



Applied Policy Project

Attracting Remote Workers to Rural Virginia

Prepared for Virginia Deputy Secretary of Commerce and Trade Cassidy Rasnick



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Disclaimer

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgements and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

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Executive Summary

Rural depopulation has occurred throughout the world since the Industrial Revolution, and rural Virginia is no exception. Southwest and Southside Virginia, in particular, have consistently experienced depopulation as local economies built around coal, tobacco, and manufacturing significantly declined, leading to disparate outcomes compared to the rest of Virginia in income, education, and health. This trend is expected to continue over the next 25 years, as current projections show further population declines in these areas while the rest of the state experiences significant growth.

Since March 2020, COVID-19 has reoriented various ways of life, including where and how many people do their jobs. It is estimated that half of the workforce in the United States was working remotely by April 2020, and the sudden shift went better than expected for many firms. As a result, the move to remote work, which has been growing gradually in recent years, may have drastically accelerated. This presents rural areas with an opportunity to attract workers who may no longer be tied to living within driving distance of company offices. Certainly, this trend is widely publicized and highly speculated, leading to a competitive environment over attracting these workers.

Any policy proposals or initiatives will need to consider Virginia's specific barriers, namely the lack of broadband access in rural Virginia compared to urban areas. It will also need to consider any alternatives based on cost efficiency, effectiveness, equity, and feasibility. To attract remote workers, Virginia could:

1. Provide monetary incentives for remote workers to relocate to rural Virginia
2. Establish coworking spaces in rural areas
3. Attract workers back to rural Virginia through a job placement program
4. Launch a collaborative regional marketing campaign

Virginia should support setting up a coworking space in either Southwest or Southside Virginia with a business model that makes the facility free to use for anyone in the community. Virginia should support this because: 1) the magnitude of the shift to remote work is uncertain, and the Commonwealth should support initiatives that also directly benefit current residents; 2) the area will need a unique asset to stand out in competing to attract workers with no ties to the area; and 3) there are significant tangential benefits that come with establishing a coworking space, namely developing a more robust entrepreneurial ecosystem.

To set the wheels in motion, site selection must be determined. Based on the current coworking footprint in Southwest and Southside Virginia, the state should support putting a coworking space on the Virginia side of downtown Bristol. Next, it must engage public and private partners, including GO Virginia, the Center for Innovative Technology, the Virginia Tobacco Commission, and UVA Wise. Last, the state can help to develop consistent programming that allows for networking opportunities across these rural areas. It will facilitate development and learning, providing opportunities for a tighter-knit business community.

While a permanent shift to remote work looks likely for many workers, the magnitude and shape of the shift is still to be determined. As a result, Virginia should support initiatives that have the potential to attract remote workers from outside the area while also providing needed infrastructure that will benefit current residents.

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1 Introduction

In November 2020, the *Virginia Mercury* published a piece titled, “In a shrinking part of Southside Virginia, VDOT is still planning a highway expansion” (Gordon, 2020). The Virginia Department of Transportation has plans for a \$745 million, 7.4-mile highway expansion in/around Martinsville, which has been decimated economically over the last several decades. The merits of this particular project notwithstanding, this is a perfect example of the situation facing state lawmakers as they determine how best to support regions in Virginia that have been left behind, experiencing disparate economic, education, and health outcomes. Those regions that have been hit the hardest are Southwest and Southside Virginia.

Southwest Virginia experienced population declines in three of the last six decades, including an estimated 4.2% decline over the last 10 years (University of Virginia Weldon Cooper Center, 2020). Southside Virginia, meanwhile, has had its population decline in three of the last four decades with an estimated drop of 2.4% over the last 10 years (University of Virginia Weldon Cooper Center, 2020). These data points show that this is an established trend that would take a significant intervention to reverse or slow.

Dale Wagoner, deputy county administrator for Henry County, told the *Virginia Mercury* regarding the highway project, “If we want to correct the negative trend, then we have to do something different to improve that,” which just as easily can be applied to the macro problem his region faces (Gordon, 2020).

Rural outmigration has become a longstanding trend with few proven solutions. Further, any potential solutions will be specific to a region based on relative comparative advantages and particular demographics. These challenges present themselves in both identifying potential policy responses to the problem and then generalizing those solutions to both Southwest and Southside Virginia.

The COVID-19 pandemic significantly shocked the economy, requiring significant flexibility from employers to adapt to a work environment that prohibited workers from coming into the office. As a result, remote working significantly increased and provided a potential tool for rural development.

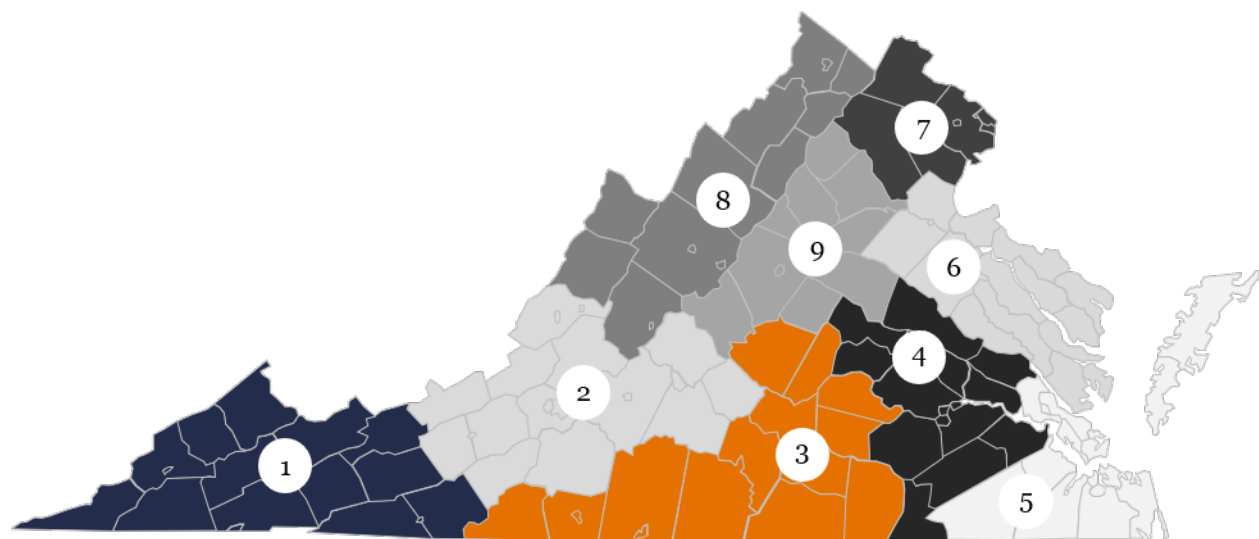
2 Problem Statement

Through 2045, the population in Southwest and Southside Virginia is expected to decline by 6.3% and 7.5%, respectively, while Virginia’s population in total projects to grow by 20.4% (University of Virginia Weldon Cooper Center, 2020). The people in these almost exclusively rural regions experience worse health, education, and economic outcomes compared to the rest of Virginia, and the projected population declines will lead to a smaller tax base and fewer representatives in state government, reducing these regions’ abilities to advocate and implement policy that will better the lives of their citizens. Virginia can attempt to take advantage of the emerging trend toward remote work coming out of the pandemic by supporting initiatives that encourage remote workers to locate in rural localities in Virginia.

3 Regional Characteristics

For the purposes of this project, the regions described coincide with those as defined by GO Virginia. GO Virginia is a business-led economic development initiative established in 2016, which breaks the Commonwealth into nine distinct regions (GO Virginia, 2020). The regions range in size from just over 364,000 people (Southside Virginia or Region 3) to 2.5 million people (Northern Virginia or Region 7). It is Regions 1 (Southwest) and 3 (Southside) that will be analyzed in detail.

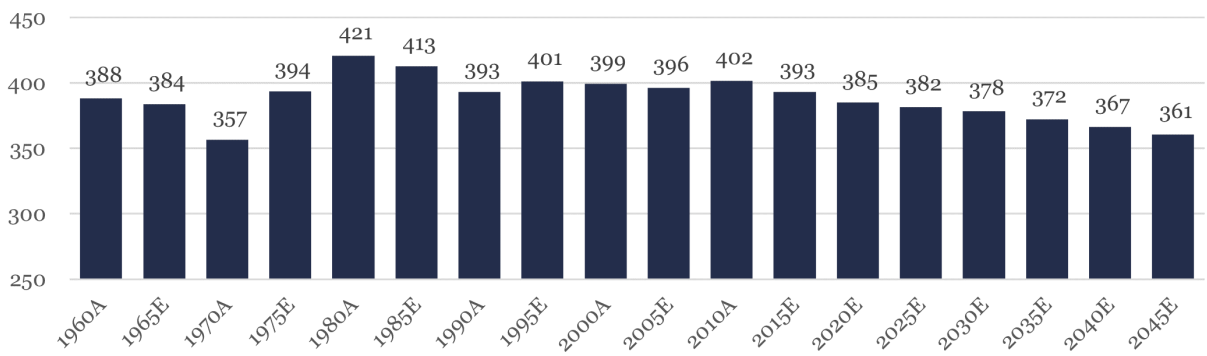
Figure 1: GO Virginia Regions



3.1 GO Virginia Region 1: Southwest Virginia

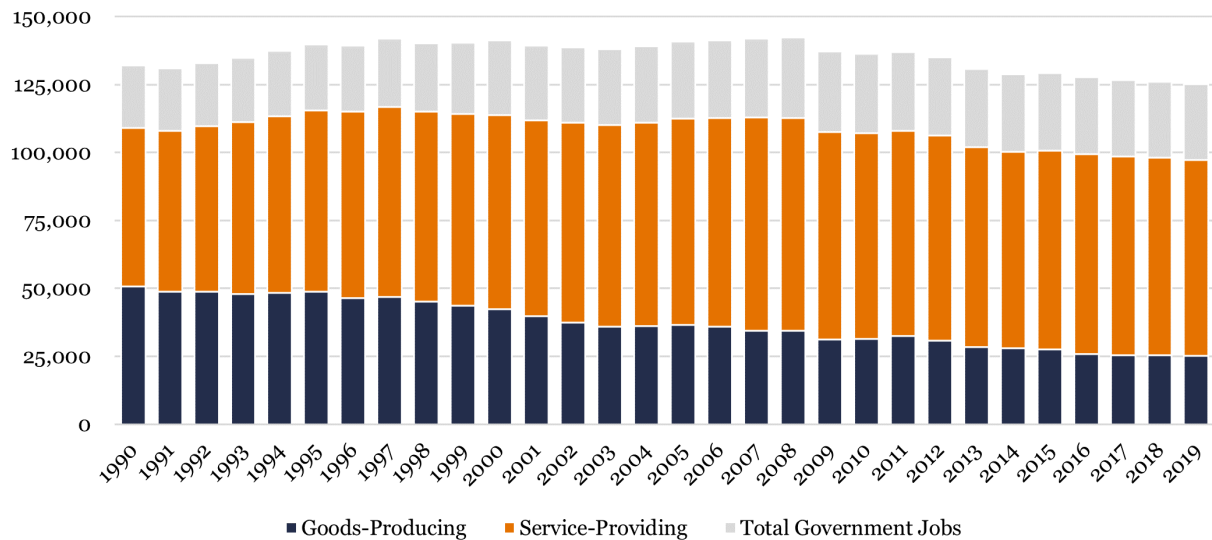
Southwest Virginia (or Region 1 as defined by GO Virginia) includes the cities of Bristol, Galax, and Norton, as well as the counties of Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise, and Wythe. Since 1960, the population in Southwest Virginia has fluctuated between 357,000 in 1970 to 421,000 in 1980. Its 2019 population is estimated at 376,114 with over 95% of the population being white (University of Virginia Weldon Cooper Center, 2020).

Figure 2: Southwest Virginia Population 1960-2045E (population in thousands)



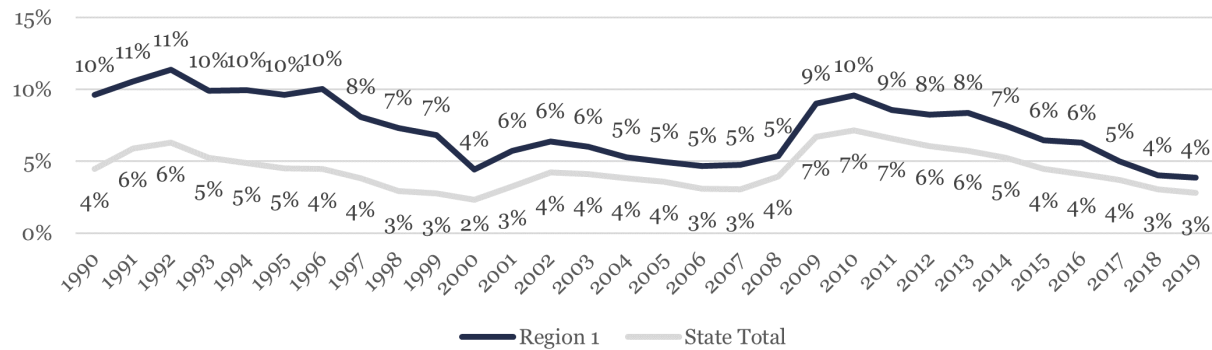
The region’s economy centered around natural resources (coal mining), agriculture, and manufacturing, but it has seen those goods-producing jobs slowly dwindle over the last 30 years. Goods-producing jobs (natural resources/mining, construction, and manufacturing) have declined from 50,697 jobs in 1990 to 27,835 in 2019, while service-providing jobs grew from 58,402 to 72,199 (U.S. Bureau of Labor Statistics, 2020).

Figure 3: Southwest Virginia Employment by Industry 1990-2019



Over the last ten years, the regional unemployment rate has been between 1.3-1.5x the state unemployment rate. In 2019, the unemployment rate in Southwest Virginia was 3.8% compared to 2.8% statewide. From 2000-2019, the unemployment rate was as high as 9.6% in 2010 and as low as 3.8% in 2019. The 2018 median household income in Southwest Virginia localities ranged from \$32,144 in Buchanan County (the lowest in all of Virginia) to \$47,681 in Bland County. The median of the localities is \$38,506, which is meaningfully below the state median household income of \$72,600.

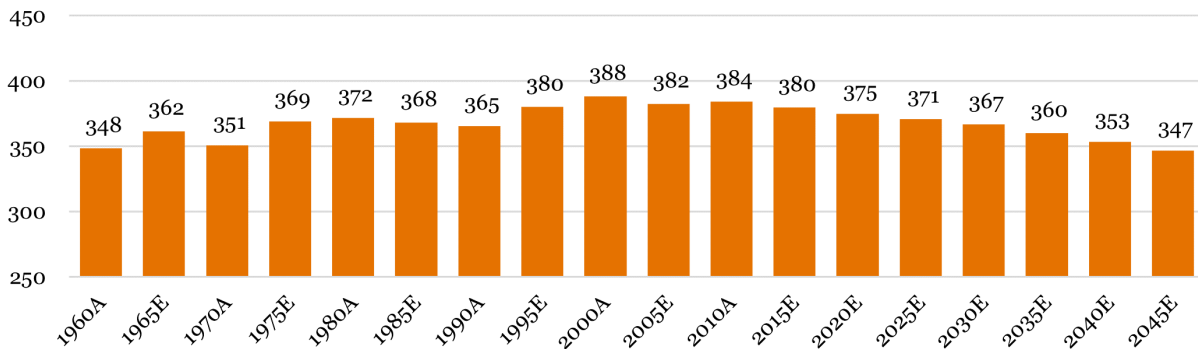
Figure 4: Southwest Virginia vs. Statewide Unemployment Rate 1990-2019



3.2 GO Virginia Region 3: Southside Virginia

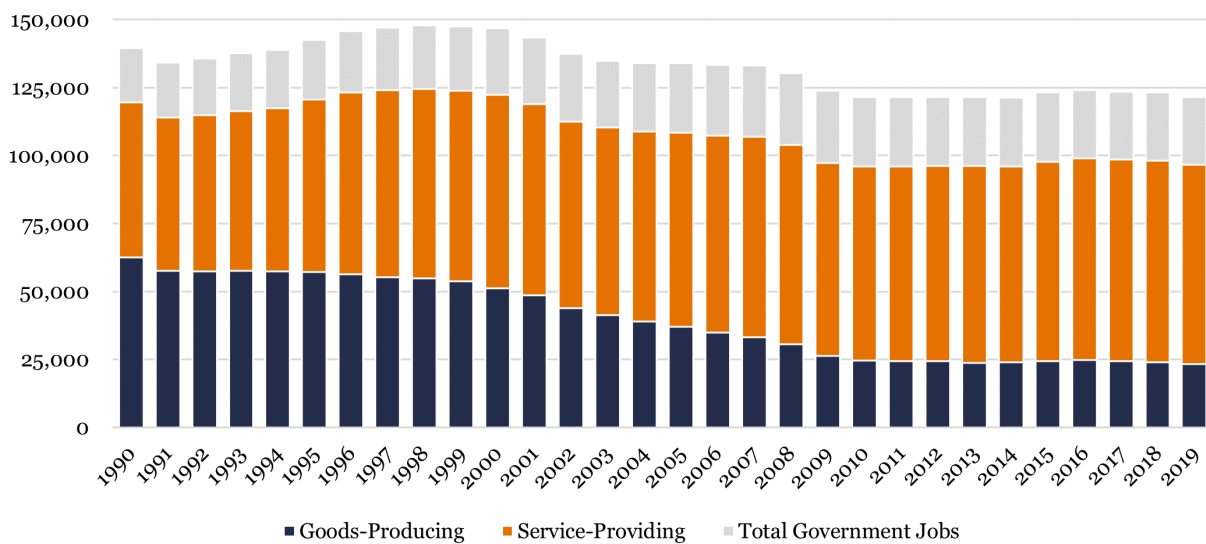
Southside Virginia (or Region 3 as defined by GO Virginia) includes the cities of Danville and Martinsville, as well as the counties of Amelia, Brunswick, Buckingham, Charlotte, Cumberland, Halifax, Henry, Lunenburg, Mecklenburg, Nottoway, Patrick, Pittsylvania, and Prince Edward. Since 1960, the population in Southside Virginia has fluctuated from as low as 348,000 in 1960 to 388,000 in 2000. Its 2019 population is 364,181 with 65% being white and 32% being Black (University of Virginia Weldon Cooper Center, 2020).

Figure 5: Southside Virginia Population 1960-2045E (population in thousands)



The region's economy was built around agriculture and manufacturing (textiles and furniture), but it has also seen its goods-producing jobs slowly dwindle over the last 30 years. Goods-producing jobs (natural resources/mining, construction, and manufacturing) have declined from 62,513 jobs in 1990 to 23,421 in 2019, while service-providing jobs grew from 57,199 to 73,246 (U.S. Bureau of Labor Statistics, 2020).

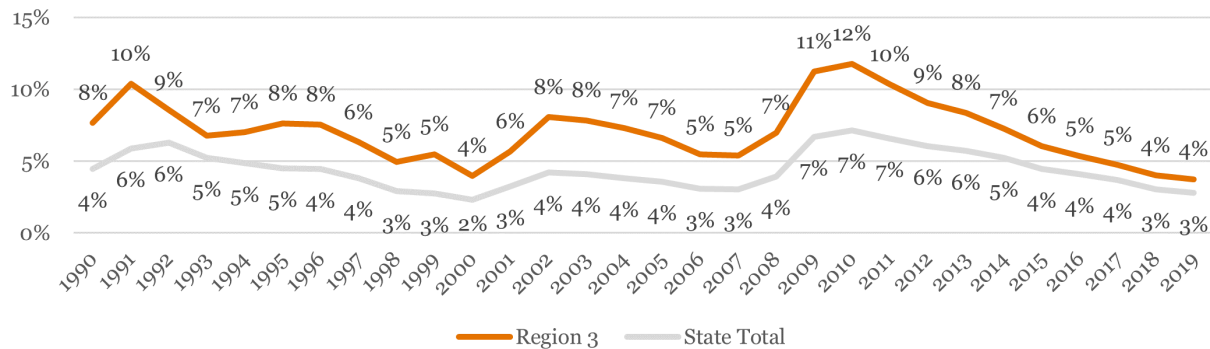
Figure 6: Southside Virginia Employment by Industry 1990-2019



Over the last ten years, the regional unemployment rate has been between 1.3-1.7x the state

unemployment rate. In 2019, the unemployment rate in Southside Virginia was 3.8% compared to 2.8% statewide. From 2000-2019, the unemployment rate was as high as 11.8% in 2010 and as low as 3.8% in 2019. The 2018 median household income in Southside Virginia localities ranged from \$33,892 in Martinsville (the second lowest in all of Virginia) to \$57,280 in Amelia County. The median of the localities is \$43,096, which is also meaningfully below the state median household income of \$72,600.

Figure 7: Southside Virginia vs. Statewide Unemployment Rate 1990-2019



4 Disparate Regional Outcomes

4.1 Financial Resources

The depopulation consequences easily manifest themselves in the tax base of each of these regions. According to data from the Virginia Department of Taxation, Southwest Virginia saw its state tax liabilities grow at a compound annual growth rate (CAGR) of 1.7% from 2004-2017 while Southside Virginia grew at a CAGR of 2.2% (Virginia Department of Taxation, 2020). All other regions in Virginia grew at a CAGR of at least 3.2%, and the state average over this time was 4.0% (Virginia Department of Taxation, 2020). If Southwest and Southside Virginia saw its tax liabilities grow at a 3.2% CAGR over this period, it would have resulted in an increase of \$50 million in state tax revenue in 2017 from Southwest Virginia and \$30 million in state tax revenue in 2017 from Southside Virginia.

This smaller tax base leads to significant disparities in education funding, but the disparity does not come at the state level. As an example, in 2018, Virginia provided Dickenson County in Southwest Virginia \$5,387 per student in state education funding while Arlington received \$1,589 per student in state education funding; however, at the local level, Arlington provided an additional \$16,228 per student in local funding while Dickenson County provided just \$3,398 (The Roanoke Times Editorial Board, 2018).

This uncovers two key points. The first is that this disparity in funding leads to unequal access to a quality education, leading to worse outcomes. The second is that this disparity comes despite the state providing more funding to rural areas on a per capita basis than to urban areas. This shows that policy is needed that will not just divert state resources but enable these communities to rebuild a foundation themselves that will help slow out-migration and encourage in-migration.

4.2 Education Outcomes

The out-migration from rural areas in the country has exasperated already disparate education outcomes. Nationally, there were 27,145 schools in rural areas for the 2015-2016 school year, which was 2,700 fewer than ten years prior (D. Truong, 2018). As of 2018 in Virginia, rural school enrollment had shrunk seven percent since 2008-2009 while the state as a whole saw enrollment grow by five percent (D. Truong, 2018).

There also exists an educational attainment gap for both Southwest and Southside Virginia compared to the rest of the state. Southwest and Southside Virginia are the only regions where there are more adults without high school diplomas than adults with at least a bachelor’s degree from college (U.S. Census Bureau, 2020). As Figures 8 and 9 show, 16% of adults in both Southwest (Region 1) and Southside (Region 3) Virginia have at least a bachelor’s degree compared to 19% and 18%, respectively, that do not have a high school diploma (U.S. Census Bureau, 2020).

Figure 8: Percentage with Bachelor’s Degrees or Higher for Adults Aged 25 or Higher 1970-2019

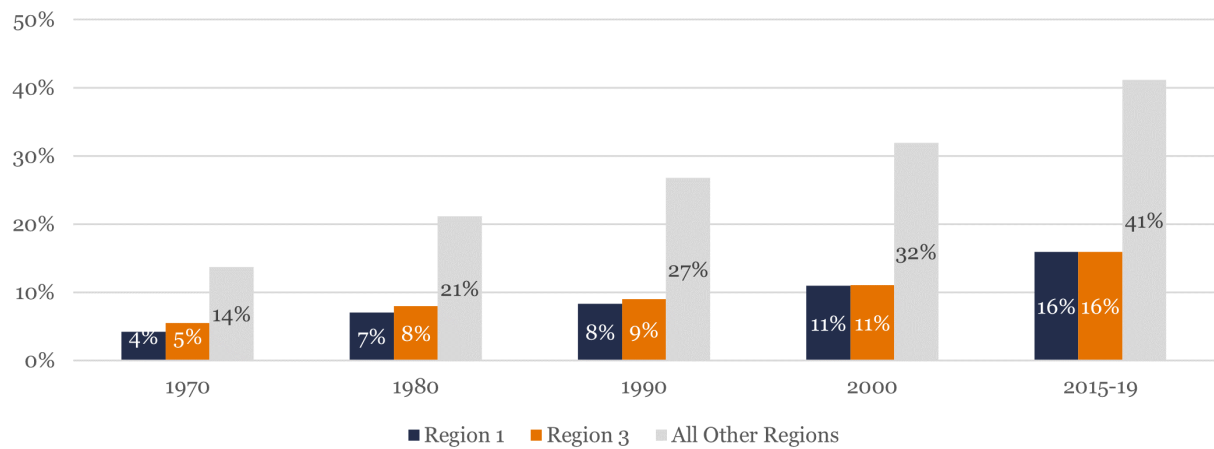
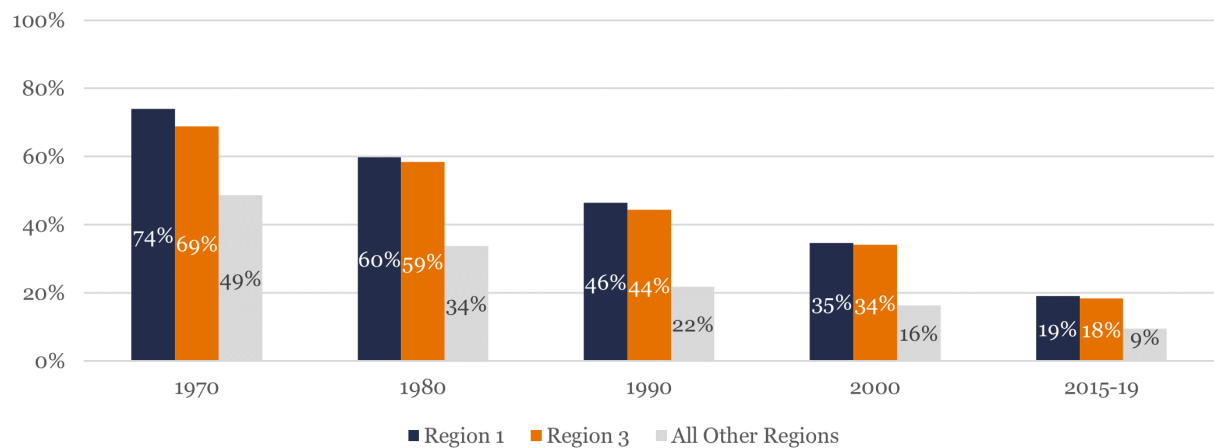


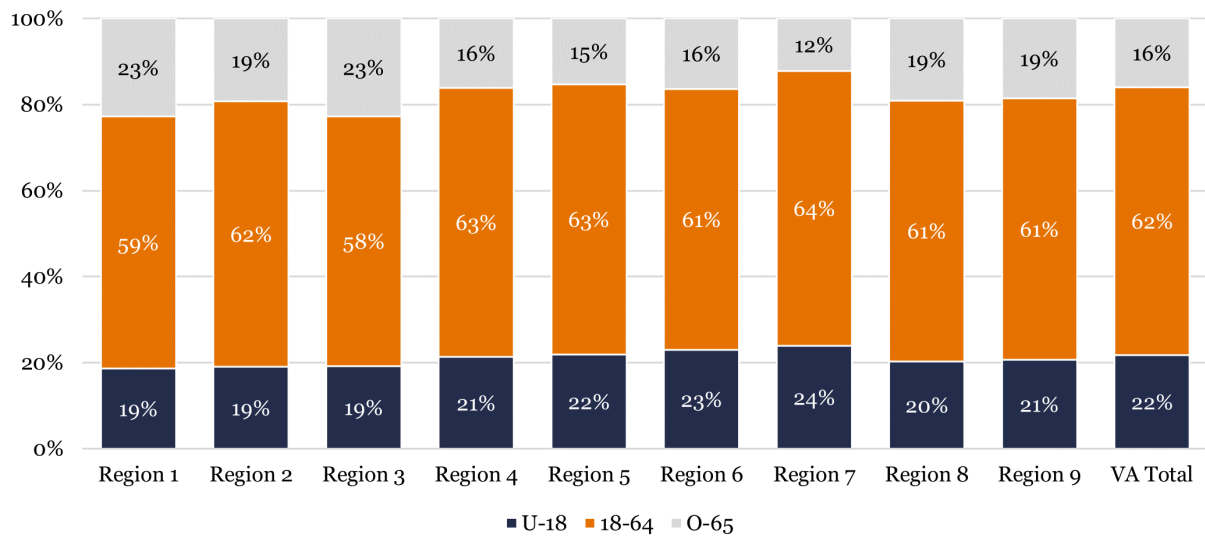
Figure 9: Percentage without High School Diplomas for Adults Aged 25 or Higher 1970-2019



4.3 Health Outcomes

Since 2005, 155 rural hospitals have closed nationwide. This comes because the hospitals are in areas where population is decreasing, and it is typically younger, healthier people who are leaving the areas. That leaves an older population with more health problems, widening the gap in health outcomes. Region 1 and Region 3 are the only GO Virginia regions where at least 20% of the populations are over 65 years of age, and both regions have 23% of their populations at or above retirement age (University of Virginia Weldon Cooper Center, 2020).

Figure 10: Age Breakdown by GO Virginia Region 2019



Rural counties in Virginia “have some of the most significant disparities in health outcomes and [social determinants of health] compared to other states in the nation” (Virginia Rural Health Association, 2013). The top health issues in rural Virginia are obesity, diabetes, and depression & anxiety (Virginia Rural Health Association, 2013).

5 The State of Remote Work

5.1 Trending Toward Remote Work

In 1959, famous management consultant Peter Drucker coined the term “knowledge worker” in *The Landmarks of Tomorrow*, which meant a worker who was paid to think for a living as opposed to doing manual labor. In 1999, Drucker proclaimed that, “The most valuable asset of a 21st-century institution (whether business or non-business) will be its *knowledge workers* and their *productivity*” (Drucker, 1999).

The continued development of the knowledge economy coupled with technological progress has given rise to the concept of remote work (or telework) over the last couple decades. Remote work is broadly defined as “work regularly performed at a location remote to the ordinary work site through the use of information and communication technologies” (Donnelly & Proctor-Thomson,

2015). These alternate locations can either be at home or a remote location, whether it be an office or a coffee shop.

The terms “telework” and “telecommute” were coined by Jack Nilles in the early 1970s and feature prominently in his book *Telecommunications-Transportation Tradeoff: Options for Tomorrow*. Nilles was a physicist in the United States Air Force and with NASA but left those positions to research remote work as a means for reducing traffic congestion in urban areas and has pioneered research into the societal implications of remote work (J. M. Nilles, 1976).

The prospect of remote work policies as a way of helping families also received fairly recent attention from the federal government. President Barack Obama said in October 2010, “Because at the end of the day, attracting and retaining employees who are more productive and engaged through flexible workplace policies is not just good for business or for our economy – it’s good for our families and our future” (The White House, 2010).

Remote work, even prior to COVID-19, has been a gradually emerging trend for American workers (Krantz-Kent, 2019). That trend has taken hold in Virginia, as well. From 2010-2018, the number of Virginians working from home rose by 43% to almost 250,000 workers, or 6% of the Virginia workforce (Lombard, 2020).

Academic literature and research shows both benefits and drawbacks for employees working from home (Boell, Cecez-Kecmanovic, & Campbell, 2016). On the benefits side, telework provides increased autonomy (Harpaz, 2002), reduced casual communication (Khalifa & Davison, 2000), increased family and free time (L. C. Johnson, Andrey, & Shaw, 2007), reduced stress (Fonner & Roloff, 2010), higher productivity (Bailey & Kurland, 2002; Fonner & Roloff, 2010), better job satisfaction (Reinsch, 1999), lower commuting time (Tremblay & Genin, 2007), and better opportunities for women with children, students, and those with disabilities (Morgan, 2004).

Conversely, teleworking can have negative outcomes and experiences for employees. Remote workers experience social isolation as face-to-face interactions with coworkers are significantly reduced (Ammons & Markham, 2004). Teleworkers also find it difficult to stay in-tune with organizational values and objectives (Madsen, 2003). Employees also feel reduced managerial visibility (Cooper & Kurland, 2002), which can negatively impact the career goals of teleworkers (Khalifa & Davison, 2000).

5.2 The COVID-19 Acceleration

Prior to the COVID-19 pandemic, previous disrupting events also prompted serious discussion about remote work (Guyot & Sawhill, 2020). In the wake of 9/11 and the anthrax scares which forced government offices to close, the Congressional Research Service issued a report that stated, “Some believe that the September 11, 2001 terrorist attacks on the World Trade Center and the Pentagon, and the discovery of anthrax in Washington, DC, and other cities have fundamentally changed the workplace and demonstrated the practical application of telework to the continued operation of the government” (Congressional Research Service, 2002).

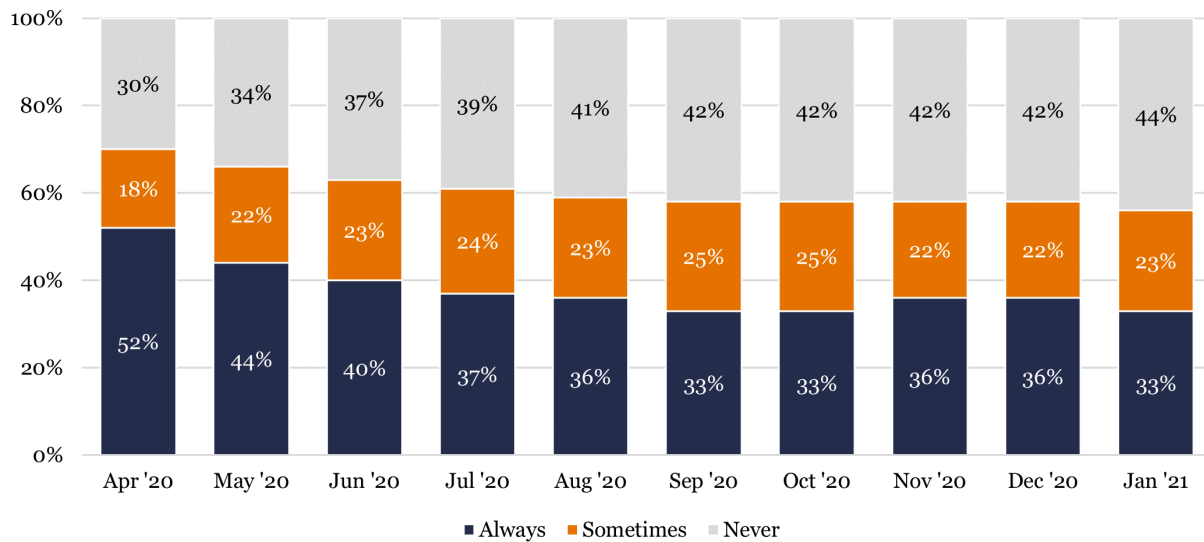
Natural disasters have also caused a sudden spike in remote work out of necessity. An earthquake in Christchurch, New Zealand on February 22, 2011 resulted in “185 deaths, the immediate closure of the central business district (CBD), extensive infrastructural damage and widespread disruptions to public services” (Donnelly & Proctor-Thomson, 2015), leading to organizations quickly

pivoting to remote work.

The COVID-19 pandemic has initiated a surge in remote work on a global scale and, in particular, within the United States, with one study finding that of those employed pre-pandemic, about half were working from home by April 2020 with 35% recently transitioning to working from home (Brynjolfsson et al., 2020).

According to Gallup, 70% of the workforce was either sometimes working remotely or always working remotely in April 2020. By January 2021, that number dipped to 56%, which has been consistent since the fall (Saad & Hickman, 2021).

Figure 11: U.S. Employed Adults Working Remotely



The remote work experiment has received positive feedback from companies. An April 2020 survey showed that 56% of 1,500 hiring managers felt the sudden shift to remote work went better than expected compared to 10% who felt it went worse than expected. As a result of these experiences, 62% of hiring managers said that their workforce would be more remote going forward (Ozimek, 2020).

Perhaps most importantly, 32% of hiring managers found that productivity increased compared to 22% who found productivity decreased as their work forces transitioned to remote work. At least 40% of the hiring managers surveyed noted each of the benefits of no commute, a reduction in non-essential meetings, and less distractions than the office. At least 30% of respondents mentioned technological issues, increased distractions at home, reduced team cohesion, and difficulties in communication as drawbacks (Ozimek, 2020).

5.3 Remote Work Post-Pandemic Considerations

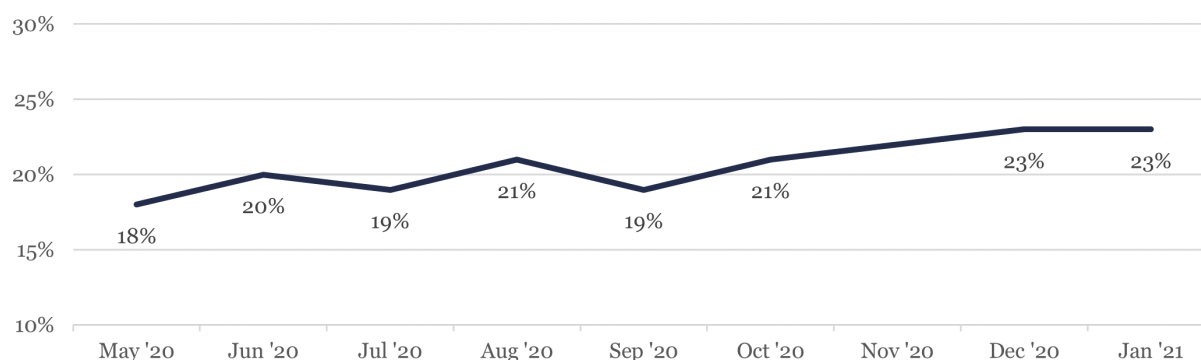
There are several practical reasons why remote work will likely continue after the threat of COVID-19 subsides: 1) Productivity of teleworkers relative to peers is comparable; 2) Pairing teleworkers with firms is becoming easier with technological innovation; 3) Teleworkers can be cheaper for

firms due to the geographic tradeoff workers are willing to make; and 4) Benefits of collocated workers, such as knowledge spillovers, are falling (Clancy, 2020).

While the surge in remote work during the pandemic has been notable, there are three questions policymakers must consider moving forward: 1) For what portion of the population is this trend to remote work permanent? 2) What kinds of jobs and demographics will continue to work remotely? 3) What are the unintended consequences of this potential shift?

Regarding the first question, as of January 2021, approximately one-fourth of the U.S. workforce would like to continue working remotely after the pandemic (Saad & Hickman, 2021). That includes 18% of the workforce that is only working remotely and would like to continue and 5% of the workforce that is sometimes working remotely and would like to continue (Saad & Hickman, 2021).

Figure 12: Desire to Continue Working Remotely Among U.S. Workers



As for the second question, moving forward, the McKinsey Global Institute estimates that more than 20% of the workforce could work remotely three to five days a week, which “would mean three to four times as many people working from home than before the pandemic and would have a profound impact on urban economies, transportation, and consumer spending, among other things” (Lund, Madgavkar, Manyika, & Smit, 2020).

These jobs are highly concentrated in a few sectors. Those with the highest potential for remote work include finance, insurance, management, business services, and information technology (Lund et al., 2020). As McKinsey points out, “These sectors are characterized by a high share of workers with college degrees or higher” (Lund et al., 2020).

Conversely, McKinsey estimates that more than half of the workforce would have very little possibility of working remotely post-pandemic. These are jobs that require collaboration, the use of particular machinery, or services that require being on the move. As McKinsey summarized, “Many of such jobs are low wage and more at risk from broad trends such as automation and digitization. Remote work thus risks accentuating inequalities at a social level” (Lund et al., 2020).

On top of concerns about inequality and also addressing questions about unintended consequences, one of the biggest drawbacks to home-based remote work is the feeling of professional isolation (de Vries, Tummers, & Bekkers, 2019). This year, Americans have experienced a significant decline in their mental health as a result of the pandemic. Gallup found that in 2020, the percentage of Americans who felt their mental health or emotional well-being was either excellent

or good dropped from 85% in 2019 to 76% in 2020, the lowest by five percentage points since the survey began in 2001 (Brenan, 2020).

Nilles, in his work, has documented the kinds of workers who should not participate in home-based remote work. They are the following (J. Nilles, 2021):

- People who need daily access to information that is highly restricted, such as military and corporate secrets, or to equipment that is fixed in its location, such as laboratories or heavy production machinery.
- New employees until they have had a chance to learn the ropes and the culture of the organization, except for those whose jobs are independent of the organization's culture.
- Young, single people who would benefit more from the social activities of the organization.
- People who have difficulty working alone or without close supervision.
- People whose household environments are not conducive to uninterrupted working. This includes homes with limited space for isolation during working hours; homes with small children or others who need constant attention; homes with noisy neighbors during working hours.

There is also a risk that enthusiasm of firms to maintain flexible remote work policies could wane. That has happened with multiple companies in the recent past. In 2013, Yahoo CEO Marissa Mayer required that company employees who worked remotely must relocate to company facilities. In a memo to employees, Yahoo's Jackie Reses said, "Speed and quality are often sacrificed when we work from home. We need to be one Yahoo!, and that starts with physically being together" (Swisher, 2013).

In 2014, Reddit changed its remote work policies after a \$50 million fundraising round. It closed its Salt Lake City and New York City offices and mandated that all of its employees relocate to company headquarters in San Francisco (A. Truong, 2014).

IBM was one of the early adopters of flexible workplace policies, but in March 2017, it directed thousands of employees working remotely to relocate to one of six physical locations in the United States or else the employees would be let go (Kasriel, 2017).

Some tech companies have even developed policies that will alter pay for employees who decide to relocate away from company headquarters to work remotely. VMware Inc. is allowing employees to work remotely with the caveat that if they move from Silicon Valley, salaries will receive a cost-of-living adjustment, meaning a relocation to Denver would come with an 18% salary decrease (Grant, Alexander, & Wagner, 2020). Facebook and Twitter are also considering similar pay policies, which could carry significant ramifications for attracting remote workers to rural areas (Grant et al., 2020).

While there will certainly be adjustments from companies and workers to an economic landscape where remote work is more prevalent, Brookings notes remote work "may stay with us as a popular practice that, if done well, can improve job satisfaction, raise productivity, reduce emissions, and spread work to more remote regions" (Guyot & Sawhill, 2020).

6 Rural Broadband Access

Certainly, a crucial element of attracting remote workers is quality broadband internet access. In the U.S., there exists a significant rural/urban “digital divide,” as many rural areas still do not have access to broadband. The Federal Communications Commission (FCC) noted in a report last year that 22.3% of Americans in rural areas and 27.7% of Americans in Tribal lands do not have adequate broadband coverage, compared to just 1.5% of people in urban areas (Federal Communications Commission, 2020).

Lack of broadband infrastructure in rural areas certainly drives away jobs and most likely drives away citizens. One study found that lack of broadband access can explain “at least a quarter and as much as half of rural population loss” in the United States (Ross, 2018).

This has been a bipartisan focus in Virginia over the last five gubernatorial administrations. During Mark Warner’s term in 2005, the Mid-Atlantic Broadband Collaborative (MBC) was established to provide last-mile broadband infrastructure to Southside Virginia (Sluss, 2005). Tim Kaine established a “Broadband Roundtable” in 2007, headed up by Warner, to develop a plan for increased broadband access (*Virginia Gov. Announces Broadband Roundtable*, 2007). During Bob McDonnell’s term, the second detailed broadband availability map was released in July 2011 (Broadband Advisory Council, 2012). Terry McAuliffe signed a 2016 bill that allowed providers to install broadband infrastructure underground along gravel roads (Nadler, 2016).

Rural broadband access has been a focus of Ralph Northam’s administration, and in October 2020, Northam announced that \$30 million in CARES Act funding would be devoted to rural broadband initiatives. Northam said, “Broadband is to today’s economy like electricity was generations ago—when you have it, you can get ahead” (Office of the Governor, 2020).

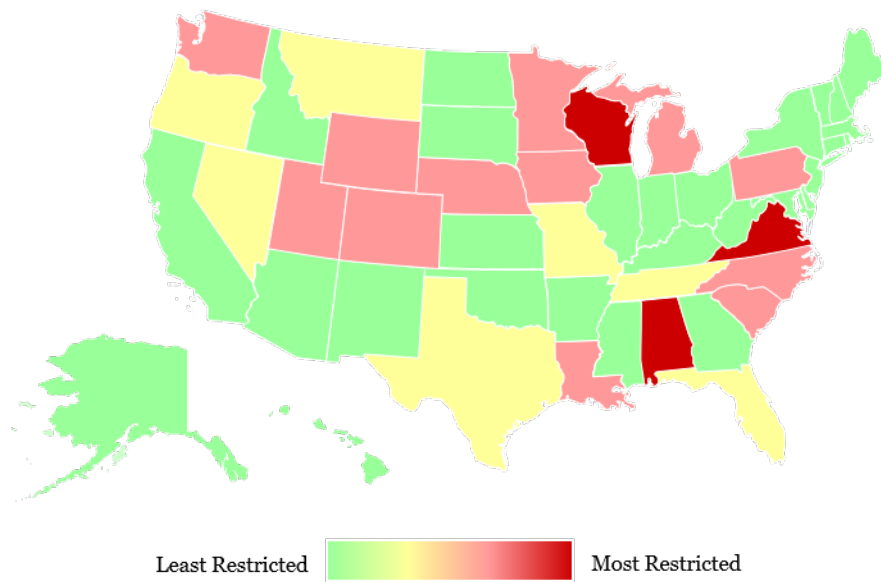
Virginia 2021 gubernatorial candidates have again emphasized rural broadband as an area of focus. McAuliffe’s platform includes investing in “broadband infrastructure and access” (*Creating a Flourishing Rural Economy*, 2021). In March, Jennifer Carroll Foy released a plan pledging that 97% of Virginians would have access to high-speed internet by the end of the four-year term (Carroll Foy, 2021).

Despite nearly two decades of attention, there still exists a rural-urban divide in Virginia. In urban areas of the Commonwealth, 98.5% of residents have access to a high-speed connection compared to just 69.0% of rural residents (Commonwealth Connect, 2020).

While Virginia has pledged to support rural broadband expansion with additional funding, the Commonwealth still is home to one of the more restrictive regulatory environments when it comes to allowing localities to solve the broadband problem themselves. Currently, there are 22 states that have laws blocking or prohibiting municipal broadband (Claypoole, 2021). Virginia, along with Alabama and Wisconsin, has some of the most restrictions (Chamberlain, 2020).

These roadblocks to more local control come about for two reasons. The first is the lobbying power of legacy broadband providers, which have the natural incentives of any other business. In October 2020, the Virginia House of Delegates approved a budget that included “a proposal for a pilot program for municipal broadband authorities to compete with the private sector for state grants to provide high-speed internet in hard-to-reach areas,” but it was met with intense push back from cable companies (Friedenberger, 2020b). The final budget did not include the proposal (Friedenberger, 2020a).

Figure 13: States with Municipal Broadband Roadblocks



The second reason is that Virginia is a “Dillon’s Rule” state. Dillon’s Rule “is a rule of strict construction adopted by the Virginia Supreme Court that states that any powers exercised by local governments must be explicitly granted to them by the General Assembly” (Schrager, 2019). This means that if localities aim to solve their broadband issues themselves, it would require approval from the General Assembly in Richmond.

7 Criteria

The preceding background has informed the potential alternatives considered to attract remote workers to Southwest and Southside Virginia. Each of the alternatives will be judged according to cost efficiency, effectiveness, equity, and feasibility.

7.1 Cost Efficiency

These initiatives can be judged on their ability to attract and retain workers in Southwest and Southside Virginia who would not have moved to these regions otherwise. This can be measured quantitatively through a break-even analysis of the outcome necessary to justify the investment required for each alternative. For comparison, a net present value (“NPV”) analysis will be conducted for the remote worker incentive program with the assumption that a full \$500,000 will be allotted to 50 workers. Then, for each of the other alternatives, a calculation will be done to determine the number of workers necessary to break even using a hurdle rate of 10%. Full calculations are included in the Appendix.

7.2 Effectiveness

Ultimately, the goal is to accentuate the assets of these rural regions to attract workers who want to establish roots in these areas. The only way to do that is to advertise and follow through on

establishing these communities as attractive alternatives to the lifestyles most of these workers would have experienced in areas where these jobs currently reside. Each of these alternatives must contribute to the idea that these regions are an excellent place to live for the long haul.

7.3 Equity

Equity in this sense would be attracting remote workers from outside of these regions without taking away from the local community. For example, a remote worker grant may disperse funds to someone who already has a well-paying job, and that worker may never attempt to become a meaningful member of the local community. Geographic equity will be considered, particularly within GO Virginia regions. Racial equity will also be considered, given that GO Virginia Region 1 and GO Virginia Region 3 are demographically different.

7.4 Feasibility

There are two limiting factors that must be considered for each of these alternatives. The first is the rural broadband gap that exists in Virginia. Alternatives must consider this significant barrier to attracting remote workers. Clearly, if broadband infrastructure is not in place, it would be tough for anyone to work from home in the most rural areas. The second is Virginia's Dillon's Rule status, which limits the power of local governments to what has been granted them by the state. Through interviews, multiple people commented that Dillon's Rule is both a legal and psychological barrier to local governments innovating in Virginia.

8 Alternatives

These alternatives were developed from a combination of interviews from those with significant experience in economic development in rural Virginia and desktop research into existing programs.

8.1 Alternative 1: Provide Incentives for Remote Workers to Relocate to Rural Virginia

Potential Recommendation: Virginia can provide incentive payments of \$10,000 to 50 remote workers who relocate to either Southwest or Southside Virginia.

In April 2021, West Virginia unveiled an initiative that will provide a package worth over \$20,000 for remote workers who move to select areas of the state. Participants are given money each month, with \$10,000 distributed in the first year and \$2,000 in the second year, and they will also receive free access to a coworking space, continuing education programs, and free passes for outdoor amenities such as hiking trails, whitewater rafting, and skiing (Lewis, 2021).

The program will be funded by a \$25 million donation from former Intuit CEO Brad Smith and his wife, Alys. The program will only allow participants to move to Morgantown, Shepherdstown, and Lewisburg. Applications for Morgantown were being accepted as of April 2021 with application processes for Shepherdstown and Lewisburg to come at a later date (Ascend West Virginia, 2021).

In 2018, Vermont created the Remote Worker Grant Program to attract remote workers and promote remote work arrangements (Agency of Commerce and Community Development, 2020).

Program workers had to qualify as “new remote workers” based on: 1) They had to move to Vermont on or after January 1, 2019; 2) They must be full-time employees of an out of state business (later amended to include Vermont businesses); and 3) They must perform at least 50% of their job at home or in a coworking space (Hoffer, 2019). From January 2019 to January 2020, Vermont awarded 140 remote workers plus their families a total of \$500,000 in grants ranging from \$400 to \$5,000 (Agency of Commerce and Community Development, 2020).

The Vermont program received considerable criticism from the state auditor in November 2019. The auditor said, “We found numerous questionable choices that resulted, in part, from efforts by the Agency to adhere to the Legislature’s intent (i.e., keep it simple and get the money out the door). Unfortunately, haste can lead to poor judgment and procedures that overlook important details, which can result in the inefficient and ineffective use of taxpayer dollars” (Hoffer, 2019).

He continued, “... we cannot know with certainty that grantees moved to Vermont because of the Program. Indeed, there is a serious structural flaw in the Program since it requires applicants to prove residency before applying. Therefore, applicants must make financial and major life commitments before knowing if they will receive grant funds. That means they had the will and the means to relocate without the program” (Hoffer, 2019).

Tulsa, Oklahoma debuted a remote worker incentive program in November 2018 called “Tulsa Remote” that paid \$10,000 plus membership at a coworking space to people who either work full-time remotely or are self-employed outside of Oklahoma. In 2020, the program brought 375 members to Tulsa (*Tulsa Remote*, n.d.).

The program is not funded by public dollars but by the George Kaiser Family Foundation, which is located in Tulsa, and each of its cohorts has been picked from among 10,000+ applicants (Holder, 2020). Aaron Bolzle, the Executive Director of Tulsa Remote, noted that the real measure of these programs is when and whether participants leave, which means these programs could take decades to determine their effectiveness (Holder, 2020).

In Northwest Alabama, Remote Shoals is a program that awards \$10,000 to workers who relocate to the area, which stresses its local culture and low cost of living. It is notable that there is an income threshold where workers must make more than \$52,000 to apply (*Remote Shoals*, n.d.). The area is also located in between Nashville, Memphis, Birmingham, and Atlanta.

Analysis

Cost Efficiency: Allocating \$500,000 to 50 workers will result in a net present value of \$226,000 over 10 years.

Effectiveness: Clearly, this would attract remote workers to the region. It would also generate earned media that would allow the regions to showcase their strengths to a wide audience, but the extent of this earned media may be limited given other first movers like Vermont and Tulsa would make Virginia’s efforts repetitive. The challenge will be to convince those who come to stay for the long haul. There is also a scale problem as it is unlikely that the 50 workers a program like this would attract will change any of the underlying disparities the region faces compared to the rest of Virginia.

Equity: This is inequitable given that it is providing incentives to remote workers who more

than likely earn more than their new neighbors. It does provide geographic equity since a remote worker could locate anywhere within Region 1 and Region 3 to receive the incentive payment. Although, most workers will congregate in regions with broadband access. Racial equity is undetermined. The incentives would be open to everyone, but white workers are more likely to work remotely compared to Black and Hispanic workers (Shoichet, 2020).

Feasibility: A potential barrier to this approach is broadband access. Marketing a program on a wide scale without the underlying infrastructure necessary to allow remote work across the regions is problematic. Locally, these regions would need to be open to a small influx of people from outside the area, but it would not require any change in approach from local governments. There could also be resentment from established citizens toward those relocating due to a lump-sum payment.

Tradeoff Summary: This is a proven way to guarantee a certain amount of in-migration, but the scale and long-term effectiveness of these programs create significant questions as to whether this is the best use of dollars that could be allocated elsewhere.

8.2 Alternative 2: Establish Coworking Spaces in Rural Areas

Potential Recommendation: Virginia can work to establish a network of coworking spaces in rural Virginia where space will be publicly available without having to pay a membership fee.

Software engineer Brad Neuberg coined the term “coworking” in 2005. Neuberg worked at a startup in San Francisco and felt unhappy professionally. He was searching for a solution that did not exist at the time to combine what he desired, “the freedom and independence of working for myself along with the structure and community of working with others” (Neuberg, n.d.). Coworking spaces allow for both the sharing of work spaces and the sharing of social spaces, which facilitate social interactions that result in knowledge and idea exchanges (R. B. Bouncken & Reuschl, 2018).

Over the last decade, coworking spaces have been established at a rapid pace. The number of coworking spaces in the world increased from around 600 in 2010 to over 2,000 in 2012 to over 15,000 in 2018 (Proteau, 2019). As of 2019, there were over 5,000 coworking spaces established just in the United States (Stevanovic, 2021).

Coworking spaces have popped up throughout the Commonwealth, including in Southwest and Southside Virginia. In Southwest Virginia, The Oxbow Center was established in St. Paul and is run by the University of Virginia’s College at Wise (UVA Wise). That project received a grant from the Virginia Coalfield Economic Development Authority in April 2019 (The Oxbow Center, n.d.). UVA Wise is also partnering with the Center for Innovative Technology, Atomicorp, Mapcom Systems, the Virginia Tobacco Commission, and Clinch River State Park (Kingsport Times News, 2019). In early 2017, Spacelab opened on East Main Street in downtown Abingdon (Weisfeld, 2017).

In Bristol, Tennessee, there is a coworking space run by The Summit Companies, which is a strategic consulting firm. It is a way of filling an area need but also a means of business development as those companies occupying this office space would be natural clients (Summit Companies, n.d.).

In Southside, the SOVA Innovation Hub, a 15,000 sq. ft. coworking space funded by Microsoft and the Mid-Atlantic Broadband Communities Corporation, opened in 2021 as the first new building constructed in downtown South Boston in 40 years (SOVA Innovation Hub, 2021). There are

also coworking facilities in Martinsville (West Piedmont Business Development Center, n.d.) and Danville (River City Coworking, n.d.).

All of these locations operate on a membership plan, charging daily or monthly fees to access different levels of accommodations. For example, all locations simply offer a base rate to use an open coworking space, and they offer the use of a private office for a higher rate. This is the predominant operating model for coworking facilities.

An example of perhaps a more appropriate operating and business model is *The Commons on Champa* in downtown Denver. *The Commons on Champa* is a 20,000 sq. ft. public-private venture that is a public gathering space featuring work, meeting, and event areas with complementary WiFi and locally roasted coffee (The Commons on Champa, n.d.). It operates as a 501(c)(3) organization and is managed by the Downtown Denver Partnership.

The facility was built on three elements: space, programming, and community. Unlike many coworking spaces it is not a business incubator. Instead, “it is a public gathering place for the city’s diverse community of business-builders” (Business Wire, 2015).

Denver Mayor Michael Hancock said, “Denver’s ideas economy is booming. This public-private venture is now here to help our innovative community realize their dreams and boldly move to create jobs and opportunity in our city” (Business Wire, 2015).

Analysis

Cost Efficiency: This would require significant funding for construction (\$1.7 million), as well as ongoing funding for maintenance (\$500 thousand per year). Using cost estimates for *The Commons on Champa* in Denver, this program would require attracting 75 workers per year to break even.

Effectiveness: Committing to a project like this would go a long way in changing the narrative in these regions. It provides infrastructure that enables the communities to solidify their foundations from the ground up, and it is something tangible leaders in the region can point to that indicates progress. A center like this would also facilitate a more connected entrepreneurial community that would more quickly develop through collaboration and shared experiences.

Equity: Making the coworking space free rather than a paid membership model ensures equitable access for community members. Within GO Virginia Region 1, it would be geographically inequitable since the building would be placed in Bristol, which is almost two hours from Wise County, for example. Placing the coworking space in Region 1 would not provide racial equity, given the demographic makeup of the region (95% white) compared to Region 3 (65% white).

Feasibility: Given the region’s broadband limitations, this would provide a reliable space for remote workers and entrepreneurs to access all the technology necessary to do their jobs. It would require significant local buy-in as most of these facilities are not operated by state agencies but by local stakeholders.

Tradeoff Summary: While the most costly option, it would provide economic infrastructure that could help differentiate the region. It also would help in building up the local entrepreneurial ecosystem.

8.3 Alternative 3: Attract Workers Back to Rural Virginia

Potential Recommendation: Virginia can set up a program that facilitates job placement for anyone outside the Commonwealth interested in living in Southwest or Southside Virginia. This program will target “boomerangs,” or people who moved away for school or work then return when they are older with a family, but it can be a program accessible by all.

Dakota Roots began in 2006 and is designed to match anyone from out-of-state interested in living in South Dakota with a job and has matched thousands of people with jobs since its inception. The program “uses a candidate’s work history, skills, and interests to find their perfect match across 16,000 state-wide openings. Upon registration, each job seeker is matched to a personal advisor. Coming with no cost or obligation, these Job Advisors help with everything from the career search and fact-finding to resume writing and relocation” (Dakota Roots, 2019).

While Dakota Roots has been successful, it has not been used to attract remote workers to South Dakota, given it is a matching program for jobs that currently reside in the state.

Virginia does attempt to lure college graduates back to Southwest and Southside Virginia through loan repayment programs. There is a program for health professionals and a program for teachers, physical/occupational therapists, engineers, and IT workers (Virginia Department of Health, n.d.; Tobacco Region, n.d.). While the programs are open to everyone, they give preference to those who grew up in these regions (Friedenberger, 2019).

Analysis

Cost Efficiency: Assuming a \$200,000 annual budget, this program would require attracting 25 remote workers per year to break even.

Effectiveness: This would remove a significant barrier for people from the area who want to move back to rural Virginia, which would be job placement; however, it is not proven to attract remote workers, specifically.

Equity: Access would be equitable since these services would be open to anyone who registers for the program. As such, it would also be geographically and racially equitable as consultants would help place applicants in jobs throughout rural Virginia regardless of race, ethnicity, or gender.

Feasibility: For placing potential remote workers, a potential barrier is broadband access. This program should receive significant local support, as the state would be providing a job placement service for openings throughout these regions. It may run into pushback given the loan repayment programs already in place.

Tradeoff Summary: This program has not been used to attract remote workers. Still, a program like this has proven itself to be successful in South Dakota, and it could be a potential solution to help with rural depopulation, in general.

8.4 Alternative 4: Launch a Collaborative Marketing Campaign

Potential Recommendation: Virginia’s GO Virginia Regions 1 and 3 could launch collaborative marketing campaigns emphasizing the natural assets of Southwest and Southside Virginia, targeting bigger metropolitan areas and select college towns.

Across the United States, 746 counties (24% of all U.S. counties) are depopulating, and 91% of those depopulating counties are rural (K. Johnson & Lichter, 2019). While rural depopulation has been widespread across the country, there is a noticeable group of rural counties that have gone in the opposite direction.

In 2010, 35% of rural counties were at their peak population, and these counties usually benefit from proximity to urban centers or are areas of high recreational or retirement activity (K. Johnson & Lichter, 2019). More than 80% of rural farm counties are depopulating compared to just 15% of non-metropolitan recreational counties, and 59% of these recreational counties are at their population peaks (K. Johnson & Lichter, 2019).

Roanoke is an area that has successfully changed its narrative over the last decade in an intentional way by emphasizing and investing in promoting and maintaining its outdoor features. The Roanoke Regional Partnership established The Roanoke Outside Foundation and Get2KnowNoke, two initiatives to help re-brand the area as one for outdoor enthusiasts (Roanoke Outside, n.d.; Get2KnowNoke, n.d.). As a result, the Roanoke area saw a 38% increase in outdoor sector employment between 2010-2019 (Jojack, 2020).

In Spring 2020, the Roanoke Regional Partnership launched a digital marketing campaign aimed at larger metropolitan areas titled, “Live Here, Work Anywhere, Play Everywhere,” emphasizing again Roanoke’s natural assets and low cost of living (Jojack, 2020). These campaigns have used Google Ads and also new platforms like Hulu, Spotify, and Pandora (Doughty, 2019).

While targeting other larger cities makes sense, there also could be an opportunity in targeting select college towns. A survey in Sweden noted that “men and women who studied education and forestry/agriculture are among the most likely to return to rural areas” (Haley, 2018). A few large out-of-state schools that have both a forestry and education program include University of Michigan (Ann Arbor), Michigan State University (East Lansing), Ohio State University (Columbus), University of Wisconsin-Madison, University of Washington (Seattle), and University of Illinois-Urbana/Champaign.

Analysis

Cost Efficiency: Assuming a \$100,000 marketing campaign, this program would require attracting 13 remote workers per year to break even.

Effectiveness: Marketing campaigns can help to shape the narrative of a region. A lot has been done in Southwest and Southside Virginia to emphasize natural assets, and a well-placed campaign would help to spread that narrative well outside of Virginia.

Equity: A campaign like this would be designed to attract young workers of all races, ethnicities, and genders. It would be geographically equitable as the entire region would be showcased.

Feasibility: To attract remote workers, the lack of broadband access could limit the appeal of more remote areas. Local governments will support such a campaign as it will highlight the most appealing aspects of these regions.

Tradeoff Summary: A long-term, collaborative marketing strategy is a cost-effective way of shaping a region’s narrative, but given the intense competition among rural areas across the country to attract remote workers, it may be tough to stand out.

9 Outcomes Matrix

	Cost Efficiency	Effectiveness	Equity	Feasibility
Alt. 1: Provide Remote Work Incentives	<ul style="list-style-type: none"> \$500k attracting 50 workers results in NPV of \$226k 	<ul style="list-style-type: none"> Guarantees certain number of remote workers over a one-year period but limited upside 	<ul style="list-style-type: none"> High-income earners get payment White workers more likely to work remotely 	<ul style="list-style-type: none"> Broadband barrier remains Potential local resentment of incoming remote workers
<i>Assessment</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>	<i>Fair</i>
Alt. 2: Establish Coworking Spaces in Rural Virginia	<ul style="list-style-type: none"> \$1.7 million construction costs and \$500k annual maintenance expense require attracting 75 workers per year to break even 	<ul style="list-style-type: none"> Tangible structure with unique model that helps reframe narrative of the region Useful for incoming workers as well as current citizens 	<ul style="list-style-type: none"> Equitable access given free to public Geographically inequitable as center located in Bristol 	<ul style="list-style-type: none"> Hardwired internet connection bypasses broadband deficiency Requires local buy-in
<i>Assessment</i>	<i>Poor</i>	<i>Good</i>	<i>Fair</i>	<i>Good</i>
Alt. 3: Attract Workers From the Area Who Left	<ul style="list-style-type: none"> \$200k annual program expense requires attracting 25 remote workers per year to break even 	<ul style="list-style-type: none"> Proven model (Dakota Roots) attracting workers, but remote workers may not need services 	<ul style="list-style-type: none"> Services available to all 	<ul style="list-style-type: none"> Broadband barrier remains Could be covering similar ground as the Tobacco Region's loan repayment programs
<i>Assessment</i>	<i>Good</i>	<i>Fair</i>	<i>Good</i>	<i>Fair</i>
Alt. 4: Collaborative Marketing Campaign	<ul style="list-style-type: none"> \$100k annual program expense requires attracting 13 remote workers per year to break even 	<ul style="list-style-type: none"> Help shape narrative of region Tough to measure impact 	<ul style="list-style-type: none"> Region marketed to all young workers in metro areas and select college towns 	<ul style="list-style-type: none"> Broadband barrier remains Confident in local support
<i>Assessment</i>	<i>Good</i>	<i>Fair</i>	<i>Good</i>	<i>Fair</i>

10 Recommendation

To attract remote workers to GO Virginia Region 1 and Region 3, the state should support setting up a coworking space in either Southwest or Southside Virginia modeled after *The Commons on Champa* in Denver, which receives public/private support to offer coworking space and programming at no direct cost to the communities.

There are three reasons why Virginia should support this effort: 1) The magnitude and ultimate form of the shift to remote work is uncertain, meaning supporting an effort that also provides a valuable service to current residents limits downside; 2) Attracting remote workers in the near future will be a competitive endeavor, and it will take a unique asset to make the region stand out; and 3) There are significant tangential benefits that come along with a project like this, notably its accelerating development of the local entrepreneurial ecosystem.

On the first point, a coworking space would provide publicly available infrastructure accessible by current residents as well as those who could relocate. This potentially bypasses resentment issues that come along with remote work incentive or loan forgiveness programs. In Tulsa, a Reddit user commented, “All this program tells me is we don’t like native Oklahomans we only want coastal elites moving here” (Holder, 2020).

In Virginia, there was disagreement over the loan repayment program. Del. Tommy Wright, R-Lunenburg, said, “I’d rather we take the money we’ve got and spend it in the footprint on people that are already here, try to lift them up. I think that’s the goal of the tobacco commission. I think what we’re getting into now is bringing people in from other parts of the state and that’s more or less giving up” (Friedenberger, 2019).

Further, the remote work shift is still to be determined. Google and Amazon have recently disclosed their plans for a gradual return to the office by Fall 2021, and Alphabet/Google CEO Sundar Pichai has expressed how working together in-person is core to company culture (Maidenberg, 2021). JPMorgan also has announced it will not be remote after the pandemic (Beaudette, 2021).

Many companies are also looking to implement hybrid remote work policies (Glazer & Cutter, 2021). If the shift is to a hybrid model rather than allowing full remote work, that would significantly impact the number of workers able to relocate away from company-owned office space.

On the second point, there has been considerable coverage of the potential shift to remote work in the wake of the pandemic. A Wall Street Journal search of the term “remote work” uncovers 550 articles published between April 2020 and March 2021. In particular, there has been emphasis on what this means for rural areas. All of these areas are trying to figure out ways to take advantage of this potential shift, meaning the region will need something substantial it can market to stand out.

Lastly and most importantly, a coworking space accessible by all has other benefits besides attracting remote workers from outside the area. A study in Germany concluded that, “An additional benefit for rural towns and villages is that the presence of a coworking space can make the location more vital, lively and attractive” (Hölzel & de Vries, 2021).

Also in Germany, coworking spaces were used at the onset of the pandemic by students attending school remotely. As one study noted, “Students as well as entrepreneurs and employees embraced these spaces to escape the cabin fever and the digital divide at home” (Gruenwald, 2020).

Coworking spaces also can help to establish a thriving entrepreneurial ecosystem. As one study

notes, coworking spaces “can facilitate joint work, creativity, knowledge exchanges, work satisfaction and ultimately lead to increasing innovation and entrepreneurship” (R. Bouncken, Ratzmann, Barwinski, & Kraus, 2020).

These locations help to support “bottoms-up” economic development. This can be summarized as, “Instead of offering incentive packages to big firms, cities and states should favor improving the mix of business services and business inputs to locally-rooted small and medium-sized firms. This should entail policies like helping local startups and startup ecosystems, skill development, technology transfer, and providing education and training programs that bolster the local workforce and connect workers to local firms” (Florida, 2019).

Longtime entrepreneur and investor Brad Feld formulated “The Boulder Thesis” in his book *Startup Communities* in 2012, which provided a blueprint for localities of all sizes to build their entrepreneurial communities in a bottoms-up approach. “The Boulder Thesis” has the following four components (Feld, 2020):

- Entrepreneurs must lead the startup community
- The leaders must have a long-term commitment
- The startup community must be inclusive of anyone who wants to participate in it
- The startup community must have continual activities that engage the entire entrepreneurial stack

A coworking space in the model of The Commons on Champa helps to facilitate all four of these components. Most notably, it signals a long-term commitment to developing the region by providing useful and necessary infrastructure to help bring like-minded professionals together.

11 Implementation

11.1 Determine Site Selection

Given the prevalence of coworking spaces in Southside Virginia (Martinsville, Danville, and South Boston), The most logical place for the first coworking space of this model would be in Southwest Virginia. Further, since there are spaces in St. Paul and Abingdon, the most logical choice would be on the Virginia side of Bristol (preferably downtown).

The complicating factor is that recently, a coworking space was established in Bristol, Tennessee that is run by The Summit Companies, which is a strategic consulting firm. For Summit, it is a way of filling a gap (lack of coworking space in the area) but also a means of business development as those companies occupying this office space would be natural clients.

There are two concerns that could justify establishing a public-private venture to compete with this already established coworking space. First, remote workers and independent contractors most likely would not need the consulting services, so a model that allowed free access to coworking space would win out on cost for these remote workers. The second is The Summit Companies has been around since 2005 and recently established its coworking space. If the business hypothesis for setting up the coworking space does not work out as planned, needed economic infrastructure could disappear. A public commitment to this project could be much more stable for the region.

11.2 Solicit Support from Public and Private Entities

First, support from the University of Virginia's College at Wise is essential, especially given the previous experience with The Oxbow Center. That project received a grant from the Virginia Coalfield Economic Development Authority in April 2019 (The Oxbow Center, n.d.).

UVA Wise is also partnering with the Center for Innovative Technology, Atomicorp, Mapcom Systems, the Virginia Tobacco Commission, and Clinch River State Park (Kingsport Times News, 2019). The Oxbow Center and its supporters would be natural partners to start a potential network of coworking spaces across rural Virginia.

One note is that Bristol (the likely placement of the facility) is outside of the Virginia Coalfield Economic Development Authority's geographic region, so funding would most likely need to come from GO Virginia or the Virginia Tobacco Commission.

Atomicorp and Mapcom Systems are excellent private partners for technological needs, but other partnerships could be formed. Particularly, financial institutions active in the area like Truist, Wells Fargo, and Virginia Community Capital would be logical approaches.

To renovate an existing building, the initial investment would be approximately \$1.7-\$2.0 million and ongoing expenses would be around \$500 thousand per year. Ultimately, the long-term partnerships involved would need to provide reliable sources of funding well into the future.

11.3 Develop Consistent Programming

In order to facilitate a bottoms-up approach to economic development where workers and entrepreneurs are the leaders, the Kauffman Foundation has stated that state and local governments should avoid public venture funds or incubators, and instead, focus on fostering development and learning (Motoyama & Wiens, 2015). To do this, Virginia can fund programming that will bring remote workers and entrepreneurs together to amplify network effects and develop a tighter-knit business community.

There is recent precedent for this. In October 2020, GO Virginia awarded a \$240 thousand grant to the 757 Angels network, which will fund a one-year entrepreneurial ecosystem development program offered by Techstars, a Colorado-based business accelerator co-founded by Brad Feld (Metcalf, 2021). The Center for Innovative Technology also has a division devoted to entrepreneurial ecosystems, which can assist in this effort.

12 Conclusion

The COVID-19 pandemic will have ramifications on multiple facets of life for decades to come. Since March 2020, companies have been forced to allow employees the option of working remotely. This sudden shift by necessity could lead to a significant reformulation to the nature of how and where many people do their jobs, potentially changing the dynamic for rural areas that have experienced decades of out-migration as a result of well-paying jobs moving to more urban areas. As this potential shift takes shape, Virginia should support initiatives that will both attract potential remote workers from outside the area while also building infrastructure and facilitating opportunities for current residents.

Appendix

A Net Present Value Analyses

A net present value analysis was done for the remote work incentive program using a hurdle rate of 10%. This is done first because it is a safe assumption that the full allotment of funds will be dispersed to remote workers relocating to the area.

The same analysis was run for the remaining three alternatives, solving for the number of workers the program would need to attract to break even at a 10% hurdle rate. A few notes on the assumptions used:

- Costs were determined by desktop research that revealed typical program costs. *The Commons on Champa* initial costs were taken from an article in the *Denver Post* and maintenance costs were taken from the Downtown Denver Events Inc. 2018 Form 990 (Chuang, 2015; ProPublica, n.d.).
- The average salary of a remote worker in his or her first year is assumed to be \$75,000 and costs to serve each worker are assumed to be \$2,351 per year (taken from a Virginia ROI model).
- The effective income tax rate is assumed to be 5.24% and the effective sales tax rate is assumed to be 0.88% (both taken from a Virginia ROI model).
- The “Population Increase” line item indicates annual population increase. Cumulative population increase can be determined by adding the increase for the previous years.

A.1 Remote Work Incentive Program

(\$ in thousands)

Basic Assumptions

Annual Salary	\$75
Annual Service Cost	\$2
Eff. Inc. Tax Rate	5.24%
Eff. Sales Tax Rate	0.88%
Discount Rate	10.00%

Projected 10-Year Cash Flows

(\$ in thousands)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Expenses	(\$500)	(\$120)	(\$122)	(\$125)	(\$127)	(\$130)	(\$132)	(\$135)	(\$138)	(\$140)	(\$143)
Revenue		230	234	239	244	248	253	258	264	269	274
Annual Cash Flow	(\$500)	\$110	\$112	\$114	\$116	\$119	\$121	\$123	\$126	\$128	\$131
Net Present Value	\$226										

Assumptions

Inflation	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Population Increase	50	0	0	0	0	0	0	0	0	0	0

A.2 Coworking Space in Southwest Virginia

Assumptions	
Commons on Champa Construction Costs	\$2,300,000
Space Discount	25%
Cost of Living Discount	0%
Initial Costs	\$1,725,000

Commons on Champa Operating Expenses	\$586,644
Space Discount	25%
Cost of Living Discount	0%
Year 1 Maintenance Costs	\$439,983

(\$ in thousands)

Basic Assumptions

Initial Salary	\$75
Initial Service Cost	\$2
Eff. Inc. Tax Rate	5.24%
Eff. Sales Tax Rate	0.88%
Discount Rate	10.00%

Projected 10-Year Cash Flows

(\$ in thousands)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Expenses	(\$1,725)	(\$629)	(\$825)	(\$1,028)	(\$1,240)	(\$1,459)	(\$1,687)	(\$1,923)	(\$2,168)	(\$2,422)	(\$2,686)
Revenue		344	695	1,054	1,419	1,791	2,172	2,559	2,955	3,358	3,769
Annual Cash Flow	#####	(\$284)	(\$129)	\$25	\$179	\$332	\$485	\$636	\$786	\$936	\$1,084

Net Present Value **\$39**

Assumptions

Inflation	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Population Increase	75	75	75	75	75	75	75	75	75	75	75

A.3 Job Placement Program

(\$ in thousands)

Basic Assumptions

Annual Salary	\$75
Annual Service Cost	\$2
Eff. Inc. Tax Rate	5.24%
Eff. Sales Tax Rate	0.88%
Discount Rate	10.00%

Projected 10-Year Cash Flows

(\$ in thousands)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Expenses	(\$200)	(\$264)	(\$330)	(\$399)	(\$471)	(\$545)	(\$622)	(\$702)	(\$785)	(\$871)	(\$960)
Revenue		115	232	351	473	597	724	853	985	1,119	1,256
Annual Cash Flow	(\$200)	(\$149)	(\$99)	(\$48)	\$2	\$52	\$101	\$151	\$200	\$248	\$296

Net Present Value **\$27**

Assumptions

Inflation	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Population Increase	25	25	25	25	25	25	25	25	25	25	25

A.4 Collaborative Marketing Campaign

(\$ in thousands)

Basic Assumptions

Annual Salary	\$75
Annual Service Cost	\$2
Eff. Inc. Tax Rate	5.24%
Eff. Sales Tax Rate	0.88%
Discount Rate	10.00%

Projected 10-Year Cash Flows

(\$ in thousands)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Expenses	(\$100)	(\$133)	(\$168)	(\$203)	(\$241)	(\$279)	(\$319)	(\$361)	(\$404)	(\$448)	(\$494)
Revenue		60	121	183	246	311	376	444	512	582	653
Annual Cash Flow	(\$100)	(\$74)	(\$47)	(\$21)	\$5	\$31	\$57	\$83	\$109	\$134	\$159

Net Present Value	\$45
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Assumptions

Inflation	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Population Increase	13	13	13	13	13	13	13	13	13	13	13

B 2019 Age and Sex Demographics by GO Virginia Region

(University of Virginia Weldon Cooper Center, 2020)

(population in thousands)

Region	Male				Female				Total			
	U-18	18-64	O-65	Total	U-18	18-64	O-65	Total	U-18	18-64	O-65	Total
1	36	113	39	188	34	107	47	188	70	220	86	376
2	76	239	66	381	73	243	84	399	148	482	150	780
3	36	108	36	180	34	104	46	185	70	212	83	364
4	139	390	89	618	133	411	116	660	272	800	205	1,278
5	192	539	112	844	184	540	149	873	376	1,079	261	1,717
6	61	157	38	256	58	157	46	261	119	314	84	517
7	310	806	138	1,254	295	808	168	1,271	605	1,614	306	2,525
8	56	163	47	267	54	164	56	274	110	328	103	541
9	46	130	37	213	45	136	44	225	91	266	81	438
Total	951	2,646	603	4,200	910	2,669	756	4,335	1,861	5,316	1,359	8,536

Region	Male				Female				Total			
	U-18	18-64	O-65	Total	U-18	18-64	O-65	Total	U-18	18-64	O-65	Total
Region 1	10%	30%	10%	50%	9%	28%	12%	50%	19%	59%	23%	100%
Region 2	10%	31%	9%	49%	9%	31%	11%	51%	19%	62%	19%	100%
Region 3	10%	30%	10%	49%	9%	29%	13%	51%	19%	58%	23%	100%
Region 4	11%	31%	7%	48%	10%	32%	9%	52%	21%	63%	16%	100%
Region 5	11%	31%	7%	49%	11%	31%	9%	51%	22%	63%	15%	100%
Region 6	12%	30%	7%	50%	11%	30%	9%	50%	23%	61%	16%	100%
Region 7	12%	32%	5%	50%	12%	32%	7%	50%	24%	64%	12%	100%
Region 8	10%	30%	9%	49%	10%	30%	10%	51%	20%	61%	19%	100%
Region 9	10%	30%	8%	49%	10%	31%	10%	51%	21%	61%	19%	100%
VA Total	11%	31%	7%	49%	11%	31%	9%	51%	22%	62%	16%	100%

C 2019 Race Demographics by GO Virginia Region

(University of Virginia Weldon Cooper Center, 2020)

(population in thousands)

Region	2019 Population by Race						2019 % Population by Race				
	Total	White	Black	Asian	Other	Multiple	White	Black	Asian	Other	Multiple
1	376	358	11	2	1	4	95%	3%	0%	0%	1%
2	780	643	98	19	3	17	82%	13%	2%	0%	2%
3	364	237	116	3	2	6	65%	32%	1%	0%	2%
4	1,278	785	398	54	8	33	61%	31%	4%	1%	3%
5	1,717	1,008	560	72	12	65	59%	33%	4%	1%	4%
6	517	381	102	12	4	19	74%	20%	2%	1%	4%
7	2,525	1,667	330	407	20	101	66%	13%	16%	1%	4%
8	541	486	30	9	3	12	90%	6%	2%	1%	2%
9	438	358	52	13	3	12	82%	12%	3%	1%	3%
Total	8,536	5,923	1,697	590	57	270	69%	20%	7%	1%	3%

D Census Population by GO Virginia Region 1960-2010

(University of Virginia Weldon Cooper Center, 2020)

(population in thousands)

Region	Census Population						% Change				
	1960A	1970A	1980A	1990A	2000A	2010A	1970A	1980A	1990A	2000A	2010A
1	388	357	421	393	399	402	(8%)	18%	(7%)	2%	1%
2	481	540	624	652	706	762	12%	16%	5%	8%	8%
3	348	351	372	365	388	384	1%	6%	(2%)	6%	(1%)
4	603	709	794	896	1,033	1,176	17%	12%	13%	15%	14%
5	957	1,132	1,234	1,463	1,585	1,668	18%	9%	19%	8%	5%
6	147	162	220	288	374	469	11%	36%	31%	30%	25%
7	614	939	1,106	1,466	1,815	2,231	53%	18%	33%	24%	23%
8	264	293	341	384	444	509	11%	16%	13%	16%	15%
9	164	187	236	281	334	401	15%	26%	19%	19%	20%
Total	3,967	4,669	5,347	6,189	7,079	8,001	18%	15%	16%	14%	13%

E Southwest Virginia (Region 1) Census Population by Locality 1960-2010

(University of Virginia Weldon Cooper Center, 2020)

(population in thousands)

Geography	Census Population						% Change				
	1960A	1970A	1980A	1990A	2000A	2010A	1970A	1980A	1990A	2000A	2010A
Washington County	38	41	46	46	51	55	7%	14%	(1%)	11%	7%
Tazewell County	45	40	51	46	45	45	(11%)	27%	(9%)	(3%)	1%
Wise County	44	36	44	40	42	41	(18%)	22%	(10%)	7%	(2%)
Smyth County	31	31	33	32	33	32	1%	6%	(3%)	2%	(3%)
Carroll County	23	23	27	27	29	30	(0%)	18%	(2%)	10%	3%
Wythe County	22	22	26	25	28	29	1%	15%	(0%)	8%	6%
Russell County	26	25	32	29	29	29	(7%)	29%	(10%)	2%	(1%)
Lee County	26	20	26	24	24	26	(21%)	28%	(6%)	(4%)	8%
Buchanan County	37	32	38	31	27	24	(13%)	18%	(18%)	(14%)	(11%)
Scott County	26	24	25	23	23	23	(6%)	3%	(7%)	1%	(1%)
Bristol City	17	15	19	18	17	18	(13%)	28%	(3%)	(6%)	3%
Dickenson County	20	16	20	18	16	16	(20%)	23%	(11%)	(7%)	(3%)
Grayson County	17	15	17	16	17	16	(11%)	7%	(2%)	4%	(8%)
Galax city	5	6	7	7	7	7	19%	4%	2%	3%	3%
Bland County	6	5	6	7	7	7	(9%)	17%	3%	5%	(1%)
Norton city	5	4	5	4	4	4	(17%)	14%	(11%)	(8%)	1%
Region 1 Total	388	357	421	393	399	402	(8%)	18%	(7%)	2%	1%

F Southside Virginia (Region 3) Census Population by Locality 1960-2010

(University of Virginia Weldon Cooper Center, 2020)

(population in thousands)

Geography	Census Population						% Change				
	1960A	1970A	1980A	1990A	2000A	2010A	1970A	1980A	1990A	2000A	2010A
Pittsylvania County	58	59	66	56	62	64	1%	13%	(16%)	11%	3%
Henry County	40	51	58	57	58	54	26%	13%	(1%)	2%	(7%)
Danville city	47	46	46	53	48	43	(0%)	(2%)	16%	(9%)	(11%)
Halifax County	40	37	38	36	37	36	(7%)	2%	(4%)	4%	(3%)
Mecklenburg County	31	29	29	29	32	33	(6%)	0%	(1%)	11%	1%
Prince Edward County	14	14	16	17	20	23	2%	14%	5%	14%	18%
Patrick County	15	15	18	17	19	18	0%	15%	(1%)	11%	(5%)
Brunswick County	18	16	16	16	18	17	(9%)	(3%)	2%	15%	(5%)
Buckingham County	11	11	12	13	16	17	(3%)	11%	10%	21%	10%
Nottoway County	15	14	15	15	16	16	(6%)	3%	2%	5%	1%
Martinsville city	19	20	18	16	15	14	5%	(8%)	(11%)	(5%)	(10%)
Lunenburg County	13	12	12	11	13	13	(7%)	4%	(6%)	15%	(2%)
Amelia County	8	8	8	9	11	13	(3%)	11%	5%	30%	11%
Charlotte County	13	12	12	12	12	13	(7%)	(1%)	(5%)	7%	1%
Cumberland County	6	6	8	8	9	10	(3%)	28%	(1%)	15%	11%
Region 3 Total	348	351	372	365	388	384	1%	6%	(2%)	6%	(1%)

G Unemployment Rate by GO Virginia Region 1995-2019

(U.S. Bureau of Labor Statistics, 2020)

Region	Unemployment Rates																								
	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
1	10%	10%	8%	7%	7%	4%	6%	6%	6%	5%	5%	5%	5%	5%	9%	10%	9%	8%	8%	7%	6%	6%	5%	4%	4%
2	4%	4%	4%	3%	3%	3%	4%	5%	5%	4%	4%	3%	3%	4%	8%	8%	7%	6%	6%	5%	5%	4%	4%	3%	3%
3	8%	8%	6%	5%	5%	4%	6%	8%	8%	7%	7%	5%	5%	7%	11%	12%	10%	9%	8%	7%	6%	5%	5%	4%	4%
4	4%	4%	3%	3%	2%	2%	3%	4%	4%	4%	4%	3%	3%	4%	8%	8%	7%	7%	6%	6%	5%	4%	4%	3%	3%
5	5%	5%	5%	4%	3%	3%	3%	4%	4%	4%	4%	3%	3%	4%	7%	8%	7%	7%	6%	6%	5%	5%	4%	3%	3%
6	5%	5%	4%	3%	3%	2%	3%	4%	4%	3%	3%	3%	3%	4%	6%	7%	7%	6%	6%	6%	5%	4%	4%	3%	3%
7	3%	3%	2%	2%	2%	2%	3%	3%	3%	3%	3%	2%	2%	3%	5%	5%	5%	5%	4%	4%	4%	3%	3%	2%	2%
8	5%	4%	3%	2%	2%	2%	3%	4%	4%	3%	3%	3%	3%	4%	7%	8%	7%	6%	6%	5%	4%	4%	4%	3%	3%
9	4%	4%	3%	2%	2%	2%	3%	4%	4%	3%	3%	3%	3%	4%	6%	7%	6%	5%	5%	4%	4%	4%	3%	3%	3%
Total	5%	4%	4%	3%	3%	2%	3%	4%	4%	4%	4%	3%	3%	4%	7%	7%	7%	6%	6%	5%	4%	4%	4%	3%	3%

H Median Labor Force Participation Rates by GO Virginia Region 2011-2019

(U.S. Bureau of Labor Statistics, 1976; Virginia Employment Commission, n.d.)

Region	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	55%	54%	55%	54%	53%	53%	51%	51%	54%
2	65%	65%	64%	63%	60%	60%	57%	58%	60%
3	58%	57%	56%	55%	54%	54%	53%	51%	57%
4	66%	65%	63%	63%	63%	62%	60%	60%	63%
5	69%	68%	67%	67%	66%	65%	59%	65%	67%
6	68%	65%	64%	65%	63%	64%	62%	60%	66%
7	83%	82%	79%	75%	73%	72%	71%	75%	75%
8	66%	66%	68%	66%	65%	65%	62%	61%	65%
9	69%	68%	67%	68%	67%	67%	64%	62%	69%
VA Avg.	67%	67%	66%	66%	65%	65%	66%	66%	66%

I Tax Data by GO Virginia Region 2004-2017

(Virginia Department of Taxation, 2020)

Net Taxable Income by GO Virginia Region															% Change
(\$ in billions)															
Region	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2004-2017
1	\$4.0	\$4.5	\$4.7	\$4.8	\$4.8	\$4.5	\$4.9	\$5.0	\$4.8	\$4.7	\$4.9	\$4.9	\$4.6	\$4.8	18%
2	9.5	10.3	11.2	12.0	11.2	10.8	11.0	11.3	12.0	12.1	13.1	13.4	13.5	13.7	44%
3	3.8	3.9	4.2	4.4	4.2	3.9	4.0	4.0	4.2	4.3	4.6	4.7	4.7	4.8	27%
4	19.8	22.0	24.2	25.9	24.3	22.3	23.5	24.2	26.3	26.7	29.0	30.3	29.8	31.1	57%
5	22.2	23.6	25.7	27.1	27.0	25.0	26.0	27.1	28.9	28.9	31.3	32.3	31.6	33.0	49%
6	7.3	7.8	8.5	8.7	8.5	8.5	8.9	9.3	9.7	9.9	10.5	11.1	11.1	11.7	59%
7	58.9	67.8	72.4	76.5	73.1	73.5	80.5	83.5	89.8	90.1	98.4	101.4	98.9	103.4	76%
8	6.9	7.5	7.8	8.1	7.7	7.3	7.6	7.8	8.3	8.5	9.1	9.6	9.7	10.1	47%
9	7.1	8.2	9.4	9.8	8.9	8.2	9.4	9.1	9.6	9.8	11.5	12.0	11.2	11.7	64%
Total	\$139.7	\$155.5	\$168.3	\$177.2	\$169.8	\$163.9	\$175.9	\$181.4	\$193.5	\$195.1	\$212.4	\$219.7	\$215.2	\$224.4	61%
Income Tax Liability by GO Virginia Region															
Region	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
1	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.3	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	24%
2	0.5	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	50%
3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	33%
4	1.0	1.1	1.3	1.4	1.3	1.2	1.2	1.3	1.4	1.4	1.5	1.6	1.6	1.7	62%
5	1.1	1.2	1.3	1.4	1.4	1.3	1.3	1.4	1.5	1.5	1.6	1.7	1.7	1.7	55%
6	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	65%
7	3.1	3.6	3.9	4.1	4.0	4.0	4.3	4.5	4.9	4.9	5.4	5.5	5.4	5.6	80%
8	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	53%
9	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	70%
Total	\$7.2	\$8.1	\$8.8	\$9.3	\$9.0	\$8.6	\$9.3	\$9.6	\$10.3	\$10.3	\$11.3	\$11.7	\$11.5	\$12.0	66%

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