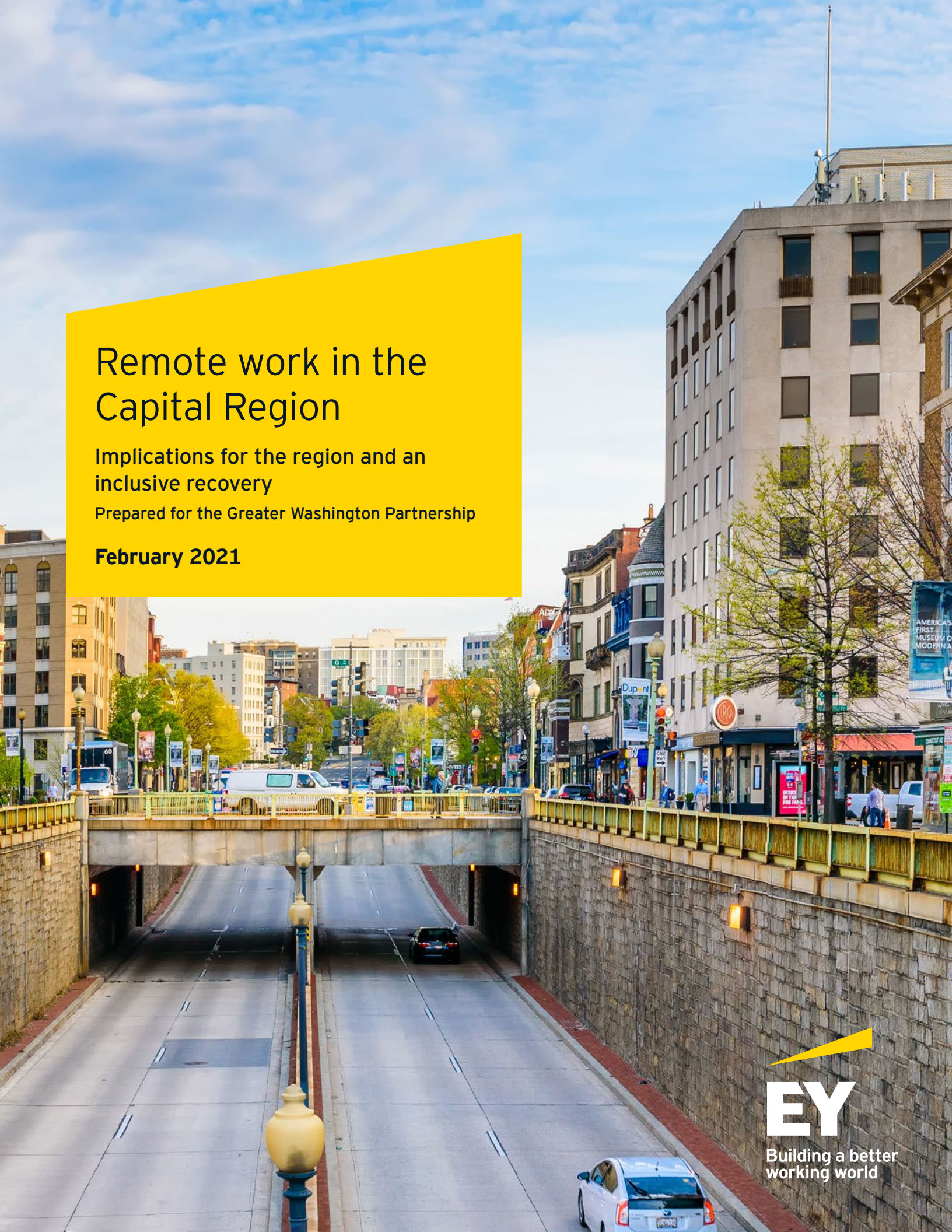

Remote work in the Capital Region

Implications for the region and an inclusive recovery

Prepared for the Greater Washington Partnership

February 2021

EY

Building a better working world

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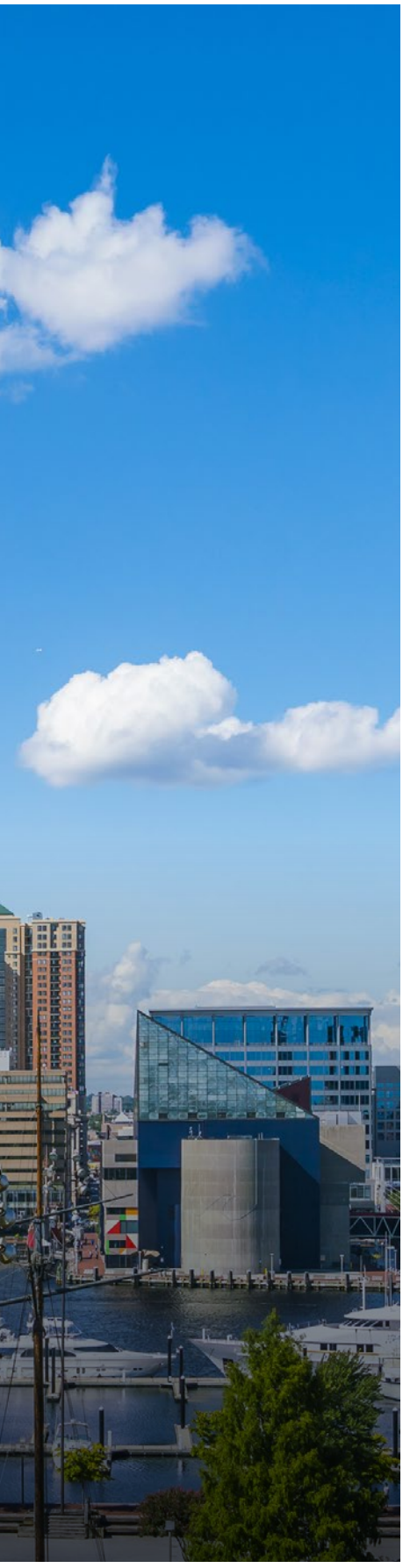


CONTENTS

Glossary

Downtown/urban core. For ZIP code and cross-regional analysis, neighborhoods within a five-mile radius of the central business district are classified as the downtown/urban core. For county-level analysis within the Capital Region, cores are subregional urban areas as defined by the Metropolitan Washington Council of Governments.

Dual-person remote-capable households. Workers living in households where all adult wage earners have the capability to work remotely. These households may have more opportunities to relocate following a shift to remote work.

Essential workers. Occupations in critical infrastructure sectors as identified by the US Department of Homeland Security such as public administration, utilities, transport services, and agriculture and food production.

Frontline workers. A subset of essential workers whose jobs cannot be performed remotely.

Full remote-work potential. The overall potential of jobs that can be completed at home without consideration of willingness or desire to work remotely.

Non-remote, non-essential workers. A subset of non-remote-capable employees who work in industries outside of critical infrastructure sectors as determined by the US Department of Homeland Security.

People of color. Non-white, non-Hispanic workers.

Remote-capable. Occupations with work activities that can be easily done anywhere, such as emailing colleagues, writing reports and analyzing data. It excludes work contexts and activities tied to a worksite and tasks that require a substantial degree of face-to-face contact.

Smaller business. Businesses with less than 50 employees.

Worksites. Physical work locations such as corporate offices, stores, factories and facilities that are tied to an employer.

1. Executive summary

The COVID-19 pandemic has accelerated the adoption of remote work across industries and occupations, allowing remote-capable employees to work from the comfort and safety of their homes. While the COVID-19-era prevalence of remote work will likely not be maintained once the pandemic has subsided, data collected through external surveys as well as the Greater Washington Partnership (the Partnership) and EY Capital COVID-19 Snapshot shows greater levels of remote working will continue even after herd immunity is reached, relative to pre-COVID-19 levels.[1] [2] [3] [4]

If a quarter of the employees capable of working remotely continue to do so after the pandemic, the impact of this shift will be felt beyond just those working remotely. This new way of working may impact migration trends throughout the region, commuting and transit patterns, the demand for goods and services provided by smaller businesses, and employment and career opportunities for both remote and non-remote workers. To address these changes, policymakers and community leaders need to understand the potential for sustained remote work in the Capital Region as well as the benefits and challenges it will present.

The increased prevalence of remote work is expected to disproportionately impact the region's most vulnerable and underserved communities. Better understanding the differential impacts of these shifts on distinct communities will allow leaders to develop targeted policies and approaches that put equity at the center and promote an inclusive economic recovery.

Ernst & Young LLP (EY US) conducted this study at the request of the Partnership to assess the population and makeup of remote-capable jobs in the Capital Region, the degree to which employees in these positions might work remotely and the potential impacts of sustained remote work scenarios on the region's transportation system, smaller businesses and non-remote workers. For the purposes of this study, the Capital Region is defined as the Baltimore-Columbia-Towson, MD; Richmond, VA; and Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical areas, which, at this scale, represent the third-largest economy in the US and seventh-largest in the world with more than 10 million residents, 188,000 employers and 5 million workers.

Remote work scenarios

This study considers two potential remote work scenarios following recovery from the COVID-19 pandemic, with different shares and frequencies of workers performing their duties remotely. The two scenarios are built on surveys gauging the likelihood of sustained remote work. The degree and speed at which remote workers return to physical worksites in the coming years will depend on other factors outside of this study's bounds (e.g., pace of vaccinations, community transmission rates, advances in technology).

"Substantial shift" scenario

The first scenario assumes a substantial shift to remote work where 28% of the region's remote-capable workers work remotely at least once a week and 17% live in dual-person remote-capable households, meaning all primary income earners may work remotely at least some of the time. This scenario is a five-fold increase from before the pandemic, with the possibility of 18% of the region's workforce, or more than a million people, working remotely 3-5 days per week.

"Moderate shift" scenario

The second scenario anticipates 24% of the region's remote-capable workers work remotely at least once a week and 15% live in dual-person remote-capable households. Fourteen percent of the region's employees work remotely 3-5 days per week. This scenario represents nearly three times the number of workers spending most of their time working remotely compared with before the pandemic.

KEY FINDINGS

The EY team analyzed the potential implications of sustained remote work in the Capital Region on the population of potential remote-capable workers, the spread of remote-capable jobs across the region, changes to transportation demand, and the impacts to smaller businesses and essential, frontline and workers from other sectors who are not capable of working remotely in the region. These issues were analyzed for two remote work scenarios. Key findings from the study are summarized below.

Potential for remote work in the Capital Region

- **Compared with its peer regions, the Capital Region has the nation's second-largest pool of potential remote workers, behind the San Francisco Bay Area**.[5] The number of remote workers in the region may increase five-fold from levels experienced before the pandemic, with the possibility of more than a million workers (18% of the total workforce) spending 3-5 days per week off-site.
- **New hybrid ways of working are more likely to emerge than a shift to full-time remote work**. For remote-capable employees, it is unlikely that all will work remotely full-time. Rather, these employees may work some of the time at worksites, with the remaining time spent working remotely. These shifts to distributed worksites may have significant implications for the Capital Region, including talent recruitment and retention, office space demand, housing costs, transport plans and investments, and urban and suburban vitality.

Remote work implications on migration

- **The future of remote work is unlikely to be uniformly experienced across the region**. For example, the District's downtown/urban core and surrounding neighborhoods have the highest share of remote-capable residents, while Baltimore and Richmond have a larger concentration of remote-capable residents in suburban communities.
- **Existing data does not reveal large-scale migration from the Capital Region but suggests potential shifts within the region**. While new home inventories have declined in the region overall, a 2% decline in home listing prices in the District core as opposed to a slight increase in downtown/urban core Baltimore and Richmond points to a potential reallocation of workers within the region.

Transport demand and mobility changes

- **Trips taken for non-commute purposes represent the vast majority (over 75%) of trips taken in the region**. These are unlikely to change in the near term under a future remote working scenario, meaning high-level mobility patterns in a post-COVID-19 scenario are likely to be broadly similar to the pre-COVID-19 baseline.
- **The region's residents use transit more for commuting than other modes, such as driving**. For example, while over 40% of transit riders are commuters, only 25% of driving trips are commute trips. This means that a shift toward remote work may have a disproportionate impact on key commuting modes such as rail, subway and bus.
- **Fewer commute trips could have significant, lasting implications for existing state and transit agency revenues**. Remote work in the Capital Region is likely to cause a shift toward non-commute trips, potentially leading to a significant reduction in farebox revenues for transit operators. Analysis of potential remote work scenarios suggests transit providers in the Capital Region could experience a significant reduction in fare revenues, translating to a reduction of up to 5% of total revenues. Revenue sources linked to vehicle miles traveled – notably, motor fuel taxes – would also be vulnerable to a decline given a structural shift toward remote work.

Smaller business impacts

- **Smaller businesses in downtowns/urban cores will likely suffer from changes in consumer foot traffic under both remote work scenarios**. An increase in flexible working arrangements and more days spent at home will decrease spending on meals, shopping and entertainment around the workplace. This could disproportionately impact smaller businesses around workplaces, particularly in dining, entertainment and retail, that rely on revenue generated from the increased daytime population of the downtown/urban core.
- **Smaller businesses in residential districts may benefit from a shift in consumer spending, but to a lesser degree**. Work from home is not likely to result in a dollar-for-dollar shift of consumer spending to residential districts. For example, remote workers may shift to eating self-prepared meals when working at home rather than purchasing meals near an office.
- **Smaller businesses owned by people of color may be more negatively impacted due to changes in consumption demand**. Nearly half of all Latinx-owned and almost 60% of Black-owned small businesses nationally were found to have liquidity concerns in 2019 by the Federal Reserve Bank of Atlanta, as compared with only 31% of all small businesses reporting similar levels of financial distress.

Essential, frontline, retail, restaurant and entertainment workers impact[6]

- **Increased remote work may exacerbate existing inequalities along educational divides**. Frontline workers generally have lower levels of educational attainment, with 39% holding a bachelor's degree or above compared with 46% of the overall workforce. This disparity is more pronounced for restaurant and retail workers, of which 16% have a college degree. Given the association between remote work potential and educational attainment, non-remote workers are less likely to have the skills necessary to transition to remote-capable occupations without additional training.
- **People of color are disproportionately impacted by changes to employment opportunities for non-remote workers in industries not deemed "essential"**. Unemployment remains high for workers in these occupations. People of color account for 61% of non-essential, non-remote workers compared with 46% of the overall workforce.

While these key findings reference the Capital Region as a whole, the EY team recognizes that the region is not homogeneous. Therefore, the benefits and challenges of remote work scenarios may be experienced differently across the region. When possible, the report draws distinctions between the three metro areas as well as downtowns/urban cores and suburban areas.

2. The potential for remote work in the Capital Region

Within several weeks, the COVID-19 pandemic transformed the landscape of remote work for millions of residents in the Capital Region. Nearly all workers who could feasibly work remotely did so at the start of the pandemic in spring 2020, with many continuing to work remotely in 2021. This section examines the extent to which that trend may continue.

Few individuals had experience with working remotely prior to the pandemic.

Prior to the initial shutdown of non-essential businesses in March 2020, only 5% of the region's residents worked from home full-time.[7] The few individuals who regularly worked from home were concentrated in higher-skilled industries and jobs. These workers have been disproportionately white (68% of full-time remote workers were white, compared with 54% of the region's overall workforce). More than a quarter of these employees worked in professional, scientific and technical services, with workers in management, business and financial operations, and computer and math representing more than half of all remote jobs.

The composition of the Capital Region's remote workers closely mirrored national averages.

While different industries and occupations had varying degrees of remote work prior to the pandemic, the starting point across the region and nation was low. However, government and tech workers in the Capital Region composed a larger share of the remote workforce than the country overall (5% of government workers and 10% of computer and math occupations in the region, compared with 2% and 7%, respectively, nationwide).

The pandemic increased the number of employees temporarily working at home sevenfold across the country.

Nationally, the Bureau of Labor Statistics (BLS) found more than 35% of all employed workers worked at home due to the pandemic in May 2020 compared with 5% in February, a sevenfold increase. Yet, the shift toward remote work was not uniform across occupations and industries. More than 60% of employees in finance, professional services and IT worked from home in May 2020. The largest gains in remote work were in education, where the sudden shift toward distance learning resulted in more than 76% working at home, compared with 3% before the pandemic.

The share of employees working remotely has decreased nationally since May 2020 but remains elevated.

As lockdowns eased, many workers started to return to the office. However, nationally, there remained more than four times as many people working remotely as of November 2020 compared with prior to the pandemic, as illustrated in the chart to the right. While nearly all industries saw a precipitous rise in remote workers, the opportunity to work remotely has been clustered in industries with higher wages.

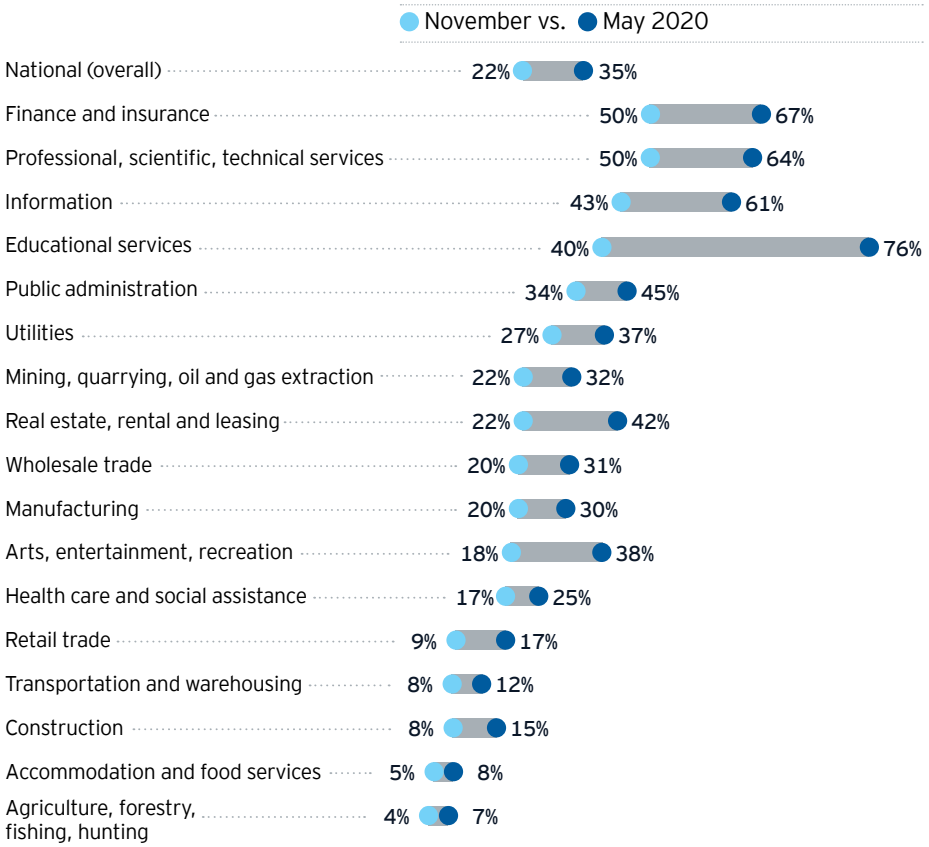
The Capital Region saw a similar sudden rise in the number of remote workers.

According to the Partnership's Capital COVID-19 Snapshot, the number of remote workers in the region increased to 59% in August 2020. By December 2020, 79% of workers were spending at least some time at home with 58% working remotely full-time.[8]

The Capital Region has the second highest share of remote working potential among major metro area peers, with 49% of jobs considered remote-capable.

Compared with the region's peers, only the San Francisco Bay Area has a slightly higher proportion of remote-capable jobs (50%). These estimates likely reflect the unique compositions of talent across different metro areas, with larger shares of tech jobs in Greater San Francisco and Boston than Los Angeles and New York.

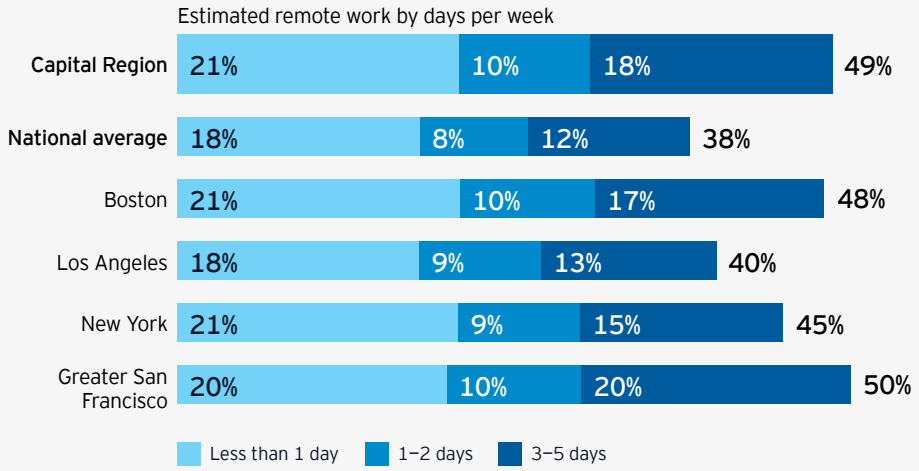
National shift in remote work from May to November 2020



Source: EY analysis, Bureau of Labor Statistics Current Population Survey – Supplemental data measuring the effects of the coronavirus (COVID-19) pandemic on the labor market.

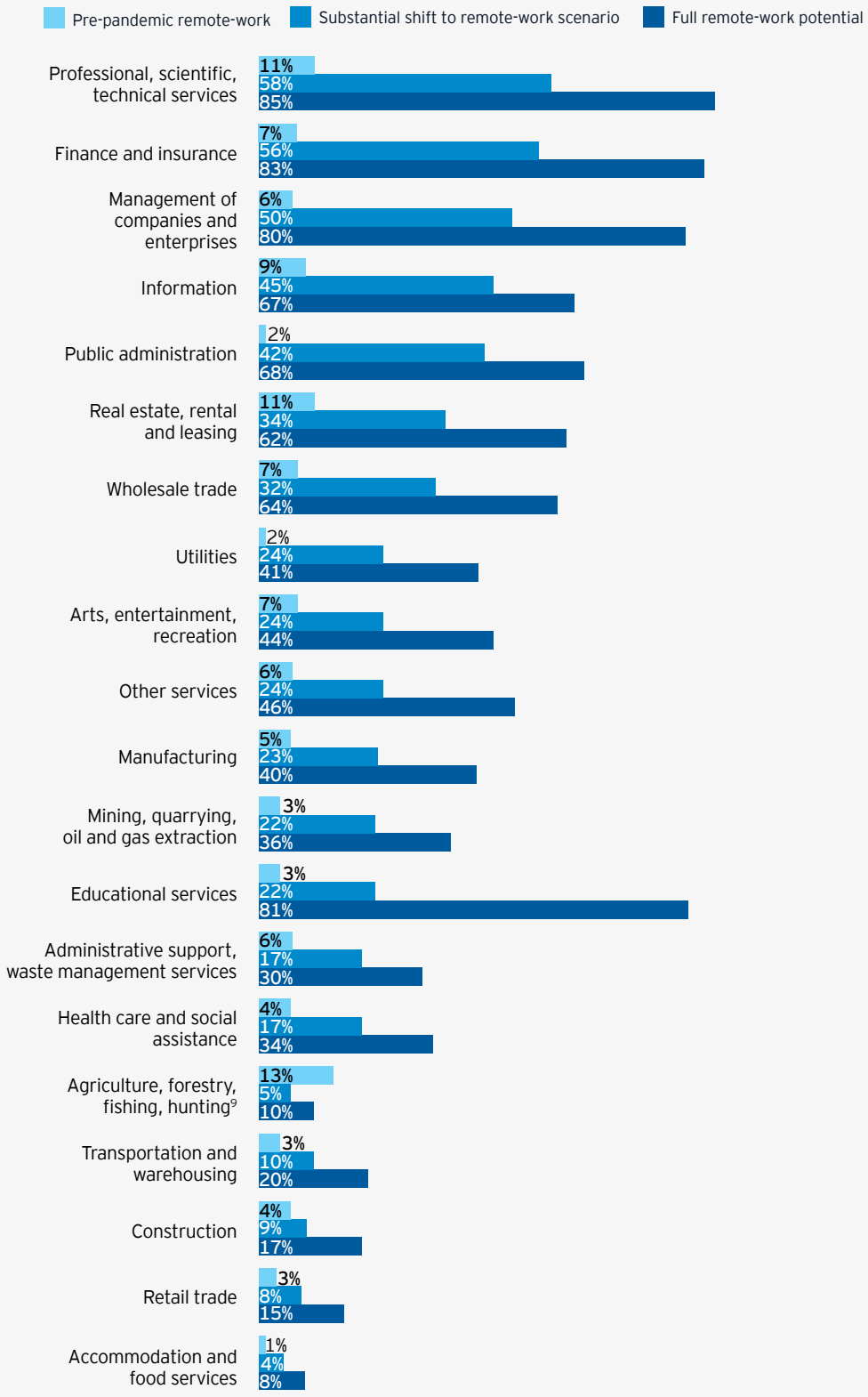
Substantial shift to remote work scenario

Share of working population

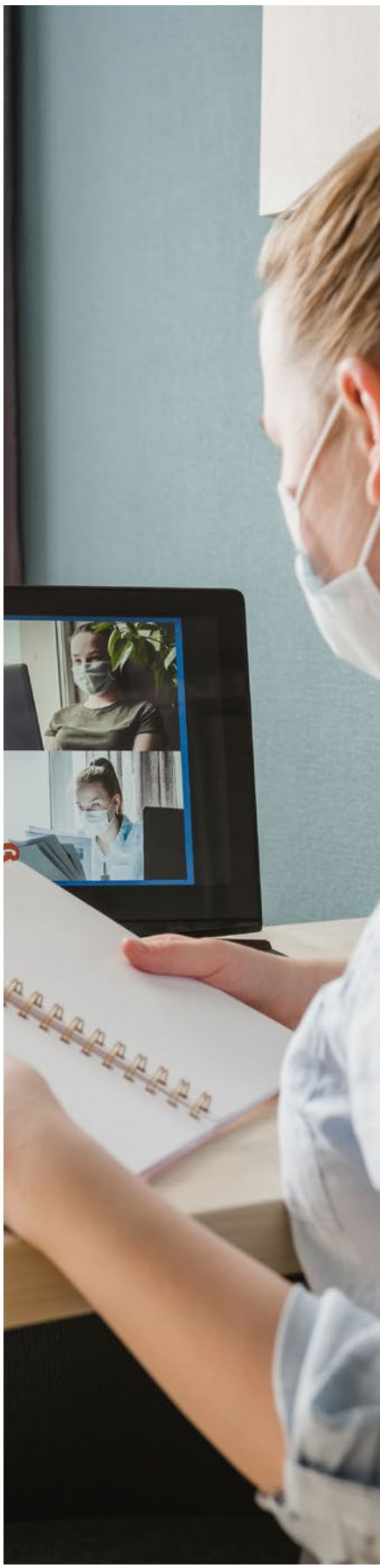


Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, Occupation Information Network (O*NET).

Share of employees who can work remotely in the Capital Region by industry



Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, Occupation Information Network (O*NET). Industries sorted by share of workers who are remote-capable under the substantial shift scenario.



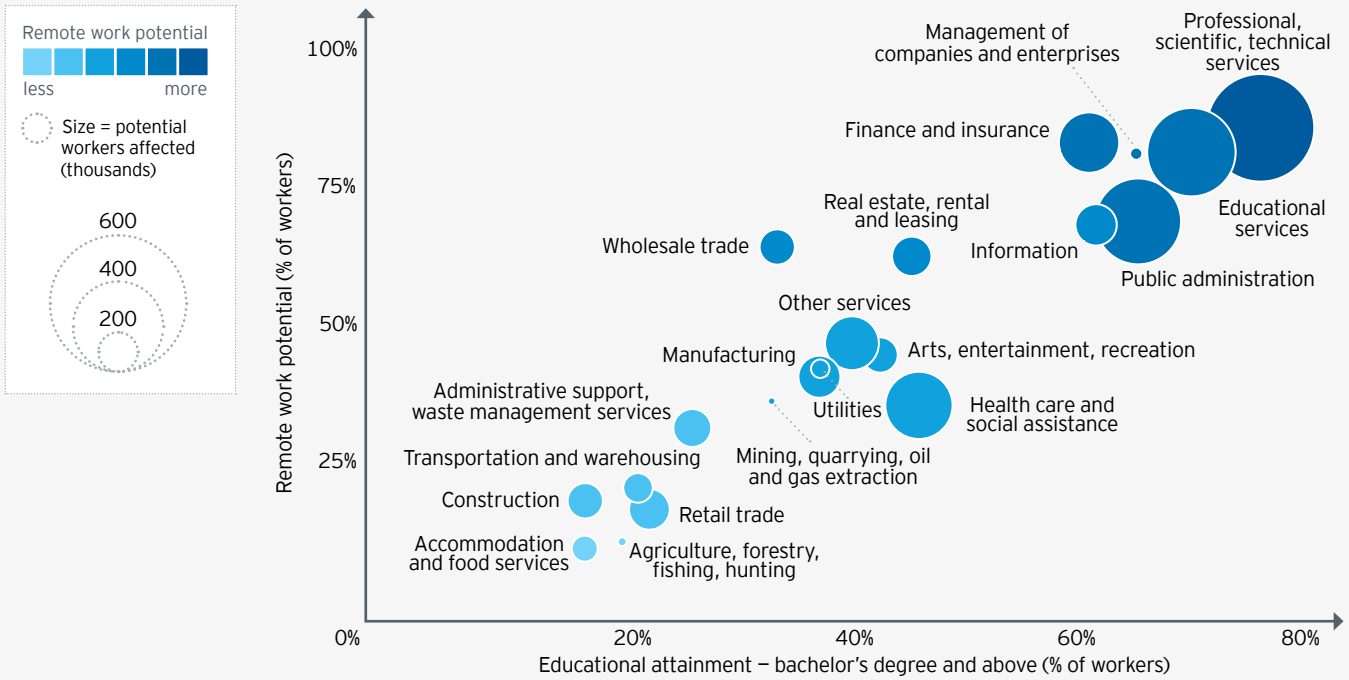
Remote work opportunities are clustered in higher-wage and higher-skill industries.

These occupations include IT, business, finance, law and management, where workers spend a large amount of time interacting electronically with coworkers and clients and can work remotely without losing productivity or efficiency. Industries that require more generic skills — as proxied by the share of workers without a college education — have fewer opportunities for remote work (as shown in the figure below).

Government and STEM professionals will likely see large gains in the opportunities to work remotely.

Some of the largest gains in remote work opportunities compared with before the pandemic will likely be clustered in government and STEM jobs. Two in five federal government workers may spend some time at home, with smaller shares of state and local public-sector professionals working remotely. STEM workers, in particular, may see a considerable shift to remote work, with nearly three in four workers spending the occasional day working remotely.[10]

Correlation of remote work potential and educational attainment in the Capital Region



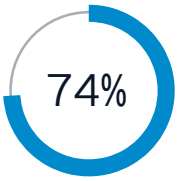
Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, Bureau of Labor Statistics Occupational Employment Statistics, Occupational Information Network (O*NET).

Remote work potential for the Capital Region's public-sector professionals

Government employees	Pre-pandemic full-time remote work	Working remotely 3–5 days per week: Moderate shift scenario	Working remotely 3–5 days per week: Substantial shift scenario
Federal government	3%	25%	30%
State government	2%	11%	19%
Local government	4%	6%	8%

Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.

Remote work opportunities for STEM workers



of these workers could benefit from remote work opportunities under the substantial shift scenario

10½ times greater than the 7% of these employees working remotely prior to the pandemic

The importance of collaboration may ultimately dictate how frequently remote-capable employees work on-site.

Accounting for the importance of collaboration in remote-capable jobs, we estimate two scenarios where some remote-capable workers split their time between remote locations and worksites. Specifically, we anticipate that individuals in remote-capable jobs that require a high degree of interpersonal activity (e.g., team building, interaction with others and face-to-face contact with external customers) may want to spend more time in offices following the end of the pandemic, compared with jobs where collaboration is less important.

Over the long run, the number of remote working days will vary across industries and occupations.

Once health concerns subside, certain industries will likely see a faster return to worksites due to the social dimension of their jobs. A desire to confront employee isolation may encourage remote-capable workers to spend fewer days at home. This is particularly true for jobs that prioritize in-person communication, knowledge-sharing and a high-degree of collaboration. For example, it is expected that primary and secondary school teachers will not continue to work remotely in large numbers.

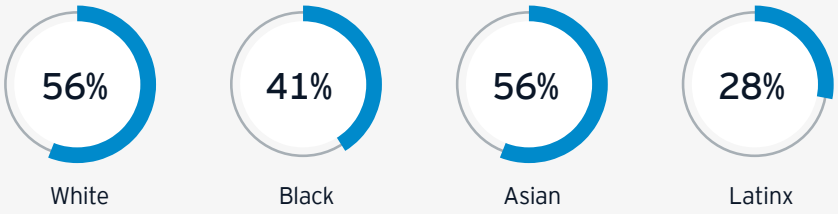
Remote-capable workers in the Capital Region can save up to 11 days per year in commuting time on average.

Under both the moderate and substantial shift scenarios, remote-capable workers would experience time savings by avoiding the daily commute. Collectively, the Capital Region would save nearly 30 million days per year in commute time under the substantial shift scenario, allowing for improved work-life balance and a reduction in carbon emissions.[11]

The remote-capable divide in the Capital Region under the substantial shift scenario

Remote work opportunity by ethnicity

Percentage of current workers within demographic groups who can work remotely



Characteristics of remote-capable workers

Percentage of remote- and non-remote-capable workers by demographic and socioeconomic characteristics

	Of all workers who are ...	
	Remote-capable	Non-remote-capable
People of color	38%	52%
Women	52%	46%
Education (bachelor's degree and above)	67%	31%
Below 200% of federal poverty line	6%	19%
Median age	44	40

Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.

Women appear to have equitable remote work opportunities, but disparities are seen at the industry and occupation levels.

For example, women are more likely to be in health care and social assistance as well as educational services compared with men. These industries have smaller percentages of sustained remote work potential.

Remote work opportunities are distributed inequitably across demographic and socioeconomic backgrounds in the Capital Region.

Remote work has rapidly advanced across the region, but the opportunities to work remotely disproportionately disadvantage people of color in the workforce. Black and Latinx workers will be less likely to work from home under the substantial shift scenario (41% of Black workers and 28% of Latinx workers compared with 56% of white workers). The lack of diversity in remote work opportunities may pose new challenges for people of color as companies prioritize new working arrangements in favor of higher-skilled, remote-capable workers, who are predominately white and Asian.

Black and Latinx communities may confront a skills gap in the shift toward remote work.

Remote work requires specialized and technical skills, as demonstrated by the fact that 67% of remote-capable workers have a bachelor's degree and above. These jobs are generally associated with higher wages and lower levels of poverty. Only 6% of remote-capable workers are below 200% of the federal poverty line compared with 19% of non-remote-capable workers. The skills needed for remote work may pose challenges for the Capital Region's Black and Latinx workers, where two-thirds of Black employees and three-fourths of Latinx employees do not have a college degree.

3. Remote work implications on migration

Remote work has great potential to impact daily life and migration patterns of households for those who formerly commuted to an office or physical workplace on a regular basis. Moreover, remote-capable workers reside in certain neighborhoods of the Capital Region. This clustering of remote-capable households means that the changes in daily life, commuting, housing needs and consumption may not be evenly distributed. This section analyzes the distribution of remote-capable workers across the Capital Region and potential implications on migration.

Remote-capable individuals may seek out more affordable housing options farther away from their worksites.

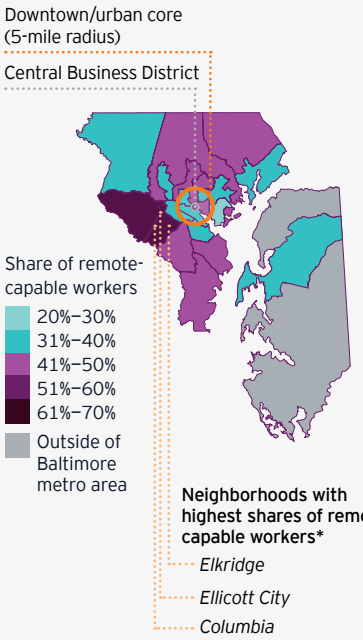
The highest share of remote-capable workers in the Washington metro area live in or near the District's downtown/urban core, Northwest DC, northern Arlington County, and the Bethesda and Potomac areas of Montgomery County. While these areas offer convenient access to work and urban amenities, properties are generally smaller, accompanied by higher rent burdens. Within DC's downtown/urban core, nearly 30% of residents are in households where all adults can work remotely under the substantial shift scenario. Some of these households may prefer more space and less-expensive neighborhoods.

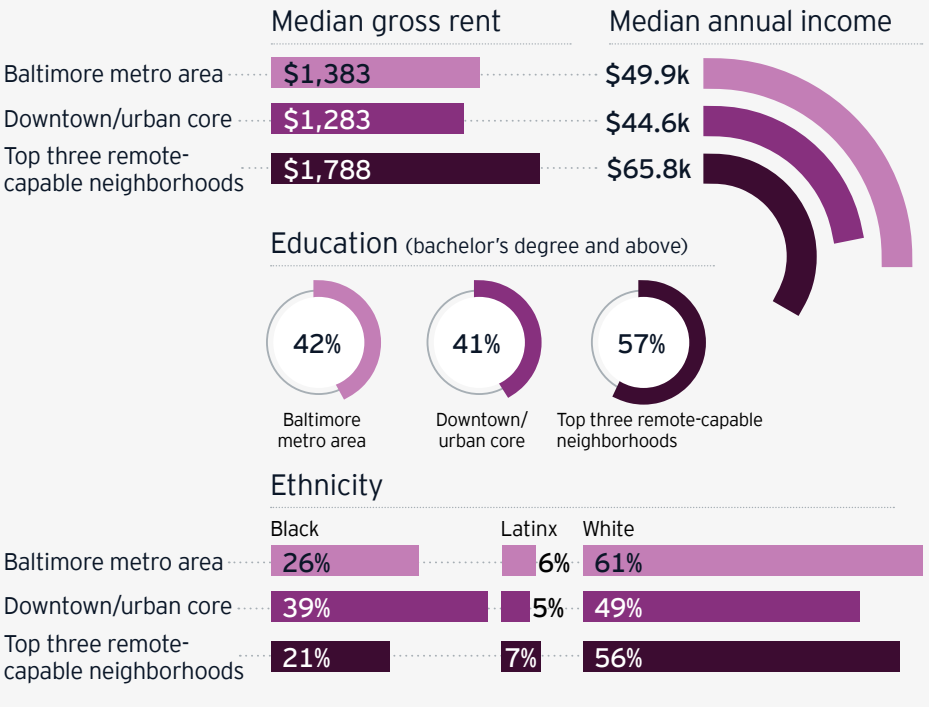
The future of remote work is unlikely to be uniformly experienced across the Capital Region.

Remote-capable workers in Baltimore and Richmond are more likely to reside in suburban areas instead of neighborhoods near the metros' central business districts. In Baltimore, the highest shares of remote-capable households are in the suburban communities of Howard and Anne Arundel Counties, where 22% of workers live in remote-capable households. In Richmond, there is similarly a higher share of remote-capable households in the Tuckahoe, Short Pump and Wyndham neighborhoods in Henrico County, with 32% of workers living in remote-capable households under the substantial shift scenario. While it remains to be seen whether remote work will cause large-scale migrations both from and within the Capital Region, the variation in clustering of where remote workers live across the three metros will likely lead to different mobility trends throughout the region.

Demographic and socioeconomic characteristics of the Capital Region's workforce by residential neighborhood

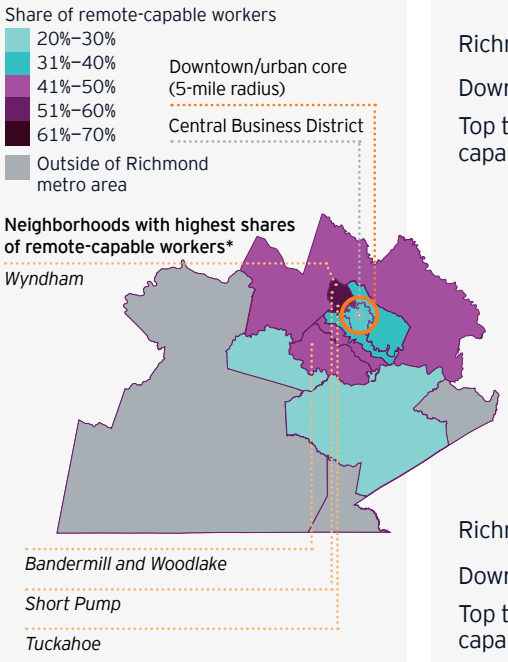
Baltimore metro area

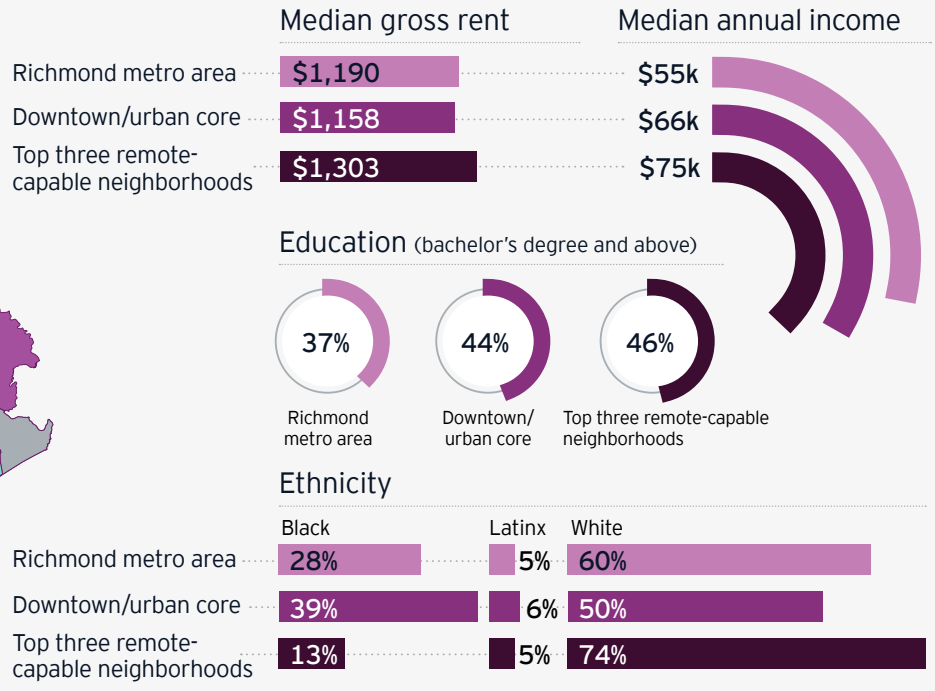




*The three highest remote-capable neighborhoods are in suburbs of Howard and Anne Arundel County.

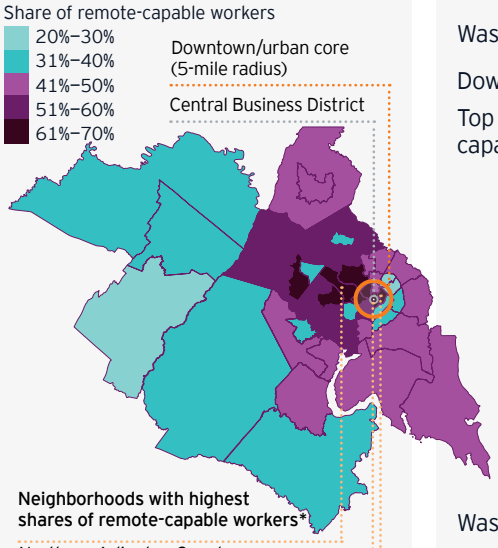
Richmond metro area

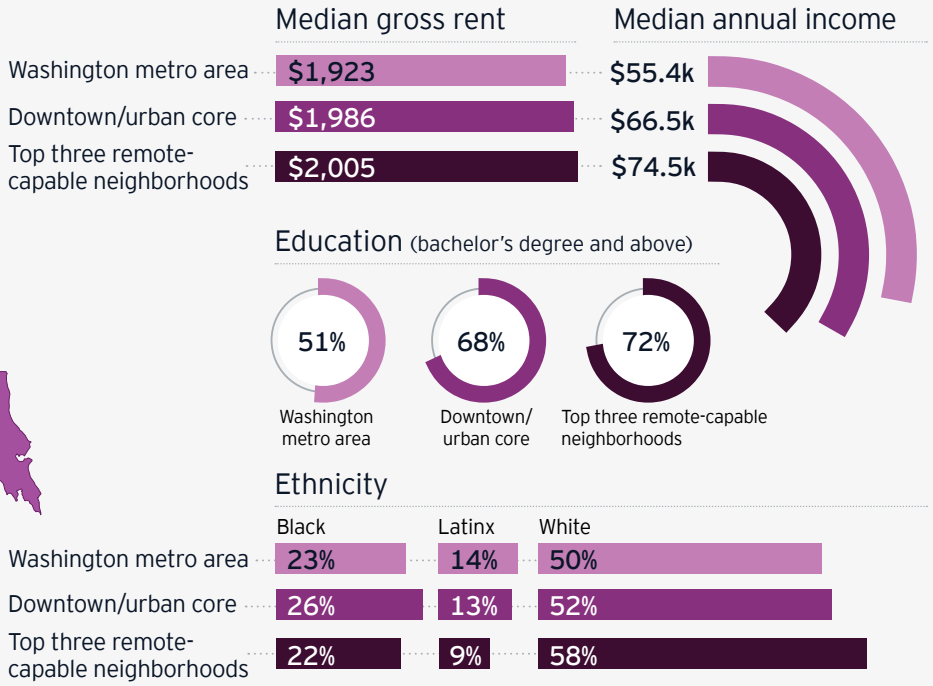




*The three highest remote-capable neighborhoods are Tuckahoe, Short Pump and Wyndham in Henrico County; Bandermill and Woodlake in Chesterfield County.

Washington, DC metro area





*The three highest remote-capable neighborhoods are in central and western wards of the District along with northern Arlington County and the Bethesda and Potomac neighborhoods of Montgomery County.

Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.

Housing inventory data may suggest migration within the Capital Region rather than outward migration from the region.

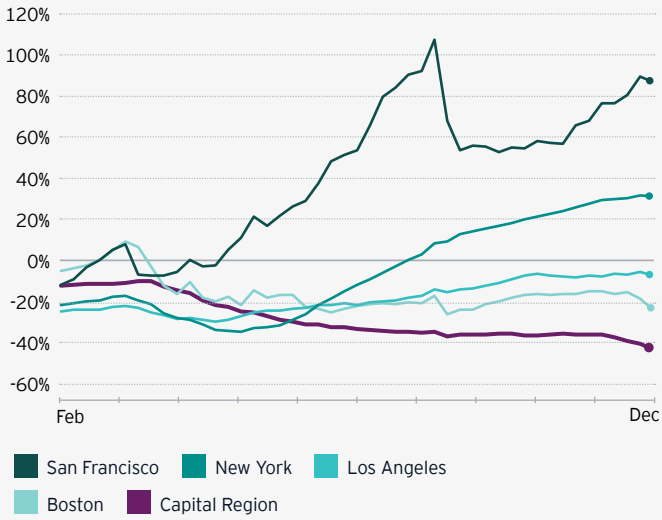
In the initial months following the onset of the pandemic in spring 2020, single-family home inventories declined across the Capital Region and among the region's peers. However, since July 2020, new housing supply has diverged between cities. Among the region's peers, San Francisco and New York have seen steep rises in inventories, with a more than 100% growth in supply in San Francisco year over year in August. There have been more moderate increases in new supply in Los Angeles and Boston, but new supply in the Capital Region continues to decline, with 44% less inventory in December 2020 compared with the previous year. The charts below show inventories have shrunk overall following the pandemic, suggesting that the Capital Region is not experiencing a large-scale shift away from the region.

At the metro level, there is only a weak association between remote work capability and increased housing supply.

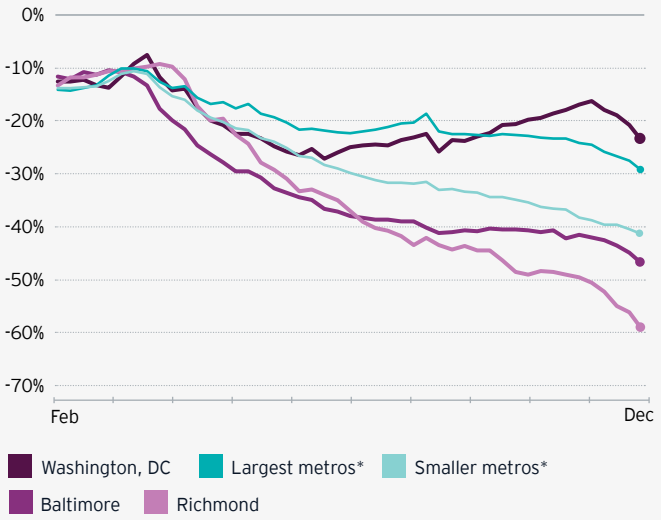
Remote work has increased opportunities to move away from larger metros, but there has so far been only a moderate correlation between the share of remote workers and increased inventories. San Francisco and New York are notable exceptions, yet, within the Capital Region, differences are apparent. Like other large metros, inventory drops have been slower in DC (down 24% in December 2020 compared with the previous year) than in Baltimore (-47%) and Richmond (-60%), which suggests that migration patterns after March 2020 are not uniform across the region.[12]

Change in home inventories February–December 2020 (year-over-year growth)

The Capital Region and peer metro areas



Metro areas within the Capital Region



Source: EY analysis, Redfin.com

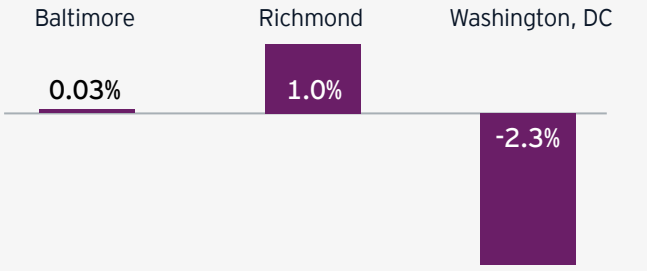
* Largest metros include the 25 most populous metro areas nationally. Smaller metros include the remaining 100 most populous metro areas nationally.

Housing costs may provide an early indicator of the impacts of remote work-driven migration across the region.

Since February 2020, growth in rental prices in Washington, DC's downtown/urban core has fallen 2.3% year over year compared with stable prices in Baltimore's downtown/urban core and a 1% increase in Richmond's downtown/urban core. This suggests a more complicated story than a large-scale migration from densely populated neighborhoods. Compared with the region's peers, rental prices are not decelerating at a similar rate, with considerable declines in rents in the downtowns/urban cores of San Francisco (-28.7%) and New York (-8.9%) compared with a more moderate deceleration in Boston (-3.7%) and Los Angeles (-1.6%).

Rental price index in downtowns/urban cores (year-over-year growth)

Percentage point difference
February–November 2020



Source: EY analysis, Zillow Observed Rent Index (ZORI).

Washington, DC area home listing prices show an increased preference for distant suburbs and a decreased preference for downtown/urban core homes.

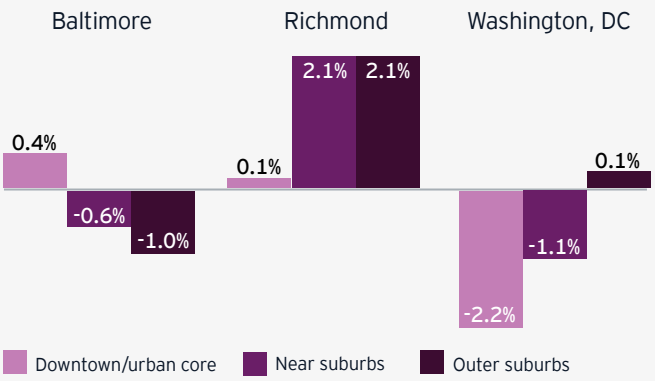
Within the downtown/urban core of the District, median listing prices fell by 2.2% year over year from February to November 2020, compared with a 1.1% decline for homes within 20 miles and a 0.1% increase for homes in outer suburbs (20-49 miles from the business district).[13] This divergence between the District's downtown/urban core and suburban communities broadly corresponds with the locations where remote workers reside in the DC metro area.

By contrast, downtown Baltimore and Richmond have seen growth in their median listing prices since the start of the pandemic.

In Baltimore, we see slowing growth rates in home listing prices in suburban areas where remote workers reside and a modest acceleration in prices in downtown Baltimore. In Richmond, year-over-year growth rates have seen a 2% increase from February 2020, which suggests increased demand for more affordable areas throughout the region. The varying growth rates in median listing prices between urban and suburban areas throughout the Capital Region adds further evidence for a reallocation of residents within the region, rather than an outward migration.

Median home listing price (year-over-year growth)

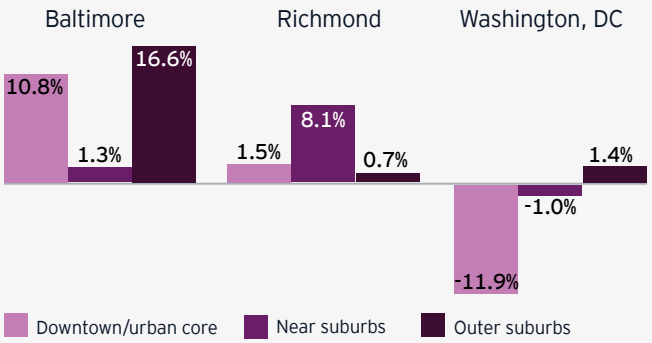
Percentage point difference
February–November 2020



Source: EY analysis, Redfin.com.

Online real estate search interest (year-over-year growth)

Percentage point difference February–November 2020



Source: EY analysis, Realtor.com market hotness index

A substantial shift in remote working may increase relocation within the Capital Region.

Online search interest in real estate listings may be a meaningful proxy for future interest in moving under the remote work scenarios.[14] ZIP codes in the downtown/urban core of Washington, DC saw a 11.9% decrease in search interest from February to November 2020 compared with a 1% decrease in the near suburbs and a 1.4% appreciation in the outer suburbs. Search interest reveals a larger interest within Baltimore City and its outer suburbs but only slightly increased interest in downtown/urban core Richmond and its outer suburbs.

A structural shift in remote working provides new residence location options for about a quarter of dual-person remote-capable households in the District's downtown/urban core.

It is estimated that 24%–27% of individuals living in the District's downtown/urban core live in households where all working adults are in remote-capable jobs. The added flexibility of remote work provides these households with increased opportunities to seek different housing options throughout the Capital Region for various reasons, including affordability.

4. Transport demand and mobility changes

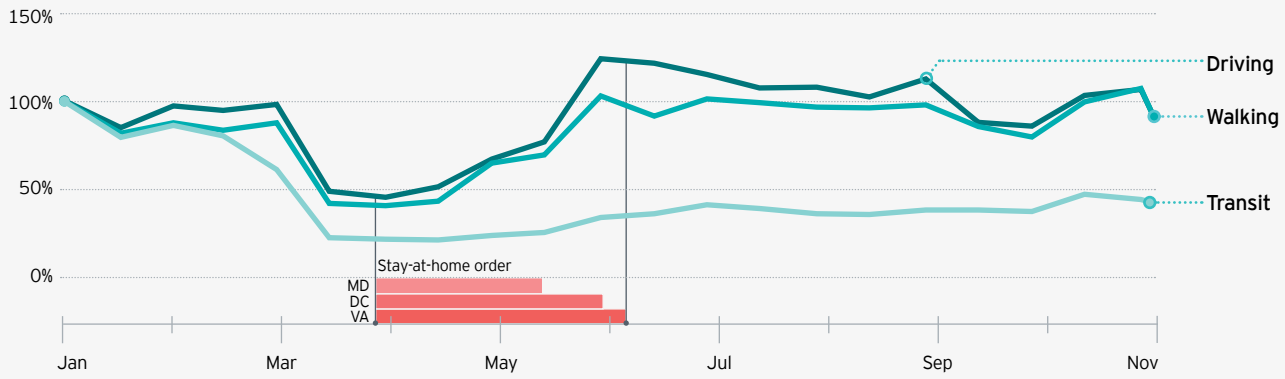
Public health concerns and increased opportunities to work from home led to a significant decline in mass transit usage and the driving of personal vehicles early in the pandemic. While rates of driving have gradually recovered to near pre-pandemic levels, transit usage is still historically low. Rail ridership is still down by more than 80% and bus ridership down by more than 50% on Washington's Metro system as of January 2021, with continued (although slightly less severe) declines for rail and bus systems in the Baltimore and Richmond networks.[15] [16] [17]

As workplaces reopen, people and companies have expressed anxiety over the health readiness of public transport, creating an additional near-term strain on already-stressed transit agency budgets. The fear of transit during the pandemic may potentially lead to a long-term uptick in car usage. Even in a post-vaccine environment in which health concerns on public transit are a diminished concern, a long-term shift toward remote work could permanently reduce the level of commute trips in the region.

This section analyzes the degree to which reduced commuting from increased remote work could lead to reduced overall demand on the transportation infrastructure for the region. The analysis also includes a high-level range of estimates for the potential revenue impacts. Several elements of the region's mobility baseline will affect how a shift toward remote work could manifest and are discussed in the following section.

Normalized trip trends for the Capital Region

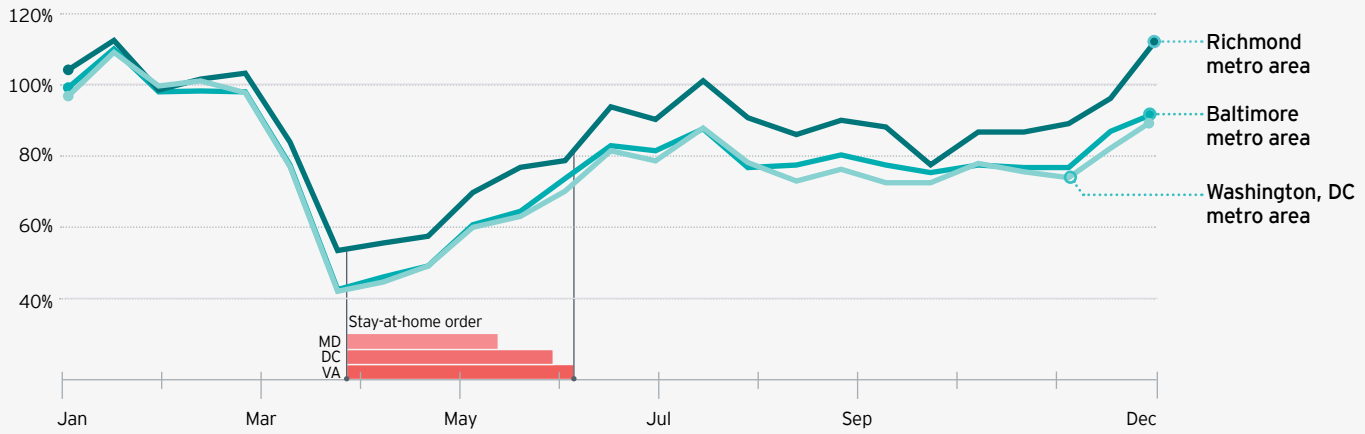
By mode (seasonally adjusted for 2020)



Sources: Apple Mobility, US Bureau of Transportation Statistics

Normalized vehicle miles traveled

By metro area (seasonally adjusted 2020)



Source: INRIX

Trip numbers declined substantially across all modes during the early stages of the pandemic in April–May 2020.

The level of reduction indicates that both commute and non-commute trips were impacted. Transit experienced both the steepest and the most persistent decline in trips, likely due to safety concerns and to transit's role as a more commuter-oriented mode. While the number of trips for driving and walking modes saw a recovery and potentially a slight increase relative to the baseline, this did not mitigate an overall decline in seasonally adjusted vehicle miles traveled.

Vehicle miles traveled for the region remain below the seasonally adjusted baseline but have trended toward recovery.

Vehicle miles traveled reduced significantly relative to their seasonal average, particularly during the April-June period, and largely remained below the baseline through 2020. A slightly higher recovery in the Richmond metro area may reflect the slightly higher average share of non-commute trips as a fraction of all trips in outer suburb areas relative to inner and core zones, consistent with the lower average density in Richmond's surrounding areas.

Non-commute trips are the major mobility driver for the region.

Even prior to the pandemic, trips in the region were primarily made for purposes other than commuting, with commute trips making up only about a quarter of all trips in 2019. Given that non-commute trips – which are more likely to be taken by driving rather than transit – are unlikely to be affected by a long-term shift toward remote work, these trips are likely to both recover faster and return to levels closer to the pre-COVID-19 baseline than commute trips.

Since commuters tend to use different modes than non-commuters – in particular, commute trips are more likely to be by transit – this dynamic has important implications for mode share in potential recovery scenarios.

Total commute vs. non-commute trips

Sources: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, US Bureau of Transportation Statistics

Slightly less than half of the region's commuters hold positions that could potentially be conducted through remote work.

They represent the maximum proportion of commute trips that could be lost due to a permanent shift toward teleworking.[18]

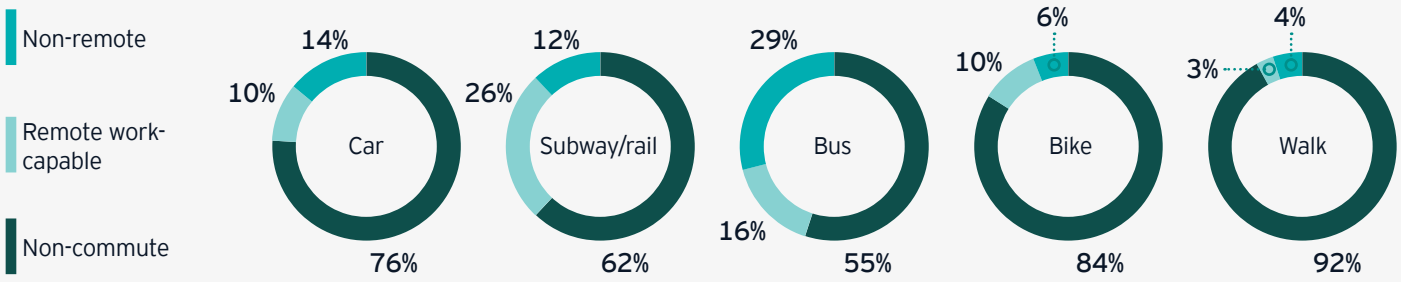
Where trips originate affects what types of trips travelers are likely to take.

Both the proportion of commute trips vs. non-commute trips and the proportion of remote-capable jobs vary based on where travelers are starting – travelers in the outer suburbs, for example, tend to take more non-commute trips than those in the region's core areas. This implies that trips are more likely to recover to pre-COVID-19 levels in some environments than others, which in turn has modal implications: if trip numbers recover faster in the outer suburbs – where travelers are overall much more likely to drive, for example – the region would see an overall shift toward driving.

Some modes – particularly subway and rail – are much more likely to be used for commuting than others.

What mode residents rely on depends on what type of trip they are taking. This means that some modes are used primarily for non-commute trips, such as walking or biking, while others have a much higher share of commuters. While only about a quarter of car trips are commute trips, 38% of subway/rail trips and 45% of bus trips are made by commuters.

Commute (non-remote and remote-capable) and non-commute trips by mode



Sources: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, US Bureau of Transportation Statistics.

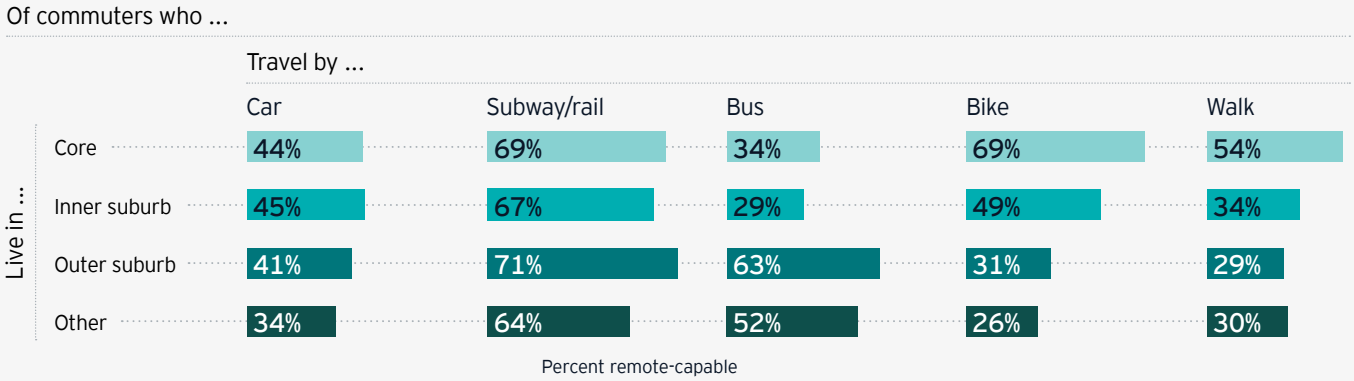
Different transportation modes are used by different types of commuters in the region.

For example, subway ridership is heavily skewed toward remote-capable jobs – 68% of subway riders hold jobs that could be conducted remotely. Buses and cars, on the other hand, are more likely to be used by commuters who cannot conduct their job remotely – only 35% of bus commuters have remote-capable jobs. This indicates that some types of public transit operators are more likely than others to see a long-run ridership impact from shifting remote work patterns, even in a post-vaccine environment.

Some modes are more likely than others to serve remote-capable commuters, with some variation based on where commuters live.

For instance, car commuters in areas outside the suburbs are, on average, less likely than car commuters in urban core areas to be able to conduct their jobs remotely, potentially indicating that commute-driven vehicle miles traveled are likely to recover faster in the outer suburbs. Subways are used predominantly by remote-capable commuters across geographies. Bus ridership shows considerably more variation, with bus commuters in outer suburb areas significantly more likely to hold remote-capable jobs (63%) than bus commuters in any other geographies.

Percentage of commuters by area and commute mode who are remote-capable



Data sources: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, Metropolitan Washington Council of Governments county classifications.

The region may see a shift toward non-commute trips as a result of a trend toward increased remote work.[19]

While safety concerns at the height of the pandemic appear to have driven a reduction in both commute and non-commute trips, the largest reduction was in trips to work. Commute trips are also less likely to recover to pre-pandemic levels if a significant number of former commuters increase their remote-work time. The scenario analysis in the following three charts refers to the scenarios developed in section 2.

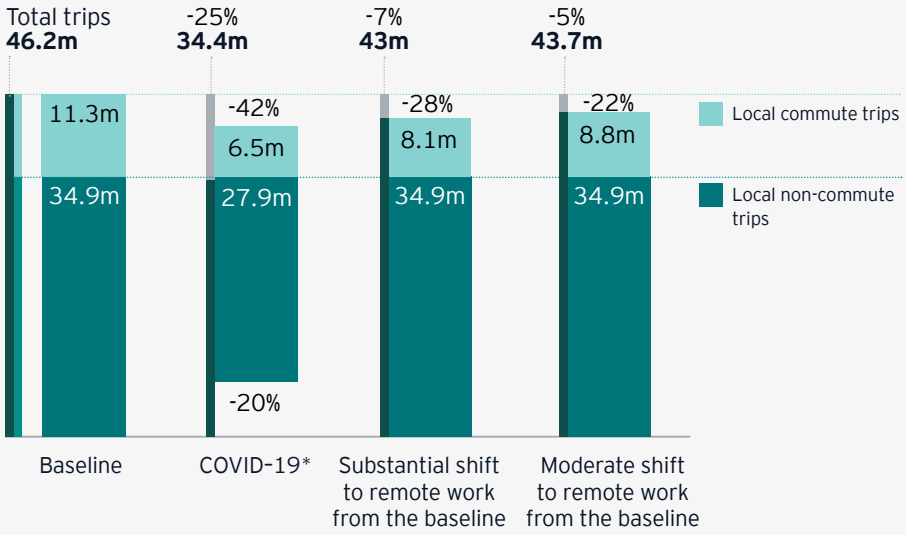
Travel time reduction

Commuters in the region could see a total travel time savings of up to 30% as a result of a shift to remote work. Remote-capable workers would benefit from these time savings and road users could benefit from congestion relief, although benefits are unlikely to be evenly distributed among the region's residents.

A shift toward non-commute trips would have a disproportionate impact on transit.

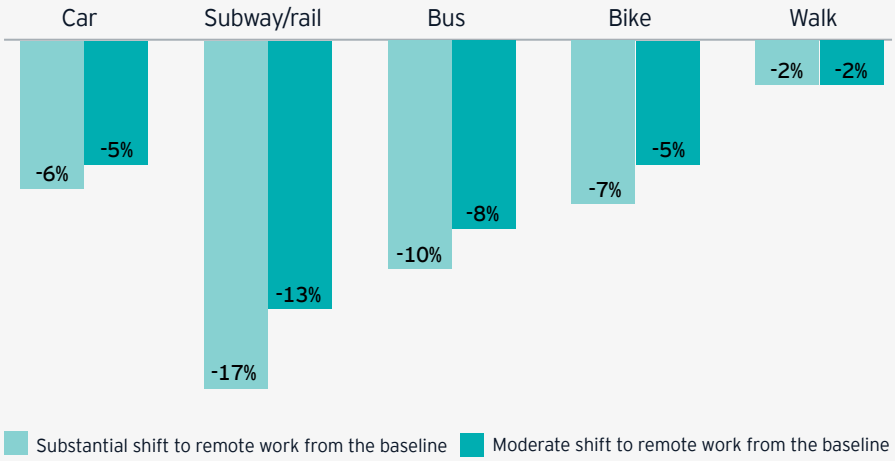
Fewer commute trips would have implications for post-COVID-19 mode share and may mean that some of the reduction in transit ridership will persist even after safety concerns are alleviated. Subway and rail ridership, in particular, has been reliant on commuters with remote-capable jobs.

Scenario analysis: commute and non-commute trips



Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.
*Estimates based on May 2020

Scenario analysis for total trips by mode, relative to baseline



Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, US Bureau of Transportation Statistics, National Transit Database.

Fewer commute trips could have significant long-term implications for farebox revenues across transit providers, even in a post-recovery scenario.

Even once the safety concerns of transit riders are addressed, both bus and subway/rail services could experience long-term ridership reductions as a result of changing mobility patterns. This would impact transit operators across the region and across modes, including local subway and bus networks as well as regional commuter rail systems.[20] Overall, subway/rail systems in the region could experience a fare revenue reduction of 13%–17% under the scenarios considered, with bus systems potentially experiencing reductions of 8%–10%.

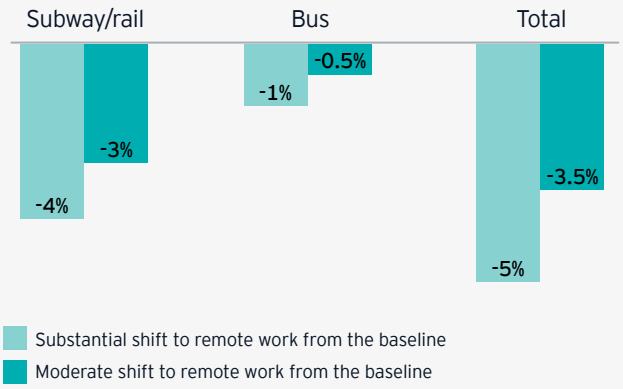
While the portion of total operating funds made up by fare revenues varies across the region's transit systems, on average the region's subway and rail systems could see reductions of 3%–5% in overall operating funds, potentially requiring additional financial support from federal, state or local funding sources. Bus operators would likely see less of an impact on average due to a smaller reduction in fare revenues and less reliance on farebox sources as a percentage of total revenues.

The revenue impact of both short- and long-run VMT (vehicle miles traveled) reductions could be significant.

It is estimated that the region lost upwards of $250 million in gas tax revenue in 2020 as a result of VMT reductions, primarily caused by a decrease in personal driving trips and associated revenues (e.g., fuel tax, tolls). Similarly, Maryland estimated a $116 million reduction in motor fuel tax revenue for their FY 2020, a 14% reduction relative to the state's pre-pandemic estimates.[21]

While a long-term shift toward remote work would likely be less dramatic than the shift experienced during the initial months of the pandemic in 2020 — and would likely have less of an impact on driving than transit in percentage terms — a structural change in commuter driving trips could lead to a corresponding structural reduction in long-term VMT-linked revenues.

Estimated range of percent reduction in total sources of transit agency operating funds (annual)



Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, National Transit Database 2019 Agency Profiles, US Bureau of Transportation Statistics.

5. Smaller business impacts

The impacts of the pandemic on businesses have not been felt evenly across geographies, sectors or employers of different sizes. Likewise, a permanent transition to increased remote work is likely to impact smaller businesses disproportionately. This section examines the potential impact of these changes on smaller businesses (those with less than 50 employees) across the Capital Region.

Smaller businesses constitute the bulk of employers in the Capital Region.

According to the US Census Annual Business Survey, smaller businesses make up more than 80% of all firms, or 152,000 establishments in the Capital Region.[22] This translates to more than a million jobs, or more than one in five workers in the region. Of these, people of color own more than a quarter of the region's smaller businesses and employ nearly 260,000 workers. However, businesses owned by people of color in the region tend to have fewer employees on average than smaller businesses overall. Businesses owned by people of color make up 29% of companies with less than 10 employees, whereas firms owned by people of color constitute 22% of firms with between 10 and 50 employees.

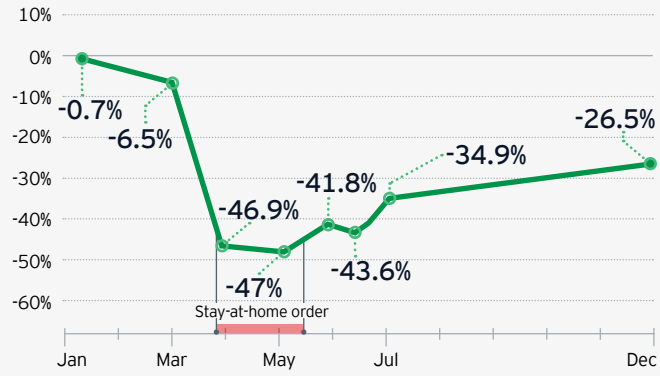
Small businesses owned by people of color were more financially vulnerable prior to the pandemic.

In 2019, the Federal Reserve Bank of Atlanta conducted a survey of businesses with less than 500 employees and found that 58% of Black-owned small businesses and 49% of Latinx-owned small businesses were financially "distressed" or "at risk" nationwide, meaning that these businesses did not have the liquidity necessary to withstand two months of revenue loss. These figures are significantly higher than the 31% of all small businesses reporting similar liquidity concerns.[23]

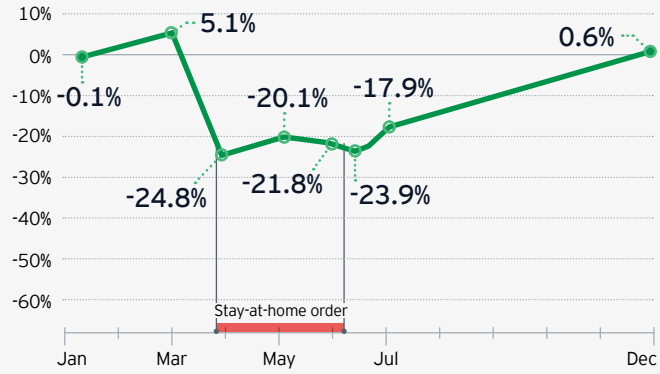
Change in number of smaller businesses open

By metro area (compared with January 2020*)

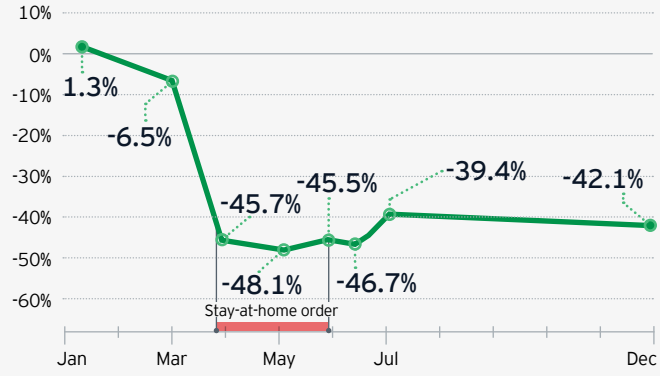
Baltimore metro area



Richmond metro area



Washington, DC metro area



Source: Opportunity Insights, https://tracktherecovery.org.
*Seasonally adjusted with a baseline of January 4–31 2020

The pandemic precipitated a sudden decline in the number of smaller businesses that could remain open.

All three downtown/urban cores in the Capital Region experienced a sharp decline in smaller businesses open at the onset of the pandemic in March 2020 compared with January of that year.[24] The number of smaller businesses open increased within each downtown/urban core between the end of the stay-at-home order and July 2020. Both Baltimore and Richmond continued to recover through December 2020, where the number of smaller businesses open, as of December 2020, decreased 26.5% in Baltimore and increased 0.6% in Richmond compared with their respective January 2020 baseline. In contrast, the number of smaller businesses open in Washington, DC decreased from July-December 2020. As of December 2020, the number of these businesses open in the District decreased 42.1% relative to its January 2020 baseline.[25]

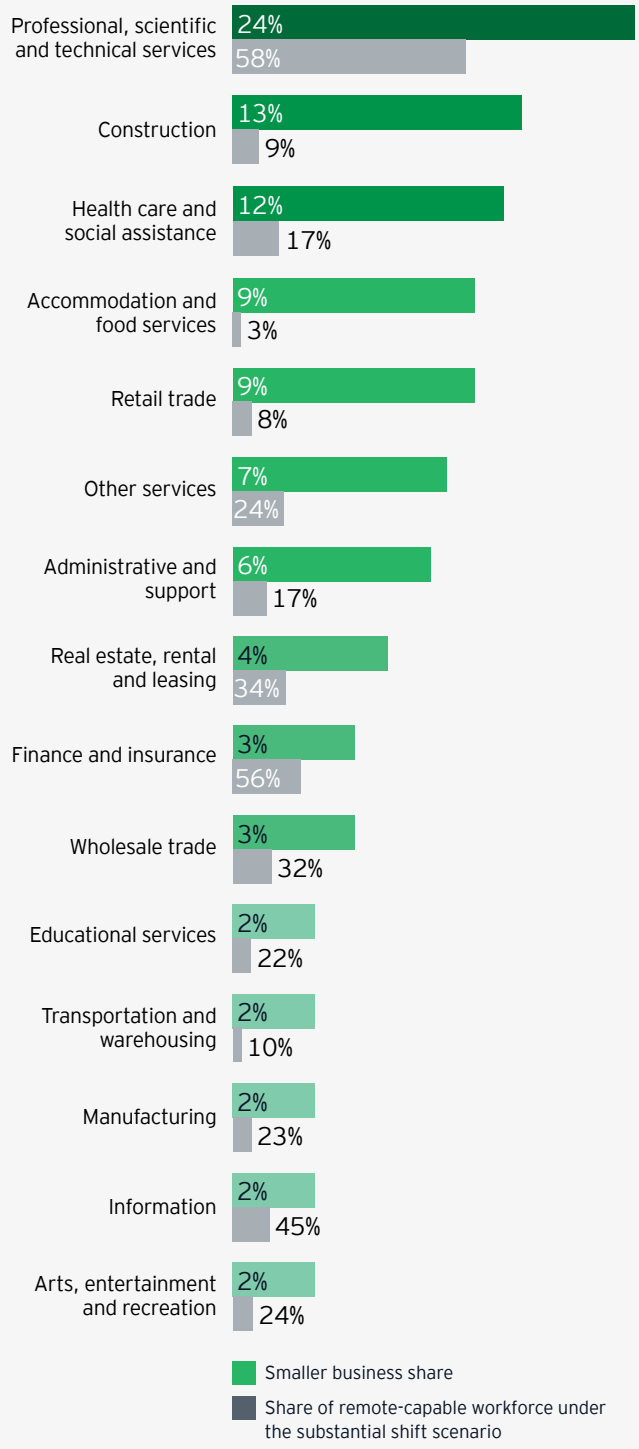
Approximately a third of the region's smaller businesses are in sectors with a low potential for remote work.[26]

Many of these businesses rely heavily on demand generated by commuters and residents with higher wages and increased consumption expenditures (e.g., restaurants).

Recovery of smaller business activity may be slow, as most businesses continue to report adverse impacts due to COVID-19.

Despite improving sentiment among small businesses, the US Census Small Business Pulse Survey has consistently found more than 70% of small businesses in the Capital Region reporting a large or moderate negative effect from the pandemic.[27]

Smaller business share by industry and remote work capability

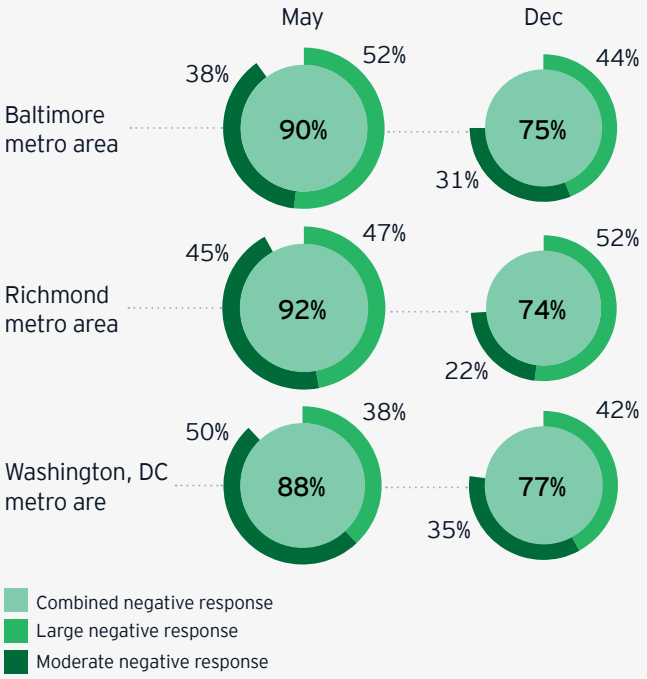


Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, US Census Annual Business Survey.

COVID–19 small business impacts

Small businesses continue to report adverse impacts due to COVID–19

Q Overall, how has this business been affected by the COVID–19 pandemic?



Source: US Census Small Business Pulse Surveys

Small businesses owned by people of color view additional relief funding as vital.

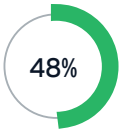
Nationally, the MetLife/US Chamber of Commerce noted in December 2020 that 83% of businesses owned by people of color reported that additional federal relief funding will be important for their businesses to weather the remainder of the pandemic compared with 71% of white-owned businesses.[28] This underscores the need for better targeting of federal small business aid to minority-owned businesses.[29]

A structural shift to remote work may exacerbate the challenges for smaller businesses in Baltimore, Richmond and the District.

Before the pandemic, the cities of Baltimore, Richmond and Washington, DC experienced significant increases in their daytime populations due to an influx of daily commuters. Commuters constitute more than half (56%) of the District's workforce with smaller but sizable shares in Baltimore (30%) and Richmond (41%).[30] Smaller businesses, particularly in retail, personal services, and accommodation and food services, have relied heavily on commuter spending around their offices. Among these workers, approximately 37% of the District's commuters (from outside Washington, DC) are in remote-capable jobs, with smaller shares of potential remote workers commuting to Baltimore (25%) and Richmond (30%).

Nationwide, businesses owned by people of color make up a large share of small businesses in industries most affected by the pandemic

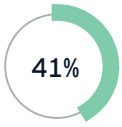
in administrative and support and waste management services



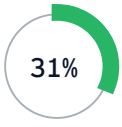
in accommodation and food services

in transportation and warehousing

Business owners of color are more concerned about the permanent closure of their businesses



of business owners of color are concerned

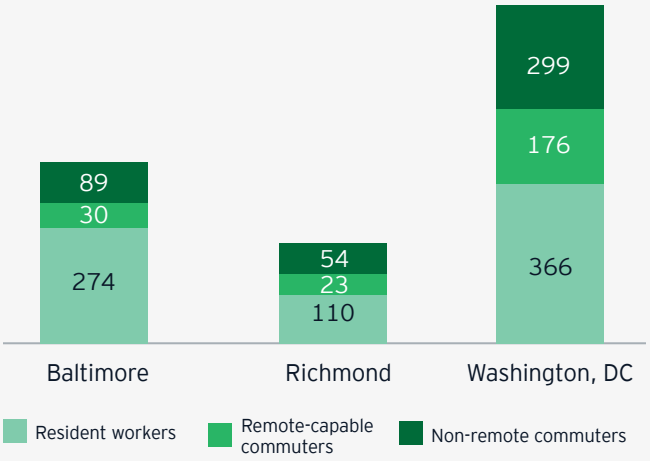


of white business owners are concerned

Source: EY analysis, US Census Annual Business Survey, "Small Business Index," MetLife & US Chamber of Commerce, 15 December 2020.

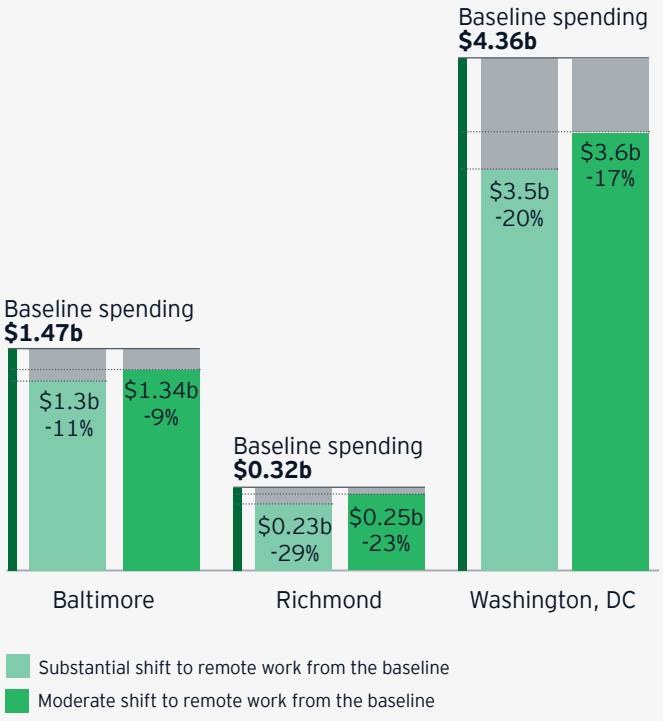
Workers by city and commute status

Substantial shift scenario (thousands of workers)



Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.

Scenario analysis: potential restaurant and retail spending from commuters around workplace



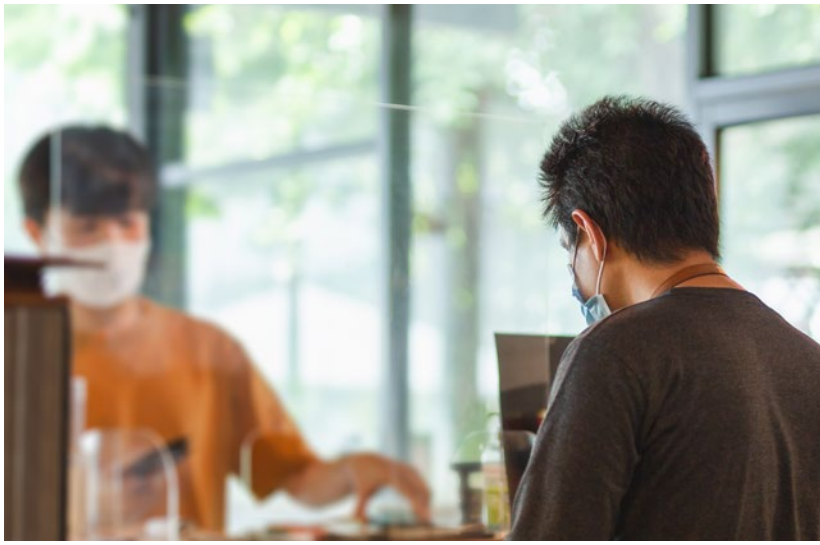
Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample, Esri ArcGIS Business Analyst.

Spending by commuters around their workplace may decrease by up to 29% across the Capital Region, adversely impacting smaller businesses in downtown neighborhoods.

The shift toward greater remote work for suburban commuters into the District, Baltimore and Richmond could reallocate restaurant, entertainment and retail spending away from smaller businesses in commercial districts. Generally, remote-capable workers spend $127 per week on goods and services, such as food, beverage, entertainment and retail purchases near their workplace.[31] A shift toward flexible working could decrease spending by commuters near their workplace by 9%–29%. The overall decrease in consumption spending will depend on the number of workers who continue to live near business districts following the pandemic. The scenario analysis shows the potential reduction in spending by city under both the substantial and moderate shift scenarios.

Some consumer spending may shift toward smaller businesses closer to home.

It remains to be seen if the decrease in consumption spending by commuters in downtown neighborhoods will be reallocated to restaurants and smaller businesses closer to the homes of remote-capable workers. However, there may not be a dollar-for-dollar reallocation in spending as remote workers may eat at home and undertake fewer work-related social activities adjacent to worksites that involve spending on goods and services.



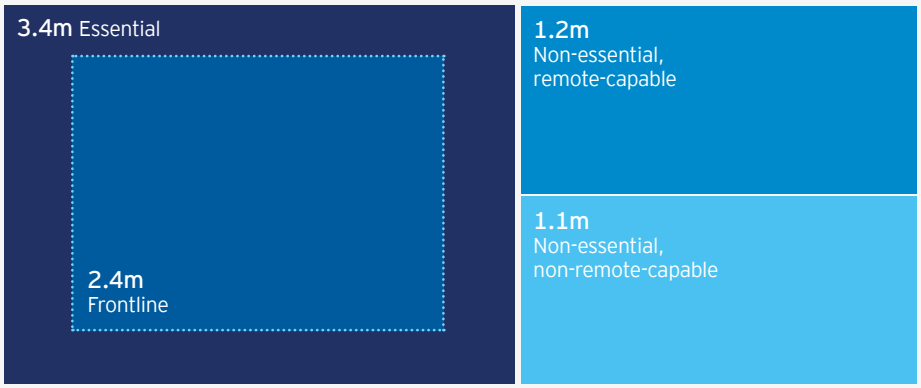
6. Essential, frontline, retail, restaurant and entertainment worker impacts

The pandemic has disproportionately impacted frontline, essential and other workers in contexts that require physical activity or face-to-face interaction.

While remote-capable employees were generally able to continue their work safely at home, frontline and other non-remote workers have been required to work outside the home, risking exposure to COVID-19. Retail, restaurant, entertainment and other non-essential, non-remote workers experienced higher unemployment as the economy shut down and remote-capable workers shifted to working from home. This section examines the potential impacts of the remote work scenarios on essential, frontline and other non-remote-capable workers, including in retail, restaurant and entertainment.

Essential, frontline and non-remote workers

Of the total 5.7m in the Capital Region



Example industries

Frontline (non-remote-capable)
- Health care and social assistance
- Educational services
- Transportation and warehousing

Essential (remote-capable)
- Public administration
- Finance and insurance

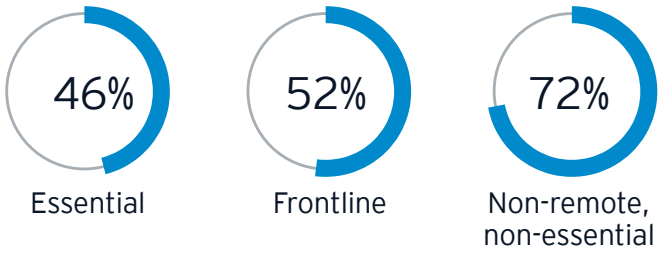
Non-essential, non-remote-capable
- Arts, entertainment, recreation
- Accommodation and food services
- Retail trade

Source: EY analysis, American Community Survey

Essential, frontline and workers in other non-remote occupations encompass a large share of the Capital Region's workforce.

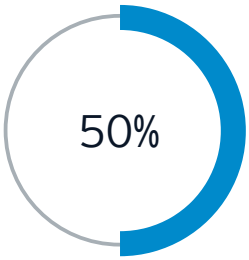
Essential workers comprise upwards of 60% of the Capital Region workforce, with similar percentages evident in the Washington, DC, Baltimore and Richmond metro areas. These workers are clustered in critical infrastructure sectors as identified by the Department of Homeland Security such as public administration, utilities, agriculture and food production, and transport, and have been a linchpin in ensuring the economic and social vitality of the region during the pandemic. Frontline workers are a subset of essential workers and are employed in the same set of critical infrastructure sectors, but their job functions are unable to be performed remotely. Roughly 45% of the Capital Region's essential workers are on the frontlines.

Workers earning less than the Capital Region's median wage



Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.

Only half of the region's frontline workers had access to health insurance prior to the pandemic, underscoring the risk of working on-site during a public health emergency.

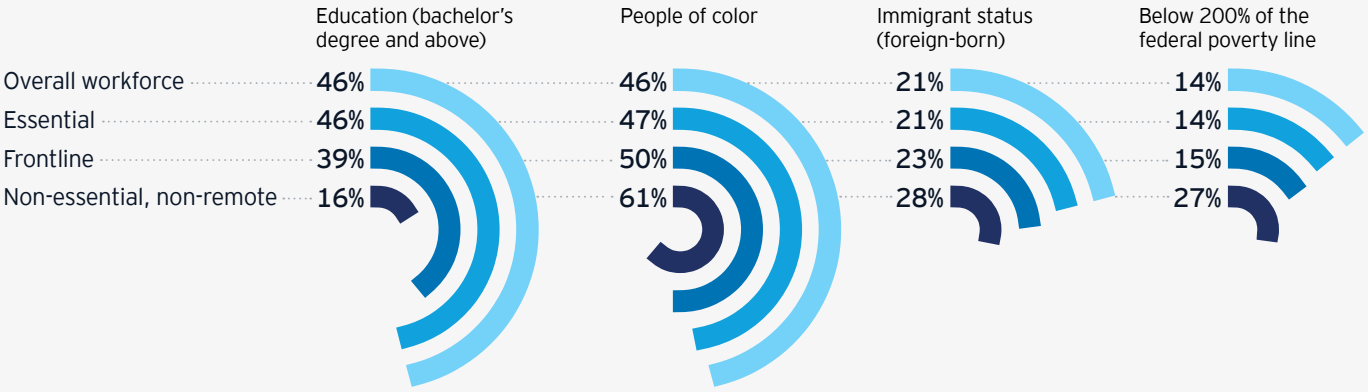


Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.

A structural shift toward remote work may significantly impact other non-remote-capable jobs in non-essential industries.

Separated from frontline and essential workers are more than 1.1 million workers who are considered both non-essential and non-remote. Nearly half of these employees work at restaurants, hotels and retail stores, including more than 234,000 waiters, cooks and food preparers and 215,000 salesclerks. While incomes for essential and frontline workers are broadly comparable with the region's median wage, more than 72% of non-remote workers in non-essential industries fall below the overall median wage for the Capital Region.

Demographic and socioeconomic characteristics of workers by occupation type



Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.

Frontline and other non-essential, non-remote workers in the Capital Region are more likely to be from disadvantaged communities.

While the demographic profiles of essential workers are largely comparable to the region's overall workforce, frontline workers skew slightly toward people of color and have lower levels of educational attainment, with 39% holding a bachelor's degree or above. Disparities are more pronounced for non-remote-capable workers in non-essential industries: only 16% of these workers have a college education, and 61% are from non-white communities.

The pandemic shuttered businesses and left many individuals in non-essential, non-remote occupations unable to work.

While the number of workers reporting employment disruption from the pandemic recovered a great deal during 2020, from 20% in May to 5.7% in November, the recovery stalled for many workers in non-essential and non-remote jobs. For food service and retail, more than 1 in 10 workers remained out of work as of November 2020. These numbers mirror national-level unemployment rates for workers in hospitality, accommodation and food services.

Fewer workers returning to office places is likely to further impact workers in frontline and other non-remote occupations.

A large structural shift toward remote work and a decline in commuters hinders job prospects for frontline and non-essential, non-remote workers in personal services whose jobs are supported by commuter and remote worker spending and activity in core business districts. Should job loss and unemployment trends continue, these workers may become long-term unemployed, which could mean an erosion of their job skills and professional networks, as well as reduced future earning potential.[32]

Disparities in educational attainment and a high, positive correlation with remote work potential means non-remote workers are less likely to have the skills necessary to transition to remote-capable occupations.

Only 16% of non-remote-capable workers in non-essential industries have a college education, compared with 46% of the overall population. The educational barrier to remote-capable jobs, lack of financial resources to easily relocate for work and the possible decline in demand for service jobs in the region could make it extremely difficult to find work outside their place of residence.

7. Conclusion

The effects of a moderate to substantial shift to remote work in the Capital Region will not be felt evenly across geography, industry or occupation. While remote-capable workers may benefit from a more flexible work environment and time saved on their commute, public services, smaller businesses, and restaurant and retail workers who historically relied on regular commuters will be required to adapt to a post-pandemic future of work.

The pandemic has exacerbated existing inequities while creating new challenges. The opportunity exists through this crisis to redress long-standing inequities and invest in underserved communities. Leaders from both the private and public sectors will need to consider how to capitalize on the benefits generated from a more flexible work environment while mitigating the costs that will be more heavily borne by small businesses, people of color and non-essential, non-remote workers.

Given the disproportionate opportunities for remote-capable work, equity will need to be at the center of the agendas to create an inclusive economy of the future where workers can thrive irrespective of their job, race or neighborhood. Policy may need to be directed to those most harmed by sustained remote work scenarios. Considerations could include capital and mentorship support for small businesses, upskilling and training for transitioning workers, and accessible public transportation options for all workers. How the region handles this critical inflection point in the future of work may determine its future competitiveness and attractiveness for talent and companies alike.

Appendix

Analytical approach

To understand the full population of remote-capable workers in the region, we leveraged information on work activities and contexts across all 873 jobs in the Occupational Information Network (O*NET). We estimated the potential for remote work following leading academic studies based on the type of activities that one performs as well as the context necessary to perform those activities.[33] Occupational data at the metropolitan statistical area level was drawn from the Bureau of Labor Statistic's Occupational Employment Survey, with residence and demographic attributes drawn from the US Census Bureau's 2014-2018 American Community Survey 5-year Public Use Microdata Sample. The analysis pooled estimates across the Baltimore-Columbia-Towson, MD; Richmond, VA; and Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical areas and determined that 49% of the Capital Region's civilian workforce could potentially complete their jobs at home. Among those who cannot work from home are many of those with economically insecure jobs that require more physical activity, face-to-face activity with external customers and outdoor work environments, such as food preparation, building cleaning, hotel workers, security, restaurant staff, transportation, maintenance and construction.

While these estimates provide an upper bound on the number of jobs that can theoretically be performed anywhere, they do not provide insights on the likelihood of working remotely among remote-capable workers following the pandemic. Existing public opinion surveys such as the Partnership's Capital COVID-19 Snapshot reveal that remote-capable workers will most likely split time between working at home and on-site, and we do not expect that the nature of hybrid working will look similar across occupations.[34] Instead, we assume that workers in jobs that require a greater degree of social interaction and in-person collaboration would be likely to want to spend more time in offices. We obtained the level of team building and collaboration across occupations using work activities in the O*NET survey and estimated the number of remote working days per occupation for two scenarios — a substantial and a moderate shift to remote work. The key difference between the scenarios is in the number of people working remotely 3–5 days vs. 1–2 days.

The graphic on the next page compares these two scenarios in terms of the prevalence of remote work prior to and during the COVID-19 pandemic. For the purposes of this study, remote-capable means occupations with work activities that can be easily done anywhere, such as emailing colleagues, writing reports and analyzing data (e.g., data scientists, financial analysts, economists, software developers). It excludes work contexts and activities tied to a worksite and tasks that require a substantial degree of face-to-face contact.

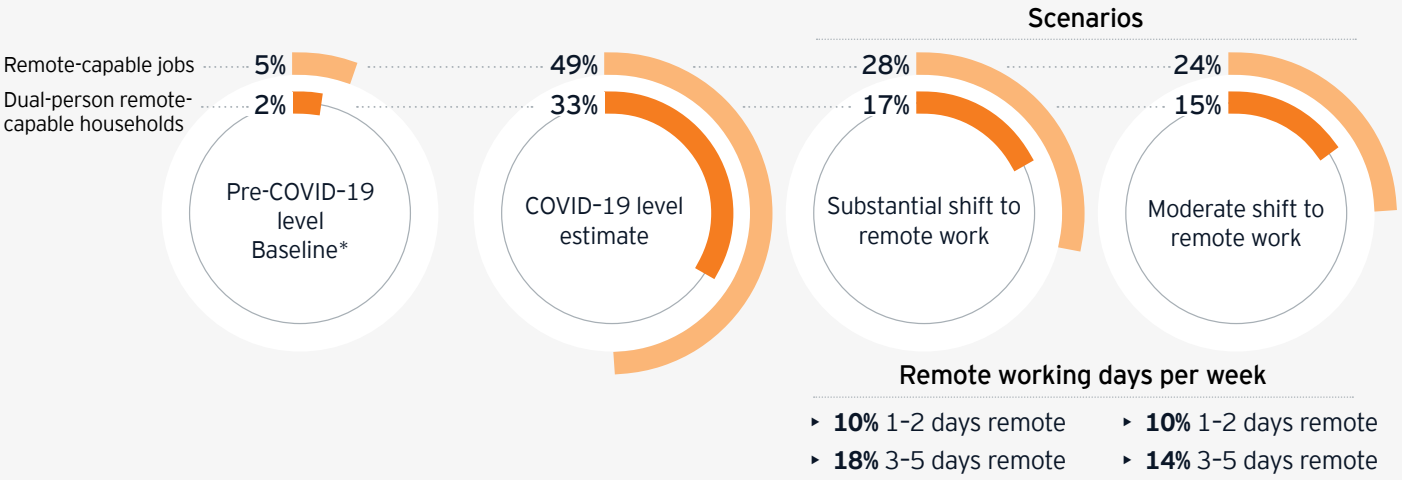
To estimate the diversity and socioeconomic impacts of remote working, we collected demographic attributes, including gender, race and ethnicity; residence and workplace characteristics; and income from the US Census American Community Survey (ACS). These statistics were complemented by transport and commuting characteristics and consumer spending data derived from the ACS and Esri ArcGIS Business Analyst, respectively.

Limitations of analysis

The reader should be aware of the following limitations and assumptions of this analysis:

- Except where indicated, the location of remote-capable jobs and households refer to the residences rather than worksites of wage earners in the Capital Region.
- National-level data was used to contextualize trends that may have implications for the Capital Region and where public local-level data is not available.
- The trajectory of the pandemic may change worker expectations and satisfaction with remote work, which are outside the contours of this study.
- The scenario analysis was estimated using the degree of work collaboration and teaming from O*NET as a proxy for a need for more on-site working days. As such, it does not account for instances where remote work may help facilitate rather than impede collaboration.
- The consumption spending impacts are estimated using an average spending reduction given an increase in the number of remote working days by commuters. It does not account for any changes in spending by workers who reside near their workplace or who may move to a different area.
- Classifications and aggregations of workers and businesses are not standard across different data sources and may yield varying estimates depending on the characteristics of the underlying data.

Scenarios and remote work estimates



* Indicates the share of workers who responded they normally work from home to the American Community Survey's question asking how workers normally commute to work. This percentage excludes remote work at co-working locations or other sites (e.g., cafes) outside of one's home.

Demographic characteristics and remote capability by industry under the substantial shift scenario

Industry	Remote work under substantial shift scenario	Women	Educational attainment*	People of color
Professional, scientific, technical services	58%	42%	77%	35%
Finance and insurance	56%	55%	61%	39%
Management of companies and enterprises	50%	49%	66%	29%
Information	45%	42%	62%	39%
Public administration	42%	46%	66%	44%
Real estate, rental and leasing	34%	47%	45%	43%
Wholesale trade	32%	29%	33%	33%
Utilities	24%	22%	37%	36%
Arts, entertainment, recreation	24%	49%	43%	37%
Other services	24%	57%	40%	47%
Manufacturing	23%	30%	37%	38%
Mining, quarrying, oil and gas extraction	22%	16%	33%	27%
Educational services	22%	69%	71%	38%
Administrative, support, waste management services	17%	42%	26%	61%
Health care and social assistance	17%	78%	46%	53%
Transportation and warehousing	10%	26%	21%	62%
Construction	9%	11%	16%	49%
Retail trade	8%	48%	22%	49%
Agriculture, forestry, fishing, hunting	5%	29%	19%	25%
Accommodation and food services	4%	52%	16%	60%

Source: EY analysis, 2014-2018 American Community Survey 5-year Public Use Microdata Sample.
*Bachelor's degree and above.

Endnotes

1. Executive summary

1 Megan Brenan, "COVID-19 and Remote Work: An Update," *Gallup*, 13 October 2020.

2 Jose Maria Barrero, Nicholas Bloom, Steven J. Davis, "Why Working From Home Will Stick," *Becker Friedman Institute Working Paper*, 2 December 2020.

3 Kristen Senz, "How Much Will Remote Work Continue After the Pandemic?," *Harvard Business School Working Paper*, 24 August 2020.

4 "Capital COVID-19 Snapshot: Planning for the return to worksites," *Greater Washington Partnership website*, https://greaterwashingtonpartnership.com/capital-covid-snapshot (accessed 26 January 2021).

5 Peer regions include the New York-Newark-Jersey City metro area, Boston-Cambridge-Newton metro area, Los Angeles-Long Beach-Anaheim metro area, Chicago-Naperville-Elgin metro area and Greater San Francisco, which includes the San Francisco–Oakland–Berkeley and San Jose-Sunnyvale-Santa Clara metro areas. These regions were determined in consultation with the Partnership and are defined as areas that compete with the Capital Region for talent and investment based on economic development and occupational structures.

6 This study follows definitions of essential and frontline workers defined in Francine D. Blau, Josefine Koebe and Pamela A. Meyerhofer. "Who are the Essential and Frontline Workers?," *National Bureau of Economic Research website*, https://www.nber.org/papers/w27791, accessed 2 December 2020. Essential workers are in critical infrastructure sectors as identified by the Department of Homeland Security such as public administration, utilities, agriculture and food production, and transport. Frontline workers are a subset of essential workers, but their job functions are unable to be performed remotely.

7 Pre-pandemic shares of remote work are estimated using the commuting/journey-to-work question in the American Community Survey where the individual answered "worked at home" when asked how they usually get to work. This question excludes individuals who worked remotely but not at home such as at cafes and co-working locations. It includes individuals such as owners of family farms who may work at home but may have little flexibility of working at other locations.

8 "Capital COVID-19 Snapshot: Planning for the return to worksites," *Greater Washington Partnership website*, https://greaterwashingtonpartnership.com/capital-covid-snapshot (accessed 26 January 2021).

2. The potential for remote work in the Capital Region

9 The share of agriculture workers working remotely prior to the pandemic includes individuals working on family farms at their place of residence. In the scenario analysis, these workers are classified as non-remote-capable because their jobs cannot be performed from anywhere and are still tied to their worksite.

10 STEM includes 100 occupations in computer, mathematical, architecture engineering, life and physical science, and managerial and postsecondary teaching occupations within these functional categories as defined by "STEM," *Bureau of Labor Statistics website*, https://www.bls.gov/oes/stem_list.xlsx (accessed 1 December 2020).

11 The average commute time is estimated to be 64 minutes (round trip) for a remote worker, compared with 60 minutes (round trip) for an average worker in the Capital Region. If we assume 15 days of paid vacation time and approximately 2.8m remote-capable employees in the Capital Region, then the annual savings per worker would be 11 days and total annual savings would be 30.4m days.

3. Remote work implications on migration

12 The definition and comparison of large and small metro regions follows analysis outlined in acedemic studies such as Sitian Lu and Yichen Su, "The Impact of the COVID-19 Pandemic on the Demand for Density: Evidence from the U.S. Housing Market," *Federal Reserve Bank of Dallas Working Papers*, No. 2024 and Arjun Ramani and Nick Bloom, "The donut effect: How COVID-19 shapes real estate," *Stanford Institute for Economic Policy Research (SIEPR) Policy Brief*.

13 Defined as ZIP codes within five miles of the central business districts in Baltimore, Richmond and Washington, DC metro areas following national level analysis in Sitian Lu and Yichen Su, "The Impact of the COVID-19 Pandemic on the Demand for Density: Evidence from the U.S. Housing Market," *Federal Reserve Bank of Dallas Working Papers*, No. 2024.

14 The Realtor.com Market Hotness Index is an indicator for how fast moving supply and rising demand is for ZIP code compared with the rest of the country based on listing views on Realtor.com. The website uses listing views at the ZIP code-level to measure demand and median days on the market to measure supply. For related analyses, see Sabrina Speianu, "Urban vs Suburban Growth Report: The Grass is Greener in the Suburbs," *Realtor.com website,* 24 September 2020, https://www.realtor.com/research/urban-vs-suburban-growth-report-september-2020 (accessed 16 December 2020).

4. Transport demand and mobility changes

15 "Covid-19 Public Information," *Washington Metropolitan Area Transit Authority (WMATA) website*, https://www.wmata.com/service/covid19/covid-19-public-information.cfm (accessed 16 December 2020).

16 "Coronavirus Updates," *Maryland Department of Transportation (MDOT) website*, https://www.mta.maryland.gov/coronavirus (accessed 16 December, 2020).

17 "GRTC Board of Directors Meeting," *GRTC Transit System*, 15 December 2020.

18 For the purpose of this analysis, remote work potential is estimated based on ACS occupational data.

19 For the purpose of this analysis, non-commute trips for the substantial and moderate shift scenarios align with the baseline, assuming a full post-vaccine recovery of non-commute trips to pre-pandemic levels.

20 For the COVID-19 scenario, commute trips for non-remote workers are assumed to align with the baseline, which likely understates the actual commute trip reductions due to the pandemic.

21 "Issue Papers 2021 Legislative Session," Department of Legislative Services 2020, December 2020.

5. Smaller business impacts

22 EY analysis of US Census Bureau Annual Business Survey statistics, https://www.census.gov/programs-surveys/abs.html.

23 *Small Business Credit Survey*, Federal Reserve Bank of Atlanta, December 2019.

24 Downtown/urban cores defined here as Baltimore City, the District of Columbia and Richmond City.

25 Open is defined by the data source as having one or more financial transactions in the past three days.

26 The number of small businesses refers to the classifications in the US Census Bureau Small Business Pulse Survey of businesses with less than 500 employees and receipts of $1,000.

27 EY analysis of "Small Business Pulse Surveys," United States Census Bureau, 2020.

28 "Small Business Index," MetLife & US Chamber of Commerce, 15 December 2020.

29 Aaron Gregg, "Watchdog faults SBA on minority-owned and rural small-business relief lending," *The Washington Post*, 8 May 2020.

30 EY analysis of workplace and residence locations in the American Community Survey Public Use Microdata Sample (PUMS) 2014-2018 5-year sample.

31 Retail and restaurant spending near the workplace was derived by collecting the average resident's spending on dining out, bars and entertainment using population-weighted consumer spending statistics at the Public Use Microdata Area (PUMA)-level from Esri ArcGIS Business Analyst. These estimates were weighted by EY team analysis of spending per day near a worker's home and worksite and then matched with residence and workplace location data from the American Community Survey.

6. Essential, frontline, retail, restaurant and entertainment worker impacts

32 Donna S. Rothstein, "An analysis of long-term unemployment," *Monthly Labor Review*, US Bureau of Labor Statistics, July 2016.

Appendix

33 For example, see Jonathan Dingel and Brent Neiman, "How Many Jobs Can be Done at Home?" *Becker Friedman Institute Working Paper*, June 2020. Su Yichen, "Working from Home During a Pandemic: It's Not for Everyone," Federal Reserve Bank of Dallas, 7 April 2020.

34 "Capital COVID-19 Snapshot: Planning for the return to worksites," *Greater Washington Partnership website*, https://greaterwashingtonpartnership.com/capital-covid-snapshot (accessed 26 January 2021).

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