the independent vehicle quality model. The second application was when vehicle quality interacted with IVT as described in section 8.24.

R2 Income standardisation

Rising income increased the sensitivity to IVT and albeit to a lesser extent to vehicle quality. By contrast, income had no consistent effect on fare, SI and stop quality. As section 7.18 (see part 1 of this report) commented there was also an effect on the model constants with rising income reducing the size of the model constant and also the concession fare constant. Fewer respondents always chose the slower/cheaper option as incomes rose. In standardising the income effect, the constants were omitted and the market segment models re-estimated. Table R.1 presents the parameter estimates with the basic overall model presented on the right for comparative purposes.

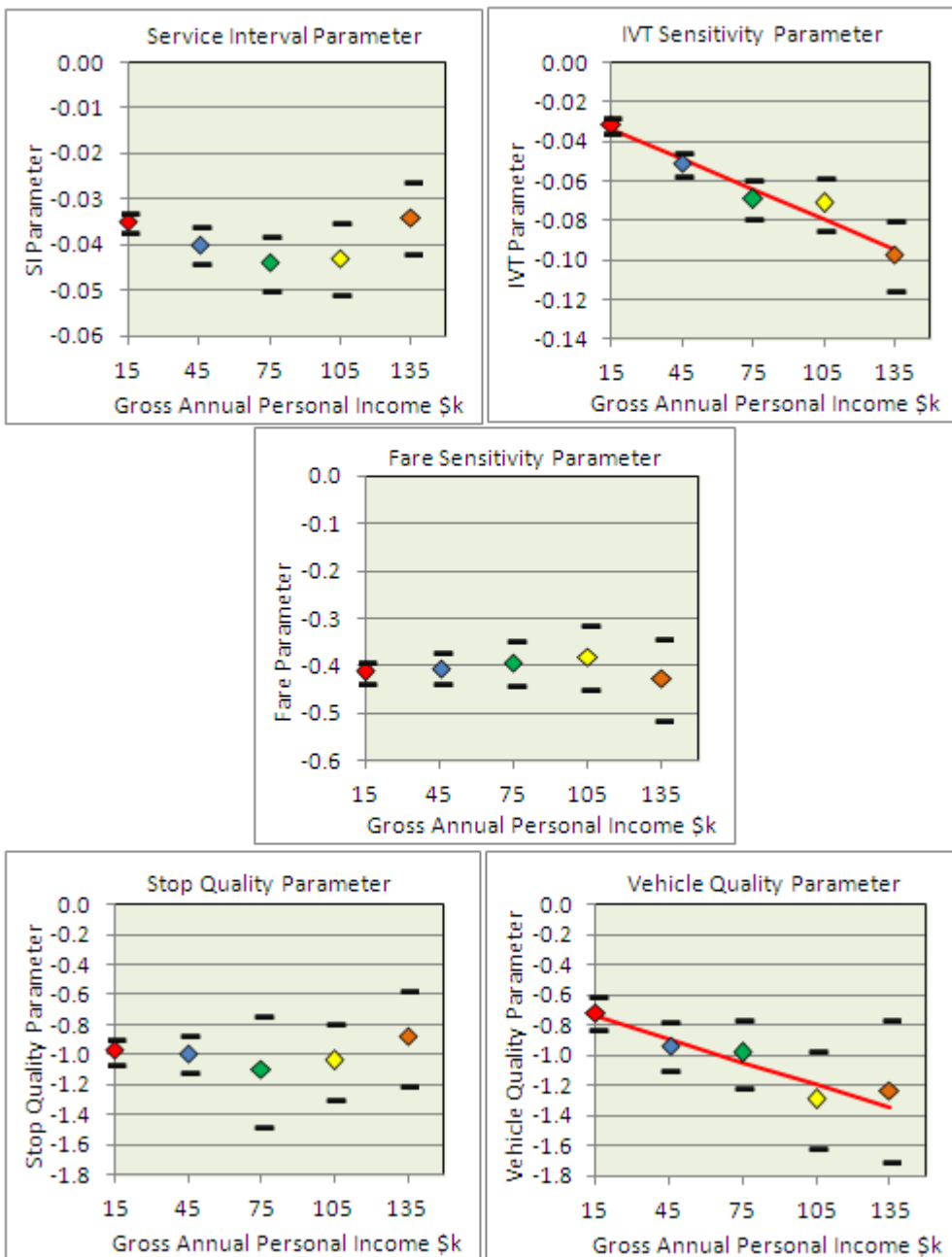
Table R.1 Stated preference models with personal income

Parameter Estimates	Income Class					Basic ALL
	<30k	30-60k	60-90k	90-120k	>120k	
SI Dif	-0.035	-0.040	-0.044	-0.043	-0.034	-0.036
IVT Dif	-0.031	-0.051	-0.069	-0.071	-0.097	-0.060
Fare Dif	-0.413	-0.404	-0.394	-0.381	-0.428	-0.360
Stop Qual Dif	-0.972	-0.989	-1.101	-1.038	-0.881	-0.959
Veh Qual Dif	-0.713	-0.935	-0.982	-1.291	-1.234	-1.143
Concession Fare Constant	na	na	na	na	na	-0.539
Constant	na	na	na	na	na	-0.326
 t Values	<30k	30-60k	60-90k	90-120k	>120k	40.8k
SI Dif	35.0	20.0	14.7	10.8	8.5	36.0
IVT Dif	15.5	17.0	13.8	10.1	10.8	30.0
Fare Dif	34.4	23.8	15.8	10.9	9.7	32.7
Stop Quality Dif	21.6	15.5	5.8	7.9	5.4	29.1
Veh Quality Dif	12.5	11.5	8.5	7.8	5.1	22.4
Concession Fare Constant	na	na	na	na	na	13.1
Constant	na	na	na	na	na	8.6
Observations	22,690	16,851	16,852	16,853	16,854	39,877
Interviews	2,872	2,133	2,133	2,133	2,133	5,048
Relative Valuations	<30k	30-60k	60-90k	90-120k	>120k	40.8k
Service Interval / IVT (mins)	1.13	0.78	0.64	0.61	0.35	0.60
Stop Quality / IVT (mins)	31	19	16	15	9	16
Vehicle Quality / IVT (mins)	23	18	14	18	13	19
Value of Onboard Time \$/hr	4.50	7.57	10.51	11.18	13.60	10.00
Stop Quality \$/trip	2.35	2.45	2.79	2.72	2.06	2.66
Vehicle Quality \$/trip	1.73	2.31	2.49	3.39	2.88	3.18

Figure R.1 graphs the attribute parameters with income and superimposes a fitted regression line. The graphs for IVT and also vehicle quality show a clear linear relationship with income whereas the other graphs do not show any strong relationship.

The combination of a stronger IVT parameter with a constant fare parameter led to an increase in the value of time from \$4.50/hour for incomes of under \$30,000 to \$13.60 for incomes over \$120,000. For vehicle quality, the value of very poor to very good quality increased from \$1.73 for incomes under \$30,000 to \$3.39 for incomes of \$90,000 to \$120,000 before declining to just under \$3 for incomes over \$120,000.

Figure R.1 Stated preference sensitivity parameters with income



The IVT and vehicle quality parameters were standardised using the three-step approach outlined in appendix P. Table R.2 presents the regression equations of step 1 which were fitted using weighted ordinary least squares.

Table R.2 Parameter sensitivity with income models

Parameter Estimates	Standardised	Unstandardised
SI Dif	-0.037	-0.036
IVT Dif	-0.054	-0.060
Fare Dif	-0.354	-0.360
Stop Qual Dif	-0.968	-0.959
Veh Qual Dif	-1.011	-1.143
Concession Fare Constant	-0.313	-0.539
Constant	-0.265	-0.326
t Values	Standardised	Unstandardised
SI Dif	37.0	36.0
IVT Dif	27.0	30.0
Fare Dif	32.2	32.7
Stop Quality Dif	29.3	29.1
Veh Quality Dif	23.5	22.4
Concession Fare Constant	7.6	13.1
Constant	7.6	8.6
Observations	39,877	39,877
Interviews	5,048	5,048
Relative Valuations	Standardised	Unstandardised
Service Interval / IVT (mins)	0.69	0.60
Stop Quality / IVT (mins)	18	16
Vehicle Quality / IVT (mins)	19	19
Value of Onboard Time \$/hr	9.15	10.00
Stop Quality \$/trip	2.73	2.66
Vehicle Quality \$/trip	2.86	3.18

The second step standardised the equations by dividing them by the income average in the data set of \$40,800. The third step multiplied the change in IVT and vehicle quality for each SP observation by the adjustment factors.

Standardisation increased the IVT difference (and also the vehicle quality difference) for observations with higher than average personal income and reduced the difference for lower incomes. Table R.3 presents the standardised overall model with the IVT standardised for SI and the vehicle quality parameter (standardised for both income and vehicle time). Alongside is the non-standardised model for comparison.

Table R.3 Stated preference model parameters standardised by income

Parameter	Invehicle Time		Vehicle Quality	
	β	t	β	t
Constant	-0.0258	5.4	-0.668	9.5
Income	-0.00051	8.4	-0.005	5.2

Income standardisation reduced the IVT and vehicle quality sensitivity parameters largely by removing the constants during standardisation. When reintroduced, the size of the two constants declined (independent of sign). The constant reduced from -0.326 to -0.265 and the concession fare constant from -0.539 to -0.313. Both these effects are considered model improvements since less variation in sensitivity was left unexplained by the SP variables.

The value of time reduced from \$10/hour to \$9.15/hour at the average income of \$40,800. The relative value of SI increased to 0.69 times IVT (at a service level of 23 minutes). The time value of stop quality (from very poor to very good) increased from 16 minutes to 18 minutes and from \$2.66 per trip to \$2.73 per trip when measured in terms of fare.

The value of vehicle quality remained unchanged at 19 minutes of IVT but declined in dollar value from \$3.18 per trip to \$2.86 for a 27-minute trip. Calculating the value of IVT for a specific income requires the slope parameter of -0.001 (table R.2) to be multiplied with the income difference and then added to the standardised IVT parameter of -0.054. Then, the number is divided by the fare dif parameter of -.354 and multiplied by 60 to express the valuation in dollars per hour. Equation R.1 shows the calculation for an income of \$15,000 (the calculation must be in thousand dollar income units) which gives a value of time of \$6.92/hour (the 'k's are only shown to identify the incomes - the calculation must be in thousand dollar income units). For an income of \$120,000, the value of time would be \$16/hour.

$$VOT\$/hr = 60\beta_V / \beta_F = 60 \frac{-0.054 - 0.00051(15k - 40.8k)}{-.354} = 6.92 / hr \quad \text{(Equation R.1)}$$

R3 Income standardisation in the vehicle quality/in-vehicle time interaction model

The income standardisation procedure was repeated but with vehicle quality interacting with IVT. Table R.4 presents the estimated models by income segment.

Table R.4 Vehicle quality/in-vehicle time model with personal income

Parameter Estimates	Gross Annual Personal Income \$000				
	<30k	30-60k	60-90k	90-120k	>120k
SI Dif (IVT Adj)	-0.034	-0.039	-0.043	-0.043	-0.034
IVT Dif	-0.025	-0.045	-0.062	-0.067	-0.091
Fare Dif	-0.392	-0.374	-0.372	-0.341	-0.398
Stop Qual Dif	-0.972	-0.972	-1.088	-1.007	-0.857
Veh Qual * IVT	-0.024	-0.028	-0.034	-0.036	-0.038
Concession Fare Constant	0.000	0.000	0.000	0.000	0.000
Constant	0.000	0.000	0.000	0.000	0.000
 t Values	<30k	30-60k	60-90k	90-120k	>120k
SI Dif	25.9	19.6	14.8	10.6	6.4
IVT Dif	10.1	13.0	12.3	9.5	10.3
Fare Dif	32.6	22.7	15.6	10.2	9.6
Stop Quality Dif	21.4	15.3	12.1	7.7	5.3
Veh Quality Dif	11.9	9.5	7.9	6.2	5.2
Concession Fare Constant	na	na	na	na	na
Constant	na	na	na	na	na
Observations	22,690	16,851	16,852	16,853	16,854
Interviews	2,872	2,133	2,133	2,133	2,133
Relative Valuations	<30k	30-60k	60-90k	90-120k	>120k
Service Interval / IVT (mins)	1.37	0.86	0.69	0.64	0.38
Stop Quality / IVT (mins)	39	21	18	15	9
Vehicle Quality / IVT (mins)	1.0	0.6	0.5	0.5	0.4
Value of Onboard Time \$/hr	3.78	7.26	10.01	11.82	13.68
Stop Quality \$/trip	2.48	2.60	2.93	2.96	2.15
Vehicle Quality \$/trip	0.06	0.07	0.09	0.10	0.09

The IVT and vehicle quality parameters increased (ignoring sign) consistently with income. Figure R.2 graphs the relationships. The relationship was strongest for IVT with the parameter increasing steadily from -0.025 for incomes less than \$30,000 to -0.091 for incomes over \$120,000. For vehicle quality, the parameter increased from -0.024 to -0.038.

Figure R.2 Stated preference in-vehicle time and vehicle quality/in-vehicle time parameters with income

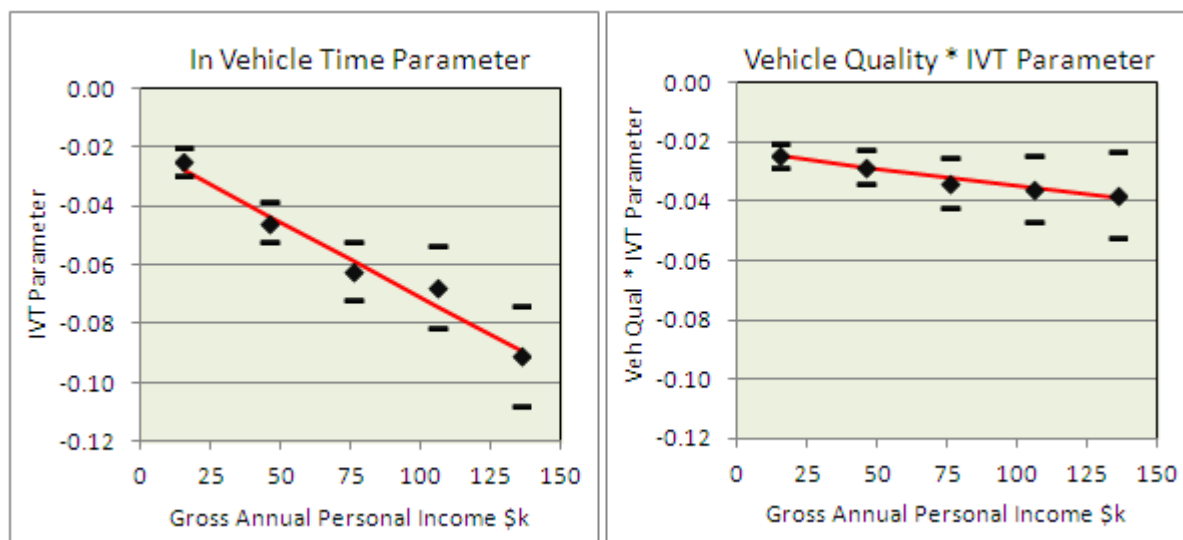


Table R.5 presents the regression equations which were fitted using weighted ordinary least squares. The IVT parameters were close to those estimated in table Q.2, whereas for vehicle quality the parameters were smaller.

Table R.5 Parameter sensitivity with income models

	IVT	t	VQV	t
Constant	-0.020	4.6	-0.023	24.7
Income	-0.00051	9.8	-0.00012	9.6

The data was then standardised using steps 2 and 3 described in section R2.

Appendix S: Stated preference passenger profile and trip, mode and city models

Variable	Model 1: Gender Model	β	STE	t
Main Effect	SI Dif	-0.037	0.001	-38.18
Variables	IVT Dif	-0.061	0.002	-33.31
	Fare Dif	-0.355	0.011	-31.87
	Stop Qual Dif	-0.968	0.033	-29.62
	Veh Qual Dif	-1.016	0.043	-23.78
	Concession Fare Constant	-0.314	0.041	-7.67
	Constant	-0.283	0.035	-8.16
Gender	Male*IVT Dif	0.014	0.002	8.62

Variable	Model 2: Trip Purpose	β	STE	t
Main Effect	SI Dif	-0.038	0.001	-37.57
Variables	IVT Dif	-0.054	0.002	-32.73
	Fare Dif	-0.351	0.011	-30.93
	Stop Qual Dif	-0.943	0.034	-27.80
	Veh Qual Dif	-0.961	0.044	-21.86
	Concession Fare Constant	-0.296	0.041	-7.14
	Constant	-0.252	0.035	-7.24
Journey Purpose (Base = Work)	Education * Fare Dif	-0.035	0.013	-2.81
	Personal Business * IVT Dif	0.010	0.003	3.44
	Company Business * Fare Dif	0.157	0.036	4.31
	Shopping * SI Dif	0.013	0.003	3.81
	Shopping * Station Qual Dif	-0.334	0.120	-2.79
	Visit Friends/Relts * Veh Qual Dif	-0.208	0.098	-2.12
	Ent/Hol * Veh Qual Dif	-0.323	0.110	-2.95

Variable	Model 3: Socio-Economic Status	β	STE	t
Main Effect	SI Dif	-0.039	0.001	-38.17
Variables	IVT Dif	-0.053	0.002	-30.43
	Fare Dif	-0.345	0.012	-27.97
	Stop Qual Dif	-0.958	0.033	-28.70
	Veh Qual Dif	-0.998	0.043	-23.22
	Concession Fare Constant	-0.324	0.043	-7.56
	Constant	-0.247	0.036	-6.95
Socio Economic Status (Base = Employed)	Student * IVT Dif	-0.010	0.004	-2.50
	Student * Fare Dif	-0.063	0.018	-3.57
	House Person * SI Dif	0.018	0.005	3.37
	House Person * IVT Dif	0.015	0.006	2.78
	Retired * SI Dif	0.021	0.005	4.56
	Retired * IVT Dif	0.026	0.008	3.41
	Retired * Fare Dif	0.207	0.036	5.74
	Retired * Stop Qual Dif	-0.338	0.166	-2.04
	Unemployed * IVT Dif	0.031	0.006	5.40

Variable	Model 4: Age Group	β	STE	t
Main Effect	SI Dif	-0.039	0.001	-38.24
Variables	IVT Dif	-0.054	0.002	-31.98
	Fare Dif	-0.350	0.012	-29.09
	Stop Qual Dif	-0.968	0.033	-29.63
	Veh Qual Dif	-1.000	0.043	-23.34
	Concession Fare Constant	-0.268	0.043	-6.19
	Constant	-0.248	0.035	-7.10
Age Group (Base = 25 to 64)	Age < 18 * Fare Dif	-0.052	0.018	-2.94
	Age 18-24 * Fare Dif	-0.033	0.010	-3.24
	Age >64 * SI Dif	0.022	0.004	5.33
	Age >64 * IVT Dif	0.029	0.006	4.50
	Age >64 * Fare Dif	0.213	0.033	6.53

Variable	Model 5: Free Fare	β	STE	t
Main Effect	SI Dif	-0.038	0.001	-38.16
Variables	IVT Dif	-0.054	0.002	-33.75
	Fare Dif	-0.361	0.011	-32.15
	Stop Qual Dif	-0.967	0.033	-29.61
	Veh Qual Dif	-1.012	0.043	-23.70
	Concession Fare Constant	-0.310	0.041	-7.56
	Constant	-0.267	0.035	-7.72
Free Fare (Base = Not Fare)	Free Fare * SI Dif	0.019	0.005	3.95
	Free Fare * IVT Dif	0.024	0.009	2.71
	Free Fare * Fare Dif	0.203	0.041	4.97

Variable	Model 6: Time Period	β	STE	t
Main Effect	SI Dif	-0.329	0.015	-21.76
Variables	IVT Dif	-0.054	0.002	-33.54
	Fare Dif	-0.354	0.011	-31.84
	Stop Quality Dif	-0.968	0.033	-29.64
	Veh Quality Dif	-1.010	0.043	-23.64
	Concession Fare Constant	-0.311	0.041	-7.60
	Constant	-0.265	0.035	-7.66
Time Period (Base=AM Pk)	Off Peak * SI Dif	-0.004	0.002	-2.12
	PM Peak * SI Dif	-0.017	0.003	-5.59

Variable	Model 7: Mode	β	STE	t
Main Effect	SI Dif	-0.040	0.001	-34.67
Variables	IVT Dif	-0.051	0.002	-27.91
	Fare Dif	-0.353	0.011	-31.73
	Stop Qual Dif	-0.878	0.038	-23.19
	Veh Qual Dif	-0.868	0.052	-16.70
	Concession Fare Constant	-0.322	0.041	-7.86
	Constant	-0.238	0.035	-6.83
Mode (Base=Bus)	Rail * SI Dif	0.010	0.002	4.73
	Rail * IVT Dif	-0.005	0.002	-2.24
	Rail * Stop Qual Dif	-0.347	0.075	-4.65
	Rail * Vehicle Qual Dif	-0.330	0.079	-4.16

Variable	Model 8: Mode & City	β	STE	t
Main Effect	SI Dif	-0.048	0.002	-29.61
Variables	IVT Dif	-0.057	0.002	-30.68
	Fare Dif	-0.377	0.013	-29.97
	Stop Qual Dif	-0.879	0.038	-23.29
	Veh Qual Dif	-0.850	0.048	-17.72
	Concession Fare Constant	-0.279	0.041	-6.76
	Constant	-0.216	0.035	-6.16
Mode (Base=WTN Bus)	AUC Bus * SI Dif	0.014	0.002	6.24
	AUC Bus * IVT Dif	0.012	0.003	4.14
	AUC Bus * Fare Dif	0.055	0.016	3.49
	CHC Bus * IVT Dif	0.018	0.003	6.49
	CHC Bus * Fare Dif	0.154	0.037	4.20
	WTN Rail * SI Dif	0.021	0.003	8.00
	WTN Rail * Stop Quality Dif	-0.327	0.084	-3.91
	WTN Rail * Vehicle Quality Dif	-0.452	0.068	-6.68
	AUC Rail * Stop Quality Dif	-0.423	0.129	-3.29

Appendix T: Review of values of time, service intervals and mode constants

The 28 studies reviewed by Douglas and Wallis (2013) provided 81 values of time for bus, rail and ferry. A tabular summary of the studies and values is presented in table U.1 (which includes a label pointing to the reference list). The studies straddle more than two decades: the first study was in 1990 and the last in 2013. However, the bulk of the studies was undertaken between 1995 and 2005.

Twenty-four studies were Australian, mostly undertaken in NSW, with some studies in Brisbane and one in Canberra. Four studies were undertaken in New Zealand (including the pilot market survey of the current study) which provided seven values of time.

The studies provided values of time for bus, rail, light rail and ferry. Some values for travelling by car were provided but these values were omitted from the dataset. To emphasise this omission, the review uses the term 'public transport value of time' or PTVoT. The studies cover peak, off-peak and 'all-day' travel. Some studies produced estimates by trip purpose rather than peak/off-peak values and where this was done, commuting to work or education trips were considered as 'peak' and non commuting trips as off-peak with overall estimates treated as 50% peak and 50% off-peak.

Most of the surveys were undertaken as part of patronage forecasting exercises. Other studies were undertaken as part of building demand models or estimating parameters for economic evaluations. Some studies only interviewed users of the travel mode but some studies also surveyed car, walk/cycle and other non public transport users. All but two of the studies used SP market research. SP surveys present respondents with a series of pair-wise choices in which travel times, fares and other service levels are varied. The 26 studies covered four types of journey choice: (a) same mode choices such as bus versus bus; (b) public transport choices such as bus versus rail; (c) public transport versus car choices; or as in a few instances (d) walking/cycling versus bus/rail.

Generally, those SP studies that presented 'same mode' choices (eg bus vs bus) produced less variable estimators (a lower standard error in relation to the mean estimate) than studies that presented 'different mode' choices (eg bus vs car). The probable reason is that 'same mode' choices focused on the time/cost trade-off and were less prone to respondents consistently choosing one alternative (for example car over bus) irrespective of the fares and times shown for bus.

The two non-SP studies were analyses of household travel data commissioned by the Transport and Data Centre NSW to develop a travel model for Sydney (Hague Consulting 2001 and Fox et al 2010). The lack of similar revealed preference (RP) studies reflects the statistical problems typically encountered; the two main problems being insufficient variation in time/cost in time-series data and a correlation in times and costs for cross-sectional data.

The review did undertake some analysis to see whether the value of time varied according to the type of data (SP and RP), transport mode (eg bus or rail) and respondent (eg rail or car user). None of the segmentations produced differences that were statistically significant at the 95% confidence level (Douglas Economics 2013).

To take account of the relative accuracy of the 81 different estimates, the ratio of the standard error to the mean estimate ($|t|$ value) was used as a weighting factor.

T1 References

Douglas, NJ and IP Wallis (2013) *Predicting the value of public transport in-vehicle time*. Paper presented at the 36th Australasian Transport Research Forum, Brisbane, 2–4 October 2012.

Douglas Economics (2013) *Review of public transport parameters*. Report to Bureau of Transport Statistics NSW.

Fox, J, A Daly and B Patrolni (2010) *Sydney strategic re-estimation mode-destination model*. Prepared for Bureau of Transport Studies, Transport NSW.

Hague Consulting (2001) *Sydney travel model based on Household Travel Survey calibration*. Report to Transport Data Centre, NSW.

Appendix U: Review of in-vehicle time, service interval and mode constants

Table U.1 Review of value of in-vehicle time estimates

#	Study	Location	NZ/A	Year	Reference	Choice	Mode(s)	Users	Value of time \$/hour			t value			Comment
									Peak/wrk	Offpk/oth	All	Peak/wrk	Offpk/oth	All	
1	WR90	WTN	N	1990	SDG (1990)	MM	Rail	All			2.87			10.31	No car av \$2.16/hour; Car av \$3.39/hour
4	SydR92	Sydney	A	1992	SDG (1992)	RvAll	Rail	Rail			5.61			4.20	Wghtd 't' estimate of mode choice SP estimates
5	SL95T	Sydney	A	1995	BAH (1995)	LvBvR	PT	All			3.49			4.82	
6	SL95B	Sydney	A	1995	" " "	LvBvRvW	PT	B,W			6.12			12.61	PT v PT v walk SP, All observation estimate
6	SL95B	Sydney	A	1995	" " "	LvB	Bus	Bus			2.71			2.89	Glebe SP bus v LRT, bus users
8	PC96	Sydney	A	1996	RPPK (1996)	PT v PT	PT	B,R	8.66			10.10			Wghtd av (t stat) of bus and rail estimates
8	PC96	Sydney	A	1996	" " "	PT v PT	PT	Car	9.48			6.42			Wghtd av (t stat) of bus and rail estimates
8	PC96	Sydney	A	1996	" " "	PT v car	PT	B,R	4.42			8.45			
8	PC96	Sydney	A	1996	" " "	PT v car	PT	Car	4.73			6.80			
9	M2_96	Sydney	A	1996	RPPK (1996)	PT v PT	Bus	Bus	6.97			8.89			Wghtd average (t stat) of car v PT & PT v PT estimate
9	M2_96	Sydney	A	1996	" " "	PT v PT	Bus	Car	6.60			9.54			
9	M2_96	Sydney	A	1996	" " "	PT v car	Bus	Bus	7.11			5.75			
9	M2_96	Sydney	A	1996	" " "	PT v car	Bus	Car	8.66			4.32			
10	STM96	Sydney	A	1996	Hague (2001)	RPMM	Rail	All	15.75			nk			Average value for rail journey to work
10	STM96	Sydney	A	1996	" " "	RPMM	Bus	All	10.50			nk			Average value for bus journey to work
11	LivTW98	Sydney	A	1998	PPK (1998)	PT v PT	Bus	B,R	8.37			11.44			All observation estimate
11	LivTW98	Sydney	A	1998	" " "	PT v PT	Bus	Car	9.56			3.37			
12	SBQ99	Sydney	A	1999	Hensher (2002)	BvB	Bus	Bus			4.02			4.13	
13	SBQ00	Sydney	A	2000	Hensher (2003)	BvB	Bus	Bus			3.38			7.27	t wghtd average value of bus mkt segments
14	BSG00	Brisbane	A	2000	PCIE (2000)	PT v PT	B,R	All	8.90	2.90	6.11	3.63	2.03	4.16	Longer distance services. Peak = work and off-peak = other. Average of car and PT respondents
15	BJ00	Sydney	A	2000	Halcrow (2000)	PT v PT	B,R	B,R	5.24	4.91	5.08	nk	nk	nk	Av mkt seg estimate, peak = commuters; off peak = leisure.
15	BJ00	Sydney	A	2000	" " "	PT v PT	B,R	Car	7.65	5.40	6.53	nk	nk	nk	

Pricing strategies for public transport: Part 3: Appendices

#	Study	Location	NZ/A	Year	Reference	Choice	Mode(s)	Value of time \$/hour			t value			Comment	
								Users	Peak/wrk	Offpk/oth	All	Peak/wrk	Offpk/oth		All
16	SdNw00	Sydney	A	2000	PCIE (2000)	RvR	Rail	Rail	5.56	3.46	4.94	4.60	4.19	6.83	Inter-urban service with relatively high concession use
17	Bri01	Brisbane	A	2001	Douglas (2003)	Av	PT	PT	8.70	6.50	7.60	nk	nk	nk	Average of PT v car and PT v PT short and medium SP
17	Bri01	Brisbane	A	2001	" " "	Av	PT	Car	9.90	7.40	8.30	nk	nk	nk	Average value of PTvPT and PTv car Sps, Large sample sizes
18	SFry01	Sydney	A	2001	BAH (2001)	FvB	F&B	Ferry	11.42	11.41	11.42	2.52	3.64	4.12	
18	SFry01	Sydney	A	2001	" " "	FvB	F&B	Bus	3.49	4.52	3.90	2.73	2.10	2.40	
18	SFry01	Sydney	A	2001	" " "	FvC	F&B	Ferry	11.24	14.35	12.61	5.35	4.20	6.60	
19	NZEM02	WN,AC,CH	N	2001	Beca (2002)	BvB,RvR	B,R	B,R	5.41	3.55	4.52	9.86	8.99	13.18	Peak = commuters/off-pk = others
20	Can03	Canberra	A	2003	BAH(2003)	BvB	Bus	Bus	11.30	6.16	6.78	nk	nk	nk	Pk=commuters/ Off-pk =other. Taxi \$31/hour but low sample 9obs
20	Can03	Canberra	A	2003	" " "	BvC	Bus	Car	12.30	6.87	8.83	nk	nk	nk	
21	SydR03	Sydney	A	2003	Douglas (2003)	RvR	Rail	Rail	9.46	7.83	8.76	15.00	15.00	25.00	Large sample sizes, T values approximate. Weighted concession/non concession value. Values
22	SNW03	Sydney	A	2003	Hensher (2003)	MM	PT	All	16.82	6.88	11.77	nk	nk	nk	All est based on relative sample sizes (≈ equal). Wald stats
23	SLRT03	Sydney	A	2003	BAH (2003)	LvB	L,B	L,B	10.54	10.17	9.70	5.01	6.89	8.02	
23	SLRT03	Sydney	A	2003	" " "	PTvPT	PT	PT	12.63	11.18	11.97	10.48	12.96	15.64	Weighted av (t stat) of bus,rail,LRT & ferry transfer & CBD trips
28	STM06	Sydney	A	2006	Fox (2010)	RPMM	Rail	Rail			7.48			2.00	Trip purpose value for rail users. Approx t value
28	STM06	Sydney	A	2006	Fox (2010)	RPMM	Rail	Bus			8.96			2.00	Trip purpose value for bus users Approx t value
30	NZRI08	WTN,AUC	N	2008	Vincent (2008)	BvB,RvR	PT	B,R			7.71			9.11	With and without SP constant model results averaged
31	AusTC10	CapCities	A	2010	CRC (2010)	RvR	PT	All	11.55			16.57			Seated <30 mins & >30 min values averaged.
32	SMet11	Sydney	A	2011	Hensher (2011)	MM	PT	All	7.74			7.52			Commuter valuation. Bus fare and rail fare values averaged
33	SRVoT12	Sydney	A	2011	Douglas (2011)	RvR	Rail	Rail	11.79	10.48	11.24	8.67	6.16	9.86	
34	NZPS12	WTN	N	2012	Douglas (2012)	RvR	Bus	Rail			8.56			3.40	Pricing strategies pilot survey results - largely off-peak surveys of rail users
34	NZPS12	WTN	N	2012	" " "	BvB,RvR	B,R	Bus			7.13			3.92	
35	SIC12	Sydney	A	2012	Douglas (2013)	PTvPT	B,R	B,R	13.14			12.38			SP survey of rail and bus users to estimate the cost of transfer

Appendix U: Review of in-vehicle time, service interval and mode constants

Table U.2 Value of service interval/IVT estimates

#	#	Study	Location	NZ/A	Year	Author	SP	Mode	Mkt	SI			t-value			Comments
										Peak/wrk	Offpk/oth	All	Peak/wrk	Offpk/oth	All	
1	1	WR90	WTN	N	1990	NZRail	MM	Rail	All			0.37			7.2	Weighted av (t stat) No car av 0.39; Car Av 0.34
2	2	WQ91	WTN	N	1991	WRC	PT v PT	PT	All	0.29	0.11		nk	nk		Work = commuters; off-pk = non commuters. Value of time of both
3	3	ALRT91	AKL	N	1991	ARC	PT v PT	PT	All			0.38			3.0	
4	4	SydR92	Sydney	A	1992	CityRail	RvAll	Rail	All			0.45			4.0	
5	5	SL95T	Sydney	A	1995	NSW DoT	LvBvR	PT	All			0.79			6.9	
6	6	SL95B	Sydney	A	1995	NSW DoT	LvBvRvW	PT	B,W			0.90			13.5	PT v PT v walk SP, All observation estimate
7	8	PC96	Sydney	A	1996	NSW DoT	PT v PT	PT	B,R	0.65			13.2			Wghtd av (t stat) of bus and rail estimates
8	8	PC96	Sydney	A	1996	NSW DoT	PT v PT	PT	Car	0.59			8.1			Wghtd av (t stat) of bus and rail estimates
9	8	PC96	Sydney	A	1996	NSW DoT	PT v Car	PT	B,R	0.68			5.2			
10	8	PC96	Sydney	A	1996	NSW DoT	PT v Car	PT	Car	0.75			3.3			
11	9	M2_96	Sydney	A	1996	NSW DoT	PT v PT	Bus	Bus	0.57			10.1			Wghtd average (t stat) of car v PT & PT v PT estimate
12	9	M2_96	Sydney	A	1996	NSW DoT	PT v PT	Bus	Car	0.60			10.2			
13	9	M2_96	Sydney	A	1996	NSW DoT	PT v Car	Bus	Bus	0.50			7.1			
14	9	M2_96	Sydney	A	1996	NSW DoT	PT v Car	Bus	Car	0.70			6.2			
15	10	STM96	Sydney	A	1996	NSW TDC	RPMM	Rail	All	0.41			2.3			First wait - value halved to get SI valuation
16	10	STM96	Sydney	A	1996	NSW TDC	RPMM	Bus	All	0.28			2.3			
17	11	LivTW98	Sydney	A	1998	NSW DoT	BvB	Bus	Bus	1.03			8.9			Attribute defined as maximum wait
18	11	LivTW98	Sydney	A	1998	NSW DoT	PT v PT	Bus	Car	1.09			4.5			
19	12	SBQ99	Sydney	A	1999	STA NSW	PT v PT	Bus	Car			1.35			2.0	Av of half hr & hourly (versus every 15 mins). Approx T value
20	13	SBQ00	Sydney	A	2000	STA NSW	PT v PT	B,R	All			0.80			6.6	Approx t value based on fare/SI parameter
21	14	BSG00	Brisbane	A	2000	Ove Arup	PT v PT	B,R	All	0.40	0.90	0.63	3.9	1.8	2.6	Longer distance. Car & PT response averaged. Peak = commuter; off-pk = non commuter
22	16	SdNw00	Sydney	A	2000	SRA	RvR	Rail	Rail	0.67	0.90	0.76	2.8	3.5	6.6	Inter-urban service
23	17	Bri01	Brisbane	A	2001	BCC	Av	PT	PT	0.49	0.56	0.52	nk	nk	nk	Average of PT v car and PT v PT short and medium SP
24	17	Bri01	Brisbane	A	2001	BCC	Av	PT	Car	0.44	0.46	0.45	nk	nk	nk	Average value of PT v PT and PT v sar Sps, Large sample
25	18	SFry01	Sydney	A	2001	Syd Ferry	FvB	F&B	Ferry	0.25	0.30	0.42	4.0	3.2	1.8	

Pricing strategies for public transport: Part 3: Appendices

#	#	Study	Location	NZ/A	Year	Author	SP	Mode	Mkt	SI			t-value			Comments
										Peak/wrk	Offpk/oth	All	Peak/wrk	Offpk/oth	All	
26	18	SFry01	Sydney	A	2001	Syd Ferry	FvB	F&B	Bus	0.55	0.32	0.46	2.1	1.5	1.9	
27	18	SFry01	Sydney	A	2001	Syd Ferry	FvC	F&B	Ferry	0.42		0.45	3.9	4.2		
28	19	NZEM02	WN,AC,CH	N	2001	SDG	BvB,RvR	B,R	B,R	0.61	0.64	0.63	3.5	4.0	4.5	At 15 min headway. SI value increases with freq. 0.95 at 5 min freq & 0.39 at hourly for commuters
29	20	Can03	Canberra	A	2003	ACT	BvB	Bus	Bus	0.65	0.80	0.78	nk	nk	nk	Value of wait time. Converted to SI wait = half headway.
30	20	Can03	Canberra	A	2003	ACT	BvC	Bus	Car	0.55	0.87	0.75	nk	nk	nk	
31	21	SydR03	Sydney	A	2003	SRA	RvR	Rail	Rail	0.77	0.61	0.70	10	10	10	Large sample sizes, T values approximate.
32	22	SNW03	Sydney	A	2003	NSW DoT	MM	Bus	All	0.77	0.66	0.71	9.5	12.6	12.8	All estimate based on relative sample sizes (\approx equal)
33	23	SLRT03	Sydney	A	2003	NSW DoT	LvB	L,B	L,B	0.90	0.79	0.81	5.1	6.4	7.9	
34	23	SLRT03	Sydney	A	2003	NSW DoT	PTvPT	PT	PT	0.54	0.68	0.61	6.5	4.0	6.7	Value of wait time reported. Converted to SI assuming wait = half headway.
35	26	DND05	Melb	A	2005	VTIDpt	RvR	Rail	Rail	0.99	0.89	1.00	nk	nk	nk	Departure time difference rather than SI. No adjustment made
36	27	SRTC06	Sydney	A	2005	RailCorp	RvR	Rail	Rail	0.46			7.87			Value of platform wait halved to equate to SI
37	28	STM06	Sydney	A	2006	BTS Syd	RPMM	Rail	Rail				1.62		nk	Value of first wait. Estimates by trip purpose which were trip weighted. Large differences by purpose.
38	28	STM06	Sydney	A	2006	BTS Syd	RPMM	Rail	Bus				0.80		nk	Approx t value
39	32	SMet11	Sydney	A	2011	ITS Syd	MM	PT	All	0.26				7.5		Commuter valuation. Non-linear specification based on squared frequency of service. Value estimated at 15 min frequency
40	33	SRVoT12	Sydney	A	2011	DEL	RvR	Rail	Rail	0.20	0.17	0.18	9.3	8.5	15.5	Survey estimated displacement (travelling earlier/later than desired) so waiting excluded. Values converted to SI (/4) are low. Not included in analysis
41	34	NZPS12	WTN	N	2012	DEL	RvR	Rail	Rail			0.27			2.3	Pilot survey results
42	34	NZPS12	WTN	N	2012	DEL	BvB	Bus	Bus			0.70			4.0	

Appendix U: Review of in-vehicle time, service interval and mode constants

Table U.3 Value of alternative specific constants/IVT

Reference		Study	Location	NZ/A	Year	For	By	Study	Mode	Mkt	Trip purp	IVT mins	ASC minutes						Rt/Bt	Comment
N	V												B-R	B-R*	B-L	B-TW	R-TW	B-F		
1	1	WR90	WTN	N	1990	NZRail	SDG	MM	Rail	All	All	40	20	20						Rail access time - mainly walk. Weighted Av (t stat) No car av 2.7; Car Av 2.5
2	2	WQ91	WTN	N	1991	WRC	SDG	PT v PT	PT	All	All	40	1.1	1						Std train v std bus; greater variation in quality values
3	3	SL95B	Sydney	A	1995	NSW DoT	BAH/PC	LvBvRvW	PT	B,W	All	20	0.2	0	3.5					PT v PT v walk SP, All observation estimate
3	4	SL95B	Sydney	A	1995	NSW DoT	BAH/PC	LvB	Bus	Bus	All	20			7.5					Glebe SP
4	5	PC96	Sydney	A	1996	NSW DoT	RPPK	PT v PT	PT	B,R	All	30	8.2	8	8.6					Wghtd av (t stat) of bus and rail estimates
4	6	PC96	Sydney	A	1996	NSW DoT	RPPK	PT v PT	PT	Car	All	30	6.4	6	0.8					
4	7	PC96	Sydney	A	1996	NSW DoT	RPPK	PT v Car	PT	B,R	All	30	-0.1	0						
4	8	PC96	Sydney	A	1996	NSW DoT	RPPK	PT v Car	PT	Car	All	30	6.1	6						
5	9	STM96	Sydney	A	1996	NSW TDC	Hague	RPMM	All	All	Work	30	-7	2					0.69	ASC favours bus but counter-acted by time multiplier favour-ing rail. Watershed = 10 mins
6	10	LivTW98	Sydney	A	1998	NSW DoT	PPK	PT v PT	Bus	B,R	All	30				6.0				Av of every 30 mins & hourly (versus every 15 mins). Approx T value
6	11	LivTW98	Sydney	A	1998	NSW DoT	PPK	PT v PT	Bus	Car	All	30				5.9	3.6			
7	12	BSG00	Brisbane	A	2000	Ove Arup	PCIE	PT v PT	B,R	All	Work	30	14	14						Longer distance services. Response weighted averaged of car and PT response. Peak = commuter off-pk = non commuter
7	13	BSG00	Brisbane	A	2000	Ove Arup	PCIE	PT v PT	B,R	All	Other	80	39	39						Walk and wait valuation
8	14	SFry01	Sydney	A	2001	SydFerry	BAH/PCIE	FvB	F&B	Ferry	Peak	30							18	
8	15	SFry01	Sydney	A	2001	SydFerry	BAH/PCIE	FvB	F&B	Ferry	Off-Pk	30							32	
8	16	SFry01	Sydney	A	2001	SydFerry	BAH/PCIE	FvC	F&B	Bus	All	30							-3	