Housing the Region's Future Workforce

Policy Challenges for Local Jurisdictions

Final Report

by

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Arlington, Virginia

October 25, 2011

Acknowledgements

The Center for Regional Analysis would like to thank the following sponsors for their support for this research project:

2030 Group

Bank of America

Stephen T. Antosh

Thomas S. Bozzuto

Sidney O. Dewberry

Emanuel J. Friedman

William Hazel

Donald and Angela Irwin

Robert C. Kettler, Kettler Inc.

NVR, Inc.

Gordon Smith, Miller and Smith Inc.

We would also like to thank the Metropolitan Washington Council of Governments for their support and sponsorship of the Housing the Region's Future Workforce conference.

Summary of Key Research Findings

Over the next 20 years, the Washington DC metropolitan area will add more than a million net new jobs. At the same time, the region will need 1.8 million replacement workers to fill jobs vacated by retirees and others. The ability to absorb these new workers into the region and to ensure robust regional economic growth depends critically on providing a sufficient amount of housing of the right types and prices and in the right places. The share of gross regional product that leaks out of the metropolitan area is expected to increase from four to eight percent over the next two decades as more and more of the region's workers commute to homes outside of the region. The level of traffic congestion is worsening and our region's workers face some of the most arduous and longest commutes in the nation. Employers are concerned about the ability to attract new workers because of the price and availability of housing. Without local cooperation and a regional housing strategy, the future health of the Washington area economy could be threatened.

This research analyzes the future housing demand associated with net new job growth in the Washington DC metropolitan area between 2010 and 2030. Because it is a jobs-driven forecast of housing demand, it explicitly links the economic opportunities in the region to the availability and affordability of housing. The housing demand forecasts include an analysis of the type (single-family and multi-family), tenure (owner and renter), price or rent, and location of the housing that will be needed over the next 20 years. The analysis includes two sets of housing unit forecasts that take into account inter-jurisdictional commuting levels and rates.

These housing demand estimates are based on an analysis of the need for housing units for the region's expected 1.05 million net new workers. As such, the forecasts significantly underestimate the amount of housing that will ultimately be needed to accommodate both net new and replacement workers. However, even the conservative estimates of housing need reflect rates of new construction that are far greater than the pace of housing construction in the recent past and are greater than the amount of housing called for by many local jurisdictions' comprehensive plans.

Key Findings

- The Washington DC metropolitan area is expected to add **1.05 million net new jobs** between 2010 and 2030. More than one-third of the region's job growth will be in the professional and technical services sector (about 370,000 net new jobs.) While jobs in this sector tend to have higher than average wages, many of the new professional and technical service sector jobs will be entry-level positions. The region will also add nearly 130,000 administrative and waste services jobs and 117,000 jobs in the health services sector.

- If each jurisdiction provided enough housing to accommodate all of its future workers, the Washington DC region needs to add **731,457 net new housing units** between 2010 and 2030. This supply of housing assumes that the amount of jurisdiction-to-jurisdiction commuting stays at present levels. Supplying this amount of housing will require the construction of about 38,000 net new housing units each year regionwide, an annual pace of construction never before seen in the region and below what local jurisdictions have accounted for in their comprehensive plans.

- If the new jobs added in the local jurisdictions have the same in-commuting rates of current jobs, the housing need is 348,282 new units. This low estimate implies that a half a million new workers will commute to their jobs from places outside the region, creating unsustainable levels of traffic congestion over the next two decades.

- The types of housing that will be needed to accommodate new workers over the next 20 years reflects the changing demographics of the working age population and the mix of jobs the region is expecting. The housing demand forecasts suggest a need for **283,677 single-family houses** (single-family detached and townhomes) and **447,780 multi-family units**. Thus, over 60 percent of the new housing units needed in the region over the next two decades will be multi-family while less than 40 percent will be single-family. The region's current housing stock, by contrast, is 67 percent single-family and 33 percent multi-family. There will need to be substantial changes in builders' approaches to new home construction and local governments' policies for guiding residential development in order to accommodate this needed housing growth.

- There will be a shift in the homeownership rate for future residents of the Washington DC region. Currently, the region's homeownership rate is 64 percent. However, **only 55 percent of the new workers to the region over the next 20 years will live in owner-occupied housing units**, while 45 percent will rent.

- The region's new housing must be priced so that it is affordable to new workers. While the Washington DC metropolitan area will continue to attract many high-wage jobs over the next 20 years, many new workers will be entry-level workers and others will work in

sectors that traditionally have lower wages. In addition, a greater share of workers will live alone and consequently will have only one income. As a result, the region will need a substantial amount of ownership and rental housing with relatively moderate prices and rents. Based on the housing need forecasts, **more than two-thirds of owner-occupied units need to be priced below $400,000**. **More than half of new renters will need housing with rents less than $1,250 a month.** Thus, in order to keep new workers living within the region, there is a need for relatively smaller and more moderately priced housing in the decades to come. Much of the moderately priced housing will not be new construction, but rather must be preserved from the existing stock.

Policy Implications

These jobs-driven housing demand forecasts have several implications for local governments, builders, economic development professionals, and employers in the region:

1. Local jurisdictions are planning for an insufficient amount of housing to accommodate future workers.

2. More housing is needed closer to jobs, in existing and growing regional employment centers.

3. There is a need for more multi-family housing and smaller, more affordable owner and renter homes in the region.

4. A lack of a sufficient supply of housing contributes to worsening traffic and quality of life and threatens our region's economic vitality.

Table 1. Net New Jobs: 2010 – 2030
Washington DC Metropolitan Area

Jurisdiction	Net New Jobs 2010-2030	Percent Change 2010-2030
District of Columbia	**152,130**	**20.8**
Calvert	14,588	64.2
Charles	20,401	47.0
Frederick	41,950	42.5
Montgomery	163,008	34.5
Prince George's	76,578	23.7
Suburban Maryland	**316,525**	**32.9**
Alexandria	41,340	39.0
Arlington	46,640	26.1
Clarke	1,086	26.3
Fairfax*	168,833	26.7
Fauquier	10,261	48.5
Loudoun	146,909	104.7
Prince William**	81,241	58.2
Spotsylvania***	44,362	77.5
Stafford	33,786	84.6
Warren	4,022	32.7
Northern Virginia	**578,480**	54.9
Jefferson Co WV	6,720	47.7
Washington Metro Area	**1,053,855**	**38.2**

Source: IHS Global Insight, GMU Center for Regional Analysis.
Full-time jobs only.
*Includes the cities of Fairfax and Falls Church
**Includes the cities of Manassas and Manassas Park
***Includes the city of Fredericksburg

Table 2. Estimates of Housing Demand: 2010 – 2030
Washington DC Metropolitan Area
High and Low Estimates*

Jurisdiction	High Estimates	Low Estimates
District of Columbia	**122,613**	**36,784**
Calvert	9,764	8,007
Charles	13,608	8,029
Frederick	27,336	19,956
Montgomery	108,522	69,454
Prince George's	52,382	28,286
Suburban Maryland	**211,612**	**133,731**
Alexandria	30,922	6,494
Arlington	34,342	8,929
Clarke	744	431
Fairfax	110,947	52,145
Fauquier	6,870	4,740
Loudoun	98,171	51,049
Prince William	55,065	30,286
Spotsylvania	30,375	13,061
Stafford	22,680	11,793
Warren	2,702	1,756
Northern Virginia	**392,817**	**174,191**
Jefferson Co WV	4,414	3,576
Washington MSA	**731,457**	**348,282**

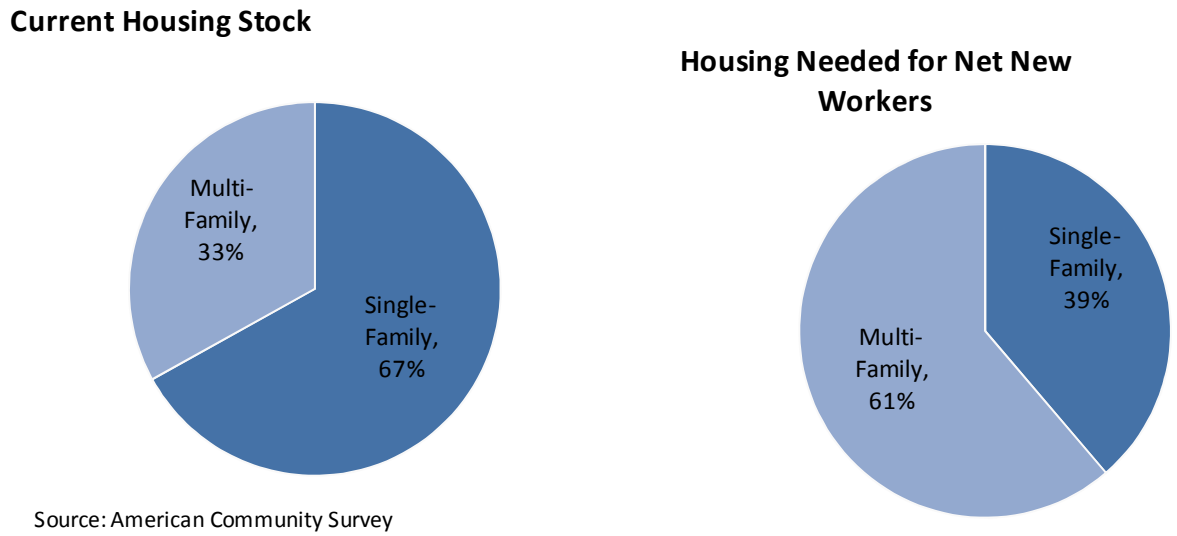
*The high estimates assume all new workers housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes. The low estimates assume that new jobs in each jurisdiction have the same in-commuting rates as current jobs.

Table 3. Estimates of Housing Demand by Unit Type: 2010 – 2030
Washington DC Metropolitan Area
High Estimates*

Jurisdiction	Total Units	Single-Family (includes townhouses)	Multi-Family
District of Columbia	**122,613**	**9,886**	**112,726**
Calvert	9,764	5,467	4,297
Charles	13,608	7,541	6,067
Frederick	27,336	15,446	11,890
Montgomery	108,522	36,658	71,864
Prince George's	52,382	20,416	31,965
Suburban Maryland	**211,612**	**85,529**	**126,084**
Alexandria	30,922	2,442	28,481
Arlington	34,342	3,515	30,827
Clarke	744	427	317
Fairfax	110,947	51,254	59,693
Fauquier	6,870	4,092	2,778
Loudoun	98,171	59,768	38,403
Prince William	55,065	32,083	22,982
Spotsylvania	30,375	17,228	13,148
Stafford	22,680	13,328	9,352
Warren	2,702	1,545	1,157
Northern Virginia	**392,817**	**185,681**	**207,136**
Jefferson Co WV	4,414	2,581	1,833
Washington MSA	**731,457**	**283,677**	**447,780**

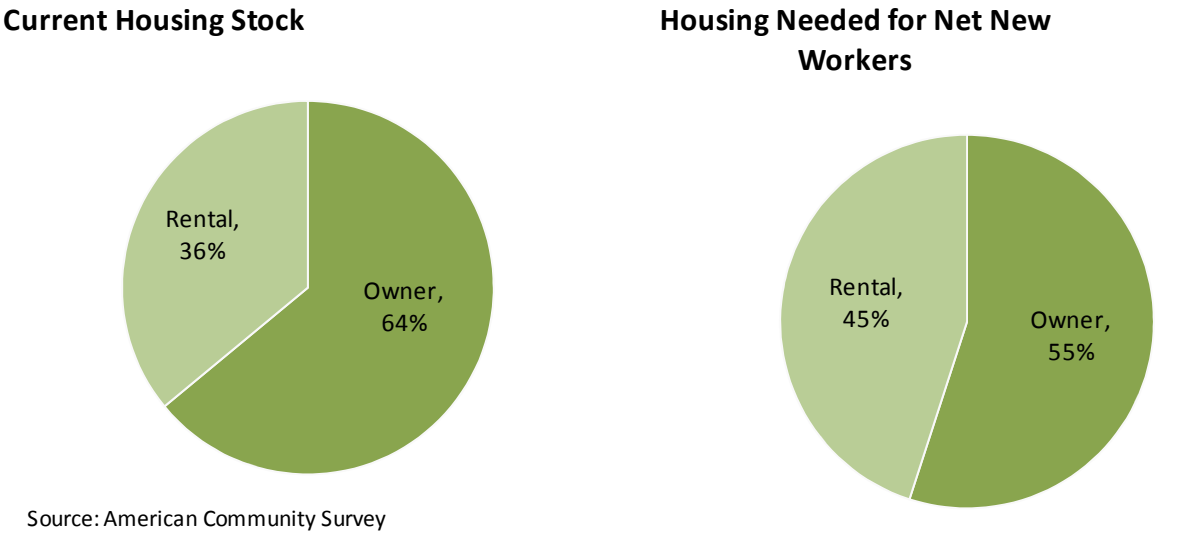
*The high estimates assume all new workers housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

Figure 1. Comparing Unit Types: Existing and Needed



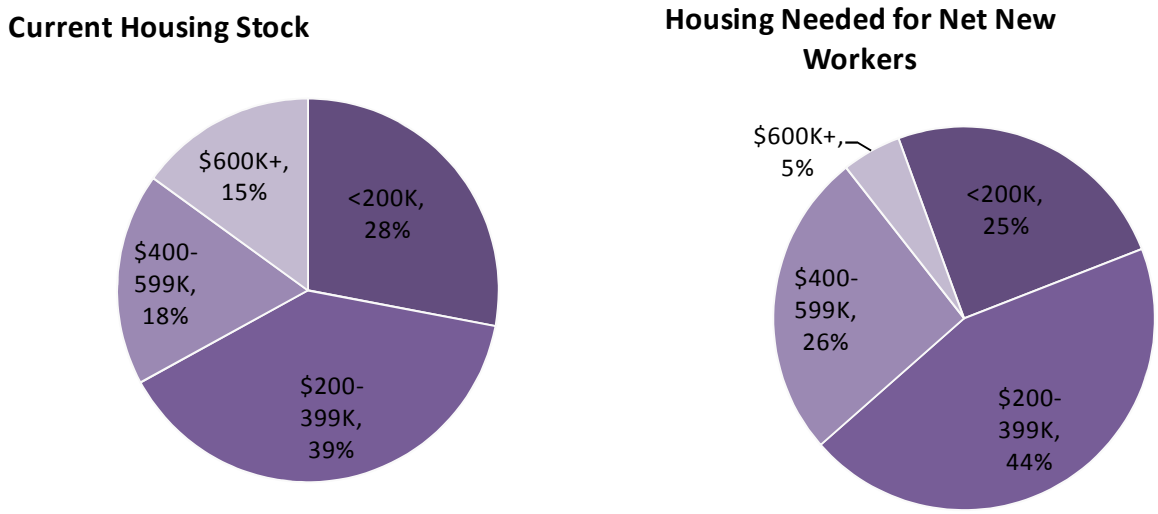
Source: American Community Survey

Figure 2. Comparing Owner versus Rental Unit Types: Existing and Needed



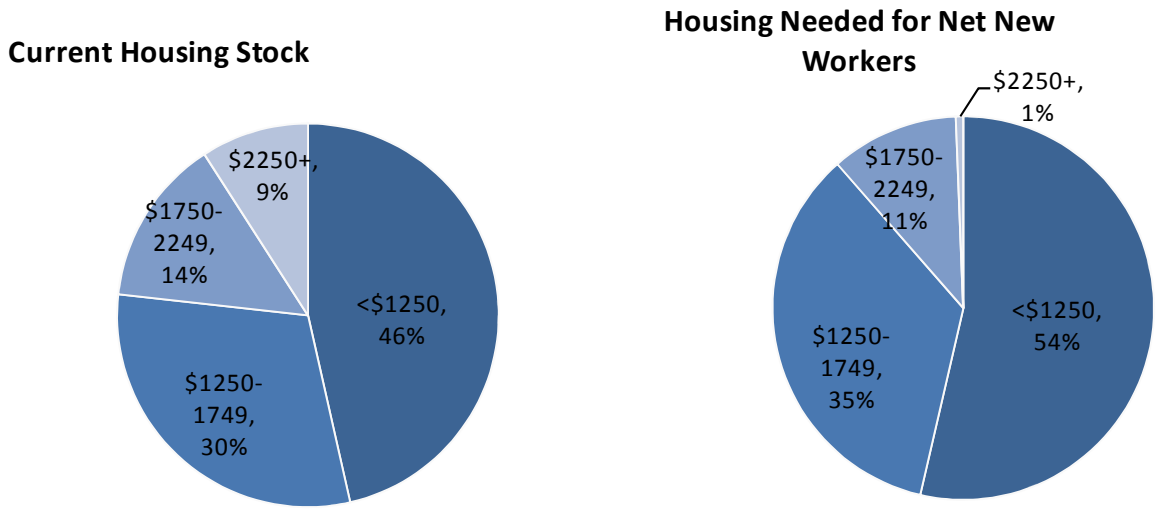
Source: American Community Survey

Figure 3a. Comparing Home Prices: Existing and Needed



Source: MRIS, Jan-Aug 2011 sales

Figure 3b. Comparing Rents: Existing and Needed



Source: American Community Survey

The Role of Housing in Achieving the Washington Metropolitan Area's Economic Potential

Regional Economic Outlook

The economic forecasts for the Washington metropolitan area point to continuing gains in income and employment over the coming two decades. These gains will be achieved even as the region's economy adjusts to significant changes in its sectoral structure and the relative performances of different sectors following the Great Recession of 2008-2009, and the redefined role of the federal government as a major force in the metropolitan area economy. While the regional economy is not projected to grow as fast in the coming two decades as it has in the last two decades, it is positioned to add as many as one million net new jobs, a potential gain of 38 percent over today's employment level.

But beyond the sheer number of jobs being added, the region will also experience an even greater change in the mix of its existing workforce over this period as Baby Boomers retire (their departure from the workforce will accelerate each year going forward and peak in 2017-2018). Combined with the normal turnover of workers in the workforce (workers relocating outside of the region, choosing not to work for a variety of reasons, or switching jobs to a different sector), the demand for workers not currently in the workforce to backfill these replacement positions is estimated to total 1.8 million.

These changes—net new jobs and replacement jobs—will accelerate the structural changes naturally occurring in the region's economy. As a result, the economic growth (gain in gross regional project) projected for the Washington region over the 2010-2030 period is 82 percent (inflation adjusted), increasing its GRP from $425 billion in 2010 to $775 billion in 2030. This significant gain in GRP, far exceeding net new job growth, suggests that the economy in 2030 will be substantially different than it is today and that the types of jobs being added will consist of disproportionally higher value added positions than the job mix that characterizes today's economy.

Risks to the Region's Economic Outlook

While this economic forecast suggests that the Washington region has significant growth potential and that its economy will remain robust and vital over the coming years, these projections raise important challenges. They are not guaranteed. In order for the Washington metropolitan area to secure this potential economic growth it will need to meet the labor force requirements of this new economy as well as the other critical supporting requirements, including transportation services, water and sewage treatment capacity, and the cultural, social, environmental and other amenities that have made the region attractive to workers moving here from other regions in the U.S. and the world. And, most importantly, the region will need to be able to meet the housing requirements of this new workforce.

As of 2010, the Washington metropolitan area was more dependent on non-resident workers—commuters coming in daily to work from outside its borders and returning home each night—than any other metropolitan area in the country. This demand for labor not residing in the metropolitan area is seen in the area's highway congestion and crowded commuter trains. While this percentage may not seem large at 4.25 percent, it translates into approximately 230,000 long-distance commuters coming and going every day. Besides the traffic generated by this commuting (the Washington area now ranks number one in congestion delays)[1], this pattern generates a significant transfer of GRP generated within the Washington area economy ($18.1 billion) to places of residence outside the region where it is spent and taxed.

If these commuting patterns persist as the Washington area grows over the coming 20 years due to an insufficient increase in the region's housing supply (not just as measured in the number of units but also the tenure and price mix), this dependence on non-resident workers to fill the region's jobs is projected to grow to 8.75 percent by 2030 and account for a loss of $68 billion (in 2010$s) that year from the regional economy significantly reducing its tax base and retail market potential. This increased dependency on non-resident workers would increase the number of workers commuting into the region every day to work to 700,000 and more than double the demand of transport services to accommodate these work trips. Clearly, the region does not have the financial capacity or the land to build its way out of this looming problem of inadequate interregional transportation.

A principal source of this looming transportation problem is the inadequate supply of housing within the region to house its workforce. The inadequate supply of housing is also the source of the traffic congestion that is generated from intraregional (i.e. jurisdiction-to-jurisdiction) commuting. If more workers working in the Washington area lived in the Washington area the requirements for interregional transportation would decline. And, if more workers working in each of the Washington region's jurisdictions lived in the jurisdiction within which they worked, the intra-regional transportation congestion for which the Washington area has become famous could be reduced.

The consequences of not having enough housing to house the region's future workforce close to where this workforce will be working are enormous. Even if the long-distance commuting capacity could be provided, there would still be a significant transfer of wealth out of the region to adjacent jurisdictions, an erosion of the region's tax base, and serious environmental effects, not to mention the unnecessary consumption of energy and loss of personal time and efficiency. But, not having these long-distance commuters to do the region's work would seriously threaten the Washington region's economic growth potential going forward. Housing the workforce is key to the Washington region being able to sustain its economic vitality and to achieve its economic growth potential.

[1] Schrank, David, Tim Lomax, and Bill Eisele. 2011. *TTI's 2011 Urban Mobility Report*. Texas Transportation Institute, The Texas A&M University System.

Forecasts of Housing Needed to Support Regional Economic Growth

The objective of this research is to forecast the amount of housing that will be required to house the region's future workers in order to help ensure that the region can achieve its future economic potential. This research starts with jobs as the driver of demand for housing and uses assumptions about workers' wages, age structure, and household composition to forecast the amount, type and price of housing that the region will need over the 2010 – 2030 period.[2] Specifically, this research addresses four questions:

1. **How much housing will be needed to house the region's new workers?** The forecasts estimate the number of housing units that will be needed to house the region's net new workers between 2010 and 2030, including an analysis of this need relative to recent residential construction trends.

2. **Where should this housing be located?** With the goal of keeping levels of traffic congestion from worsening over the next two decades, the housing demand forecasts explicitly link the location of needed housing to the locations of new jobs, at the jurisdiction level.

3. **What types of housing units will be needed?** In addition to understanding the overall amount of housing needed, these forecasts assess the demand for single-family (detached and townhouses) and multi-family housing, as well as owner and rental housing.

4. **What prices and rents will new workers be able to afford?** The housing available to the region's future workforce must be priced at levels that are affordable. The forecasts take the wages of new jobs into account to forecast housing demand at different price and rent levels.

How much housing will be needed to house the region's new workers?

If each jurisdiction in the Washington metropolitan area supplied enough housing to house all of its future workers, the region would need to add 731,457 net new housing units between 2010 and 2030 (Table 4.) These "high" forecasts assume that all new workers are housed in the jurisdiction in which they work and therefore the volume of intraregional commuting will not increase from present levels.

[2] The detailed methodology is included in the Appendix. The year 2010 is used as the beginning of the forecast period for the sake of convenience.

Table 4. Estimates of Housing Demand: 2010 – 2030
Washington DC Metropolitan Area
High and Low Estimates*

Jurisdiction	High Estimates	Low Estimates
District of Columbia	**122,613**	**36,784**
Calvert	9,764	8,007
Charles	13,608	8,029
Frederick	27,336	19,956
Montgomery	108,522	69,454
Prince George's	52,382	28,286
Suburban Maryland	**211,612**	**133,731**
Alexandria	30,922	6,494
Arlington	34,342	8,929
Clarke	744	431
Fairfax	110,947	52,145
Fauquier	6,870	4,740
Loudoun	98,171	51,049
Prince William	55,065	30,286
Spotsylvania	30,375	13,061
Stafford	22,680	11,793
Warren	2,702	1,756
Northern Virginia	**392,817**	**174,191**
Jefferson Co WV	4,414	3,576
Washington MSA	**731,457**	**348,282**

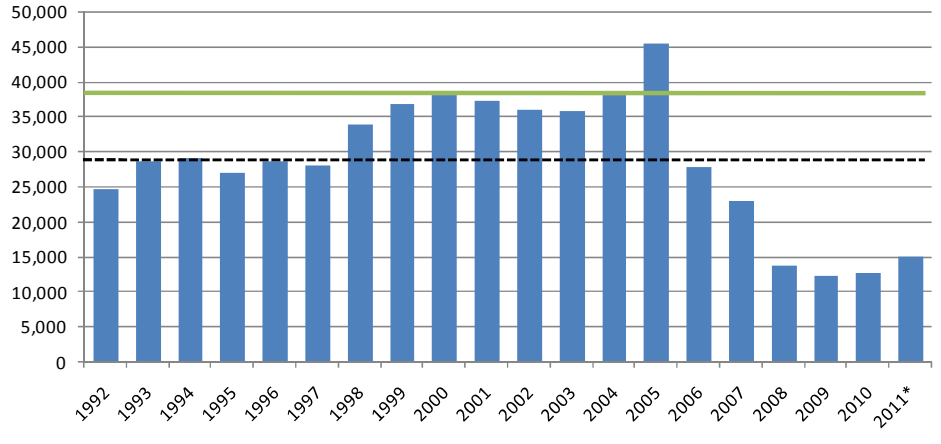
*The high estimates assume all new workers housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes. The low estimates assume that new jobs in each jurisdiction have the same in-commuting rates as current jobs.

Of course, not all of the workers in a jurisdiction live in the jurisdiction in which they work. Households with multiple workers live in one jurisdiction while the workers might commute to different jurisdictions. Some people choose to live outside the jurisdiction in which they work for reasons other than the commute, such as proximity to natural resources or family. However, there are many people who would like to live closer to where they work but cannot find adequate and affordable housing. As a consequence of all of these factors, there is a substantial amount of intraregional commuting. There is also a steady stream of commuters on highways and railways coming into the Washington area from jurisdictions outside the region.

As part of these housing demand forecasts, a "low" series of estimates were produced that assumes that the net new jobs in each jurisdiction have the same in-commuting rates for new jobs as current jobs. That is, each jurisdiction houses only a portion of its new workers over the next 20 years. The current level of in-commuting varies considerably from jurisdiction to jurisdiction. For example, about 70 percent of jobs in the District of Columbia are held by people who live outside of the city. By contrast, only 18 percent of jobs in Calvert County, Maryland are held by non-Calvert County residents. Based on the assumption of continued in-commuting rates, the region would need to add 348,282 net new housing units over the next 20 years. These "low" estimates imply that an additional half a million people who work in the Washington metropolitan area would live outside the region. These "low" forecasts would create an intolerable level of congestion on the region's roads and transit system.

To limit the strain on the region's transportation systems, to maintain the region's high quality of life, and to keep more economic activity in the region, the "high" forecasts provide the best goal for housing production. The "high" estimates imply that the region would need to add more than 38,000 new housing units each year between now and 2030. Over the past 19 years, the region has averaged 28,600 building permits each year (Figure 4.) Since the bursting of the housing bubble in 2006 and 2007, the amount of residential construction has dropped dramatically. The number of building permits issued in the Washington metropolitan area has dropped to historically low levels in 2009 and 2010. While there is some indication that building activity has picked up somewhat in the region—particularly in multi-family rental construction inside the Beltway—the number of residential building permits issued in 2011 is still far below the annual pace needed to achieve an adequate supply of housing. These housing demand forecasts indicate a need for a jump start of the residential construction sector and sustained building activity in the years to come.

Figure 4
Residential Building Permits
Washington Metropolitan Area



Source: U.S. Census Bureau
*Annualized 2011 total based on data through June

1992-2011 annual average: 28,600
2011-2030 annual needed: 38,500

Where should this housing be located?

Because the majority of the region's job growth over the next 20 years will occur in Northern Virginia, the demand for housing is greater there than in Suburban Maryland. Between 2010 and 2030, there will be a need for 392,817 new housing units in Northern Virginia to house its 578,480 new workers, with more than half of these units needed in Fairfax and Loudoun counties. In Suburban Maryland, there will be a demand for 211,612 net new units to accommodate 316,525 future workers, and more than half of the new housing in Suburban Maryland will be needed in Montgomery County. An increase of 152,130 jobs in the District of Columbia suggests a need for 122,613 housing units over the next 20 years if all of the District's new workers were to be housed in the city.

Nearly two-thirds of the new housing needed over the next 20 years will be needed in the region's core or Beltway jurisdictions, a subregion that includes the District of Columbia, Montgomery and Prince George's counties in Maryland, and the city of Alexandria, and Arlington and Fairfax counties in Virginia. While 63 percent of the future housing need is forecasted for these jurisdictions, the pattern of residential construction activity has been focused on the more suburban jurisdictions. Over the last 19 years, less than half of all of the building permits issued in the Washington metropolitan area were in one of the core or Beltway jurisdictions. This share has declined over the past two decades, from 56 percent of all residential building permits in 1992 to 44 percent in 2010.

In addition to the core and Beltway jurisdictions, there will be significant demand for housing in Loudoun County as a result of its strong anticipated job growth. Between 2010 and 2030, Loudoun County would need to add 98,171 net new housing units to house nearly 150,000 new workers, which suggests construction of about 5,000 units per year. This level of construction activity is not unprecedented in Loudoun County. In 2002 through 2006, the county issued more than 6,000 residential building permits each year. On average, over the past 19 years there has been an average of 4,234 building permits issued annually in the county.

These housing demand forecasts do not suggest locations for housing *within* jurisdictions. However, based on the assessment of the need for housing of different types and price/rent ranges (see below), a substantial portion of the housing that will be needed by future workers will need to be located close to established and growing employment centers, near transit and transportation networks and in more compact developments.

What types of housing units will be needed?

The housing forecasts include an assessment of the demand for four different types of housing units—single-family owner, single-family rental, multi-family owner, and multi-family renter. (Single-family includes both single-family detached homes and townhouses. Multi-family includes units in rental and condominium buildings.)

The types of housing that will be needed to accommodate new workers over the next 20 years reflect the changing demographics of workers and mix of future jobs in the region. The single biggest need over the next two decades will be for multi-family rental units. About 39 percent of the housing unit forecasts—285,644 units—are in the multi-family rental category (Table 5.) The next biggest category is the single-family owner category, where there will be a need for 236,990 housing units over the next 20 years. There will also be demand for 162,136 owner-occupied multi-family units, or condominium units. Only a small percentage of the housing unit forecasts—6.4 percent—will be single-family rental units.

Table 5. Estimates of Housing Demand by Unit Type: 2010 – 2030
Washington DC Metropolitan Area
High Estimates*

Jurisdiction	Total Units	Single-Family		Multi-Family	
		Owner	Renter	Owner	Renter
District of Columbia	**122,613**	**8,308**	**1,578**	**38,386**	**74,340**
Calvert	9,764	4,261	1,206	1,226	3,071
Charles	13,608	6,109	1,432	1,655	4,413
Frederick	27,336	12,235	3,211	3,393	8,498
Montgomery	108,522	29,989	6,669	24,588	47,276
Prince George's	52,382	17,827	2,589	10,292	21,673
Suburban Maryland	**211,612**	**70,421**	**15,108**	**41,153**	**84,931**
Alexandria	30,922	2,020	422	8,390	20,090
Arlington	34,342	3,036	478	12,035	18,792
Clarke	744	342	85	95	221
Fairfax	110,947	46,031	5,223	32,381	27,312
Fauquier	6,870	3,362	731	914	1,864
Loudoun	98,171	49,976	9,791	13,570	24,833
Prince William	55,065	25,942	6,141	7,569	15,413
Spotsylvania	30,375	13,331	3,897	3,791	9,356
Stafford	22,680	10,906	2,422	2,940	6,412
Warren	2,702	1,227	318	330	827
Northern Virginia	**392,817**	**156,173**	**29,508**	**82,015**	**125,121**
Jefferson Co WV	4,414	2,087	494	582	1,251
Washington MSA	**731,457**	**236,990**	**46,687**	**162,136**	**285,644**
		283,677		**447,780**	

*The high estimates assume all new workers are housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

These housing demand forecasts suggest a need for 283,677 single-family houses and 447,780 multi-family housing units. Thus, over 60 percent of the housing units needed for the region's net new workers will be multi-family, while less than 40 percent will be single-family. The region's current housing stock, by contrast, is 67 percent single-family and 33 percent multi-family (Table 6.)

There will also be a shift in the homeownership rate for future residents of the Washington DC region, largely due to changes in the age structure and household compositions of new workers. Currently, the homeownership rate in the region is 64 percent. However, only 55 percent of the new workers to the region over the next 20 years will live in owner-occupied units, while 45 percent will rent. The shifts in housing type and owner/renter status suggest a need for changes in builders' approaches to new home construction and local governments' policies for guiding residential development in order to accommodate this needed housing growth.

Table 6. Comparing Unit Types: Existing and Future Housing
Washington DC Metropolitan Area

Jurisdiction	Current Housing Stock (%)*	Housing Needed for Net New Workers (%)
Single-Family	67	39
Multi-Family	33	61
Owner	64	55
Renter	36	45

*2009 American Community Survey

What prices and rents will new workers be able to afford?

To ensure that new workers are able to live in the region, housing must be available at the right prices and rents. The region's housing must be priced so that it is affordable to new workers. While the Washington metropolitan area will continue to attract many high-wage jobs over the next 20 years, the new workers coming to the region will have wages all along the income spectrum. Furthermore, a growing share of workers will live alone and will therefore have only one income. As a result, the Washington region will need a substantial amount of housing at relatively moderate prices and rents.

Of the 1.05 million net new jobs that will be added to the region's economy, the strongest growth will be in the professional and technical services and management sector, where there is expected to be more than 370,000 net new jobs added between 2010 and 2030 (Table 7.) These jobs tend to be relatively high wage jobs—the median wage for professional and technical services jobs in the region is $75,000 compared with an overall median wage of

$44,000. However, there will be strong job growth regionally in a number of other sectors, including in sectors with lower wages. The region will add 129,701 jobs in the administrative and waste services sector, 117,304 jobs in the health services sector, and 94,928 jobs in the construction sector. These sectors all have median wages below the overall median.

Table 7. Employment Forecasts by Sector: 2010 - 2030
Washington DC Metropolitan Area

Sector	Net New Jobs	Median Wage ($)
Total	1,053,855	44,000
Construction	94,928	35,000
Manufacturing	-2,505	56,000
Transportation & Utilities	24,972	37,000
Wholesale Trade	14,384	38,000
Retail Trade	61,689	20,000
Information	23,900	65,000
Finance & Insurance	16,438	55,000
Real Estate	15,061	45,000
Prof & Tech Services; Management	370,412	75,000
Admin & Waste Services	129,701	27,500
Education	41,343	40,000
Health Services	117,304	35,000
Leisure & Hospitality	51,057	14,750
Other Services	26,773	35,000
Government	60,497	75,000
Military	7,901	75,000

Source: IHS Global Insight, 2009 American Community Survey. Data on military wages were not available from the ACS. Therefore, the median wage for military employment was assumed to be the same as the median wage for government employment.

The median wages were used to calculate household incomes and to estimate home prices and rents that are affordable to the region's net new workers. It was assumed that the maximum affordable home price was four times the household income, while the maximum rent depended on household income and did not exceed 30 percent of household income (Table 8.)

About one-quarter of the owner-occupied units that will be needed to house new workers in the region—98,314 units—will need to be priced below $200,000 (Table 9.) About 44 percent will need to be priced between $200,000 and $399,999 and 26 percent between $400,000 and $599,999. Only about five percent of the forecasted owner-occupied units will need to be priced at $600,000 or higher.

Table 8. Household Income and Maximum Home Prices and Monthly Rents

Household Income	Home Price	Monthly Rent
Less than $50,000	Less than $200,000	Less than $1,249
$50,000-74,999	$200,000-299,999	$1,250-1,314
$75,000-99,999	$300,000-399,999	$1,315-1,749
$100,000-124,999	$400,000-499,999	$1,750-1,874
$125,000-149,999	$500,000-599,999	$1,875-2,249
$150,000 or more	$600,000 or more	$2,250 or more

There will also be a substantial need for moderately priced rental units. Based on this analysis, there will be a demand for 178,138 rental units with rents below $1,250 per month (Table 10.) These units constitute about 54 percent of the total forecasted rental units. Another 35 percent will need to have rents between $1,250 and $1,749. Only 11 percent are in the $1,750 to $2,249 rental range and less than one percent of the forecasts rental units will have rents of $2,250 or more.

The demand for moderately priced owner and rental units does not mean that all of these more affordable units must be new construction. In some markets, it would be very difficult to build new units at these lower prices and rents without significant subsidy. Therefore, these forecasts suggest that the preservation of existing affordable owner and rental housing is essential for ensuring a sufficient supply of affordable housing for the region's future workforce.

Table 9. Estimates of Housing Demand: 2010 – 2030
Owner-Occupied Units
Washington DC Metropolitan Area
High Estimates*

Jurisdiction	Total Owner-Occupied Units	Home Price (2010 $s)			
		Less than $200,000	$200,000 – 399,999	$400,000 – 599,999	$600,000 or More
District of Columbia	46,694	8,189	25,595	12,911	0
Calvert	5,487	2,477	1,978	997	35
Charles	7,763	3,581	3,448	631	103
Frederick	15,628	6,567	8,298	763	0
Montgomery	54,577	16,712	23,109	12,073	2,684
Prince George's	28,119	8,767	15,506	3,846	0
Suburban Maryland	**111,574**	**38,104**	**52,339**	**18,309**	**2,821**
Alexandria	10,410	1,322	7,808	4,529	1,413
Arlington	15,072	184	202	49	2
Clarke	437	4,129	27,664	37,077	9,543
Fairfax	78,412	1,571	1,724	867	113
Fauquier	4,275	18,703	27,522	15,454	1,868
Loudoun	63,547	10,896	15,407	6,011	1,196
Prince William	33,511	7,128	7,740	1,902	352
Spotsylvania	17,122	4,311	5,491	2,363	1,679
Stafford	13,846	761	615	160	21
Warren	1,557	1,959	4,122	3,341	989
Northern Virginia	**238,188**	**50,965**	**98,294**	**71,752**	**17,177**
Jefferson Co WV	2,669	1,056	1,081	491	41
Washington MSA	**399,125**	**98,314**	**177,309**	**103,463**	**20,039**

*The high estimates assume all new workers are housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

Table 10. Estimates of Housing Demand: 2010 – 2030
Renter-Occupied Units
Washington DC Metropolitan Area
High Estimates*

Jurisdiction	Total Owner-Occupied Units	Monthly Rent (2010 $s)			
		Less than $1,250	$1,250 – 1,749	$1,750 – 2,249	$2,250 or More
District of Columbia	**75,919**	**39,893**	**25,089**	**10,937**	**0**
	0				
Calvert	4,278	3,180	942	154	2
Charles	5,845	4,653	1,019	168	5
Frederick	11,708	8,312	3,141	256	0
Montgomery	53,945	31,257	19,804	2,654	230
Prince George's	24,262	13,761	9,440	1,061	0
Suburban Maryland	**100,038**	**61,163**	**34,346**	**4,293**	**236**
Alexandria	19,270	6,422	7,702	4,684	462
Arlington	307	203	96	7	0
Clarke	32,535	7,595	15,546	8,552	842
Fairfax	2,595	1,686	786	117	6
Fauquier	34,624	20,613	11,788	2,130	93
Loudoun	21,555	13,009	7,642	830	74
Prince William	13,253	9,561	3,377	298	17
Spotsylvania	8,834	5,816	2,583	356	79
Stafford	1,145	818	303	23	1
Warren	20,512	10,188	6,433	3,631	260
Northern Virginia	**154,629**	**75,910**	**56,257**	**20,629**	**1,833**
Jefferson Co WV	**1,745**	**1,170**	**489**	**84**	**2**
Washington MSA	**332,331**	**178,136**	**116,181**	**35,942**	**2,071**

*The high estimates assume all new workers are housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

Policy Implications

Housing Policy and the Region's Economic Development

Housing needs to be thought of as an economic development strategy. Those jurisdictions that have sufficient housing to accommodate a growing proportion of their future workforce requirements will have a competitive advantage over jurisdictions that must import their workers. Jurisdictions that have sufficient housing for their workforce will not have to provide the same transportation services that jurisdictions dependent on non-resident workers will have to provide.

For the Washington region to grow efficiently and reduce its dependence on imported labor, all jurisdictions need to have a housing policy that reflects their specific housing requirements to accommodate future economic growth and the workforce demands that this growth implies. Today, no jurisdiction in the Washington area has a housing policy designed to respond adequately to its economic growth potential and workforce requirements.

Housing is where the workforce lives; it is where workers spend a large proportion of their income and where they pay their taxes. Recognizing and institutionalizing this critical link between housing and economic growth is critical to the future viability of the Washington region's economy. The Washington region cannot achieve its future growth potential without having the workforce to support this expanding economy. And, this workforce will not be available to the region's future businesses in the absence of sufficient housing, located to minimize the need to commute, and priced at levels fitting the ranges of jobs and incomes projected for the Washington region over the next 20 years. Without meeting the region's future demand for housing the Washington area will not maintain its position as one of the most advanced and dynamic economies among the nation's metropolitan areas and will lose position to other metropolitan area economies that have achieved the necessary balance between housing and their future workforce requirements.

The results of these housing demand forecasts suggest several implications for local housing policy.

Local jurisdictions are planning for an insufficient amount of housing to accommodate future workers. The Washington metropolitan area jurisdictions, in cooperation with the Metropolitan Washington Council of Governments (MWCOG), produce household forecasts as part of the MWCOG cooperative forecasting process.[3] According to the most recent forecasts, local jurisdictions anticipate adding about 556,000 additional housing units between 2010 and 2030. This level of new housing is insufficient to house the 1.05 million net new workers, suggesting a deficit of about 175,000 units, or about 254,000 new workers who will live outside the region and commute in. If the 1.8 million replacement workers are taken into

[3] The local jurisdictions and MWCOG produce forecasts of population, households and employment. The household forecasts are used as an estimate of housing unit forecasts. The latest forecasts are Round 8 and were completed in 2010.

consideration, the amount of housing the local jurisdictions are planning for vastly understates the need.

The deficit varies substantially across the region (Table 11.) Generally, the MWCOG forecasts for the outer suburbs are higher than the housing need suggested by the employment-driven housing demand forecasts. The lack of housing in the region—and the mismatch between the location of housing and job growth—will mean that more workers will live outside the region and commute in and more people will make jurisdiction-to-jurisdiction commutes, worsening traffic congestion and resulting in relatively slower regional economic growth as a greater share of GRP leaves the region each night.

Table 11. Comparison of Employment-Driven Housing Forecasts and MWCOG Round 8 Forecasts: 2010 - 2030

	Employment-Driven Forecasts	MWCOG Forecasts	Deficit
District of Columbia	**122,613**	**52,045**	**-70,568**
			0
Calvert	9,764	6,302	-3,462
Charles	13,608	23,261	9,653
Frederick	27,336	35,417	8,081
Montgomery	108,522	77,500	-31,022
Prince George's	52,382	42,800	-9,582
Suburban Maryland	**211,612**	**186,916**	**-24,696**
Alexandria	30,922	23,923	-6,999
Arlington	34,342	23,731	-10,611
Clarke	744	2,239	1,495
Fairfax	110,947	101,869	-9,078
Fauquier	6,870	36,283	29,413
Loudoun	98,171	47,878	-50,293
Prince William	55,065	62,050	6,985
Spotsylvania	30,375	26,102	-4,273
Stafford	22,680	29,346	6,666
Warren	2,702	N/A	N/A
Northern Virginia	**392,817**	**304,209**	**-88,608**
Jefferson Co WV	4,414	12,648	8,234
Washington MSA	**731,457**	**555,818**	**-175,639**

More housing is needed closer to jobs, in existing and growing regional employment centers. The Washington DC region will add 1.05 million net new jobs over the next 20 years. The fastest job growth will be in Loudoun County where the number of jobs will increase from 140,381 in 2010 to 287,290 in 2030. Significant job growth is also forecasted for the District of Columbia, Fairfax County and Montgomery County. Together, these four jurisdictions account for more than 60 percent of the region's job growth over the next 20 years. Therefore, 60 percent of the region's net new housing units should be located in these jurisdictions; however, the MWCOG forecasts call for only half of the region's new units in these four jurisdictions.

Locating new housing near existing and growing employment centers provides opportunities for mixed use developments that make more efficient use of transportation networks and other infrastructure.

There is a need for more multi-family housing and smaller, more affordable owner and renter homes in the region. The housing demand forecasts suggest that the housing that will be needed by the region's future workforce will be smaller than the current housing stock, including more multi-family units (i.e. rental and condominium), and will need to include a substantial share with moderate rents and prices. Thus, new workers will demand not only multi-family units but they will also need smaller single-family detached homes and townhouses. The reason for this shift relates to the changing demographics of the labor force and the distribution of wages of new jobs. There will be a greater share of single-person and two-person households among the future labor force. The workers coming to the region for new jobs will be somewhat younger than the existing labor force. While there will be many relatively high paying jobs in the region over the next 20 years, there will also be a substantial number of jobs in relatively lower wage jobs. Many of these lower wage jobs are critical supporting jobs to the higher wage professional and technical services sector, including the administrative and waste services sector, the retail trade sector and the leisure and hospitality sector.

Not all of the moderately priced housing will results from new construction. In fact, in many places in the region, lower priced housing is difficult to build without some form of public subsidy. Therefore, it is essential that steps are taken to inventory and preserve the market rate affordable housing that currently exists, particularly units in fast-growing and in-demand jurisdictions.

A lack of a sufficient supply of housing contributes to worsening traffic and quality of life and threatens our region's economic vitality. A lack of sufficient housing in the Washing area will lead to increased traffic congestion, causing commuters to spend more time in traffic, reducing productivity and quality of life. It will make it more difficult for businesses to recruit workers. As other parts of the country achieve a better balance between housing and economic growth, workers may choose to leave the Washington DC area for places with more affordable housing closer to their jobs and with shorter, less stressful commutes.

Currently, 4.25 percent of the Washington area's GRP leaks out of the region as workers commute to their homes in jurisdictions outside the metropolitan area boundaries. Thus, these workers pay taxes and buy goods and services outside of the region, contributing to the local economy outside of the region. It is estimated that by 2030, the share of GRP that will leave the region will be 8.75 percent or higher. Thus, a lack of a sufficient supply of housing—in the right locations, of the right unit mix, and with the right prices and rents—is essential for ensuring the Washington metropolitan area can achieve its economic potential.

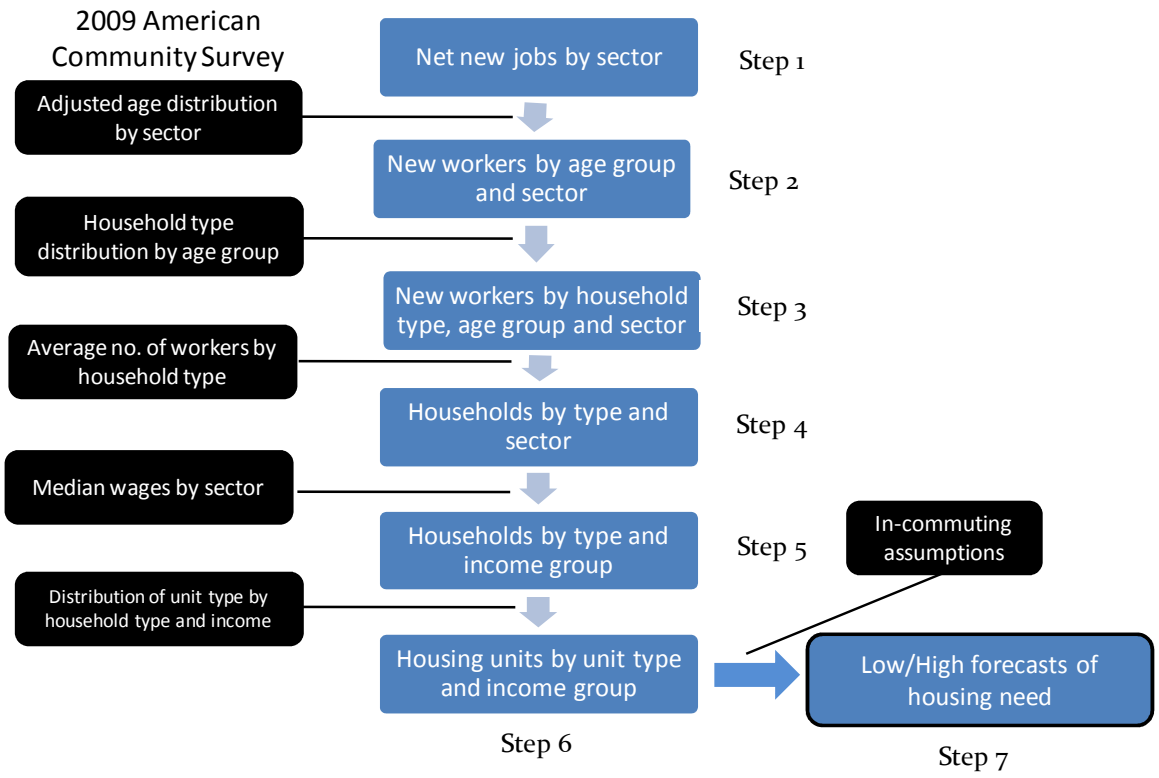
Appendix

Methodology

The housing demand forecasts generated by the Center for Regional Analysis are employment-driven forecasts of the need for housing. These forecasts differ from some other forecasts of housing need, which are demographically driven. The approach explicitly links regional job and economic growth with the availability and price of housing. Housing forecasts were generated for 17 jurisdictions or groups of jurisdictions that comprise the Washington DC Metropolitan Statistical Area.[1] These housing forecasts were based on forecasts of job growth by industry sector for each jurisdiction and assessed the amount and type of housing that would be needed to house each jurisdiction's workers.

The Center conducted a seven-step model for generating housing demand forecasts (see Figure A1.) Each step in the process was important for modeling not simply the overall demand for housing, but also the need for housing in different jurisdictions, of different types, and at different price/rent points. The characteristics of the housing units needed for the region's future workers depend on the age, household composition, and household income of new workers, which are all factors included in the analysis. This section briefly outlines the methodology and data used to derive the forecasts.

Figure A1. Methodology for Forecasting Housing Need



[1] There are 22 counties and cities in the Washington DC Metropolitan Statistical Area. For this research, several independent cities in Virginia were combined with their surrounding county. The cities of Fairfax and Falls Church are included in the Fairfax County forecasts. The cities of Manassas and Manassas Park are included in the Prince William County forecasts. The city of Fredericksburg is included in the Spotsylvania County forecasts.

Step 1. Determine Net New Job Growth By Sector

It is important to understand the types of jobs coming to the region so we can develop estimates of household income, which will determine housing types and affordability levels. IHS Global Insight provides annual job forecasts for each of the region's jurisdictions. These employment forecasts are based on a county-level econometric model that Global Insight updates regularly. The forecasts include full-time, payroll jobs only, excluding both part-time jobs and self-employed persons. Therefore, the Global Insight figures undercount the total employment activity in the region. The Global Insight forecasts include 13 major industry sectors. In some cases, we split the Global Insight sectors into subsectors if the wages of workers in different subsectors were likely to have different wages. We split the Global Insight trade and utilities sector into transportation and utilities, wholesale trade and retail trade. We divided the education and health services sector into two sectors. We split the financial services sector into finance and insurance and real estate. Finally, we split the professional and business services sector into professional and technical services/management and administrative/waste services. Historic county-level employment data from the U.S. Bureau of Economic Analysis was used to divide the sectors. Tables A1-1 through A1-17 summarize the employment change by sector for each jurisdiction.

Step 2. Assign Net New Workers to Age Categories

Understanding the age distribution of the region's future workforce is important for estimating housing demand, since the demand for different types of housing is strongly associated with individuals' ages. The first step in moving from jobs to housing demand is to estimate the age distribution of the net new workers. For each jurisdiction, we assigned some share of the net new workers in each sector to one of three age groups: under 30, 30-44 or 45-64. We assumed no net new workers are aged 65 or older. New workers will be somewhat younger than the existing workforce.

We analyzed data from the 2009 American Community Survey (1-year microdata sample) to estimate the age distribution of *current* workers for each industry sector. This analysis was done separately for each jurisdiction. We adjusted the age distribution to account for the fact that new workers will be younger by analyzing 2009 ACS data on the age distribution of recent movers to the Washington DC region. Through this analysis, we found that recent movers are more likely to be under age 45 and less likely to be age 45 to 64 compared to existing workers. We applied these ratios to the age distribution of existing workers in each jurisdiction to adjust the age distribution for new workers. Tables A2-1 through A2-17 summarize the age distribution of new workers by sector for each jurisdiction.

Step 3. Assign Net New Workers to Household Types

Age is a determinant of housing need largely because of the household composition implied by the ages of the individuals in the households. For example, new workers under age 30 are more likely to live in one-person households or two adult-no children households. By contrast, workers age 30 to 44 are more likely to live in households with children.

We assigned each new worker in each sector to one of ten household types based on the age group to which they were assigned in the previous analytic step. The 10 household types are listed below:

Household Size	Household Composition	Household Size	Household Composition
1-person households	1 adult	3-person households	1 adult, 2 child
2-person households	1 adult, 1 child		2 adults, 1 child
	2 adults		3 adults
		4+ person households	1 adult, 3+ children
			2 adults, 2+ children
			3 adults, 1+ children
			4 adults

We used the 2009 ACS 1-year data and analyzed the current distribution of household types for each age group and for each jurisdiction. Thus, for each jurisdiction, we assessed what percent of workers under 30 live in one-adult households, what percent live in one-adult, one-child households and so on. From step 2 above, we know how many workers in each sector are in each age group (under 30, 30-44, and 45-64) for each jurisdiction. We used the distribution of household types by age from the 2009 ACS to assign workers in each sector and age group to a household type. Tables A3-1 through A3-17 summarize the distribution of household types by age group for each sector.

Step 4. Generate the Number of Households by Type Using Average Number of Workers per Household

From the 2009 ACS analysis, we estimated the average number of workers in each of the ten household types. We analyzed these averages for each jurisdiction or group of jurisdictions (when the sample sizes were too small.) By knowing the number of workers in each household type, we convert workers into households by dividing the total number of workers assigned to each household type by the average number of workers in each household type. (See Figure A2 for an example.) This step assumes that workers who live in the same household also work in the same sector. Tables A3-1 through A3-17 summarize the average workers per household by household type for each jurisdiction.

Figure A2. Example of Assigning Workers to Household Types

Assume there were 1,000 net new workers in the construction sector in Fairfax County who were between the ages of 30 and 44. From the 2009 ACS we have the household type distribution for people age 30 to 44 in Fairfax County, as shown in the second column of the table below. We use that distribution to assign the 1,000 net new construction workers to a household type, as shown in the fourth column of the table below. We repeat this process for all age groups and all sectors in each jurisdiction.

Household Type	% of all 30-44 year olds in Fairfax County	Average No. of Workers	No. of Net New Construction Workers Age 30-44	No. of Net New Households Associated with New Construction Workers Age 30-44
1 adult	10%	1	100	100
1 adult, 1 child	10%	1	100	100
2 adults	20%	1.42	200	141
1 adult, 2 child	10%	1	100	100
2 adults, 1 child	20%	1.73	200	116
3 adults	5%	2.08	50	24
1 adult, 3+ children	5%	1	50	50
2 adults, 2+ children	10%	1.84	100	54
3 adults, 1+ children	5%	2.37	50	21
4 adults	5%	2.4	50	21

Then, we combine workers into households. For example, the 100 workers in the first row of the table above form 100 households, but the 200 workers in the third row form 141 households (200 workers / 1.42 workers per household.)

Step 5. Calculate Household Income and Sum Households by Income Group

Housing demand is driven by factors including age and household composition, but it is also necessarily related to household income. We calculated median household incomes for all ten household types and all industry sectors. Then, we tabulate the total number of households in each of six income categories: less than $50,000; $50,000 – 74,999; $75,000 – 99,999; $100,000 - 124,999; $125,000 – 149,999; and $150,000 and greater.

We used the 2009 ACS 1-year data to calculate the median wages by sector for each jurisdiction. Tables A4-1 through A4-4 summarize the median wages by sector for each jurisdiction. Using information on the median wage by sector and the average number of workers per household (assuming both are in the same sector), we calculated the household income for each household type and sector for each jurisdiction. We then summed up—across sectors—the number of households in each of the six income categories for each of the ten household types. Thus, we have a count of the numbers of one-adult households in each income group, the number of one-adult, one-child households in each income group, and so on.

Step 6. Estimate the Number of Housing Units by Type and Price/Rent

After step 5, we have a count of the number of households by household type and household income that result from the net new jobs in each jurisdiction. Household type and household income are both associated with the type of housing demanded. We estimated the need for four different types of housing units in six rent/price categories. The four housing unit types are: single-family (included single-family detached and townhouse) owner and renter, and multi-family owner and renter. The six rent/price categories are linked to the six income groups and represent the maximum rent or home price affordable to households in each income group.

We used the 2009 ACS 1-year data to run crosstabulations of housing type (i.e. four types) by household composition (i.e. 10 household types) for each of the six income groups. The results of this analysis show the current distribution of housing types for different household types and household incomes. We ran this analysis for each jurisdiction (or a group of jurisdictions when sample sizes were too small.) Tables A5-1 through A5-7 show the distributions of housing unit type by household composition for the six income groups. We then applied these distributions to the projected number of households for each jurisdiction to estimate the need for housing by unit type and rent/price.

We made assumptions about the affordable price and rent levels for households in each of the six income groups (see below.) We assumed that the maximum affordable home price was four times the household income. The maximum affordable rent was set as a percentage of household income. We assumed affordable rents would not exceed 30% of renters' income when the household income was below $50,000; 21% of income for renters with incomes between $50,000 and 99,999; and 18% of income for renters with incomes about $100,000.

These rent percentages are based on standard definitions of housing burden for the lowest income group and on an analysis of rents as a percentage of household income in the 2009 ACS for the other income groups, knowing that higher income renters tend to spend a lower percentage of their income on rent than do lower income renters.

Household Income	Owner	Renter
Less than $50,000	Less than $200,000	Less than $1,249
$50,000-74,999	$200,000-299,999	$1,250-1,314
$75,000-99,999	$300,000-399,999	$1,315-1,749
$100,000-124,999	$400,000-499,999	$1,750-1,874
$125,000-149,999	$500,000-599,999	$1,875-2,249
$150,000 or more	$600,000 or more	$2,250 or more

Step 7. Develop "High" and "Low" Forecasts Based on In-Commuting Assumptions

After step 6, we have a count of the number of new housing units needed by type and price needed to accommodate *all* new workers in a jurisdiction. These "high" forecasts assume that all new workers over the next 20 years will live in the jurisdiction in which they work. Therefore, these forecasts assume that the level of jurisdiction-to-jurisdiction commuting will remain at current levels.

We generated another set of forecasts that assumed that the new jobs in each jurisdiction had the same in-commuting rate associated with existing jobs. For example, 47 percent of Fairfax County jobs are held by people who live in Fairfax. For the "low" set of forecasts, we assumed that 47 percent of Fairfax's new workers would be housed in Fairfax. We made this assumption for all the jurisdictions, given their individual current in-commuting rates. Table A6 summarizes the in-commuting rates for each jurisdiction. As a result, these "low" forecasts assume that a large number of the new workers actually live outside of the Washington DC region. The result would be substantial increases in total commuting and traffic congestion.

Study Limitations

The demand for housing depends on many factors. Modeling this housing demand necessarily involves making several simplifying assumptions. Some of the complexity of housing need will be excluded from the analysis and some of the limitations of the research are described briefly in this section.

The housing demand forecasts exclude the housing needed to accommodate replacement workers. There is a need for 731,457 housing units to house the 1.05 million net new workers that will be needed in the region between 2010 and 2030. Over the same time, there will be a need for 1.80 million replacement workers, as the current workforce ages and retires. Some retiring workers will leave the region, thus freeing up housing units for new or replacement workers. However, many of the retiring workers will stay in the region. It is estimated that over a 20-year period, about 40 percent of people age 55 and older move out of state. Thus, when workers in the Washington DC region retire, the majority will stay in their houses in the region.[2] As a result, the housing demand forecasts presented in this report understate the actual need for housing over the next 20 years.

It is assumed that there are no major shifts in the housing unit preferences of future cohorts or in the direction of Federal policies related to homeownership. These forecasts are based on data on the housing characteristics of current residents by age group, household composition and household income in order to make estimates of future housing needs. This method assumes that there are no major changes in the housing unit preferences of future cohorts. Some housing professionals and researchers have suggested that future cohorts will shift their housing preferences to more rental housing and more compact housing closer to transit.[3] It is unclear whether a major shift in housing preferences would actually materialize, particularly over the relatively short time period of two decades. If there is a shift, however, there will be an even greater demand for multi-family and rental units and more compact single-family development.

In addition, this research makes no assumptions about the direction of Federal policies related to homeownership which might make owning relatively less attractive or feasible over time. If there are major changes to the federal mortgage interest deduction (which is unlikely, particularly in the short term) or to regulation related to downpayment and other requirements for securing a home mortgage, then homeownership may be less desirable or less achievable for future workers. Thus, there could be a shift to a need for even more rental housing in the region.

It is assumed that workers' housing location choices are related solely to their place of work. The "high" forecasts were generated to keep current jurisdiction-to-jurisdiction commuting levels constant over the next 20 years. The means to achieving this goal is to place all workers'

[2] Sergeant, Julie F., David J. Ekerdt, and Rosemary Chapin. 2008. "Measurement of Late-Life Residential Relocation: Why Are Rates for Such a Manifest Event So Varied?" *Journal of Gerontology* 63B(2): S92-S98.
[3] See, for example, *Generation Y in the Marketplace,* a presentation by RCLCO available at www.rclco.com.

homes in the jurisdictions in which they work. This is an oversimplification of the decisions people make about where to live. Many households with multiple workers have work places in different jurisdictions. Workers have become increasingly more mobile with respect to work, changing jobs more frequently than in the past. And while telecommuting is still a small part of the labor force, with a very small share of workers regularly working from home, some workers are not tied to a physical workplace.

These housing demand forecasts are not meant to suggest that people should live in the same jurisdiction in which they work. Rather, these forecasts provide guidance for the amount of housing that would be required so that workers have the options for affordable housing closer to where they work. The overall quantity of housing needed could be redistributed somewhat throughout the region given other factors that influence housing choice.

Table A1. Job Change 2010 – 2030

Table A1-1. District of Columbia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	732,483	819,901	884,613	87,418	64,712
Construction, Natural Resources and Mining	11,007	16,347	18,456	5,340	2,109
Manufacturing	1,351	1,418	1,208	67	-210
Transportation & Utilities	5,249	5,953	6,574	704	621
Wholesale Trade	4,366	4,951	5,467	586	516
Retail Trade	17,675	20,045	22,135	2,370	2,089
Information	18,545	20,695	22,829	2,150	2,134
Finance and Insurance	12,755	14,399	16,002	1,644	1,603
Real Estate and Rental and Leasing	13,163	14,860	16,514	1,697	1,654
Prof, Scientific and Tech Services; Management	112,543	145,966	167,784	33,423	21,817
Admin and Waste Services	41,390	53,682	61,705	12,292	8,024
Education	47,759	56,742	64,820	8,983	8,079
Health Services	57,589	68,420	78,162	10,831	9,741
Leisure and Hospitality	58,509	63,075	67,233	4,566	4,158
Other Services	63,566	65,261	66,298	1,695	1,037
Government/Public Administration	247,543	247,184	247,740	-359	556
Military	19,473	20,902	21,686	1,429	784

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A1-2. Calvert County, Maryland

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	22,719	30,673	37,307	7,954	6,634
Construction, Natural Resources and Mining	1,940	3,290	4,491	1,350	1,201
Manufacturing	624	771	703	147	-68
Transportation & Utilities	641	857	1,046	216	190
Wholesale Trade	453	606	740	153	134
Retail Trade	4,003	5,351	6,537	1,348	1,185
Information	108	140	152	32	12
Finance and Insurance	181	225	261	45	35
Real Estate and Rental and Leasing	483	603	697	119	95
Prof, Scientific and Tech Services; Management	912	1,267	1,589	355	322
Admin and Waste Services	746	1,036	1,300	290	264
Education	278	381	455	103	74
Health Services	3,499	4,799	5,727	1,300	928
Leisure and Hospitality	3,053	3,752	4,318	699	566
Other Services	1,090	1,390	1,823	300	433
Government/Public Administration	4,398	5,830	7,073	1,432	1,243
Military	310	375	395	65	20

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A1-3. Charles County, Maryland

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	43,368	54,733	63,769	11,365	9,036
Construction, Natural Resources and Mining	3,765	5,923	7,212	2,158	1,289
Manufacturing	767	919	854	152	-65
Transportation & Utilities	1,656	2,043	2,398	386	355
Wholesale Trade	0	0	0	0	0
Retail Trade	9,569	11,801	13,849	2,233	2,048
Information	406	488	518	82	30
Finance and Insurance	567	690	770	123	80
Real Estate and Rental and Leasing	955	1,161	1,296	206	135
Prof, Scientific and Tech Services; Management	1,842	2,436	2,982	593	546
Admin and Waste Services	1,360	1,797	2,200	438	403
Education	492	643	748	151	105
Health Services	4,363	5,706	6,636	1,343	930
Leisure and Hospitality	5,191	6,066	6,722	875	656
Other Services	1,732	2,105	2,685	373	580
Government/Public Administration	9,592	11,613	13,484	2,021	1,871
Military	1,111	1,342	1,415	231	73

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis
Note: There was insufficient information to separate out the number of Wholesale Trade jobs. These jobs are included in the Transportation & Utilities and Retail Trade figures.

Table A1-4. Frederick County, Maryland

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	98,784	121,048	140,734	22,264	19,686
Construction, Natural Resources and Mining	8,122	10,823	10,522	2,701	-301
Manufacturing	4,764	5,070	4,467	306	-603
Transportation & Utilities	0	0	0	0	0
Wholesale Trade	3,050	3,536	4,082	487	546
Retail Trade	13,082	15,171	17,512	2,088	2,341
Information	1,424	1,654	1,879	230	225
Finance and Insurance	5,394	6,362	7,089	968	727
Real Estate and Rental and Leasing	2,815	3,320	3,699	505	379
Prof, Scientific and Tech Services; Management	10,882	14,640	18,646	3,757	4,006
Admin and Waste Services	4,972	6,688	8,518	1,717	1,830
Education	2,610	3,535	4,490	925	955
Health Services	9,636	13,050	16,578	3,414	3,528
Leisure and Hospitality	9,276	10,673	12,611	1,397	1,938
Other Services	3,783	4,216	5,077	433	861
Government/Public Administration	17,047	19,785	22,870	2,738	3,085
Military	1,927	2,525	2,694	598	169

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis
Note: There was insufficient information to separate out the number of Transportation & Utilities jobs. These jobs are included in the Wholesale Trade and Retail Trade figures.

Table A1-5. Montgomery County, Maryland

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	472,619	565,133	635,627	92,514	70,494
Construction, Natural Resources and Mining	24,806	39,737	48,443	14,931	8,706
Manufacturing	12,585	13,186	11,083	601	-2,103
Transportation & Utilities	6,554	7,235	7,819	681	584
Wholesale Trade	10,314	11,386	12,304	1,072	919
Retail Trade	42,786	47,231	51,042	4,445	3,811
Information	14,685	16,684	17,882	1,999	1,198
Finance and Insurance	15,260	17,045	17,809	1,785	763
Real Estate and Rental and Leasing	17,363	19,395	20,263	2,032	869
Prof, Scientific and Tech Services; Management	78,287	101,113	120,827	22,826	19,714
Admin and Waste Services	30,748	39,713	47,456	8,965	7,743
Education	12,334	15,951	18,913	3,617	2,962
Health Services	50,916	65,848	78,076	14,932	12,228
Leisure and Hospitality	37,591	41,909	47,261	4,318	5,352
Other Services	25,434	27,140	30,541	1,706	3,401
Government/Public Administration	86,299	92,836	96,601	6,537	3,765
Military	6,657	8,724	9,307	2,067	583

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A1-6. Prince George's County, Maryland

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	323,347	372,870	399,925	49,523	27,055
Construction, Natural Resources and Mining	28,665	43,392	51,787	14,727	8,395
Manufacturing	9,668	9,976	8,300	308	-1,676
Transportation & Utilities	12,210	13,396	14,296	1,186	900
Wholesale Trade	10,562	11,588	12,367	1,026	779
Retail Trade	37,746	41,413	44,197	3,667	2,783
Information	3,052	3,225	3,126	173	-99
Finance and Insurance	5,059	5,396	5,490	337	95
Real Estate and Rental and Leasing	6,981	7,445	7,576	464	130
Prof, Scientific and Tech Services; Management	21,854	26,352	29,468	4,498	3,116
Admin and Waste Services	18,176	21,918	24,510	3,742	2,592
Education	5,400	6,450	6,802	1,050	352
Health Services	25,434	30,378	32,037	4,944	1,659
Leisure and Hospitality	28,051	29,800	30,545	1,749	745
Other Services	12,559	13,965	16,174	1,406	2,209
Government/Public Administration	89,818	98,373	102,916	8,555	4,543
Military	8,112	9,802	10,334	1,690	532

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A1-7. City of Alexandria, Virginia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	106,120	129,981	147,460	23,861	17,479
Construction, Natural Resources and Mining	2,953	5,146	6,944	2,193	1,798
Manufacturing	1,136	1,098	829	-38	-269
Transportation & Utilities	1,884	2,011	1,983	126	-28
Wholesale Trade	1,979	2,112	2,083	133	-29
Retail Trade	7,770	8,292	8,179	522	-114
Information	1,977	2,340	2,553	363	213
Finance and Insurance	2,354	2,639	2,791	285	152
Real Estate and Rental and Leasing	3,379	3,789	4,007	410	218
Prof, Scientific and Tech Services; Management	17,728	28,464	37,808	10,736	9,343
Admin and Waste Services	6,472	10,392	13,802	3,920	3,411
Education	2,264	2,972	3,331	707	359
Health Services	5,500	7,218	8,090	1,719	872
Leisure and Hospitality	8,884	10,038	10,348	1,154	310
Other Services	14,061	14,889	16,406	828	1,517
Government/Public Administration	23,714	24,559	24,286	845	-273
Military	4,064	4,022	4,020	-42	-2

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A1-8. Arlington County, Virginia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	178,885	209,422	225,525	30,537	16,103
Construction, Natural Resources and Mining	2,611	4,871	6,634	2,260	1,763
Manufacturing	585	622	454	37	-168
Transportation & Utilities	9,450	9,656	9,035	206	-621
Wholesale Trade	0	0	0	0	0
Retail Trade	10,656	10,889	10,189	233	-700
Information	4,517	5,023	5,117	506	94
Finance and Insurance	2,598	2,793	2,796	196	3
Real Estate and Rental and Leasing	3,961	4,260	4,265	298	5
Prof, Scientific and Tech Services; Management	36,633	56,087	70,251	19,454	14,165
Admin and Waste Services	8,157	12,489	15,644	4,332	3,154
Education	6,933	8,648	9,147	1,716	498
Health Services	7,827	9,765	10,327	1,937	563
Leisure and Hospitality	16,137	17,463	17,108	1,326	-355
Other Services	13,604	13,736	14,284	132	548
Government/Public Administration	43,629	41,653	38,814	-1,976	-2,839
Military	11,587	11,467	11,460	-120	-7

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis
Note: There was insufficient information to separate out the number of Wholesale Trade jobs. These jobs are included in the Transportation & Utilities and Retail Trade figures.

Table A1-9. Clarke County, Virginia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	4,136	4,603	5,222	467	619
Construction, Natural Resources and Mining	443	568	655	124	87
Manufacturing	785	734	614	-51	-120
Transportation & Utilities	54	55	60	1	5
Wholesale Trade	155	158	172	4	13
Retail Trade	298	305	331	7	26
Information	18	18	20	0	2
Finance and Insurance	47	52	61	5	8
Real Estate and Rental and Leasing	103	114	132	10	18
Prof, Scientific and Tech Services; Management	186	281	409	95	128
Admin and Waste Services	186	281	409	95	128
Education	269	333	411	64	79
Health Services	269	333	411	64	79
Leisure and Hospitality	322	352	401	30	49
Other Services	200	202	245	2	43
Government/Public Administration	754	771	845	16	74
Military	47	46	46	0	0

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A1-10. Fairfax County, Virginia (includes independent cities of Fairfax and Falls Church)

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	633,450	733,853	802,283	100,403	68,430
Construction, Natural Resources and Mining	24,797	32,241	34,626	7,444	2,385
Manufacturing	8,704	7,958	5,780	-746	-2,178
Transportation & Utilities	0	0	0	0	0
Wholesale Trade	19,381	18,337	16,910	-1,043	-1,427
Retail Trade	62,740	59,363	54,742	-3,378	-4,621
Information	23,571	24,648	24,993	1,077	345
Finance and Insurance	14,321	14,227	14,045	-94	-181
Real Estate and Rental and Leasing	18,079	17,960	17,732	-119	-229
Prof, Scientific and Tech Services; Management	184,462	262,765	325,403	78,303	62,638
Admin and Waste Services	44,115	62,842	77,822	18,727	14,980
Education	14,622	17,015	17,788	2,394	773
Health Services	49,790	57,942	60,573	8,151	2,631
Leisure and Hospitality	49,790	49,703	47,842	-87	-1,861
Other Services	29,678	27,910	28,688	-1,768	778
Government/Public Administration	82,507	74,121	68,522	-8,386	-5,599
Military	6,893	6,821	6,817	-72	-4

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis
Note: There was insufficient information to separate out the number of Transportation & Utilities jobs. These jobs are included in the Wholesale Trade and Retail Trade figures.

Table A1-11. Fauquier County, Virginia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	21,158	26,417	31,419	5,259	5,002
Construction, Natural Resources and Mining	2,491	2,887	2,392	396	-495
Manufacturing	689	814	733	125	-81
Transportation & Utilities	0	0	0	0	0
Wholesale Trade	751	868	985	117	117
Retail Trade	2,993	3,461	3,928	468	467
Information	180	223	275	43	52
Finance and Insurance	282	344	420	61	76
Real Estate and Rental and Leasing	502	611	745	109	134
Prof, Scientific and Tech Services; Management	1,550	2,677	4,083	1,127	1,406
Admin and Waste Services	535	925	1,410	389	485
Education	517	732	945	215	213
Health Services	2,602	3,681	4,753	1,080	1,072
Leisure and Hospitality	2,452	2,938	3,440	486	502
Other Services	1,292	1,477	1,875	184	398
Government/Public Administration	4,106	4,566	5,222	460	657
Military	216	214	214	-2	0

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis
Note: There was insufficient information to separate out the number of Transportation & Utilities jobs. These jobs are included in the Wholesale Trade and Retail Trade figures.

Table A1-12. Loudoun County, Virginia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	140,381	213,421	287,290	73,040	73,868
Construction, Natural Resources and Mining	13,022	19,035	22,002	6,013	2,967
Manufacturing	3,840	6,393	7,952	2,553	1,559
Transportation & Utilities	10,740	19,356	28,478	8,616	9,122
Wholesale Trade	3,731	7,542	11,720	3,811	4,179
Retail Trade	17,017	26,717	36,171	9,700	9,454
Information	7,571	13,288	18,752	5,717	5,464
Finance and Insurance	1,905	2,894	3,512	989	619
Real Estate and Rental and Leasing	2,594	3,841	4,711	1,246	870
Prof, Scientific and Tech Services; Management	18,360	29,541	41,136	11,181	11,595
Admin and Waste Services	7,388	12,055	16,675	4,666	4,621
Education	2,672	3,928	4,897	1,256	970
Health Services	9,413	13,134	16,742	3,720	3,608
Leisure and Hospitality	13,823	17,489	21,038	3,666	3,550
Other Services	5,649	7,383	8,867	1,734	1,484
Government/Public Administration	21,718	29,889	43,709	8,171	13,820
Military	938	938	927	0	-11

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A1-13. Prince William County, Virginia (includes the independent cities of Manassas and Manassas Park)

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	139,563	180,966	220,804	41,403	39,838
Construction, Natural Resources and Mining	11,727	14,313	12,206	2,586	-2,107
Manufacturing	3,299	3,519	3,144	220	-375
Transportation & Utilities	3,930	4,705	5,383	775	678
Wholesale Trade	2,926	3,503	4,008	577	505
Retail Trade	23,050	27,598	31,576	4,548	3,978
Information	1,429	1,867	2,363	438	496
Finance and Insurance	1,345	1,691	2,083	346	392
Real Estate and Rental and Leasing	2,594	3,261	4,016	667	755
Prof, Scientific and Tech Services; Management	11,685	20,835	32,071	9,150	11,237
Admin and Waste Services	8,088	14,421	22,199	6,333	7,777
Education	2,440	3,572	4,654	1,133	1,082
Health Services	12,307	18,022	23,479	5,714	5,457
Leisure and Hospitality	15,059	18,605	21,786	3,546	3,181
Other Services	5,540	6,558	8,401	1,018	1,843
Government/Public Administration	27,874	32,290	37,233	4,416	4,943
Military	6,271	6,206	6,202	-65	-4

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A1-14. Spotsylvania County, Virginia (includes the independent city of Fredericksburg)

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	57,251	76,999	101,613	19,748	24,614
Construction, Natural Resources and Mining	2,745	4,335	5,823	1,590	1,488
Manufacturing	1,266	1,463	1,390	197	-73
Transportation & Utilities	0	0	0	0	0
Wholesale Trade	0	0	0	0	0
Retail Trade	14,229	17,384	21,118	3,155	3,734
Information	778	1,033	1,374	255	341
Finance and Insurance	717	915	1,195	198	280
Real Estate and Rental and Leasing	1,349	1,723	2,251	374	528
Prof, Scientific and Tech Services; Management	3,457	6,309	10,302	2,852	3,993
Admin and Waste Services	1,905	3,477	5,678	1,572	2,201
Education	1,035	1,543	2,134	508	591
Health Services	9,551	14,244	19,696	4,693	5,452
Leisure and Hospitality	8,437	10,616	13,220	2,179	2,604
Other Services	2,644	3,188	4,334	544	1,146
Government/Public Administration	8,676	10,312	12,641	1,636	2,329
Military	462	457	457	-5	0

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis
Note: There was insufficient information to separate out the number of Transportation & Utilities and Wholesale Trade jobs. These jobs are included in the Retail Trade figures.

Table A1-15. Stafford County, Virginia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	39,913	56,297	73,699	16,384	17,402
Construction, Natural Resources and Mining	2,013	2,923	3,363	910	440
Manufacturing	595	808	796	213	-12
Transportation & Utilities	0	0	0	0	0
Wholesale Trade	1,898	2,439	3,004	541	565
Retail Trade	4,912	6,311	7,772	1,399	1,461
Information	308	431	580	123	149
Finance and Insurance	4,561	7,173	9,375	2,612	2,202
Real Estate and Rental and Leasing	1,283	2,018	2,638	735	620
Prof, Scientific and Tech Services; Management	2,958	5,799	9,427	2,840	3,629
Admin and Waste Services	1,231	2,412	3,922	1,182	1,509
Education	628	1,018	1,426	390	408
Health Services	2,673	4,332	6,071	1,659	1,739
Leisure and Hospitality	3,763	5,020	6,327	1,257	1,307
Other Services	1,795	2,329	3,149	534	820
Government/Public Administration	8,765	10,781	13,347	2,016	2,566
Military	2,530	2,503	2,502	-27	-1

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis
Note: There was insufficient information to separate out the number of Transportation & Utilities jobs. These jobs are included in the Wholesale Trade and Retail Trade figures.

Table A1-16. Warren County, Virginia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	12,289	14,075	16,311	1,785	2,237
Construction, Natural Resources and Mining	427	561	646	134	85
Manufacturing	905	881	733	-24	-149
Transportation & Utilities	1,260	1,341	1,450	81	109
Wholesale Trade	0	0	0	0	0
Retail Trade	1,824	1,941	2,098	117	157
Information	66	74	85	8	11
Finance and Insurance	155	172	200	17	28
Real Estate and Rental and Leasing	204	226	263	22	37
Prof, Scientific and Tech Services; Management	524	817	1,179	293	361
Admin and Waste Services	807	1,259	1,816	452	557
Education	525	670	822	145	152
Health Services	1,258	1,606	1,970	348	365
Leisure and Hospitality	1,503	1,626	1,795	123	169
Other Services	906	941	1,136	36	194
Government/Public Administration	1,807	1,841	2,001	34	161
Military	119	118	118	-1	0

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis
Note: There was insufficient information to separate out the number of Wholesale Trade jobs. These jobs are included in the Transportation & Utilities and Retail Trade figures.

Table A1-17. Jefferson County, West Virginia

Sector	2010	2020	2030	Change 2010-2020	Change 2020-2030
Total Employment	14,096	17,234	20,817	3,137	3,583
Construction, Natural Resources and Mining	531	692	790	162	98
Manufacturing	791	889	809	98	-79
Transportation & Utilities	198	244	277	46	33
Wholesale Trade	268	329	374	62	45
Retail Trade	1,677	2,063	2,342	386	279
Information	111	129	148	18	19
Finance and Insurance	161	173	199	12	26
Real Estate and Rental and Leasing	272	293	338	21	44
Prof, Scientific and Tech Services; Management	391	765	1,302	375	537
Admin and Waste Services	391	765	1,302	375	537
Education	530	714	864	185	150
Health Services	956	1,290	1,561	334	271
Leisure and Hospitality	3,388	3,694	4,291	305	597
Other Services	520	631	842	111	211
Government/Public Administration	3,627	4,254	5,066	627	812
Military	287	309	311	22	2

Sources: IHS Global Insight, Bureau of Economic Analysis, GMU Center for Regional Analysis

Table A2. Age Distribution by Sector

Table A2-1. District of Columbia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	36%	51%	13%
Manufacturing	21%	46%	32%
Transportation & Utilities	15%	43%	42%
Wholesale Trade	16%	57%	27%
Retail Trade	52%	36%	12%
Information	26%	47%	27%
Finance and Insurance	24%	58%	17%
Real Estate and Rental and Leasing	25%	49%	26%
Prof, Scientific and Tech Services; Management	25%	52%	23%
Admin and Waste Services	30%	48%	22%
Education	37%	38%	25%
Health Services	22%	49%	29%
Leisure and Hospitality	42%	39%	18%
Other Services	27%	49%	24%
Government/Public Administration	21%	47%	32%
Military	21%	47%	32%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-2. Calvert County, Maryland

Sector	Under 30	30 – 44	45 – 64
Construction, Natural Resources and Mining	44%	46%	11%
Manufacturing	10%	73%	16%
Transportation & Utilities	27%	41%	32%
Wholesale Trade	18%	15%	67%
Retail Trade	46%	24%	30%
Information	10%	90%	0%
Finance and Insurance	65%	22%	13%
Real Estate and Rental and Leasing	19%	20%	61%
Prof, Scientific and Tech Services; Management	27%	38%	34%
Admin and Waste Services	25%	28%	48%
Education	44%	34%	21%
Health Services	33%	37%	30%
Leisure and Hospitality	79%	9%	11%
Other Services	33%	26%	41%
Government/Public Administration	42%	42%	16%
Military	42%	42%	16%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-3. Charles County, Maryland

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	27%	52%	21%
Manufacturing	54%	46%	0%
Transportation & Utilities	10%	54%	36%
Wholesale Trade	13%	33%	54%
Retail Trade	48%	25%	27%
Information	0%	0%	100%
Finance and Insurance	7%	65%	28%
Real Estate and Rental and Leasing	0%	55%	45%
Prof, Scientific and Tech Services; Management	29%	29%	43%
Admin and Waste Services	63%	28%	9%
Education	19%	36%	45%
Health Services	26%	40%	34%
Leisure and Hospitality	72%	10%	17%
Other Services	65%	35%	0%
Government/Public Administration	26%	40%	34%
Military	26%	40%	34%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-4. Frederick County, Maryland

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	16%	41%	44%
Manufacturing	24%	40%	35%
Transportation & Utilities	14%	52%	34%
Wholesale Trade	7%	87%	6%
Retail Trade	57%	29%	14%
Information	72%	43%	0%
Finance and Insurance	13%	52%	35%
Real Estate and Rental and Leasing	8%	55%	37%
Prof, Scientific and Tech Services; Management	30%	38%	32%
Admin and Waste Services	33%	41%	26%
Education	25%	42%	33%
Health Services	31%	44%	25%
Leisure and Hospitality	71%	28%	0%
Other Services	31%	43%	26%
Government/Public Administration	19%	37%	45%
Military	19%	37%	45%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-5. Montgomery County, Maryland

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	25%	54%	21%
Manufacturing	8%	43%	50%
Transportation & Utilities	30%	39%	31%
Wholesale Trade	22%	39%	38%
Retail Trade	42%	32%	26%
Information	30%	39%	31%
Finance and Insurance	27%	49%	25%
Real Estate and Rental and Leasing	30%	41%	29%
Prof, Scientific and Tech Services; Management	15%	41%	45%
Admin and Waste Services	31%	49%	20%
Education	19%	38%	43%
Health Services	24%	39%	37%
Leisure and Hospitality	57%	35%	8%
Other Services	27%	36%	37%
Government/Public Administration	22%	42%	36%
Military	22%	42%	36%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-6. Prince George's County, Maryland

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	26%	48%	27%
Manufacturing	26%	37%	38%
Transportation & Utilities	19%	51%	30%
Wholesale Trade	28%	58%	14%
Retail Trade	45%	41%	13%
Information	27%	76%	0%
Finance and Insurance	29%	42%	29%
Real Estate and Rental and Leasing	8%	49%	42%
Prof, Scientific and Tech Services; Management	22%	49%	29%
Admin and Waste Services	41%	42%	17%
Education	38%	41%	21%
Health Services	33%	37%	30%
Leisure and Hospitality	64%	32%	4%
Other Services	35%	45%	20%
Government/Public Administration	28%	45%	27%
Military	28%	45%	27%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-7. City of Alexandria, Virginia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	30%	50%	20%
Manufacturing	0%	54%	46%
Transportation & Utilities	29%	41%	29%
Wholesale Trade	17%	11%	72%
Retail Trade	43%	37%	19%
Information	27%	73%	27%
Finance and Insurance	13%	72%	13%
Real Estate and Rental and Leasing	21%	50%	21%
Prof, Scientific and Tech Services; Management	30%	39%	30%
Admin and Waste Services	32%	50%	18%
Education	36%	41%	23%
Health Services	22%	50%	28%
Leisure and Hospitality	38%	56%	6%
Other Services	26%	44%	30%
Government/Public Administration	26%	39%	34%
Military	26%	39%	34%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-8. Arlington County, Virginia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	29%	47%	24%
Manufacturing	13%	38%	50%
Transportation & Utilities	18%	54%	28%
Wholesale Trade	68%	32%	0%
Retail Trade	43%	38%	19%
Information	25%	56%	20%
Finance and Insurance	29%	69%	2%
Real Estate and Rental and Leasing	35%	35%	31%
Prof, Scientific and Tech Services; Management	27%	54%	19%
Admin and Waste Services	17%	57%	26%
Education	37%	46%	16%
Health Services	21%	60%	20%
Leisure and Hospitality	44%	43%	13%
Other Services	26%	56%	18%
Government/Public Administration	18%	51%	31%
Military	18%	51%	31%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-9. Clarke County, Virginia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	27%	59%	14%
Manufacturing	19%	53%	28%
Transportation & Utilities	15%	46%	39%
Wholesale Trade	12%	32%	56%
Retail Trade	64%	27%	9%
Information	15%	62%	23%
Finance and Insurance	31%	56%	13%
Real Estate and Rental and Leasing	29%	45%	26%
Prof, Scientific and Tech Services; Management	25%	55%	21%
Admin and Waste Services	42%	49%	8%
Education	25%	42%	33%
Health Services	31%	43%	27%
Leisure and Hospitality	46%	33%	21%
Other Services	35%	33%	31%
Government/Public Administration	14%	56%	30%
Military	14%	56%	30%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-10. Fairfax County, Virginia (includes the independent cities of Fairfax and Falls Church)

Sector	Under 30	30 – 44	45 – 64
Construction, Natural Resources and Mining	25%	52%	22%
Manufacturing	21%	49%	30%
Transportation & Utilities	37%	36%	27%
Wholesale Trade	39%	24%	37%
Retail Trade	42%	40%	19%
Information	26%	62%	13%
Finance and Insurance	20%	56%	24%
Real Estate and Rental and Leasing	20%	56%	24%
Prof, Scientific and Tech Services; Management	28%	51%	21%
Admin and Waste Services	36%	56%	8%
Education	27%	44%	29%
Health Services	30%	41%	29%
Leisure and Hospitality	61%	28%	11%
Other Services	30%	37%	33%
Government/Public Administration	30%	37%	33%
Military	30%	37%	33%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-11. Fauquier County, Virginia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	27%	59%	14%
Manufacturing	19%	53%	28%
Transportation & Utilities	15%	46%	39%
Wholesale Trade	12%	32%	56%
Retail Trade	64%	27%	9%
Information	15%	62%	23%
Finance and Insurance	31%	56%	13%
Real Estate and Rental and Leasing	29%	45%	26%
Prof, Scientific and Tech Services; Management	25%	55%	21%
Admin and Waste Services	42%	49%	8%
Education	25%	42%	33%
Health Services	31%	43%	27%
Leisure and Hospitality	46%	33%	21%
Other Services	35%	33%	31%
Government/Public Administration	14%	56%	30%
Military	14%	56%	30%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-12. Loudoun County, Virginia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	27%	59%	14%
Manufacturing	19%	53%	28%
Transportation & Utilities	15%	46%	39%
Wholesale Trade	12%	32%	56%
Retail Trade	64%	27%	9%
Information	15%	62%	23%
Finance and Insurance	31%	56%	13%
Real Estate and Rental and Leasing	29%	45%	26%
Prof, Scientific and Tech Services; Management	25%	55%	21%
Admin and Waste Services	42%	49%	8%
Education	25%	42%	33%
Health Services	31%	43%	27%
Leisure and Hospitality	46%	33%	21%
Other Services	35%	33%	31%
Government/Public Administration	14%	56%	30%
Military	14%	56%	30%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-13. Prince William County, Virginia (includes the independent cities of Manassas and Manassas Park)

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	29%	61%	10%
Manufacturing	32%	40%	28%
Transportation & Utilities	44%	53%	3%
Wholesale Trade	19%	39%	41%
Retail Trade	52%	40%	8%
Information	53%	34%	13%
Finance and Insurance	28%	38%	33%
Real Estate and Rental and Leasing	14%	63%	23%
Prof, Scientific and Tech Services; Management	19%	53%	27%
Admin and Waste Services	34%	55%	11%
Education	19%	53%	28%
Health Services	30%	43%	27%
Leisure and Hospitality	73%	32%	0%
Other Services	17%	44%	40%
Government/Public Administration	50%	43%	7%
Military	50%	43%	7%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-14. Spotsylvania County, Virginia (includes the independent city of Fredericksburg)

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	33%	51%	16%
Manufacturing	12%	40%	47%
Transportation & Utilities	35%	38%	27%
Wholesale Trade	15%	47%	38%
Retail Trade	61%	20%	18%
Information	26%	53%	21%
Finance and Insurance	21%	42%	36%
Real Estate and Rental and Leasing	47%	27%	26%
Prof, Scientific and Tech Services; Management	20%	47%	33%
Admin and Waste Services	42%	55%	2%
Education	35%	23%	41%
Health Services	34%	51%	15%
Leisure and Hospitality	54%	31%	14%
Other Services	22%	49%	29%
Government/Public Administration	19%	30%	51%
Military	19%	30%	51%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-15. Stafford County, Virginia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	20%	53%	27%
Manufacturing	51%	33%	16%
Transportation & Utilities	27%	47%	27%
Wholesale Trade	21%	20%	58%
Retail Trade	57%	33%	10%
Information	0%	79%	21%
Finance and Insurance	60%	40%	0%
Real Estate and Rental and Leasing	8%	73%	18%
Prof, Scientific and Tech Services; Management	20%	41%	39%
Admin and Waste Services	48%	39%	13%
Education	6%	45%	49%
Health Services	53%	31%	16%
Leisure and Hospitality	59%	15%	27%
Other Services	3%	58%	39%
Government/Public Administration	37%	46%	17%
Military	37%	46%	17%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-16. Warren County, Virginia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	27%	59%	14%
Manufacturing	19%	53%	28%
Transportation & Utilities	15%	46%	39%
Wholesale Trade	12%	32%	56%
Retail Trade	64%	27%	9%
Information	15%	62%	23%
Finance and Insurance	31%	56%	13%
Real Estate and Rental and Leasing	29%	45%	26%
Prof, Scientific and Tech Services; Management	25%	55%	21%
Admin and Waste Services	42%	49%	8%
Education	25%	42%	33%
Health Services	31%	43%	27%
Leisure and Hospitality	46%	33%	21%
Other Services	35%	33%	31%
Government/Public Administration	14%	56%	30%
Military	14%	56%	30%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A2-17. Jefferson County, West Virginia

Sector	Under 30	30 – 44	45 - 64
Construction, Natural Resources and Mining	27%	59%	14%
Manufacturing	19%	53%	28%
Transportation & Utilities	15%	46%	39%
Wholesale Trade	12%	32%	56%
Retail Trade	64%	27%	9%
Information	15%	62%	23%
Finance and Insurance	31%	56%	13%
Real Estate and Rental and Leasing	29%	45%	26%
Prof, Scientific and Tech Services; Management	25%	55%	21%
Admin and Waste Services	42%	49%	8%
Education	25%	42%	33%
Health Services	31%	43%	27%
Leisure and Hospitality	46%	33%	21%
Other Services	35%	33%	31%
Government/Public Administration	14%	56%	30%
Military	14%	56%	30%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3. Household Types and Workers per Household by Age Group

Table A3-1. District of Columbia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.39	1	1.59	1.72	1	1.69	1.68	1.78
Age Group										
Under 30	39%	3%	28%	3%	4%	9%	1%	4%	1%	8%
30-44	34%	3%	25%	3%	11%	3%	5%	11%	2%	3%
45-64	33%	2%	28%	2%	5%	11%	1%	5%	3%	10%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-2. Calvert County, Maryland

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.33	1	1.76	1.93	1	1.92	2.57	2.34
Age Group										
Under 30	12%	1%	30%	2%	24%	3%	4%	18%	2%	3%
30-44	8%	3%	9%	1%	16%	4%	13%	33%	5%	8%
45-64	13%	1%	35%	0%	10%	7%	2%	11%	5%	17%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-3. Charles County, Maryland

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.33	1	1.76	1.93	1	1.92	2.57	2.34
Age Group										
Under 30	16%	0%	19%	10%	19%	0%	6%	18%	11%	0%
30-44	9%	3%	11%	2%	8%	5%	7%	37%	17%	1%
45-64	15%	1%	31%	1%	7%	18%	2%	4%	11%	10%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-4. Frederick County, Maryland

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	15%	2%	24%	0%	34%	9%	0%	15%	0%	2%
30-44	8%	3%	15%	2%	14%	3%	10%	33%	10%	2%
45-64	11%	1%	32%	1%	9%	17%	2%	11%	8%	8%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-5. Montgomery County, Maryland

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.43	1	1.78	2.16	1	1.87	2.47	2.51
Age Group										
Under 30	20%	2%	39%	2%	9%	9%	1%	9%	4%	7%
30-44	12%	2%	18%	1%	18%	2%	10%	29%	4%	4%
45-64	15%	1%	25%	1%	7%	14%	2%	12%	10%	12%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-6. Prince George's County, Maryland

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	21%	4%	24%	1%	12%	10%	3%	10%	5%	8%
30-44	17%	5%	16%	2%	13%	6%	6%	21%	9%	5%
45-64	18%	1%	27%	0%	6%	14%	1%	7%	10%	15%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-7. City of Alexandria, Virginia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.51	1	1.64	2.14	1	1.7	2.32	2.5
Age Group										
Under 30	30%	2%	40%	0%	4%	11%	0%	13%	0%	1%
30-44	33%	1%	30%	2%	9%	3%	4%	12%	5%	1%
45-64	35%	1%	29%	0%	4%	11%	1%	9%	3%	8%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-8. Arlington County, Virginia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.51	1	1.64	2.14	1	1.7	2.32	2.5
Age Group										
Under 30	26%	1%	46%	0%	2%	14%	1%	0%	2%	8%
30-44	35%	1%	21%	1%	16%	2%	3%	16%	4%	3%
45-64	33%	2%	24%	0%	7%	10%	2%	10%	5%	8%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-9. Clarke County, Virginia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	15%	1%	44%	2%	13%	4%	1%	10%	1%	9%
30-44	8%	1%	17%	2%	18%	3%	10%	33%	5%	3%
45-64	12%	1%	33%	0%	9%	12%	4%	12%	7%	11%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-10. Fairfax County, Virginia (including the independent cities of Fairfax and Falls Church)

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.43	1	1.78	2.16	1	1.87	2.47	2.51
Age Group										
Under 30	17%	1%	38%	0%	8%	13%	1%	7%	4%	10%
30-44	11%	2%	18%	2%	17%	4%	8%	32%	4%	2%
45-64	14%	1%	27%	0%	9%	15%	2%	12%	8%	11%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-11. Fauquier County, Virginia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	15%	1%	44%	2%	13%	4%	1%	10%	1%	9%
30-44	8%	1%	17%	2%	18%	3%	10%	33%	5%	3%
45-64	12%	1%	33%	0%	9%	12%	4%	12%	7%	11%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-12. Loudoun County, Virginia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	15%	1%	44%	2%	13%	4%	1%	10%	1%	9%
30-44	8%	1%	17%	2%	18%	3%	10%	33%	5%	3%
45-64	12%	1%	33%	0%	9%	12%	4%	12%	7%	11%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-13. Prince William County, Virginia (including the independent cities of Manassas and Manassas Park)

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	23%	2%	25%	1%	14%	12%	4%	11%	3%	6%
30-44	8%	3%	14%	2%	18%	3%	12%	30%	7%	4%
45-64	10%	1%	27%	0%	10%	13%	4%	8%	12%	16%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-14. Spotsylvania County, Virginia (including the independent city of Fredericksburg)

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	17%	1%	29%	0%	13%	3%	10%	25%	0%	2%
30-44	7%	4%	11%	1%	18%	2%	14%	32%	6%	4%
45-64	11%	1%	35%	0%	7%	15%	3%	8%	9%	11%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-15. Stafford County, Virginia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	20%	6%	19%	2%	17%	5%	1%	21%	1%	6%
30-44	3%	5%	10%	2%	16%	4%	17%	33%	8%	2%
45-64	8%	0%	29%	0%	9%	18%	2%	10%	8%	15%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-16. Warren County, Virginia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	15%	1%	44%	2%	13%	4%	1%	10%	1%	9%
30-44	8%	1%	17%	2%	18%	3%	10%	33%	5%	3%
45-64	12%	1%	33%	0%	9%	12%	4%	12%	7%	11%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A3-17. Jefferson County, West Virginia

Household Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
Workers	1	1	1.42	1	1.72	2.08	1	1.82	2.33	2.43
Age Group										
Under 30	15%	1%	44%	2%	13%	4%	1%	10%	1%	9%
30-44	8%	1%	17%	2%	18%	3%	10%	33%	5%	3%
45-64	12%	1%	33%	0%	9%	12%	4%	12%	7%	11%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis

Table A4. Median Wages by Sector (2010 dollars)

Table A4-1. Median Wages by Sector (2010 dollars)

Sector	District of Columbia	Calvert County, MD	Charles County, MD	Frederick County, MD
Construction, Natural Resources and Mining	35,000	35,400	45,000	15,000
Manufacturing	75,000	78,000	50,000	35,000
Transportation & Utilities	50,000	41,100	30,000	35,000
Wholesale Trade	40,000	80,000	75,000	40,900
Retail Trade	22,000	12,000	17,000	13,100
Information	72,000	32,000	98,000	53,000
Finance and Insurance	80,000	22,000	27,000	36,000
Real Estate and Rental and Leasing	52,000	11,000	30,000	27,000
Prof, Scientific and Tech Services; Management	76,000	60,000	75,000	47,000
Admin and Waste Services	28,000	21,000	24,000	24,000
Education	48,000	45,000	39,000	33,000
Health Services	40,000	24,000	30,000	32,500
Leisure and Hospitality	29,500	7,300	12,450	23,000
Other Services	52,000	15,000	20,800	8,000
Government/Public Administration	82,000	60,000	46,700	50,000
Military	82,000	60,000	46,700	50,000

Table A4-2. Median Wages by Sector (2010 dollars)

Sector	Montgomery County, MD	Prince George's County, MD	City of Alexandria, VA	Arlington County, VA
Construction, Natural Resources and Mining	35,000	37,400	28,800	35,600
Manufacturing	66,000	38,000	60,000	77,000
Transportation & Utilities	25,500	41,000	39,600	37,000
Wholesale Trade	50,000	30,000	41,600	38,000
Retail Trade	23,000	24,000	30,000	23,100
Information	65,000	38,000	33,000	63,000
Finance and Insurance	55,000	40,000	54,000	52,000
Real Estate and Rental and Leasing	36,000	35,000	70,000	50,000
Prof, Scientific and Tech Services; Management	70,000	50,000	72,000	75,000
Admin and Waste Services	25,000	25,000	27,800	32,000
Education	40,000	45,000	25,100	45,000
Health Services	34,000	30,000	48,000	30,900
Leisure and Hospitality	17,500	18,500	23,500	23,550
Other Services	25,600	25,300	38,000	50,000
Government/Public Administration	72,000	59,000	80,000	88,000
Military	72,000	59,000	80,000	88,000

Table A4-3. Median Wages by Sector (2010 dollars)

Sector	Clarke County, VA	Fairfax County, VA	Fauquier County, VA	Loudoun County, VA
Construction, Natural Resources and Mining	38,000	35,000	38,000	38,000
Manufacturing	70,000	70,000	70,000	70,000
Transportation & Utilities	32,000	30,000	32,000	32,000
Wholesale Trade	45,000	52,000	45,000	45,000
Retail Trade	15,000	26,000	15,000	15,000
Information	75,000	75,000	75,000	75,000
Finance and Insurance	44,000	65,000	44,000	44,000
Real Estate and Rental and Leasing	38,000	39,500	38,000	38,000
Prof, Scientific and Tech Services; Management	64,000	80,000	64,000	64,000
Admin and Waste Services	27,500	32,000	27,500	27,500
Education	32,000	43,100	32,000	32,000
Health Services	30,000	38,900	30,000	30,000
Leisure and Hospitality	16,500	15,000	16,500	16,500
Other Services	20,000	27,000	20,000	20,000
Government/Public Administration	60,000	75,000	60,000	60,000
Military	60,000	75,000	60,000	60,000

Table A4-4. Median Wages by Sector (2010 dollars)

Sector	Prince William County, VA	Spotsylvania County, VA	Stafford County, VA	Warren County, VA	Jefferson County, WV
Construction, Natural Resources and Mining	33,800	30,000	30,000	38,000	38,000
Manufacturing	63,000	48,000	27,500	70,000	70,000
Transportation & Utilities	36,000	18,000	23,000	32,000	32,000
Wholesale Trade	38,000	38,000	20,000	45,000	45,000
Retail Trade	18,500	18,000	19,300	15,000	15,000
Information	60,000	65,000	99,000	75,000	75,000
Finance and Insurance	36,000	40,000	38,800	44,000	44,000
Real Estate and Rental and Leasing	36,300	50,000	50,000	38,000	38,000
Prof, Scientific and Tech Services; Management	67,000	30,000	83,000	64,000	64,000
Admin and Waste Services	30,000	17,000	30,000	27,500	27,500
Education	46,000	40,000	38,000	32,000	32,000
Health Services	31,000	37,000	22,500	30,000	30,000
Leisure and Hospitality	9,250	10,000	20,500	16,500	16,500
Other Services	25,000	26,000	29,900	20,000	20,000
Government/Public Administration	55,000	49,000	65,000	60,000	60,000
Military	55,000	49,000	65,000	60,000	60,000

Table A5. Unit Type by Household Type and Income
Table A5-1. District of Columbia
Less than $50,000

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4adults
SF-owner	2%	5%	2%	0%	0%	0%	11%	0%	0%	9%
SF-renter	1%	0%	1%	0%	3%	5%	0%	0%	7%	12%
MF-owner	16%	18%	14%	10%	18%	26%	4%	5%	7%	19%
MF-renter	82%	76%	83%	90%	78%	70%	85%	95%	86%	60%

$50,000 – 74,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	3%	8%	7%	0%	0%	5%	23%	0%	55%	7%
SF-renter	1%	0%	0%	0%	0%	0%	0%	0%	16%	12%
MF-owner	31%	24%	45%	10%	28%	26%	36%	58%	29%	44%
MF-renter	65%	69%	48%	90%	72%	69%	41%	42%	0%	37%

$75,000 – 99,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	4%	10%	8%	10%	0%	17%	26%	0%	55%	7%
SF-renter	0%	0%	0%	0%	0%	0%	0%	0%	16%	12%
MF-owner	47%	55%	33%	55%	28%	40%	46%	58%	29%	44%
MF-renter	49%	35%	60%	35%	72%	43%	27%	42%	0%	37%

$100,000 – 124,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	3%	20%	12%	10%	18%	21%	26%	0%	55%	7%
SF-renter	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%
MF-owner	65%	55%	33%	55%	37%	47%	46%	51%	45%	12%
MF-renter	32%	25%	51%	35%	45%	32%	27%	49%	0%	81%

$125,000 – 149,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	4%	20%	9%	10%	37%	21%	26%	22%	55%	13%
SF-renter	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%
MF-owner	63%	55%	48%	55%	35%	47%	46%	42%	45%	49%
MF-renter	33%	25%	42%	35%	28%	32%	27%	36%	0%	30%

$150,000 or More

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	5%	20%	19%	29%	34%	35%	28%	48%	59%	14%
SF-renter	1%	0%	0%	0%	0%	0%	8%	2%	0%	13%
MF-owner	64%	55%	61%	71%	55%	53%	53%	46%	18%	42%
MF-renter	30%	25%	19%	0%	11%	12%	11%	4%	23%	31%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis
Note: SF = single-family and includes single-family attached and detached units; MF = multi-family

Table A5-2. City of Alexandria and Arlington County, Virginia
Less than $50,000

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4adults
SF-owner	22%	10%	37%	9%	16%	33%	21%	22%	30%	21%
SF-renter	5%	8%	7%	3%	16%	7%	17%	10%	7%	19%
MF-owner	18%	14%	15%	12%	13%	17%	7%	9%	13%	15%
MF-renter	55%	67%	41%	75%	54%	43%	55%	58%	50%	45%

$50,000 – 74,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	23%	27%	47%	36%	30%	43%	40%	40%	46%	44%
SF-renter	2%	7%	4%	5%	11%	10%	24%	12%	12%	7%
MF-owner	32%	24%	20%	22%	19%	23%	12%	20%	15%	17%
MF-renter	43%	42%	29%	38%	40%	24%	24%	27%	28%	33%

$75,000 – 99,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	24%	27%	47%	49%	47%	55%	63%	59%	57%	52%
SF-renter	2%	1%	3%	5%	9%	6%	12%	9%	9%	5%
MF-owner	39%	28%	24%	19%	22%	19%	15%	21%	25%	15%
MF-renter	35%	44%	26%	27%	22%	19%	10%	11%	9%	28%

$100,000 – 124,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	28%	38%	49%	49%	52%	56%	67%	59%	59%	52%
SF-renter	1%	0%	3%	8%	3%	6%	9%	8%	4%	10%
MF-owner	44%	35%	27%	31%	27%	22%	17%	23%	15%	19%
MF-renter	28%	26%	21%	12%	18%	15%	7%	9%	21%	19%

$125,000 – 149,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	26%	44%	57%	49%	53%	72%	74%	73%	67%	56%
SF-renter	2%	9%	1%	21%	3%	5%	11%	5%	9%	13%
MF-owner	47%	36%	26%	14%	33%	16%	11%	18%	21%	16%
MF-renter	26%	12%	17%	16%	11%	6%	4%	4%	2%	15%

$150,000 or More

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	33%	48%	63%	48%	70%	79%	90%	84%	88%	76%
SF-renter	3%	0%	2%	0%	4%	3%	3%	3%	1%	7%
MF-owner	43%	28%	27%	42%	21%	13%	5%	11%	8%	11%
MF-renter	22%	24%	9%	10%	5%	6%	1%	3%	3%	6%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis
Note: SF = single-family and includes single-family attached and detached units; MF = multi-family

Table A5-3. Montgomery County, Maryland and Fairfax County, Virginia
Less than $50,000

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4adults
SF-owner	13%	0%	18%	12%	16%	27%	25%	19%	40%	12%
SF-renter	4%	10%	5%	8%	8%	23%	15%	7%	6%	8%
MF-owner	25%	17%	15%	21%	16%	24%	12%	15%	11%	22%
MF-renter	58%	72%	62%	59%	60%	26%	48%	58%	44%	58%

$50,000 – 74,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	18%	9%	23%	26%	28%	27%	27%	36%	40%	24%
SF-renter	1%	0%	2%	7%	5%	23%	18%	7%	6%	4%
MF-owner	35%	36%	30%	25%	19%	24%	21%	27%	11%	29%
MF-renter	46%	55%	44%	42%	48%	26%	33%	30%	44%	43%

$75,000 – 99,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	19%	9%	23%	46%	40%	46%	47%	42%	40%	53%
SF-renter	1%	0%	2%	0%	7%	0%	14%	9%	6%	0%
MF-owner	51%	36%	30%	20%	30%	20%	25%	26%	11%	15%
MF-renter	29%	55%	44%	34%	22%	35%	13%	23%	44%	32%

$100,000 – 124,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	23%	27%	43%	64%	41%	46%	49%	52%	58%	64%
SF-renter	3%	0%	2%	21%	2%	0%	9%	10%	0%	0%
MF-owner	44%	73%	33%	16%	31%	35%	28%	26%	22%	27%
MF-renter	30%	0%	22%	0%	26%	20%	14%	12%	20%	9%

$125,000 – 149,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	33%	27%	49%	64%	44%	60%	65%	68%	72%	40%
SF-renter	4%	0%	1%	21%	4%	9%	16%	8%	7%	25%
MF-owner	44%	73%	33%	16%	39%	28%	14%	21%	19%	20%
MF-renter	19%	0%	17%	0%	12%	4%	6%	4%	2%	14%

$150,000 or More

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	44%	45%	67%	64%	72%	80%	92%	85%	85%	78%
SF-renter	2%	0%	2%	21%	5%	3%	2%	2%	1%	9%
MF-owner	36%	42%	23%	16%	19%	12%	5%	9%	11%	11%
MF-renter	18%	13%	8%	0%	4%	6%	1%	3%	3%	2%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis
Note: SF = single-family and includes single-family attached and detached units; MF = multi-family

Table A5-6. Prince George's County, Maryland
Less than $50,000

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4adults
SF-owner	23%	5%	37%	15%	10%	29%	24%	18%	44%	20%
SF-renter	4%	3%	4%	0%	4%	9%	14%	3%	6%	17%
MF-owner	19%	12%	16%	17%	15%	7%	7%	16%	6%	20%
MF-renter	54%	80%	43%	69%	70%	54%	55%	62%	44%	43%

$50,000 – 74,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	25%	20%	47%	31%	28%	47%	41%	39%	41%	52%
SF-renter	2%	8%	3%	3%	7%	7%	22%	4%	7%	7%
MF-owner	32%	26%	20%	29%	20%	23%	17%	21%	14%	7%
MF-renter	42%	46%	30%	37%	45%	23%	20%	36%	37%	34%

$75,000 – 99,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	31%	36%	47%	31%	40%	47%	59%	50%	50%	53%
SF-renter	2%	0%	3%	3%	2%	7%	10%	9%	8%	7%
MF-owner	41%	14%	20%	29%	31%	23%	12%	25%	32%	14%
MF-renter	26%	51%	30%	37%	27%	23%	19%	17%	10%	26%

$100,000 – 124,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	40%	38%	52%	31%	40%	60%	62%	50%	73%	65%
SF-renter	3%	0%	3%	3%	2%	7%	7%	9%	3%	7%
MF-owner	31%	43%	24%	29%	31%	24%	27%	25%	10%	17%
MF-renter	26%	19%	21%	37%	27%	9%	4%	17%	15%	12%

$125,000 – 149,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	42%	60%	61%	50%	53%	73%	58%	76%	73%	65%
SF-renter	2%	0%	1%	0%	4%	9%	15%	5%	3%	7%
MF-owner	41%	40%	23%	50%	35%	15%	20%	18%	10%	17%
MF-renter	16%	0%	14%	0%	8%	3%	6%	2%	15%	12%

$150,000 or More

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	44%	82%	69%	50%	77%	80%	91%	87%	86%	83%
SF-renter	1%	0%	2%	0%	4%	2%	2%	3%	2%	5%
MF-owner	30%	0%	21%	50%	19%	9%	6%	8%	9%	9%
MF-renter	24%	18%	8%	0%	1%	8%	1%	1%	2%	3%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis
Note: SF = single-family and includes single-family attached and detached units; MF = multi-family

Table A5-7. Remaining Jurisdictions
Less than $50,000

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4adults
SF-owner	34%	18%	54%	15%	19%	45%	28%	25%	46%	25%
SF-renter	7%	11%	11%	2%	22%	11%	30%	19%	6%	30%
MF-owner	13%	11%	8%	10%	6%	10%	8%	8%	15%	11%
MF-renter	45%	59%	26%	72%	53%	34%	35%	48%	33%	35%

$50,000 – 74,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	37%	28%	61%	49%	34%	63%	50%	50%	51%	53%
SF-renter	3%	12%	4%	3%	15%	4%	27%	11%	7%	15%
MF-owner	26%	21%	15%	25%	20%	13%	8%	14%	15%	11%
MF-renter	34%	39%	20%	23%	31%	20%	15%	25%	27%	21%

$75,000 – 99,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	45%	50%	64%	49%	57%	61%	76%	80%	64%	53%
SF-renter	6%	0%	4%	3%	12%	6%	8%	5%	12%	15%
MF-owner	27%	16%	15%	25%	15%	23%	6%	13%	16%	11%
MF-renter	21%	34%	16%	23%	16%	9%	10%	3%	8%	21%

$100,000 – 124,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	59%	50%	65%	26%	70%	67%	81%	67%	61%	53%
SF-renter	25%	0%	3%	0%	2%	8%	4%	8%	7%	15%
MF-owner	16%	16%	18%	61%	23%	16%	9%	19%	13%	11%
MF-renter	0%	34%	13%	13%	6%	9%	5%	6%	18%	21%

$125,000 – 149,999

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	59%	50%	75%	48%	70%	90%	83%	83%	56%	68%
SF-renter	13%	0%	1%	0%	2%	1%	5%	3%	12%	11%
MF-owner	16%	16%	18%	52%	19%	7%	8%	13%	28%	7%
MF-renter	12%	34%	6%	0%	9%	2%	3%	1%	3%	15%

$150,000 or More

Unit Type	1 adult	1 adult/ 1 child	2 adults	1 adult/ 2 children	2 adults/ 1 child	3 adults	1 adult/ 3+ children	2 adults/ 2+ children	3 adults/ 1+ children	4 adults
SF-owner	62%	50%	75%	48%	81%	88%	95%	87%	91%	91%
SF-renter	7%	0%	2%	0%	3%	1%	2%	3%	1%	3%
MF-owner	19%	16%	18%	52%	15%	7%	2%	8%	5%	3%
MF-renter	12%	34%	4%	0%	0%	3%	1%	1%	3%	3%

Sources: 2009 American Community Survey, GMU Center for Regional Analysis
Note: SF = single-family and includes single-family attached and detached units; MF = multi-family

Table A6. In-Commuting Rates
(Percent of Jobs in a Jurisdiction Held by Workers Who Live Outside the Jurisdiction)

Jurisdiction	In-Commuting Rate (%)
District of Columbia	70.4
Calvert	17.7
Charles	41.1
Frederick	27.2
Montgomery	36.0
Prince George's	46.8
Alexandria	78.6
Arlington	74.2
Clarke	42.1
Fairfax*	53.0
Fauquier	31.1
Loudoun	48.3
Prince William**	45.1
Spotsylvania***	57.4
Stafford	47.8
Warren	34.5
Jefferson	19.2

Source: American Community Survey, GMU Center for Regional Analysis
*Includes the cities of Fairfax and Falls Church
**Includes the cities of Manassas and Manassas Park
***Includes the city of Fredericksburg