Maryland Transportation Authority
2011 Traffic and Toll Revenue Report

December 1, 2011

Revised February 6, 2012

Prepared for:

Maryland Transportation Authority

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February 6, 2012

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Subject: February 6, 2012 Revision of the 2011 Comprehensive Traffic and Revenue Report for the Maryland Transportation Authority

Sirs/Madam:

The February 6, 2012 revision to the 2011 Traffic and Revenue Report consists of the following changes:

1. Monthly in-lane toll revenue estimates have been revised for Fiscal Year 2012 on Page 54, Table 26 to equate to the annual total. Annual totals remain the same.
2. More detailed disclaimer language has been inserted on Page 61.

Jacobs Engineering Group Inc.

Philip Eshelman
Project Manager

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Executive Summary

As traffic and revenue consultant for the Maryland Transportation Authority (MdTA), Jacobs annually provides estimates of transactions and toll revenue for the MdTA's seven legacy toll facilities[1]. These seven facilities consist of one expressway, two tunnels and four bridges that provide critical transportation infrastructure links for both local and regional movement of people and goods. The seven facilities can be grouped into three geographic regions of the state: Northern, Central and Southern, and are shown along with the Intercounty Connector (ICC) in Figure ES.1 on the following page. As shown in the figure, all the facilities are on either Interstates or major US routes that cross bodies of water with very limited competing alternatives. Many serve as critical links in the northeast corridor highway network. In the Northern Region, the John F. Kennedy Memorial Highway (JFK) and Thomas J. Hatem Memorial Bridge (Hatem) provide regional and local connectivity across the Susquehanna River including critical east coast interstate travel connection. In the Central Region, the Fort McHenry Tunnel (FMT), the Baltimore Harbor Tunnel (BHT) and the Francis Scott Key Bridge (FSK) offer access under or over the Baltimore Harbor. In the Southern Region the William Preston Lane Jr. Memorial Bridge, commonly known as the Bay Bridge (Bay) crosses the Chesapeake Bay providing access between the metropolitan areas to the west and recreational areas on the coast. The Governor Harry W. Nice Memorial Bridge (Nice), also in the Southern Region, provides movement between Maryland and Virginia across the Potomac River. Transaction and toll revenue estimates for the Inter-County Connector and the I-95 Express Toll Lanes projects are not included in this analysis as forecasts for those facilities are provided by others.

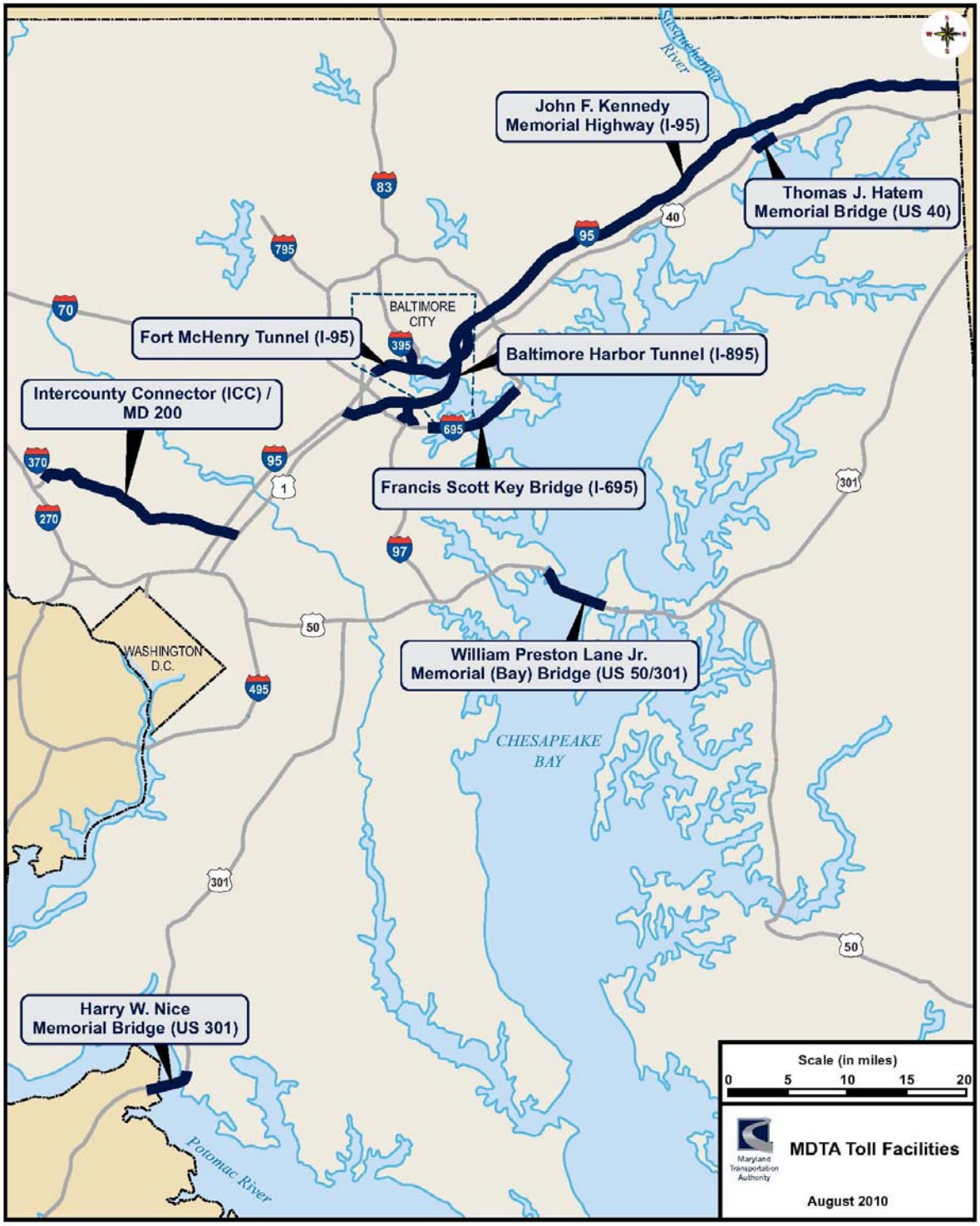
In addition to estimates of transactions and toll revenue for the seven facilities currently operated by the MdTA, estimates of toll and concession related revenue sources available to the MdTA were developed to provide a full picture of revenue potential for the Authority over the next ten year period.

The forecasts are based on the current toll and fee schedule with toll increases approved at the September 22, 2011 meeting of the MdTA and identified as Appendix A to this report.

This executive summary presents the results of these work efforts including a review of the overall methodology of forecast as well as final estimates. The work, analyses, and forecasts for the existing tolled bridges are of investment-grade quality and suitable for financing. As part of the analysis, a traffic and toll revenue model for the existing MdTA tolled facilities was developed. This model has the ability to adjust projections based on economic parameters and toll adjustments by the type of vehicle and payment method for each toll facility.

[1] The legacy facilities include the JFK, Hatem, FMT, BHT, FSK, Bay and Nice toll facilities as defined in this section.

Figure ES.1: MdTA Facility Locations



The traffic and revenue model with resulting traffic and toll revenue estimates and projections were developed independently for each of the MdTA tolled facilities, based on actual transaction and toll revenue data through the full MdTA fiscal year 2011 (FY2011) ending June 2011 and the first three months of FY2012, (July, August and September 2011). The MdTA fiscal year for 2012 runs from July 1, 2011 to June 30, 2012. All MdTA transaction and revenue data is based upon this fiscal year definition.

As a result of the uncertainty in the short term economy and the toll adjustments to occur on November 1, 2011, January 1, 2012 and July 1, 2013, Jacobs is forecasting a decline in tolled traffic on the MdTA system from FY2012 through FY2014, with a slow, steady recovery of traffic through the forecast horizon of FY2021. The forecast estimates that traffic levels will not return to the high level of FY2007 traffic within the forecast period. The following are the fundamental conclusions of the analysis:

- The previous forecast of traffic and toll revenue was met in FY2011, with actual revenue 1.5 percent above that projected. The model that was used to create the previous forecast was the basis for the current forecast;
- The forecast assuming no toll increase anticipates a loss in traffic in FY2012 with stabilization in FY2013 and slow steady recovery beyond with FY2007 traffic levels (previous high) being reached by FY2014. (This is a hypothetical forecast for comparison purposes only. Tolls are being increased as approved in September 2011 by the MdTA);
- The forecast of traffic and toll revenue with the approved toll increases in FY2012 through FY2014 uses conservative elasticity factors with forecasted loss of traffic due to the toll increase approximately twice the historical experience;
- The planned toll schedule adjustments are relatively consistent across payment class such that motorists' movements to different payment classes represents little risk to revenue; and
- The forecasted long-term growth rate of transactions and toll revenue of approximately 1.0 percent after recovery is slightly greater than in the most recent past (FY2002-FY2007: 0.7 percent growth per year) due to emergence from recession but lower than previously experienced (FY1995-FY2002: 2.9 percent annual growth per year) due to changing demographics and consistent with the previously forecasted long term trends.

Historical Transactions

During the course of the work effort, a complete set of available traffic and economic data sets were compiled. Historical transaction and toll revenue data were compiled from the MdTA for all the facilities by month detailed to payment and vehicle class. Traffic and toll revenue data were also obtained from neighboring toll authorities to gain the most recent understanding of tolled traffic trends in the region. Additionally, other traffic counts in the region were reviewed to understand overall travel patterns in the region.

There were three areas of study concentration in the development of the transaction and toll revenue forecast for the MdTA facilities:

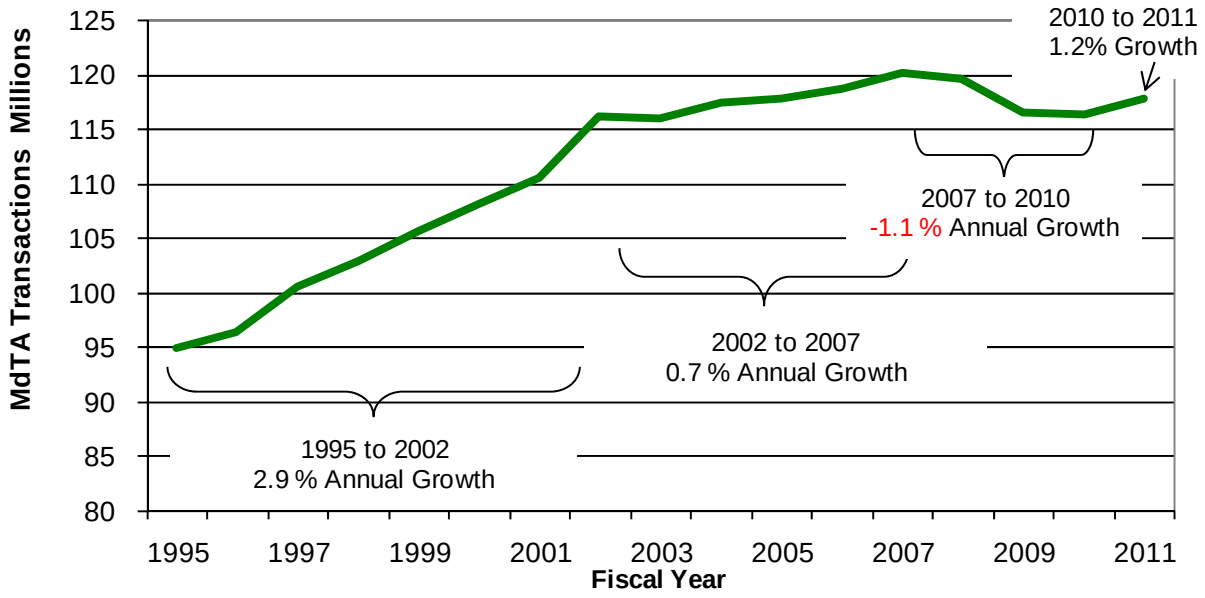
- Emergence from the recession;
- Evaluation of "normal" traffic growth; and
- Impact of the planned toll schedule adjustments.

Traffic on the MdTA facilities decreased from FY2007 to FY2009, flattened in FY2010 and increased in FY2011. In order to understand the current economic situation in an historical traffic context, Jacobs compared the current national traffic levels and MdTA transaction levels to previous recessions. This analysis demonstrated that the 2008 recession and current recovery from it may be fundamentally different from the previous recessions. While traffic began to recover in FY2011, the beginning of FY2012 shows signs of weakening, which is reflected in the forecasts.

Based on the forecasts of both national and state gross domestic products and anticipated employment recovery, Jacobs estimates that very modest recovery will continue through FY2012 and "new normal" growth rates for both vehicle classes of approximately one percent are forecasted to occur in FY2013. These underlying forecasts assume no toll adjustment, providing a base from which to develop the forecast assuming the implementation of the approved toll adjustments in FY2012, FY2013 and FY2014. With these toll adjustments, traffic is projected to decrease in all of those years with the slow steady "new normal" growth to occur in FY2015.

Figure ES.2 provides total MdTA transaction levels from FY1995 to FY2011. As presented in the figure, transaction growth decreased from 2.9 percent annually between FY1995 and FY2002, to 0.7 percent annually between FY2002 and FY2007. This decrease in growth predates all recessionary effects that began to be experienced starting in FY2008.

Figure ES.2: MdTA Annual Actual Total Transactions



This reduction of annual growth clearly indicates a change in travel characteristics in the region. Additionally, this trend follows the national trend of reductions in growth even before the recession and gas price changes. There are multiple reasons for this reduction in traffic growth, despite recent population and production growth increases in GDP and the Industrial Production Index. These reasons include, but are not limited to:

- Aging population;
- Workforce characteristics;
- Telecommuting; and
- Trip reduction and trip chaining (multi-purpose trips).

The experience of the recent past and the indication of changing travel characteristics pointed to the development of a "new normal" growth rate for the system. The approximately 1.0 percent "new normal" developed for the transaction forecast represents growth that is less than that experienced from FY1995 to FY2002 and slightly higher than the stalled growth of FY2002 to FY2007 . The reduction of future growth rates as compared to the historical growth from FY1995 to FY2002 is based upon the changing demographics and travel characteristics we have seen in the region and across the nation. The slightly higher growth than the most recent positive growth trends from FY2002 to FY2007 is based on recovery from the recession.

The flattening of traffic in FY2010 and the slow recovery in FY2011 can be seen in this Figure as well.

Forecasted Transactions and Toll Revenues

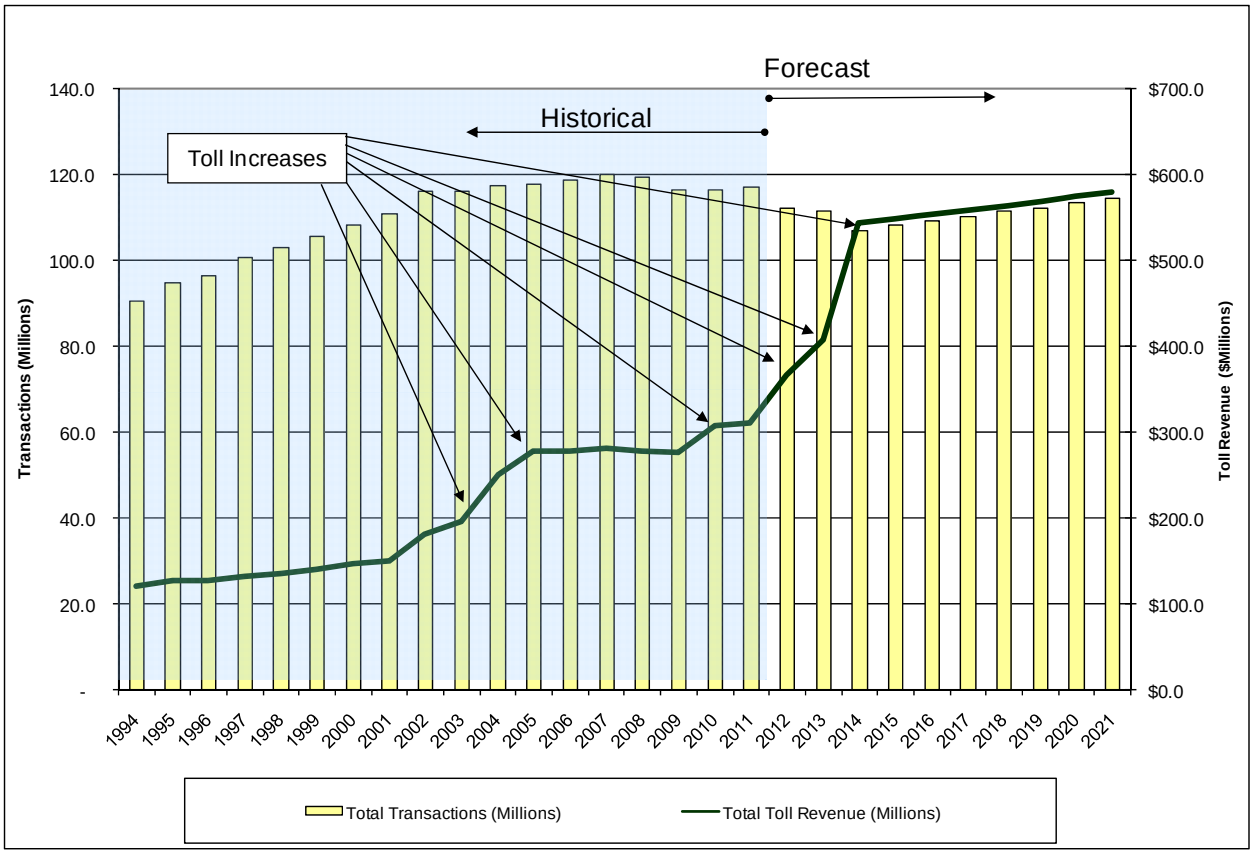
The transaction and in-lane toll revenue forecast was developed by vehicle class, payment type, for each of the seven facilities. In addition, the planned toll increases in FY2012 and FY2014 are recognized in this analysis. Due to the uncertainty of the current economic climate conservative elasticity factors were used in the analysis to provide achievable traffic and toll revenue forecasts for the MdTA facilities. Historical and future forecasted transactions and in-lane toll revenue for the MdTA System are provided in Table ES.1. These data are also shown graphically in Figure ES.3.

Transactions are forecasted to decrease 9 percent from FY2011 to FY2014, while toll revenue is forecasted to increase by 74 percent for the same time period due to the phased implementation of the toll adjustment. Modest growth in transactions and toll revenue is expected to resume in FY2015, with a return to a “new normal” growth rate of approximately 1.0 percent per year for the remainder of the forecast.

Table ES.1: MdTA Transactions and In-Lane Toll Revenues, Historical and Forecasted

Fiscal Year	Total Transactions (Millions)	Total In-Lane Toll Revenue (Millions)	Transactions Growth	In-Lane Toll Revenue Growth
1994	90.4	$121.1		
1995	94.9	$126.9	4.9%	4.8%
1996	96.4	$127.6	1.6%	0.6%
1997	100.5	$132.4	4.3%	3.8%
1998	102.8	$136.7	2.3%	3.2%
1999	105.6	$140.9	2.7%	3.1%
2000	108.2	$148.2	2.4%	5.1%
2001	110.8	$149.9	2.4%	1.2%
2002	116.1	$182.4	4.8%	21.7%
2003	115.9	$197.0	-0.2%	8.0%
2004	117.4	$251.3	1.3%	27.6%
2005	117.8	$278.5	0.3%	10.8%
2006	118.6	$278.8	0.7%	0.1%
2007	120.1	$282.3	1.2%	1.3%
2008	119.5	$279.3	-0.5%	-1.1%
2009	116.4	$276.6	-2.5%	-1.0%
2010	116.3	$308.5	-0.1%	11.5%
2011	117.7	$312.0	1.2%	1.1%
2012	112.3	$367.1	-4.6%	17.7%
2013	111.4	$409.0	-0.8%	11.4%
2014	107.0	$544.2	-3.9%	33.1%
2015	108.2	$549.2	1.1%	0.9%
2016	109.3	$553.9	1.1%	0.9%
2017	110.2	$559.6	0.8%	1.0%
2018	111.4	$564.7	1.1%	0.9%
2019	112.3	$569.5	0.8%	0.8%
2020	113.4	$575.1	1.0%	1.0%
2021	114.6	$580.7	1.0%	1.0%

Figure ES.3: MdTA Annual Transactions and In-Lane Toll Revenue, Historical and Forecasted



In addition to the forecasted transactions and gross toll revenues, Jacobs developed forecasts of various other revenue sources for the MdTA. These include unused toll revenue through the commuter program, transponder sales, monthly account fees, notice of toll due fees, violation fees, commercial discounts, over-size permits, concession revenues and revenue associated with the Hatem commuter program. These revenue streams were also affected by toll adjustments in FY2012 and FY2014 as detailed in Appendix A. The forecasts are provided in Table ES.2.

Table ES.2: MdTA In-Lane Toll Revenue and Other Revenues, Historical and Forecasted

Fiscal Year	MdTA Toll and Other Revenue Estimates ($ Millions)												
	In-Lane Toll Revenue	Unused Toll Revenue	Transponder Sales	Monthly Account Fees	Notice of Toll Due Fees	Violation Fees	Commercial Vehicle Post-Usage Discount	Commercial Vehicle High Frequency Discount	Over-Size Permit Fee	Concession Revenue	Hatem E-ZPass Program *	Total	Percent Increase of Total
2004	251.3	2.0				0.8	(2.3)			8.1		259.9	
2005	278.5	2.8				1.5	(3.9)			8.0		286.9	10.4%
2006	278.8	3.5				2.8	(4.5)			7.8		288.4	0.5%
2007	282.3	4.0				3.0	(4.8)			8.1		292.6	1.5%
2008	279.3	4.3				3.0	(5.0)			8.0		289.6	-1.0%
2009	276.6	4.5				1.9	(4.8)			8.0		286.2	-1.2%
2010	308.5	6.6	1.4	9.6	1.1	2.3	(6.6)	(0.2)	1.0	8.2		331.8	15.9%
2011	312.0	6.5	1.9	9.9	1.3	1.3	(6.7)	(0.3)	1.2	7.9		335.0	1.0%
2012	367.1	8.5	1.1	5.5	-	2.2	(6.5)	(0.7)	1.0	8.2	0.7	387.2	15.6%
2013	409.0	8.8	0.8	5.3	-	2.2	(5.2)	(0.9)	1.0	3.6	1.3	425.9	10.0%
2014	544.2	10.7	0.8	5.2	-	2.2	(7.2)	(1.2)	1.0	1.2	2.5	559.4	31.4%
2015	549.2	10.8	0.9	5.0	-	2.2	(7.2)	(1.2)	1.0	1.3	2.5	564.5	0.9%
2016	553.9	11.0	0.9	5.0	-	2.1	(7.2)	(1.2)	1.0	2.1	2.5	570.1	1.0%
2017	559.6	11.1	0.9	5.0	-	2.1	(7.2)	(1.2)	1.0	2.4	2.5	576.2	1.1%
2018	564.7	11.2	0.9	5.0	-	2.1	(7.2)	(1.2)	1.0	2.5	2.5	581.5	0.9%
2019	569.5	11.3	0.9	5.0	-	2.1	(7.2)	(1.2)	1.0	2.5	2.5	586.3	0.8%
2020	575.1	11.4	1.0	5.0	-	2.0	(7.2)	(1.2)	1.0	2.6	2.5	592.2	1.0%
2021	580.7	11.5	1.0	5.0	-	2.0	(7.2)	(1.2)	1.0	2.6	2.5	598.0	1.0%

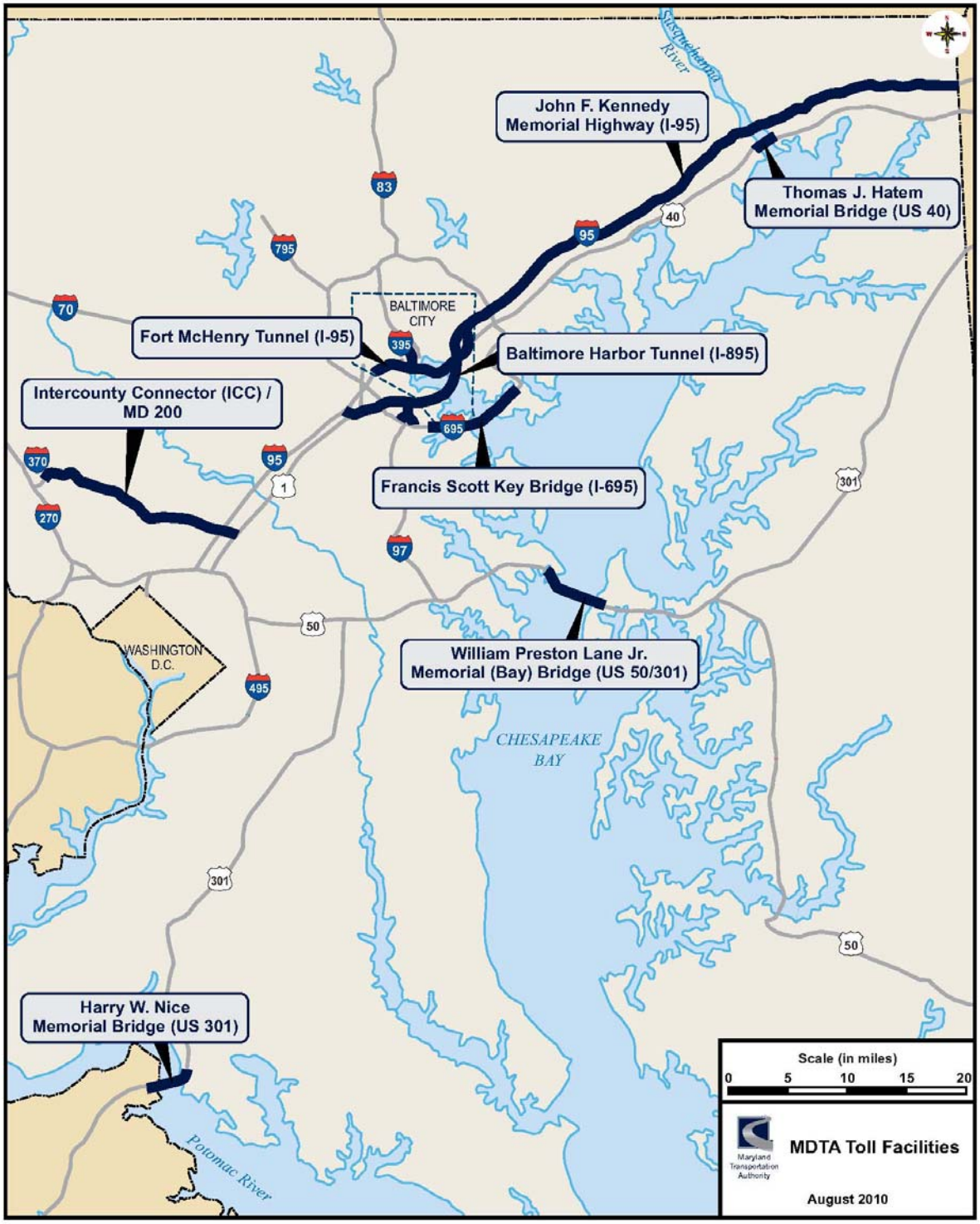
*****Prior to this forecast Hatem Bridge AVI revenue was not forecasted separately. Now that it is an E-ZPass based program, it is forecast as “other revenue” as identified in this table.

1.0 Introduction

The Maryland Transportation Authority (MdTA) currently operates eight toll facilities within the State of Maryland consisting of two expressways, two tunnels and four bridges that provide critical transportation infrastructure links for both local and regional movement of people and goods. The eight facilities can be grouped into three geographic regions of the state: Northern, Central and Southern and are shown along with the ICC in Figure 1, on the following page. As shown in the figure, all the facilities are on either Interstates or major US routes that cross bodies of water with very limited competing alternatives. In the Northern Region, the John F. Kennedy Memorial Highway (JFK) and Thomas J. Hatem Memorial Bridge (Hatem) provide regional and local connectivity across the Susquehanna River including critical east coast interstate travel connection. In the Central Region, the Fort McHenry Tunnel (FMT), the Baltimore Harbor Tunnel (BHT) and the Francis Scott Key Bridge (FSK) offer access under or over the Baltimore Harbor and are known collectively as the Baltimore Harbor Crossings. In the Southern Region the William Preston Lane Jr. Memorial Bridge, commonly known as the Bay Bridge (Bay) crosses the Chesapeake Bay providing access between the metropolitan areas to the west and recreational areas on the coast. The Governor Harry W. Nice Memorial Bridge (Nice), also in the Southern Region, provides movement between Maryland and Virginia across the Potomac River. Separate traffic and revenue forecasts have been prepared for the ICC and I-95 Express Toll Lanes and are not included in this report.

Each toll facility under the MdTA charge has unique patronage and motorists' characteristics. This is tempered by similarities within each Region as many facilities offer redundancy of capacity, specifically in the Northern and Central Regions. The estimates of future traffic and toll revenue were based upon this understanding of historical experience as well as the changing economic environment.

Figure 1: MdTA Facility Locations



During the course of the work effort, a complete set of available traffic and economic data sets were compiled. Historical traffic and toll revenue data were compiled from the MdTA for all the facilities by month detailed to payment and vehicle class. Traffic and toll revenue data were also obtained from neighboring toll authorities to gain the most recent understanding of tolled traffic trends in the region.

The current local, national and global economic conditions are unparalleled in recent history. For this analysis, Jacobs has continued its extensive research into the most relevant historic and forecasted socioeconomic parameters in order to make a viable estimate of future traffic and toll revenues. The most recent recession began in December 2007 and lasted 18 months until June 2009 according to the National Bureau of Economic Research (NBER). This recession is comparable to the most significant previous recessions of 1973-1975 and 1981 -1982. Both of which were estimated to be 16 months in duration. The question remains as to what the recovery of the current recession will look like; e.g. jobless stoked by innovation or slow derived from the lowering of inventory. As traffic is not simply a function of gross domestic product (GDP) but employment and production levels, a detailed review was undertaken and described herein.

The traffic and revenue model with resulting traffic and toll revenue estimates and projections was developed independently for the MdTA tolled facilities, based on traffic and toll revenue data through the full MdTA fiscal year 2011 (FY2011) ending June 2011 and the first three months of FY2012, (July, August and September 2011). The MdTA fiscal year for 2012 runs from July 1, 2011 to June 30, 2012. All data in this report is presented as "fiscal year" following this convention. As part of the analysis a static trend line-based traffic and toll revenue model for the existing MdTA tolled facilities was developed. This model has the ability to adjust projections based on various economic parameters and is segmented by the type of vehicle and the specific toll facility. Additionally the model was augmented to provided forecasts based upon adjustments to the toll schedules by facility. The assumptions of future toll schedules for the analysis were derived from the changes approved at the September 22, 2011 meeting of the Maryland Transportation Authority and identified as Appendix A to this report. These adjustments included toll increases affecting FY2012 through FY2014. The work, analyses, and results for the existing tolled bridges are of investment-grade quality and suitable for financing.

As a result of the approved toll adjustments and the uncertainty in the short term economy, Jacobs is forecasting a decline in transactions of approximately 9 percent from FY2011 to FY2014 and increases in in-lane toll revenue of approximately 74 percent over that same time period. After FY2014, long term growth forecasts of approximately one percent are assumed through the final year of the forecast in FY2021. The background and methodology that lead to Jacobs' traffic and toll revenue projections for seven of the eight

toll facilities operated by MdTA as described previously are presented herein. Traffic and toll revenue estimates for the Inter-County Connector and the I-95 Express Toll Lanes projects planned by the MdTA were not included in this analysis as they are provided by others.

2.0 Historical Toll Transaction and Toll Revenues

Historical toll transaction and gross toll revenue data were provided by the MdTA for Jacobs to use in developing a thorough understanding of the current state of the MdTA toll facilities. Additionally, other traffic counts in the region were reviewed to understand overall travel patterns in the region. These items are detailed in the following sections.

2.1 Historical Toll Transactions

This section provides a summary of historical toll transaction data for the MdTA toll facilities. Data include annual transaction data, participation in the various payment options including special commuter programs, and vehicle class analysis, separating passenger cars and commercial vehicles.

Transactions on the MdTA facilities have steadily increased since the inception in 1940 as a result of both traffic growth on existing facilities and the introduction of new facilities, as illustrated in Figure 1. This growth is more prominent pre-1990 than in the more recent past. There have also been several annual drops in transaction levels, either as a result of overall economic recessions or, as in the case in 1991 and 1992, or the conversion of JFK, Hatem and Lane to one-way tolling, thus effectively reducing the number of transactions on those facilities by half. The recessionary periods are discussed in the economic section of this report. Also of note is the unprecedented flattening of traffic that predates the current recession, starting in 2002. This is shown more explicitly in Figure 2.

Figure 2: MdTA Historical Annual Transactions

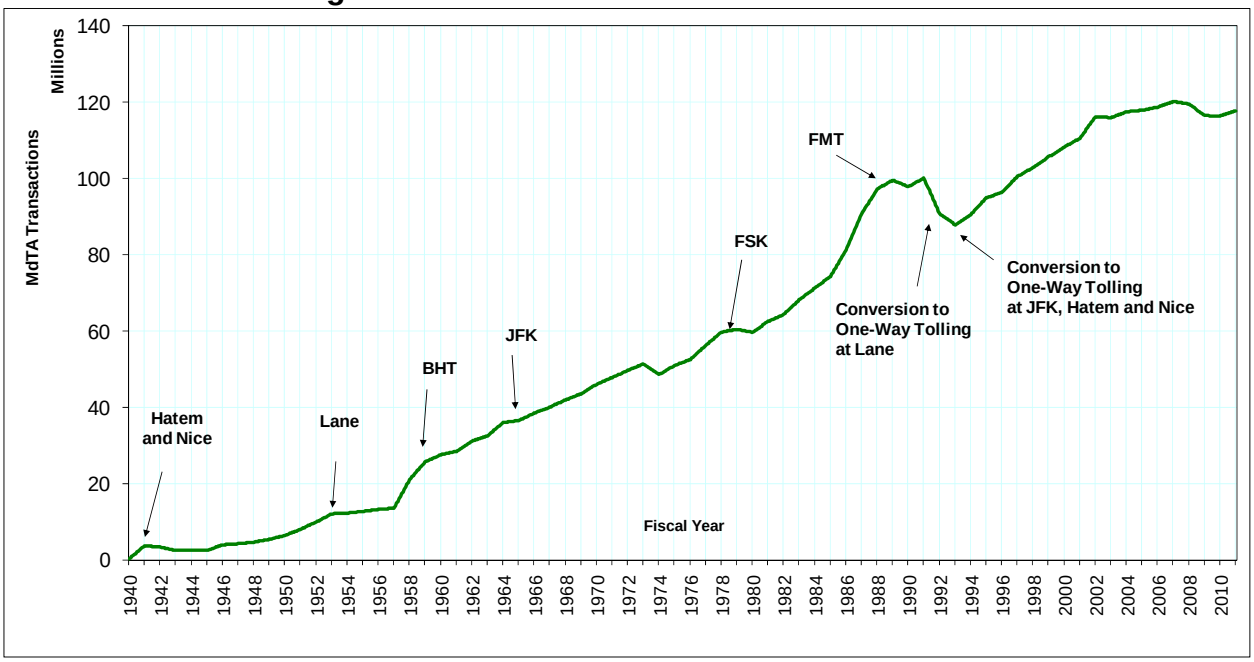
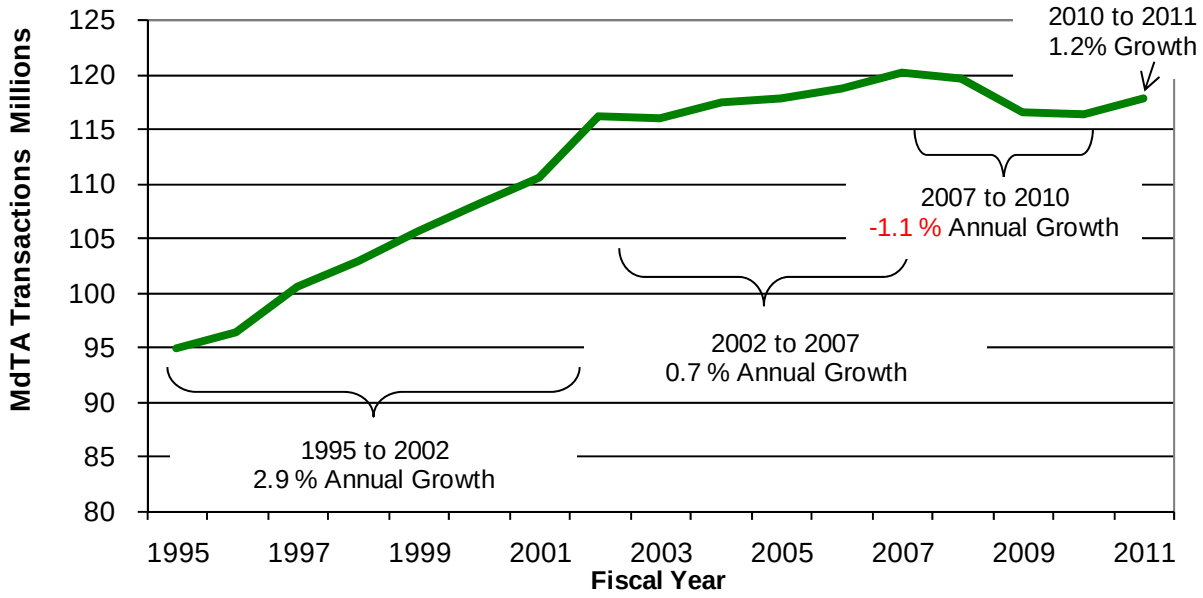


Figure 3: MdTA Recent Historical Annual Transactions



Between FY1995 and FY2002, MdTA transactions grew at an average annual rate of 2.9 percent. For the next five years, from FY2002 to FY2007, transactions grew at 0.7 percent. This decrease in growth during the similar economic time periods from FY1995 to FY2007 is discussed in more detail in Section 3 of this report, specifically regarding the national and local trends in vehicle miles traveled (VMT). The decrease in traffic from FY2007 to FY2010 is a function of the recession, both the initial effects, with large decreases from FY2007 to FY2009, and the lingering effects with essentially no growth from FY2009 to FY2010. Additionally, tolls were increased for commercial vehicles in late FY2009 (May 2009), causing an estimated further decrease in traffic levels affecting both FY2009 and FY2010. It is estimated that the flattening of traffic in FY2010 marked the beginning of the recovery for the MdTA System. In FY2011 transactions increased 1.2 percent representing a modest recovery from the recession.

2.1.1 Historical Toll Transactions and Revenue by Facility

The following tables and figure show a breakdown of transactions by facility from FY1995 to FY2011, as well as annual percent changes. The data were provided by the MdTA through TVI reports through FY2010 and the FY2011 is provided by the MdTA Office of Finance.

Table 1: MdTA FY1995 – FY2011 Actual Toll Transactions by Facility

Fiscal Year	MdTA Facilities - Annual Transactions (Millions)							
	JFK	Hatem	Nice	Lane	BHT	Key	FMT	Total
1995	12.39	4.11	2.58	10.08	19.91	9.60	36.20	94.87
1996	12.67	4.15	2.54	10.26	20.14	9.55	37.04	96.35
1997	13.20	4.35	2.52	10.73	21.14	9.80	38.75	100.49
1998	13.63	4.49	2.59	11.21	20.03	10.56	40.32	102.83
1999	13.97	4.66	2.65	11.64	21.93	10.87	39.91	105.63
2000	14.31	4.60	2.72	11.84	23.04	10.94	40.76	108.21
2001	14.53	4.66	2.82	11.96	23.37	11.01	42.14	110.49
2002	15.16	4.86	2.94	12.50	24.75	11.53	44.33	116.07
2003	14.85	5.08	2.96	12.41	24.93	11.55	44.14	115.92
2004	15.17	5.45	3.18	12.94	25.94	12.03	42.73	117.44
2005	14.96	5.57	3.21	12.98	25.50	12.10	43.52	117.84
2006	14.74	5.56	3.36	13.27	26.26	11.89	43.57	118.65
2007	14.84	5.56	3.42	13.49	25.74	12.20	44.85	120.10
2008	14.65	5.12	3.39	13.37	25.77	12.34	44.83	119.47
2009	14.64	5.03	3.35	12.75	25.53	11.69	43.45	116.44
2010	14.75	4.99	3.35	12.99	25.23	10.96	44.06	116.33
2011	14.86	5.05	3.35	13.19	25.50	11.07	44.66	117.68

Table 2: MdTA FY1995 – FY2011 Actual Toll Transaction Growth Rate by Facility

Fiscal Year	MdTA Facilities - Transaction Growth							
	JFK	Hatem	Nice	Lane	BHT	Key	FMT	Total
1995	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1996	2.3%	1.0%	-1.6%	1.8%	1.2%	-0.5%	2.3%	1.6%
1997	4.2%	4.8%	-0.8%	4.6%	5.0%	2.6%	4.6%	4.3%
1998	3.3%	3.2%	2.8%	4.5%	-5.3%	7.8%	4.1%	2.3%
1999	2.5%	3.8%	2.3%	3.8%	9.5%	2.9%	-1.0%	2.7%
2000	2.4%	-1.3%	2.6%	1.7%	5.1%	0.6%	2.1%	2.4%
2001	1.5%	1.3%	3.7%	1.0%	1.4%	0.6%	3.4%	2.1%
2002	4.3%	4.3%	4.3%	4.5%	5.9%	4.7%	5.2%	5.1%
2003	-2.0%	4.5%	0.7%	-0.7%	0.7%	0.2%	-0.4%	-0.1%
2004	2.2%	7.3%	7.4%	4.3%	4.1%	4.2%	-3.2%	1.3%
2005	-1.4%	2.2%	0.9%	0.3%	-1.7%	0.6%	1.8%	0.3%
2006	-1.5%	-0.2%	4.7%	2.2%	3.0%	-1.7%	0.1%	0.7%
2007	0.7%	0.0%	1.8%	1.7%	-2.0%	2.6%	2.9%	1.2%
2008	-1.3%	-7.9%	-0.9%	-0.9%	0.1%	1.1%	0.0%	-0.5%
2009	-0.1%	-1.8%	-1.2%	-4.6%	-0.9%	-5.3%	-3.1%	-2.5%
2010	0.8%	-0.8%	0.0%	1.9%	-1.2%	-6.2%	1.4%	-0.1%
2011	0.7%	1.2%	0.0%	1.5%	1.1%	1.0%	1.4%	1.2%

Figure 4: MdTA FY1995 – FY2011 Actual Toll Transactions by Facility

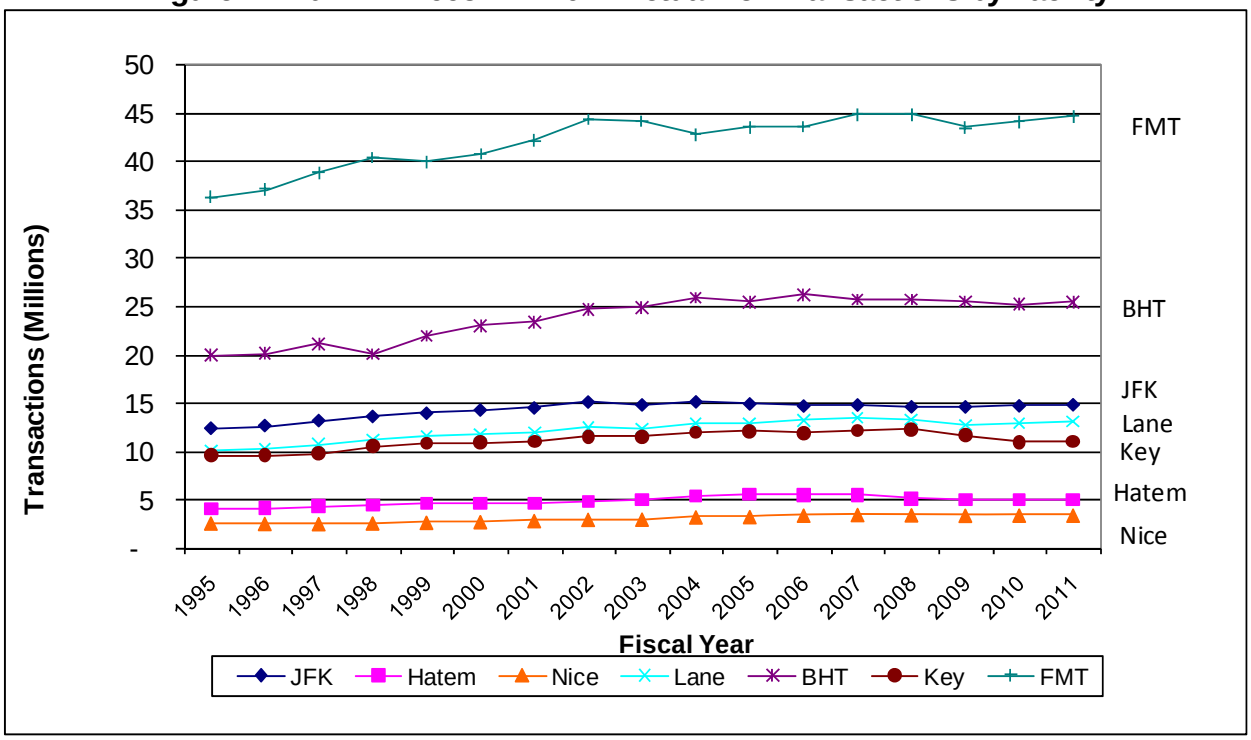


Table 3 and Table 4 provide the FY1995 to FY2011 actual gross toll revenue as well as its growth by facility for the MdTA system. There are sizable increases in toll revenue that outpace transaction growth, specifically for fiscal years FY2002 through FY2005 and FY2010. This is due to various toll increases that were implemented during these times. Table 5 provides the average toll by fiscal year by toll facility to demonstrate these increases. From FY2005 to FY2009 the average toll remained very stable because there were no adjustments to the toll schedule during this time. In FY2010 the average toll increased because of the toll increases implemented in that year. The average toll remained stable from FY2010 to FY2011 when no adjustments to the toll schedule were made.

Table 3: MdTA FY1995 – FY2011 Actual Gross In-Lane Toll Revenue by Facility

Fiscal Year	MdTA Facilities - Annual Toll Revenue (Millions)							
	JFK	Hatem	Nice	Lane	BHT	Key	FMT	Total
1995	33.3	1.3	4.4	25.9	15.6	8.5	37.9	126.9
1996	33.5	1.3	4.3	26.1	15.7	8.6	38.3	127.8
1997	34.2	1.6	4.1	27.6	16.2	8.9	39.9	132.5
1998	35.3	1.7	4.3	28.9	15.5	9.5	41.5	136.7
1999	36.3	2.0	4.4	30.0	16.9	9.6	42.6	141.8
2000	37.8	2.0	4.5	30.3	19.0	10.4	43.3	147.3
2001	38.3	1.9	4.7	30.3	19.3	10.1	45.2	149.8
2002	63.6	2.7	7.4	31.9	19.9	10.5	45.9	181.9
2003	74.9	3.2	9.1	31.9	20.6	11.1	46.2	197.0
2004	88.7	3.7	9.9	33.6	30.7	16.7	68.0	251.3
2005	94.6	3.7	10.0	33.5	34.7	19.2	82.7	278.4
2006	93.5	3.9	10.5	34.0	35.6	18.8	82.4	278.7
2007	94.6	3.8	10.4	34.4	35.1	19.2	84.7	282.2
2008	92.7	3.9	10.1	33.9	35.3	19.4	84.0	279.3
2009	95.1	2.0	9.8	32.5	35.6	18.6	83.0	276.6
2010	106.5	2.7	10.0	37.1	37.9	20.0	93.5	307.7
2011	107.1	2.8	10.1	38.0	37.8	20.8	95.3	311.9

Table 4: MdTA FY1995 – FY2011 Actual Gross In-Lane Toll Revenue Growth by Facility

Fiscal Year	MdTA Facilities - Toll Revenue Growth							
	JFK	Hatem	Nice	Lane	BHT	Key	FMT	Total
1995	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1996	0.6%	0.0%	-2.3%	0.8%	0.6%	1.2%	1.1%	0.7%
1997	2.1%	23.1%	-4.7%	5.7%	3.2%	3.5%	4.2%	3.7%
1998	3.2%	6.3%	4.9%	4.7%	-4.3%	6.7%	4.0%	3.2%
1999	2.8%	17.6%	2.3%	3.8%	9.0%	1.1%	2.7%	3.7%
2000	4.1%	0.0%	2.3%	1.0%	12.4%	8.3%	1.6%	3.9%
2001	1.3%	-5.0%	4.4%	0.0%	1.6%	-2.9%	4.4%	1.7%
2002	66.1%	42.1%	57.4%	5.3%	3.1%	4.0%	1.5%	21.4%
2003	17.8%	18.5%	23.0%	0.0%	3.5%	5.7%	0.7%	8.3%
2004	18.4%	15.6%	8.8%	5.3%	49.0%	50.5%	47.2%	27.6%
2005	6.7%	0.0%	1.0%	-0.3%	13.0%	15.0%	21.6%	10.8%
2006	-1.2%	5.4%	5.0%	1.5%	2.6%	-2.1%	-0.4%	0.1%
2007	1.2%	-2.6%	-1.0%	1.2%	-1.4%	2.1%	2.8%	1.3%
2008	-2.0%	2.6%	-2.9%	-1.5%	0.6%	1.0%	-0.8%	-1.0%
2009	2.6%	-48.7%	-3.0%	-4.1%	0.8%	-4.1%	-1.2%	-1.0%
2010	12.0%	35.0%	2.0%	14.2%	6.5%	7.5%	12.7%	11.2%
2011	0.6%	3.7%	1.0%	2.4%	-0.3%	4.0%	1.9%	1.4%

Table 5: MdTA FY1995 – FY2011 Actual Average Toll Rates by Facility

Fiscal Year	MdTA Facilities - Average Toll (All Vehicle Classes)							
	JFK	Hatem	Nice	Lane	BHT	Key	FMT	Total
1995	$2.69	$0.32	$1.71	$2.57	$0.78	$0.89	$1.05	$1.34
1996	2.64	0.31	1.69	2.54	0.78	0.90	1.03	1.33
1997	2.59	0.37	1.63	2.57	0.77	0.91	1.03	1.32
1998	2.59	0.38	1.66	2.58	0.77	0.90	1.03	1.33
1999	2.60	0.43	1.66	2.58	0.77	0.88	1.07	1.34
2000	2.64	0.43	1.65	2.56	0.82	0.95	1.06	1.36
2001	2.64	0.41	1.67	2.53	0.83	0.92	1.07	1.36
2002	4.20	0.56	2.52	2.55	0.80	0.91	1.04	1.57
2003	5.04	0.63	3.07	2.57	0.83	0.96	1.05	1.70
2004	5.85	0.68	3.11	2.60	1.18	1.39	1.59	2.14
2005	6.32	0.66	3.12	2.58	1.36	1.59	1.90	2.36
2006	6.34	0.70	3.13	2.56	1.36	1.58	1.89	2.35
2007	6.37	0.68	3.04	2.55	1.36	1.57	1.89	2.35
2008	6.33	0.76	2.98	2.54	1.37	1.57	1.87	2.34
2009	6.44	0.40	2.92	2.54	1.39	1.58	1.90	2.36
2010	7.22	0.54	2.99	2.86	1.50	1.82	2.12	2.65
2011	7.21	0.55	3.01	2.88	1.48	1.88	2.13	2.65

2.2 Regional Traffic Review

In addition to the review of transactions on the MdTA facilities, a review of traffic volumes on competing as well as complementary facilities to the MdTA System was undertaken to understand overall traffic patterns in the region. For comparative purposes, the counts are provided by region, including MdTA and non-MdTA roadways. The following tables present the Northern, Central and Southern Regions' historical average annual daily traffic volumes and capitalized annual growth rate of those volumes between represented years. Note that for comparative purposes the one-way transactions for JFK highway and Hatem, Nice and Bay Bridges were doubled to compare to the two way volumes of the other roadways.

Table 6: Historical Count Data – Northern Region

Average Annual Daily Traffic - Northern Region									
Source	**Location**	**1995**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
SHA	I-83 North	46,539	50,219	61,975	66,760	62,068	59,830	61,620	61,971
SHA	US 1 North (Susquehanna River)	8,675	9,650	9,950	9,852	11,640	11,061	11,282	10,050
MdTA	JFK (1)	67,890	78,466	81,957	80,744	81,317	80,283	80,229	80,815
MdTA	Hatem (1)	22,521	25,205	30,520	30,450	30,474	28,075	27,582	27,358
SHA	US 301 North	9,450	10,475	11,425	11,650	11,531	10,952	10,370	10,451
Total		155,075	174,015	195,827	199,456	197,029	190,201	191,082	190,645

(1): JFK and Hatem Traffic figures are doubled to compare to the two-way volumes on the other roadways

Table 7: Historical Growth Rate – Northern Region

Source	**Location**	**Compound Annual Growth Rate**						
		95-00	**00-05**	**05-06**	**06-07**	**07-08**	**08-09**	**09-10**
SHA	I-83 North	1.5%	4.3%	7.7%	-7.0%	-3.6%	3.0%	0.6%
SHA	US 1 North (Susquehanna River)	2.2%	0.6%	-1.0%	18.1%	-5.0%	2.0%	-10.9%
MdTA	JFK (1)	2.9%	0.9%	-1.5%	0.7%	-1.3%	-0.1%	0.7%
MdTA	Hatem (1)	2.3%	3.9%	-0.2%	0.1%	-7.9%	-1.8%	-0.8%
SHA	US 301 North	2.1%	1.8%	2.0%	-1.0%	-5.0%	-5.3%	0.8%
Total		2.3%	2.4%	1.9%	-1.2%	-3.5%	0.5%	-0.2%

Table 8: Historical Count Data – Central Region

Average Annual Daily Traffic - Central Region									
Source	**Location**	**1995**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
SHA	I-95 North Central	134,475	139,575	173,825	161,780	161,781	157,742	160,880	161,521
SHA	I-97 South Central	70,500	95,575	99,325	102,610	102,611	100,562	105,110	105,531
SHA	MD 295 South Central	59,075	58,025	86,250	85,392	91,630	88,881	88,882	89,423
SHA	I-95 South Central	153,275	192,575	189,825	191,880	191,881	188,042	192,100	192,871
SHA	I-695 Southwest	156,175	175,125	188,325	188,333	193,050	189,191	188,860	189,621
SHA	I-83 North Central	46,900	50,850	113,475	113,481	113,482	111,230	112,341	112,792
SHA	I-695 Northeast	142,475	147,725	152,650	152,652	155,270	152,171	153,692	150,850
MdTA	BHT	109,096	126,192	139,720	143,902	141,042	141,209	139,905	138,222
MdTA	FSK	52,603	59,945	66,324	65,171	66,867	67,632	64,045	60,050
MdTA	FMT	198,356	223,342	238,453	238,754	245,776	245,639	238,059	241,451
Total		573,500	660,875	737,550	729,995	740,953	724,418	735,832	738,967

Table 9: Historical Growth Rate – Central Region

Source	**Location**	**Compound Annual Growth Rate**						
		95-00	**00-05**	**05-06**	**06-07**	**07-08**	**08-09**	**09-10**
SHA	I-95 North Central	0.7%	4.5%	-6.9%	0.0%	-2.5%	2.0%	0.4%
SHA	I-97 South Central	6.3%	0.8%	3.3%	0.0%	-2.0%	4.5%	0.4%
SHA	MD 295 South Central	-0.4%	8.3%	-1.0%	7.3%	-3.0%	0.0%	0.6%
SHA	I-95 South Central	4.7%	-0.3%	1.1%	0.0%	-2.0%	2.2%	0.4%
SHA	I-695 Southwest	2.3%	1.5%	0.0%	2.5%	-2.0%	-0.2%	0.4%
SHA	I-83 North Central	1.6%	17.4%	0.0%	0.0%	-2.0%	1.0%	0.4%
SHA	I-695 Northeast	0.7%	0.7%	0.0%	1.7%	-2.0%	1.0%	-1.8%
MdTA	BHT	3.0%	2.1%	3.0%	-2.0%	0.1%	-0.9%	-1.2%
MdTA	FSK	2.6%	2.0%	-1.7%	2.6%	1.1%	-5.3%	-6.2%
MdTA	FMT	2.4%	1.3%	0.1%	2.9%	-0.1%	-3.1%	1.4%
Total		2.9%	2.2%	-1.0%	1.5%	-2.2%	1.6%	0.4%

Table 10: Historical Count Data – Southern Region

Average Annual Daily Traffic - Southern Region									
Source	**Location**	**1995**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
SHA	US301 South	17,350	25,400	22,975	22,751	22,522	21,403	21,834	22,520
VDOT	I-95 Far South (Virginia)	99,000	120,000	134,000	138,000	137,000	133,000	136,000	136,000
MdTA	BB (1)	55,233	64,877	71,123	72,716	73,941	73,260	69,844	71,200
MdTA	Nice (1)	14,137	14,849	17,592	18,385	18,731	18,580	18,341	18,378
Total		185,720	225,126	245,690	251,852	252,194	246,243	246,020	248,098

(1): Bay and Nice Bridges traffic figures are doubled to compare to the two-way volumes on the other roadways

Table 11: Historical Growth Rate – Southern Region

Source	**Location**	**Compound Annual Growth Rate**						
		95-00	**00-05**	**05-06**	**06-07**	**07-08**	**08-09**	**09-10**
SHA	US301 South	7.9%	-2.0%	-1.0%	-1.0%	-5.0%	2.0%	3.1%
VDOT	I-95 Far South (Virginia)	3.9%	2.2%	3.0%	-0.7%	-2.9%	2.3%	0.0%
MdTA	BB	3.3%	1.9%	2.2%	1.7%	-0.9%	-4.7%	1.9%
MdTA	Nice	1.0%	3.4%	4.5%	1.9%	-0.8%	-1.3%	0.2%
Total		3.9%	1.8%	2.5%	0.1%	-2.4%	-0.1%	0.8%

2.3 Historical Toll Transactions by Vehicle Class

The historical toll transactions on the MdTA facilities by vehicle class are shown in Table 12. As commercial vehicle usage of MdTA facilities reacts more acutely to recessionary times, the percentage of these vehicles as a function of total transactions has slightly declined since FY2009. The percent share of commercial vehicles on the System decreased from 7.9 percent in years leading to FY2009 to 7.3 percent in FY2009 and further to 7.0 percent of total traffic in both FY2010 and FY2011. Additionally, commercial vehicles were subject to a toll increase in May FY2009 which is estimated to have had an impact on a portion of FY2009 and FY2010 traffic. It is evident this impact continued in FY2011.

Table 12: MdTA Historical Toll Transactions by Vehicle Class

Fiscal Year	MdTA Facilities - Transactions (Millions)			
	Passenger Cars	Commercial Vehicles	Total	% CV
1995	86.6	8.3	94.9	8.7%
1996	88.2	8.1	96.3	8.4%
1997	92.1	8.4	100.5	8.4%
1998	94.2	8.6	102.8	8.4%
1999	96.6	9.1	105.7	8.6%
2000	98.6	9.6	108.2	8.9%
2001	101.3	9.5	110.8	8.6%
2002	106.9	9.2	116.1	7.9%
2003	106.9	9.0	115.9	7.8%
2004	108.1	9.3	117.4	7.9%
2005	108.4	9.4	117.8	8.0%
2006	109.2	9.4	118.6	7.9%
2007	110.6	9.5	120.1	7.9%
2008	110.1	9.4	119.5	7.9%
2009	108.0	8.5	116.4	7.3%
2010	108.3	8.1	116.3	7.0%
2011	109.5	8.2	117.7	7.0%

The participation in commuter plans on the MdTA system has been declining slightly over the recent years as well, as exhibited in Table 13. Currently, commuter plans offer passenger car motorists up to 80 percent cost savings on most of the MdTA facilities, with

the exceptions being the Bay Bridge, offering up to 40 percent savings. These savings have enticed a significant portion of motorists into the program, which peaked in FY2008. Since then the percentage of passenger car transactions in this category has decreased in both absolute and percentage terms. One reason for this slight decline in participation from FY2008 to FY 2011 is estimated to be caused by the change in the commuter program from allowing for a set number of trips at the reduced rate in a 45 day period instead of a 60 day period. With this change in policy, it is estimated that the commuter program did not make economic sense for some of the less-frequent customers; thus, there was a slight reduction in program participation while overall passenger car transactions increased**.**

Table 13: MdTA Commuter Plan Participation

Fiscal Year	MdTA Facilities - Transactions (Millions)			
	Commuters	Non-Commuters	Total Passenger Cars	Percent Commuters
2004	32.1	76.0	108.1	29.7%
2005	36.5	72.0	108.4	33.6%
2006	37.4	71.9	109.2	34.2%
2007	38.3	72.3	110.6	34.6%
2008	38.5	71.6	110.1	35.0%
2009	37.4	70.5	108.0	34.7%
2010	35.7	72.6	108.3	33.0%
2011	35.0	74.5	109.5	32.0%

The counterbalancing of the decrease in commercial vehicle transactions and commuter discount plan participation as a function of the total transactions has allowed for a relatively flat average toll rate, as presented previously in the report. These trends are a significant input for the development of the projections of traffic and gross toll revenue that are provided later in the report.

3.0 Economic and Demographic Factors

During the course of this analysis, Jacobs analyzed several key socio-economic factors relevant to the growth in traffic and related toll revenues for the MdTA tolled facilities. Factors that are relevant to the long term background growth of traffic on the facilities were studied, as was the relationship of traffic to specific economic indices for passenger car and truck traffic. Jacobs also conducted extensive background research into the specific dynamics of past economic recessions and recovery from those recessions in order to better understand the current phenomenon and to aid in giving context to the most recent economic downturn when compared with past recessions. The analyses are summarized in the following sections.

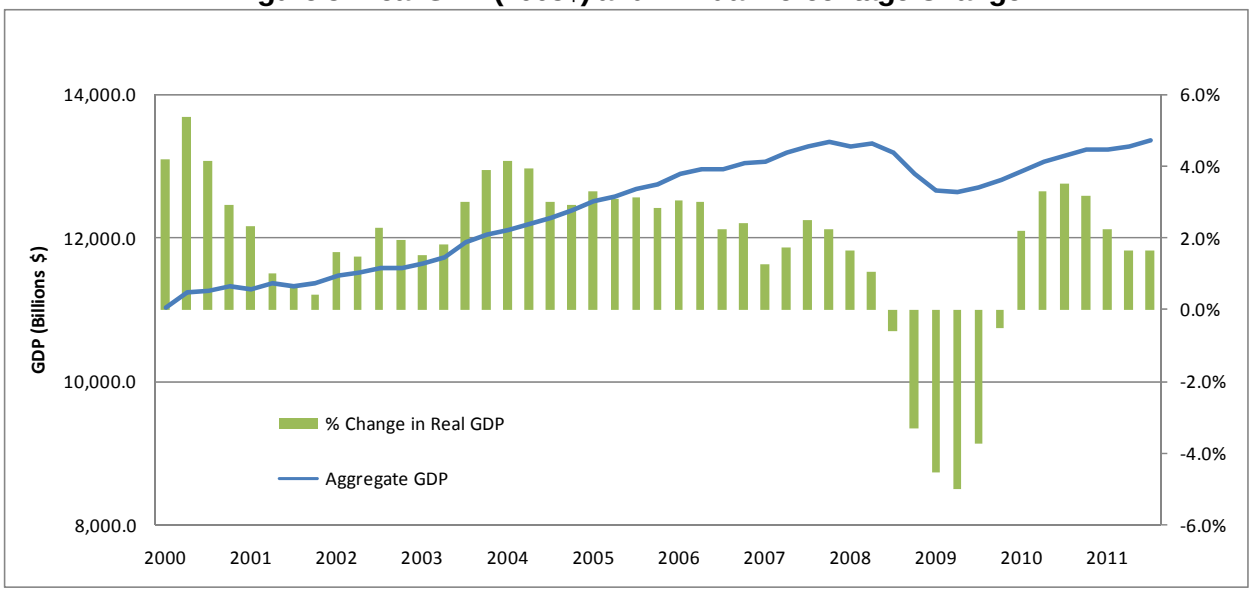
3.1 Review of Regional and National Socio-economic Factors

This section discusses historical and forecasted national economic conditions with an emphasis on the projected growth in output. Moreover, this section provides a review and summary of local economic factors, such as the change in fuel costs, population, employment, housing, and commuter patterns in Maryland and in neighboring states.

3.1.1 General National Economic Conditions

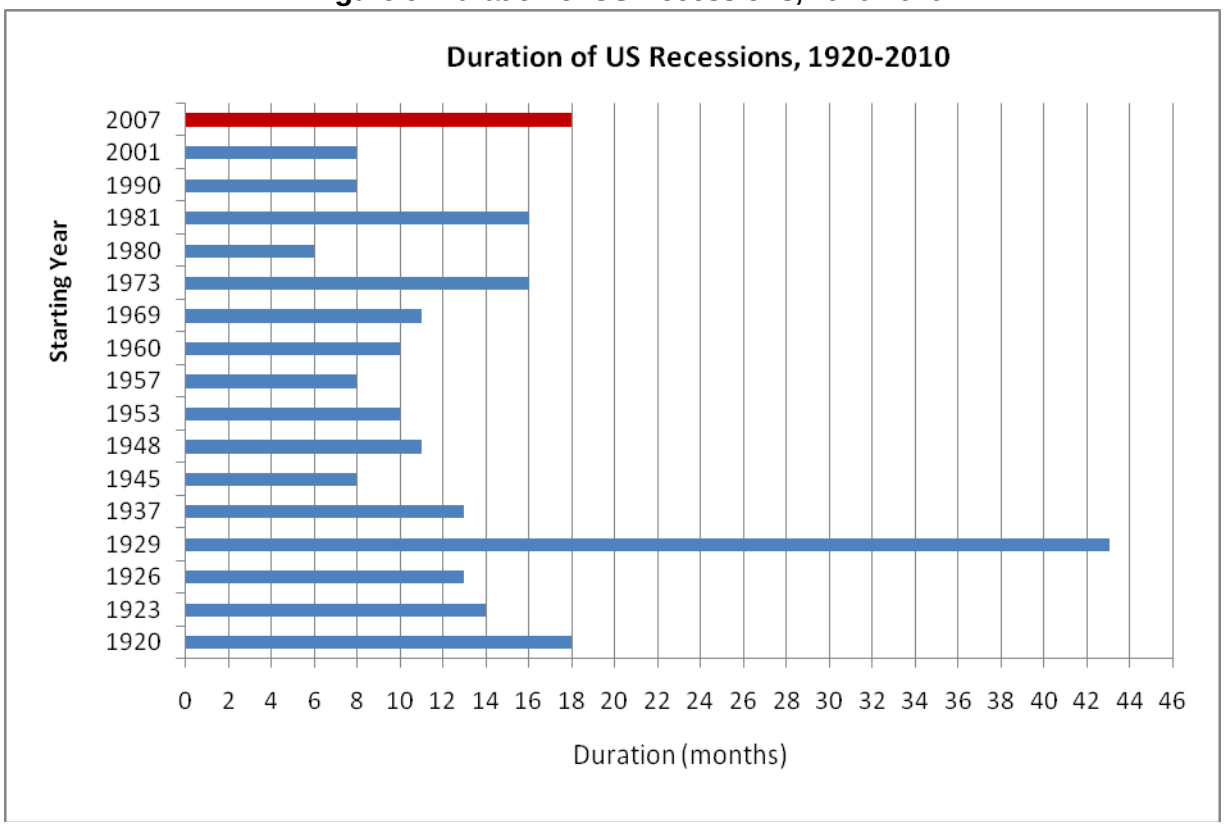
From 2000 to 2010, real Gross Domestic Product (GDP) and the Industrial Production Index in the U.S. increased by an average of 1.8 percent and 0.6 percent per year, respectively. This includes the recession that began and ended in 2001 and the most recent recession, which began in December 2007 and officially ended in June 2009. This recent recession has been more severe compared to previous recessions, resulting in zero growth in real GDP and a -3.3 percent decrease in industrial production in 2008. Real GDP decreased by an additional -2.6 percent in 2009, but recovered in 2010 with a 2.9 percent annual increase. Due to a lag in economic activity, industrial production decreased by -9.3 percent in 2009, but rebounded solidly in 2010, with over 3 percent annual growth. During the first three quarters of 2011, Real GDP has increased by 1.8 percent. The Real GDP and the growth of Real GDP since 2000 are shown in Figure 5. Note the recession in 2008 and 2009, the strong recovery in 2010 and the slowing of that recovery in the first three quarters of 2011.

Figure 5: Real GDP (2005$) and Annual Percentage Change



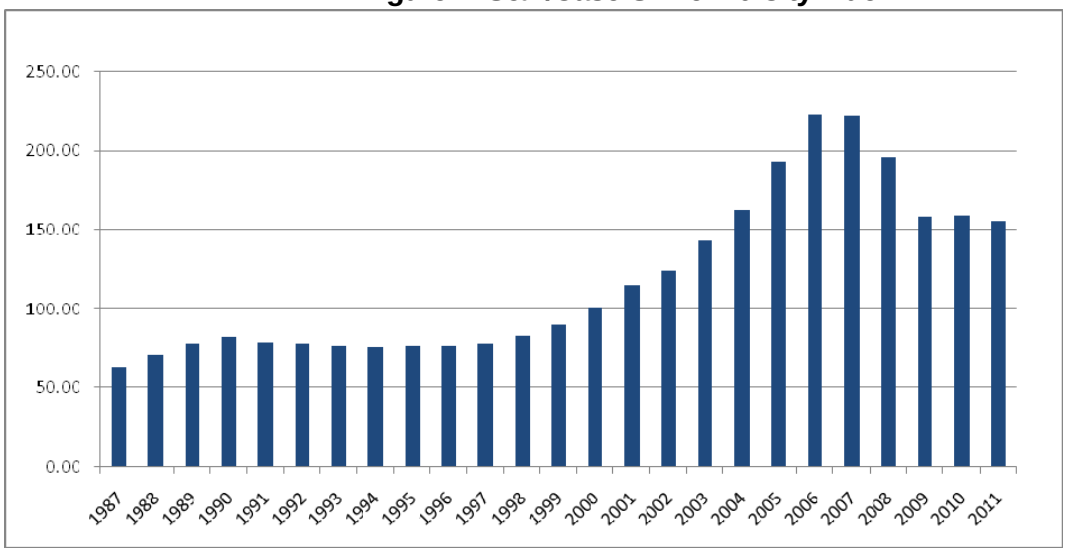
Recessions are technically defined as two consecutive quarters of negative growth of GDP. In determining whether a recession has taken place, the National Bureau of Economic Research (NBER) can include other factors in its analysis. According to the NBER, the most recent recession lasted 18 months, making it the longest economic downturn since the Great Depression. Additionally, this recession is comparable to and possibly may exceed the recessions of the early 1970s and early 1980s in duration and severity, as shown in Figure 6.

Figure 6: Duration of US Recessions, 1920-2010



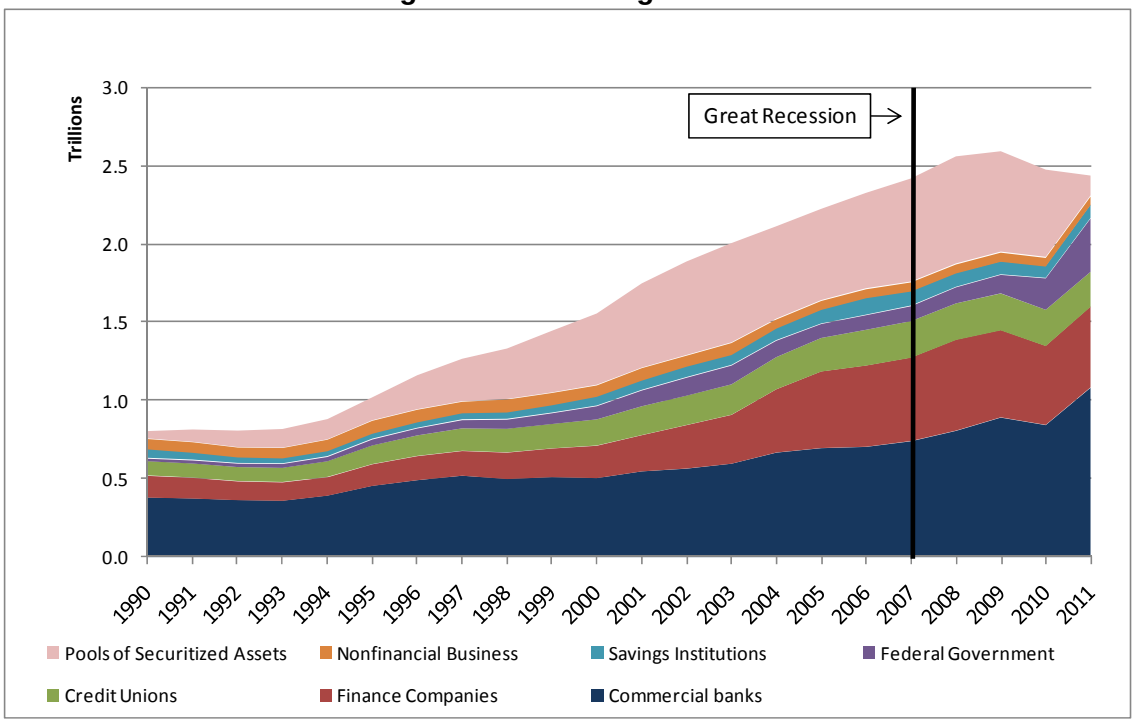
Economic downturns that have occurred after the Great Depression have typically been triggered by a contraction in the monetary supply (typified by higher interest rates) or an external shock (sudden rise in oil prices, political turmoil, etc.) resulting in a decrease in consumer confidence, economic growth, and employment. Once expansionary conditions are in place, then post-recessionary periods are characterized by rapid, strong and sustained increases in GDP and employment. In contrast, the recent recession was caused by the near collapse of the financial sector, the lack of available credit, the end of the "bubble" in real estate, and high consumer debt levels. In 2008 and 2009, housing prices for the S&P/Case-Shiller 10-City Index, decreased by -11% and -19%, respectively, as shown in Figure 7.

Figure 7: S&P/Case-Shiller 10 City Index



Due to a lag, outstanding consumer credit declined by -6% from $2.6 trillion to $2.4 trillion from 2009 to early 2011. In particular, securitized asset pools decreased precipitously—from $682 billion to $127 billion from 2008-11. Consumer credit is detailed by sector in Figure 8. These conditions are more similar to the underlying causes and impacts of to the Great Depression. Recent economic research indicates that the root causes of these contractions lead to weaker and fragile recoveries until the financial sector stabilizes, asset prices recover, and deleveraging by consumers and businesses is concluded. Consequently, economic growth is expected to be sluggish with high unemployment over longer periods of time.

Figure 8: Outstanding Consumer Credit



3.1.1.1Long-Term Structural Trends

There have also been a number of long-term structural trends in the U.S. and internationally which have impeded economic growth and employment creation in recent years. First, there have been significant productivity improvements in the form of advances in information technology, computing power, transportation, and communications. Initially, these advances encouraged the transfer of manufacturing facilities and jobs to areas (Mexico, China, etc.) with higher unemployment and lower wages. This also shifted the engine for economic growth from manufacturing (31% of GDP in 1970 and 23% GDP in 2010) to services (32% of GDP in 1970 and 47% of GDP in 2010). These trends intensified after the technology boom of the late 1990s and the subsequent bust that took place during the early 2000's, which encouraged the rapid and widespread expansion of inexpensive communications technologies and further flattened factor and wage costs. Increasingly, this has led to the outsourcing of professional services. For example, X-rays can be evaluated or financial statements can be prepared cheaply and rapidly almost anywhere in the world where technical capacity exists. It is expected that this structural trend will continue in the medium to long- term.

Second, there has been a restructuring of the international economy with traditional trading partners (Europe and Japan) generating a decreasing share of global GDP, while other economies including Brazil, Russia, India and China ("the BRIC countries"),

comprising a larger share of the global economy. For the U.S., this has resulted in greater competition not just in manufacturing, but also in professional services, reducing direct and indirect employment. A third trend has been the aging of the U.S population. The median age has increased from 27.9 in 1970 to 37.2 in 2010. This trend has also taken hold in Europe and Japan and is expected to eventually impact China due to its one-child policy. Finally, there has been a rapid and significant expansion in consumer credit, which has reached unsustainable levels. As a result, consumers have reduced or deferred large discretionary purchases, such as vehicles and appliances, until debt levels have decreased to more manageable levels. These factors tend to further dampen economic growth and employment over the short-term.

3.1.1.2Short-Term Economic Forecast

At the start of 2011, there was a great detail of optimism with respect to economic growth and employment, which has subsequently diminished as the year has progressed. Forecasts prepared in April 2011 by financial institutions and business associations predicted that real GDP would increase by 2.9% and 3.2% in 2011 and 2012, respectively. However, more recent data indicates that real GDP is expected to grow more slowly. Forecasts prepared in August 2011 predict that real GDP will increase by approximately 1.7% in 2011 and 2.2% in 2012. The previous and revised forecast of Real GDP for 2011 and 2012 are presented in Figure 9 and Figure 10, respectively. (As of this writing, the U.S. Federal Reserve Bank (FRB) and the International Monetary Fund (IMF) have not yet revised their forecasts.) Factors cited in these revised forecasts include slower than expected economic growth, higher than expected unemployment, flattened consumer spending, weakness in the housing market and new construction, stock market volatility, and the recent downgrade in the U.S. credit rating by Standard and Poor's. The revised forecasts, especially for 2011, barely exceed population growth, which increased by an average of 0.9% per year from 2000 to 2010.

Figure 9: Real GDP Forecasts for 2011, Previous and Revised

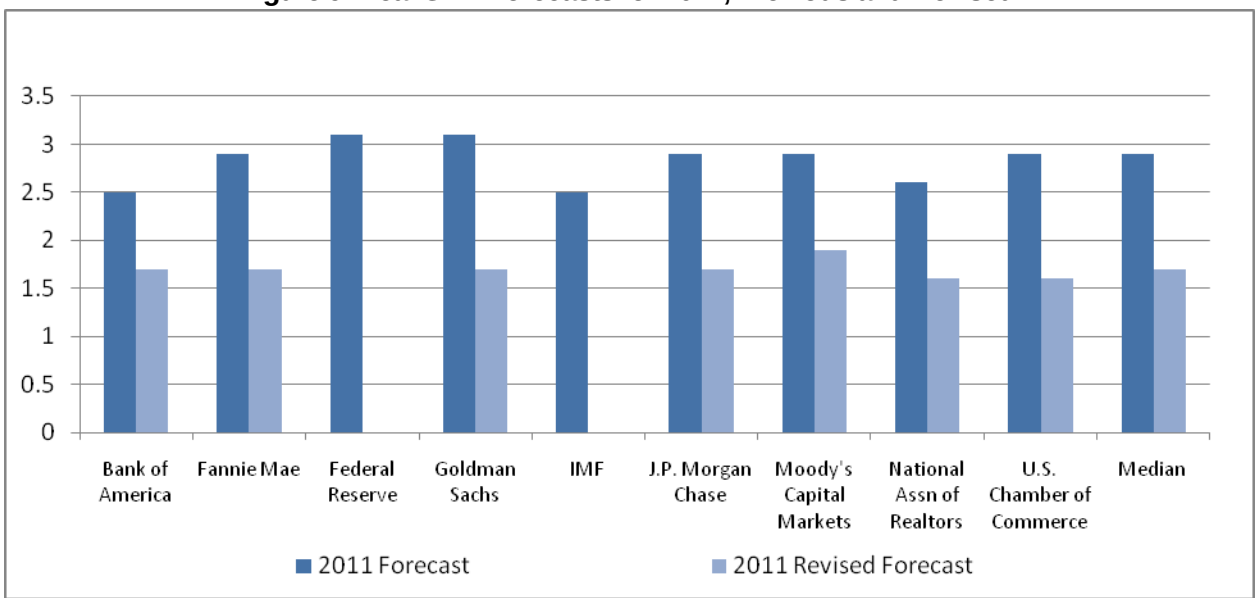
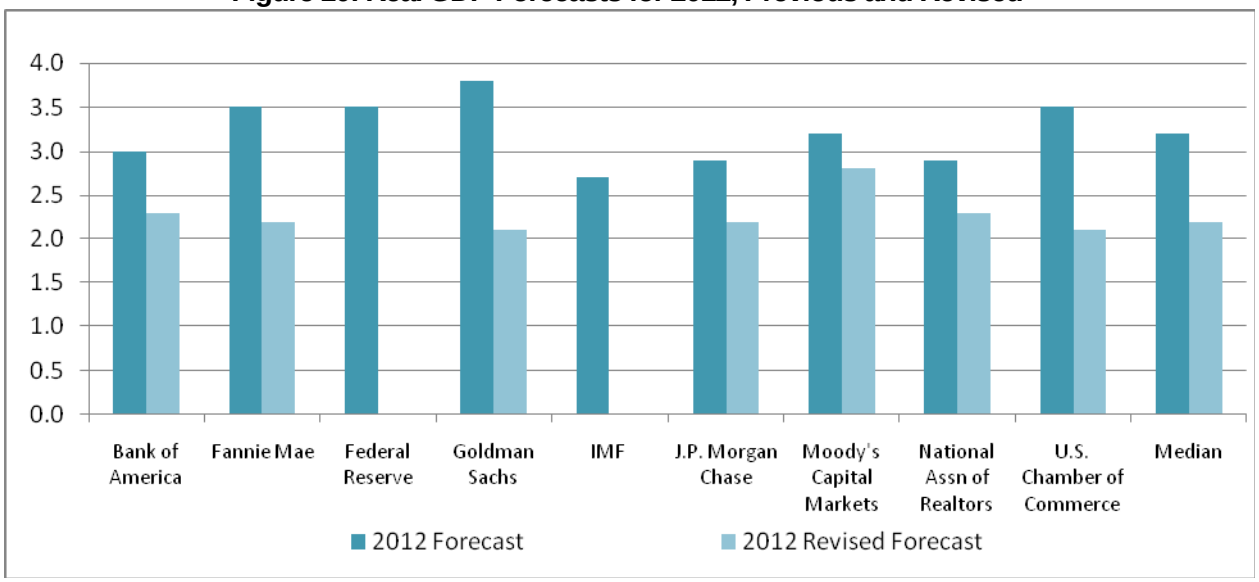


Figure 10: Real GDP Forecasts for 2012, Previous and Revised



These factors have renewed concerns of the possibility of a second or "double-dip" recession within the next 2-3 years, which last occurred in the early 1980s. As of this writing, none of the revised forecasts are predicting a return to recessionary conditions. Moreover, the Federal Reserve is planning to maintain its policy of low interest rates and possibly conduct another round of quantitative easing to spur economic growth. Revised forecasts are generally calling for sluggish economic growth and weak labor market conditions in 2011 with a slight improvement in 2012. Possible signs of a second recession have also not yet materialized. For example, the yield curve remains positive with short term interest rates (0-12 months) on U.S. Treasuries trading at or near zero

and the interest rates on 30-year U.S. Treasuries trading at 3.75%, as of August 23, 2011. Additionally, the market for crude oil remains strong with the price expected to be close to $100/barrel for this year and next. In comparison, the price during 2009, which corresponded to the steepest part of the recession, averaged approximately $62/barrel.

If the forecasts calling for continued slow growth materialize, then the economy will remain vulnerable to exogenous risks, which could potentially drive the U.S. economy back into recession. External events that could bring on a second recession include the ongoing European debt crises, continued volatility in the stock market which reduces investor and consumer confidence, continued instability in the Middle East, or a natural disaster (e.g. the 2011 earthquake in Japan). In particular, the European debt situation represents a key external risk that could affect economic recovery in the U.S. At the present time, there are concerns that Ireland, Portugal or Spain may join Greece in requiring assistance from the European Union or the IMF in order to avoid default. French banks are particularly exposed, which could result in a second round of financial contagion, further retrenchment in the financial sector, and another recession.

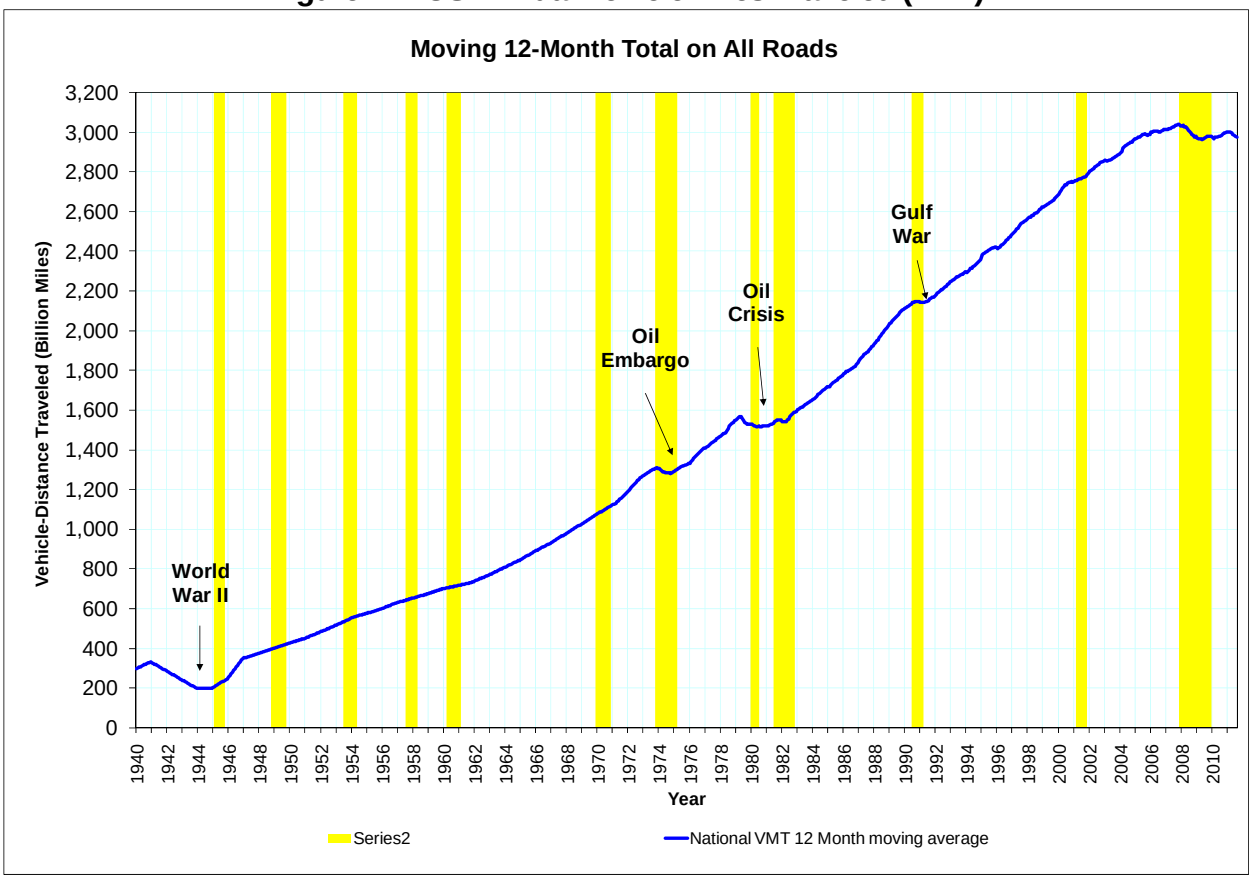
Our outlook is for relatively flat economic growth of 1.7% for 2011 and 2.2% for 2012, which represents the median of the revised economic forecasts developed by financial institutions and business associations in the short term. It is anticipated that a slow recovery will emerge in the medium term in contrast to robust recoveries of previous recessions. This fits with the current base case forecast provided by Jacobs for the MdTA facilities.

3.1.2 National Trends in Vehicle Miles Traveled (VMT)

The United States has experienced a decrease in VMT on its highways over the last few years. This reduction in VMT has resulted in a substantial decrease in revenues generated from fuel taxes and tolls, which are major sources of funding for transportation projects. There are several factors that have contributed to this phenomenon, including volatility in oil and gasoline prices, aging of the population, periodic decreases in output and employment, and changes in technology which renders some commuter and discretionary trips unnecessary.

Figure 11 presents annual VMT (a 12-month moving total) from 1940 through the middle of 2011. Historically, there have been temporary reductions in VMT during wars, oil crises and economic recessions. Despite these temporary “dips,” VMT has continued to grow rapidly over the years. However, VMT remained flat in 2006 and 2007, decreased by more than two percent in 2008 through 2009, recovered slightly in 2010 and then has fallen recently. This recent reduction in VMT will be discussed in the comparative recession analysis later in this document.

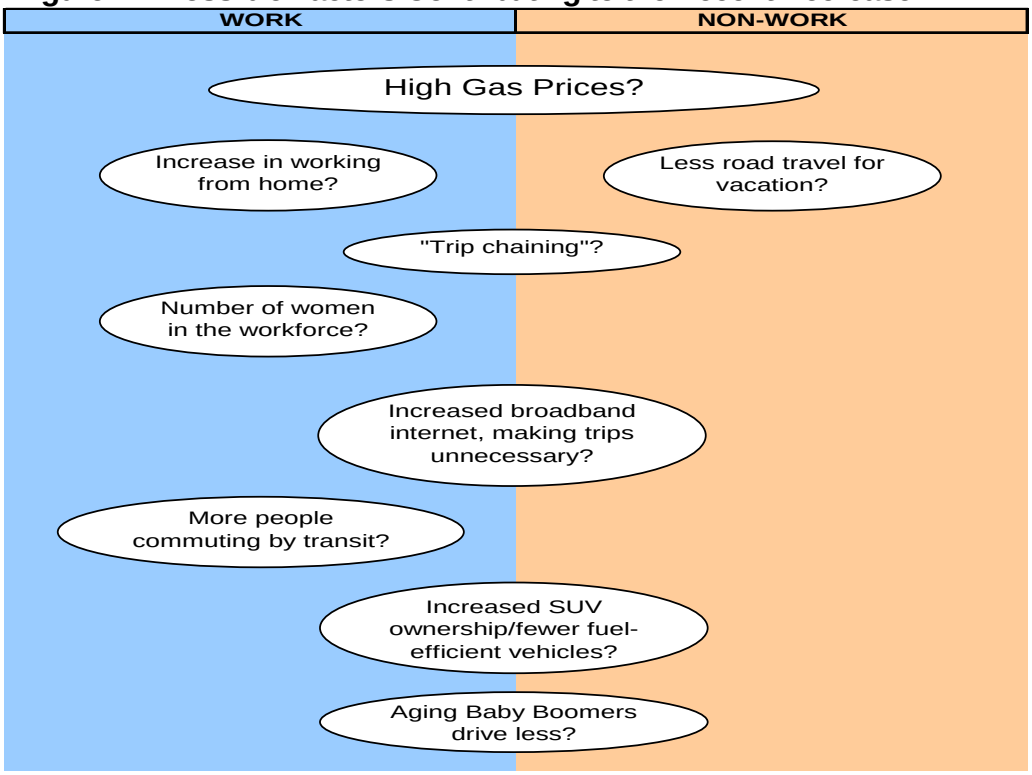
Figure 11: US Annual Vehicle Miles Traveled (VMT)



Source: Federal Highway Administration (FHWA)

Figure 12 lists some of the economic, demographic, and behavioral factors that may have caused the recent drop in VMT that are outside of the direct impact of the recession. The purpose of identifying these non-economic factors, is to isolate changes in travel characteristics that change the historical relationship between economy (and employment) and travel. This list includes the factors that impact work and non-work related trips. It should be noted that some factors affect both trip types.

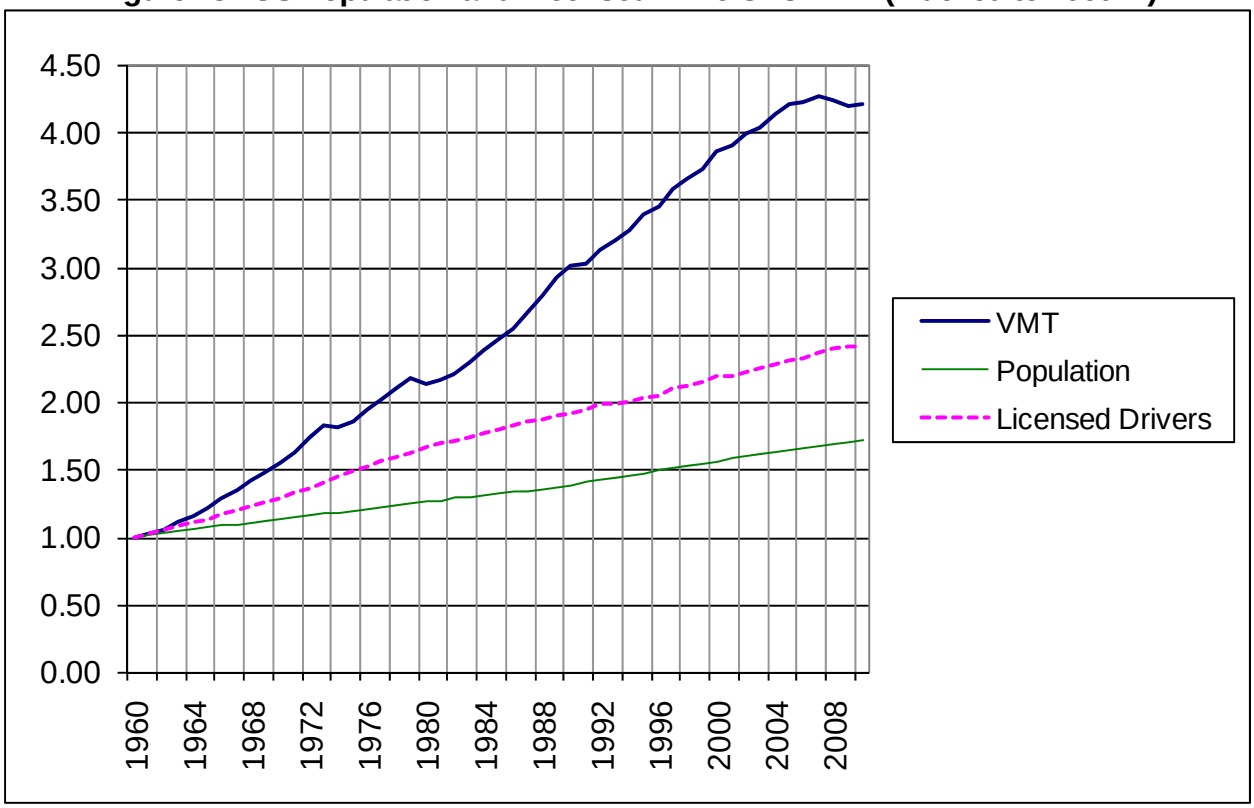
Figure 12: Possible Factors Contributing to the Recent Decrease in VMT



Source: Jacobs Consultancy

Figure 13 compares the annual change in VMT to the annual increase in total population and the number of licensed drivers in the U.S. Historically, total VMT in the U.S. has increased at a higher average annual rate compared to population and the total number of licensed drivers.

Figure 13: US Population and Licensed Drivers vs. VMT (Indexed to 1960=1)



Sources: FHWA; U.S. Census

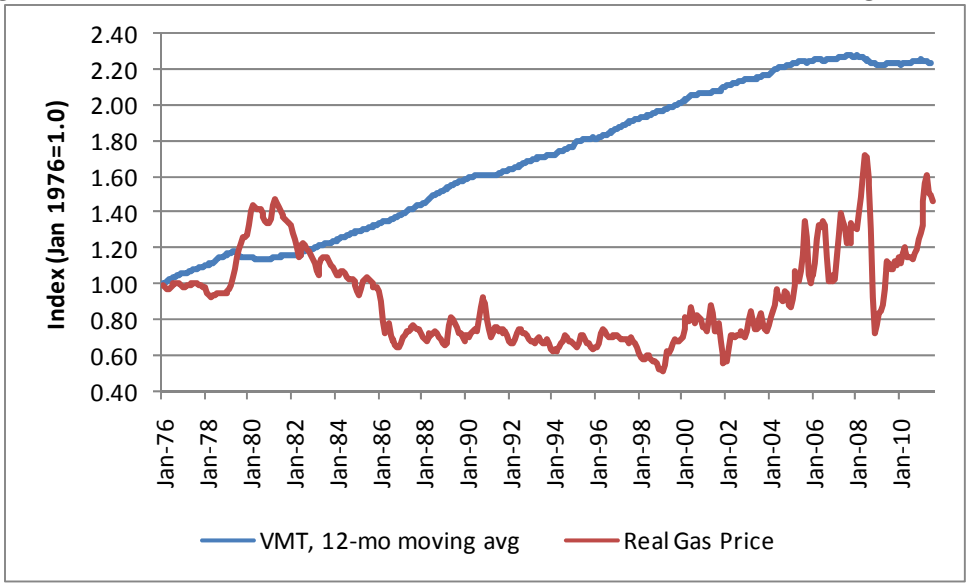
3.1.2.1 Fuel Costs

A number of factors may have caused the recent drop in VMT; the jump in gas prices is often cited as a key factor. Until the significant reduction in gasoline prices in late 2008, inflation-adjusted (real) gas prices had approached, then exceeded, the 1981 levels that were caused by the 1979 oil shock. The worldwide price for crude oil in July 2008 was $147/barrel, dropping to $39/barrel in February 2009. This steep decrease and partial rebound in crude oil prices illustrate the impact of the recession as well as provides signs of recovery in economic conditions. Crude oil prices rebounded shortly after the February 2009 low and averaged $61.66/barrel during 2009. Since 2009 prices have fluctuated with a 2010 average of $79.40 and have since risen to the current level of approximately $100/barrel in November 2011.

Figure 14 summarizes the annual change in real gasoline prices and in VMT from January 1973 to July 2011, the most recent data available from FHWA. Once a certain threshold is reached, higher gasoline prices appear to have a strong impact on traffic volumes and VMT, resulting in increased transit usage, reduced trips, and combined purpose trips ("trip chaining"). The spike in fuel prices from 2004 to 2008 has made people more aware of the financial impact of high gas prices, caused a re-examination of vehicle fuel efficiency

standards, and raised the possibility of changes in driving behavior. Following the peak, the steep decline in gas prices in 2009 had only a nominal impact on the VMT.

Figure 14: Real Gas Prices vs. VMT, 1973-2009, 12-Month Moving Average

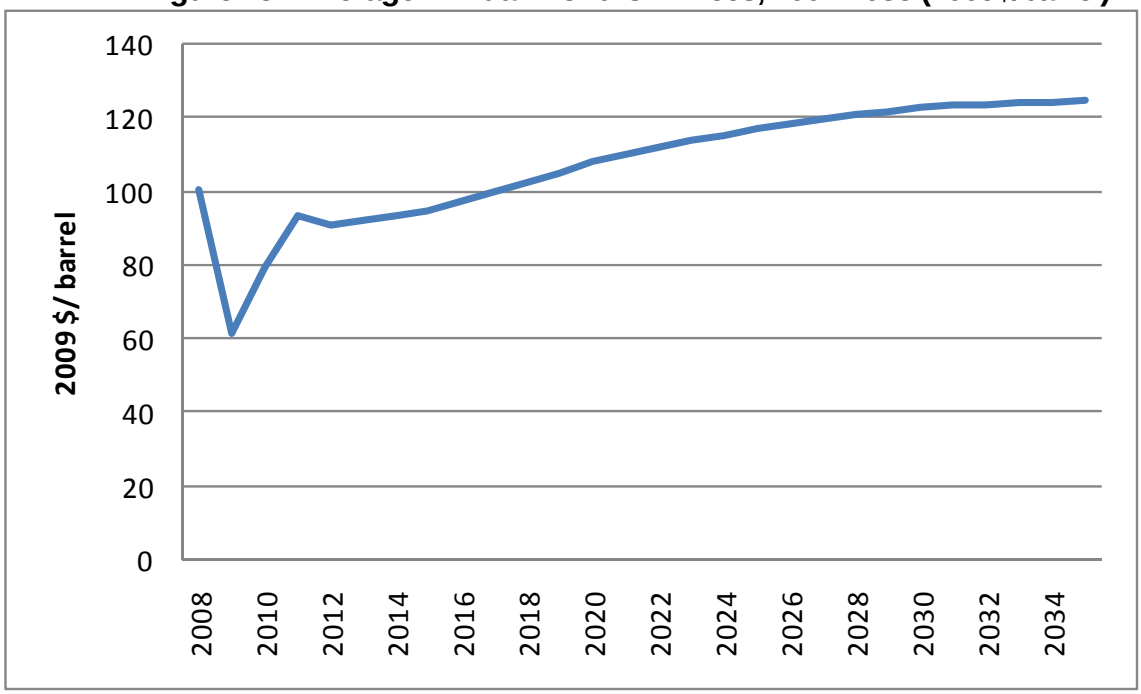


Sources: FHWA, EIA

EIA estimated that retail gasoline prices (including taxes) across the U.S. averaged $2.78/gallon in 2010. In its November 2011 forecasts, EIA anticipates that gasoline prices will average approximately $3.54/gallon in 2011 and $3.46 in 2012. The EIA estimates that crude oil will average $93.80/barrel and $91.13/barrel in 2011 and 2012, respectively, despite prices being above that in November 2011.

Figure 15 shows historical and EIA's forecasted average world oil prices per barrel from 2008 to 2035. Oil prices decreased from historic highs in 2008 to lower levels in 2009 and 2010. Oil prices are anticipated to decrease in 2012 slowly increase over time, as has been predicted by previous forecasts from the EIA.

Figure 15: Average Annual World Oil Prices, 2007-2035 (2009$/barrel)



Source: Energy Information Administration (EIA), US Department of Energy

3.1.2.2 Work vs. Non-Work Travel

The 2001 National Household Travel Survey converted the number of trips by purpose and distance into VMT, which is summarized in Table 14. According to the 2001 survey, trips commuting to/from work and work related trips accounted for more than 35 percent of total VMT. The next highest categories were trips related to social/recreational activities and family/personal business, which accounted for 25 percent and 19 percent of total VMT, respectively. In addition, shopping related trips accounted for 15 percent of VMT. Finally, other trips, which include medical and religious related trips, accounted for about 7 percent of total VMT in 2001.

Table 14: Share of VMT by Trip Purpose, 2001

Purpose	Percentage of Total VMT
Commuting and Work Related Business	35.4%
Social/Recreational	24.4%
Family/Personal Business	18.7%
Shopping	14.5%
Other	6.9%

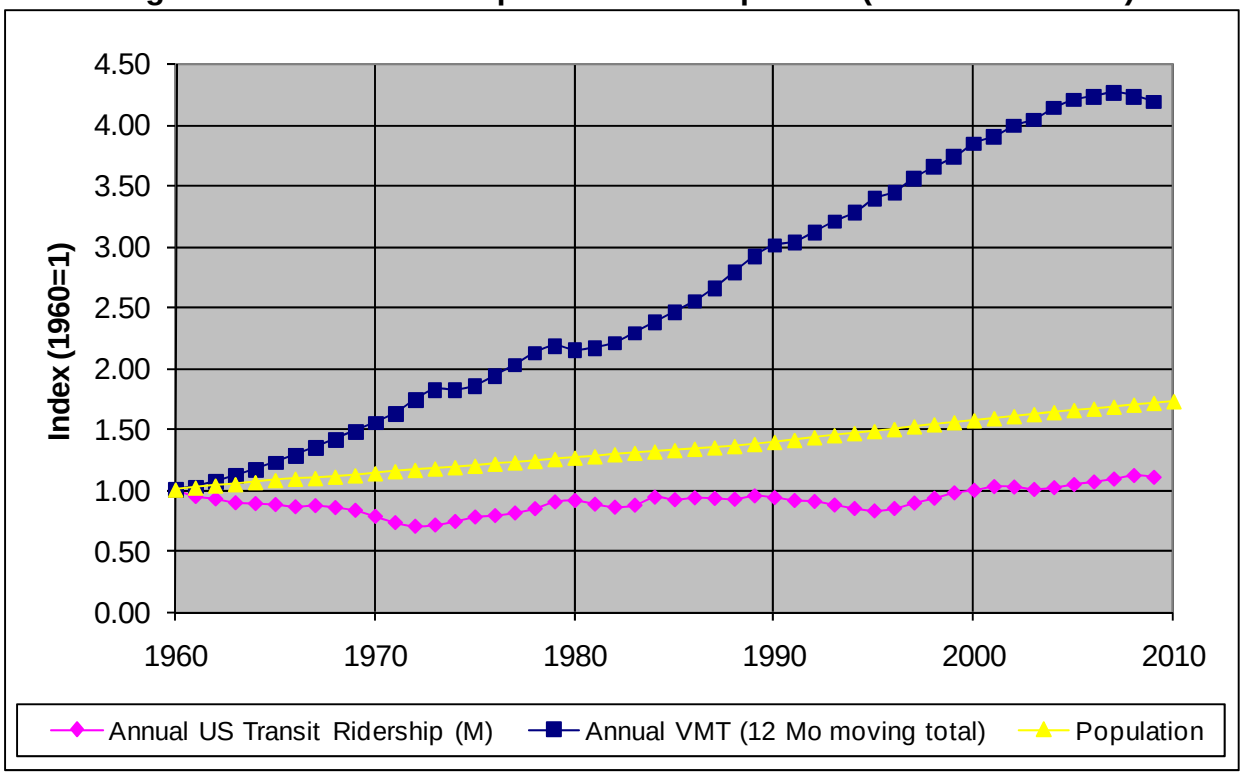
Source: 2001 National Household Travel Survey, U.S. Department of Transportation

3.1.2.3 Transit

The ease, widespread availability, and comparative cost of using passenger cars compared to other transportation modes increased dramatically throughout the 20th century, Changes in land-use patterns, increased development in suburban areas, and the relatively higher allocation of funding to highway projects has resulted in a relatively sustained decline in transit ridership levels from 1960 onward. During the 1970s, transit ridership decreased to approximately 60 percent of 1960 levels. Based on data published by the American Public Transportation Association (APTA), transit ridership returned to 1960 levels in 1990, decreased again during most of the decade, and then bounced back to historical levels in 2000. Since 2000, transit ridership has continued to grow, with a small decrease in 2009. This decrease is likely due to job losses.

Figure 16 compares the annual growth in transit ridership in relation to VMT and population. Transit ridership includes both work and non-work trips. Although there has been a 10 percent increase in transit trips from 1960 to 2009, population has increased by 72 percent and VMT has increased by over 300 percent.

Figure 16: Transit Ridership vs. VMT and Population (Indexed to 1960=1)

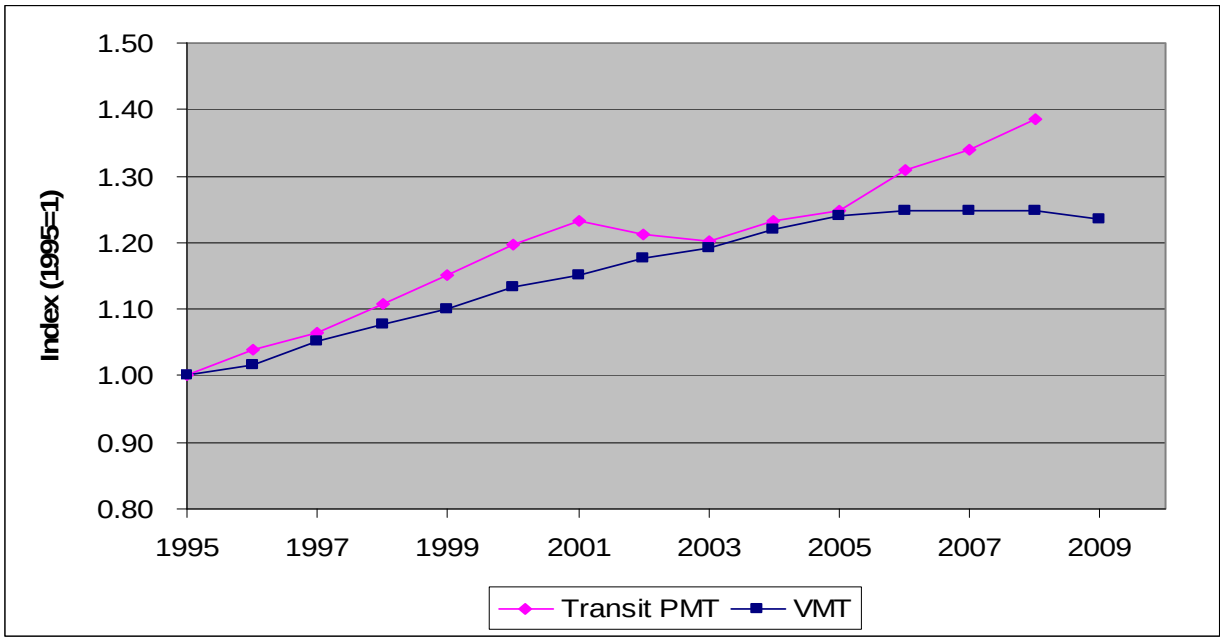


Source: APTA 2011 Public Transportation Fact Book

However, passenger miles traveled (PMT) has kept pace with or exceeded highway VMT since 1995. This trend encompasses the slight decrease in transit PMT that occurred from 2002 to 2005 possibly as a result of post-9/11 fears. The growth in transit PMT may be

attributed to the following factors: (i) the improved/expanded transit service in urban and suburban areas; (ii) the increased growth of suburban areas which has supported the development of long-distance bus and rail commuter lines; (iii) the increase in congestion on urban and suburban roadways, particularly to/from major employment centers; (iv) the recent increase in gasoline prices which has made transit a potentially more cost-effective means for some individuals; and (v) the increase in the number of individuals over the age of 65, who are less likely to drive. Figure 17 compares the annual change in transit PMT and highway VMT from 1995 to 2009.

Figure 17: Transit PMT vs. Highway VMT (Indexed to 1995=1)



Sources: APTA 2010 Public Transportation Fact Book

3.1.2.4 Discretionary Travel, Telecommuting and the Internet

The advent and widespread usage of the internet more than 15 years ago has brought about a whole new information age whereby many people now use it as the main tool for the retrieval and exchange of information, social communication, entertainment, and the purchase of goods and services. In theory, increased internet usage would make some vehicle trips unnecessary. According to the Federal Communications Commission (FCC), the share of U.S. households with broadband internet increased from 4 percent in 2000 to 64 percent in October 2009. According to Nielsen Online, Americans currently spend an average of nearly 60 hours per month on the internet or about two hours per day. A 2000 study by the Stanford Institute for the Quantitative Study of Society (SIQSS) included a survey of more than 4,000 adults nationwide, which sought to evaluate how the internet has affected society. This study revealed that with more time spent online, there is a decrease in

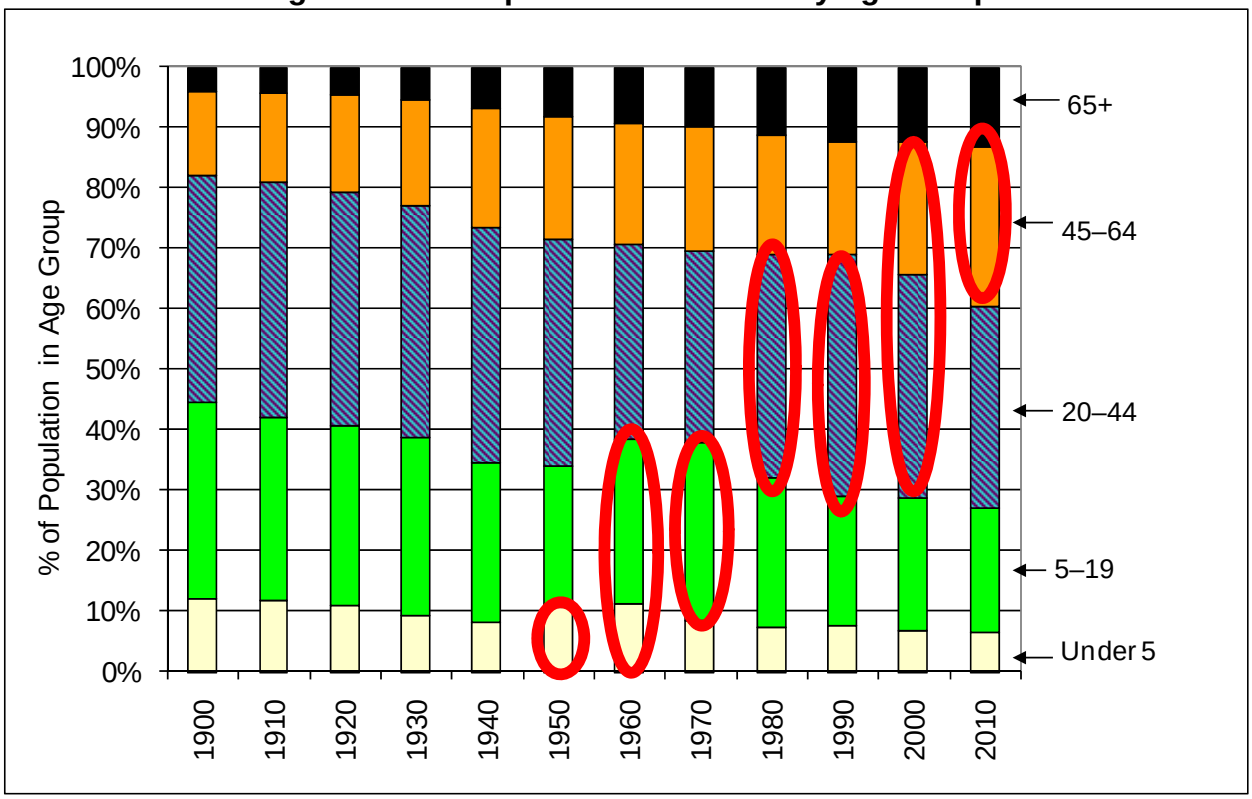
social contact, time spent commuting, and time spent shopping. These studies suggest that increases in internet usage and speed may have caused a decrease in discretionary travel.

An increase in telecommuting may have also caused a small decrease in national VMT. Individuals who work from home save on the time and expense of commuting. With the widespread availability of cell phones, high-speed internet service, and laptop computers, it has become increasingly easier for work in certain employment sectors, e.g. sales, management, professional services, and information technology, to be conducted from home. The Dieringer Research Group, Inc. in their February 2009 survey brief, *"Telework Trendlines 2009,"* found that the number of employees telecommuting at least once a month doubled from 17 million in 2001 to 34 million in 2008. Nearly 14 million workers in 2008, which constituted 9 percent of the labor force, telecommute almost every day. The decrease in trips to the office likely had a small effect on the decline in VMT.

3.1.2.5 Age

Shifts in the age of the U.S. population will also impact VMT. Figure 18 shows how the population within each age group changed from 1900 to 2010. The post-World War II baby boom brought about a significant spike in birth rates between 1946 and 1964. However, the percentage of the population in the 20 to 44 age group, which typically produces the most VMT, has declined since 1990. At the same time, the 45 to 64 age group and the 65+ age groups have steadily increased in size.

Figure 18: US Population Distribution by Age Group

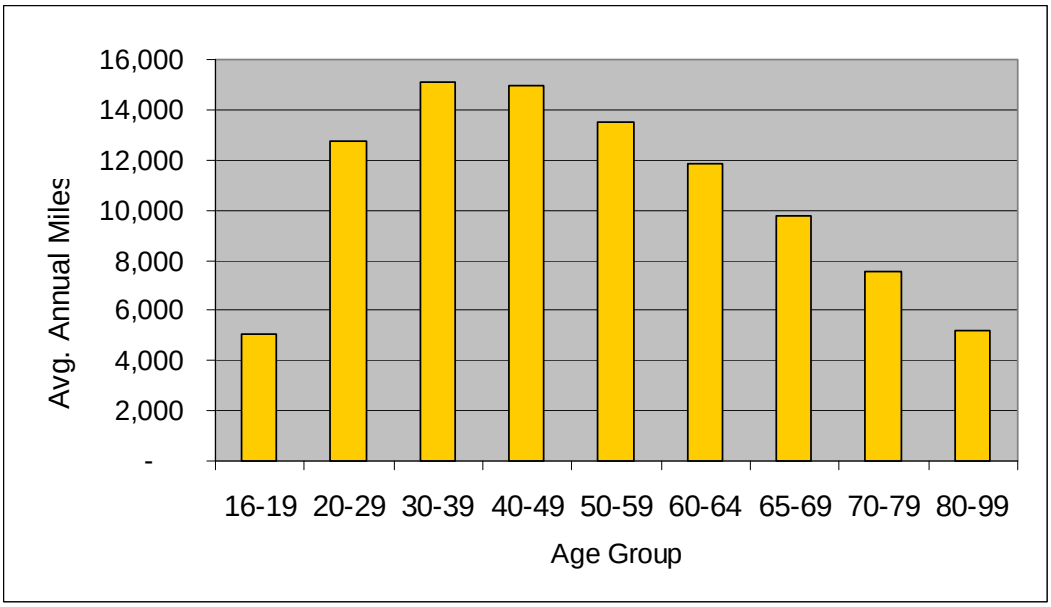


Source: US Census Bureau

Based on previous studies, individuals tend to gradually drive less as they age, especially after the age of 40. Figure 19 summarizes the results from the 2009 National Household Travel Survey and the number of VMT per person by age group. This data highlights the impact of an aging population on national VMT. In 2009, the 30-39 age group recorded the highest average VMT per person: approximately 15,100 for the year. The next highest groups were the 40-49 age group and the 50-59 age group which recorded slightly less than 15,000 VMT/person and 13,500 VMT/person, respectively. The 60-64 age group recorded about 11,800 VMT/person in 2009, while those in the 65-69, 70-79 and 80-99 age groups averaged about 9,800, 7,600 and 5,200 miles in 2009, respectively. With the aging of the Baby Boomer population, as shown in the previous chart, the average VMT per person had

been decreasing over the past decade. This, plus increased longevity, is expected to have a long-term effect on VMT; traffic growth is not expected to return to the rates achieved in the 1980s and 1990s.

Figure 19: Average VMT per Person by Age Range, 2009

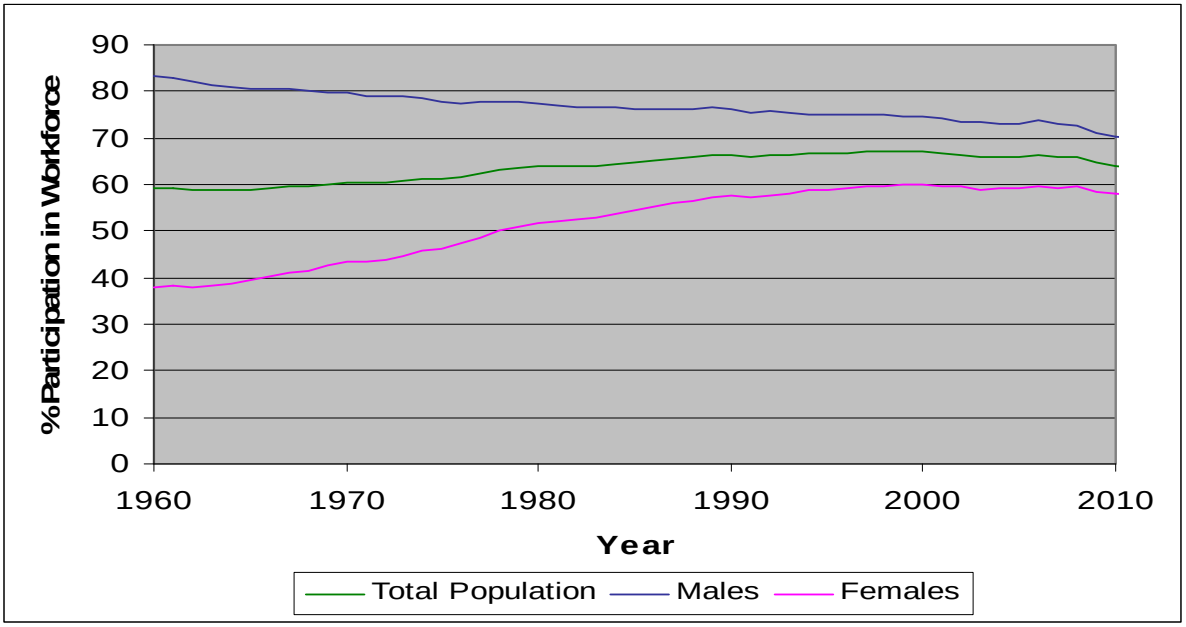


Source: 2009 National Household Travel Survey, U.S. Department of Transportation

3.1.2.6 Women in the Workforce

Female participation in the workforce rose dramatically from the mid-1960s to around 2000, increasing from 38 percent to 60 percent of the total workforce. This trend has also contributed to the historical growth in VMT. As a result of the recent economic downturn, the participation in the workforce for each gender as a percentage of the total population has decreased. Approximately 59 percent of women and 71 percent of men currently participate in the workforce. These rates are expected to decrease with the continued aging and retirement of the Baby Boomer generation. Figure 20 summarizes the historical participation of each gender in the U.S. labor force.

Figure 20: Participation in the Workforce by Gender



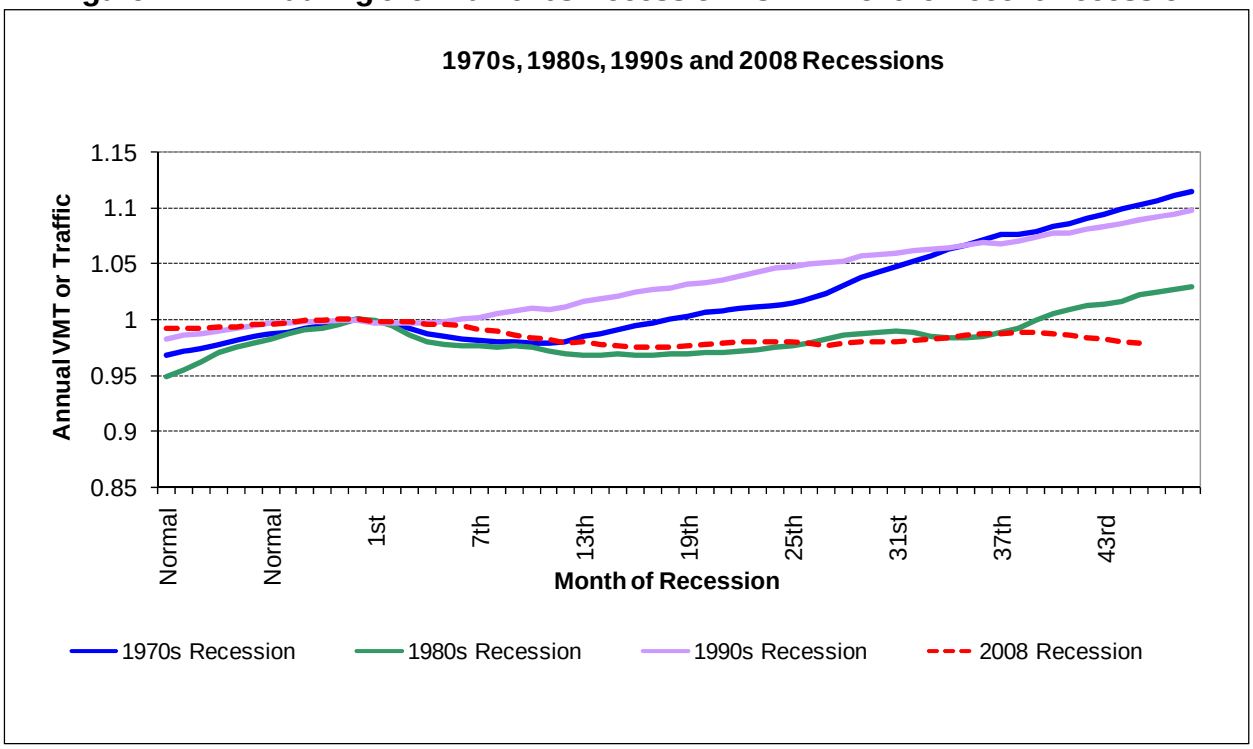
Source: US Department of Labor Bureau of Labor Statistics

3.1.3 Comparative Recession Analysis

Beginning in December 2007, the U.S. economy entered into a recessionary period. Moreover, the collapse of Lehman Brothers in the fall of 2008 led to concerns regarding the overall stability of the financial system. This development accelerated the decline in output, industrial production, and employment, led to a decrease in consumer spending and commercial investment, and the tightening of credit markets. The most recent recession has also resulted in a steeper decline in VMT along the nation's road and highways as well as a decrease in revenues generated from fuel taxes and tolls. As part of this analysis, Jacobs compared the impact of the recent recession on VMT to the major recessions that have occurred during the last forty years.

Historically, the most significant declines in VMT occurred during the following periods: (i) the mid-1970s oil crisis and recession; (ii) the 1980s recession; (iii) the recession of the early 1990s; and (iv) the recent recession. In mid-2008, there was a noticeable decline in total VMT of more than 2 percent from 2007 levels. VMT levels during the recent recession are illustrated as the red trend line in Figure 21. Both the recessions in the 1970s and 1980s were partially due to oil crises. Figure 21 also shows the decline of traffic that began in late 1973, compared to the recent recession. Within 16 months, traffic had returned to its pre-recession level in mid-1975.

Figure 21: VMT during the Mid-1970s Recession vs. VMT of the Recent Recession



Source: Derived from FHWA VMT Data through August 2011

Figure 21 also illustrates VMT levels recorded during the early 1980s recession. Traffic reached its peak in early 1979 at approximately 1,569 billion VMT and quickly fell to its low point of 1,518 billion VMT in 1980. Traffic levels increased slightly in early 1980s, but proceeded to decline for almost two years. In all, VMT levels during the 1980s recession did not return to pre-recessionary levels for approximately 39 months. Moreover, this "double-dip" created additional volatility, resulting in a longer and more gradual recovery in total VMT. Figure 21 illustrates a constant decline in VMT during the 1980s recession, which is comparable to the recent recession due to the similar magnitude in the decrease in VMT.

The most recent recession can also be compared to the recession that took hold in the early 1990s, which coincided with the Gulf War and the immediate post-war period. The decline in VMT during this recession was relatively small in magnitude and lasted about a year before returning to pre-recession levels. VMT levels during the recent recession appear to be below the levels recorded during the early 1990s. Figure 21 also compares VMT levels during the 1990 recession with the recent recession.

As it is clear from the figure, the 2008 recession has not recovered like any of the previously analyzed recessions. In fact, the slight recovery that mimicked the 1980 recession has been undermined in the most recent months with losses in year over year VMT. It is

estimated that this stagnation of VMT is caused by both changes in driving patterns due to the various changes in lifestyle noted in this analysis as well as the continuing lack of employment and consumer confidence in the current recovery period.

3.1.4 Regional Socio-Economic Trends

The previous section reviewed national indicators of both economic and VMT growth. In the following section trends in regional socio-economic factors are reviewed including population, employment, income, travel patterns and a comparative review of VMT and MdTA transaction trends during the most recent recessions.

3.1.4.1 Population Trends

Between 2000 and 2010, population in the state of Maryland increased from approximately 5.3 million to 5.8 million residents, representing an average annual increase of 0.9 percent. Maryland's population is highly urbanized with sixteen of twenty-two counties forming part of a larger metropolitan area, accounting for almost 85 percent of the total population.

Population growth has been somewhat uneven as there have been stronger increases in suburban areas, while there have population decreases in Western Maryland and in Baltimore City. In particular, six counties experienced annual growth rates in population of over 1.5 percent between 2000 and 2010. These counties include Frederick County (Washington, DC area), , Queen Anne's and Cecil Counties (Eastern Shore), and Calvert, Charles, and St. Mary's counties (Southern Maryland).

From 2000 to 2010, the Baltimore metropolitan area increased at average annual rate of 0.6 percent. While the region accounted for 47.4 percent of total population in 2000, this percentage decreased to 46.4 percent in 2010 and is anticipated to slowly decrease over time to approximately 45 percent in 2025. Table 15 shows historical population and forecast population growth for regions within Maryland as well as for the entire state.

Table 15: Historical and Projected Population in Maryland, 1990-2025

Year	Baltimore Metro	Washington D.C. Metro	Southern Maryland	Western Maryland	Eastern Shore	Maryland	MD CAGR (1)
1990	2,348,219	1,635,788	228,500	224,477	343,769	4,780,753	N/A
2000	2,512,431	1,870,133	281,320	236,699	395,903	5,296,486	1.03%
2005	2,601,750	1,984,950	319,350	243,150	423,200	5,572,400	1.02%
2010	2,676,850	2,061,550	340,050	250,250	445,300	5,774,000	0.71%
2015	2,778,350	2,150,400	371,750	262,150	475,800	6,038,450	0.90%
2020	2,847,550	2,243,900	403,900	274,650	506,300	6,276,300	0.78%
2025	2,899,550	2,329,850	434,500	285,200	534,200	6,483,300	0.65%

Sources: Maryland Department of Planning, Planning Data Services, November 2010.
(1) Compound Annual Growth Rate for Maryland

Moreover, road usage on Maryland's seven legacy toll facilities will also be impacted as a result of population growth in neighboring states. In particular, traffic coming from the Philadelphia and Washington, DC. Metropolitan areas will likely have an impact on the John F. Kennedy Memorial Highway (I-95) as well as on the toll bridges and tunnels in Baltimore. Additionally, the William Preston Lane Jr. Memorial (Bay) Bridge (US50/301) represents a critical entry point to the tourist areas along the Eastern shore. Finally, the Governor Harry W. Nice Memorial Bridge (US 301) in Charles County, MD is another entry point to King George and Stafford counties in Virginia. Table 16 summarizes the historical and forecasted population increases in Maryland, Delaware, Washington, D.C. and its Northern Virginia suburbs, and the Philadelphia metropolitan area. In all, this region had a total population of about 13.6 million inhabitants in 2010. By 2025, total population in the region is expected to increase to beyond 15 million, representing a 0.8 percent annual average increase.

Table 16: Historical and Projected Population in Maryland and in Adjacent States and Major Metropolitan Areas, 2000-2025 (in thousands)

Year	Maryland	District of Columbia	Delaware	Northern Virginia	Southern Penn.	Total	CAGR (1)
1990	4,780,753	606,900	666,168	1,527,636	3,728,909	11,310,366	N/A
2000	5,296,486	572,053	786,408	1,908,100	3,849,664	12,412,711	0.93%
2005	5,572,400	582,049	839,924	2,183,951	3,917,832	13,096,156	1.08%
2010	5,774,000	605,513	895,173	2,347,103	3,988,352	13,610,141	0.77%
2015	6,038,450	651,526	940,449	2,509,298	4,056,998	14,196,721	0.85%
2020	6,276,300	669,790	981,922	2,686,290	4,127,031	14,741,333	0.76%
2025	6,483,300	693,825	1,019,497	2,845,699	4,193,395	15,235,716	0.66%

Sources: Maryland Department of Planning, Planning Data Services, Metropolitan Washington Council of Governments, Delaware Valley Regional Planning Commission and the Delaware Office of State Planning Coordination

(1) Compound Annual Growth Rate for Total

3.1.4.2 Labor Force and Employment Trends

The growing population in Maryland has had a direct influence on the state's labor force and employment. From 1990 to 2005, the labor force in Maryland increased by 252,000, which translates into an average annual growth rate of 0.6 percent. This growth has been has been relatively steady, although slowing somewhat in 2009. Recent projections prepared by the Maryland Department of Planning estimate that the total labor force in Maryland will increase by approximately 1.0 per year through 2015 before tapering off to about 0.56 percent between 2015 and 2020. This would represent the addition of nearly 400,000 net new workers from 2005 to 2020. Table 17 summarizes the historical and forecast labor force in Maryland and in the five regions in the state.

Table 17: Historical and Projected Labor Force in Maryland, by Region 1990-2020

Year	Baltimore Metro	Washington, DC Suburbs	Southern Maryland	Western Maryland	Eastern Shore	Maryland	Maryland CAGR (1)
1990	1,258,417	974,337	125,680	104,508	176,954	2,639,896	N/A
2000	1,291,461	1,015,394	150,356	110,562	201,752	2,769,525	0.48%
2005	1,331,770	1,060,960	169,250	114,600	215,560	2,892,140	0.87%
2010	1,384,210	1,109,090	182,490	120,090	231,330	3,027,210	0.92%
2015	1,442,500	1,172,420	200,450	128,050	250,220	3,193,640	1.08%
2020	1,462,620	1,209,720	214,300	133,770	264,030	3,284,440	0.56%

Source: Maryland Department of Planning, Planning Data Services, February 2009.

(1) Compound Annual Growth Rate for Maryland

From 2000 to 2005, it is estimated that over 250,000 net new jobs were created in Maryland; this is about 1.6 percent growth per year. Employment growth has been fairly strong across most regions in the state. This strong growth was tempered from 2005 to 2010, with an estimated addition of only 50,000 net new jobs. Table 18 summarizes the total number of full- and part-time jobs in the five Maryland regions. Employment is forecasted to return to previous growth rates of between one and two percent per year depending on the region, after the lower growth because of the recession. Longer term, growth rates are expected to be slightly lower than this as the employment markets become more saturated. Because the total employment includes out-of-state commuters (e.g. from District of Columbia, Delaware, and Pennsylvania) and individuals with multiple jobs, the total number of jobs exceeded total labor force in 2005.

Table 18: Number of Total Jobs by Maryland Region, 1990-2025

Year	Baltimore Metro	Washington, DC Suburbs	Southern Maryland	Western Maryland	Eastern Shore	Maryland	Maryland CAGR (1)
1990	1,391,299	957,334	92,345	116,821	179,450	2,737,249	
2000	1,514,491	1,087,993	124,138	130,198	208,382	3,065,202	1.14%
2005	1,608,651	1,182,606	146,974	137,353	233,192	3,308,776	1.54%
2010	1,638,800	1,196,800	157,000	135,900	231,300	3,359,800	0.31%
2015	1,742,800	1,280,400	172,600	141,600	251,900	3,589,300	1.33%
2020	1,826,800	1,350,500	185,500	147,000	268,400	3,778,200	1.03%
2025	1,873,700	1,388,800	195,300	151,100	277,900	3,886,800	0.57%

Source: Maryland Department of Planning, Planning Data Services, May 2011
(1) Compound Annual Growth Rate for Maryland

During the previous decade, employment growth in Maryland has been extremely strong in the educational/health services, professional/business services, and government, construction, and tourism industries. According to the U.S. Census Bureau in 2007, Maryland had the second highest percentage (25.4 percent) of professional and technical workers as a percentage of the total employment. Similar to other regions in the U.S., the manufacturing sector has experienced a reduction in total employment in recent years. Table 19 summarizes the largest 25 employers in the State of Maryland in 2010.

Table 19: Largest 25 Employers in State of Maryland, 2010

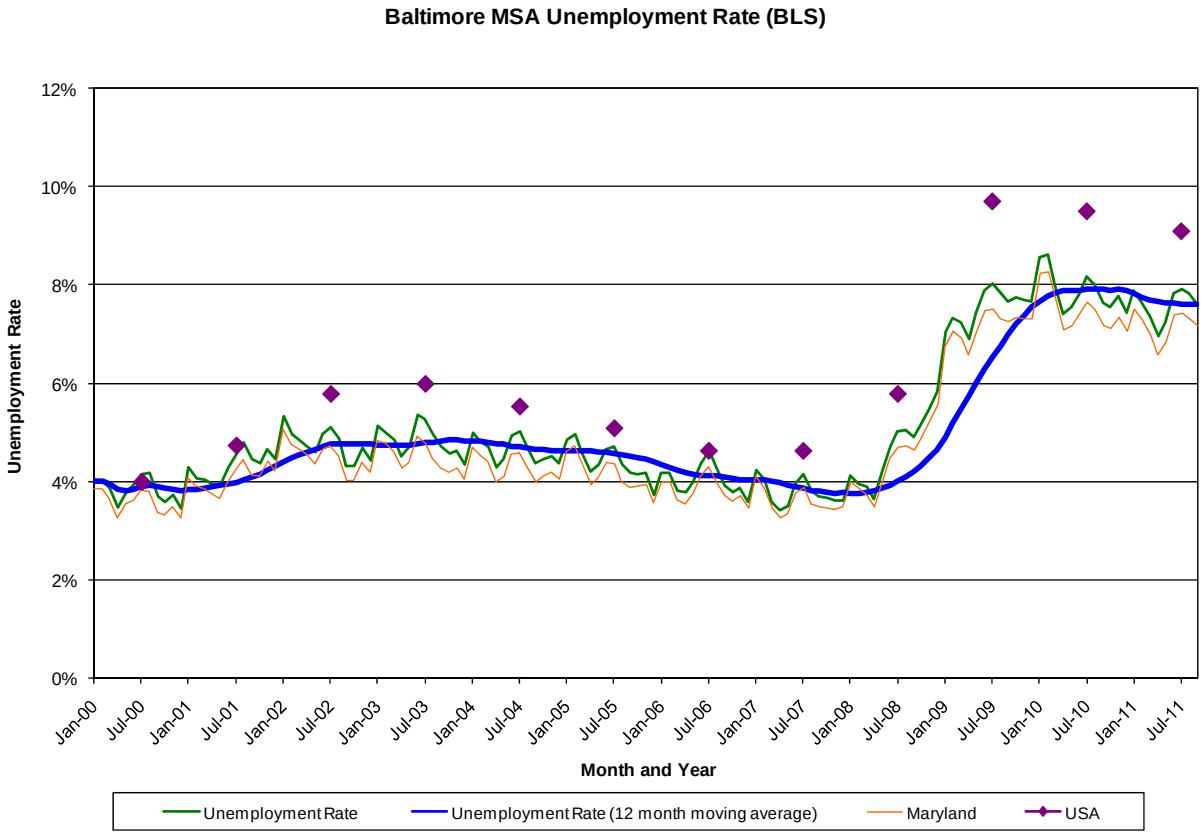
Employer	Employment	Industry
Fort George G. Meade	41,000	Military installation/intelligence
University System of Maryland	35,803	Higher education
Johns Hopkins University	27,000	Higher education
Johns Hopkins Hospital & Health System	20,273	Hospitals; health services
National Institutes of Health	17,842	Federal agency
Walmart	17,715	Consumer goods
University of Maryland Medical System	15,000	Hospitals; health services
MedStar Health	14,867	Hospitals; health services
Aberdeen Proving Ground	13,984	Military installation
Giant Food	13,403	Groceries
U.S. Social Security Administration	13,000	Federal agency
Verizon Maryland	11,253	Communication services
Naval Air Station Patuxent River	10,965	Military installation
Northrop Grumman	10,800	Electronic systems
Lockheed Martin	9,245	Aerospace and electronics
Marriott International	9,170	Food and lodging services
Adventist HealthCare	8,572	Hospitals; health services
National Naval Medical Center	8,108	Hospital; health services
Joint Base Andrews Naval Air Facility	8,057	Military installation
Constellation Energy Group	7,501	Energy services
Safeway	7,500	Groceries
McDonald's	7,493	Restaurants
LifeBridge Health	6,961	Hospitals; health services
United Parcel Service	6,806	Package delivery services
SAIC	6,500	Engineering services

Source: Maryland Department of Business and Economic Development, 2010

While tracking national trends, unemployment in Maryland has remained below that of the U.S. Unemployment increased during the recession at the start of the decade as well as during the current recession. Figure 22 summarizes state and national unemployment rates from 2000 to 2011 from the Bureau of Labor Statistics (BLS). In addition to the favorable rates compared to the national experience, is the leveling off and recovery of the unemployment rate as of late, possibly marking, not only the end of the recession, but the

recovery of the labor markets. This can most easily be seen in the blue line that represents the 12-month moving average of the unemployment rate which essentially removes the seasonality characteristics of employment.

Figure 22: Baltimore MSA, Maryland and National Unemployment Rates, 2000 to 2011



Source: Bureau of Labor Statistics

3.1.4.3 Wages and Income

Real income is a key indicator of the direction the economy is going. Table 20 presents the real personal income per capita by Maryland regions, both historically and projected. Historically Maryland has averaged around 2 percent annual growth in real income from 1990 to 2005. It is estimated that this growth has slowed from 2005 to 2010 because of the recession. Growth is anticipated to rebound, with over a 2 percent annual increase from 2010 to 2015, then settling down to typical historical growth rates into the future. This is consistent with the anticipated recovery from the recession and lower long term growth rates expected in employment.

Table 20: Real Personal Income Per Capita, by Maryland Regions, 1990 to 2025, (2005 Dollars)

Year	Baltimore Metro	Washington, DC Suburbs	Southern Maryland	Western Maryland	Eastern Shore	Maryland	Maryland CAGR (1)
1990	30,031	36,675	27,480	21,608	21,715	31,438	
2000	37,472	43,973	34,395	26,360	26,166	38,630	2.08%
2005	42,079	47,234	36,796	29,355	29,687	42,480	1.92%
2010	44,375	48,077	39,534	31,618	29,736	44,040	0.72%
2015	50,026	54,400	44,769	35,756	33,837	49,898	2.53%
2020	55,478	59,672	49,967	39,849	37,413	55,096	2.00%
2025	58,821	62,639	53,397	42,351	39,587	58,196	1.10%

Source: Maryland Department of Planning, Planning Data Services, April 2011
(1) Compound Annual Growth Rate for Maryland

3.1.4.4 Commuting Patterns in Maryland

According to the Maryland Department of Planning, over 450,000 Maryland residents or about 18 percent of all working residents in Maryland commuted out-of-state in 2000, the most recent year in which data are available. The majority of these commuters work in either Washington, D.C. (62 percent) or Virginia (26 percent) because of their close proximity. Maryland commuters who work in the Washington, D.C. area typically live in Montgomery, Prince George's, Frederick, Anne Arundel, or Charles counties. The remaining 12 percent of out-of-state commuters work in other neighboring states, e.g. Pennsylvania, Delaware and West Virginia. For example, Maryland residents who commute to Wilmington, Delaware are primarily from Cecil County.

In comparison, approximately 183,000 out of state residents commute to work in Maryland. The number of commuters who come to work into Maryland is greatest from Virginia (33 percent), Pennsylvania (22 percent) and Washington, D.C. (20 percent). As a result, Maryland had an estimated net outflow of 267,000 commuters in 2000. Overall, the total number of out-of-state commuters going into Maryland increased between 1990 and 2000 by nearly 31,500 or about 20.8 percent.

Approximately 94 percent of the commuters who come to the Baltimore area for employment live in Baltimore County, Baltimore City or in the surrounding counties that comprise the Baltimore metropolitan area. Of this amount, the majority (78 percent) commute using single occupancy vehicles, with the remainder using carpools (11 percent), public transit (4 percent) or other forms of transportation (7 percent). Additionally, mean commuter travel times for people working in Baltimore County range from 22 minutes to 57 minutes, Table 21 summarizes the commuter patterns within and to Baltimore County.

Table 21: Commuting Patterns for Workers in Baltimore County, 2000

Area	Total	Drove Alone		Carpool		Public Transit/Other		Mean Travel Time
Baltimore County	196,915	153,815	78.1%	19,875	10.1%	20,395	10.4%	22
Baltimore City	59,060	37,215	63.0%	9,380	15.9%	11,885	20.1%	33
Harford County	26,645	23,955	89.9%	2,495	9.4%	189	0.7%	39
Carroll County	15,365	13,880	90.3%	1,370	8.9%	100	0.7%	39
Anne Arundel County	13,400	12,185	90.9%	1,075	8.0%	140	1.0%	34
Howard County	11,350	10,460	92.2%	825	7.3%	45	0.4%	29
York County (PA)	7,970	7,030	88.2%	900	11.3%	25	0.3%	45
Prince George's County	1,800	1,380	76.7%	300	16.7%	109	6.1%	51
Montgomery County	1,560	1,285	82.4%	240	15.4%	35	2.2%	53
Frederick County	950	760	80.0%	160	16.8%	10	1.1%	54
Cecil County	875	770	88.0%	110	12.6%	-	0.0%	57
All Other	5,758	4,370	75.9%	989	17.2%	365	6.3%	NA
Total	341,648	267,105	78.2%	37,719	11.0%	33,298	9.7%	NA

Source: Maryland Department of Planning

To augment the year 2000 data available from the Maryland Department of Planning, general commuting patterns for the Baltimore region were collected from the 2010 US Census and presented in Table 22. It is interesting to note that the lower public transit percentages of the suburban communities of Baltimore are supplemented by increased percentage of people working from home. This is less demonstrated in the counties that are suburban to Washington D.C.

Table 22: Commuting Patterns in Baltimore Region

Area	Drive Alone	Carpool	Public Transit	Work From Home	Other
Baltimore County	79.4%	9.7%	4.3%	3.5%	3.1%
Baltimore City	60.0%	11.4%	17.6%	2.6%	8.4%
Harford County	84.0%	8.8%	0.9%	4.4%	1.9%
Carroll County	82.8%	8.2%	0.7%	5.7%	2.6%
Anne Arundel County	79.4%	9.7%	3.2%	5.0%	2.7%
Howard County	80.9%	7.6%	3.7%	5.5%	2.3%
Prince George's County	64.7%	12.8%	17.0%	2.9%	2.6%
Montgomery County	64.8%	11.1%	15.1%	5.9%	3.1%
Frederick County	74.6%	12.2%	3.7%	5.4%	4.1%
Cecil County	80.7%	11.2%	1.1%	4.6%	2.4%
Total	71.8%	10.7%	9.8%	4.3%	3.4%

4.0 Transactions and Revenue Forecasts

For the purpose of developing traffic and revenue projections for the MdTA facilities, Jacobs developed two scenarios. The first assumes no toll increase (No Toll Increase Model) and the second scenario assumes the September 22, 2011 approved toll adjustment is implemented (Toll Increase Model).

4.1 Traffic and Toll Revenue Forecasts

In this section the transaction and toll revenue forecasts are presented. First the development and function of the two traffic and toll revenue models that estimate revenue for the two scenarios is described, and the assumptions of the model are provided including the understanding of transportation improvements in the region.

4.1.1 Traffic and Toll Revenue Model

The traffic and toll revenue models with resulting transaction and toll revenue estimates and projections were made independently by facility, based on data through August 2011, representing the full 2011 fiscal year and the first two months of FY2012. The work, analyses, and results are of investment-grade quality and suitable for financing.

The No Toll Increase Model uses actual traffic and toll revenue data provided by MdTA as the foundation. These data were provided by month from FY2004 through FY2011 and annually since facility inception. The No Toll Increase Model forecasts facility specific transactions by the following vehicle and payment classes:

- Passenger Car Commuter Cash;
- Passenger Car Commuter ETC;
- Passenger Car Non-Commuter Cash;
- Passenger Car Non-Commuter ETC;
- Commercial Vehicle Cash;
- Commercial Vehicle ETC; and
- Official Duty/Violations.

A passenger car is defined as a two-axle and commercial vehicle as having 3 or more axle. Passenger car and commercial vehicle transactions were forecasted independently by facility based upon historical and projected correlation with the Gross Domestic Product and Industrial Production Index, respectively. The forecasts by vehicle type were then disaggregated into applicable payment categories based upon historical and projected participation trends. The forecasted transactions by payment type were then converted to

toll revenue estimates based on the historical and projected average toll by the respective vehicle and payment classes.

The Toll Increase Model was developed to accommodate planned toll adjustments in FY2012 and FY2014 including the introduction of new payment classes. Appendix A provides the new toll schedule by facility and payment class as assumed in the development of the estimates. The Toll Increase Model uses the No Toll Increase Model as its basis incorporating short and long term economic trends that are the primary drivers of the forecast. In face of the planned toll adjustments the Toll Increase Model moves traffic either off of the facility, into a new payment class based on relative economic attractiveness of that class or allows traffic to remain in the current payment class. These decisions are made for each facility for each payment and vehicle class as described previously.

Movement off of any particular facility is based upon price elasticity of demand factors developed by payment and vehicle class. It has been understood from past toll increases as well as previous modeling efforts that the MdTA facilities are relatively inelastic as they provide connection across natural water barriers therefore there are limited alternative routes that can be taken to avoid the toll facilities. A reduction of trips on MdTA facilities in response to an increase in total trip cost can come in many forms including simple reduced trip making by motorists, trip chaining (combining what were previously multiple trips into one; i.e. school and shopping trips), use of alternate routes or modes of travel and carpooling among others.

For this analysis a conservative approach to elasticity was taken due to the continued uncertainty of the underlying economics that drive traffic demand. Overall elasticity rates for the analysis were between -0.12 and -0.20, meaning for a 100 percent toll increase it would be expected that there would be a reduction in transactions of 12 to 20 percent. Again, the elasticity rates that were used in this analysis are approximately twice the historical elasticity rates experienced on the MdTA System, resulting in a conservative forecast.

Once traffic by payment and vehicle class under the planned toll increases is determined in the model, gross toll revenue is calculated for each class. Under the planned toll schedules there will be opportunity for motorists without E-ZPass transponders to travel through non-gated lanes and pay the MdTA through the mail. The MdTA will take a picture of the license plate, look up the car registration address through the appropriate Department of Motor Vehicles and send an invoice in the mail. This payment class will incur a fifty percent surcharge on the cash toll rate. The model estimates that 68 percent of these transactions will be paid and thus does not recognize 100 percent collection of revenue from this payment class. The other payment classes (cash and E-ZPass) are assumed to provide full

collection of gross toll revenue as anticipated from the transaction and appropriate toll rate as has been the historical experience.

4.1.2 Roadway Planned Improvements

The model also takes into account current and planned roadway improvements. All construction and improvement projects are anticipated to have minimal effects on the existing MdTA toll facilities. The following table provides a list of improvement projects considered in the analysis. There is uncertainty in the development of some of these long term improvement projects and as such inclusion in the table does not necessarily make comment on their probability of implementation, just the acknowledgement of potential transportation programs in the region. The analysis assumes that none of these projects will have material impact on the toll revenues for the MdTA facilities reviewed in this report.

<table>
<tr><th colspan="2">MdTA Projects</th></tr>
<tr><td>▪ I-95 Express Toll Lanes
▪ Hatem Bridge Re-decking
▪ I-95/MD 24 Improvement Project
▪ I-95 Section 100 - 400
▪ I-695/Quarantine Road Interchange
▪ I-95 Master Plan Study</td><td>▪ I-95 JFK Toll Plaza Planning Study
▪ Nice Bridge Approach Improvement Project
▪ Nice Bridge Improvement Project
▪ Truck Transfer Facility</td></tr>
<tr><th colspan="2">Maryland State Highway Administration</th></tr>
<tr><td>Charles County
▪ US 301, Waldorf Area Project
▪ US 301 South Corridor Transportation Study
Cecil County
▪ MD 545, Blue Ball Road

Queen Anne’s County
▪ MD 404, Shore Highway
▪ US 50, Ocean Gateway
▪ US 301, Blue Star Memorial Highway</td><td>Harford County
▪ MD 755, Edgewood Road
▪ MD 24, Rocks Road
▪ Perryman Access Study
▪ US 1, Belair Road
▪ MD 159, Philadelphia Road
▪ US 40, Pulaski Highway
Baltimore County and City
▪ I-695, Baltimore Beltway
▪ US 1, Belair Road
▪ I-795, Northwest Expressway
▪ MD 140, Reisterstown Road</td></tr>
</table>

▪ MD 313, Greensboro Road ▪ Anne Arundel County ▪ MD 3, Robert Crain Highway ▪ MD 175, Annapolis Road ▪ MD 198, Laurel Fort Meade Road ▪ MD 295, Baltimore Washington Parkway ▪ MD 648, Baltimore Annapolis Boulevard, and MD 3, Crain Highway ▪ US 50, John Hanson Highway ▪ CO 582, Ridge Road ▪ MD 295, Baltimore Washington Parkway ▪ MD 450, Defense Highway ▪ MD 732, Guilford Road ***Howard County*** ▪ I-70 ▪ MD 32, Patuxent Freeway ▪ US 29, Columbia Pike ▪ US 40, Baltimore National Pike	▪ MD 145, Paper Mill Road ▪ US 1, Belair Road ▪ US 40, Baltimore National Pike ▪ US 40, Pulaski Highway ▪ CO 37, McDonough Road ▪ I-83, JFX ▪ I-695, Baltimore Beltway ▪ MD 7, Philadelphia Road ▪ MD 45, York Road ▪ MD 131, Seminary Road ▪ MD 147, Harford Road ▪ US 1, Belair Road ▪ US 1, Southwestern Boulevard
MTA Projects	
▪ Red Line Corridor Transit Study ▪ Purple Line ▪ Corridor Cities Transitway	▪ Maglev ▪ MARC Growth and Investment Plan

4.1.3 Transactions and Toll Revenue Forecasts

As indicated in this report, the current local, national and global economic conditions are unparalleled in recent history. Jacobs has conducted extensive research in relevant historical and forecasted socio-economic parameters in order to make a viable forecast of future traffic and toll revenues. Historical transactions by facility and vehicle class were correlated to various economic and demographic data points to understand the trends. These trends then provided comparative analysis against which the forecast of the economic and demographic data points could be related in order to understand transaction potential for the future.

In addition to the current economic climate, the planned toll adjustments have been taken into account as described in the previous section. As a result of the continued sluggishness of the economy, for the no toll increase scenario Jacobs is forecasting only a very slight increase in tolled traffic for the short-term, with a return to FY2007 levels (the highest previous level of transactions) estimated to occur in FY2014. For the toll increase scenario (i.e. with the FY2012 through FY2014 toll increases approved in September 2011) transactions are anticipated to decrease multiple times during the extent of the forecast with 2021 levels (horizon year of the forecast) not reaching the current level of transactions on the system. Transaction and toll revenue results are summarized by scenario in Table 23 and are detailed by facility further in this section of the report. The shaded portions of the tables reflect historical data. The estimates of transactions for both scenarios are shown graphically in Figure 23.

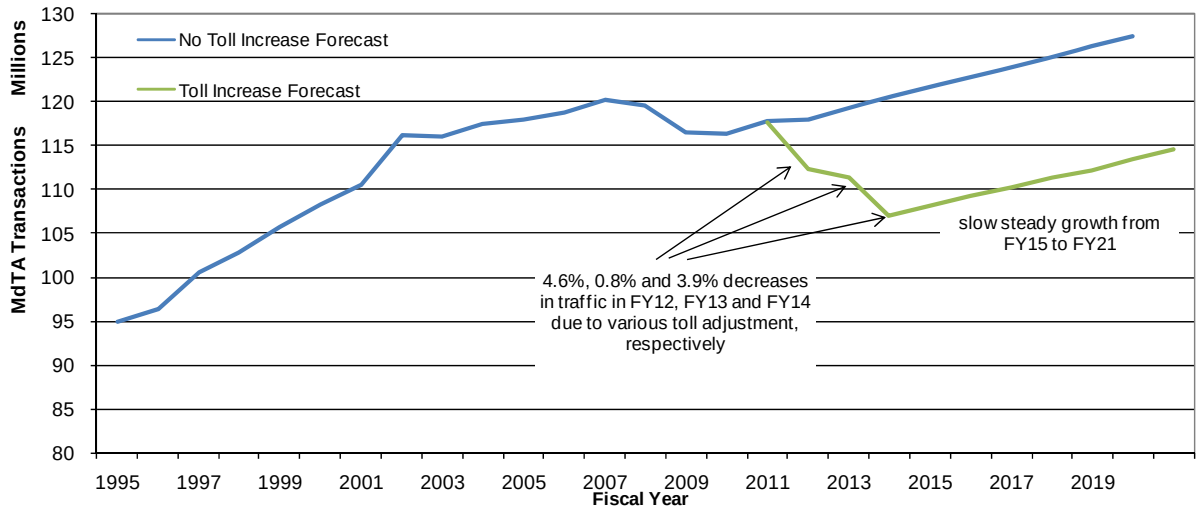
Under the no toll increase scenario it is estimated that transactions on the MdTA facilities will remain relatively flat into FY2012, with modest growth in FY2013. From FY2012 to FY2021 it is estimated that the “new normal” growth rate will be between 0.9 and 1.3 percent, lower than growth rates experienced by the MdTA facilities from FY1995 to FY2002, with recovery from the low growth from FY2002 to FY2007 and negative growth from FY2007 to FY2010.

Under the toll increases scenario it is estimated that transactions will experience year over year losses of 4.6, 0.8 and 3.9 percent for FY2012, FY2103 and FY2014 respectively. Beginning in FY2015, it is estimated that slow, steady growth will emerge, following the growth rates of the no toll increase scenario. It is estimated that FY2021 transactions will be below FY2001 levels, representing no growth for twenty years, which Jacobs recognizes as a conservative forecast of transactions and subsequently in-lane toll revenue. The toll increase scenario represents the forecast of transactions and toll revenue assuming the implementation of the toll adjustments approved on September 22, 2011 by the MdTA.

Table 23: Historical and Forecasted Total Transaction and In-Lane Toll Revenue, No Toll Increase Scenario and Toll Increase Scenario ($ Millions)

Fiscal Year	No Toll Increase		Approved 9/22/2011 Toll Increase	
	Transactions	Toll Revenue	Transactions	Toll Revenue
2005	117.8	$278.5	117.8	$278.5
2006	118.6	$278.8	118.6	$278.8
2007	120.1	$282.3	120.1	$282.3
2008	119.5	$279.3	119.5	$279.3
2009	116.4	$276.6	116.4	$276.6
2010	116.3	$308.5	116.3	$308.5
2011	117.7	$312.0	117.7	$312.0
2012	117.9	$310.2	112.3	$367.1
2013	119.2	$313.7	111.4	$409.0
2014	120.4	$317.3	107.0	$544.2
2015	121.6	$320.4	108.2	$549.2
2016	122.7	$323.4	109.3	$553.9
2017	123.9	$326.5	110.2	$559.6
2018	125.0	$329.5	111.4	$564.7
2019	126.2	$332.7	112.3	$569.5
2020	127.4	$335.8	113.4	$575.1
2021	128.6	$338.9	114.6	$580.7

Figure 23: Historical and Forecasted Transactions, No Toll Increase Scenario and Toll Increase Scenario



4.1.4 Transactions and In-Lane Toll Revenue Forecasts by Facility

Transaction and toll revenue forecasts by facility under the toll increase scenario for the planned toll adjustment forecast are presented subsequently. Detailed transaction and toll revenue tables by facility and vehicle class are provided in the appendix of this report.

Table 24: Historical and Forecasted Transactions by Facility, Toll Increase Scenario

Fiscal Year	MdTA Facilities - Historical and Projected Annual Transactions (Millions)							
	JFK	Hatem	Nice	Lane	BHT	Key	FMT	Total
2005	15.0	5.6	3.2	13.0	25.5	12.1	43.5	117.8
2006	14.7	5.6	3.4	13.3	26.3	11.9	43.6	118.6
2007	14.8	5.6	3.4	13.5	25.7	12.2	44.9	120.1
2008	14.7	5.1	3.4	13.4	25.8	12.3	44.8	119.5
2009	14.6	5.0	3.3	12.7	25.5	11.7	43.4	116.4
2010	14.7	5.0	3.4	13.0	25.2	11.0	44.1	116.3
2011	14.9	5.0	3.3	13.2	25.5	11.1	44.6	117.7
2012	14.6	5.1	3.2	12.7	24.1	10.2	42.4	112.3
2013	14.6	5.1	3.1	12.6	23.8	10.2	42.0	111.4
2014	14.1	5.1	2.8	11.4	23.1	10.0	40.5	107.0
2015	14.3	5.2	2.9	11.5	23.2	10.0	41.0	108.2
2016	14.4	5.3	3.0	11.7	23.5	10.1	41.3	109.3
2017	14.6	5.3	3.0	11.8	23.7	10.2	41.7	110.2
2018	14.7	5.4	3.0	11.9	23.8	10.3	42.2	111.4
2019	14.7	5.4	3.1	12.0	24.0	10.4	42.6	112.3
2020	14.9	5.6	3.1	12.1	24.2	10.5	43.0	113.4
2021	15.1	5.7	3.1	12.2	24.4	10.6	43.5	114.6

Table 25: Historical and Forecasted In-Lane Toll Revenue by Facility, Toll Increase Scenario

Fiscal Year	MdTA Facilities - Historical and Projected Annual In-Lane Toll Revenue ($ Millions)							
	JFK	Hatem	Nice	Lane	BHT	Key	FMT	Total
2005	94.6	3.7	10.0	33.5	34.7	19.2	82.7	278.5
2006	93.5	3.9	10.5	34.0	35.6	18.8	82.4	278.8
2007	94.6	3.8	10.4	34.4	35.1	19.2	84.7	282.3
2008	92.7	3.9	10.1	33.9	35.3	19.4	84.0	279.3
2009	95.1	2.0	9.8	32.5	35.6	18.6	83.0	276.6
2010	107.3	2.6	10.1	36.8	37.0	20.5	94.0	308.5
2011	107.4	2.9	10.1	37.6	37.8	20.7	95.3	312.0
2012	116.2	2.8	11.9	45.7	48.5	25.3	116.8	367.1
2013	122.8	2.7	13.3	52.0	54.7	29.3	134.2	409.0
2014	161.8	3.6	18.7	72.5	73.3	39.1	175.2	544.2
2015	163.0	3.7	19.0	73.3	73.6	40.5	175.1	549.2
2016	164.1	3.8	19.3	74.0	74.4	41.0	176.4	553.9
2017	166.0	3.8	19.5	74.9	74.9	41.5	177.9	559.6
2018	167.7	3.9	19.9	75.7	75.5	41.9	179.1	564.7
2019	169.6	3.9	19.9	76.3	76.0	42.5	180.2	569.5
2020	171.8	4.0	20.1	77.0	76.6	42.9	181.6	575.1
2021	173.5	4.1	20.3	77.8	77.4	43.3	183.4	580.7

4.1.5 Monthly Transactions and In-Lane Toll Revenue Forecasts

For budgeting and tracking purposes monthly estimates of both transactions and in-lane toll revenue are developed for the MdTA. Table 26 presents monthly estimates of transaction and toll revenue for FY2012 and FY2013 for the seven MdTA legacy facilities discussed in this report. This includes the toll adjustments on November 1, 2011 (November FY2012) and January 1, 2012 (January FY2012). In addition the table provides a summation of the months to the full fiscal year for both FY2012 and FY2013.

Table 26: Monthly Transaction and In-Lane Toll Revenue for the MdTA Facilities for FY2012 and FY2013

Fiscal Year	Month	Transactions (M)	In-Lane Toll Revenue ($M)
2012	Jul	10.910	29.016
2012	Aug	10.640	27.697
2012	Sep	9.850	25.595
2012	Oct	10.010	25.926
2012	Nov	8.940	30.576
2012	Dec	8.780	30.115
2012	Jan	8.180	29.904
2012	Feb	7.620	27.987
2012	Mar	9.060	33.604
2012	Apr	9.140	34.114
2012	May	9.620	36.423
2012	Jun	9.540	36.183
2012	Total	112.290	367.140
2013	Jul	10.210	38.110
2013	Aug	10.330	38.472
2013	Sep	9.080	33.496
2013	Oct	9.280	33.780
2013	Nov	9.120	33.078
2013	Dec	8.950	32.512
2013	Jan	8.370	30.105
2013	Feb	7.800	28.174
2013	Mar	9.260	33.823
2013	Apr	9.350	34.332
2013	May	9.840	36.655
2013	Jun	9.760	36.413
2013	Total	111.370	408.950

4.2 Other Revenue Forecasts

In addition to transaction and toll revenue forecasts, Jacobs has conducted analyses to provide forecasts of revenue streams that are associated with MdTA facilities. These ten other revenue streams can be broken down into five general categories as follows:

1. Commuter Plan: Unused Toll Revenue from pre-paid plan
2. Transponder
    a. Transponder Sales
    b. Monthly Service Fees
3. Violation
    a. Notice of Toll Due Fees
    b. Violation Fees
4. Commercial Vehicle Fees/Discounts
    a. Post-Usage Discount
    b. High Frequency Discount
    c. Over-Size Permit Fee
5. Concession Revenue
6. Hatem E-ZPass Program

The forecasts of these ten revenue streams, as well as historical revenue for the applicable categories, are provided in Table 27, with a description of the analyses by category following.

Table 27: Other Revenue Forecasts

Fiscal Year	MdTA Other Revenue Estimates										
	Unused Toll Revenue	Transponder Sales	Monthly Account Fees	Notice of Toll Due Fees	Violation Fees	Commercial Vehicle Post-Usage Discount	Commercial Vehicle High Frequency Discount	Over-Size Permit Fee	Concession Revenue	Hatem E-ZPass Program *	Total
2004	2.0				0.8	(2.3)			8.1		8.6
2005	2.8				1.5	(3.9)			8.0		8.4
2006	3.5				2.8	(4.5)			7.8		9.6
2007	4.0				3.0	(4.8)			8.1		10.3
2008	4.3				3.0	(5.0)			8.0		10.3
2009	4.5				1.9	(4.8)			8.0		9.6
2010	6.6	1.4	9.6	1.1	2.3	(6.6)	(0.2)	1.0	8.2		23.3
2011	6.5	1.9	9.9	1.3	1.3	(6.7)	(0.3)	1.2	7.9		23.0
2012	8.5	1.1	5.5	-	2.2	(6.5)	(0.7)	1.0	8.2	0.7	20.0
2013	8.8	0.8	5.3	-	2.2	(5.2)	(0.9)	1.0	3.6	1.3	16.9
2014	10.7	0.8	5.2	-	2.2	(7.2)	(1.2)	1.0	1.2	2.5	15.2
2015	10.8	0.9	5.0	-	2.2	(7.2)	(1.2)	1.0	1.3	2.5	15.3
2016	11.0	0.9	5.0	-	2.1	(7.2)	(1.2)	1.0	2.1	2.5	16.2
2017	11.1	0.9	5.0	-	2.1	(7.2)	(1.2)	1.0	2.4	2.5	16.6
2018	11.2	0.9	5.0	-	2.1	(7.2)	(1.2)	1.0	2.5	2.5	16.8
2019	11.3	0.9	5.0	-	2.1	(7.2)	(1.2)	1.0	2.5	2.5	16.9
2020	11.4	1.0	5.0	-	2.0	(7.2)	(1.2)	1.0	2.6	2.5	17.2
2021	11.5	1.0	5.0	-	2.0	(7.2)	(1.2)	1.0	2.6	2.5	17.2

*Prior to this forecast Hatem Bridge AVI revenue was not forecasted separately. Now that it is an E-ZPass based program, it is forecast as “other revenue” as identified in this table.

4.2.1 Commuter Plan

As described in the previous section regarding the traffic and revenue model, the commuter plan allows customers to pre-pay for a substantial discount at the MdTA facilities. Currently under this plan, commuters can buy 50 transactions for $20 for the Central and Northern Region facilities, with a double charge per transaction at JFK due to one-way tolling, 25 transactions for $15 at the Nice Bridge, and 25 transactions for $25 at the Bay Bridge, all to be used within a 45-day period. Before July 1, 2009, this period allowed was 60 days. The MdTA collects revenue from these motorists at the full discounted price and applies all unused revenue after the expiration of the window to a separate account entitled "Unused Toll Revenue".

This plan will change slightly under the planned toll adjustments, offering a 75 percent discount off the cash toll rate beginning in November 1, 2011 and lowering again to a 65 percent discount beginning July 1, 2013.

Using frequency data, the number of unique commuter accounts that would no longer benefit from this program was determined, given the relationship to the full fare toll rate. Additionally there is still some movement of motorists due to the shortening of the window to use the trips from 60 to 45 days. Moving forward, it is anticipated that more and more motorists that have economic incentive to do so will begin to move out of the program. However this is balanced with the increased toll in this class which will cause the revenue in this category to increases.

4.2.2 Transponders/Accounts

Both of these revenue streams were newly introduced in FY2010. Transponder prices ranged from $21 for the Standard, $33 for the Exterior and $40 for the Fusion transponder from July 1, 2009 to December 31, 2011. On January 1, 2012 the Standard transponder will be $9 with similar reductions in price for the other styles. The forecast of future revenues from sales is based on estimated transponder growth from historical experience as well as an understanding of the mix of transponders to be sold, heavily weighted to the purchase of Standard transponders.

Monthly account fees for MdTA ***E-ZPass*** accounts of $1.50 were implemented July 1, 2009. Beginning on November 1, 2011, accounts with 3 or more toll transactions in a month will be exempt from this fee. Reviewing existing ***E-ZPass*** account data for frequency of use, estimates of accounts that will be subject to this fee were developed tempered by the slow closure of accounts for these low frequency users. The forecast was produced with consideration of the foregoing and anticipation of account growth based on a discounted historical trend.

4.2.3 Violation Fees

The violation fees of $25 were estimated based on FY2010 and FY2011 actual data for fee collection in this category.

The notice of toll due fee was newly introduced for FY2010. This fee is being replaced by the 50 percent surcharge for image based tolling. The revenue collected for this surcharge is included in the overall toll revenue estimate.

4.2.4 Commercial Vehicles

The post-usage discount for commercial vehicle accounts offers accounts a percent discount directly related to the total dollar amount spent per month. Beginning January 1, 2012 this discount is being restructured to reflect new thresholds and is only offered to vehicles with five axles or more. Using existing account data, estimates of the magnitude of this fee under the new structure were developed.

The high frequency discount has also been limited to only commercial vehicle operators with 5 axles or more as well as has been restructured to offer levels of discounts for as few as 60 trips for one transponder in a month. Again, using actual transponder data the forecast for this fee was developed.

The oversize permit is a charge which replaced the “Unusual Class” of vehicles on the MdTA facilities in FY2010. The estimates of revenue for this fee were developed based upon FY2010 and FY2011 data and limited growth over time, as appropriate.

4.2.5 Concession Revenue

The MdTA collects revenue from two travel plazas along JFK Highway. Using historical data by concession site, correlating with JFK traffic levels, base forecasts were developed. It is further understood that there will be improvement projects to the travel centers resulting in various closures in FY2013 through FY2016 and limited revenue potential after FY2016 due to the structure of the procurement for the update of these travel plazas. All relevant information and data regarding the forecast of this revenue stream was provided by the MdTA staff. The base forecast was adjusted to reflect this, with slight growth throughout the forecast period.

4.3 Total Revenue Forecasts

Table 28 provides the final forecasts of toll revenue and other revenue, as discussed in the previous sections.

Table 28: MdTA Total Revenue Forecasts

Fiscal Year	MdTA Toll and Other Revenue Estimates ($ Millions)		
	In-Lane Toll Revenue	Other Revenue	Total Revenue
2004	251.3	8.6	259.9
2005	278.5	8.4	286.9
2006	278.8	9.6	288.4
2007	282.3	10.3	292.6
2008	279.3	10.3	289.6
2009	276.6	9.6	286.2
2010	308.5	23.3	331.8
2011	312.0	23.0	335.0
2012	367.1	20.0	387.2
2013	409.0	16.9	425.9
2014	544.2	15.2	559.4
2015	549.2	15.3	564.5
2016	553.9	16.2	570.1
2017	559.6	16.6	576.2
2018	564.7	16.8	581.5
2019	569.5	16.9	586.3
2020	575.1	17.2	592.2
2021	580.7	17.2	598.0

5.0 Limits and Disclaimers

It is Jacobs' opinion that the traffic and toll revenue estimates provided herein are reasonable and that they have been prepared in accordance with accepted industry-wide practice. However, given the uncertainties within the current economic climate, it is important to note the following assumptions which, in our opinion, are reasonable:

- This report presents the results of Jacobs' consideration of the information available as of the date hereof and the application of our experience and professional judgment to that information. It is not a guarantee of any future events or trends.
- The traffic and toll revenue estimates will be subject to future economic and social conditions, demographic developments and regional transportation construction activities that cannot be predicted with certainty.
- The estimates contained in this report, while presented with numeric specificity, are based on a number of estimates and assumptions which, though considered reasonable to us, are inherently subject to economic and competitive uncertainties and contingencies, most of which are beyond the control of the MdTA and cannot be predicted with certainty. In many instances, a broad range of alternative assumptions could be considered reasonable. Changes in the assumptions used could result in material differences in estimated outcomes.
- Jacobs' traffic and toll revenue estimations only represent our best judgment and we do not warrant or represent that the actual toll revenues will not vary from our estimates.
- We do not express any opinion on the following items: socioeconomic and demographic forecasts, proposed land use development projects and potential improvements to the regional transportation network.
- The standards of operation and maintenance on all of the system will be maintained as planned within the business rules and practices.
- The general configuration and location of the system and its interchanges will remain as discussed in this report.
- Access to and from the system will remain as discussed in this report.
- No other competing highway projects, tolled or non-tolled are assumed to be constructed or significantly improved in the project corridor during the project period, except those identified within this report.
- Major highway improvements that are currently underway or fully funded will be completed as planned.
- The system will be well maintained, efficiently operated, and effectively signed to encourage maximum usage.

- No reduced growth initiatives or related controls that would significantly inhibit normal development patterns will be introduced during the estimate period.
- There will be no future serious protracted recession during the estimate period.
- There will be no protracted fuel shortage during the estimate period.
- No local, regional, or national emergency will arise that will abnormally restrict the use of motor vehicles.

In Jacobs' opinion, the assumptions underlying the projections provide a reasonable basis for the revenue projections and operating expenses. However, any financial projection is subject to uncertainties. Inevitably, some assumptions used to develop the projections will not be realized, and unanticipated events and circumstances may occur. There are likely to be differences between the projections and actual results, and those differences may be material. Because of these uncertainties, Jacobs makes no guaranty or warranty with respect to the projections disclosed in this Study

* * * * *

We greatly appreciate the invaluable assistance provided by the staff of the Maryland Transportation Authority.

Very truly yours,

Richard J. Gobeille, P.E.
National Toll/Finance Unit Manager

Phil Eshelman
Project Manager

APPENDIX A

Approved Toll Schedule

FINAL PUBLIC NOTICE

The Maryland Transportation Authority (MDTA), the State agency that owns, finances, operates and maintains Maryland's toll facilities, APPROVED at its September 22, 2011, public meeting the following changes to its toll structure:

William Preston Lane, Jr., Memorial (Bay) Bridge (US 50/301)

Cash/Base	Current	11/1/2011	1/1/2012	7/1/2013
2-axle	$ 2.50	$ 4.00		$ 6.00
3-axle	$ 9.00		$ 8.00	$ 12.00
4-axle	$ 12.00		$ 12.00	$ 18.00
5-axle	$ 15.00		$ 24.00	$ 36.00
6+-axle	$ 18.00		$ 30.00	$ 45.00

Maryland *E-ZPass*	Current	11/1/2011	7/1/2013
Commuter	$ 1.00*	$ 1.00*	$ 2.10*
2-axle	$ 2.50	$ 3.60	$ 5.40
3-axle		n/a	
4-axle			
5-axle			
6+-axle			

Video	Current	11/1/2011	1/1/2012	7/1/2013
2-axle	$ 5.50	$ 6.00		$ 9.00
3-axle	$ 12.00	$ 13.50	$ 12.00	$ 18.00
4-axle	$ 15.00	$ 18.00	$ 18.00	$ 27.00
5-axle	$ 18.00	$ 22.50	$ 36.00	$ 51.00
6+-axle	$ 21.00	$ 27.00	$ 45.00	$ 60.00

Baltimore Harbor Tunnel (I-895), Fort McHenry Tunnel (I-95/I-395) and Francis Scott Key Bridge (I-695)

Cash/Base	Current	11/1/2011	1/1/2012	7/1/2013
2-axle	$ 2.00	$ 3.00		$ 4.00
3-axle	$ 6.00		$ 6.00	$ 8.00
4-axle	$ 9.00		$ 9.00	$ 12.00
5-axle	$ 12.00		$ 18.00	$ 24.00
6+-axle	$ 15.00		$ 23.00	$ 30.00

Maryland *E-ZPass*	Current	11/1/2011	7/1/2013
Commuter	$ .40*	$ .75*	$ 1.40*
2-axle	$ 2.00	$ 2.70	$ 3.60
3-axle			
4-axle		n/a	
5-axle			
6+-axle			

Video	Current	11/1/2011	1/1/2012	7/1/2013
2-axle	$ 5.00	$ 4.50		$ 6.00
3-axle	$ 9.00	$ 9.00	$ 9.00	$ 12.00
4-axle	$ 12.00	$ 13.50	$ 13.50	$ 18.00
5-axle	$ 15.00	$ 18.00	$ 27.00	$ 36.00
6+-axle	$ 18.00	$ 22.50	$ 34.50	$ 45.00

John F. Kennedy Memorial Highway (I-95) and Thomas J. Hatem Memorial Bridge (US 40)

Cash/Base	Current	11/1/2011	1/1/2012	7/1/2013
2-axle	$ 5.00	$ 6.00		$ 8.00
3-axle	$ 15.00		$ 12.00	$ 16.00
4-axle	$ 23.00		$ 18.00	$ 24.00
5-axle	$ 30.00		$ 36.00	$ 48.00
6+-axle	$ 38.00		$ 45.00	$ 60.00

Maryland *E-ZPass*	Current	11/1/2011	7/1/2013
Commuter	$ .80*	$ 1.50*	$ 2.80*
2-axle	$ 5.00	$ 5.40	$ 7.20
3-axle		n/a	
4-axle			
5-axle			
6+-axle			

Video	Current	11/1/2011	1/1/2012	7/1/2013
2-axle	$ 8.00	$ 9.00		$ 12.00
3-axle	$ 10.00	$ 22.50	$ 18.00	$ 24.00
4-axle	$ 26.00	$ 34.50	$ 27.00	$ 36.00
5-axle	$ 33.00	$ 45.00	$ 51.00	$ 63.00
6+-axle	$ 41.00	$ 53.00	$ 60.00	$ 75.00

Gov. Harry W. Nice Memorial Bridge (US 301)

Cash/Base	Current	11/1/2011	1/1/2012	7/1/2013
2-axle	$ 3.00	$ 4.00		$ 6.00
3-axle	$ 9.00		$ 8.00	$ 12.00
4-axle	$ 12.00		$ 12.00	$ 18.00
5-axle	$ 15.00		$ 24.00	$ 36.00
6+-axle	$ 18.00		$ 30.00	$ 45.00

Maryland *E-ZPass*	Current	11/1/2011	7/1/2013
Commuter	$ .60*	$ 1.00*	$ 2.10*
2-axle	$ 3.00	$ 3.60	$ 5.40
3-axle		n/a	
4-axle			
5-axle			
6+-axle			

Video	Current	11/1/2011	1/1/2012	7/1/2013
2-axle	$ 6.00	$ 6.00		$ 9.00
3-axle	$ 12.00	$ 13.50	$ 12.00	$ 18.00
4-axle	$ 15.00	$ 18.00	$ 18.00	$ 27.00
5-axle	$ 18.00	$ 22.50	$ 36.00	$ 51.00
6+-axle	$ 21.00	$ 27.00	$ 45.00	$ 60.00

** Commuter discount plans are available for customers with valid E-ZPass Maryland accounts driving two-axle vehicles.[1] Plans for the Bay and Nice bridges are $25 (effective November 1, 2011) and $52.50 (effective July 1, 2013) and offer 25 trips. The Baltimore Regional Plan is $37.50 (effective November 1, 2011) and $70 (effective July 1, 2013) and offers 50 trips. Note: two "trips" are deducted at the Kennedy Highway and Hatem Bridge for the Baltimore Regional Plan. Plans end after 45 days or when all of the trips are used, whichever comes first.*

Approved changes to the Hatem Bridge AVI Decal program:

- The AVI Decal will transition to *E-ZPass* Hatem Bridge plans by Sept. 30, 2012. Customers may continue to purchase AVI Decals for $10 until August 31, 2012; however, all decals expire on Sept. 30, 2012, if they have not already expired before that date. No refunds will be provided for AVI decals. Effective February 1, 2012, AVI decals will no longer be sold in the toll lanes.
- Two *E-ZPass* Hatem Bridge plans will be available to replace the AVI Decal:
  1. Hatem Bridge-Only Plan will be offered for two-axle vehicles only in which a valid, properly mounted transponder provides unlimited trips for the Hatem Bridge ONLY. No monthly account fees or pre-paid tolls will be required for this plan. This plan begins on February 1, 2012, and costs $10 per year. On July 1, 2013, the price increases to $20 per year. *E-ZPass* transponders will be provided at no charge for the Hatem Bridge-Only Plan until January 31, 2013.
  2. For existing or new *E-ZPass* Maryland customers, this plan may be added to individual transponders on an *E-ZPass* Maryland account. Please note that these accounts are still subject to account and transponder fees and pre-paid toll deposits in addition to the annual plan fee.

Approved changes to the Hatem Bridge A-Series and T-Series Ticket Books:

- The existing ticket programs will be phased-out for vehicles with three or more axles.
- Sales of T-Series tickets (used for light trailers in conjunction with the AVI Decal) ends on August 31, 2012. Acceptance of T-Series tickets end on September 30, 2012, when AVI decals expire. Prices for T-Series tickets increase by 50% on November 1, 2011, and on April 1, 2012. No refunds will be provided for T-Series tickets.
- Sales of A-Series tickets for vehicles with five axles end on December 31, 2011. Prices for A-Series tickets for vehicles with three and four axles increase by 50% on January 1, 2012; July 1, 2012; and January 1, 2013. On May 31, 2013, ticket sales end; all A-Series tickets will have expired by July 1, 2013. No refunds will be provided for A-Series tickets.

The MDTA also approved additional changes effective November 1, 2011:

- Reflected in the above tables, a 10% discount off the two-axle Cash/Base rate for two-axle vehicles having a valid *E-ZPass* Maryland account with an operable, properly mounted transponder (except if the transponder already has a discount plan associated with it for that facility).[1]
- Reflected in the above tables, commuter discount rates are now uniform for all fixed toll facilities -- a 75% discount off the Cash/Base toll (effective November 1, 2011) and a 65% discount off the Cash/Base toll (effective July 1, 2013).[1]
- Waive the $1.50 *E-ZPass* Maryland monthly fee on accounts used to pay three or more tolls in the previous month at MDTA facilities.
- For fixed-toll facilities, replace the $3 Notice of Toll Due fee with a Video Toll rate that is 150% of the Cash/Base toll. There is a minimum video surcharge of $1 and a maximum of $15.
- For the Intercounty Connector (ICC)/MD 200, replace the $3 Notice of Toll Due fee with Video Toll Rate ranges that are 150% of the current toll mileage rate ranges. There is a minimum video surcharge of $1 and a maximum of $15. For additional details, visit www.mdta.maryland.gov.
- Modify the Bay Bridge Shoppers Discount Plan to be a 50% discount for 10 trips that are valid for 90 days, good Sunday through Thursday only. The discount plan costs $20 (effective November 1, 2011) and $30 (effective July 1, 2013).
- Reflected in the above tables, all Cash tolls are now set to whole dollar amounts.[1]

The MDTA also approved additional changes effective January 1, 2012:

- The post-usage discount program, which has been restructured, is limited to vehicles with five or more axles.[1] Visit www.mdta.maryland.gov for new post-usage rebate rates.
- For three- and four-axle vehicles, the multipliers used to set the tolls have been reduced and are reflected in the above tables.[1]
- The supplemental rebate program is modified to apply only to vehicles with five or more axles and is expanded to provide rebates to vehicles making 60 or more trips per month.[1] Refer to the website below for the supplemental rebate rates.

[1] Does not apply to the ICC.

For more information visit www.mdta.maryland.gov.

Maryland Transportation Authority

APPENDIX B

TRAFFIC AND TOLL REVENUE FORECASTS BY FACILITY

Table A.1: JOHN F. Kennedy Memorial Highway (I-95)
Transaction and Toll Revenue Forecast by Vehicle Class

Fiscal Year	JFK Highway		
	PC	CV	Total
	Transactions		
2012	12.9	1.7	14.6
2013	12.9	1.7	14.6
2014	12.4	1.7	14.1
2015	12.6	1.7	14.3
2016	12.7	1.7	14.4
2017	12.9	1.7	14.6
2018	13.0	1.7	14.7
2019	13.0	1.7	14.7
2020	13.2	1.7	14.9
2021	13.4	1.7	15.1
	Toll Revenue		
2012	66.0	50.2	116.2
2013	70.0	52.8	122.8
2014	90.5	71.3	161.8
2015	91.4	71.6	163.0
2016	92.2	71.9	164.1
2017	92.9	73.1	166.0
2018	93.6	74.1	167.7
2019	94.4	75.2	169.6
2020	95.3	76.5	171.8
2021	96.2	77.8	174.0

Table A.2: Baltimore Harbor Tunnel (I-895)
Transaction and Toll Revenue Forecast by Vehicle Class

Fiscal Year	Baltimore Harbor Tunnel		
	PC	CV	Total
	Transactions		
2012	23.4	0.7	24.1
2013	23.1	0.7	23.8
2014	22.4	0.6	23.1
2015	22.6	0.6	23.2
2016	22.8	0.7	23.5
2017	22.9	0.7	23.7
2018	23.1	0.7	23.9
2019	23.3	0.7	24.0
2020	23.5	0.7	24.2
2021	23.7	0.7	24.4
	Toll Revenue		
2012	41.3	7.2	48.5
2013	46.7	8.0	54.7
2014	63.1	10.2	73.3
2015	63.5	10.1	73.6
2016	64.0	10.4	74.4
2017	64.4	10.5	74.9
2018	65.0	10.5	75.5
2019	65.4	10.6	76.0
2020	66.0	10.6	76.6
2021	66.6	10.6	77.2

Table A.3: Francis Scott Key Bridge (I-695)
Transaction and Toll Revenue Forecast by Vehicle Class

Fiscal Year	Francis Scott Key Bridge		
	PC	CV	Total
	Transactions		
2012	9.2	1.0	10.2
2013	9.2	1.0	10.2
2014	9.1	0.9	10.0
2015	9.1	0.9	10.1
2016	9.2	0.9	10.1
2017	9.3	0.9	10.2
2018	9.3	1.0	10.3
2019	9.4	1.0	10.4
2020	9.5	1.0	10.5
2021	9.6	1.0	10.6
	Toll Revenue		
2012	13.5	11.8	25.3
2013	15.8	13.5	29.3
2014	22.1	17.0	39.1
2015	22.9	17.6	40.5
2016	23.1	17.9	41.0
2017	23.6	17.9	41.5
2018	23.8	18.1	41.9
2019	24.2	18.3	42.5
2020	24.4	18.5	42.9
2021	24.6	18.7	43.3

Table A.4: Fort McHenry Tunnel (I-95)
Transaction and Toll Revenue Forecast by Vehicle Class

Fiscal Year	Fort McHenry Tunnel		
	PC	CV	Total
	Transactions		
2012	39.1	3.3	42.4
2013	38.7	3.3	42.0
2014	37.4	3.2	40.6
2015	37.7	3.2	41.0
2016	38.1	3.2	41.4
2017	38.5	3.2	41.7
2018	38.9	3.3	42.2
2019	39.3	3.3	42.6
2020	39.7	3.3	43.0
2021	40.1	3.3	43.5
	Toll Revenue		
2012	74.1	42.7	116.8
2013	83.8	50.4	134.2
2014	111.7	63.5	175.2
2015	111.2	63.9	175.1
2016	111.8	64.6	176.4
2017	112.5	65.4	177.9
2018	113.1	66.0	179.1
2019	113.7	66.5	180.2
2020	114.4	67.2	181.6
2021	115.2	67.8	183.0

Table A.5: William Preston Lane Jr. Memorial Bridge (US 50/301)
Transaction and Toll Revenue Forecast by Vehicle Class

Fiscal Year	Bay Bridge		
	PC	CV	Total
	Transactions		
2012	11.9	0.9	12.7
2013	11.8	0.8	12.6
2014	10.7	0.8	11.4
2015	10.7	0.8	11.5
2016	10.8	0.9	11.7
2017	10.9	0.9	11.8
2018	11.1	0.9	11.9
2019	11.2	0.9	12.0
2020	11.2	0.9	12.1
2021	11.3	0.9	12.2
	Toll Revenue		
2012	30.7	15.0	45.7
2013	34.6	17.4	52.0
2014	49.0	23.5	72.5
2015	49.4	23.9	73.3
2016	49.8	24.2	74.0
2017	50.3	24.6	74.9
2018	50.9	24.8	75.7
2019	51.3	25.0	76.3
2020	51.9	25.1	77.0
2021	52.4	25.3	77.7

Table A.6: Harry W. Nice Memorial Bridge (US 301)
Transaction and Toll Revenue Forecast by Vehicle Class

Fiscal Year	Harry W. Nice Bridge		
	PC	CV	Total
	Transactions		
2012	3.0	0.2	3.2
2013	2.9	0.2	3.1
2014	2.7	0.2	2.8
2015	2.7	0.3	2.9
2016	2.7	0.3	3.0
2017	2.7	0.3	3.0
2018	2.7	0.3	3.0
2019	2.8	0.3	3.1
2020	2.8	0.3	3.1
2021	2.8	0.3	3.1
	Toll Revenue		
2012	8.2	3.7	11.9
2013	8.9	4.4	13.3
2014	12.8	5.9	18.7
2015	12.9	6.1	19.0
2016	12.9	6.4	19.3
2017	12.9	6.6	19.5
2018	13.1	6.8	19.9
2019	13.1	6.8	19.9
2020	13.1	7.0	20.1
2021	13.1	7.2	20.3

Table A.7: Thomas J. Hatem Memorial Bridge (US 40)
Transaction and Toll Revenue Forecast by Vehicle Class

Fiscal Year	Hatem Memorial Bridge		
	PC	CV	Total
	Transactions		
2012	5.0	0.1	5.1
2013	4.9	0.1	5.0
2014	5.0	0.1	5.1
2015	5.0	0.2	5.2
2016	5.1	0.2	5.3
2017	5.1	0.2	5.3
2018	5.2	0.2	5.4
2019	5.2	0.2	5.4
2020	5.3	0.2	5.6
2021	5.4	0.4	5.8
	Toll Revenue		
2012	1.6	1.2	2.8
2013	1.9	0.8	2.7
2014	2.5	1.1	3.6
2015	2.7	2.0	4.7
2016	2.7	2.1	4.8
2017	2.7	2.1	4.8
2018	2.7	2.2	4.9
2019	2.7	2.2	4.9
2020	2.7	2.3	5.0
2021	2.7	2.4	5.1