

Toll Burden in the New York Metropolitan Region Social Equity and Measures of Burden

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Executive Summary of Toll Burden and Social Equity Estimates New York City Toll Bridges and Tunnels April 9, 2009

Researchers at The College of Staten Island (CSI) have had a research interest in road user fees for a number of years. As an island community with limited transportation options, the cost of bridge tolls is a significant burden on island residents and businesses. The City University of New York High Performance Computer Center, based at CSI has worked with the University Transportation Research Center – Region II of the United States Department of Transportation based at The City College of New York to estimate the impacts of road pricing in the New York Metropolitan Region as well as across the United States.

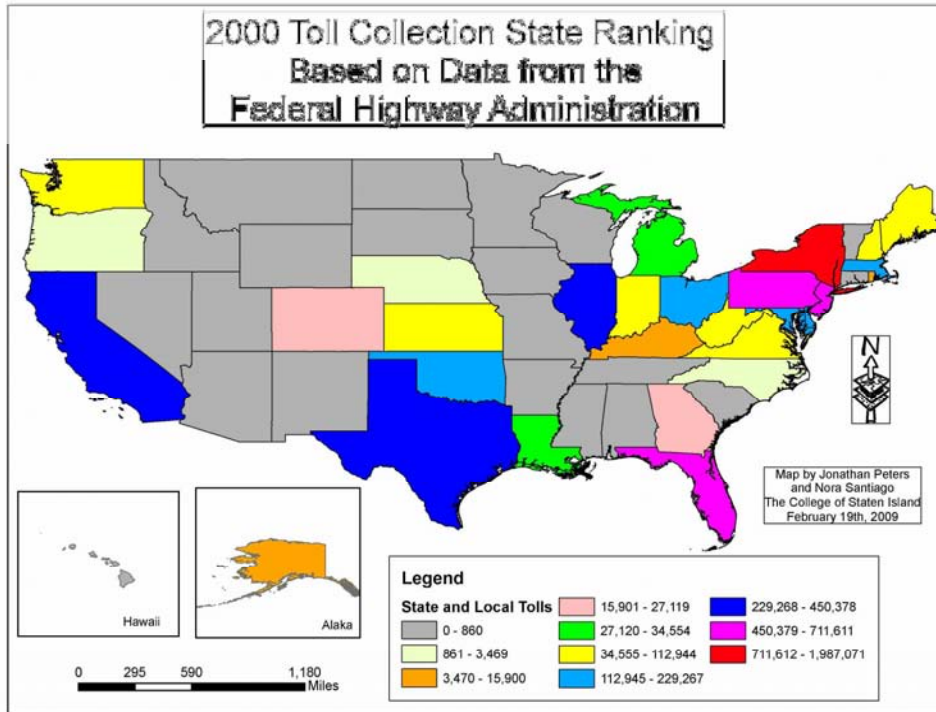
Toll roads and road pricing are of considerable interest at a national as well as a regional level. Most states in the United States face significant transportation funding needs that are not being met by existing revenue sources. Therefore, many states are examining toll systems and road pricing as an alternative source of revenue. As is illustrated in Table 1, New York leads the country in terms of road tolls. Most states utilize fuel and vehicle registration taxes as their major mechanisms to fund highway and road improvements. Northeastern States such as New York and New Jersey have much higher toll burdens than say for example a Western state such as Nevada.

Table 1: Major sources of highway-user revenues – Source – FHWA (2000)

	U.S.	NYS	NJ	NV
▶ Federal Fuel Taxes –	\$34.7B	\$1.4B	987M	206M
▶ State & Local Fuel & Other -	\$58.6B	\$2.2B	1,173M	438M
▶ Tolls –	\$ 6.6B	\$2.0B	711M	0.6M
▶ Total	\$99.9B	\$5.6B	2,872M	644M

Based upon information from the Federal Highway Administration, Map 1 illustrates the amount of tolls collected in each state.

Map 1: Tolls Collected by state (thousands of dollars)



The CSI Social Equity Research Group (CSI-SERG) has been involved in estimating the impacts of these road tolls and fees to more fully understand the costs of collection as well as the social impacts of road fees. Recent work from our research group has been incorporated into New York State Department of Transportation projects, research projects from the General Accountability Office (GAO) of the Federal Government, The New Jersey State Assembly, The Nevada State Legislature as well as The National Academies of Science.

Of particular interest to our research group is the concept of social equity – the idea that fairness in terms of costs and services provided are key considerations in transportation planning. This concept, mandated by Executive Order 12898 in 1994 as an extension of the Civil Rights Act of 1964, requires that regional planning agencies consider the impact of costs and benefits of transportation projects to assure that protected classes are not unduly hurt by transportation planning decisions

State Planning Organizations need to assure the Federal Government that they have analyzed needs of protected groups, included them in transportation decision making, have not over burdened them with costs and finally assure that protected groups are not denied the benefits of transportation. Traditionally, protected classes include minority populations, disabled individuals, senior citizens and low income populations

The CSI - SERG has examined the burden of existing tolling in the New York Metropolitan area based on a number of different data sources. The CSI -SERG is

actively engaged in additional data acquisition and analysis. This paper presents a basic overview of our findings to date.

First Basic Measures of Burden – Total Costs

New York State has a generally high toll burden as compared to national averages. On a per capita basis, NY State collects about \$105 per person in road tolls each year. This is over four times the National average of \$23.45 per person in road tolls. Based on our estimates, Staten Island has a toll burden that is almost 3 times the New York State average and over 12 times the National average! If we expect that Staten Island residents pay similar fees to other state residents for National and state fuel and other taxes, then the average Staten Island resident pays over \$480 per year in road user fees. This represents an annual average burden of almost \$2,000 per household. Table 2 provides an overview of the per capita costs of road fees in the United States, NY State and Staten Island.

Table 2: Highway User Revenue – Year 2000 (FHWA & Authors)

Revenue Source	US Per Capita	NYS Per Capita	Staten Island Per Capita
•Federal Fuel Taxes –	\$ 123.30	\$ 73.78	\$ 73.78
•State & Local Fuel & Other	\$ 208.23	\$ 115.93	\$ 115.93
•Tolls –	\$ 23.45	\$ 105.39	\$ 293.00
•Total	\$ 354.98	\$ 295.10	\$ 482.71

These burdens will also impact the business location decisions that firms will make and therefore have an impact on regional competitiveness as well as regional equity. Staten Island has a significant competitive disadvantage in terms of regional competitiveness due to the high cost of road tolls. In 2007, \$460,255,000 in tolls were collected on Staten Island and 1/3 of that total came directly from Staten Island residents. Roughly 6.3% of the Nations tolls are collected at the four toll plazas on Staten Island.

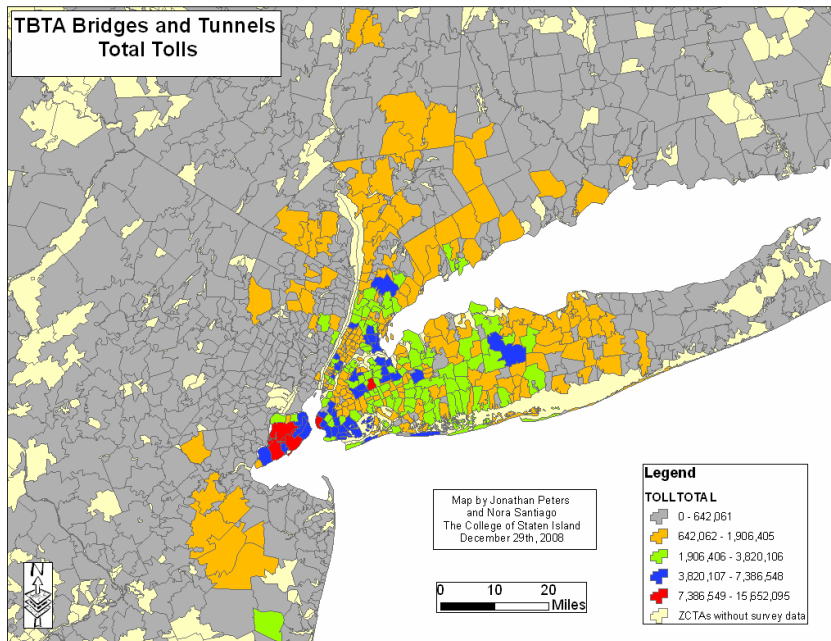
Second Measure: Social Equity Analysis

In the Fall of 2004, a member of the CSI team found a MTA Origin - Destination Survey in a NYC Garbage Can. The CSI-SERG & CUNY High Performance Computing Center submitted a Freedom of Information Act Request to MTA Bridges & Tunnels for this data. We received the raw data in Winter 2008 and processed it be able to estimate regional toll burden at the Zip Code level. This survey of 61,201 **private vehicles** crossing the MTA Bridges and Tunnels provide us with an opportunity to explore who pays road tolls in the region. These tolls represent about 14% of the Nation’s tolls. We performed significant data analysis at CUNY HPC by combining the survey data with MTA Financial Data and U.S. Census data.

The authors allocated the total private vehicle tolls that were reported by the MTA in their financial statements based upon the observed data from the MTA User Survey. This allows us to create a composite annual estimate of the total burden by Zip Code for each MTA Bridge/Tunnel facility. This data represents what we believe to be the finest publicly available low level detail data of toll burden in the United States. In addition, due to the inclusion of cash users as well as electronic toll tag users, this data set represents a valuable measure of the social burden of tolling in the United States. This information has been presented at the National Academies of Science to improve the understanding of road fee burdens.

Our most basic measure of social burden is the total amount of tolls paid by Zip Code. Map 2 presents a general overview of the burden by Zip code for all MTA toll facilities. Astounding as it may seem, there are 8 Zip Codes in the New York Metro region that have a total toll burden of over \$7,000,000 each. Twenty-four (24) Zip Codes in this region have a burden greater than \$5,000,000. Residents of any one of these 24 Zip Codes pay more tolls than the \$4,320,000 in tolls collected in the lowest 24 toll States. In addition, it is important to remember that 50% of the toll revenue collected at these facilities is used to subsidize mass transit.

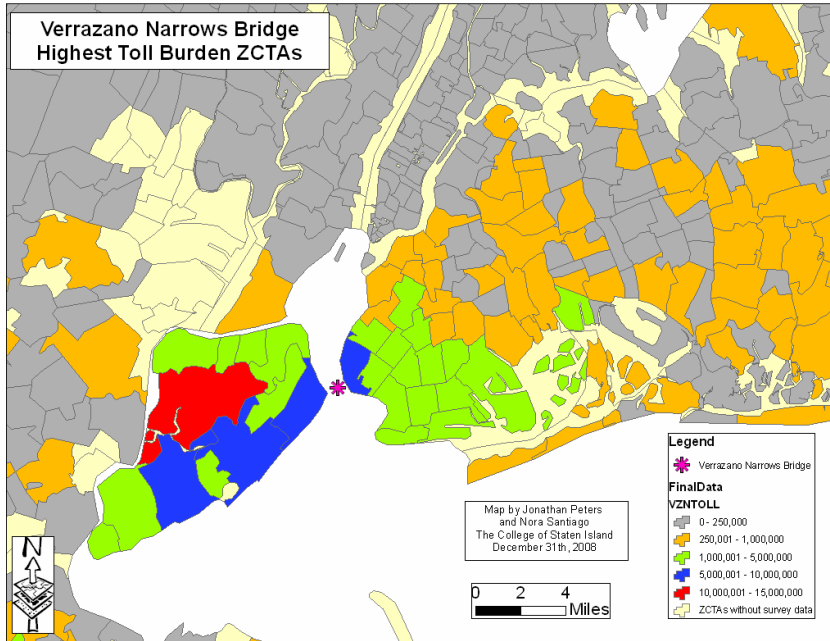
Map 2 – Total Tolls by Zip Code



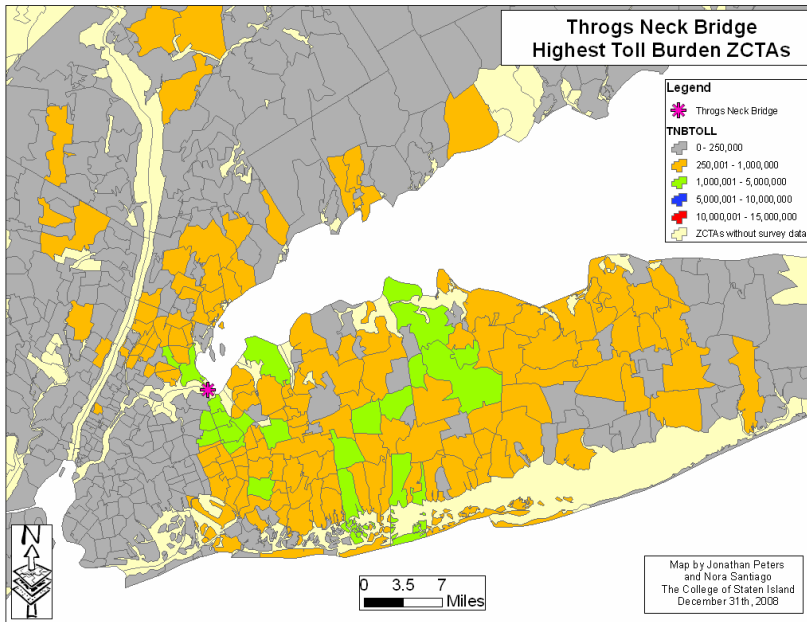
The authors identified a number of interesting results from this data. First, the vast bulk (80+%) of tolls on the MTA facilities are paid by people who live within 30 miles of the facility – most toll burden is local for private vehicle users. Second, the burden of tolls are related to the location of the facility and other alternative routes. There are radically different spatial patterns on different facilities: Map 3 provides the spatial pattern of the

Verrazano Narrows Bridge Users. Map 4 presents the spatial pattern of Throgs Neck Bridge users. Maps of each MTA facility are available from the author by request.

Map 3: Verrazano Narrows Bridge Users



Map 4: Throgs Neck Bridge Users

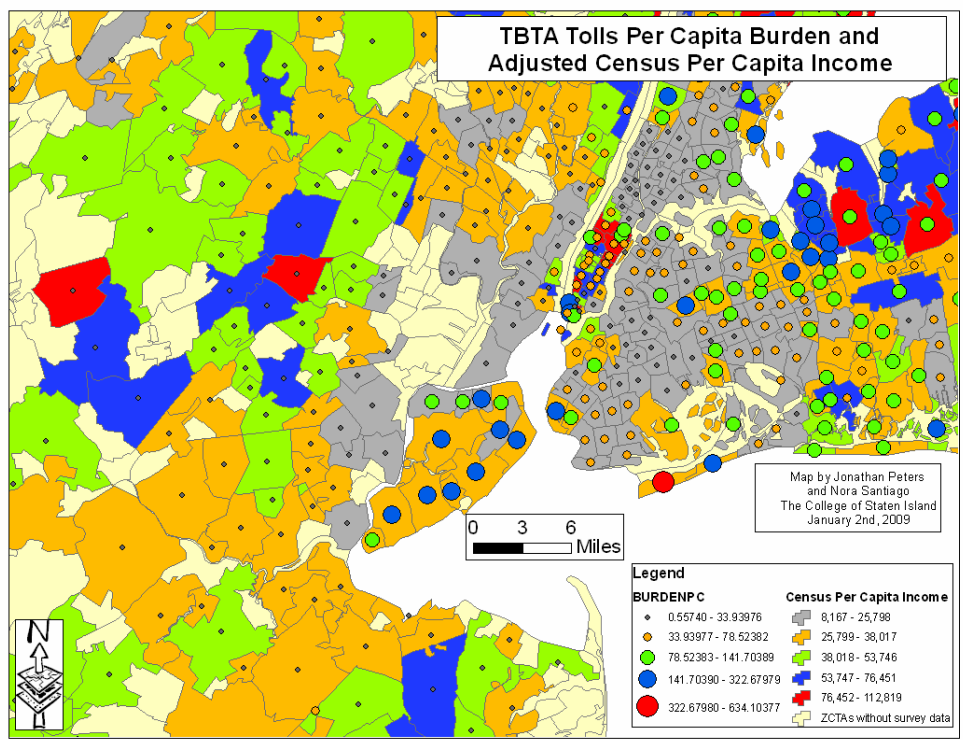


The authors also noted significant impacts in bridge use in terms of income if we controlled for the availability of free alternative routes. Bridges with good free

alternatives tend to have more high income users. The Henry Hudson Bridge and Queens Midtown Tunnel both had more than 27% of their users with \$200,000+ household income. In stark contrast, the monopoly corridor of the Verrazano Narrows Bridge, had 23% of the users reporting a household income of less than \$42,500 and only 9% made more than \$200,000. Full income data by facility is presented in the attached table.

Finally, the authors compared the burden of tolls by Zip Code and the Income Per Capita to examine the relationship of income and toll road costs. We found that income and toll burden are not strongly linked. Note the high burden per capita on Staten Island (moderate income areas) as compared to the lower per capita burden in Manhattan (high income areas). Some extremely high burden areas are moderate income. Map 5 provides both the Per Capita Income as well as the Toll Burden Per Capita

Map 5: Toll Burden Per Capita and Per Capita Income



Third Measure: Regional Equity - County Level Impacts

The authors summarized the data by county to examine the impacts of MTA tolls on each county in the region. For New York State, Queens County produced the most revenue for MTA Bridges and Tunnels with 161 Million dollars in tolls in 2004, with Nassau and Kings county in second and third place respectively. Staten Island (Richmond County) contributes the fourth highest level of tolls to the MTA system at 72.6 Million dollars a year in 2004. Table 3 provides ranking for New York counties by total toll burden.

Table 3: MTA Toll Burden by County – Ranked by Total Tolls (\$)

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State	County	Surveys	Tolls	Revenue	Avg Toll	Avg Income
NY	QUEENS	12037	51,257,325	\$ 160,988,816	\$ 2.85	73,028
NY	NASSAU	7906	32,348,258	\$ 116,127,385	\$ 3.58	100,484
NY	KINGS	5551	31,452,537	\$ 106,564,777	\$ 3.70	78,078
NY	RICHMOND	4970	32,848,346	\$ 72,654,370	\$ 2.76	78,356
NY	WESTCHESTER	6743	24,513,673	\$ 71,491,162	\$ 2.70	109,247
NY	NEW YORK	4811	21,039,884	\$ 65,449,214	\$ 2.98	119,134
NY	SUFFOLK	3877	17,158,349	\$ 63,727,494	\$ 3.72	95,199
NY	BRONX	3816	18,346,875	\$ 62,756,202	\$ 3.07	69,736
NY	ROCKLAND	679	2,765,777	\$ 9,614,908	\$ 3.40	94,083
NY	PUTNAM	440	1,665,073	\$ 5,267,733	\$ 2.96	97,608
NY	DUTCHESS	342	1,412,971	\$ 4,631,096	\$ 3.05	84,079
NY	ORANGE	279	1,243,996	\$ 4,385,181	\$ 3.41	89,964
NY	ULSTER	102	426,253	\$ 1,480,733	\$ 3.32	72,500
NY	SULLIVAN	47	256,959	\$ 975,083	\$ 3.67	78,138
NY	ALBANY	38	161,199	\$ 584,293	\$ 3.49	84,934
NY	SARATOGA	28	138,727	\$ 501,669	\$ 3.48	69,911
NY	DELAWARE	24	119,416	\$ 434,711	\$ 3.48	48,542
NY	COLUMBIA	35	130,180	\$ 419,153	\$ 3.07	63,143
NY	BROOME	15	102,899	\$ 402,649	\$ 3.80	57,667
NY	MONROE	18	108,693	\$ 402,249	\$ 3.64	102,222
NY	SCHENECTADY	25	106,245	\$ 390,979	\$ 3.56	89,400
NY	ONONDAGA	26	96,664	\$ 330,026	\$ 3.44	70,865
NY	RENSSELAER	23	86,127	\$ 282,685	\$ 2.98	83,152
NY	ONEIDA	12	71,070	\$ 282,514	\$ 3.88	60,000
NY	ERIE	11	60,733	\$ 247,413	\$ 4.09	80,000
NY	GREENE	15	61,892	\$ 212,078	\$ 3.53	56,333
NY	SCHOHARIE	10	42,747	\$ 170,835	\$ 3.65	56,750
NY	TOMPKINS	10	45,482	\$ 162,498	\$ 3.45	63,750
NY	WASHINGTON	8	32,243	\$ 135,031	\$ 4.00	79,688
NY	OTSEGO	9	35,409	\$ 124,459	\$ 3.50	75,000
NY	CLINTON	2	19,658	\$ 79,562	\$ 4.00	77,500
NY	CHENANGO	4	19,303	\$ 74,926	\$ 3.75	41,875
NY	JEFFERSON	4	17,746	\$ 63,618	\$ 3.63	91,875
NY	CHEMUNG	3	18,110	\$ 62,319	\$ 3.00	72,500
NY	HERKIMER	2	15,079	\$ 57,965	\$ 3.75	87,500
NY	NIAGARA	3	18,639	\$ 53,739	\$ 3.50	105,833
NY	WAYNE	1	7,933	\$ 49,837	\$ 8.00	62,500
NY	CORTLAND	2	11,243	\$ 40,450	\$ 3.00	27,500
NY	ESSEX	5	14,549	\$ 40,342	\$ 2.70	51,500
NY	LEWIS	1	9,873	\$ 40,094	\$ 4.00	42,500
NY	WARREN	3	11,538	\$ 37,636	\$ 3.50	104,167
NY	FULTON	3	7,966	\$ 29,458	\$ 3.50	51,667
NY	CHAUTAUQUA	3	10,302	\$ 23,958	\$ 2.17	170,833
NY	ONTARIO	2	5,311	\$ 19,639	\$ 3.50	112,500
NY	OSWEGO	2	5,311	\$ 19,639	\$ 3.50	30,000
NY	MADISON	1	2,655	\$ 9,819	\$ 3.50	87,500
NY	STEBEN	1	2,655	\$ 9,819	\$ 3.50	62,500
NY	TIOGA	1	2,655	\$ 9,819	\$ 3.50	42,500
NY	CAYUGA	1	2,964	\$ 4,473	\$ 1.50	87,500
	NY State	51951	238,339,492	\$ 751,924,506		

However, these rankings do not consider the relative population sizes of each county, so Queens, with 2.2 Million residents, while contributing significant toll dollars is not as impacted on a household basis as Staten Island with 443,000 residents. Staten Island

residents had burdens that were almost twice as heavy on a per capita basis (\$163 per person per year) than the next highest burden – Nassau County at \$86 per person. Table 4 provides county level rankings by per capita burden for New York counties.

Table 4: MTA Toll Burden by County – Ranked by Per Capita Burden

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STATE	County	Surveys	Population	TBTA Volume	TBTA Revenue	Avg Toll	Avg Income	PCBurden
NY	RICHMOND	4,970	443,728	32,848,346	\$ 72,654,370	\$ 2.76	\$ 78,356	\$ 163.74
NY	NASSAU	7,906	1,345,436	32,348,258	\$ 116,127,385	\$ 3.58	\$ 100,484	\$ 86.31
NY	WESTCHESTER	6,743	922,118	24,513,673	\$ 71,491,162	\$ 2.70	\$ 109,247	\$ 77.53
NY	QUEENS	12,037	2,237,198	51,257,325	\$ 160,988,816	\$ 2.85	\$ 73,028	\$ 71.96
NY	PUTNAM	440	96,285	1,665,073	\$ 5,267,733	\$ 2.96	\$ 97,608	\$ 54.71
NY	BRONX	3,816	1,327,690	18,346,875	\$ 62,756,202	\$ 3.07	\$ 69,736	\$ 47.27
NY	SUFFOLK	3,877	1,411,398	17,158,349	\$ 63,727,494	\$ 3.72	\$ 95,199	\$ 45.15
NY	KINGS	5,551	2,465,326	31,452,537	\$ 106,564,777	\$ 3.70	\$ 78,078	\$ 43.23
NY	NEW YORK	4,811	1,530,526	21,039,884	\$ 65,449,214	\$ 2.98	\$ 119,134	\$ 42.76
NY	ROCKLAND	679	286,753	2,765,777	\$ 9,614,908	\$ 3.40	\$ 94,083	\$ 33.53
NY	SULLIVAN	47	51,483	256,959	\$ 975,083	\$ 3.67	\$ 78,138	\$ 18.94
NY	DUTCHESS	342	281,637	1,412,971	\$ 4,631,096	\$ 3.05	\$ 84,079	\$ 16.44
NY	DELAWARE	24	30,569	119,416	\$ 434,711	\$ 3.48	\$ 48,542	\$ 14.22
NY	ORANGE	279	333,010	1,243,996	\$ 4,385,181	\$ 3.41	\$ 89,964	\$ 13.17
NY	HERKIMER	2	4,670	15,079	\$ 57,965	\$ 3.75	\$ 87,500	\$ 12.41
NY	OSWEGO	2	1,865	5,311	\$ 19,639	\$ 3.50	\$ 30,000	\$ 10.53
NY	ULSTER	102	150,665	426,253	\$ 1,480,733	\$ 3.32	\$ 72,500	\$ 9.83
NY	COLUMBIA	35	43,910	130,180	\$ 419,153	\$ 3.07	\$ 63,143	\$ 9.55
NY	SCHOHARIE	10	18,757	42,747	\$ 170,835	\$ 3.65	\$ 56,750	\$ 9.11
NY	GREENE	15	23,533	61,892	\$ 212,078	\$ 3.53	\$ 56,333	\$ 9.01
NY	WAYNE	1	6,050	7,933	\$ 49,837	\$ 8.00	\$ 62,500	\$ 8.23
NY	JEFFERSON	4	11,959	17,746	\$ 63,618	\$ 3.63	\$ 91,875	\$ 5.32
NY	CHENANGO	4	14,466	19,303	\$ 74,926	\$ 3.75	\$ 41,875	\$ 5.18
NY	LEWIS	1	8,316	9,873	\$ 40,094	\$ 4.00	\$ 42,500	\$ 4.82
NY	WASHINGTON	8	31,396	32,243	\$ 135,031	\$ 4.00	\$ 79,688	\$ 4.30
NY	SARATOGA	28	123,418	138,727	\$ 501,669	\$ 3.48	\$ 69,911	\$ 4.06
NY	OTSEGO	9	32,561	35,409	\$ 124,459	\$ 3.50	\$ 75,000	\$ 3.82
NY	SCHENECTADY	25	132,389	106,245	\$ 390,979	\$ 3.56	\$ 89,400	\$ 2.95
NY	BROOME	15	148,526	102,899	\$ 402,649	\$ 3.80	\$ 57,667	\$ 2.71
NY	RENSSELAER	23	104,791	86,127	\$ 282,685	\$ 2.98	\$ 83,152	\$ 2.70
NY	ALBANY	38	219,622	161,199	\$ 584,293	\$ 3.49	\$ 84,934	\$ 2.66
NY	ESSEX	5	15,356	14,549	\$ 40,342	\$ 2.70	\$ 51,500	\$ 2.63
NY	ONEIDA	12	116,240	71,070	\$ 282,514	\$ 3.88	\$ 60,000	\$ 2.43
NY	CAYUGA	1	1,928	2,964	\$ 4,473	\$ 1.50	\$ 87,500	\$ 2.32
NY	CLINTON	2	34,637	19,658	\$ 79,562	\$ 4.00	\$ 77,500	\$ 2.30
NY	TOMPKINS	10	74,989	45,482	\$ 162,498	\$ 3.45	\$ 63,750	\$ 2.17

Conclusions and Further Research

This information represents our current best estimates of toll burden in the NY Metro Region. We are very confident in the methods that we used to produce these estimates are technically correct. They represent some of the best quality data that is available to study social equity questions as they relate to road pricing. We welcome further information from the regional toll agencies that would allow us to improve our estimates.

The results here indicate that tolls are a very local phenomenon in terms of burden. MTA tolls are not evenly distributed around the region. Some of the highest income areas have relatively low burdens. Some moderate income areas have very high burdens.

Further analysis based on additional information as well as additional analysis techniques are in process. Additional results will be released as data is finalized. Updated information can be obtained from the lead author:

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