



**Preliminary Analysis of the Regional and Social Impacts of the Proposed  
Monetization of the New Jersey Toll Roads**

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## Introduction

The Governor of the State of New Jersey, Jon Corzine in his State of the State Address on January 8, 2008 proposed a major set of initiative to solve the general financial problems of the state. A key component of that proposal was a monetization proposal for a number of existing toll roads in the state as well as the addition of tolls to a five mile segment of an existing highway. The core of this proposal is the transfer of control of the toll roads to a public benefit corporation using a concession agreement. This concession agreement is proposed to allow for a series of four 50% increases as well as inflation escalations. The compounded impact of these effects is an approximately 788% increase in tolls over the period 2007 to 2022.

His proposed roads are listed in Table 1.

**Table 1: The Roads**

Roads	Mileage
The New Jersey Turnpike	123
The Garden State Parkway	173
The Atlantic City Expressway	44
Route 440 from the Outerbridge Crossing to The New Jersey Turnpike	5

As a public service, the CUNY High Performance Computing Facility (CUNY-HPC) at the College of Staten Island and the University Transportation Research Center (UTRC-2) under the direction of Dr. Jonathan Peters has performed a detailed analysis of existing and proposed tolls based upon toll collection data proved by the Gannett New Jersey Organization from the New Jersey Turnpike Authority. This data base provides at a Zip Code level combined Business and Residential toll data for electronic toll collection users on both the New Jersey Turnpike as well as the Garden State Parkway. These accounts are classified based on billing address by account. A summary of the dollar value of these accounts and a comparison to total 2006 toll data are provided in Table 2.

**Table 2: Data Coverage**

Road	NJ Turnpike	Garden State Parkway
<b>Gannett Data (Dollars)</b>	\$132,412,487	\$88,332,576
<b>Total Tolls in 2006 (Dollars)</b>	\$533,399,014	\$203,879,971
<b>Percent of Tolls (Dollars)</b>	24.8%	43.3%

## Research Plan

While this data set does not allow us to do a full analysis of the social impacts of toll collection in New Jersey, the data represents some of the best public information on the incidence of toll burden on various social classes as well as the best regional data on toll burden in public hands.

While it is normal for academic research to proceed at a pace that is considerably more reflective than the public policy agenda, there exists a pressing need for the people and civic leaders of New Jersey to have a reasonable set of measures of toll burden to use in the public discourse of the monetization proposal. The Governor of New Jersey has set a goal of implementing the monetization proposal by March 31, 2008. We therefore are providing this preliminary report of the toll burden data by county and zip code. It should provide significant insight into the overall impact of toll burden across the state.

The authors have further plans for detailed toll burden analysis based on both additional analysis of the current data base as well as based upon improved toll collection and demographic information. In particular, it would be useful to be able to directly see the impact of toll costs on individual households.

## **Methods**

The New Jersey Turnpike Authority under a Freedom of Information Act request from Gannett New Jersey provided E-ZPass toll collection data from the period July 2006 to June 2007. This data was supplied to the authors by Gannett New Jersey and provides us with 262,177,285 transactions representing \$220,745,063 in tolls. While not an ideal format for regional comparisons, the ubiquitous nature of zip codes make them a useful and standard form of data aggregation. The New Jersey Turnpike Authority data is provided for 704 Zip Codes across the state in their E-ZPass account file.

To provide some measure of social and regional equity, the CUNY HPC summarized the data to match with the data from the 2000 Census. The Census Bureau provides data at various levels of aggregation, including state, county and by Census Tract and Block. None of these summaries are exactly convertible to match with Zip Code level data.

The Census Bureau also provides data in a standardized form of zip code summary – the ZCTA code data. These files contain data from the U.S. Census summarized to reflect the “primary” zip code for a particular region. With 580 separate municipalities and 21 counties, New Jersey has a significant level of governmental fragmentation. As an added complexity, the U.S. Postal Service does not plan zip codes on the basis of municipal boundaries. We therefore had to perform some adjustments to the zip coding of the toll data to have a good fit with the ZCTA data. We then summarized the 704 reported zip codes from the toll data into the 580 ZCTA codes and merged the two data sources.

The authors have performed an extensive review of the zip codes in the data base to provide the best match of zip codes and demographic data. We are able to assign \$217,387,759 of the \$220,745,063 in tolls or 98.47% of the toll data to a ZCTA code area. The remaining tolls - \$3,357,304.00 will be further analyzed to find the best possible match in the ZCTA data. As we have a small portion of the toll data is still unassigned, the reported results may slightly understate the true burden at the town level. Any unassigned tolls are placed in a general county category and given the zip code

99999. As such, the county level data is currently the most accurate in terms of measuring the burden by region.

At the county level, the ZCTA codes allow us to summarize the data at the county post office level. The County Post Office summary does not exactly match the true county level data, as some post office boundaries cross county boundaries. However, the overall fit is generally good and the regional population summaries vary by a relatively small percentage. For ease of discussion, we will consider ZCTA and Zip Codes to be the same for the rest of this report.

## **Results**

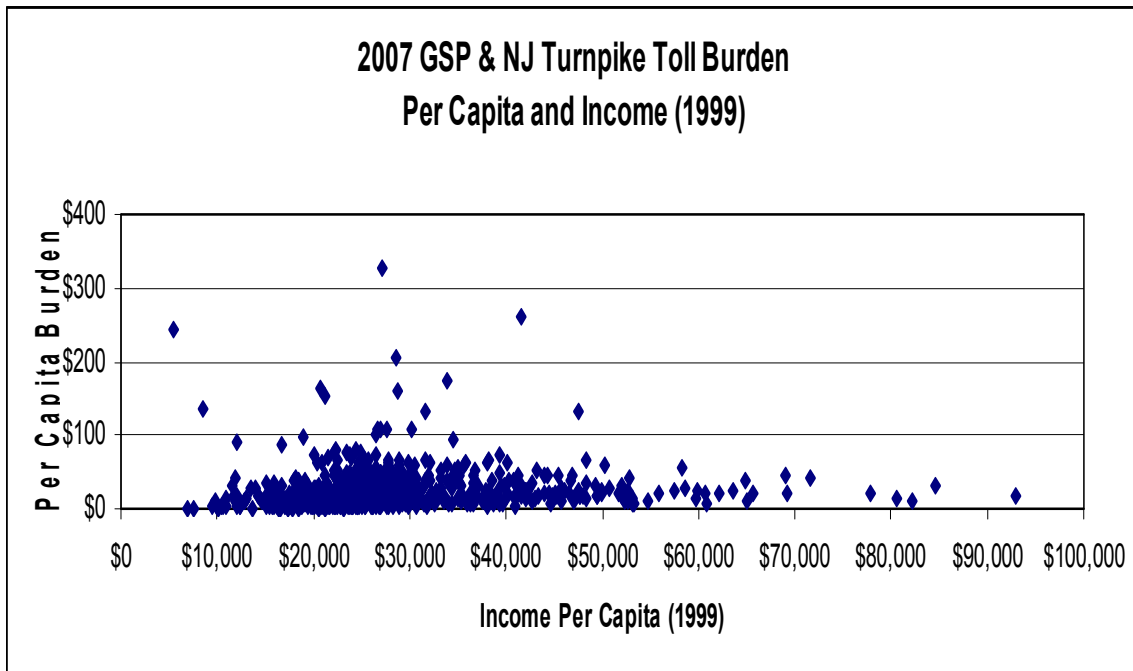
Based upon the conceptual idea of regional equity and social justice, we developed metrics of the burden of GSP & NJTPK tolls by zip code. These concepts are further developed and discussed in numerous papers on environmental justice and regional analysis. Readers are encouraged to review “Environmental Justice Regional Analysis: *Baseline and Time Series Data*” by the North Jersey Transportation Planning Authority for further information. It provides a useful review of some of the concepts as they relate to Northern New Jersey.

### **Metric I: Per Capita Burden**

Our first metric was the burden per capita. By dividing the total tolls collected in a region by the population we estimate the cost per person on average in that ZCTA code area. There are some limitations in this method, as we have both business and residential toll collection data for a particular area. However, the concept of per capita burden does have some value as it weights in both the residential as well as the commercial activity of a region. In this form of analysis, the heaviest burdens by ZCTA code are carried in areas that appear to have high levels of commercial activity. Certain ZCTA code in areas such as Trenton, Teterboro and Hanesport exhibit extremely high toll burdens per capita and our expectation is that these areas are localized zip codes that serve high concentrations of business. Further analysis of these areas is currently under way. For graphing purposes, these extreme values are omitted from the data.

As is clearly shown in Chart 1, the general relationship between income and per capita toll burden for the majority of zip codes (2 observations omitted – Hanesport (08036) and Teterboro (07608)) is quite variable. As one can clearly see, there is a significant amount of variation in terms of burden as related to the income per capita. A significant number of towns with relatively low incomes have very high burdens under existing tolls.

**Chart 1: Per Capita Burden and Income**



In addition, the wealthiest zip codes in New Jersey all have relatively low burdens per capita. Of the 34 zip codes that had per capita incomes greater than \$50,000, all had burdens less than \$60 per capita (\$58.40 dollars maximum in Sea Girt (08750). As a group, these 34 towns had an average burden of \$23.10 per person. Teterboro (07608) was excluded from this analysis as it is clearly and outlier in the data. Table 3 provides detailed information on all zip codes with an average income greater than \$50,000 per capita in 1999.

**Table 3: Highest Income Zip Codes**

Zip Code	Postal Office	County	Income Per Capita (1999)	Toll Burden Per Capita (2007)
07078	SHORT HILLS	Essex	\$ 92,940.00	\$ 18.34
07428	MC AFEE	Sussex	\$ 84,595.00	\$ 30.53
07931	FAR HILLS	Somerset	\$ 82,227.00	\$ 8.73
07620	ALPINE	Bergen	\$ 80,621.00	\$ 15.50
07021	ESSEX FELLS	Essex	\$ 77,787.00	\$ 21.85
07608	TETERBORO	Bergen	\$ 72,613.00	\$ 7,136.17
07760	RUMSON	Monmouth	\$ 71,585.00	\$ 42.58
07924	BERNARDSVILLE	Somerset	\$ 69,141.00	\$ 19.23
07842	HIBERNIA	Morris	\$ 69,081.00	\$ 43.75
07458	SADDLE RIVER	Bergen	\$ 65,634.00	\$ 22.42
07046	MOUNTAIN LAKES	Morris	\$ 65,086.00	\$ 9.95
08738	MANTOLOKING	Ocean	\$ 64,790.00	\$ 36.73
07423	HO HO KUS	Bergen	\$ 63,594.00	\$ 24.06
07901	SUMMIT	Union	\$ 62,167.00	\$ 20.26
07934	GLADSTONE	Somerset	\$ 60,789.00	\$ 7.24
07928	CHATHAM	Morris	\$ 60,654.00	\$ 22.34
07976	NEW VERNON	Morris	\$ 59,844.00	\$ 23.03
07417	FRANKLIN LAKES	Bergen	\$ 59,763.00	\$ 14.52
07043	MONTCLAIR	Essex	\$ 58,569.00	\$ 26.30
08858	OLDWICK	Hunterdon	\$ 58,330.00	\$ 54.96
07632	ENGLEWOOD CLIFFS	Bergen	\$ 57,399.00	\$ 22.90
08558	SKILLMAN	Somerset	\$ 55,876.00	\$ 20.43
07920	BASKING RIDGE	Somerset	\$ 54,753.00	\$ 10.14
07921	BEDMINSTER	Somerset	\$ 53,211.00	\$ 7.47
07670	TENAFLY	Bergen	\$ 53,170.00	\$ 14.84
08836	MARTINSVILLE	Somerset	\$ 53,167.00	\$ 7.79
07750	MONMOUTH BEACH	Monmouth	\$ 52,862.00	\$ 42.73
07945	MENDHAM	Morris	\$ 52,694.00	\$ 9.19
08212	CAPE MAY POINT	Cape May	\$ 52,689.00	\$ 25.12
07930	CHESTER	Morris	\$ 52,250.00	\$ 9.63
08248	STRATHMERE	Cape May	\$ 52,045.00	\$ 30.50
07627	DEMAREST	Bergen	\$ 51,939.00	\$ 17.99
07450	RIDGEWOOD	Bergen	\$ 51,658.00	\$ 19.26
07310	JERSEY CITY	Hudson	\$ 50,741.00	\$ 27.84
08750	SEA GIRT	Monmouth	\$ 50,228.00	\$ 58.35

In stark contrast, the 31 lowest income zip codes in New Jersey, towns with income per capita less than \$15,000 per person, report an average burden of \$17.60 per person in 2007. This result probably significantly underreports the true impact in these communities due to the use of E-ZPass only data. Lower income individuals are less likely to have some of the necessary financial and social infrastructure needed to utilize electronic toll collection than higher income groups. Items needed to establish and

maintain electronic tolling accounts such as a stable mailing address, credit or debit cards and a checking account are much less prevalent in low income communities.

We excluded Trenton (08625) – the lowest income zip code with a per capita income of \$5,458 and a burden of 244.20 per capita in the low income analysis as we believe that that zip code is a data outlier.

**Table 4: Lowest Income Zip Codes**

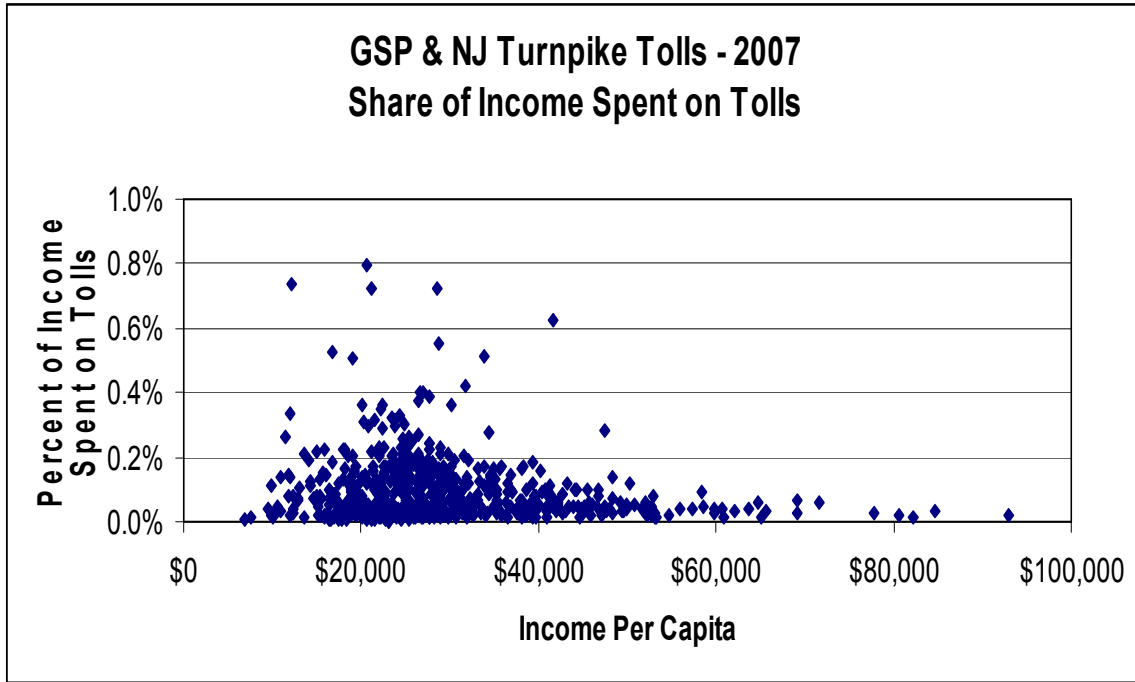
Zip Code	Postal Office	County	Income Per Capita (1999)	Toll Burden Per Capita (2007)
07112	NEWARK	Essex	\$ 14,749.00	\$ 10.60
07106	NEWARK	Essex	\$ 14,557.00	\$ 10.87
08901	NEW BRUNSWICK	Middlesex	\$ 14,297.00	\$ 15.97
07503	PATERSON	Passaic	\$ 14,226.00	\$ 17.34
08064	NEW LISBON	Burlington	\$ 14,044.00	\$ 26.49
08609	TRENTON	Mercer	\$ 13,601.00	\$ 1.51
07201	ELIZABETH	Essex	\$ 13,507.00	\$ 28.24
07104	NEWARK	Essex	\$ 13,076.00	\$ 13.72
07513	PATERSON	Passaic	\$ 12,920.00	\$ 8.79
07055	PASSAIC	Passaic	\$ 12,877.00	\$ 9.04
08641	TRENTON	Burlington	\$ 12,373.00	\$ 2.90
07522	PATERSON	Passaic	\$ 12,291.00	\$ 4.60
07524	PATERSON	Passaic	\$ 12,261.00	\$ 9.97
08352	ROSENHAYN	Cumberland	\$ 12,097.00	\$ 89.52
08346	NEWTONVILLE	Atlantic	\$ 12,079.00	\$ 2.44
07107	NEWARK	Essex	\$ 11,959.00	\$ 16.27
08095	WINSLOW	Camden	\$ 11,955.00	\$ 40.04
07103	NEWARK	Essex	\$ 11,837.00	\$ 9.07
07102	NEWARK	Essex	\$ 11,770.00	\$ 16.85
07206	ELIZABETH	Union	\$ 11,483.00	\$ 30.53
07108	NEWARK	Essex	\$ 10,992.00	\$ 14.91
08104	CAMDEN	Camden	\$ 10,916.00	\$ 3.28
08640	FORT DIX	Burlington	\$ 10,536.00	\$ 3.43
07501	PATERSON	Passaic	\$ 10,506.00	\$ 4.64
08105	CAMDEN	Camden	\$ 10,136.00	\$ 1.07
08103	CAMDEN	Camden	\$ 9,943.00	\$ 2.02
08608	TRENTON	Mercer	\$ 9,800.00	\$ 10.92
07505	PATERSON	Passaic	\$ 9,467.00	\$ 3.57
07114	NEWARK	Essex	\$ 8,457.00	\$ 134.49
08102	CAMDEN	Camden	\$ 7,563.00	\$ 1.12
08314	DELMONT	Cumberland	\$ 6,844.00	\$ 0.26
08625	TRENTON	Mercer	\$ 5,458.00	\$ 244.18

**Metric II: Share of Income Spent on Tolls**

Our second form of analysis was to examine the percentage of income that was spent on tolls. As is clearly visible in Chart 2, the share of income spent on tolls varies widely

among the towns, with some low income towns already spending almost 1% of their income on GSP & NJTPK tolls. These areas will experience a 788% increase in toll costs by 2022 under the proposed plan from the Governor. To what degree people in a region can alter their travel patters to adjust for these costs is still under review.

**Chart 2: Income Per Capita and Percent of Income Spent on Tolls**



**Metric III: Regional Equity – Maps**

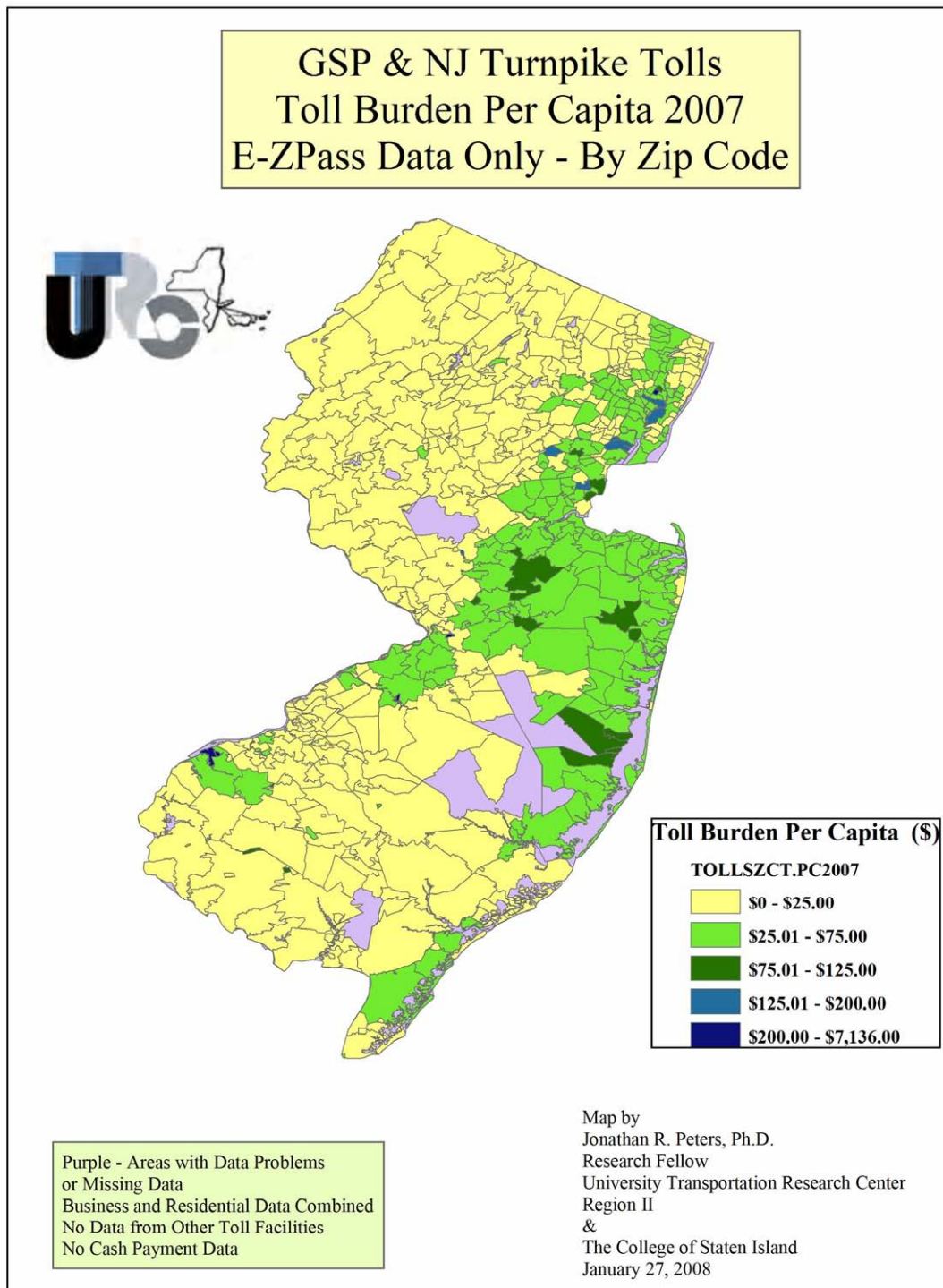
To further explore the regional equity of the proposed toll increases, the authors developed maps using ARCVIEW software to study the regional equity of the proposal. In addition, we also summarized the data by postal county to observe the variation by region.

Map 1 illustrates the per capita burden at a zip code level. As is clearly observable, the regions with limited access to alternative highway services are most impacted by the tolls currently. Counties such as Middlesex, Monmouth, Ocean as well as Essex and Union counties have a disproportionate burden per person. Counties such as Warren, Sussex, Somerset and Hunterdon have relatively low burdens currently. Based on the roads selected for monetization, we expect that this regional imbalance will continue and intensify over the life of the program. In particular, the most heavily tolled county – Middlesex – is the site of the additional Route 440 toll.

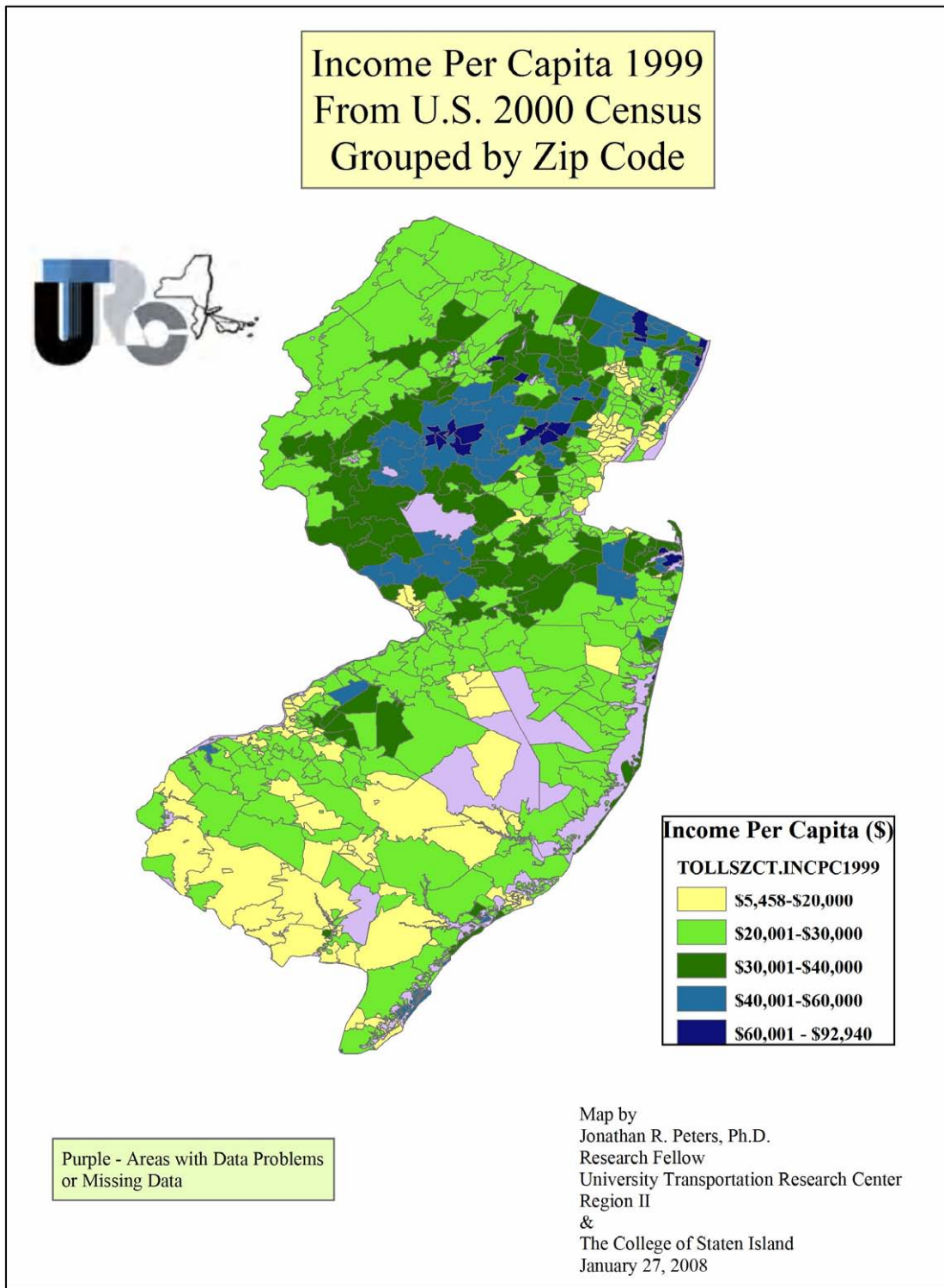
In comparison, the Income Per Capita is illustrated in Map 2. Clearly the high income areas of North Central New Jersey exhibit relatively lower levels of toll burden as compared to lower income areas of Middlesex, Ocean and others.



**Map 1: Per Capita Toll Burden by Zip Code**



**Map 2: Income Per Capita from 2000 Census**



## County Level Analysis

### Metric IV: Regional Equity – County Level Summary

Table 4 provides an overview of the impact by county. The county level of per capita burden varies from \$4.06 per person in Sussex County to \$47.65 per person in Middlesex county.

**Table 4: GSP & NJTP Tolls and Burden By County**

Postal County	Total Accounts	NJTP & GSP Total Tolls	Total Population	Housing Units	Per Capita Burden	Average Toll
Atlantic	42,221	\$3,080,226	252,646	113,841	\$12.19	\$0.74
Bergen	148,993	\$25,422,590	884,118	339,820	\$28.75	\$0.85
Burlington	60,950	\$8,387,403	413,750	159,067	\$20.27	\$1.72
Camden	68,133	\$4,370,652	524,368	205,385	\$8.34	\$1.49
Cape May	18,645	\$2,603,155	102,949	91,308	\$25.29	\$0.70
Cumberland	6,489	\$1,134,459	148,172	53,622	\$7.66	\$3.26
Essex	111,138	\$22,378,805	858,914	324,071	\$26.05	\$0.71
Gloucester	35,505	\$3,433,367	238,390	89,104	\$14.40	\$1.98
Hudson	81,347	\$21,229,350	608,975	240,618	\$34.86	\$1.25
Hunterdon	14,459	\$1,015,243	124,707	45,690	\$8.14	\$0.86
Mercer	36,967	\$5,707,284	360,704	136,538	\$15.82	\$1.15
Middlesex	130,753	\$35,395,840	742,865	271,362	\$47.65	\$1.16
Monmouth	119,126	\$29,177,825	627,911	245,461	\$46.47	\$0.70
Morris	69,211	\$5,914,215	453,104	168,036	\$13.05	\$0.76
Ocean	102,124	\$22,659,512	510,746	248,614	\$44.37	\$0.53
Passaic	61,589	\$8,515,850	500,035	174,209	\$17.03	\$0.73
Salem	3,579	\$435,519	65,226	26,528	\$6.68	\$2.30
Somerset	41,101	\$3,215,586	260,979	98,756	\$12.32	\$0.83
Sussex	13,663	\$590,420	145,363	56,951	\$4.06	\$0.65
Union	79,540	\$15,616,427	486,201	179,555	\$32.12	\$0.81
Warren	8,334	\$461,335	103,867	41,661	\$4.44	\$0.79
Total	1,253,867	\$ 220,745,063	8,413,990	3,310,197		

### Conclusions:

The proposed monetization program represents a significant change in the burden of taxation in New Jersey. All of the data that we have reviewed has indicated that a more detailed analysis of social burden should be conducted to insure social and regional equity for this program.

The authors encourage the release of detailed toll information from the authorities so that further analysis can be completed. In addition, we encourage both the State and Federal government to conduct a social justice review of these proposals and existing toll policies.

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