Maryland Transportation Authority
2013 Traffic and Toll Revenue Report

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Executive Summary

As the 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 connections. 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 Patapsco River. 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 eastern shore of Maryland and Delaware to the Baltimore and Washington DC metropolitan areas. The Governor Harry W. Nice Memorial Bridge (Nice), also in the Southern Region, connects Maryland and Virginia across the Potomac River.

Transaction and toll revenue estimates for the Intercounty Connector and the I-95 Express Toll Lanes are not included in this analysis as forecasts for those facilities are provided separately.

In addition to estimates of transactions and "in-lane toll revenue" for these seven legacy toll facilities operated by the MDTA, estimates of "other toll revenue" and concession revenue sources available to the MDTA were developed to provide a full picture of revenue potential for the MDTA through 2023. "Other Toll Revenue" categories are shown on Table ES.2, and include items such as unused toll revenue, transponder sales, fees, and discounts.

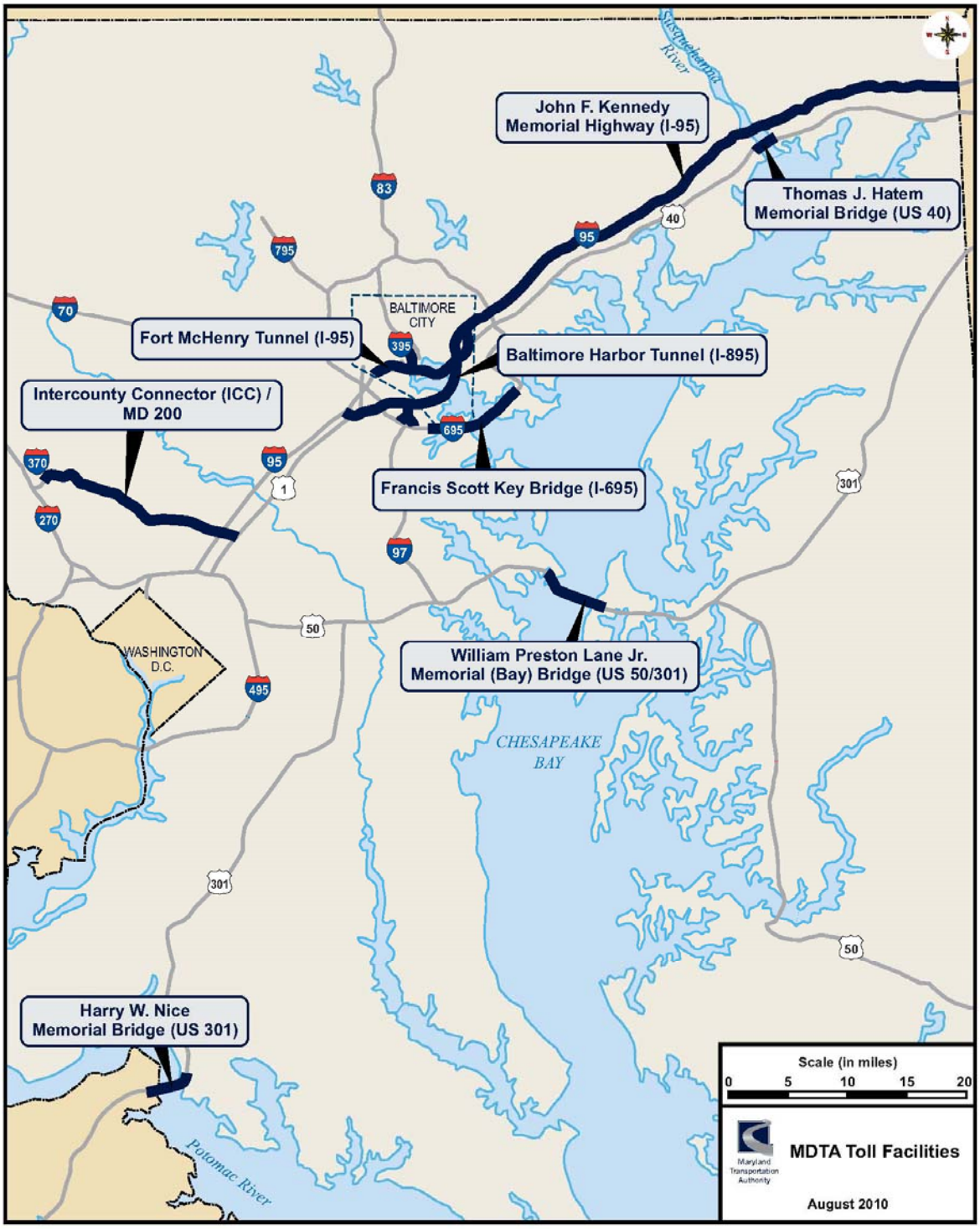
The forecasts are based on the current toll and fee schedules, that include the toll adjustments approved by the MDTA on September 22, 2011 and identified as Appendix A to this report. The most recent and final of these toll adjustments were implemented on July 1, 2013, affecting the full 2014 fiscal year (FY).

This executive summary includes a review of the overall forecasting methodology as well as traffic and revenue estimates. The work, analyses, and forecasts for the existing legacy toll facilities are of investment-grade quality and suitable for financing. As part of the analysis,

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

a traffic and toll revenue model for the existing legacy 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 legacy toll facility.

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 legacy tolled facilities, based on actual transaction and toll revenue data through the full MDTA FY2013 ending June 30, 2013 and the first three months of FY2014, (July, August and September 2013). The MDTA FY2014 runs from July 1, 2013 through June 30, 2014. All MDTA transaction and revenue data is based upon this fiscal year definition.

Reflecting the current slow economic recovery and the toll adjustments that occurred on July 1, 2013, Jacobs is forecasting a decline in tolled traffic on the MDTA's legacy toll system for FY2014, with a slow, steady recovery of traffic through the forecast horizon of FY2023. The forecast estimates that traffic levels will not return to the high level of FY2007 traffic within the forecast period.

These forecasts are reasonable and are appropriately conservative, taking into consideration the following observations:

- The previous forecast of traffic and toll revenue was met in FY2013, with actual revenue 0.1 percent above that projected. The models that were used to create the previous forecast provide the basis for the current forecast;
- The forecast of traffic and toll revenue uses conservative elasticity factors. The forecasted loss of traffic due to the toll increase implemented in FY2014 is approximately twice that actually thus far experienced as a result of the FY2012 and FY2014 adjustments;
- The planned toll schedule adjustments in FY2014 are relatively consistent across payment classes such that motorists' movements to different payment classes represents little risk to revenue; and
- The forecasted, approximately 1 percent long-term growth rate of transactions and toll revenue after recovery is slightly greater than in the most recent past (FY2002-FY2007: 0.7 percent annual growth per year) due to emergence from recession. It is, however, 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 historical traffic and economic data sets were compiled. Historical transaction and toll revenue data were compiled from the MDTA for all of the legacy facilities by month detailed to payment and vehicle class. Historical 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. Traffic counts in the region were also 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:

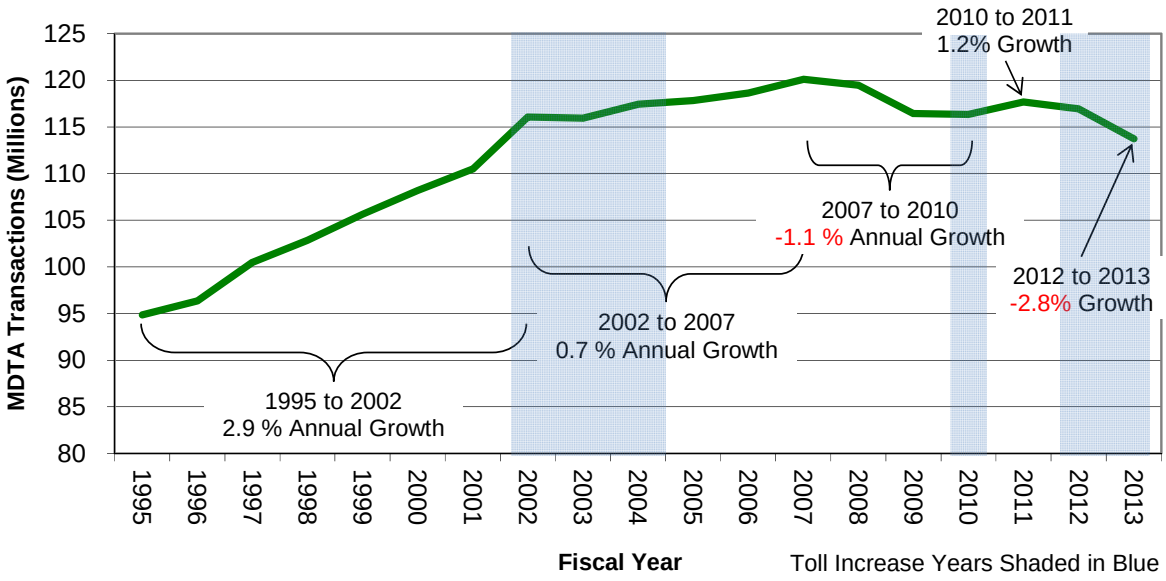
- Emergence from the recession;
- Evaluation of "normal" traffic growth; and
- Impact of the planned toll schedule adjustments.

Traffic on MDTA facilities decreased from FY2007 through FY2009, flattened in FY2010 and increased in FY2011. While traffic began to recover in FY2011, traffic declined in FY2012 due to the toll increases implemented in November 2011 and January 2012. There were further decreases in traffic in FY2013 due to the continuation of the impact of the toll increase.

Based on the forecasts of both national and state gross domestic products and anticipated employment recovery, Jacobs estimates that modest recovery will continue through FY2014 and "new normal" growth rates for cars and trucks of approximately one percent are forecasted to occur in FY2014. These underlying growth forecasts assume no toll adjustment from FY2103 to FY2014 providing a base from which to develop the forecast. With these toll adjustments in FY2014, traffic is projected to decrease in FY2014 with slow steady "new normal" growth to occur in FY2015.

Figure ES.2 provides total MDTA transaction levels from FY1995 through FY2013. As presented in the figure, transaction growth increased from 2.9 percent annually from FY1995 through FY2002, and showed a 0.7 percent annual increase from FY2002 through FY2007. This slowing in positive growth predates all recessionary effects that were 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. Annual growth of national vehicle miles traveled in the 1990's ranged from 2.5 to 3.5 percent while growth from 2002 through 2007 ranged from 1.5 to 2.5 percent. 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" growth rate developed for the transaction forecast represents growth that is less than that experienced from FY1995 through FY2002 and slightly higher than the stalled growth from FY2002 through FY2007. The reduction of future growth rates as compared to the historical growth from FY1995 through 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 through FY2007 is based on recovery from the recession.

The flattening of traffic in FY2010 and the slow recovery that started in FY2011 can be seen in this Figure as well. In FY2012 and FY2013 traffic decreased slightly in response to the toll adjustments.

Forecasted Transactions and Toll Revenues

The transaction and in-lane toll revenue forecast was developed by vehicle class and payment type for each of the seven facilities. The effect of the toll increases in FY2012 and FY2014 are recognized and included 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's legacy toll 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 6.2 percent from in FY2014, while toll revenue is forecasted to increase by 31.3 percent for the same time period. These decreases are considered conservative as the first four months of FY2014 have actually shown an increase in traffic of 0.2 percent and an increase in toll revenue of 40.1 percent. 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 period. This normal growth is estimated to be slightly disrupted, slowed to no growth in FY2017, by the construction projects to replace the Canton Viaduct and to replace the superstructure and deck on the Patapsco Flats Bridge on I-895 suppressing revenue potential for the Baltimore Harbor Tunnel from FY2016 through FY2018.

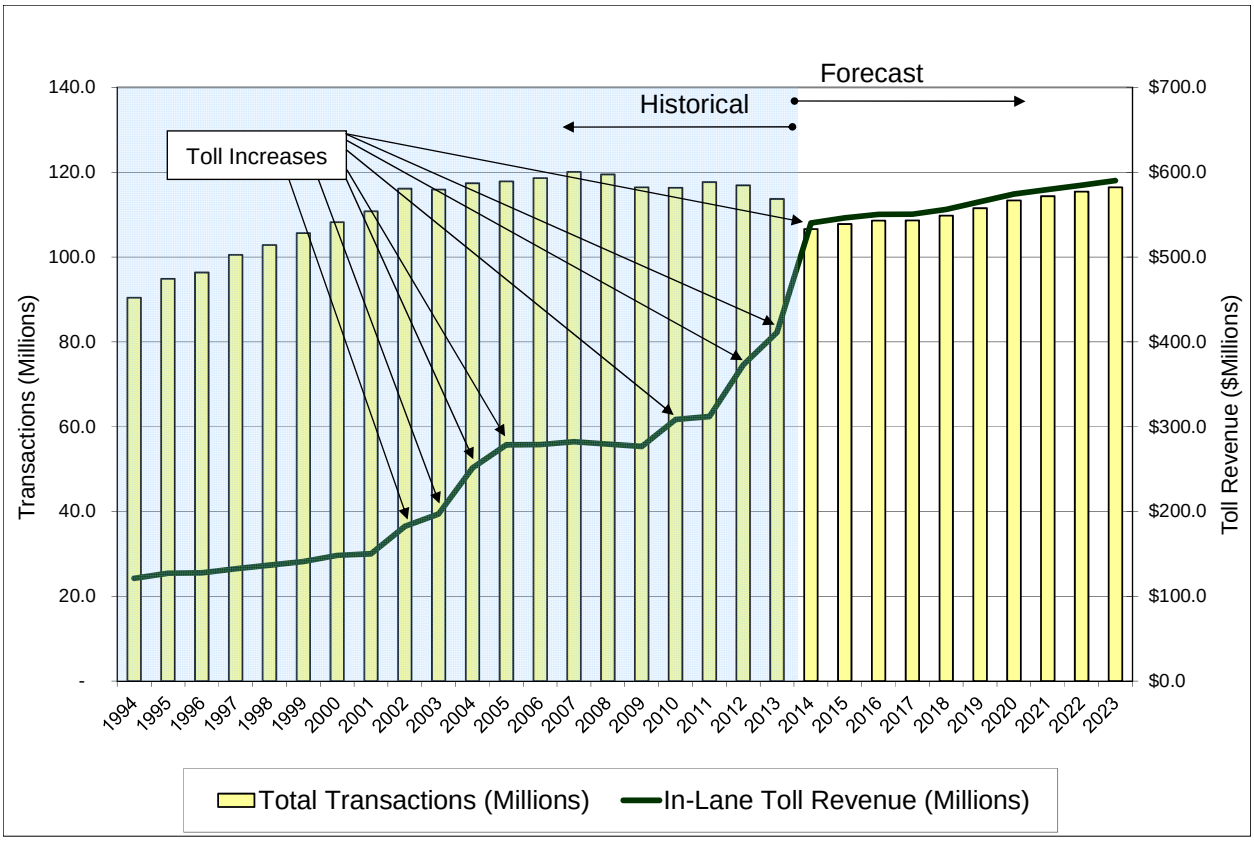
Table ES.1: MDTA Transactions and In-Lane Toll Revenues, Historical and Forecasted

MdTA Annual Traffic and Toll Revenue Historical and Projected				
			Growth	
Fiscal Year	Transactions	Toll Revenue	Transactions	Toll Revenue
2000	108.2	148.2		
2001	110.8	149.9	2.4%	1.1%
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	1.3%	1.3%
2008	119.5	279.3	-0.5%	-1.1%
2009	116.4	276.6	-2.6%	-1.0%
2010*	116.3	308.5	-0.1%	11.5%
2011	117.7	312.0	1.1%	1.1%
2012*	121.7	373.0	3.4%	19.6%
2013*	113.7	411.4	-6.6%	10.3%
2014*	106.6	540.3	-6.2%	31.3%
2015	107.8	546.2	1.1%	1.1%
2016	108.6	550.3	0.8%	0.8%
2017	108.6	550.5	0.0%	0.0%
2018	109.7	556.2	1.0%	1.0%
2019	111.5	565.3	1.6%	1.6%
2020	113.4	574.5	1.6%	1.6%
2021	114.4	579.6	0.9%	0.9%
2022	115.4	584.9	0.9%	0.9%
2023	116.4	590.1	0.9%	0.9%

* Indicates year of toll increase

Shaded years represent actuals

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 *E-ZPass* account fees, notice of toll due fees, violation fees, commercial discounts, over-size permits, concession revenues and revenue associated with the Hatem E-ZPass program. Some of these revenues were allocated to the ICC facility as per the accounting structure of the MDTA. 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	Fall 2013 MdTA Toll and Other Revenue Estimates ($ Millions)																
	In-Lane Toll Revenue	Unused Toll Revenue	Trans-ponder 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	Con-cession Revenue	Hatem E-ZPass Program	ICC Trans-ponder Sales	ICC Monthly Account Fees	ICC Violation Fees	I-95 ETL Violation Fees	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	373.0	9.1	1.7	4.7	0.8	2.8	(5.9)	(0.2)	1.3	7.6	0.3	0.1	0.3	1.7		397.3	18.6%
2013	411.6	11.5	1.3	5.3	0.1	4.0	(4.6)	(0.7)	1.3	4.1	0.8	0.2	0.7	5.1		440.6	10.9%
2014	540.3	14.1	1.3	5.3	-	4.0	(6.4)	(0.9)	1.3	3.6	1.5	0.2	0.9	5.1		570.3	29.4%
2015	546.2	14.3	1.5	5.4	-	3.7	(6.5)	(0.9)	1.3	6.1	1.5	0.2	0.9	5.1	0.1	578.9	1.5%
2016	550.3	14.4	1.5	5.4	-	3.7	(6.5)	(1.0)	1.3	6.6	1.5	0.2	0.9	4.8	0.1	583.2	0.7%
2017	550.5	14.5	1.5	5.4	-	3.7	(6.6)	(1.0)	1.3	6.7	1.5	0.2	0.9	4.8	0.1	583.5	0.1%
2018	556.2	14.6	1.5	5.5	-	3.6	(6.7)	(1.1)	1.3	6.7	1.5	0.2	0.9	4.8	0.1	589.1	0.9%
2019	565.3	14.9	1.5	5.5	-	3.6	(6.8)	(1.1)	1.3	6.8	1.5	0.2	0.9	4.8	0.1	598.5	1.6%
2020	574.5	15.0	1.6	5.5	-	3.6	(6.9)	(1.1)	1.3	6.9	1.5	0.2	0.9	4.8	0.1	607.9	1.6%
2021	579.6	15.1	1.6	5.6	-	3.4	(7.0)	(1.3)	1.3	7.0	1.5	0.2	0.9	4.5	0.1	612.5	0.8%
2022	584.9	15.2	1.6	5.6	-	3.4	(7.1)	(1.3)	1.3	7.2	1.5	0.2	0.9	4.5	0.1	618.0	0.9%
2023	590.1	15.4	1.6	5.6	-	3.4	(7.2)	(1.3)	1.3	7.4	1.5	0.2	0.9	4.5	0.1	623.5	0.9%

* Shaded years represent actuals

Historical Revenue Forecast Performance

Jacobs has been providing traffic and revenue forecasts to the MDTA since 2009. Each year a similar work program is implemented, as described within this document, to arrive at estimates of revenue for MDTA budgeting purposes. Each year is unique with the implementation of toll adjustments, different time points of economic cycles and various construction projects, among many other factors that may affect revenue potential.

Table ES.3 presents the accuracy of those forecasts. The table identifies the year the forecast was made, the fiscal year being forecasted and the accuracy of those forecasts for both in-lane toll revenue and total revenue as defined in the previous sections. Only years in which the actual and assumed toll schedules were identical are shown. In spite of toll adjustments affecting three of the four forecasting years which makes the forecasting process even more complicated (FY2010, FY2012, FY2013), actual revenue has always been higher than the forecast, with the most recent fiscal year, FY 2013 being 1.4 percent above the forecast. The same processes that were developed and proved successful for the previous forecasts have been used in this current analysis, giving confidence to the current forecasts.

Table ES.3: MDTA Revenue, Estimated versus Actual, FY2010 through FY2013 Transactions

Year Forecast Prepared	Fiscal Year Forecasted	Jacobs' Forecast		Actual		Percent Difference	
		In Lane Toll Revenue	Total Revenue	In Lane Toll Revenue	Total Revenue	In Lane Toll Revenue	Total Revenue
2009	2010	$294.4	$315.3	$308.5	$331.8	4.79%	5.25%
	2011	$295.6	$315.9	$312.0	$335.0	5.55%	6.05%
2010	2011	$307.6	$331.0	$312.0	$335.0	1.43%	1.21%
2011	2012	$367.1	$387.2	$373.0	$397.3	1.61%	2.61%
	2013	$409.0	$425.9	$411.6	$440.6	0.64%	3.46%
2012	2013	$411.4	$434.4	$411.6	$440.6	0.05%	1.43%

Table ES.4 presents a comparison of the 2012 forecast to the current, 2013, forecast, including the total from FY2013 through FY2022. Overall the current forecast estimates more revenue for this time period. This includes slightly less revenue in FY2017 and FY2018 due to the estimated impact of construction projects included in the FY2013 forecasts.

Table ES.4: Estimated Total MDTA Revenue Comparison, 2012 Forecast and 2013 Forecast

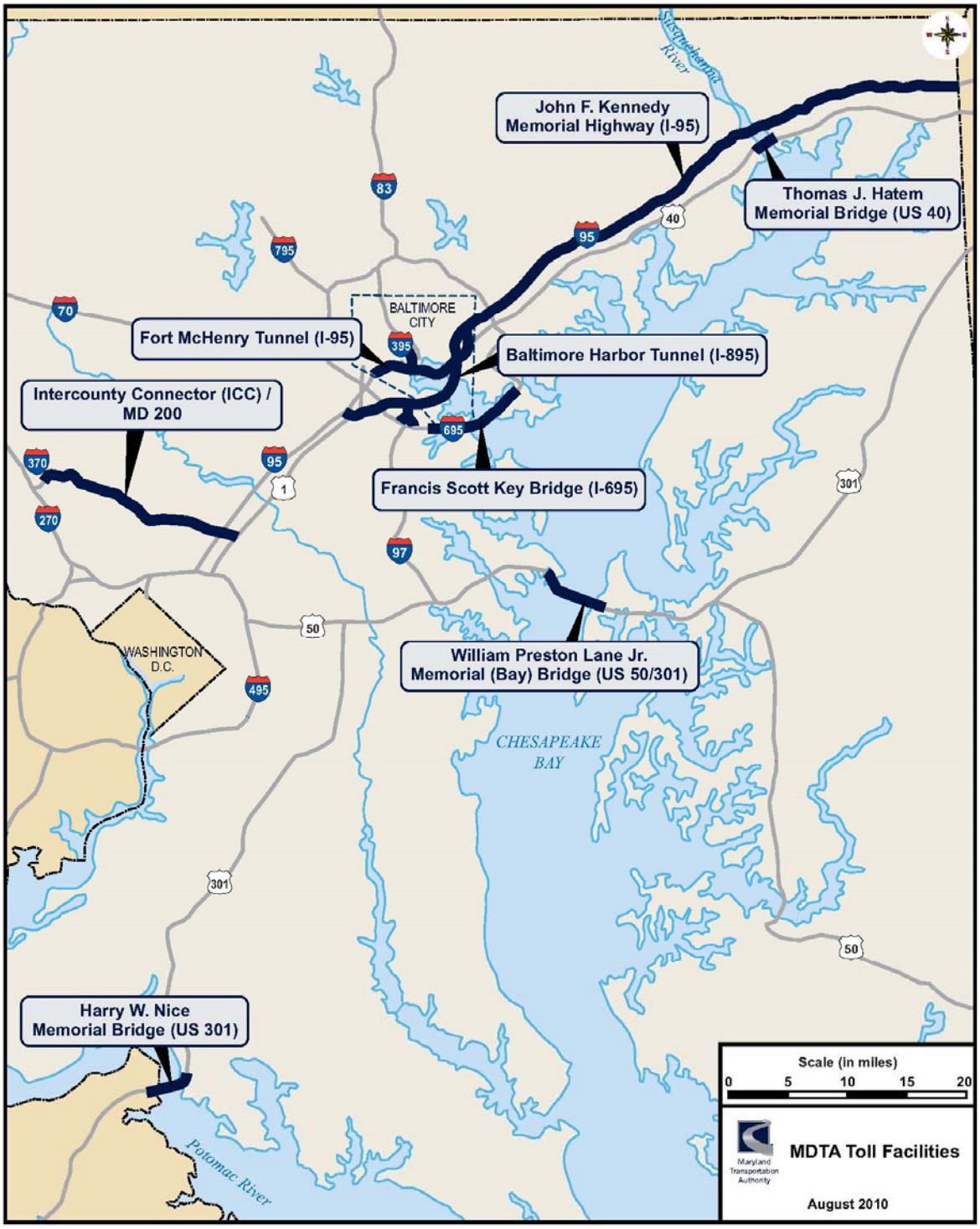
	Total Revenue Forecasts ($M)		
Fiscal Year	2012 Forecast	2013 Forecast	Difference
2013	434.4	440.6	1.4%
2014	566.4	570.3	0.7%
2015	575.1	578.9	0.7%
2016	581.3	583.2	0.3%
2017	587.2	583.5	-0.6%
2018	592.8	589.1	-0.6%
2019	598.6	598.5	0.0%
2020	604.3	607.9	0.6%
2021	609.4	612.5	0.5%
2022	614.9	618.0	0.5%
Total	5,764.5	5,782.5	0.3%

1.0 Introduction

The Maryland Transportation Authority (MDTA) currently operates eight toll facilities 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 seven "legacy facilities"; i.e., all but the recently constructed Intercounty Connector, 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 Patapsco River 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 eastern shore of Maryland and Delaware and the Baltimore and Washington DC metropolitan areas. 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's 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 recent past and 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 recovery from the current recession appears to be relatively jobless marked by innovation and slow growth. As traffic is not simply a function of gross domestic product (GDP) but also 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 each of MDTA's legacy facilities, based on traffic and toll revenue data through the full MDTA fiscal year 2013 (FY2013) ending June 2013 and the first three months of FY2014, (July, August and September 2013). The MDTA FY2014 runs from July 1, 2013 through June 30, 2014. 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 toll schedules for the analysis were derived from the changes approved at the September 22, 2011 meeting of the MDTA Board and identified as Appendix A to this report. These adjustments included the toll increases implemented in FY2013 and FY2014. The work, analyses, and results for the existing tolled bridges and tunnels are of investment-grade quality and suitable for financing.

As a result of the continued effect of the approved toll adjustments and the uncertainty in the short term economy, Jacobs is forecasting a decrease of 6.2 percent in traffic in FY2014, while toll revenue is forecasted to increase by 31.3 percent. These decreases are considered conservative as the first four months of FY2014 have actually shown an increase in traffic of 0.2 percent and an increase in toll revenue of 40.1 percent. 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. This is tempered by an estimated decrease in traffic and toll revenue for the Baltimore Harbor Tunnel during construction efforts on the Canton Viaduct and Patapsco Flats Bridge from FY2016 through FY2018. The background and methodology that led 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 Intercounty Connector and the I-95 Express Toll Lanes are not included in this analysis.

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's 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's legacy 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 was the case in 1991 and 1992, or the conversion of JFK Highway, Hatem Bridge, Nice Bridge, and Bay Bridge 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

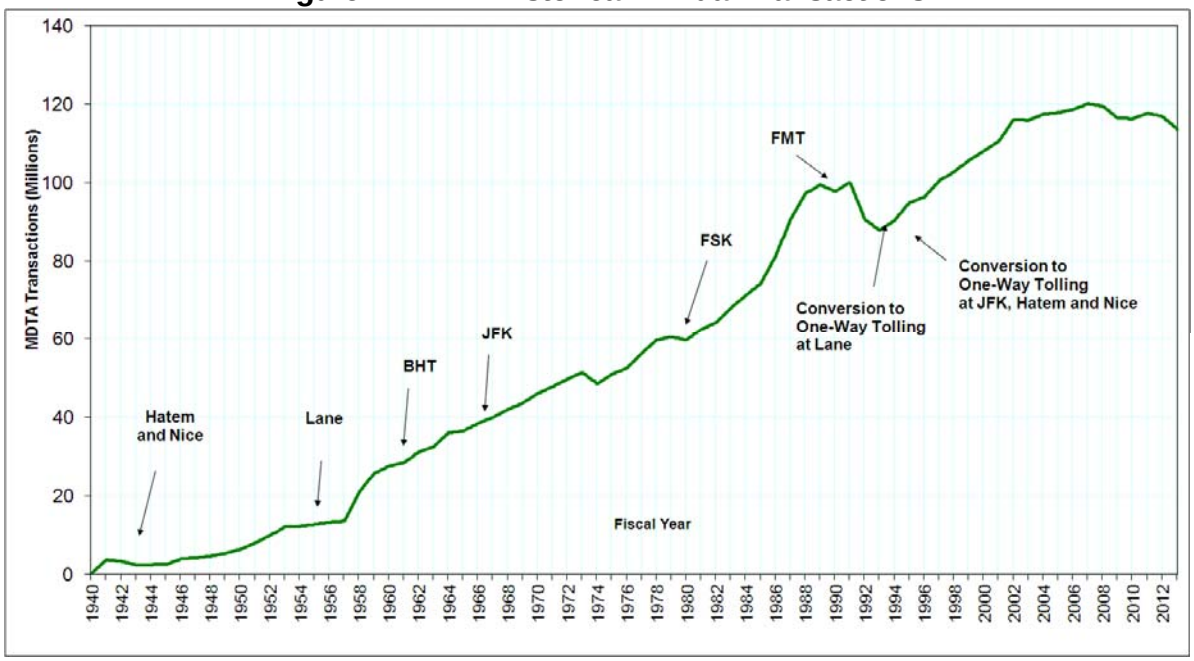
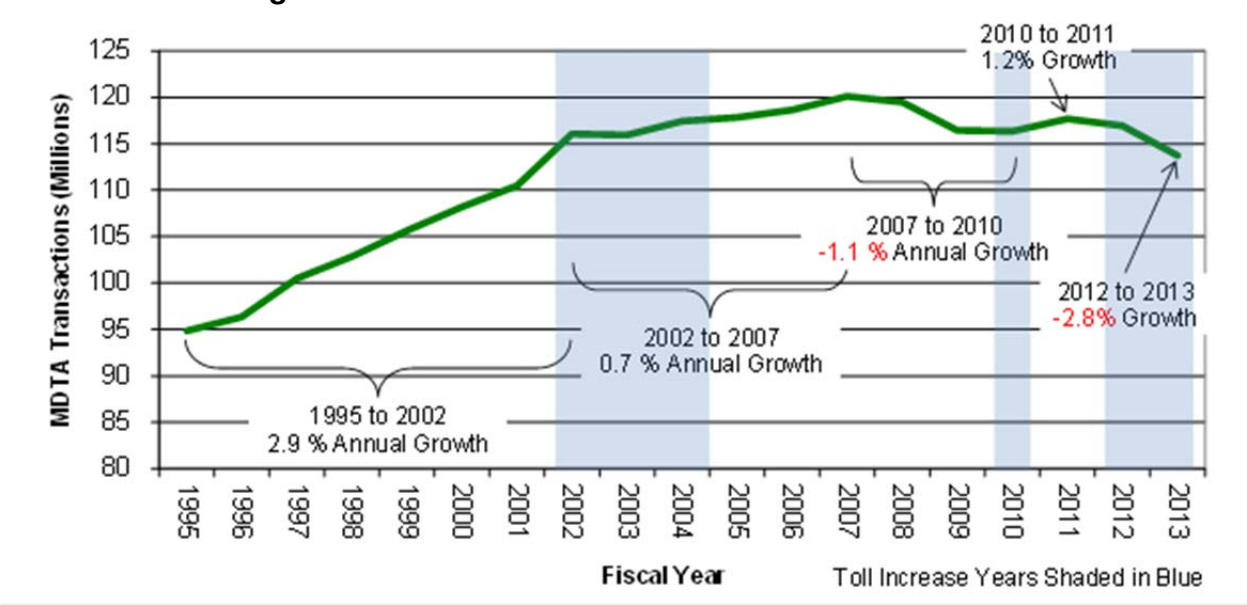


Figure 3: MDTA Recent Historical Annual Transactions



Between FY1995 and FY2002, MDTA's transactions grew at an average annual rate of 2.9 percent. For the next five years, from FY2002 through FY2007, transactions grew at 0.7 percent. This decrease in growth during the similar economic time periods from FY1995 through FY2007 is discussed in more detail in Section 3 of this report, specifically relating to national and local trends in vehicle miles traveled (VMT). The decrease in traffic from FY2007 through FY2010 is a function of the recession, both the initial effects, with large decreases from FY2007 through 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), likely 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, with sizable growth in FY2011 of 1.2 percent. In FY2013 transactions decreased by 2.8 percent due to the toll increases implemented during the fiscal year.

2.1.1 Historical Toll Transactions and Revenue by Facility

The following tables and figure show a breakdown of transactions by facility from FY1995 through FY2013, as well as annual percent changes. The data were provided by the MDTA through Traffic Volume and Income (TVI) reports through FY2013.

Table 1: MDTA FY1995 – FY2013 Actual Toll Transactions by Facility

Fiscal Year	MdTA Facilities - Annual Transactions (Millions)							
	JFK	Hatem	Nice	Lane	BHT	Key	FMT	Total
1995	12.4	4.1	2.6	10.1	19.9	9.6	36.2	94.9
1996	12.7	4.2	2.5	10.3	20.1	9.6	37.0	96.4
1997	13.2	4.4	2.5	10.7	21.1	9.8	38.8	100.5
1998	13.6	4.5	2.6	11.2	20.0	10.6	40.3	102.8
1999	14.0	4.7	2.7	11.6	21.9	10.9	39.9	105.6
2000	14.3	4.6	2.7	11.8	23.0	10.9	40.8	108.2
2001	14.5	4.7	2.8	12.0	23.4	11.0	42.1	110.5
2002	15.2	4.9	2.9	12.5	24.8	11.5	44.3	116.1
2003	14.9	5.1	3.0	12.4	24.9	11.6	44.1	115.9
2004	15.2	5.5	3.2	12.9	25.9	12.0	42.7	117.4
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	118.7
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	3.4	12.8	25.5	11.7	43.5	116.4
2010	14.8	5.0	3.4	13.0	25.2	11.0	44.1	116.3
2011	14.9	5.1	3.4	13.2	25.5	11.1	44.7	117.7
2012	14.7	5.0	3.3	13.1	25.6	11.0	44.2	116.9
2013	14.7	4.6	3.3	12.7	24.0	10.9	43.6	113.8

Table 2: MDTA FY1995 – FY2013 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	2.30%	1.00%	-1.60%	1.80%	1.20%	-0.50%	2.30%	1.60%
1997	4.20%	4.80%	-0.80%	4.60%	5.00%	2.60%	4.60%	4.30%
1998	3.30%	3.20%	2.80%	4.50%	-5.30%	7.80%	4.10%	2.30%
1999	2.50%	3.80%	2.30%	3.80%	9.50%	2.90%	-1.00%	2.70%
2000	2.40%	-1.30%	2.60%	1.70%	5.10%	0.60%	2.10%	2.40%
2001	1.50%	1.30%	3.70%	1.00%	1.40%	0.60%	3.40%	2.10%
2002	4.30%	4.30%	4.30%	4.50%	5.90%	4.70%	5.20%	5.10%
2003	-2.00%	4.50%	0.70%	-0.70%	0.70%	0.20%	-0.40%	-0.10%
2004	2.20%	7.30%	7.40%	4.30%	4.10%	4.20%	-3.20%	1.30%
2005	-1.40%	2.20%	0.90%	0.30%	-1.70%	0.60%	1.80%	0.30%
2006	-1.50%	-0.20%	4.70%	2.20%	3.00%	-1.70%	0.10%	0.70%
2007	0.70%	0.00%	1.80%	1.70%	-2.00%	2.60%	2.90%	1.20%
2008	-1.30%	-7.90%	-0.90%	-0.90%	0.10%	1.10%	0.00%	-0.50%
2009	-0.10%	-1.80%	-1.20%	-4.60%	-0.90%	-5.30%	-3.10%	-2.50%
2010	0.80%	-0.80%	0.00%	1.90%	-1.20%	-6.20%	1.40%	-0.10%
2011	0.70%	1.20%	0.00%	1.50%	1.10%	1.00%	1.40%	1.20%
2012	-1.08%	-0.99%	-1.49%	-0.68%	0.39%	-0.63%	-1.03%	-0.66%
2013	0.00%	-8.00%	0.00%	-3.05%	-6.25%	-0.91%	-1.36%	-2.65%

Figure 4: MDTA FY1995 – FY2013 Actual Toll Transactions by Facility

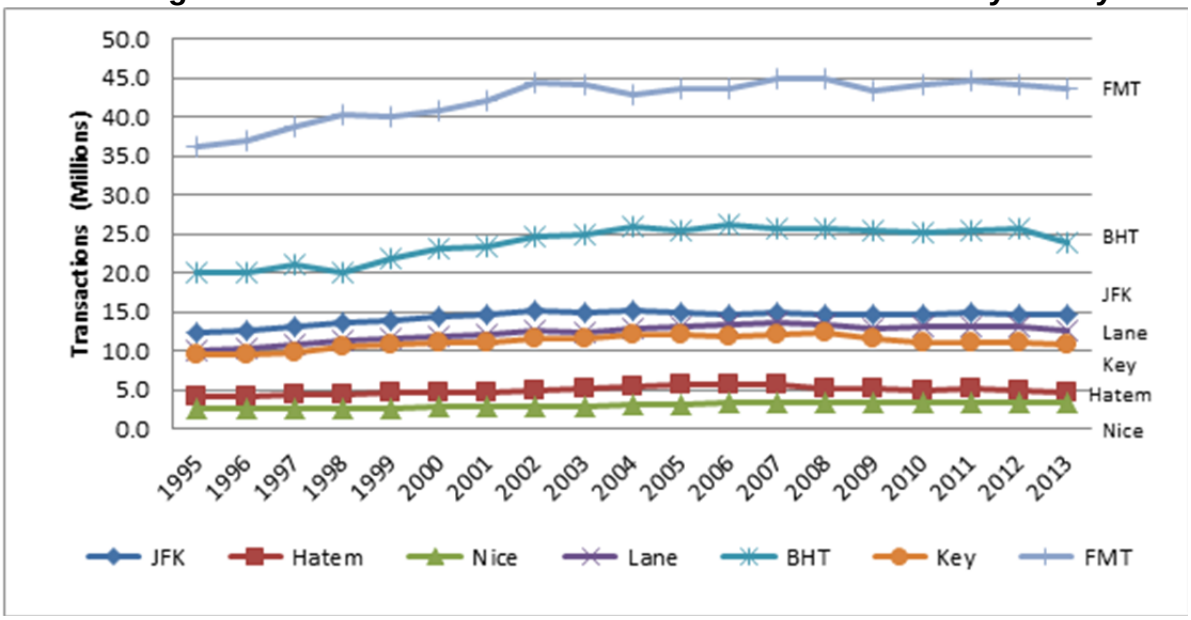


Table 3 and Table 4 provide the FY1995 through FY2013 actual gross toll revenue as well as its growth by facility for the MDTA system. There are sizable increases in toll revenue that outpace transaction growth, specifically for fiscal years FY2002 through FY2005, FY2010 and FY2012. This is due to various toll increases that were implemented during these periods. Table 5 provides the average toll by fiscal year by toll facility to demonstrate these increases. From FY2005 through FY2009 the average toll remained very stable because there were no adjustments to the toll schedule during this time. In FY2010 and FY2012 the average toll increased because of the toll increases implemented in those years. The average toll remained stable from FY2010 to FY2011 when no adjustments to the toll schedule were made.

Table 3: MDTA FY1995 – FY2013 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
2012	$116.0	$5.3	$11.6	$46.7	$48.7	$25.8	$118.8	$372.9
2013	$121.9	$7.6	$13.0	$52.4	$52.1	$28.9	$135.6	$411.5

Table 4: MDTA FY1995 – FY2013 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	0.60%	0.00%	-2.30%	0.80%	0.60%	1.20%	1.10%	0.70%
1997	2.10%	23.10%	-4.70%	5.70%	3.20%	3.50%	4.20%	3.70%
1998	3.20%	6.30%	4.90%	4.70%	-4.30%	6.70%	4.00%	3.20%
1999	2.80%	17.60%	2.30%	3.80%	9.00%	1.10%	2.70%	3.70%
2000	4.10%	0.00%	2.30%	1.00%	12.40%	8.30%	1.60%	3.90%
2001	1.30%	-5.00%	4.40%	0.00%	1.60%	-2.90%	4.40%	1.70%
2002	66.10%	42.10%	57.40%	5.30%	3.10%	4.00%	1.50%	21.40%
2003	17.80%	18.50%	23.00%	0.00%	3.50%	5.70%	0.70%	8.30%
2004	18.40%	15.60%	8.80%	5.30%	49.00%	50.50%	47.20%	27.60%
2005	6.70%	0.00%	1.00%	-0.30%	13.00%	15.00%	21.60%	10.80%
2006	-1.20%	5.40%	5.00%	1.50%	2.60%	-2.10%	-0.40%	0.10%
2007	1.20%	-2.60%	-1.00%	1.20%	-1.40%	2.10%	2.80%	1.30%
2008	-2.00%	2.60%	-2.90%	-1.50%	0.60%	1.00%	-0.80%	-1.00%
2009	2.60%	-48.70%	-3.00%	-4.10%	0.80%	-4.10%	-1.20%	-1.00%
2010	12.00%	35.00%	2.00%	14.20%	6.50%	7.50%	12.70%	11.20%
2011	0.60%	3.70%	1.00%	2.40%	-0.30%	4.00%	1.90%	1.40%
2012	8.31%	89.29%	14.85%	22.89%	28.84%	24.04%	24.66%	19.56%
2013	5.09%	43.40%	12.07%	12.21%	6.98%	12.02%	14.14%	10.35%

Table 5: MDTA FY1995 – FY2013 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
2012	$7.89	$1.06	$3.52	$3.56	$1.90	$2.35	$2.69	$3.19
2013	$8.29	$1.65	$3.94	$4.13	$2.17	$2.65	$3.11	$3.62

2.2 Regional Traffic Review

In addition to the review of transactions on the MDTA's 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, Hatem Bridge, Nice Bridge and Bay Bridge were doubled to compare to the two way volumes of the other roadways.

Table 6: Historical Count Data – Northern Region

Source	Location	Average Annual Daily Traffic - Northern Region									
		1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
SHA	I-83 North	46,539	50,219	61,975	66,760	62,068	59,830	61,620	61,971	60,988	60,165
SHA	US 1 North (Susquehanna River)	8,675	9,650	9,950	9,852	11,640	11,061	11,282	10,050	9,861	9,882
MDTA	JFK	67,890	78,466	81,957	80,744	81,317	80,283	80,229	80,815	81,448	80,795
MDTA	Hatem	22,521	25,205	30,520	30,450	30,474	28,075	27,582	27,358	27,664	27,547
SHA	US 301 North	9,450	10,475	11,425	11,650	11,531	10,952	10,370	10,451	10,252	10,620
Average		31,015	34,803	39,165	39,891	39,406	38,040	38,216	38,129	38,043	37,802

Table 7: Historical Growth Rate – Northern Region

Source	Location	Capitalized Annual Growth Rate								
		95-00	00-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12
SHA	I-83 North	1.5%	4.3%	7.7%	-7.0%	-3.6%	3.0%	0.6%	-1.6%	-1.3%
SHA	US 1 North (Susquehanna River)	2.2%	0.6%	-1.0%	18.1%	-5.0%	2.0%	-10.9%	-1.9%	0.2%
MDTA	JFK	2.9%	0.9%	-1.5%	0.7%	-1.3%	-0.1%	0.7%	0.8%	-0.8%
MDTA	Hatem	2.3%	3.9%	-0.2%	0.1%	-7.9%	-1.8%	-0.8%	1.1%	-0.4%
SHA	US 301 North	2.1%	1.8%	2.0%	-1.0%	-5.0%	-5.3%	0.8%	-1.9%	3.6%
Average		2.3%	2.4%	1.9%	-1.2%	-3.5%	0.5%	-0.2%	-0.2%	-0.6%

Table 8: Historical Count Data – Central Region

Source	Location	Average Annual Daily Traffic - Central Region									
		1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
SHA	I-95 North Central	134,475	139,575	173,825	161,780	161,781	157,742	160,880	161,521	161,682	162,493
SHA	I-97 South Central	70,500	95,575	99,325	102,610	102,611	100,562	105,110	105,531	105,642	106,210
SHA	MD 295 South Central	59,075	58,025	86,250	85,392	91,630	88,881	88,882	89,423	93,390	92,641
SHA	I-95 South Central	153,275	192,575	189,825	191,880	191,881	188,042	192,100	192,871	193,062	191,280
SHA	I-695 Southwest	156,175	175,125	188,325	188,333	193,050	189,191	188,860	189,621	189,812	190,763
SHA	I-83 North Central	46,900	50,850	113,475	113,481	113,482	111,230	112,341	112,792	102,860	103,371
SHA	I-695 Northeast	142,475	147,725	152,650	152,652	155,270	152,171	153,692	150,850	151,001	151,762
MDTA	BHT	109,096	126,192	139,720	143,902	141,042	141,209	139,905	138,222	139,704	140,283
MDTA	FSK	52,603	59,945	66,324	65,171	66,867	67,632	64,045	60,050	60,666	60,086
MDTA	FMT	198,356	223,342	238,453	238,754	245,776	245,639	238,059	241,451	244,526	242,425
Average		112,293	126,893	144,817	144,395	146,339	144,230	144,387	144,233	144,234	144,131

Table 9: Historical Growth Rate – Central Region

Source	Location	Average Annual Growth Rate								
		95-00	00-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12
SHA	I-95 North Central	0.7%	4.5%	-6.9%	0.0%	-2.5%	2.0%	0.4%	0.1%	0.5%
SHA	I-97 South Central	6.3%	0.8%	3.3%	0.0%	-2.0%	4.5%	0.4%	0.1%	0.5%
SHA	MD 295 South Central	-0.4%	8.3%	-1.0%	7.3%	-3.0%	0.0%	0.6%	4.4%	-0.8%
SHA	I-95 South Central	4.7%	-0.3%	1.1%	0.0%	-2.0%	2.2%	0.4%	0.1%	-0.9%
SHA	I-695 Southwest	2.3%	1.5%	0.0%	2.5%	-2.0%	-0.2%	0.4%	0.1%	0.5%
SHA	I-83 North Central	1.6%	17.4%	0.0%	0.0%	-2.0%	1.0%	0.4%	-8.8%	0.5%
SHA	I-695 Northeast	0.7%	0.7%	0.0%	1.7%	-2.0%	1.0%	-1.8%	0.1%	0.5%
MDTA	BHT	3.0%	2.1%	3.0%	-2.0%	0.1%	-0.9%	-1.2%	1.1%	0.4%
MDTA	FSK	2.6%	2.0%	-1.7%	2.6%	1.1%	-5.3%	-6.2%	1.0%	-1.0%
MDTA	FMT	2.4%	1.3%	0.1%	2.9%	-0.1%	-3.1%	1.4%	1.3%	-0.9%
Average		2.5%	2.7%	-0.3%	1.3%	-1.4%	0.1%	-0.1%	0.0%	-0.1%

Table 10: Historical Count Data – Southern Region

Source	Location	Average Annual Daily Traffic - Southern Region									
		1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
SHA	US301 South	17,350	25,400	22,975	22,751	22,522	21,403	21,834	22,520	22,091	22,142
SHA	I-95 Far South (Virginia)	99,000	120,000	134,000	138,000	137,000	133,000	136,000	136,000	135,000	135,000
MDTA	BB	55,233	64,877	71,123	72,716	73,941	73,260	69,844	71,200	72,284	71,677
MDTA	Nice	14,137	14,849	17,592	18,385	18,731	18,580	18,341	18,378	18,346	17,961
Average		46,430	56,282	61,422	62,963	63,049	61,561	61,505	62,025	61,930	61,695

(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	Capitalized Annual Growth Rate								
		95-00	00-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12
SHA	US301 South	7.9%	-2.0%	-1.0%	-1.0%	-5.0%	2.0%	3.1%	-1.9%	0.2%
VDOT	I-95 Far South (Virginia)	3.9%	2.2%	3.0%	-0.7%	-2.9%	2.3%	0.0%	-0.7%	0.0%
MDTA	BB	3.3%	1.9%	2.2%	1.7%	-0.9%	-4.7%	1.9%	1.5%	-0.8%
MDTA	Nice	1.0%	3.4%	4.5%	1.9%	-0.8%	-1.3%	0.2%	-0.2%	-2.1%
Average		3.9%	1.8%	2.5%	0.1%	-2.4%	-0.1%	0.8%	-0.2%	-0.4%

2.3 Historical Toll Transactions by Vehicle Class

The historical toll transactions on the MDTA's facilities by vehicle class are shown in Table 12. As commercial vehicle usage of MDTA's 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 up 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 affected by the toll increases in May FY2009 and January FY2012. It is evident this impact continued in FY2012 and FY2013, when commercial vehicle share dropped to below 7 percent of total traffic. In addition to the impact of the toll increases to commercial vehicles, overall it is being shown that commercial vehicle traffic is declining as a percentage of total vehicles. This means growth in commercial vehicles, while positive, is less than what is estimated for commercial vehicles.

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%
2012	109.0	7.9	116.9	6.8%
2013	105.9	7.8	113.7	6.9%

MDTA commuter plans offer passenger car motorists up to 75 percent cost savings based on the most recent toll adjustment in FY2012. These savings have enticed a significant portion of motorists into the program, which peaked in FY2008 as presented in Table 13. The participation in commuter plans on the MDTA system declined slightly from FY2008 through FY2011 from a high of 35 percent of all passenger car transactions in FY2008 to 32 percent in FY2011. One likely reason for this slight decline in participation from FY2008 through FY 2011 is 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. In FY2013, commuter transactions as a percent of total decreased from 34.6 percent to 33.4 percent.

Table 13: MDTA Commuter Plan Participation

Fiscal Year	MdTA Facilities - Transactions (Millions)			
	Commuters	Non-Commuters	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%
2012	37.7	71.3	109.0	34.6%
2013	35.1	70.8	105.9	33.2%

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's 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 periods 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.

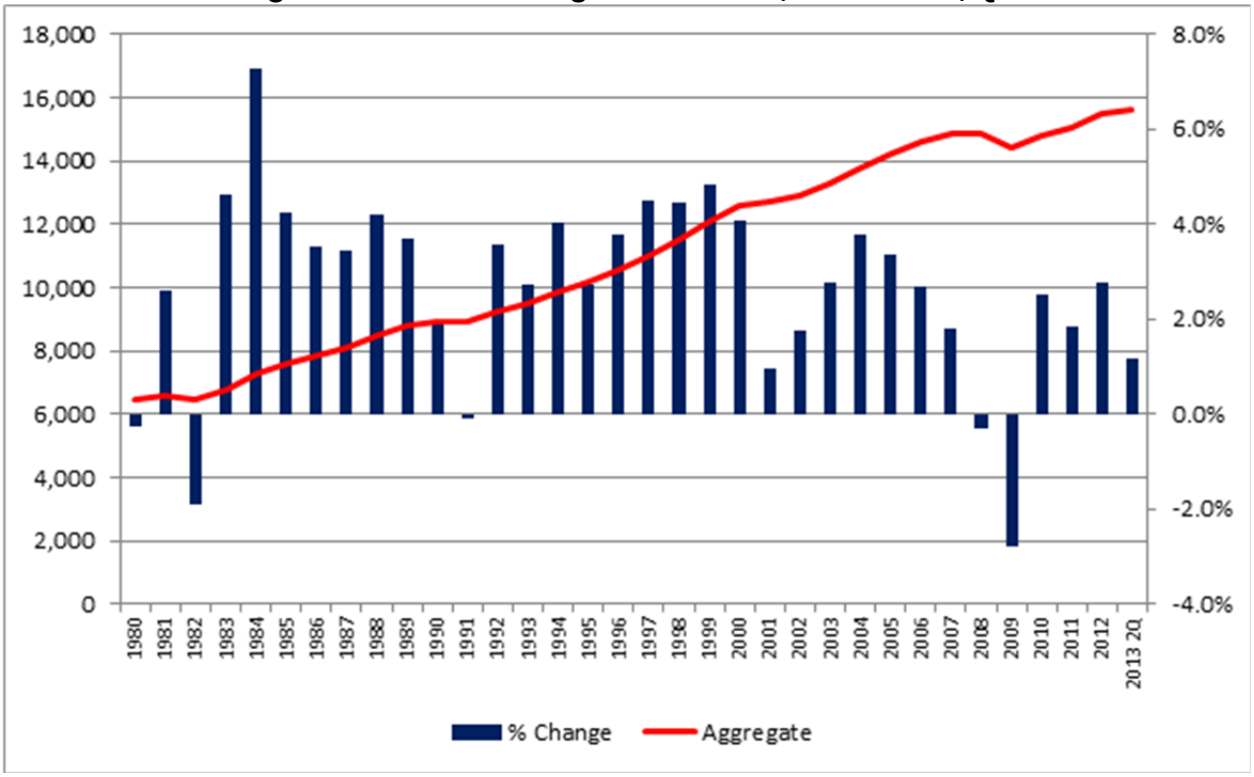
3.1 Review of Regional and National Socio-economic Factors

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

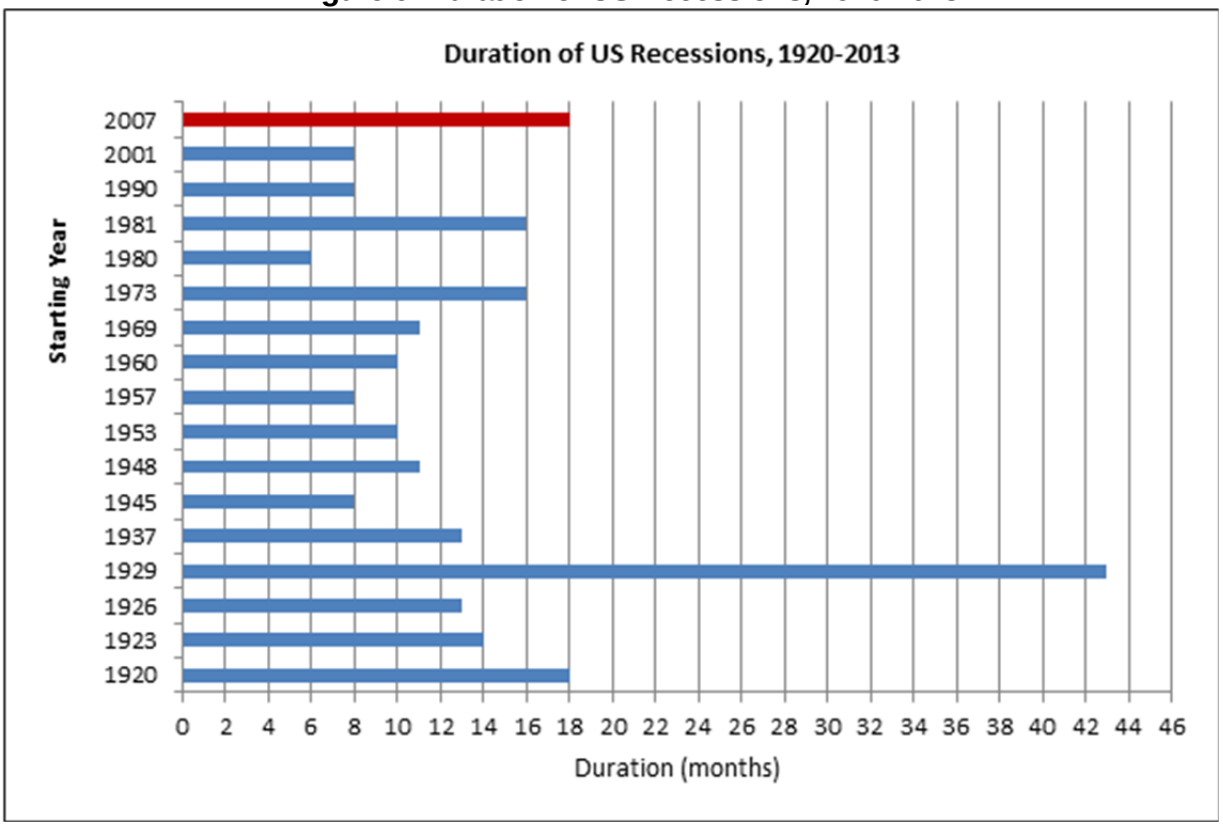
From 2000 to 2012, real Gross Domestic Product (GDP) and the Industrial Production Index in the U.S. increased by an average of 1.9 percent and 0.4 percent per year, respectively. This includes the recession that began and ended in 2001 and the most recent recession, which began in December 2007 and 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. Real GDP increased by 2.8 percent in 2012 and by an annualized rate of 1.3 percent and 1.6 percent in Q1 and Q2 of 2013, respectively. Figure 5 compares year-over-year changes in real GDP since 1980.

Figure 5: Percent Change in Real GDP, 1980 – 2013, Q2



Recessions are technically defined as two consecutive quarters of negative growth. 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 2007-2009 recession lasted 18 months, making it the longest economic downturn since the Great Depression, as shown in Figure 6. Additionally, this recession is comparable to and may possibly exceed the recessions of the early 1970s and early 1980s in duration and severity. Economic downturns that have occurred after the Great Depression have typically been triggered by a contracting monetary supply (typified by higher interest rates) or an external shock (e.g. sudden rise in oil prices, political turmoil, etc.) resulting in decreased consumer confidence, economic growth, and employment. Once expansionary conditions are in place, then post-recessionary periods have typically been characterized by rapid, strong and sustained increases in GDP and employment.

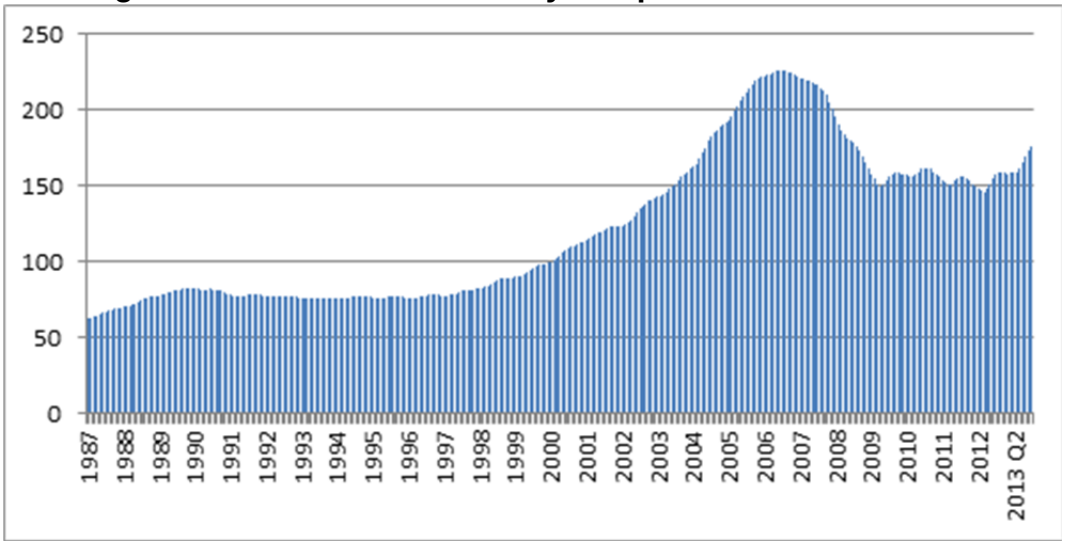
Figure 6: Duration of US Recessions, 1920-2013



In contrast, the recent recession was caused by the near collapse of the financial sector, the lack of available credit, a rapid decline in the price of real estate assets, and high consumer debt levels. The subsequent deleveraging by consumers and businesses tends to have a more severe, longer-term impact on the economy. Indications of credit tightening and deleveraging include the following:

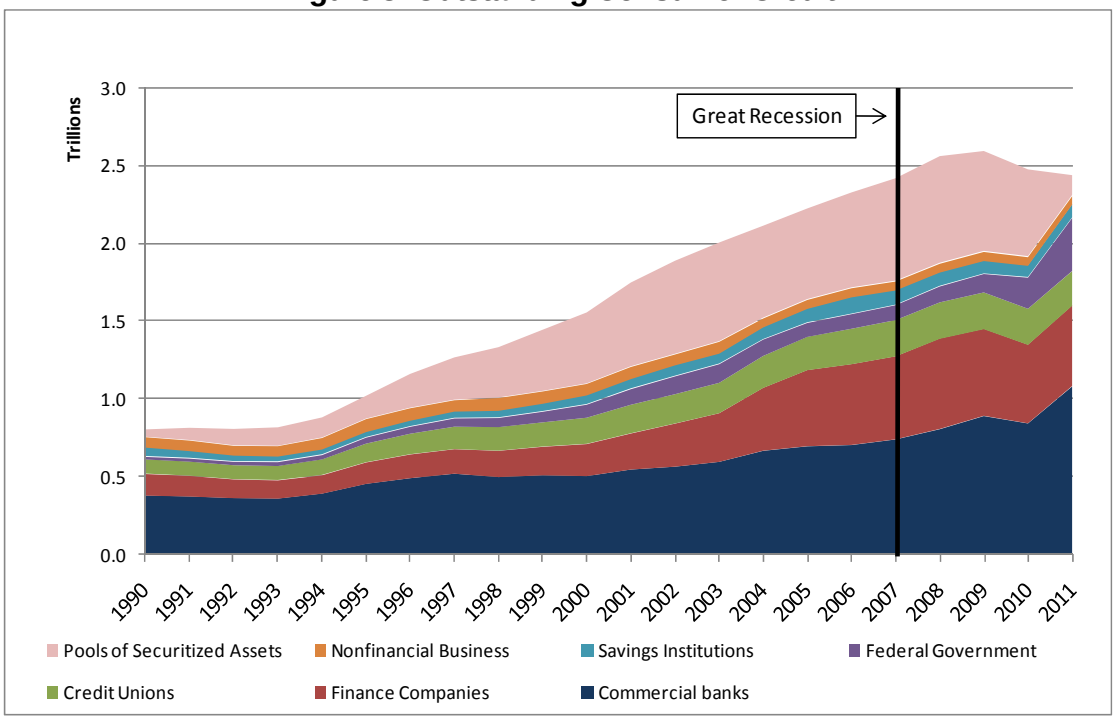
- Housing prices tracked by the S&P/Case-Shiller Index decreased by 11% in 2008 and 19% in 2009, respectively, as shown in Figure 7.
- Outstanding consumer credit declined by 6% from $2.6 trillion to $2.4 trillion from 2009 to 2011 as shown in Figure 8.
- Securitized asset pools decreased precipitously—from $682 billion to $127 billion from 2008 to 2011.

Figure 7: S&P/Case-Shiller 10-City Composite Home Price 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. Recent forecasts anticipate that sustained economic growth in the United States will resume in 2014 or 2015, depending on local conditions.

Figure 8: Outstanding Consumer Credit



3.1.1.1 Long-Term Structural Trends

The recent recession has coincided with a number of long-term structural trends in the U.S. and internationally which have encumbered economic growth and employment creation. First, there have been significant productivity improvements in the form of advances in information technology, computing power, transportation, and communications. These advances encouraged the transfer of manufacturing facilities and jobs to areas with higher unemployment and lower wages. This has also shifted the engine for economic growth in the U.S. from manufacturing (from 31 percent of GDP in 1970 to 23 percent GDP in 2010) to services (from 32 percent of GDP in 1970 to 47 percent of GDP in 2010). The technology boom of the 1990s and the subsequent bust in the early 2000 intensified these trends, encouraged the expansion of inexpensive communications technologies, and further flattened factory and wage costs, internationally. 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.

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.

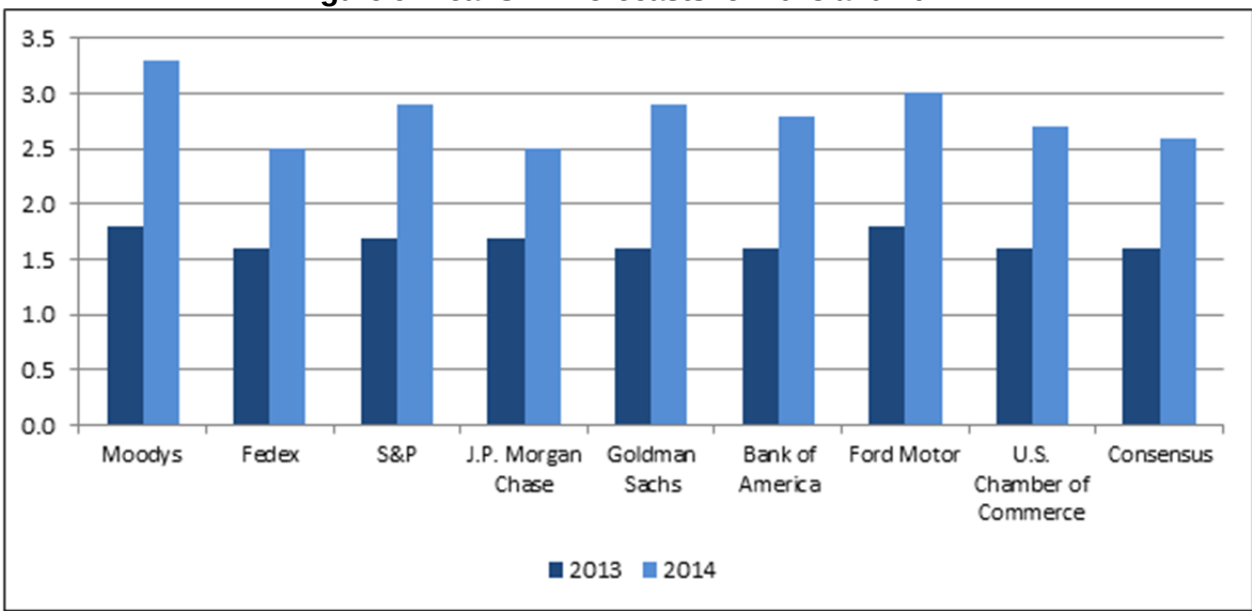
Finally, there has been a rapid and significant expansion in consumer credit, which has reached unsustainable levels. As a result, consumers have reduced or deferred large discretionary purchases, such as vehicles and appliances, until debt levels have decreased to more manageable levels. These factors tend to further dampen economic growth and employment over the short-term.

3.1.1.2 Short-Term Economic Forecast

Despite the relatively sluggish economic growth in recent years, there are positive economic signs that growth will pick up in the foreseeable future. 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 10-year U.S. Treasuries trading at 2.65 percent as of early October 2013. The market for crude oil remains strong with the $/barrel price at approximately $108/barrel. Monthly average crude oil prices have increased during 2013 as a result of supply disruptions in Libya and increased concerns over the conflict in Syria. The Energy Information Administration (EIA)'s forecast prepared in August 2013 anticipates that crude oil price will average between $96/barrel to $101/barrel in 2013 and 2014.

Moreover, there are recent signs of recovery in the housing market. After steadily declining from 2006 to 2011, housing prices have stabilized or started to increase in selected markets during 2012. The Case-Shiller 10-City Index and 20-City Index have shown signs of recovery during 2012 with increases of 7 percent and 8 percent, respectively. The 20-City Index has increased by 11 percent through July 2013. Housing starts are projected to continue increase. There were 612,000 new units in 2011 and 770,000 new units in 2012. It is expected that there will be new 960,000 new units in 2013. Figure 9 summarizes the real GDP forecast provided by selected financial institutions, manufacturers, and shippers over the short-term. The consensus forecast is that real GDP will increase by 1.6 percent and 2.6 percent for 2013 and 2014, respectively.

Figure 9: Real GDP Forecasts for 2013 and 2014



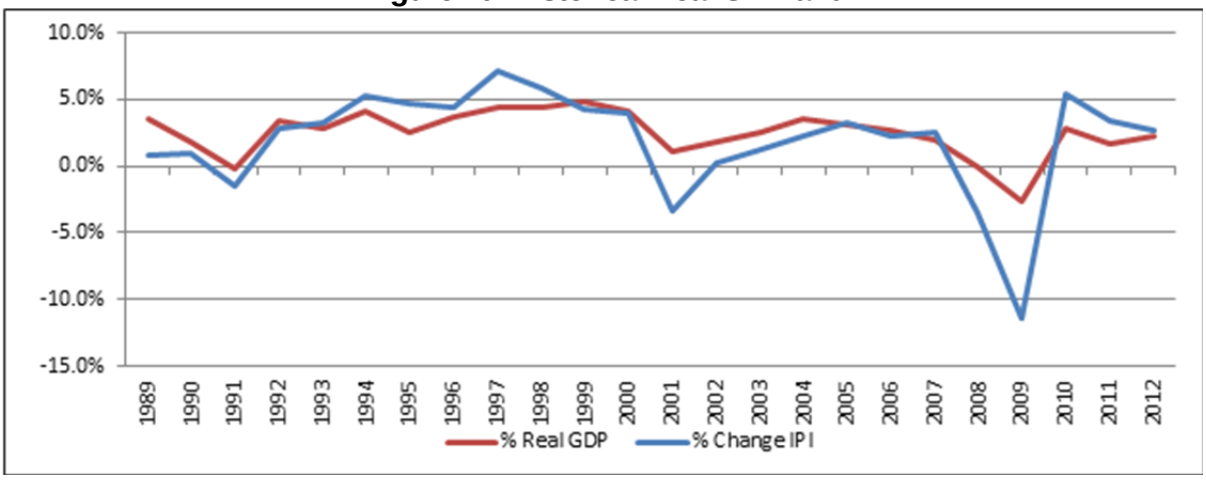
Source: Blue Chip Economic Indicators (BCIE)

It is anticipated that that a tepid recovery will continue in the medium term in contrast to the robust recoveries of previous recessions. Potential factors that may result in slower economic growth in the U.S. include the following: (i) slow economic growth in Europe; (ii) possible slowdown in economic growth in China and India; and (iii) increased tensions in the Middle East, including the conflict in Syria; and (iv) the potential for slower growth in the U.S. as result of delays in passing a new Federal budget and/or increases in the Federal debt ceiling.

3.1.1.3 Industrial Production

Changes in U.S. industrial production have historically moved in tandem with GDP, albeit with steeper decreases during recessions and larger increases during recovery periods. During the lowest point of the 2001 recession, the Industrial Production Index (IPI) decreased by -4.0 percent. Due to the severity of the 2007-09 recession, the IPI declined -11.3 percent in 2009. Since then, the IPI has recovered, increasing by 5.7 percent, 3.4 percent, and 3.6 percent during 2010, 2011, and 2012, respectively. Despite this recovery, the total value of the IPI for "Final Products and Non-Industrial Supplies" is at 98.8 percent of its 2007 peak. Figure 10 compares the growth in real GDP with IPI from 1989 to 2012.

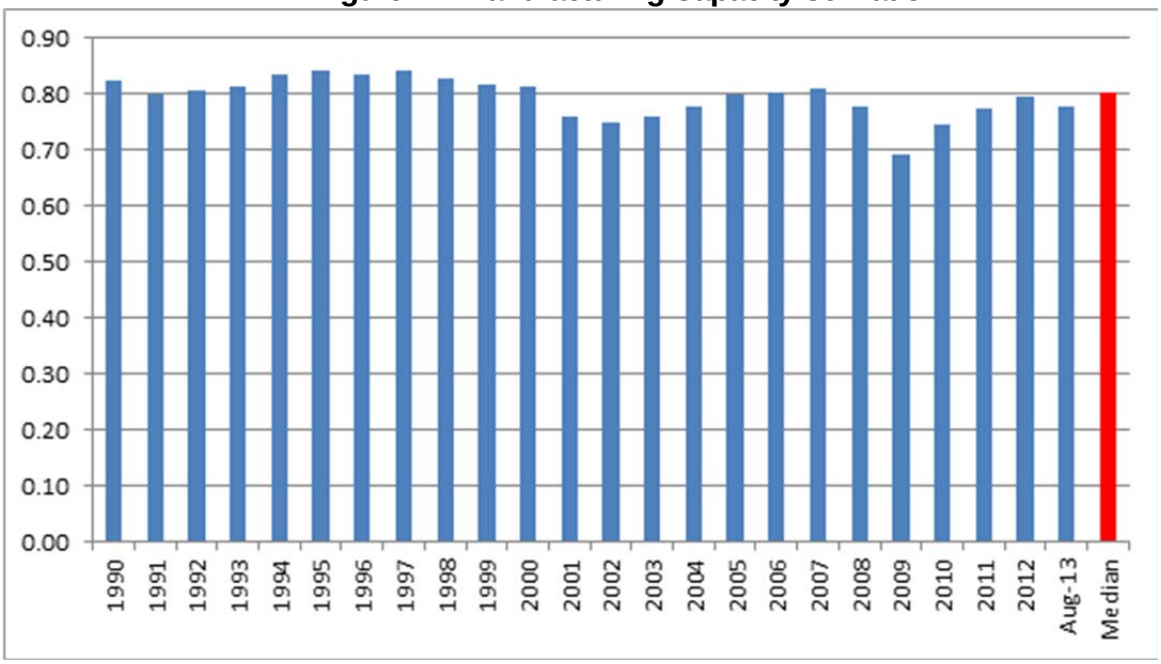
Figure 10: Historical Real GDP and IPI



Source: Bureau of Economic Analysis and the U.S. Federal Reserve Bank

Similar to the IPI, the utilization of U.S manufacturing capacity also decreased significantly in 2009, declining to 0.692. Since then, capacity utilization has increased to 0.778 as of August 2013, which is approximately 97 percent of the historical median value of 0.804 from 1990 to 2012. Capacity utilization has decreased in recent months having been at 0.782 in March 2013. Figure 11 summarizes manufacturing capacity utilization from 1990 to 2012.

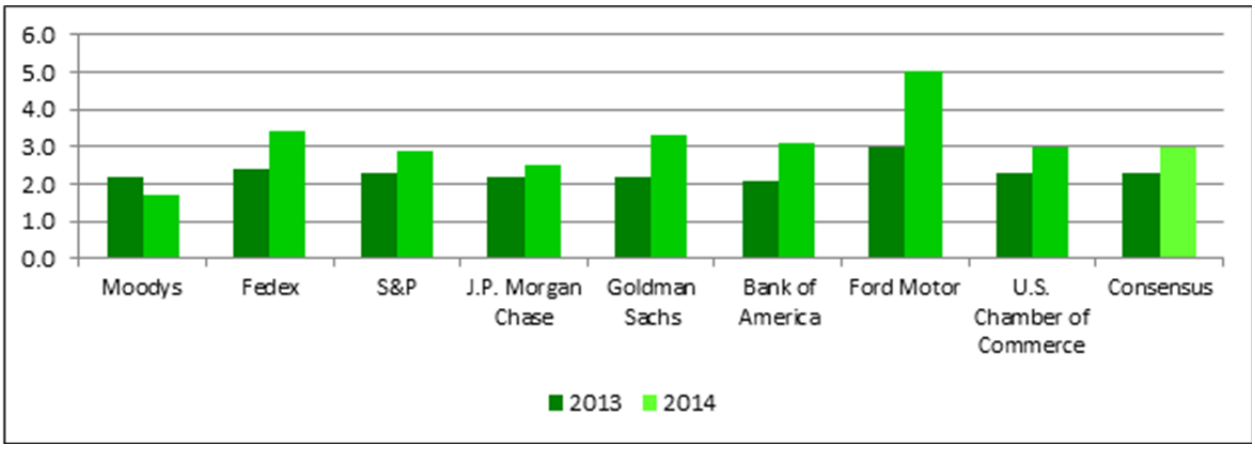
Figure 11: Manufacturing Capacity Utilization



Source: U.S. Federal Reserve Bank

Based on forecasts developed by financial institutions and industry analysts, the IPI is forecasted to increase by 2.3 percent in 2013 and 3.0 percent in 2014. This rate factors in the potential impact to U.S. exports due to weak growth in Europe and slower growth in emerging markets, including Brazil and China. As a result, we expect that the growth in the shipment of goods across the nation's highways will be tempered, resulting in a relatively modest rate of growth in commercial traffic on I-40. Figure 12 summarizes selected forecasts for the Industry Production Index.

Figure 12: Industrial Production Forecasts for 2013 and 2014



Source: Blue Chip Economic Indicators (BCIE)

3.1.1.4 Employment

At the beginning of 2008, the national unemployment rate was 5.0 percent. By October 2009, unemployment peaked at around 10.0 percent. During 2008 and 2009, total employment decreased by 3.2 percent each year. Total employment started to recover in subsequent months with a 0.9 percent increase in 2010 and a 1.5 percent increase in 2011. The unemployment rate has decreased gradually to 7.3 percent by August 2013. Long-term forecasts of employment tend to differ, depending on varying considerations of the potential impact of long-term structural trends, such as advances in information technology, outsourcing of jobs, and an aging population.

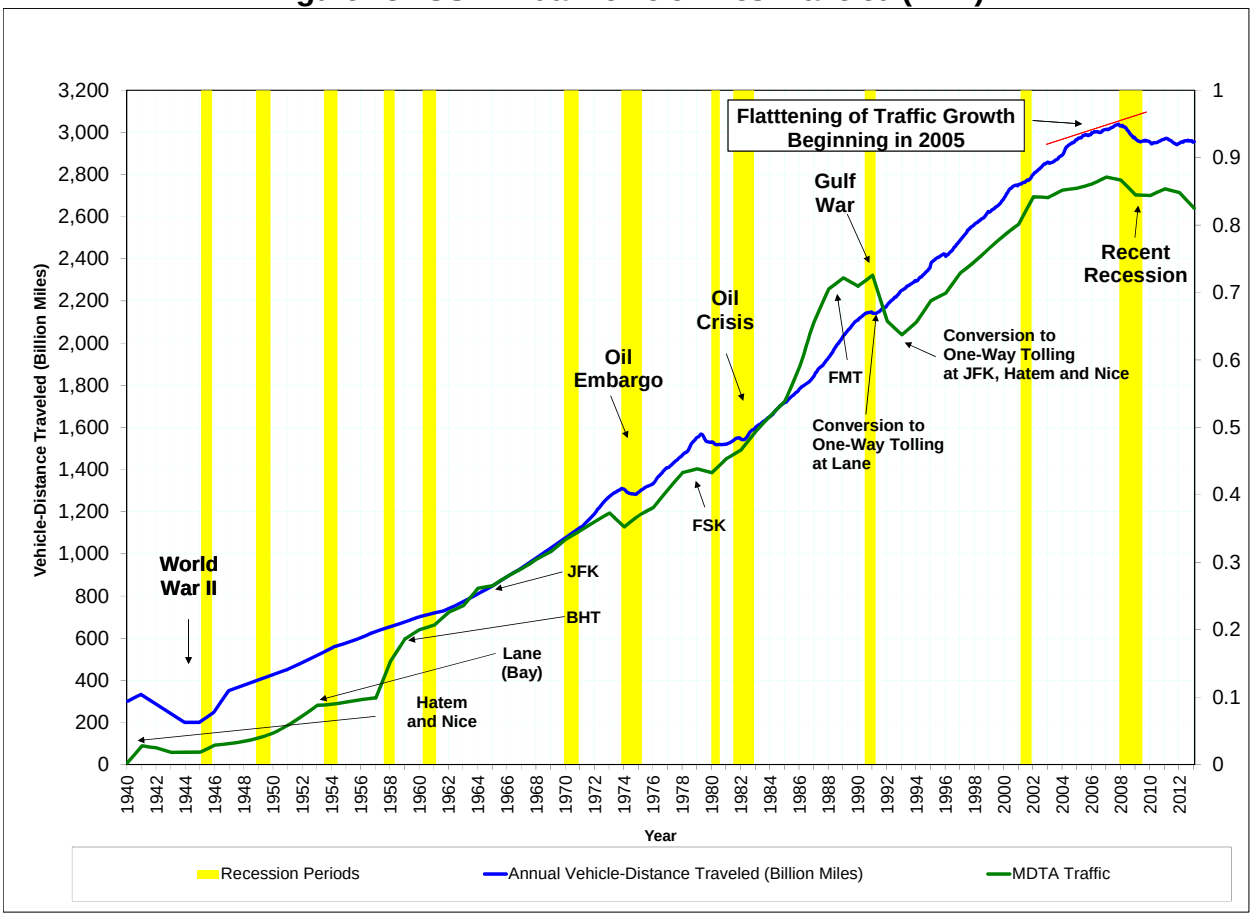
The U.S. Congressional Budget Office (CBO) has forecasted that employment would return to historical levels by 2015. However, other institutions and economic analysts are predicting historically high levels of unemployment in the U.S. through 2015 and beyond. In any event, the most recent recession has had a more severe impact on employment, especially compared to previous downturns other than the Great Depression. Similar to the Great Depression, the decrease in employment levels has been steeper and the recovery has taken a relatively long time to take hold.

3.1.2 National Trends in Vehicle Miles Traveled (VMT)

The United States has experienced a never before seen flattening, then drop, in vehicle-miles traveled (VMT) on its highways over the past several years. A reduction in VMT means less revenue – in the form of gas tax or tolls - for funding transportation projects. Jacobs reviewed and compiled available reports and data to investigate the possible factors contributing to this phenomenon.

Figure 13 depicts the 12-month moving total of national travel mileage from 1940 through July 2012 on all U.S. highways and on the MDTA system. As seen in this figure, there were temporary reductions in VMT during World War II, oil crises and economic recessions. Despite these temporary "dips", the VMT continued to grow rapidly over the years. It shows that, in recent years, with the exception of short, flat periods during the 1991 and 2001 recessions (each less than one year), VMT grew at a steady pace through about 2005. VMT then grew at a much slower pace through 2008. The increase in gas prices and the downturn in economic activity that took hold in late 2008 resulted in a significant reduction in total national travel mileage after December 2007 peak. While VMT declined throughout 2008, it has remained flat in 2009 until the summer months, when there was a slight increase over the previous year. This perceived growth was due in part to the large reduction in summer gas prices from 2008 to 2009. Since the recession ended, there have been slight increases and decreases in VMT from month to month with an average annual increase of about 0.9 percent between 2010 and 2012. For the first two quarters of 2013, VMT remained unchanged during Q1 and decreased slightly by 0.2 percent in Q2 over the previous year.

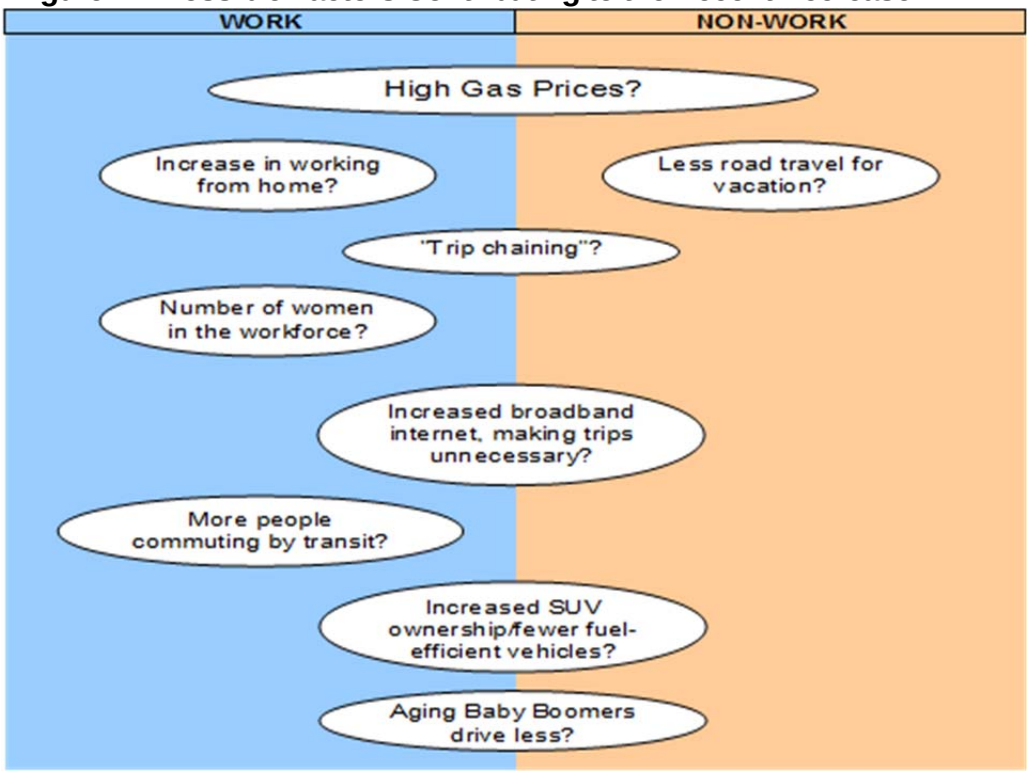
Figure 13: US Annual Vehicle Miles Traveled (VMT)



Source: Federal Highway Administration (FHWA), MDTA

Figure 14 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.

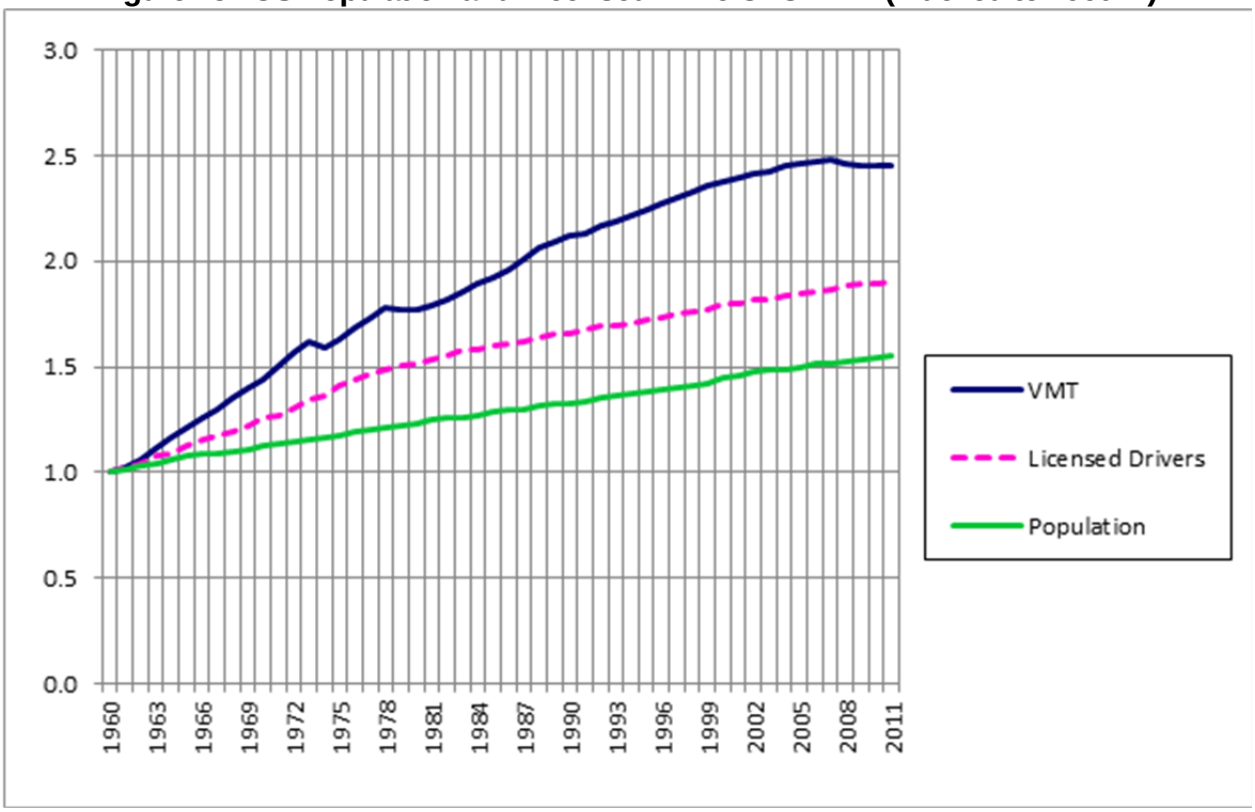
Figure 14: Possible Factors Contributing to the Recent Decrease in VMT



Source: Jacobs Consultancy

Figure 15 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 15: US Population and Licensed Drivers vs. VMT (Indexed to 1960=1)



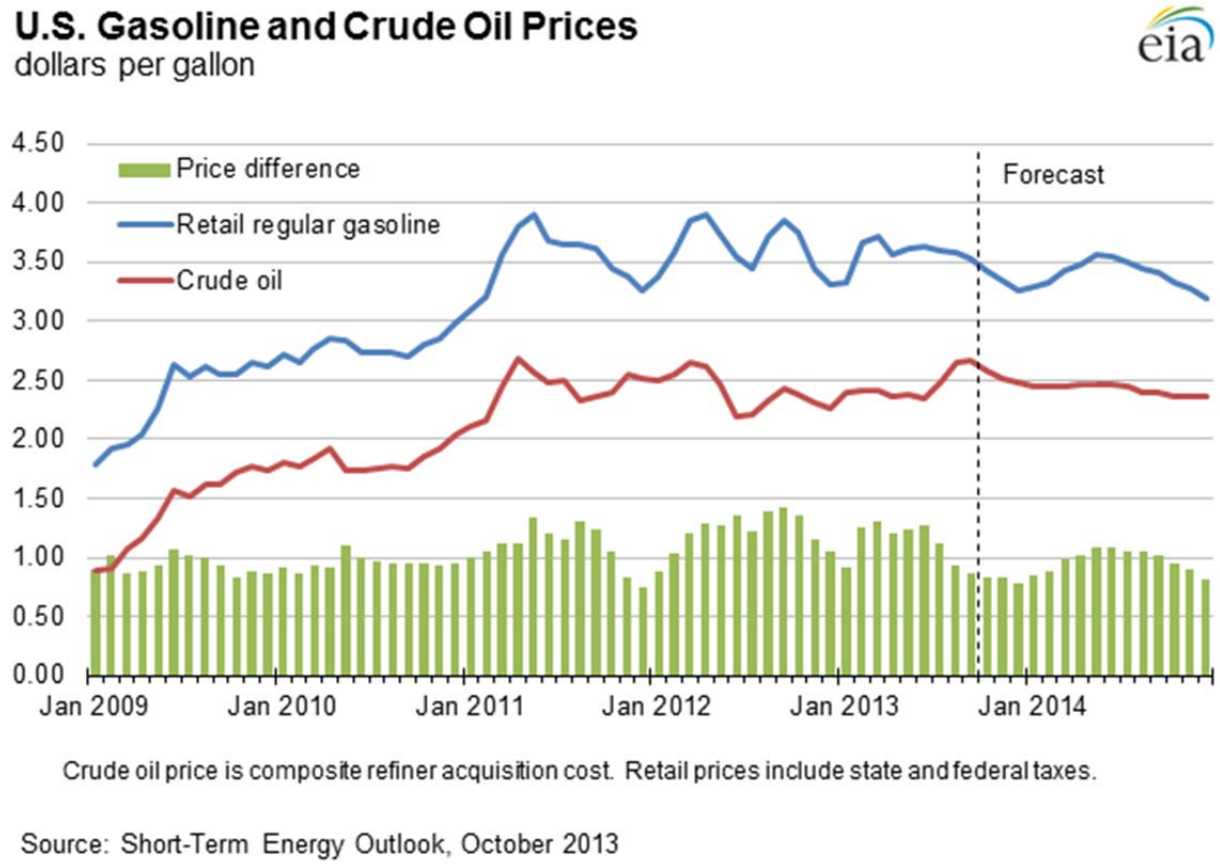
Sources: FHWA; U.S. Census

3.1.2.1Fuel 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. During the period of rapid oil and gasoline price increases in the summer of 2008 experts in the toll forecasting field tried to bring some perspective to the phenomenon by formulating opinions as to how motorists would modify their driving habits in lock step with price escalations. This exercise is continuously being conducted as it is particularly important to toll road agencies as they attempt to plan for the future. In this section, we will take a look at historical and forecasted gasoline prices, our view of the motorists' perception of the fluctuating prices, historical traffic data in the face of such fluctuations and finally what the future may hold for motorists and toll road operators.

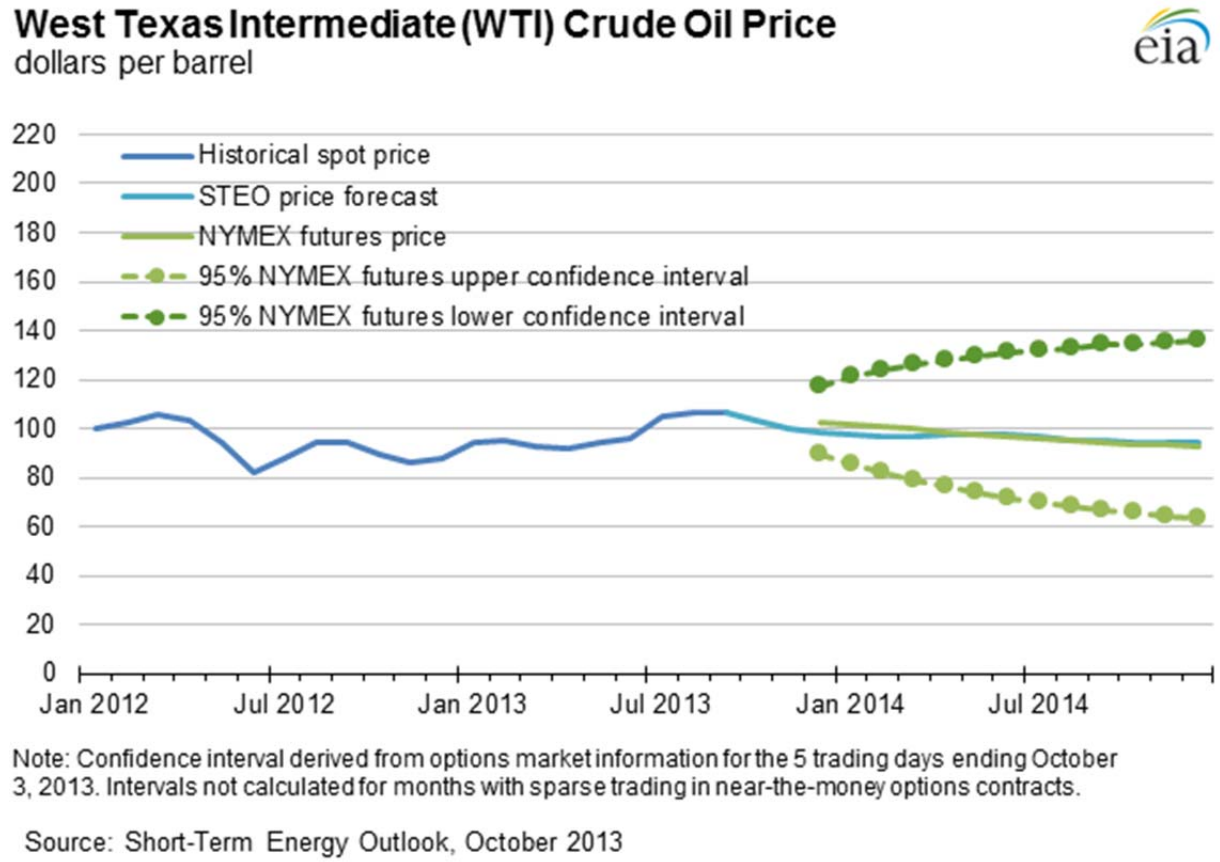
Figure 16 presents the historical and projected gasoline and crude prices from the US Energy Information Administration (EIA). The graph illustrates the peaking of gasoline prices in the summer of 2008, the precipitous drop in late 2008, and the subsequent rise to another price spike in May 2011. Since that time prices have fluctuated between $3.25 and $4.00.. In their August 2013 report, the U.S. Energy Information Administration projects prices to continue declining to about $3.31 in early 2014, with a seasonal peak of about $3.51 in May 2014.

Figure 16: Historical and Projected US Gasoline and Crude Oil Prices, EIA



This relatively static forecast of future oil and gas prices may be reassuring; however, what this graph does not show is the level of uncertainty in these projections. Figure 17 presents the projection of West Texas Intermediate Crude Oil Price. The base projection is obviously similar to that of Figure 16, but it is the possible range of this price that is disconcerting. Based on the options markets the 95 percent confidence interval for WTI is between 76 percent more to 38 percent less than current estimates for December 2014. With a wide range of possible future prices of oil and gasoline, projecting traffic volumes has become an increasingly difficult task.

Figure 17: Historical and Projected Crude Oil Prices with Confidence Range, EIA



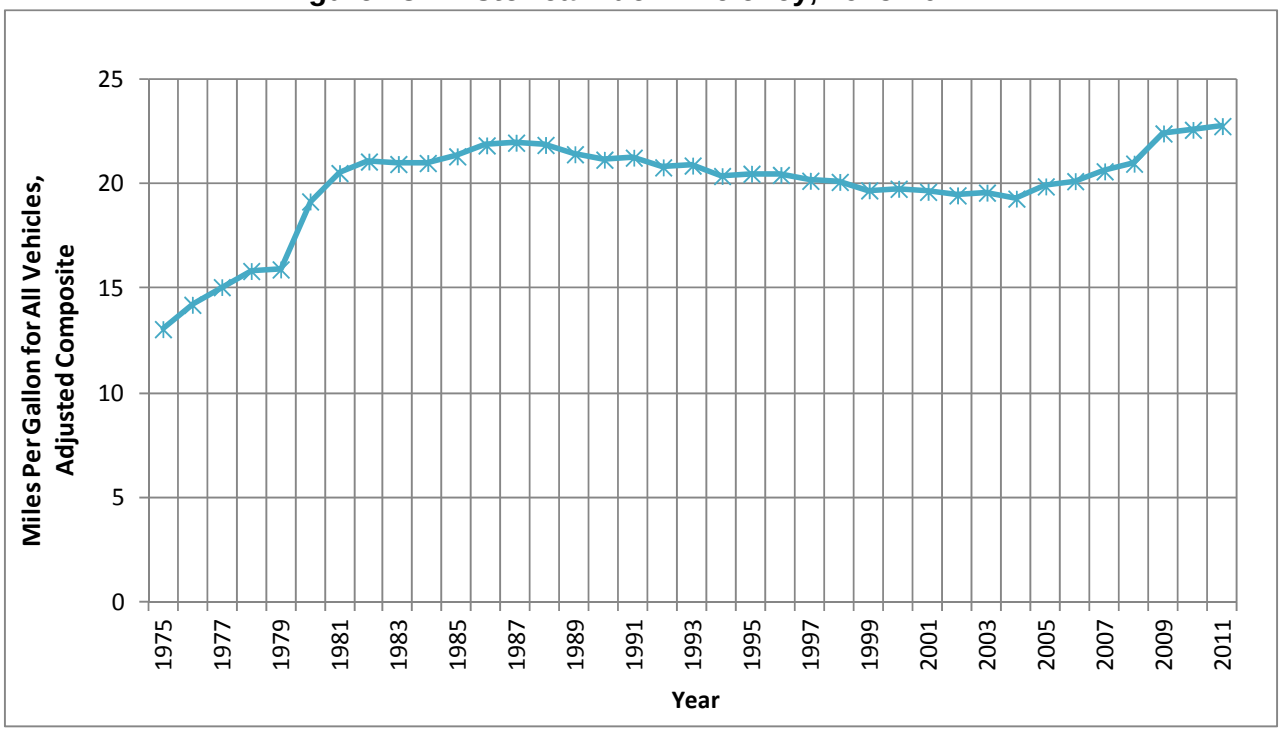
Note: Confidence interval derived from options market information for the 5 trading days ending October 3, 2013. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Source: Short-Term Energy Outlook, October 2013

Another consideration is the decreasing reliance on oil and gasoline as the fuel for our vehicles with the increasing fuel efficiency of vehicles, as shown in Figure 18. The sharp increase in fuel efficiency in the late 1970s was caused by the oil crisis and the trend toward buying smaller, more fuel-efficient vehicles. A gradual decline in average MPG from 1987 through 2004 occurred as larger vehicles and SUVs became more popular. From 2005 through today that trend was again turned around, and today vehicles are more fuel-efficient than ever. This means that, generally speaking, gas prices today do not have as large an effect on drivers as it did ten years ago.

Also to consider in this discussion is the emergence and growth of hybrid and electric vehicles in the marketplace. These alternate fuel vehicles, while they of course rely on some sort of fuel source, may not be so dependent on oil in the future and a wider range of energy options from natural gas, coal, nuclear and possibly renewable sources such as solar and wind. It has been estimated that electric vehicles could constitute up to 35 percent of the market by 2025. Though these predictions vary widely by source, what is important to understand is the potential for mitigation of rising oil prices by motorists.

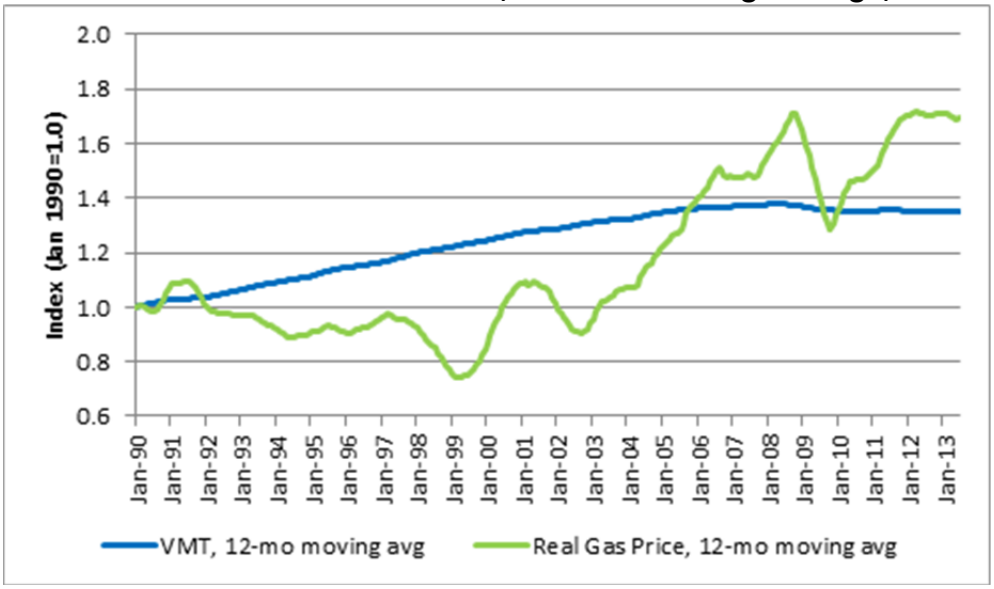
Figure 18: Historical Fuel Efficiency, 1975-2011



Source: epa.gov

To understand the potential impact of future gas prices on traffic we can look at historical reactions. Figure 19 presents historical VMT across the United States as compared to gasoline prices from 1990 through June 2013. Both the VMT and real gas prices represent a 12-month moving average to remove any seasonality factors; all data are indexed to the 12 months ending January 1990. While the latest rcession began in the fall of 2008, there was still a flattening, then decline, in vehicle miles that started several years before. This may be partially attributed to rising gas prices. The continuation of the decline, post-fall 2008, would be more attributable to the economic meltdown, as gas prices dropped significantly by early 2009. Gas prices have generally increased since then, and VMT has slightly declined. Due to the recession and slow recovery period, it has been difficult to pinpoint the elasticity of travel as it relates to gas prices; however, we can roughly estimate about a 5 percent loss in VMT nationwide due to the doubling in gas prices from 2003 through today.

Figure 19: National VMT vs. Real Gas Prices, 12-Month Moving Average, 1990-June 2013



Continuously high gas prices could permanently modify the typical American's perception of our assumed right to drive our vehicles in the manner to which we are accustomed. There are, of course, a number of longer term strategies that could be undertaken to help offset the effects of oil/gasoline price peaking, including some of the following:

- Mandatory as well as voluntary increases in fuel efficiency
- Increased transportation mode choice shifts,
- Regulation of pricing
- Increased taxation
- Rationing
- Increased production and use of non-petroleum fuels.

In addition there are a number of new technologies that might help replace oil consumption in transportation thus mitigating the continued dependence on oil and the resultant price rises on gasoline. These include some of the following:

- The use of Ethanol and Biodiesel fuels,
- Coal and Biomass Gas-to-liquid (GTL)
- Natural Gas
- Advanced Vehicle Technologies which should include:
- increasing the efficiency of the internal combustion engine,

- continued proliferation of hybrid electric and plug-in hybrid electric vehicles,
- continued ongoing work to improve the efficiency of conventional vehicles, and
- continued work on the use of Hydrogen Fuel Cell Vehicles.

All of these envisioned efforts depend on the continued subtle changes in the market forces on the speculation of futures related to oil prices; gradual, less dramatic rises in the price of oil crude per barrel; already anticipated resources which dictate supply and demand, and finally, the mitigation of all the natural forces of weather and other "acts of God" on the availability of crude oil on which to run our economic engines. What is not envisioned, and cannot be sustained for a very long period of time, is that nothing is done to mitigate our oil dependency while waiting for one or more of the changes mentioned above to become anything more than a "subtle change" and enter the realm of dramatic, unavoidable or unanticipated.

What is equally certain is that the future continues to be unknown, and that over the next few years increases in oil prices caused by disruptions to supply and demand, natural disaster or artificially speculative market forces, will not only change our driving behavior, but ultimately become a very significant challenge to an increasingly global economy. The measurement of how dramatically each rise in the price per barrel of oil makes on travel beyond the currently-known relationships is, of course, related to the specifics of individual markets.

3.1.2.2 Work vs. Non-Work Travel

The 2009 National Household Travel Survey converted the number of trips by purpose and distance into VMT, which is summarized in Table 14. According to the 2009 survey, trips commuting to/from work and work related trips accounted for almost 28 percent of total VMT. The next highest categories were trips related to social/recreational activities and family/personal business, which accounted for 24 percent and 18 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 15 percent of total VMT in 2009.

Table 14: Share of VMT by Trip Purpose, 2009

Purpose	Percentage of Total VMT
Commuting and Work Related Business	27.8%
Social/Recreational	24.4%
Family/Personal Business	17.7%
Shopping	15.0%
Other	15.1%

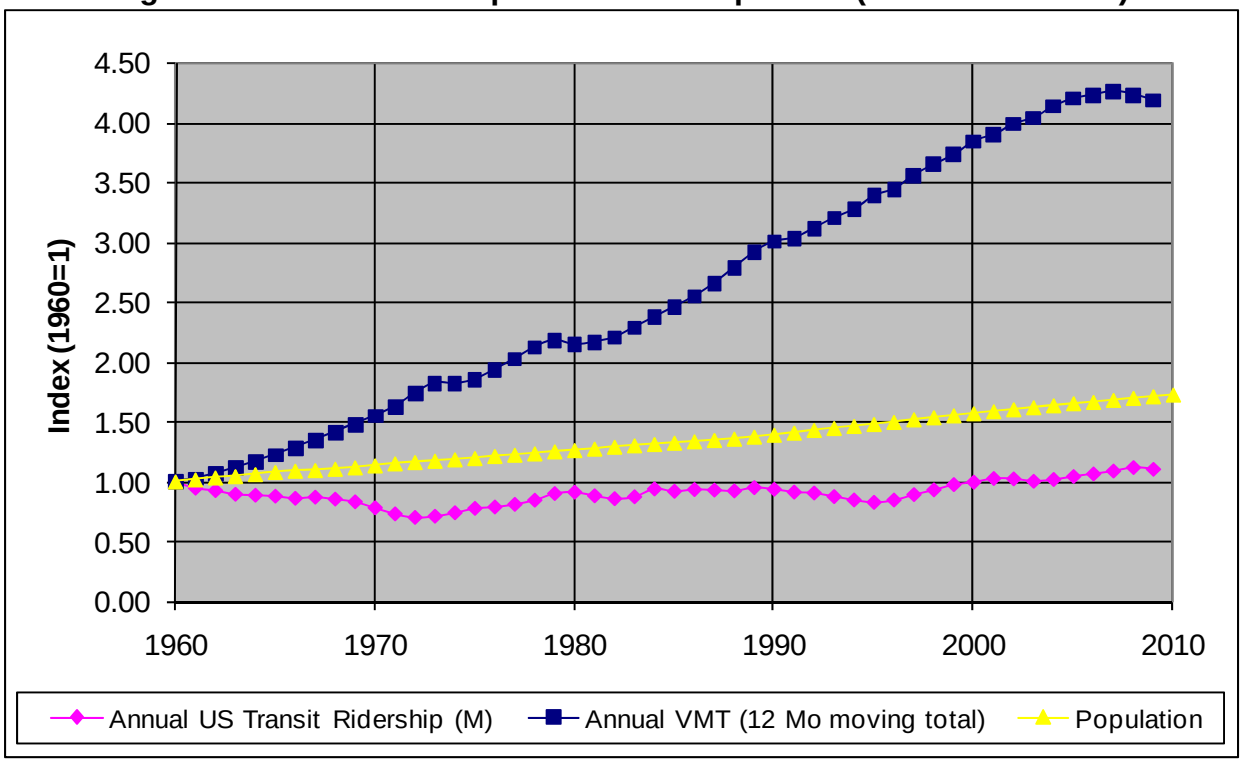
Source: 2009 National Household Travel Survey, U.S. Department of Transportation

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 20 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 20: Transit Ridership vs. VMT and Population (Indexed to 1960=1)

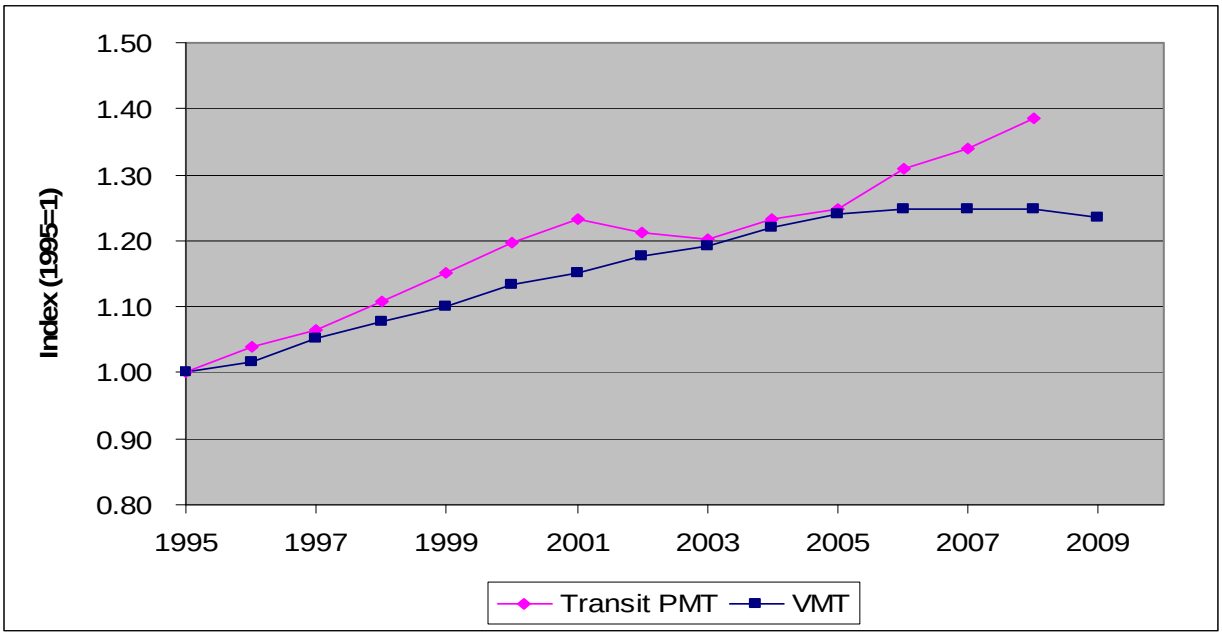


Source: APTA 2011 Public Transportation Fact Book

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 21 compares the annual change in transit PMT and highway VMT from 1995 to 2009.

Figure 21: 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

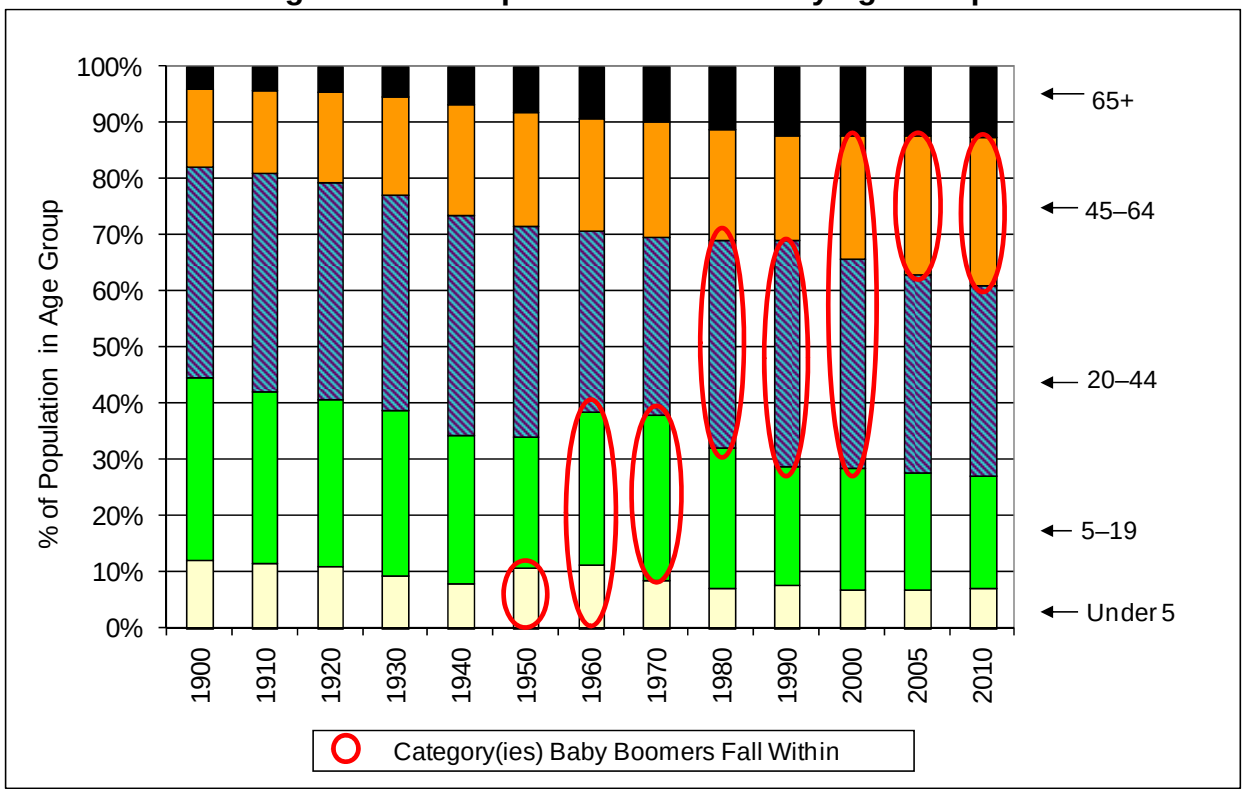
social contact, time spent commuting, and time spent shopping. These studies suggest that increases in internet usage and speed may have caused a decrease in discretionary travel.

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 June 2011 survey brief, *"Telework 2011,"* found that the number of employees telecommuting at least once a month decreased by 22 percent from 33.7million in 2008 to 26.2 million in 2010. Nearly 12 million workers in 2010, 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 22 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 22: US Population Distribution by Age Group

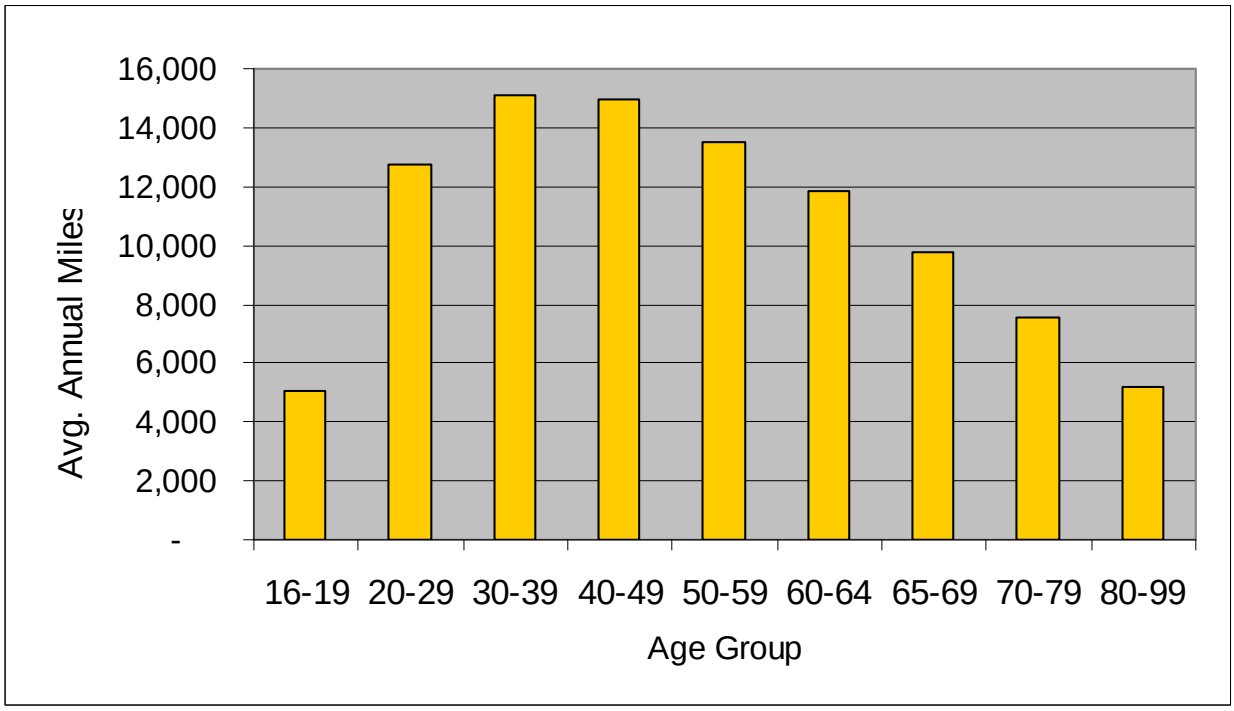


Source: US Census Bureau

Based on previous studies, individuals tend to gradually drive less as they age, especially after the age of 40. Figure 23 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 23: Average VMT per Person by Age Range, 2009

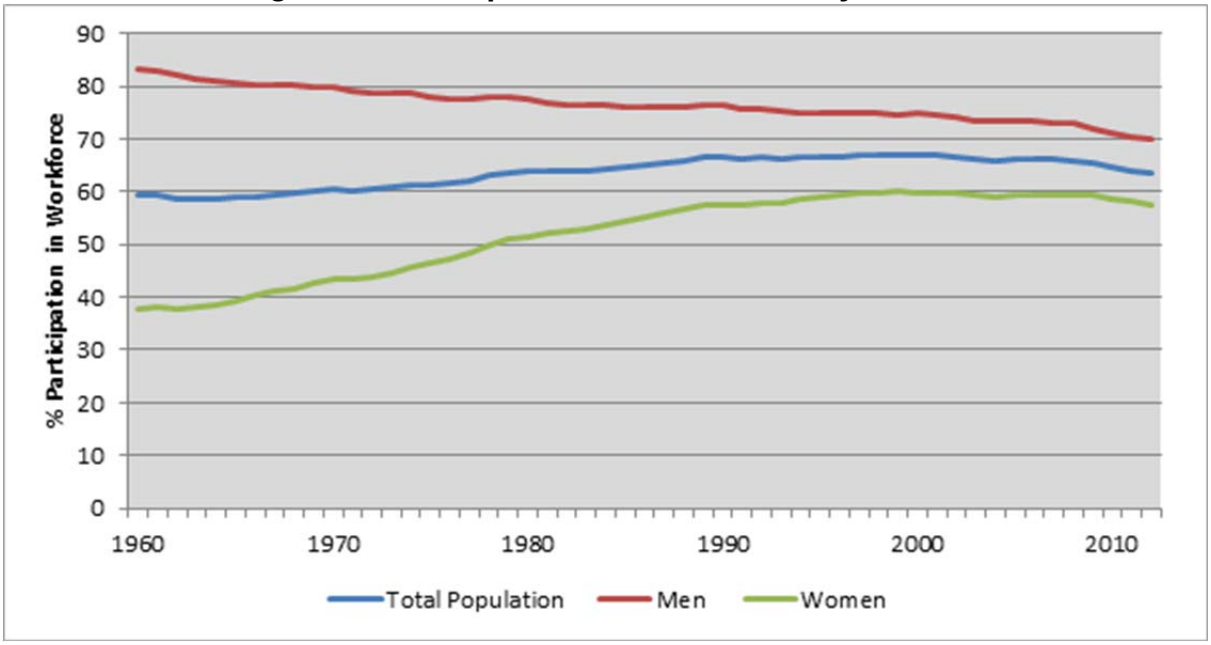


Source: 2009 National Household Travel Survey, U.S. Department of Transportation

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 58 percent of women and 70 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 24 summarizes the historical participation of each gender in the U.S. labor force.

Figure 24: Participation in the Workforce by Gender



Source: US Department of Labor Bureau of Labor Statistics

3.2 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.

In comparison with the rest of the United States, the 2007-09 recession impacted Maryland at a much later date and has been relatively shallow. Real Gross State Product (GSP) in Maryland expanded by 1.6% in 2007 and 1.3% in 2008 before contracting by 1.3% in 2009. Economic output subsequently recovered, increasing by 2.9% in 2010, but slowed to 0.9% in 2011. Unemployment in Maryland has remained relatively low with a 7.0% unemployment rate reported for August 2012. Factors that have been encouraging for economic growth in the State include the following:

- The Federal government has helped to buoy employment in the Washington, DC, which includes Montgomery and Prince George's County. The government sector accounted for 18% of Maryland's Gross State Product (GSP) in 2011. This amount was split evenly between Federal/military and state/local government;
- Other leading sectors of Maryland's economy include finance, insurance, and real estate (21% of real GSP), professional/management services (14%), and wholesale and retail trade (10%), and health care (8%), and manufacturing (7%); and
- Maryland had the 3rd highest median household income ($64,025) in 2010, behind only New Hampshire ($66,707) and Connecticut ($66,452)

Despite the 2007-09 Recession, the two largest Metropolitan Statistical Areas (MSAs)—Washington, DC and Baltimore MSA—located in or adjacent to Maryland exhibited relatively strong economic growth. Real Gross Regional Product (GRP) in the Baltimore MSA increased by 1.6% and 0.3% in 2007 and 2008, respectively. There was a -0.7% decrease in real GRP in 2009 followed 3.3% increase in 2010. The Washington DC MSA experienced even less of an impact from the 2007-09 recession, as real GRP increased every year except in 2009, which remained flat from the previous year. During 2010, real GRP increased by 3.6%, comparing favorably to similar sized MSAs. 2011 data has not yet been published.

3.2.1 Population Trends

Between 2000 and 2012, population in the state of Maryland increased from approximately 5.3 million to 5.9 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, eight counties experienced annual growth rates in population of 1.5 percent or greater between 2000 and 2010. These counties include Calvert County, Worchester County, Howard County, Frederick County, Carroll County, Cecil County, Harford County, Queen Anne's County, Charles County, and Montgomery County.

Between 1990 and 2012, population in the state of Maryland increased from approximately 4.7 million to 5.9 million residents. Population growth has been especially strong during the 1990s and the 2000s, with an annual growth rate of 1.3% and 1.0%, respectively. Maryland's population is highly urban with 16 of 22 counties forming part of a larger metropolitan area, accounting for almost 85 percent of the total population.

From 2000 to 2010, the Baltimore MSA increased at average annual rate of 0.6%, while the Maryland counties located in the Washington, DC MSA increased by 1.2%. Eight counties experienced annual growth rates in population of over 1.5% between 2000 and 2010. These counties include Frederick County (Washington MSA), Howard County (Baltimore MSA) Queen Anne's, Cecil, and Wicomico Counties (Eastern Shore), and Calvert, Charles, and St. Mary's counties (Southern Maryland). The table below summarizes historical and forecast population growth for Maryland as well as five regions within Maryland defined by the Maryland Department of Planning. 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, 1990-2040

Year	Baltimore Metro	Washington D.C. Metro	Southern Maryland	Western Maryland	Eastern Shore	Total	CAGR (1)
1990	2,348,219	1,635,788	228,500	224,477	343,769	4,780,753	1.03%
2000	2,512,431	1,870,133	281,320	236,699	395,903	5,296,486	0.87%
2010	2,662,691	2,068,582	340,439	252,614	449,226	5,773,552	0.64%
2015	2,725,650	2,145,350	362,850	259,350	468,800	5,962,000	0.84%
2020	2,816,250	2,235,750	395,100	269,450	499,600	6,216,150	0.67%
2025	2,875,500	2,318,500	426,200	280,450	527,600	6,428,250	0.56%
2030	2,919,450	2,398,800	451,100	290,500	552,050	6,611,900	0.37%
2040	2,973,600	2,502,050	485,650	305,650	594,950	6,861,900	N/A

Sources: Maryland Department of Planning, Planning Data Services, March 2012.
(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 2040, total population in the region is expected to increase to beyond 16.4 million, representing a 0.6 percent annual average increase.

Table 16: Historical and Projected Population in Maryland and in Adjacent States and Major Metropolitan Areas, 2000-2040 (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	0.93%
2000	5,296,486	572,053	786,408	1,908,100	3,849,664	12,412,711	0.93%
2010	5,773,552	601,723	899,773	2,334,423	4,008,994	13,618,465	0.77%
2020	6,216,150	676,326	989,170	2,693,694	4,128,746	14,704,086	0.67%
2030	6,611,900	722,763	1,064,393	2,984,479	4,340,620	15,724,155	0.42%
2040	6,861,900	771,165	1,125,742	3,172,228	4,469,538	16,400,573	N/A

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

3.2.2 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 2010, total employment in Maryland increased by approximately 627,000, which translates into an average annual growth rate of 1.0% during this period. Recent projections prepared by the Maryland Department of Planning estimate that total employment will increase by approximately 1.21%/year through 2015, decreasing to an estimated 1.05%/year from 2015 to 2020. This would represent the addition of approximately 209,000 and 190,000 net new employment from 2010 to 2015 and from 2015 to 2020, respectively. Employment growth has been projected to gradually taper down to 0.42%/year from 2030 to 2040. The table below summarizes the historical and forecast labor force in Maryland and for the five regions defined by the Maryland Department of Planning.

Table 17: Historical and Projected Labor Force in Maryland, by Region 1990-2040

Year	Baltimore Metro	Washington, DC Suburbs	Southern Maryland	Western Maryland	Eastern Shore	Total	CAGR (1)
1990	1,391,299	957,334	92,345	116,821	179,450	2,737,249	1.14%
2000	1,514,491	1,087,993	124,138	130,198	208,382	3,065,202	0.94%
2010	1,641,071	1,201,142	156,230	136,648	229,727	3,364,818	1.21%
2015	1,738,900	1,276,100	169,300	141,600	248,000	3,573,900	1.05%
2020	1,821,400	1,348,900	182,300	147,600	264,600	3,764,800	0.58%
2025	1,869,400	1,387,600	191,700	152,400	275,000	3,876,100	0.43%
2030	1,907,000	1,417,400	197,600	155,200	282,600	3,959,800	0.42%
2040	1,982,600	1,476,500	211,000	160,300	297,500	4,127,900	N/A

Source: Maryland Department of Planning, Planning Data Services, March 2012
(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 education and health services, professional services, government, technology, and

tourism industries. The Maryland Department of Business and Economic Development has forecasted that employment in these sectors will continue to remain strong in the short-term. According to the 2010 Census, Maryland had the second highest percentage (26.1 percent) of professional and technical workers as a percentage of the total employment. In particular, the technology sector currently employs an estimated 87 out of every 1,000 private sector workers, ranking 4th in the United States. Additionally, employment in the construction and natural resources sector increased of 2% from 2011 to 2012. This increase has occurred despite a de facto moratorium on natural gas drilling. Similar to other regions in the U.S., the manufacturing sector has experienced a reduction in total employment in recent years. The table below summarizes the 15 largest employers in the State of Maryland in 2012.

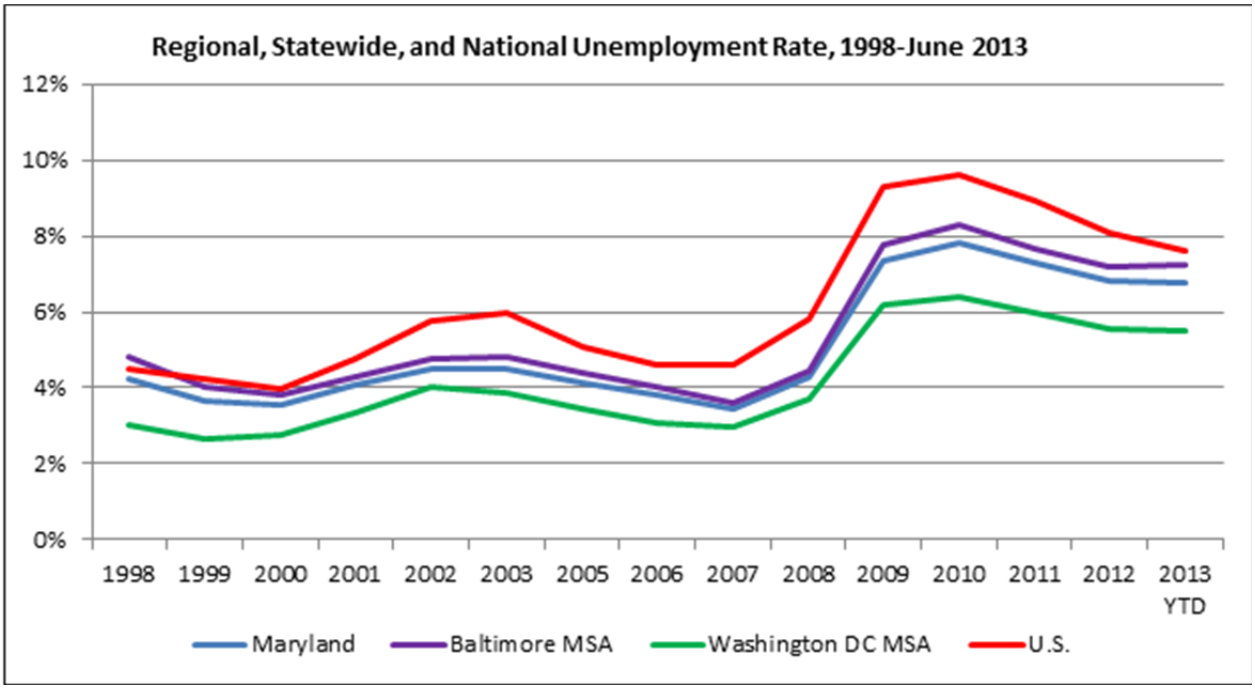
Table 19: Largest 25 Employers in State of Maryland, 2012

Employer	Employment	Industry
Fort George G. Meade	56,700	Military installation/intelligence
University System of Maryland	36,880	Higher education
Johns Hopkins University	27,000	Higher education
Johns Hopkins Hospital & Health System	21,620	Hospitals; health services
Walmart	17,680	Consumer goods
National Institutes of Health	17,660	Federal Agency
Aberdeen Proving Ground	15,580	Military installation
MedStar Health	15,520	Hospitals; health services
University of Maryland Medical System	15,000	Hospitals; health services
Joint Base Andrews Naval Air Facility	13,500	Military installation
Giant Food	13,180	Groceries
U.S. Social Security Administration	13,000	Federal agency
U.S. Food and Drug Administration	12,200	Federal agency
Walter Reed National Military Medical Center	11,680	Hospitals; health services
Naval Air Station Patuxent River	10,960	Military installation

Source: Maryland Department of Business and Economic Development, 2012

While tracking national trends, unemployment in Maryland has remained below that of the U.S. Unemployment increased during 2001 recession and during 2007-09 recession. Unemployment is not uniform across the state as the unemployment rate in the Washington, DC MSA was 6.0%, but 7.9% in the Baltimore MSA, as of June 213. Figure 22 summarizes regional, state, and national unemployment rates tracked by the Bureau of Labor Statistics (BLS) from 1998 to June 2013.

Figure 25: Baltimore MSA, Maryland and National Unemployment Rates, 1998 to June 2013



Source: Bureau of Labor Statistics

3.2.3 Wages and Income

Real income is a key indicator of the direction and strength of the local economy. The table below presents actual and forecast real per capita income for each of the Maryland planning regions. Statewide, real per capita income increased by an average of 1.7%/year from 1990 to 2010. The Maryland Department of Planning has forecasted that income growth will remain relatively strong with average annual increase of 2.0%/year from 2010 to 2020.

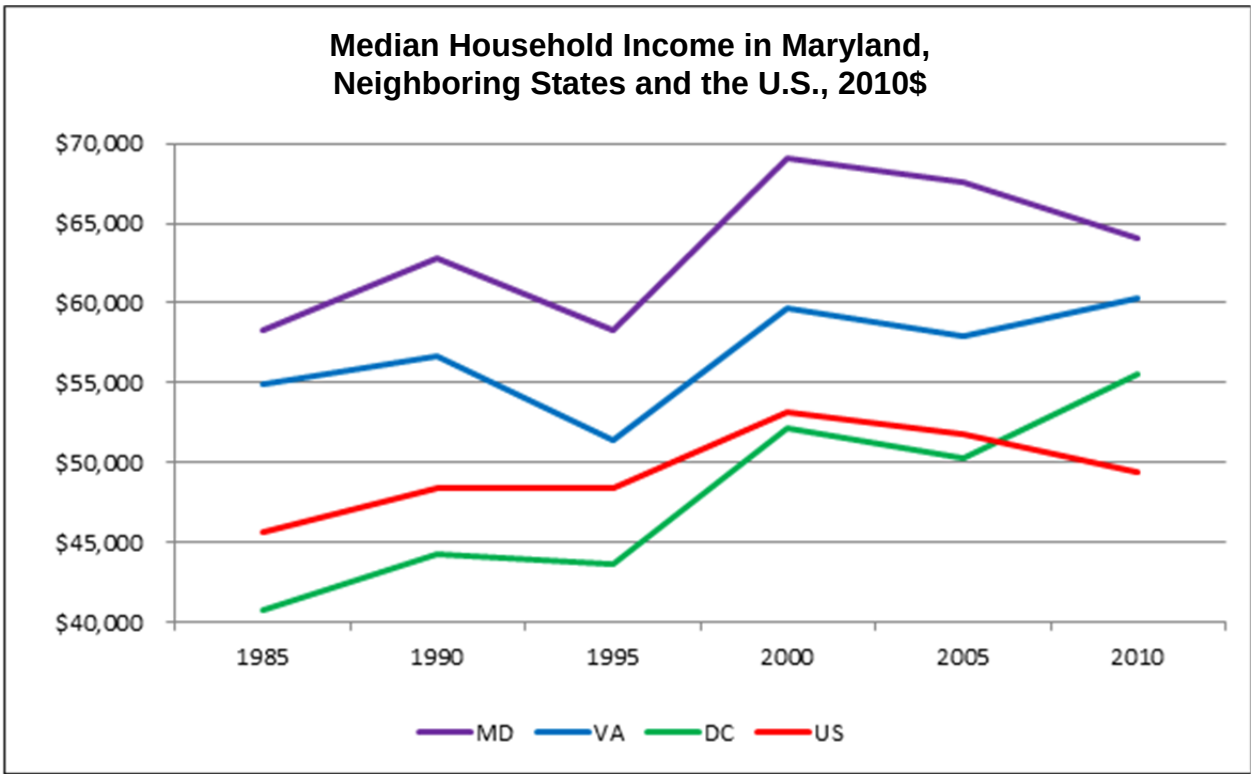
Table 20: Real Personal Income Per Capita, by Maryland Regions, 1990 to 2040, (2005 Dollars)

Year	Baltimore Metro	Washington, DC Suburbs	Southern Maryland	Western Maryland	Eastern Shore	Maryland	Maryland CAGR (1)
1990	30,018	36,658	27,467	21,598	25,059	31,423	2.1%
2000	37,448	43,951	34,384	26,352	30,836	38,609	1.3%
2010	44,254	48,177	39,774	31,412	34,847	44,121	2.0%
2020	54,340	57,970	49,040	38,505	43,095	53,753	0.9%
2030	59,625	62,638	54,547	42,579	47,117	58,629	0.8%
2040	64,489	52,059	60,010	46,164	50,642	63,251	N/A

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

In 2010, Maryland ranked 3rd out of 51 states and the District of Columbia with a median household income of $64,025. In real terms, median household income increased by an average annual rate of 0.4% from 1985 to 2010. This growth rate takes into account the statewide decline in real household income during the 1990s as well as national economic trends. The average annual growth rate of median household income in Maryland was above that the U.S. (0.3%/year) and commensurate to Virginia and Pennsylvania (0.4%/year) during the same period. Median household income in the District of Columbia has increased by 1.2%/year. With the onset of the 2007-09 recession, real household income in Maryland declined by an aggregate of -7.2% since 2007 (-3.1%/year). Nationally, real median household income has decreased steadily since 2000. Additionally, Maryland has the second lowest poverty rate for 2011, with 10.1% of the population living in poverty, compared with 15.9% for the U.S.

Figure 26: Median Household Income, 2010$



Source: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplements

3.2.4 Commuting Patterns in Maryland

According to the Maryland Department of Planning, nearly 470,000 Maryland residents commuted to employment areas outside of the state in 2010, the most recent year in which data was available. Approximately 85% of these commuters work in either Washington, D.C. or Virginia. Another 9% of out-of-state commuters work in either Pennsylvania or Delaware with remaining commuting to work in other states. In comparison, approximately 270,000 out of state residents commute to work in Maryland. The number of commuters who come to work into Maryland is greatest from Virginia (31% of total commuters), Pennsylvania (25%) and Washington, D.C. (19%). Overall, the percentage of Maryland residents who work within the state was estimated to be 39.3%, out-of-state commuters accounted for 60.7% of total commuters. The average commuting time was 31.8 minutes in 2010 (up from 31.2 minutes in 2000).

Similar patterns have been recorded for the Baltimore MSA and Washington, DC MSA as 39.0% and 39.6% of commuters, respectively, work in the same jurisdiction (or county) in which they reside. In the two largest counties in terms of population and employment within the Baltimore MSA—Baltimore County and Anne Arundel County—this percentage was roughly 41%. In both of counties, there was an estimated of 79.4% of total commuters who drive alone to work and 9.7% of commuters who carpooled. Baltimore County had a slightly higher percentage of commuters who used public transit in 2010. Compared to 2000, average travel times increased to 28.5 minutes for Baltimore County and 29.3 minutes for Anne Arundel County.

At a county level, a somewhat different distribution exists in the Washington, D.C. MSA. In Montgomery County, an estimated 49.4% of residents commute within the county, which is significantly higher than the statewide average. In contrast, this percentage is 28.8% in Prince George's County. In 2010, an estimated 64.8% of Montgomery County commuters drove alone, 11.1% carpooled, and 15.1% used public transit. Average commuting time increased from 32.8 minutes in 2000 to 34.0 minutes in 2010. In Prince George's County, an estimated 64.7% of commuters drove alone, 12.8% carpooled, and 17.0% used public transit in 2010. The mean commuting time decreased slightly from 35.9 minutes in 2000 to 34.7 minutes in 2010. Based on data compiled for the 2000 and 2010 census, the table below summarizes the percentage of commuters by transportation mode and mean travel time to work for 2000 and 2010 for the four most populous counties and for the entire state.

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%

3.2.5 Statewide Economic Forecast

Economic growth and employment in Maryland has historically followed national trends, but overall economic conditions have tended to be stronger due to the large number of professional employees, the state's close proximity to the Federal government offices in Washington, D.C., and relatively high median house income. Additionally, the value of exports transported through the Port of Baltimore has increased by 135% from 2006 to 2011.

These strengths also represent potential vulnerabilities. Proposed reductions in federal spending in 2013, particularly in the defense industry, could impact Maryland more deeply relative to other states. Moreover, a potential slowdown in global economic conditions would lead to a decrease in exports, particularly to China and Europe.

Absent these uncertainties, Maryland economy is expected to grow at a relatively healthy rate. An economic forecast prepared by Chase and JP Morgan in early 2013 forecasted that statewide real GSP would increase by 2.7% and total employment would increase by 1.2% in 2013. A two-year forecast the annual change in statewide economic output and employment is provided in the table below.

Table 22: Maryland Economic Forecast, 2013-14

	2013	2014
Real GDP	2.7%	3.8%
Employment	1.2%	1.6%

Source: Chase/JP Morgan, Maryland Economic Outlook, 2013

4.0 Transactions and Revenue Forecasts

For the purpose of developing traffic and revenue projections for the MDTA's facilities, Jacobs developed two scenarios. The first assumes no FY 2014 toll increase (No Toll Increase Model) and the second scenario includes the FY2014 toll increase which was implemented on July 1, 2013 (Toll Increase Model). The purpose of this distinction is to provide a review of the impact of the toll increase.

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 September 2013, representing the full 2013 fiscal year and the first three months of FY2014. 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 FY2013 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 (MDTA EZ-Pass) ;
- Passenger Car Non-Commuter ETC (Non-MDTA EZ-Pass);
- 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. These 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 the toll adjustments implemented on July 1, 2013. Appendix A provides the 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. Using the traffic data resulting from the FY2012 toll increase, elasticity factors by payment type and vehicle class were developed. These factors were reviewed and adjusted to arrive at a conservative estimate of future transactions under the toll adjustment. 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 generally between 0 and -0.15, meaning for a 100 percent toll increase it would be expected that there would be a reduction in transactions of 0 to 15 percent. 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. 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. The majority of construction and improvement projects are anticipated to have minimal effects on the existing MDTA toll facilities. It is estimated that the Baltimore Harbor Tunnel will experience the most significant impact on traffic and toll revenue during the forecast period due to the Canton Viaduct and Patapsco Flats construction projects. These projects will limit capacity of travel lanes that provide access to the BHT from FY2016 through FY2018.

The following table provides a list of potential improvement projects completed or to be completed 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>▪ Canton Viaduct Reconstruction
▪ Patapsco Flats Deck and Superstructure Replacement
▪ I-95 Express Toll Lanes
▪</td><td>▪ FSK AET Conversion
▪ Hatem AET Conversion
▪ FMT Deck Overlays</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</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</td></tr>
</table>

▪ US 50, Ocean Gateway ▪ US 301, Blue Star Memorial Highway ▪ 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	▪ I-795, Northwest Expressway ▪ MD 140, Reisterstown Road ▪ 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 ▪ MARC Growth and Investment Plan

4.1.3 Transactions and Toll Revenue Forecasts

As indicated in this report, the local, national and global economic conditions over the past five years have been 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 and toll revenue potential for the future.

In addition to the previous and current economic climate, the implemented 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 (i.e. assuming no toll increase in FY2014) 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 FY2019. This forecast was prepared to provide a baseline of transactions against which the effects of the FY2014 toll increase can be measured. For the toll increase scenario (i.e. with the FY2014 toll increases approved in September 2011) transactions are anticipated to decrease in FY2014 and current transaction levels (FY2013) are estimated to be reached by FY2021. Transaction and toll revenue results are summarized 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 the toll increase and assumed no toll increase are shown graphically in Figure 27.

Under the no toll increase scenario it is estimated that transactions on the MDTA facilities would increase modestly throughout the forecast period with “new normal” growth rates between 1.1 and 0.9 percent, lower than growth rates experienced by the MDTA facilities from FY1995 through FY2002, with recovery from the low growth from FY2002 through FY2007 and negative growth from FY2007 through FY2010.

Under the toll increase scenario it is estimated that transactions will experience year over year loss of 6.2 percent from FY2013 to FY2014 and 1.1 percent increase from FY2014 to FY2015. Beginning in FY2015, it is estimated that slow, steady growth will emerge, following the growth rates of the no toll increase scenario tempered by the limited growth during construction periods on the BHT corridor. It is estimated that FY2024 transactions will be near FY2004 levels, representing no growth for almost twenty years, which Jacobs recognizes as a conservative forecast of transactions and subsequently in-lane toll revenue. If the experience of the FY2012 toll increase was employed directly instead of conservatively as described, losses in traffic would be anticipated to be approximately half of the current estimates. The toll increase scenario represents the forecast of transactions

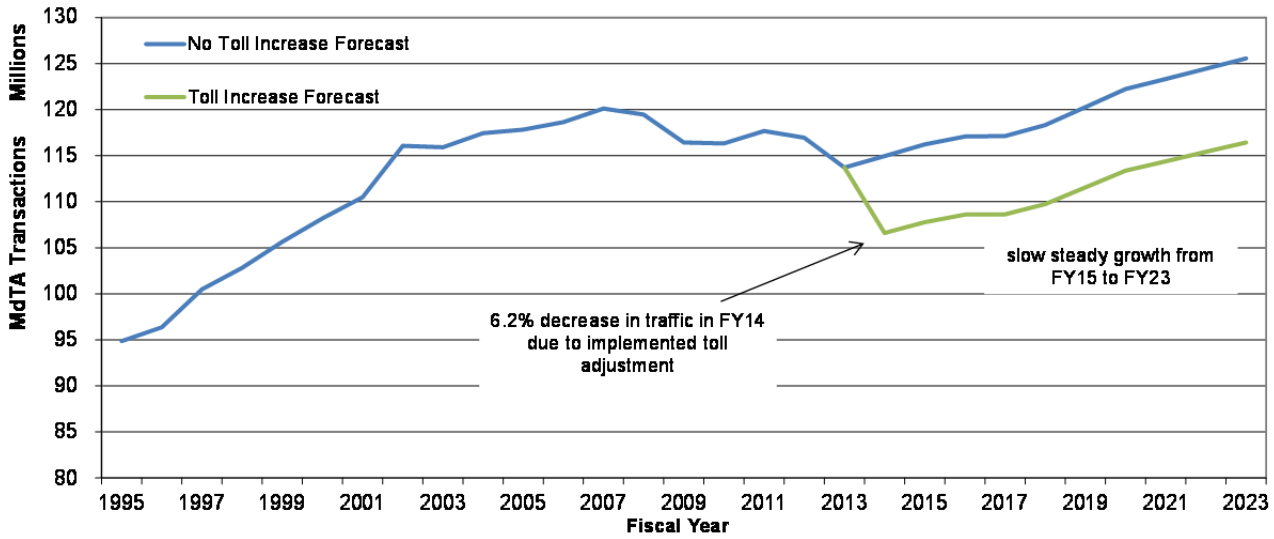
and toll revenue assuming the continuing implementation of the toll adjustments approved on September 22, 2011 by the MDTA.

Table 23: Historical and Forecasted Total Transaction and In-Lane Toll Revenue, and Annual Growth including FY2014 Toll Increase ($ Millions)

MdTA Annual Traffic and Toll Revenue Historical and Projected				
			Growth	
Fiscal Year	Transactions	Toll Revenue	Transactions	Toll Revenue
2000	108.2	148.2		
2001	110.8	149.9	2.4%	1.1%
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	1.3%	1.3%
2008	119.5	279.3	-0.5%	-1.1%
2009	116.4	276.6	-2.6%	-1.0%
2010*	116.3	308.5	-0.1%	11.5%
2011	117.7	312.0	1.1%	1.1%
2012*	121.7	373.0	3.4%	19.6%
2013*	113.7	411.4	-6.6%	10.3%
2014*	106.6	540.3	-6.2%	31.3%
2015	107.8	546.2	1.1%	1.1%
2016	108.6	550.3	0.8%	0.8%
2017	108.6	550.5	0.0%	0.0%
2018	109.7	556.2	1.0%	1.0%
2019	111.5	565.3	1.6%	1.6%
2020	113.4	574.5	1.6%	1.6%
2021	114.4	579.6	0.9%	0.9%
2022	115.4	584.9	0.9%	0.9%
2023	116.4	590.1	0.9%	0.9%

* Indicates year of toll increase

Figure 27: 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 Including FY2014 Toll Increase

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	14.7	5.0	3.3	13.1	25.6	11.0	44.2	116.9
2013	14.7	4.6	3.3	12.7	24.0	10.9	43.6	113.8
2014	14.1	4.6	3.1	11.9	22.9	9.9	40.2	106.7
2015	14.3	4.7	3.1	12.0	23.2	10.0	40.6	107.8
2016	14.4	4.7	3.2	12.2	22.8	10.1	41.1	108.6
2017	14.6	4.7	3.2	12.3	21.3	10.2	41.5	108.6
2018	14.7	4.8	3.2	12.4	21.5	10.3	41.9	109.7
2019	14.9	4.8	3.3	12.5	22.9	10.4	42.3	111.5
2020	15.0	4.9	3.3	12.7	24.4	10.5	42.7	113.4
2021	15.1	4.9	3.3	12.8	24.6	10.6	43.1	114.4
2022	15.3	5.0	3.4	12.9	24.8	10.7	43.5	115.4
2023	15.4	5.0	3.4	13.0	25.0	10.8	43.9	116.4

Table 25: Historical and Forecasted In-Lane Toll Revenue by Facility including FY2014 Toll Increase

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	116.0	5.3	11.6	46.7	48.7	25.8	118.8	372.9
2013	121.9	7.6	13.0	52.4	52.1	28.9	135.6	411.5
2014	156.3	9.5	18.9	74.9	70.4	37.4	172.9	540.3
2015	158.0	9.6	19.1	75.7	71.2	37.8	174.8	546.2
2016	159.7	9.7	19.3	76.5	70.1	38.2	176.7	552.1
2017	161.4	9.8	19.5	77.3	65.4	38.6	178.5	557.8
2018	163.0	9.9	19.7	78.1	66.1	39.0	180.3	563.5
2019	164.6	10.0	19.9	78.9	70.4	39.4	182.1	569.0
2020	166.2	10.1	20.1	79.6	74.9	39.8	183.8	574.5
2021	167.7	10.2	20.3	80.4	75.5	40.1	185.5	579.6
2022	169.2	10.3	20.5	81.1	76.2	40.5	187.2	584.9
2023	170.7	10.4	20.6	81.8	76.9	40.9	188.9	590.1

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 FY2014 and FY2015 for the MDTA's seven legacy facilities discussed in this report. This includes all planned toll adjustments. In addition the table provides a summation of the months to the full fiscal year for both FY2014 and FY2015.

Table 26: Monthly Transaction and In-Lane Toll Revenue for the MDTA Facilities for FY2014 and FY2015

Fiscal Year	Month	Transactions (M)	In-Lane Toll Revenue ($M)
2014	Jul	10.24	$52.631
2014	Aug	10.64	$54.382
2014	Sep	9.22	$46.188
2014	Oct	9.41	$47.268
2014	Nov	8.57	$44.022
2014	Dec	8.23	$41.603
2014	Jan	7.54	$37.368
2014	Feb	7.45	$36.717
2014	Mar	8.46	$42.863
2014	Apr	8.59	$43.538
2014	May	9.09	$46.558
2014	Jun	9.18	$47.160
2014	Total	106.6	$540.3
2015	Jul	9.907	$50.913
2015	Aug	10.184	$52.042
2015	Sep	8.744	$43.812
2015	Oct	8.797	$44.204
2015	Nov	8.955	$46.017
2015	Dec	8.606	$43.488
2015	Jan	7.885	$39.061
2015	Feb	7.793	$38.381
2015	Mar	8.841	$44.805
2015	Apr	8.981	$45.511
2015	May	9.497	$48.667
2015	Jun	9.593	$49.297
2015	Total	107.8	$546.2

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 (Legacy and ICC)
    b. Monthly Service Fees (Legacy and ICC)
3. Violation
    a. Notice of Toll Due Fees
    b. Violation Fees (Legacy, ICC and I-95 ETL)
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 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	Fall 2013 MdTA Toll and Other Revenue Estimates ($ Millions)																
	In-Lane Toll Revenue	Unused Toll Revenue	Trans-ponder 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	Con-cession Revenue	Hatem E-ZPass Program	ICC Trans-ponder Sales	ICC Monthly Account Fees	ICC Violation Fees	I-95 ETL Violation Fees	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	373.0	9.1	1.7	4.7	0.8	2.8	(5.9)	(0.2)	1.3	7.6	0.3	0.1	0.3	1.7		397.3	18.6%
2013	411.6	11.5	1.3	5.3	0.1	4.0	(4.6)	(0.7)	1.3	4.1	0.8	0.2	0.7	5.1		440.6	10.9%
2014	540.3	14.1	1.3	5.3	-	4.0	(6.4)	(0.9)	1.3	3.6	1.5	0.2	0.9	5.1		570.3	29.4%
2015	546.2	14.3	1.5	5.4	-	3.7	(6.5)	(0.9)	1.3	6.1	1.5	0.2	0.9	5.1	0.1	578.9	1.5%
2016	550.3	14.4	1.5	5.4	-	3.7	(6.5)	(1.0)	1.3	6.6	1.5	0.2	0.9	4.8	0.1	583.2	0.7%
2017	550.5	14.5	1.5	5.4	-	3.7	(6.6)	(1.0)	1.3	6.7	1.5	0.2	0.9	4.8	0.1	583.5	0.1%
2018	556.2	14.6	1.5	5.5	-	3.6	(6.7)	(1.1)	1.3	6.7	1.5	0.2	0.9	4.8	0.1	589.1	0.9%
2019	565.3	14.9	1.5	5.5	-	3.6	(6.8)	(1.1)	1.3	6.8	1.5	0.2	0.9	4.8	0.1	598.5	1.6%
2020	574.5	15.0	1.6	5.5	-	3.6	(6.9)	(1.1)	1.3	6.9	1.5	0.2	0.9	4.8	0.1	607.9	1.6%
2021	579.6	15.1	1.6	5.6	-	3.4	(7.0)	(1.3)	1.3	7.0	1.5	0.2	0.9	4.5	0.1	612.5	0.8%
2022	584.9	15.2	1.6	5.6	-	3.4	(7.1)	(1.3)	1.3	7.2	1.5	0.2	0.9	4.5	0.1	618.0	0.9%
2023	590.1	15.4	1.6	5.6	-	3.4	(7.2)	(1.3)	1.3	7.4	1.5	0.2	0.9	4.5	0.1	623.5	0.9%

4.2.1 Commuter Plan

The MDTA commuter plan allows customers to pre-pay for a substantial discount at the MDTA's facilities. Currently under this plan (after the FY2014 toll adjustment), commuters receive a 65 percent discount from the cash rate when purchasing 50 transactions for Central Facilities of BHT, FMT and FSK with a double charge per transaction at JFK and Hatem due to one-way tolling. For the Bay and Nice facilities 25 transaction units can be purchased at the same discount rate. All transactions are to be used within 45 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". Revenue is anticipated to increase in this category mostly due to the continuing increases in tolls in FY2013 and FY2014.

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 dropped to $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 were 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 closure of accounts experienced after the implementation of the fee. It is further anticipated that a slow closure of accounts for low frequency users will continue. The forecast was produced with consideration of the foregoing and anticipation of account growth based on a discounted historical trend.

The forecast for both of these fees were allocated to ICC and Legacy facilities individually to match MDTA accounting procedures.

4.2.3 Violation Fees

The violation fees were estimated based on FY2010 through FY2013 actual data for fee collection in this category. The notice of toll due fee was newly introduced for FY2010. This fee was replaced by the 50 percent surcharge for image based tolling. The revenue collected for this surcharge is included in the overall toll revenue estimate. This fee was allocated to ICC, Legacy and the I-95 ETL (when opened) facilities individually based on historical trends to match MDTA accounting procedures.

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. On January 1, 2012 the discount was restructured to reflect new thresholds and is only offered to vehicles with five axles or more. Using existing account data and historical experience, 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 through FY2013 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 and limited revenue potential after completion 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 using revenue projections developed by Areas USA MDTP, LCC, the concessionaire. 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	Fall 2013 MdTA Toll and Other Revenue Estimates ($ Millions)			
	In-Lane Toll Revenue	Other Revenue	Total	Percent Increase of Total
2004	251.3	8.6	259.9	
2005	278.5	8.4	286.9	10.4%
2006	278.8	9.6	288.4	0.5%
2007	282.3	10.3	292.6	1.5%
2008	279.3	10.3	289.6	-1.0%
2009	276.6	9.6	286.2	-1.2%
2010	308.5	23.3	331.8	15.9%
2011	312.0	23.0	335.0	1.0%
2012	373.0	24.3	397.3	18.6%
2013	411.6	29.0	440.6	10.9%
2014	540.3	30.0	570.3	29.4%
2015	546.2	32.7	578.9	1.5%
2016	550.3	32.9	583.2	0.7%
2017	550.5	33.0	583.5	0.1%
2018	556.2	32.9	589.1	0.9%
2019	565.3	33.2	598.5	1.6%
2020	574.5	33.4	607.9	1.6%
2021	579.6	32.9	612.5	0.8%
2022	584.9	33.1	618.0	0.9%
2023	590.1	33.4	623.5	0.9%

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 limited synopsis presents the highlighted 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

This document, and the opinions, analysis, evaluations, or recommendations contained herein are for the sole use and benefit of the contracting parties. There are no intended third party beneficiaries, and Jacobs Engineering Group, (and its affiliates) shall have no liability whatsoever to any third parties for any defect, deficiency, error, omission in any statement contained in or in any way related to this document or the services provided.

Neither this document nor any information contained therein or otherwise supplied by Jacobs Civil Consultants Inc. in connection with the study and the services provided to our client shall be used in connection with any financing solicitation, proxy, and proxy statement, proxy soliciting materials, prospectus, Securities Registration Statement or similar document without the express written consent of Jacobs Engineering Group.

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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

PUBLIC NOTICE
REMINDER: New Toll Rates Effective July 1, 2013

REMINDER: 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 **effective July 1, 2013**:

William Preston Lane, Jr., Memorial (Bay) Bridge (US 50/301) and Gov. Harry W. Nice Memorial Bridge (US 301)

Cash/Base Rates	Current	7/1/2013
2-axle	$ 4.00	$ 6.00
3-axle	$ 8.00	$ 12.00
4-axle	$ 12.00	$ 18.00
5-axle	$ 24.00	$ 36.00
6+-axle	$ 30.00	$ 45.00

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

Video Toll Rates	Current	7/1/2013
2-axle	$ 6.00	$ 9.00
3-axle	$ 12.00	$ 18.00
4-axle	$ 18.00	$ 27.00
5-axle	$ 36.00	$ 51.00
6+-axle	$ 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 Rates	Current	7/1/2013
2-axle	$ 3.00	$ 4.00
3-axle	$ 6.00	$ 8.00
4-axle	$ 9.00	$ 12.00
5-axle	$ 18.00	$ 24.00
6+-axle	$ 23.00	$ 30.00

Maryland *E-ZPass* Rates	Current	7/1/2013
Commuter	$ 0.75	$ 1.40
2-axle	$ 2.70	$ 3.60
3-axle		
4-axle	n/a	
5-axle		
6+-axle		

Video Toll Rates	Current	7/1/2013
2-axle	$ 4.50	$ 6.00
3-axle	$ 9.00	$ 12.00
4-axle	$ 13.50	$ 18.00
5-axle	$ 27.00	$ 36.00
6+-axle	$ 34.50	$ 45.00

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

Cash/Base Rates	Current	7/1/2013
2-axle	$ 6.00	$ 8.00
3-axle	$ 12.00	$ 16.00
4-axle	$ 18.00	$ 24.00
5-axle	$ 36.00	$ 48.00
6+-axle	$ 45.00	$ 60.00

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

Video Toll Rates	Current	7/1/2013
2-axle	$ 9.00	$ 12.00
3-axle	$ 18.00	$ 24.00
4-axle	$ 27.00	$ 36.00
5-axle	$ 51.00	$ 63.00
6+-axle	$ 60.00	$ 75.00

Commuter discount plans are available for customers with valid E-ZPass Maryland accounts driving two-axle vehicles. Plans for the Bay and Nice bridges are $52.50 (effective July 1, 2013) and offer 25 trips. The Baltimore Regional Plan is $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 because tolls are collected in one direction only. Plans end after 45 days or when all of the trips are used, whichever comes first.

NOTE: The Maryland *E-ZPass* two-axle toll rate provides a 10% discount off the Cash/Base rate (excludes the Intercounty Connector/MD 200). Visit ezpassmd.com today.

Additional approved changes effective July 1, 2013:

- The **price of the *E-ZPass* Hatem Bridge Choice "A" and "B" Plans increases to $20 per year**. The plans are offered for two-axle vehicles only and provide unlimited trips at the Hatem Bridge.
- The **A-Series ticket program at the Hatem Bridge is being phased-out** for vehicles with three or more axles. All A-Series tickets will have expired by this date. No refunds will be provided for A-Series tickets.
- The **Bay Bridge Shoppers Discount Plan is $30**. The plan is available with *E-ZPass* and offers a 50% discount for 10 trips that are valid for 90 days, good Sunday through Thursday only.
- Reflected in the tables to the left, **commuter discount rates are now uniform for all fixed toll facilities** -- a 65% discount off the Cash/Base toll.

Maryland Transportation Authority

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

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 Memorial Highway		
	PC	CV	Total
	Transactions		
2014	12.4	1.6	14.0
2015	12.5	1.6	14.1
2016	12.7	1.6	14.3
2017	12.8	1.6	14.4
2018	12.9	1.7	14.6
2019	13.1	1.7	14.7
2020	13.2	1.7	14.9
2021	13.3	1.7	15.0
2022	13.4	1.7	15.1
2023	13.5	1.7	15.3
	Toll Revenue		
2014	91.6	64.7	156.3
2015	92.6	65.4	158.0
2016	93.6	66.1	159.7
2017	94.6	66.8	161.4
2018	95.6	67.4	163.0
2019	96.5	68.1	164.6
2020	97.4	68.8	166.2
2021	98.3	69.4	167.7
2022	99.2	70.0	169.2
2023	100.1	70.6	170.7

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		
2014	22.2	0.5	22.7
2015	22.4	0.5	23.0
2016	22.1	0.5	22.6
2017	20.6	0.5	21.1
2018	20.8	0.5	21.3
2019	22.2	0.5	22.7
2020	23.6	0.6	24.2
2021	23.8	0.6	24.4
2022	24.0	0.6	24.6
2023	24.2	0.6	24.8
	Toll Revenue		
2014	62.7	7.7	70.4
2015	63.4	7.8	71.2
2016	62.5	7.7	70.2
2017	58.3	7.2	65.5
2018	58.9	7.3	66.1
2019	62.8	7.7	70.5
2020	66.7	8.2	74.9
2021	67.3	8.3	75.6
2022	67.9	8.4	76.3
2023	68.5	8.4	76.9

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		
2014	8.9	0.9	9.8
2015	9.0	0.9	9.9
2016	9.1	0.9	10.0
2017	9.2	0.9	10.1
2018	9.3	0.9	10.2
2019	9.4	0.9	10.3
2020	9.5	1.0	10.4
2021	9.5	1.0	10.5
2022	9.6	1.0	10.6
2023	9.7	1.0	10.7
	Toll Revenue		
2014	20.8	16.6	37.4
2015	21.1	16.8	37.8
2016	21.3	17.0	38.2
2017	21.5	17.1	38.6
2018	21.7	17.3	39.0
2019	21.9	17.5	39.4
2020	22.1	17.6	39.8
2021	22.3	17.8	40.1
2022	22.5	18.0	40.5
2023	22.7	18.1	40.9

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		
2014	36.5	3.3	39.8
2015	36.9	3.3	40.2
2016	37.3	3.4	40.6
2017	37.7	3.4	41.1
2018	38.1	3.4	41.5
2019	38.4	3.5	41.9
2020	38.8	3.5	42.3
2021	39.2	3.5	42.7
2022	39.5	3.5	43.1
2023	39.9	3.6	43.4
	Toll Revenue		
2014	108.2	64.6	172.9
2015	109.4	65.3	174.8
2016	110.6	66.0	176.6
2017	111.8	66.7	178.5
2018	112.9	67.4	180.3
2019	114.0	68.1	182.1
2020	115.1	68.7	183.8
2021	116.1	69.3	185.5
2022	117.2	70.0	187.1
2023	118.2	70.6	188.8

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		
2014	11.0	0.8	11.8
2015	11.1	0.8	12.0
2016	11.3	0.8	12.1
2017	11.4	0.8	12.2
2018	11.5	0.9	12.4
2019	11.6	0.9	12.5
2020	11.7	0.9	12.6
2021	11.8	0.9	12.7
2022	11.9	0.9	12.8
2023	12.0	0.9	12.9
	Toll Revenue		
2014	51.2	23.7	74.9
2015	51.7	24.0	75.7
2016	52.3	24.2	76.5
2017	52.8	24.5	77.3
2018	53.3	24.7	78.1
2019	53.9	25.0	78.9
2020	54.4	25.2	79.6
2021	54.9	25.4	80.3
2022	55.4	25.7	81.1
2023	55.9	25.9	81.8

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		
2014	2.9	0.2	3.0
2015	2.9	0.2	3.1
2016	2.9	0.2	3.1
2017	3.0	0.2	3.1
2018	3.0	0.2	3.2
2019	3.0	0.2	3.2
2020	3.0	0.2	3.2
2021	3.1	0.2	3.3
2022	3.1	0.2	3.3
2023	3.1	0.2	3.3
	Toll Revenue		
2014	13.8	5.1	18.9
2015	14.0	5.1	19.1
2016	14.1	5.2	19.3
2017	14.2	5.2	19.5
2018	14.4	5.3	19.7
2019	14.5	5.3	19.9
2020	14.7	5.4	20.1
2021	14.8	5.4	20.2
2022	14.9	5.5	20.4
2023	15.1	5.5	20.6

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		
2014	4.4	0.2	4.5
2015	4.4	0.2	4.6
2016	4.5	0.2	4.6
2017	4.5	0.2	4.7
2018	4.6	0.2	4.7
2019	4.6	0.2	4.8
2020	4.7	0.2	4.8
2021	4.7	0.2	4.9
2022	4.7	0.2	4.9
2023	4.8	0.2	5.0
	Toll Revenue		
2014	5.0	4.5	9.5
2015	5.1	4.5	9.6
2016	5.2	4.5	9.7
2017	5.2	4.6	9.8
2018	5.3	4.6	9.9
2019	5.3	4.7	10.0
2020	5.4	4.7	10.1
2021	5.4	4.8	10.2
2022	5.5	4.8	10.3
2023	5.5	4.9	10.4