Appendix K

Core and Mueller

GDP and per Capita Income Spreadsheet

User Information

Methodology for Determining the Economic Development Impacts of Transit Projects
Project TCRP H-39
Spreadsheet Tool Documentation (May 29, 2012)

INTRODUCTION

This spreadsheet is used to estimate the agglomeration-related productivity impacts of proposed rail projects. It is based on analysis that is presented in detail in the TCRP H-39 Final Report.

The spreadsheet contains information about existing conditions in US metropolitan areas, along with information about the existing rail and bus systems, as of 2008 and 2009. User inputs are combined with this information to estimate the productivity benefits associated with proposed new rail investments in that metropolitan area.

HOW TO USE

On the next worksheet, enter four pieces of information in the four cells shaded light orange. The terms below are defined as footnotes on the next sheet, for users unfamiliar with them.

- Metropolitan area (MSA) name (cell C10) - with drop-down menu of official U.S. Census MSA names, if using Excel 2010 (see below if using a previous version of Excel).
- New proposed track mileage (cell C11)
- New proposed annual train revenue miles (cell C12)
- New proposed rail seat capacity (cell C13)

The green-highlighted cells to the right display a range of estimates of agglomeration-related productivity impacts based on the user inputs. The estimates are from the regression models presented in the TCRP H-39 Final Report.

There is a large range of possible economic benefits for any given project in any given metropolitan area. This reflects the inherent uncertainty in predicting future impacts.

Rows 33 to 55 show the technical details of the model outputs and are not needed for most users.

NOTES ON INTERPRETATION

The best use of this tool is to compare projects proposed by different agencies in different metropolitan areas in the US. We do not recommend adding the estimates to existing quantified estimates (e.g., of travel time reductions). The estimates are better used to compare projects to each other.

The spreadsheet cannot be used to discriminate among different proposed rail investments with the same projected track mileage, seat capacity and revenue miles in the same city. This is because the small subsample of 34 cities with rail in the US limited the complexity of data analysis.

Regardless of project characteristics, metropolitan areas with relatively high wages, large populations, high employment density, and existing rail networks will have higher estimated agglomeration-productivity benefits than those in other metropolitan areas. This reflects findings from our analysis.

OTHER IMPORTANT USER NOTES

This spreadsheet tool does not currently enable calculation of agglomeration impacts for MSAs that are partially or wholly in four states: Connecticut, Massachusetts, New Hampshire, and North Carolina. The Census Bureau does not provide block-level employment data through the Longitudinal Employer-Household Dynamics data set for those states, so they cannot be included in the estimates.

The spreadsheet works best in Excel 2010. In previous versions of Excel, there is no drop-down list for the user to select an MSA in cell C10, and instead the user must correctly type the exact name of the MSA according to the Census bureau. If you are not using Excel 2010, you can go to the "MSAdata" sheet, find and copy the correct name of the MSA, and paste that into cell C9.

Data Entry and Outputs

TCRP H-39 - SPREADSHEET TOOL - ESTIMATED AGGLOMERATION-RELATED PRODUCTIVITY IMPACTS OF TRANSIT INVESTMENTS
May 29, 2012 - FINAL VERSION

INPUT AND REFERENCE PANEL

	Key to shading	
	user data entry	
	reference	
	main output values	
MSA name **[drop-down list in Excel 2010]**	Austin-Round Rock, TX	
New proposed track mileage[1]	5.5	miles
New proposed annual train revenue miles[2]	11	revenue miles per year
New proposed rail seat capacity[3]	1980	seats
Population	1,654,100	
Workers	1,064,064	
Wage (average payroll)	$44,621	
Gross payroll (millions)	$47,480	
GDP per capita	$41,792	
Gross GDP (millions)	$69,128	
Base track miles	0	
Central city employment density	2,328	
Sq mi of urbanized area	424	
Sq mi of metropolitan area	4,224	

OUTPUT - ESTIMATED RANGE OF PRODUCTIVITY IMPACTS (yearly)

Wages		GDP		Combined GDP-Wage Range	
Min	Max	Min	Max	Min	Max
$4,126	$303,871,162	$9,901	$747,859,032	$4,126	$747,859,032
Wages per worker		**GDP per capita**		**Median Impact**	
$0.00	$285.58	$0.01	$452.12	$259,284,029	
Median Impact		**Median Impact**			
$224,178,162		$498,327,314			

Notes
1. A measure of the route path over a rail facility without regard to the number of rail tracks existing in the right-of-way (in miles)
2. The number of additional miles traveled by new or existing trains while in revenue service
3. The number of physical seats installed on any newly acquired vehicles

PRODUCTIVITY IMPACT ESTIMATES - INCLUDING INTERMEDIATE STEPS

	Transit → agg coeff, w/NYC	Transit → agg coeff, w/oNYC	Base value agg measure	Change in agg measure	Percent change	Capped % change	Agg → wage elasticity	Net wage multiplier	Net wage effect	Agg → GDP elasticity	Net GDP multiplier	Net GDP effect
Track miles → Central city employment density [OLS]	1.806	0.556	2,328	9.93	0.43%	0.43%	0.0554	0.000236	$ 11,223,597	0.152	0.000649	$ 44,834,109
Track miles → Central city employment density [IV]	5.983	6.483										
Rail revenue miles → Central city employment density [OLS]	0.0000503	0.0000397	2,328	0.00	0.00%	0.00%	0.0554	0.000000	$ 625	0.152	0.000000	$ 2,497
Rail revenue miles → Central city employment density [IV]	0.0000831	0.000167										
Rail seat cap / capita → Central city employment density [OLS]	41410.0	26945.4	2,328	49.57	2.13%	2.13%	0.0554	0.001180	$ 56,009,320	0.152	0.003237	$ 223,736,463
Rail seat cap / capita → Central city employment density [IV]	129861.3	88230.2										

Track miles / MSA area → Central city employment density [OLS]	9931.3	5039.5	2,328	12.93	0.56%	0.56%	0.0554	0.000308	$ 14,611,489	0.152	0.000844	$ 58,367,479
Track miles / MSA area → Central city employment density [IV]	46120.0	52554.7										
Track mile/UZA area → Population [OLS]	22718912.2	15854133.2	1,654,100	205,594	12.43%	12.43%	0.0420	0.005220	$ 247,861,842	0.0610	0.007582	$ 524,122,569
Track mile/UZA area → Population [IV]	50652398.2	41952921.7										
Track mile/capita → Population [OLS]	7.16411e+10	5.27010e+10	1,654,100	175,235	10.59%	10.59%	0.0420	0.004449	$ 211,260,619	0.0610	0.006462	$ 446,726,520
Track mile/capita → Population [IV]	1.92112e+11	1.10493e+11										
Rail revenue miles → Population [OLS]	0.264	0.377	1,654,100	3	0.00%	0.00%	0.0420	0.000000	$ 3,501	0.0610	0.000000	$ 7,403
Rail revenue miles → Population [IV]	0.287	0.479										

AGGLOMERATION-TO-PRODUCTIVITY COEFFICIENTS

Dep var	*Indep var*	*OLS coeff*	*IV coeff*	*Notes*
Average wage (logged)	Central city employment density (logged)	0.0554	0.114	2-year lags
GDP per capita (logged)	Central city employment density (logged)	0.152	0.135	2-year lags
Average wage (logged)	Population (logged)	0.0420	0.0344	No lag
GDP per capita (logged)	Population (logged)	0.0610	0.0633	No lag

MSA Data

cbsa_code	name	ppw00	emp08	population	gdppc	GDP in $	total GDP	uzasqm	lnwage	lngdppc00	lneden_pcity	lnhc	lnpop	lnfwypc	lnaptapc2	eden_UZA	eden_pcity	raildum	apta_cleaned	freeart	population
10180	Abilene, TX	30197.81	101226	159059	0.0276375	27637.5	$4,395,993,113	53.69609	10.31553	-3.58858	6.831068	-1.70672	11.97703	0.002094	0	842.1469	926.1793	0	0	333.4406	159059
10420	Akron, OH	38704.77	424392	699954	0.0356466	35646.6	$24,950,980,256	336.7755	10.56372	-3.334101	7.453256	-1.42125	13.45877	0.000635	0	726.9234	1725.472	0	0	444.5235	699954
10500	Albany, GA	29913.37	82255	164488	0.0224819	22481.9	$3,698,002,767	73.02319	10.30606	-3.795045	6.629928	-1.92733	12.01059	0.002308	0	553.0982	757.4273	0	0	380.1183	164488
10580	Albany-Schenectady-Troy, NY	39400.06	554009	854301	0.0365422	36542.2	$31,218,038,002	339.4524	10.58152	-3.309289	8.200086	-1.22944	13.65804	0.001062	0	1007.62	3641.263	0	0	907.3066	854301
10740	Albuquerque, NM	35760.02	512994	846582	0.0339483	33948.3	$28,740,019,711	280.5144	10.48459	-3.382917	7.658737	-1.31676	13.64896	0.000878	4.96E-05	1153.082	2119.08	1	42	743.6896	846582
10780	Alexandria, LA	30911.47	85873	153451	0.0266339	26633.9	$4,086,998,589	58.59414	10.33888	-3.62557	7.125393	-1.87774	11.94114	0.002131	0	743.5214	1243.137	0	0	327.3557	153451
10900	Allentown-Bethlehem-Easton, PA-NJ	41078.98	434311	811669	0.0333153	33315.3	$27,040,996,236	296.3094	10.62325	-3.401738	7.754556	-1.47972	13.60685	0.000738	0	791.8681	2332.174	0	0	599.2046	811669
11020	Altoona, PA	30581.5	75556	125923	0.0292719	29271.9	$3,686,005,464	44.76262	10.32815	-3.531129	7.811893	-1.90952	11.74343	0.001186	0	1062.762	2469.802	0	0	149.4195	125923
11100	Amarillo, TX	34160.63	158038	243682	0.0352262	35226.2	$8,583,990,868	85.36008	10.43883	-3.345964	7.036788	-1.62346	12.40362	0.001504	0	1006.466	1137.727	0	0	366.8537	243682
11180	Ames, IA	30557.7	57218	86219	0.0305037	30503.7	$2,629,998,510	18.30555	10.32737	-3.489907	7.345252	-1.15752	11.36465	0.001435	0	1409.955	1548.825	0	0	123.7714	86219
11260	Anchorage, AK	52499.14	236261	365790	0.060696	60696	$22,201,989,840	117.7265	10.86855	-2.801877	7.218347	-1.44433	12.80981	0.001068	0	1183.141	1364.231	0	0	390.9503	365790
11300	Anderson, IN	29337.73	53469	131253	0.0215081	21508.1	$2,823,002,649	64.37132	10.28663	-3.839327	6.380587	-1.91135	11.78488	0.0011	0	424.366	590.2737	0	0	144.4251	131253
11340	Anderson, SC	30150.93	90035	182937	0.0210619	21061.9	$3,853,000,800	104.2849	10.31397	-3.86029	7.24491	-1.82128	12.1169	0.0013	0	411.5649	1400.955	0	0	237.8937	182937
11460	Ann Arbor, MI	49048.7	240701	344767	0.0385159	38515.9	$13,279,011,295	111.2299	10.80057	-3.256685	8.153141	-0.91645	12.75062	0.000551	0	1425.237	3474.275	0	0	189.97	344767
11500	Anniston-Oxford, AL	29444.72	66665	113422	0.0248188	24818.8	$2,814,997,934	76.82863	10.29027	-3.696153	6.481809	-1.88216	11.63887	0.001155	0	461.3254	653.1514	0	0	131.1221	113422
11540	Appleton, WI	37370.67	151240	219780	0.0389253	38925.3	$8,555,002,434	60.02888	10.52864	-3.246111	7.83662	-1.55112	12.30038	0.001215	0	1434.426	2531.633	0	0	267.1003	219780
12020	Athens-Clarke County, GA	30693.91	115868	189926	0.0239883	23988.3	$4,556,001,866	78.60275	10.33182	-3.73019	6.805767	-1.388	12.15439	0.001168	0	704.9498	903.04	0	0	221.9378	189926
12060	Atlanta-Sandy Springs-Marietta, GA	44729.85	3235326	5385586	0.0453665	45366.5	$244,325,187,269	2119.193	10.7084	-3.092982	7.856838	-1.25438	15.49924	0.00048	9.19E-06	872.9243	2583.339	1	49.5	2584.201	5385586
12100	Atlantic City, NJ	35148.08	186480	270609	0.0449726	44972.6	$12,169,990,313	110.8735	10.46733	-3.101701	8.526545	-1.65353	12.50843	0.000844	0	998.1013	5046.977	0	0	228.3727	270609
12220	Auburn-Opelika, AL	26619.3	68995	133105	0.0191728	19172.8	$2,551,995,544	63.96428	10.18939	-3.954261	6.717185	-1.57244	11.79889	0.000949	0	528.2792	826.4879	0	0	126.3995	133105
12260	Augusta-Richmond County, GA-SC	34759.18	306044	534612	0.0251192	25119.2	$13,429,025,750	247.1086	10.4562	-3.684125	6.575908	-1.64249	13.1893	0.001395	0	614.7258	717.597	0	0	746.1378	534612
12420	Austin-Round Rock, TX	44621.43	1064064	1654100	0.0417919	41791.9	$69,127,981,790	424.1254	10.70597	-3.175052	7.752733	-1.16469	14.31877	0.000471	0	1507.151	2327.927	0	0	778.6232	1654100
12540	Bakersfield, CA	37829.41	370844	797145	0.0288342	28834.2	$22,985,038,359	191.8234	10.54084	-3.546195	7.40179	-2.10176	13.58879	0.001438	0	883.985	1638.916	0	0	1147.012	797145
12580	Baltimore-Towson, MD	44573.68	1711130	2677712	0.0406676	40667.6	$108,896,120,531	856.2657	10.7049	-3.202325	8.217829	-1.24158	14.80047	0.000449	0.00004	1159.382	3706.447	1	107	1201.423	2677712
12620	Bangor, ME	32412.02	95667	149268	0.0298054	29805.4	$4,448,992,447	41.9264	10.38628	-3.513064	7.379821	-1.63125	11.9135	0.002269	0	982.9606	1603.303	0	0	339.0922	149268
12940	Baton Rouge, LA	38533.21	483553	779340	0.0439128	43912.8	$34,223,001,552	312.0978	10.55928	-3.12555	7.504716	-1.59931	13.5662	0.000744	0	830.0538	1816.59	0	0	579.9609	779340
12980	Battle Creek, MI	39451.65	68614	136404	0.0306369	30636.9	$4,178,995,708	59.86588	10.58283	-3.485549	6.968655	-1.82652	11.82338	0.001535	0	568.4374	1062.792	0	0	209.5951	136404
13020	Bay City, MI	36092.14	50175	107597	0.0227609	22760.9	$2,449,004,557	43.67062	10.49383	-3.782713	7.165251	-1.92206	11.58615	0.001123	0	540.9587	1293.686	0	0	120.8866	107597
13140	Beaumont-Port Arthur, TX	41429.88	214052	377477	0.0361505	36150.5	$13,645,982,289	163.9835	10.63176	-3.320063	7.013472	-1.93558	12.84126	0.001096	0	737.0679	1111.507	0	0	413.9367	377477
13380	Bellingham, WA	35949.52	116172	196960	0.0327071	32707.1	$6,441,990,416	57.41743	10.48987	-3.420162	7.417055	-1.412	12.19076	0.000872	0	846.7813	1664.125	0	0	171.7598	196960
13460	Bend, OR	32447.22	101177	157730	0.0357319	35731.9	$5,635,992,587	43.72596	10.38737	-3.33171	7.224179	-1.38317	11.96864	0.001167	0	971.1165	1372.212	0	0	184.1202	157730
13740	Billings, MT	33995.19	110554	152320	0.0396074	39607.4	$6,032,999,168	52.76145	10.43397	-3.228739	7.220712	-1.34475	11.93374	0.002398	0	1082.04	1367.463	0	0	365.7606	152320
13780	Binghamton, NY	36418.5	140905	244870	0.0254747	25474.7	$6,237,989,789	80.47766	10.50283	-3.670068	7.956281	-1.48981	12.40848	0.001409	0	1088.041	2853.44	0	0	345.2657	244870
13820	Birmingham-Hoover, AL	40845.02	683998	1123146	0.0431306	43130.6	$48,441,960,868	449.4415	10.61754	-3.143522	7.266757	-1.4916	13.93164	0.00097	0	833.7236	1431.899	0	0	1089.978	1123146
13900	Bismarck, ND	34038.95	79821	104629	0.0355924	35592.4	$3,723,997,220	34.00799	10.43526	-3.335622	7.522352	-1.39734	11.55818	0.003584	0	1449.512	1848.911	0	0	375.6318	104629
13980	Blacksburg-Christiansburg-Radford, VA	32417.74	84568	158521	0.0235994	23599.4	$3,741,000,487	46.93519	10.38646	-3.746534	6.926602	-1.60911	11.97364	0.000598	0	871.9044	1019.025	0	0	94.73724	158521
14020	Bloomington, IN	31276.44	105177	184165	0.0246681	24668.1	$4,543,000,637	53.50242	10.35062	-3.702245	7.498836	-1.45926	12.12359	0.001148	0	993.9924	1805.938	0	0	211.6201	184165
14060	Bloomington-Normal, IL	40334.11	112403	165571	0.0452374	45237.4	$7,490,001,555	38.74287	10.60495	-3.095831	7.438487	-1.21748	12.01716	0.001502	0	1620.685	1700.175	0	0	248.8221	165571
14260	Boise City-Nampa, ID	36215.62	378922	598719	0.0354273	35427.3	$21,210,997,629	165.6517	10.49725	-3.340272	7.485958	-1.45126	13.30255	0.000983	0	1306.005	1782.831	0	0	588.575	598719
14500	Boulder, CO	48276.81	241178	300452	0.0524144	52414.4	$15,748,011,309	82.94524	10.78471	-2.948575	8.128229	-0.71527	12.61304	0.000761	0	1529.479	3388.794	0	0	228.6245	300452
14540	Bowling Green, KY	33016.59	75418	118588	0.032887	32887	$3,900,003,556	36.30591	10.40477	-3.414679	7.240713	-1.63714	11.68341	0.000964	0	1108.58	1395.088	0	0	114.3418	118588
14600	Bradenton-Sarasota-Venice, FL	33197.12	390477	685926	0.0316871	31687.1	$21,735,005,755	254.0143	10.41022	-3.451846	7.664971	-1.10756	13.43853	0.000473	0	780.3538	2132.331	0	0	324.5767	685926
14740	Bremerton-Silverdale, WA	33306.45	130123	239865	0.0201572	20157.2	$4,835,006,778	130.008	10.41351	-3.904195	7.318361	-1.42482	12.38783	0.00067	0	418.6203	1507.731	0	0	160.8195	239865
15180	Brownsville-Harlingen, TX	23255.38	170980	389164	0.0148369	14836.9	$5,773,987,352	123.6033	10.05429	-4.210636	7.076291	-2.10055	12.87176	0.000506	0	775.4808	1183.57	0	0	196.9995	389164
15260	Brunswick, GA	29383.15	59983	103020	0.0241312	24131.2	$2,485,996,224	45.03338	10.28818	-3.724248	7.323456	-1.62259	11.54268	0.002463	0	643.0785	1515.432	0	0	254.0201	103020
15380	Buffalo-Niagara Falls, NY	35849.88	658725	1124055	0.0334094	33409.4	$37,554,003,117	394.9897	10.4871	-3.398918	7.678472	-1.41351	13.93245	0.000753	5.69E-06	1111.158	2161.315	1	6.4	846.1335	1124055
15540	Burlington-South Burlington, VT	41717.44	153534	207028	0.0425353	42535.3	$8,805,998,088	68.36285	10.63867	-3.157421	7.709836	-1.1459	12.24061	0.001395	0	1094.937	2230.175	0	0	288.9482	207028
15940	Canton-Massillon, OH	32435.34	224848	408782	0.0290301	29030.1	$11,866,982,338	189.082	10.387	-3.539421	7.142399	-1.71629	12.92094	0.000881	0	734.8823	1264.458	0	0	360.2552	408782
15980	Cape Coral-Fort Myers, FL	32942.61	299691	588709	0.0311886	31188.6	$18,361,009,517	231.5379	10.40252	-3.467703	6.884664	-1.31959	13.28569	0.000329	0	670.171	977.1735	0	0	193.7764	588709
16020	Cape Girardeau-Jackson, MO-IL	29763.08	62905	93287	0.0283855	28385.5	$2,647,998,139	27.21549	10.30102	-3.561876	7.211333		11.44344	0.002291	0	1144.311	1354.696	0	0	213.9142	93287
16180	Carson City, NV	37841.3	42179	55274	0.0401093	40109.3	$2,217,001,448	20.23501	10.54116	-3.216148	7.054017	-1.646	10.92006	0.000513	0	1157.499	1157.499	0	0	28.36716	55274
16220	Casper, WY	39936.98	55922	73057	0.0829489	82948.9	$6,059,997,787	26.36549	10.59506	-2.48953	6.955341	-1.64266	11.199	0.003617	0	925.2627	1048.737	0	0	264.7586	73057
16300	Cedar Rapids, IA	39152	176099	254911	0.0450275	45027.5	$11,478,005,053	71.29517	10.57521	-3.100482	7.395322	-1.40687	12.44867	0.001476	0	1413.546	1628.349	0	0	376.6303	254911
16580	Champaign-Urbana, IL	32163.49	143142	223998	0.0272101	27210.1	$6,095,007,980	66.05064	10.37859	-3.604168	7.609862	-1.27497	12.31939	0.002009	0	1102.866	2018	0	0	450.4422	223998
16620	Charleston, WV	38115.96	182844	303331	0.0414102	41410.2	$12,560,997,376	115.5062	10.54839	-3.184228	7.682145	-1.67819	12.62258	0.001178	0	955.8538	2169.267	0	0	357.6291	303331
16700	Charleston-North Charleston, SC	34801.84	407920	647194	0.0325034	32503.4	$21,036,005,460	237.0366	10.45743	-3.426411	7.170134	-1.4654	13.3804	0.000794	0	890.5799	1300.019	0	0	513.838	647194

aptapc	frwyartpc	aptasqmiles	freeartsqmiles	railseatcap	MBseatcapy	railseatpc	MBseatpc	aptauza	freeartuza	lnppw11	lnppw21	lnppw22	lnppw23	lnppw31	lnppw42	lnppw44	lnppw48	lnppw51	lnppw52	lnppw53	lnppw54	lnppw55	lnppw56	lnppw61
0	0.0020963	0	0.1214615		124			0	6.209774	10.60361	11.01087	11.21026	10.75056	10.4448	10.62656	10.00403	10.49829	10.59536	10.55307	10.49686	10.63313		10.07893	9.884816
0	0.0006351	0	0.4911249					0	1.31994		10.89736		10.88639	10.68713	10.88004	10.02653	10.68204	10.92273	10.82374	10.29525	10.85308	11.36318	10.26954	10.17983
0	0.0023109	0	0.1965772		190			0	5.205446	10.90842			10.50558	10.78052	10.58621	9.891738	10.4423	10.46473	10.61813	10.12393	10.69201	11.44053	9.981977	
0	0.001062	0	0.3220393		669			0	2.672854	10.7557		11.46672	10.90171	10.90455	10.8501	10.04747	10.50927	11.00851	10.98266	10.41332	10.96557	11.00904	10.29144	10.41018
4.96E-05	0.0008785	0.0045221	0.0800716		279			0.14972	2.651164	9.882434	11.01734	10.89832	10.61102	10.78086	10.71364	10.08218	10.46292	10.62542	10.77706	10.32389	10.95212	10.84816	10.1907	10.36385
0	0.0021333	0	0.1663684		99			0	5.586833	10.61002			10.63669	10.53711	10.57293	10.01787	10.53701	10.45954	10.54089	10.14922	10.59366	11.08995	9.984643	9.825958
0	0.0007382	0	0.4105933		419			0	2.022226	11.6685	10.80171	11.51148	10.82669	10.79754	11.13648	10.00369	10.47009	10.80963	10.80819	10.37457	10.9704	11.58661	10.29455	10.31604
0	0.0011866	0	0.2841743		321			0	3.338042				10.49619	10.53485	10.54702	9.925796	10.56586	10.42767	10.66181	10.20655	10.47907	11.09885	9.730392	9.727178
0	0.0015055	0	0.1002196		53			0	4.297719		11.30687		10.56397	10.61222	10.66927	10.01705	10.54982	10.63343	10.68436	10.28883	10.83459	10.92714	9.972181	9.802069
0	0.0014355	0	0.2160586		769			0	6.761414	10.9167		10.54128	10.68612	10.7458	10.90815	9.903029	10.30872	10.23882	10.57667	10.22615	10.69315	10.81386	10.05531	9.739217
0	0.0010688	0	0.0148207		142			0	3.320836	11.14322	11.65007		11.38668	10.92588	10.83286	10.24617	11.0778	10.97925	11.03105	10.38999	11.12226	11.52901	10.73483	10.20153
0	0.0011004	0	0.3194329		214			0	2.243626				10.59333	10.6108	10.88142	9.931563	10.63408	10.57265	10.48778	9.950185	10.21986	11.44456	10.11113	9.650628
0	0.0013004	0	0.3313202					0	2.281191	10.27348	11.03516	11.12034	10.32654	10.5766	10.71572	9.948896	10.51535	10.59919	10.52885	10.15794	10.37411	11.27148	10.27059	
0	0.000551	0	0.2675863		814			0	1.707904				10.98722	10.95478	10.90945	10.02756	10.74112	11.08788	10.98307	10.55203	11.47494	12.26779	10.37554	10.1804
0	0.0011561	0	0.2154979					0	1.706683			10.93847	10.28965	10.64684	10.67089	9.902127	10.3716	10.44497	10.58342	10.11246	10.6559		9.978446	10.20795
0	0.0012153	0	0.2781773		355			0	4.44953	10.71613			10.99013	10.7459	10.77848	9.937515	10.63466	10.72643	10.83719	10.2268	10.70233	11.00055	10.33525	9.894134
0	0.0011685	0	0.215163		300			0	2.823538		10.45819		10.47668	10.55854	10.59868	9.937227	10.56311	10.47712	10.86313	10.27097	10.61113	11.22793	10.02901	10.40517
9.19E-06	0.0004798	0.0059094	0.3085065		1585			0.02336	1.219427	10.87469	10.86037	11.00045	10.72401	10.70659	11.02326	10.067	10.67246	11.21182	11.18677	10.83948	11.09832	11.51414	10.3518	10.55755
0	0.0008439	0	0.4070275					0	2.059759	10.2877		11.37001	10.92306	10.55133	10.71823	10.13323	10.24957	10.8199	10.8965	10.56912	11.08189		10.18431	10.23879
0	0.0009496	0	0.2076513		180			0	1.976095	10.14027	10.97953	11.2224	10.47826	10.59766	10.60944	9.870895	10.38382	10.36449	10.69136	10.0942	10.3267		9.675867	9.546151
0	0.0013957	0	0.2275607		192			0	3.019474	10.52626	10.59891		10.42308	10.78274	10.83478	9.967928	10.42945	10.56853	10.68752	10.26474	10.85387	10.9784	10.11414	10.08842
0	0.0004707	0	0.1843323					0	1.835832		11.11654	11.24625	10.69656	10.95575	11.17459	10.11652	10.54767	11.19139	11.09716	10.56489	11.16809	11.34089	10.23194	10.25593
0	0.0014389	0	0.1408939		188			0	5.979524	10.11932	11.36483		10.75273	10.74949	10.8158	10.07405	10.65088	10.56992	10.83101	10.41212	10.8688	11.30325	10.34141	10.20149
0.00004	0.0004487	0.0410111	0.4604833		655			0.12496	1.403096	10.44551	10.79501		10.79805	10.90916	10.93295	10.06825	10.61583	11.05948	11.24611	10.75425	11.17907	11.24531	10.43721	10.6678
0	0.0022717	0	0.0998585		259			0	8.087797	10.53644		10.9374	10.69244	10.59691	10.59097	10.00555	10.58016	10.67663	10.63929	10.21341	10.68496		10.01937	9.809755
0	0.0007442	0	0.1439132		606			0	1.858266	10.52302	11.01246	11.27124	10.84383	11.07538	10.80119	9.999735	10.67859	10.75124	10.88072	10.41743	10.97921	11.31819	10.24768	10.07789
0	0.0015366	0	0.2957391		256			0	3.501078		10.71381		10.70801	10.72027	10.7589	9.956442	10.5902	10.40116	10.93384	10.16364	10.61403		9.967602	
0	0.0011235	0	0.2721164		295			0	2.768146	10.30617	11.01024		10.77136	10.89902	10.53758	9.967343	10.37276	10.56684	10.54852	9.885017	10.4955	11.71029	10.34506	9.630869
0	0.0010966	0	0.192146		174			0	2.524257	11.16384	10.81819		10.90426	11.11565	10.84911	10.06199	10.64122	10.71933	10.69178	10.43779	11.14542	11.37884	10.14847	9.900931
0	0.0008721	0	0.0810366		483			0	2.991422	10.62712	10.72053		10.85978	10.78544	10.66793	10.09979	10.52427	10.64835	10.84163	10.17522	10.81759	11.12239	10.3553	10.02569
0	0.0011673	0	0.0610042		186			0	4.210776		10.33646	11.19357	10.46983	10.49701	10.71496	10.10979	10.78989	10.60892	10.80846	10.20797	10.72395	11.25487	10.19374	10.06383
0	0.0024013	0	0.0781015		196			0	6.932344	10.28648	11.48231	11.32227	10.57196	10.80684	10.70491	10.10447	10.3083	10.71884	10.7807	10.32148	10.73818	11.33777	9.98297	8.804875
0	0.00141	0	0.2817311		217			0	4.290205		10.56956		10.89527	10.71523	10.63547	9.92044	10.37301	10.57128	10.72569	10.18128	10.86617	10.9557	10.10687	9.744685
0	0.0009705	0	0.2057325		242			0	2.425183	10.73443	11.05627		10.70907	10.75322	10.90262	10.03307	10.59	10.90077	11.14725	10.49206	10.92783	11.35039	10.24842	10.09204
0	0.0035901	0	0.1055336		195			0	11.0454	10.81978	11.09101		10.7946	10.74043	10.65472	10.01726	10.45328	10.53559	10.6397	10.03433	10.63005	10.87014	10.0393	9.947383
0	0.0005976	0	0.1397521		341			0	2.018469			11.19807	10.31344	10.83857	10.77639	9.931478	10.39657	10.40793	10.90315	10.24591	10.83812		9.799752	10.40375
0	0.0011491	0	0.1601663		468			0	3.955336	9.337233	12.05327	10.79161	10.76515	10.66705	10.80241	9.859947	10.43968	10.69339	10.53668	10.18688	10.54662	11.73016	9.94048	9.951379
0	0.0015028	0	0.2102377		145			0	6.422398			11.30916	10.68667	10.76999	11.02372	9.929943	10.51484	10.79416	11.04208	10.30713	10.66892	10.90103	10.22243	9.737708
0	0.0009831	0	0.0499311		205			0	3.553087	10.39475	10.69794		10.47225	10.85923	10.81391	10.09884	10.36959	10.58768	10.70534	10.36444	10.82519	11.58548	10.13599	9.932849
0	0.0007609	0	0.3079283					0	2.75633	10.21793			10.70134	10.9712	11.38332	10.18015	10.30728	11.19993	11.07117	10.41188	11.22824	11.22482	10.30381	10.01541
0	0.0009642	0	0.1348634					0	3.149399		11.11772		10.54794	10.65004	10.64512	9.914152	10.41528	10.4625	10.70977	10.305	10.90619	11.06199	9.983297	9.954181
0	0.0004732	0	0.2472818		553			0	1.277789	9.758245	10.55231		10.54901	10.69533	10.75718	10.06091	10.43767	10.78431	10.98851	10.46003	10.78784	10.54073	10.21661	10.39403
0	0.0006705	0	0.4061369		583			0	1.236997	11.15127			10.69954	10.55221	10.64091	10.13042	10.56204	10.94406	10.75664	10.28334	10.8383		10.22479	10.22391
0	0.0005062	0	0.2174971		191			0	1.593804	9.996022			10.21349	10.34148	10.20957	9.866963	10.33112	10.24312	10.45442	9.880798	10.2273	10.80808	9.909027	9.9927
0	0.0024657	0	0.1953673		653			0	5.640707	10.51928			10.31189	10.87761	10.56545	10.03455	10.35254	10.39312	10.88081	10.23608	10.66689		10.11501	9.733848
5.69E-06	0.0007528	0.0040838	0.5399159		536			0.0162	2.142166	9.803667	11.10718	11.39555	10.91056	10.79694	10.82485	9.944764	10.44224	10.85858	10.85646	10.28011	10.79024	11.18114	10.25877	10.08451
0	0.0013957	0	0.2295554					0	4.226685	10.1778	11.1177		10.84604	10.8859	10.85496	10.06506	10.42524	10.74952	11.1891	10.43266	11.18147		9.987204	10.06404
0	0.0008813	0	0.3710875		279			0	1.905285	8.804875	10.85348	11.02395	10.71564	10.70645	10.70006	10.00121	10.42697	10.59101	10.611	10.17905	10.62393	11.0805	10.16056	9.817843
0	0.0003292	0	0.2411262		318			0	0.8369098	10.26715			10.54646	10.4504	10.68959	10.08415	10.29224	10.73997	10.85125	10.33183	10.83932	11.27355	10.18755	10.34883
0	0.0022931	0	0.148992					0	7.860016		10.35057		10.45074	10.61098	10.66486	9.911057	10.75777	10.66335	10.57468	10.20005	10.3764	10.40662	9.404687	9.888707
0	0.0005132	0	0.1978814					0	1.401885				10.54867	10.75207	10.8815	10.24469	10.32536	10.92233	10.79603	10.21649	10.9416	11.56587	10.33702	
0	0.003624	0	0.0495814		183			0	10.04186		11.23452		10.64077	10.85614	11.00049	10.13462	10.86973	10.49197	10.83022	10.73287	10.77822	10.90549	9.851752	
0	0.0014775	0	0.1874585		694			0	5.282691		10.93039		10.93234	11.00518	10.76862	10.03031	10.16462	10.70496	10.93916	10.99091	10.96842	11.15474	10.09425	10.19644
0	0.0020109	0	0.2342726		641			0	6.819649			11.21495	10.87923	10.5462	10.67174	9.92797	10.45643	10.65528	10.65236	10.40388	10.7306	11.14907	9.898827	9.545069
0	0.001179	0	0.1412357		229			0	3.096191	10.30444	11.29296	11.16194	10.83727	10.95697	10.79776	9.907413	10.69449	10.80484	10.77106	10.39857	10.79066	11.27111	10.27331	9.993776
0	0.0007939	0	0.19832		188			0	2.167758	10.81305	10.51807		10.52754	10.82052	10.83476	10.0327	10.51878	10.83778	10.85482	10.47526	11.0377	11.30508	10.00892	10.09067

lnppw62	lnppw71	lnppw72	lnppw81	lnppw99	railrevmiles	railrevmiles per rail mile	totrevmiles	cbsa_area	pcity_uza_landarea	pcity_uza_landarea_sqmi	cbsa_area_gross	pcitylandarea
10.36834	9.490804	9.418955	9.741195		0		422323	2745.237	122704203	47.37636	2757.702	47.37636
10.51342	9.770511	9.356152	10.03148					905.113	157908539	60.96883	924.3572	60.96883
10.50717	8.591301	9.2564	9.950934		0		532011	1933.684	115642526	44.64983	1957.7	44.64983
10.53411	9.812752	9.576674	10.32727	11.17605	0		7290739	2817.379	107065964	41.3384	2878.112	41.3384
10.64202	10.00964	9.551586	10.11405			0	5068244	9287.811	323797461	125.0189	9297.089	125.0189
10.49647	9.35435	9.354277	9.820256		0		520402	1967.656	67209329	25.94967	2026.31	25.94967
10.6803	9.890585	9.512428	10.03145	9.740969	0		2369621	1459.363	87814250	33.90527	1475.9	33.90527
10.57899	9.862281	9.377088	9.79389		0		445692	525.8023	25211932	9.734382	526.8638	9.734382
10.61178	9.642933	9.384178	9.930162		0		655128	3660.498	181304052	70.00188	3682.344	70.00189
10.58177		9.259781	10.0268	9.249561	0		1093276	572.8601	38867599	15.00686	573.6494	15.00686
10.80417	9.772847	10.025	10.33215	10.08581	0		2150344	26378.75	242094350	93.47315	27219.78	93.47316
10.46778	10.30699	9.300128	9.762874	9.472705	0		294900	452.1299	87601920	33.82329	452.9044	33.82329
10.51107	9.586796	9.29961	10.06789	9.392662				718.0176	45968670	17.7486	757.4148	17.7486
10.79072	9.884387	9.519421	10.20907		0		3302611	709.939	73836397	28.50839	722.4191	28.50839
10.419	9.779802	9.348869	9.902785					608.4614	106513845	41.12523	612.2868	41.12523
10.6568	9.375374	9.251754	10.01029		0		1025222	960.1803	45932910	17.7348	1041.622	17.7348
10.69879	10.01039	9.330572	9.874726	12.38422	0		771529	1031.487	142701164	55.09723	1035.063	55.09723
10.67446	10.33968	9.587604	10.21362	11.09338	4349928	87877.33333	4.04E+07	8376.488	554227795	213.9885	8481.081	213.9886
10.67203	10.01507	10.27467	10.14752					561.0743	28007614	10.8138	671.8272	10.8138
10.37201	9.625314	9.223344	9.69416		0		79549	608.7103	100360763	38.74951	615.8424	38.74951
10.64692	9.512801	9.329011	9.870472	9.498983	0		570128	3278.852	301549325	116.4288	3323.554	116.4289
10.66802	10.0446	9.641644	10.308	9.930268				4224.02	599291736	231.3878	4280.614	231.3878
10.64701	9.676012	9.526248	10.12081		0		3437792	8140.964	168345258	64.99847	8163.068	64.99847
10.68746	10.33237	9.641829	10.25875	10.23913		0		2609.048	246290294	95.09322	3105.023	95.09322
10.58913	9.906026	9.474902	9.914172		0		540855	3395.726	42916542	16.57017	3556.918	16.57017
10.42083	9.708631	9.440881	10.18036		0		2333836	4029.935	235017894	90.74091	4214.533	90.74092
10.60822	9.783663	9.438773	10.14052	9.769957	0		377440	708.7162	59622820	23.0205	718.353	23.0205
10.47963	9.912503	9.281812	9.864496		0		1023787	444.246	26340599	10.17016	630.7167	10.17016
10.43239	9.426879	9.389772	9.960202	9.222763	0		911153	2154.282	188770867	72.88484	2389.786	72.88484
10.57123	9.841147	9.613492	10.06593		0		1902962	2119.533	58265670	22.4965	2503.465	22.4965
10.65047	9.708571	9.69269	9.988379	10.54534	0		196682	3018.154	71394893	27.56572	3054.738	27.56572
10.65741	9.655741	9.508334	10.04698		0		582256	4683.145	100632553	38.85445	4711.288	38.85445
10.50401	9.817859	9.40161	9.904986		0		1834049	1225.515	25432061	9.819374	1238.395	9.819374
10.67915	9.828703	9.510798	10.05267		0		2791997	5298.034	364336948	140.6713	5369.771	140.6713
10.59623	9.456546	9.414054	10.05656		0		305000	3559.356	59613220	23.01679	3613.741	23.01679
10.59253	9.60547	9.336073	9.85507		0		710852	677.8947	85670828	33.07769	1089.491	33.07769
10.51072	9.534084	9.346081	10.07443		0		976332	1321.252	64274334	24.81646	1345.064	24.81646
10.58014	9.372578	9.416724	10.14456	9.300588	0		1083044	1183.527	94503502	36.48801	1186.27	36.48801
10.56396	9.608349	9.422729	10.06086		0		1375651	11787.73	227419072	87.80699	11833.05	87.807
10.66868	9.694409	9.626015	10.39014	10.45929				742.4601	52355482	20.21457	740.3667	20.21457
10.52513	9.809213	9.374393	9.912976					847.8342	68993325	26.63847	855.695	26.63847
10.5988	9.891308	9.623267	9.941076		0		3677745	1312.578	107066999	41.3388	1618.017	41.3388
10.62293	10.01086	9.621256	9.985748	9.528794	0		2375439	395.9738	43929429	16.96125	565.9251	16.96125
10.18008	9.741693	9.310287	9.720852	10.59037	0		791934	905.7567	180266483	69.60128	1276.46	69.60128
10.61104	9.660892	9.917124	9.930012		379439		1.02E+07	1300.218	23689503	9.146568	1606.381	9.146569
10.46232	10.79864	9.490876	9.96935	10.42066		0		1567.158	242288562	93.54813	2366.525	93.54814
10.62524	9.843115	9.672245	10.1419					1258.73	52461147	20.25536	1506.001	20.25536
10.4524	9.564423	9.344213	9.910315		0		2518231	970.8093	125085502	48.29578	979.4582	48.29578
10.70175	10.018	9.641709	10.00651	9.815826	0		3006028	803.6304	203157373	78.4395	1212.375	78.4395
10.54198	9.744394	9.30198	9.81454					1435.743	57613867	22.24484	1460.008	22.24484
10.80863	10.1532	9.592313	10.22756	10.43412				143.3544	52408427	20.23501	157.2452	20.23501
10.74668	9.700035	9.552444	10.23347		0		209197	5339.882	48987525	18.91419	5375.644	18.91419
10.4924	9.617515	9.353354	9.981144	9.828525	0		1041326	2009.14	116759893	45.08125	2019.998	45.08125
10.66077	9.598217	9.348808	9.969709	8.837665	0		3578700	1922.727	77196551	29.80576	1924.099	29.80576
10.57263	9.949743	9.423504	10.04857		0		2319541	2532.144	72664751	28.05602	2546.933	28.05602
10.70799	9.702517	9.594547	10.06335		0		2720358	2590.954	328802145	126.9512	3163.051	126.9512