

Table 3.15 Main Mode Choice Models

	Long Trip				Short Trip					
	Business		Other		Business		Commuter		Other	
	Coeff.	T-stat	Coeff.	T-stat	Coeff.	T-stat	Coeff.	T-stat	Coeff.	T-stat
Observations	2,918		8,075		326		564		852	
Final log-likelihood	-1,969		-3,933		-295		-445		-744	
Rho-squared(0)	0.389		0.31		0.175		0.281		0.205	
Rho-squared(cons)	0.163		0.155		0.123		0.159		0.117	
Main Mode Characteristics										
<i>Constants</i>										
Car (base)										
Air	-1.645	-4.7	0.6898	2.8						
Conventional rail	-0.387	-0.9	0.6149	2.6	-0.268	-0.5	4.232	2.6	-	-1.4
									0.3847	
High-speed rail	-0.3503	-1.1	1.434	7	-1.557	-2.8	4.048	2.5	0.5041	1.7
<i>Level of Service</i>										
Cost (\$)	-0.01626	-12.8	-0.035	-18.5	-0.109	-5.4	-0.148	-11.3	-0.109	-8.2
In-vehicle time (min)	-0.016	-11.1	-0.011	-14.2	-0.5	constrained	-0.025	constrained	-0.014	-5.2
Service headway (min)	-0.003	-3.7	-0.003	-3.5	-0.006	-2.5	-	-2.4	-0.009	-5.5
							0.0023			
Reliability (% on time)	0.001	0.3	0.005	1.9	0.023	1.8	0.006	0.6	0.004	0.6
Implied Value of Time IVT (\$/hour)	\$57.71		\$18.33		\$27.60		\$10.12		\$7.93	
Ratio Frequency/IVT	0.21		0.24		0.12		0.1		0.66	
Trip Characteristics										
<i>Travel in a Group</i>										
Car	0.8492	4.2	1.417	9.1						
Air	-0.3375	-2.7	-0.5061	-3.7						
Household Characteristics										
<i>Household Size</i>										
Car	0.0704	0.9	0.225	4.9			0.655	2		
<i>Income</i>										
High – car					-1.211	-2.3	-1.247	-1.8		
High – air	1.018	4.5								
High – conventional rail	0.5237	1.2								
High – high-speed rail	0.9807	4.8								
<i>Fewer Cars than Workers</i>										
Car	-0.7696	-2.4	-0.4354	-2.8	-0.7873	-0.8	-2	-1.5		
Nesting and scaling										
Nest – air, rail, high-speed rail	0.8514	8.8	0.7426	13	0.5159	2.7	0.5892	3.4	0.6855	6.1
Access mode choice logsum	0.115	3.1	0.2134	3.8	0.4628	1.9	0.33	1.5	0.3148	3.5
Egress mode choice logsum	0.1561	3.8	0.3974	7.1	0.4628	constrained	0.33	constrained	0.3148	3.5

Table 3.15. Main Mode Choice Models

Variable	Acronym	Definition	Coefficient / Constant Applied for Mode				Long Trip				Business		Short Trip		Recreation / Other	
			Car	Air	Conv. Rail	High Speed Rail	Business / Commute		Recreation / Other		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
							Coefficient	t-stat	Coefficient	t-stat						
<i>Level of Service Coefficients</i>																
1	cost	Cost (\$)	x	x	x	x	-0.017	-12.8	-0.035	-18.5	-0.109	Constr	-0.148	-11.3	-0.108	-8.1
2	time	In-vehicle time (minutes)	x	x	x	x	-0.018	Constr	-0.011	-14.2	-0.050	Constr	-0.025	Constr	-0.014	-5.2
3	reli	Reliability (Percent on time)	x	x	x	x	0.023	Constr	0.005	1.9	0.023	1.8	0.007	0.7	0.004	0.7
4	freq	Service headway (minutes)		x	x	x	-0.179	-191.0	-0.011	-14.7	-0.050	-18.1	-0.025	-12.7	-0.014	-8.4
5	accls	Access mode choice logsum					0.136	3.4	0.204	3.7	0.463	Constr	0.330	Constr	0.303	3.4
6	egrls	Egress mode choice logsum					0.171	3.9	0.399	7.1			0.330	Constr		
7	accls<-5	Access mode choice logsum less than -5? (0/1)														
8	egrls<-5	Egress mode choice logsum less than -5? (0/1)														
9	freq>60	Service headway greater than 60 minutes? (0/1)														
10	reli>90	Reliability greater than 90 percent? (0/1)														
<i>Constants</i>																
104	c-group	Traveling in a group? (0/1)	x				1.086	4.6	1.430	9.1						
105	c-nocars	Zero car household? (0/1)	x													
106	c-carslt2	Fewer than 2 cars for household size greater than 1? (0/1)	x						-0.308	-2.3	-1.114	-1.2	-1.824	-1.3	-0.728	-2.3
107	c-hhsize	Household size	x				0.182	1.2	0.296	4.4			0.877	1.7		
108	c-hiinc	High income household? (0/1)	x								-1.232	-2.3	-1.180	-1.6		
200	a-const	Mode constant		x			-10.269	Constr	-4.683	Constr						
207	a-loinc	Low income household? (0/1)		x												
208	a-hiinc	High income household? (0/1)		x			1.180	4.6								
209	a-msinc	Missing income household? (0/1) (for model estimation only)		x												
210	a-group	Traveling in a group? (0/1)		x			-0.356	-2.8	-0.505	-3.7						
211	{lax-sfo}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
212	{sfo-lax}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
213	{lax-oak}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
214	{oak-lax}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
215	{lax-sjc}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
216	{sjc-lax}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
217	{lax-sac}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
218	{sac-lax}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
221	{bur-sfo}	Airport interchange served? (0/1)		x			4.151	Constr	4.151	Constr						
222	{sfo-bur}	Airport interchange served? (0/1)		x			5.363	Constr	5.363	Constr						
223	{bur-oak}	Airport interchange served? (0/1)		x			2.032	Constr	2.032	Constr						
224	{oak-bur}	Airport interchange served? (0/1)		x			4.145	Constr	4.145	Constr						
225	{bur-sjc}	Airport interchange served? (0/1)		x			3.757	Constr	3.757	Constr						
226	{sjc-bur}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
227	{bur-sac}	Airport interchange served? (0/1)		x			5.602	Constr	5.602	Constr						
228	{sac-bur}	Airport interchange served? (0/1)		x			1.421	Constr	1.421	Constr						
231	{ont-sfo}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
232	{sfo-ont}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
233	{ont-oak}	Airport interchange served? (0/1)		x			2.233	Constr	2.233	Constr						
234	{oak-ont}	Airport interchange served? (0/1)		x			2.269	Constr	2.269	Constr						
235	{ont-sjc}	Airport interchange served? (0/1)		x			3.263	Constr	3.263	Constr						
236	{sjc-ont}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
237	{ont-sac}	Airport interchange served? (0/1)		x			5.907	Constr	5.907	Constr						
238	{sac-ont}	Airport interchange served? (0/1)		x			3.787	Constr	3.787	Constr						
241	{sna-sfo}	Airport interchange served? (0/1)		x			4.652	Constr	4.652	Constr						
242	{sfo-sna}	Airport interchange served? (0/1)		x			2.409	Constr	2.409	Constr						
243	{sna-oak}	Airport interchange served? (0/1)		x			-0.231	Constr	-0.231	Constr						
244	{oak-sna}	Airport interchange served? (0/1)		x			-2.852	Constr	-2.852	Constr						
245	{sna-sjc}	Airport interchange served? (0/1)		x			4.348	Constr	4.348	Constr						
246	{sjc-sna}	Airport interchange served? (0/1)		x			2.963	Constr	2.963	Constr						
247	{sna-sac}	Airport interchange served? (0/1)		x			3.571	Constr	3.571	Constr						
248	{sac-sna}	Airport interchange served? (0/1)		x			-1.996	Constr	-1.996	Constr						
251	{san-sfo}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
252	{sfo-san}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
253	{san-oak}	Airport interchange served? (0/1)		x			1.704	Constr	1.704	Constr						
254	{oak-san}	Airport interchange served? (0/1)		x			1.952	Constr	1.952	Constr						
255	{san-sjc}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
256	{sjc-san}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
257	{san-sac}	Airport interchange served? (0/1)		x			5.000	Constr	5.000	Constr						
258	{sac-san}	Airport interchange served? (0/1)		x			5.686	Constr	5.686	Constr						
300	h-const	Mode constant				x	-6.757	Constr	-0.713	Constr	-7.530	Constr	-6.964	Constr	-5.685	Constr
307	h-loinc	Low income household? (0/1)				x										
308	h-hiinc	High income household? (0/1)				x	1.147	4.8								
309	h-msinc	Missing income household? (0/1) (for model estimation only)				x										
400	r-const	Mode constant			x		-4.620	Constr	1.272	Constr	-6.232	Constr	-7.126	Constr	-5.541	Constr
407	r-loinc	Low income household? (0/1)			x											
408	r-hiinc	High income household? (0/1)			x		0.613	1.4								
409	r-msinc	Missing income household? (0/1) (for model estimation only)			x											
99	Theta0099	Nesting coefficient		x	x	x	0.692	10.4	0.738	13.0	0.516	Constr	0.420	3.9	0.689	6.1
Implied Value of Time							\$63.64		\$18.45		\$27.60		\$10.12		\$7.95	

Memorandum

TO: Nick Brand
FROM: George Mazur
DATE: January 29, 2010
RE: Final Coefficients and Constants in HSR Ridership & Revenue Model

The seven (7) attached tables provide the final coefficients and constants in the high-speed rail (HSR) ridership and revenue model, which was developed by Cambridge Systematics under contract to the Metropolitan Transportation Commission (MTC). These tables supersede information presented in the Task 5a report (*Interregional Model System Development*), dated August 2006.

The Task 5a report listed the model coefficients and constants as they existed after the preliminary estimation and calibration effort. As is normally the case, additional calibration and validation efforts led to changes in model structure, variables, and the values of coefficients and constants. These changes continued until the model structure was finalized in April 2007. There have been no changes to these model elements since April 2007. The client, MTC, elected not to update the Task 5a report nor to include the final coefficients and constants in the final project report.