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can be nearly two miles and extend travel time above the speed limit by roughly 15 minutes. As noted above, the intersection with Georgia Avenue is scheduled for capacity improvements, and ultimately, a grade-separation.

- **Veirs Mill Road (MD 586)** from Georgia Avenue (MD 97) to First Street/Norbeck Road (MD 28). This is one of the most congested corridors in the County, largely because it crosses several east-west arteries and runs in between the heavily traveled MD 97 and MD 355 corridors. The intersections at Twinbrook Parkway (ranked eighth in this year's most congested list) and First Street both exceed their LATR standard. Travel time along this corridor is periodically marked by delays at major intersections including University Boulevard, MD 185, Randolph Road, Aspen Hill Road and First Street. As noted above, the intersection at First Street is part of a State Highway Administration intersection improvement study. The Veirs Mill Road corridor is currently under study as a candidate for Bus Rapid Transit.

III. TRANSPORTATION TRENDS

Vehicle Miles Traveled

National trend data collected by the Federal Highway Administration indicate that the nation is in the midst of a decline in national vehicle miles traveled (VMT) that began in 2005 (U.S. DOT *Traffic Volume Trends*, years 2006-2009). February 2009 VMT data indicate a decline of 1.9 billion vehicle miles, or 0.9 percent, when compared with February 2008. A slumping economy and fluctuating gas prices are likely causes of the national decline. This national decline in VMT is not uniform across the country, however. Depending on the time of year, and seasonal flows, quadrants of the country experience different changes in VMT. While the South Atlantic States (a group of eight states and the District of Columbia, which includes Maryland) saw a VMT decline of 2.2 percent from February 2008 to February 2009, the North Central states (12 states in the upper Midwest) saw an increase in VMT of 1.3 percent.

Both the state of Maryland and Montgomery County are affected by the recent downturn in the economy, and VMT analysis for these areas also show recent declines. Job losses, a common indicator of economic malaise, began to appear in Montgomery County in 2007. An estimated 4,800 jobs have been lost in the County since the end of 2006 (MNCPPC Research Team estimates, April 2009). Figure 3.1 provides a comparison of the decline in VMT at the national, state and county level. Although Maryland VMT has fluctuated somewhat over the past three years, Montgomery County VMT data reveal decreases in the past two years. Figure 3.2 depicts Montgomery County VMT totals since the year 2000 and illustrates the dramatic decrease in VMT since 2005.

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Figure 3.1: Year to Year Percent Change in Vehicle Miles Traveled for the United States, Maryland and Montgomery County

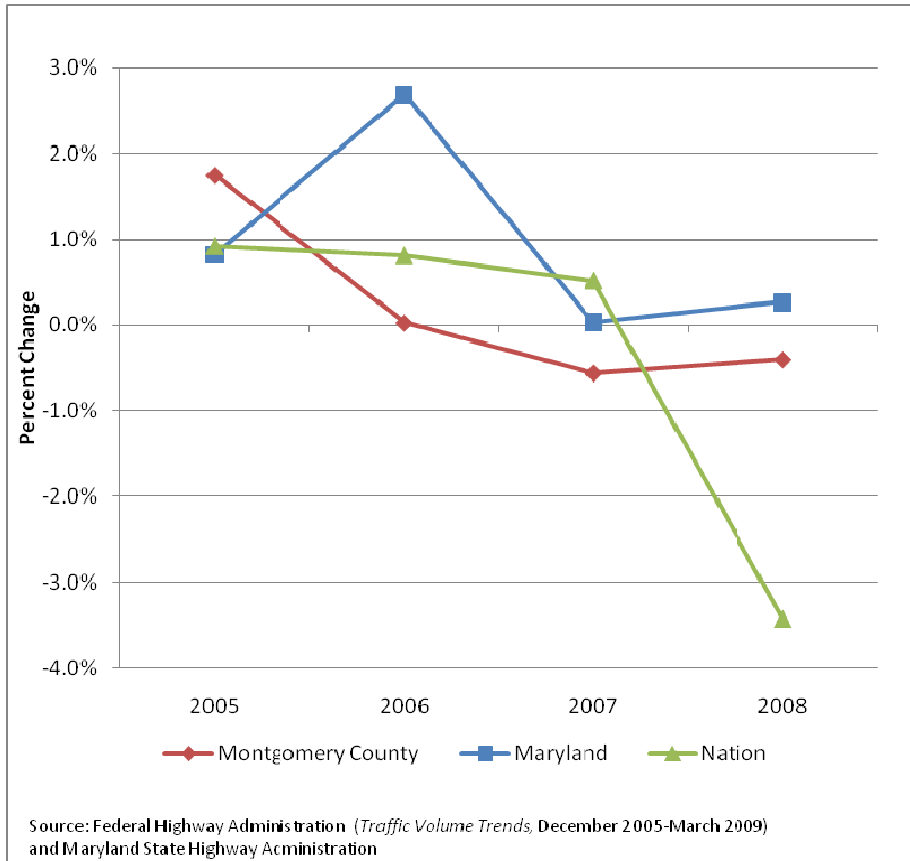
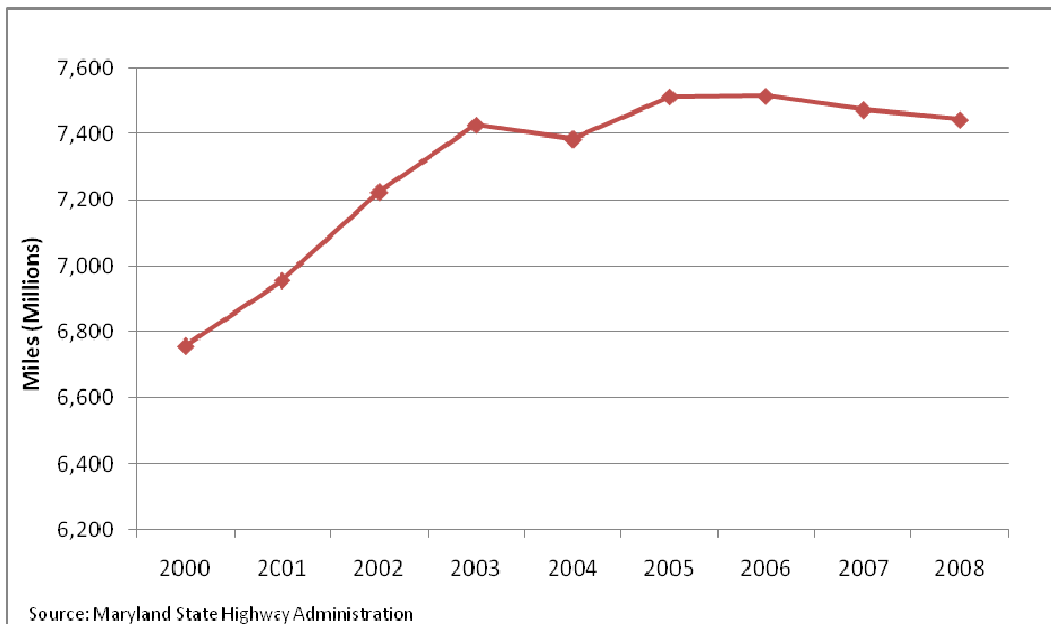


Figure 3.2: Total Vehicle Miles Traveled (VMT) on State Highways in Montgomery County, MD



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Pedestrian Counts

Traffic counts conducted for the 2009 HMR by MCV, Inc. included pedestrian counts as well as vehicular counts where feasible. Pedestrian counts for 111 intersections have been loaded into the MNCPPC intersection count database and serve as a base for pedestrian analysis, particularly in relation to other transportation systems and trends. The highest 30 of these pedestrian counts are displayed in Table 3.1. Data displayed here is for the combined morning and afternoon peak travel times (6:30 – 9:30 am and 4:00 – 7:00 pm). Pedestrian counts conducted as part of this study in 2009 were recorded at intersections that were a high priority for the County from a vehicular standpoint (due to lack of previous data, interest in ongoing development nearby, etc.), with secondary regard to pedestrian connectivity or access. Therefore, pedestrian counts provided in Table 3.1 do not represent locations of the highest pedestrian volume county-wide or key pedestrian crossing locations. The pedestrian to vehicle ratio is also represented in the table, to provide context for the total traffic volume at a given intersection.

Of the 111 locations sampled for pedestrian data, 30 had counts over 100 during the peak hours on the date of sampling, while just four had counts over 500 and two had counts greater than 1,000 pedestrians. The busiest intersection, from a pedestrian count standpoint was at where 1,841 pedestrians were counted. Veirs Mill Road (MD 586) at Randolph Road and East West Highway (MD 410) and 16th Street (MD 390) also had high pedestrian volumes. The Colesville Road (US 29) and East West Highway (410) intersection also had the highest pedestrian to vehicle ratio of 0.098, followed by the intersection of Carroll Avenue (MD 195) and Laurel Avenue with 0.066. Few counts were done inside of central business districts where pedestrian volumes, and possibly ratios, would be higher.

The map in Figure 3.3 provides a picture of the locations of the 111 pedestrian counts, with grouping by total pedestrian volume. Although a distinct pattern of higher pedestrian volumes in down county areas is clearly displayed on the map, several intersections in Rockville and Gaithersburg have counts that are above 150 pedestrians, and in the top 20 percent of county-wide intersection counts.

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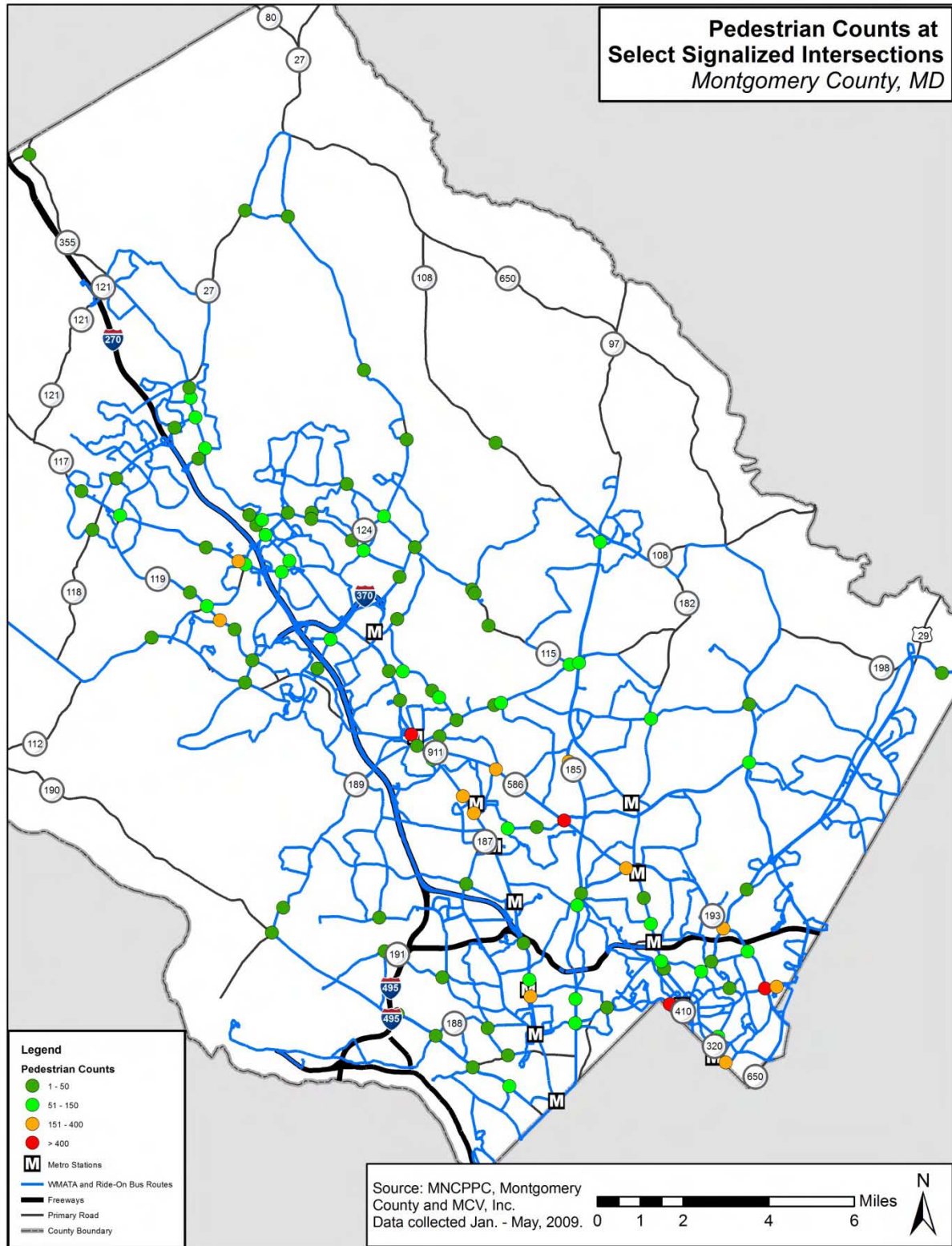
Table 3.1: Total (AM + PM) Peak Period Observed Pedestrian Crossing Volumes

Pedestrian Volume Rank	Intersection Name	Peak Vehicle Volume	Peak Pedestrian Volume	Pedestrian to Vehicle Ratio
1	Colesville Rd (US 29) at East West Hwy (MD 410)	18,785	1,841	0.0980
2	Veirs Mill Rd (MD 586) at Randolph Rd	69,594	1,452	0.0209
3	East-West Hwy (MD 410) at 16th St (MD 390)	24,714	985	0.0399
4	Hungerford Dr (MD 355) at Middle Ln/Park Rd	24,650	671	0.0272
5	Georgia Ave (MD 97) at Randolph Rd	34,102	479	0.0140
6	Connecticut Ave (MD 185) at Jones Bridge Rd	37,415	348	0.0093
7	Piney Branch Rd (MD 320) at Carroll Ave	12,641	287	0.0227
8	Rockville Pk (MD 355) at Twinbrook Pkwy/Rollins Ave	24,303	263	0.0108
9	University Blvd (MD 193) at Veirs Mill Rd (MD 586)	24,850	250	0.0101
10	Carroll Ave (MD 195) at Laurel Ave	3,659	242	0.0661
11	Veirs Mill Rd (MD 586) at Twinbrook Pkwy	30,519	220	0.0072
12	Rockville Pike (MD 355) at Jones Bridge Rd/Center Dr	60,468	219	0.0036
13	Clopper Rd (MD 117) at Quince Orchard Rd (MD 124)	29,683	108	0.0036
14	Clopper Rd (MD 117) at Firstfield Rd	17,556	210	0.0120
15	Great Seneca Hwy (MD 119) at Kentlands Blvd	21,583	192	0.0089
16	Connecticut Ave (MD 185) at Independence St	19,260	185	0.0096
17	Connecticut Ave (MD 185) at East-West Hwy (MD 410)	33,026	149	0.0045
18	Frederick Rd (MD 355) at Chestnut St	16,974	149	0.0088
19	Georgia Ave (MD 97) at August Dr	25,019	140	0.0056
20	Russell Ave at Christopher St	8,245	136	0.0165
21	Layhill Rd (MD 182) at Bel Pre Rd/Bonifant Rd	20,744	131	0.0063
22	W Diamond Ave at Muddy Branch Rd/Chestnut St	13,735	130	0.0095
23	Clopper Rd (MD 117) at Great Seneca Hwy (MD 119)	16,103	127	0.0079
24	Georgia Ave (MD 97) at Morningwood/Spartan Rd	17,632	115	0.0065
25	Veirs Mill Rd (MD 586) at First St	85,553	114	0.0013
26	Colesville Rd (US 29) at Dale Dr	27,760	113	0.0041
27	Connecticut Ave (MD 185) at Plyers Mill Rd	29,319	111	0.0038
28	River Rd (MD 190) at Brookside/Ridgefield	17,742	108	0.0061
29	Connecticut Ave (MD 185) at Knowles Ave	25,020	103	0.0041
30	New Hampshire Ave (MD 650) at Randolph Rd	36,131	100	0.0028

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Figure 3.3: 2009 Peak Hour Pedestrian Counts



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Ride-On Bus Service

Montgomery County bus service, called Ride-On, is comprised of an extensive network of local, feeder, circulator and express routes that compliment the regional and line service provided by the Washington Metropolitan Area Transit Authority (WMATA). Figures 3.4 and 3.5 illustrate the breadth of these routes. These maps also depict fiscal year 2006 ridership (the most current data available) on these bus lines. Figure 3.4 depicts average daily (weekday) ridership while Figure 3.5 depicts ridership per revenue mile. In total, the Ride-On system operates roughly 80 routes. Ride-On service is a key factor in mobility within the County and registered more daily (average) boardings in fiscal year 2008 than the Montgomery County Metrorail stations. In fiscal year 2008, average daily ridership was approximately 95,000.

The County's heaviest ridership is on routes that serve areas in a line running north-west from Silver Spring along the I-270 corridor, stretching as far north as Germantown. Ridership is also heavy in the south eastern portion of the County near White Oak. In order, the three routes with the highest average daily ridership in fiscal year 2006 were Germantown to Rockville, Silver Spring to Langley Park, and Shady Grove/Montgomery College to National Naval Medical Center. The proximity of these routes to Metrorail stations underscores the importance of bus service beyond and between Metrorail stations as an important part of the transit network. Figure 3.5 depicts a somewhat different picture of ridership, with the additional consideration of cost. In this map it is clear that although ridership along the I-270 corridor is high, of these routes travel long distances and are not as productive on a rider per revenue mile basis. Therefore, these longer routes are not as cost effective as some other routes. Routes beyond the I-270 corridor such as the route to Olney, carry the least riders per revenue mile, while routes between Bethesda and Silver Spring are the most cost effective.

Frequency of Ride On bus service for 2008 is depicted in Figure 3.6. The majority of the County's routes provide peak hour service every 20 – 30 minutes. Busy routes from Germantown south along I-270, and routes serving the central business districts in and around I-495, offer service with headways of 15 minutes or less.

Linkages and patterns between pedestrians and buses are important as riders must walk to and from bus stops at either end of their trip. Intersections with heavy pedestrian activity reported in the previous section, particularly those along Veirs Mill Road, in Silver Spring and Rockville are likely connected to extensive bus service in those areas. Connections between bus and rail service in the county are also documented in the number of lines near metro stations in Figure 3.6. Metrorail ridership is discussed in the next section of the report.

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Figure 3.4: Average Daily Ride On Ridership (2006)

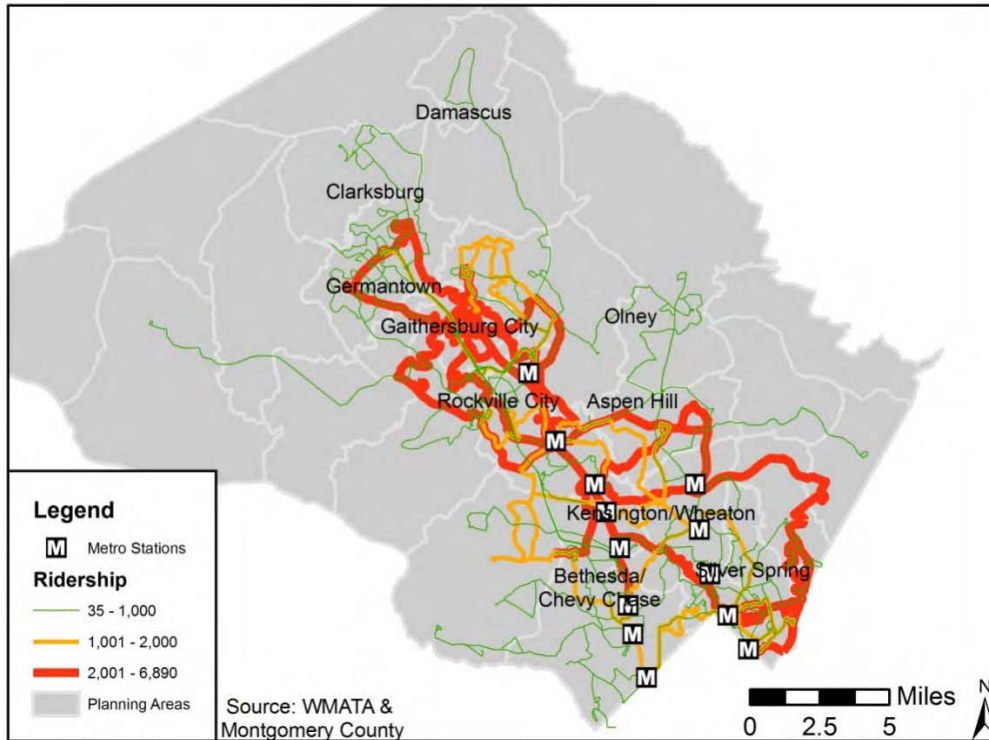
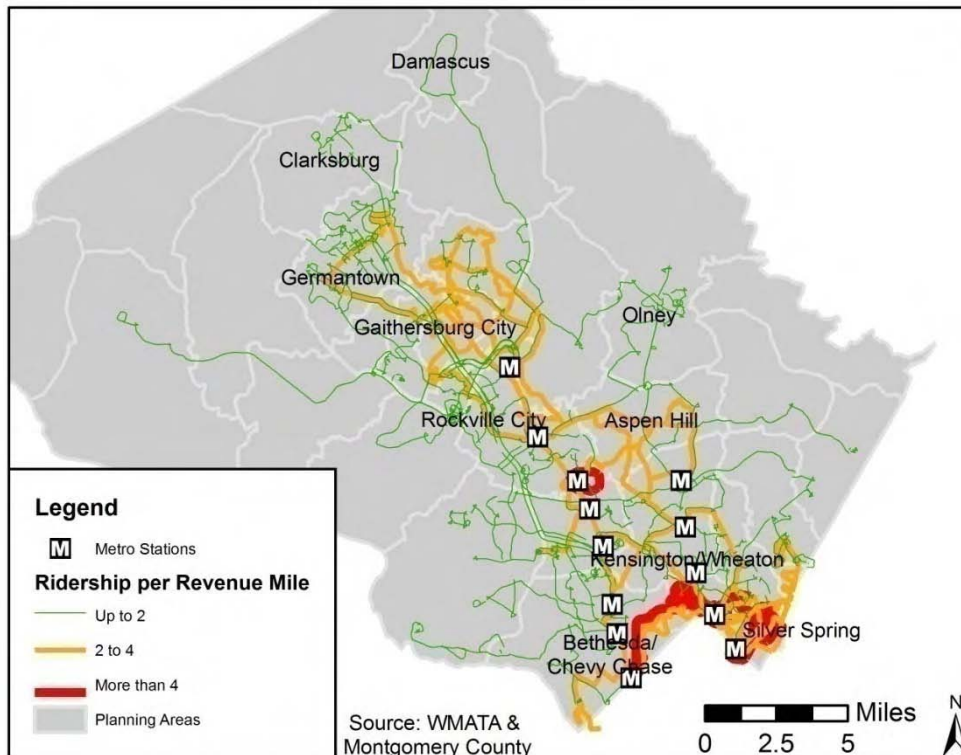


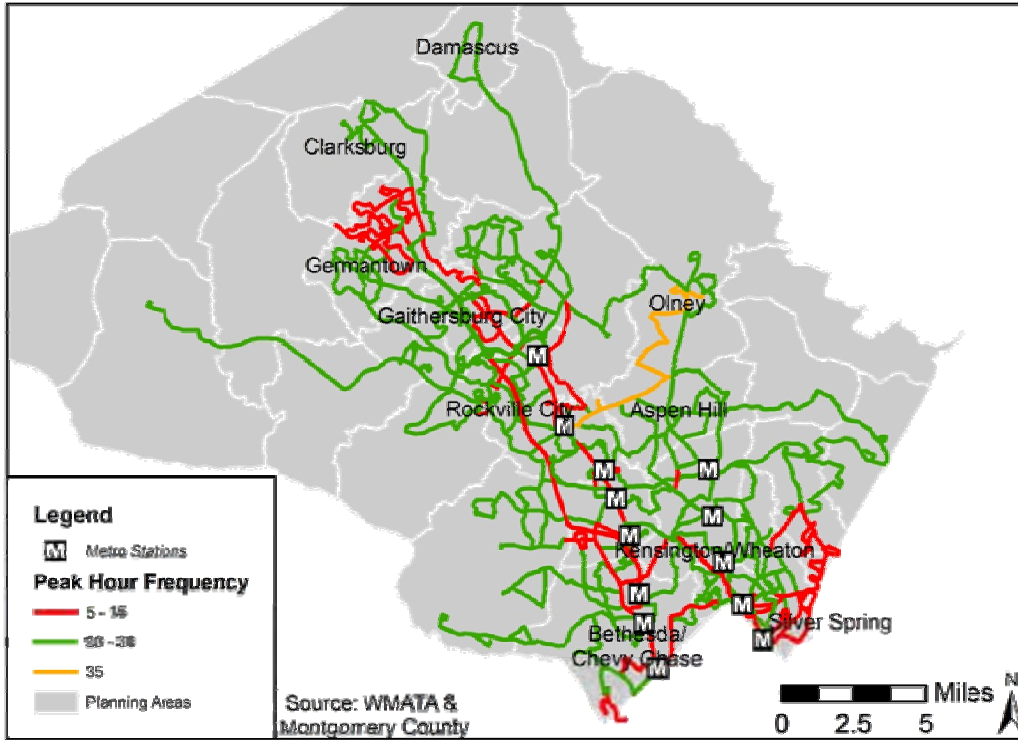
Figure 3.5: Ride On Ridership by Revenue Mile (2006)



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Figure 3.6: Peak Hour Ride On Bus Headways (2008)



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Metrorail Analysis

Assessment of Metrorail ridership is another key component of mobility in Montgomery County. Similar to road and intersection analysis presented in the previous sections of this document, measures of volume and time of travel are also useful for Metrorail data. These two types of data are presented for each of Montgomery County's Red Line stations in terms of total ridership (entries and exits) in Figure 3.7 and ridership by time of day in Figure 3.8A (entries) and 3.8B (exits).

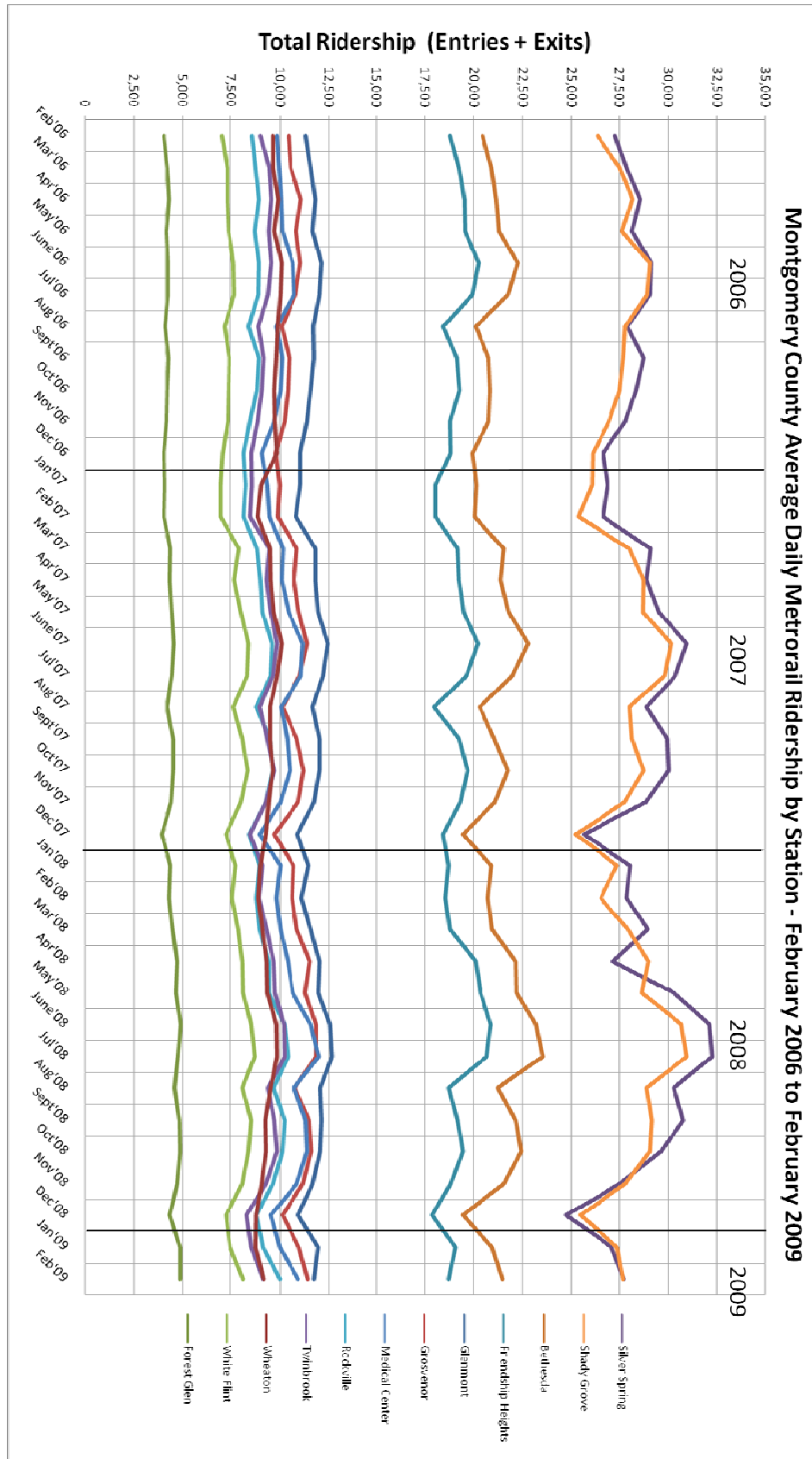
Unlike trends in vehicle miles traveled, ridership on Metrorail has increased, by approximately five percent, between February 2006 and February 2009. Figure 3.7 depicts the varying levels of ridership increases for average weekday ridership in Montgomery County. Two types of change are depicted in this figure. First, ridership at the four most heavily used stations; Silver Spring, Shady Grove, Bethesda and Friendship Heights, exhibit seasonal peaks (and troughs) with highest ridership in the summer months of June, July and August and significantly lower volume in the winter months. At the Shady Grove station, ridership increased from 28,933 in July 2006 to 30,952 in July 2009, a seven percent change. This peak travel period is important because it represents maximum stress on the capacity of the stations, and is ahead of the year to year increase in ridership of the entire system. A second change depicted in Figure 3.7 is the uneven increase in ridership at each station. For example, average daily ridership in Silver Spring was 27,285 in February 2006 and 27,708 in February 2009 while ridership at the Rockville station was 8,594 and 10,000 for the same time periods. This 16 percent increase in ridership in Rockville is roughly three times the percent change in total ridership for all Montgomery County stations.

The time of day patterns in Figures 3.8A and 3.8B depict the predominantly residential nature of the areas surrounding many Metrorail stations in Montgomery County. Metrorail stations located in communities with a balance of residential and employment/commercial uses have an equal pattern of entries and exits throughout the day. A good example of uneven ridership is the Medical Center station where the adjacent major employment sites of the National Institute of Health and Naval Medical Center draw large numbers of riders from elsewhere in the system who exit at the station in the morning and then head onto Metrorail in the afternoon to return home. Shady Grove is a station that exhibits ridership that is nearly the opposite of that at Medical Center. Roughly three quarters of entries to the Shady Grove Station occur during the morning peak hours, while approximately two thirds of the exits from the station occur in the afternoon peak hours. Entry and exit data are similar for the majority of the Red Line stations in the County with a few exceptions. The central business districts of Silver Spring, Bethesda and Friendship Heights exhibit more balanced ridership due to their large employment base.

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Figure 3.7: Metrorail Ridership 2006 to 2009



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Figure 3.8A: Montgomery County Metrorail Entries (February 2008)

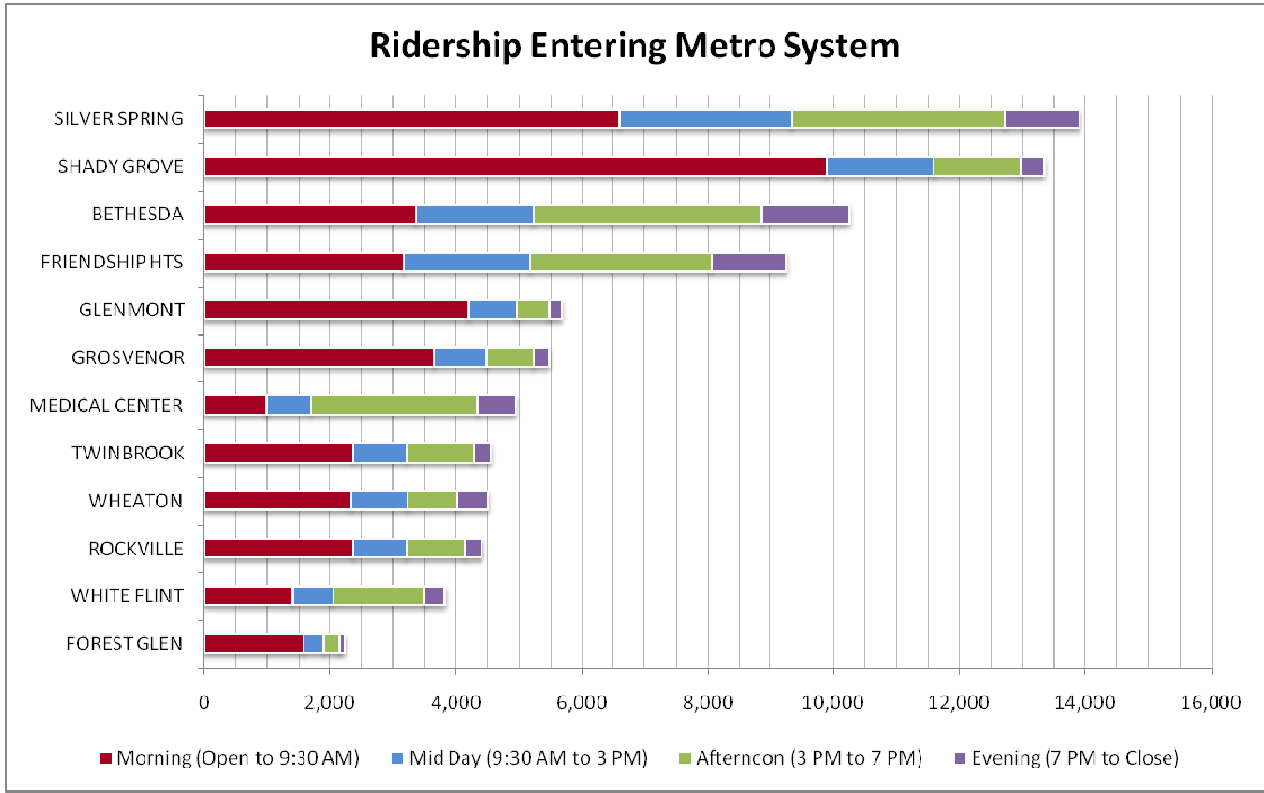


Figure 3.8B: Montgomery County Metrorail Exits (February 2008)

