

**The Need, Cost, and Benefits of  
Establishing a Telework Center in  
The Rappahannock Rapidan Region**



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## **1.0 SUMMARY**

As population growth in our region continues, in some areas outpacing the national average, commuters are resigned to spending more time on increasingly congested roadways. This report examines the costs, benefits, and feasibility of creating a telework center within the Rappahannock-Rapidan Region as a way to reduce people's commuting time and increase their quality of life.

## **2.0 TELECOMMUTING AND TELEWORKING OVERVIEW**

In the early 1990's, the Federal government began examining telecommuting as a way to increase employees' quality of life, reduce road congestion and air pollution, and lower real estate costs for office space. Telecommuting, a relatively new concept then, has since gained increased attention and can be defined as employees working one or several days per week at a location other than their central office. This alternate work location can be at a home office or at a telework center or other satellite office specifically designated for this purpose. The employee is expected to maintain the same work performance at these locations as if they were working in the main office.

Since 1993, sixteen telework centers have been opened in the states surrounding the Washington, D.C. metropolitan area—namely, Maryland, Virginia, and West Virginia. All of these centers were established partly or wholly with government funds, and each is unique in its physical layout, operating procedures, and degrees of success.

Teleworking (telecommuting from a telework center) gained significant attention and support in 2000 when the Federal government passed legislation mandating each agency to establish teleworking policies and options for all Federal employees able to do part of their work at a location

other than their central office. Since then, the number of Federal workers who telecommute on a regular basis has risen, though not as quickly as the legislation mandated.

## **2.1 Benefits of Teleworking**

There are numerous benefits to teleworking. However, they cannot always be quantified in terms of cost savings, and it is difficult to measure the degree to which each benefit has been achieved. Reports sponsored by the U.S. General Services Administration (GSA) have evaluated the estimated and actualized benefits of teleworking. The list of perceived benefits includes:

Benefits to the community or individual:

- Increased quality of life
- Reduced traffic congestion
- Boost to local economies
- Improved air quality
- Lower personal expenses
- More job satisfaction
- More flexible job schedules

Benefits to the employer

- Increased employee morale and retention rates
- Increased employee productivity (including less absenteeism and lateness)
- Reduction of overhead costs for office space
- More attractive, satisfying jobs
- Access to employees across a larger geographic area

A telework center in the Rappahannock-Rapidan Region would be expected to produce similar benefits. For this region, the most significant benefits would be the improved quality of life and the reduced road congestion that would occur when some worker's chose to telecommute rather than commute to their regular office.

### **3.0 FACTORS DETERMINING THE FEASIBILITY OF A TELEWORK CENTER**

When examining the progress of existing telework centers around the Washington, D.C. metropolitan area, several basic factors affecting the centers' success can be found. These same factors would also affect the feasibility of a telework center in the Region. They include:

- A need for commuter solutions
- Demand for telecommuting options
- An adequate federal worker base
- Available funding

These are explored in detail below.

#### **3.1 The Need for Commuter Solutions**

The decade spanning from 1990 to 2000 brought much population growth to the Rappahannock-Rapidan Region. Many of these people moved to the area for its rural character and continue to work in the metropolitan D.C. area. This has caused increased strain and congestion on the Region's transportation network as well as significant increases in commuting times

##### *3.10 Population and Labor Force Growth*

As the Rappahannock-Rapidan Region's population continues to grow, so does its labor force and commuting base. Between 1990 and 2000, the Region's five counties had a combined labor force growth greater than the national average for the same time period. Culpeper and Orange Counties both experienced labor growth rates, 17.7% and 15.7% respectively, well above the national average of 10.9%.

Table 1: Labor Force Growth in the Region

County	1990	2000	Percent Change
Culpeper	14,303	16,832	+ 17.7
Fauquier	26,541	29,446	+ 10.9
Madison	5,752	6,384	+ 11.0
Orange	10,790	12,485	+ 15.7
Rappahannock	3,596	3,672	+ 2.1
R-R Region	60,982	68,819	+ 12.9
Nation	125,182,378	138,820,935	+ 10.9

Source: Virginia Economic Commission

Similar upward trends can be seen in total population growth for the Region in the last decade. Again, Culpeper and Orange Counties surpass the national population growth rate and are in the top quarter of fastest-growing counties in Virginia.

Table 2: Population Growth in the Region

County	1990	2000	Percent Change
Culpeper	27,791	34,262	+ 23.3
Fauquier	48,860	55,139	+ 12.9
Madison	11,949	12,520	+ 4.8
Orange	21,421	25,881	+ 20.8
Rappahannock	6,622	6,983	+ 5.5
R-R Region	116,643	134,785	+ 15.6
Virginia	6,189,197	7,078,515	+ 14.4
Nation	248,709,873	281,421,906	+ 13.2

Source: U.S. Census 2000

### 3.11 Commuting Trends

Across the region, commuting times increased over twenty percent between 1990 and 2000. The average commuting time to work for residents in the Region was 29.1 minutes in 1990. In 2000, it rose to 35.4 minutes. The greatest change in commuting times occurred in Culpeper County, where the average commuting time increased thirty-three percent, or increased from 28.5 minutes in 1990 to 37.9 minutes in 2000.

Table 3: Average Commuting Time to Work in Minutes

County	1990	2000	Percent Change
Culpeper	28.5	37.9	+ 33.0
Fauquier	32.6	36.8	+ 12.9
Madison	23.0	30.3	+ 31.7
Orange	26.5	33.1	+ 24.9
Rappahannock	34.7	38.7	+ 11.5
Region	29.1	35.4	+ 21.7

Source: U.S. Census 2000

Because of the region's rural character and distance from metropolitan areas, the majority of people in the region continue to drive alone in a car to work. In the last decade, the number of these people commuting in single-occupancy vehicles grew by 22%. In the same time period, the number of people carpooling decreased by 18.4%. These longer commuting times in single-occupancy vehicles contribute to traffic congestion, air pollution, increased road maintenance/construction, and reduced quality of life for the commuters.

Table 4: Method of Transportation to Work in the Region

Method	1990 Census		Census 2000		Change 1990 to 2000	
	Number	Percent	Number	Percent	Number	Percent
Drove alone	42,318	70.4	50,607	76.5	+ 8,289	+ 22.0
Carpooled	10,914	19.4	9,337	14.0	-1,577	- 18.4
Public transportation (including taxicab)	412	0.7	519	0.7	+ 107	+ 16.6
Bicycle or walked	1,945	3.4	1,824	2.7	-121	- 3.5
Motorcycle or other means	651	1.1	450	0.6	-201	- 29.9
Worked at home	2,532	5.1	3,073	5.4	+ 541	+ 19.6

Source: American Association of State Highway and Transportation Officials, CTPP 2000.

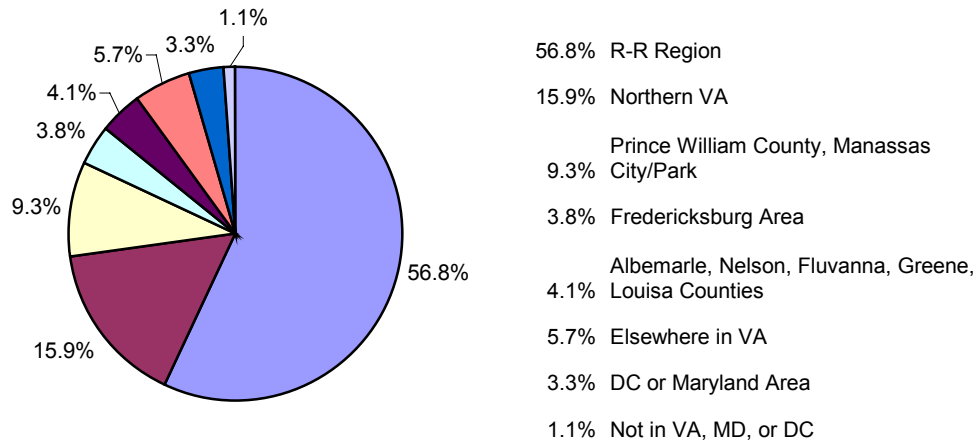
### 3.12 Commuter Destinations

The majority (56.9%) of workers in the Rappahannock-Rapidan Region work in Culpeper, Fauquier, Madison, Orange, or Rappahannock counties. The second-largest contingent of workers (28.2%) are destined for counties in Northern Virginia, Maryland, or the District of Columbia; this

large commuting segment typically travels along the busiest roadways in the region.

Figure 1 illustrates the percentage of workers commuting to each geographic destination.

*Figure 1: Regional Commuter Destinations*



Source: R-RRC

The maps in Appendix A show detailed geographic distributions of commuter destinations by each county.

### 3.2 Demand for a Telework Center

In a 2003 labor-force study commissioned by the Rappahannock Rapidan Regional Commission, 52.5% of respondents said they disliked commuting. The reasons they gave for this included the amount of time commuting requires, the stress involved, the monetary costs, personal safety, and fatigue during the commute.

When respondents were asked if they would telecommute if it was available to them, over half of them responded in a positive manner. Twenty percent answered they would like to telecommute on a regular basis if they were able to, and another 30.5% would be interested in



telecommuting on an occasional basis. This is an overwhelming sign that commuters would be receptive to commuting alternatives.

As previously seen in Table 4, 5.4% of workers in the region already work from home, and in the study completed by the Commission, 16.5% of respondents said they already telecommuted at least a few hours per week. These statistics are encouraging and may indicate that a larger number of workers would consider working from a telework center closer to their home.

### **3.3 Federal Workers in the Region**

At this time, the federal government is the largest promoter of telework centers and the largest subscriber of telework center seats. A federal mandate in 2000 ordered that an increasing number of federal employees have the option to telework until all eligible employees have the option by 2004. To this end, the government subscribes to a certain number of seats at most of the telework centers, composing the centers' largest customer base. Obtaining such federally-subscribed seats would be an important factor leading to the success of a telework center in the Rappahannock-Rapidan Region.

Assuming teleworkers will telecommute one day per week on the average, it would take five telecommuting federal workers to fill one seat on a full-time basis. Furthermore, because only five percent of all federal workers currently telecommute, it would theoretically take a pool of one hundred federal workers to fill that one seat, and a pool of hundreds to fill multiple seats. Unfortunately, the Region does not have a federal worker base of that size.

The last study to examine the number of federal workers in each county was performed by the U.S. General Services Administration in 1998. In

that study, the number of federal workers in each county of the region ranged between 35 (Rappahannock County) and 194 (Fauquier County). However, the number of postal workers, who we assume would never be eligible to telecommute, in each county ranged from sixty-five to ninety-three percent of all the federal workers in that county. This illustrates the very small base of federal workers that existed in the region in 1998.

*Table 5: Number of Federal Workers in the Region in 1998*

<b>County</b>	<b>All Federal Workers</b>	<b>Postal Service Workers</b>	<b>Non-Postal Service Workers</b>
Culpeper	128	101	27
Fauquier	194	129	65
Madison	61	32	29
Orange	58	54	4
Rappahannock	35	23	12
Total	476	339	137

*Source: U.S. General Services Administration*

Though there has been high growth in the region--particularly an influx from the Washington D.C metropolitan area, which would likely include more federal workers--the number of total federal employees has been shrinking in recent years. Because of these variables, and because of a lack of quantifiable data, it would be difficult to estimate the current number of federal workers in the region. However, even with revised figures, it is still likely the region does not have the hundreds of federal workers necessary to fill even a few telework center seats.

### **3.4 Available Funding for a Telework Center**

Due to the economic downturn in recent years, the amount of funding for telework center programs has likely declined. Also, the U.S. Congress is examining yearly reports published by the U.S. GSA that summarize the costs and benefits of existing telework centers. These reports have returned mixed results and bring into question the effectiveness of the

telework program. Therefore, it is unlikely the government would approve funding to create another telework center.

#### **4.0 COSTS OF A TELEWORK CENTER**

Though existing telework centers vary in size, layout, and operation, they are designed with similar office equipment and services. Teleworkers must have access to most basic office equipment that would be available at their central office. Also, telework centers must strive to provide equipment and services that would make it convenient for people to work at the telework center (such as twenty-four hour access) rather than an inconvenience. Such a list would include:

- High-speed internet access
- Private and semi-private workspaces
- Personal mobile filing drawers
- Phone service access through billable phone cards
- Standard office equipment (copier, fax, printers, shredder)
- Small teleconference room and video conference equipment
- 24-hour office access by security card
- Computer/administrative support
- Building designed for multiple-use activities
- Location near major transportation route

There have been no guidelines for the development of telework centers, which has resulted in facilities of differing sizes, layouts, and operation. A 1998 Ernst and Young study found that telework centers funded by the GSA ranged from approximately \$200,000 to \$600,000 to develop. The average cost of development was \$400,000 per telework center. After examining the equipment in each telecenter and each centers' development costs, the study estimated the average cost, by component, for creating a telecenter with 30 workstations, or seats.

Table 6: Estimated Development Costs for a 30-Workstation Telework Center

<b>Telework Center Component</b>	<b>Lower Estimate</b>	<b>Upper Estimate</b>
Furniture	\$91,000	\$112,000
Computer Network/Equipment	144,000	178,000
Telephone System	28,000	51,000
Office Equipment	7,000	13,000
Security System	4,000	9,000
Project Management and Professional Fees	6,000	21,000
<b>Total Development Costs</b>	<b>280,000</b>	<b>384,000</b>

Source: Ernst & Young LLP

A telecenter with thirty workstations is very large. It is more likely that the region would only be able to support a telecenter with ten workstations. Therefore, the above analysis can be further simplified by dividing the total development costs by 30 to deliver the lower (\$9,333) and upper (\$12,800) development costs per workstation. We can then estimate how much it might cost to develop a ten-seat telework center in the region.

Table 7: Estimated Development Costs for a 10-Workstation Telework Center

<b>Description</b>	<b>Upper Estimate</b>	<b>Lower Estimate</b>
Development Costs per Workstation	\$9,333	\$12,800
Total Development Costs	\$93,330	\$128,000

This is only an estimate. Actual development will likely be somewhat higher than what is noted as equipment such as the computer network and servers, telephone network, and office machinery will have high development costs no matter the size of the telework center.

Following the above method for development costs, the same break down can be shown for estimated yearly operating costs.

Table 8: Estimated Operating Costs for a 30-Workstation Telework Center

<b>Operating Cost</b>	<b>Lower Estimate</b>	<b>Upper Estimate</b>
Lease or Rent Expense	\$33,000	\$74,000
Management/Personnel	33,000	70,000
Administrative and General	1,000	9,000
Operations, Maintenance and Security	2,000	11,000
Utilities	5,000	6,000
Telecommunications	18,000	36,000
Marketing	1,000	12,000
Reserve for Replacement (Equipment Upgrades)	29,000	36,000
<b>Total Operating Costs</b>	<b>122,000</b>	<b>254,000</b>

Source: Ernst & Young LLP

Simplifying the above table to a ten-workstation telework center gives a yearly operating cost of roughly between \$41,000 and \$85,000:

Table 9: Estimated Operating Costs for a 10-Workstation Telework Center

<b>Description</b>	<b>Upper Estimate</b>	<b>Lower Estimate</b>
Operating Costs per Workstation	\$4,067	\$8,467
Total Operating Costs	\$40,667	\$84,667

Operating costs in the Rappahannock Rapidan Region are likely to be at the lower end, considering real estate and personnel costs are lower in this area.

## 5.0 PAST PERFORMANCE OF EXISTING TELEWORK CENTERS

When examining the feasibility of a telework center in the Rappahannock-Rapidan Region, the history of existing telework centers must be considered. There are 16 telework centers serving the Washington, D.C. metropolitan area. They are located in DC, MD, VA, and WV and are of varying sizes and layouts.

The majority of these telework centers do not reach profitability or cover their operating expenses from the fees they charge. Most telework

centers have also had difficulty filling their workstation seats to maximum capacity. The lack of a financially successful telework program has been attributed to many factors, foremost among them is an outdated fee schedule set by the government that fails to adequately recover all operating and construction costs. Other reasons include poor marketing and non-centralized organization of the telework centers.

However, the success of any telework program cannot be measured by profitability alone. It must instead be gauged by a combination of cost savings to the government and employers, the improved quality of life for employees using the center, and other intangible effects outlined in section 2.1 of this report.

Various studies completed by the U.S. GSA have evaluated the costs and benefits of the telework center programs. While reports in recent years have declared the program a failure when strictly based on financial terms, the 1998 Ernst and Young study noted several of the programs achievements, including improving quality of life for workers, increasing worker productivity, and achieving an 'economically attractive alternative to the daily commute.'

The Ernst and Young report also suggested steps through which telework centers could become a financially-viable program. One way to increase the success of a center, by increasing the profitability and making it a more valuable community asset, is to diversify the clients and number of uses for the center. This can be done through a variety of means, including: a small-business incubator, a support facility to home-based telecommuters, executive suites for businesses, a community training internet access center, and a conference or meeting center.

## 6.0 EXTENDING BROADBAND SERVICE AND WORKING FROM HOME

Establishing a telework center is not the only way to alleviate commuting and quality of life issues. One alternative would be to increase the number of people who work at home. This would theoretically bring an even greater benefit to the area by entirely eliminating the commute of these workers to their central office or to a telework center. According to the 2000 Census, 5.4 percent of workers in the Region currently work from home (see Table 4). It is not clear if these home workers are self-employed or if they are telecommuting.

Though the number of home workers in the Region increased by nearly twenty percent between 1990 and 2000, several barriers remain that would prevent even more people from working at home. The following is a list of some home-working barriers:

- Insufficient high-speed access exists in the region, causing a problem for people who need to access large amounts of data over the internet.
- While managers can be assured employees at a telework center are working in a productive and professional environment, they may question an employee's ability to productively work at home.
- Some workers will not have the ability to work at home, either because they don't have a home computer, don't have the space to work at home, or their home environment is not conducive to focusing on their work.
- Some workers will choose not to work at home because they might fear this type of isolation and prefer the social interactions of a workplace.

Currently, the first barrier regarding insufficient high-speed access, is the most problematic in the region and the only one that can be solved in a region-wide effort. Because the region is largely rural, it is unlikely that

cable modem service will be extended to any significant portion of the region. This leaves the option of creating a wireless broadband network, which is a new, but proven as being an increasingly-successful technology.

Fauquier County and the Town of Culpeper have both investigated expanding their area's broadband service through a wireless network. However, to date, neither are pursuing a feasible work plan, nor have they established estimated costs for such a system. The County of Orange and the Towns of Orange and Gordonsville have recently received pricing quotes for establishing a wireless network between the towns, schools, and county offices. They estimate an initial cost of \$200,000 for this wireless internet service. If used as an estimate, we can see that building a network across five counties would not be cost effective as an alternative to a telework center, though a wireless network would have many additional benefits for residents and businesses in the Region. Also, creating a wireless network on a reasonable budget would not be practical for the region. This is because wireless-signal transmitters must be built within line of sight of one another, which would not be possible for remote areas without towers or buildings or for areas in hillier terrain.

## **7.0 CONCLUSION**

As the population and the number of workers in the Region grows, so does the congestion on the roads. Census statistics show that the Region is a high-growth area when compared to state and national trends. The data also shows that as the length of people's commuting times increase, the majority of these people continue to drive to work in a single occupancy vehicle.

Increasing the number of telecommuting options available to residents in the region is a viable solution for easing this congestion and improving the



quality of life for workers. This report examined the costs, benefits, and feasibility of establishing a telework center in the region. While a telework center would help to ease congestion and improve the quality of life for commuters, there are several hurdles that might not make this a feasible alternative. Foremost among these are the low number of federal workers in the region and unpredictable federal funding while the government evaluates the success of existing telework centers.

Another commuting alternative this report briefly explored was to increase the number of home workers in the region. This could likely be done only if high-speed internet access was provided throughout the region, primarily in the form of a wireless broadband network. However, this solution has prohibitions in both the cost of the project and the geography of the region.

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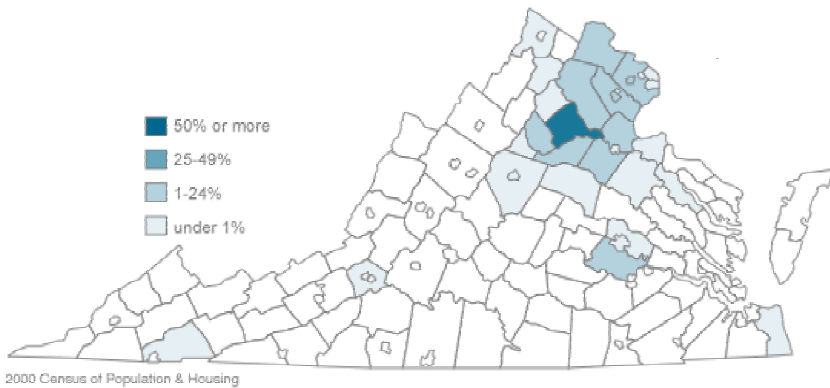
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# APPENDIX A

## Commuter Destinations by County

Source: *Weldon Cooper Center for Public Service*

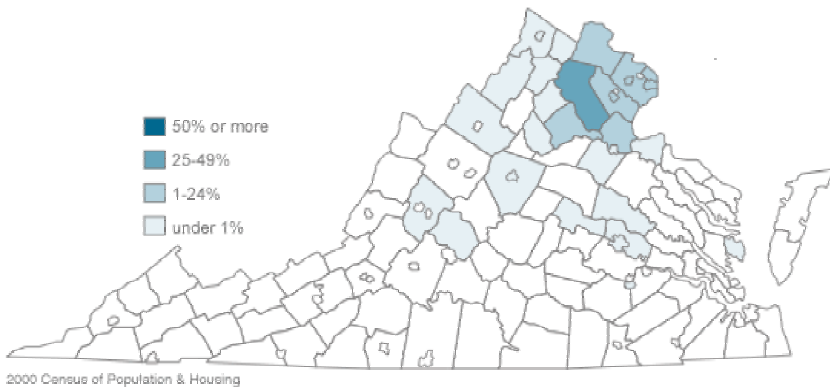
Where Culpeper County Residents Worked



**Out of State**

- District of Columbia DC 1.62%
- Montgomery Co MD 0.43%
- Prince George's Co MD 0.31%
- Charles Co MD 0.17%
- AUSTRALIA 0.11%
- Cook Co IL 0.09%
- Baltimore Co MD 0.09%
- Anne Arundel Co MD 0.08%
- St. Mary's Co MD 0.06%
- Sussex Co DE 0.05%
- Washington Co TN 0.04%
- CANADA 0.04%
- Cuyahoga Co OH 0.04%

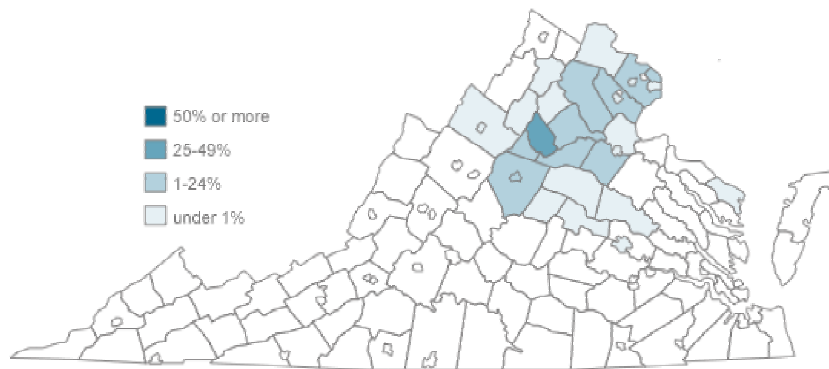
Where Fauquier County Residents Worked



**Out of State**

- District of Columbia DC 4.04%
- Montgomery Co MD 0.97%
- Prince George's Co MD 0.48%
- Richland Co OH 0.08%
- Frederick Co MD 0.05%
- Fullton Co GA 0.05%
- Anne Arundel Co MD 0.05%
- New York Co NY 0.05%
- CANADA 0.04%
- Queens Co NY 0.04%
- Travis Co TX 0.04%
- Montgomery Co PA 0.04%
- TAIWAN 0.04%
- Cook Co IL 0.03%
- Howard Co MD 0.03%
- St. Mary's Co MD 0.03%
- Mecklenburg Co NC 0.03%
- Clinton Co OH 0.03%
- CAMBODIA 0.03%
- Marion Co IN 0.02%
- Washington Co WI 0.02%
- Riverside Co CA 0.02%
- Fairfield Co CT 0.02%
- Baltimore Co MD 0.02%
- Essex Co NJ 0.02%
- Monongalia Co WV 0.02%
- BOSNIA AND HERZEGOVINA 0.02%
- St. Landry Parish LA 0.01%

**Where Madison County Residents Worked**

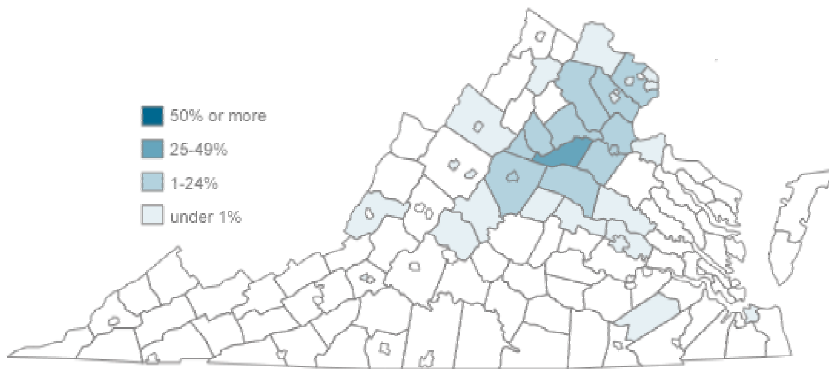


2000 Census of Population & Housing

**Out of State**

Greenbrier Co WV 0.23%  
 Broward Co FL 0.21%  
 Mecklenburg Co NC 0.21%  
 Nassau Co NY 0.15%  
 Montgomery Co MD 0.12%  
 District of Columbia DC 0.08%

**Where Orange County Residents Worked**

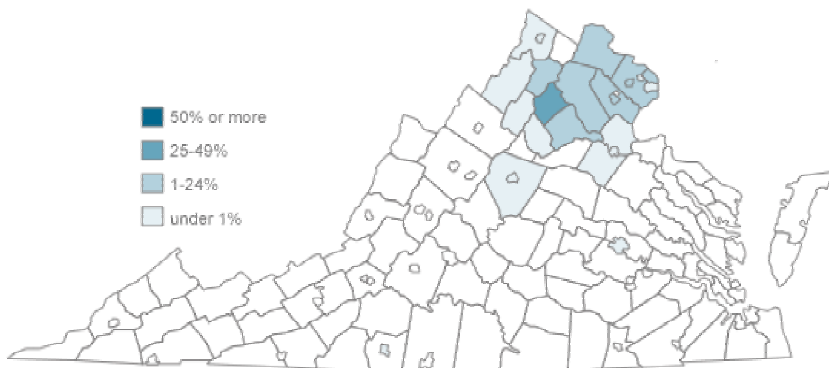


2000 Census of Population & Housing

**Out of State**

District of Columbia DC 1.35%  
 Montgomery Co MD 0.53%  
 Prince George's Co MD 0.13%  
 Sebastian Co AR 0.10%  
 El Paso Co CO 0.07%  
 Charles Co MD 0.07%  
 St. Mary's Co MD 0.07%  
 Baltimore Co MD 0.05%  
 Mecklenburg Co NC 0.05%

**Where Rappahannock County Residents Worked**



2000 Census of Population & Housing

**Out of State**

District of Columbia DC 3.15%  
 Prince George's Co MD 1.13%  
 Montgomery Co MD 0.59%  
 Nassau Co NY 0.53%  
 Sussex Co DE 0.25%  
 Frederick Co MD 0.17%  
 ENGLAND 0.17%  
 Philadelphia Co PA 0.14%  
 Bergen Co NJ 0.11%