Washington Metropolitan Area Transit Authority

Paper 2:

WMATA Compact Area Sector-By-Sector Travel Typologies, Recovery Strengths and Likelihoods

PRN ID: CPLAN21010
SOW ICE ID: SOW0008471

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October 2021

Introduction

This paper is the second in a series of three papers that examines economic and labor market factors that could impact transit ridership through 2025 by developing travel generation typologies by industry sector and forecasting job growth on a sector-by-sector basis. First, this analysis examines data on commuting behavior by workers characterized by their industry and occupation of employment, which creates a baseline for assessing changes in likely ridership as the regional economy emerges from the direct effects of the Covid-19 pandemic. Second, this paper expands on the findings of Paper One regarding work-from-home tendencies across industries and occupations and further explores office access data from Kastle Systems, a provider of commercial building security services, on the pace of returning to the pre-pandemic work environment. This section also provides a preliminary typology of post-Covid commuters that will improve future analyses of the impacts of regional employment change on demand for bus and rail transit services. The third element of this paper is a sector-by-sector jobs forecasts that will provide WMATA staff with data to support planning.

Key findings of this paper include:

- Prior to the pandemic, commuting trips via rail transit and bus in the WMATA Compact Area are made by individuals employed largely in just a few key industry sectors
- Over half of commuters traveling by rail transit were in just two sectors, Public Administration and Professional, Scientific, and Management services.

- Kastle Systems data, derived from office security systems, reveal that the pace at which office workers are returning to work is slow. Office workers are not simply avoiding public transit, they appear to be still largely working from home.
- Sectors that account for large shares of commuter trips on rail transit and bus were largely resilient to the pandemic and are forecast to continue to grow in the WMATA Compact Area though 2025, though work-from-home will impact total ridership.

The remainder of this paper is organized as follows. In section one, travel by industry sector and occupation is examined. This includes data from the U.S. Census Bureau's American Community Survey, Kastle Systems office security data, and a review of academic work on the possibility to work from home across differing industry sectors. In section two, sector-by-sector forecasts are provided for the WMATA Compact Area, with recovery likelihoods and strengths provided. Conclusions are then drawn in the final section.

Section 1: Means of Transportation to Work for Industry and Occupations

A significant question over the next five years is how the work-from-home employment paradigm will evolve? Will commuting patterns return to pre-pandemic levels? Will those who are able to work from home be able to do so as much as they have during the pandemic? Will a hybrid approach evolve with workers commuting to the office for some part of the workweek, perhaps on off-peak hours, and work from home for the remainder? While the exact characteristics of regional employment in a post-pandemic economy remain uncertain, this section uses pre-pandemic commuting patterns in the WMATA Compact Area using Census data from 2019 to establish a baseline of potential commuting behavior across industry sectors and occupations.

ACS PUMS Data

This analysis uses data from the 2019 American Community Survey by the Census Bureau as a baseline of commuting patterns that existed prior to the pandemic. Commuting travels modes are assessed by industry and by occupation.[1] Industry classifications are used to describe the sector that an employee's employer operates in, such as finance and insurance. Occupation classifications are used to describe an employee's job, such as architect or truck driver. Such distinctions are important as the share of occupations within an industry can vary among cities. For example, while the finance industry may be primarily comprised of bankers in one city another may operate as back office operations that primarily employ computer programmers and database administrators. The analysis identifies which industries and occupations contribute the most transit riders, bus or rail, and which workers, by industry and occupation, appear to be more reliant on transit services for their journey to work. While these data represent pre-pandemic conditions, they provide key insights into how journey to work ridership may recover in a post pandemic economy that will be shaped by work-from-home patterns and the degree to which industries disrupted most by the pandemic recover in the coming years. Complete commuting tables by industry and occupation

[1] Specifically, the means of transportation to work was used. A list of WMATA Compact Area PUMAs is provided in the appendix of this document.

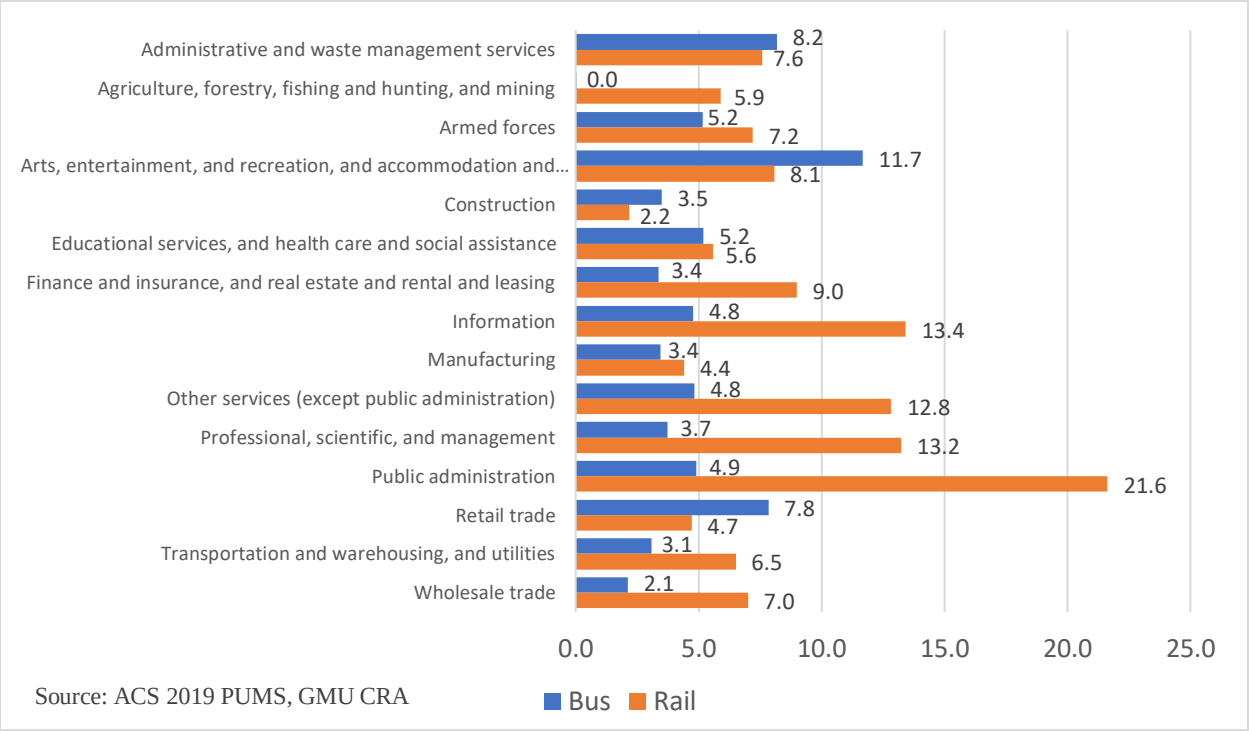
are provided in the appendix to this report. It is important to note that the analyses presented in this paper focus on commuting trips (journey to work) and thus does not directly assess post-pandemic economic impacts on other travel types (personal trips). It is possible that some industry outlooks, such as for restaurants, entertainment, and retail could have implications for transit trips for personal reasons.[2]

The percentage of workers in various industries who commuted by bus and rail in 2019 in the WMATA Compact Area indicate significant differences in ridership exist across industries (Figure 1). Public administration by far has the highest percentage of commuters riding rail (22%), followed by professional, scientific, and technical services (13%)[3], information (13%), and other services (13%). Arts, entertainment, recreation, accommodation, and food services have the highest rate of workers riding buses (12%), followed by administrative and waste management services (8.2%), and retail trade (7.8%). No industry has a majority of workers collectively commuting by public transportation. Additionally, apart from public administration, no industry has more than 13% of their workforce using any particular form of transit. Despite this, the variation between industries reveals the extent to which employees across different industries rely on public transit services.

[2] If employment in restaurants, entertainment venues, and retail stores lag, this could mean that these entities have more limited operations and thus there could be a related reduction in ridership tied to customers making personal trips to these places of business.

[3] In the first paper in this series, the differential recovery trajectories within the profession business service sector was highlighted. While professional scientific and technical sector jobs continued to grow, administrative support and waste management jobs declined. For this reason, these two sectors are disaggregated in the majority of the analysis in this paper. In this paper, NAICS 54 (Professional, Scientific, and Technical Services) and 55 (Management of Companies and Enterprises) are combined, while NAICS 56 (Administrative and Support and Waste Management Services) are reported separately.

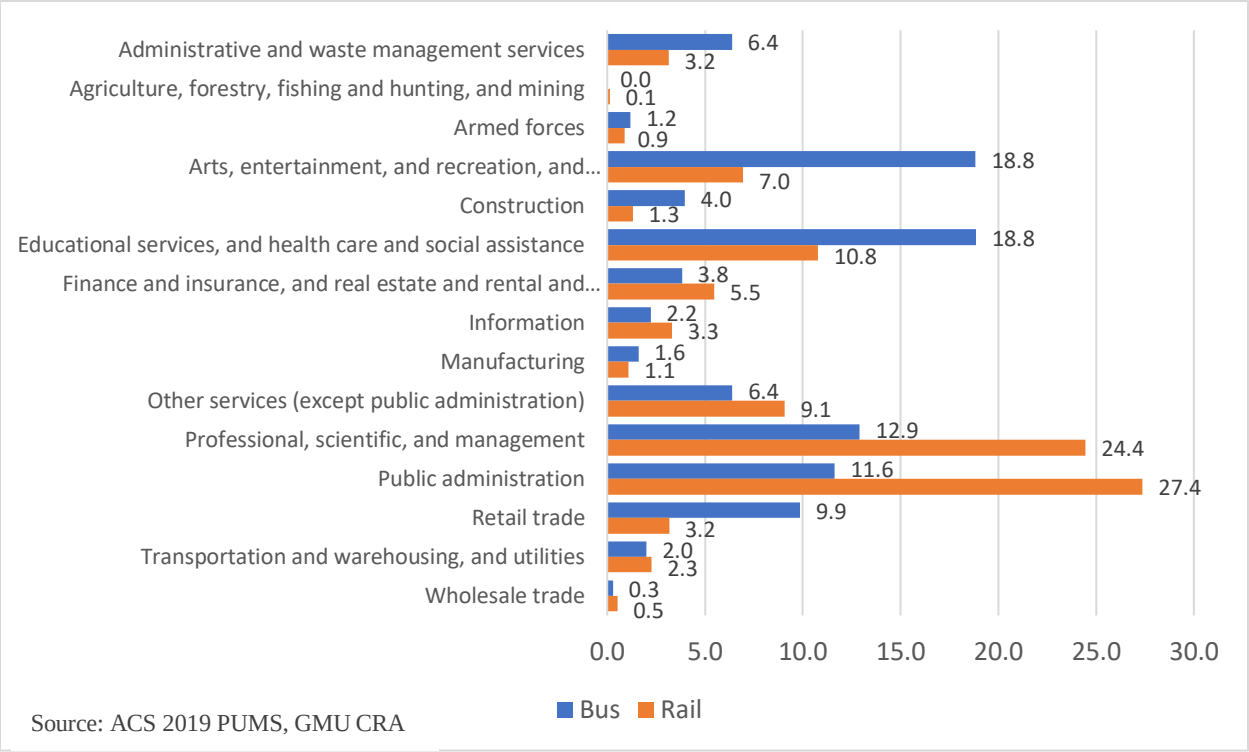
Figure 1. Percent of Industry Commuting by Transit



Source: ACS 2019 PUMS, GMU CRA

As industries differed in their reliance on modes of transportation for commuting in 2019, the impacts on transit commuting also varied by the size of these industries in the regional economy. While some industries may have a high portion of workers commuting by a particular mode, if the industry is relatively small in the transit system service area, it may not contribute much to overall mode use (Figure 2). examines the share of total commuters for bus and rail by industry. Examining the total number of workers commuting by public transportation indicates that over half of rail commuting is comprised of employees from just two industry sectors — public administration (27%) and professional, scientific, and management (24%). These two sectors are two of the largest industry sectors in the WMATA Compact Area and both sectors have relatively high shares of its employees commuting by rail. Likewise, nearly 40% of bus commuters come from two key industries — arts, entertainment, recreation, accommodation, and food services (19%) and educational services, health care, and social assistance (19%). The variance in contributions to ridership by mode (bus/rail) across industries is striking. These differences between bus and rail commute ridership are likely due to a combination of factors including wages within each industry, the geographic concentration of the industry, and the proximity of housing that is affordable for industry workers.

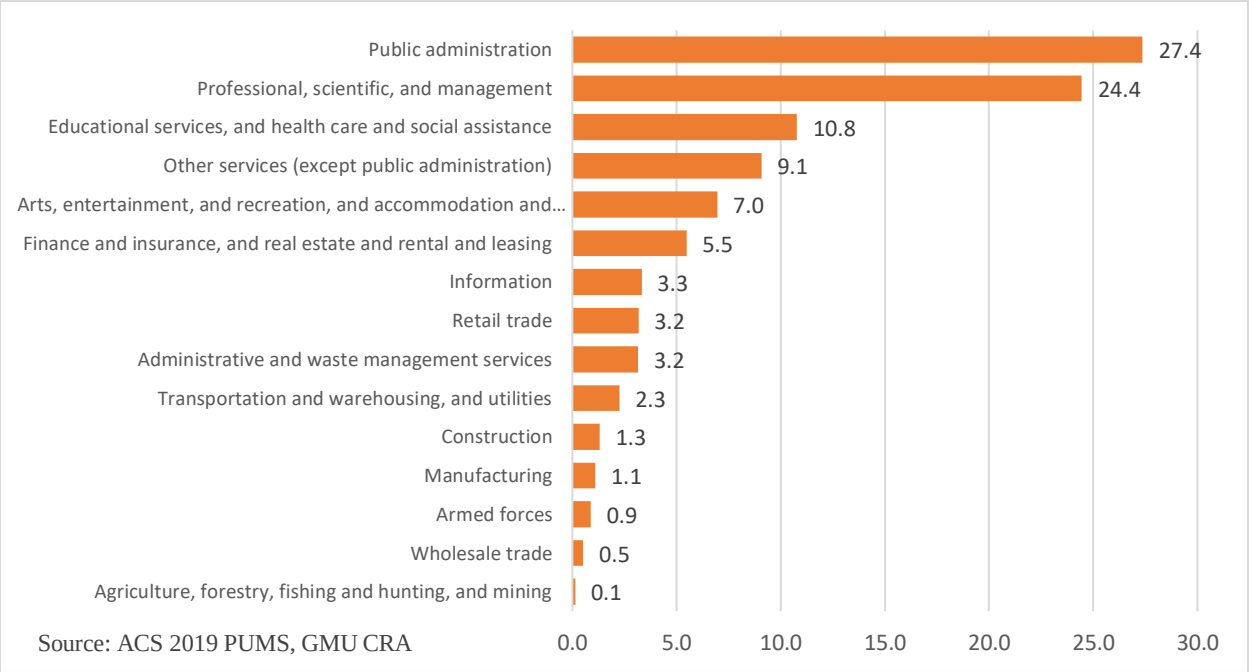
Figure 2. Percent of Total Commuters by Industry



Source: ACS 2019 PUMS, GMU CRA

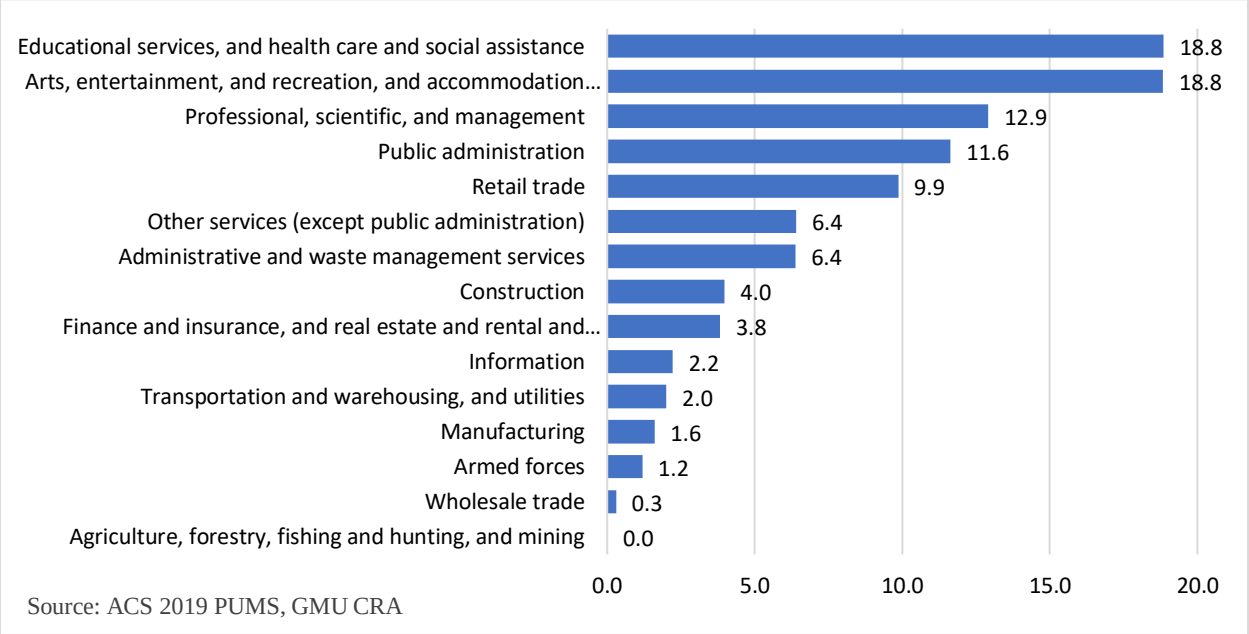
Focusing only on rail commuters and ordering them by industry contribution of commuters makes clear that rail commuters are comprised of workers in just a few key industry sectors (Figure 3). The top two industry sectors, public administration and professional, scientific and management accounted for 52% of total rail commuters in 2019. The top 5 industry sectors accounted for 79% of commuters for that travel mode. The bottom 10 industries account for only 21% of rail commuters, less than either of the top two industries alone.

Figure 3. Percent of Rail Commuters by Industry



Bus commuters, like rail commuters, are primarily concentrated in a few key industries, and, industries contribute to bus commuters at varying rates (Figure 4). The top two industries educational and health services, and entertainment and accommodation, account for 38% of bus commuters. The top five industries accounted for 72% of bus commuters in the WMATA Compact Area in 2019. The bottom ten industries, in contrast, only accounted for 28% of bus commuters in the WMATA Compact Area in 2019.

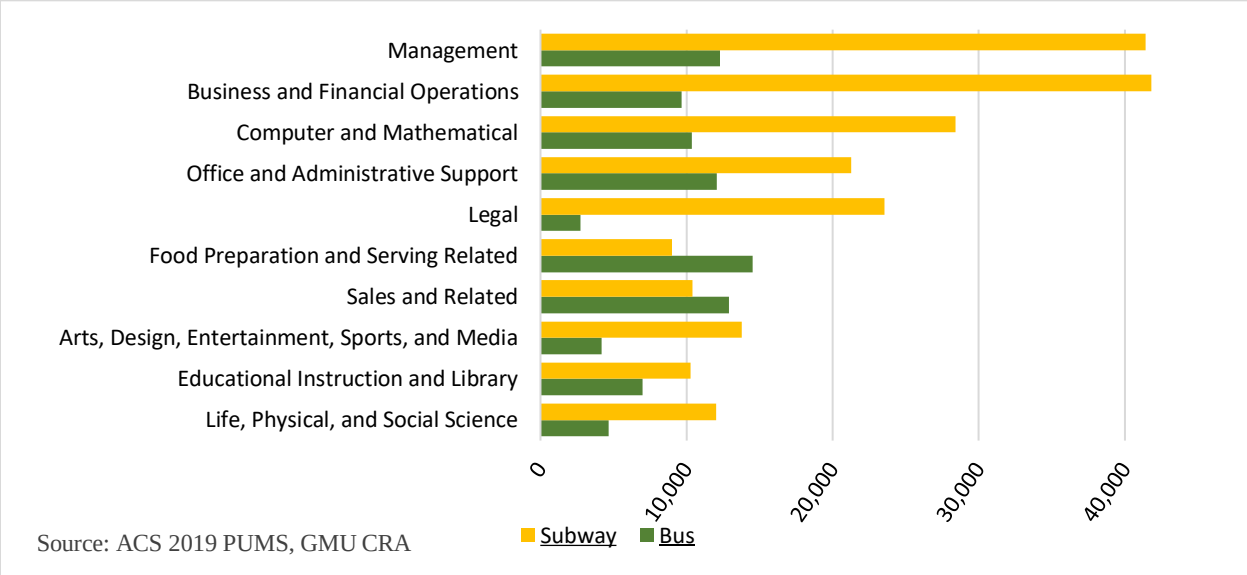
Figure 4. Percent of Bus Commuters by Industry



Commute Mode by Occupation

In addition to industry variation, bus and rail commuting also varies by occupation (Figure 5). The largest contributor to bus and rail commuting are the management occupations, with 53,693 people in 2019 in the WMATA Compact Area. Among the management occupation, 12,276 commuted by bus while 41,417 commuted by rail. There were 51,464 commuters in business and financial operations occupations with 9,639 commuting by bus and 41,825 commuting by rail. Not all occupations commuting by bus had more people commuting by rail than bus. In 2019, food preparation and serving related occupations tended to rely more on bus, with 14,537 workers commuting by bus and 9,009 commuting by rail. The complete table of occupations by commute to work is provided in the appendix. While commuting by bus and rail varies widely by occupation, the overall picture suggests that people working in higher paid occupations tend to use transit rail services more than riding a bus.

Figure 5. WMATA Compact Area - Commute to Work by Occupation



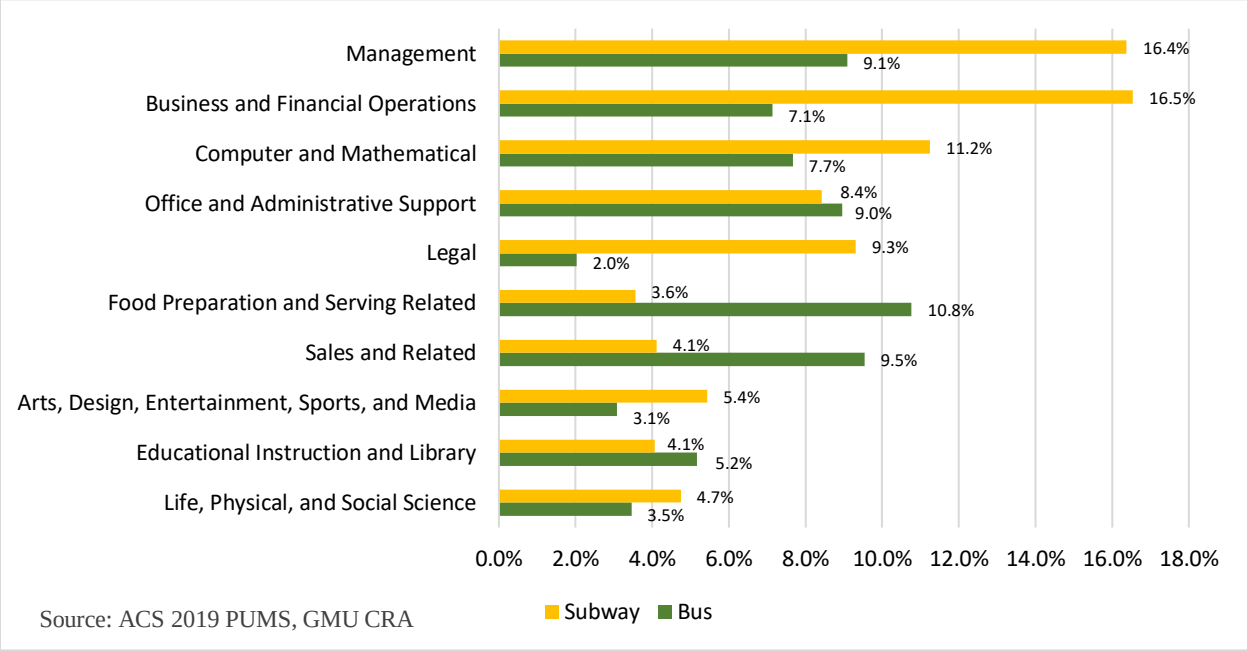
Source: ACS 2019 PUMS, GMU CRA

Examining the contributions of occupation groups to commuters by mode in percentage terms provides a basis for analyzing future ridership trends in coming years when combined with occupational forecasts and the likelihood of persistent work-from-home characteristics of each occupation (Figure 6). Management occupations accounted for slightly more than 16% of all commutes to work by rail in the 2019 ACS PUMS data. Combined, Management, Business and Financial Operations, and Computer and Mathematical occupations accounted for 44% of people who commuted by rail in 2019. Two occupation categories that tended to favor commuting by bus, Food Preparation and Serving Related, and Sales and Related[4] accounted for 21% of all people who commuted by bus 2019. The complete table of occupations contribution to commuting modes is provided in the appendix. Overall, examining the contribution of commuting shares by

[4] Sales and related occupations include occupations such as "First-line Supervisors of Retail Sales Workers", "Cashiers", "Insurance Sales Agents", "Travel Agents", "Sales Representatives, Wholesale and Manufacturing", and "Telemarketers".

occupation reveals the importance of three occupation groups for rail in the WMATA Compact Area.

Figure 6. WMATA Compact Area – Occupational Contribution to Commute Mode



To get directly at the issue of reliance on transit by industry, Table 1 provides 2019 ACS estimates of commuters using transit and those working from home. Importantly, not all industries that had high transit usage in 2019 could be classified as reliant on transit. For example, while professional, technical and management industry relied on transit nearly as much as the arts, entertainment, accommodation and restaurants sector, the later had a much lower percent of workers working from home. This is obviously the result of the need of entertainment and accommodation workers needing to be onsite at their jobs, with very limited ability to do effectively work remotely.

Table 1. Commuting by Industry - Reliance on Transit

Industry	Transit Level*	Transit Percent*	Work From Home Level	Work From Home Percent	Other Commute
Education and health services	52,689	11%	23,525	5%	84%
Professional, Technical, Management	79,248	17%	61,132	13%	70%
Public administration	84,871	27%	9,466	3%	71%
Arts, Entertain., Restaurants & Accomm.	43,020	20%	5,079	2%	78%
Other Services (Except Public Admin.)	31,608	18%	10,975	6%	76%
Retail trade	21,338	13%	8,941	5%	82%
Finance and insurance	19,026	12%	12,741	8%	79%
Construction	8,717	6%	5,840	4%	91%
Administration and Waste Management	16,609	16%	7,653	7%	77%
Total	387,881	15%	163,677	6%	78%

Source: ACS 2019 PUMS. * Does not include commuter train. Includes bus and rail using Census terminology.

Similar to variance across industries, the degree to which employees across occupations rely on transit service also varies, though not as widely (see Table 2). In understanding how future transit commuters could be affected across occupation categories, we can observe that while similar proportions of workers in food preparation services and business and financial operations use transit services, work from home opportunities are much more likely (11% versus 2%) for business and financial operations workers. This should be considered from two perspectives, the relative employment trends for each of these occupations in the coming years and related impacts on total commuters, and the degree to which workers in a given occupation *rely* on the transit system to access a job. This latter issue is magnified by considerations of relative labor earnings across occupation groups. Food services workers are more reliant on public transportation due in part to their ability to afford other travel options.

Table 2. Commuting by Occupation - Reliance on Transit

Occupation (SOC 2 Digit)	Transit*	WFH	Other
Educational Instruction and Library	11%	5%	84%
Sales and Related	13%	9%	77%
Food Preparation and Serving Related	20%	2%	78%
Office and Administrative Support	17%	5%	79%
Computer and Mathematical	17%	9%	74%
Business and Financial Operations	20%	11%	69%
Management	15%	8%	77%
Total	15%	6%	78%

Source: ACS 2019 PUMS. * Does not include commuter train. Includes bus and rail (Census terminology).

Section 2: Work-From-Home and Return-to-Office

While travel behaviors prior to the onset of the pandemic are illustrative in determining what a return to normal may look like, the current state of affairs is highly influenced by the ability and comfort of being able to go into an office, or some other on-site setting. This section analyzes nearly real-time data on return-to-office trends from the building security services provider Kastle Systems. Furthermore, industry data from the previous section is used to develop a set of travel typologies by industry that can inform WMATA planning efforts.

Back to the Office Barometer

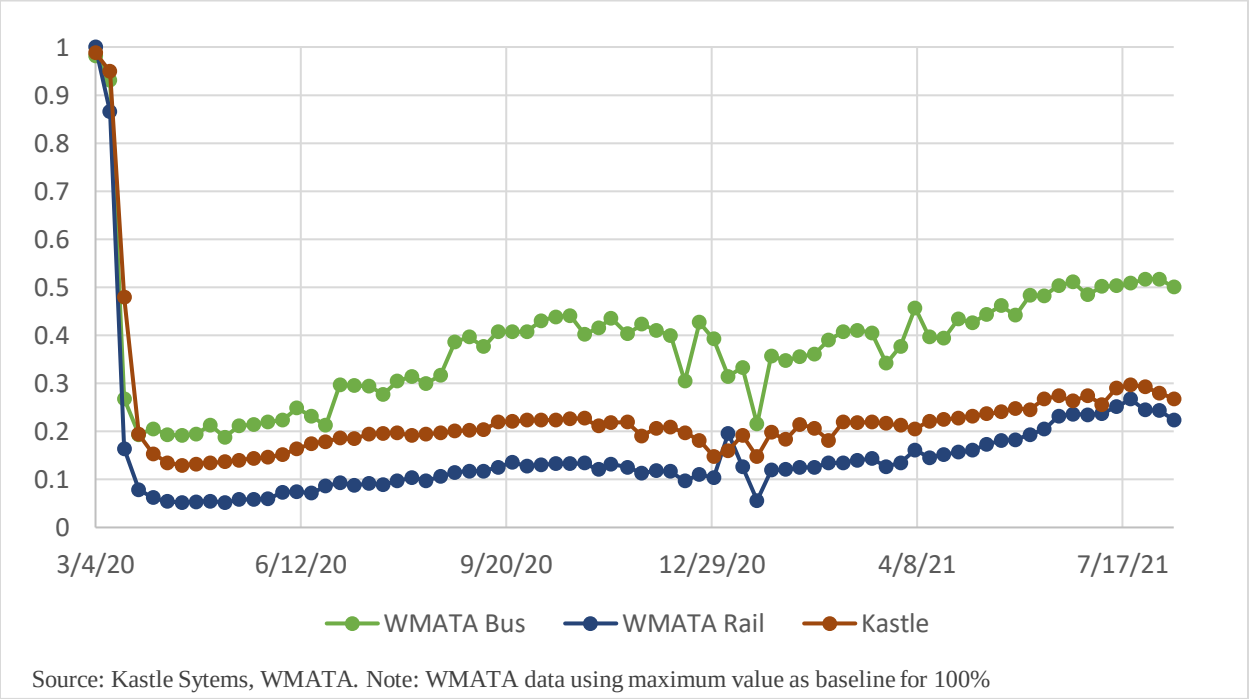
Given the importance of office jobs to total employment and transit system ridership in the WMATA Compact Area, the availability of data that are as close to real-time as possible are important to examine in establishing trends over the coming months and years. The return to office also had spillover impacts on important service sectors like retail, restaurants, and personal

services located in regional employment centers. Fortunately, the building security services company, Kastle Systems, is tracking the degree to which workers are returning to offices using their systems and making that information publicly available in aggregate fashion.

The Kastle Systems Back-to-Work Barometer is an index that compares in-person office check-ins using keycard, fob, and app security data. In addition to data for the DC Metropolitan Area, Kastle Systems has developed sub-regional indices for the District of Columbia, as well as an index focusing on offices of lawyers. The indexes are updated weekly and provide data that reasonably represent return-to-office trends since the start of the pandemic.

To begin, the DC Kastle Back-To-Work Index is plotted with indices of Metro Bus and Rail Riders showing changes in office visits reported by Kastle Systems and ridership by WMATA for both bus and rail from March 2020 to August 2021 (See Figure 7.). The results are scaled for comparability with WMATA ridership indices, with both bus and rail tracking closely with office access. The initial dramatic decline in all three at the outset of the pandemic was followed by a long-stabilization period, before slowly rising. Bus ridership has recovered more quickly, which follows the higher use of bus services among industries and occupations less associated with work in office buildings

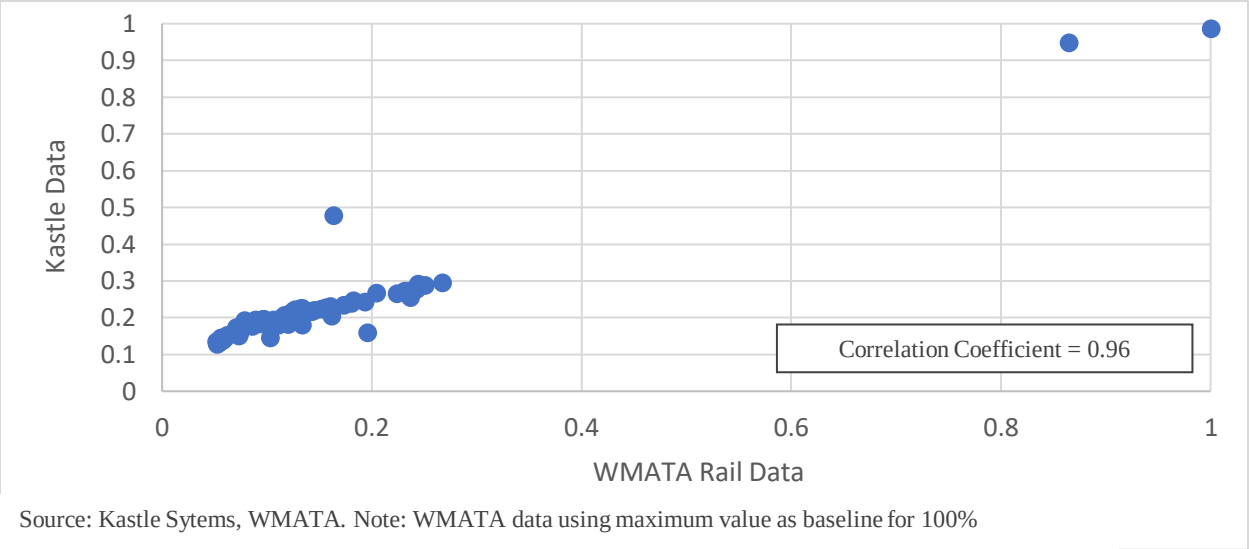
Figure 7. Kastle Back to Work Barometer vs WMATA Bus and Rail Ridership



Source: Kastle Sytems, WMATA. Note: WMATA data using maximum value as baseline for 100%

Plotting weekly data on a scatter plot reveals the strengths of the correlation between rail ridership and office visits (Figure 8). The correlation coefficient between the two datasets is 0.96. If the three outliers (where the Kastle data is greater than 0.4) are excluded, this correlation coefficient drops to a value of 0.91, but still shows that the Kastle System data provides valuable information in understanding how return-to-office settings is affecting transit ridership

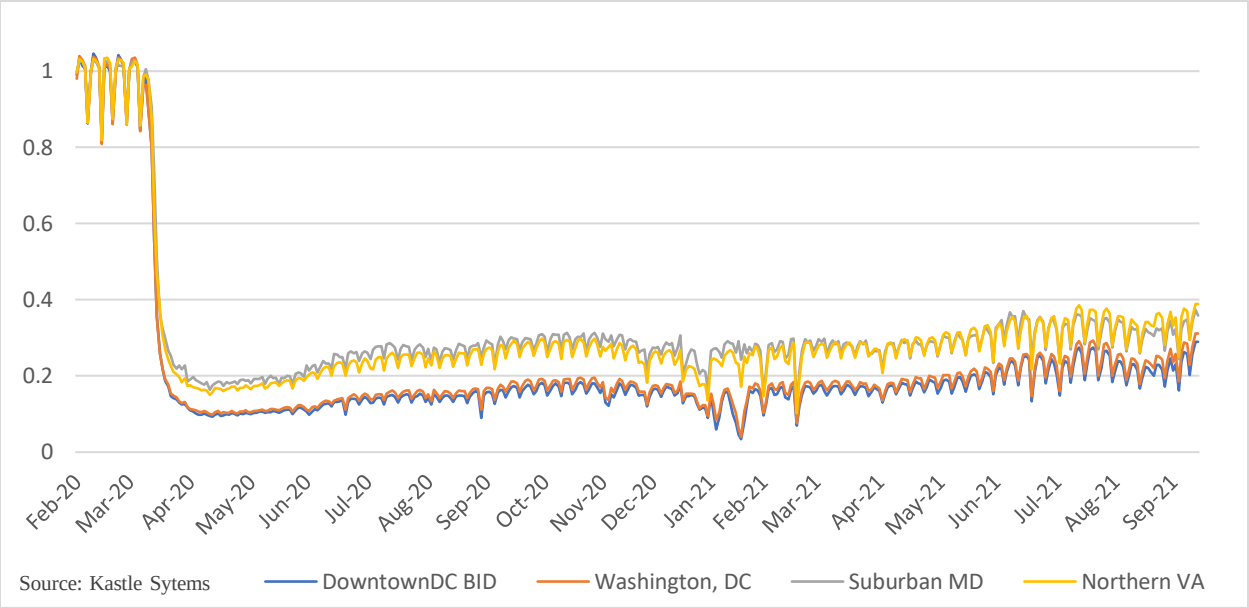
Figure 8. Kastle Back to Work Barometer vs WMATA Rail Ridership Index



Source: Kastle Sytems, WMATA. Note: WMATA data using maximum value as baseline for 100%

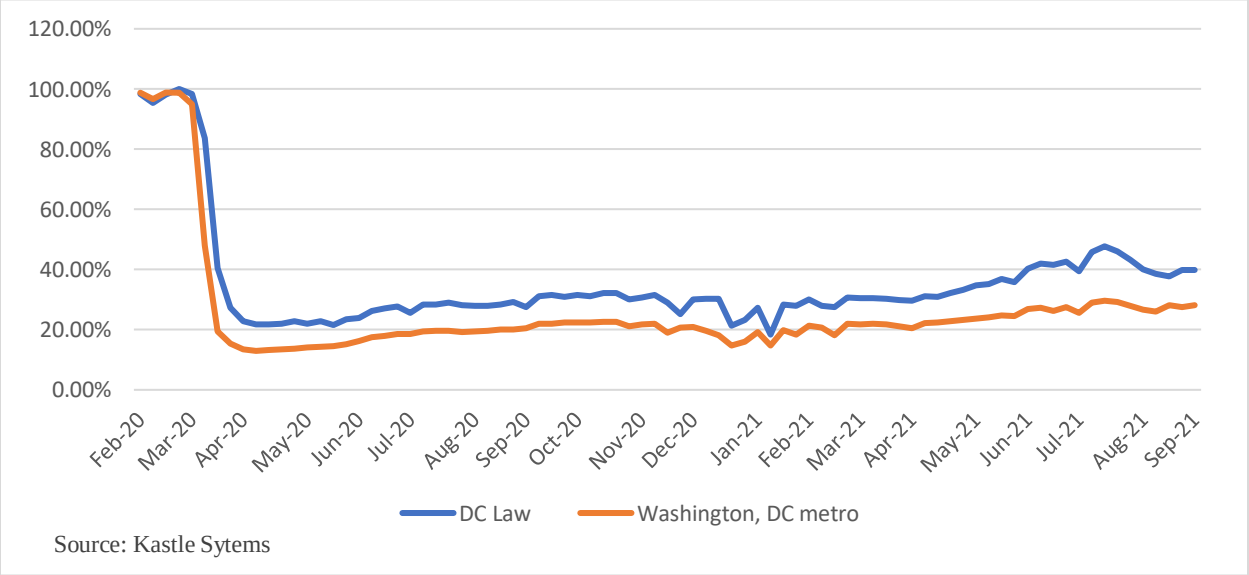
While the overall Kastle Back-to-Work barometer points to a gradual return to the office, the propensity to return to the office does vary by sub-region within the DC MSA (Figure 9). The variation in the first two months is the result of notable work from home on Fridays that existed in the DC Metro Statistical Area (MSA) prior to the pandemic. Suburban Maryland and Northern Virginia are distinctly different from the downtown DC BID and DC as a whole. Office visits in Suburban Maryland and Northern Virginia declined less than in DC in the early days of the pandemic. Additionally, office visits in Suburban Maryland and Northern Virginia have been consistently higher than in DC. However, the office visit index from increased faster September 1st, 2021, through September 15th, 2021, in DC than the suburban portions of the DC MSA, which may indicate workers are beginning to return to the offices that are more likely to use public transit to commute to work. We can also speculate the work location policies for federal workers may be driving some of the differentials seen between the District and suburban areas.

Figure 9. Kastle Back to Work Barometer - DC Metro Sub-Regions



Providing an even closer match to the professional services that drive the DC economy, Kastle Systems produces a DC Law Back to Work Barometer (Figure 10). This index provides evidence that workers in law offices are going back into the office at a higher rate than the overall office population. While the rate is higher, the difference between the DC Law index and the overall DC index has been relatively stable from May 2020 through present.

Figure 10. Kastle Back to Work Barometer - DC Law Index vs Total Index



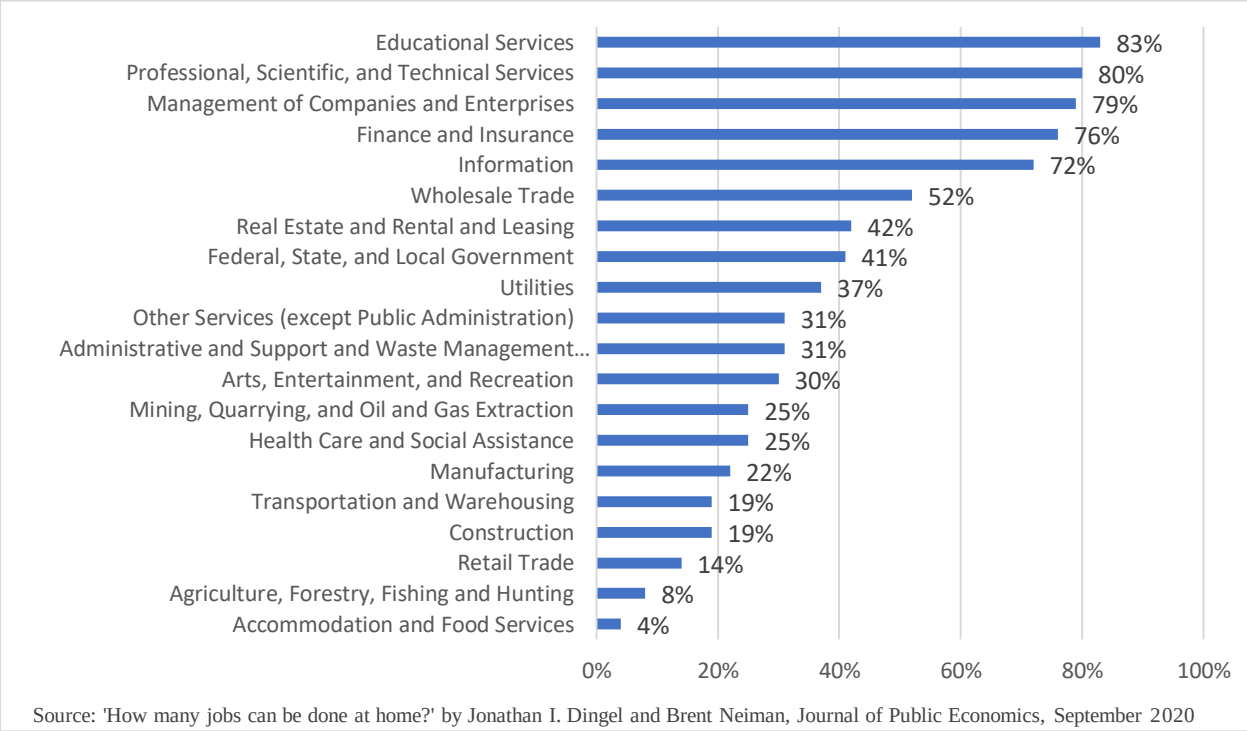
Overall, the Kastle data matches closely to the Metro indices for both bus and rail. The rail data matches the office barometer more closely, and both the current gauge of these indices and their

recent slopes suggest that it will be some time before office visits and ridership return to pre-pandemic levels.

Work From Home Propensity

Finally, to provide additional detail on the propensity to work from home and how it may evolve over the coming months and years, the analysis turned to recently published academic and professional papers that assess the ability to perform job duties remotely (at home) across industries and occupations, which are based in no small part to work trends that were emerging before the pandemic.[5] These estimates examine the share of work that could be done at home, which differs from the data analyzed previously explicating the share of workers that were actually working from home in 2019. The data analyzed here, are theoretical estimates while the previously reported data were survey data of people in the WMATA Compact Area. The top industries that could work from home include education services; professional, scientific, and technical services; and management of companies. These three industry sectors are important contributors to total transit rail commute ridership as previously discussed. Industries that require physical work or direct engagement with customers must clearly be performed in person. Combining these data with the earlier Census data on transit mode choices, the relative resilience of bus commuters compared to rail commuters is, perhaps, unsurprising. Note that while Education Services and some other services *can* be delivered by employees working from remote locations (home or elsewhere), there are societal and political pressures that dictate that these services be provided in a traditional, in-person setting.

Figure 11. Work from Home Propensity by Industry

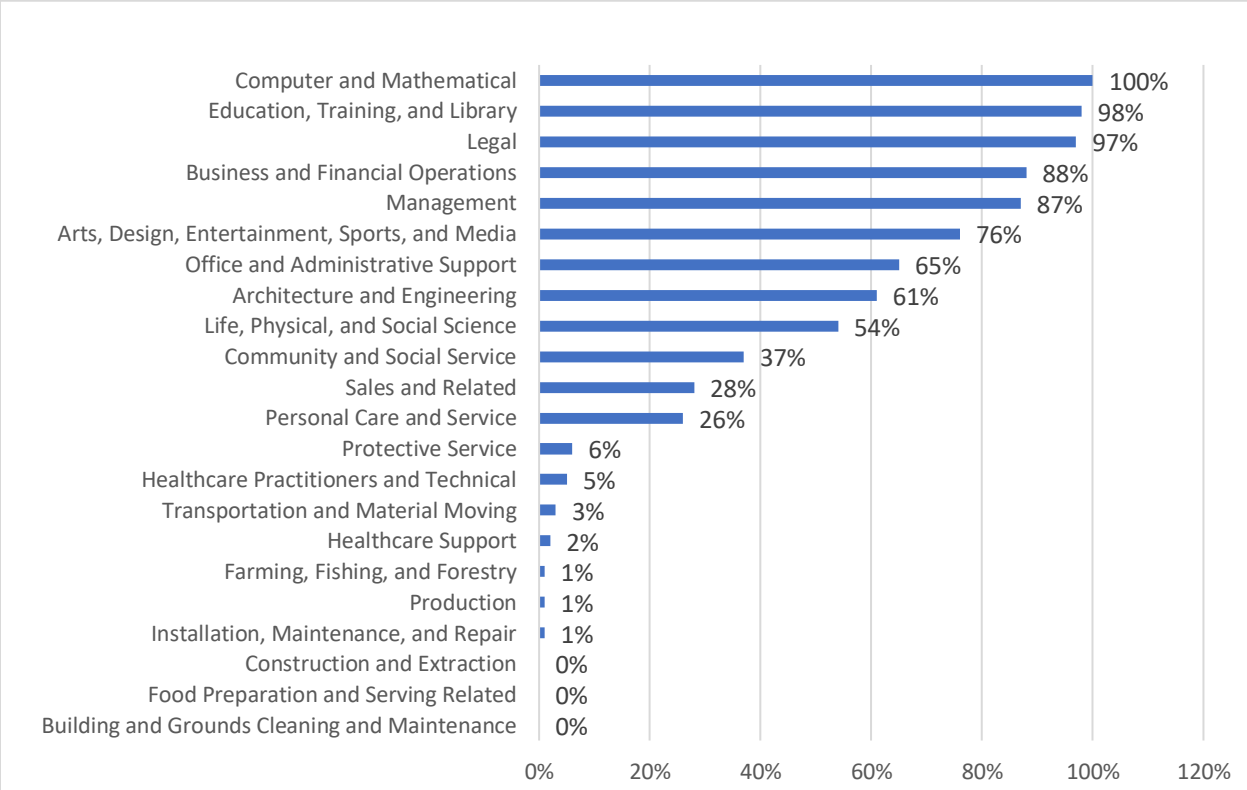


Source: 'How many jobs can be done at home?' by Jonathan I. Dingel and Brent Neiman, Journal of Public Economics, September 2020

[5] "How many jobs can be done at home?" by Jonathan I. Dingel and Brent Neiman Journal of Public Economics September 2020

The professional literature also looks at the ability to perform work remotely by occupation (see Figure 12). The occupations with the greatest share of jobs that can be performed at home include Computer and Mathematical; Legal; and Education, Training, and Library jobs. Occupations with the fewest share of jobs that can be performed remotely fit within the same patterns as jobs by industry including Food Preparation and Service Related occupations; Installation, Maintenance, and Repair; and Building and Ground Cleaning and Maintenance. As noted in the first paper in this series, there was a notable difference in year-over-year job change within the professional and business service sector, with the professional jobs continuing to grow throughout the pandemic while support jobs such as building and grounds maintenance declined sharply.

Figure 12. Work from Home Propensity by Occupation



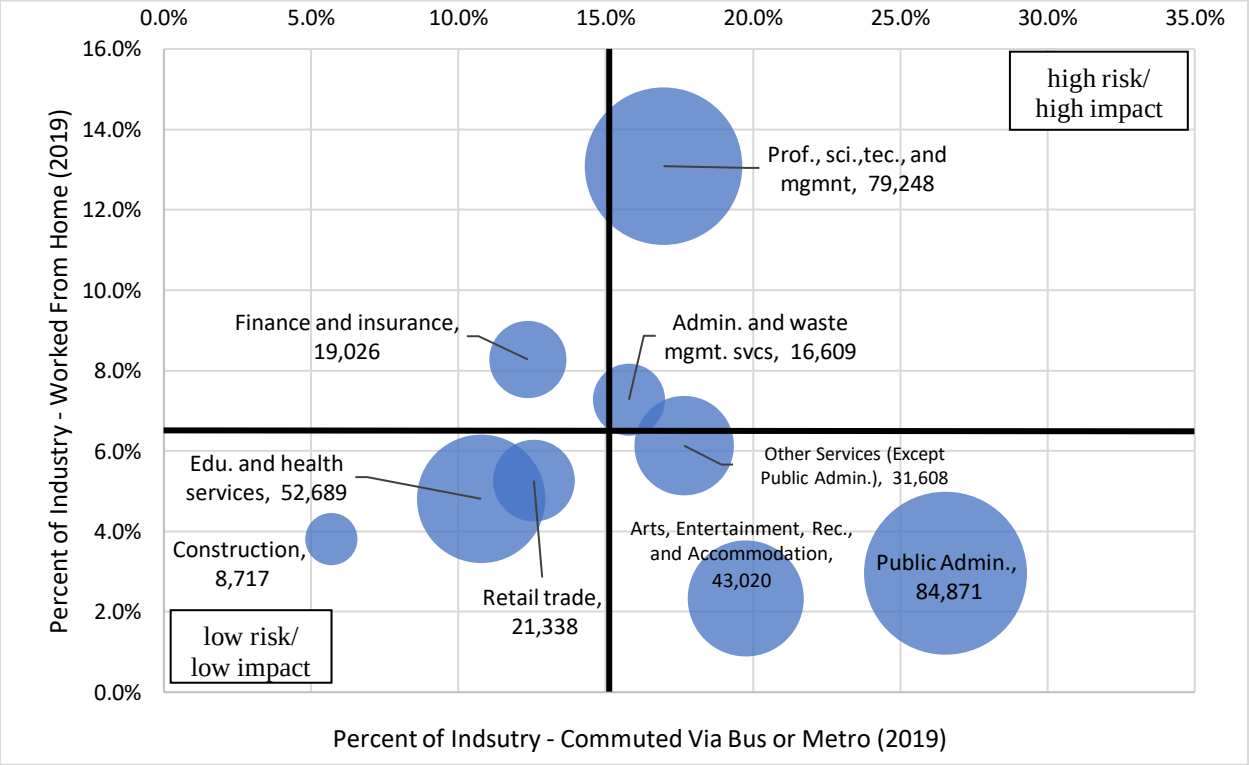
Source: 'How many jobs can be done at home?' by Jonathan I. Dingel and Brent Neiman, Journal of Public Economics, September 2020

Dingel and Neiman find that in the Washington-Arlington-Alexandria area, a total of 50% of jobs can be performed remotely and these jobs collectively account for 64% of all area wage and salary earnings. This indicates that any ridership decline driven service reductions would, on average, have a greater impact on lower wage earners who may not be able to afford alternative modes of transportation for their journey to work.

Travel Typologies

Combining the data previously described, travel typologies can be created to help assess opportunities and identify threats regarding transit system ridership in the coming months and years of recovery from the COVID-19 pandemic. In Figure 13, industry travel typologies are provided based on the percent of workers who commuted using either bus or metro rail and the percent of workers that worked from home in 2019. The size of the bubble represents the number of workers in the industry in the WMATA Compact Area in 2019. Sectors with higher propensities to use transit services represent opportunities for commuter ridership recovery and the economy returns to more normal economic conditions. However, those industries where remote work is likely to be more persistent and potentially become a permanent characteristic for a least part of the work week will limit commuter ridership recovery – all else being equal. For example, while professional, scientific, technical, and management industry workers have a higher propensity to ride transit, they are also more likely to continue to work from home for at least part of their workweek based on pre-pandemic work characteristics. Given this is one of the region's largest employment sectors, this is a high risk sector for transit commuter ridership. Conversely, while Education and Health Services in also a large contributor of jobs, there is relatively low risk of permanently losing these riders to work-from-home. To be clear, there is one important sector that could be shifted in the chart based on emerging employment policies. Public sector workers are among the highest contributors to commuter ridership, especially transit rail. If the Biden Administration allows most federal workers to "permanently" shift to full or hybrid work from home, that bubble will shift to the high risk/high impact quadrant.

Figure 13. Travel Typologies



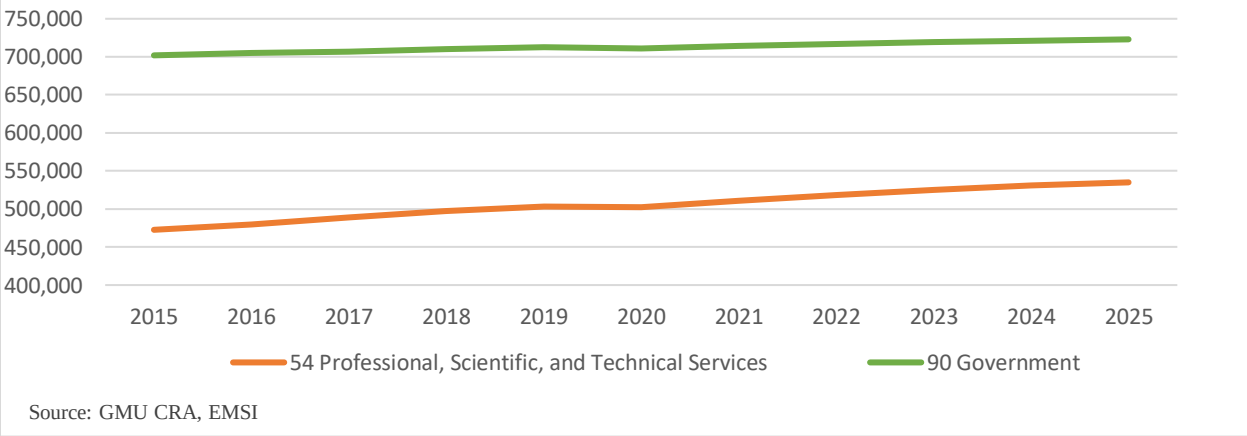
Part 3: Sector Forecast Assessments

In the first paper in this series, an overall forecast was provided. In this section, sector-by-sector forecasts are discussed. Sector level forecast focus primarily on the largest and most important industries, with a full table provided in the appendix.

Sector Assessments – Primary

The two largest sectors of the WMATA Compact Area (Professional, Scientific, and Technical Services, and Government), were growing before the pandemic, held steady through the pandemic, and are forecast to grow in the years to come (Figure 14). From 2015 to 2019, jobs in the Professional, Scientific, and Technical Services sector increased from 462,024 to 491,036 while Government jobs increased from 666,695 to 675,328. From 2019 to 2020, neither sector experienced a notable decline, and from 2020 to 2021, both sectors recorded gains. From 2021 through 2025, both sectors are forecast to continue growing. Professional, Scientific, and Technical Services sector jobs are forecast to increase from 499,043 in 2021 to 522,211 in 2025. Government jobs are forecast to increase from 676,598 to 683,577. The two largest sectors in the WMATA Compact Area by number of jobs were resilient to the pandemic and are forecast to continue growing in the coming years.

Figure 14. Job Growth in the Two Largest Sectors in the WMATA Compact Area

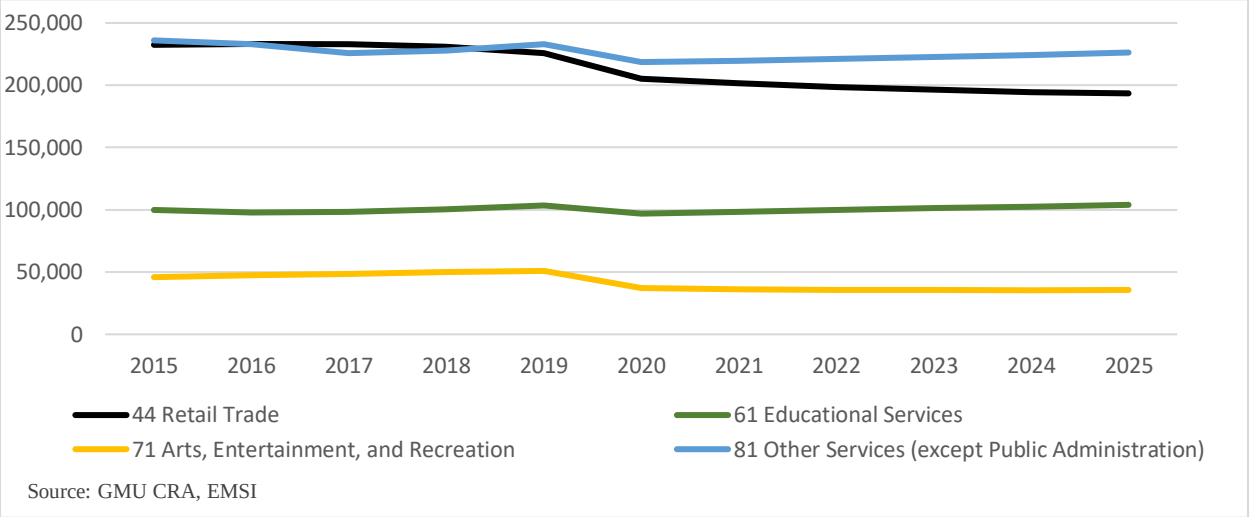


Source: GMU CRA, EMSI

In addition to the largest sectors of the economy, there are other noteworthy sectors. The complete jobs forecast is located in the appendix. First, Other Services (Except Public Administration) is the third largest sector by jobs in the WMATA Compact Area. This sector recorded a 6.1% decline in the number of jobs during the pandemic from 224,583 in 2019 to 210,810 in 2020 and is forecast to grow to just 218,154 jobs by 2025. The number of jobs in Retail Trade declined 9.2% from 203,313 in 2019 to 184,066 in 2020. Despite the anticipated recovery of other sectors, Retail Trade had been declining since at least 2017 and is not anticipated to recovery to pre-pandemic levels. While the Educational Services sector recorded a 6.4% decrease in jobs from 101,478 jobs in 2019 to 95,027 jobs in 2020, the sector grew to 96,516 in 2021 and is forecast to recover to pre-pandemic levels in 2025. Finally, among the hardest hit sectors was the Arts, Entertainment, and Recreation sector. The number of jobs in the WMATA Compact Area in this sector declined 27.7% from

47,295 in 2019 to 34,572 in 2020. Total job growth from 2020 to 2021 was relatively weak in the WMATA Compact Area and is forecast to remain below pre-pandemic levels through 2025.

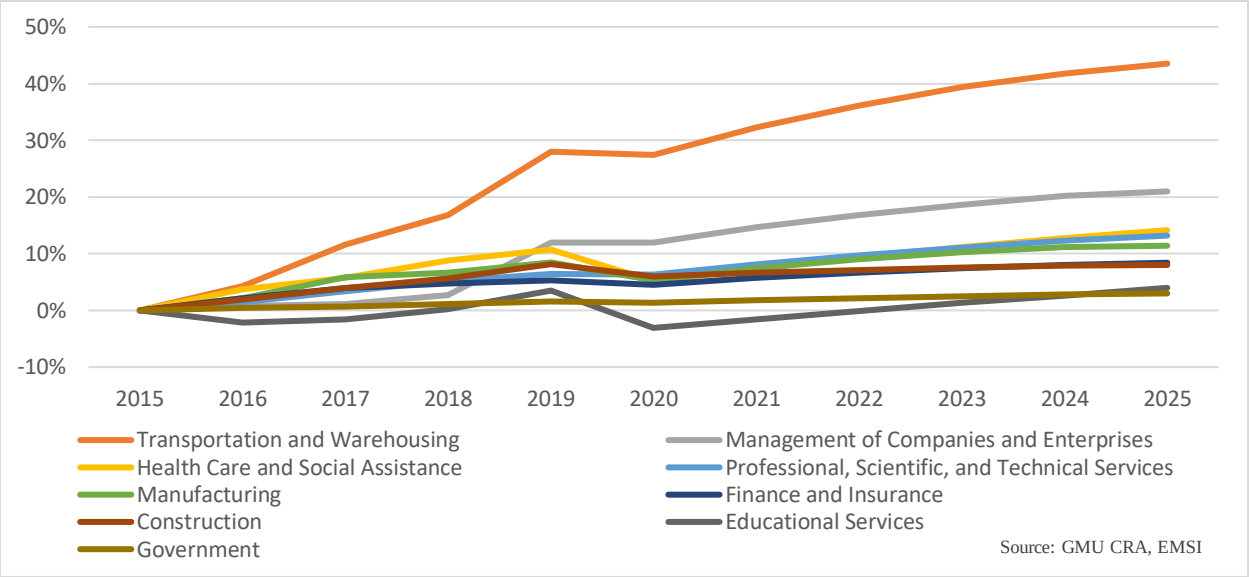
Figure 15. Job Growth in Select Sectors: WMATA Compact Area



Source: GMU CRA, EMSI

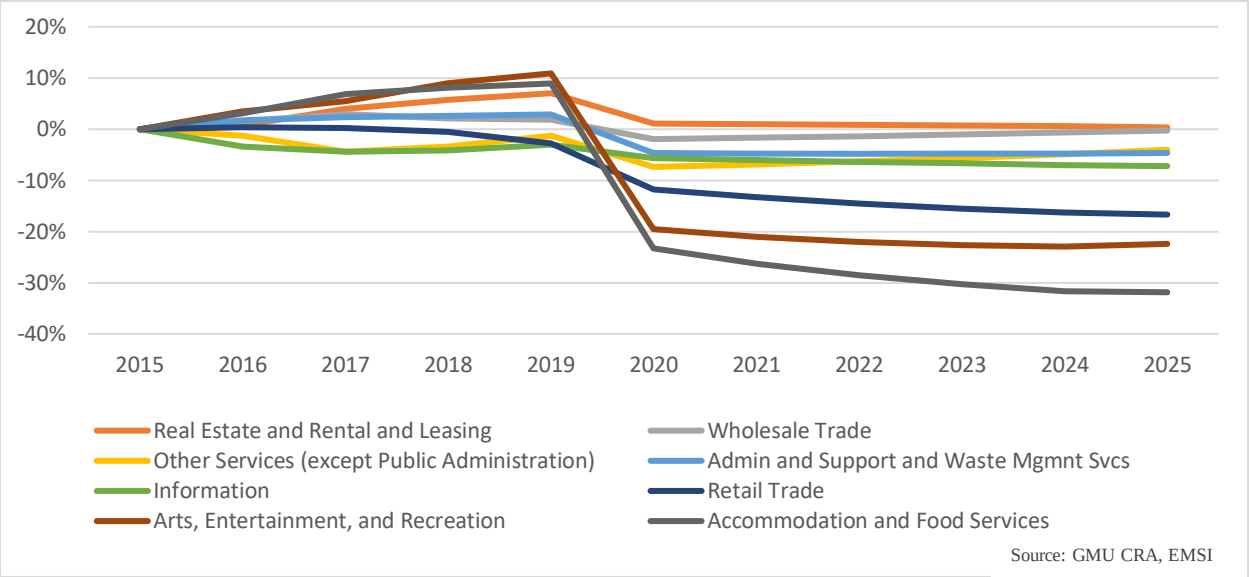
For illustrative purposes, employment sectors with more than 10,000 area jobs are categorized as *Resilient* or *Non-Resilient* based on their performance in recovering from the pandemic. Resilient industries are those that are forecast to have more jobs in 2025 than 2015 while non-resilient industries are forecast to have fewer jobs in 2025 than 2015. Among the seventeen industries with more than 10,000 jobs, nine are forecast to have more jobs in 2025 than in 2015 (Figure 16). Among the resilient industries, four recorded job losses during the height of the pandemic disruptions including Health Care and Social Assistance; Professional, Scientific, and Technical Services; Manufacturing; Finance and Insurance; Construction; and Educational Services. Despite the jobs losses attributable to pandemic related disruptions, each of these industries are forecast to have more jobs in the WMATA Compact Area in 2025 than 2015. From 2015 to 2025, the sectors with the largest employment gains are forecast to be Transportation and Warehousing (+44%), Management of Companies and Enterprises (+21%), and Health Care and Social Assistance (+14%). Resilient sectors of the economy either grew throughout the pandemic or are only temporarily impacted and anticipated to recovery in the coming year.

Figure 16. Resilient Industries in the WMATA Compact Area



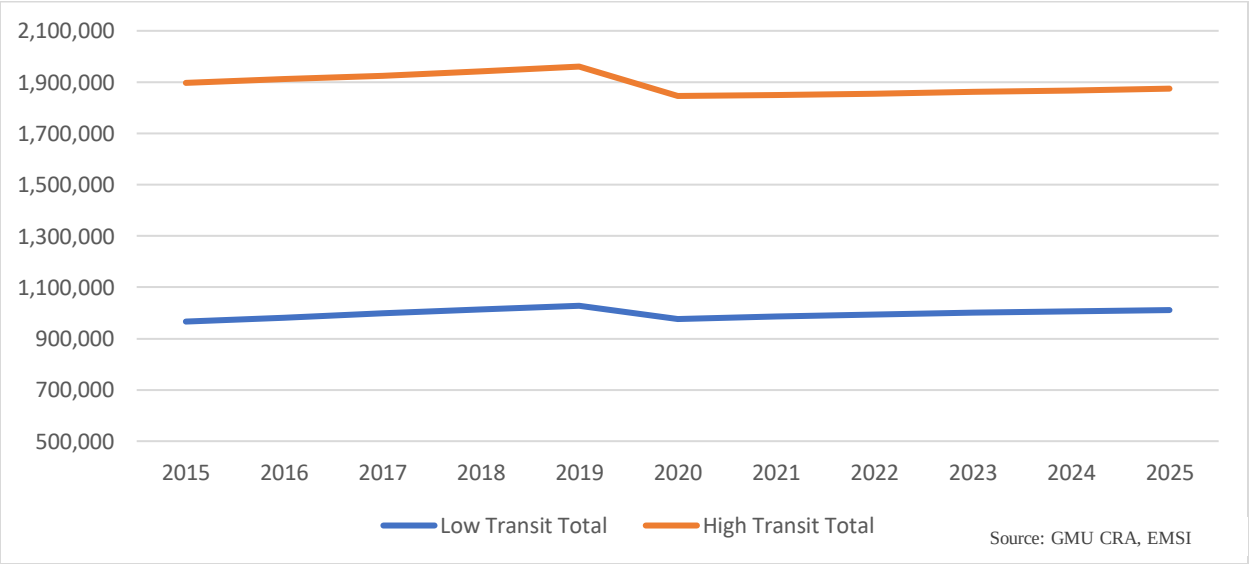
The remaining eight industry sectors in the WMATA Compact Area with more than 10,000 jobs are forecast to either continue to decline or grow more slowly than resilient sectors. From 2015 to 2025, the most adversely impacted sectors are Retail Trade (-32%), Arts, Entertainment, and Recreation (-22%), and Accommodation and Food Services (-17%). Among these three industries, only Retail Trade was declining prior to the pandemic reflecting the long term shift to e-commerce sales. Among the other Non-Resilient sectors, job change (either growth or decline) was either relatively modest during the pandemic or will see longer term challenges. Most notably, retail trade's shift to more online sales will be persistent with some of these jobs appearing in other industry sectors such as transportation and distribution. Accommodation and food services will see prolonged impacts as business travel recovery lags and restaurants, especially in DC, will be challenged by total reduction in demand as many workers maintain hybrid schedules. Arts, entertainment, recreation employment will also be impacted by slow business travel recovery and perhaps some spillover effects of relatively fewer workers being in the office that impacts afterwork entertainment options.

Figure 17. Non-Resilient Industries in the WMATA Compact Area



The final way that the forecasts are analyzed here are by grouping industries with high and low transit use (Figure 18). High transit use industries are those with a greater portion of workers reporting commuting by either bus or metro rail than all workers in the WMATA Compact Area. From 2015 through 2025, industries with higher than average transit use are anticipated to grow by 4.7%. In contrast, industries with lower than average transit use are anticipated to decline by 1.2%. These forecasts are intuitive following the analysis in Part 1 and Part 2 that finds that government and professional, scientific, and technical services sectors both use more public transit than the overall population. Overall, while the industry mix of jobs in the WMATA Compact Area is forecast to be favorable to public transit (bus and rail), work from home among these industries is a notable uncertainty moving forward.

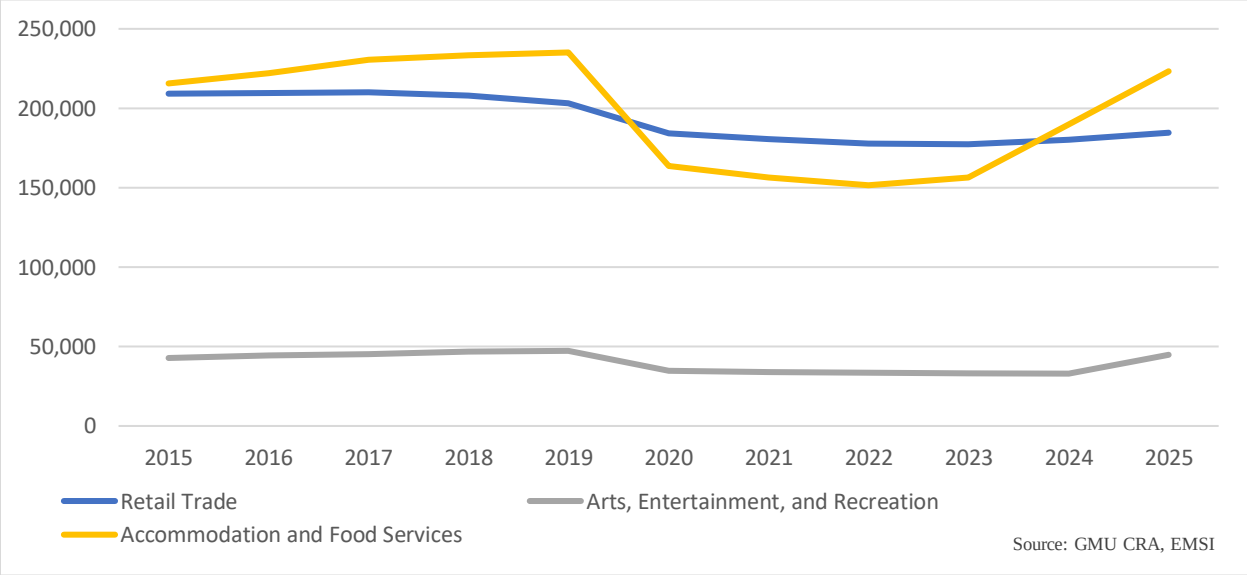
Figure 18. Jobs Change by Industries with High and Low Transit Use



Sector Assessments - Alternative

A particularly difficult aspect of forecasting is in both the ability to control the coronavirus as well as the population's comfort level in engaging with public life. Undoubtably, the three most negatively impacted industries in the wake of the pandemic have been retail trade, arts, entertainment and recreation, and accommodation and food services. The provided estimates for these industries are conservative, if not somewhat pessimistic. However, there is upside potential for these the leisure and hospitality sectors if business travel recovers more quickly and if the arts see a surge in activity based on pent-up consumer demand as more of the population is vaccinated and no other problematic variations of the coronavirus emerge. For this reason, we have provided a secondary forecast that reflects this possibility. In particular, accommodation and food services as well as arts entertainment and recreation are noted as possibly rebounding to approximately pre-pandemic levels by 2025. Retail trade employment will likely remain flat in the coming years. A full alternative forecast is provided in the appendix.

Figure 19. Secondary Forecasts - Key Industries



Employment Forecast - Recovery strength likelihoods and Timeframes Discussion

At the time this report is prepared, the U.S. is seeing a resurgence in COVID-19 cases tied primarily to the Delta variant. The worst cases seem to be concentrated among the population that has not been vaccinated with one of the three widely available vaccines. There is on-going debate about the need and timing of booster shots for those who have previously been vaccinated. In either case, where breakthrough infections do occur, the prognosis for a relatively quick recovery is quite promising. However, the spread of breakthrough cases, where a vaccinated person becomes infected, and the spread of the disease in school settings has caused concerns about the pace of job

recovery. On the national level, August 2021 job creation numbers fell substantially below expectations. We will not have later summer jobs numbers to see how the national trend in playing out in the DC area for a couple of months. However, there are two issues that persistently elevated COVID-19 cases with have on regional economic recovery: 1) some workers will not be willing to return to high-contact jobs (retail, leisure and hospitality, health services); and 2) there are many parents who cannot return to work because of a lack of daycare services or because of repeated disruptions for school age children as they become infected or exposed to COVID-19 in school settings. We roughly estimate that a lack of available childcare may be reducing the effective labor force participation rate by one to two percent.

The good news is that some of the stresses caused by the resurging COVID-19 caseload may be at least partially ameliorated by soon having the vaccine approved for some children. Recently reported clinical trials suggest that there may be approval for at least one of the vaccines for children aged 5 to 11 this fall. However, for now the late summer surge in cases has substantially slowed the economic recovery and previous forecasts should be extended by at least one quarter throughout the recovery.

In addition to local effects, the persistence of COVID-19 around the world is still playing havoc with some supply chains. The highly publicized case of supply disruptions for computer chips used in automobiles is widely visible by driving by auto dealership lots. These retailers cannot sell what they do not have, in most cases. Many retailers are warning that supply chain problems and transportation bottlenecks at ports across the globe may mean that some holiday shopping items may not be available for prime time shopping this year. Overall, Wall Street analysts and companies are starting to issue warnings that corporate earnings may disappoint managers and investors, which could cause some businesses to slow hiring. Finally, the end of special unemployment benefits means that some households will have to curtail spending, which will impact retail sector recovery. It is unclear if the end of these benefit programs will induce more individuals back into jobs, which could result in effective job growth in the closing months of 2021.

Looking further out, there are some notable patterns in the forecast data used in this analysis. Key sectors, such as Professional and Technical Services, Transportation and Warehousing (think home deliveries of everything), and Finance and Insurance barely moved downward during the early stages of the pandemic. Construction did slow somewhat, but has stabilized with about a one percent drop, which is not a large amount considering the disruptions in construction material supply chains and related materials cost increases that has delayed some projects. However, major employment sectors including Retail Trade, Accommodations and Food Services, Administrative Support, Private Education, and Other Services lost about 105,000 jobs from 2019-2020 across the WMATA service area. Oddly enough, during a health crisis Health Care and Social Assistance services dropped by 14,000 jobs for 2020, which reflects disruption in social services and many medical procedures that could be delayed or are considered elective.

For the years 2021 through 2025, the forecasts presented here expect that Professional and Technical Services, Corporate Headquarters, Transportation and Warehousing, Finance and Insurance, Healthcare and Social Assistance, and Other Services will add over 56,000 jobs. Total Government employment (all levels) will increase almost 7,000 jobs. However, the trend lines are not as favorable for Retail Trade, Accommodation and Food Services, and Arts and Entertainment

which will continue to decline or stay relatively flat throughout the forecast period. Retail Trade and Accommodation and Food Services are expected to lose an additional 21,500 jobs over the next four years. In some respects, this dismal finding actually reflects shifting job duties and categorizations. Retail trade will continue to shift to online sales, with some brick and mortar locations becoming viewing centers or even fulfillment/pickup locations. Are those workers in retail or logistics jobs? Restaurants may recover in terms of nighttime bookings and sales, but if work-from-home persists for office workers, then total demand for lunch time food services will drop dramatically. Finally, worker scarcity is driving up wages, with many fast food jobs now paying $12-$15/per hour. While this will help those workers in jobs, this is likely to increase the use of automation in this sector of the economy for basic customer interactions (ordering on kiosks) that will slow job growth compared to overall trade sales. The net effect is that total employment in the WMATA Compact Area will remain about 3.4 percent, or 101,000 jobs below 2019 levels by 2025. To be clear, this does not include the potential regional impacts of the proposed federal stimulus package spending, nor does it include any assumption about local economic disruptions if Congress allows a federal budget default.

In addition to looking at sectoral employment, this analysis also considers how the employment outlook differs among occupations with related earnings characteristics. There will be comparatively strong growth in Management, Business Operations, Computer Occupations that all average annual earnings in excess of $100,000 per year. There will also be good growth for other high to middle income occupations in Education, Healthcare, and Community and Social Services. Notable growth will also be seen in good moderate income jobs such as Healthcare Support, Construction, and Transportation/Distribution jobs. However, the forecasts show continuing downward slide in opportunities for workers in Food Preparation and Services, Building Services, Personal Care, Sales and Related jobs, and Office and Administrative support occupations, which are also some of the lowest paying jobs in our region and more likely represent individuals who are public transportation commuters.

Part 4: Conclusion

This paper analyzed travel typologies by sector and provided sector-by-sector forecasts. Data prior to the pandemic was used to identify key industries contributing to public transit commuting. Sector-by-sector forecasts were then provided for planning purposes moving forward.

In section one, several data sources examining commuting travel behavior by industry and occupation were examined. Census data from prior to the pandemic revealed that over half of commuters whose journey to work used rail were accounted for by just two professional industries. While bus commuters were similarly isolated to a few industries, the concentration was not quite so high. Occupational contribution to commuters who used rail was similarly concentrated in just a few professional occupations. Examining Kastle office security data, reveals that professionals have not simply been avoiding public transportation, they have also not been quickly returning to the office. Given the concentration of, particularly rail commuter ridership, in a few professional services industries and the slow return to office, travel typologies identifying key industries based on industry share relying on transit, percent of industry working from home prior to the pandemic, and size were developed. The most notable issue moving forward is the return of the professional, scientific, and the public administration sectors to the office, which is the source of a bulk of rail commuters.

In the section two, sector-by-sector forecasts were discussed. Overall, the key sectors that Metro rail relies on experience minimal disruption during the pandemic and are forecast to grow.
In contrast, some sectors that Metro bus relies on, such as arts, entertainment, and recreation, are forecast to decline. Despite the decline in key sectors, there remain notable upside potential in in-person industries such as accommodation moving forward, with a secondary forecast provided to highlight this.

Journey to work data from before the pandemic reveal that commute-related Metro ridership is generally concentrated, comprised of commuters from just a few industries or occupations. Rail commuters, in particular, was concentrated in a few professional sectors, and these workers have been slow to return to the office, thus necessitating a commute. Despite the slow return to the office, the industries that provide the bulk of commutes by transit are forecast to continue to grow in the coming years.

Appendix

Forecast Description and Data

The data presented in this paper offer our first assessment of potential job recovery through 2025 for the WMATA Compact Area. The data used for this forecasting exercise is sourced from Economic Modeling Specialists, Incorporated (EMSI), a labor market data analytics firm, who has recently announced they are merging with labor market analytics firm Burning Glass. Employment estimates from EMSI has two advantages over publicly available employment data from the U.S. Bureau of Labor Statistics. The first advantage is that some local employment data from the BLS is masked – it cannot be disclosed under business privacy guidelines. Economic Modeling Specialists employ proprietary algorithms to estimate local employment data and as a private enterprise are not under non-disclosure rules. Not having gaps in the data improves the forecasts. Secondly, EMSI offers estimates of total employment, including workers not traditionally covered by unemployment insurance. This means that the EMSI data provides times series data that includes contractors and gig workers (non-covered jobs). While these are modeled estimates, using this more complete definition of workers should improve the forecast's ability to effectively assess demand characteristics for transit services.

In this paper, we primarily use modeled forecasts of total employment by major industry sector (2-digit NAICS) provided by EMSI through 2025. The EMSI forecasts are based on trend analysis supplemented by broad market (national) data. The EMSI forecast appear to be appropriately conservative – meaning that they are more likely to understate total job growth than overstate future growth, but not by a lot. Review and assessment of the forecasts will continue through the third paper in this research series.

Table 3. DC MSA - Means of Transportation to Work by Industry

Industry	Total	Car, truck, or van-drove alone:	Car, truck, or van-carpooled:	Public transportation (excluding taxicab):	Walked:	Taxicab, motorcycle, bicycle, or other means:	Worked from home:
Agriculture, forestry, fishing and hunting, and mining	11,517	6,726	876	456	1,234	234	1,991
Construction	235,131	163,421	43,307	10,311	2,858	4,680	10,554
Manufacturing	93,441	70,611	8,488	5,537	1,181	1,177	6,447
Wholesale trade	33,935	24,851	3,422	2,012	295	372	2,983
Retail trade	257,616	187,850	21,273	23,264	7,769	6,552	10,908
Transportation and warehousing, and utilities	133,211	102,352	10,004	11,582	1,445	3,300	4,528
Information	74,175	44,784	3,733	12,532	2,979	1,968	8,179
Finance and insurance, and real estate and rental and leasing	195,818	126,213	14,363	21,128	9,935	4,294	19,885
Professional, scientific, and management, and administrative and waste management services	720,201	429,413	55,668	108,304	23,859	19,852	83,105
Educational services, and healthcare and social assistance	651,532	467,996	59,362	57,813	20,556	12,922	32,883
Arts, entertainment, and recreation, and accommodation and food services	292,158	179,237	32,724	47,205	14,695	11,649	6,648
Other services (except public administration)	217,649	135,625	18,239	34,491	9,303	6,979	13,012
Public administration	413,072	240,918	35,945	100,491	11,470	12,172	12,076
Armed forces	45,523	30,494	4,137	5,846	3,566	611	869
Total	3,374,979	2,210,491	311,541	440,972	111,145	86,762	214,068

Source: ACS 2019 1-Year Estimates. TableB08126.

Note: Public administration and Professional, scientific, and management, and administrative and waste management services comprise 208,795 of the 440,972 (47.3%) people who take public transportation. Arts, entertainment, and recreation, and accommodation and food services comprise another 10.7%.

Table 4. WMATA Compact Area - Means of Transportation to Work by Industry

Industry	Car, truck, or van	Bus	Rail transit or elevated rail	Long-distance train or commuter train	Lightrail, streetcar, or trolley	Taxicab	Motorcycle	Bicycle	Walked	Worked from home	Other method	Total
Administrative and waste management services	74,519	8,615	7,994	888	157	443	213	285	2,585	7,653	1,833	105,185
Agriculture, forestry, fishing and hunting, and mining	3,673	2	353	0	0	0	27	138	1,091	631	61	5,976
Armed forces	24,622	1,608	2,244	275	113	0	0	503	956	640	175	31,136
Arts, entertainment, and recreation, and accommodation and food services	149,645	25,422	17,598	346	0	2,191	1,000	931	12,559	5,079	2,990	217,761
Construction	133,657	5,375	3,342	604	0	94	98	165	1,531	5,840	2,624	153,330
Educational services, and healthcare and social assistance	377,177	25,442	27,247	2,403	100	3,332	634	4,107	20,178	23,525	4,954	489,099
Finance and insurance, and real estate and rental and leasing	107,258	5,171	13,855	740	187	1,166	75	1,328	9,759	12,741	1,671	153,951
Information	39,449	3,005	8,416	223	118	215	0	1,197	2,840	6,926	351	62,740
Manufacturing	50,808	2,170	2,781	102	145	216	139	185	919	5,238	297	63,000
Other services (except public administration)	119,035	8,646	22,962	1,614	287	1,026	295	3,152	7,911	10,975	3,038	178,941
Professional, scientific, and management	290,791	17,430	61,818	3,979	365	1,932	882	5,382	19,938	61,132	3,517	467,166
Public administration	197,419	15,693	69,178	6,153	866	1,620	491	5,385	11,175	9,466	2,365	319,811
Retail trade	128,171	13,318	8,020	89	210	1,772	0	1,058	6,171	8,941	2,112	169,862
Transportation and warehousing, and utilities	71,461	2,709	5,733	927	95	1,089	0	222	1,186	2,776	1,854	88,052
Wholesale trade	14,697	403	1,331	90	0	0	0	28	95	2,114	225	18,983
Total	1,782,382	135,009	252,872	18,433	2,643	15,096	3,854	24,066	98,894	163,677	28,067	2,524,993
Source: ACS 2019 PUMS Data. Excludes persons less than 16 years old and the unemployed.												

Note: Public administration; Professional, scientific, and management; Administrative and waste management services comprise 180,728 of the 387,881 (46.6%) people who take either bus or rail transit in the WMATA Compact Area. Arts, entertainment, and recreation, and accommodation and food services comprise another 11.1%.

Table 5. DC MSA - Means of Transportation to Work by Industry (Concise Version)

Industry	Car, truck, or van	Bus	Rail transit or elevated rail	Long-distance/ Commuter train	Other method	Total
Admin. And mgmt. svcs	74,519	8,615	7,994	888	13,169	105,185
Agri., forestry, and mining	3,673	2	353	-	1,948	5,976
Armed forces	24,622	1,608	2,244	275	2,387	31,136
Arts, entertainment, and rec., and accommodation	149,645	25,422	17,598	346	24,750	217,761
Construction	133,657	5,375	3,342	604	10,352	153,330
Edu. svcs, and health care and social assistance	377,177	25,442	27,247	2,403	56,830	489,099
Finance and insurance	107,258	5,171	13,855	740	26,927	153,951
Information	39,449	3,005	8,416	223	11,647	62,740
Manufacturing	50,808	2,170	2,781	102	7,139	63,000
Other Services, Except Public Administration	119,035	8,646	22,962	1,614	26,684	178,941
Professional, scientific, and management	290,791	17,430	61,818	3,979	93,148	467,166
Public administration	197,419	15,693	69,178	6,153	31,368	319,811
Retail trade	128,171	13,318	8,020	89	20,264	169,862
Transportation and warehousing, and utilities	71,461	2,709	5,733	927	7,222	88,052
Wholesale trade	14,697	403	1,331	90	2,462	18,983
Total	1,782,382	135,009	252,872	18,433	336,297	2,524,993

Note: WMATA Compact Area consists of all of the District of Columbia and the following PUMAs in Maryland and Virginia.
MD PUMAs:

- 2401106, 2401107, 2401104, 2401103, 2401101, 2401007, 2401004, 2401001, 2401005, 2401003, 2401002, 2401105, 2401102, 2401006.

VA PUMAs:

- 5159307, 5159305, 5159306, 5159309, 5159301, 5159303, 5110703, 5110702, 5110701, 5159308, 5101301, 5101302, 5151255, 5159302, 5159304.

Table 6. WMATA Compact Area - Commute to Work by Occupation

Occupation (SOC 2 Digit)	Car	Bus	Rail transit	Other	Work From Home	Total	Bus + Rail transit
Management	243,570	12,276	41,417	31,460	27,160	355,883	53,693
Business and Financial Operations	155,813	9,639	41,825	18,471	27,134	252,882	51,464
Computer and Mathematical	154,833	10,350	28,426	15,406	19,791	228,806	38,776
Office and Administrative Support	145,188	12,084	21,282	13,408	9,206	201,168	33,366
Legal	46,834	2,749	23,555	11,250	6,367	90,755	26,304
Food Preparation and Serving Related	78,294	14,537	9,009	12,041	1,755	115,636	23,546
Sales and Related	124,899	12,884	10,423	10,011	16,084	174,301	23,307
Arts, Design, Entertainment, Sports, and Media	37,549	4,164	13,756	9,253	12,643	77,365	17,920
Educational Instruction and Library	120,192	6,970	10,268	11,565	7,438	156,433	17,238
Life, Physical, and Social Science	37,730	4,673	12,003	8,414	3,213	66,033	16,676
Other	637,480	44,683	40,908	49,774	32,886	805,731	85,591
Total	1,782,382	135,009	252,872	191,053	163,677	2,524,993	387,881
Source: ACS PUMS 2019 1-Year Sample							

Table 7. WMATA Compact Area – Occupational Contribution to Commute Mode

Occupation (SOC 2 Digit)	Car	Bus	Rail transit	Other	Work From Home	Total	Bus + Rail transit
Management	14%	9%	16%	16%	17%	14%	14%
Business and Financial Operations	9%	7%	17%	10%	17%	10%	13%
Computer and Mathematical	9%	8%	11%	8%	12%	9%	10%
Office and Administrative Support	8%	9%	8%	7%	6%	8%	9%
Legal	3%	2%	9%	6%	4%	4%	7%
Food Preparation and Serving Related	4%	11%	4%	6%	1%	5%	6%
Sales and Related	7%	10%	4%	5%	10%	7%	6%
Arts, Design, Entertainment, Sports, and Media	2%	3%	5%	5%	8%	3%	5%
Educational Instruction and Library	7%	5%	4%	6%	5%	6%	4%
Life, Physical, and Social Science	2%	3%	5%	4%	2%	3%	4%
Other	36%	33%	16%	26%	20%	32%	22%
Total	100%	100%	100%	100%	100%	100%	100%
Source: ACS PUMS 2019 1-Year Sample. Example: Management Occupations account for 16% of Rail transit Commutes							

Part 3: Complete sector forecasts

Table 8. Industry Sector Forecasts – WMATA Compact Area

NAICS	Description	Reported Data							Forecast Data			
		2015 Jobs	2016 Jobs	2017 Jobs	2018 Jobs	2019 Jobs	2020 Jobs	2021 Jobs	2022 Jobs	2023 Jobs	2024 Jobs	2025 Jobs
11	Agriculture, Forestry, Fishing and Hunting	1,953	1,859	1,925	2,001	2,961	3,077	3,318	3,526	3,709	3,857	3,991
21	Mining, Quarrying, and Oil and Gas Extraction	518	504	540	522	626	391	388	386	384	383	383
22	Utilities	5,205	5,304	5,453	5,448	5,502	5,502	5,612	5,692	5,750	5,791	5,790
23	Construction	126,278	128,431	130,991	132,733	135,526	132,325	132,801	133,193	133,524	133,802	133,985
31	Manufacturing	37,237	37,894	39,359	39,649	40,405	39,101	39,820	40,353	40,754	41,026	41,084
42	Wholesale Trade	42,719	43,428	43,919	43,511	43,395	41,957	42,059	42,188	42,337	42,498	42,703
44	Retail Trade	209,153	209,755	210,057	208,106	203,313	184,066	180,614	177,891	175,676	173,820	173,029
48	Transportation and Warehousing	55,103	57,363	61,470	64,283	70,566	69,741	72,280	74,324	76,018	77,284	78,175
51	Information	72,766	70,512	69,693	69,896	70,750	68,926	68,654	68,409	68,181	67,976	67,794
52	Finance and Insurance	80,044	81,652	83,217	83,884	84,338	83,815	84,813	85,609	86,262	86,738	87,063
53	Real Estate and Rental and Leasing	53,400	53,700	55,400	56,421	57,099	53,813	53,724	53,631	53,534	53,412	53,321
54	Professional, Scientific, and Technical Services	462,024	468,931	477,521	485,657	491,036	490,776	499,043	506,149	512,445	518,151	522,211
55	Management of Companies and Enterprises	34,120	34,481	34,446	34,968	38,207	38,318	39,268	40,038	40,682	41,234	41,536
56	Administrative and Support and Waste Management and Remediation Services	173,749	176,199	177,771	177,920	178,215	164,957	164,614	164,417	164,321	164,326	164,505
61	Educational Services	98,019	95,647	96,298	98,131	101,478	95,027	96,516	97,949	99,340	100,622	101,970
62	Health Care and Social Assistance	256,652	266,203	271,026	278,538	282,615	268,589	273,864	278,615	283,001	287,093	290,500
71	Arts, Entertainment, and Recreation	42,710	44,342	45,195	46,752	47,295	34,572	33,863	33,404	33,119	32,951	33,160
72	Accommodation and Food Services	215,768	221,989	230,508	233,239	235,133	163,576	156,522	151,211	147,119	143,917	143,232
81	Other Services (except Public Administration)	228,178	224,859	217,492	219,550	224,583	210,810	211,900	213,211	214,679	216,226	218,154
90	Government	666,695	669,524	670,697	673,048	675,328	673,981	676,598	678,804	680,709	682,401	683,577
99	Unclassified Industry	4,797	5,281	4,471	3,017	2,799	3,311	3,502	3,658	3,789	3,902	3,970
	Total	2,867,088	2,897,859	2,927,447	2,957,275	2,991,168	2,826,632	2,839,774	2,852,658	2,865,332	2,877,409	2,890,132
Source: GMU Center for Regional Analysis, EMSI. Note: Forecasts used data from 2001 to present, 2015 forward shown for conciseness												

Table 9. Alternative Industry Sector Forecasts – WMATA Compact Area

Description	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Agriculture, Forestry, Fishing and Hunting	1,953	1,859	1,925	2,001	2,961	3,077	3,318	3,526	3,709	3,857	3,991
Mining, Quarrying, and Oil and Gas Extraction	518	504	540	522	626	391	388	386	384	383	383
Utilities	5,205	5,304	5,453	5,448	5,502	5,502	5,612	5,692	5,750	5,791	5,790
Construction	126,278	128,431	130,991	132,733	135,526	132,325	132,801	133,193	133,524	133,802	133,985
Manufacturing	37,237	37,894	39,359	39,649	40,405	39,101	39,820	40,353	40,754	41,026	41,084
Wholesale Trade	42,719	43,428	43,919	43,511	43,395	41,957	42,059	42,188	42,337	42,498	42,703
Retail Trade	209,153	209,755	210,057	208,106	203,313	184,066	180,614	177,891	177,337	180,023	184,608
Transportation and Warehousing	55,103	57,363	61,470	64,283	70,566	69,741	72,280	74,324	76,018	77,284	78,175
Information	72,766	70,512	69,693	69,896	70,750	68,926	68,654	68,409	68,181	68,179	68,794
Finance and Insurance	80,044	81,652	83,217	83,884	84,338	83,815	84,813	85,609	86,262	86,738	87,063
Real Estate and Rental and Leasing	53,400	53,700	55,400	56,421	57,099	53,813	53,724	53,631	53,534	53,412	53,321
Professional, Scientific, and Technical Services	462,024	468,931	477,521	485,657	491,036	490,776	499,043	506,149	512,445	518,151	522,211
Management of Companies and Enterprises	34,120	34,481	34,446	34,968	38,207	38,318	39,268	40,038	40,682	41,234	41,536
Administrative and Support and Waste Management and Remediation Services	173,749	176,199	177,771	177,920	178,215	164,957	164,614	164,417	164,321	164,326	164,505
Educational Services	98,019	95,647	96,298	98,131	101,478	95,027	96,516	97,949	99,340	100,622	101,970
Health Care and Social Assistance	256,652	266,203	271,026	278,538	282,615	268,589	273,864	278,615	283,001	287,093	290,500
Arts, Entertainment, and Recreation	42,710	44,342	45,195	46,752	47,295	34,572	33,863	33,404	33,119	32,951	44,930
Accommodation and Food Services	215,768	221,989	230,508	233,239	235,133	163,576	156,522	151,541	156,519	189,948	223,376
Other Services (except Public Administration)	228,178	224,859	217,492	219,550	224,583	210,810	211,900	213,211	214,679	216,226	218,154
Government	666,695	669,524	670,697	673,048	675,328	673,981	676,598	678,804	680,709	682,401	683,577
Unclassified Industry	4,797	5,281	4,471	3,017	2,799	3,311	3,502	3,658	3,789	3,902	3,970
Total	2,867,088	2,897,859	2,927,447	2,957,275	2,991,168	2,826,632	2,839,774	2,852,989	2,876,393	2,929,845	2,994,625
Source: GMU Center for Regional Analysis, EMSI. Note: Forecasts used data from 2001 to present, 2015 forward shown for conciseness											