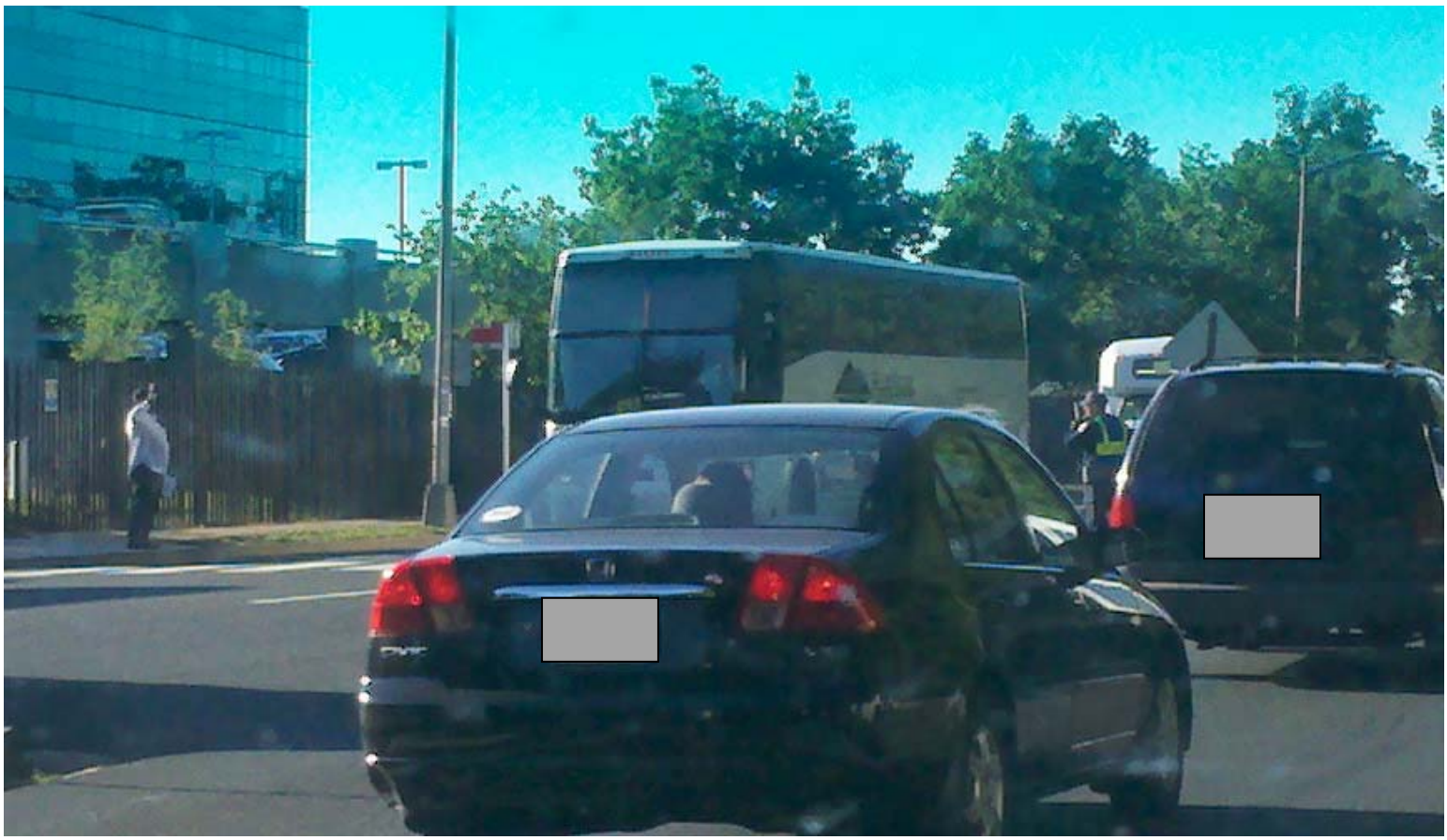
National Capital Region Transportation Planning Board



2012 Base Realignment and Closure / Federal Employment Consolidation Impact Analysis Travel Monitoring Report Current Conditions

DRAFT – June 30, 2012

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EXECUTIVE SUMMARY

This study reports vehicle and person travel data for 15 employment sites around the Washington region that were impacted by the 2005 Base Realignment and Closure (BRAC) action or other recent consolidations of large Federal sites. Counts of vehicle and people entering the sites were collected between 5:00am and 10:00am for single day at each site during Spring 2012. The deadline for completing the BRAC action was September 2011; however, some sites were granted extension. The relocations for the monitored sites were complete at the time of data collection except where otherwise noted. Nearly 95,000 vehicles carrying over 111,000 people entered the monitored sites during the morning analysis period. The average automobile occupancy for the sites during the morning analysis period was 1.18 persons per vehicle. During the different peak hours identified for each site, a total of over 37,000 people entered and the average automobile occupancy was 1.21. 76% of the people entering the sites during the morning analysis period drove alone, 16% used either a carpool or vanpool, and the remainder took transit, walked or biked, or arrived in a truck.

Data on vehicle and person volumes as well as mode split are presented for each of the 15 sites, as well as discussion of their personnel levels prior to and following the BRAC action, and both completed and planned transportation improvements for the site. All of the sites have a master plan that includes a Transportation Management Plan (TMP) which seeks to improve access to the complex through a series of short-term and long-term strategies. Many of the sites are currently updating their plans or beginning their implementation phase.

These data provide a useful snapshot of conditions just after the completion of the majority of the BRAC moves and serves as a benchmark for future monitoring of the same sites. It is anticipated that most of the sites will be recounted in approximately five years to determine the impacts of the TMP implementation and potential shifts in residential location in response to the BRAC employment shifts. The data will also be used to inform the regional travel demand forecasting process.

ACKNOWLEDGEMENTS

Conducting travel monitoring at secure military installations requires significant coordination and cooperation with base personnel. In addition, successfully navigating through the various branches of the Armed Forces, commands, agencies, and departments as each base would not have been possible without help from Federal, regional, State, and local officials who have been following the BRAC 2005 action for their respective jurisdictions from the day the final commission report was released. TPB staff gratefully acknowledges the assistance and support of the following individuals (noted on the following pages) in preparation of this report.

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INTRODUCTION

The process by which the United States' defense base infrastructure is periodically evaluated for operational efficiency is informally known as Base Realignment and Closure, or BRAC. Formally, the Defense Base Closure and Realignment Act of 1990, as amended[1] provided for the creation of an independent commission[2] appointed by the President of the United States that reviews the recommended list of base closures and realignments prepared by the Secretary of Defense and evaluates each recommendation against eight selection criteria contained under the law.[3] The BRAC Commission can add military installations to the initial list through a prescribed process. Once the Commission's recommendations are finalized, they are forwarded to the President. If the President approves the Commission's recommendations, they are forwarded to Congress, and unless Congress disapproves, the Commission's recommendations are finalized and the Department of Defense (DoD) begins the closures and realignments, to be completed within a specified period of time.[4] There have been five (5) commissions established and subsequent rounds of BRAC actions: 1988, 1991, 1993, 1995, and 2005. The closures and realignments recommended by the 2005 BRAC were to be completed by September 2011.

The 2005 BRAC actions created a significant shift of jobs and households in Maryland, Virginia, and the District of Columbia. Statewide, Maryland estimated an increase of 30,000 DoD jobs, both military and civilian, and another 30,000 indirect and induced jobs and a gain of approximately 28,000 households as a result of the 2005 BRAC actions.[5] While two of the major installations gaining jobs, Fort Meade and the Aberdeen Proving Ground, are in the Baltimore region, several facilities within the TPB region in Maryland have also gained jobs under BRAC 2005. In addition, many locations in the TPB regions in Northern Virginia and the District have added jobs post-BRAC. Finally, there are major consolidations of Federal offices that, although not part of the BRAC action, are regionally significant enough to be included in any monitoring of such employment shifts.

At the metropolitan level, the TPB region has seen a net increase of jobs as a result of the BRAC 2005 actions; however, even where total jobs have increased regionally, individual TPB jurisdictions have seen varying levels of increases and decreases of DoD-related jobs under BRAC. For example, some of the added jobs at the Walter Reed National Military Medical Center (WRNMMC) in Bethesda have been realigned from the now-closed Walter Reed Army Medical Center in Northwest Washington. The consolidation of workers from the National Geospatial Agency (NGA) at a new headquarters building at Fort Belvoir North shifted many of those jobs from the former NGA campus on Sangamore Rd in Bethesda. Approximately 22,000 jobs were shifted out of leased office space in Alexandria, Arlington, and Bailey's Crossroads in Fairfax County to military installations both within and outside the region, including Fort Belvoir

[1] Public Law 101-510, which was amended by The Ronald Reagan National Defense Authorization Act for Fiscal Year 2005, Public Law 108-375. See http://www.brac.gov/docs/BRAC05Legislation.pdf and http://www.brac.gov/docs/criteria_final_jan4_05.pdf
[2] Both the commission itself as well as the process are colloquially referred to as BRAC.
[3] *Ibid.*
[4] The law contains provisions in the event of disapproval by the President or Congress. *Ibid.*
[5] See http://www.brac.maryland.gov/what.asp

and Marine Corps Base Quantico (MCB Quantico).[6] Finally, BRAC and other major Federal consolidation have moved or will move jobs into new construction or redeveloped space, such as the Mark Center in Alexandria, Defense Health Headquarters (DHHQ) near Merrifield, the FDA research campus in White Oak, and the St. Elizabeths[7] campus in Anacostia.

To fully "trace" these workers, families and related travel across and in and out of the region is a nearly impossible task. However, monitoring the bases themselves in conjunction with the rest of the regular regional travel monitoring program and the cooperative forecasting process can provide information on the regional transportation impact of the BRAC action. This report provides initial data on travel to fifteen (15) regional BRAC and Federal employment consolidation sites, shown in Figure 1. While it is not true baseline or "before" data, it provides a useful snapshot of conditions just after the completion of the majority of the BRAC moves and serves as a benchmark for future monitoring of the same sites.

TRAVEL MONITORING PROCEDURES

At each location, field staff counted all vehicles and persons entering the site through the monitored entry point / gate between 5:00am and 10:00am, for a single Tuesday, Wednesday, or Thursday. Data collection took place during spring 2012 and included cyclists, pedestrians and transit patrons (directly observed from nearby stops or stations, obtained from area transit operators and converted to the morning analysis period, or derived from non-motorized travel when the closest transit stop was a significant distance from the base gate). The resulting information has been aggregated to the base / installation / site level; due to security concerns raised by base personnel at nearly all monitored locations, disaggregate data at the individual entry gate level is not contained within this report. Readers interested in more detailed data may request it from staff, pending approval from individual base personnel. In addition, certain access points at particular installations could not directly monitored due to specific security restrictions; in those cases base personnel provided staff with approved count information from which morning analysis period conditions could be derived.

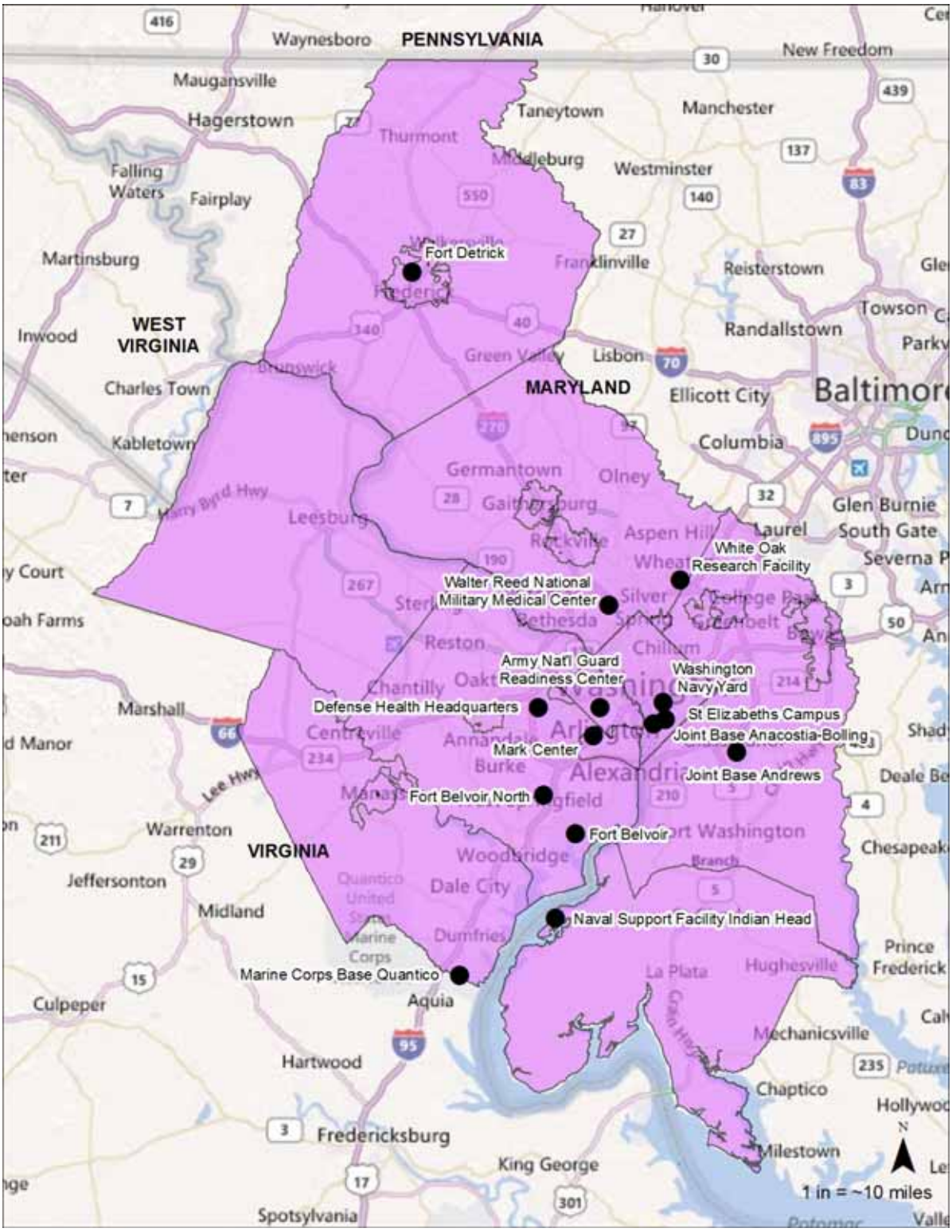
In addition, security personnel at Fort Belvoir North granted monitoring access only with the condition that data for the installation be combined with that of main post Fort Belvoir; as such those data are merged in some parts of the report. Other information in the report specific to Fort Belvoir North was obtained from publicly-available sources.

Finally, it must be noted that some base personnel may be missed during the five-hour morning count window. This includes shift workers as well as other people arriving after 10am due to outside meetings or personal business. Telecommuters and those with a regular day off / flex schedule are also not accounted for in these data.

[6] With the departure of nearly 17,000 jobs, mostly from Crystal City, Arlington received the greatest BRAC impact of any jurisdiction nationally. See http://www.bracarlingtonva.us/default/index.cfm/impact/history/ and http://www.novaregion.org/index.aspx?NID=1146

[7] The name 'St. Elizabeths' dates from the Colonial era and does not include an apostrophe.

Figure 1: BRAC / Federal Consolidation Monitoring Locations



TRAVEL MONITORING SITES AND RESULTS

Regional

Table 1 below shows the number of vehicles and persons entering each of the bases during the five-hour morning analysis period and the identified peak hour of the analysis period. Average auto occupancy for the five-hour analysis period and the peak hour is also noted for each site. The high auto occupancy for the St. Elizabeths Campus is likely due to most of the trips being for construction activities and same-shift workers carpooling to the site.

Table 1: Summary Results – All Monitoring Sites (Region)

	5 hour total			Peak Hour Persons		
Location	**Vehicles**	**Persons**	**Avg. Auto Occupancy**	**Peak Hour Persons**	**Avg. Auto Occupancy**	**Peak Hour**
Mark Center	4,284	5,582	1.14	1,504	1.13	8:00AM-9:00AM
MCB Quantico	15,525	16,927	1.1	7,076	1.08	6:45AM-7:45AM
Fort Belvoir (Main Post + Belvoir North)	26,084	28,403	1.1	8,929	1.15	6:45AM-7:45AM
ANG RC Arlington	1,107	2,082	1.16	398	1.22	6:45AM-7:45AM
TriCare / DHHQ	1,104	1,485	1.28	506	1.26	6:45AM-7:45AM
Total Virginia	*48,104*	*54,479*	*1.16*	*18,413*	*1.17*	
St Elizabeths Campus	715	1,064	1.6	589	1.88	5:15AM-6:15AM
Navy Yard	5,697	9,842	1.21	3,289	1.22	6:15AM-7:15AM
JBAB	9,007	9,644	1.09	2,943	1.07	6:45AM-7:45AM
Total DC	*15,419*	*20,550*	*1.3*	*6,821*	*1.39*	
JB Andrews	8,493	9,025	1.09	3,301	1.07	6:45AM-7:45AM
Walter Reed	8,566	11,825	1.2	4,257	1.38	6:15AM-7:15AM
White Oak	5,426	6,494	1.11	1,924	1.07	8:15AM-9:15AM
Fort Detrick	6,347	7,120	1.13	2,110	1.09	7:15AM-8:15AM
NSF Indian Head	2,003	2,137	1.08	662	1.07	6:15AM-7:15AM
Total Maryland	*30,835*	*36,601*	*1.12*	*12,254*	*1.14*	
Total All Sites	**94,358**	**111,630**	**1.18**	**37,488**	**1.21**	

Figure 2 shows the proportion of drive alone person-trips compared with non drive-alone person trips for each of the individual sites and totals for the sites in the District, Maryland, Virginia, and the region. Figure 3 shows the mode split (based on person-trips rather than vehicle trips) for all the regional monitoring sites. Compared with the *overall* regional mode split, the monitoring sites have a higher proportion of drive alone person-trips, a lower proportion of transit trips, a lower proportion of non-motorized trips, and a slightly lower proportion of carpool / vanpool trips. It should be noted that data on some of the DoD-operated shuttles are still pending from base representatives, so the transit numbers may increase slightly. In general, most of the BRAC and consolidation locations are difficult to serve with transit, a point compounded by the regional shift in work locations due to the BRAC actions without a corresponding shift in locations of residence of those workers. Base Transportation Management Plans attempt to

create modal shifts in the installation workforce by offering alternatives modes of transportation, restricting parking, etc. Since the BRAC moves are fairly recent (and some still ongoing), it may take years for the TMP strategies to have any effect; hence the desire to collect data at this early stage in the process.

The remainder of the report looks at each of the fifteen monitoring sites individually. For each location, basic information is presented regarding the location of the site, the agency tenants, and the approximate number of base personnel pre and post-BRAC. Information is also presented on highway and transit access to the site as well as available information on proposed transportation improvements and recent planning activities. Finally, the temporal distribution of vehicles and persons entering the site during the five-hour analysis period, as well as the mode split for the site, are shown.

Figure 2: Drive Alone and Non-Drive Alone Person Trips – All Individual Sites

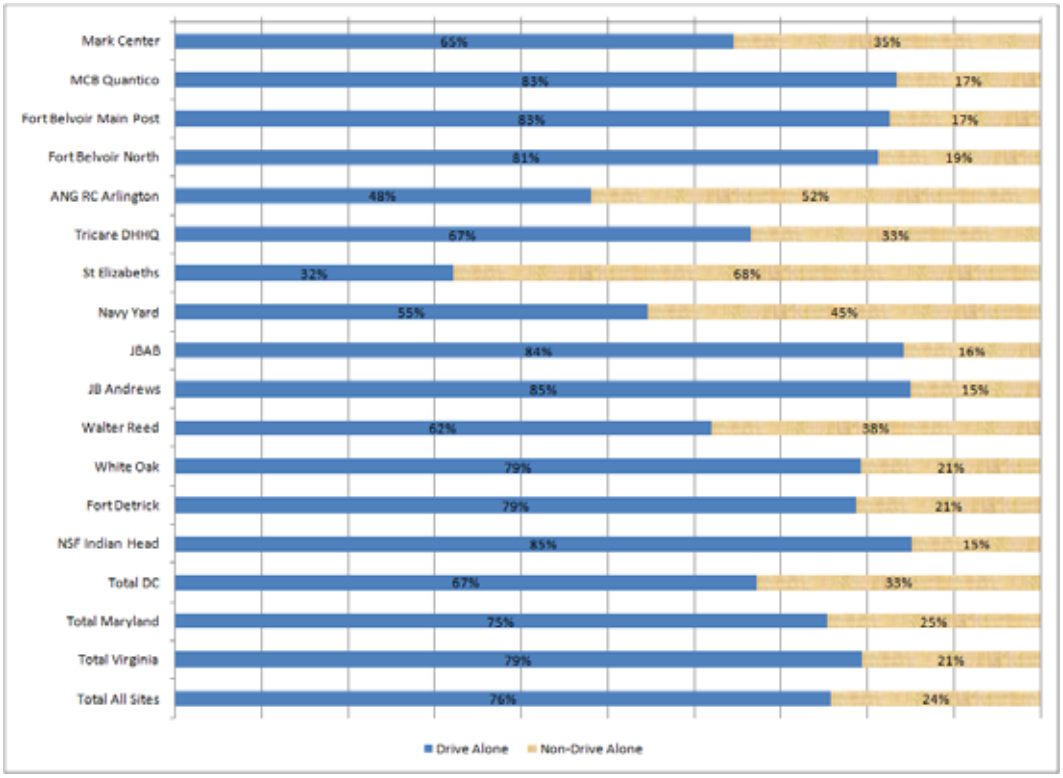
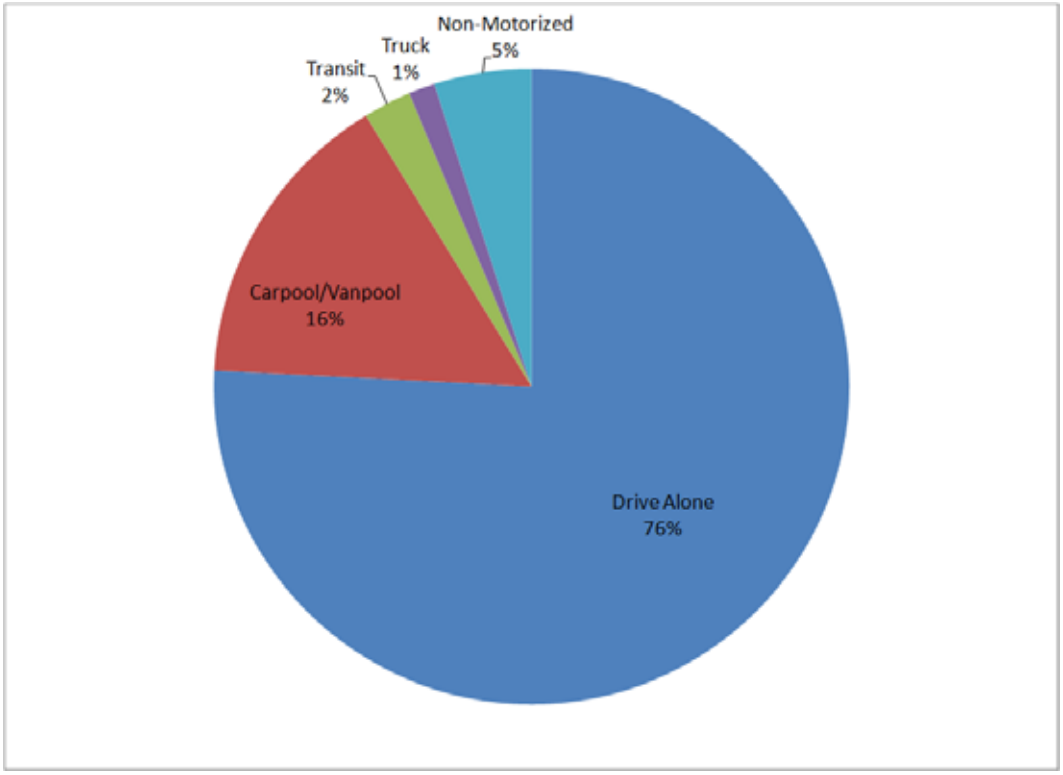


Figure 3: Person Mode Split – All Monitoring Sites (Region)



District of Columbia

St. Elizabeths Campus

The St. Elizabeths campus in the Anacostia neighborhood of Southeast Washington is named for the former psychiatric hospital located on its grounds. The campus is bisected by Martin Luther King, Jr. Ave, SE and primary access points are currently from this roadway. The West Campus, bordered on the west by the Anacostia Freeway (I-295), is owned by the Federal government. Under the General Services Adminstration (GSA), planning and construction are proceeding for a consolidated headquarters for the U.S. Department of Homeland Security (DHS), including a separate headquarters facility for the U.S. Coast Guard.[8] The Coast Guard facility is expected to be completed by the end of 2013. As part of the Coast Guard development a new west side access road intersecting with Firth Sterling Ave, SE just north of the site is being constructed along with a new access control point. Full build out and occupancy of the West Campus is currently forecast for the year 2019. The East Campus remains under District ownership and is currently the subject of an extensive master planning process and separate Environmental Assessment for transportation network improvements. The West Campus Coast Guard facility will move approximately 3,800 employees to the site; 14,000 additional employees are forecast for the full build out.

Bus service to the St. Elizabeths campus is provided by Metrobus routes operating along Martin Luther King, Jr. Ave, SE and connecting with the Anacostia Metrorail (Green Line) station northeast of the campus. District streetcar service is also planned in the vicinity of the Metrorail station. There are additional access points to the East Campus through the adjacent neighborhood from Alabama Ave, SE. Metrobus routes also operate along Alabama Ave, SE and connect with the Congress Heights Metrorail station on the Green Line.

Figure 5 shows the temporal distribution of vehicles and persons entering the St. Elizabeths Campus during the five-hour morning analysis period (5:00am to 10:00am), by 15-minute segment. The peak hour occurs from 5:15am to 6:15am and volumes are fairly low, which is expected since the only visitors to the site currently are construction and related workers. It is anticipated that volumes will increase consistently and the peak hour may shift to later in the morning as buildings are completed and occupied.

Figure 6 shows the mode split for persons entering the St. Elizabeths Campus. The largest proportion of person-trips used carpool or vanpool, followed by drive alone. This breakdown is also anticipated due to the construction work, which tends to operate in discrete time shifts, thus facilitating travel to the site in high-occupancy vehicles.

[8] Although technically a branch of the armed forces, under the law that created DHS the Coast Guard now operates under DHS during peacetime; operation can be shifted back to DoD by congressional action (i.e., a declaration of war) or by direction from the President.

Figure 4: St. Elizabeths Campus Gate Location

Figure 5: Distribution of Persons and Vehicles Entering St. Elizabeths Campus

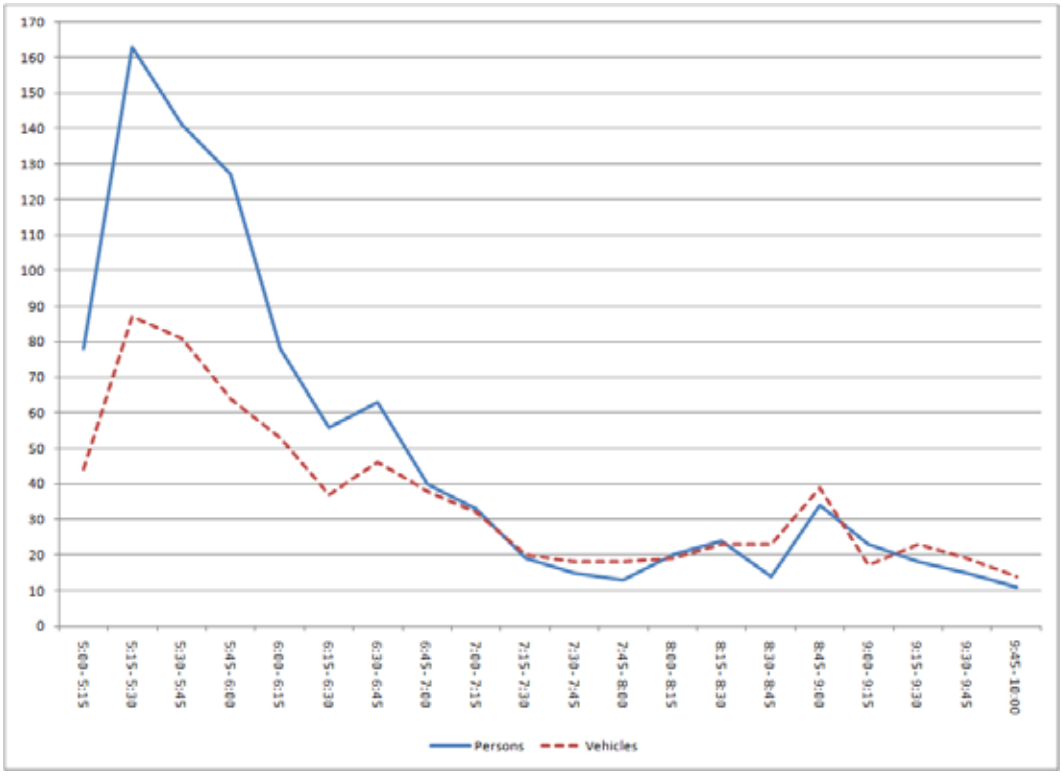
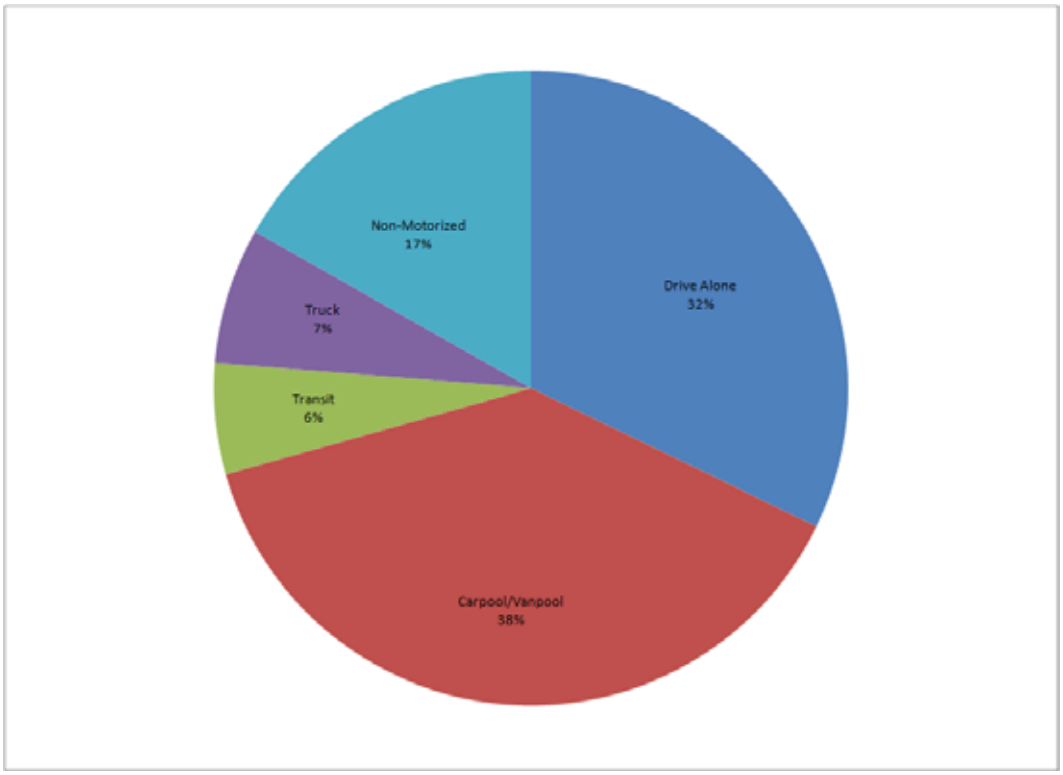


Figure 6: Person Mode Split – St. Elizabeths Campus



Joint Base Anacostia-Bolling (JBAB)

Located on the other side of I-295 from the St. Elizabeths Campus, the creation of Joint Base Anacostia-Bolling was a BRAC 2005 realignment action that merged two previously separate but adjacent installations: Bolling Air Force Base and Naval Support Facility Anacostia. The base occupies most of the land between I-295 and the Potomac River south of the Frederick Douglass Memorial Bridge. Just to the south of the installation are the Naval Research Laboratory and the Blue Plains Wastewater Treatment Facility. Nearly 14,000 employees serving approximately 50 different Federal agencies currently work at JBAB. Roughly 1,000 of those workers are the result of BRAC relocations from Arlington County. A recently released draft ten-year master plan for the installation assumes an employment increase of 5,000 jobs.[9] There are approximately 8,000 parking spaces at JBAB, and the draft master plan proposed removal of nearly 400 spaces. The resulting parking ratio and lack of transit access to the base were raised in the master plan (which includes a Transportation Management Plan [TMP]) review by the National Capital Planning Commission (NCPC).[10] NCPC's *Comprehensive Plan for the National Capital Region* requires an employee parking ratio of 1:4. Under existing conditions the parking ratio at JBAB is 1:1.66, and under master plan build out it would shift to 1:2.42.[11]

There are five gates at JBAB that are generally evenly distributed along the eastern perimeter of the base (see Figure 7). Arnold Gate is the most centrally located and has direct access from the I-295 interchange with Malcolm X Ave, SE. The Firth Sterling Gate is approximately ½ mile from the Anacostia Metrorail Station on the Green Line. Firth Sterling Gate and the Main (Arnold) Gate are served by transit via Metrobus routes A9; P17, 18 and 19, and W4, 13, and 14 and MTA Commuter Bus 907. Only routes A9, P17, P19, W13, and 907 provide peak period service to the base. JBAB is also served by two shuttles: one to the Pentagon and the other to Anacostia Metrorail station. The Pentagon shuttle offers seven trips per day while the Anacostia station shuttle provides 20-minute headway service during peak periods.[12] DDOT is planning a streetcar line in Anacostia with operations along South Capitol St to Firth Sterling Ave, Howard Rd, and Martin Luther King Jr. Avenue, passing by the Anacostia station and JBAB's Firth Sterling Gate. The North Gate was closed during our data collection. As noted in WMATA (2010):

> *The base's draft TMP recommends extending the Streetcar to a stop near the Defense Intelligence Analysis Center (DIAC) access road. A stop at this location would bring the streetcar beyond Firth Sterling Gate but not quite to the Main Gate. The stop would require a new pedestrian entrance control facility with secure biometrics at South Capitol Street. Even once the first phase of the streetcar is completed…the DoD shuttle to Anacostia station will still be necessary. The shuttle will be needed to provide direct service to on-base buildings, while the streetcar is only planned to serve the Naval Annex portion of the site. Even the proposed extension to serve the DIAC would not provide a*

[9] See http://www.ncpc.gov/DocumentDepot/Actions_Recommendations/2011May/Joint_Base_Anacostia_Bolling_Draft_Master_Plan_Recommendation_MP55_May2011_.pdf

[10] *Ibid.*

[11] *Ibid.*

[12] *Description of bus and shuttle service adapted from WMATA (2010)*

> *convenient trip for many personnel who work in buildings farther south. Additionally, current shuttle bus service frequency should be increased to every 10 minutes to provide an average wait of five minutes. If demand is sufficient, peak shuttle service could be split into two routes to provide a quicker trip to different portions of the installation. Off-peak shuttle service should be added, and could be provided on demand. It could service both the DIAC and JBAB. The shuttle vehicle would wait at Anacostia Station after the morning peak through early afternoon and then wait on base in the afternoon before and after the afternoon peak regular service.*

The base TMP indicates that 75% of JBAB employees drive alone to their jobs and 78% of employees access the base using I-295 during peak periods.[13] The TMP traffic analysis notes that the interchange near Arnold Gate operates at a Level of Service (LOS) E during the PM peak hour.[14] The signalized intersection at South Capitol St and Firth Sterling Ave SE, immediately adjacent to the Firth Sterling Gate, operates at LOS D during the AM peak hour.[15] NCPC's review recommended that JBAB improve its TMP to bring its parking ratio in line with the *Comprehensive Plan* and improve alternative transportation options and consider a joint TMP with the St. Elizabeths Campus. As part of the TMP improvements, JBAB is currently conducting an on-line employee transportation survey.

The temporal distribution of persons and vehicles entering JBAB during the five-hour morning analysis period is shown in Figure 8. Slightly fewer than 3,000 people enter JBAB during the peak hour of 6:45am to 7:45am. Average auto occupancy during the peak hour is 1.07 persons per vehicle. The mode split for the base during the morning analysis period is shown in Figure 9. Nearly 85% of the people arriving to the base drive alone. Considering the goals and objectives of the base TMP and the more stringent parking requirements mandated by NCPC, it is expected that the proportion of JBAB entries that drive alone will decrease in the future.

[13] *Ibid.*
[14] *Ibid.*
[15] *Ibid.*

Figure 7: Joint Base Anacostia-Bolling Gate Location

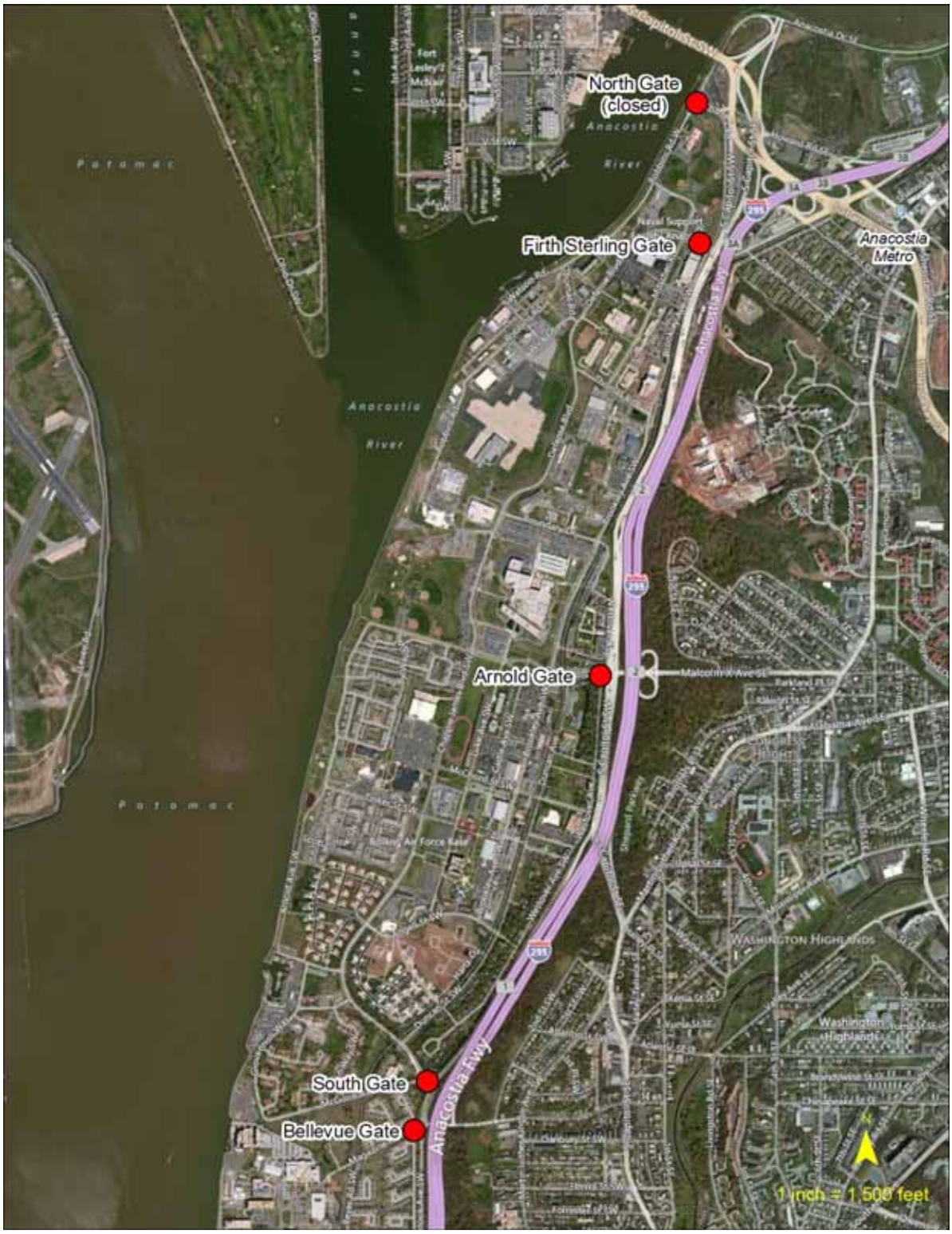


Figure 8: Time Distribution of Persons and Vehicles Entering JBAB

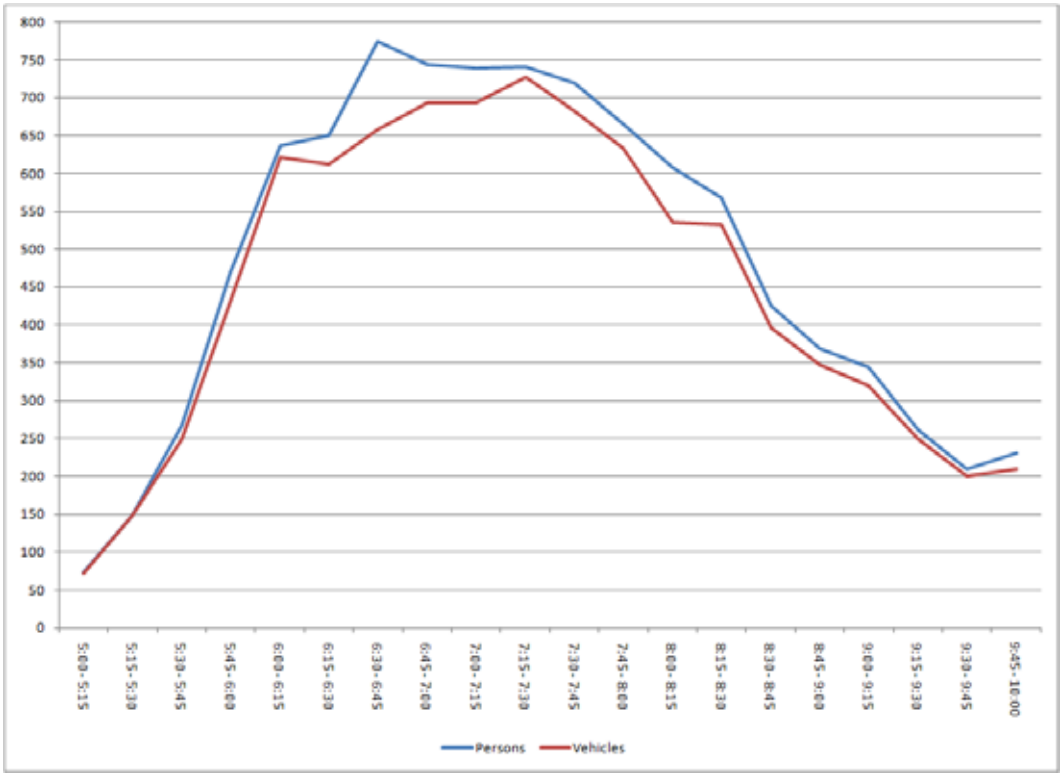
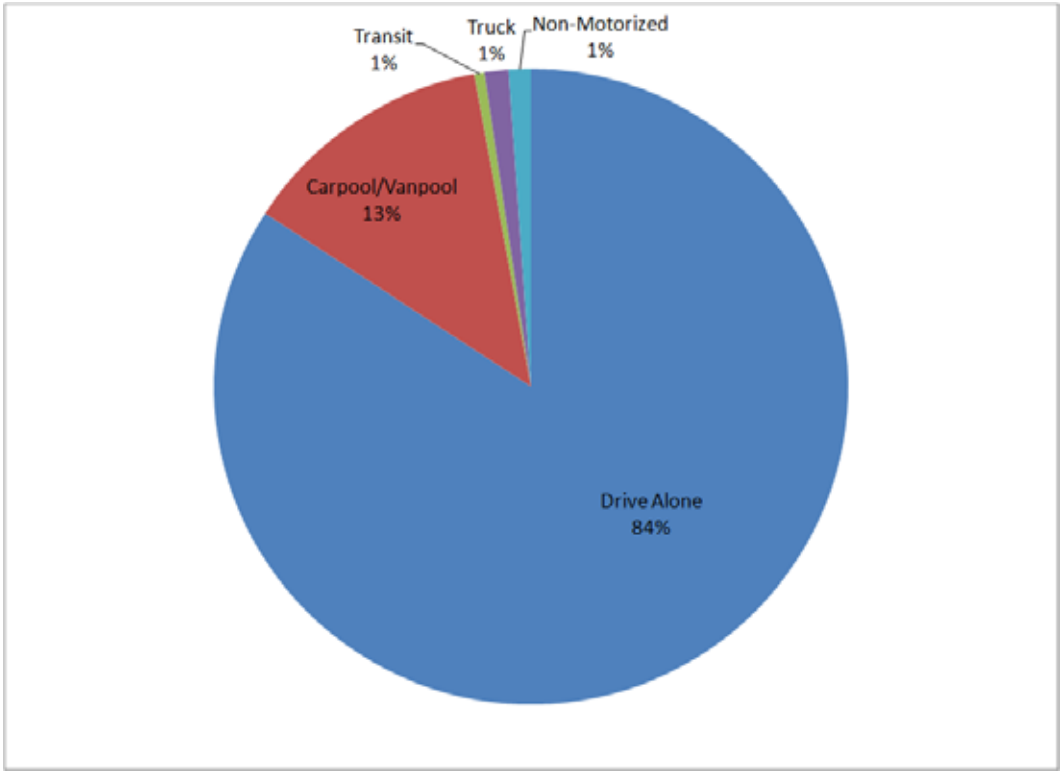


Figure 9: Person Mode Split - JBAB



Washington Navy Yard (WNY)

Washington Navy Yard is the oldest naval facility in the United States. The installation is home to Naval Support Activity Washington headquarters, Commander, Navy Installations Command (CNIC), Regional Headquarters Naval District Washington, Naval Facilities Engineering Command (NAVFAC) headquarters, and Naval Sea Systems Command (NAVSEA) headquarters, and several other tenant commands and offices. The installation is located in Southeast Washington just east of USDOT headquarters and is bounded by M St, SE on the north, the Anacostia River on the south and I-295 on the east. NAVFAC and NAVSEA were moved to the Washington Navy Yard under the BRAC 2005 actions from previous locations in Crystal City, Arlington, and the City of Alexandria. The Office of the Judge Advocate General, the Navy's military lawyers, was also relocated to the Navy Yard from Alexandria under BRAC 2005. These moves added approximately 4,500 jobs to the Navy Yard and added approximately 2,500 parking spaces.[16] There are 15,000 total personnel for Naval Support Activity Washington, of which WNY is the largest of seven regional installations.

There are four (4) access points to the Washington Navy Yard (see Figure 10): from M St, SE at 6th St and 9th St, and from 11th St, SE at N St and O St. The Sixth and M St, SE gate is located approximately 0.3 miles from the Navy Yard Metrorail Station on the Green Line. Metrobus Route N22, the Navy Yard Shuttle Line, provides seven-days-a-week service connecting the the installation with the following Metrorail stations: Navy Yard (Green Line); Eastern Market (Blue / Orange Lines); Capitol South (Blue / Orange Lines); Union Station (Red Line, connections to MARC, VRE, and Amtrak)

A DoD shuttle operating 15-passenger vans provides six daily trips between WNY and JBAB.[17] Preparation of an updated master plan and TMP for the Navy Yard is ongoing. The last approved master plan for the base was in 1990.[18]

Figure 11 shows the temporal distribution of persons and vehicles entering WNY during the five-hour morning analysis period. The peak hour occurs between 6:15am and 7:15am. Approximately 3,200 people enter the base during the peak hour and the average auto occupancy for the peak hour is 1.22 persons per vehicle. Figure 12 shows the mode split for WNY. Just over one-half of people arriving during the five-hour morning analysis period drive alone. Due to the distance from the Navy Yard Metrorail station to the WNY gates, it is probable that a high proportion of the non-motorized person-trips entering the base arrived to the area via transit.

During their initial review of the results at WNY, NAVFAC officials found the counts to be unexpectedly low. After further review and consideration of a recount at WNY, it was determined that missing shift workers and absences due to vacation, telecommuting, and other factors likely contributed to the low trip volumes.

[16] See http://www.globalsecurity.org/military/facility/washington-ny.htm
[17] See http://www.cnic.navy.mil/navycni/groups/public/documents/cdn/cnicp_a284297.pdf
[18] See http://www.ncpc.gov/DocumentDepot/Actions_Recommendations/2011September/Washington_Navy_Yard_Energy_Enhancement_Building_126_Recommendation_7231_September2011_.pdf

Figure 10: Washington Navy Yard Gate Location

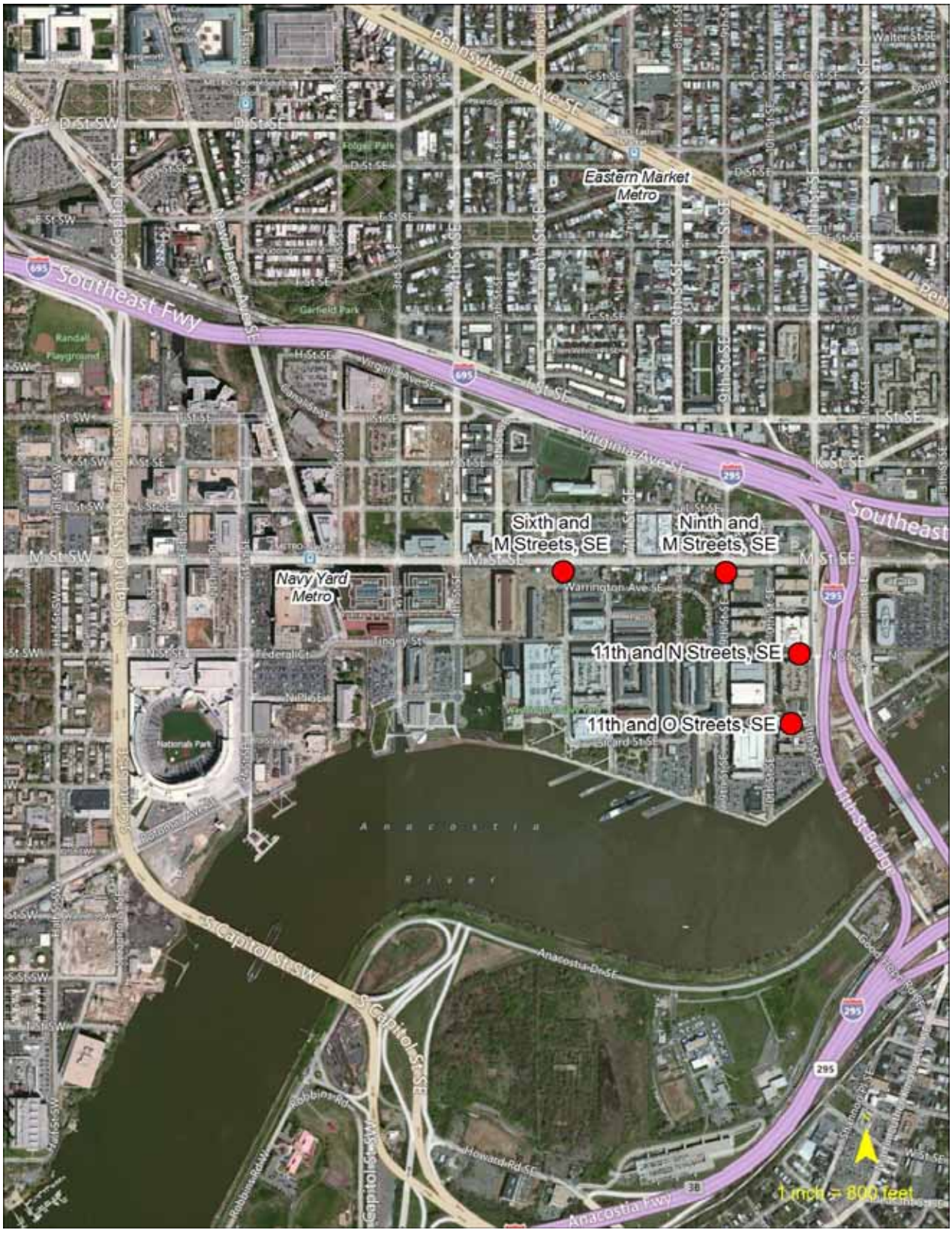


Figure 11: Distribution of Persons and Vehicles Entering Washington Navy Yard

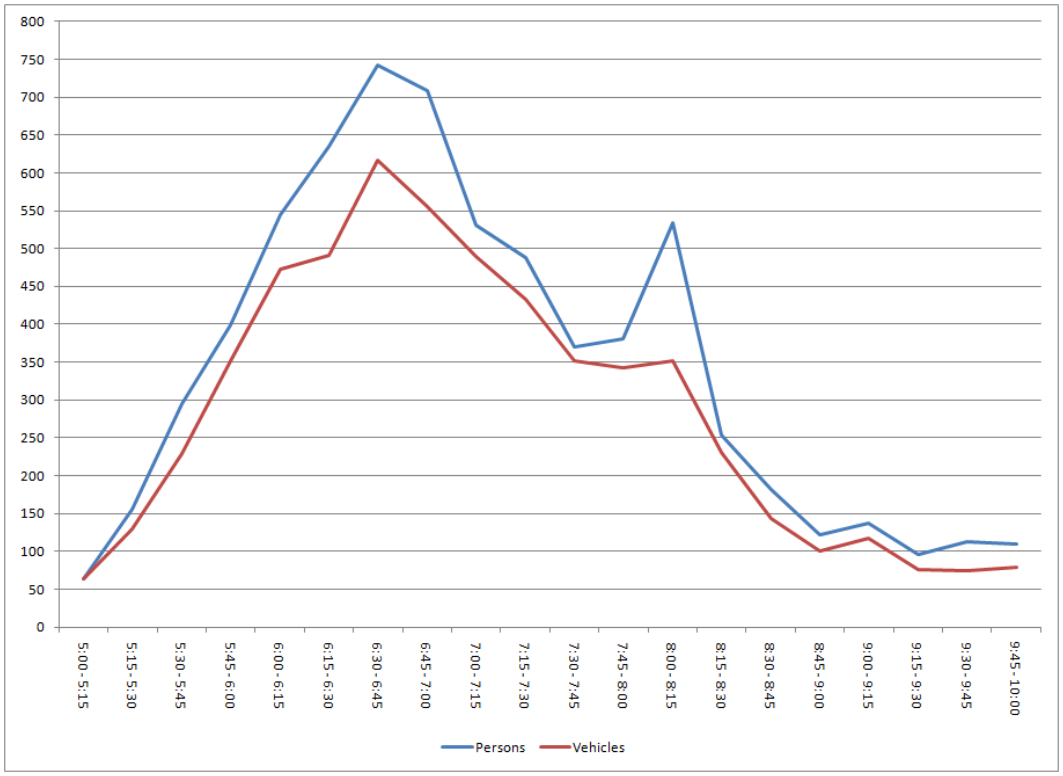
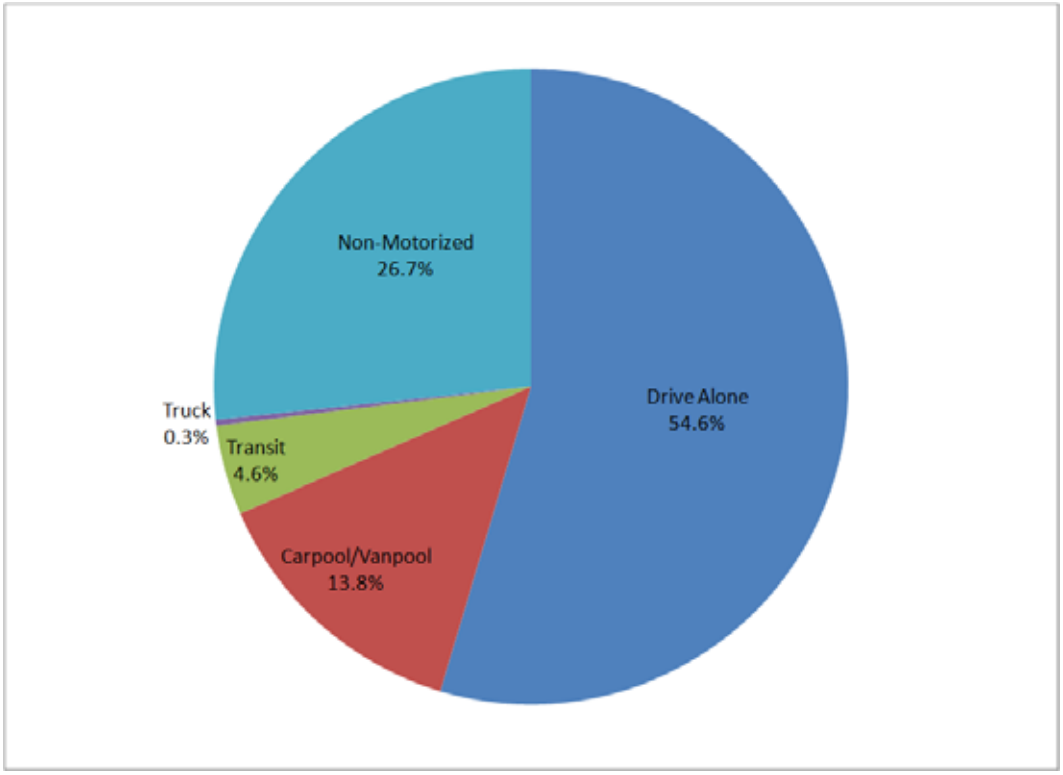


Figure 12: Person Mode Split – Washington Navy Yard



Maryland

Federal Research Center White Oak

The Federal Research Center White Oak (FRC White Oak) was the former location of the Naval Surface Warfare Center, a Navy research facility primarily dedicated to explosive ordnance testing. Previous BRAC actions relocated Navy tenants to other sites, and the primary tenant at FRC WO is the U.S. Food and Drug Administration (FDA), which is part of the Department of Health and Human Services. The FDA campus will consolidate workers from multiple other sites into a single destination that includes the agency headquarters and other research facilities. Currently about 5,500 employees work at the FDA campus, and approximately 9,000 are expected by full build out in the year 2016.

Befitting the earlier safety and security requirements of a former weapons testing facility, the overall site stretches over 662 acres in Montgomery and Prince George's counties and is bounded by New Hampshire Ave (MD 650) on the west and Powder Mill Rd (MD 212) on the east (see Figure 13) . The majority of the FDA existing and planned development is concentrated in the western portion of the site with access currently from the gates on Michelson Rd and Mahan Rd off of MD 650. The U.S. Army Research Lab Adelphi Laboratory Center (ALC) is located at the southern edge of the site with access from the Floral Drive gate off of Powder Mill Rd. A new access point from the east via a new road, FDA Boulevard, has been recently completed and provides a connection from Cherry Hill Rd through a private development known as LifeSci Village[19] There is also a Back Gate near the intersection of Powder Mill Rd and Cherry Hill Rd. Transit service is provided by Metrobus Route R2 operating on Powder Mill Rd and Cherry Hill Rd, Metrobus Routes C8 and K6 operating on MD 650, and Ride-On Routes 10, 20, and 22 operating on MD 650. MTA commuter bus route 204 provides peak period, peak direction service to FDA from Frederick and Gaithersburg via I-270 and the Intercounty Connector (MD 200) and continues to the College Park – UMD Metrorail station on the Green Line. MD 650 is one of the corridors identified in the recent bus rapid transit (BRT) study completed for the County Council.

The entire area of Montgomery County west of the Prince George's line and bounded by the Capital Beltway (I-495), Northwest Branch, Columbia Pike (US 29), and Cherry Hill Rd is the subject of the East County Science Center Master Plan being conducted by the Maryland-National Capital Park and Planning Commission (M-NCPPC). The master plan is scheduled to be completed by the end of 2013. As part of the master plan process a Transit Oriented Development (TOD) Scenario Planning Report was prepared by M/A/B for Commission staff under the TPB's Transportation-Land Use Connections (TLC) program.

Figure 14 shows the temporal distribution of persons and vehicles entering the FRC during the five-hour morning analysis period. Just over 1,900 persons enter the complex during the morning peak hour of 8:15am to 9:15am. Average auto occupancy during the morning peak hour is 1.07. The person mode split for the FRC is shown in Figure 15. Nearly 80% of the people entering during the morning analysis period drove alone.

[19] This location is sometimes called Percontee for the name of the actual developer.

Figure 13: Federal Research Center White Oak - Gate Location

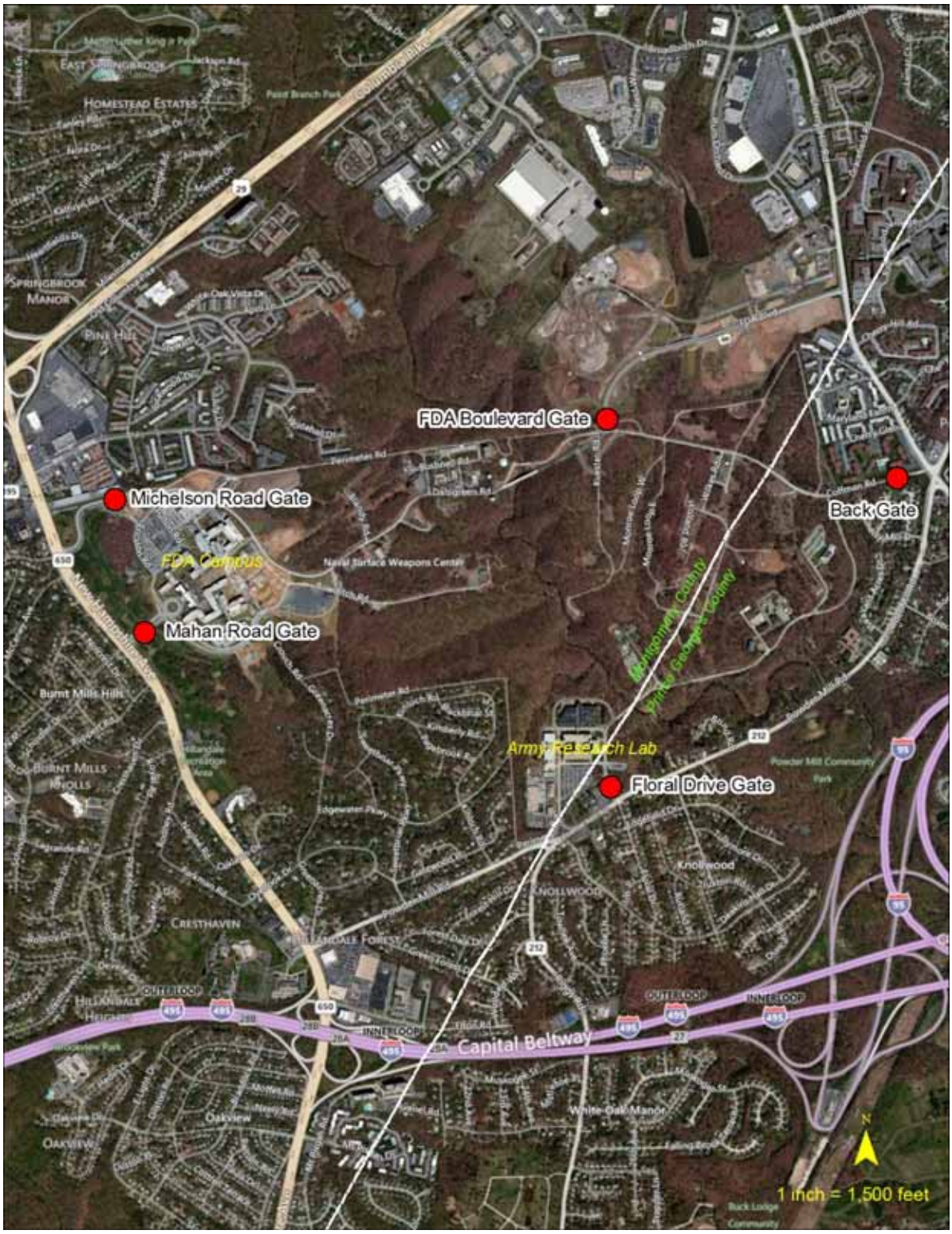


Figure 14: Distribution of Persons and Vehicles Entering FRC White Oak

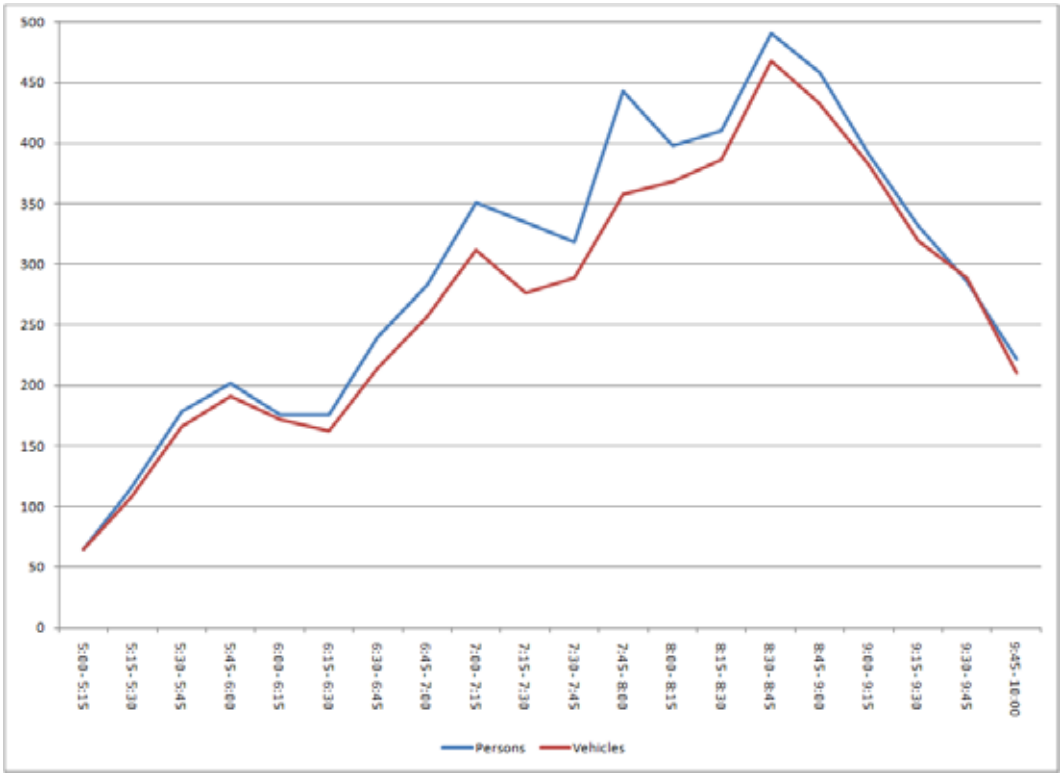
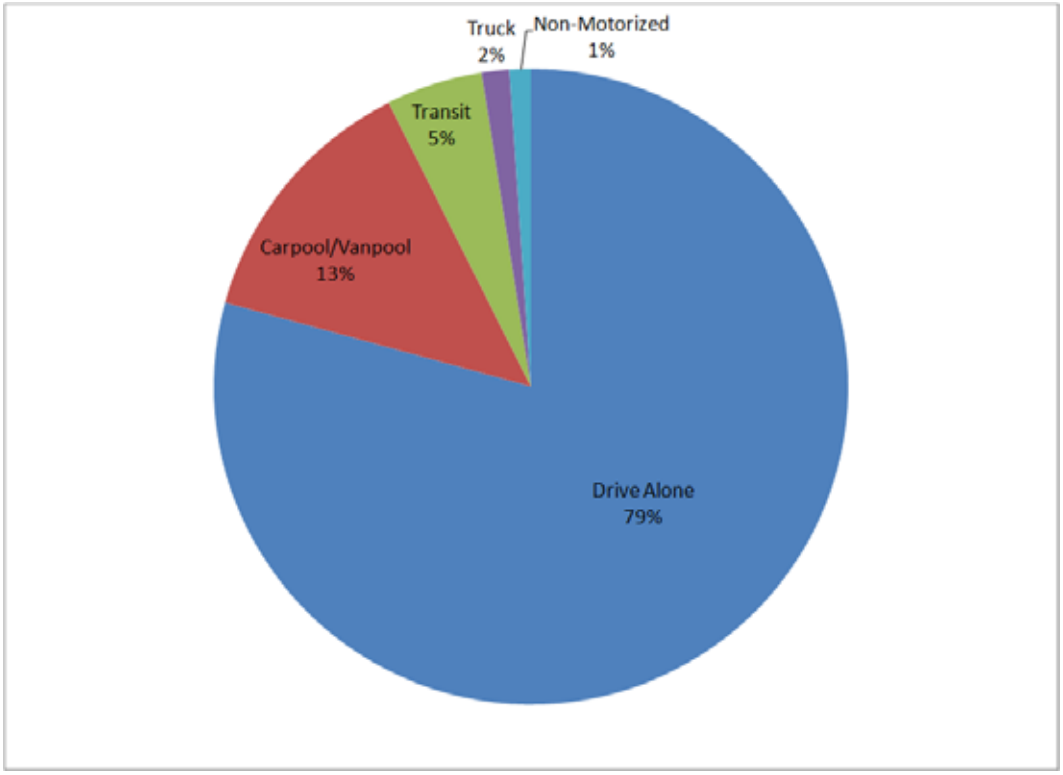


Figure 15: Person Mode Split – FRC White Oak



Fort Detrick

Fort Detrick is a U.S. Army garrison located within the City of Frederick. With 9,200 employees the base is the largest employer in Frederick County and has expanded under the recent BRAC action. The installation includes several facilities dedicated to medical and biomedical research, including the National Interagency Biodefense Campus and the Army Medical Research Institute of Infectious Diseases.

There are four access points to Fort Detrick: the main gate on 7th Street, a second gate for base personnel on Oppossumtown Pike, the Rosemont Gate for base personnel, and the Old Farm Gate for visitors and deliveries (see Figure 16). The base was the subject of a pedestrian, bicycle, and transit access study in June 2008 prepared by Kittleson and Associates under the TPB's Transportation-Land Use Connections (TLC) program. As a follow-up action, a fiscal year 2013 (FY 2013) TLC project was awarded to Frederick to complete 30% design for a three-mile rails-to-rails project known as the East Street Trail, which will provide improved bicycle and pedestrian connections between the base, the Frederick MARC commuter rail station, Frederick Memorial Hospital, and Hood College. This is the first TLC award in the new design pilot program, which seeks to move the program beyond planning into implementation. Transit service is provided to the base by Frederick County TransIT bus route 30, which connects to the Frederick MARC station. The Meet-the-MARC shuttle operated by TransIT also makes limited stops at Fort Detrick.

The distribution of vehicles and persons entering Fort Detrick during the five-hour morning analysis period is shown in Figure 17. Just over 6,300 vehicles carrying just over 7,100 people entered the base between 5:00am and 10:00am. Average auto occupancy during this period was 1.13 persons per vehicle. Just over 2,100 people entered the base during the peak hour of 7:15am to 8:15am, with an average auto occupancy of 1.09. While not the maximum person movement into the base, periods of higher vehicle occupancy occur earlier in the morning between 6:00am and 6:30am (see Figure 17).

Figure 18 shows the mode split of people entering the base during the morning analysis period. Just under 80% of people entering the base during the period drove alone, with most of the rest coming via carpool or vanpool.

Figure 16: Fort Detrick – Gate Location

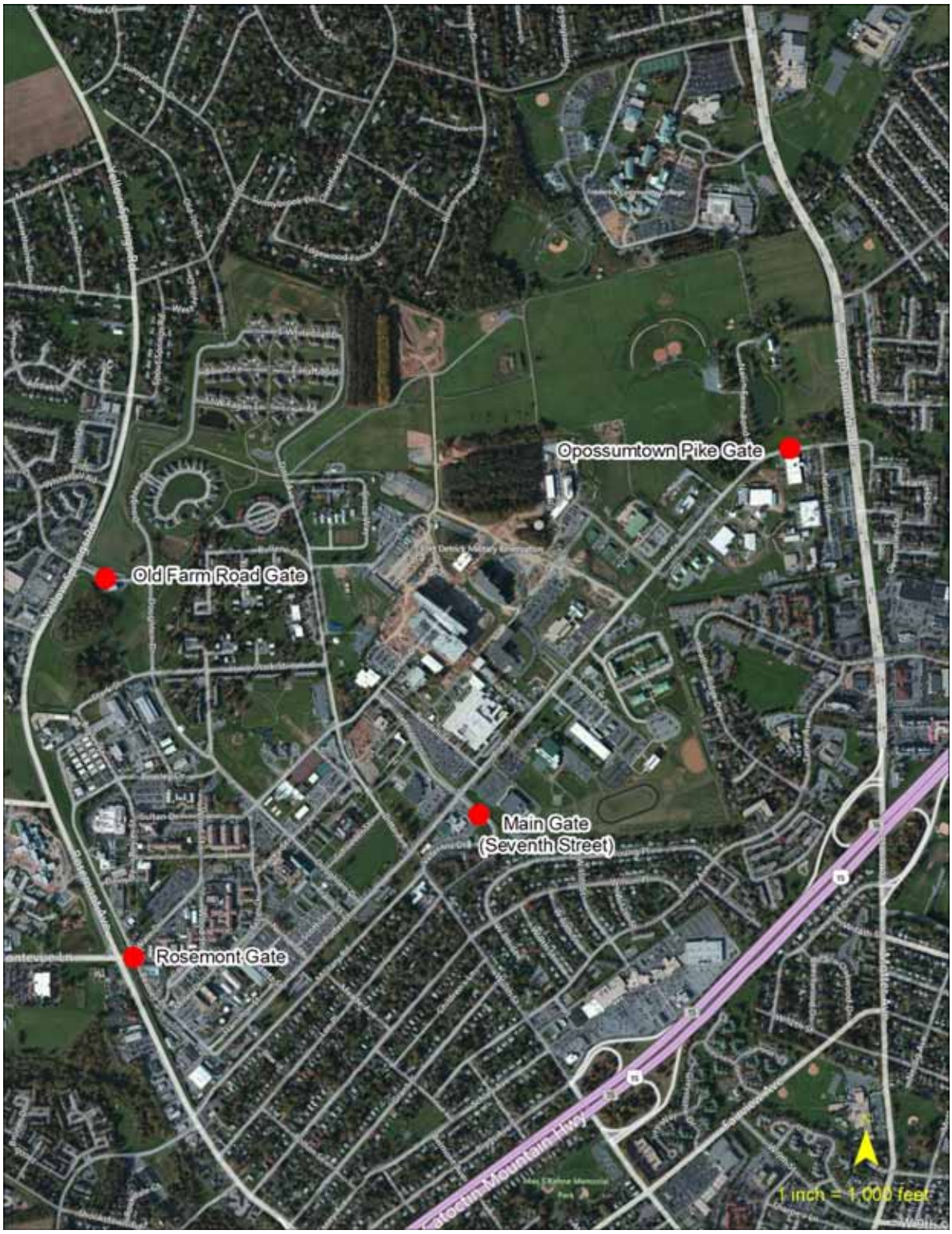


Figure 17: Distribution of Persons and Vehicles Entering Fort Detrick

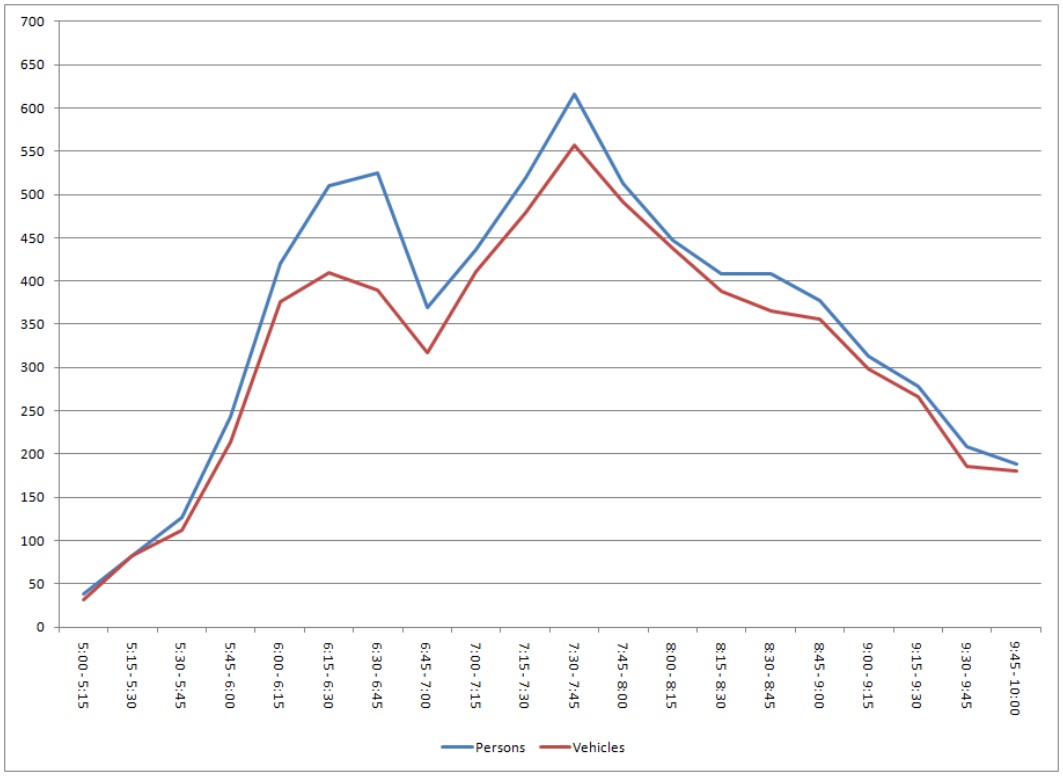
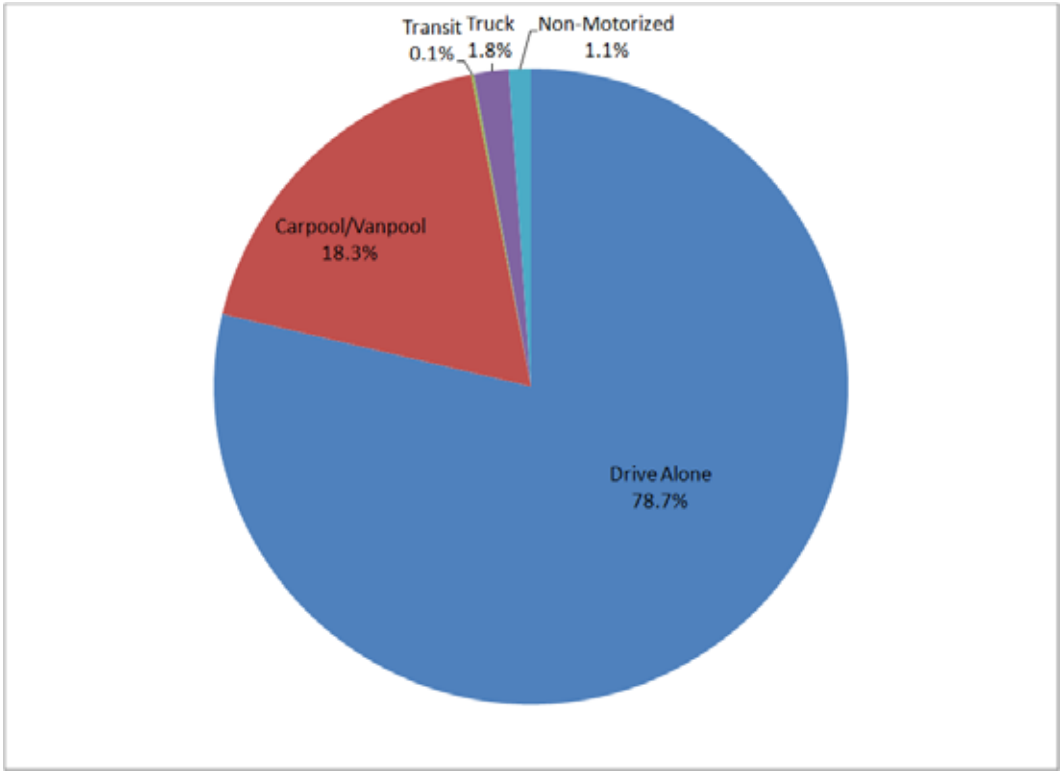


Figure 18: Person Mode Split – Fort Detrick



Joint Base Andrews

Joint Base Andrews is the facility resulting from the consolidation of Andrews Air Force Base and Naval Air Facility Washington under the BRAC 2005 action. The base is best known as the home of the two jumbo jet aircraft used to transport the President of the United States that are colloquially referred to as *Air Force One*.[20] Many other commands and aircraft are present at the base, which is located in Prince George's County just southeast of I-495, south of Suitland Pkwy, and southwest of Pennsylvania Ave (MD 4). The installation covers approximately 6,800 acres, making it a little more than half the size of Washington Dulles International Airport.[21] Approximately 3,000 jobs were added to the installation under the BRAC action, all of them relocated to newly constructed space. There are a total of just over 16,000 personnel at the base.

There are five access points to the installation (see Figure 19). The Main Gate is accessed via Allentown Rd (MD 337), which has northbound access from the Outer Loop of the Beltway only. The West Gate is located 0.2 miles southwest of the Main Gate and is for pedestrian and bicycle access only. The Virginia Gate is on the south side of the base near the golf course and is accessed via Branch Ave (MD 5). The Pearl Harbor Gate is on the south east side of the base and is accessed via Dower House Rd, which connects with MD 4 to the north and Woodyard Rd (MD 223) to the south. The North Gate is located at the northeast corner of the base and is accessed via Suitland Pkwy and MD 4.

Bus service to the base is provided by Metrobus Route K12 which stops at the West Gate and connects to the Branch Avenue terminal station on the Metrorail Green Line. In September 2011, the Central Regional Maryland Transit Corporation (which manages fixed-route bus operations in Howard, Anne Arundel, and a portion of Prince George's County as well as the City of Laurel) began managing subscription bus service to Joint Base Andrews on a Maryland route from Waldorf and La Plata and in Charles County as well as a Virginia route with stops in Stafford, Dumfries, Woodbridge, and Springfield. There is an internal circulator shuttle bus for the base.

Beginning in 2007, staff to the Prince George's County Planning Board (M-NCPPC) prepared a a series of studies to ensure compatible development in the Clear Zone, Accident Potential Zones and noise sensitive areas around the base. These areas generally extend to the north and south of the base due to the orientation of the two parallel runways but can extend in other directions based on flight operation patterns. The resulting guidelines, which will be implemented through county zoning and subdivision regulations, limit both building height and intensity of use depending on the distance and direction from the base. County planning staff has recently held briefings and public outreach meetings as part of the implementation of the plan guidelines.[22]

The Maryland State Highway Administration (SHA) has several active projects near the base, including access improvements from MD 5 to the Branch Ave Metrorail station, intersection improvements near the base, and corridor studies for both MD 223 and MD 5.

[20] That call sign is used only when the President is on-board and can be used for any fixed wing aircraft transporting the President.
[21] Further comparison shows that the base has two runways compared with the current four at Dulles. Daily flight operations are roughly one-sixth that of Dulles.
[22] See http://www.pgplanning.org/Assets/Planning/Programs+and+Projects/Special+Projects/The+Joint+Land+Use+Study/presentation.pdf

Figure 20 shows the distribution of vehicles and people entering Joint Base Andrews during the five-hour morning analysis period. Just over 9,000 people in just under 8,500 vehicles entered the base during this period, with an average auto occupancy of 1.09. During the peak hour of 6:45am to 7:45am, just over 3,300 people entered the base and the average auto occupancy was 1.07.

The mode split for the base during the morning analysis period is shown in Figure 21. 85% of the people entering the base drove alone, with most of the rest arriving by carpool or vanpool. Some of the non-motorized trips are likely transit due to the location of the transit stop near the bike/ped only gate on MD 337. Ridership data for the CMRT-operated subscription bus service could not be obtained at the time of publication.

Figure 19: Joint Base Andrews – Gate Location

Figure 20: Distribution of Persons and Vehicles Entering Joint Base Andrews

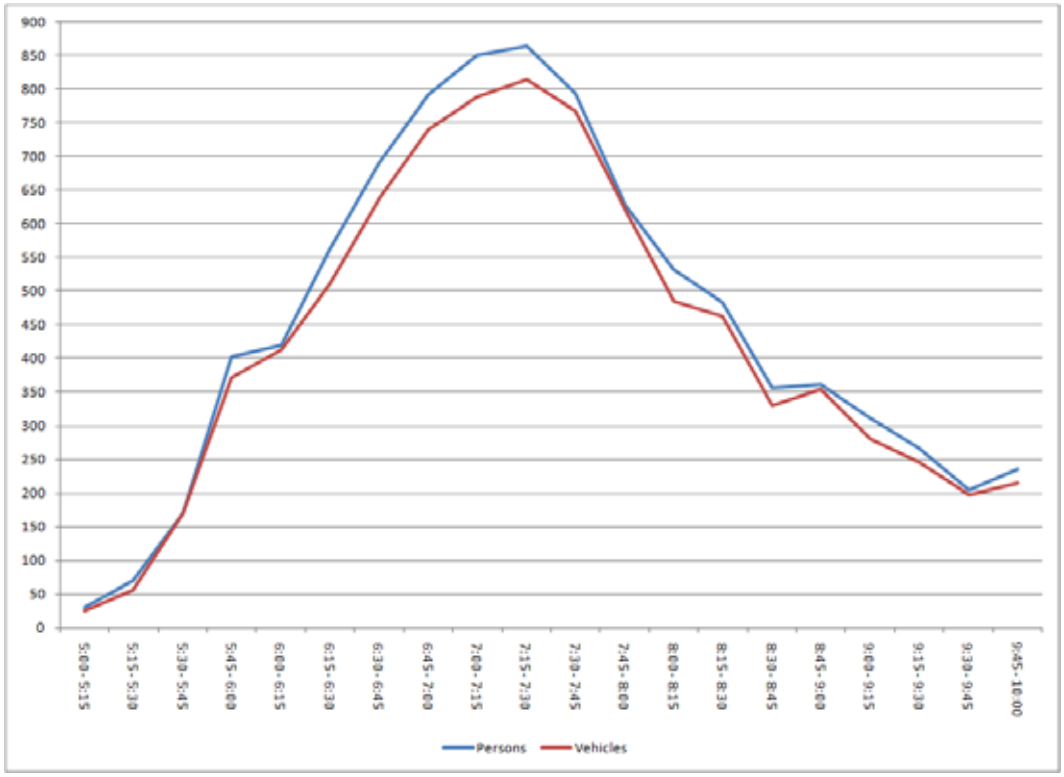
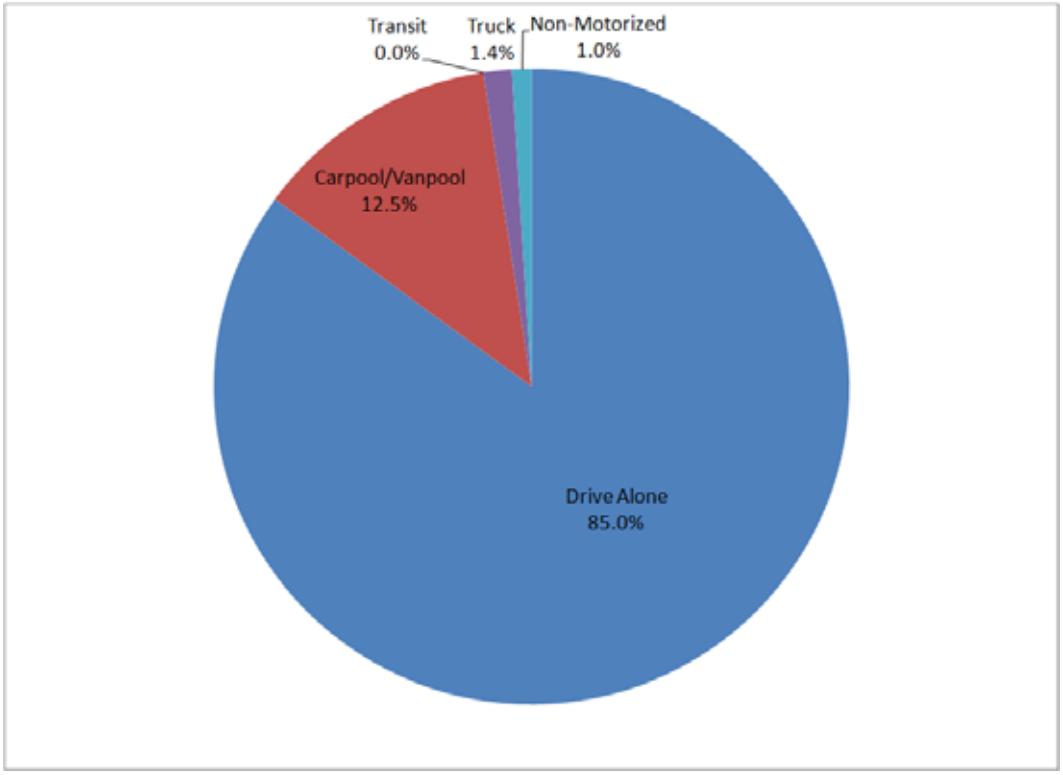


Figure 21: Person Mode Split – Joint Base Andrews



Naval Support Facility Indian Head

Naval Support Facility Indian Head (NSF IH) is a research facility located on the peninsula extending into the Potomac River immediately southwest of the town of Indian Head in Charles County. The facility received jobs under previous BRAC actions, including some moved from the White Oak site when it was still a Navy base. NSF IH was threatened with complete closure under the most recent BRAC action but ultimately survived. As of 2011 there were approximately 3,200 employees at the site. The base is one of the largest employers in Charles County.

There is a single access gate to the site at the end of Indian Head Highway ([MD 210] see Figure 22). Transit service AM and PM peak periods is provided by Metrobus Route W19, which connects to the Southern Avenue station of the Metrorail Green Line near the/ Prince George's County / District of Columbia border. Fixed route service is also provided by VanGo, the Charles County transit operator.

Figure 23 shows the distribution of vehicles and persons entering NSF IH during the five-hour morning analysis period. Just over 2,000 vehicles carrying just over 2,100 people entered the base during this time. Average auto occupancy was 1.08. During the peak hour of 6:15am to 7:15am, just over 650 people entered the base and the average auto occupancy was 1.07. Figure 24 shows the mode split for NSF IH. Over 85% of the people arriving drove alone, with most of the rest arriving by carpool or vanpool.

Figure 22: Naval Support Facility Indian Head – Gate Location

Figure 23: Time Distribution of Persons and Vehicles Entering NSF Indian Head

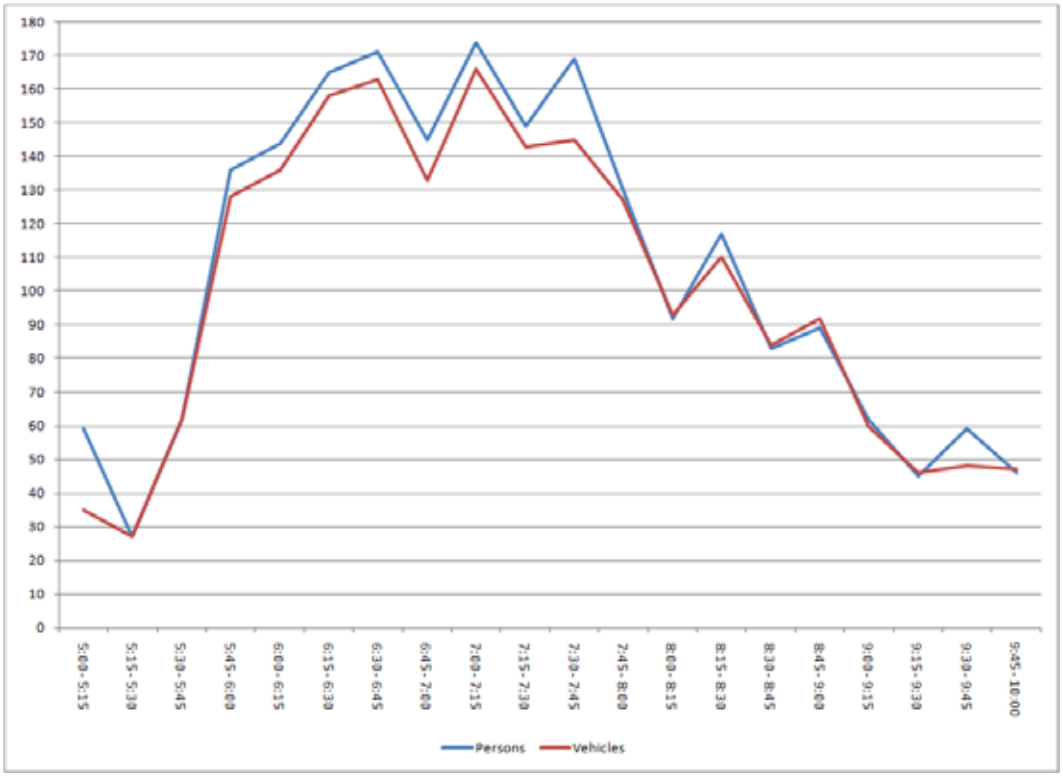
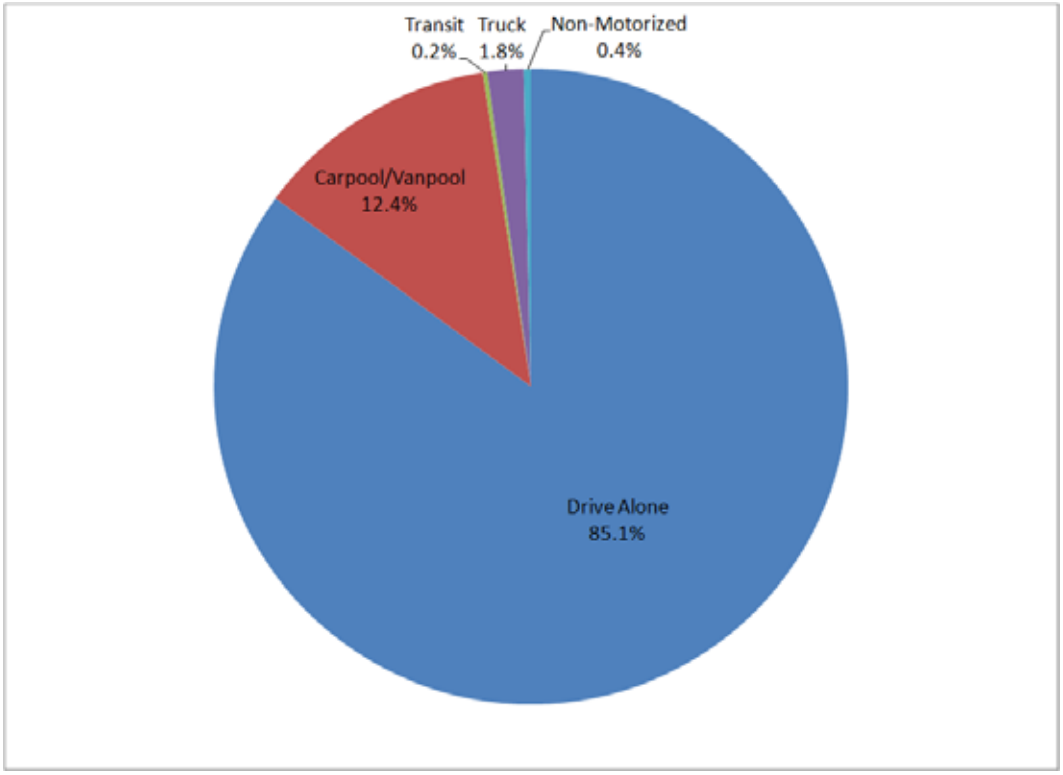


Figure 24: Person Mode Split – NSF Indian Head



Walter Reed National Military Medical Center

The Walter Reed National Military Medical Center (WRNMMC) is located at 8901 Rockville Pike in Bethesda, Montgomery County. The facility occupies most of the east side of Rockville Pike (MD 355) between Jones Bridge Road and Cedar Lane. Under the BRAC action, this facility represents the absorption of the former Walter Reed Army Medical Center, an Army facility located at 6900 Georgia Avenue, NW in the District of Columbia (now closed), into the Bethesda site previously called the National Naval Medical Center. The Uniformed Services University of Health Sciences (USUHS) is located on the WRNMMC site.

Employment at the site has increased from about 8,000 in 2008 to about 10,200 in 2012. According to the Walter Reed Web site, about 23% of employees "utilize environmentally-friendly transportation modes to come to work each day." A new pedestrian tunnel under MD 355 linking the site to the Medical Center stop on the Metrorail Red Line and new elevators from near the hospital entrance to the Metro platform are scheduled for completion in 2013. Additionally, the Maryland State Highway Administration and Montgomery County Department of Transportation are completing major intersection improvements at the intersections of Rockville Pike and Cedar Lane / West Cedar Lane, Rockville Pike and Jones Bridge Road, and Connecticut Avenue (MD 185) at Jones Bridge Road. For years, these three intersections have consistently been among the most congested in the County. Smaller scale improvements are also being / have been implemented at other intersections along the roads adjacent to the site.

There are five access points to WRNMMC (see Figure 25) . The North Gate and South Gate (Main Gate) are located on Wood Rd, which is accessed from MD 355. The Navy Lodge, Navy Exchange, and USU Gates are accessed from Jones Bridge Rd on the south side of the facility. People arriving via Metrorail exit the Medical Center station on the National Institutes of Health (NIH) campus on the west side of MD 355 just south of South Dr, which is opposite South Wood Rd. They then must exit the escalators and cross MD 355 using the crosswalk at the signalized intersection of MD 355 / South Dr / South Wood Rd and enter WRNMMC via the South Gate.

The distribution of people and vehicles entering WRNMMC during the five-hour morning analysis period is shown in Figure 26. Just over 8.500 vehicles carrying nearly 12,000 people arrived at the facility during the analysis period. The person-trip volume is higher than the post-BRAC employment levels at the site, but this level is expected considering the addition of visitors to the site, including those visiting patients at the medical center. Average auto occupancy during the analysis period is 1.2. During the peak hour between 6:15am and 7:15am, just over 4,200 people entered the site and the average auto occupancy was 1.38, the highest of of the fully functional analysis sites. In addition, the increased person-trip volume relative to the vehicle-trip volume is fairly consistent throughout the analysis period, as shown in the space between the vehicle and person lines in Figure 26.

Figure 27 shows the mode split for people entering WRNMMC during the analysis period. 62% of people entering drove alone, which is the lowest proportion of the Maryland analysis sites. At the time of publication the faregate ridership for the Medical Center station had not yet been received, so it is assumed that one-half of the non-motorized proportion is people arriving via Metrorail. 23% of people arrived via carpool or vanpool.

Figure 25: Walter Reed National Military Medical Center – Gate Location

Figure 26: Distribution of Persons and Vehicles Entering WRNMMC

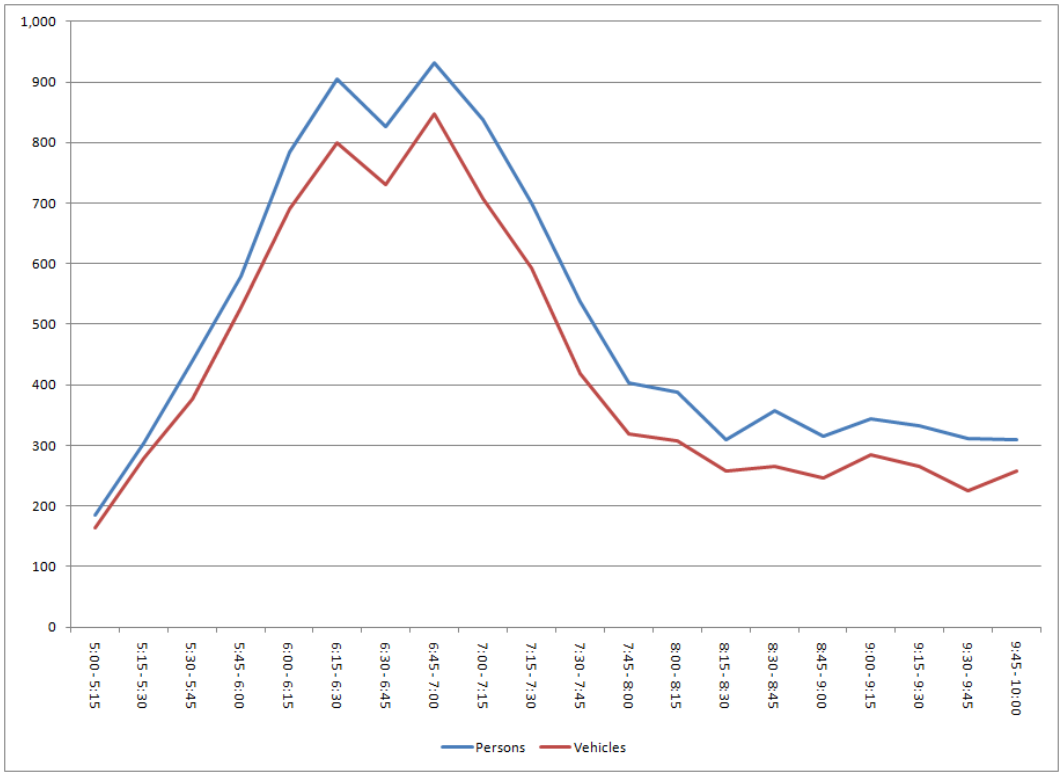
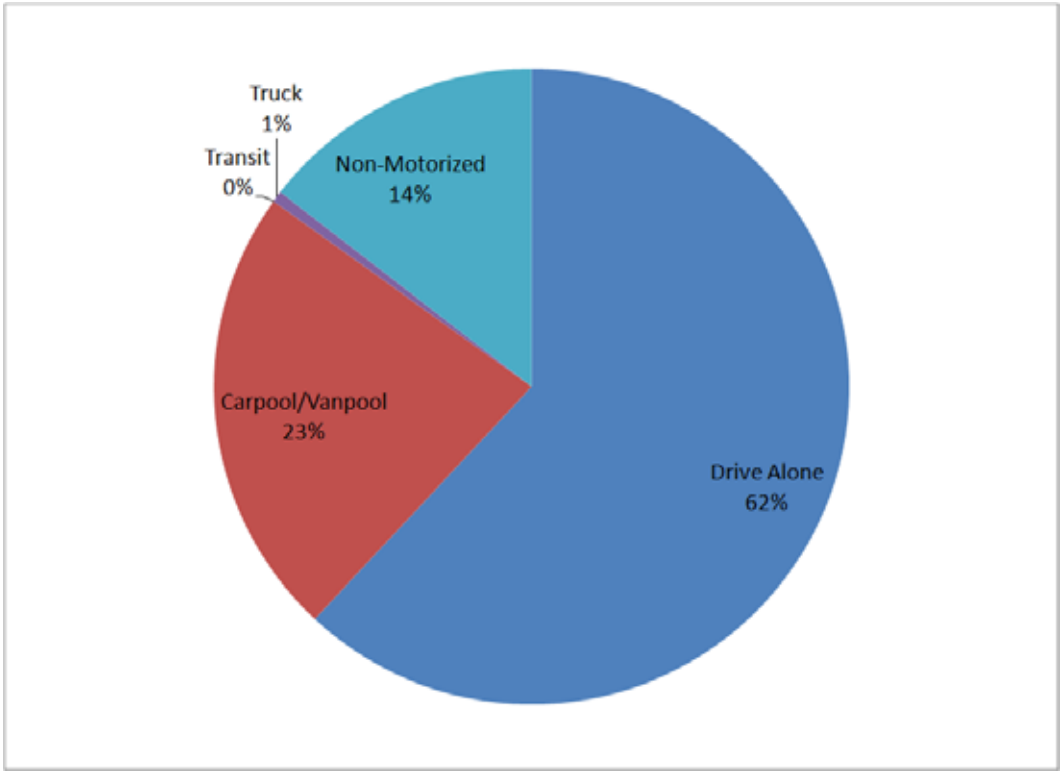


Figure 27: Person Mode Split - WRNMMC



Virginia

Army National Guard Readiness Center

The Army National Guard Readiness Center (ARNGRC) is a National Guard facility located at the southeast quadrant of the interchange between Arlington Boulevard (US 50) and South George Mason Dr in Arlington County. Immediately adjacent to the installation and intersection, but outside the fence line, are a Masonic Lodge (a source of informal parking) and three newly constructed housing units. The base occupies approximately 15 acres that were originally part of historic Arlington Hall; the historic structure itself and the balance of the original estate land lie just to the east and house the George P. Shultz National Foreign Affairs Training Center, named for the former Secretary of State under President Reagan. The two complexes are separated by a security fence and have separate access points. The original building at ARNGRC was completed in 1992 and housed approximately 1,300 employees. The BRAC action increased the total personnel to approximately 2,500 and construction of a second building and additional parking to accommodate the new employees (relocated from Jefferson Plaza 1 in Crystal City) was completed last year. As part of the construction, the main gate was moved approximately 50 feet north on South George Mason Dr. The old gate was retained for truck deliveries to the new building.

There are two access points to ARNGRC (see Figure 28): the relocated gate on South George Mason Dr, and a new gate on Arlington Blvd.[23] Transit service is provided by Metrobus Route 22A, which stops at the gate on South George Mason Dr., and Route 4A, which stops at Arlington Blvd and George Mason Dr.[24] These routes connect with the Ballston-MU (Orange Line), Pentagon (Yellow / Blue Lines) and Rosslyn (Orange / Blue Lines) Metrorail stations, respectively. Ballston-MU is the closest Metrorail station, about a mile away to the north. DoD operates a series of shuttle routes to the site that connect with Ballston, the Pentagon City Metrorail station (Blue/Yellow Lines), the Pentagon, Crystal City, and Joint Base Myer-Henderson Hall (JBM-HH).[25]

South George Mason Dr is a four-lane divided roadway with a posted speed limit of 30 miles per hour, although observed speeds often exceed the speed limit in uncongested conditions, particularly travelling southbound. The gate on South George Mason Dr has a crosswalk but is not signalized for either vehicle or pedestrian movements; as a result, two uniformed DoD police officers (one for each carriageway) provide traffic control to allow safe pedestrian crossing between 7am and 8am and 5pm and 6pm on weekdays. A Transportation Management Plan was completed for the site in June 2008 and contains information about employees' home location and travel mode based on an employee survey, including those workers relocated from Crystal City.[26]

[23] The intersection of Arlington Blvd and George Mason Dr is grade-separated (George Mason over Arlington). The entrance to the site is actually from the eastbound service road that serves as the on-ramp for traffic from George Mason to eastbound Arlington Blvd.
[24] Using the aforementioned service roads / ramps
[25] Under the BRAC 2005 action, this joint base was created by merging the operations of Fort Myer and Henderson Hall in Arlington with Fort McNair in the District of Columbia.
[26] See http://www.bracarlingtonva.us/default/index.cfm?LinkServID=991B76D5-1D09-08FB-3BB35E6FF49F3949&showMeta=0

Figure 29 shows the distribution of vehicles and people entering ARNGRC during the morning analysis period. Just over 1,100 vehicles carrying just under 2,100 people entering the facility during the five hours analyzed. Average auto occupancy for this period was 1.16. During the peak hour of 6:45am to 7:45am, 398 people entered the site and average auto occupancy was 1.22.

The mode split for people entering ARNGRC during the analysis period is shown in Figure 30. Slightly less than half of people entering the facility during this time drove alone, the lowest proportion of the active and occupied sites. The rest of the trips are split between transit, non-motorized, and carpool / vanpool. Some of the non-motorized person-trips may be transit riders alighting at the bus stop at the intersection of South George Mason Dr and Arlington Blvd and walking to the facility gates.

Figure 28: Army National Guard Readiness Center – Gate Location

Figure 29: Distribution of Persons and Vehicles Entering ARNGRC

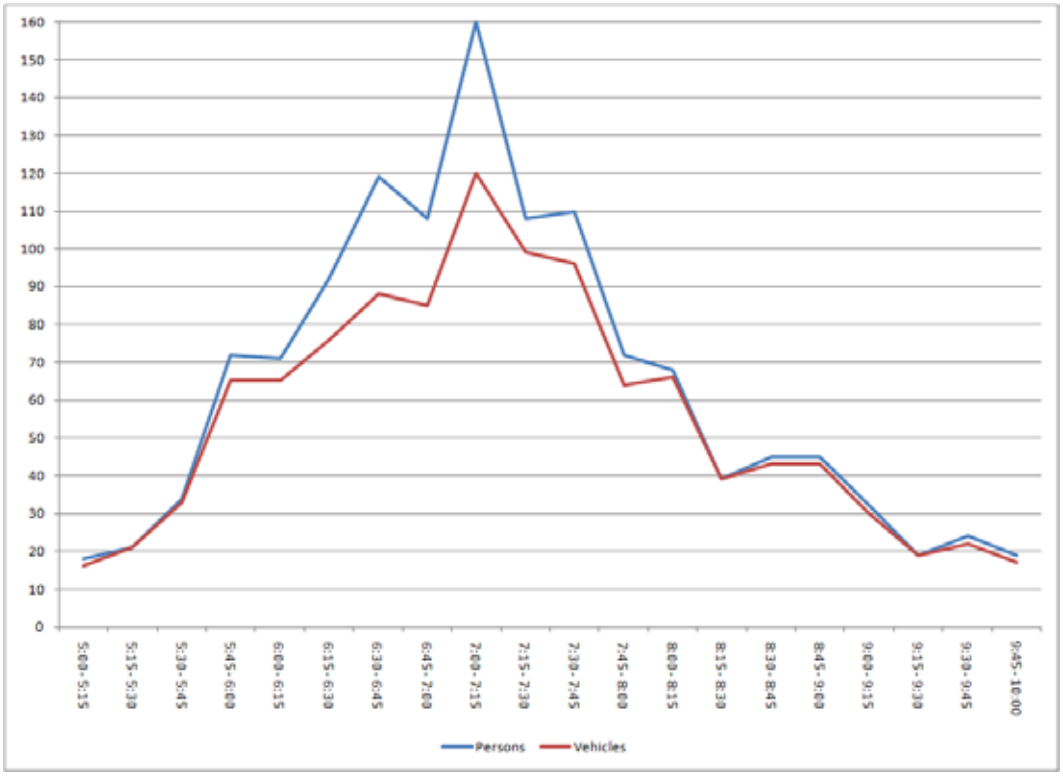
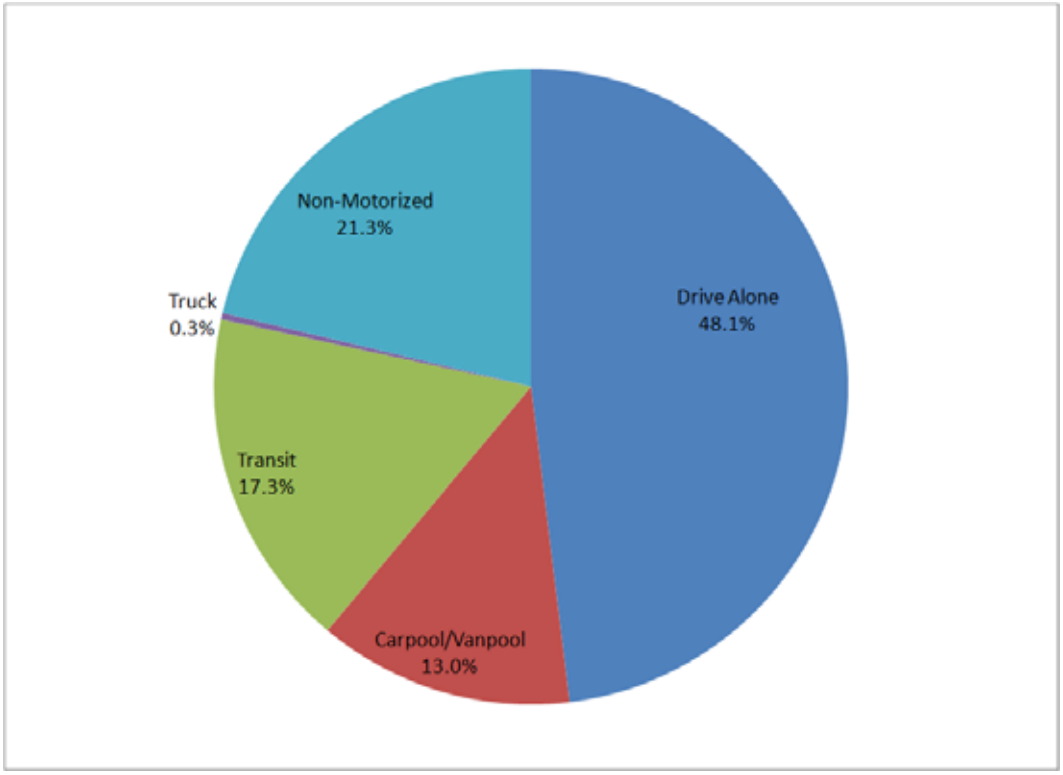


Figure 30: Person Mode Split - ARNGRC



Fort Belvoir and Fort Belvoir North

Fort Belvoir is located along Richmond Highway (US 1) and I-95 in Fairfax County. It consists of two separate sites, the larger main post (located on the east and west sides of US 1 south of Mount Vernon Highway (VA 235) and the smaller Fort Belvoir North area (the former Engineer Proving Ground), generally bounded by I-95, the Fairfax County Parkway (VA 286) and the neighborhoods just south of the Franconia-Springfield Parkway (VA 289).[27] The National Geospatial Agency (NGA) is the primary tenant at Fort Belvoir North, while the main post hosts a number of Army functions. In 2006, there were about 23,300 jobs at Fort Belvoir and Fort Belvoir North. As of 2011, there were about 36,400 jobs on the two sites. NGA represents 8,500 of that total.

Recent transportation improvements in the area include:

- Completion of the final section of VA 286 between Newington and VA 289, including a new interchange on the west side of Fort Belvoir North at Barta Road
- A new ramp from the I-95 Express Lanes (HOV-3 restricted during peak commute times) to Heller Road on Fort Belvoir North

In addition, the Federal Highway Administration (FHWA) and VDOT are studying improvements to US 1, which may include widening of the highway from four to six lanes through the Fort Belvoir area, and improvements to ease turning movements along US 1 between VA 7100 and Pohick Road, which provides access to Tulley Gate for the main post. There were nine (9) monitored access points at the main post, as many parts of the installation are not geographically contiguous (see Figure 31). Gunston Rd crosses US 1 on an overpass, so base personnel using one of the access points on the east side of US 1 (Tulley Gate, Pence Gate, or Walker Gate) can securely proceed to the portion of the installation west of US 1 not otherwise access controlled. Parking at NGA at Fort Belvoir North is capped at 5,100 spaces. The three Fort Belvoir North gates are well inside the perimeter roadway of the site (see Figure 32).

Transit service is provided to the main post by Metrobus Richmond Highway Express (REX) service, which enters the base via Pence Gate and makes several stops inside the installation, including the Fort Belvoir Community Hospital, whose construction was authorized under the BRAC 2005 action and began serving patients on August 31, 2011. REX provides limited stop service via US 1 to the Huntington and Eisenhower Ave Metrorail stations on the Yellow Line and the King Street-Old Town station (Yellow / Blue Lines). Fairfax Connector Route 335 (also called Eagle or Eagle Express[28]) provides weekday peak period express service between the Franconia-Springfield Metrorail terminal station on the Blue Line and the main post, stopping near the Kingman Gate close to the Defense Logistics Agency (DLA) and proceeding along Gunston Rd to the east side of the installation before also stopping at the hospital. DoD-operated shuttles connect NGA to the Franconia Springfield Metrorail station.

[27] Previously VA 7100 and VA 7900. Both of these facilities have been renumbered as part of their placement onto the VDOT primary road network as a result of Commonwealth Transportation Board (CTB) action earlier this year.

[28] This route was also proposed to the WMATA Board as Route 27X, but after consultation between the two agencies was operated as a Fairfax Connector route. Initially there was a DoD-operated shuttle that mirrored this route, but it since has been discontinued.

WEGOMIL RIDE SHARING PILOT FOR BELVOIR, EPG, MARK CENTER

Due to security concerns raised by NGA personnel, data for Fort Belvoir and Fort Belvoir North are presented three different ways: for both installations combined, for main post Fort Belvoir, and for Fort Belvoir North without total vehicle and person volumes. The distribution of vehicles and people entering each site are shown in Figure 33 for both of the installations combined, Figure 35 for the main post Fort Belvoir, and Figure 37 for Belvoir North. The y-axis labels have been removed on Figure 37 to meet the requirements of NGA. Just over 26,000 vehicles carrying more than 28,400 people entered the combined installations during the five-hour morning analysis period. Average auto occupancy during this period was 1.1. During the peak hour of 6:45am to 7:45am, just over 8,900 people entered the combined sites and average auto occupancy was 1.15. For just main post Fort Belvoir, average auto occupancy was 1.1 for the analysis period and 1.17 for the peak hour of 6:45am to 7:45am. For Fort Belvoir North, average auto occupancy was 1.1 for both the analysis period and peak hour of 6:45am to 7:45am. Entries to Belvoir North drop off sharply after 7:30am.

The mode split for people entering the sites during the analysis period are shown in Figure 34 for both installations combined, Figure 36 for the main post, and Figure 38 for Belvoir North. For the combined installations, 83% of the people entering during the analysis period drove alone, with most of the rest using a carpool or vanpool. The proportion of drive alone enteries is 82.5% for just the main post, and 81.2% for just Belvoir North. Belvoir North has the higher carpool / vanpool and transit share. The results for main post Fort Belvoir differ slightly from the results of their 2008 commuter survey, which showed 84.8% drive alone, 9.9% carpool / vanpool, 4% transit, 0.7% non-motorized, and the rest “other.” Given the parking caps at NGA, the higher share for travel modes other than drive-alone is expected.

Figure 31: Fort Belvoir Gate Location

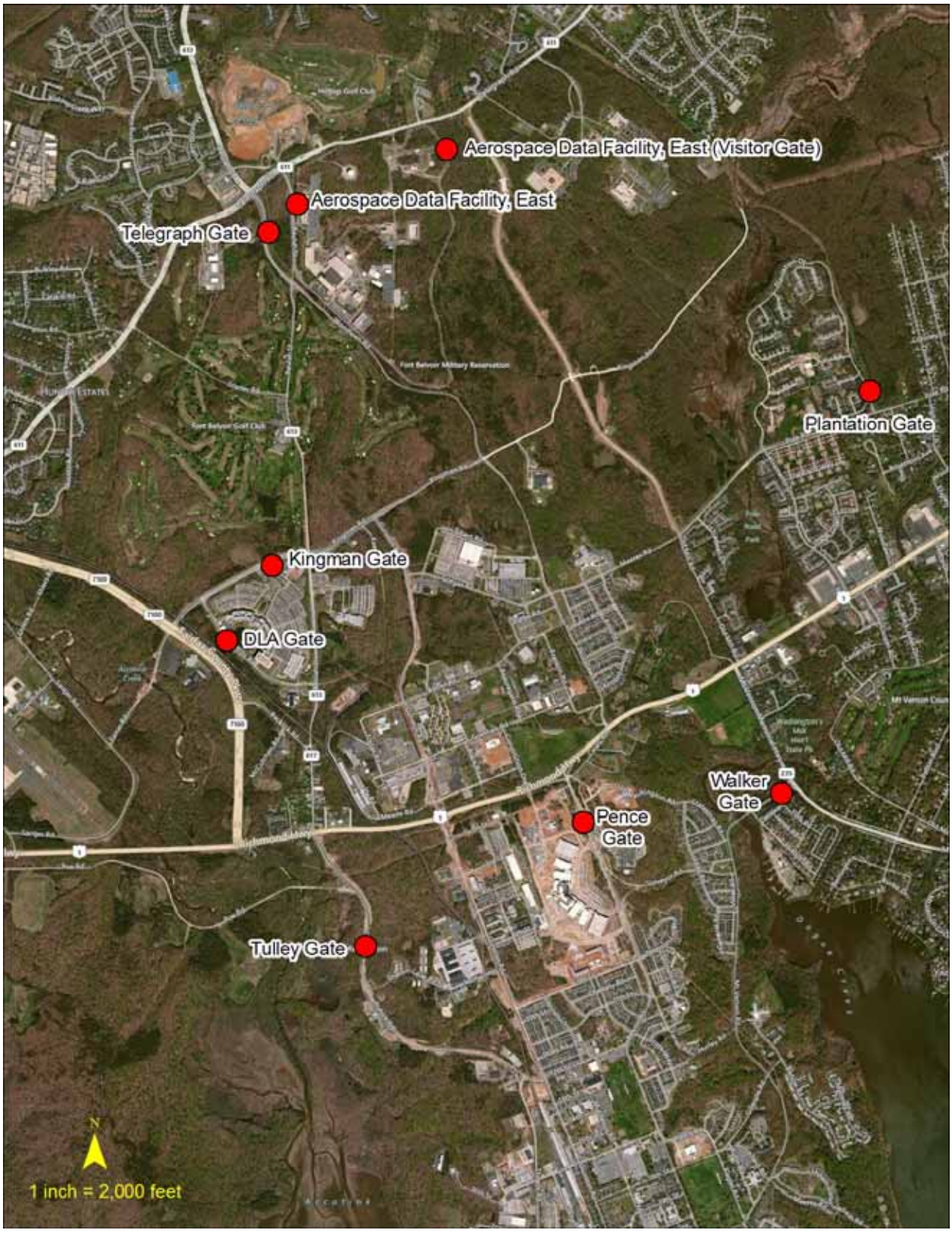


Figure 32: Fort Belvoir North Access Locations

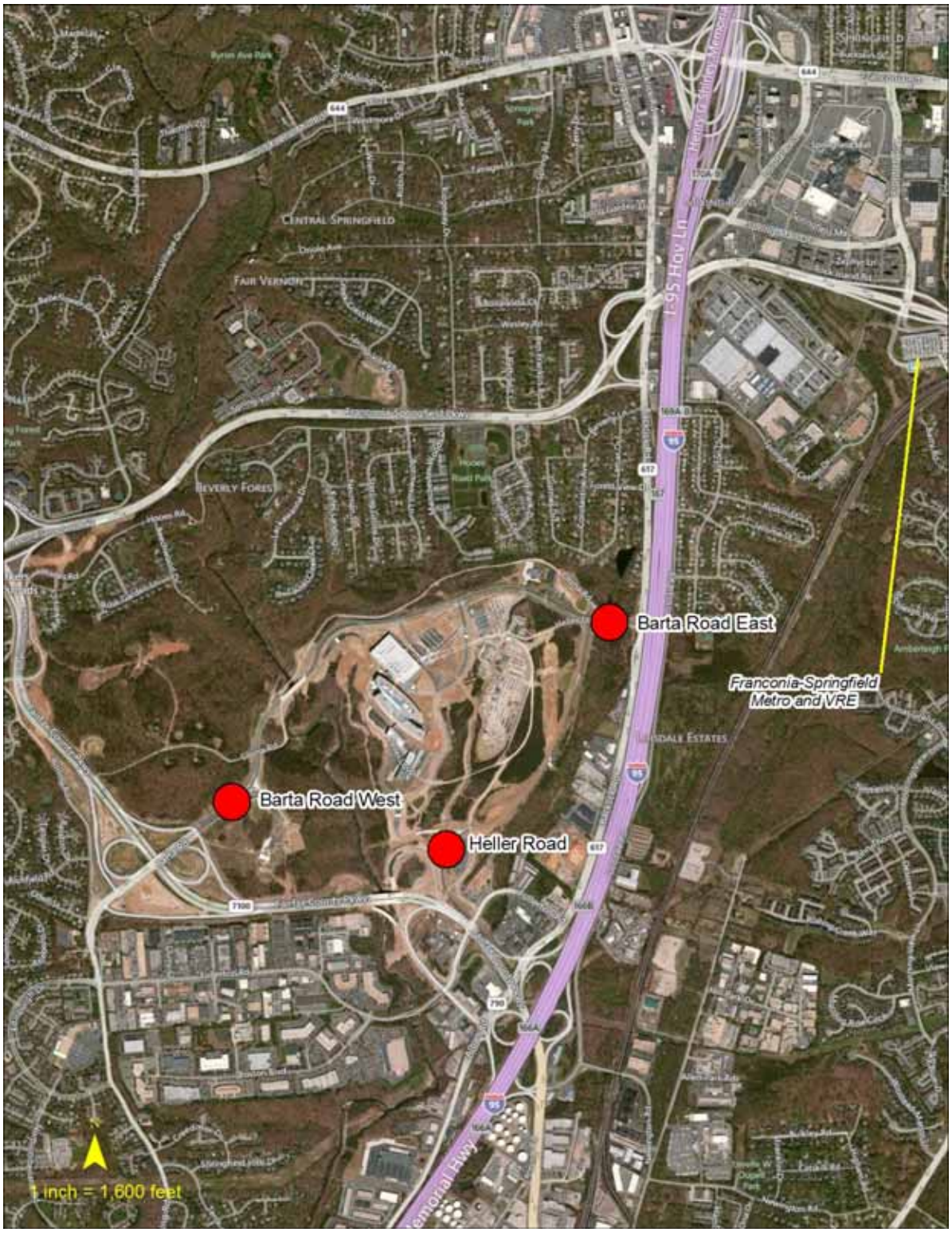


Figure 33: Distribution of Persons and Vehicles Entering Fort Belvoir and Fort Belvoir North

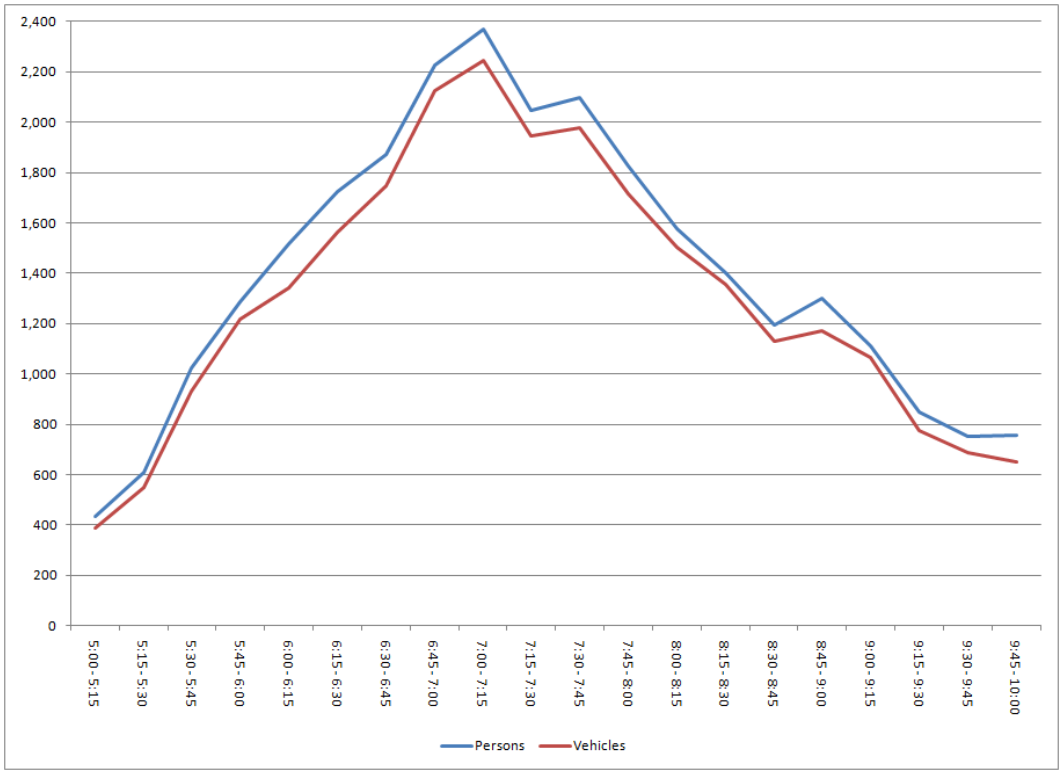


Figure 34: Person Mode Split – Fort Belvoir and Fort Belvoir North

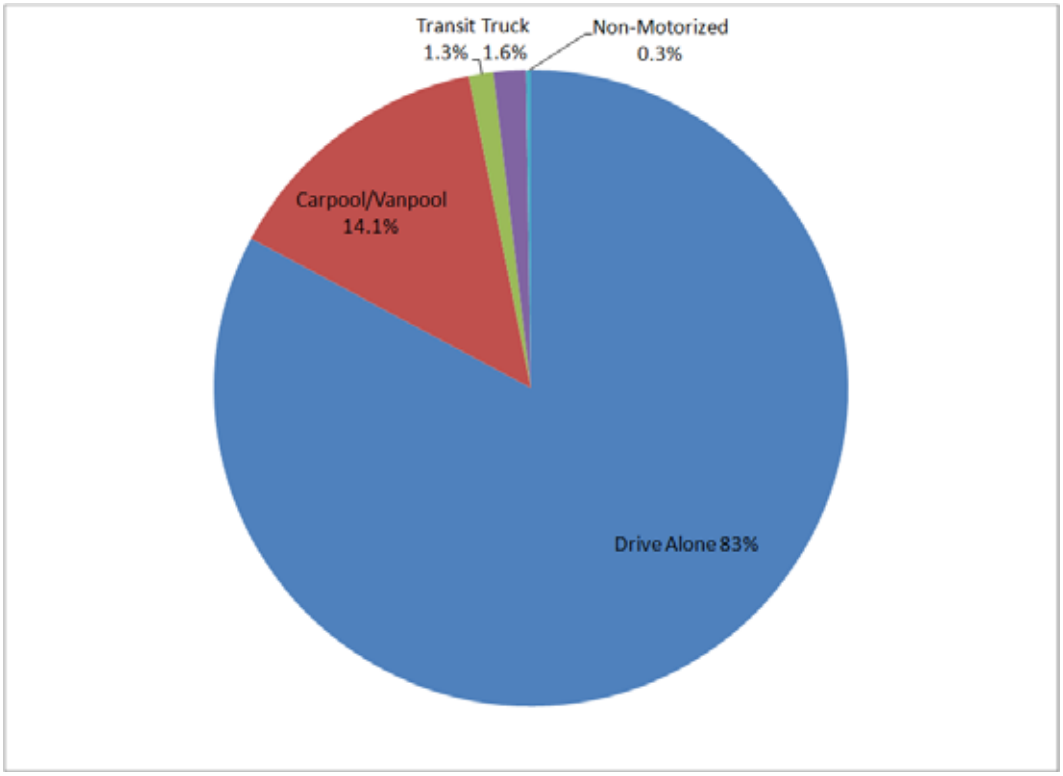


Figure 35: Distribution of Vehicles and Persons Entering Fort Belvoir

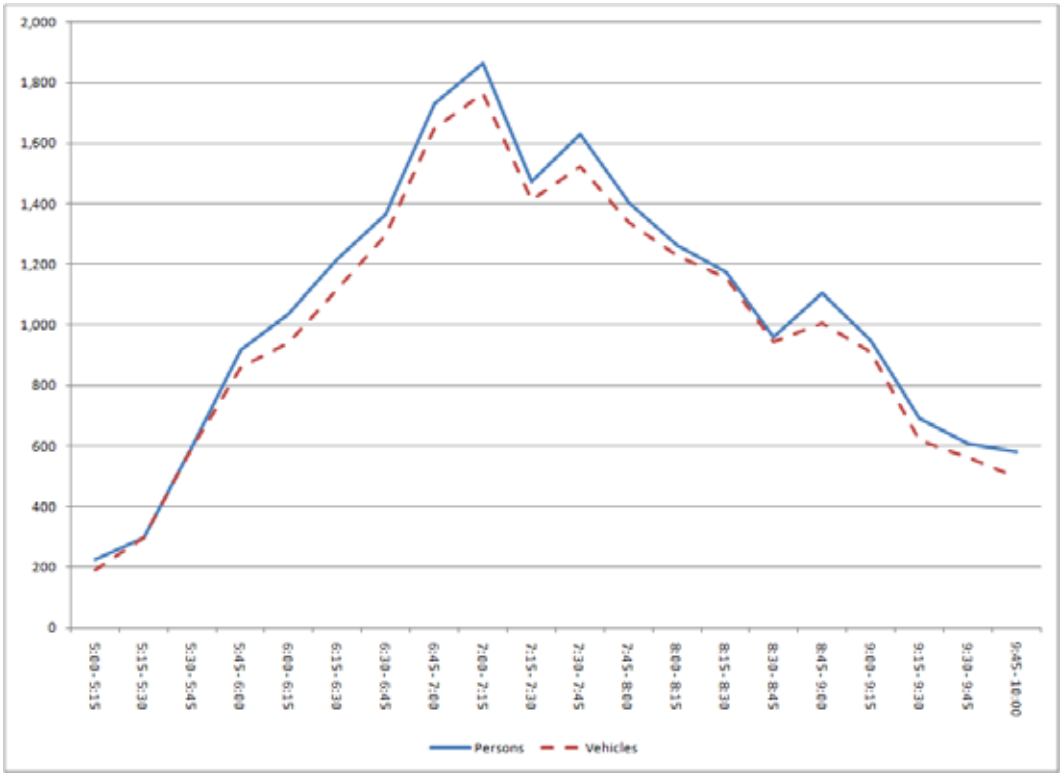


Figure 36: Person Mode Split – Fort Belvoir

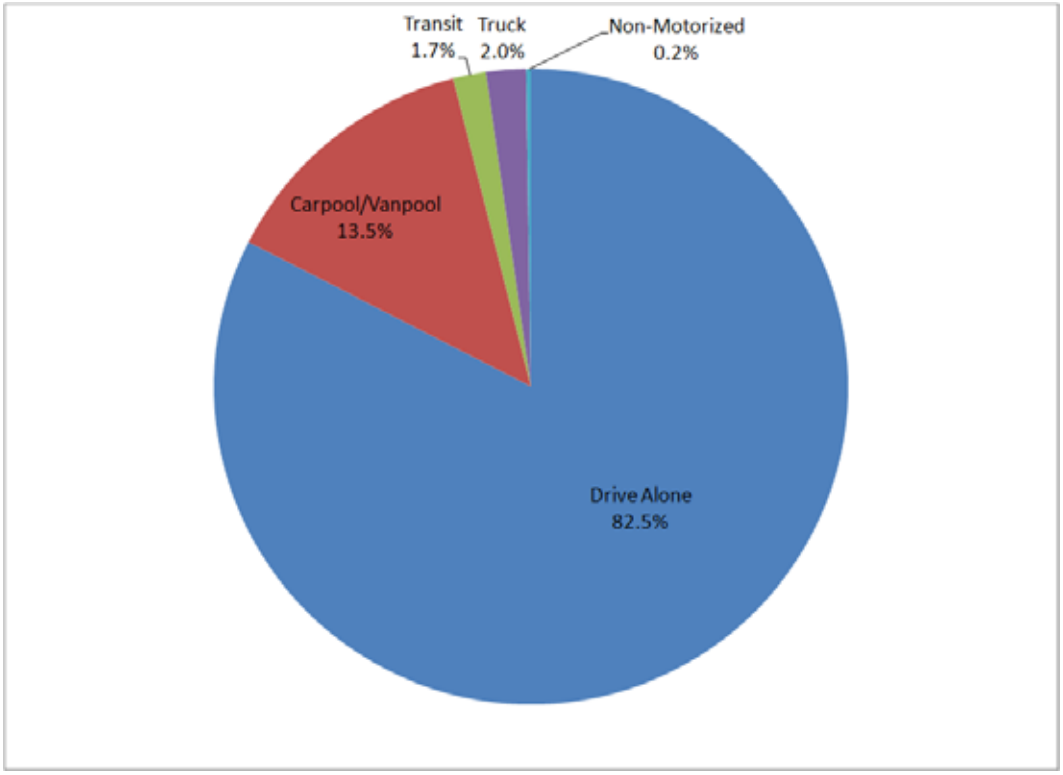


Figure 37: Distribution of Persons and Vehicles Entering Fort Belvoir North

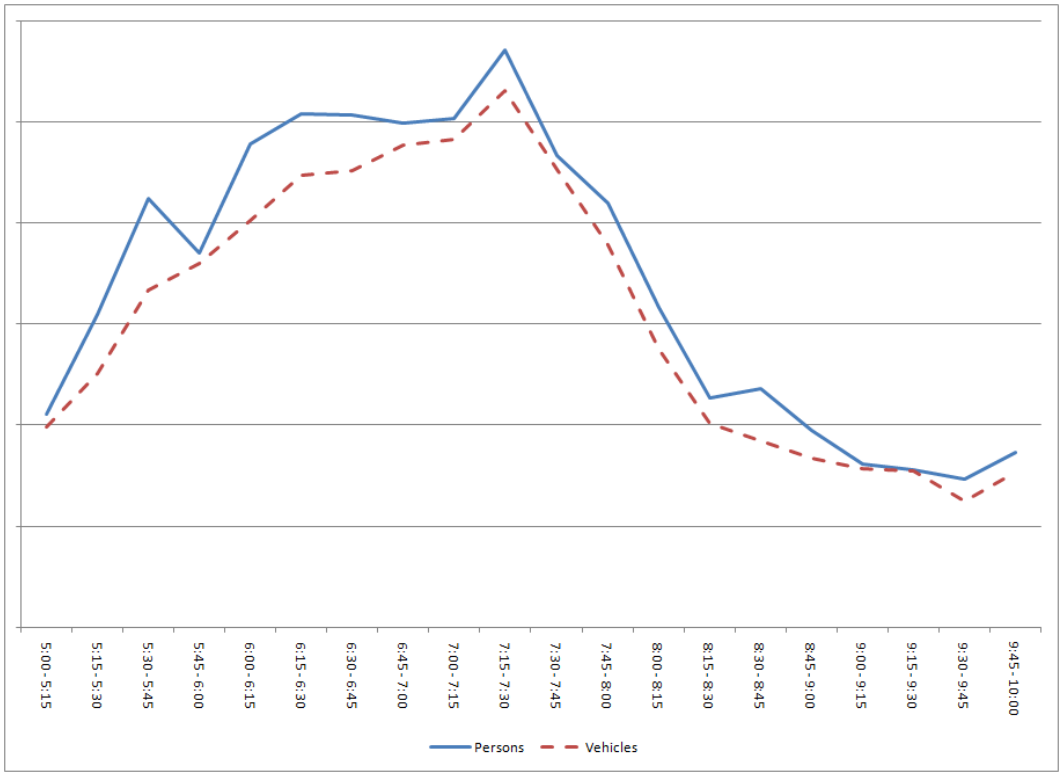
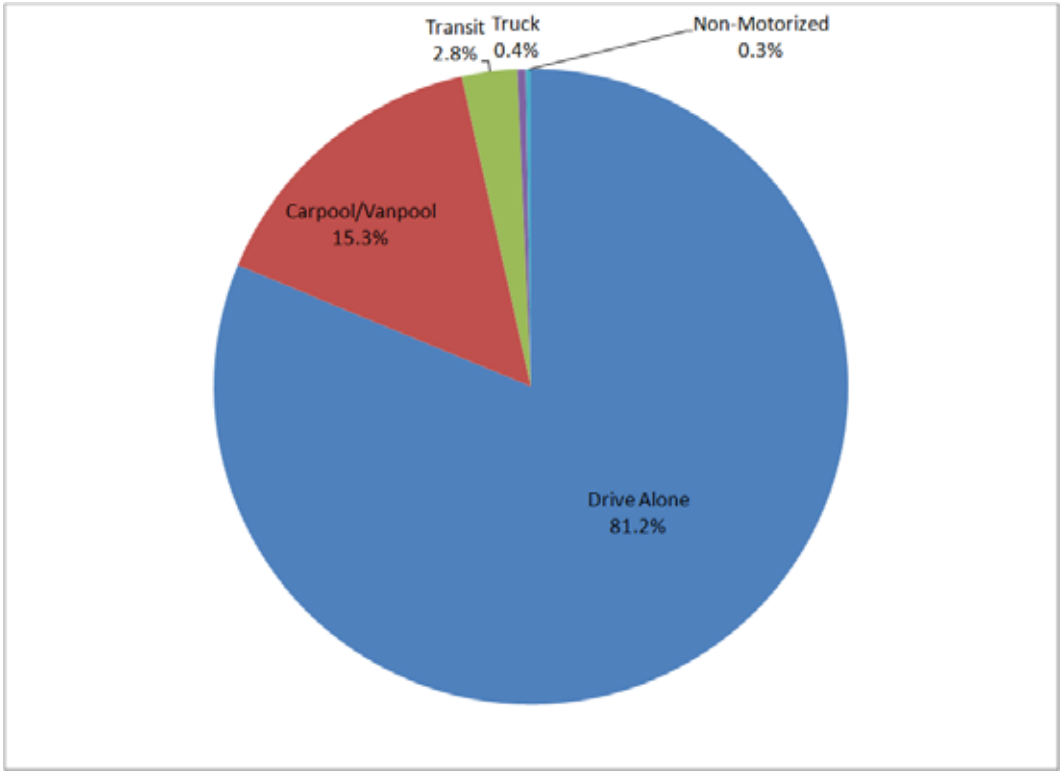


Figure 38: Person Mode Split – Fort Belvoir North



Mark Center

The Mark Center is located at the southwest quadrant of the interchange of I-395 and Seminary Road in the City of Alexandria. Access to the site is via Mark Center Avenue, which intersects Seminary Road, and Mark Center Drive, which intersects North Beauregard Street (see Figure 39). The Mark Center was built to house about 6,400 employees of the Department of Defense (of which more than half have moved in as of May 2012). Adjacent is the Institute for Defense Analysis (IDA), which houses about 600 employees.

A new transit bus station with five bus bays, which accommodates service from WMATA Metrobus, Alexandria DASH and private providers was built a short walk from the Mark Center. The Beauregard corridor is one of three under study by the City for high-capacity transit service. The Virginia Department of Transportation (VDOT) is planning to build a new reversible ramp from the I-395 High Occupancy Vehicle (HOV) lanes to enable direct access from those lanes to Seminary Road during the morning peak commute period, and from Seminary Road to the HOV lanes in the afternoon commute period. These lanes are limited to HOV-3+ (three-or more person car-pools, van-pools, buses and motorcycles) while in northbound operation from 6:00 AM to 9:00 AM and southbound from 3:30 PM to 6:00 PM.

An Environmental Assessment (EA) for the direct ramp connection was recently completed and resulted in a Finding of No Significant Impact (FONSI). Construction is expected to begin on the $80 million project in spring 2013, with completion estimated for summer 2015. The Washington Headquarters Services (WHS), the DoD administrative landlord for the Mark Center, will soon hire a consultant to assist with the implementation phase of the site's Transportation Management Plan (TMP). Currently, Mark Center parking is capped at 2,000 usable spaces (out of 3,800 total spaces) for WHS employees and contractors.

The site and its bus station are served by Metrobus Route 28X, Route 7A/F/M/W/X/Y, and 8W and DASH routes AT-1 and AT-2. Route 28X provides limited stop service along Leesburg Pike (VA 7) and connects with Bailey's Crossroads, Seven Corners, the West Falls Church Metrorail station on the Orange Line and Tysons Corner. Route 28A provides local service on the same corridor; however, it stops on Seminary Rd near the Mark Center, whereas the 28X stops at the Mark Center transit station. The multiple variations on Metrobus Route 7 provide connectivity between the site and parts of Alexandria, Arlington, and downtown Washington, including stops at the Pentagon and Federal Triangle Metrorail stations (Blue / Orange Lines). The 7M provides direct service between the Mark Center and Pentagon via I-395. The 8W also connects to the Pentagon. The AT-1 operates largely on Beauregard St and connects with the Van Dorn Street Metrorail Station on the Blue Line. A service extension through the Eisenhower Valley is proposed for the AT-1, terminating at the Eisenhower Avenue Metrorail station on the Yellow Line. The AT-2 operates from Lincolnia to the Mark Center and then along Seminary Rd, Janneys Ln, and King St (VA 7) and connects with the King Street-Old Town Metrorail station (Blue / Yellow Lines).

Previous traffic studies for the Mark Center have been the subject of controversy and pointed exchanges between the Army, the DoD Office of the Inspector General, and other federal, state, and local officials. The counts at the Mark Center taken for this report are intended as another data point, a supplement to all the previous work and not as a replacement or a substitute. In

addition to the counts at the site entrance included in the report body, field staff also collected volume and occupancy counts (not turning movements) during the five-hour morning analysis period along Mark Center Drive near the entrance to IDA and the Mark Center building, as well as the ramps from the general purpose lanes of I-395 (in both directions) to Seminary Rd. Those counts are available in with the rest of the individual base counts in Appendix A.

The distribution of vehicles and people entering the Mark Center during the five-hour morning analysis people is shown in Figure 40. Slightly fewer than 4,300 vehicles carrying just under 5,600 people entered the site during the analysis period. Average auto occupancy during the analysis period was 1.14. During the peak hour from 8:00am to 9:00am, just over 1,500 people entered the site and the average auto occupancy was 1.13. The data collection at Mark Center occurred prior to full occupancy of the complex by BRAC-relocated personnel.

The mode split for people entering the site during the morning analysis period is shown in Figure 41. 66% of the people entering the site drove alone, 15% arrived via carpool / vanpool, and 17% by transit. It is expected that completion of the direct connection to Seminary Rd from the northbound HOV lanes on I-395 will increase the proportion of person-trips entering the site via carpool or vanpool, since the use of the grade-separated lanes and the direct connection will introduce a time savings for travelers over the general purpose lanes and over the route HOV lane users must currently take to reach the Mark Center.[29]

[29] Morning travelers using the HOV lanes on I-95 currently have two options to reach the Mark Center: exit the HOV lanes and enter the general purpose lanes using the Newington flyover and continue the remainder of their trip in the general purpose lanes (nearly seven miles in highly congestion conditions), or continue in the HOV lanes to the Pentagon and then proceed in the reverse direction (southbound) in the general purpose lanes to Seminary Rd (adding nearly eight miles to their overall trip).

Figure 39: Mark Center – Monitoring Locations

Figure 40: Distribution of Persons and Vehicles Entering Mark Center

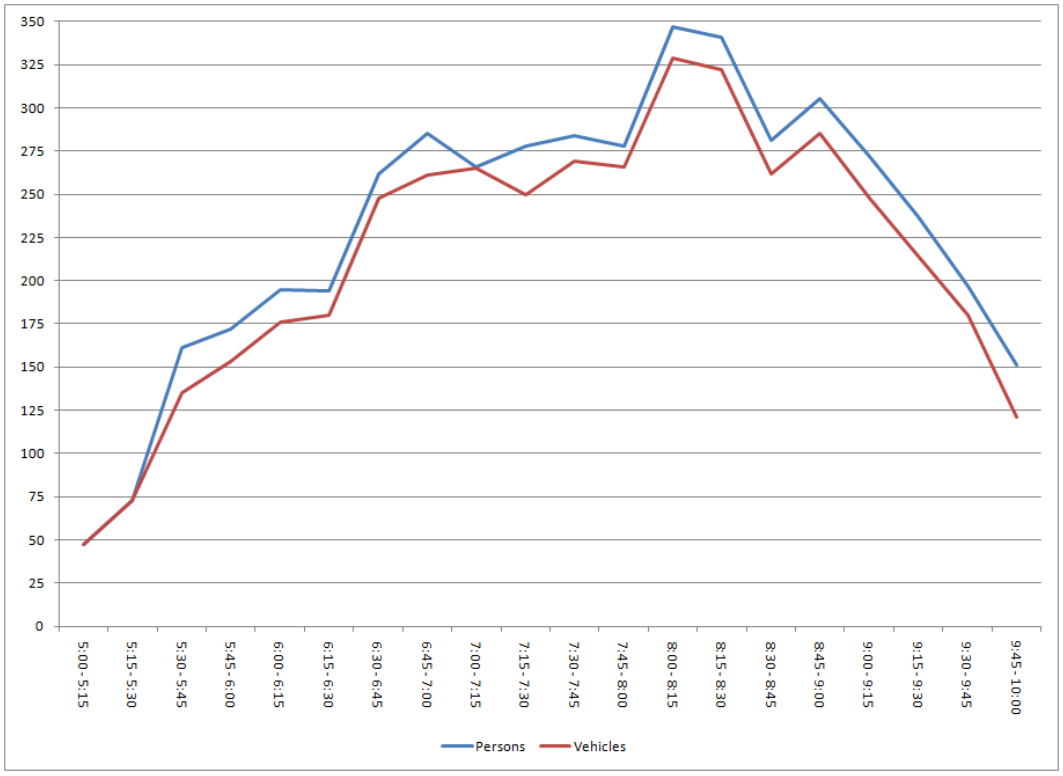
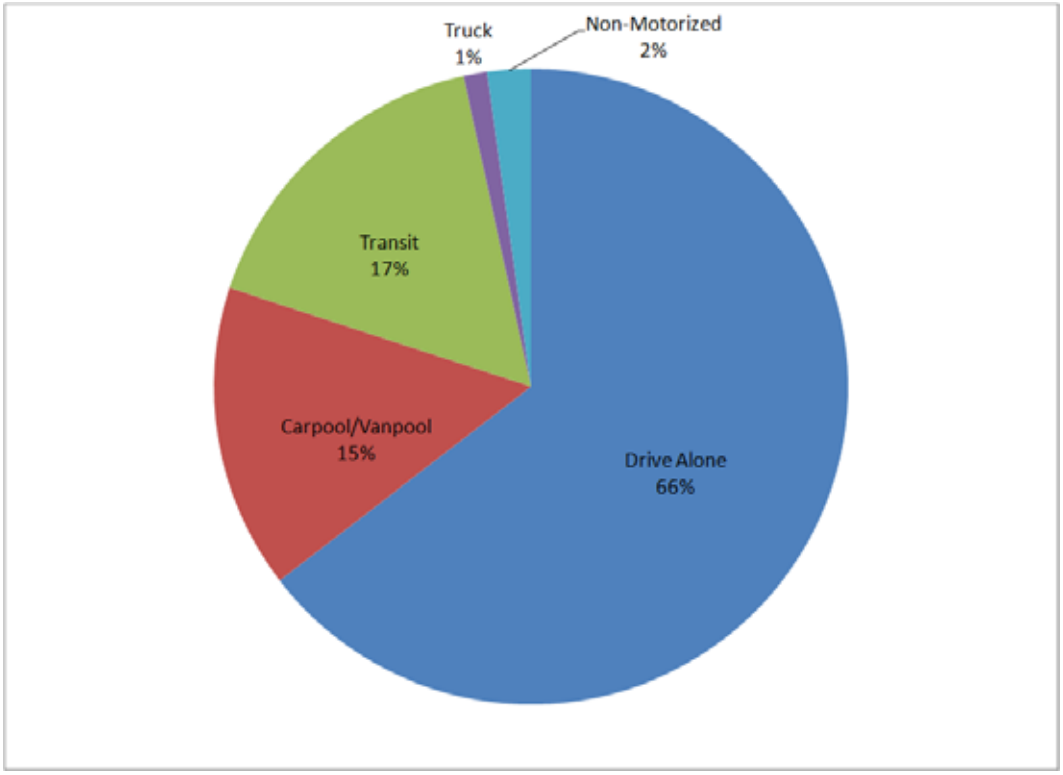


Figure 41: Person Mode Split – Mark Center



Marine Corps Base Quantico

Marine Corps Base Quantico (MCB Quantico) covers nearly 100 square miles on both the east and west sides of I-95 near Triangle in Prince William County. Base property also extends into Stafford and Fauquier counties. The Town of Quantico on the Potomac River in eastern Prince William County is surrounded by the base on three sides. The base is home to the Marines' Officer Candidate School, Marine Helicopter Squadron One (HMX-1, which transports the President of the United States), as well as the training facilities for the Federal Bureau of Investigation (FBI) and the Drug Enforcement Agency (DEA), which are located west of I-95. Numerous other commands also are housed at the base, which has a population of approximately 28,000 personnel and families. Of this total, about 16,000 are on the main side of the base and the rest on the west side. The base gained approximately 2,600 personnel under the recent BRAC action.

There are two access points to the main side of the base, shown in Figure 42. The Main Gate is located at US 1 and Fuller Rd, and the Back Gate is located at US 1 and Russell Rd. The Quantico Amtrak/VRE (Fredericksburg Line) rail station is located on the far east side of the main base within the Town; a DoD shuttle connects the rail station with locations on the main side of the installation and The Basic School (TBS) for new officer training on the west side. There are three access points to the west side of the base, also called the training area, shown in Figure 43. The Onville Rd Gate is located at the far southwestern part of the installation. The Russell Road Gate provides access to TBS and other facilities. The Telegraph Rd Gate on the west side is adjacent to the Russell-Knox Building, which was constructed to house the majority of the agencies (the Military Department Investigative Agencies and the Defense Intelligence Agency) relocated to Quantico under the BRAC action and reached full occupancy in September 2011. Most of the agencies relocated from other sites in the Washington region.

The distribution of vehicles and persons entering MCB Quantico (both main side and west side) is shown in Figure 44. Just over 15,500 vehicles carrying more than 16,900 people entered the base during the five-hour morning analysis period. Average auto occupancy for the period was 1.1. During the peak hour of 6:45am to 7:45am, nearly 7,100 people entered the base and average auto occupancy was 1.08. Volumes nearly consistent with those experienced during the peak hour occur between 6:15am and 8:15am.

Figure 45 shows the mode split for people entering MCB Quantico during the analysis period. 83% of people entering the base during this period drove alone, with 14% entering via carpool or vanpool and a small percentage using transit (including those arriving via the Quantico rail station). The Russell-Knox Building has nearly a 1-to-1 parking space to employee ratio, so it is speculated that most of those personnel drive alone and that the BRAC action may have increased the overall proportion of workers driving alone to the installation as a whole. Some of the agencies in Russell-Knox were relocated from locations better served by transit, such as WNY and Crystal City.

NAVFAC has just begun an effort to update the TMP for MCB Quantico, which was last updated in 2001. As part of that effort, a commuter survey was conducted in May and June of this year; the results were not available at the time of publication. The TMP will look at all base

transportation issues including travel times and mode split and is part of a larger update of the installation master plan, which can recommend transportation improvements.

Figure 42: Marine Corps Base Quantico, Main Base – Gate Location

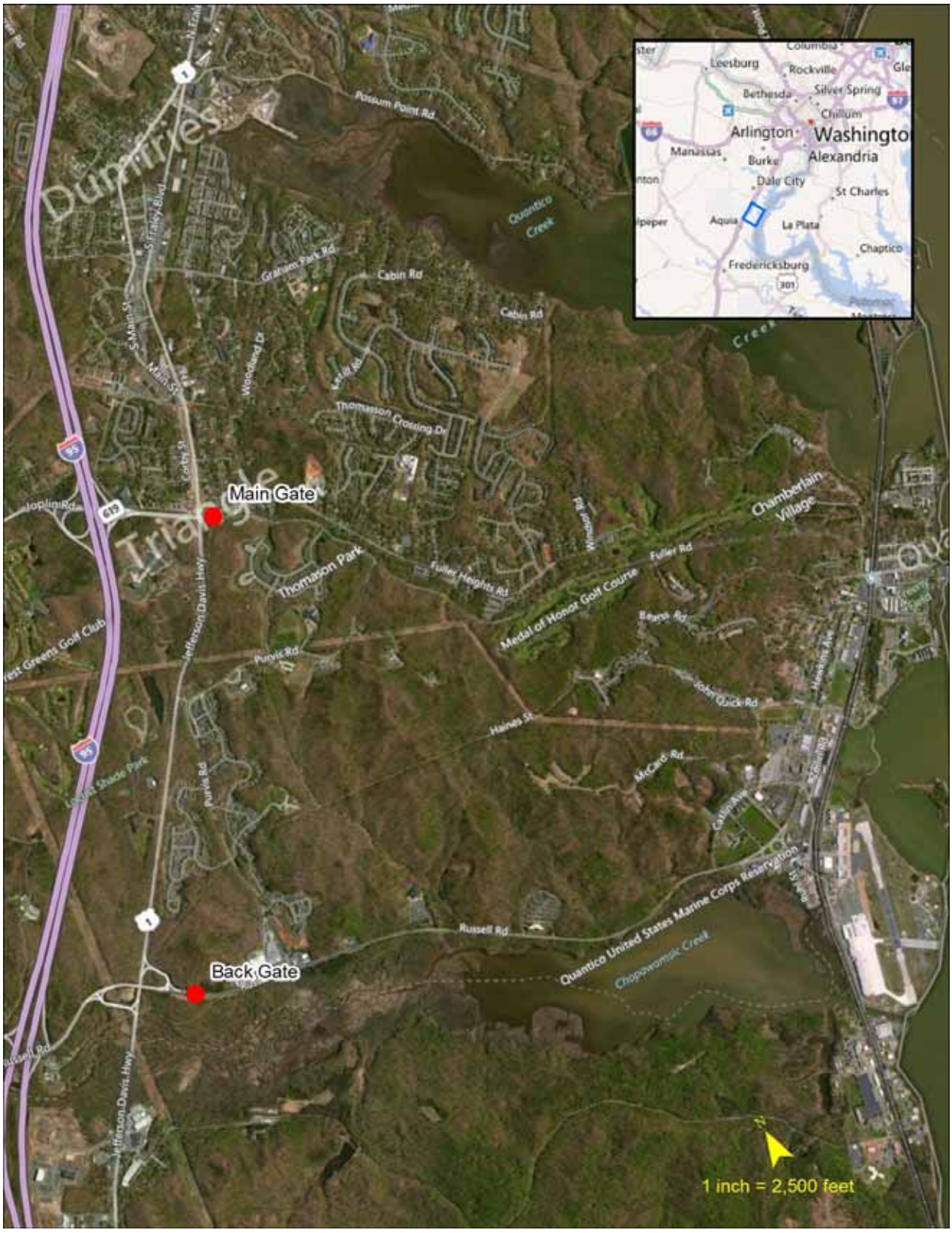


Figure 43: Marine Corps Base Quantico, Training Area – Gate Location

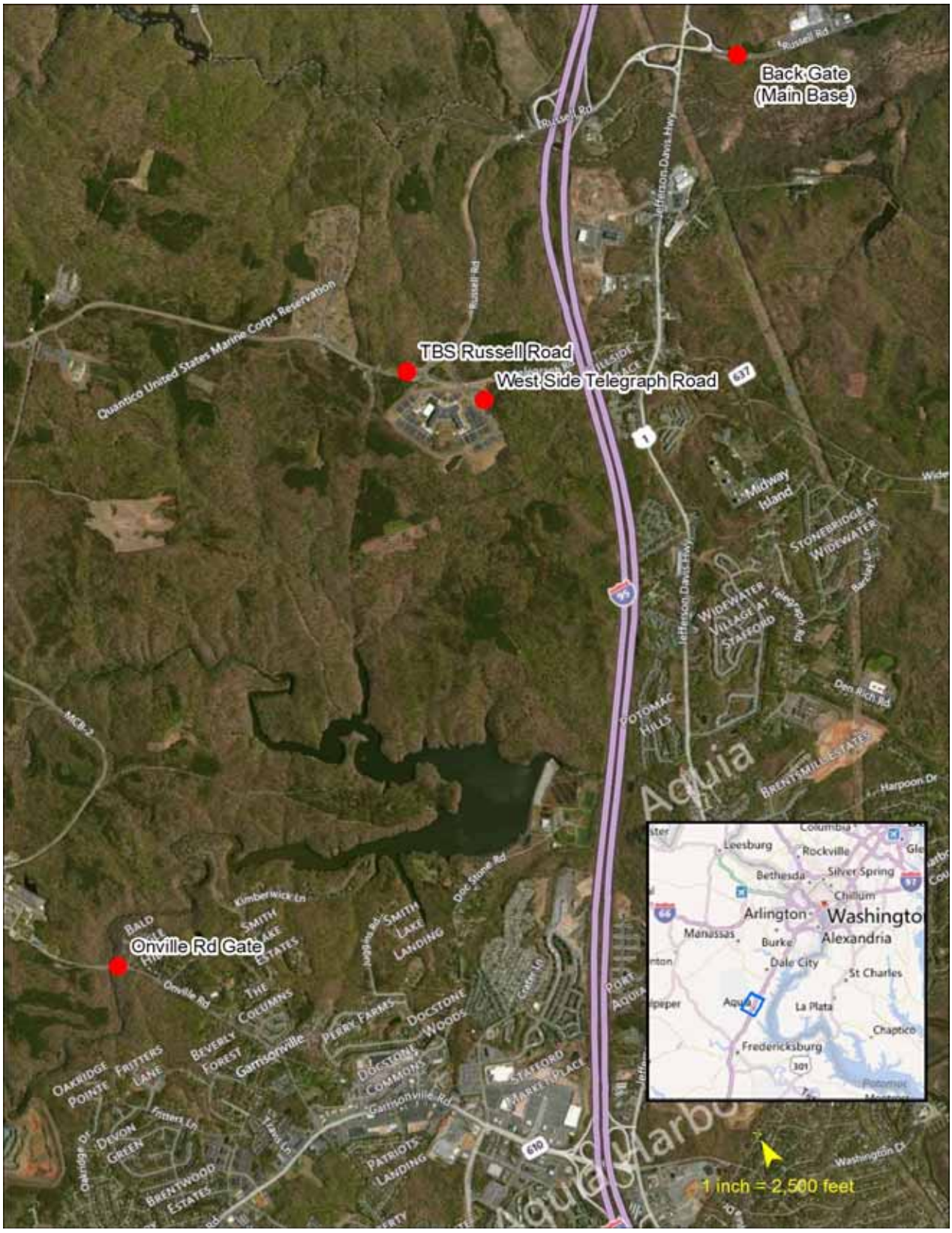


Figure 44: Distribution of Persons and Vehicles Entering MCB Quantico

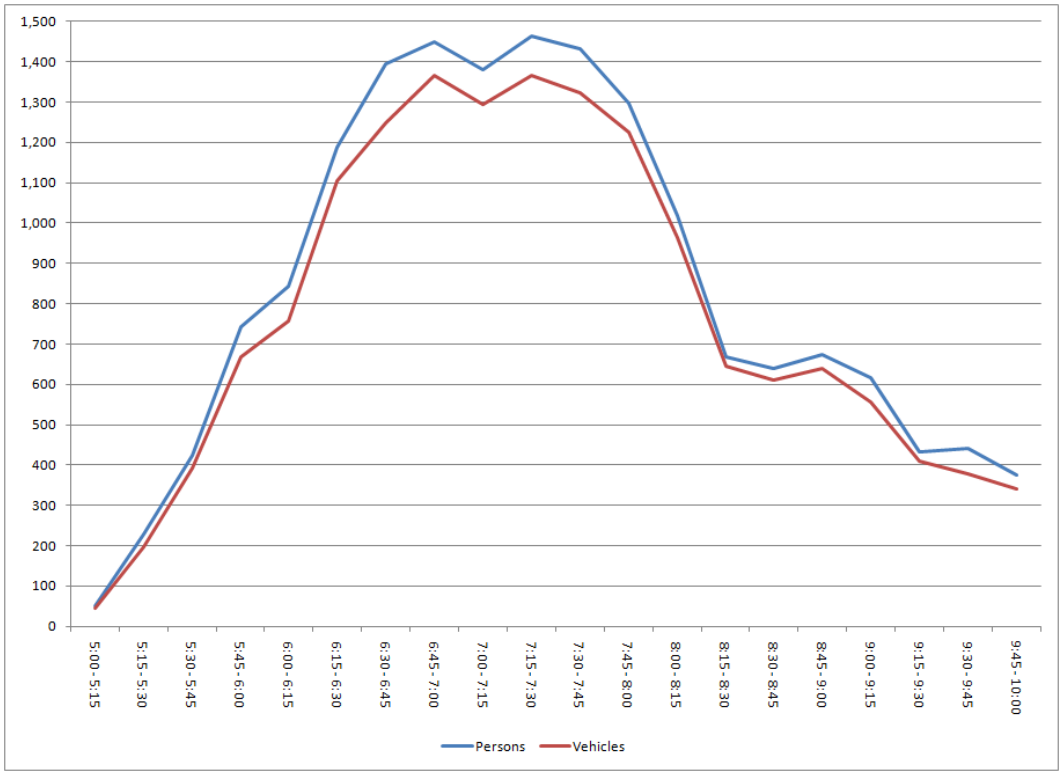
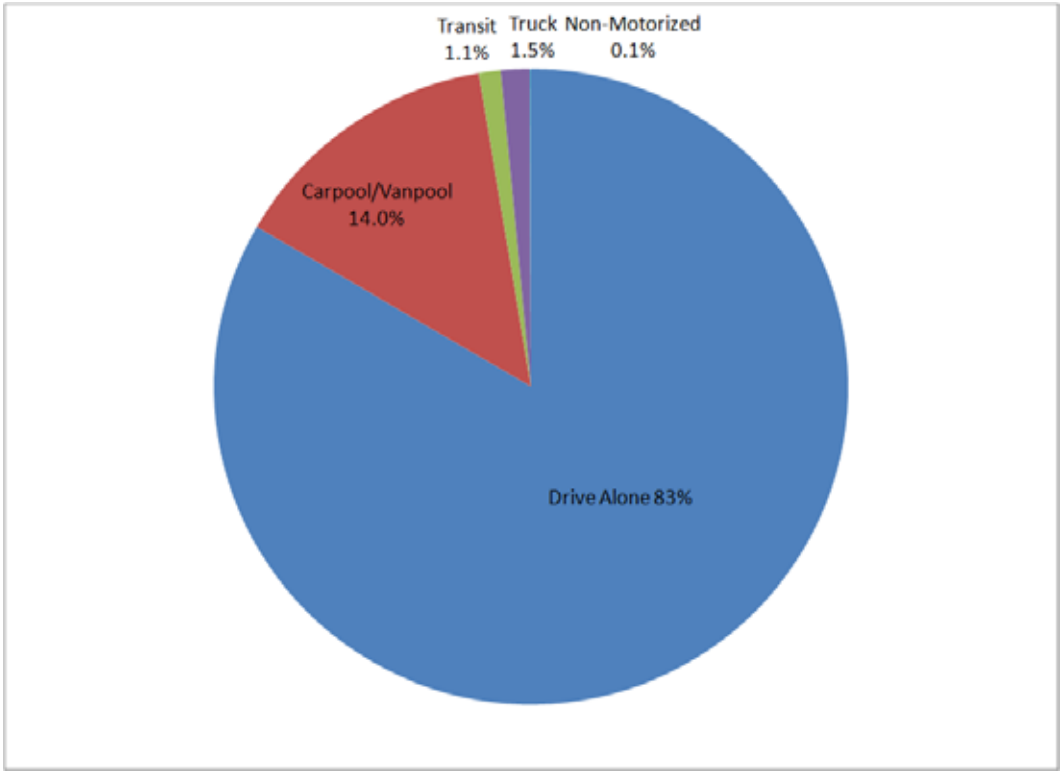


Figure 45: Person Mode Split – MCB Quantico



Defense Health Headquarters

Although not initially included, on request of VDOT and the Northern Virginia Regional Commission (NVRC), this site referred to as DHHQ was added to the list of monitoring sites. Once known as the Melpar site for the military contractor that first constructed a building on what was then rural land in 1952, the Raytheon Corporation was the last tenant before the DoD acquired the complex at 7700 Arlington Boulevard in the Falls Church area of Fairfax County. DoD retrofitted the buildings to collocate the following offices in a single campus as mandated by the BRAC 2005 action:

- DoD Office of Health Affairs (HA), excluding positions housed in the Pentagon
- TRICARE Management Activity (TMA)
- U.S. Army Office of the Surgeon General (OTSG)
- U.S. Air Force Surgeon General's Office (HAF-SG)
- U.S. Navy Bureau of Medicine (BUMED)

Approximately 3,050 employees will be located at DHHQ by the end of June 2012.

Access to DHHQ is from the main gate near the signalized intersection of Arlington Boulevard (US 50) and Jaguar Trail, and a second gate off of Fairview Park Drive on the west side of the campus (see Figure 46). The site is less than one mile from the US 50 interchange with the Capital Beltway (I-495) and about two and a half miles from the Dunn Loring Metrorail station served by the Orange Line. A direct ramp (northbound exit and southbound entrance only) from the I-495 Express Lanes to Lee Highway (US 29) will allow access to DHHQ for those travelers via US 29 and Fairview Park Drive once the facility opens later this year. DoD currently operates two shuttles connecting Metrorail to DHHQ:

- Shuttle service from the Pentagon Metrorail station on the Blue and Yellow lines to the DHHQ runs from 5:30 a.m. to 6:00 p.m., departing every 15 to 20 minutes.
- Shuttle service to the DHHQ from the Dunn Loring Metrorail station runs from 6:00 a.m. to 6:00 p.m., departing every 30 minutes during peak hours.

Metrobus Routes 1A and 1B operates along US 50 and stop near the main gate to DHHQ. There are approximately 2,000 parking spaces available at the site and reserved spaces for carpools and vanpools. Staff has heard anecdotally that the operation of the DHHQ shuttle from the Pentagon station brings slug commuters who use the HOV lanes on I-395 to the site. It is speculated that this pattern may shift with the opening of the I-495 Express Lanes.

Figure 47 show the distribution of vehicle and people entering DHHQ during the five-hour morning analysis period. Just over 1,100 vehicles carrying nearly 1,500 people entered the site during the analysis period, and the average auto occupancy was 1.28. During the peak hour from 6:45am to 7:45am, 506 people entered the site and the average auto occupancy was 1.26. DHHQ had the highest average auto occupancy of the Virginia analysis sites.

The mode split of people entering DHHQ during the morning analysis period is shown in Figure 48. About two-thirds of people entering the complex drove alone. Nearly 27% entered via

carpool or vanpool, the highest proportion of the actively occupied sites. Some of the non-motorized proportion may be people walking from transit stops to the complex gates.

As with the Mark Center, data collection for DHHQ occurred prior to full occupancy. While the proportion of people driving alone might increase as full occupancy is achieved, the opening of the I-495 Express Lanes later this year may shift a greater proportion of person-trips to carpool and vanpool due to the time savings offered relative to the general purpose lanes. In order for travel on the Express Lanes to be toll-free, automobile occupancy must be three people or more.

Figure 46: DHHQ Gate Location

Figure 47: Distribution of Persons and Vehicles Entering DHHQ

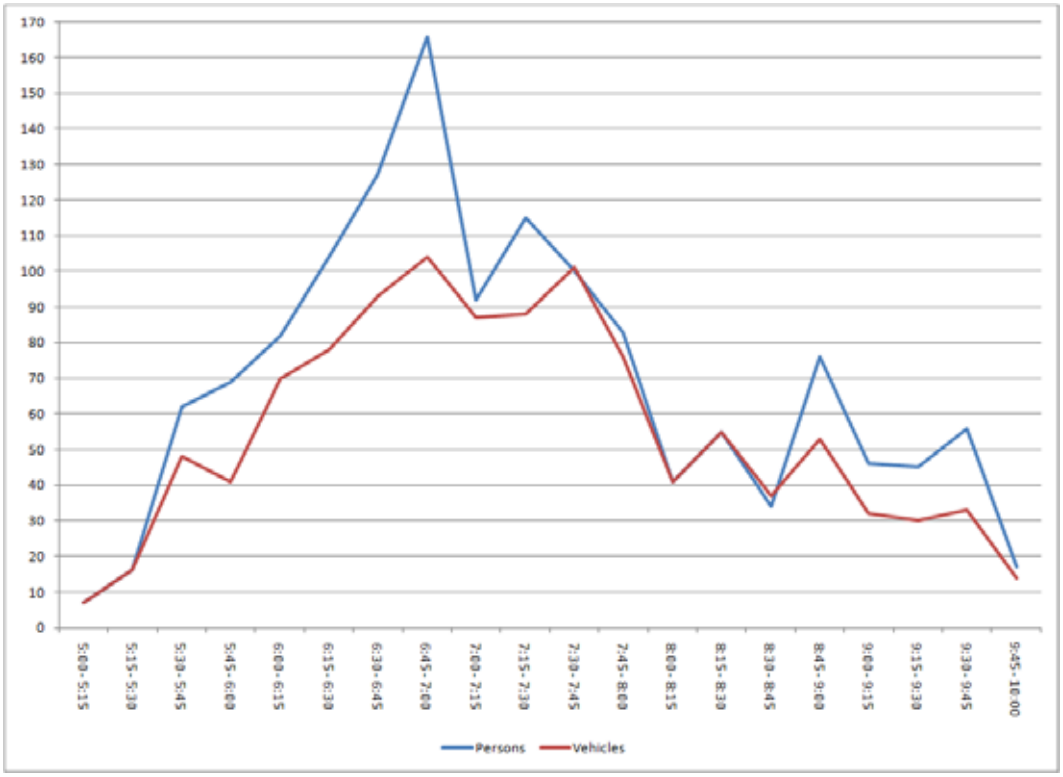
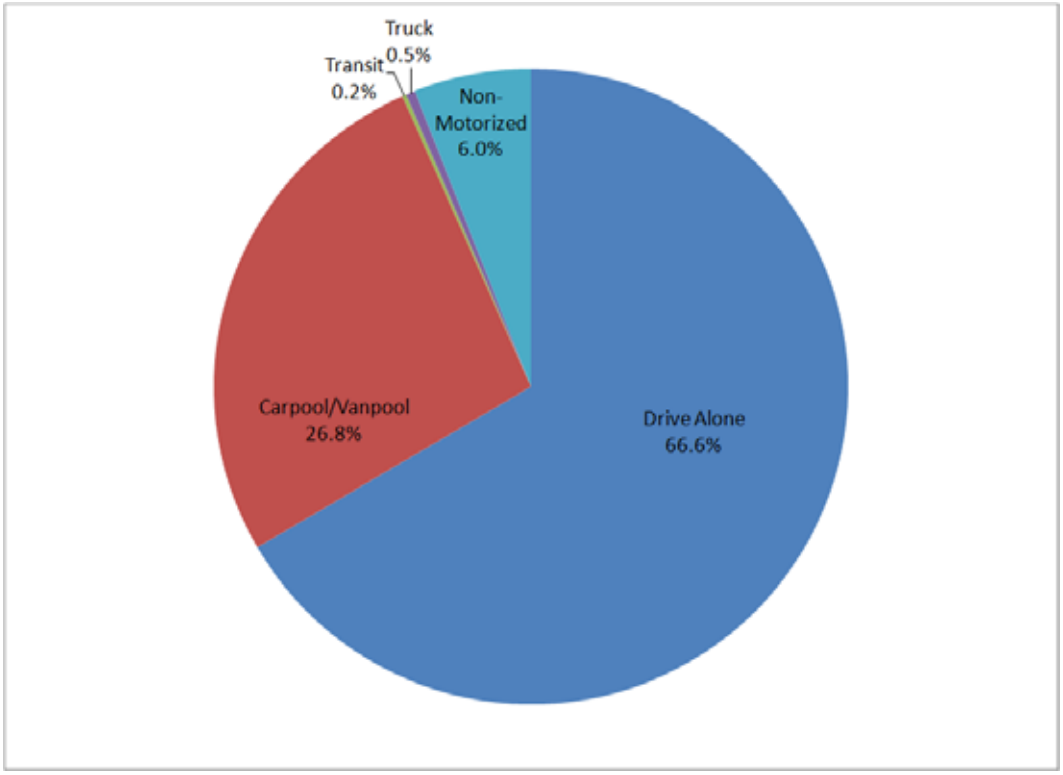


Figure 48: Person Mode Split - DHHQ



NEXT STEPS / CONTINUED MONITORING OF CONDITIONS

This report establishes initial conditions at the fifteen monitored BRAC and federal employment consolidation sites in the Washington region. While it is not true baseline or "before" data, it provides a useful snapshot of conditions just after the completion of the majority of the BRAC moves and serves as a benchmark for future monitoring of the same sites. The BRAC 2005 action has both added jobs to the region and greatly redistributed jobs around the region, with some jurisdictions seeing a net increase in jobs and others seeing a net decrease. The regional shift in jobs means a regional shift in travel behavior, and potentially, a shift residential location (which will further change travel behavior).

These last two sets of changes happen only over time as workers relocated under the BRAC action perform their household calculus and weigh the costs and benefits of their current (new) commute trip against shifting their residential location. It is also only over time that the BRAC and federal employment consolidation sites will have the opportunity to fully develop and implement their TMPs and provide transportation alternatives to their personnel as specified in those plans. Some of those TMPs may also further restrict on-site parking. Finally, sites that were vacated as part of the BRAC action, such the former Walter Reed site in Northwest Washington and the former NGA site in Bethesda are likely to redevelop (although not necessarily with another Federal tenant).[30]

Because any shifts in travel behavior will only happen over time, all of the sites monitored in this report should be monitored again at a point in the future. Staff's initial recommendation is that data be collected at all the sites again in five (5) years, during the spring of calendar year 2017 (COG fiscal year 2017). This recommendation, which is subject to review and approval by the TPB Technical Committee, includes the St. Elizabeths campus, with the realization that since full occupancy for the campus is currently scheduled for 2019, it may need to be monitored for a third time in the distant future.

Finally, there is the high probability of further BRAC actions during the next five years. The BRAC 2005 report recommended another BRAC action in 2015. Earlier this year, DoD submitted a proposal to Congress to conduct BRAC actions in 2013 and 2015. Congress did not look favorably on this initial proposal, and so the timing of any future BRAC action(s) is undetermined at this time; however, the continued interest in both the executive and legislative branches of the Federal government in cost reduction and downsizing the military virtually ensures that there will be another round of realignment and closure in the foreseeable future.

Any discussion of how those actions may further impact the region is pure speculation, yet by observing the results of the BRAC 2005 action it is possible to engage in speculation with historical evidence. In this region, DoD appears to favor leaving leased space in highly urbanized areas (e.g., Crystal City) and entering either owned space on existing installations in both urban and suburban settings (e.g., WNY, Walter Reed, Fort Belvoir, etc.) the latter of which generally has more room to accommodate new tenants and new construction, or constructing or

[30] The Army has already submitted a draft master plan to redevelop the former NGA site at 4600 Sangamore Rd in Bethesda as a secure facility known as the Intelligence Community Campus – Bethesda (ICC-B) to support activities of the Defense Intelligence Agency (DIA). The draft master plan was approved by NCPC in December 2011 and a TMP completed in April 2012. See http://www.nab.usace.army.mil/Projects/ICC-B/ICCB%20TMP%204-16-12.pdf

retrofitting new secure space on infill sites either greenfield or brownfield (e.g., Mark Center, DHHQ, St. Elizabeths). These decisions, made to satisfy a number of criteria including operational efficiency and locational security, have regional transportation and land use implications, and while it is difficult to forecast the outcome of each individual decision, the data collected for this report and its subsequent follow-up work help illustrate the regional impact of all the BRAC actions and provide additional observed data for use in the regional travel demand forecasting process.

BIBLIOGRAPHY

Washington Metropolitan Area Transit Authority. Transit Service Impacts of the Base Realignment and Closure Recommendations in the Metropolitan Washington Region. Final Report, June 2010.

APPENDIX A: VEHICLE COUNTS

APPENDIX B: TRANSIT COUNTS