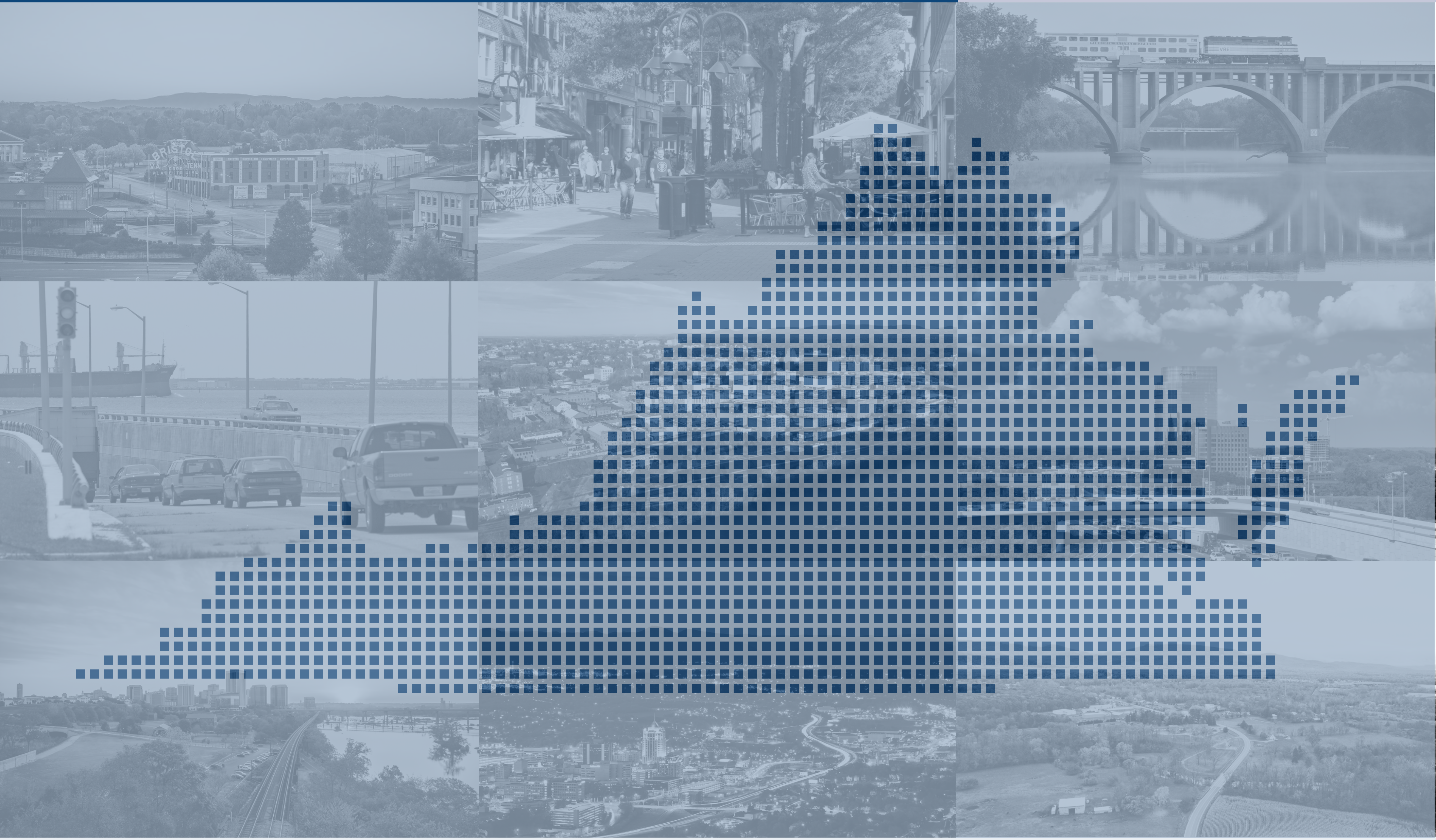
SUMMARY REPORT: 2022 VTRANS BIENNIAL TRANSPORTATION SURVEY

VTRANS | VIRGINIA'S TRANSPORTATION PLAN



PREPARED BY THE OFFICE OF INTERMODAL PLANNING AND INVESTMENT
FOR THE COMMONWEALTH TRANSPORTATION BOARD (CTB)

MARCH 2023

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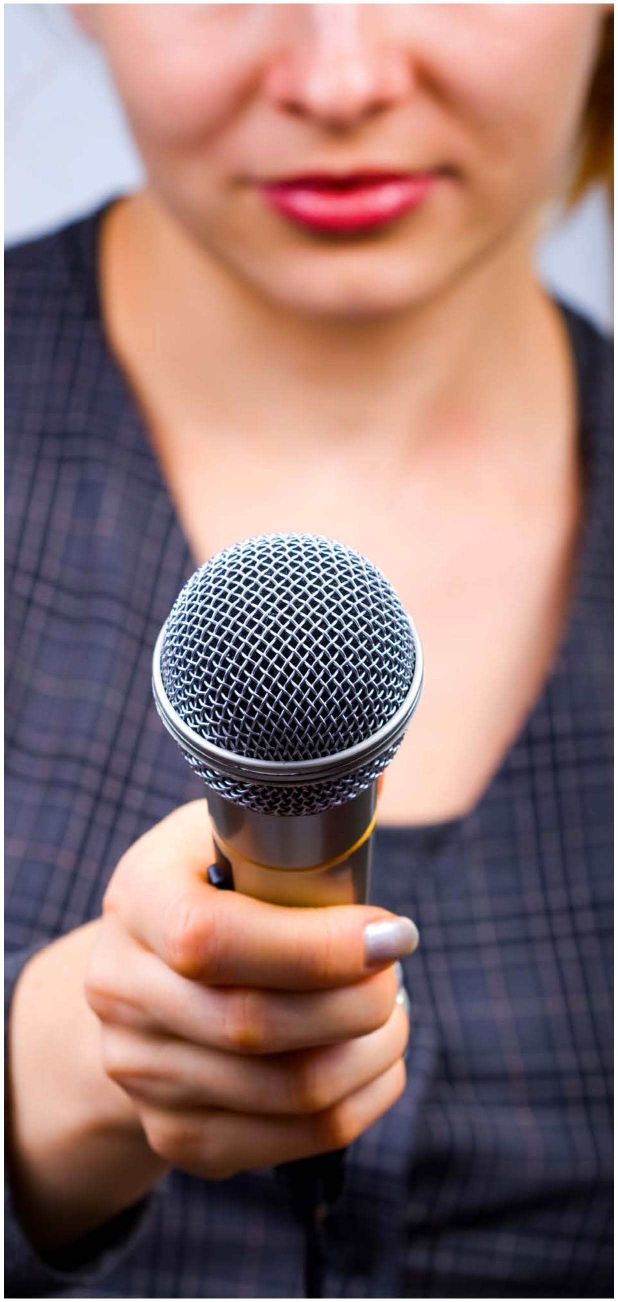

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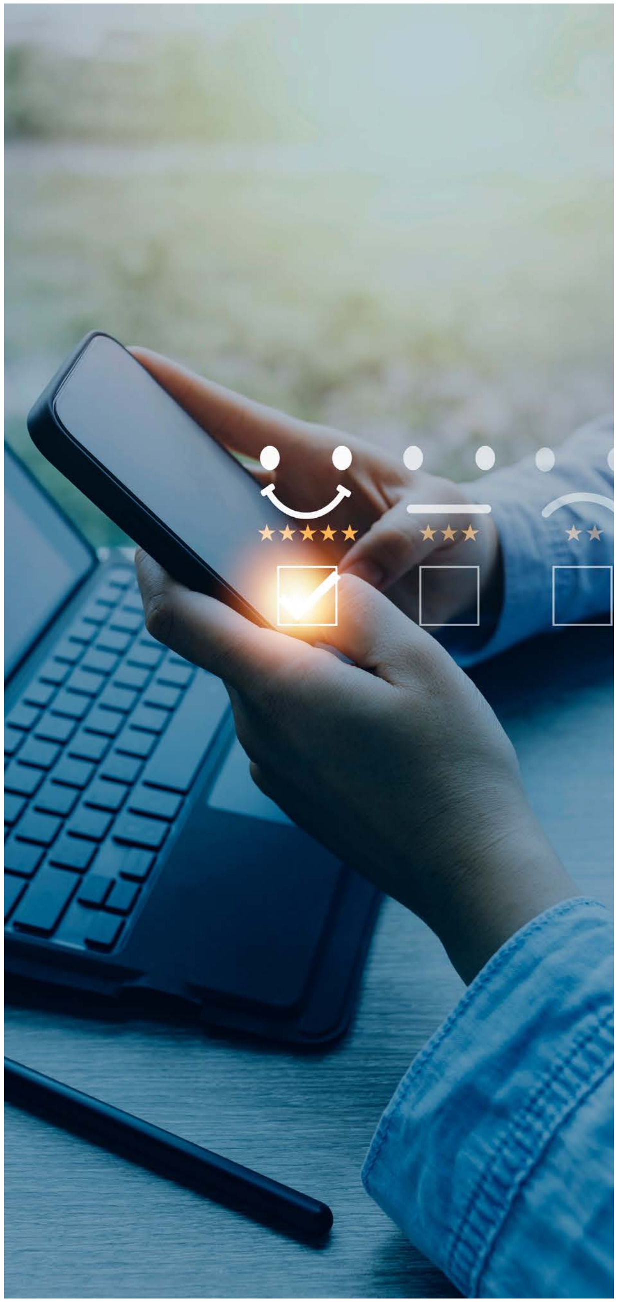

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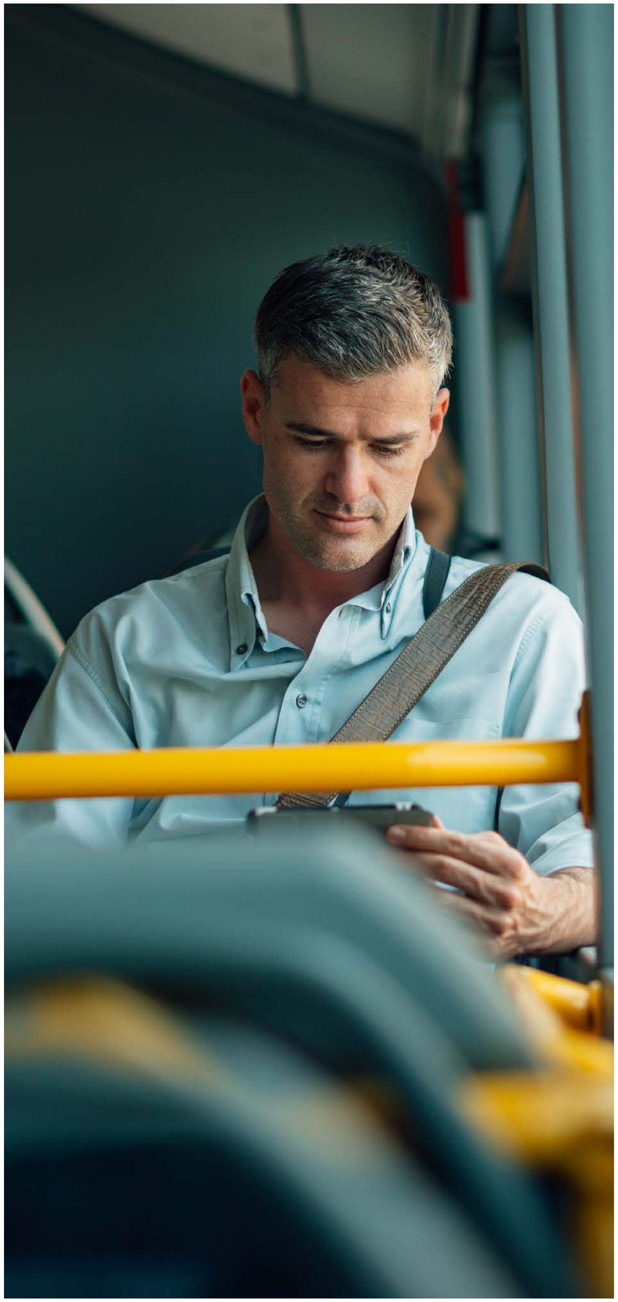

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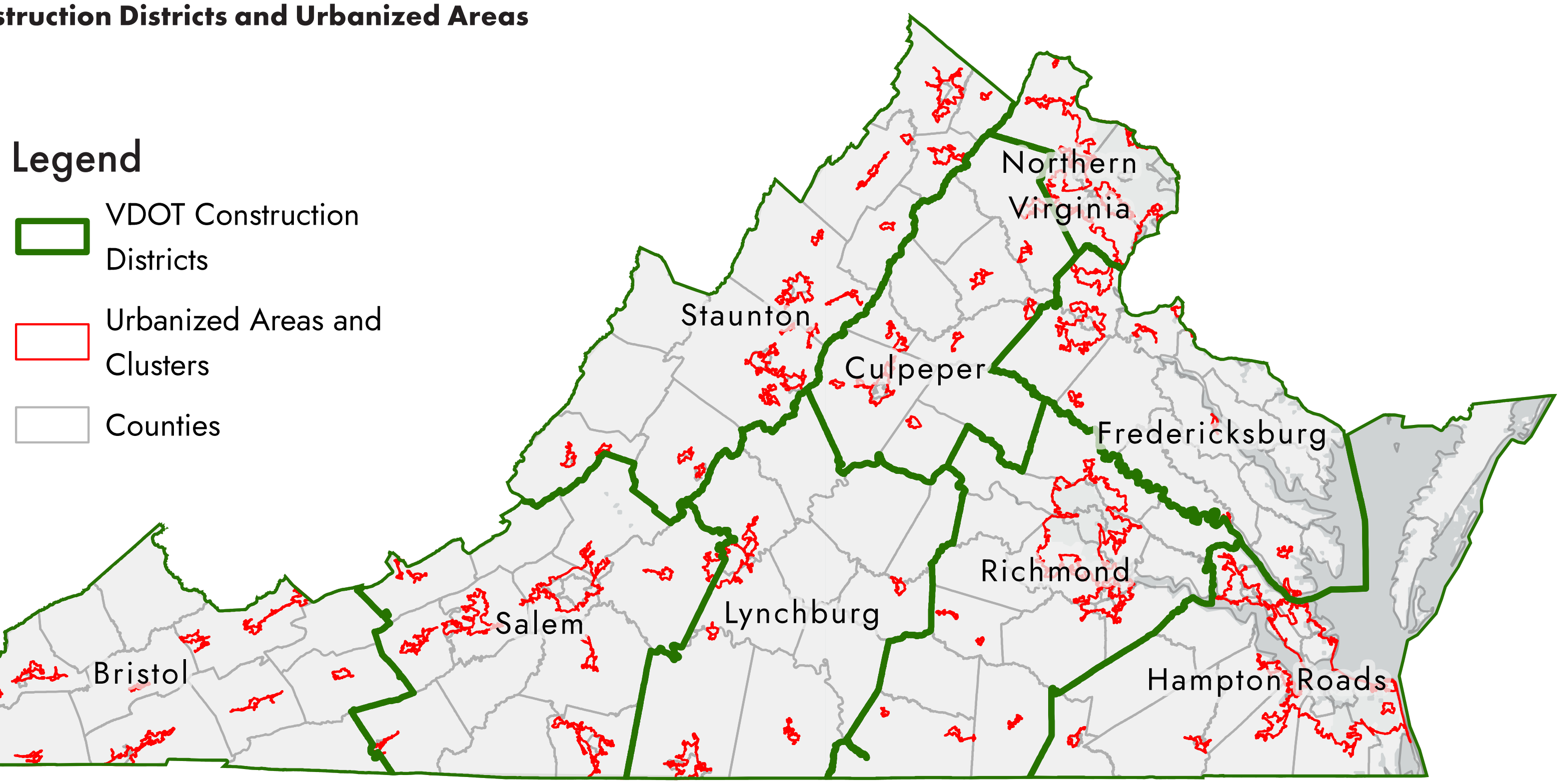
EXECUTIVE SUMMARY

This executive summary highlights some of the key findings from the 2022 VTrans Biennial Transportation Survey. The Survey results are reported for the entire state and each Virginia Department of Transportation (VDOT) Construction District (Figure E-1). The results are also available for urbanized and non-urbanized areas in each VDOT Construction District on InteractVTrans DataExplorer.

The sample for this study was drawn using address-based sampling (ABS). A random sample of residential addresses was pulled and each sample address was sent a letter inviting them to complete the survey either online or by phone. Responses were accepted between July 29, 2022 and October 3, 2022.

In total, 7,146 fully completed surveys were received, yielding a representative sample of Virginians with a response rate of 5.4%. The response rate was nearly twice that anticipated.

Figure E-1: VDOT Construction Districts and Urbanized Areas


Legend
VDOT Construction Districts
Urbanized Areas and Clusters
Counties
Northern Virginia
Staunton
Culpeper
Fredericksburg
Richmond
Salem
Lynchburg
Bristol
Hampton Roads

1.1. Transportation Priorities and Travel Characteristics

Virginian's Transportation Priorities

1 Supporting the economy by reducing congestion and making travel more reliable.

2 Ensuring transportation is safe and secure.

3 Ensuring transportation allows for efficient access to jobs and services.

Ensuring transportation is well-maintained and in good condition.

The survey posed questions to identify Virginians' top transportation priorities and general commute patterns. Noteworthy takeaways include the following:

- **Statewide, 30% of Virginians think that supporting the economy by reducing congestion and making travel more reliable should be the top priority.**
  - Reducing congestion and making travel more reliable is the top priority for urban area residents (32%) and the third priority for those in non-urban areas (24%)
  - Virginians who selected reducing congestion and increasing reliability as their top priority also tend to have the longest commutes.
- **Statewide, 23% of Virginians think safe and secure transportation should be the top priority.**
  - Safe and secure transportation is a slightly higher priority for non-urban area residents (26%) than those in urbanized areas (21%).
- **One in five Virginians think that the transportation priority should be providing efficient access to jobs.**
  - This is a higher priority for urban area residents (20%) than non-urban area residents (17%).
- **Approximately one-half of employed residents have the opportunity to work remotely.** Of those who do have the option, most (94%) opt to do so.
- **Statewide self-reported average travel time to work or school is 29 minutes.**
  - Virginians report that this travel time varies between 25 and 41 minutes, depending on congestion.
  - Fredericksburg Construction District residents have the highest self-reported travel time to work or school (an average of 43 minutes) and trip lengths (an average of 35 miles). The self-reported travel time increases to an hour in congested conditions.
  - Salem Construction District's residents report the lowest average travel time to work or school (23 minutes).
  - Non-urban area residents commute farther, an average of 24 miles versus 15 miles for urban area residents.

1.2. Driving in Virginia

The survey asked several questions regarding driving in Virginia. Noteworthy takeaways include the following:

- **Statewide, nearly one-half of residents are dissatisfied with the level of traffic congestion**, with dissatisfaction being higher in urbanized areas.
  - Statewide, a majority (55%) of urban area residents are very or somewhat dissatisfied with traffic congestion compared to 24% in non-urban areas.
  - Three in five residents in Fredericksburg and Northern Virginia Construction Districts are highly or somewhat dissatisfied with the level of traffic congestion.
  - Nearly a majority of residents in Fredericksburg and Staunton Construction Districts are highly or somewhat dissatisfied with being able to get through areas with high truck traffic.
- **Approximately 60% of residents are satisfied with being able to get to places on time reliably.**
  - Satisfaction with being able to get to places on time reliably is higher among non-urban area residents (67%) than those in urban areas (55%).
- **Almost one-half of residents are satisfied with safety from automobile accidents statewide,** while one-third of residents are dissatisfied.
- **In Virginia, 5% of total households do not have a working vehicle.**
  - Vehicle access is greater among white Virginians (97%) compared to people of color (92%) and households with incomes less than $35,500 (89%), and people ages 18 to 34 years old (93%).
  - For commuters who have a vehicle available, nine in ten make at least one trip driving to work or school in a week, with 71% making at least three trips.

1.3. Transit and Rideshare Services in Virginia

630 VIENNA METRO
7727
703-339-7200

The survey asked several questions regarding transit use in Virginia. Noteworthy takeaways include the following:

- **A majority of Virginians indicate availability of local bus (51%) and rideshare services (e.g. Uber, Lyft) (77%) for travel to work or school.**
  - The availability of local or city buses is lower in non-urban areas (17%).
  - Similarly, there are noteworthy differences in the availability of rideshare services (e.g. Uber, Lyft) between urbanized (88%) and non-urbanized (40%) areas.
  - Residents that are age 55 or older are least likely (45%) to have access to a local or city bus for travel to work or school.
- **Statewide, more than four in ten residents are dissatisfied with access to employment opportunities by transit**.
  - Residents of Fredericksburg, Bristol, and Culpeper Construction Districts are the least satisfied.
  - People of color are more likely to use public transportation for commuting or travel to school during a typical week, and are more likely to use carpools or vanpools in a typical week.
- **Statewide, nearly 45% of residents are satisfied with access to employment opportunities through rideshare services.**
  - Residents in urban areas are most satisfied with using rideshare services for travel to work or school, with those in Northern Virginia Construction District being the most satisfied and the residents in Bristol Construction District being the least satisfied. This number is much lower in non-urbanized areas (24%).
  - Rideshare usage for travel to work or school is greater among people of color than among white Virginians.
  - Rideshare usage is lower among older residents and those with annual incomes greater than $35,500.
- **Statewide, Virginians have split opinions on the reliability of public transportation**, 37% are satisfied, and 38% are dissatisfied.

1.4. Bicycling and Walking in Virginia

The survey asked several questions regarding bicycling and walking. Noteworthy takeaways include the following:

- **Statewide, 14% of Virginians make one or more walking trips to work or school.**
  - Nearly twice (17%) urban area residents walk to work or school than non-urban area residents (8%).
  - Nearly two in three Virginians in urban areas are somewhat or very satisfied with walk trips to work or school.
- **One-half of Virginians are dissatisfied with access to school or employment by walking.**
  - Dissatisfaction is nearly identical in urban and non-urban areas.
- **Approximately four in ten residents are dissatisfied with access to school or employment by biking,** with a slightly greater level of dissatisfaction for non-urban area residents.
  - Residents in Fredericksburg and Richmond Construction Districts are more dissatisfied with biking to work than those in other Construction Districts.
  - Approximately three-quarters of residents who use a personal bicycle for non-work or non-school trips are satisfied with their experience.
- **An average of one in ten residents who have available shared services for bikes, e bikes, and scooters use these services at least once a week for travel to work or school.**
  - Nearly one in four Virginians noted that such services are available.
  - Those age 18 to 34 are the most likely to use these services (15% versus 6% of older residents).
- **In terms of e-bike usage, eight in ten residents who use this mode when traveling to work or school are satisfied,** which is significantly higher than users of all the other alternative modes of travel (such as transit, taxi, rideshare, carpools, and scooter shares).

1.5. Emerging Transportation Technology Trends in Virginia

CAR CHARGING ONLY
ELECTRIC VEHICLE CHARGING STATION
Dominion
CHARGING STATION
CHARGING STATION
VDOT
CAR CHARGING ONLY

The survey included several questions regarding the use of emerging transportation-related technologies in Virginia. These included electric and hybrid vehicles, connected and autonomous vehicles, and different means of delivery of goods and accessing services. Noteworthy takeaways include the following:

- **One in four Virginians report availability of shared e-bikes or scooters for travel to work or school.**
  - One in three urban area residents report availability of shared e-bikes or scooters.
  - Nearly one in ten Virginians use shared e-bikes or scooters at least once a week to travel to work or school.
- **Approximately one in ten households have an electric vehicle (EV) or hybrid vehicle.**
  - Nearly 17% of households with annual incomes of $100,000 or more and with a vehicle have at least one electric or hybrid vehicle.
  - EV charging is mostly done at home, though non-urban area residents are notably more reliant on public charging stations.
  - Among EV owners, eight in ten use these vehicles for long-distance travel.
- **Almost half of vehicle owners who do not currently own an EV say they are willing to consider purchasing EVs.**
  - The top reasons for not purchasing EVs include cost, charging stations, and range concerns.
- **The majority of Commonwealth residents are aware of autonomous vehicles (AVs).**
  - More than half of residents would be willing to take a ride in a self-driving service, but only if a human operator is present.
  - More than one-third of residents would be willing to buy an AV.
- **When considering ground-based automated delivery services, seven in ten residents say they would use them.**
- **In terms of airborne drone delivery services, 60% of residents say they would use them**.

1.6. Transportation Asset Condition in Virginia

The survey asked several questions about the condition of the transportation system. Noteworthy takeaways include the following:

- **Approximately one-half of residents are satisfied with the condition of highways and roads.**
    - A majority of residents (52%) in Bristol Construction District are somewhat or very dissatisfied.
- **More than half of residents are satisfied with the condition of bridges.**
    - Non-urban area residents are more satisfied with the condition of bridges than urban area residents.
- **Almost half of residents are satisfied with the condition of sidewalks.**
    - Residents in urban areas tend to be more satisfied with the condition of their sidewalks compared to those in non-urban areas.
    - Residents of Northern Virginia Construction District have the highest satisfaction levels (62%).
- **Statewide, 42% of residents are dissatisfied with the condition of bicycle lanes.**
    - More residents in urbanized areas (37%) are very or somewhat satisfied with the condition of bicycle lanes compared to those in non-urban areas (24%).
    - The greatest satisfaction was seen in Northern Virginia Construction District (43%), while Fredericksburg residents were the most dissatisfied (61%).
    - Bike riders are more likely to be dissatisfied with the condition of bicycle lanes in their area, compared to those who do not ride bicycles.
- **Approximately one-half of urban area residents are very or somewhat satisfied with the condition of bus stops, park and ride, or rail stations** in their area, while 36% of non-urban area residents are very or somewhat satisfied.
    - Fifty seven percent (57%) of Northern Virginia Construction District residents are very or somewhat satisfied with the condition of bus stops, park and ride, and rail stations.

SECTION 1:
CONTEXT AND OVERVIEW

1.1: Purpose of the 2022 VTrans Biennial Transportation Survey

The 2022 VTrans Biennial Transportation Survey (hereinafter referred to as "the Survey") is conducted as part of VTrans and developed for the Commonwealth Transportation Board (CTB) by OIPI. VTrans has four focus areas symbolized by four pillars in Figure 1. The Survey will inform the CTB's Vision, Guiding Principles, Goals and Objectives (Pillar 1) and VTrans Trend Trackers to monitor the 2021 VTrans Long-Term Risk and Opportunity Register (Pillar 3).

The sample for this study was drawn using address-based sampling (ABS). A random sample of residential addresses was pulled from each of the nine Construction Districts, and each sample address was sent a letter inviting them to complete the survey either online or by phone. Responses were accepted between July 29, 2022 and October 3, 2022.

Appendix 1 includes the survey methodology and the sampling plan. Appendices 2 and 3 describe data collection and data analysis methods and techniques. Appendix 10 includes the survey questionnaire. Finally, Appendix 13 includes a summary of known limitations and opportunities for continuous improvement.

Figure 1-1: Focus Areas of VTrans – Virginia's Transportation Plan

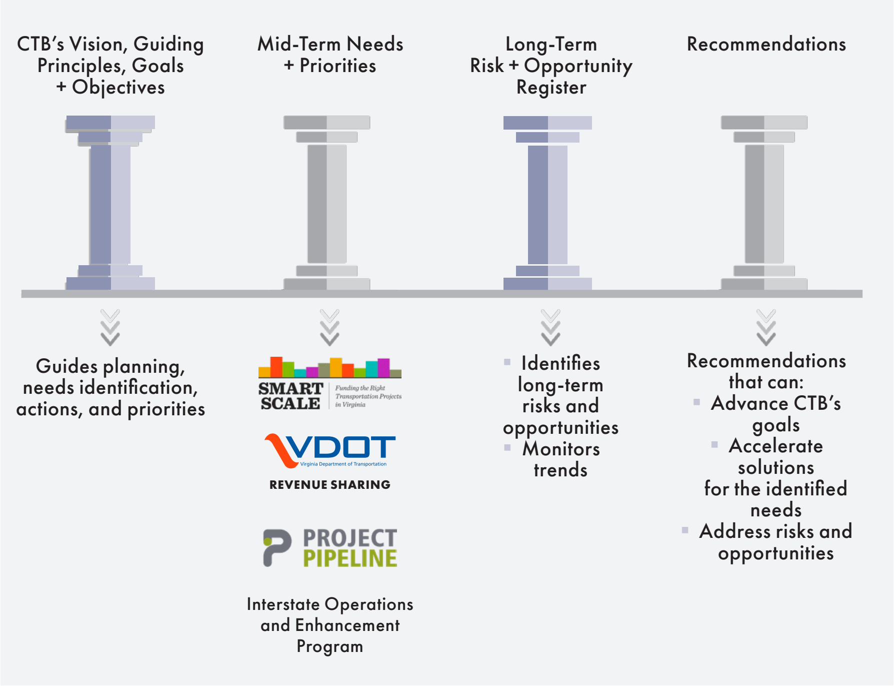
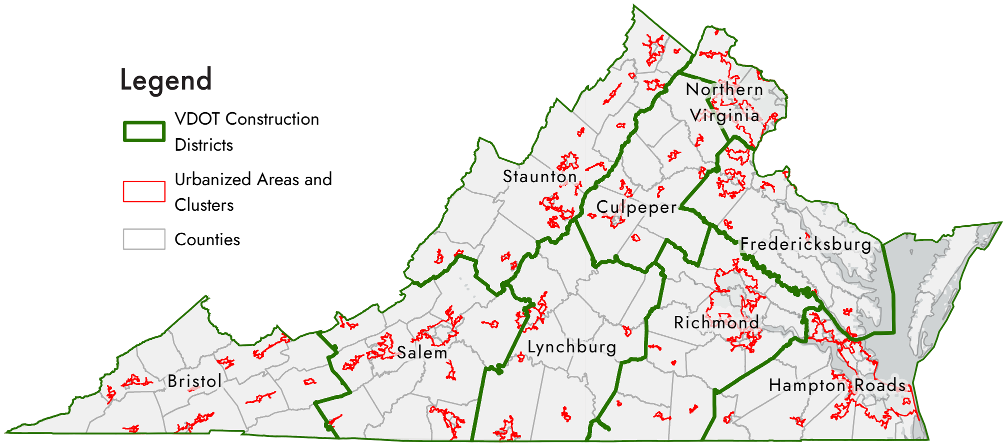

CTB's Vision, Guiding Principles, Goals + Objectives
Mid-Term Needs + Priorities
Long-Term Risk + Opportunity Register
Recommendations
Guides planning, needs identification, actions, and priorities
SMART SCALE
Funding the Right Transportation Projects in Virginia
VDOT
Virginia Department of Transportation
REVENUE SHARING
PROJECT PIPELINE
Interstate Operations and Enhancement Program
Identifies long-term risks and opportunities
Monitors trends
Recommendations that can:
Advance CTB's goals
Accelerate solutions for the identified needs
Address risks and opportunities

Figure 1-2: VDOT Construction Districts and Urbanized Areas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VDOT Construction Districts
Urbanized Areas and Clusters
Counties
Northern Virginia
Staunton
Culpeper
Fredericksburg
Richmond
Salem
Lynchburg
Bristol
Hampton Roads

1.2: Purpose of the Document

This report serves the following purposes:

- Document the intent of the Survey.
- Document the methodology used to conduct the Survey.
- Document the questionnaire and invitation letter used for the Survey.

Please utilize InteractVTrans DataExplorer for more data. This online application allows VTrans stakeholders to create custom charts for their areas of interest.

1.3: Summary of the 2022 VTrans Biennial Survey Process

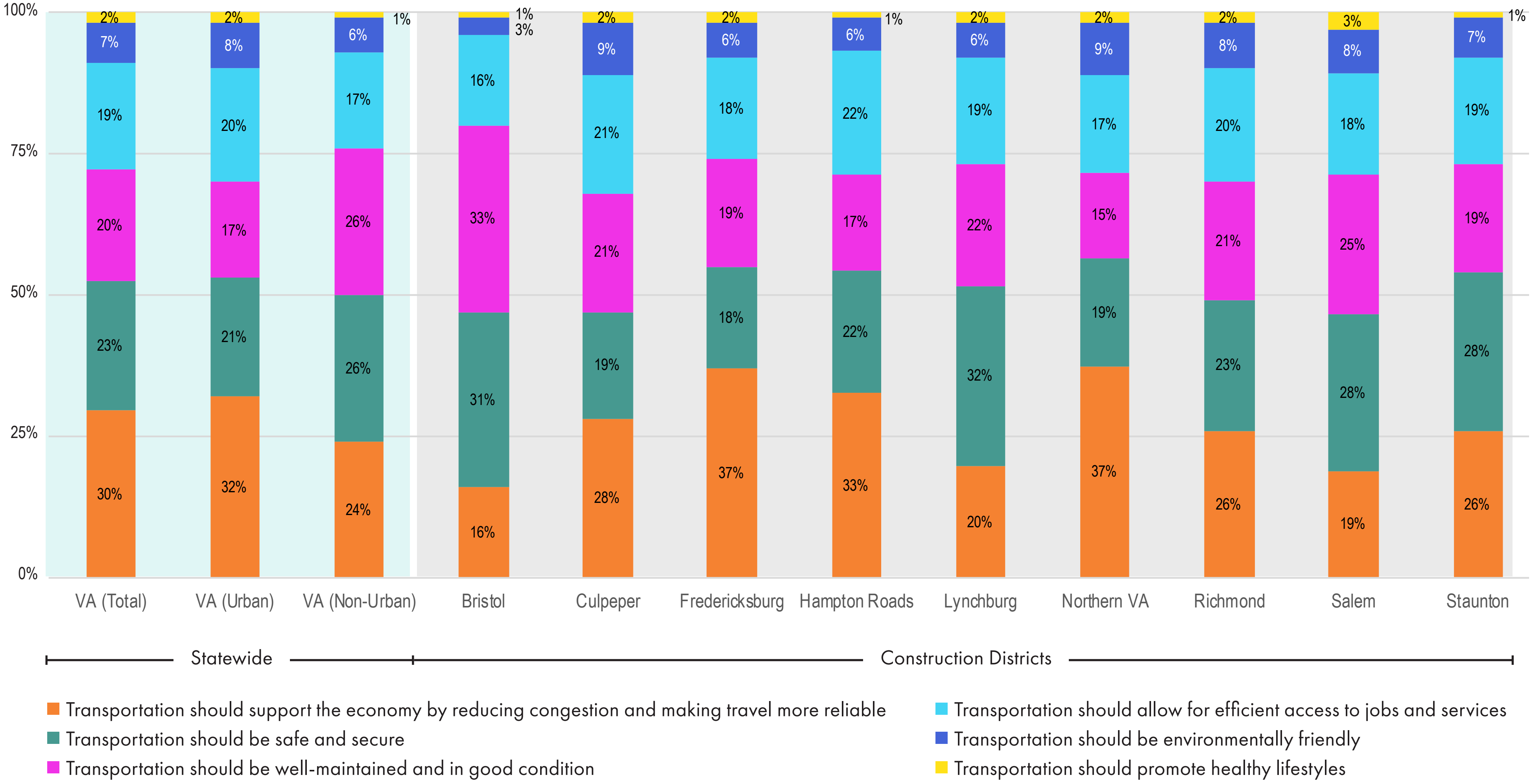
The following steps summarize the process of conducting the 2022 VTrans Biennial Survey.

1. **Establish building blocks for the Survey:** The Virginia Department of Transportation's (VDOT) nine Construction Districts are used as the building blocks for the 2022 VTrans Biennial Transportation Survey. These Construction Districts allow the Survey to capture differences in opinions and travel characteristics across the Commonwealth. Using the Construction Districts as building blocks for the Survey allows the results to be utilized for different regional purposes. Appendix 1 contains more details.
    - Furthermore, each Construction District is divided into urban areas, as designated by the United States Census, and non-urban regions outside the Census-designated urbanized areas. This allows the survey to further capture and report any differences in opinions and travel characteristics within each Construction District. It also allows the Survey to be utilized by various regional entities.
2. **Conduct pre-test:** A pre-test is conducted to validate that the wording and flow of questions are proper and that no questions are omitted. In addition, the survey invitation, and any other materials used during the Survey, are also tested. Appendix 1 in the Summary Report: 2022 VTrans Biennial Survey Report contains more details.
3. **Draw sample:** A random sample of residential addresses is pulled from urban and non-urban areas of each of the nine Construction Districts.
4. **Send invitation letters:** Each residential address was sent an enveloped letter introducing the study and explaining the three options with which residents age 18 or older, with at least 6 months of stay in Virginia in 2022, can participate. Appendices 4–6 contain copies of the invitation letters.
    - Online
    - Call to schedule
    - Receive a call
5. **Send reminders:** To increase the response rate, reminder invitations are sent to non-responders. Appendices 7–9 contain copies of the reminder invitations.
6. **Collect data:** Appendix 10 contains the Survey questionnaire. Data collection began on July 29, the date on which the first mailing was sent out; the second mailing followed closely on August 15, 2022. The third mailing was mailed on September 9, 2022. The Survey remained active online and over the phone through October 3, 2022.
7. **Synthesize data:** In total, 7,146 completed surveys were fielded, providing a response rate of 5.1%. This included 28 Spanish surveys and 17 Simplified Chinese surveys. A total of 6,817 surveys were completed online, and 329 were completed using phone calls. Appendix 2 provides more details about data collection and Appendix 3 includes details on data analysis.

SECTION 2:
PRIORITIES AND SATISFACTION

2.1: **STATEMENT AGREED WITH MOST**

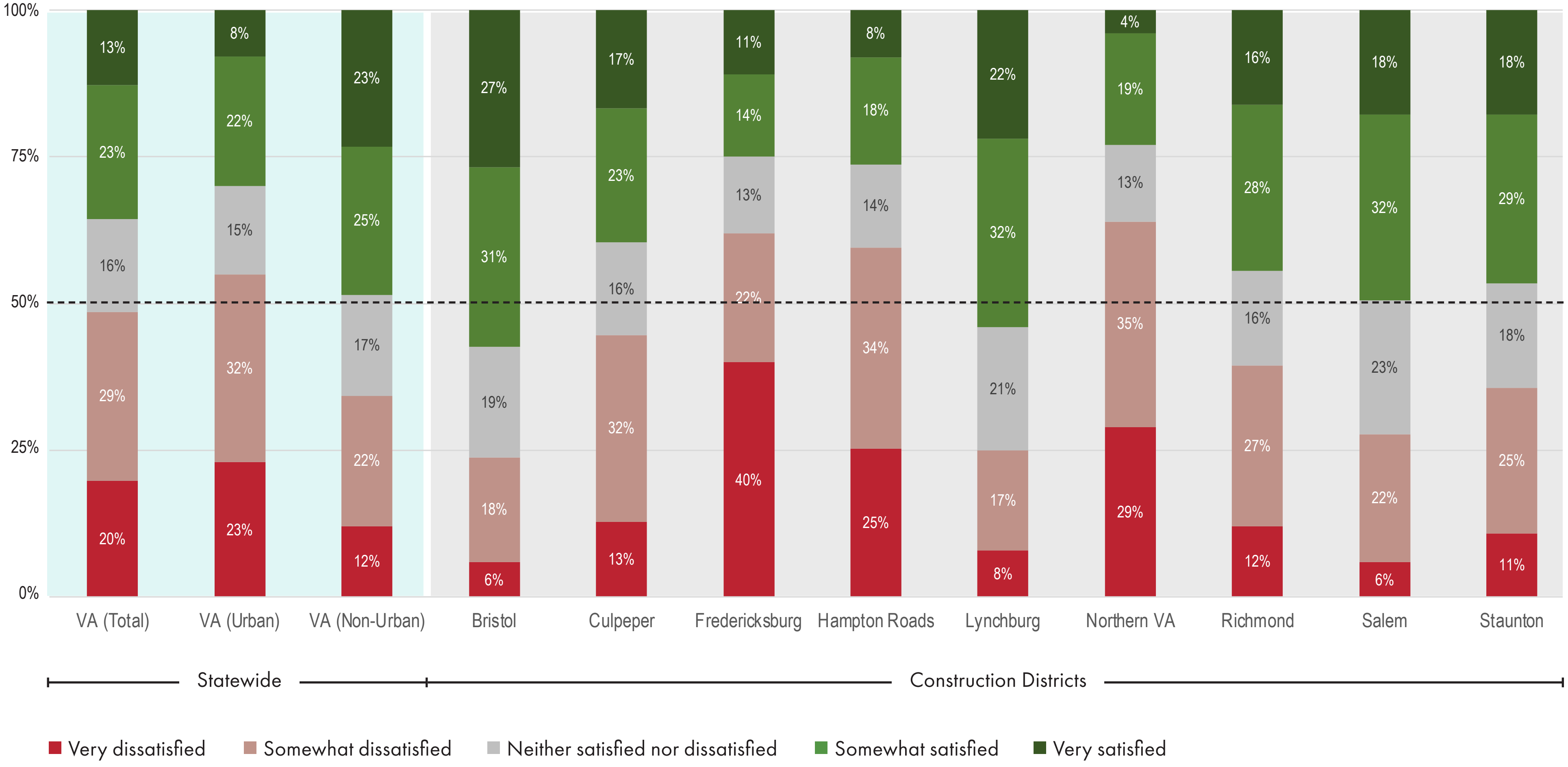
To begin the survey, residents were asked to identify their priorities for transportation in Virginia. Overall, more than one-half cited that "Transportation should support the economy by reducing congestion and making travel more reliable" or "Transportation should be safe and secure." This is generally consistent across Construction Districts, as well as for both statewide urban and non-urban areas.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,139 | VA (Urban) = 5,077 | VA (Non-Urban) = 2,062 | Construction Districts = 475 to 1,943

2.2.1: **SATISFACTION WITH TRAFFIC CONGESTION IN AREA**

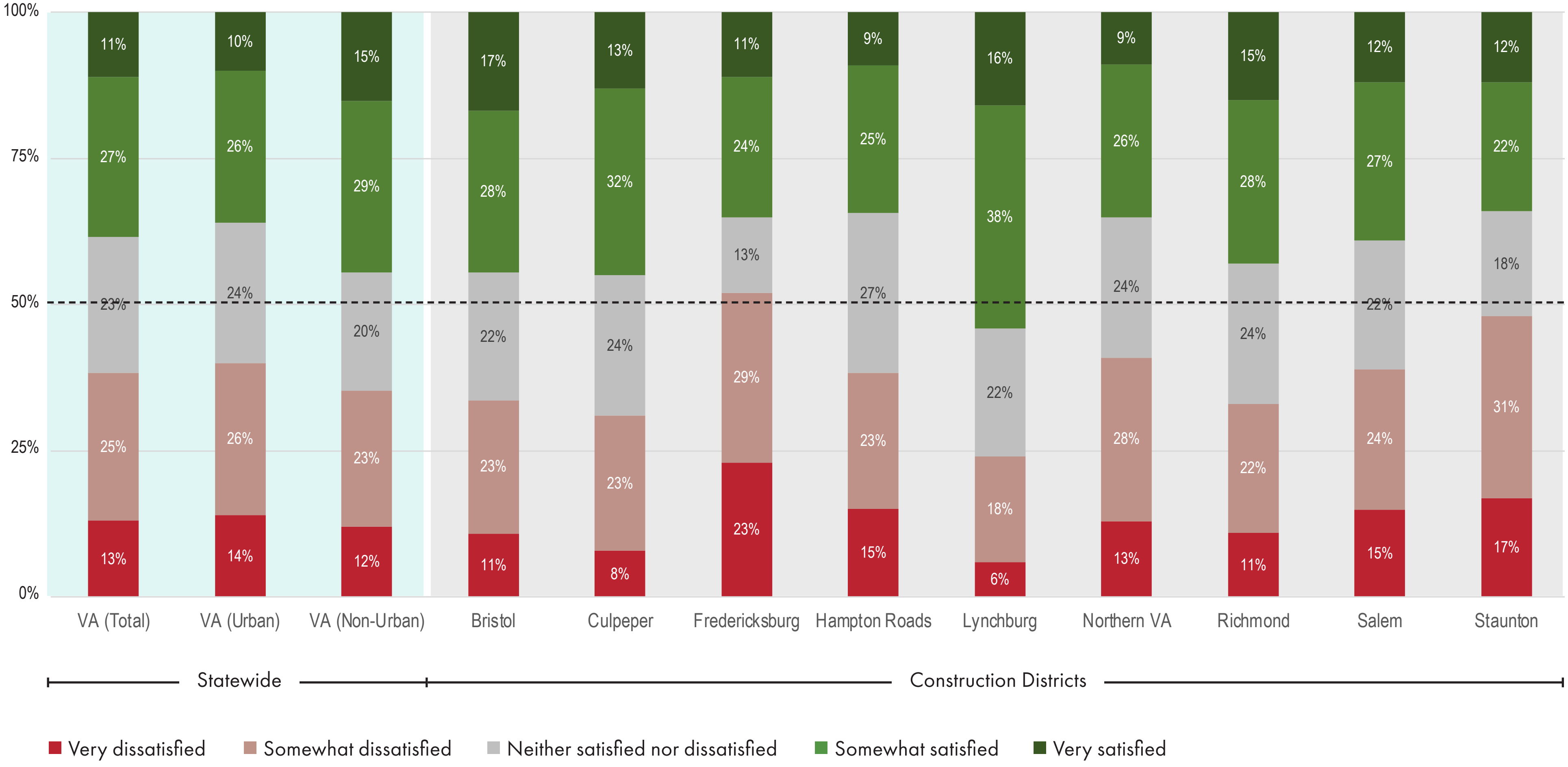
More than one-half (54%) of people in urban areas within the commonwealth are dissatisfied with traffic congestion. Less than 4 in 10 people (35%) in non-urban areas are dissatisfied.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 7,044 | VA (Urban) = 5,050 | VA (Non-Urban) = 1,994 | Construction Districts = 461 to 1,934

2.2.2: **SATISFACTION WITH BEING ABLE TO GET THROUGH AREAS WITH HIGH TRUCK TRAFFIC**

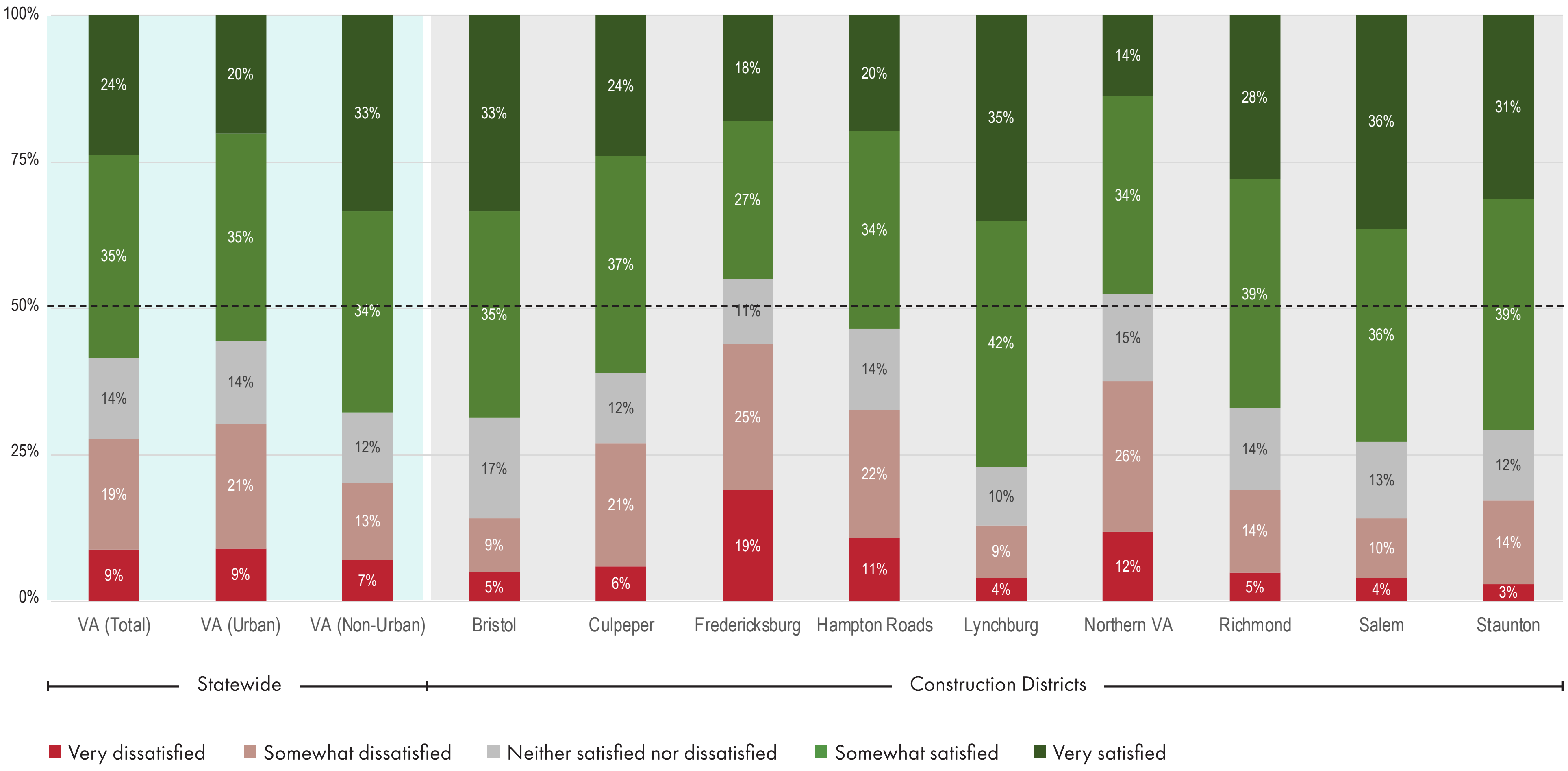
Approximately 4 in 10 full-time residents age 18 or older are satisfied with their ability to get through areas with high truck traffic. This is consistent in both the urban and non-urban areas of the commonwealth. Dissatisfaction is highest among those in the Staunton and Fredericksburg Construction Districts. Interstate 81 runs through Staunton, while Interstate 95 passes through Fredericksburg.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,667 | VA (Urban) = 4,745 | VA (Non-Urban) = 1,922 | Construction Districts = 446 to 1,795

2.2.3: **SATISFACTION WITH BEING ABLE TO GET TO A PLACE ON-TIME RELIABLY**

Full-time residents age 18 or older in non-urban areas showed higher satisfaction than those in urban areas regarding on-time reliability; note, traffic congestion is higher in urban areas.



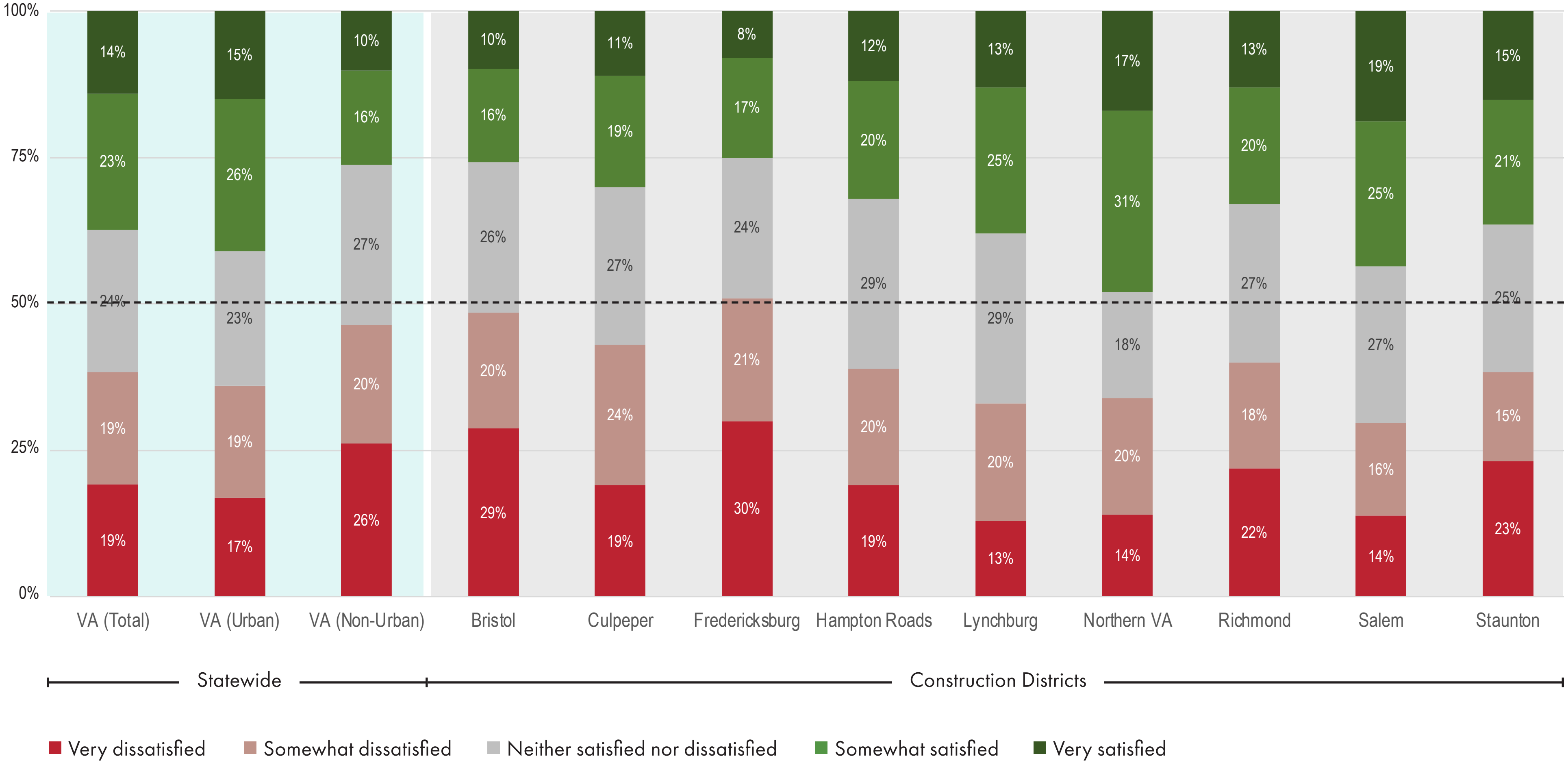
Asked of: Full-time residents, 18 or older

Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points

Number of valid responses (n-size): VA (Total) = 7,052 | VA (Urban) = 5,012 | VA (Non-Urban) = 2,040 | Construction Districts = 471 to 1,921

2.2.4: **SATISFACTION WITH RELIABILITY OF PUBLIC TRANSPORTATION**

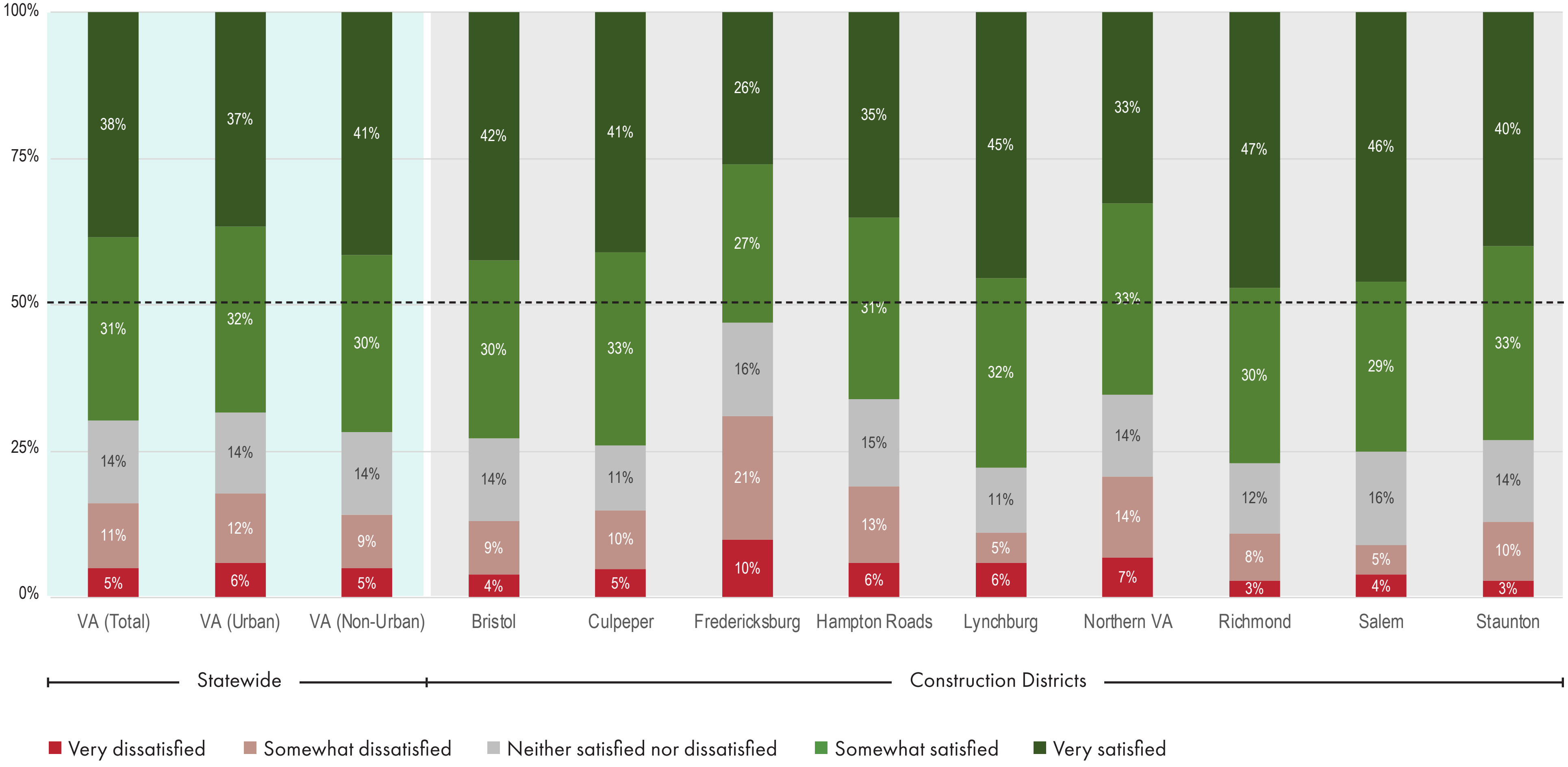
Satisfaction with the reliability of public transportation is relatively low across Virginia (38% satisfied overall). Satisfaction is greater among those in urban areas, though it still falls below one-half (41%). Satisfaction with the reliability of public transportation is highest among those in Northern Virginia (48% satisfied). The Salem Construction District noted high satisfaction (44% satisfied).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.7 percentage points | Construction Districts = ±2.4 to ±5.3 percentage points
Number of valid responses (n-size): VA (Total) = 5,526 | VA (Urban) = 4,209 | VA (Non-Urban) = 1,317 | Construction Districts = 338 to 1,701

2.2.5: **SATISFACTION WITH BEING ABLE TO GET TO EMPLOYMENT OPPORTUNITIES BY DRIVING**

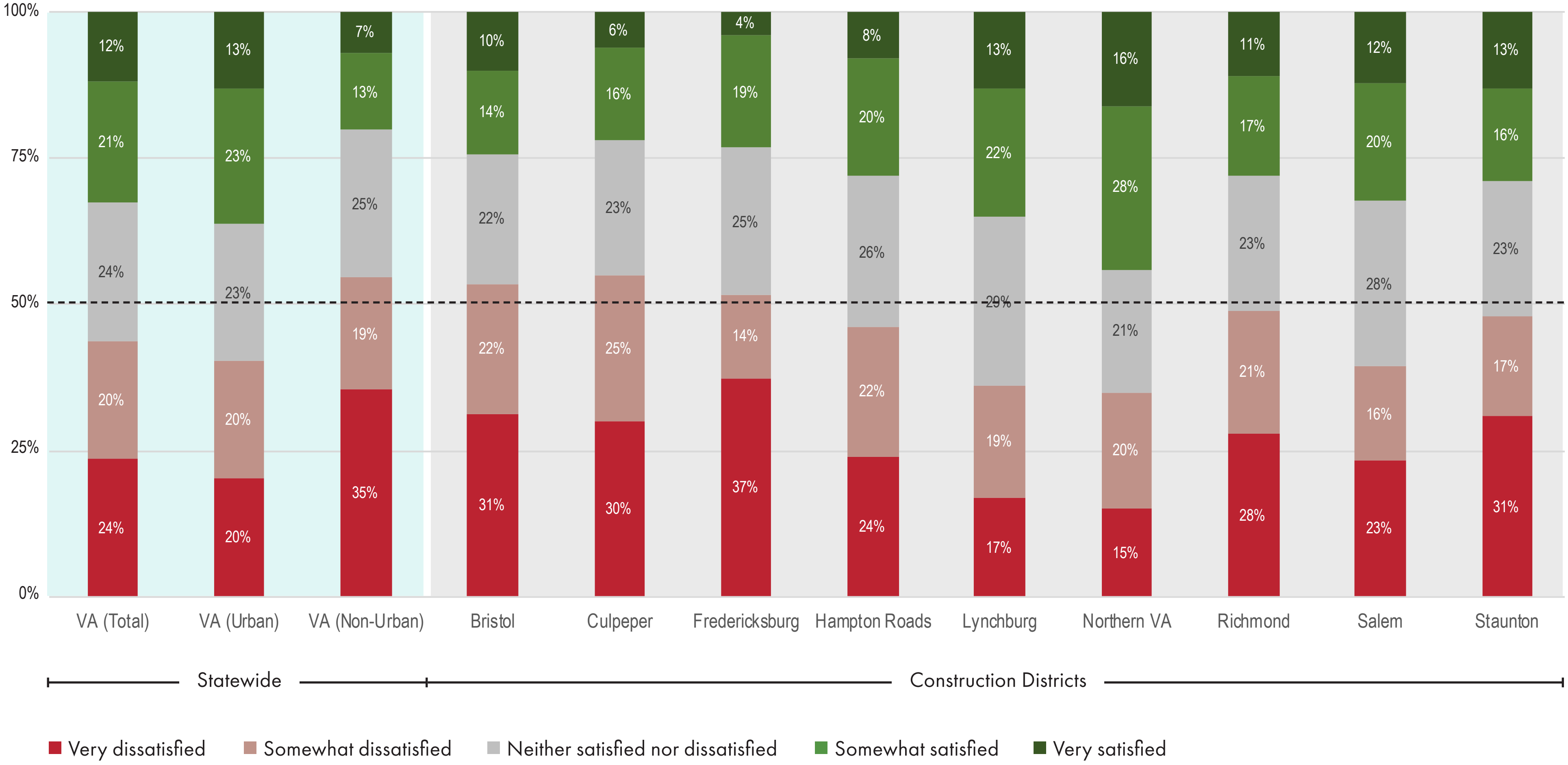
Full-time residents age 18 or older in the Fredericksburg Construction District are the least satisfied with being able to get to employment opportunities by driving (48%). This area also noted low satisfaction with being able to get to places on-time reliably and satisfaction due to traffic congestion.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.3 percentage points | Construction Districts = ±2.3 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,473 | VA (Urban) = 4,592 | VA (Non-Urban) = 1,881 | Construction Districts = 445 to 1,746

2.2.6: **SATISFACTION WITH BEING ABLE TO GET TO EMPLOYMENT OPPORTUNITIES BY PUBLIC TRANSIT**

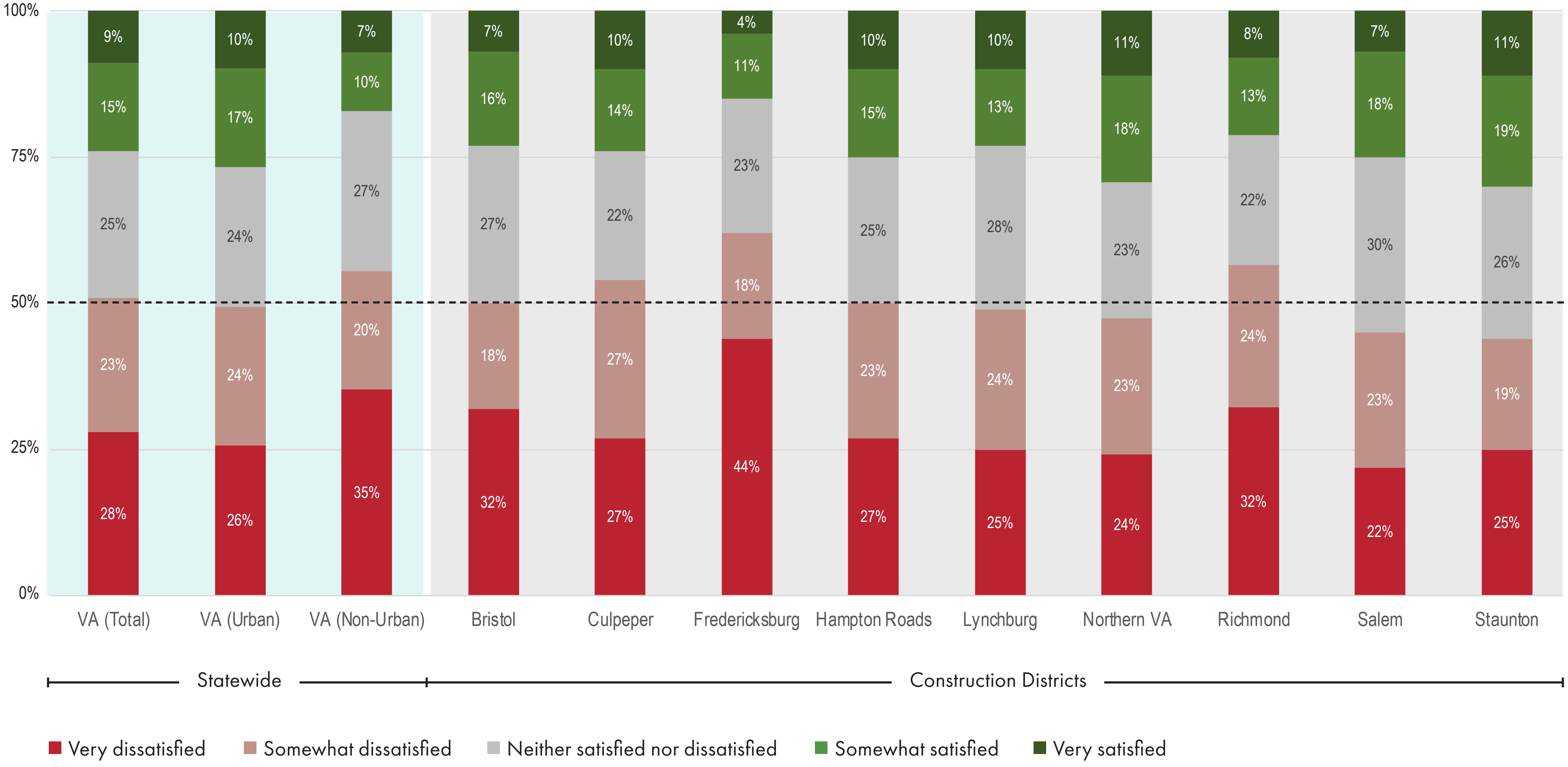
Among full-time residents age 18 or older, satisfaction with being able to get to employment opportunities is in line with with their satisfaction with the reliability of public transit. Statewide, approximately one-third are satisfied (32%), though this is measurably lower among those in non-urban areas (21% satisfied). Satisfaction is highest among those in Northern Virginia (44%).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.4 percentage points | VA (Urban) = ±1.6 percentage points | VA (Non-Urban) = ±2.7 percentage points | Construction Districts = ±2.5 to ±5.5 percentage points
Number of valid responses (n-size): VA (Total) = 5,179 | VA (Urban) = 3,877 | VA (Non-Urban) = 1,302 | Construction Districts = 316 to 1,581

2.2.7: **SATISFACTION WITH BEING ABLE TO GET TO EMPLOYMENT OPPORTUNITIES BY WALKING**

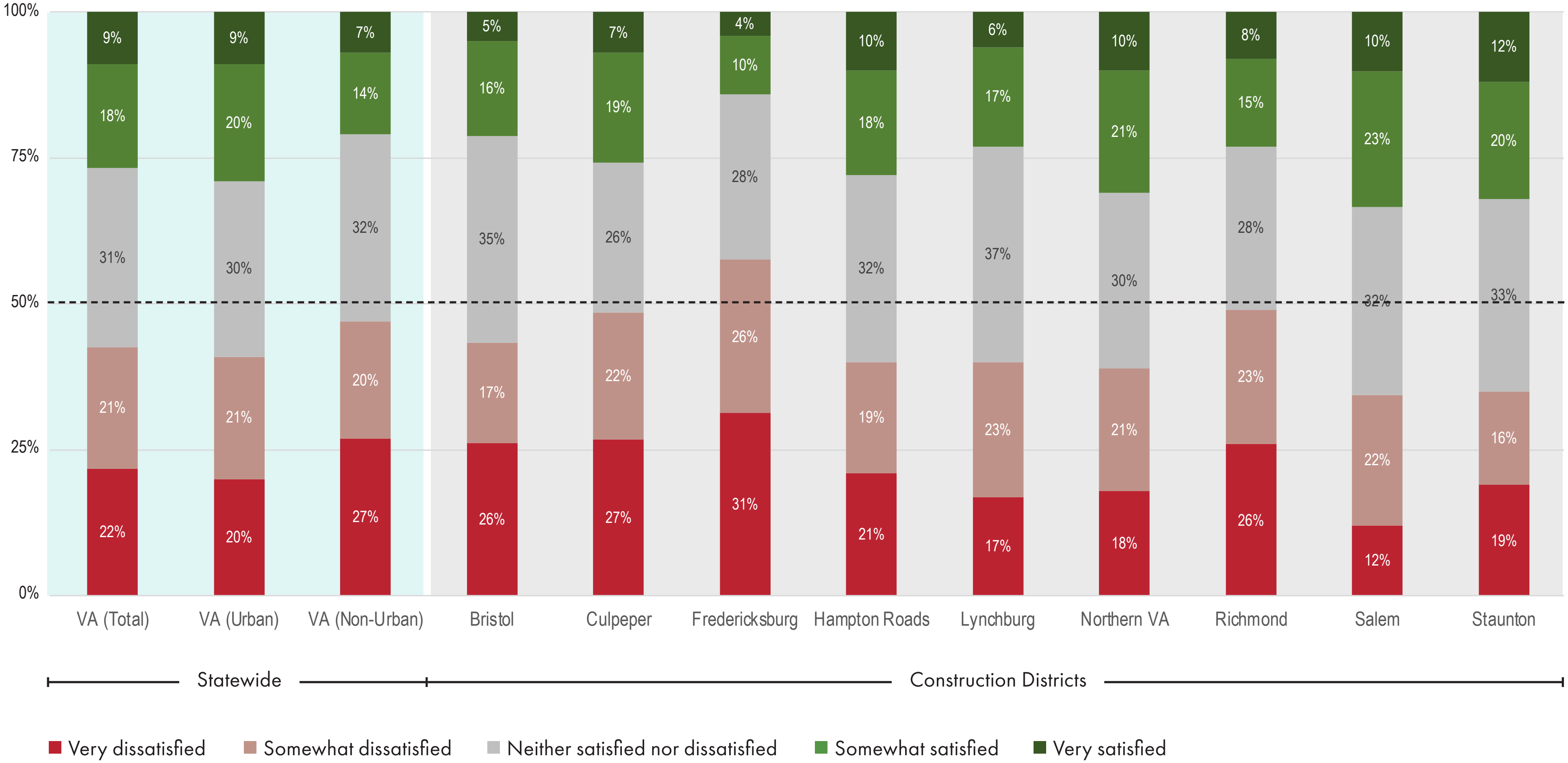
Among full-time residents age 18 or older, satisfaction with being able to get to employment opportunities by walking is relatively low, with one-fourth satisfied statewide (25%). This is generally consistent across the Construction Districts.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.4 percentage points | VA (Urban) = ±1.6 percentage points | VA (Non-Urban) = ±2.7 percentage points | Construction Districts = ±2.5 to ±5.3 percentage points
Number of valid responses (n-size): VA (Total) = 5,248 | VA (Urban) = 3,958 | VA (Non-Urban) = 1,290 | Construction Districts = 339 to 1,487

2.2.8: **SATISFACTION WITH BEING ABLE TO GET TO EMPLOYMENT OPPORTUNITIES BY BIKING**

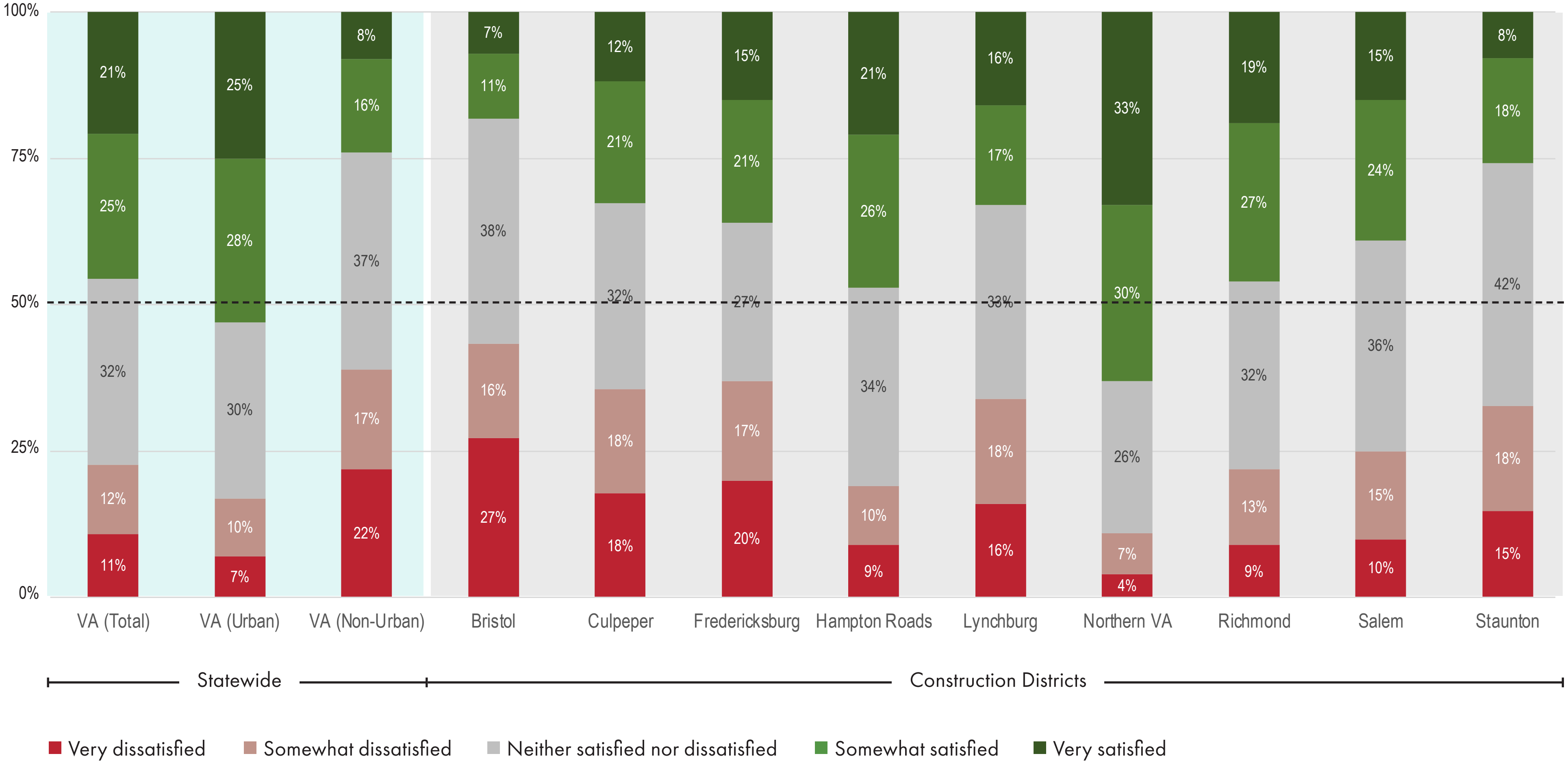
Among full-time residents age 18 or older, satisfaction with being able to get to employment opportunities by biking is relatively low, with one-fourth satisfied statewide (27%). This is generally consistent across the Construction Districts.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.4 percentage points | VA (Urban) = ±1.6 percentage points | VA (Non-Urban) = ±2.7 percentage points | Construction Districts = ±2.7 to ±5.4 percentage points
Number of valid responses (n-size): VA (Total) = 5,033 | VA (Urban) = 3,713 | VA (Non-Urban) = 1,320 | Construction Districts = 334 to 1,352

2.2.9: SATISFACTION WITH BEING ABLE TO GET TO EMPLOYMENT OPPORTUNITIES BY RIDESHARE SERVICES

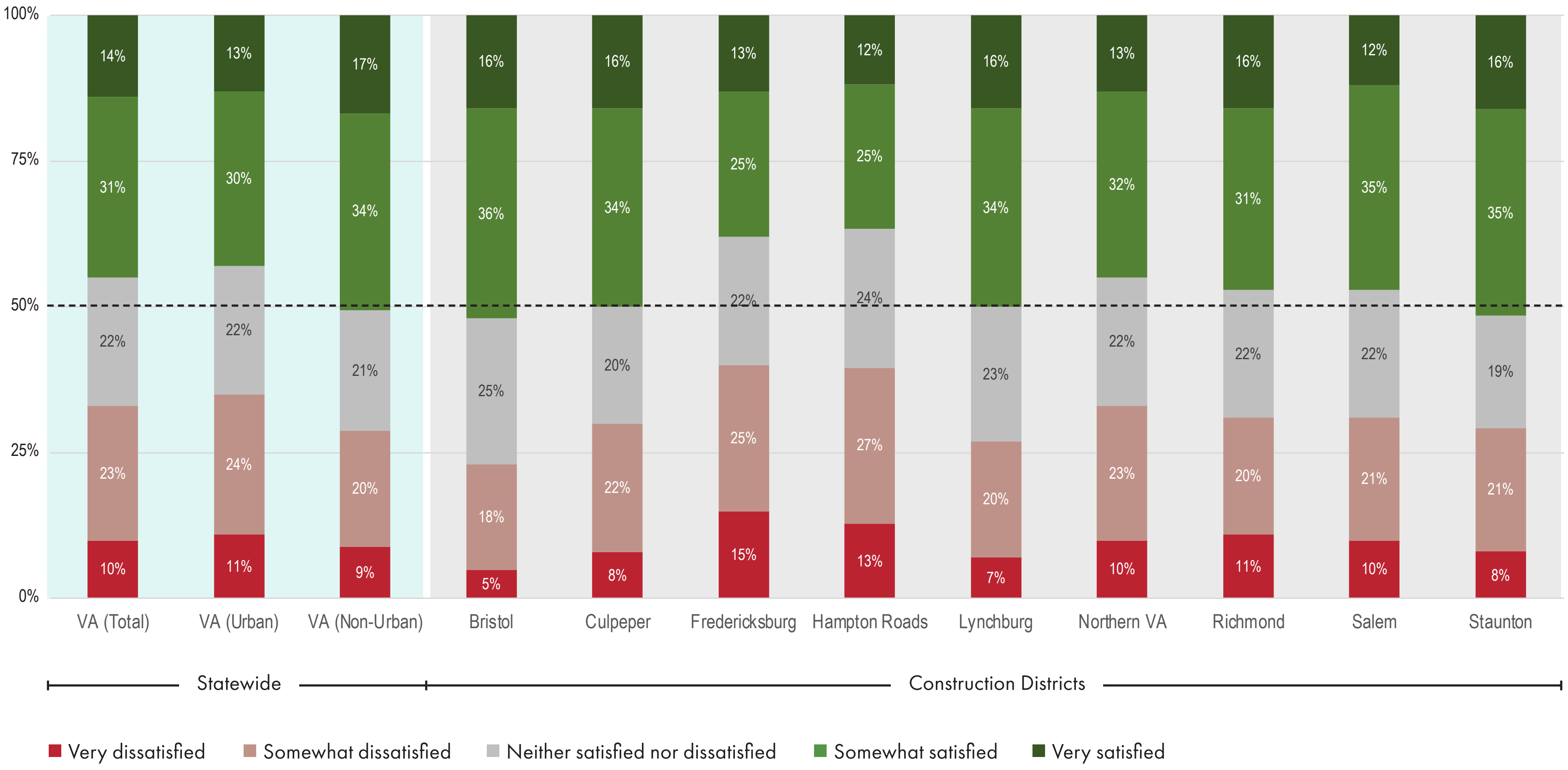
Among full-time residents age 18 or older, statewide, 45% are satisfied with being able to to get to employment opportunities by rideshare services. In urban areas, 53% are satisfied (compared to 23% in non-urban areas).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.4 percentage points | VA (Urban) = ±1.6 percentage points | VA (Non-Urban) = ±2.7 percentage points | Construction Districts = ±2.6 to ±5.5 percentage points
Number of valid responses (n-size): VA (Total) = 5,010 | VA (Urban) = 3,708 | VA (Non-Urban) = 1,302 | Construction Districts = 317 to 1,447

2.2.10: **SATISFACTION WITH THE SAFETY FROM AUTOMOBILE ACCIDENTS IN AREA**

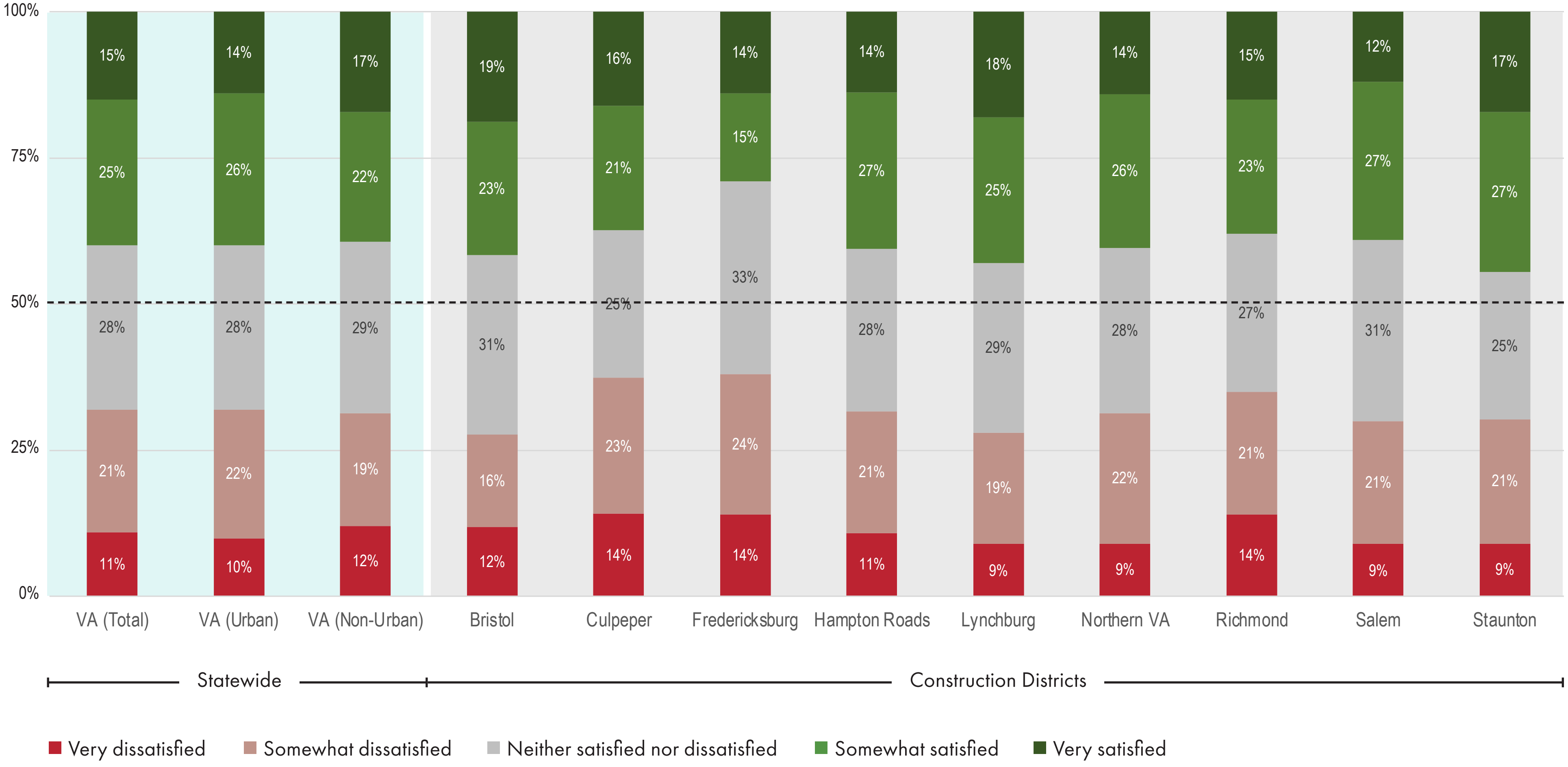
Slightly less than one-half (45%) of full-time residents age 18 or older are satisfied with safety from automobile accidents in the area. While about 4 in 10 people (42%) in urban areas are satisfied with this measure, a slightly larger proportion (51%) of residents in non-urban areas find the safety from automobile accidents satisfactory.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,060 | VA (Urban) = 5,024 | VA (Non-Urban) = 2,036 | Construction Districts = 470 to 1,914

2.2.11: **SATISFACTION WITH SAFETY FROM NON-MOTORIZED VEHICLE ACCIDENTS, SUCH AS BICYCLES OR SCOOTERS**

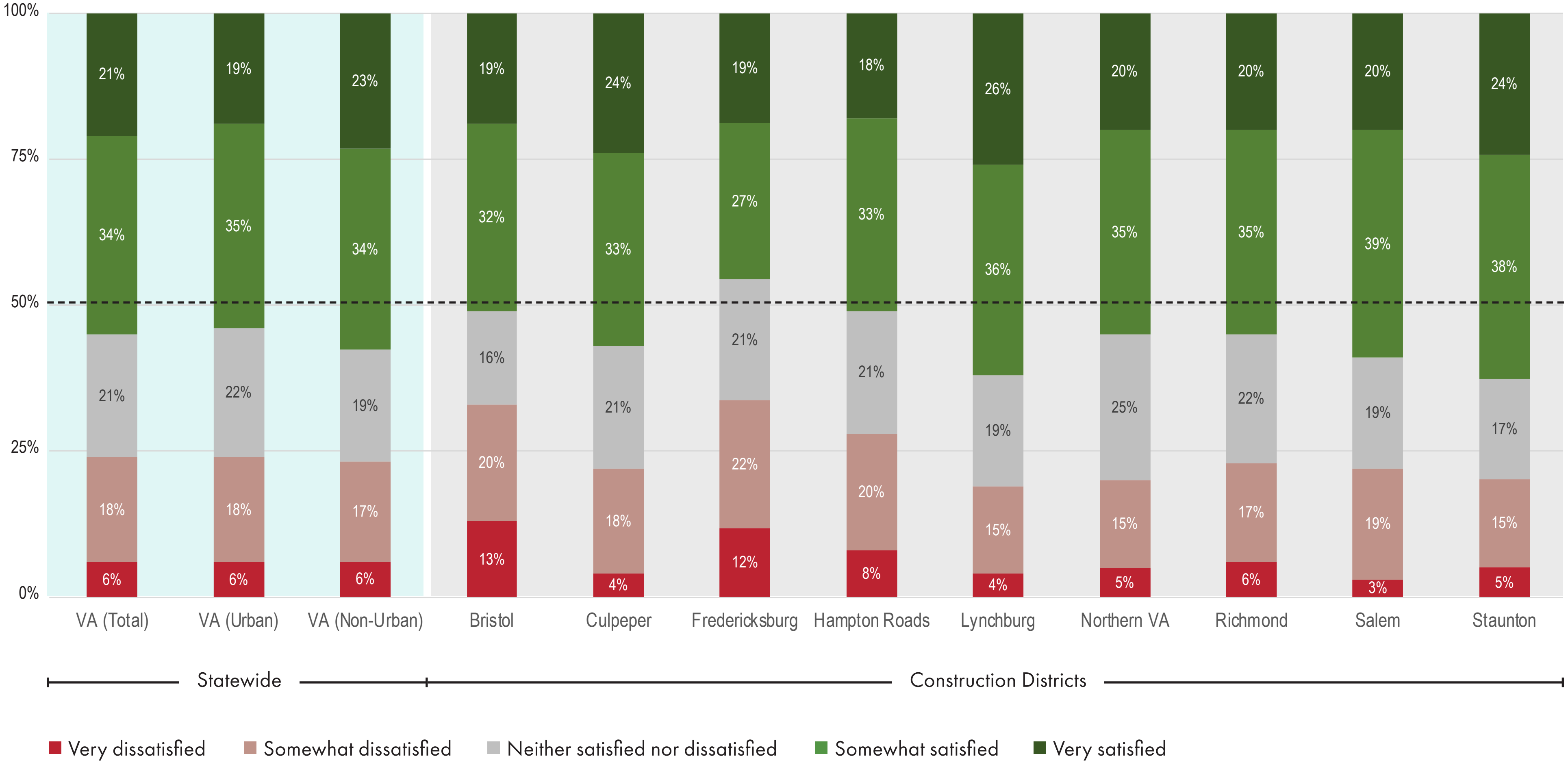
Among full-time residents age 18 or older, satisfaction was noted for every 4 in 10 people statewide (40%). This is consistent across the Construction Districts.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.3 percentage points | Construction Districts = ±2.3 to ±4.7 percentage points
Number of valid responses (n-size): VA (Total) = 6,505 | VA (Urban) = 4,726 | VA (Non-Urban) = 1,779 | Construction Districts = 429 to 1,805

2.2.12: **SATISFACTION WITH CONDITION OF BRIDGES IN AREA**

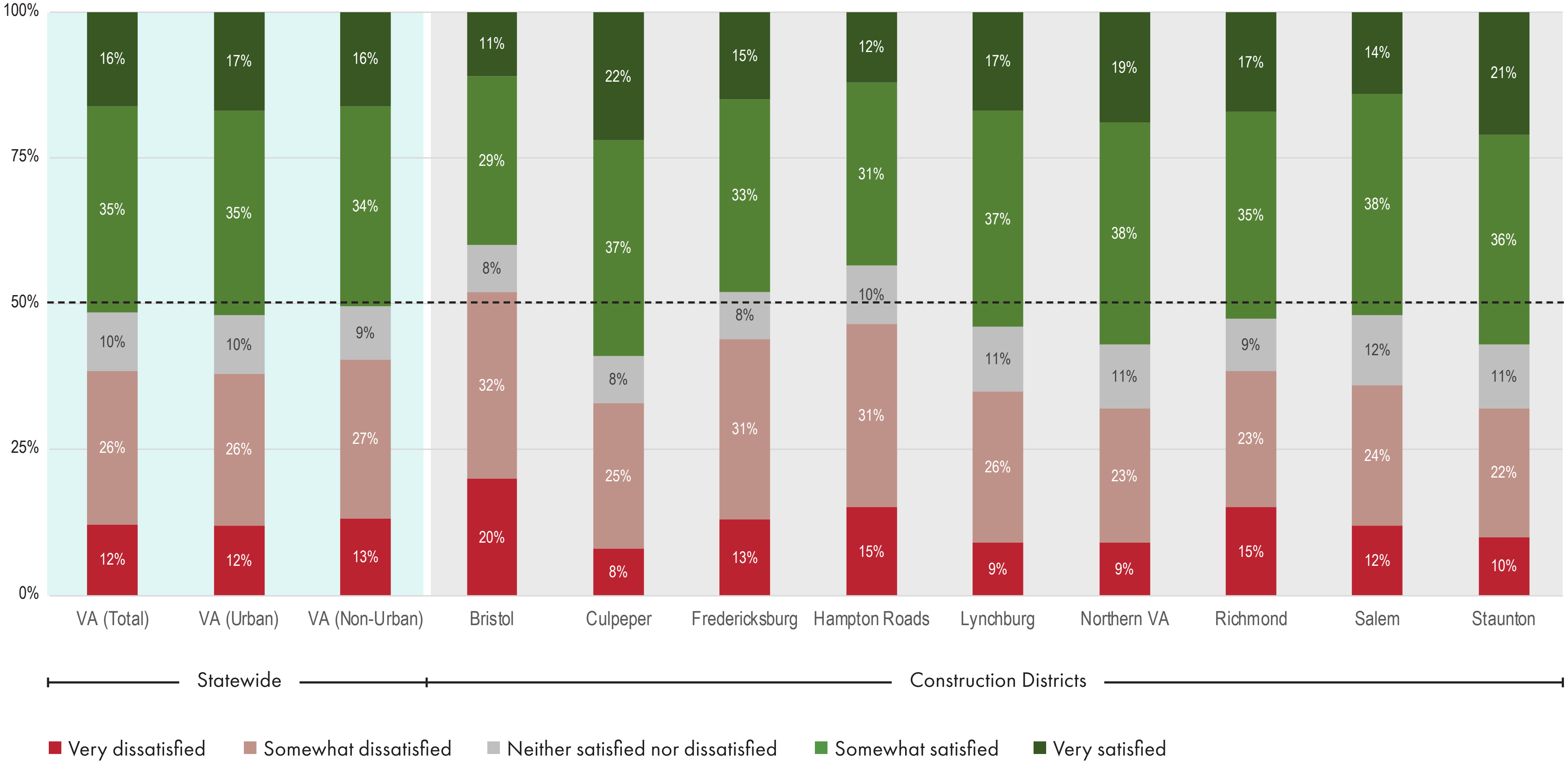
More than one-half of full-time residents age 18 or older (55%) are satisfied with the condition of bridges in their area. This is comparable between the urban versus non-urban level, and generally at the Construction District level as well.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 6,937 | VA (Urban) = 4,918 | VA (Non-Urban) = 2,019 | Construction Districts = 470 to 1,866

2.2.13: **SATISFACTION WITH CONDITION OF HIGHWAYS AND ROADS IN AREA**

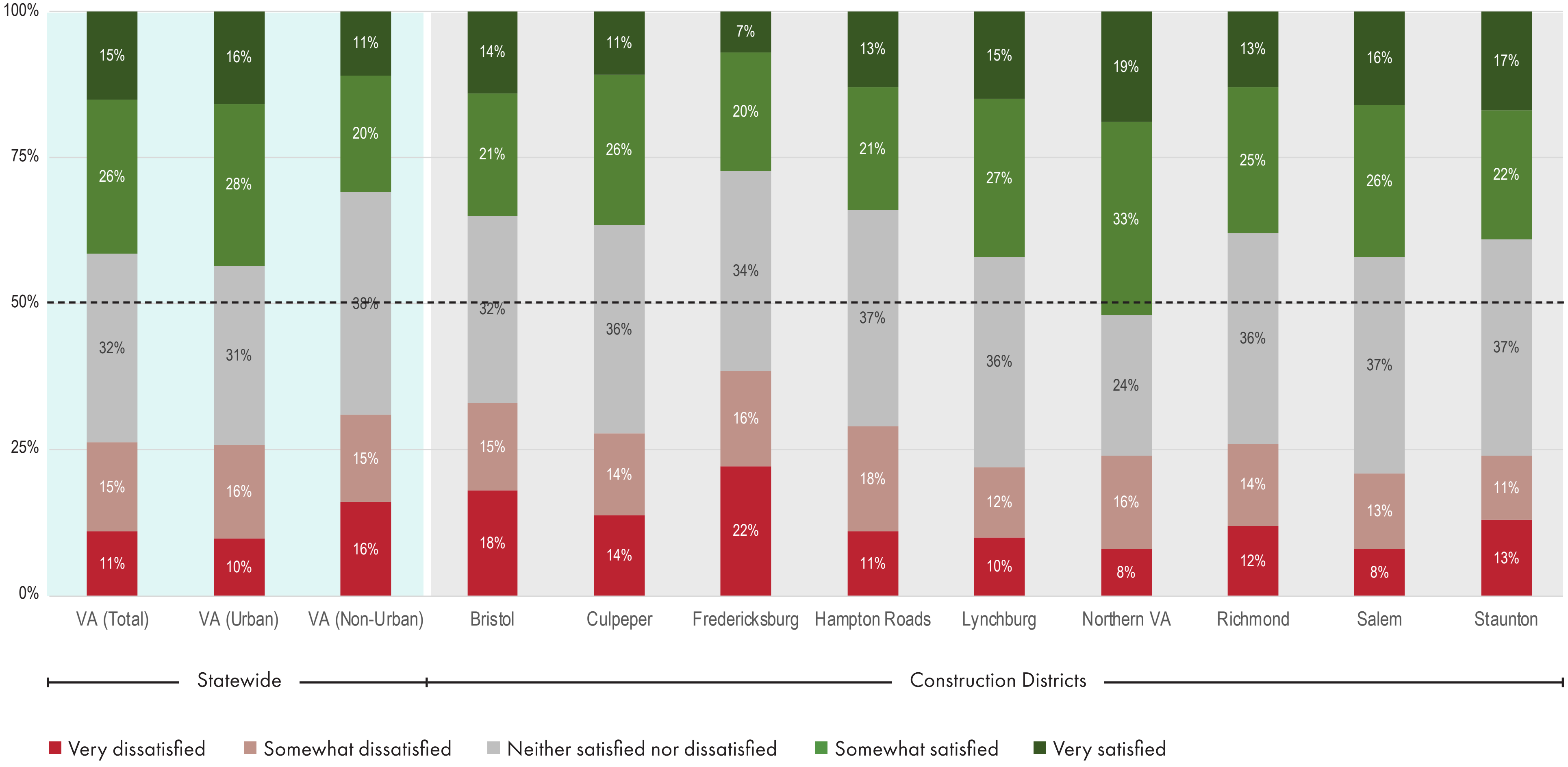
About one-half of full-time residents age 18 or older (52%) are satisfied with the condition of highways and roads in their area. This is comparable at both the urban versus non-urban level, and generally at the Construction District level as well.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,113 | VA (Urban) = 5,060 | VA (Non-Urban) = 2,053 | Construction Districts = 476 to 1,933

2.2.14: **SATISFACTION WITH CONDITION OF PUBLIC TRANSIT VEHICLES IN AREA**

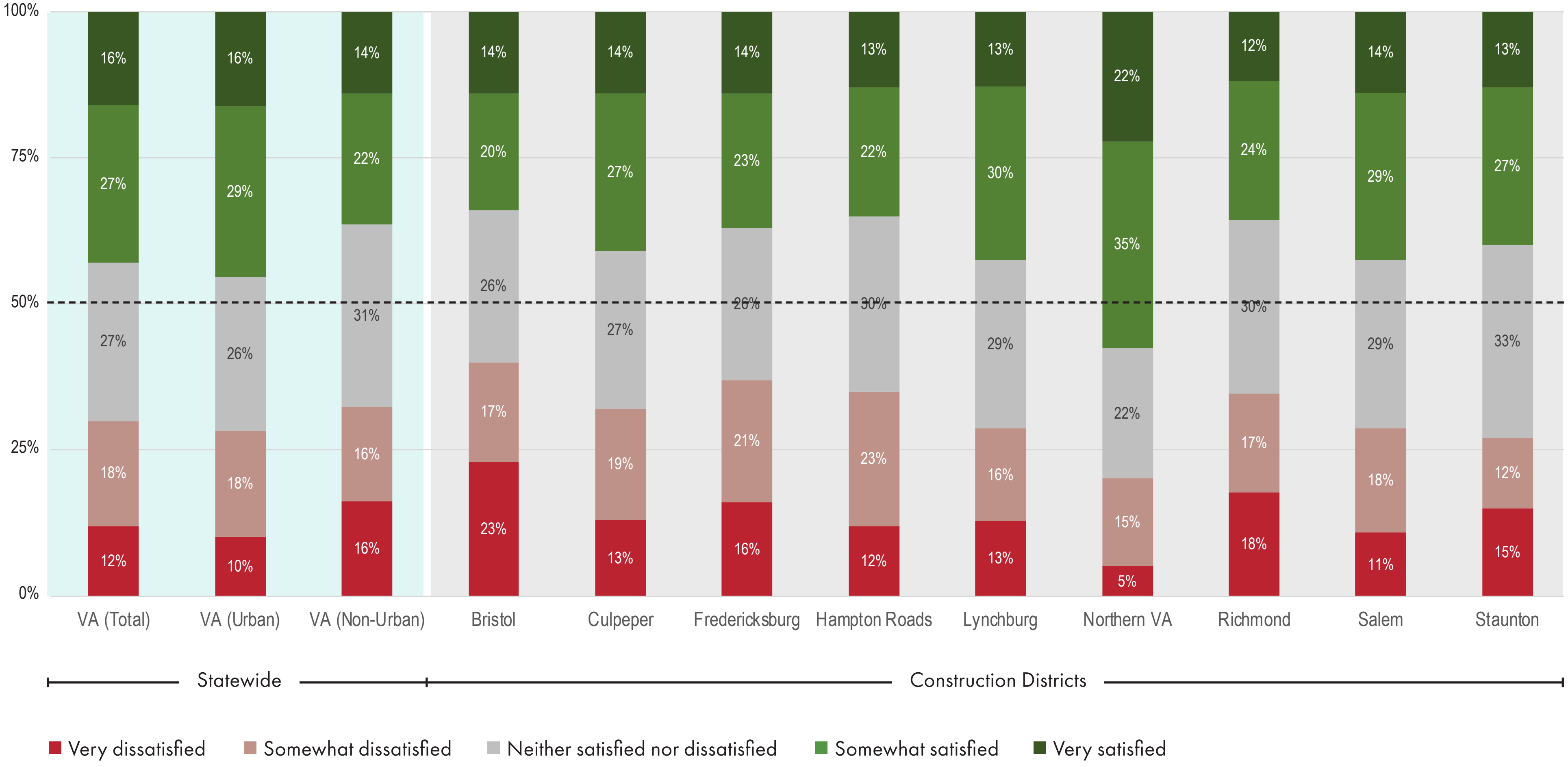
Approximately 4 in 10 full-time residents age 18 or older (41%) are satisfied with the condition of public transit vehicles in their area; this includes buses and rail cars, where applicable. Those in urban areas who are more likely to have access to public transit are more likely to be satisfied with the condition of the vehicles (44% satisfied) when compared to those in non-urban areas (31% satisfied).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.8 percentage points | Construction Districts = ±2.4 to ±5.3 percentage points
Number of valid responses (n-size): VA (Total) = 5,370 | VA (Urban) = 4,156 | VA (Non-Urban) = 1,214 | Construction Districts = 337 to 1,724

2.2.15: **SATISFACTION WITH CONDITION OF BUS STOPS, PARK AND RIDE, OR RAIL STATIONS IN AREA**

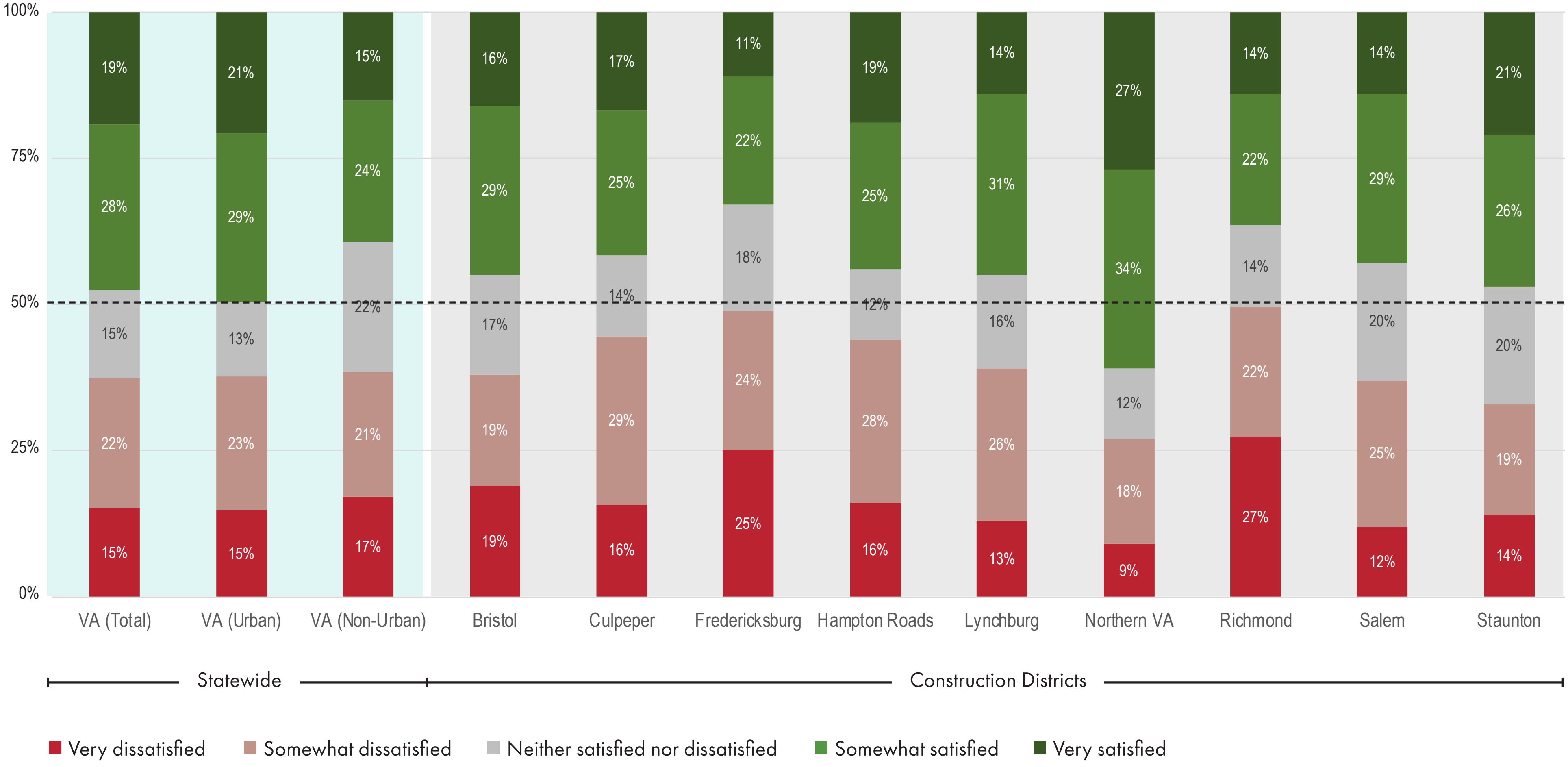
Statewide, 43% of residents age 18 or older are satisfied with the condition of bus stops, park and ride, or rail stations in their area; urban residents are 45% satisfied, while non-urban residents are 37% satisfied. Moreover, Northern Virginia sees the highest satisfaction (57%), which is expected owing to the greater density of these facilities in Northern Virginia compared to other Construction Districts.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.7 percentage points | Construction Districts = ±2.4 to ±5.3 percentage points
Number of valid responses (n-size): VA (Total) = 5,627 | VA (Urban) = 4,303 | VA (Non-Urban) = 1,324 | Construction Districts = 339 to 1,729

2.2.16: **SATISFACTION WITH CONDITION OF SIDEWALKS IN AREA**

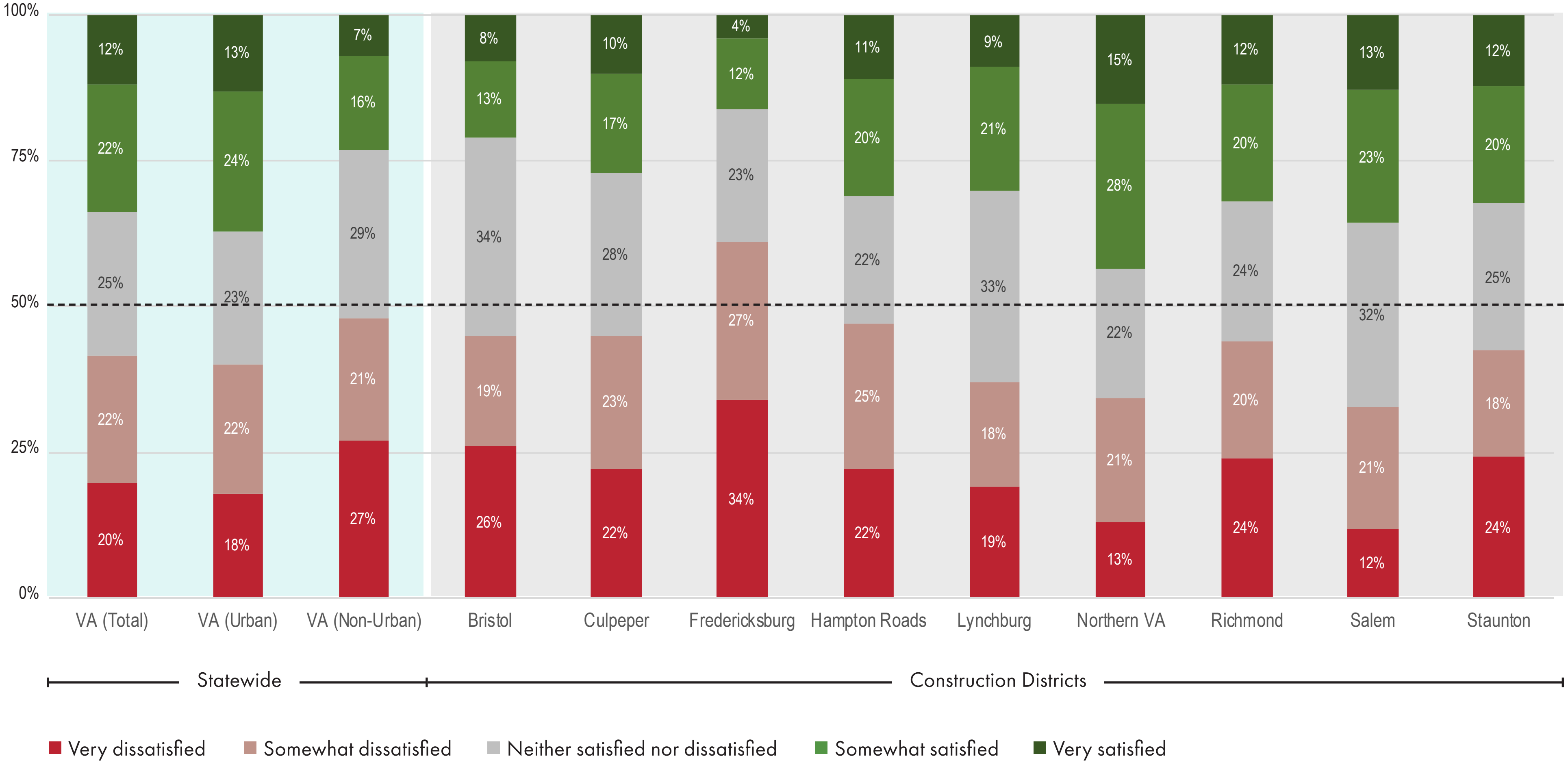
Those in urban areas tend to be more satisfied than those in non-urban areas (50% compared to 39% satisfied, respectively). This is highest among those in Northern Virginia, where 62% are satisfied.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.5 percentage points | Construction Districts = ±2.3 to ±5 percentage points
Number of valid responses (n-size): VA (Total) = 6,335 | VA (Urban) = 4,818 | VA (Non-Urban) = 1,517 | Construction Districts = 387 to 1,892

2.2.17: **SATISFACTION WITH CONDITION OF BICYCLE LANES IN AREA**

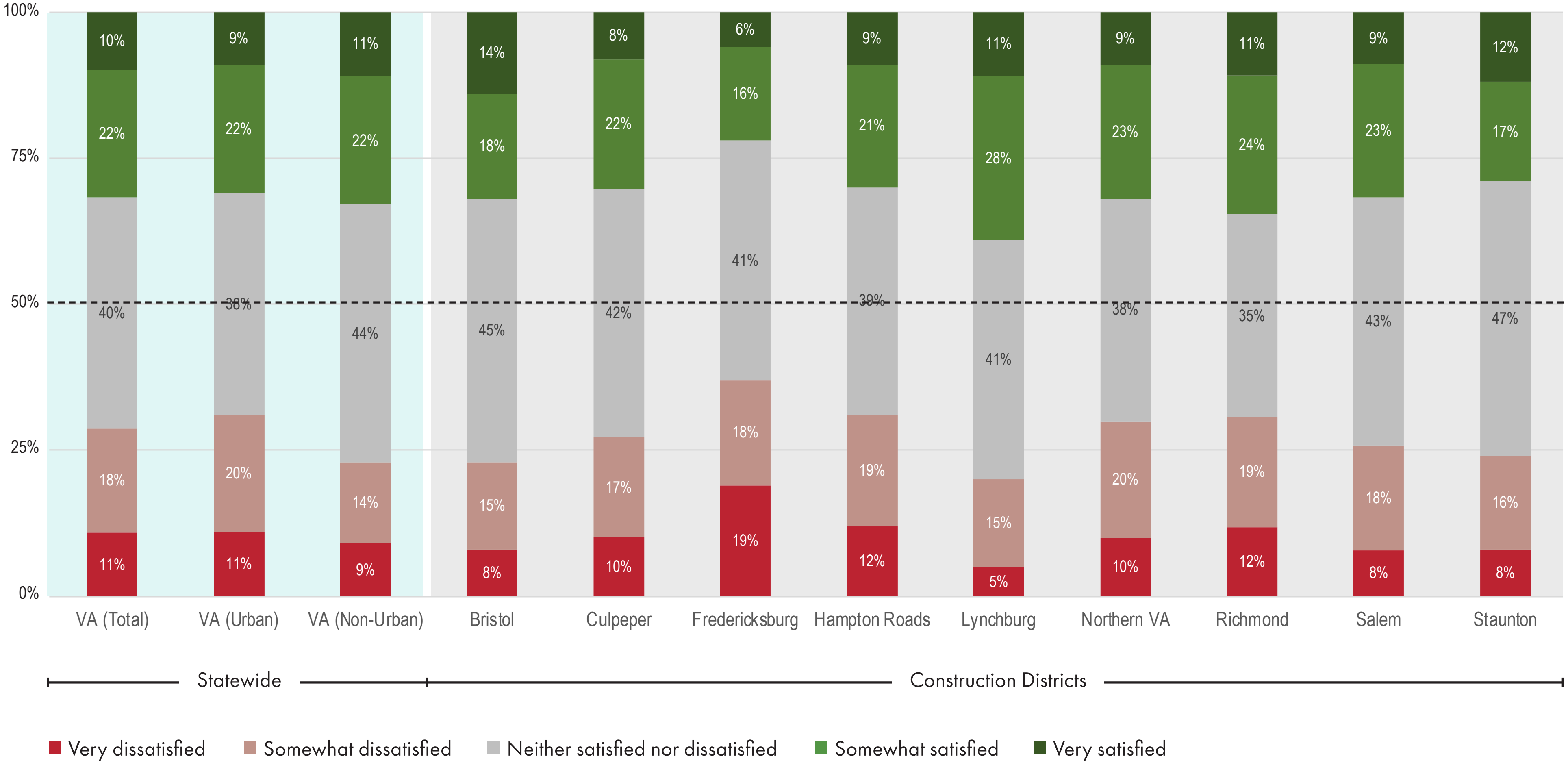
More residents in urban areas are likely to be satisfied with the condition of the bicycle lanes (37% satisfied in urban areas of Virginia, compared to 24% of those in non-urban areas). That said, nearly 43% of Northern Virginia residents are very or somewhat satisfied.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.6 percentage points | Construction Districts = ±2.4 to ±5.2 percentage points
Number of valid responses (n-size): VA (Total) = 5,779 | VA (Urban) = 4,362 | VA (Non-Urban) = 1,417 | Construction Districts = 358 to 1,680

2.2.18: **SATISFACTION WITH VIRGINIA'S PROGRESS TOWARD REDUCING TRANSPORTATION-RELATED POLLUTION**

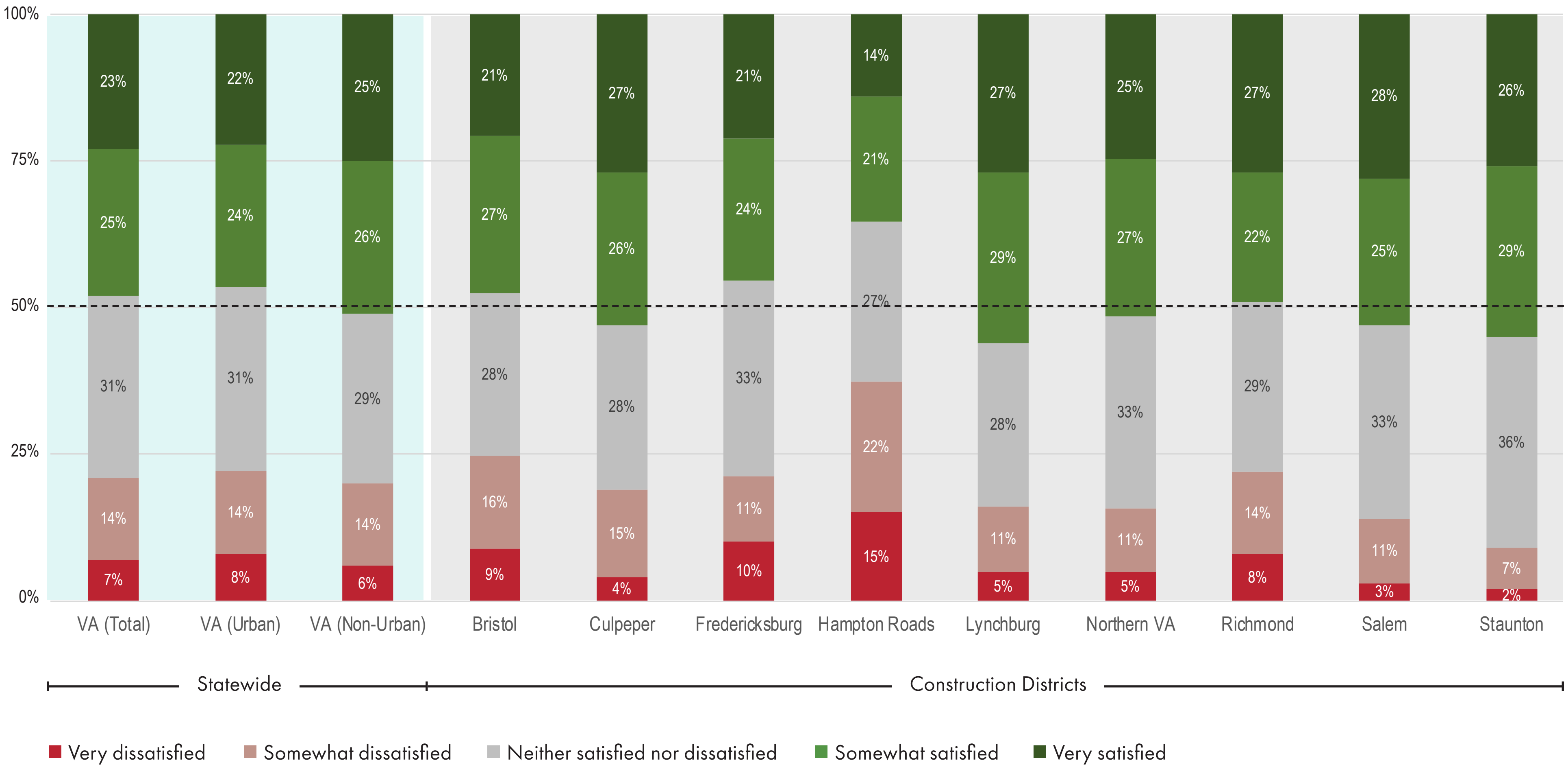
Overall, approximately one-third (32%) are satisfied with Virginia's progress toward reducing transportation-related pollution; comparable satisfaction was noted between those in urban areas and those in non-urban areas within the commonwealth.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,823 | VA (Urban) = 4,888 | VA (Non-Urban) = 1,935 | Construction Districts = 447 to 1,862

2.2.19: SATISFACTION WITH ROADWAY CLOSURES DUE TO FLOODING OR OTHER WEATHER-RELATED EVENTS

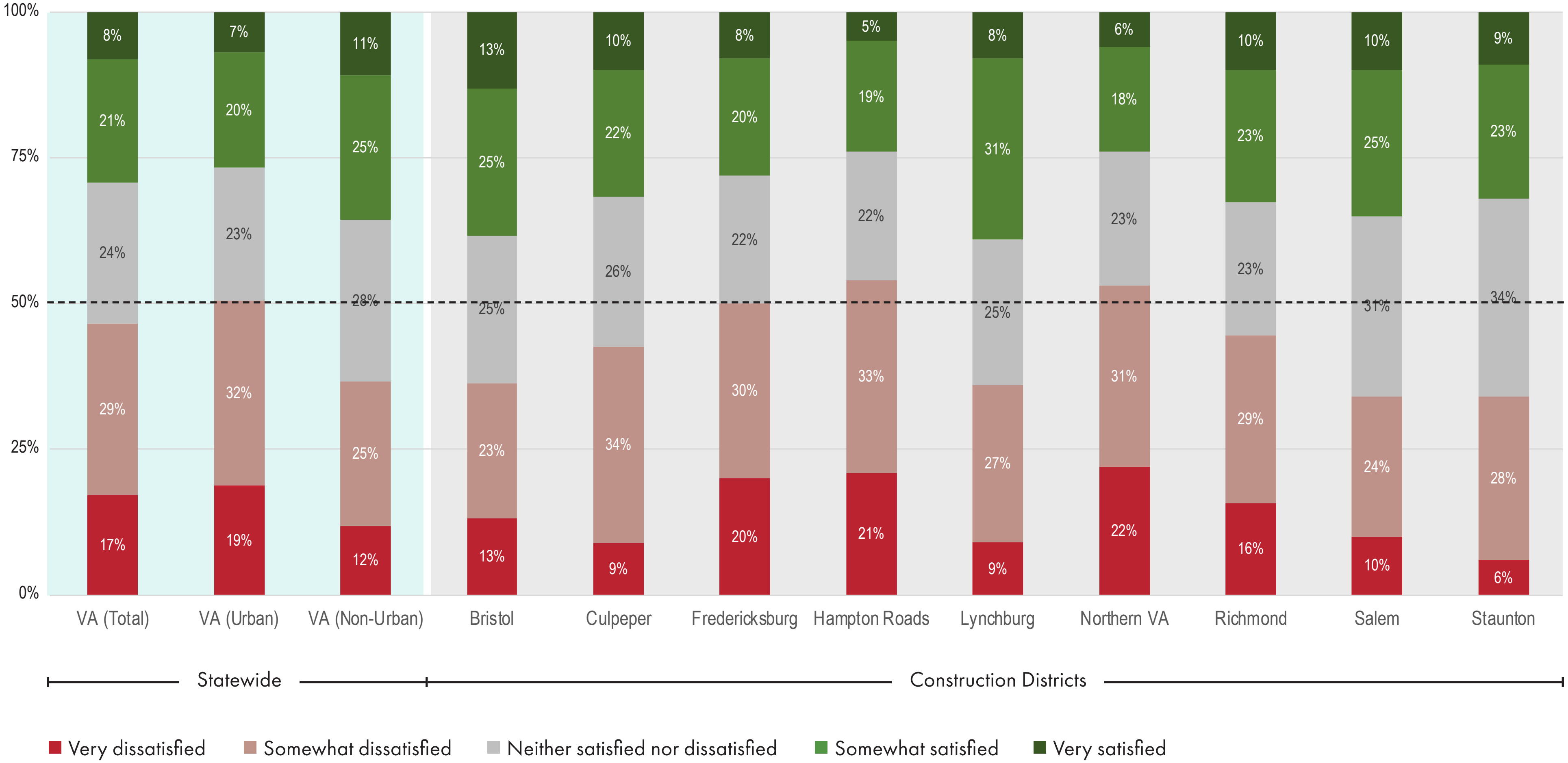
Nearly one-half of residents (48%) are satisfied with roadway closures that are a result of flooding, etc. However, 38% of residents in Hampton Roads were dissatisfied. This is notable because the Hampton Roads Construction District contains coastal area where issues such as flooding can be more salient for residents.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.4 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,575 | VA (Urban) = 4,648 | VA (Non-Urban) = 1,927 | Construction Districts = 445 to 1,732

2.2.20: **SATISFACTION WITH THE LEVEL OF DISRUPTION CAUSED BY CONSTRUCTION ZONES**

Full-time residents age 18 or older were generally dissatisfied with the level of disruption caused by construction zones (46% dissatisfied statewide): among those in urban areas, one-half were dissatisfied (50%). The greatest level of dissatisfaction was noted by Hampton Roads (54% dissatisfied) and Northern Virginia (53% dissatisfied). These areas also noted low satisfaction with traffic congestion and on-time reliability.

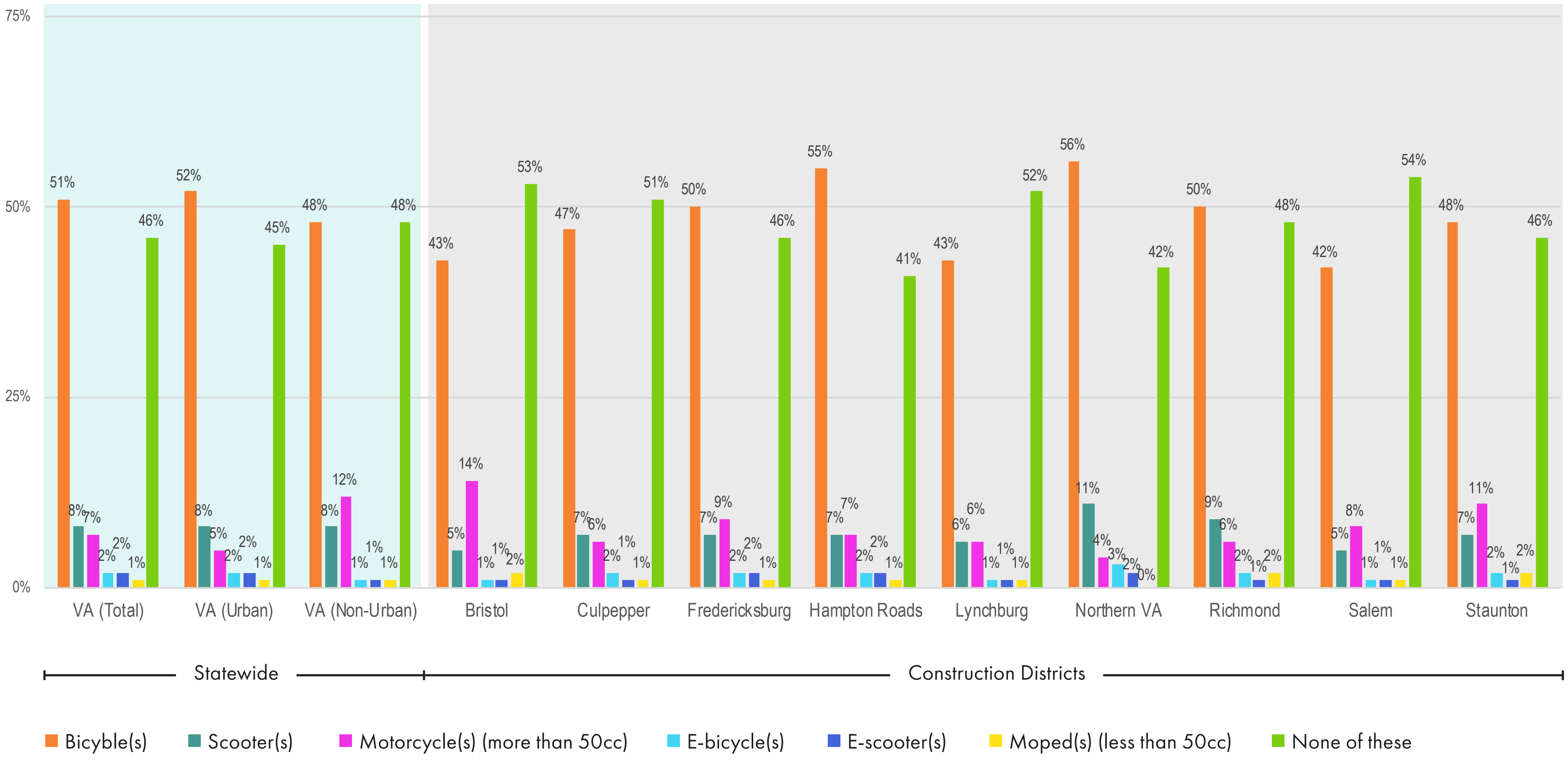


Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,009 | VA (Urban) = 5,007 | VA (Non-Urban) = 2,002 | Construction Districts = 465 to 1,926

SECTION 3:
HOUSEHOLD VEHICLE OWNERSHIP

3.1: OWNERSHIP OF ALTERNATE MODES OF TRANSPORTATION

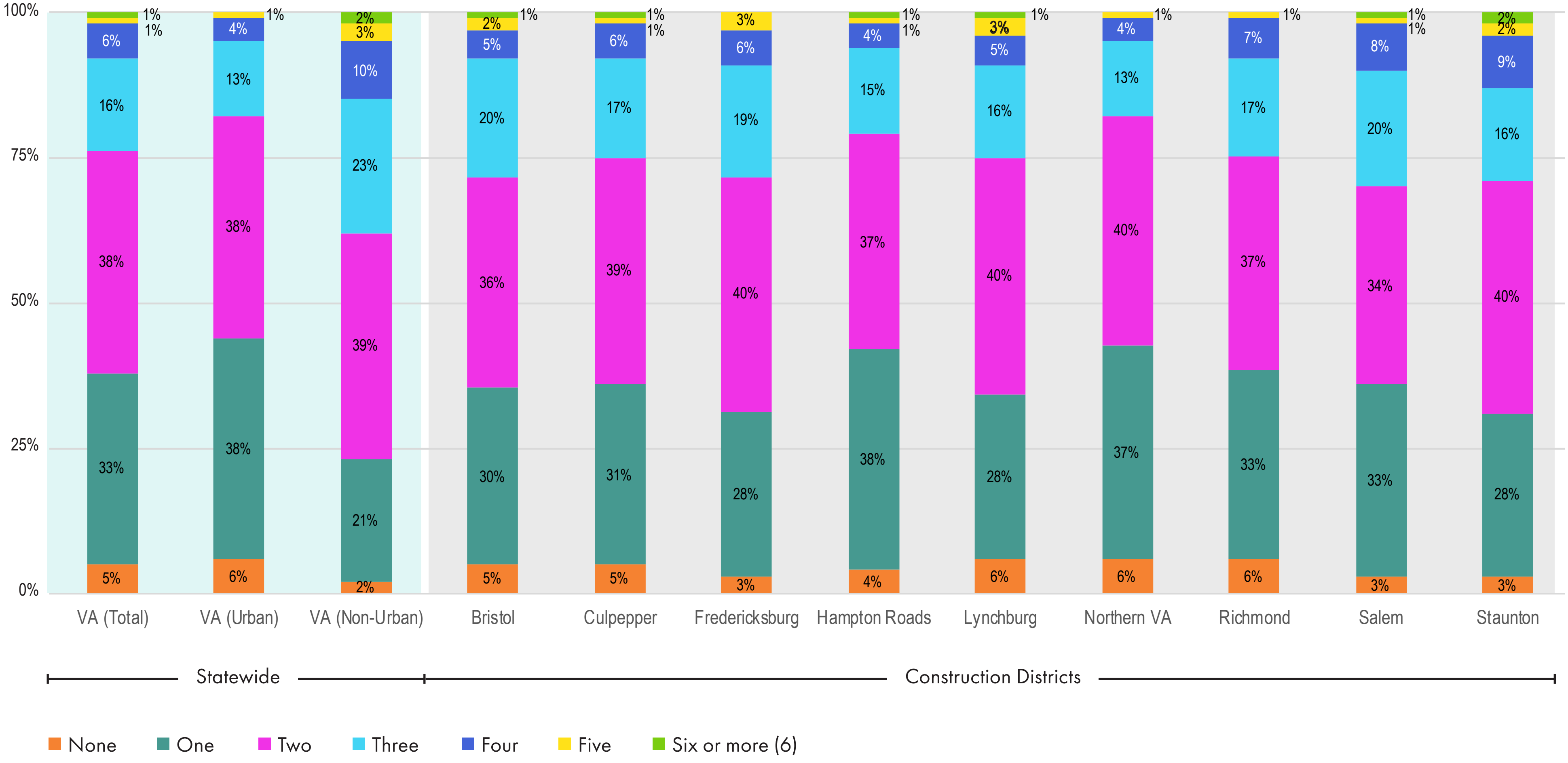
Statewide, one-half of full-time residents age 18 or older have at least one bicycle in their household (51%). Those that do have bicycle(s) in their household have an average quantity of two bicycles (2.3 on average). Bicycle ownership is higher for those with higher incomes, with 66% of those with annual household incomes of $100,000 or more having at least one bicycle in their household.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,146 | VA (Urban) = 5,079 | VA (Non-Urban) = 2,067 | Construction Districts = 477 to 1,943

3.2: **WORKING VEHICLES IN HOUSEHOLD**

The vast majority of full-time residents age 18 or older have at least one working vehicle in their household (95%). Statewide, there is an average of two vehicles in each household. Vehicle access is slightly higher among White Virginians (97%) than among people of color (92%). Notably, those in non-urban areas are more likely to have multiple vehicles in their household (77%) than their urban counterparts (56%).

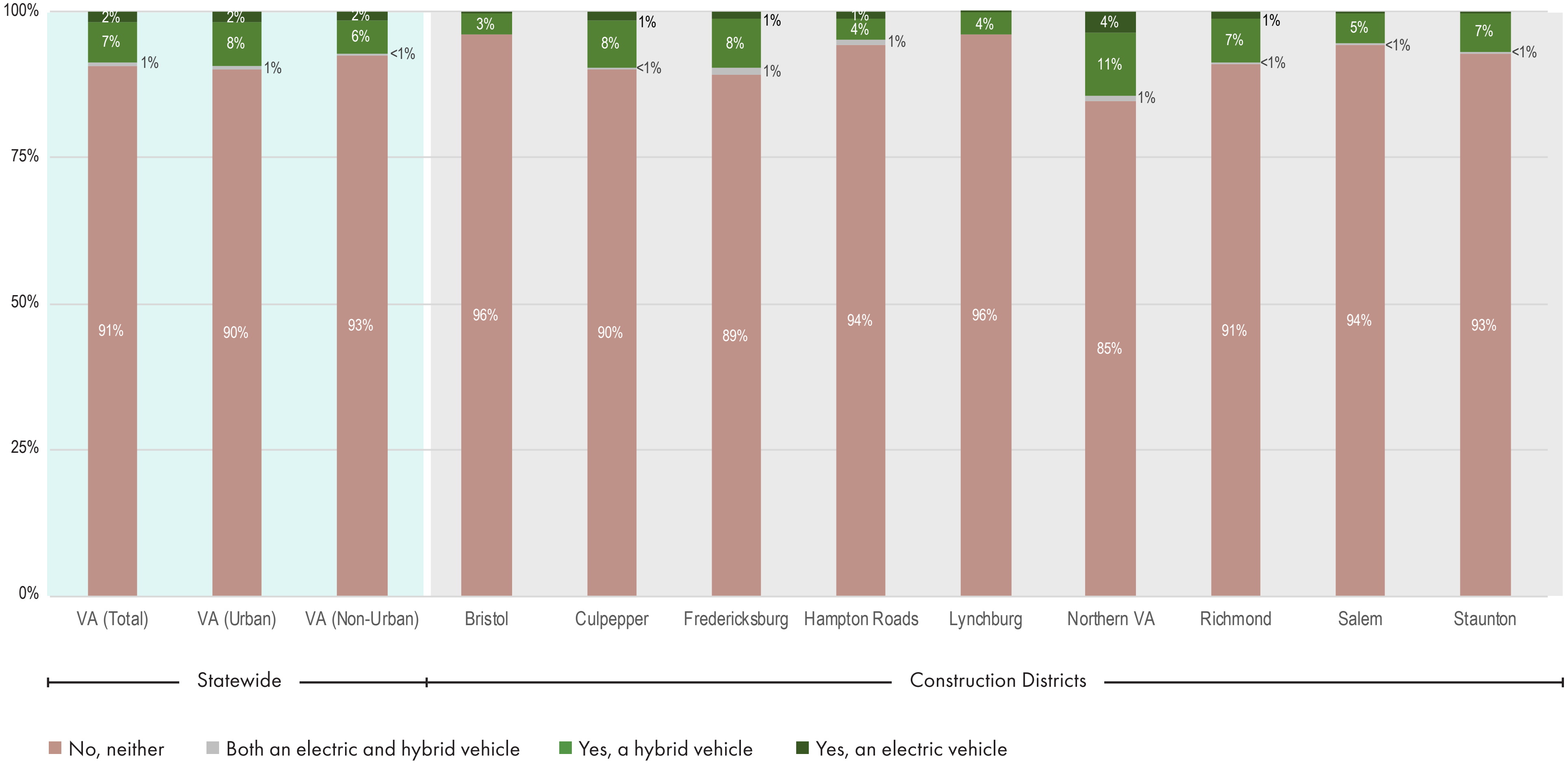


Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,144 | VA (Urban) = 5,077 | VA (Non-Urban) = 2,067 | Construction Districts = 477 to 1,943

SECTION 4:
EMERGING TRENDS

4.1.1: **OWNERSHIP OF ELECTRIC OR HYBRID VEHICLES**

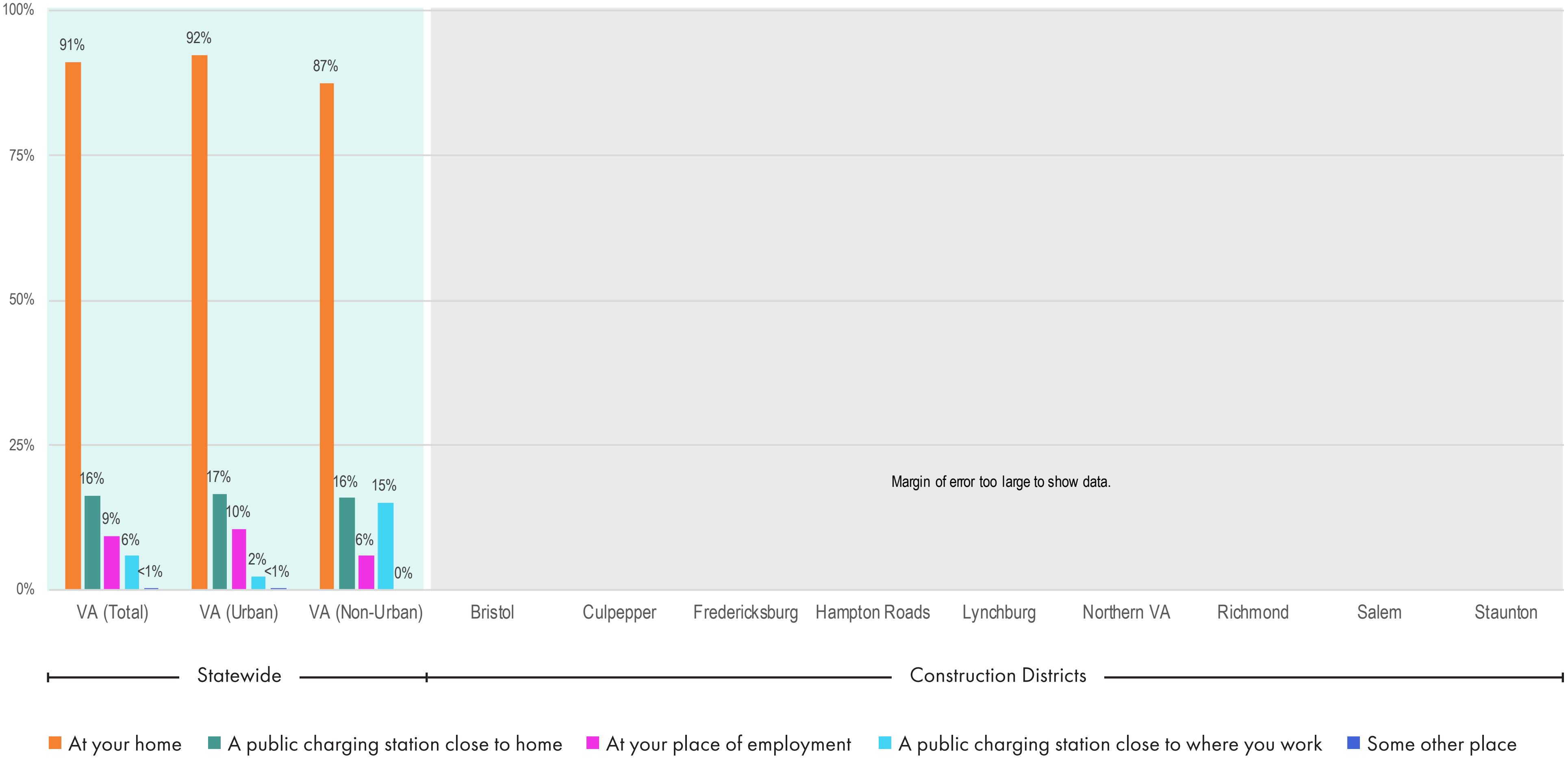
Approximately 1 in 10 full-time residents age 18 or older who own a vehicle do not own an electric or hybrid vehicle (9%). Electric or hybrid vehicle ownership is concentrated among those with higher incomes as well, where 17% of those with household incomes of $100,000 or more and a vehicle in their household have at least one electric or hybrid vehicle.



Asked of: Full-time residents, 18 or older who own an electric vehicle
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points
Number of valid responses (n-size): VA (Total) = 6,909 | VA (Urban) = 4,874 | VA (Non-Urban) = 2,035

4.1.2: **WHERE TO TYPICALLY CHARGE AN ELECTRIC VEHICLE**

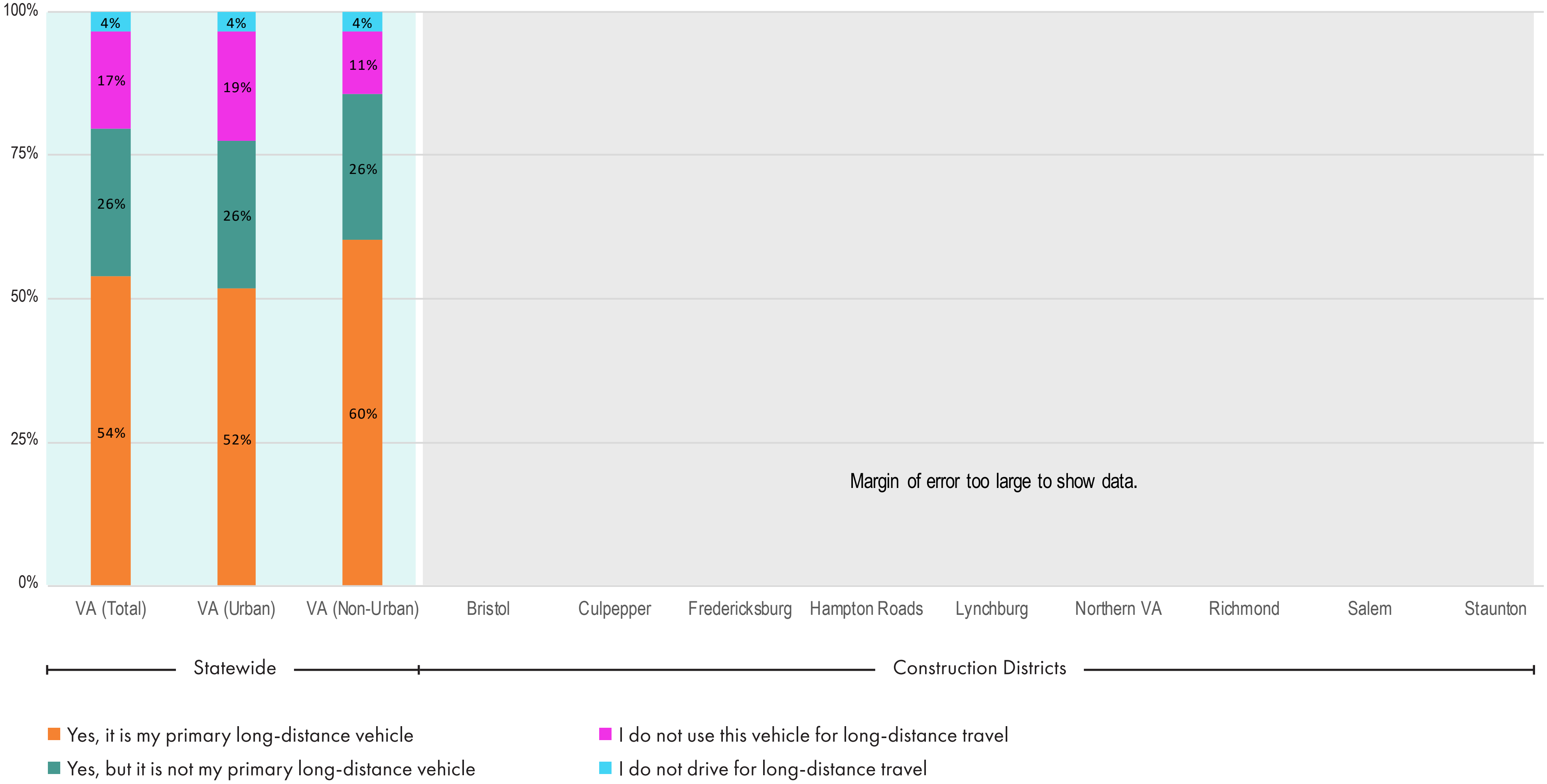
When asked where they typically charge their electric vehicle, most statewide residents reponded that they are doing so at home (91%). Note, the sample size of electric vehicle owners is too small to draw meaningful conclusions at a more granular level than statewide.



Asked of: Full-time residents, 18 or older who own an electric vehicle
Margin of Error: VA (Total) = ±8 percentage points | VA (Urban) = ±9.3 percentage points | VA (Non-Urban) = ±15.5 percentage points
Number of valid responses (n-size): VA (Total) = 151 | VA (Urban) = 111 | VA (Non-Urban) = 40

4.1.3: **USAGE OF ELECTRIC VEHICLE FOR LONG-DISTANCE TRAVEL**

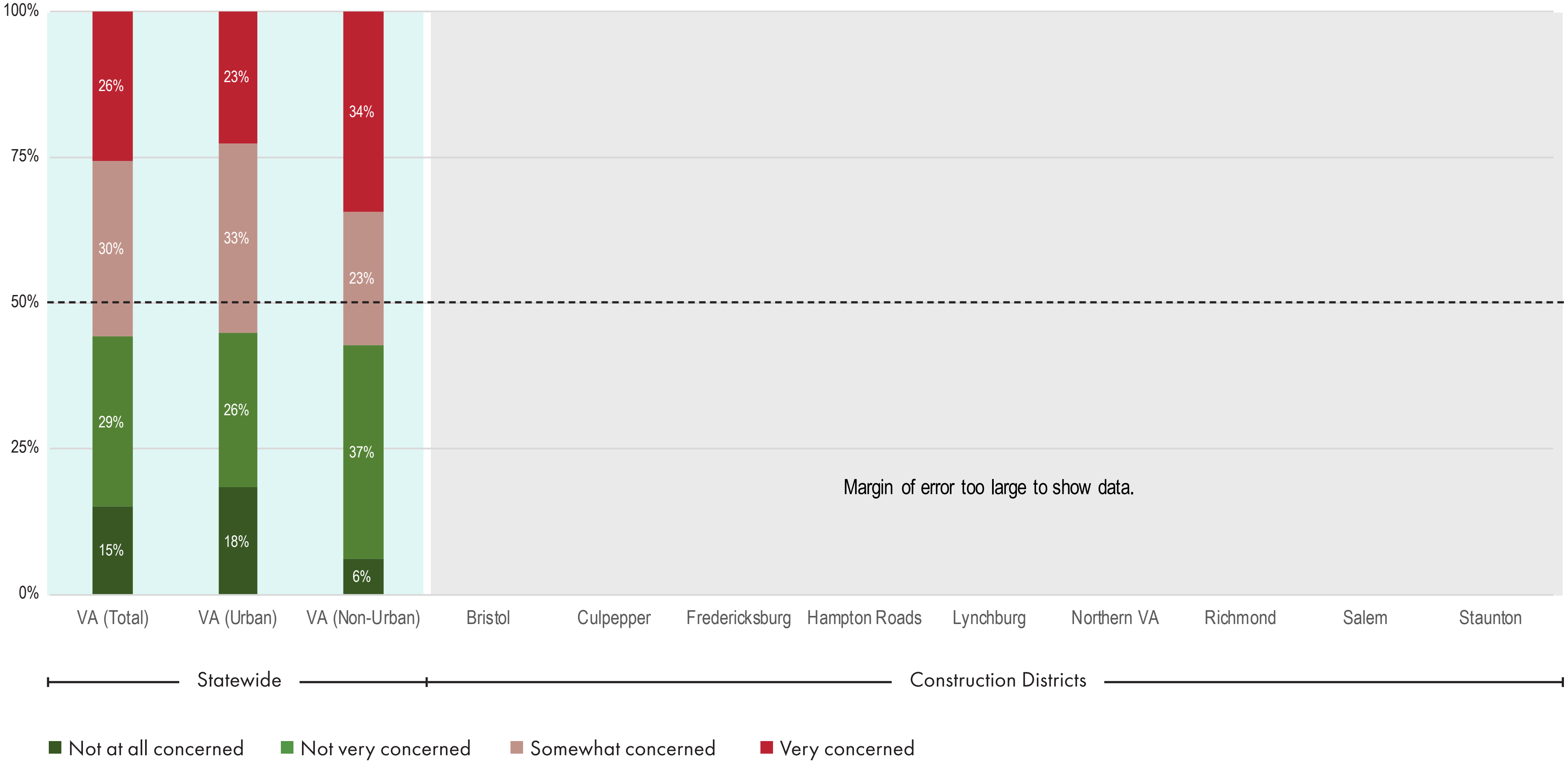
Residents who own an electric vehicle were asked if they use their electric vehicle for long-distance travel. Eight in 10 residents use their vehicles for long-distance travel to some extent (80%), though only 54% use it as their primary vehicle for long-distance travel.



Asked of: Full-time residents, 18 or older who own an electric vehicle
Margin of Error: VA (Total) = ±8 percentage points | VA (Urban) = ±9.3 percentage points | VA (Non-Urban) = ±15.7 percentage points
Number of valid responses (n-size): VA (Total) = 149 | VA (Urban) = 110 | VA (Non-Urban) = 39

4.1.4: **CONCERN ABOUT ACCESS TO CHARGING STATIONS**

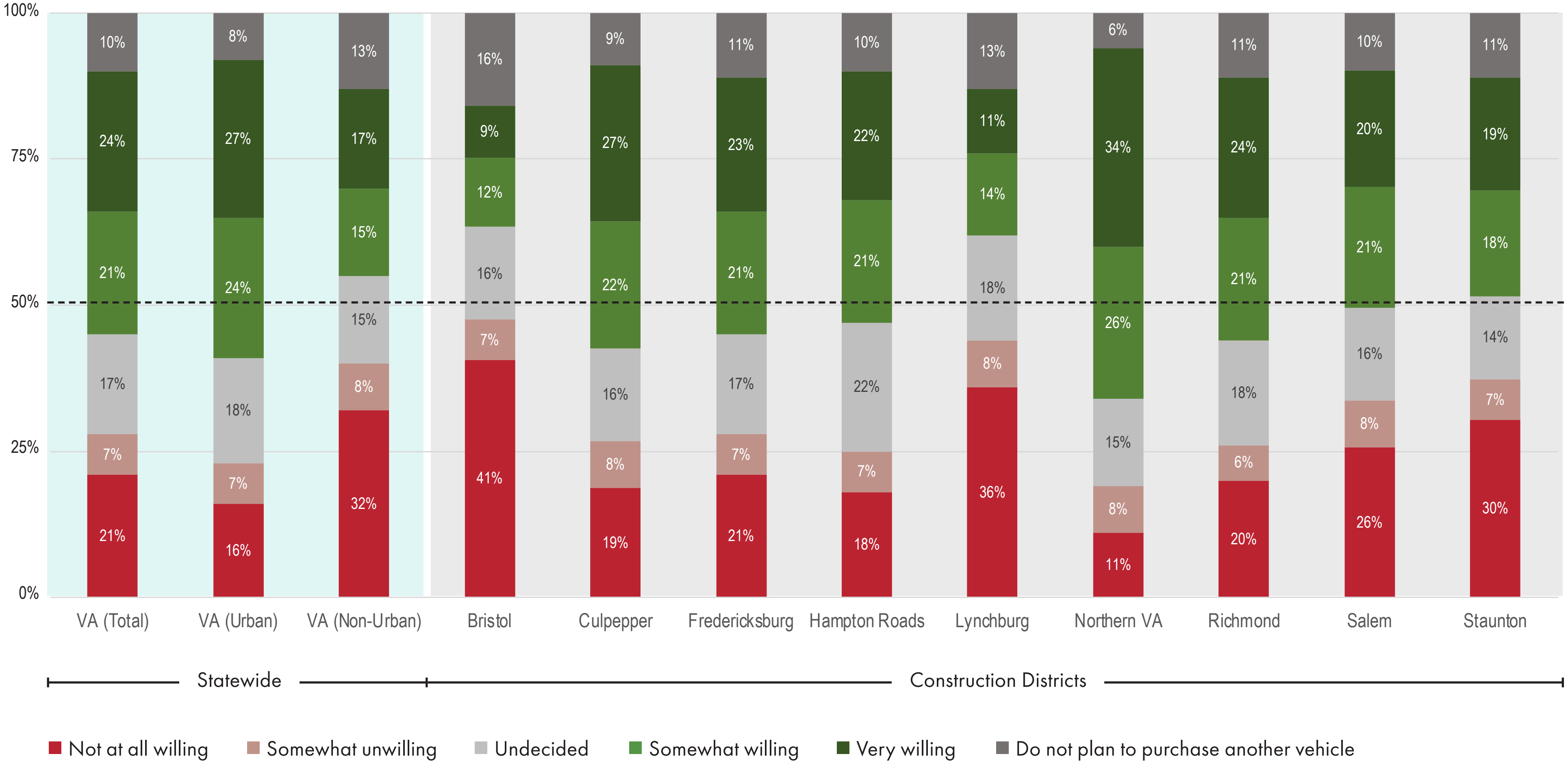
The Survey found that 56% of residents with electric vehicles are concerned about the range of charge and the access to charging stations when traveling long distances. Some residents are unwilling to consider purchasing an electric vehicle for these same reasons.



Asked of: Full-time residents, 18 or older who own an electric vehicle
Margin of Error: VA (Total) = ±8 percentage points | VA (Urban) = ±9.3 percentage points | VA (Non-Urban) = ±15.5 percentage points
Number of valid responses (n-size): VA (Total) = 151 | VA (Urban) = 111 | VA (Non-Urban) = 40

4.1.5: WILLINGNESS TO BUY ELECTRIC VEHICLES

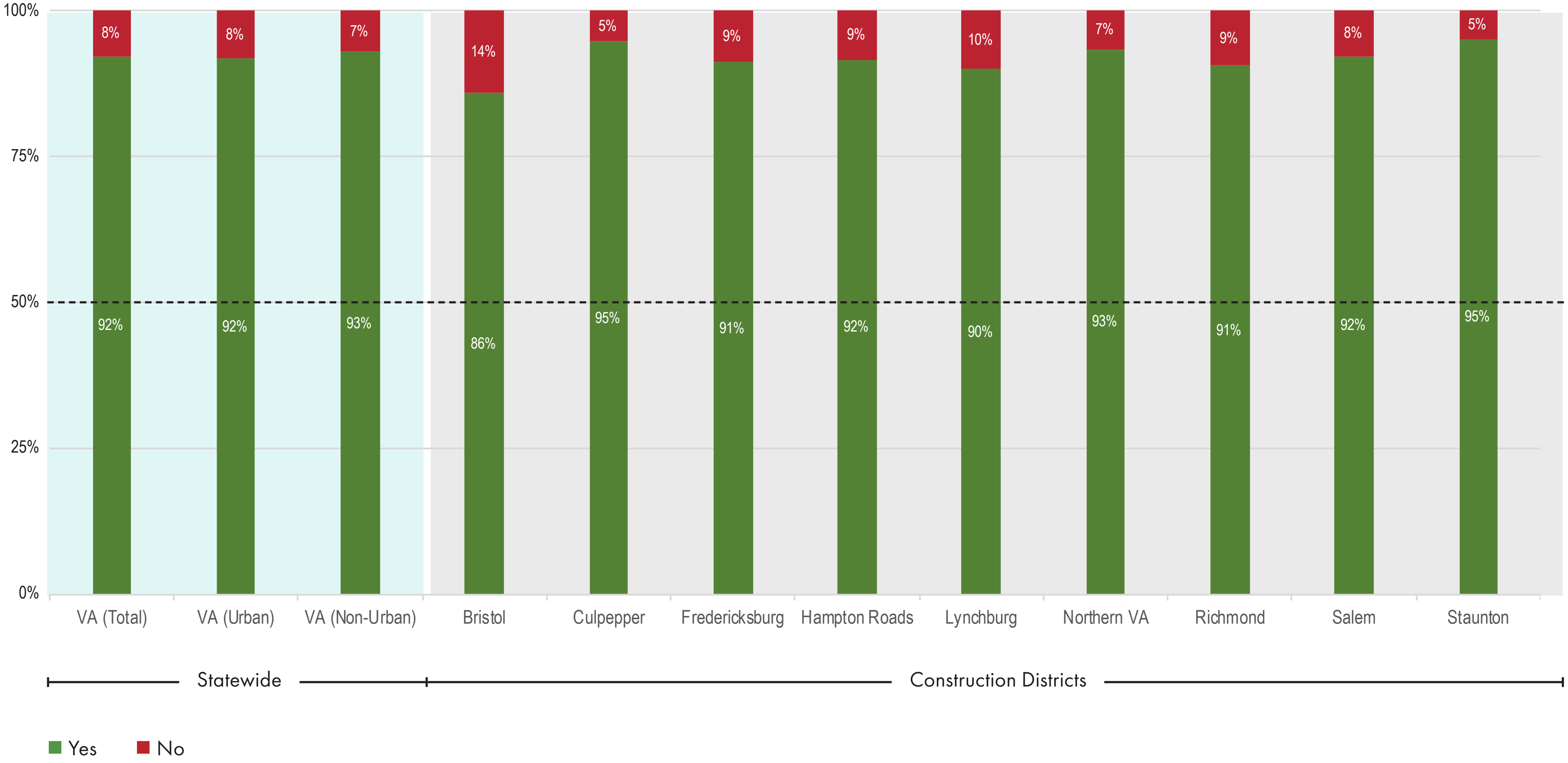
Slightly less than one-half of full-time residents age 18 or older who do not currently own an electric vehicle (but do currently own some other vehicle) are willing to consider purchasing an electric vehicle as their next car or truck (45%). Those residents aged 18 to 34 are especially likely to be willing to consider purchasing an electric vehicle (54%, compared to 35% to 50% among older age cohorts). The primary reasons for unwillingness to purchase an electric vehicle included that electric vehicles are too expensive (44%), that there are no charging stations close enough (38%), and/or general concern about the range for long-distance travel (37%).



Asked of: Full-time residents, 18 or older who own a vehicle but not electric car or truck or who don't own a vehicle
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,662 | VA (Urban) = 4,739 | VA (Non-Urban) = 1,923 | Construction Districts = 445 to 1,807

4.2.1: AWARENESS: DEVELOPMENT OF AVS WITHOUT HUMAN INTERVENTION

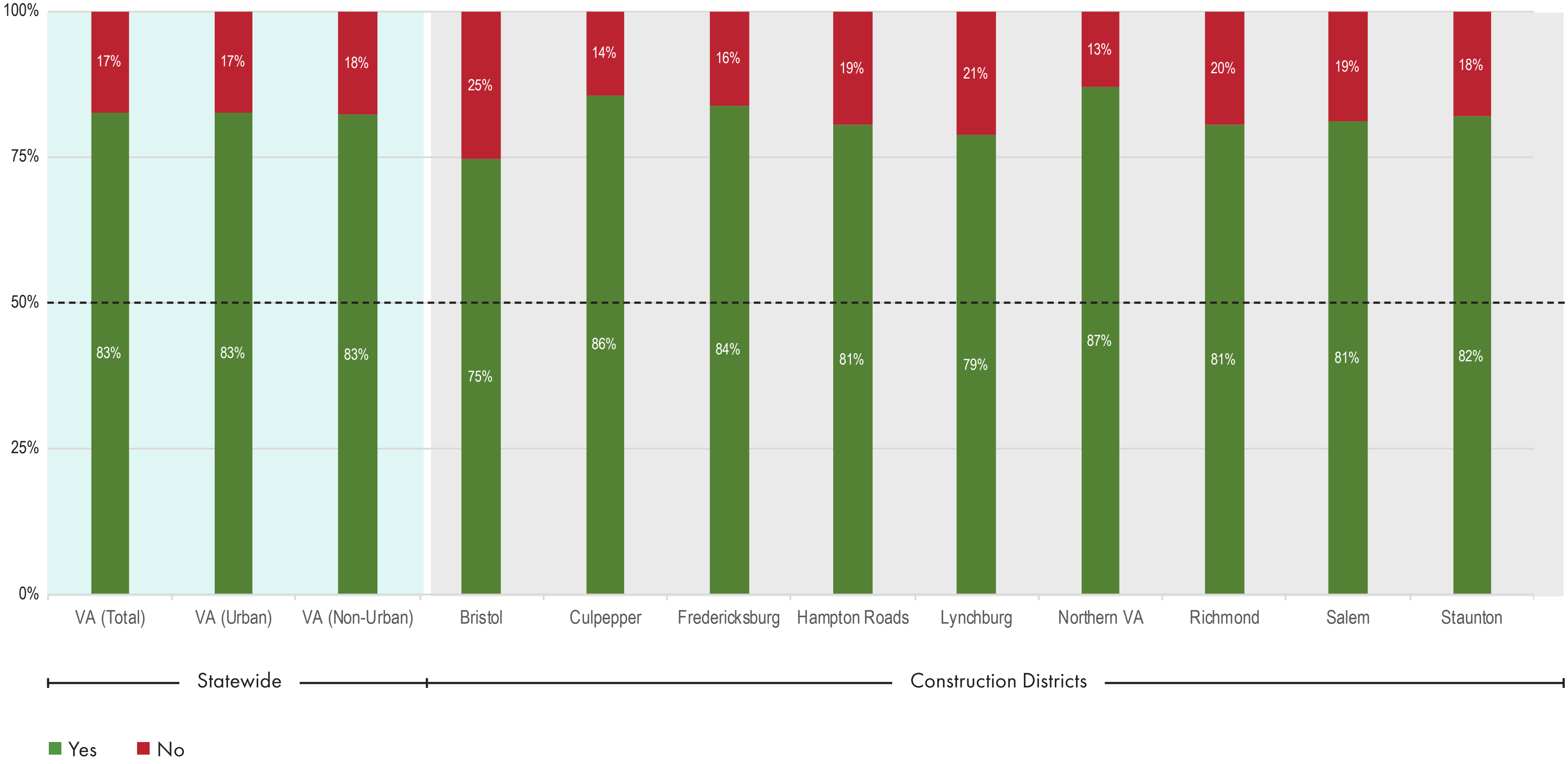
U.S. automotive companies are developing autonomous vehicles, specifically those that are capable of operating without a human present. The vast majority of full-time residents age 18 or older (92%) statewide are aware.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,146 | VA (Urban) = 5,079 | VA (Non-Urban) = 2,067 | Construction Districts = 477 to 1,943

4.2.2: AWARENESS: DEVELOPMENT OF AVS WITH HUMAN INTERVENTION

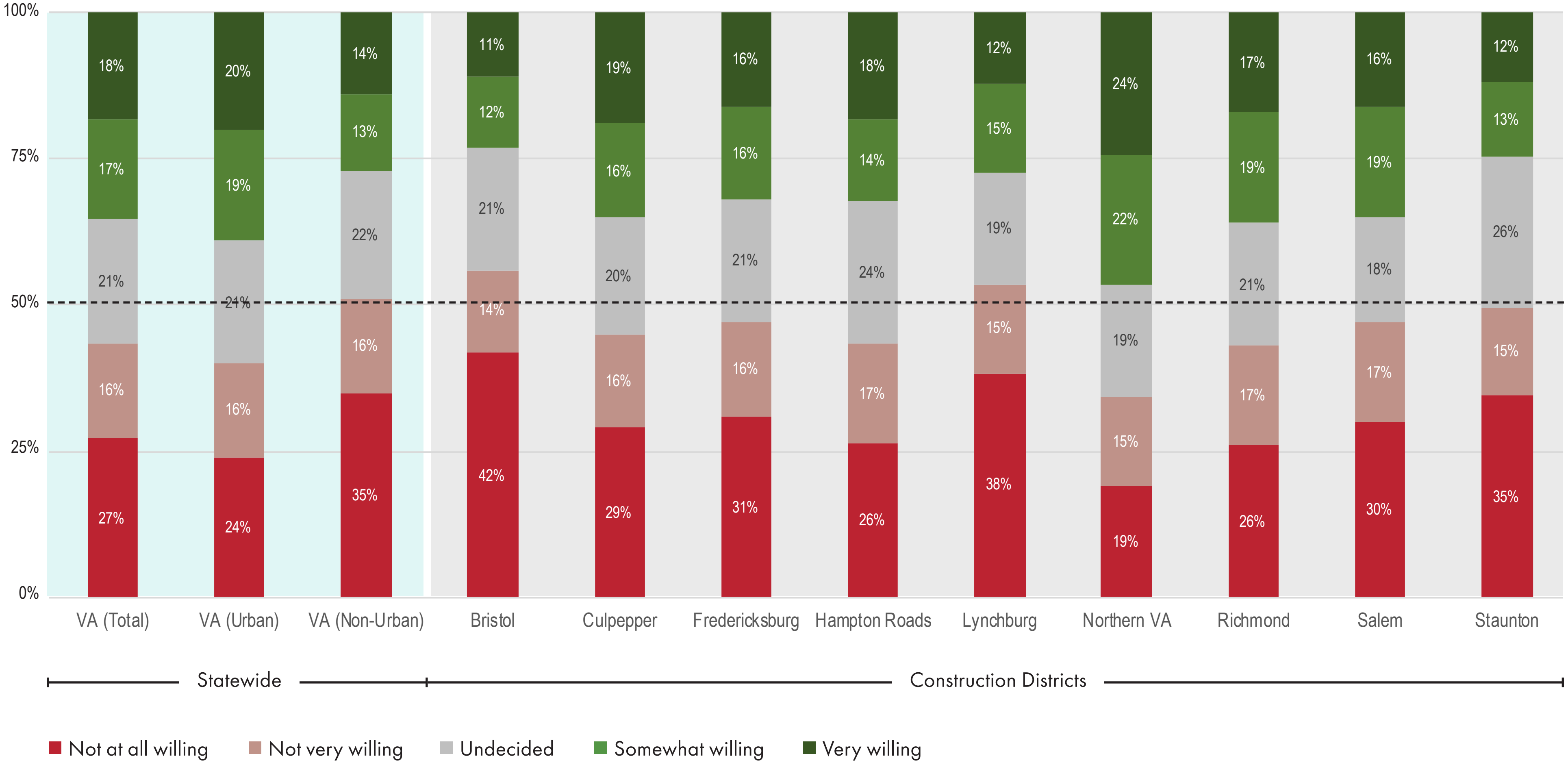
In comparison, slightly fewer full-time residents age 18 or older are aware that autonomous vehicles capable of driving with a human operator present are in development (82% are aware statewide). It is a common misperception that autonomous vehicles are self-driving without any input from a human, rather than existing in multiple forms with multiple levels of required human input or control.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,146 | VA (Urban) = 5,079 | VA (Non-Urban) = 2,067 | Construction Districts = 477 to 1,943

4.2.3: **WILLINGNESS TO BUY SELF-DRIVING VEHICLE**

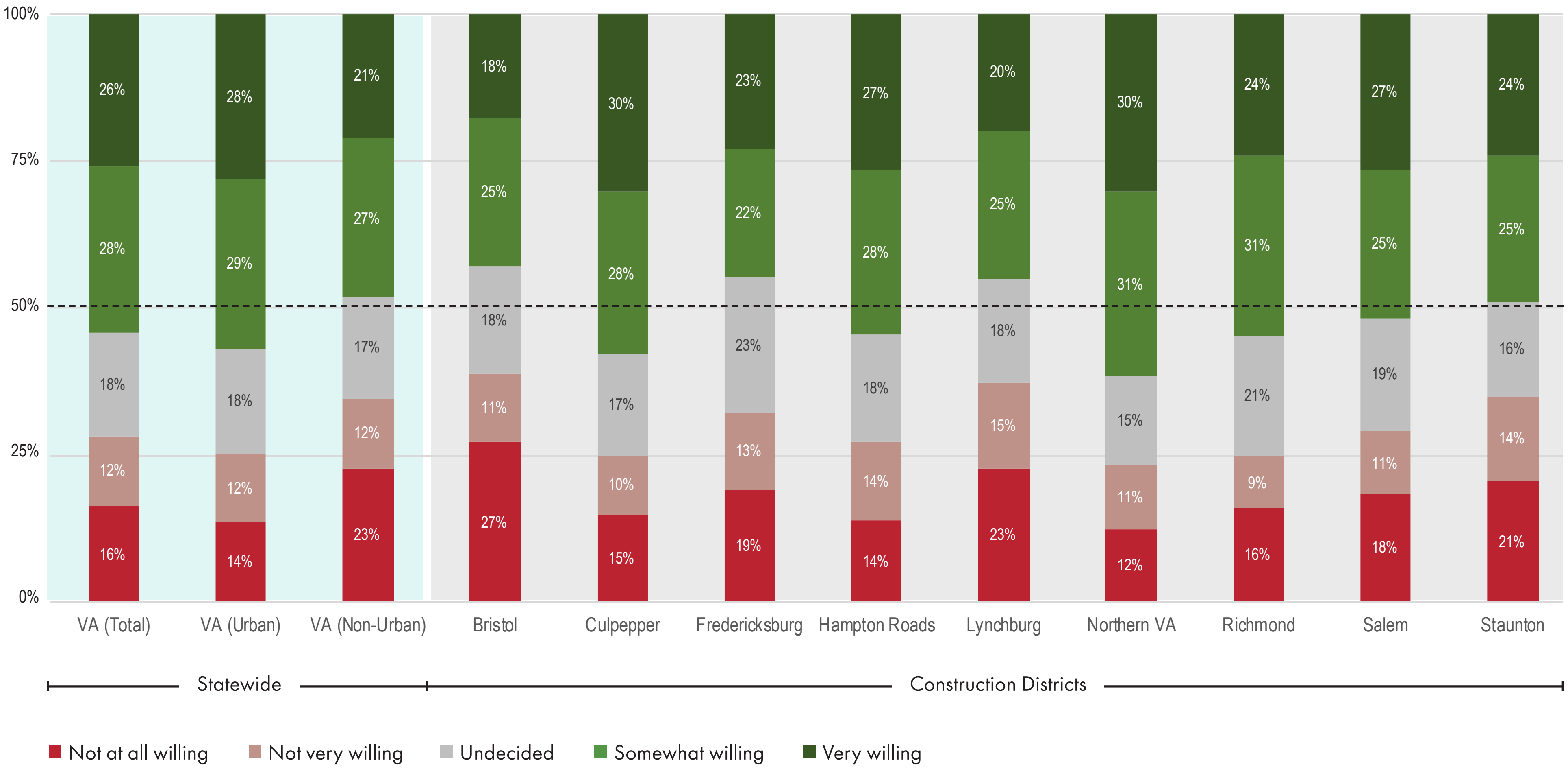
Regarding their willingness to buy a self-driving vehicle—one that can selectively perform the task of driving with a human capable of intervening present—approximately one-third of residents (35%) are willing to buy a self-driving vehicle if it is available to them. Older residents are less willing to do so, with 54% of those age 55 or older indicated as such, compared to 36% to 38% of younger age cohorts. The most common reasons against buying a self-driving vehicle were related to concerns about safety (20%), a desire to have a human in control at all times (14%), and concern that the technology is not yet fully tested (13%).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,853 | VA (Urban) = 4,870 | VA (Non-Urban) = 1,983 | Construction Districts = 457 to 1,879

4.2.4: **WILLINGNESS TO TAKE A RIDE IN A SELF-DRIVING SERVICE WITH AN OPERATOR PRESENT**

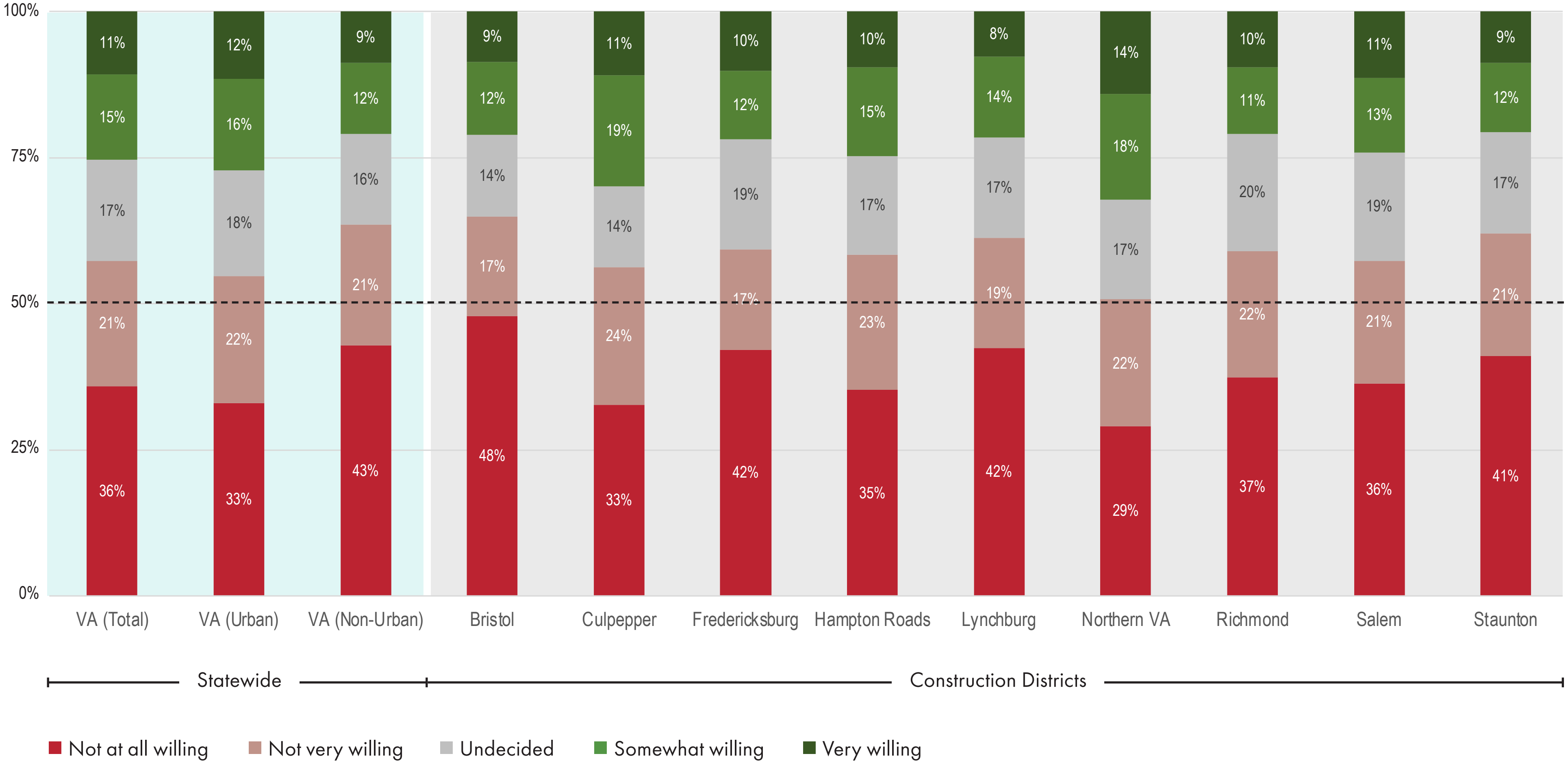
Regarding their willingness to take a ride in a self-driving service—a bus or taxi that is autonomous, but does have an operator present—slightly more than one-half (54%) are willing to do so. Moreover, 58% of those age 18 to 34 and 57% of those age 35 to 54 are willing to take a ride in a self-driving service, a slightly greater proportion than those age 55 or older (49%).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,933 | VA (Urban) = 4,931 | VA (Non-Urban) = 2,002 | Construction Districts = 459 to 1,904

4.2.5: WILLINGNESS TO TAKE A RIDE IN A SELF-DRIVING SERVICE WITHOUT AN OPERATOR PRESENT

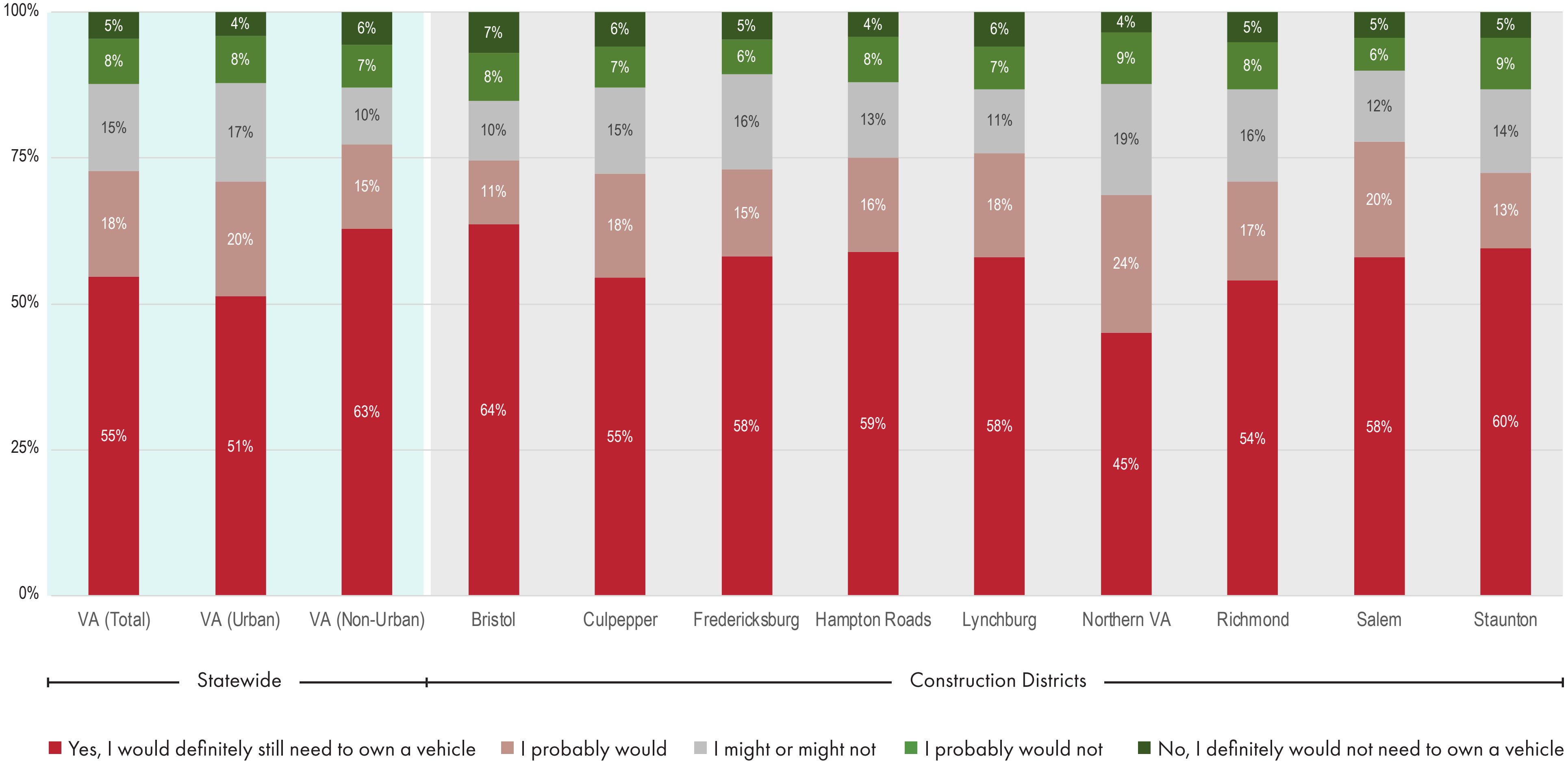
Willingnesss to take a ride in a self-driving service—a bus or taxi that is autonomous, but does not have an operator present was lower than willingness to ride in a self-driving service with an operator present, with only one-fourth (25%) willing to do so. Furthermore, one-fourth of that 25% have concerns about safety or think that it would be dangerous.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 6,970 | VA (Urban) = 4,957 | VA (Non-Urban) = 2,013 | Construction Districts = 465 to 1,908

4.2.6: **VEHICLE OWNERSHIP IF A PAY-PER-TRIP SELF-DRIVING VEHICLE IS AVAILABLE**

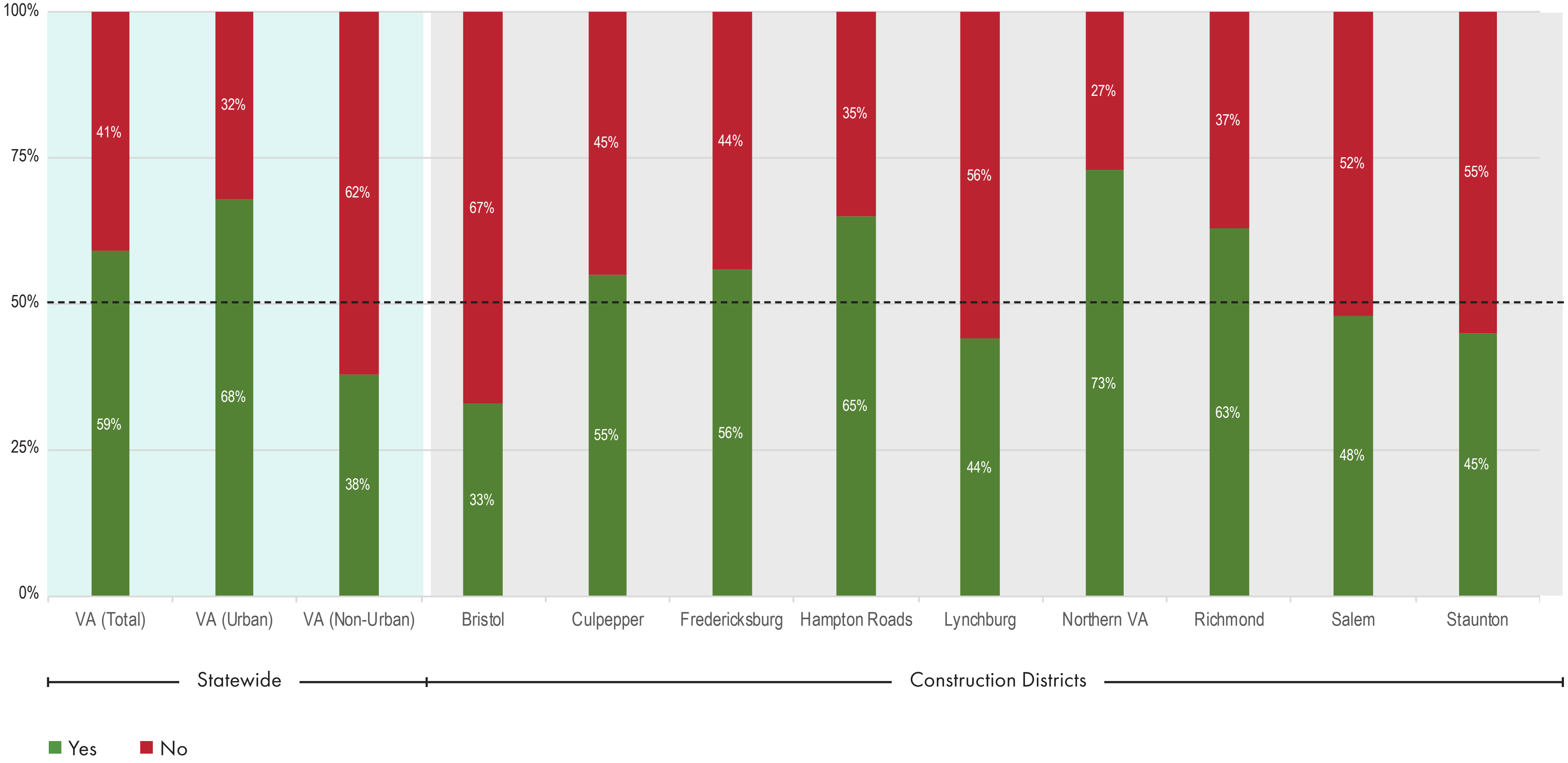
More than one-half of residents age 18 or older (55%) would definitely still feel the need to own a vehicle if a self-driving vehicle service was available to them. This is notably higher among those in non-urban areas of Virginia, relative to those in urban areas. White Virginians were more likely than other groups to feel they would probably or definitely still need to own a vehicle (75%), compared to people of color (66%).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,146 | VA (Urban) = 5,079 | VA (Non-Urban) = 2,067 | Construction Districts = 477 to 1,943

4.3.1: PAST USAGE OF RESTAURANT DELIVERY OR TAKEOUT SERVICES

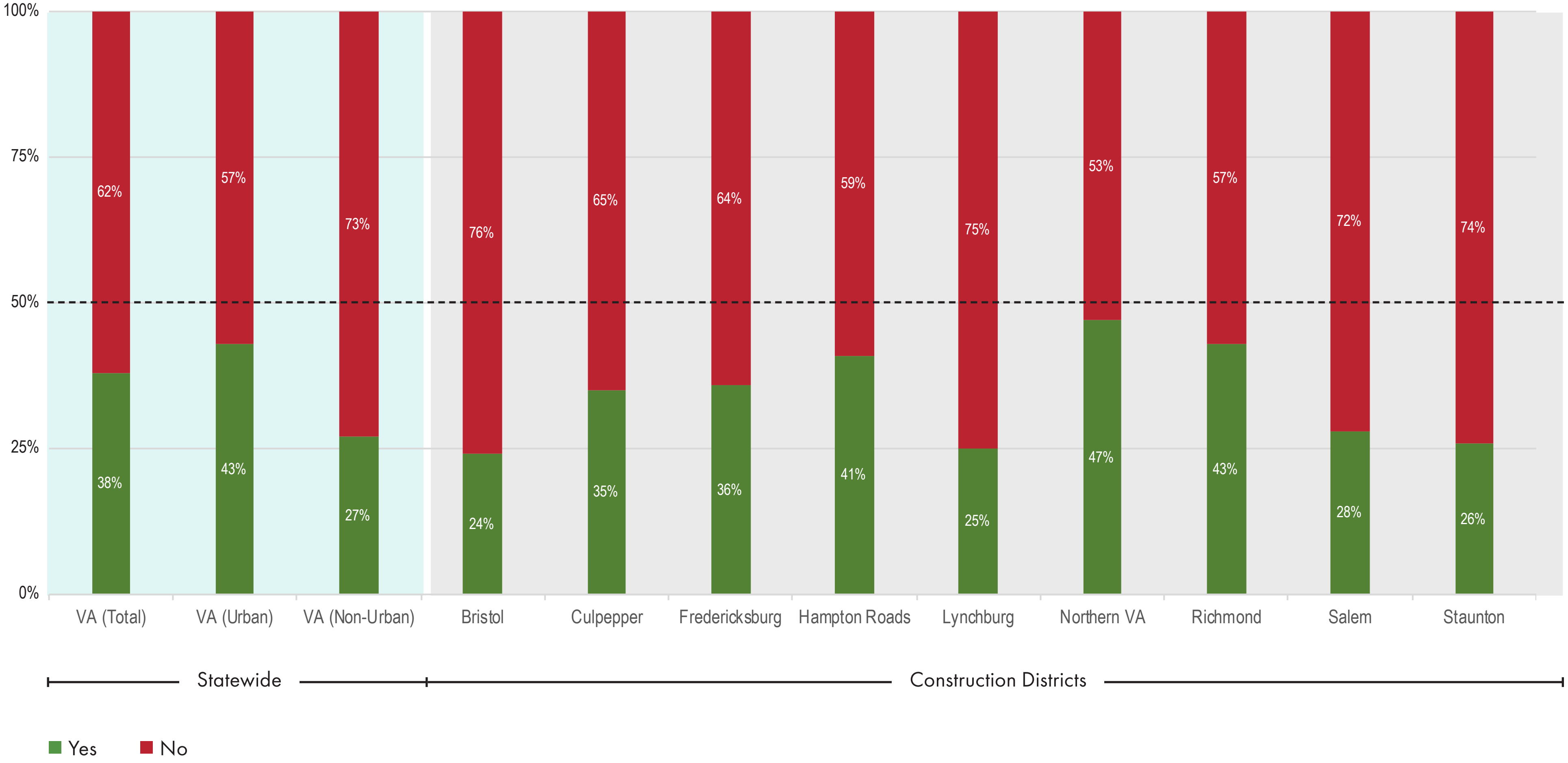
About 6 in 10 residents statewide age 18 or older (59%) have used restaurant or takeout services (e.g., DoorDash, GrubHub, or UberEats). This is highest among urban areas in Virginia, as well as among those Construction Districts with a high proportion of urban areas as well (i.e., Fredericksburg, Hampton Roads, Northern Virginia, or Richmond).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,145 | VA (Urban) = 5,079 | VA (Non-Urban) = 2,066 | Construction Districts = 477 to 1,943

4.3.2: PAST USAGE OF ONLINE GROCERY SHOPPING THROUGH A THIRD-PARTY APP

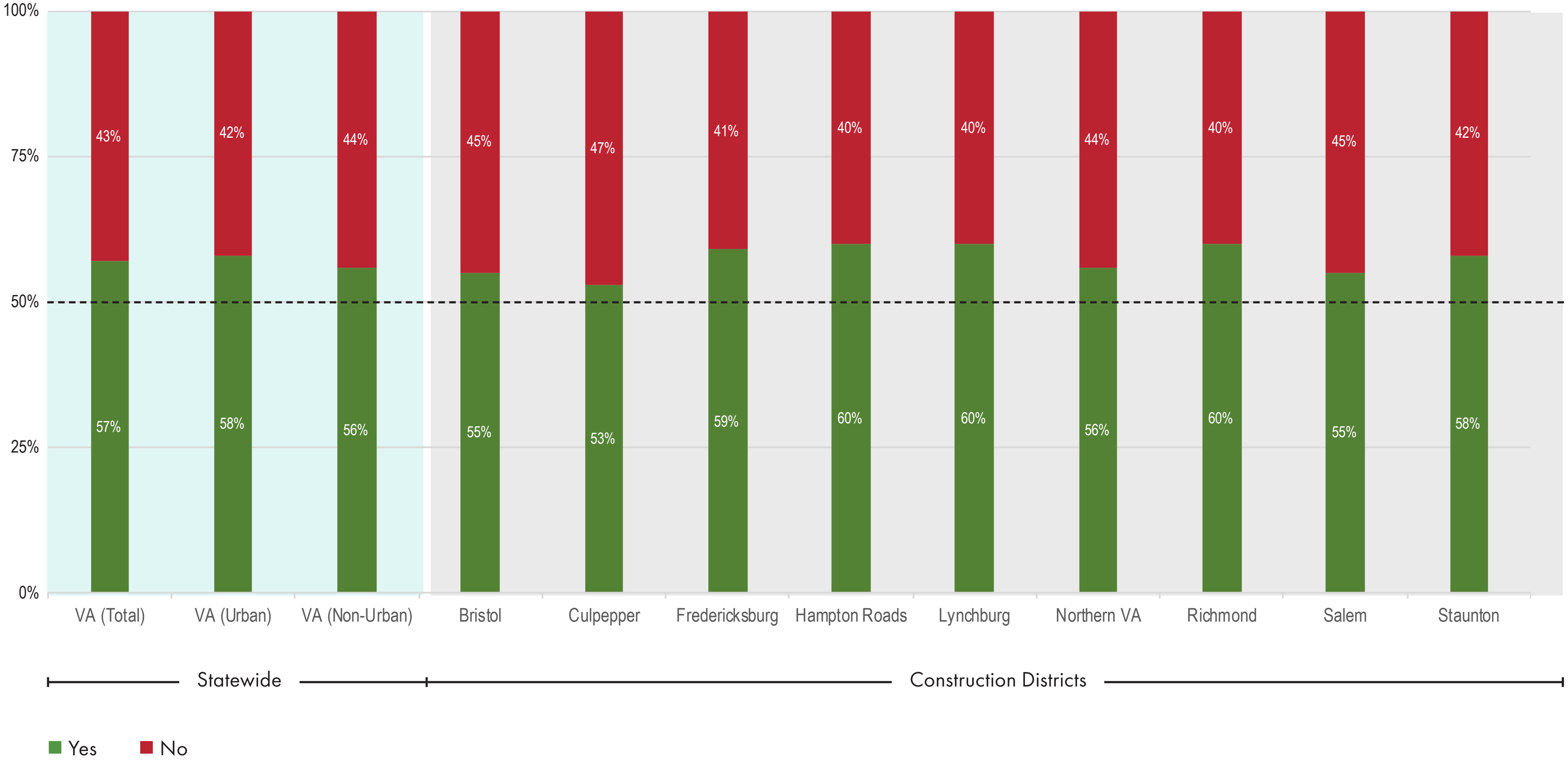
Nearly 4 in 10 residents age 18 or older (38%) at the statewide level have used a third-party app (e.g., Instacart or AmazonFresh) for grocery shopping.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,144 | VA (Urban) = 5,078 | VA (Non-Urban) = 2,066 | Construction Districts = 477 to 1,943

4.3.3: PAST USAGE OF ONLINE GROCERY ORDERING WITH IN-STORE/CURBSIDE PICKUP

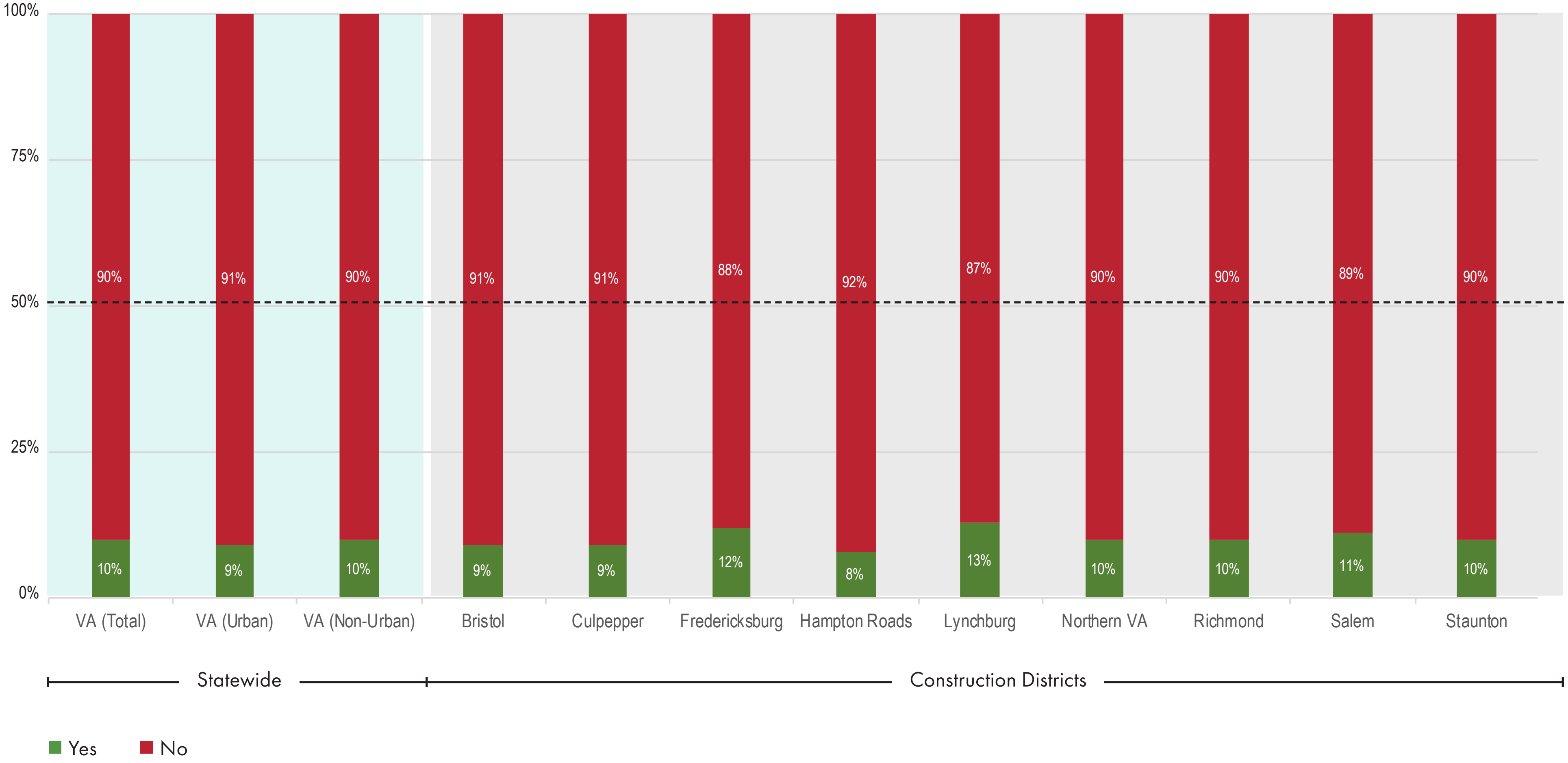
While 38% of residents age 18 or older at the statewide level have used a third-party app for grocery shopping (Q13B), incidence of usage of online grocery ordering directly from stores with in-store pickup is more common, with more than one-half having done so (57%).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,143 | VA (Urban) = 5,078 | VA (Non-Urban) = 2,065 | Construction Districts = 476 to 1,943

4.3.4: **PAST USAGE OF SOME OTHER SERVICE THAT DELIVERS TO YOUR HOME**

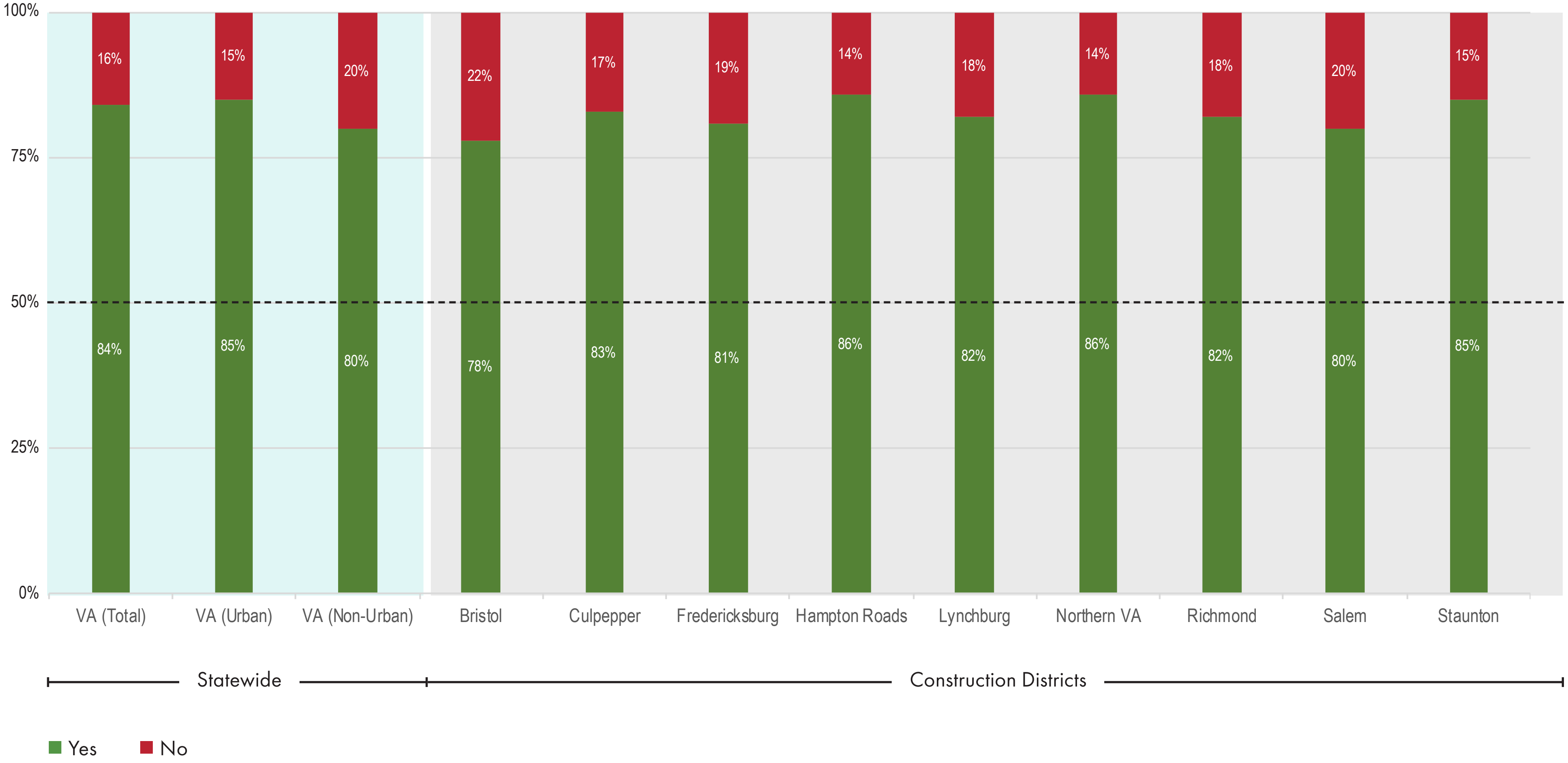
When it comes to general online retailers (such as Amazon.com or other retailers offering online ordering), more than 8 in 10 residents age 18 or older (84%) have done so at some point. This is consistent across race/ethnicity cohorts, though usage of these is somewhat tied to income, with 88% of those with annual incomes of $100,000 or more having used one of these services (compared to 79% to 83% of those in other income cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,137 | VA (Urban) = 5,072 | VA (Non-Urban) = 2,065 | Construction Districts = 476 to 1,941

4.3.5: **PAST USAGE OF AN ONLINE RETAILER OR APP**

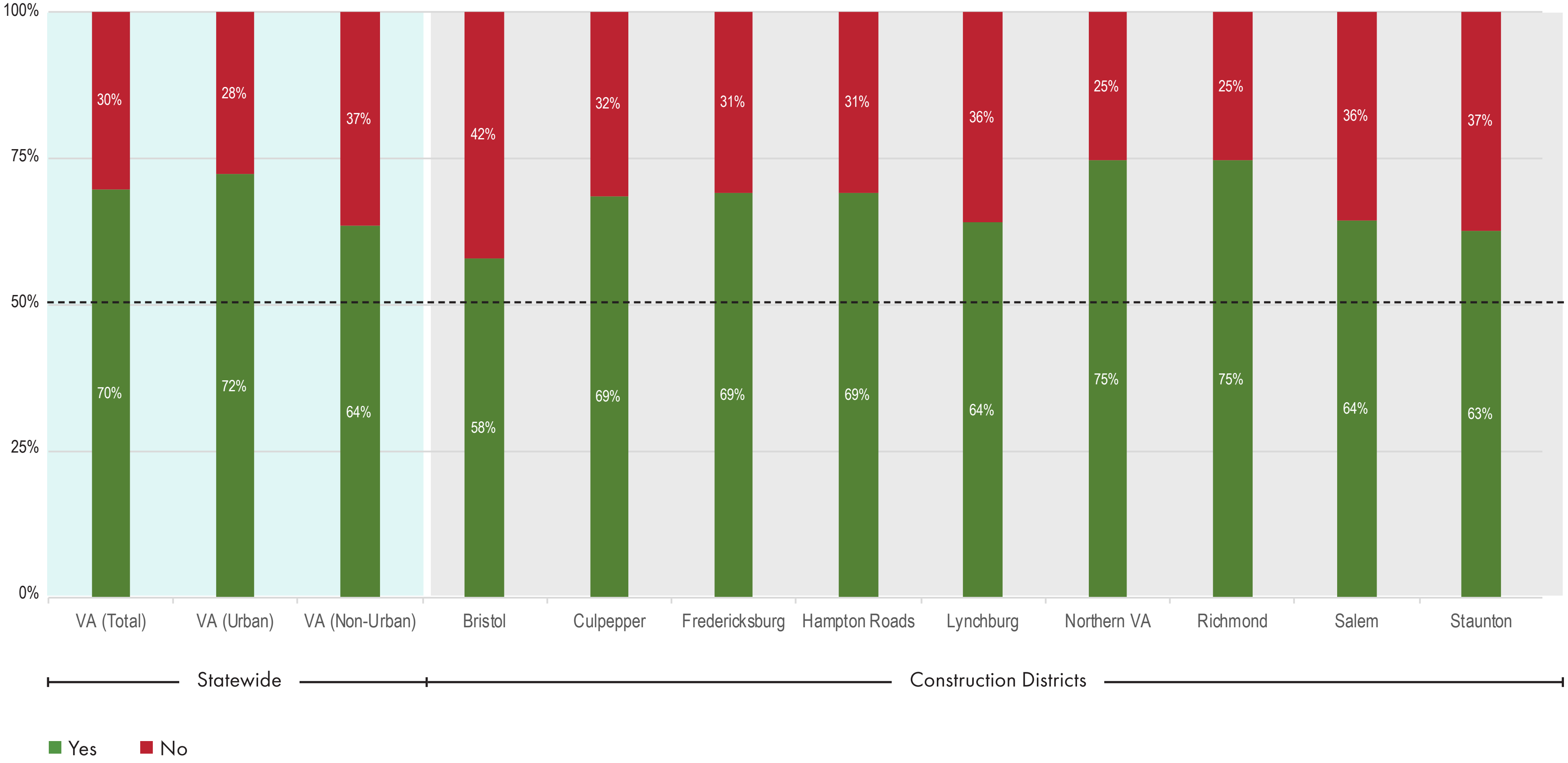
When it comes to general online retailers (such as Amazon.com or other retailers offering online ordering), more than 8 in 10 residents age 18 or older (84%) have done so at some point. This is consistent across race/ethnicity cohorts, though usage of these is somewhat tied to income, with 88% of those with annual incomes of $100,000 or more having used one of these services (compared to 79% to 83% of those in other income cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,145 | VA (Urban) = 5,079 | VA (Non-Urban) = 2,066 | Construction Districts = 477 to 1,943

4.3.6: **WOULD USE GROUND-BASED, AUTOMATED DELIVERY SERVICE**

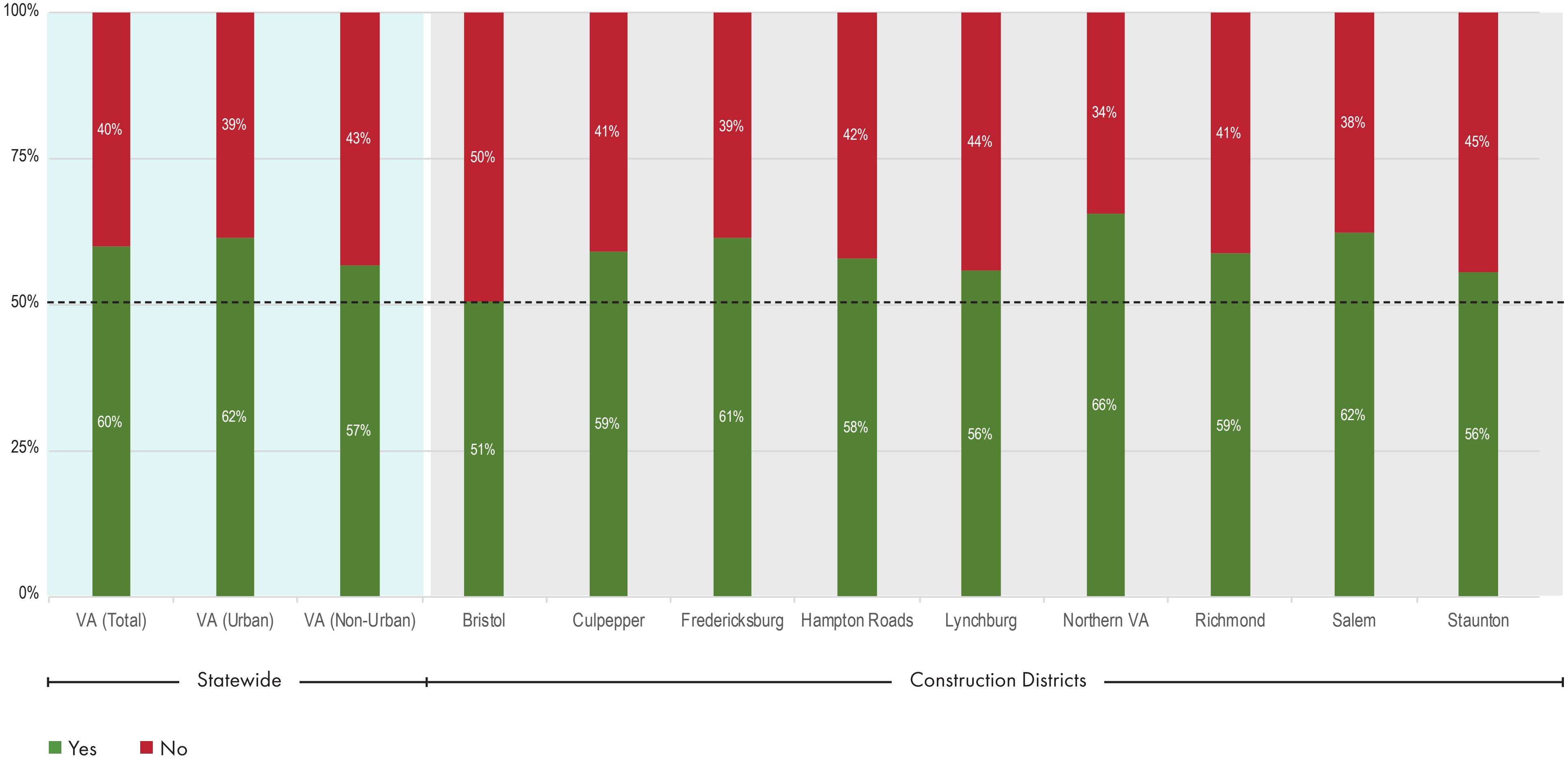
Full-time residents age 18 or older were asked if they would use a ground-based delivery service to receive food, groceries, or other goods. Note, this ground-based service was presented as being automated with robots at the street level. Seven in 10 residents (70%) would use this service. Age plays a role in the likelihood to use such a service, with 75% of those younger than 55 willing to do so, compared to 61% of residents age 55 or older.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,127 | VA (Urban) = 5,072 | VA (Non-Urban) = 2,055 | Construction Districts = 474 to 1,941

4.3.7: **WOULD USE AIRBORNE DRONE DELIVERY SERVICE**

Full-time residents age 18 or older were asked if they would use an airborne drone to receive food, groceries, or other goods. The Survey found that 60% would use an airborne drone service compared to 70% that would use a ground-based service. Again, those age 55 or older are less likely than those in younger age cohorts to utilize this service (52% would do so versus 65% to 66% of those in younger age cohorts).

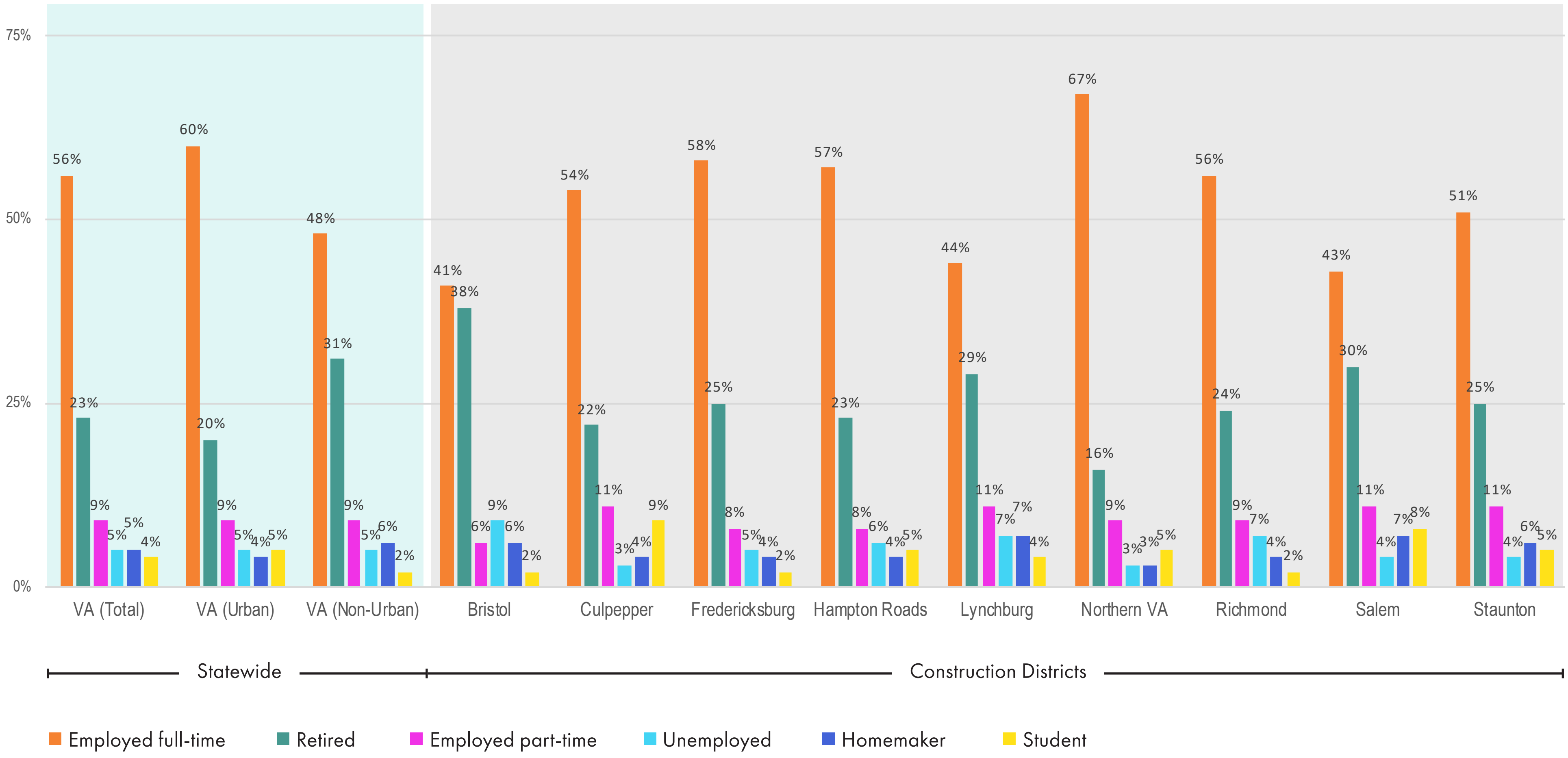


Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,127 | VA (Urban) = 5,070 | VA (Non-Urban) = 2,057 | Construction Districts = 477 to 1,942

SECTION 5:
TRAVEL TO WORK OR SCHOOL: CHARACTERISTICS AND SATISFACTION

5.1: **EMPLOYMENT STATUS**

Overall, almost 7 in 10 full-time residents age 18 or older are either employed or a student (68%). This question is the foundation for the following questions about remote work and modes of travel for both work- or school-related trips and discretionary travel.



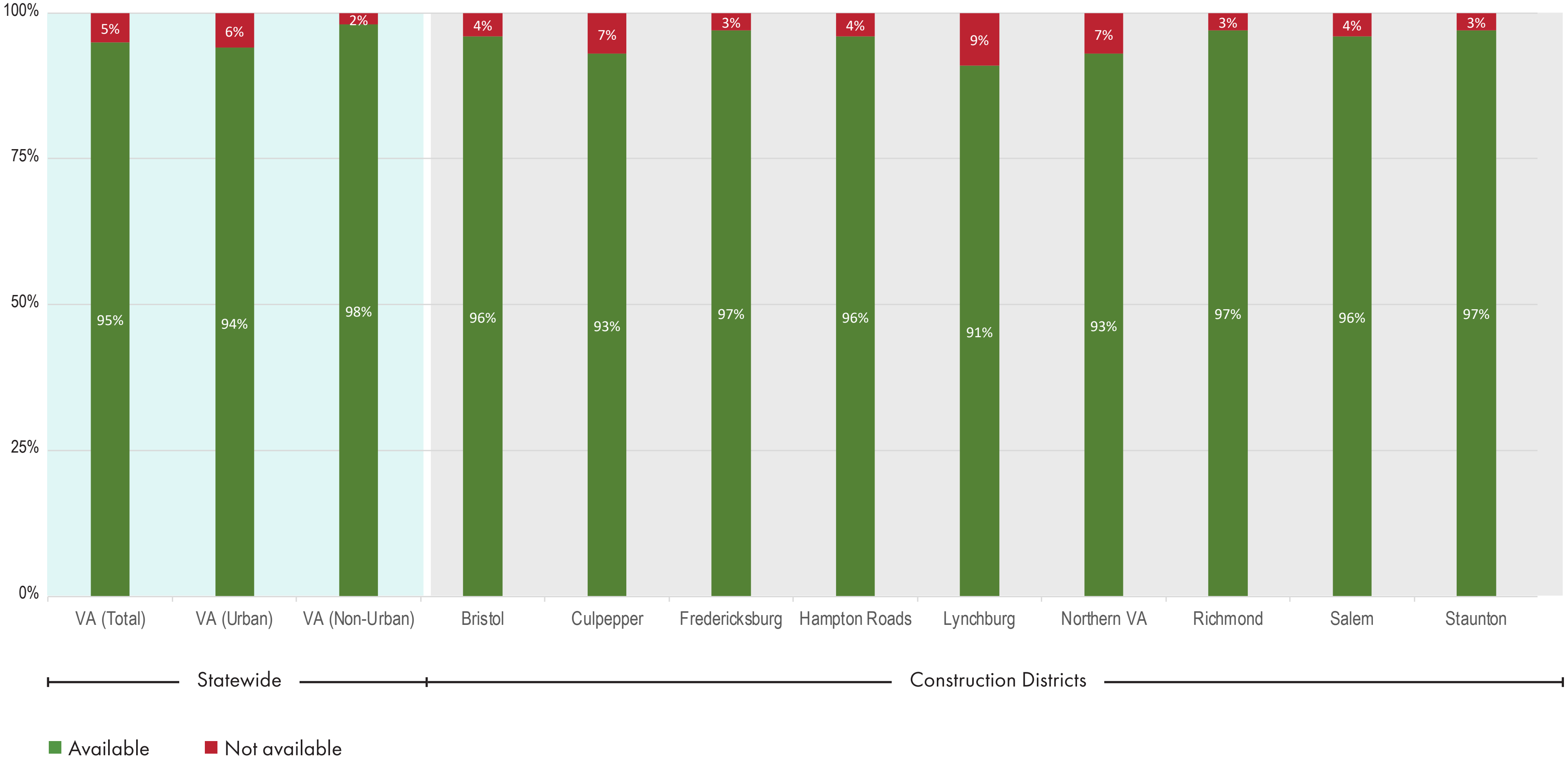
Asked of: Full-time residents, 18 or older

Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points

Number of valid responses (n-size): VA (Total) = 7,141 | VA (Urban) = 5,076 | VA (Non-Urban) = 2,065 | Construction Districts = 477 to 1,942

5.2.1: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** DRIVING PERSONAL CAR

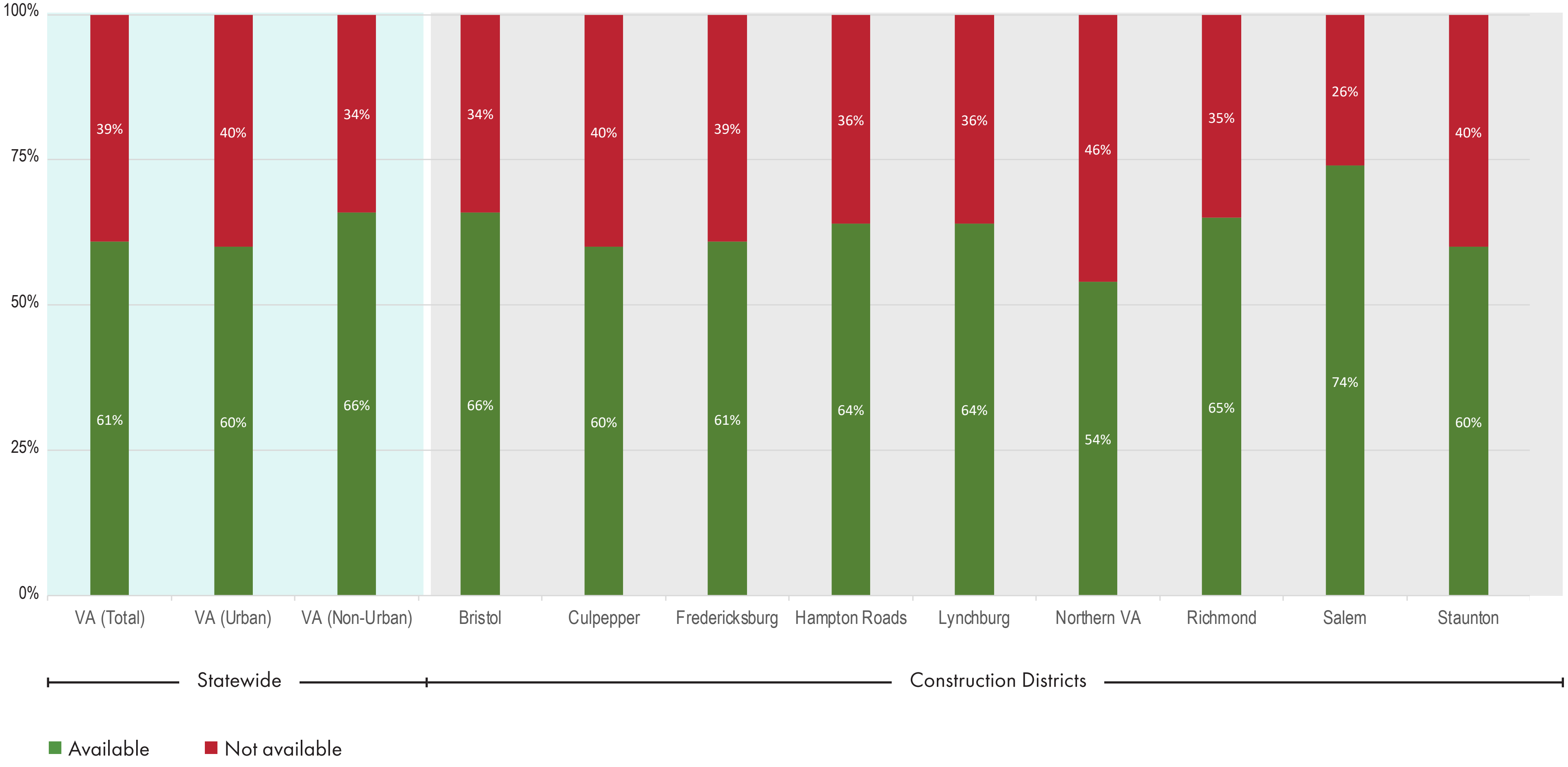
Those residents who are employed or are a full-time student and whose annual household income is less than $35,500, are less likely to have a personal vehicle available for their work or school travel (89%) compared to those in higher income cohorts (96% to 97%). Younger residents (age 18 to 34) are also less likely to have access to a personal vehicle for their work or school travel, at 92% (compared to 96% to 98% of other age cohorts).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.4 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.6 to ±5.8 percentage points
Number of valid responses (n-size): VA (Total) = 4,690 | VA (Urban) = 3,520 | VA (Non-Urban) = 1,170 | Construction Districts = 284 to 1,452

5.2.2: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** RIDING IN PERSONAL CAR

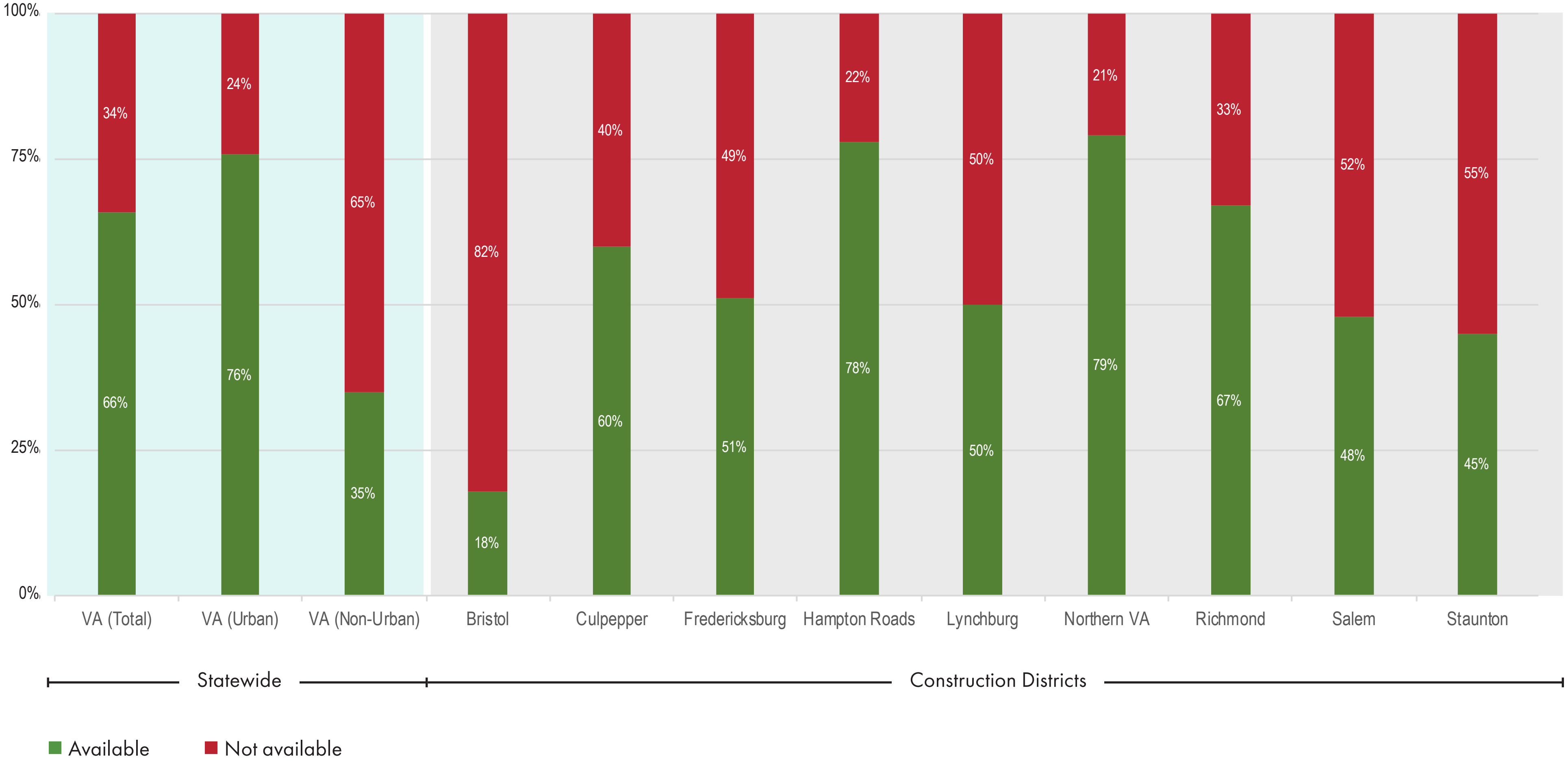
Those residents who are employed or are a full-time student and whose annual household income is less than $35,500, are less likely to have a personal car driven by a friend or family member available to them for their work or school travel (55%) compared to those in higher income cohorts (63% to 63%). Additionally, older residents (those age 55 or older) are least likely to have access to a personal car driven by friends or family for their work or school travel (55%, compared to 62% to 63% in other age cohorts).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.6 to ±5.9 percentage points
Number of valid responses (n-size): VA (Total) = 4,507 | VA (Urban) = 3,376 | VA (Non-Urban) = 1,131 | Construction Districts = 276 to 1,393

5.2.3: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** TAXI

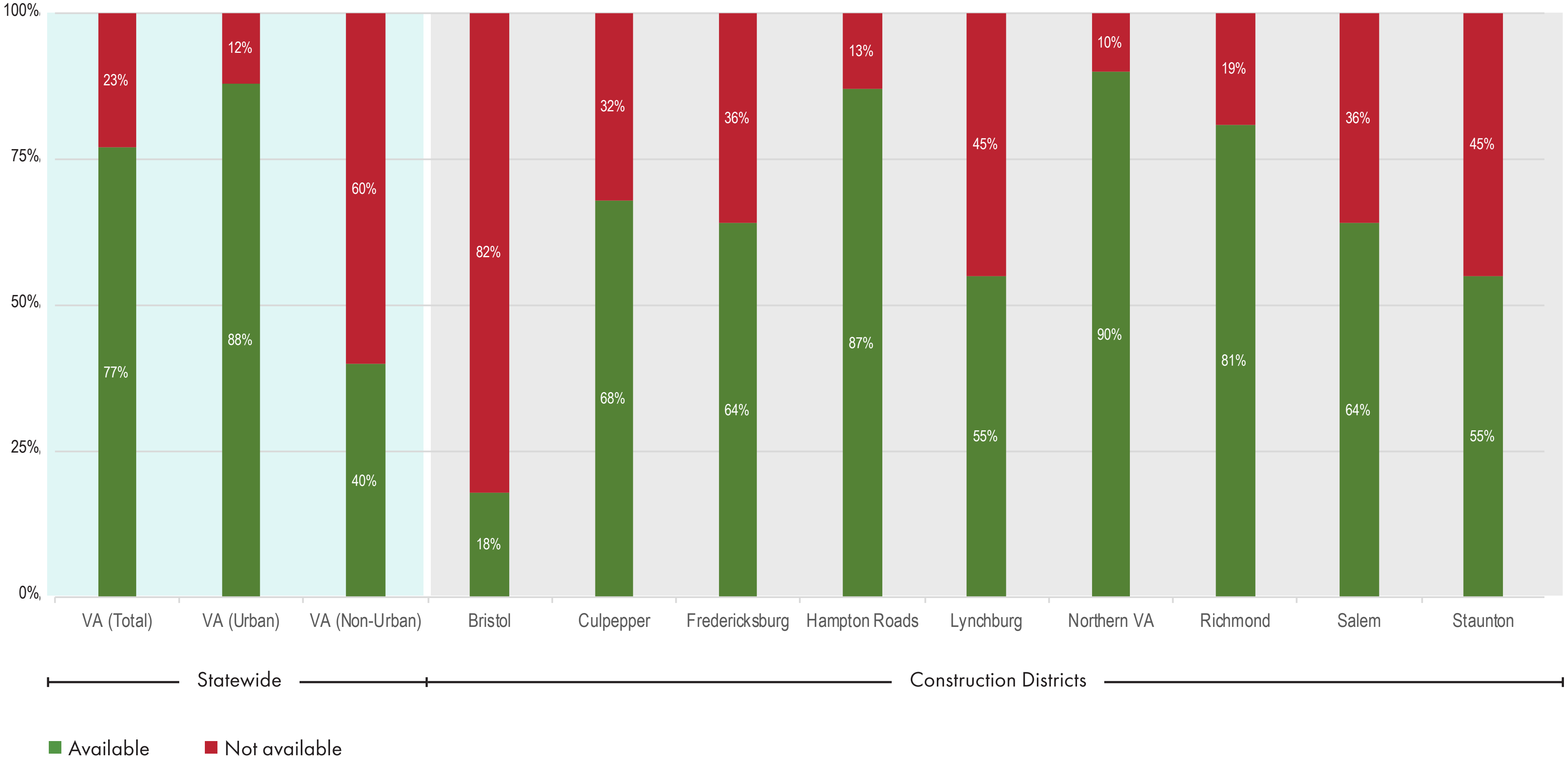
Residents who are employed or are a full-time student and whose annual household income is $100,000 or more, are most likely to have taxis available for their work or school travel (75%). Those who are younger (age 18 to 34) are least likely to have taxis available for their work or school travel (57%, compared to 68% to 69% of other age cohorts).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.6 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3.1 percentage points | Construction Districts = ±2.7 to ±6.4 percentage points
Number of valid responses (n-size): VA (Total) = 3,957 | VA (Urban) = 2,988 | VA (Non-Urban) = 969 | Construction Districts = 232 to 1,309

5.2.4: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** RIDESHARE SERVICES

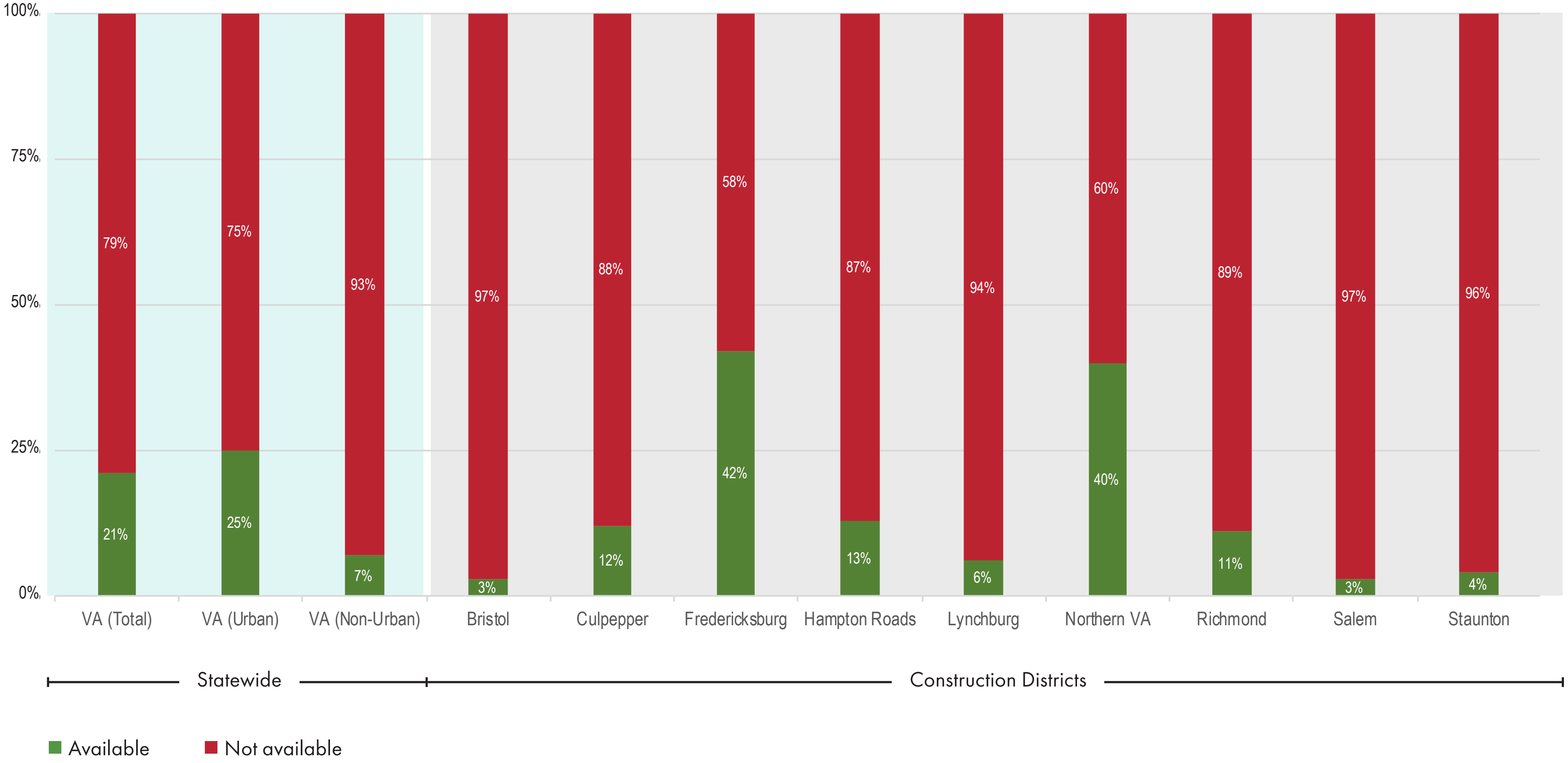
Residents who are employed or are a full-time student and whose annual household income is less than $35,500, are less likely to have rideshare services available for their work or school travel (64%). Notably, people of color who are employed or are students are more likely than white residents who are employed or are students to have access to rideshare services for their work or school travel (82%, compared to 72%).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±3.2 percentage points | Construction Districts = ±2.6 to ±6.7 percentage points
Number of valid responses (n-size): VA (Total) = 4,123 | VA (Urban) = 3,192 | VA (Non-Urban) = 931 | Construction Districts = 214 to 1,379

5.2.5: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** COMMUTER RAIL

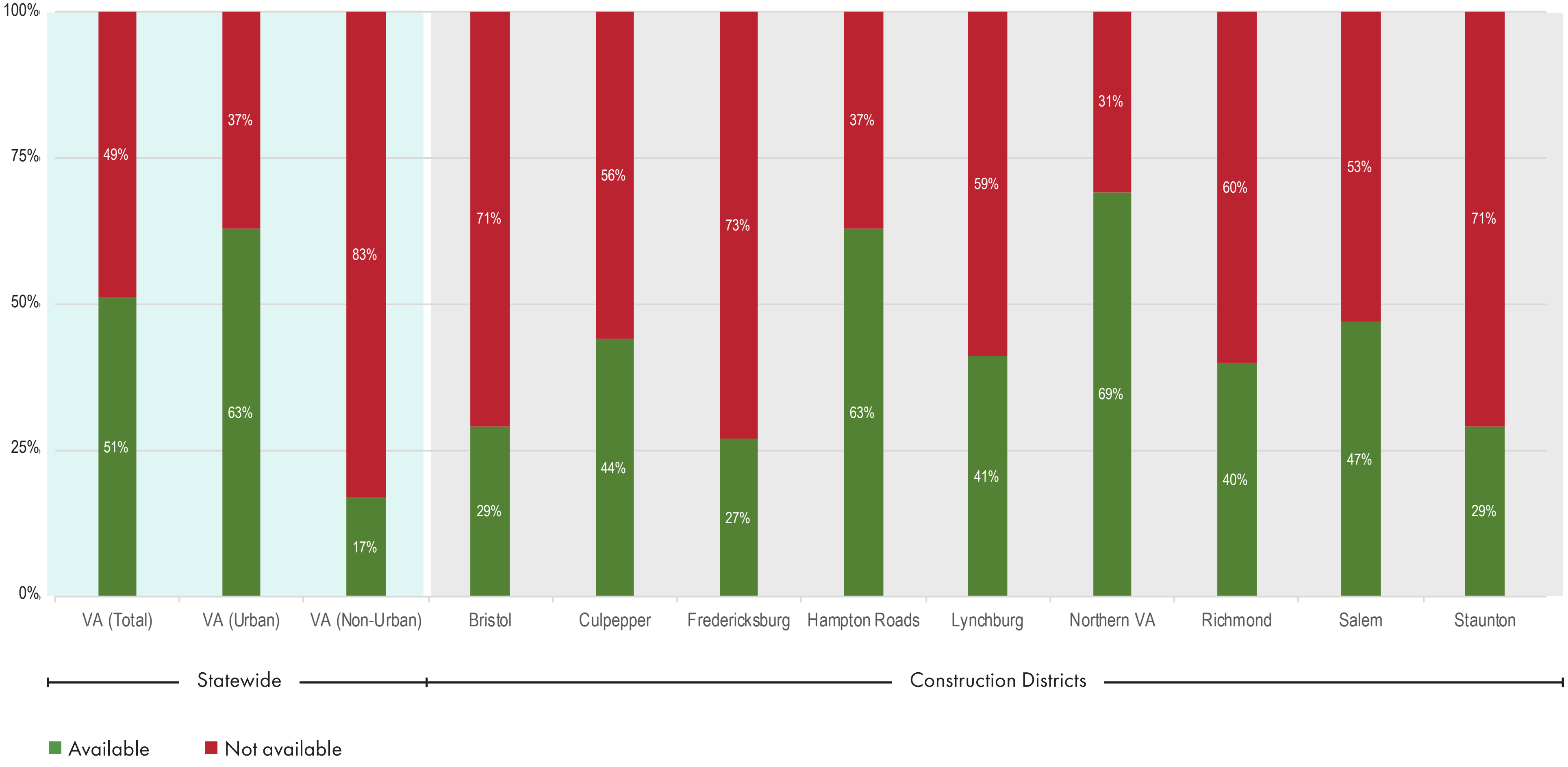
While availability of commuter rail is lower across the Commonwealth, it still follows similar patterns to those seen in rideshare services. Those with higher annual incomes (more than $100,000) are more likely than other income cohorts to have a commuter rail available for their work or school travel (27%, compared to 14% to 18%). Additionally, people of color who are employed or are students are more likely than white residents who are employed or are students to have access to rideshare services for their work or school travel (28%, compared to 17%).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3 percentage points | Construction Districts = ±2.7 to ±6.1 percentage points
Number of valid responses (n-size): VA (Total) = 4,205 | VA (Urban) = 3,121 | VA (Non-Urban) = 1,084 | Construction Districts = 261 to 1,315

5.2.6: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** LOCAL OR CITY BUS

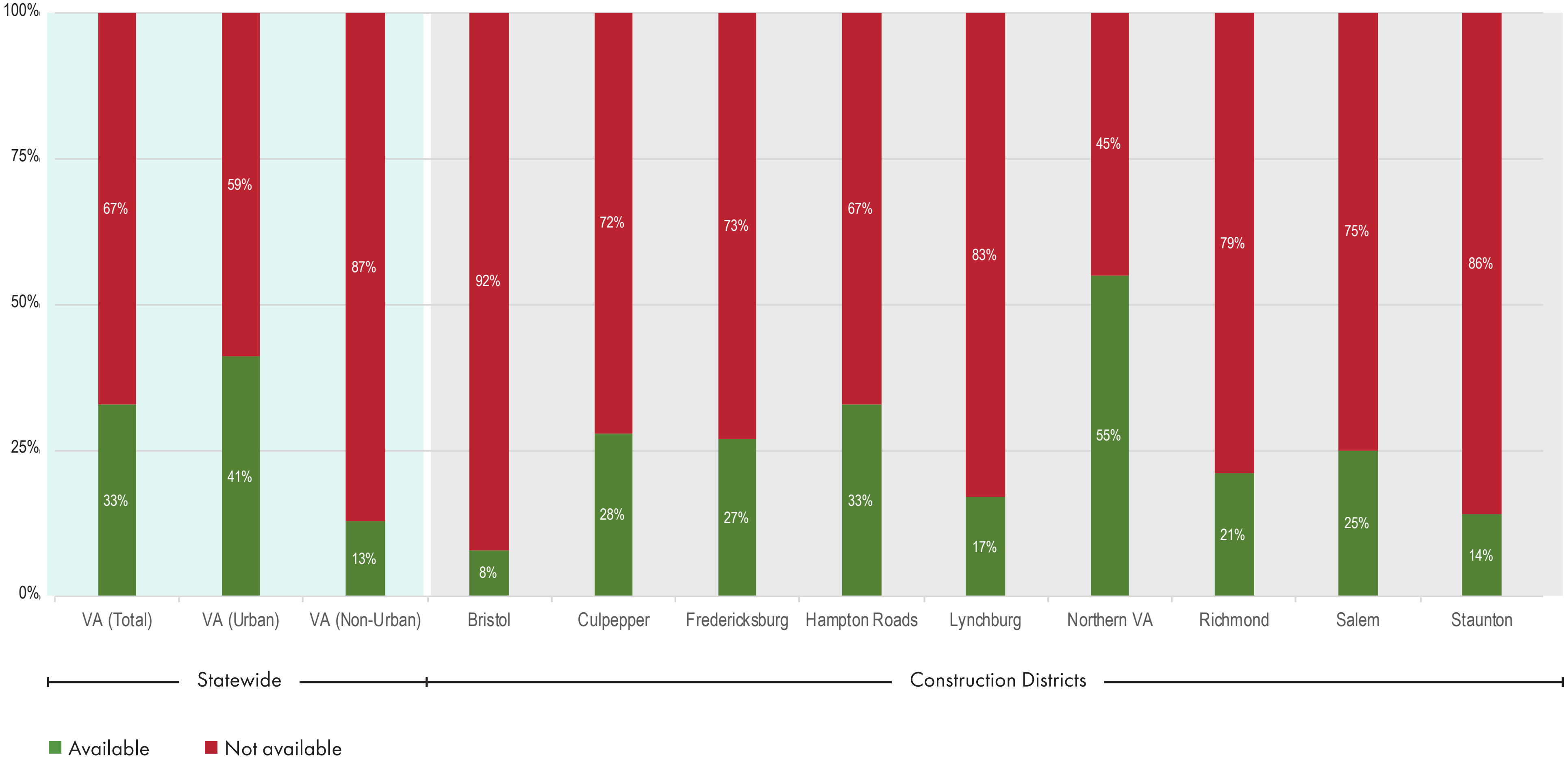
Residents who are employed or are students and are people of color are more likely to have access to local or city buses for their work or school travel (60%, compared to 46% of white Virginians). Those who are age 55 years or older are least likely to have access to a local or city bus for their work or school travel, with 45% indicating they have this mode available (compared to 50% to 57% of other age cohorts).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3 percentage points | Construction Districts = ±2.7 to ±6.1 percentage points
Number of valid responses (n-size): VA (Total) = 4,177 | VA (Urban) = 3,108 | VA (Non-Urban) = 1,069 | Construction Districts = 258 to 1,288

5.2.7: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** COMMUTER BUS

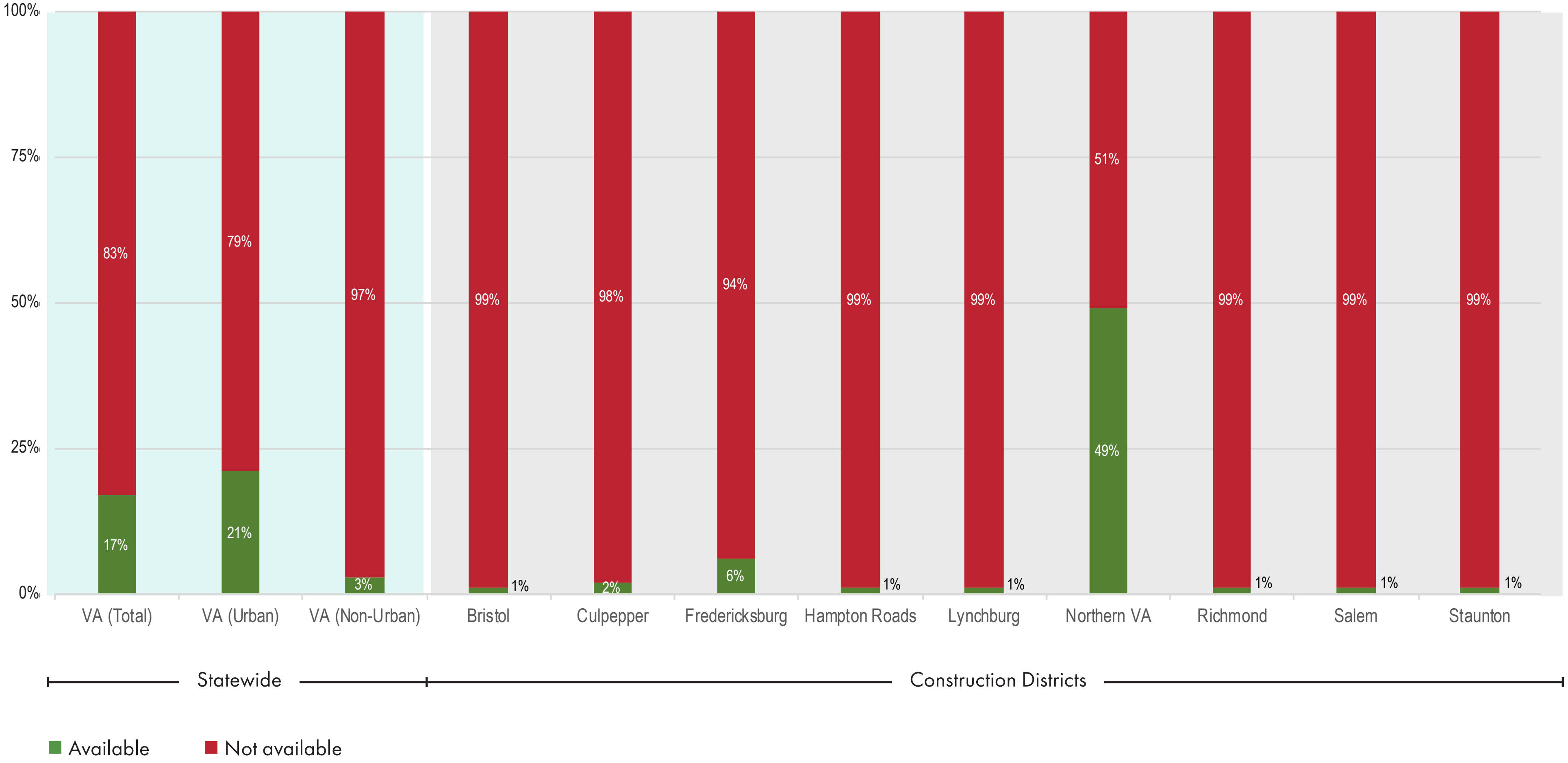
Residents who are employed or are students and are people of color tend to experience a higher availability of commuter buses for their work or school travel with 44% (compared to 27% of white Virginians) indicating they have this mode available. Those with annual incomes over $100,000 also tend to experience higher availability of commuter buses for their work or school travel, with 38% having this available.



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.6 percentage points | VA (Urban) = ±1.9 percentage points | VA (Non-Urban) = ±3 percentage points | Construction Districts = ±2.9 to ±6.4 percentage points
Number of valid responses (n-size): VA (Total) = 3,765 | VA (Urban) = 2,731 | VA (Non-Urban) = 1,034 | Construction Districts = 238 to 1,170

5.2.8: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** SUBWAY

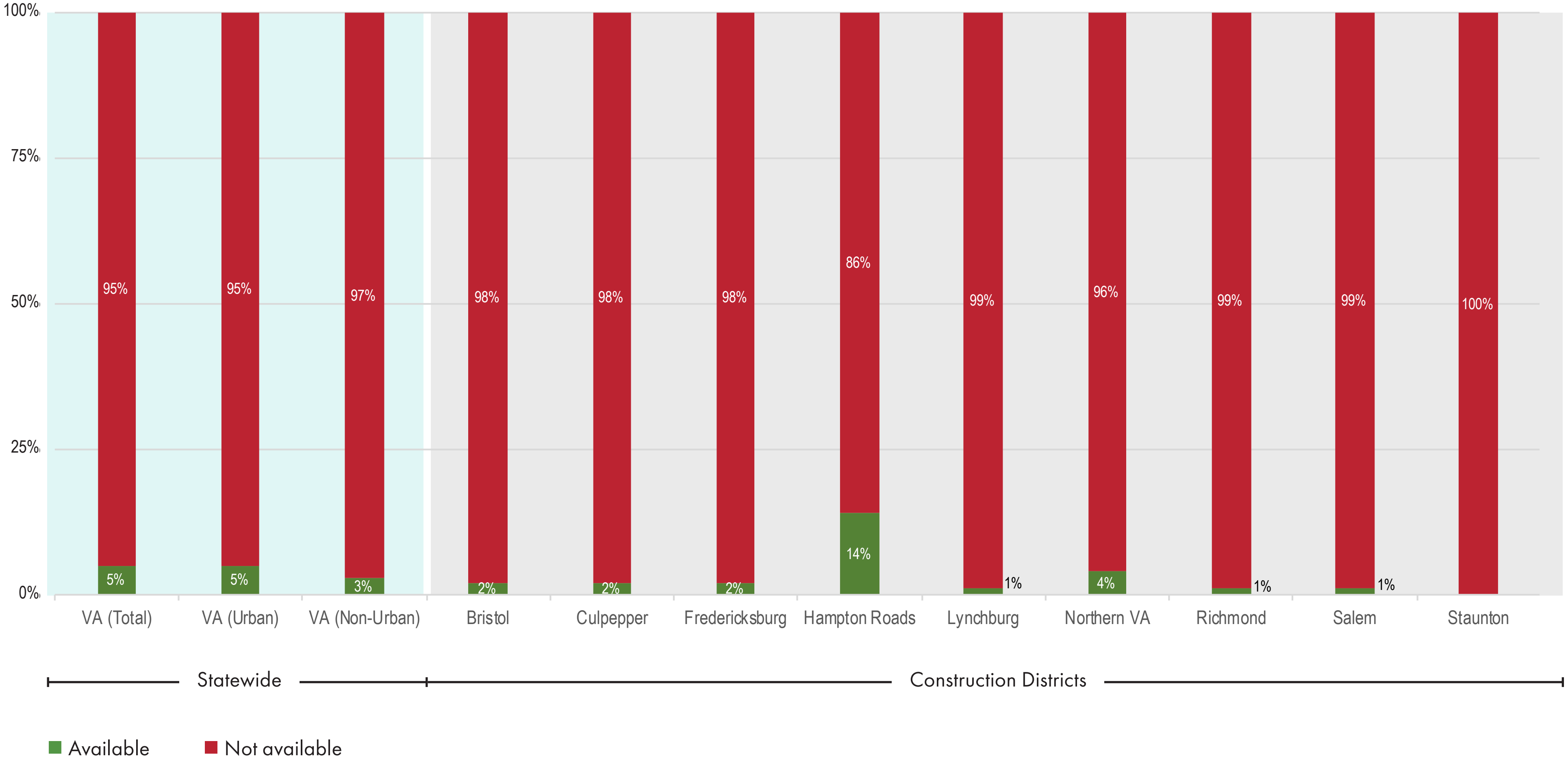
As subways in Virginia generally exist in more urbanized areas, availability for work or school travel is much higher for people of color (20%) than white Virginians (15%), much higher for Hispanic or Latino residents (27%, compared to 16% of non-Hispanic or Latino residents), and much higher for those making $100,000 or more annually (27%, compared to 6% to 12% of lower income cohorts).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.6 to ±5.9 percentage points
Number of valid responses (n-size): VA (Total) = 4,507 | VA (Urban) = 3,368 | VA (Non-Urban) = 1,139 | Construction Districts = 279 to 1,390

5.2.9: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** FERRY

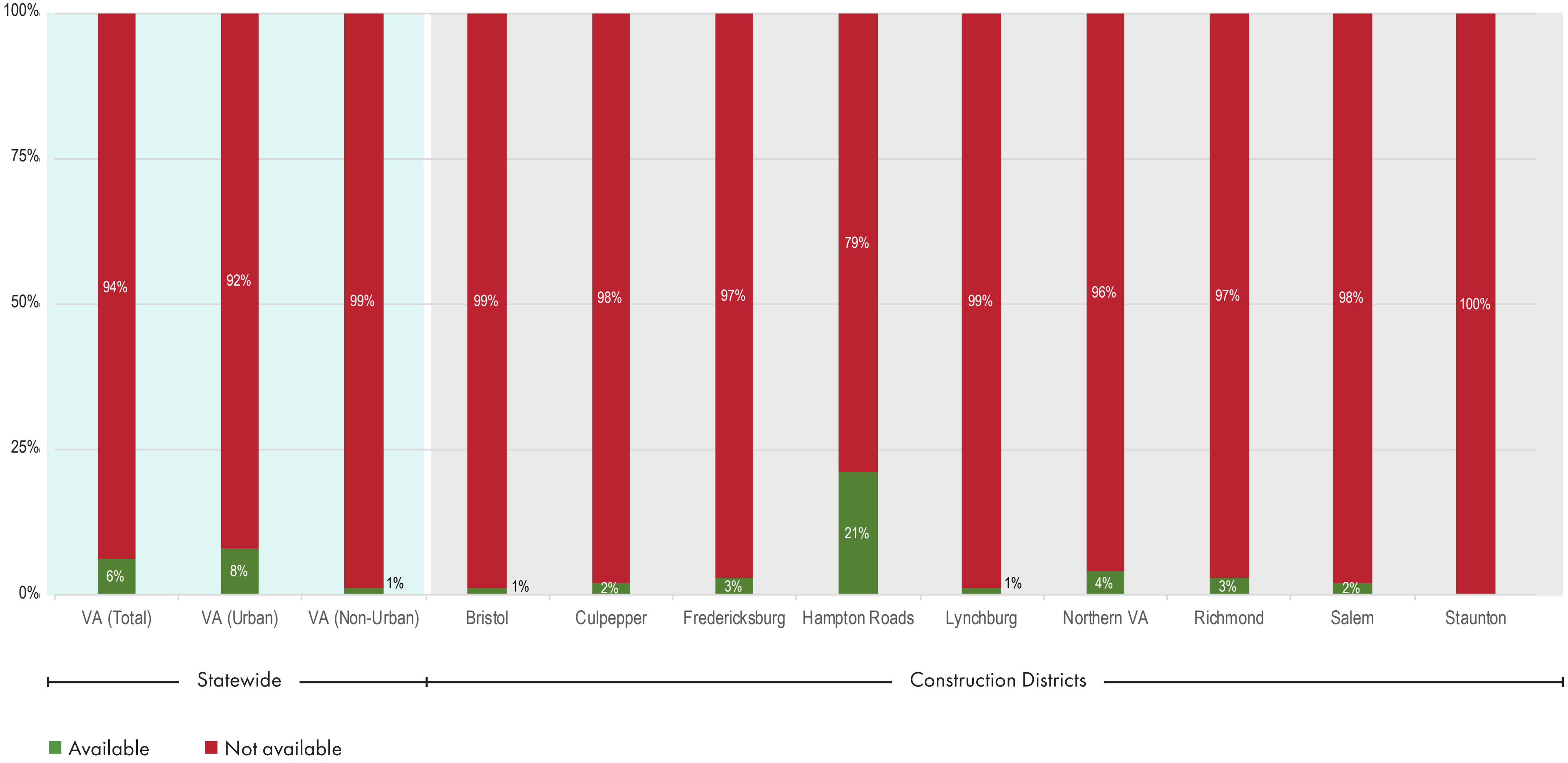
While the availability of ferries for work or school travel in Virginia experiences large, and logical, geographic differences, in the areas where ferries are available, availability is comparable across demographics.



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.7 to ±5.9 percentage points
Number of valid responses (n-size): VA (Total) = 4,480 | VA (Urban) = 3,337 | VA (Non-Urban) = 1,143 | Construction Districts = 278 to 1,358

5.2.10: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** LIGHT RAIL

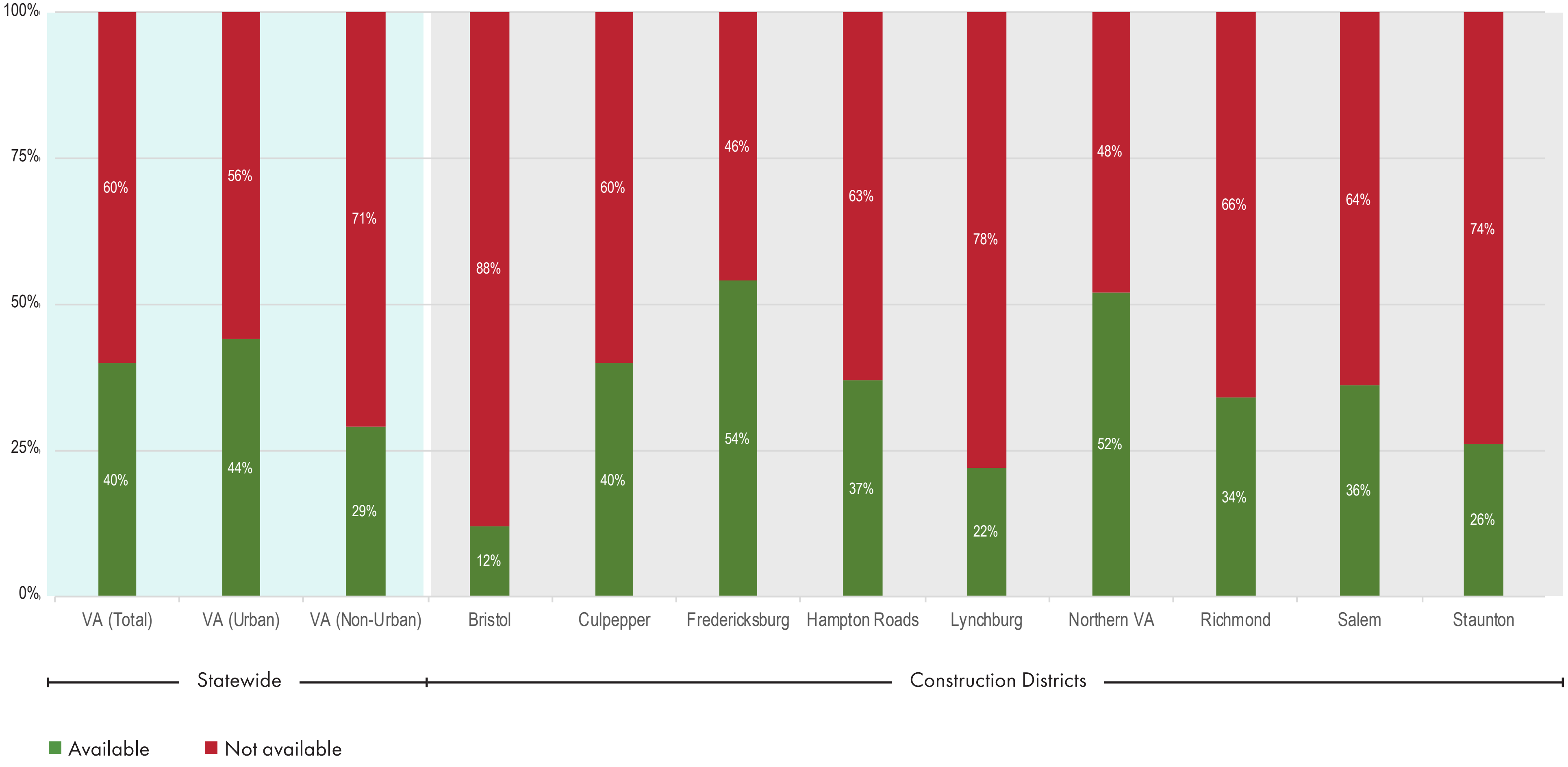
Residents who are employed or are students and are people of color tend to experience higher availability of light rail for their work or school travel, though this availability is still very low overall (8%, compared to 4% of white residents).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.7 to ±5.9 percentage points
Number of valid responses (n-size): VA (Total) = 4,337 | VA (Urban) = 3,208 | VA (Non-Urban) = 1,129 | Construction Districts = 279 to 1,279

5.2.11: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** CARPOOLS OR VANPOOLS

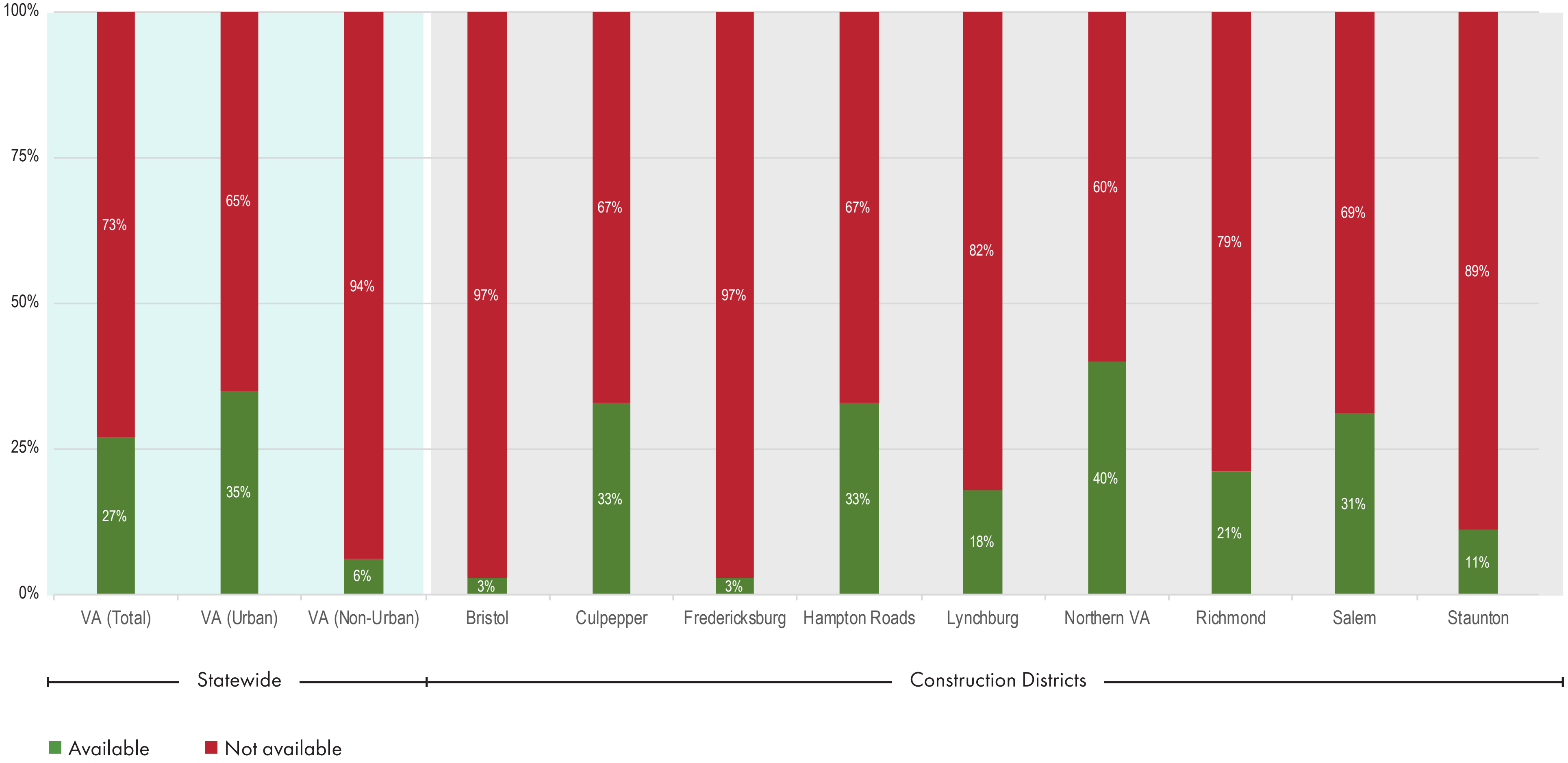
Availability of carpools or vanpools for work or school travel is generally consistent across demographic groups for those residents who are employed or students.



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.7 percentage points | VA (Urban) = ±2 percentage points | VA (Non-Urban) = ±3.3 percentage points | Construction Districts = ±3 to ±6.5 percentage points
Number of valid responses (n-size): VA (Total) = 3,397 | VA (Urban) = 2,502 | VA (Non-Urban) = 895 | Construction Districts = 227 to 1,055

5.2.12: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** A SHARED SERVICE FOR BIKES, E-BIKES, OR SCOOTERS

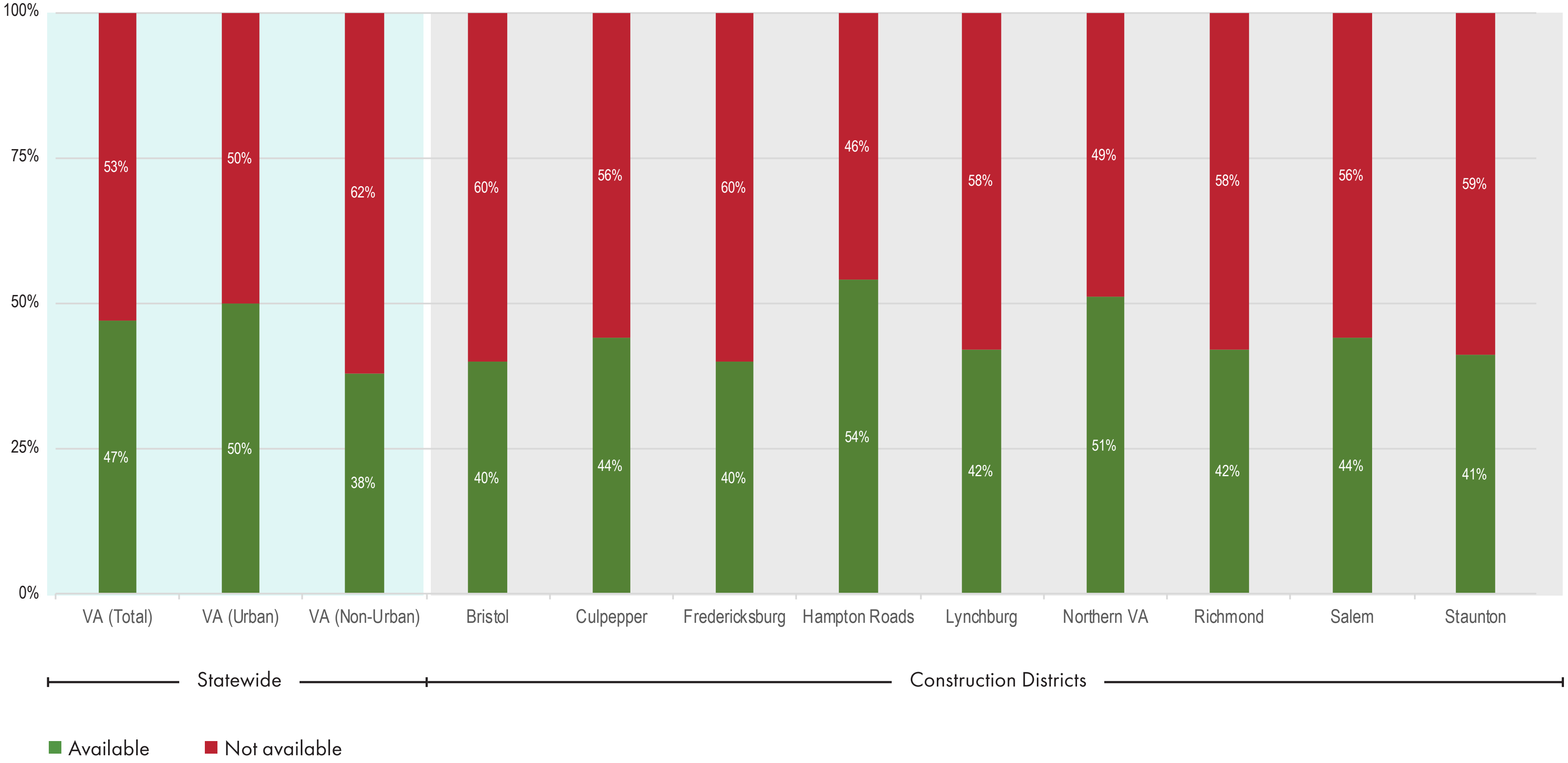
While availability of shared services for bikes, e-bikes, or scooters is low overall and highly dependent on geography, availability for work or school travel also tends to be consistent across demographic groups. However, residents age 18 to 34 years old do tend to see higher availability of these services (35%, compared to 19% to 25% of other age cohorts).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.6 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3 percentage points | Construction Districts = ±2.8 to ±6.1 percentage points
Number of valid responses (n-size): VA (Total) = 3,889 | VA (Urban) = 2,853 | VA (Non-Urban) = 1,036 | Construction Districts = 254 to 1,185

5.2.13: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** PERSONAL BICYCLE

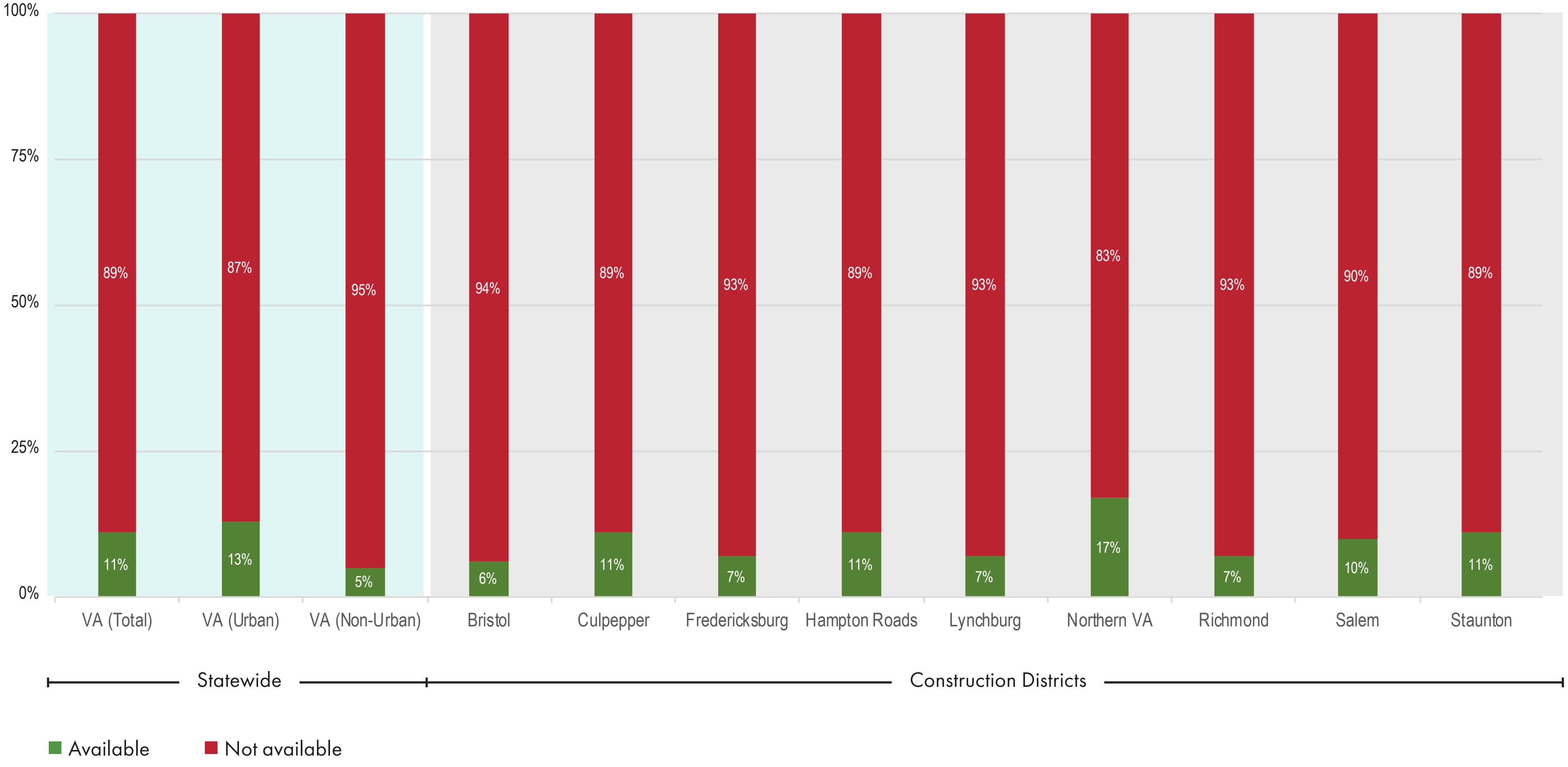
Overall, for those who are employed or are students and white, availability of a personal bicycle for work or school travel is higher than for people of color (49%, compared to 42%). Similarly, availability of personal bicycles is also higher among those with annual incomes of more than $100,000 (53%, compared to 39% to 44% of those in lower-income cohorts).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.6 to ±5.9 percentage points
Number of valid responses (n-size): VA (Total) = 4,541 | VA (Urban) = 3,410 | VA (Non-Urban) = 1,131 | Construction Districts = 275 to 1,397

5.2.14: **TRAVEL TO WORK OR SCHOOL (AVAILABILITY):** PERSONAL E-BIKE OR SCOOTER

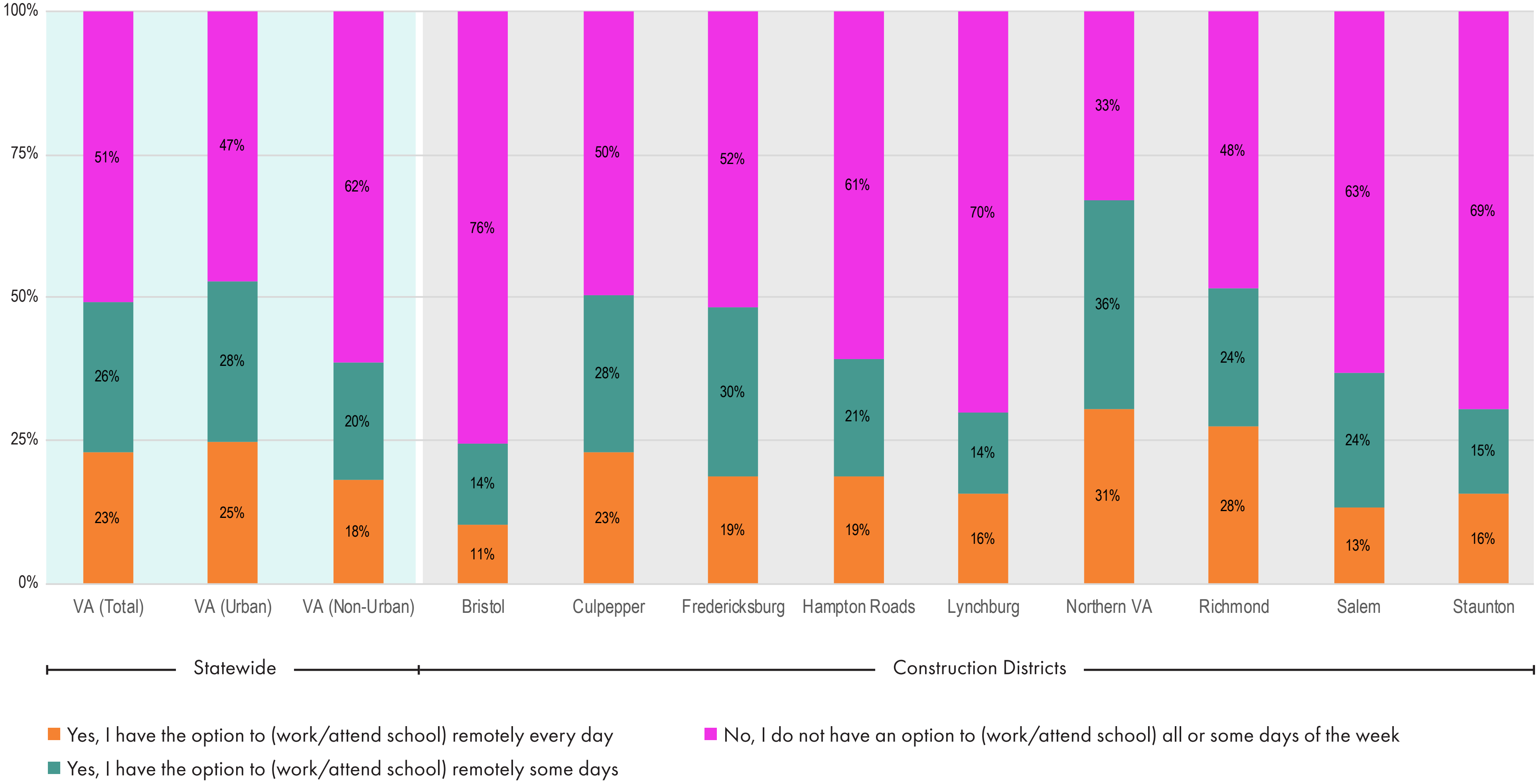
Statewide, availability of personal e-bikes or scooters is low (11%). This is consistent across demographic groups.



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.7 to ±5.9 percentage points
Number of valid responses (n-size): VA (Total) = 4,433 | VA (Urban) = 3,319 | VA (Non-Urban) = 1,114 | Construction Districts = 276 to 1,360

5.3.1: **PROVIDED AN OPTION TO (WORK/ATTEND SCHOOL) REMOTELY**

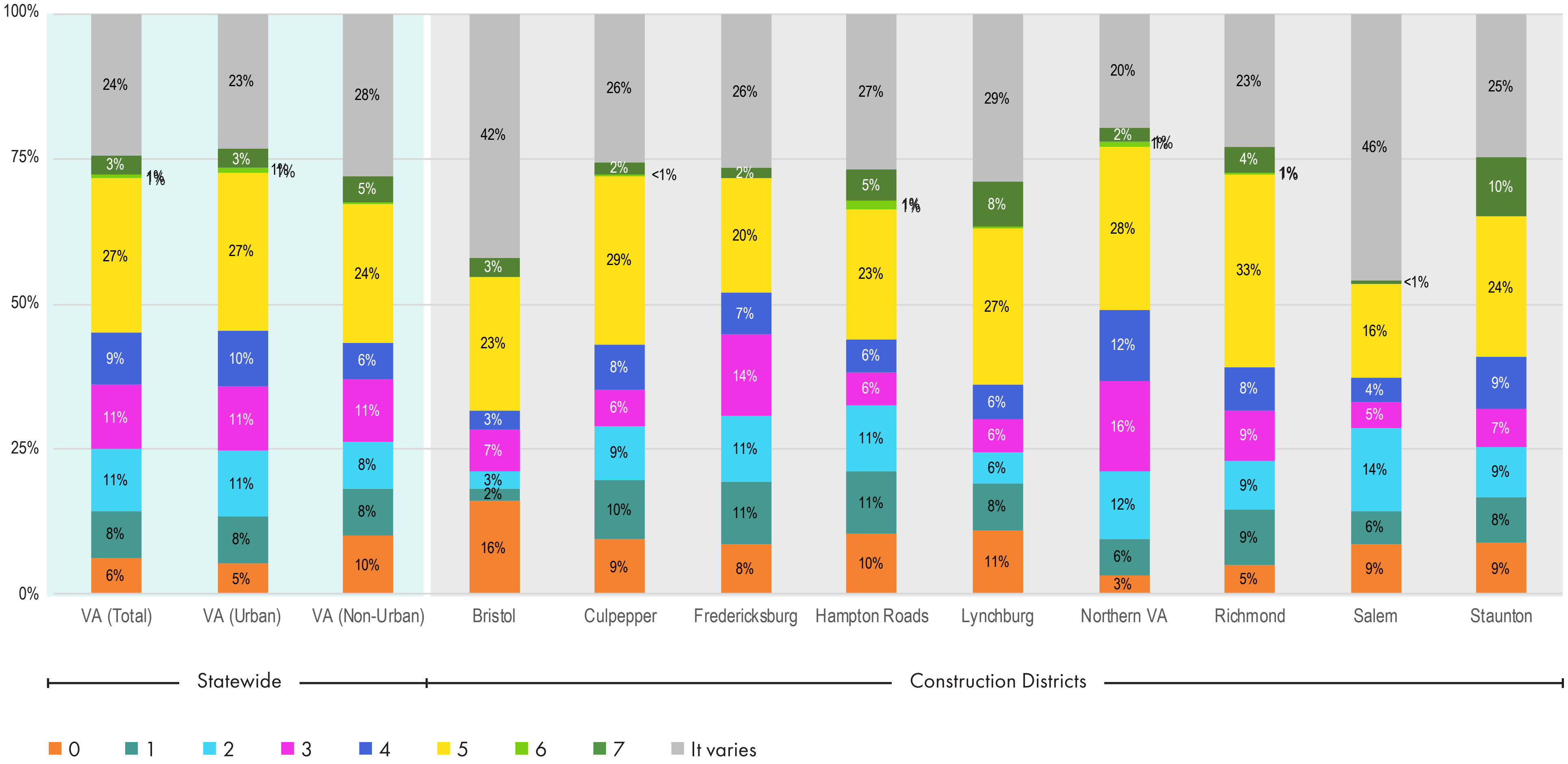
Approximately one-half of residents age 18 or older who are employed or are students are given the option to work or attend school remotely for a portion of the week; this is a higher percentage in urban areas of the commonwealth (53%) compared to the non-urban areas (38%). This is more prevalent among those with annual household incomes of $100,000 or more (68%, compared to 17% to 41% in other income cohorts).



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.4 percentage points | VA (Urban) = ±1.6 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.6 to ±5.7 percentage points
Number of valid responses (n-size): VA (Total) = 4,719 | VA (Urban) = 3,541 | VA (Non-Urban) = 1,178 | Construction Districts = 291 to 1,460

5.3.2: **IN A TYPICAL WEEK, HOW MANY DAYS WORKED FROM HOME**

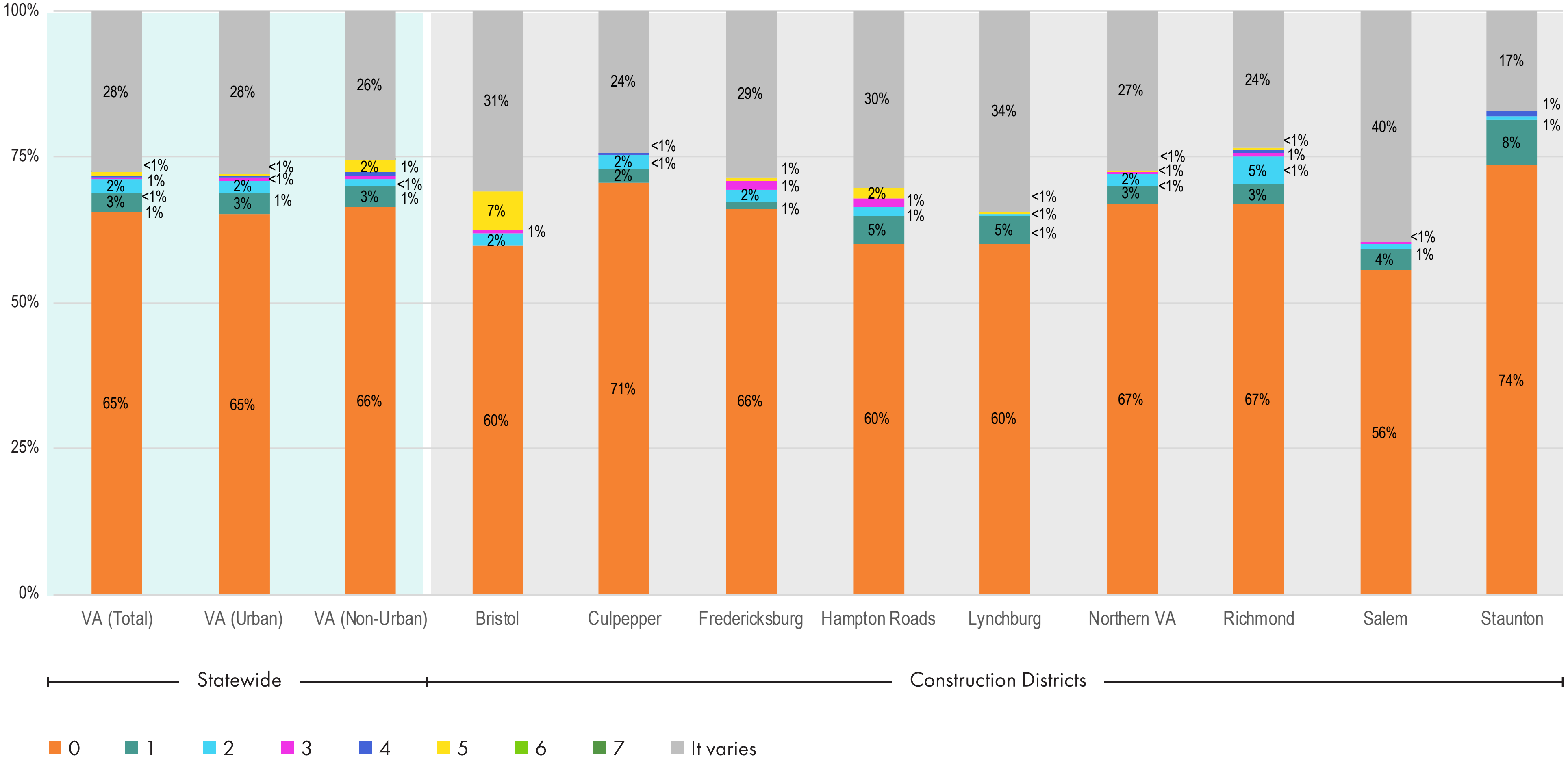
Those residents age 18 or older who are employed or are students and have the option to work or attend school remotely spend an average of slightly more than 3 days (3.4) working or attending school from home in a typical week. This is generally consistent across both urban and non-urban areas.



Asked of: Full-time residents, 18 or older who are employed or a student and have option to work or attend school remotely
Margin of Error: VA (Total) = ±2 percentage points | VA (Urban) = ±2.2 percentage points | VA (Non-Urban) = ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 2,464 | VA (Urban) = 1,995 | VA (Non-Urban) = 469

5.3.3: IN A TYPICAL WEEK, HOW MANY DAYS WORKED FROM LOCATION THAT IS NOT HOME OR PRIMARY PLACE OF EMPLOYMENT

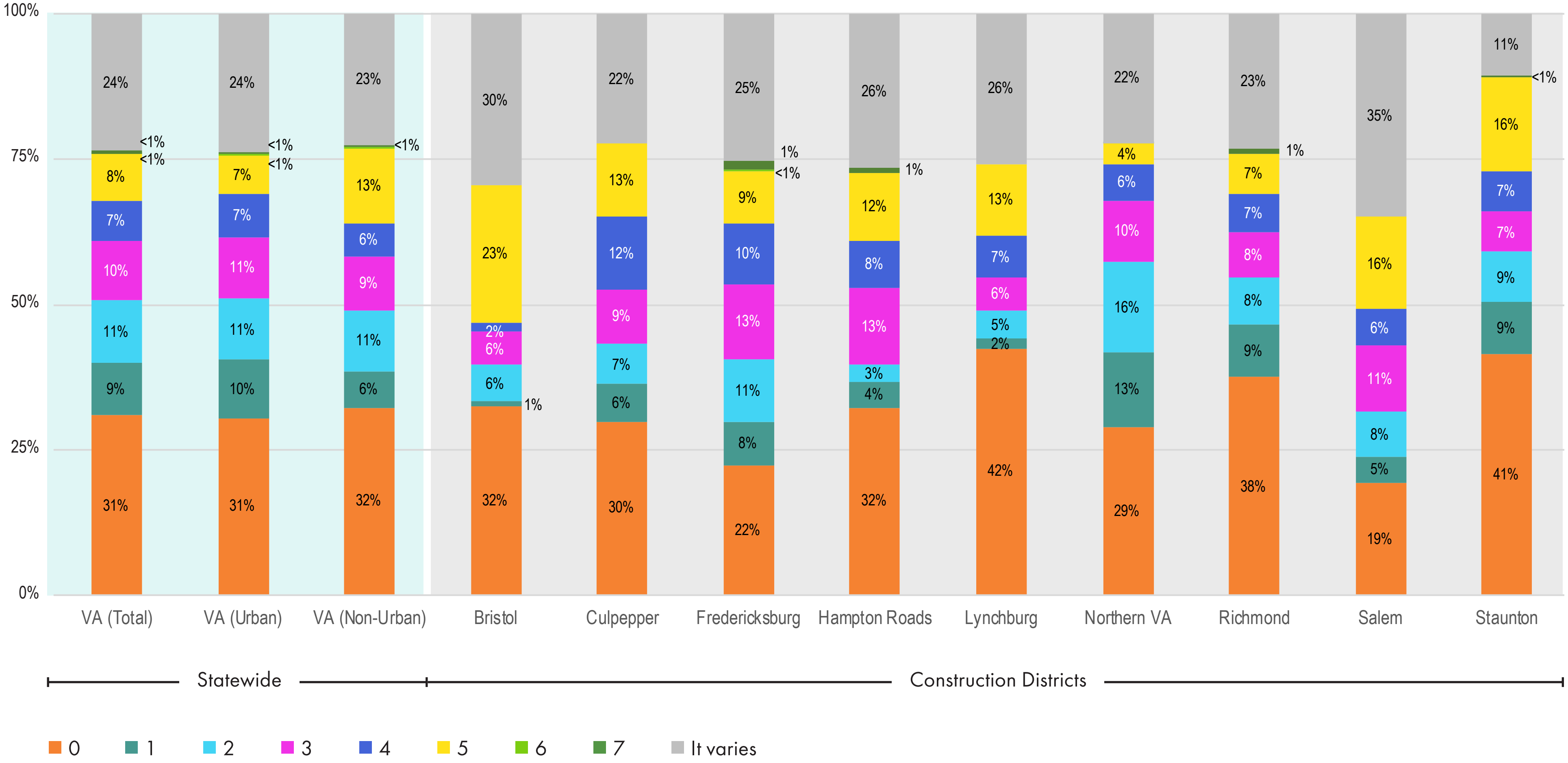
Very few residents age 18 or older who are employed or are students and have the option to work or attend school remotely spend time working remotely from a location that is neither their home nor their office. Statewide, these residents work or attend school remotely outside of their home or office less than 1 day per week.



Asked of: Full-time residents, 18 or older who are employed or a student and have option to work or attend school remotely
Margin of Error: VA (Total) = ±2 percentage points | VA (Urban) = ±2.2 percentage points | VA (Non-Urban) = ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 2,464 | VA (Urban) = 1,995 | VA (Non-Urban) = 469

5.3.4: IN A TYPICAL WEEK, HOW MANY DAYS WORKED IN-PERSON

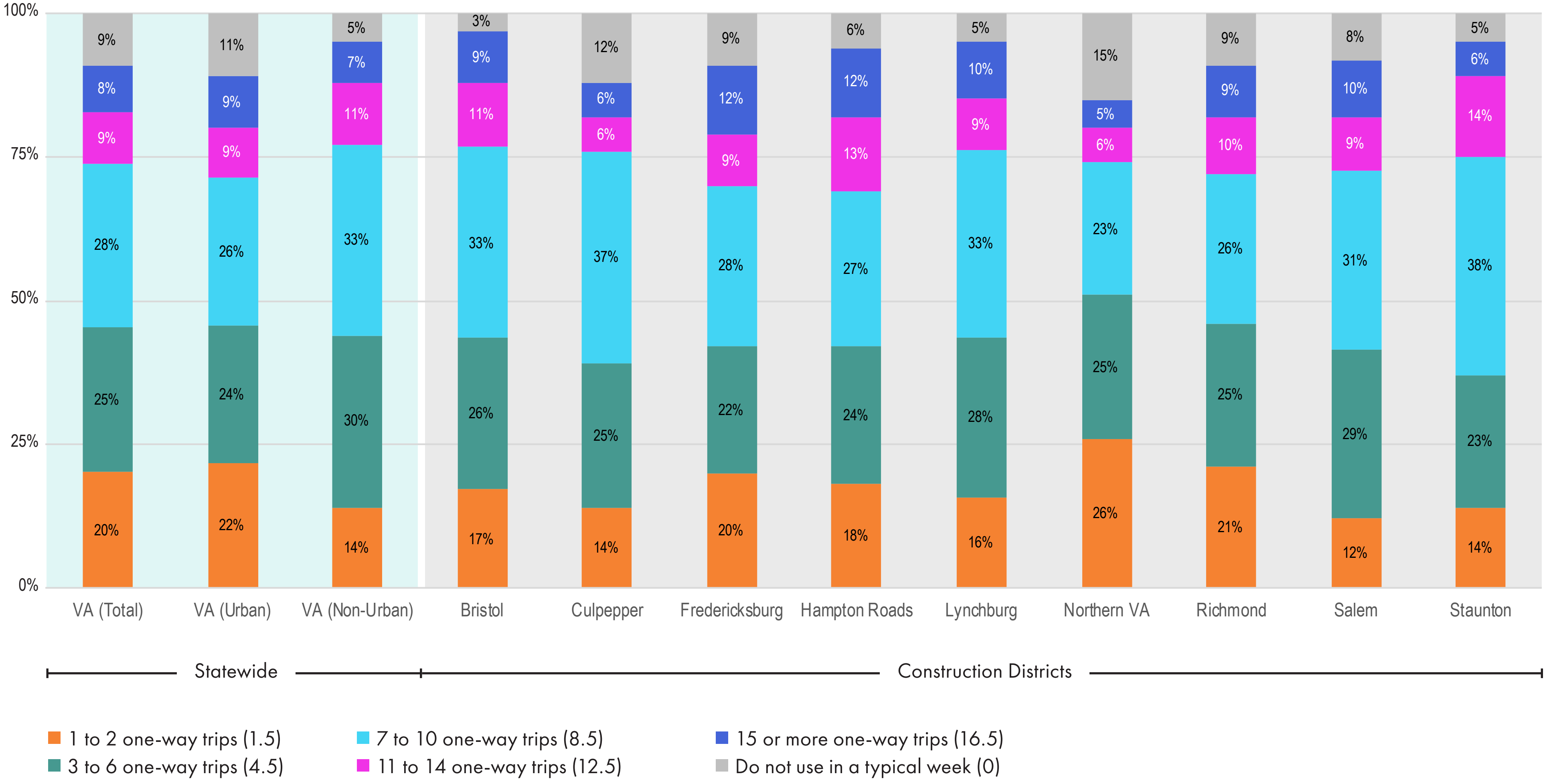
Those residents age 18 or older who are employed or are students and have the option to work or attend school remotely, on average, work or attend school 2 days per week (1.7) in-person. Those who do not work or attend school remotely (despite having the option to) most often indicated that it is their personal preference to work in-person (48%), or that the nature of their job requires them to work in-person (36%).



Asked of: Full-time residents, 18 or older who are employed or a student and have option to work or attend school remotely
Margin of Error: VA (Total) = ±2 percentage points | VA (Urban) = ±2.2 percentage points | VA (Non-Urban) = ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 2,463 | VA (Urban) = 1,994 | VA (Non-Urban) = 469

5.4.1: **TRAVEL TO WORK OR SCHOOL (ONE-WAY TRIPS IN A TYPICAL WEEK):** DRIVING PERSONAL CAR

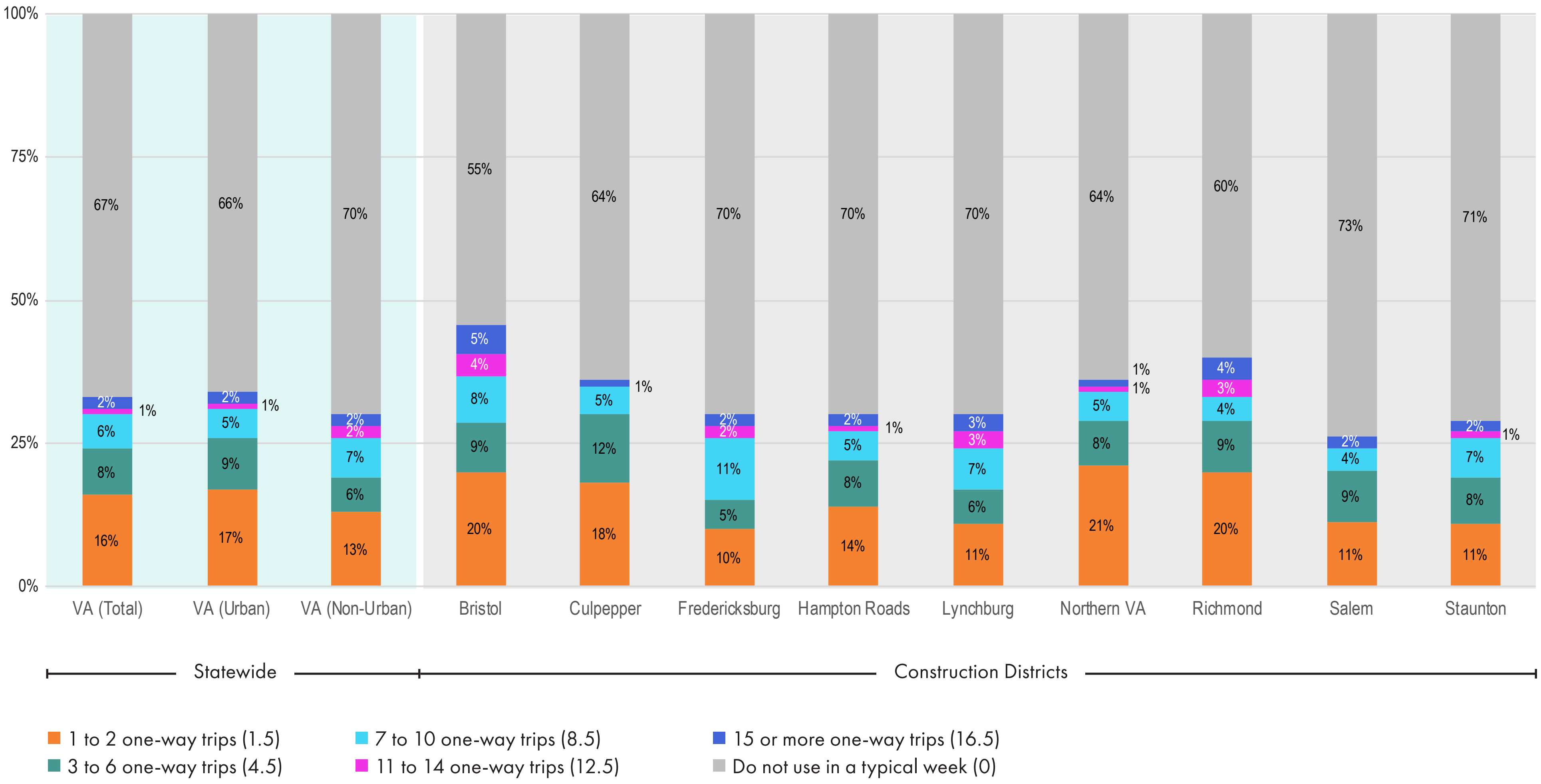
Residents age 18 or older who are employed or are students and travel to work or school are most likely to drive a personal car, truck, SUV, or motorcycle for their work or school travel, taking an average of six one-way trips in a typical week. This is higher among those in non-urban areas, where they take, on average, seven trips in a typical week. Those age 55 or older are most likely to use their personal car for at least one work or school trip per week (with 88% doing so, compared to 81% to 82% of other age cohorts).



Asked of: Full-time residents, 18 or older who commute and drive a personal car
Margin of Error: VA (Total) = ±1.6 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3.1 percentage points | Construction Districts = ±2.9 to ±6.2 percentage points
Number of valid responses (n-size): VA (Total) = 3,860 | VA (Urban) = 2,831 | VA (Non-Urban) = 1,029 | Construction Districts = 248 to 1,105

5.4.2: **TRAVEL TO WORK OR SCHOOL (ONE-WAY TRIPS IN A TYPICAL WEEK):** RIDING IN A PERSONAL CAR

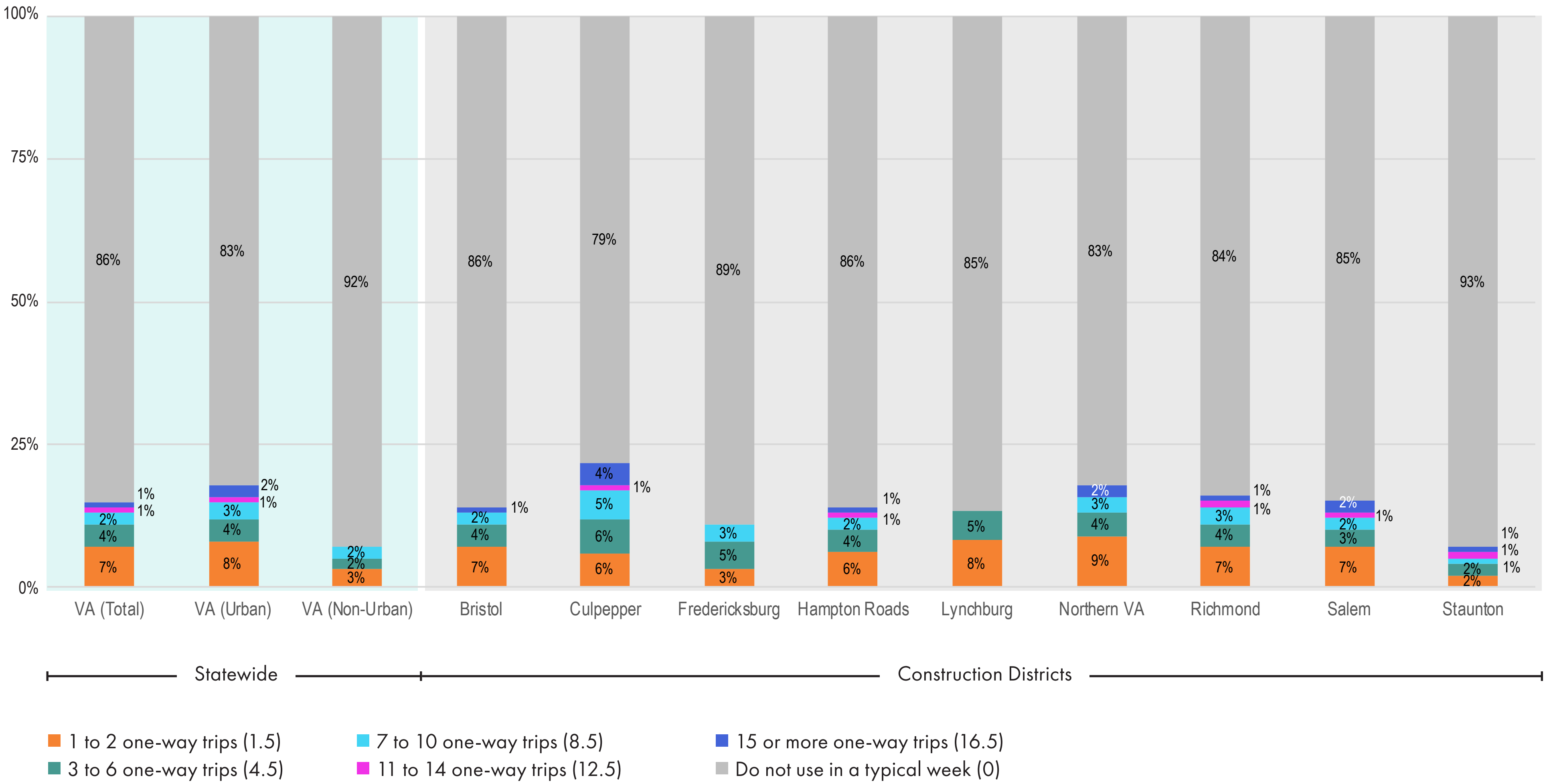
Residents age 18 or older who are employed or are students and commute tend to take one to two one-way work or school trips in a typical week by riding in a personal car driven by a friend or family member (average of 1.6). People of color and residents making less than $35,500 annually are most likely to travel to work or school by riding in a personal vehicle at least once per a typical week (44% and 45% doing so, respectively).



Asked of: Full-time residents, 18 or older who commute and ride in a personal car
Margin of Error: VA (Total) = ±2 percentage points | VA (Urban) = ±2.4 percentage points | VA (Non-Urban) = ±3.8 percentage points | Construction Districts = ±4 to ±7.6 percentage points
Number of valid responses (n-size): VA (Total) = 2,373 | VA (Urban) = 1,719 | VA (Non-Urban) = 654 | Construction Districts = 165 to 594

5.4.3: **TRAVEL TO WORK OR SCHOOL (ONE-WAY TRIPS IN A TYPICAL WEEK):** WALKING

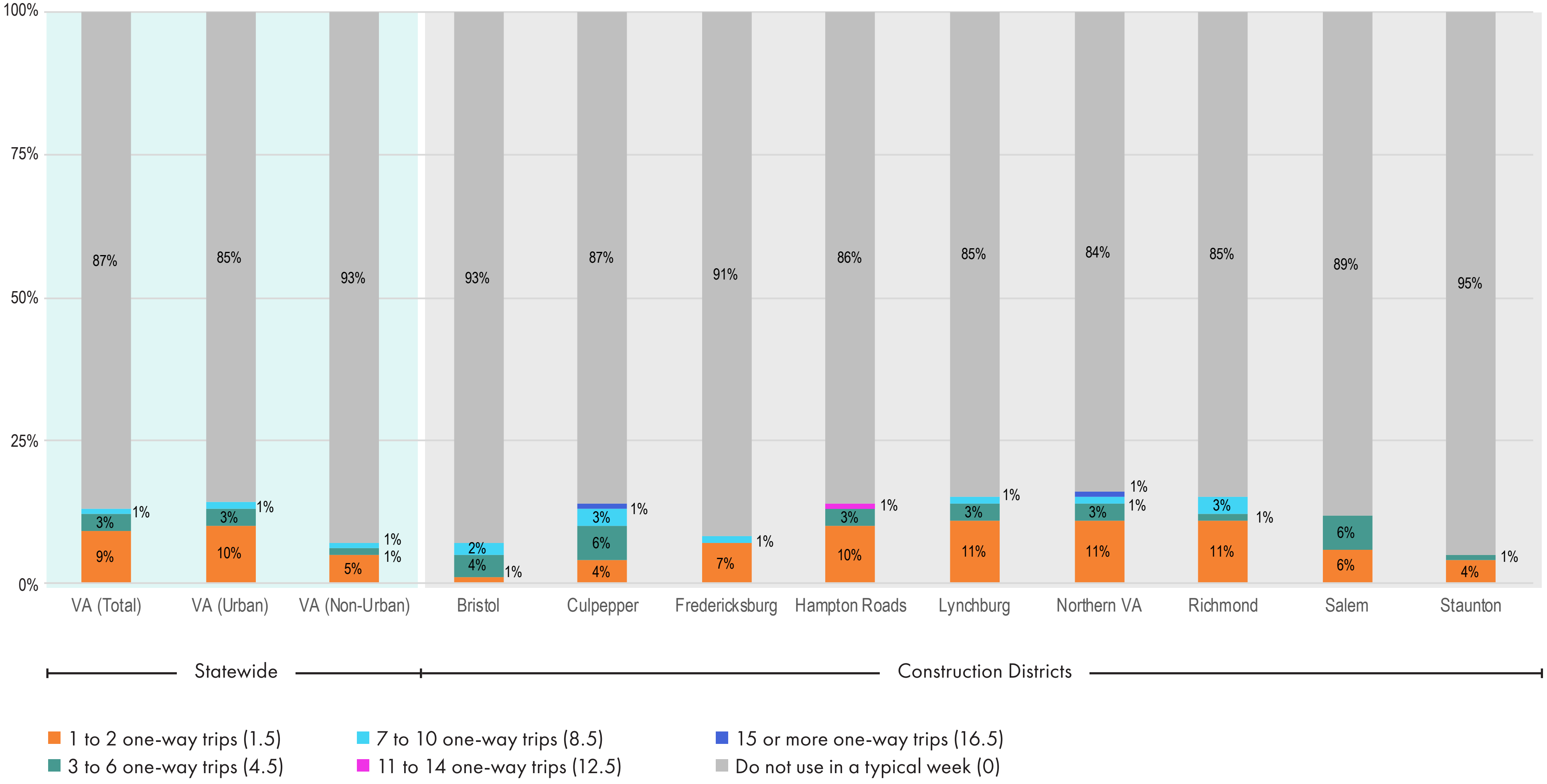
Statewide, residents who are employed and travel to work or school take, on average, about one commute trip in a typical week by walking. Yet, more than 8 in 10 do not walk to work or school in a typical week (86%). This is higher among those in non-urban areas (92%), compared to urban areas (83%). Additionally, people of color are more likely to walk to work or school in a typical week, with 19% (compared to 12% of white residents). Similarly, younger Virginians (age 18 to 34), and those who make less than $35,500 annually, are more likely to walk to work or school in a typical week (21% and 28%, respectively).



Asked of: Full-time residents, 18 or older who commute and have walking available
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3 percentage points | Construction Districts = ±2.9 to ±6.1 percentage points
Number of valid responses (n-size): VA (Total) = 4,014 | VA (Urban) = 2,965 | VA (Non-Urban) = 1,049 | Construction Districts = 261 to 1,166

5.4.4: **TRAVEL TO WORK OR SCHOOL (ONE-WAY TRIPS IN A TYPICAL WEEK):** PERSONAL BICYCLE

Similar to walking, very few residents age 18 or older who are employed or are students and travel to work or school use a personal bicycle during a typical week to travel to work or school, with an average of less than one one-way work or school trips by bicycle. However, while personal bicycle availability for work or school travel was lower for people of color (Q17M), usage of personal bicycles for work or school travel among those people of color who do have one available is higher, with 19% doing so in a typical week (compared to 10% of white residents).

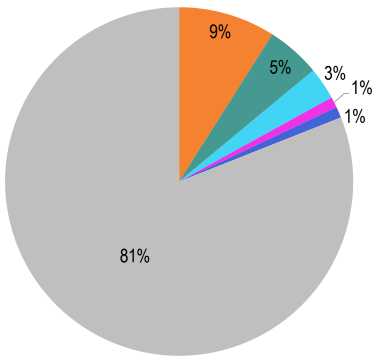


Asked of: Full-time residents, 18 or older who commute and have a personal bicycle available
Margin of Error: VA (Total) = ±2.2 percentage points | VA (Urban) = ±2.5 percentage points | VA (Non-Urban) = ±5 percentage points | Construction Districts = ±4 to ±9.7 percentage points
Number of valid responses (n-size): VA (Total) = 1,905 | VA (Urban) = 1,518 | VA (Non-Urban) = 387 | Construction Districts = 102 to 592

5.4.5–5.4.10: **TRAVEL TO WORK OR SCHOOL (ONE-WAY TRIPS IN A TYPICAL WEEK):** OTHER MODES OF TRAVEL (VA TOTAL)

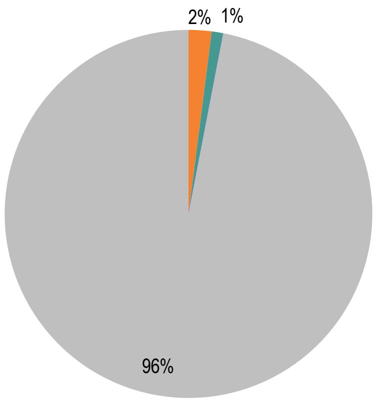
There are notable differences at the race/ethnicity level. For example, rideshare usage for traveling to work or school statewide is higher among people of color than among white residents (14%, compared to 6% using in a typical week). Additionally, people of color are more likely to use public transportation for traveling to work or school during a typical week (26%, compared to 15% of white residents who have this mode available), and are more likely to use carpools or vanpools in a typical week (16%, compared to 5% of white residents who have this mode available).

5.4.5: City Bus, Subway, Commuter Rail, Light Rail, or Ferry



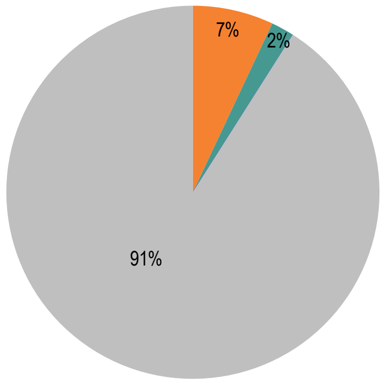
Margin of Error: VA (Total) = ±2.2 percentage points
Number of valid responses (n-size): VA (Total) = 1,960

5.4.6: Taxi



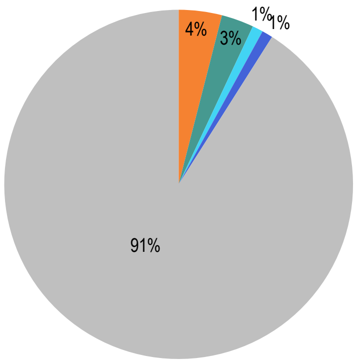
Margin of Error: VA (Total) = ±2.1 percentage points
Number of valid responses (n-size): VA (Total) = 2,238

5.4.7: Rideshare Services



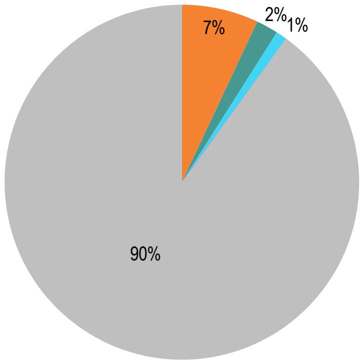
Margin of Error: VA (Total) = ±1.9 percentage points
Number of valid responses (n-size): VA (Total) = 2,593

5.4.8: Carpools or Vanpools



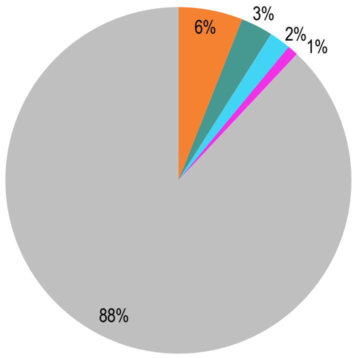
Margin of Error: VA (Total) = ±2.9 percentage points
Number of valid responses (n-size): VA (Total) = 1,129

5.4.9: Shared Services for Bikes or Scooters



Margin of Error: VA (Total) = ±3.4 percentage points
Number of valid responses (n-size): VA (Total) = 831

5.4.10: Personal E-Bike or Scooter



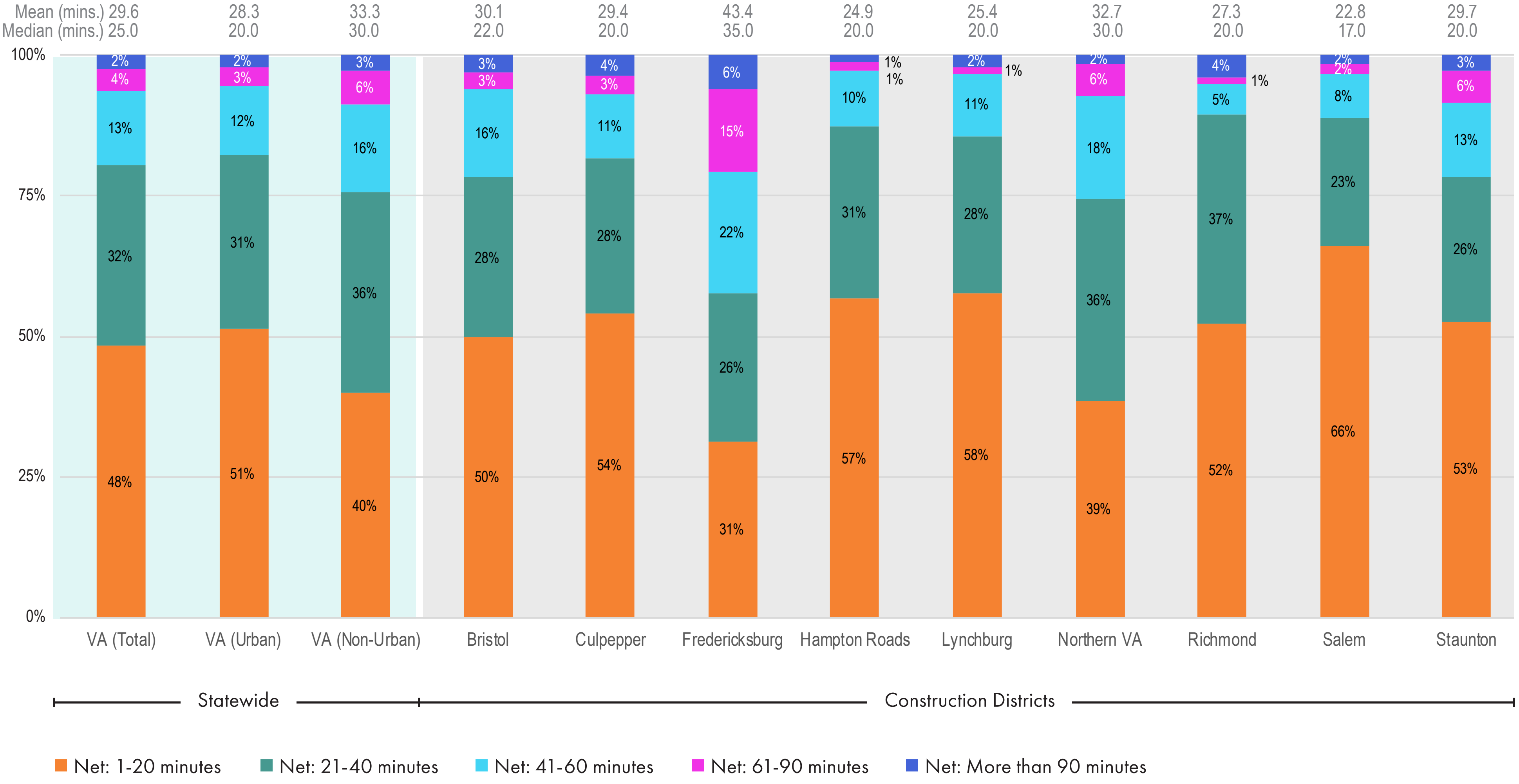
Margin of Error: VA (Total) = ±4.7 percentage points
Number of valid responses (n-size): VA (Total) = 432

🟧 1 to 2 one-way trips (1.5) 🟩 3 to 6 one-way trips (4.5) 🟦 7 to 10 one-way trips (8.5) 🟪 11 to 14 one-way trips (12.5) 🟦 15 or more one-way trips (16.5) ⬜ Do not use in a typical week (0)

Asked of: Full-time residents, 18 or older who commute and have other modes of travel available

5.5.1: TRAVEL TO WORK OR SCHOOL (TRIP LENGTH IN MINUTES – AVERAGE)

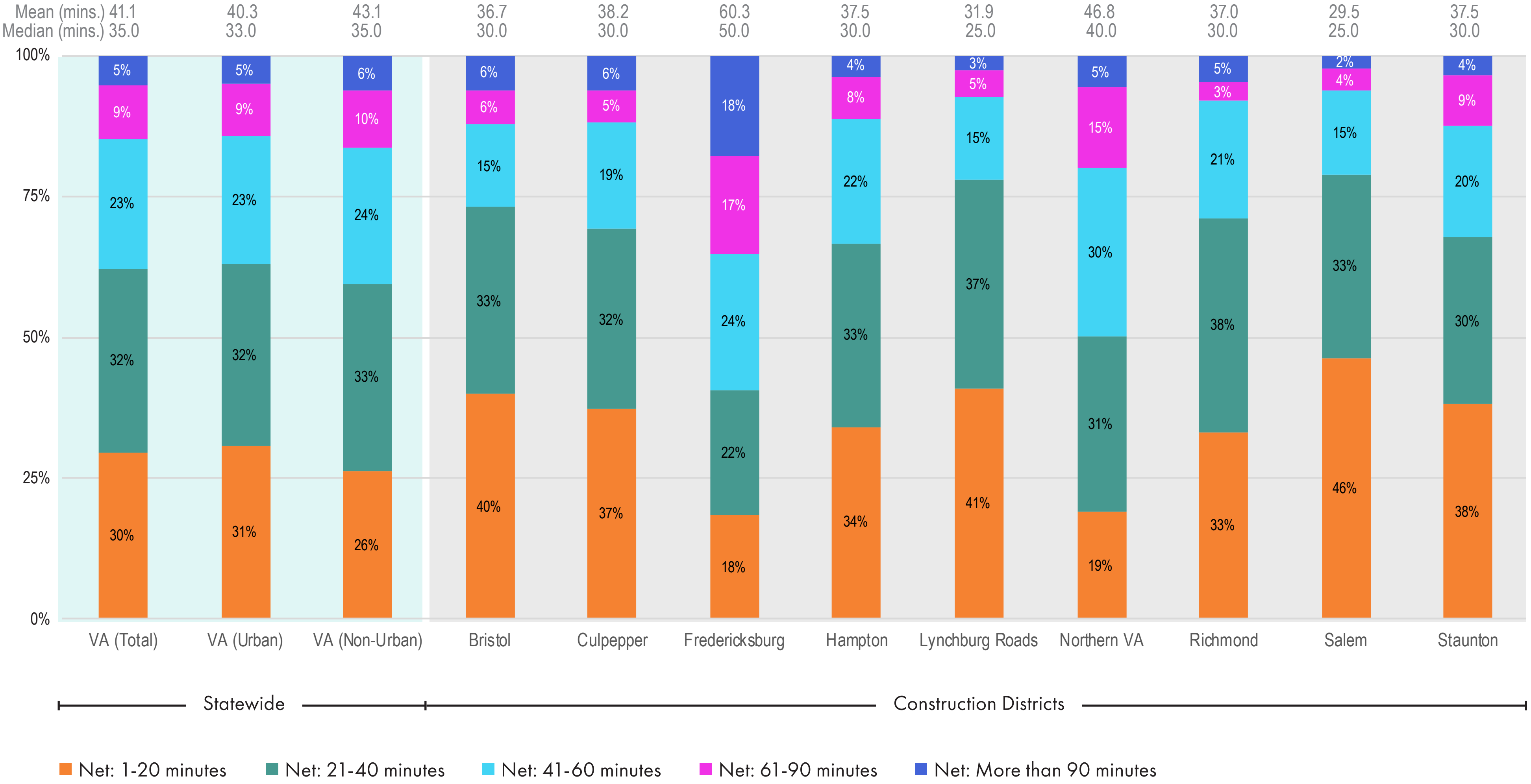
Residents were asked to estimate the duration of their one-way work or school travel (in minutes) on an average day. The statewide average travel time is 29 minutes (median of 22 minutes); however, this does vary by Construction District. The longest average travel times for work or school were reported by residents in the Fredericksburg Construction District, where the average travel time is 43 minutes (median of 35 minutes).



Asked of: Full-time residents, 18 or older who commute
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3 percentage points | Construction Districts = ±2.9 to ±6.1 percentage points
Number of valid responses (n-size): VA (Total) = 4,002 | VA (Urban) = 2,955 | VA (Non-Urban) = 1,047 | Construction Districts = 260 to 1,164

5.5.2: TRAVEL TO WORK OR SCHOOL (TRIP LENGTH IN MINUTES – IN HIGH CONGESTION)

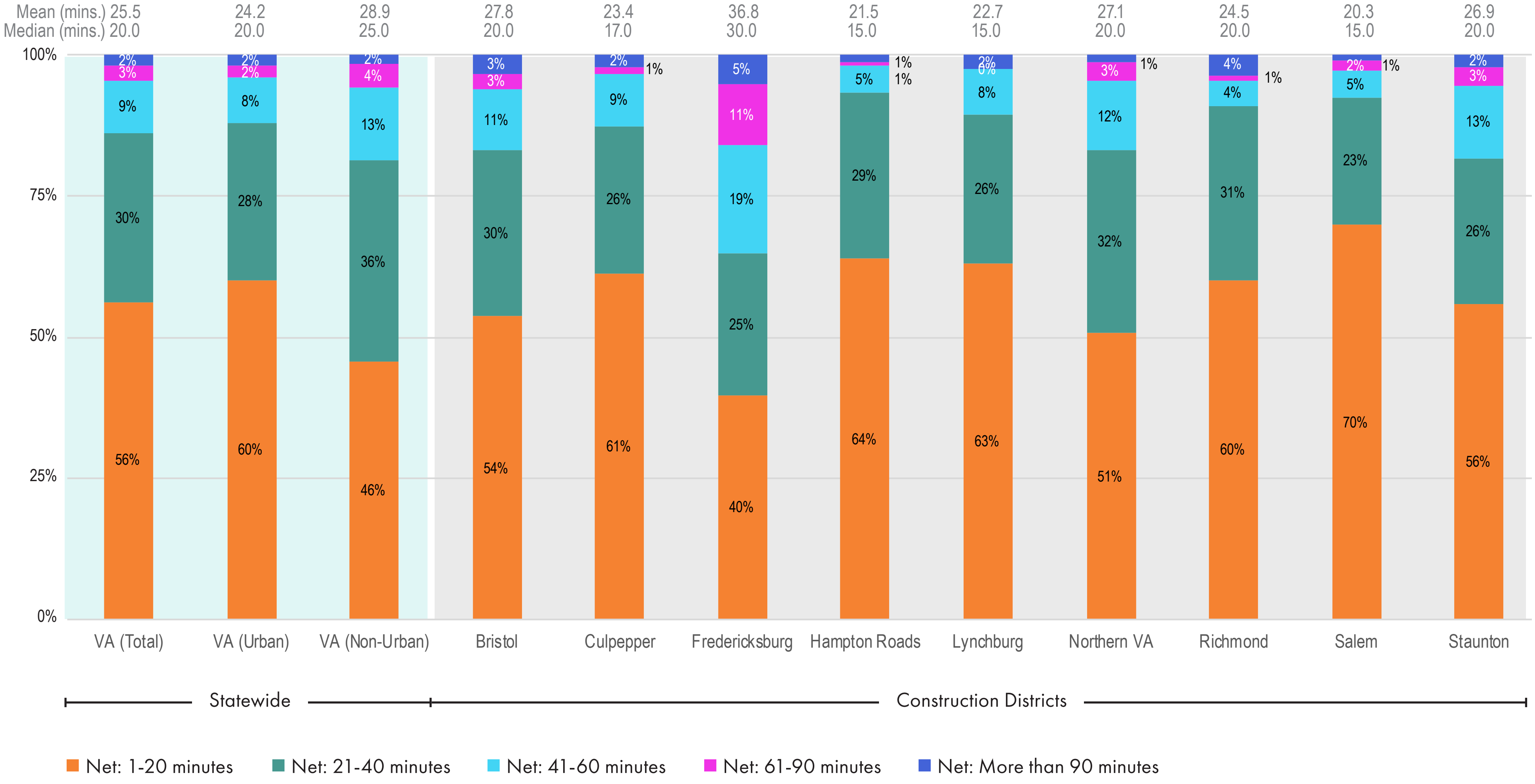
As a follow-up, those who commute to work or school via a mode other than walking, were asked to specify the duration of their one-way work or school travel when congestion is high. The statewide average work or school travel time when congestion is high is 41 minutes (median of 35 minutes). Again, this is highest in the Fredericksburg Construction District, where the average travel time when congestion is high is 60 minutes (median of 50 minutes).



Asked of: Full-time residents, 18 or older who commute but do not walk
Margin of Error: VA (Total) = ±1.6 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3.1 percentage points | Construction Districts = ±2.9 to ±6.2 percentage points
Number of valid responses (n-size): VA (Total) = 3,816 | VA (Urban) = 2,812 | VA (Non-Urban) = 1,004 | Construction Districts = 250 to 1,107

5.5.3: **TRAVEL TO WORK OR SCHOOL (TRIP LENGTH IN MINUTES – IN LOW CONGESTION)**

Residents who commute to work or school via a mode other than walking were asked the duration of their one-way work or school travel when congestion is low. The statewide average work or school travel time when congestion is low is 28 minutes (median of 20 minutes). This is highest in the Fredericksburg Construction District, where the average work or school travel time, even when congestion is low, is 37 minutes (median of 30 minutes).



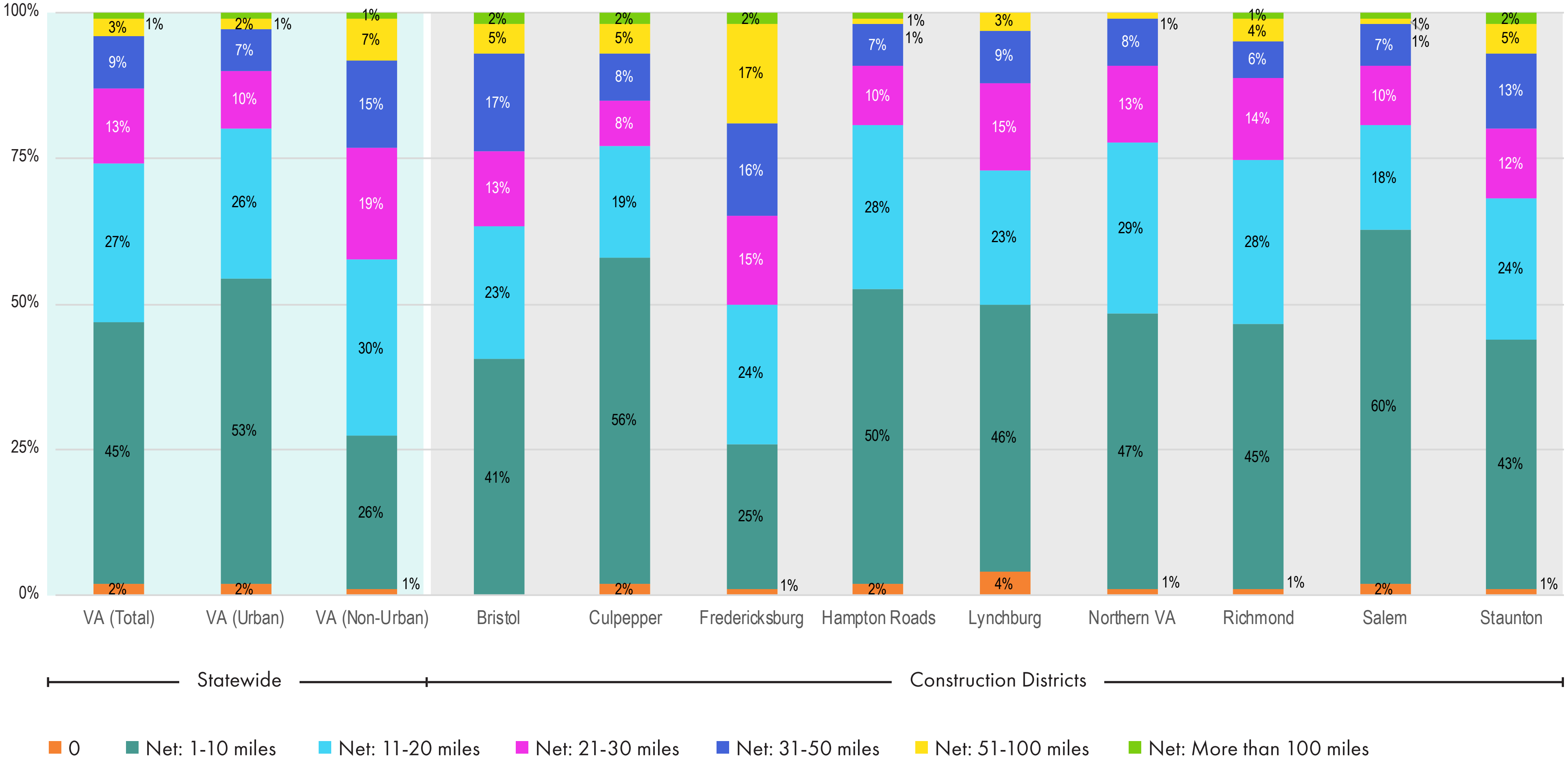
Asked of: Full-time residents, 18 or older who commute but do not walk

Margin of Error: VA (Total) = ±1.6 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3.1 percentage points | Construction Districts = ±2.9 to ±6.2 percentage points

Number of valid responses (n-size): VA (Total) = 3,819 | VA (Urban) = 2,814 | VA (Non-Urban) = 1,005 | Construction Districts = 250 to 1,107

5.5.4: TRAVEL TO WORK OR SCHOOL (TRIP LENGTH IN MILES)

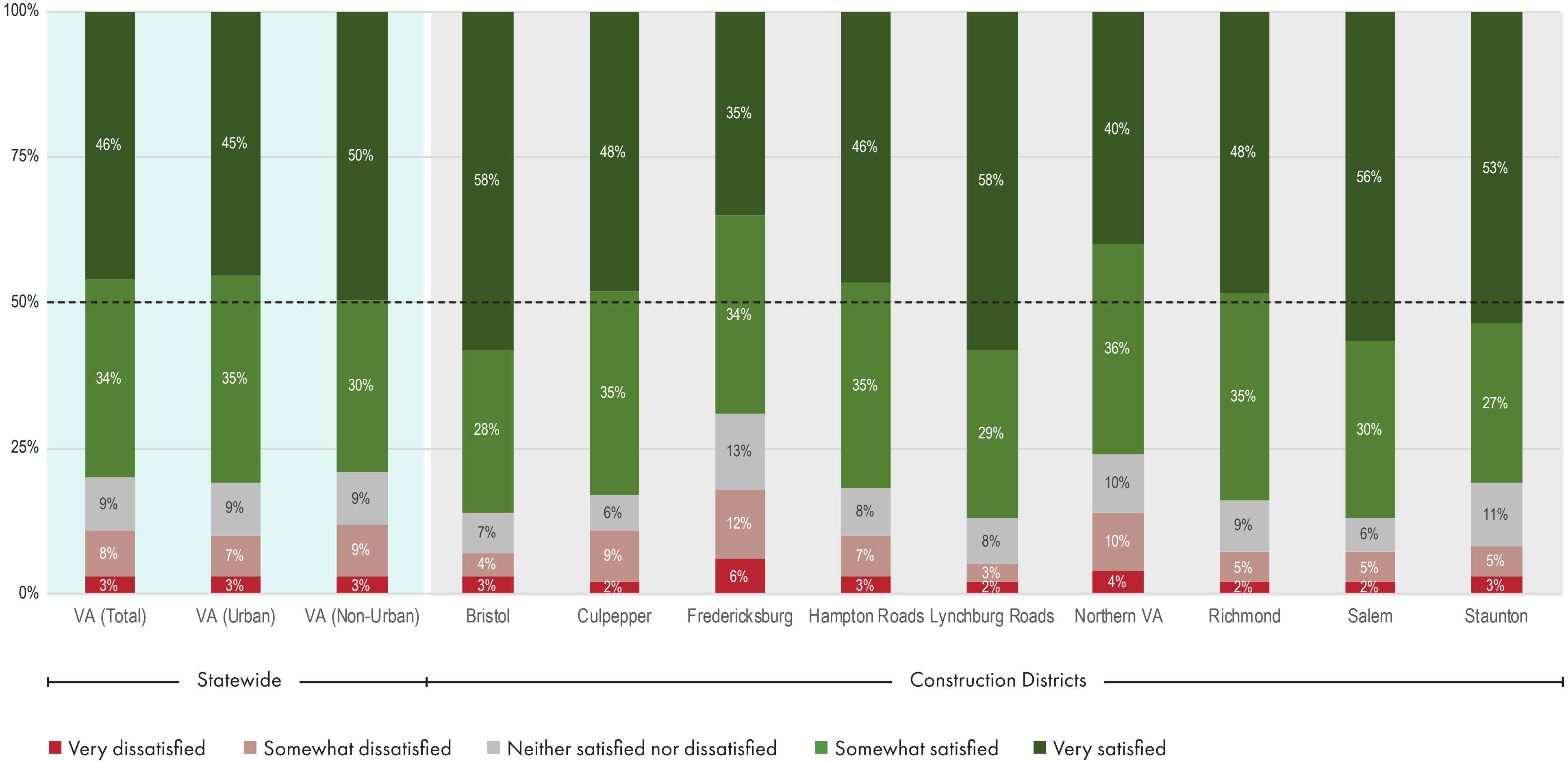
Residents who commute to work or school travel an average of 24 miles (median of 15 miles). Fredericksburg Construction District experiences an average work or school travel distance of 29 miles (median of 20 miles), which is farther than any other Construction District. Furthermore, those living in non-urban areas are traveling farther for work or school, an average of 24 miles versus 15 miles (median of 18 miles).



Asked of: Full-time residents, 18 or older who commute
Margin of Error: VA (Total) = ±1.6 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3.1 percentage points | Construction Districts = ±2.9 to ±6.3 percentage points
Number of valid responses (n-size): VA (Total) = 3,845 | VA (Urban) = 2,831 | VA (Non-Urban) = 1,014 | Construction Districts = 245 to 1,121

5.6.1: **TRAVEL TO WORK OR SCHOOL (SATISFACTION):** DRIVING PERSONAL CAR

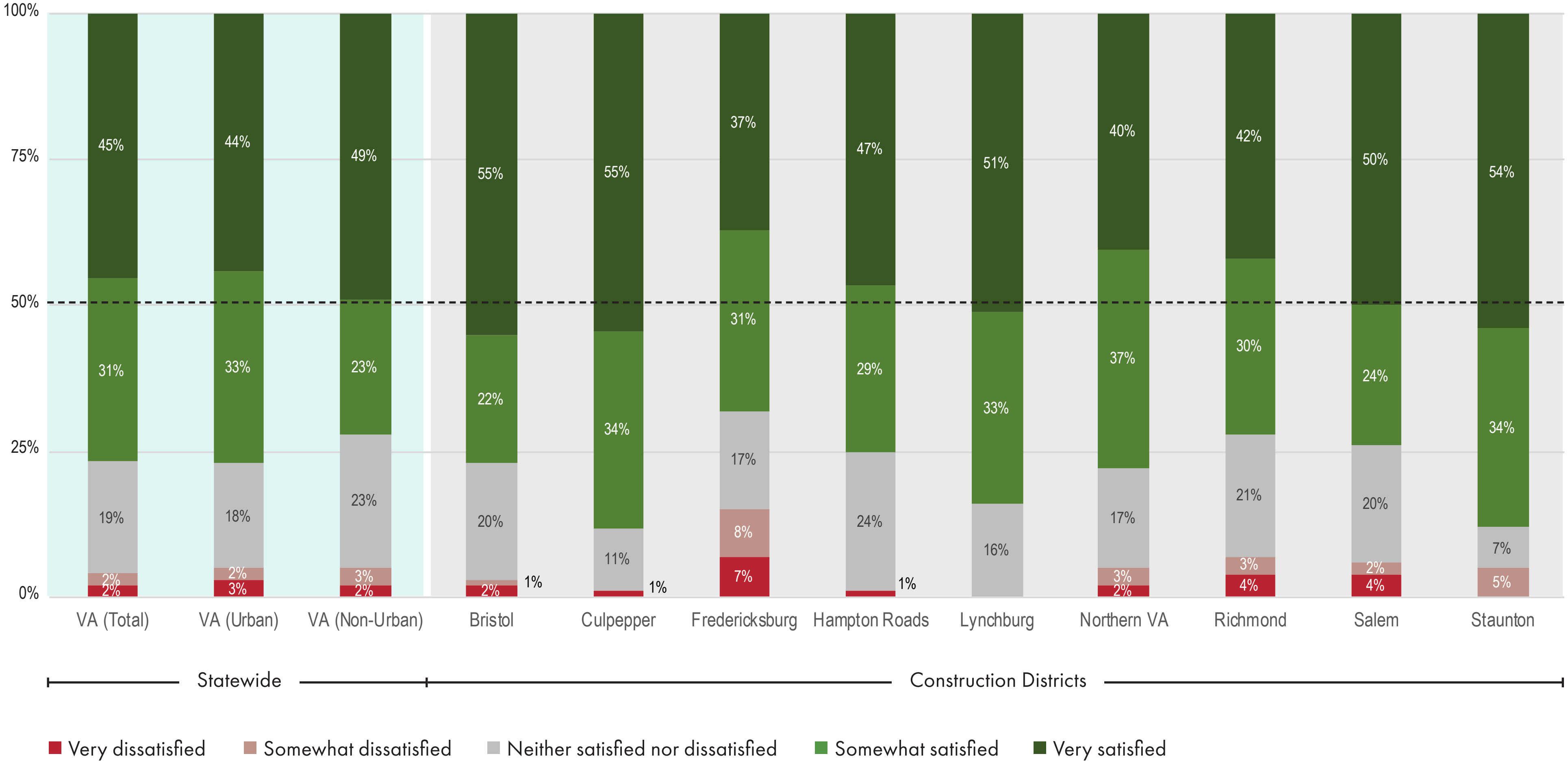
The majority of those who use a personal car at least once per week for their travel to work or school are satisfied with their experience doing so (80% satisfied). This is fairly consistent statewide.



Asked of: Full-time residents, 18 or older who commute and have a personal car available and drive a personal car
Margin of Error: VA (Total) = ±1.7 percentage points | VA (Urban) = ±1.9 percentage points | VA (Non-Urban) = ±3.1 percentage points | Construction Districts = ±3.2 to ±6.4 percentage points
Number of valid responses (n-size): VA (Total) = 3,496 | VA (Urban) = 2,526 | VA (Non-Urban) = 970 | Construction Districts = 236 to 940

5.6.2: **TRAVEL TO WORK OR SCHOOL (SATISFACTION):** RIDING IN A PERSONAL CAR

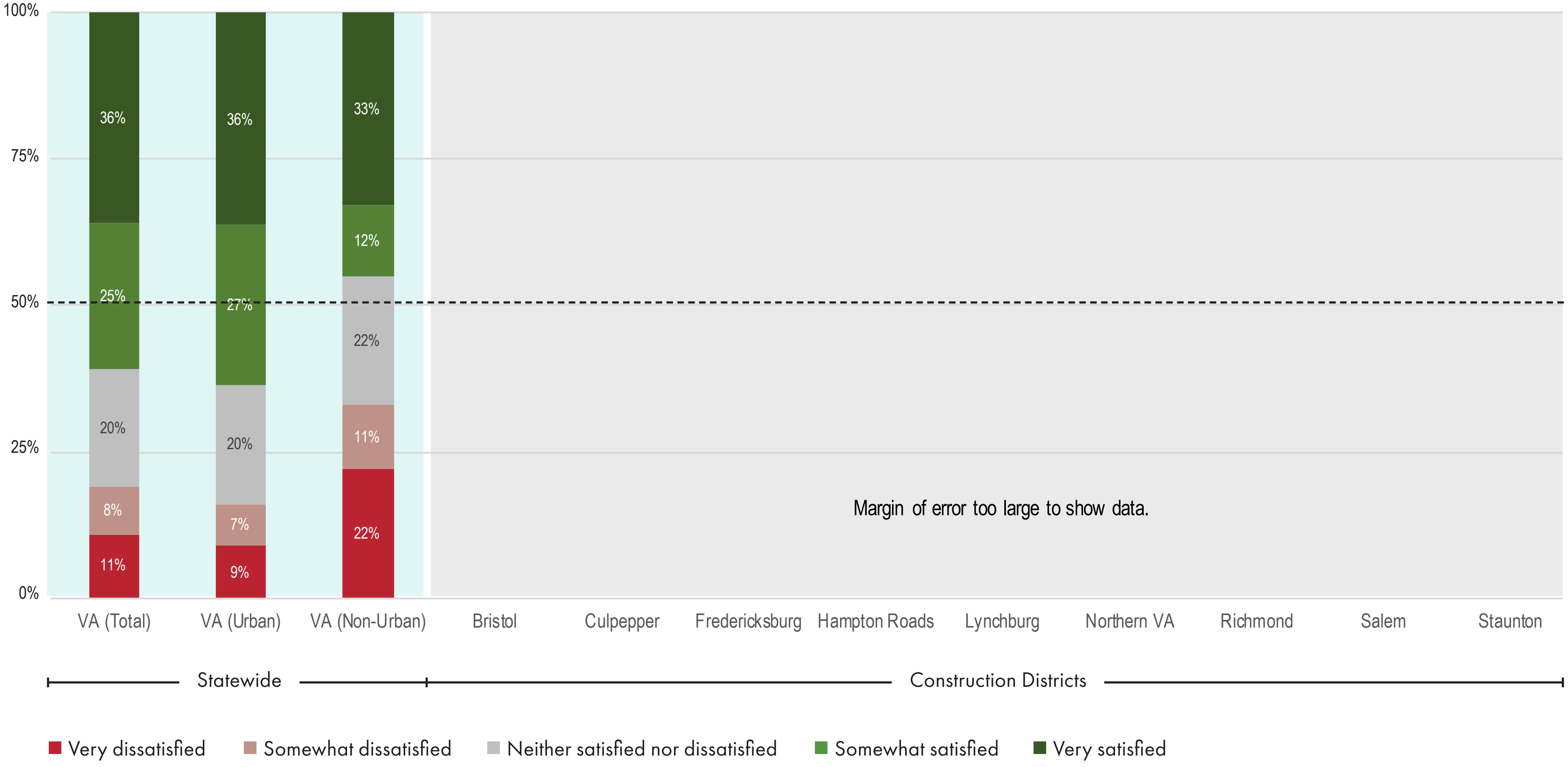
Those who ride in a personal car with a family member or friend are similarly satisfied with this mode for their travel to work or school, with three-fourths (76%) satisfied statewide.



Asked of: Full-time residents, 18 or older who commute and have a personal car available and ride in a personal car
Margin of Error: VA (Total) = ±3.7 percentage points | VA (Urban) = ±4.3 percentage points | VA (Non-Urban) = ±7 percentage points
Number of valid responses (n-size): VA (Total) = 718 | VA (Urban) = 522 | VA (Non-Urban) = 196

5.6.3: **TRAVEL TO WORK OR SCHOOL (SATISFACTION):** WALKING

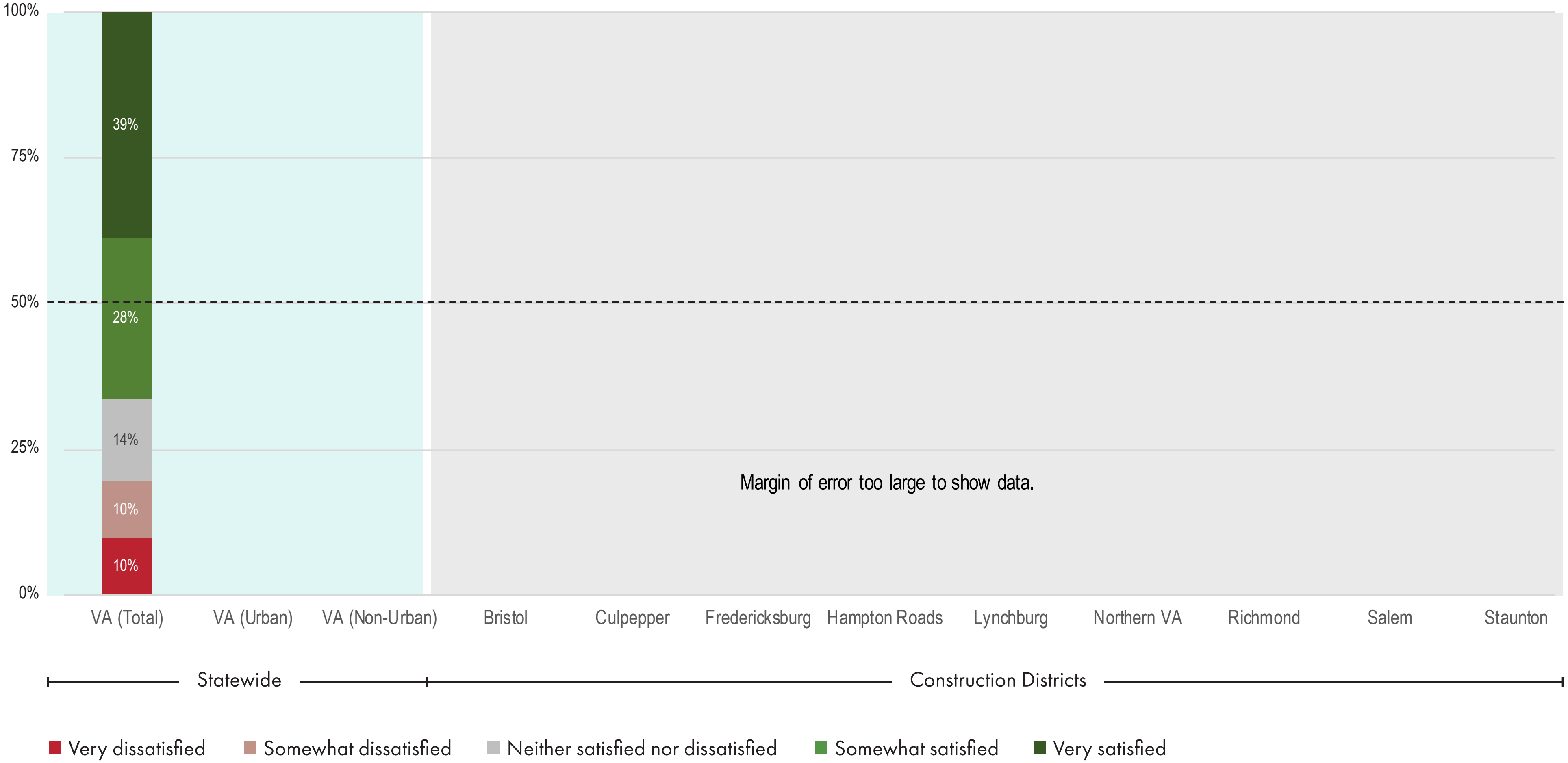
Those who do walk at least once in a typical week for their travel to work or school are generally satisfied with their experience walking, with 61% statewide reporting that they are satisfied. Residents in urban areas are more likely to be satisfied (63% satisfied) than those in non-urban areas (45% satisfied).



Asked of: Full-time residents, 18 or older who commute and have walking available and use walking
Margin of Error: VA (Total) = ±4.4 percentage points | VA (Urban) = ±4.8 percentage points | VA (Non-Urban) = ±11 percentage points
Number of valid responses (n-size): VA (Total) = 499 | VA (Urban) = 420 | VA (Non-Urban) = 79

5.6.4: **TRAVEL TO WORK OR SCHOOL (SATISFACTION):** PERSONAL BICYCLE

Those who use a personal bicycle at least once in a typical week for their travel to work or school are generally satisfied with their experience doing so, with two-thirds (67%) satisfied overall.

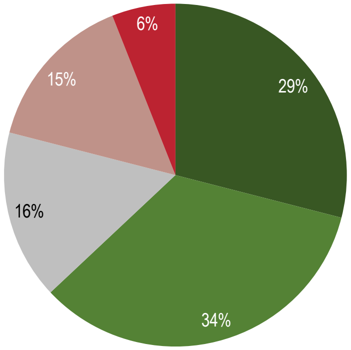


Asked of: Full-time residents, 18 or older who commute and have a personal bicycle available and use a person bicycle
Margin of Error: VA (Total) = ±6.7 percentage points
Number of valid responses (n-size): VA (Total) = 214

5.6.5–5.6.10: **TRAVEL TO WORK OR SCHOOL (SATISFACTION):** OTHER MODES OF TRAVEL (VA TOTAL)

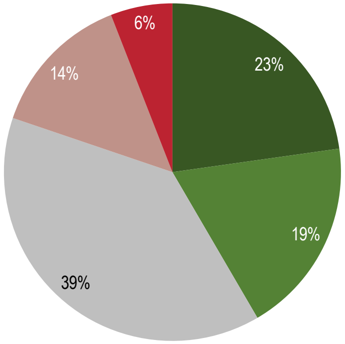
For a number of additional modes, satisfaction among full-time residents who use that mode for work or school is high. Among those who use public transportation for work or school, 63% are satisfied.

5.6.5: City Bus, Subway, Commuter Bus, Light Rail, or Commuter Rail



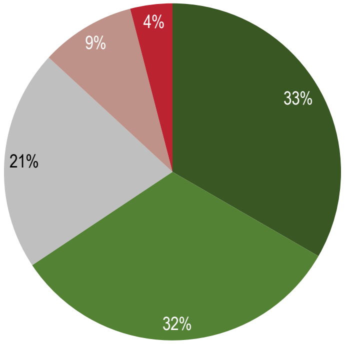
Margin of Error: VA (Total) = ±5.4 percentage points
Number of valid responses (n-size): VA (Total) = 332

5.6.6: Taxi



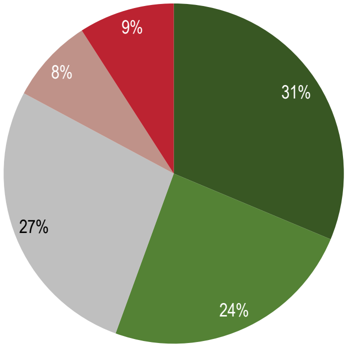
Margin of Error: VA (Total) = ±11 percentage points
Number of valid responses (n-size): VA (Total) = 80

5.6.7: Rideshare Services



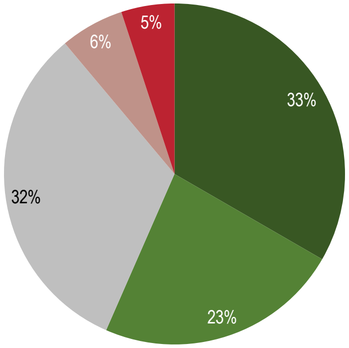
Margin of Error: VA (Total) = ±7.1 percentage points
Number of valid responses (n-size): VA (Total) = 191

5.6.8: Carpools or Vanpools



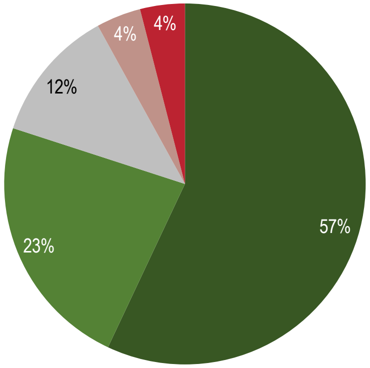
Margin of Error: VA (Total) = ±11.2 percentage points
Number of valid responses (n-size): VA (Total) = 77

5.6.9: Scooter-share



Margin of Error: VA (Total) = ±12.5 percentage points
Number of valid responses (n-size): VA (Total) = 61

5.6.10: E-Bike



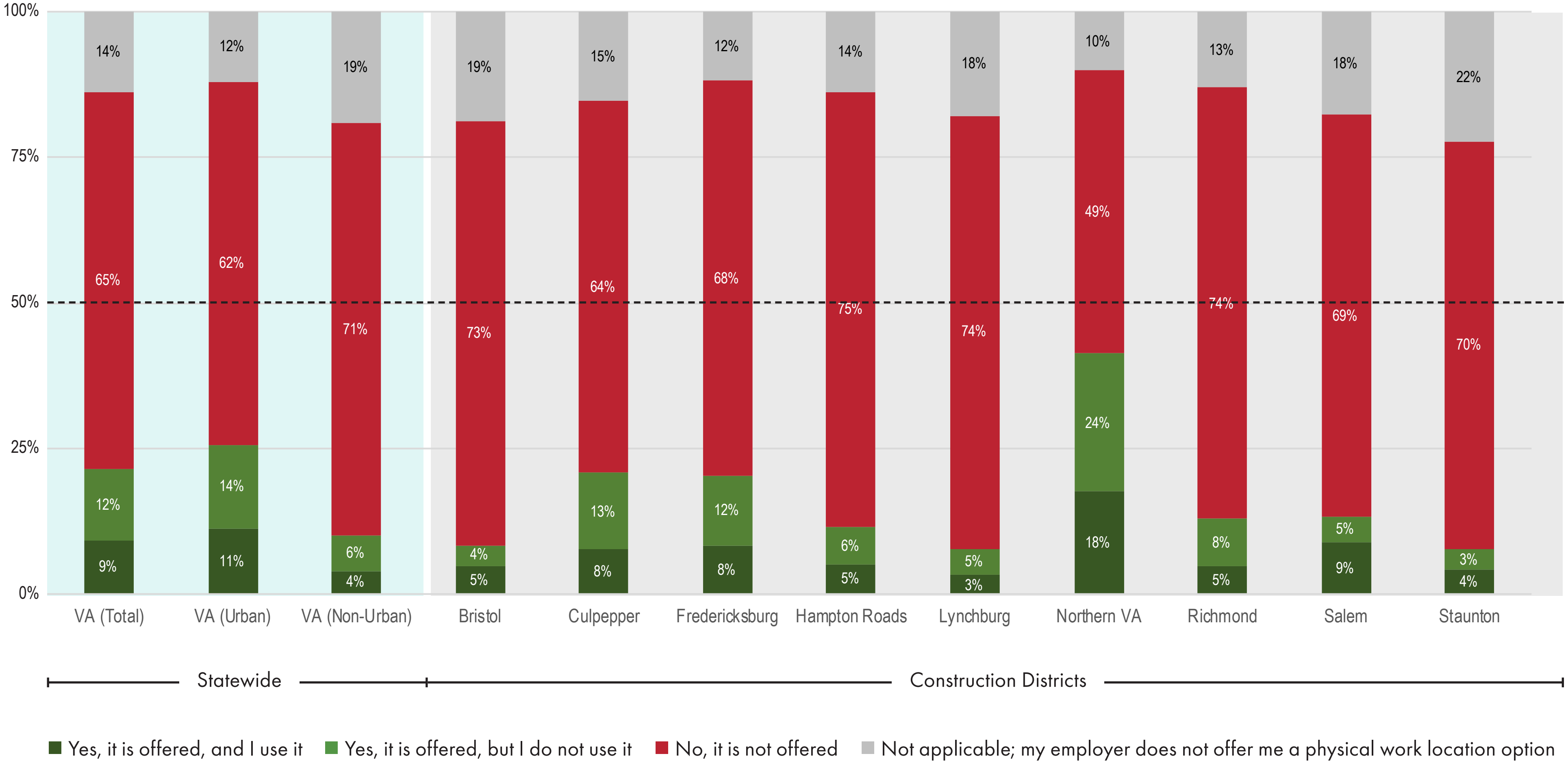
Margin of Error: VA (Total) = ±14.8 percentage points
Number of valid responses (n-size): VA (Total) = 44

🟥 Very dissatisfied ■ Somewhat dissatisfied ■ Neither satisfied nor dissatisfied 🟩 Somewhat satisfied 🟩 Very satisfied

Asked of: Full-time residents, 18 or older who commute and have other modes of travel available and use other modes of travel

5.7.1: **TRAVEL TO WORK OR SCHOOL:** OFFERED TRANSIT BENEFIT BY EMPLOYER OR SCHOOL

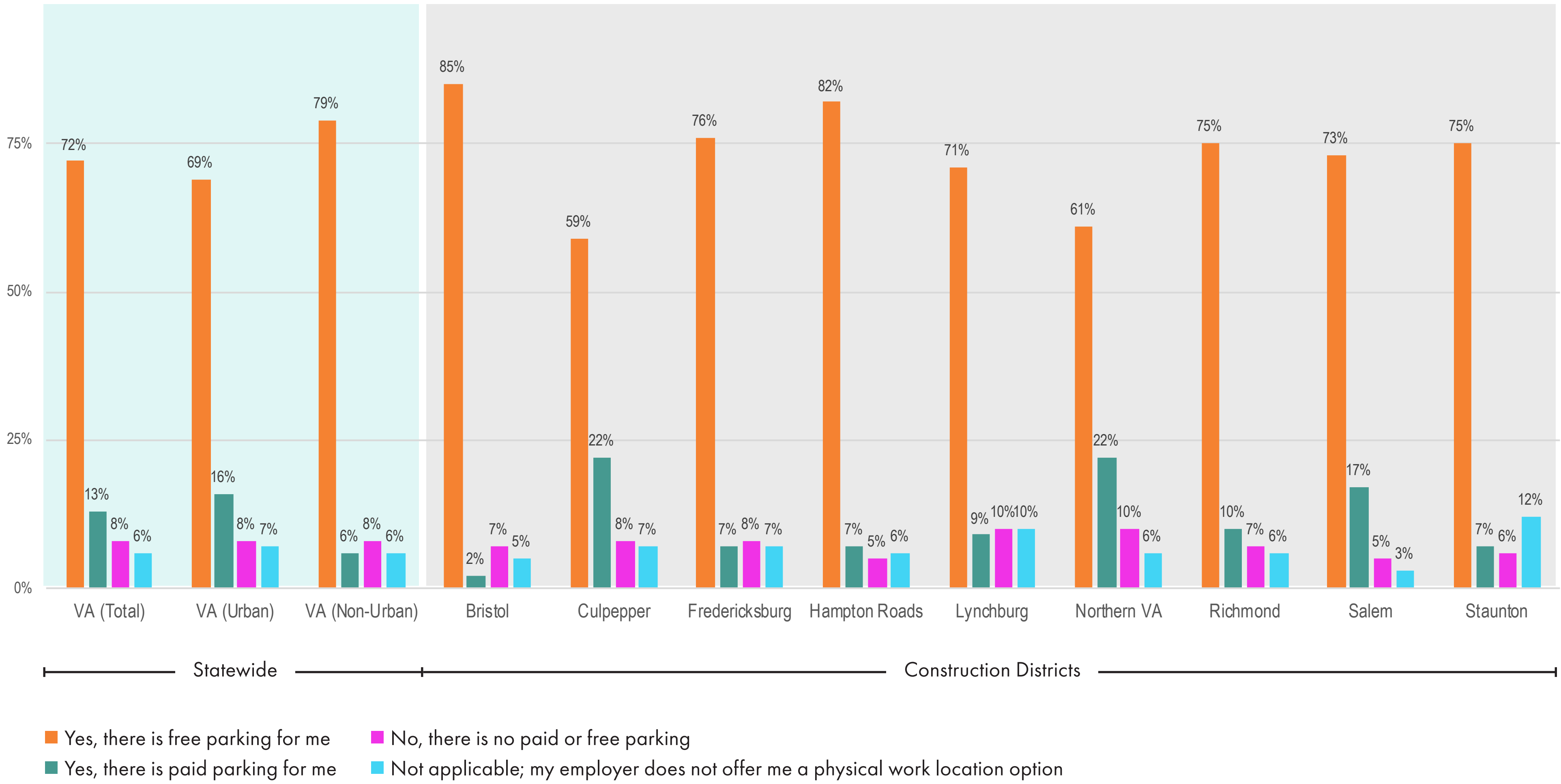
About two-thirds of residents 18 or older who are employed or are students are not offered a transit benefit by their employer or school (65%) and another 14% do not have a physical work location or school to which they would travel. Statewide, about 2 in 10 (22%) are offered this benefit, while 9% of all employed adults and students use it. Transit benefits are most commonly offered in northern Virginia (41%) whether or not they use it, unsurprising considering the large number of federal workers residing in that area.



Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.5 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.6 to ±5.9 percentage points
Number of valid responses (n-size): VA (Total) = 4,400 | VA (Urban) = 3,288 | VA (Non-Urban) = 1,112 | Construction Districts = 274 to 1,370

5.7.2: **TRAVEL TO WORK OR SCHOOL:** OFFERED FREE PARKING BY EMPLOYER OR SCHOOL

More than 8 in 10 adult residents who are employed or are students (85%) have some sort of parking available at their place of employment (whether or not they use it). Most of this available parking is free parking (72%), though a small portion is paid parking (13%). Paid parking is more common in urban areas (16%) compared to non-urban areas (6%). The opposite is true of free parking, where it is more common in non-urban areas (79% compared to 69%).



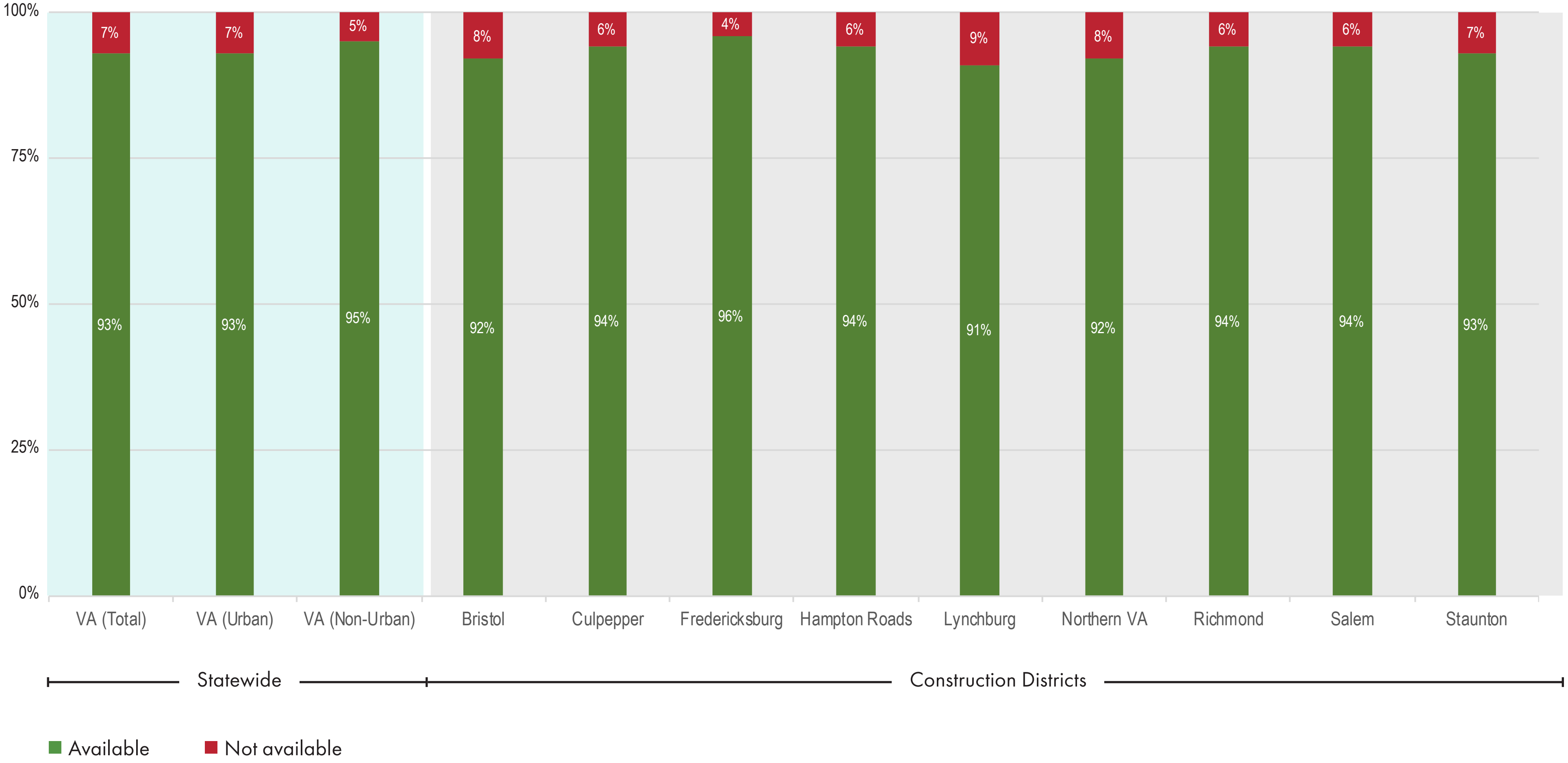
Asked of: Full-time residents, 18 or older who are currently employed or a student
Margin of Error: VA (Total) = ±1.4 percentage points | VA (Urban) = ±1.7 percentage points | VA (Non-Urban) = ±2.9 percentage points | Construction Districts = ±2.6 to ±5.8 percentage points
Number of valid responses (n-size): VA (Total) = 4,594 | VA (Urban) = 3,443 | VA (Non-Urban) = 1,151 | Construction Districts = 282 to 1,421

SECTION 6:

TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS: CHARACTERISTICS AND SATISFACTION

6.1.1: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** DRIVING PERSONAL CAR

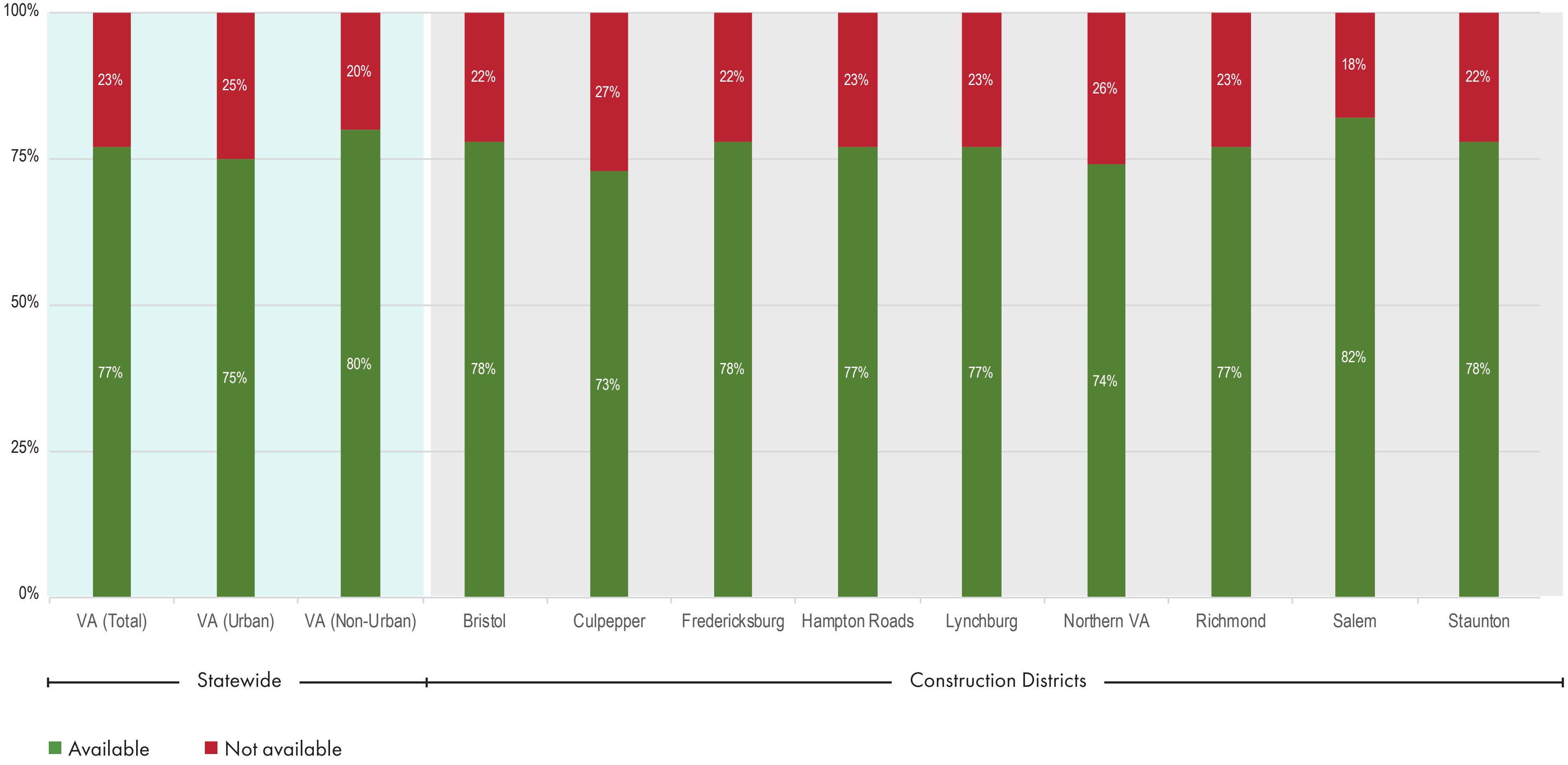
While availability of a personal vehicle for discretionary travel is generally high, there are a few notable groups where availability is lower, particularly people of color (89% have a personal vehicle available, compared to 96% of white residents), those with annual incomes of less than $35,500 (85%, compared to 95% to 98% of other income cohorts), and those age 18 to 34 years old (90%, compared to 95% of other age cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,987 | VA (Urban) = 4,975 | VA (Non-Urban) = 2,012 | Construction Districts = 460 to 1,909

6.1.2: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** RIDING IN PERSONAL CAR

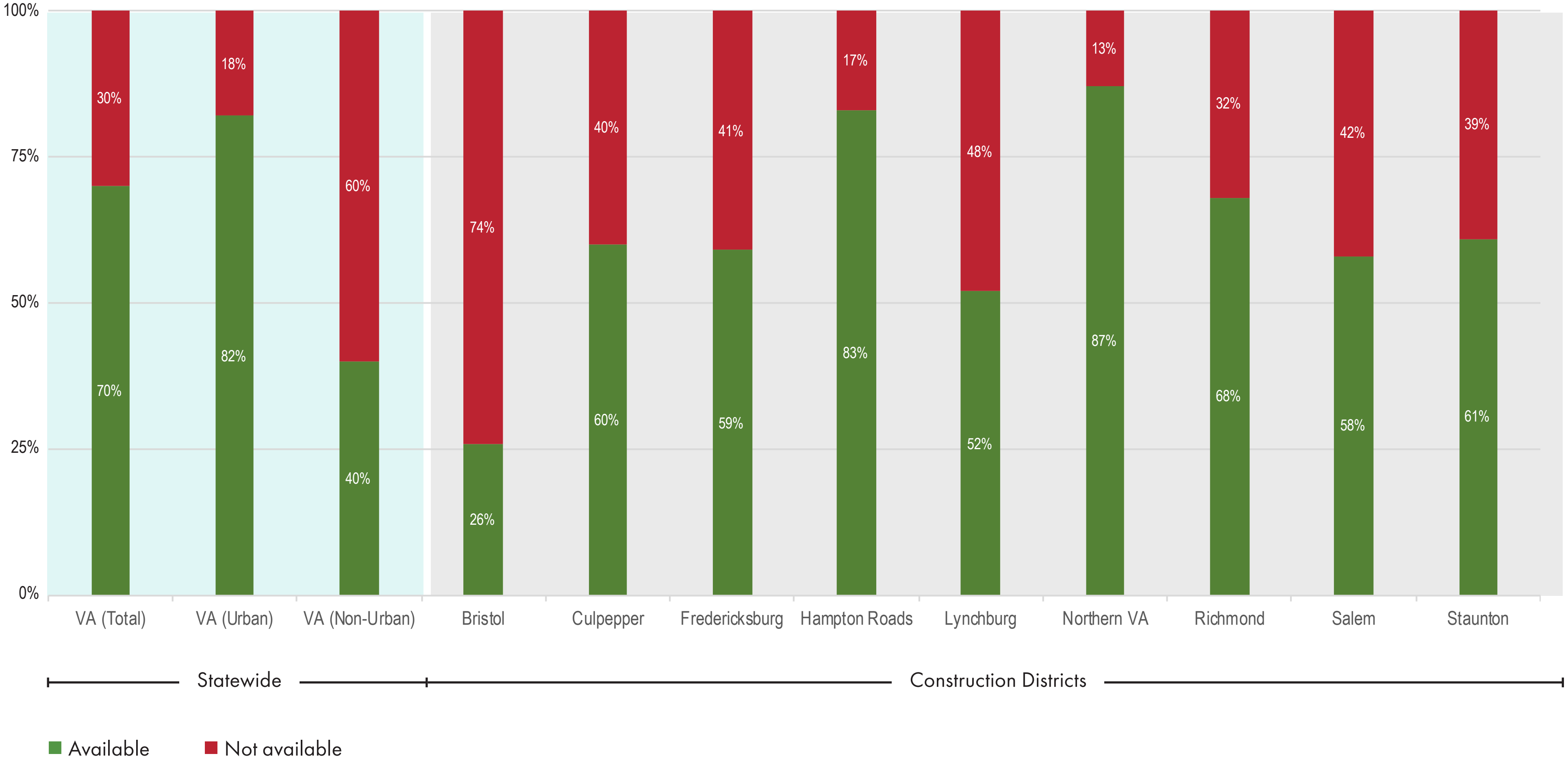
Availability of a personal car driven by a friend or family member for discretionary travel is higher among white residents than among people of color (79%, compared to 71%), and is lowest among those who have an annual income of less than $35,500 (69%, compared to 77% to 80% of other income cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,786 | VA (Urban) = 4,824 | VA (Non-Urban) = 1,962 | Construction Districts = 458 to 1,847

6.1.3: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** TAXI

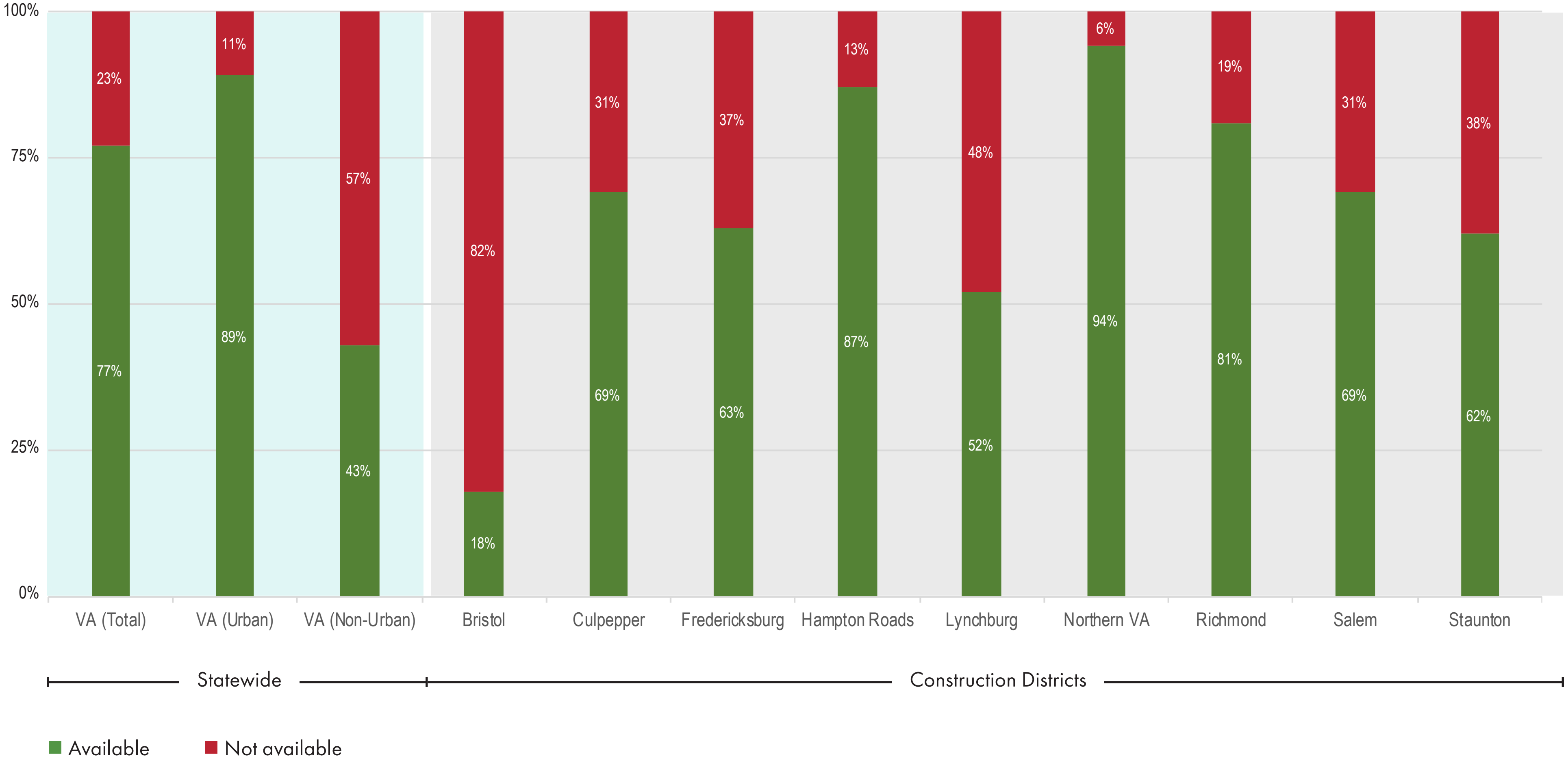
Taxis are generally least available for discretionary travel for those who make less than $35,500 annually (54%, compared to 66% to 81% of other income cohorts) and for younger residents (65% for those aged 18-34, compared to 70% to 71% of those in other age cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.4 percentage points | Construction Districts = ±2.3 to ±4.8 percentage points
Number of valid responses (n-size): VA (Total) = 6,097 | VA (Urban) = 4,406 | VA (Non-Urban) = 1,691 | Construction Districts = 411 to 1,766

6.1.4: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** RIDESHARE SERVICES

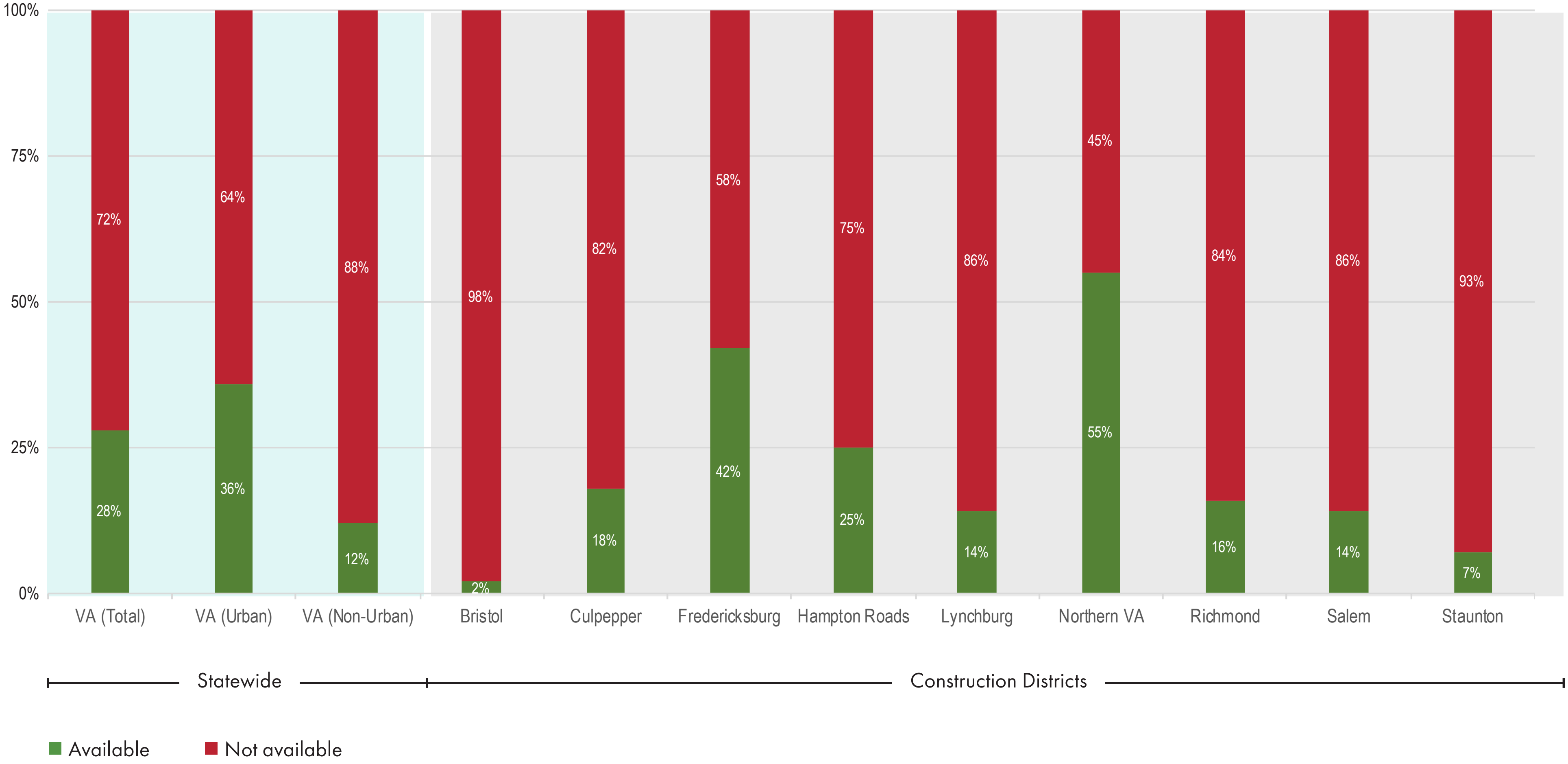
Rideshare services tend to be more available for discretionary trips for people of color, with 80% indicating they are available (compared to 73% of white residents). Additionally, these services are least available for discretionary trips for both those with annual incomes less than $35,500 (60%, compared to 73% to 87% in other income cohorts) and those who are age 55 or older (72%, compared to 76% to 78% among younger age cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.4 percentage points | Construction Districts = ±2.3 to ±5 percentage points
Number of valid responses (n-size): VA (Total) = 6,205 | VA (Urban) = 4,567 | VA (Non-Urban) = 1,638 | Construction Districts = 382 to 1,848

6.1.5: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** COMMUTER RAIL

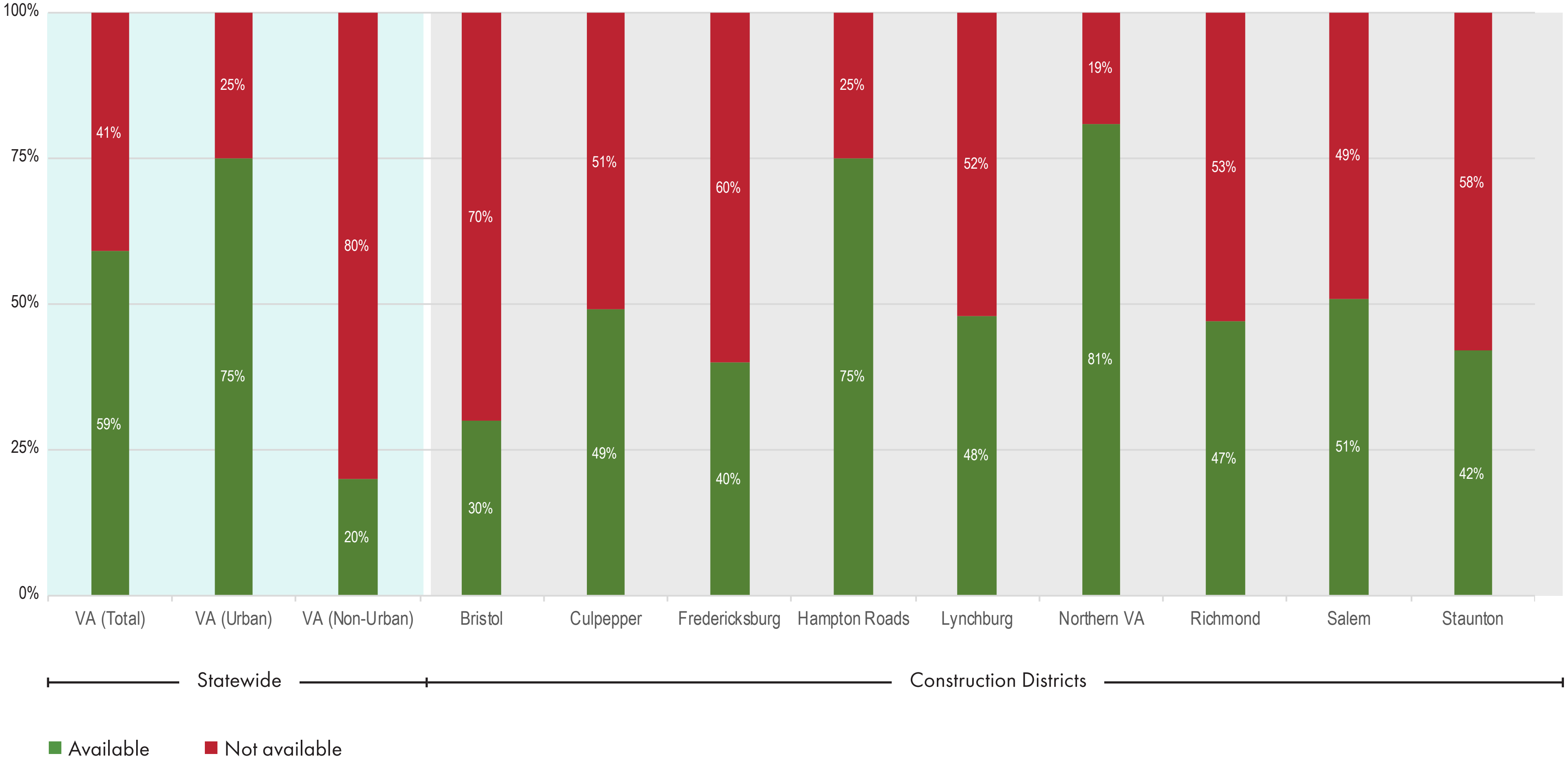
While availability of commuter rail for discretionary trips does continue to differ by race (33% of people of color have commuter rail available, compared to 26% of white residents) and income (18% of those with incomes less than $35,500, compared to 25% to 38% of other income cohorts), availability of commuter rail does not differ by age.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.3 percentage points | Construction Districts = ±2.4 to ±4.8 percentage points
Number of valid responses (n-size): VA (Total) = 6,163 | VA (Urban) = 4,298 | VA (Non-Urban) = 1,865 | Construction Districts = 412 to 1,704

6.1.6: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** LOCAL OR CITY BUS

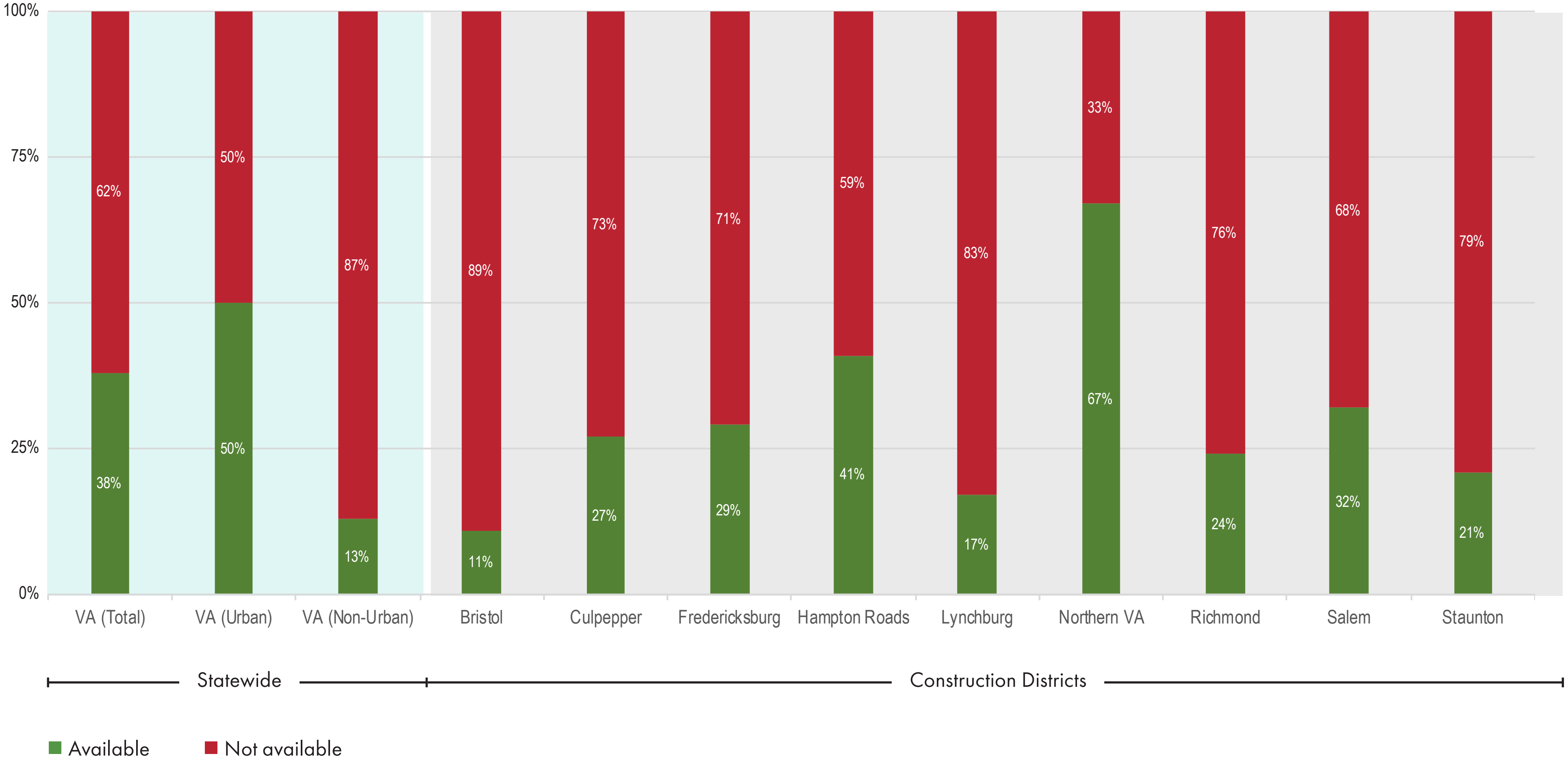
People of color tend to be most likely to have local or city buses available to them for discretionary trips (68%, compared to 55% of white residents). Similar to other modes, local or city buses are also most available for those age 18–34 (65%) and for those with annual incomes less than $35,500 (54%).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.3 percentage points | Construction Districts = ±2.3 to ±4.7 percentage points
Number of valid responses (n-size): VA (Total) = 6,450 | VA (Urban) = 4,590 | VA (Non-Urban) = 1,860 | Construction Districts = 444 to 1,789

6.1.7: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** COMMUTER BUS

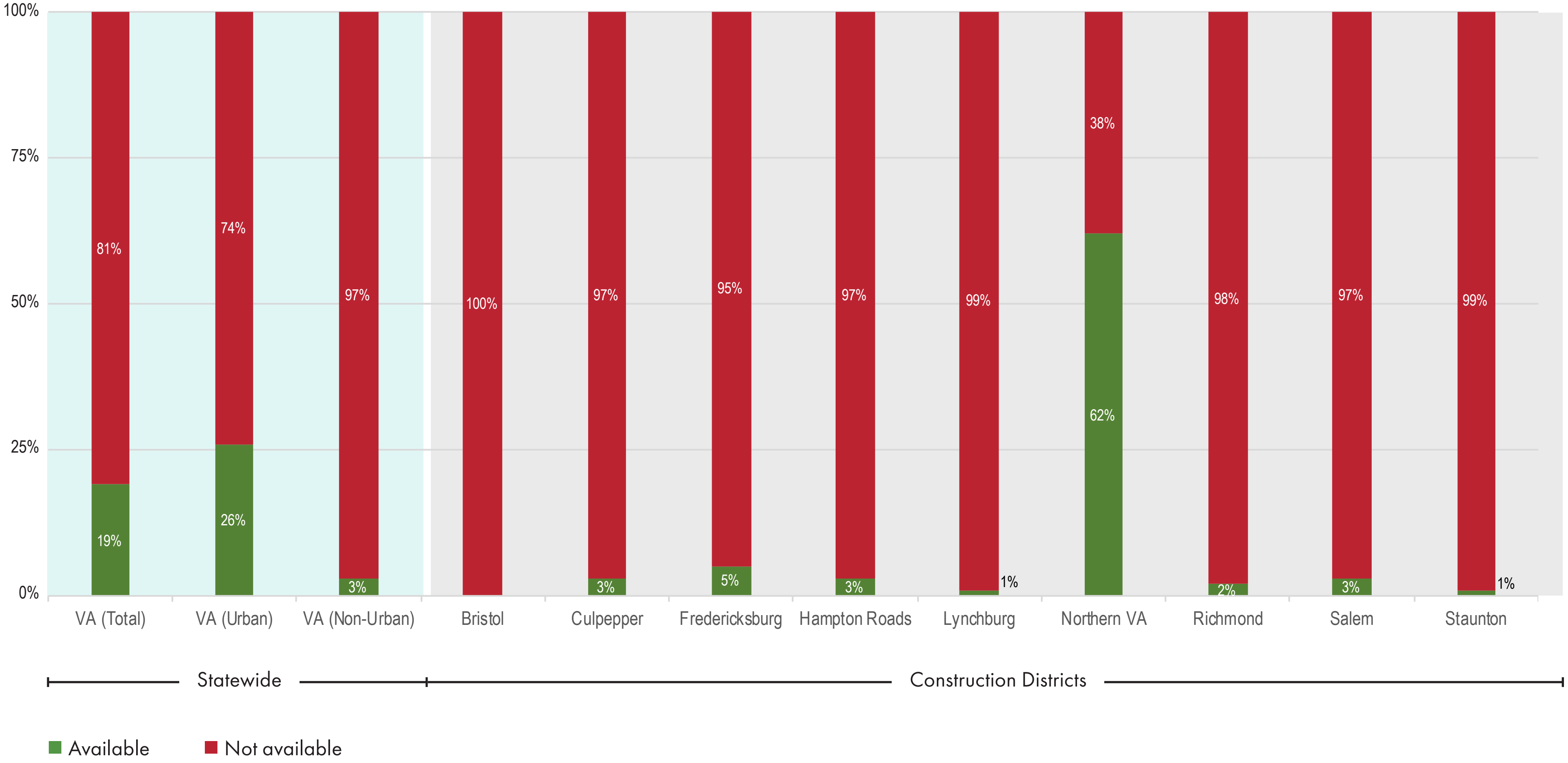
Nearly one-half (47%) of people of color have commuter buses available for discretionary trips (compared to 34% of white residents). Additionally, availability of commuter buses is more focused on higher-income residents, where 44% of those with annual incomes of $100,000 or more have this mode available (compared to 30% to 35% of lower income cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.6 percentage points | VA (Non-Urban) = ±2.3 percentage points | Construction Districts = ±2.5 to ±5 percentage points
Number of valid responses (n-size): VA (Total) = 5,653 | VA (Urban) = 3,870 | VA (Non-Urban) = 1,783 | Construction Districts = 384 to 1,568

6.1.8: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** SUBWAY

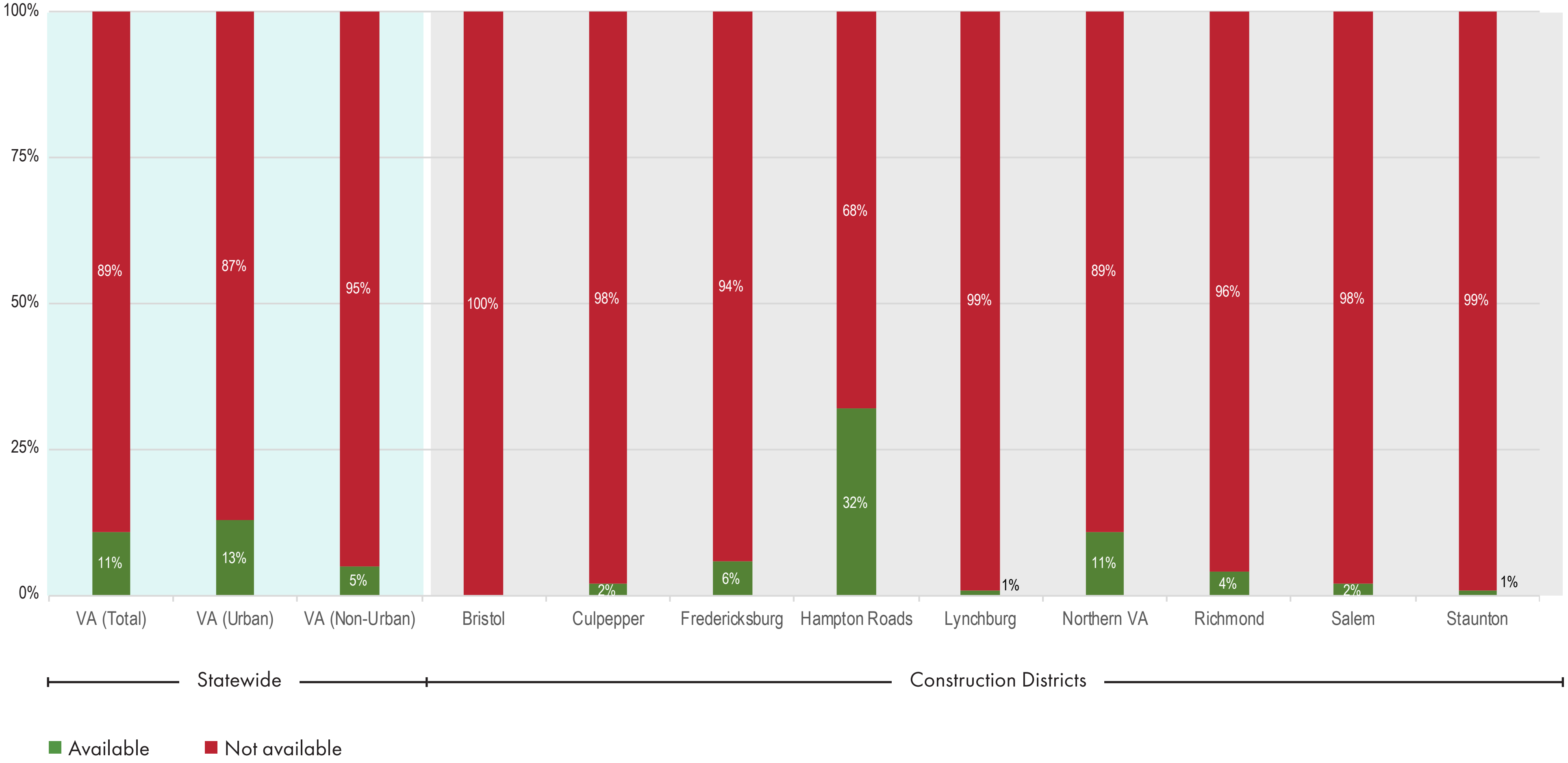
Availability of subways for discretionary travel is largely dependent on geography, and is also higher among people of color (24%, compared to 17%), and those with annual incomes that exceed $100,000 (33%, compared to 8% to 14% in lower income cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,731 | VA (Urban) = 4,749 | VA (Non-Urban) = 1,982 | Construction Districts = 453 to 1,837

6.1.9: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** FERRY

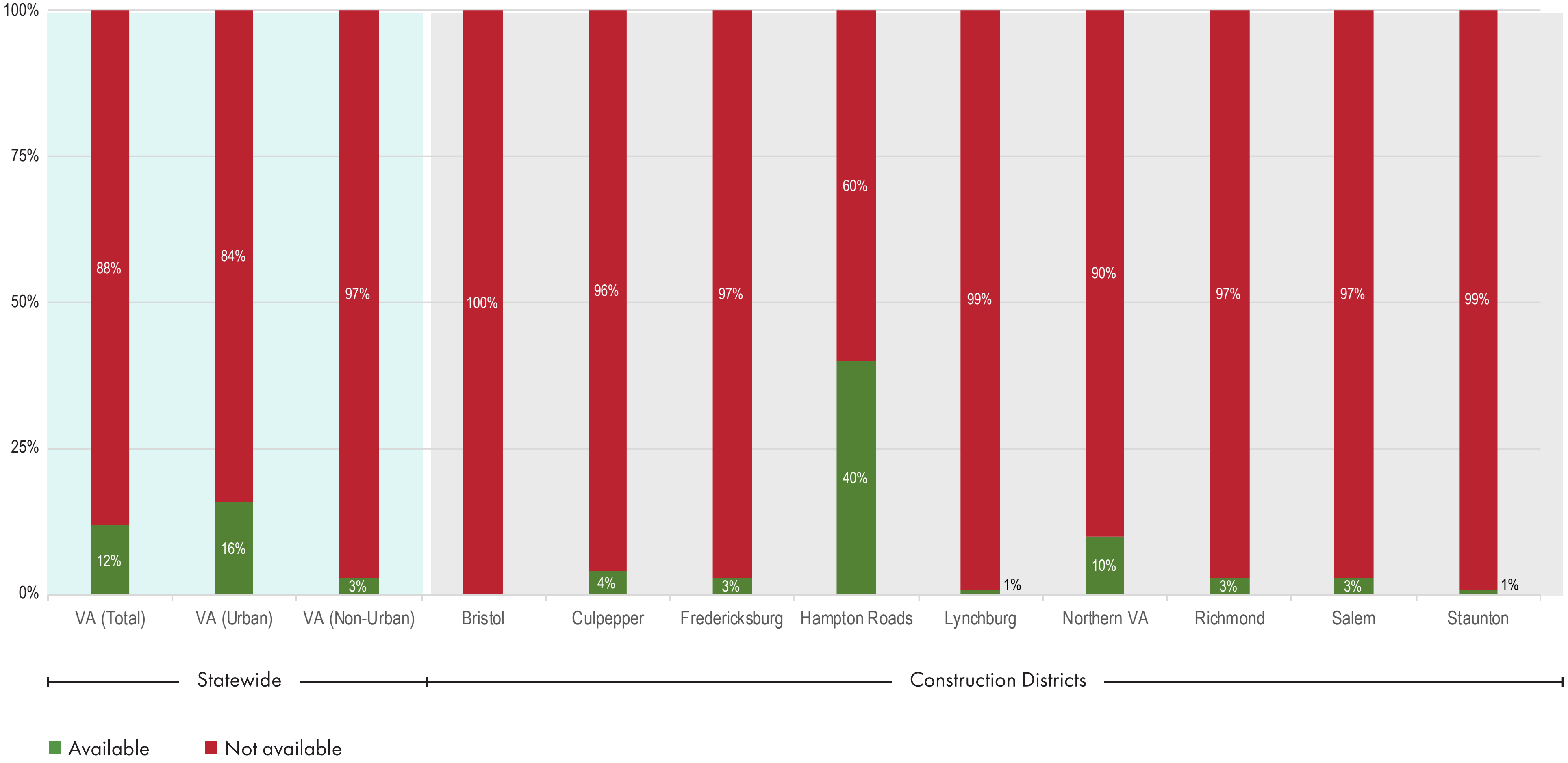
Similar to that seen with subways, availability of ferries for discretionary travel depends heavily on geography. Though interestingly, while the availability of ferries for commuting trips was consistent across demographic groups, availability of ferries for discretionary travel is higher among people of color (12%, compared to 7% of white residents).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.4 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,563 | VA (Urban) = 4,583 | VA (Non-Urban) = 1,980 | Construction Districts = 452 to 1,699

6.1.10: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** LIGHT RAIL

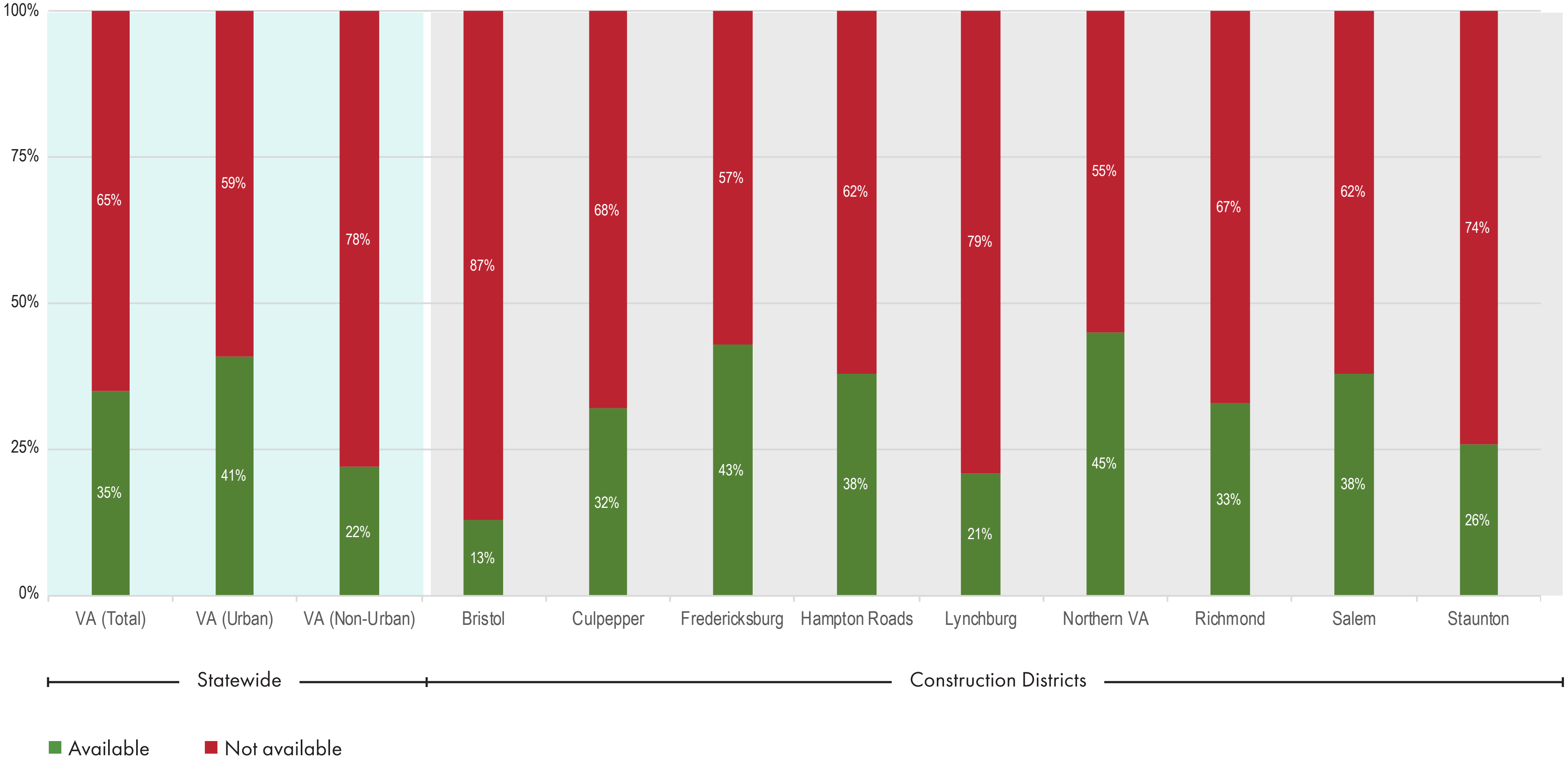
Again, light rail availability is largely dependent on geography, and with that it is more likely to be available for discretionary trips among people of color (15%, compared to 7%).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.4 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,379 | VA (Urban) = 4,428 | VA (Non-Urban) = 1,951 | Construction Districts = 448 to 1,604

6.1.11: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** CARPOOLS OR VANPOOLS

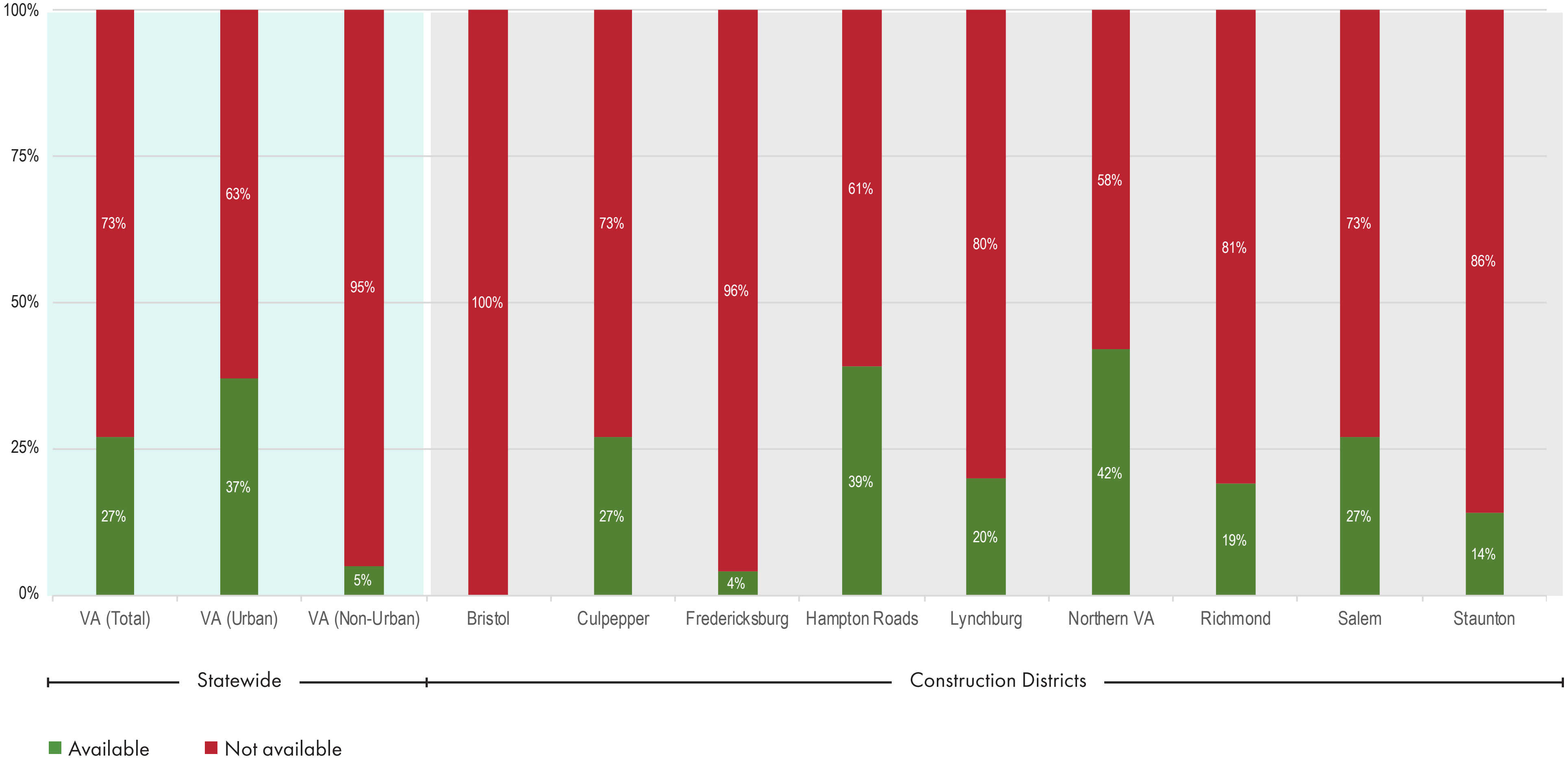
Carpools or vanpools are more likely to be available for discretionary trips for those with annual incomes of $100,000 or higher (40%, compared to 28% to 35% of those in lower-income cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.4 percentage points | VA (Urban) = ±1.6 percentage points | VA (Non-Urban) = ±2.5 percentage points | Construction Districts = ±2.6 to ±5.3 percentage points
Number of valid responses (n-size): VA (Total) = 5,162 | VA (Urban) = 3,591 | VA (Non-Urban) = 1,571 | Construction Districts = 341 to 1,421

6.1.12: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** SCOOTER-SHARE

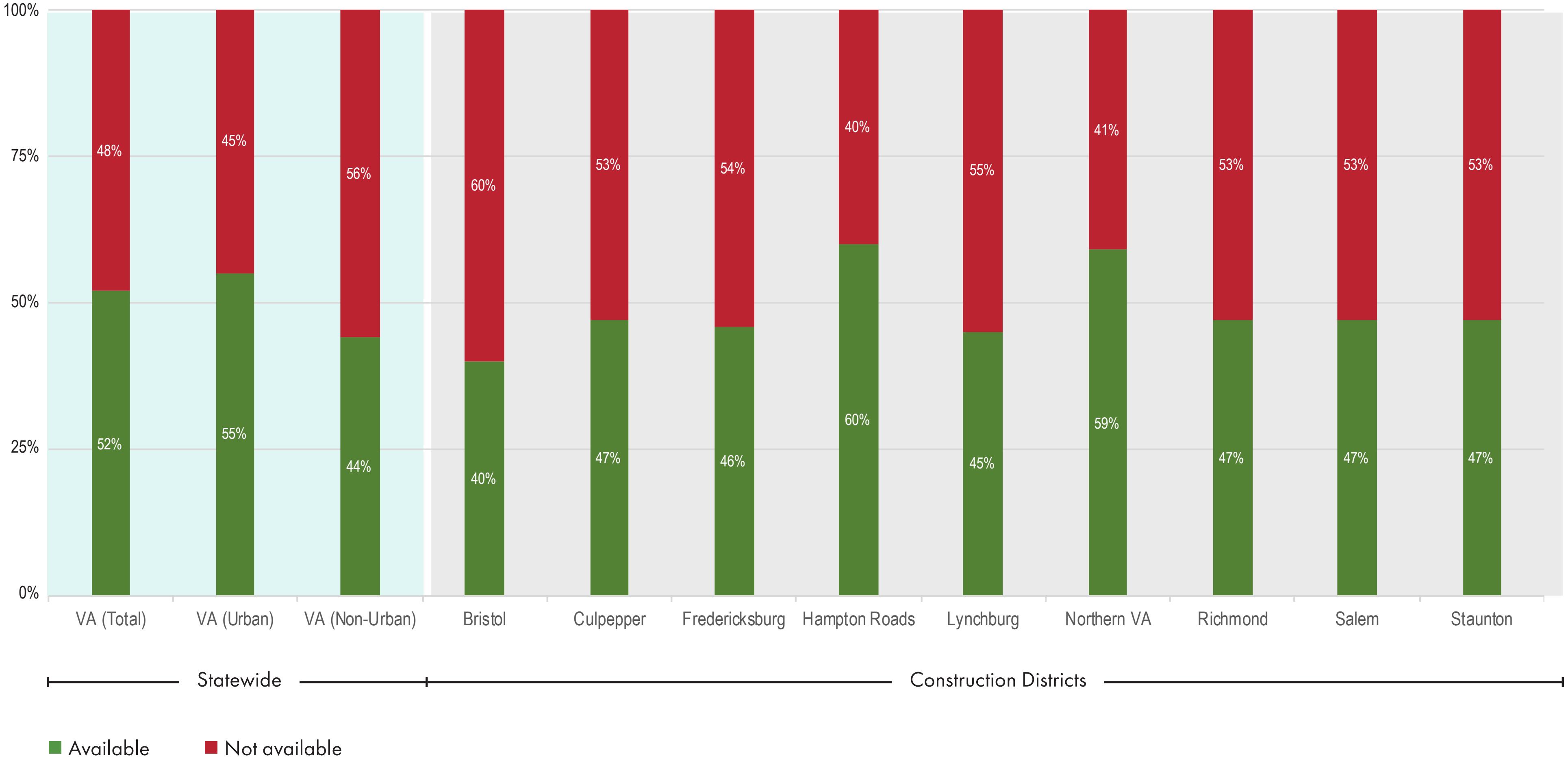
For discretionary trips, scooter-share availability is higher for those age 18 to 34, at a rate of 40% (compared to 17% to 26% of those in other age cohorts).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.3 percentage points | Construction Districts = ±2.5 to ±4.8 percentage points
Number of valid responses (n-size): VA (Total) = 5,811 | VA (Urban) = 4,011 | VA (Non-Urban) = 1,800 | Construction Districts = 412 to 1,524

6.1.13: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** PERSONAL BICYCLE

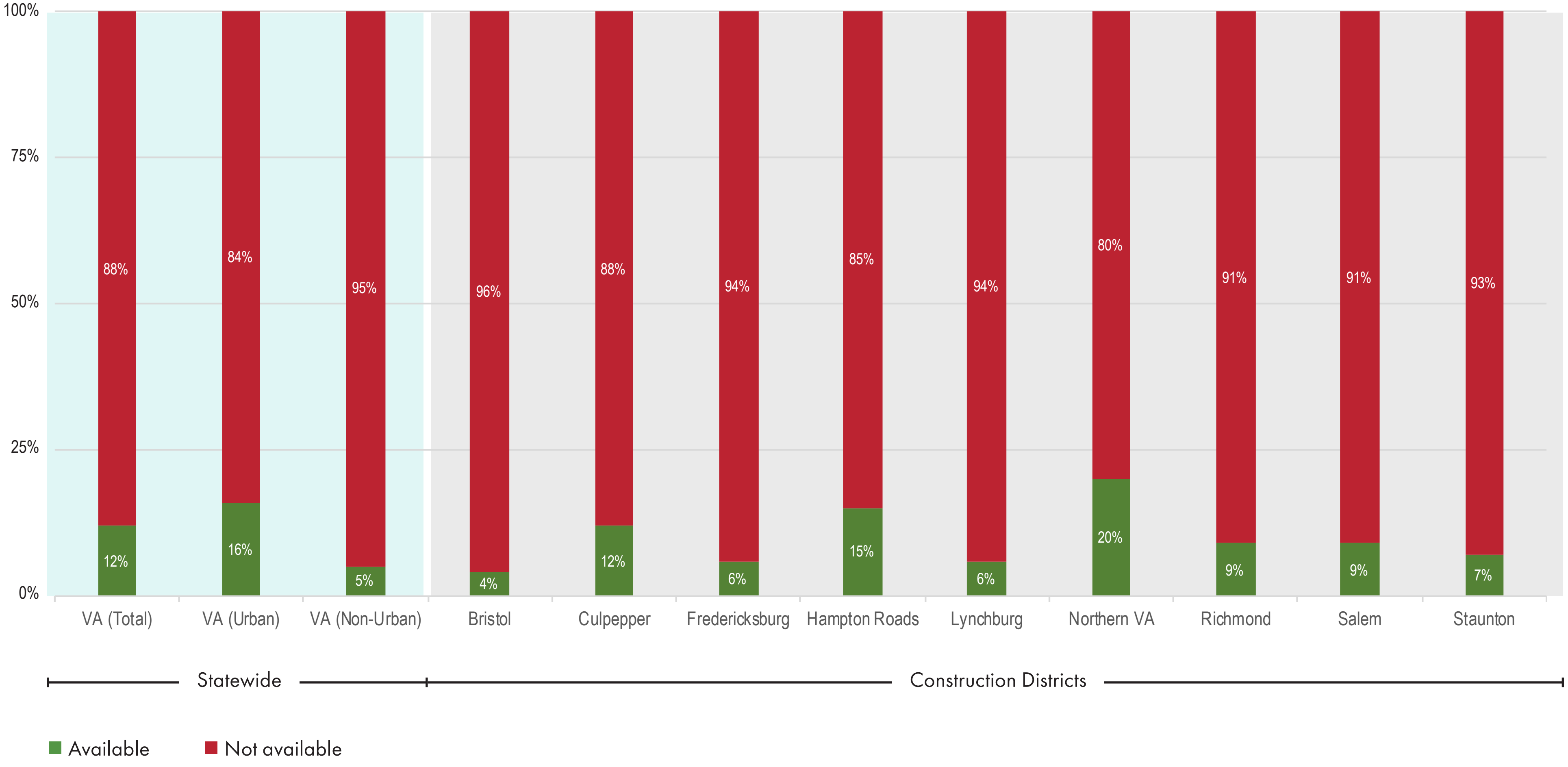
People of color tend to be less likely to have a personal bicycle available for discretionary trips than white residents (46%, compared to 53%). Similarly, those making less than $33,500 in annual income and those age 55 or older are also less likely to have a personal bicycle available for their discretionary travel (39% and 46%, respectively).



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.6 percentage points
Number of valid responses (n-size): VA (Total) = 6,763 | VA (Urban) = 4,802 | VA (Non-Urban) = 1,961 | Construction Districts = 451 to 1,842

6.1.14: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (AVAILABILITY):** E-BIKE

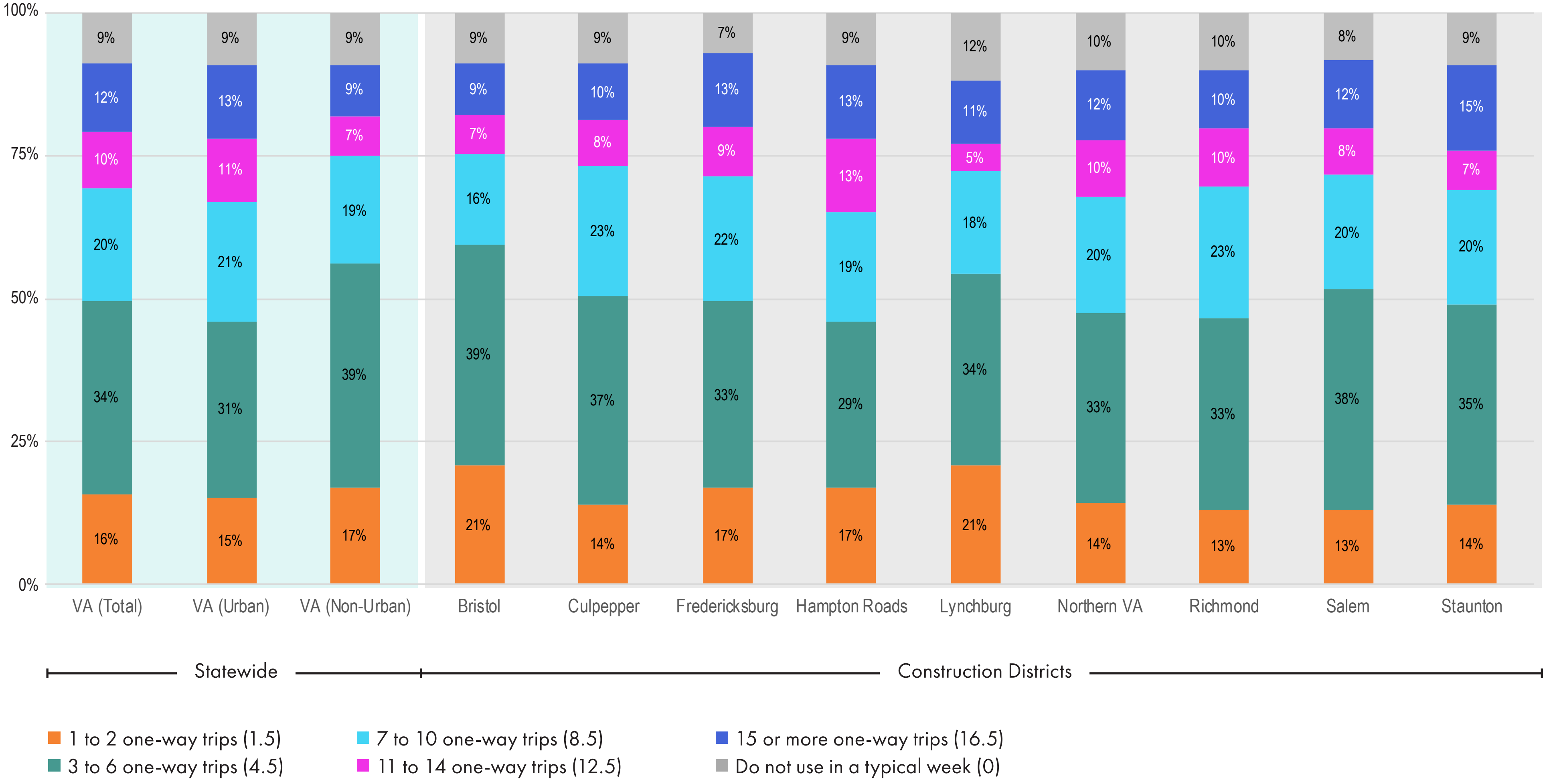
Both younger residents and residents with annual incomes of $100,000 or more are most likely to have access to an e-bike for their discretionary travel. Of those age 18–34, 15% have an e-bike available and, similarly, 15% of those higher-income residents have an e-bike available to them.



Asked of: Full-time residents, 18 or older
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.3 percentage points | Construction Districts = ±2.4 to ±4.8 percentage points
Number of valid responses (n-size): VA (Total) = 6,227 | VA (Urban) = 4,355 | VA (Non-Urban) = 1,872 | Construction Districts = 418 to 1,663

6.2.1: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (ONE-WAY TRIPS IN A TYPICAL WEEK):** DRIVING PERSONAL CAR

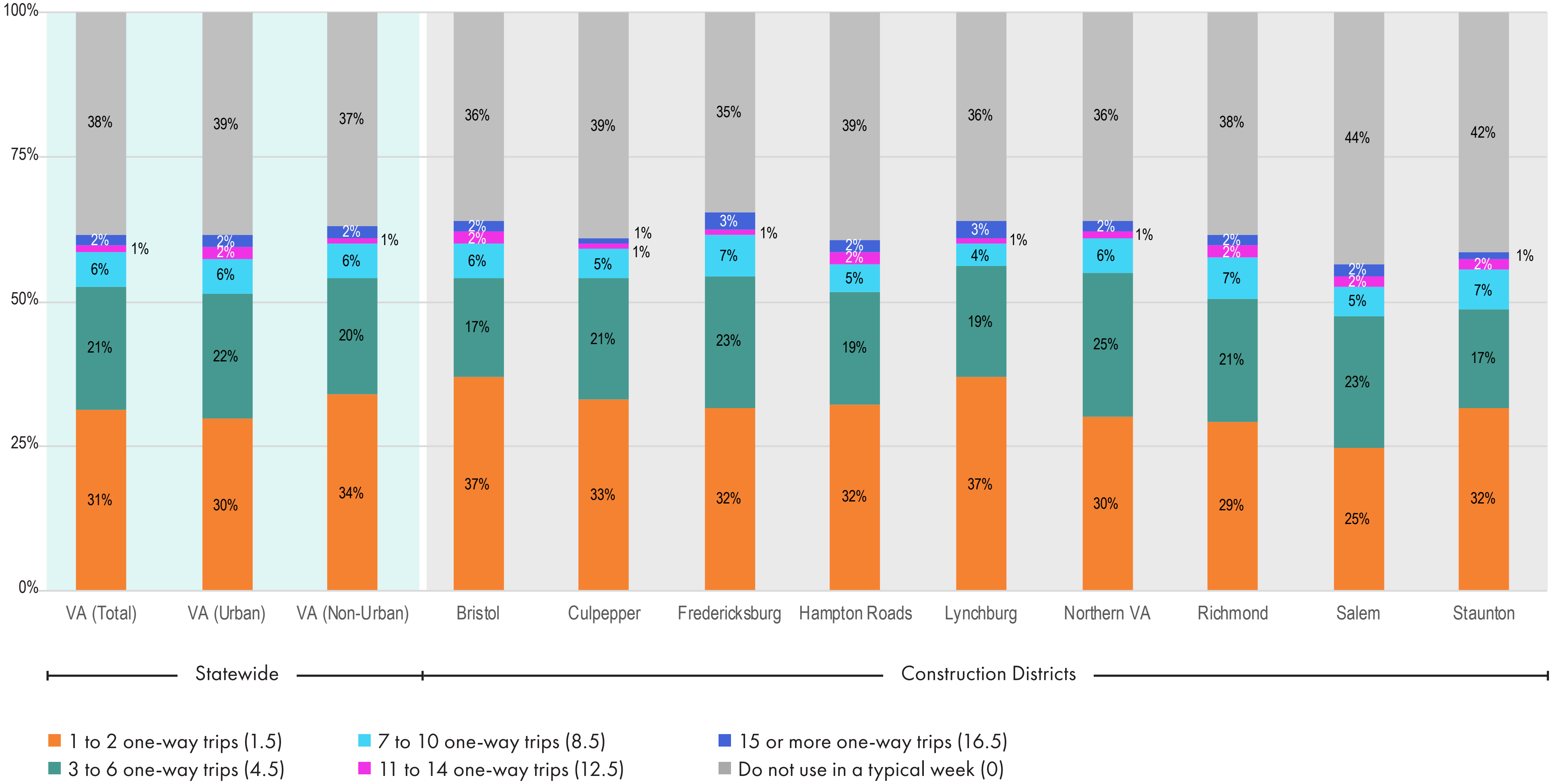
Only 9% of residents do not drive a personal vehicle for any non-work or school trips in a typical week. Interestingly, urban residents take slightly more trips by their own personal vehicle each week (an average of 6.9) than do non-urban residents (an average of 6.0). Additionally, residents age 55 or older are most likely to take at least any trips by driving their personal vehicle in a typical week, with 93% doing so. However, they do not take the most trips on average in a typical week. On average, those age 35–54 tend to take the most trips on average by driving a personal vehicle, with 7.0 trips (compared to 6.3 to 6.4 trips for other age cohorts).



Asked of: Full-time residents, 18 or older who have a personal car available for driving
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.3 to ±4.7 percentage points
Number of valid responses (n-size): VA (Total) = 6,673 | VA (Urban) = 4,738 | VA (Non-Urban) = 1,935 | Construction Districts = 437 to 1,818

6.2.2: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (ONE-WAY TRIPS IN A TYPICAL WEEK):** RIDING IN A PERSONAL CAR

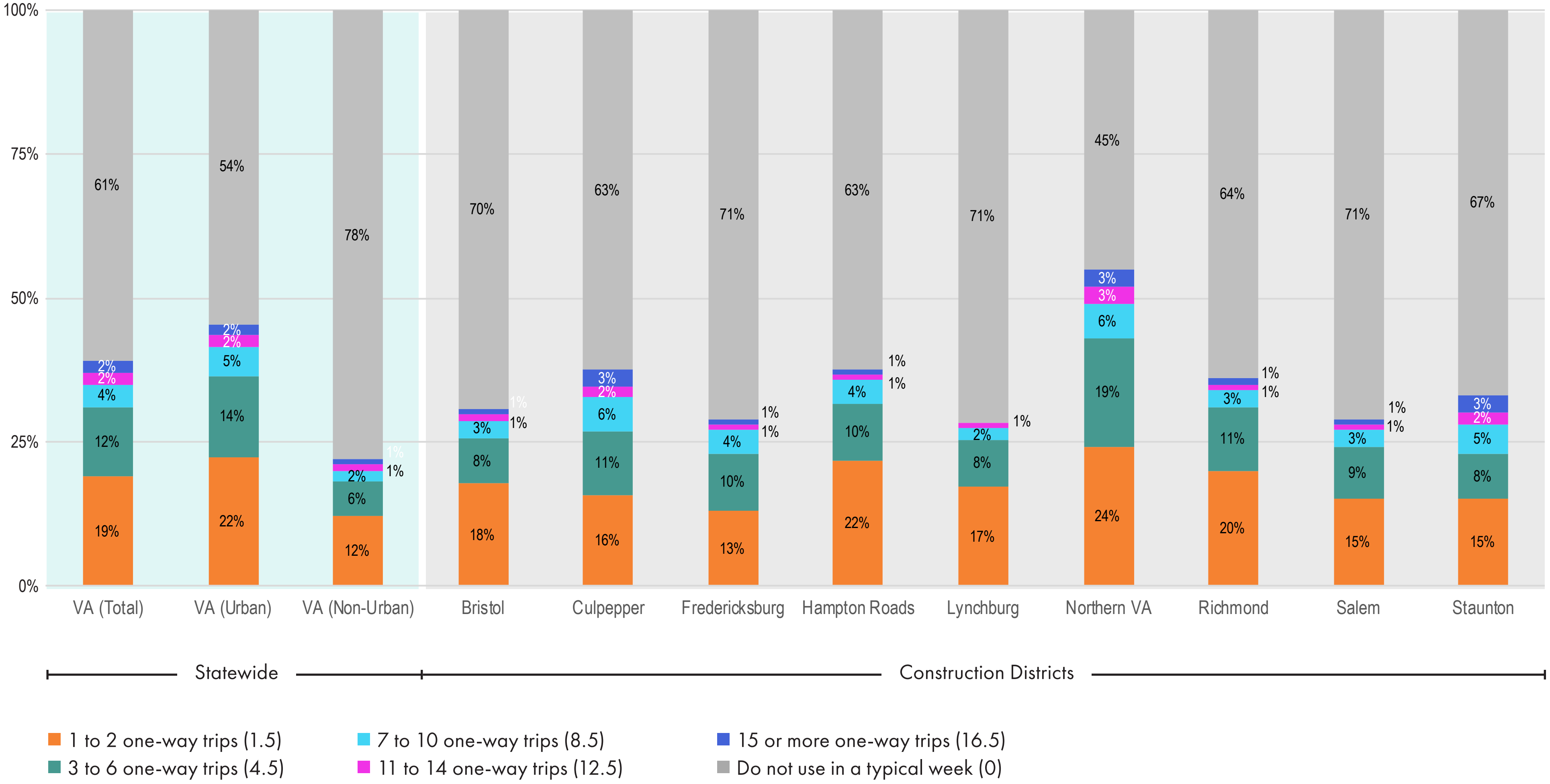
Residents who have a personal vehicle to ride in with friends or family available for non-work or school trips take, on average, two one-way trips in a typical week overall. Nearly 4 in 10 (38%) do not ride in a personal vehicle for non-work trips with a friend or family member at all in a typical week.



Asked of: Full-time residents, 18 or older who have a personal car available for riding
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.6 percentage points | VA (Non-Urban) = ±2.5 percentage points | Construction Districts = ±2.6 to ±5.2 percentage points
Number of valid responses (n-size): VA (Total) = 5,278 | VA (Urban) = 3,721 | VA (Non-Urban) = 1,557 | Construction Districts = 359 to 1,394

6.2.3: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (ONE-WAY TRIPS IN A TYPICAL WEEK):** WALKING

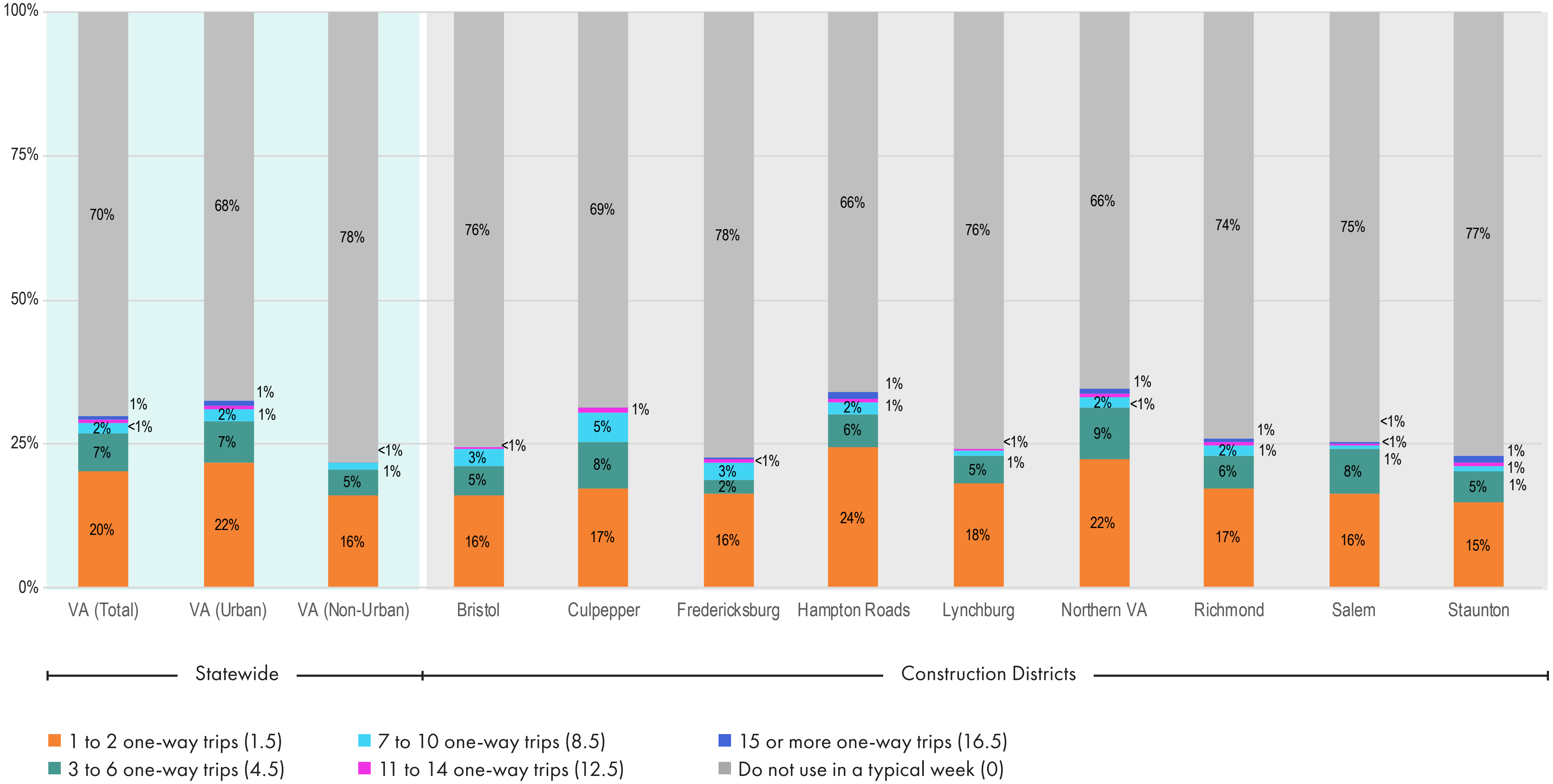
Unsurprisingly, urban residents walk more frequently, an average of two one-way trips per week, compared to non-urban residents (average of 0.9). This specifically refers to trips where they walked for the entire trip, and not just to trips where they walked for a portion (e.g., walking to a bus stop would not count as walking for the entire trip). Additionally, residents age 18–34 are more likely to take any walking trips in a typical week, with 47% doing so (compared to 36% to 37% of other age cohorts).



Asked of: Full-time residents, 18 or older who have walking available
Margin of Error: VA (Total) = ±1.2 percentage points | VA (Urban) = ±1.4 percentage points | VA (Non-Urban) = ±2.2 percentage points | Construction Districts = ±2.2 to ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 7,142 | VA (Urban) = 5,078 | VA (Non-Urban) = 2,064 | Construction Districts = 477 to 1,943

6.2.4: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (ONE-WAY TRIPS IN A TYPICAL WEEK):** PERSONAL BICYCLE

Residents who have a personal bicycle available for non-work or school trips take, on average, one one-way trip per week with their personal bicycle, with urban residents taking almost twice as many trips (an average of 1.1 versus 0.6 for non-urban residents). Seven in ten (70%) do not use their bicycle for non-work or school trips at all in a typical week.

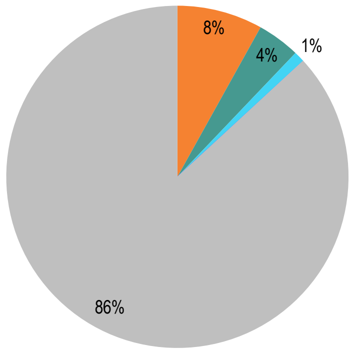


Asked of: Full-time residents, 18 or older who have a personal bicycle available
Margin of Error: VA (Total) = ±1.6 percentage points | VA (Urban) = ±1.8 percentage points | VA (Non-Urban) = ±3.3 percentage points | Construction Districts = ±2.9 to ±6.5 percentage points
Number of valid responses (n-size): VA (Total) = 3,730 | VA (Urban) = 2,845 | VA (Non-Urban) = 885 | Construction Districts = 224 to 1,145

6.2.5–6.2.10: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (ONE-WAY TRIPS IN A TYPICAL WEEK):** OTHER MODES OF TRAVEL (VA TOTAL)

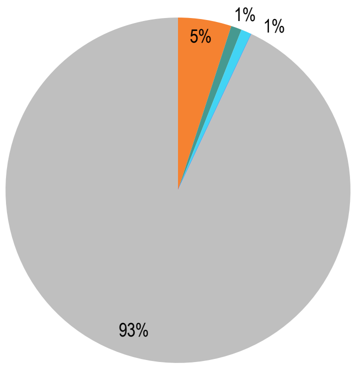
Rideshare usage tends to be focused among those residents age 18–34 (an average of 0.6 trips per week for non-work or school trips, compared to 0.3 to 0.4 among other age cohorts) and people of color (0.6 trips on average, compared to 0.3 trips for white residents). Similarly, those age 18–34 years take the most discretionary trips on average using public transportation, with an average of 0.7 trips in a typical week, compared to 0.4 trips per week in other age cohorts.

6.2.5: City Bus, Subway, Commuter Rail, Light Rail, or Ferry



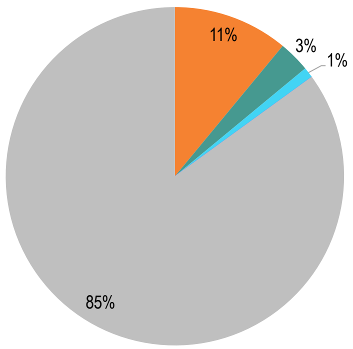
Margin of Error: VA (Total) = ±1.5 percentage points
Number of valid responses (n-size): VA (Total) = 4,318

6.2.6: Taxi



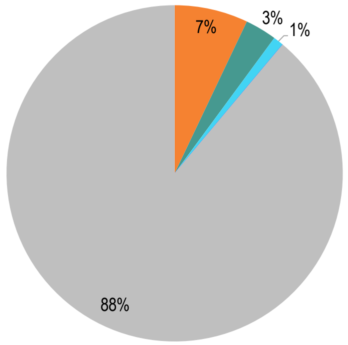
Margin of Error: VA (Total) = ±1.5 percentage points
Number of valid responses (n-size): VA (Total) = 4,391

6.2.7: Rideshare Services



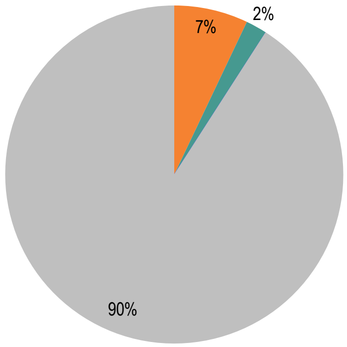
Margin of Error: VA (Total) = ±1.4 percentage points
Number of valid responses (n-size): VA (Total) = 4,755

6.2.8: Carpools or Vanpools



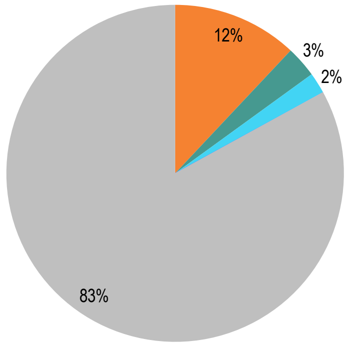
Margin of Error: VA (Total) = ±2.3 percentage points
Number of valid responses (n-size): VA (Total) = 1,838

6.2.9: Scooter-share



Margin of Error: VA (Total) = ±2.5 percentage points
Number of valid responses (n-size): VA (Total) = 1,485

6.2.10: E-bike



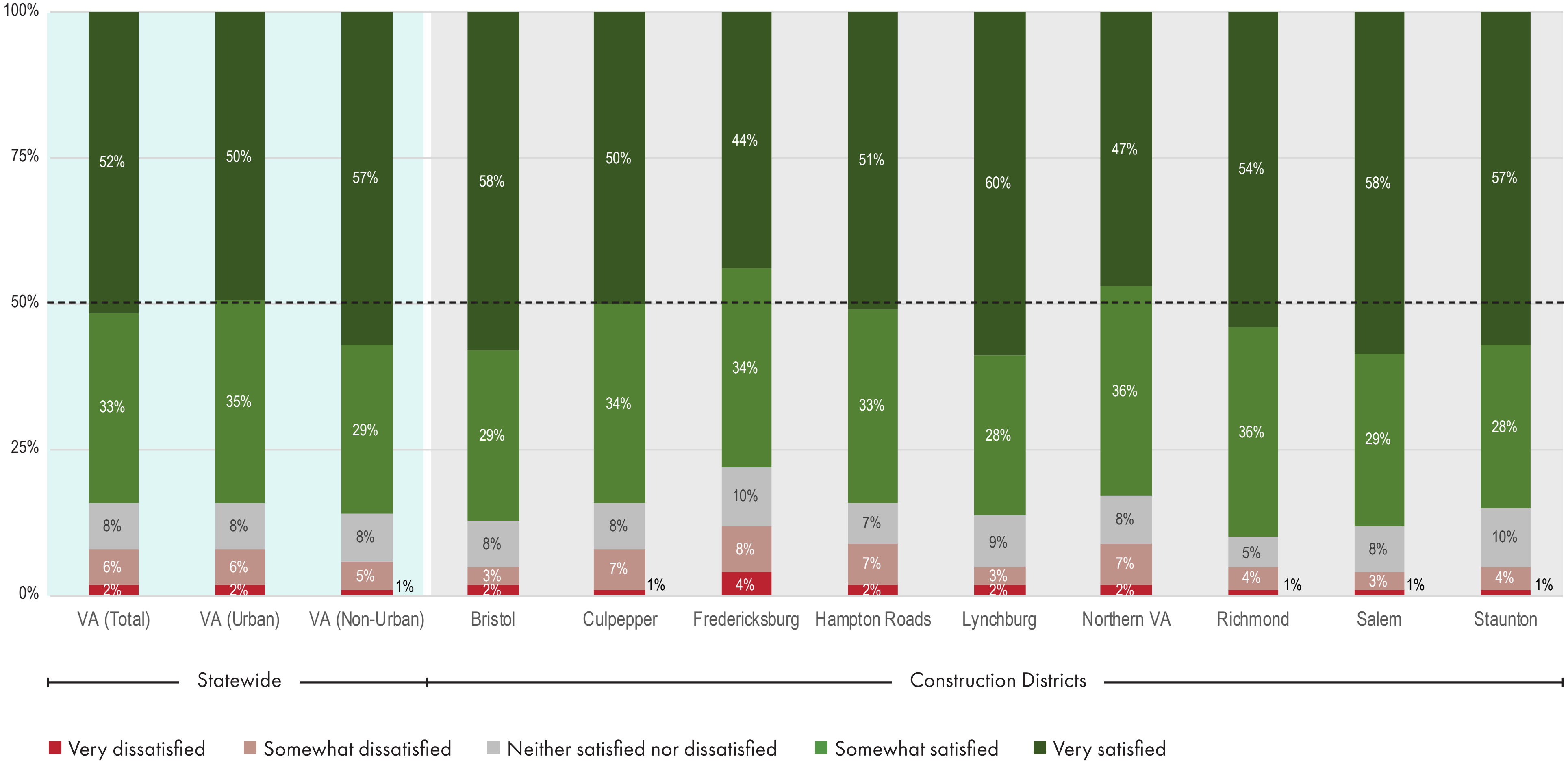
Margin of Error: VA (Total) = ±3.6 percentage points
Number of valid responses (n-size): VA (Total) = 742

🟧 1 to 2 one-way trips (1.5) ■ 3 to 6 one-way trips (4.5) ■ 7 to 10 one-way trips (8.5) ■ 11 to 14 one-way trips (12.5) 🟦 15 or more one-way trips (16.5) ■ Do not use in a typical week (0)

Asked of: Full-time residents, 18 or older who have other modes of travel available

6.3.1: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (SATISFACTION):** DRIVING PERSONAL CAR

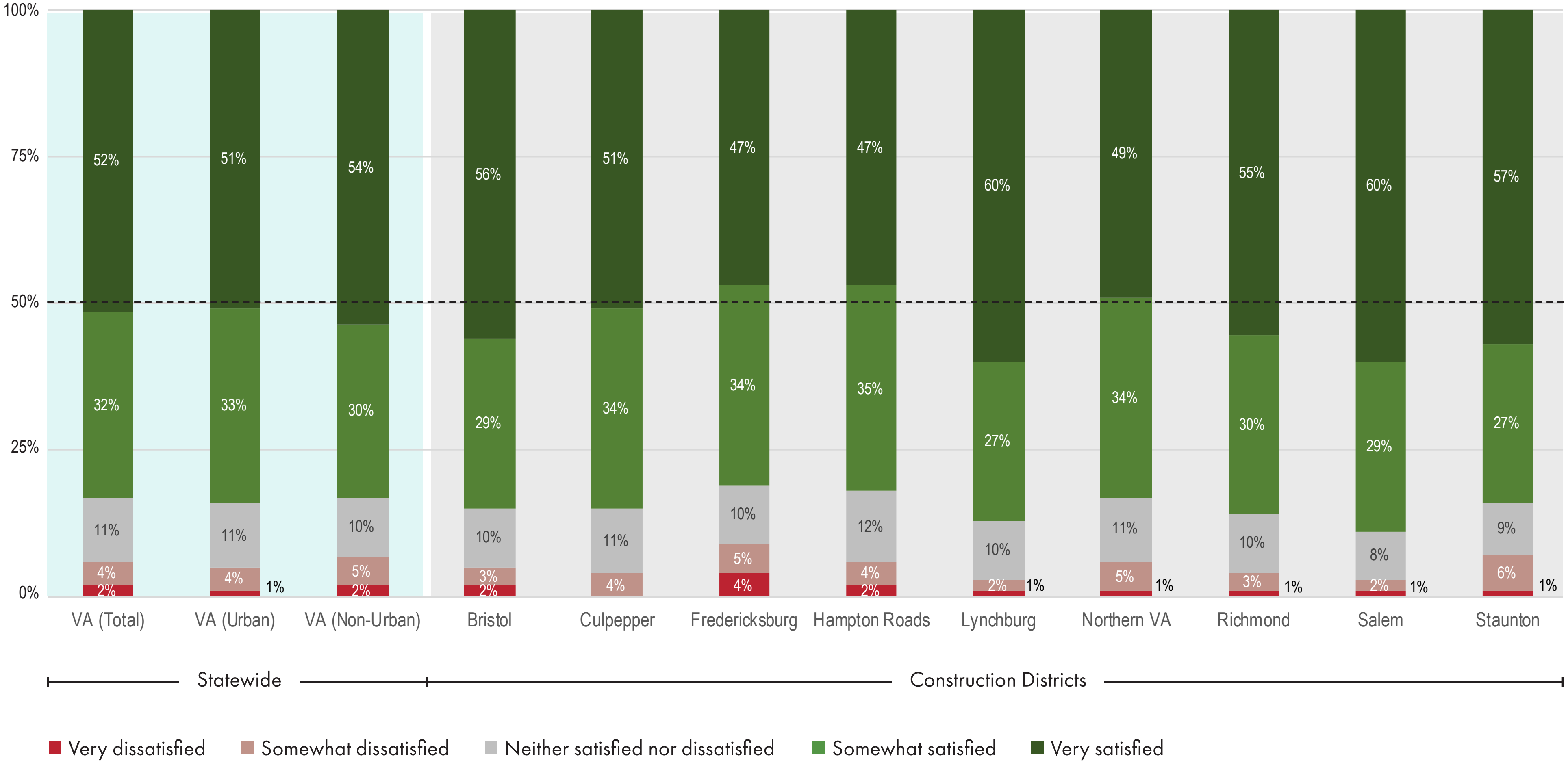
More than 8 in 10 residents who drive a personal car for non-work or school trips (85%) are satisfied with their experience doing so.



Asked of: Full-time residents, 18 or older who have a personal car available and drive a personal car for non-work/school trips
Margin of Error: VA (Total) = ±1.3 percentage points | VA (Urban) = ±1.5 percentage points | VA (Non-Urban) = ±2.3 percentage points | Construction Districts = ±2.4 to ±4.9 percentage points
Number of valid responses (n-size): VA (Total) = 6,130 | VA (Urban) = 4,337 | VA (Non-Urban) = 1,793 | Construction Districts = 396 to 1,663

6.3.2: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (SATISFACTION):** RIDING IN A PERSONAL CAR

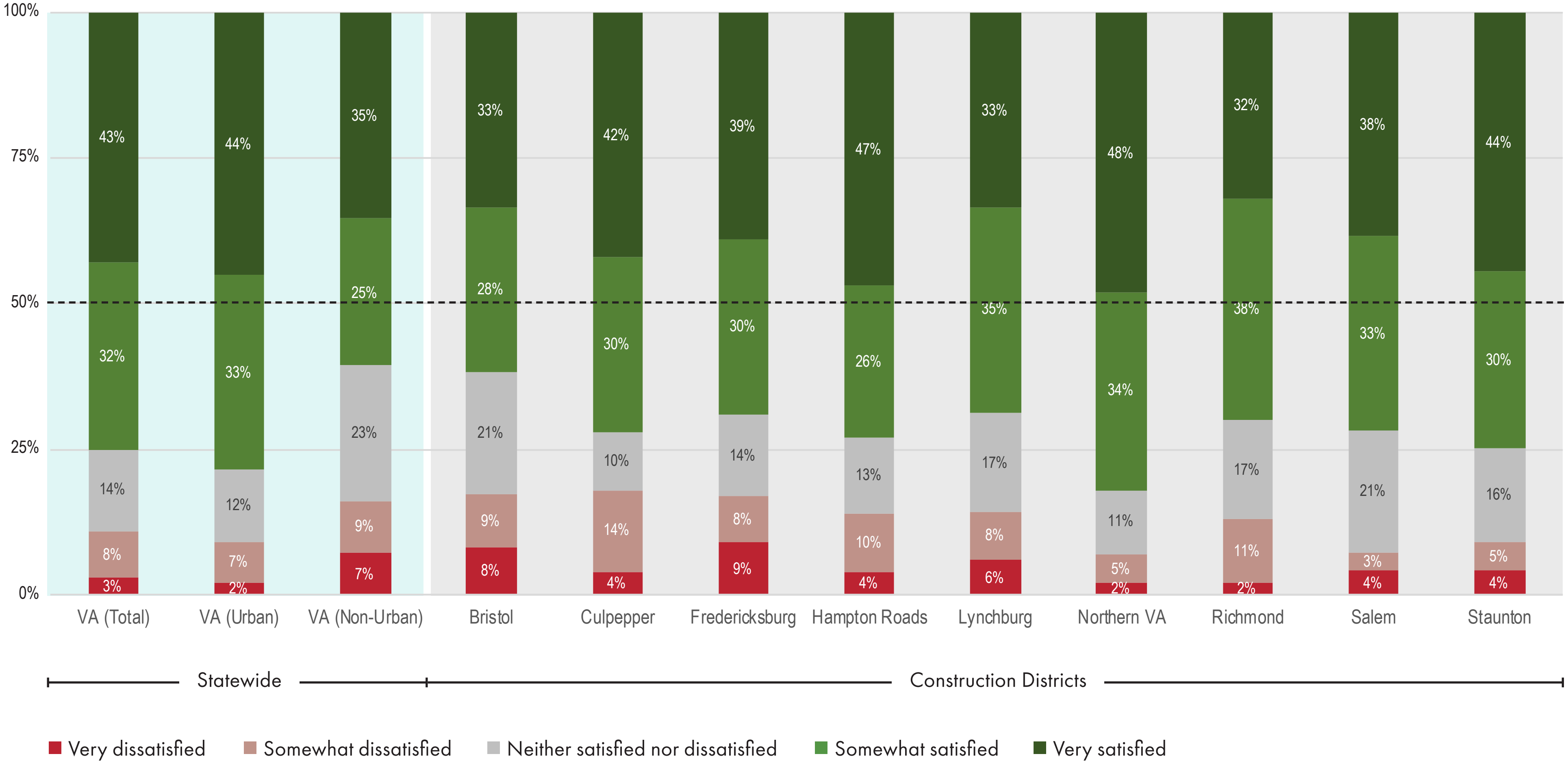
More than 8 in 10 residents who ride in a personal car with a friend or family member for non-work or school trips (85%) are satisfied with their experience doing so.



Asked of: Full-time residents, 18 or older who have a personal car available and ride in a personal car for non-work/school trips
Margin of Error: VA (Total) = ±1.7 percentage points | VA (Urban) = ±2.1 percentage points | VA (Non-Urban) = ±3.1 percentage points | Construction Districts = ±3.3 to ±6.5 percentage points
Number of valid responses (n-size): VA (Total) = 3,239 | VA (Urban) = 2,266 | VA (Non-Urban) = 973 | Construction Districts = 230 to 871

6.3.3: TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (SATISFACTION): WALKING

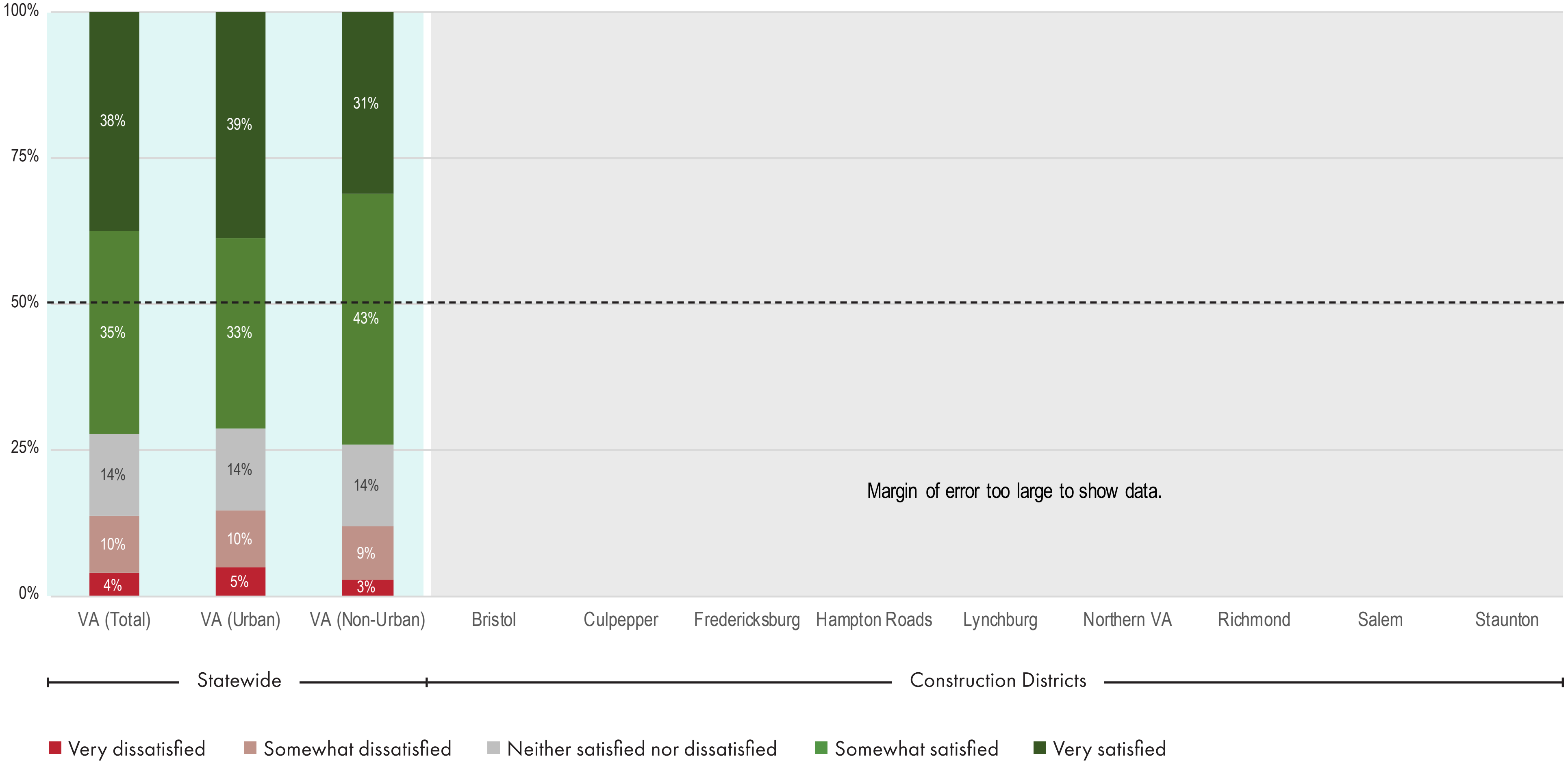
Three-fourths of residents who walk for non-work or school trips (75%) are satisfied with their experience doing so. This is notably higher among those in urban areas, where 78% are satisfied, compared to 60% of those in non-urban areas. Interestingly, this satisfaction is also higher for those with annual incomes higher than $100,000, with 81% satisfied (compared to 68% to 75% satisfied in lower-income cohorts).



Asked of: Full-time residents, 18 or older who have walking available and use walking for non-work/school trips
Margin of Error: VA (Total) = ±1.9 percentage points | VA (Urban) = ±2 percentage points | VA (Non-Urban) = ±4.5 percentage points | Construction Districts = ±3 to ±8.3 percentage points
Number of valid responses (n-size): VA (Total) = 2,801 | VA (Urban) = 2,332 | VA (Non-Urban) = 469 | Construction Districts = 138 to 1,079

6.3.4: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (SATISFACTION):** PERSONAL BICYCLE

Approximately 7 in 10 residents who use a personal bicycle for non-work or school trips (72%) are satisfied with their experience. While availability of a personal bicycle for people of color was lower, satisfaction with using a personal bicycle for non-work trips is higher for people of color (78%) when compared to white residents (68%).

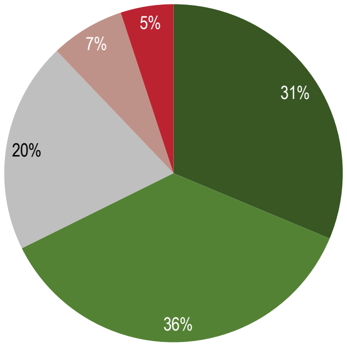


Asked of: Full-time residents, 18 or older who have a personal bicycle available and use a personal bicycle for non-work/school trips
Margin of Error: VA (Total) = ±3 percentage points | VA (Urban) = ±3.3 percentage points | VA (Non-Urban) = ±7.2 percentage points
Number of valid responses (n-size): VA (Total) = 1,054 | VA (Urban) = 868 | VA (Non-Urban) = 186

6.3.5–6.3.10: **TRAVEL TO NON-WORK/NON-SCHOOL DESTINATIONS (SATISFACTION):** OTHER MODES OF TRAVEL (VA TOTAL)

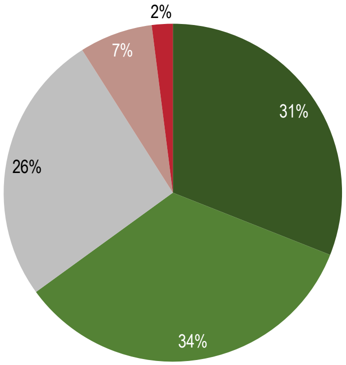
For a number of additional modes, satisfaction among full-time residents who use each mode is high (61% to 79% satisfied). Among those who have annual incomes of less than $35,500, satisfaction with public transportation for non-work trips is highest (compared to 64% to 65% of higher income cohorts).

6.3.5: City Bus, Subway, Commuter Rail, Light Rail, or Ferry



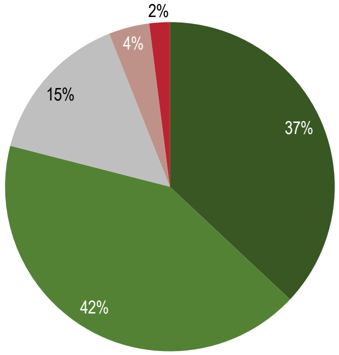
Margin of Error: VA (Total) = ±4.5 percentage points
Number of valid responses (n-size): VA (Total) = 481

6.3.6: Taxi



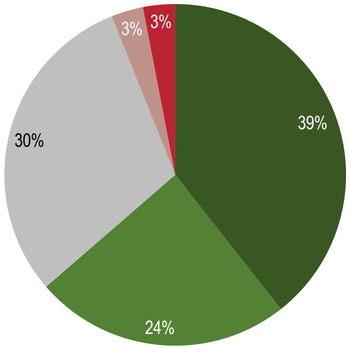
Margin of Error: VA (Total) = ±6.8 percentage points
Number of valid responses (n-size): VA (Total) = 206

6.3.7: Rideshare Services



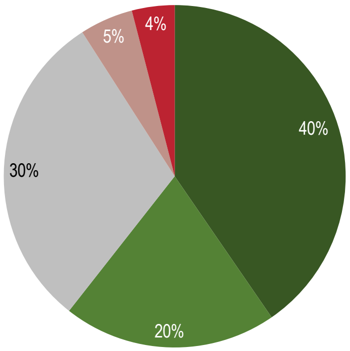
Margin of Error: VA (Total) = ±4.1 percentage points
Number of valid responses (n-size): VA (Total) = 581

6.3.8: Carpools or Vanpools



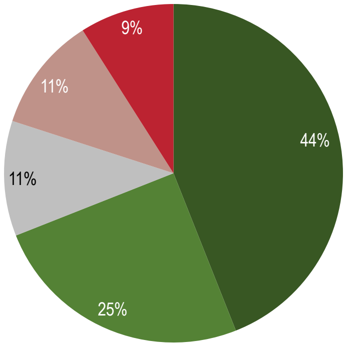
Margin of Error: VA (Total) = ±8 percentage points
Number of valid responses (n-size): VA (Total) = 149

6.3.9: Scooter-share



Margin of Error: VA (Total) = ±10.1 percentage points
Number of valid responses (n-size): VA (Total) = 95

6.3.10: E-bike



Margin of Error: VA (Total) = ±9 percentage points
Number of valid responses (n-size): VA (Total) = 119

■ Very dissatisfied ■ Somewhat dissatisfied ■ Neither satisfied nor dissatisfied ■ Somewhat satisfied ■ Very satisfied

Asked of: Full-time residents, 18 or older who have other modes of travel available and use other modes of travel for non-work/school trips

APPENDIX 1:
SURVEY METHODOLOGY AND SAMPLING PLAN

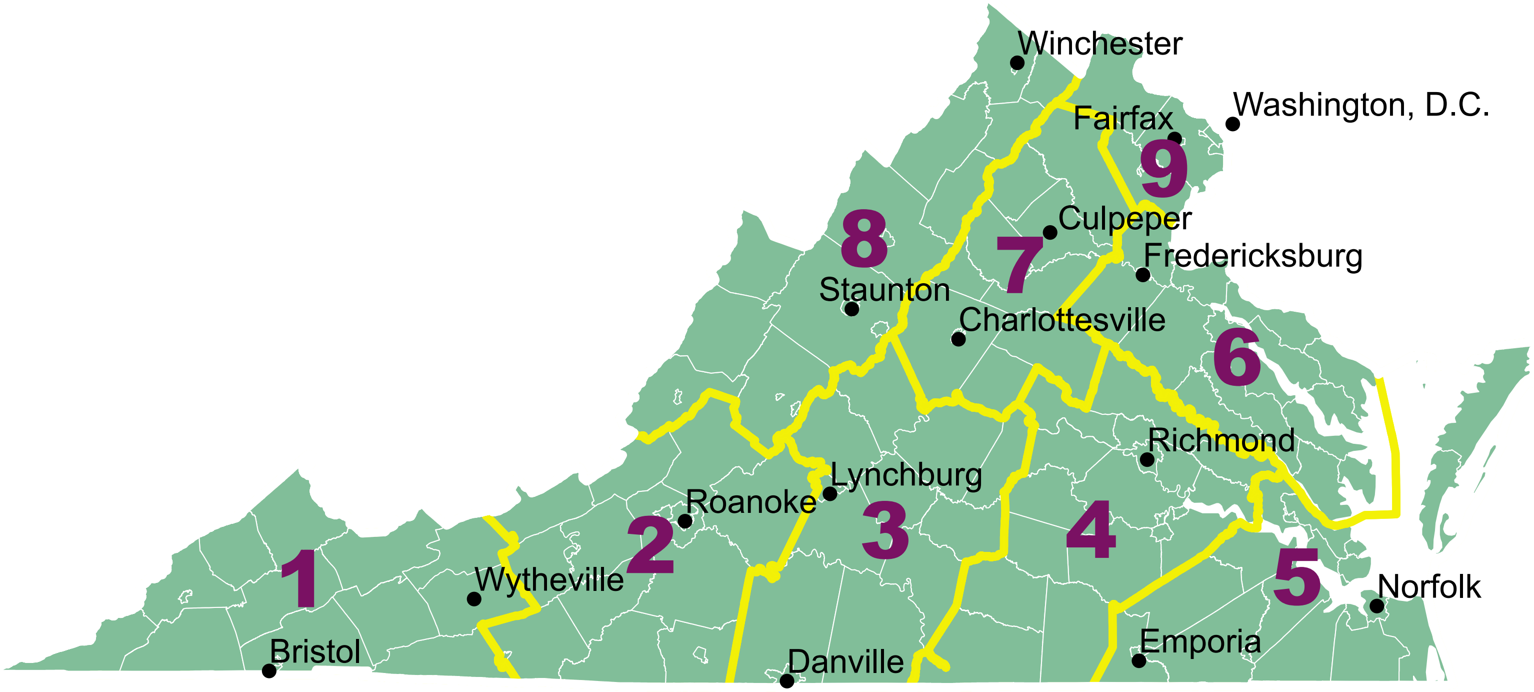
According to the National Institute of Standards and Technology (NIST),[1] "A sampling plan is a detailed outline of which measurements will be taken at what times, on which material, in what manner, and by whom. Sampling plans should be designed in such a way that the resulting data will contain a representative sample of the parameters of interest and allow for all questions, as stated in the goals, to be answered."

Sampling Frame or Regions

The Virginia Department of Transportation (VDOT) divides the state into nine districts, each of which oversees the maintenance and construction of the state-maintained highways, bridges, and tunnels. These Construction Districts are also used to distribute funds and other administrative purposes.

These established nine VDOT Construction Districts are used to randomly draw addresses to collect survey responses that meet predetermined criteria. Each Construction District is divided into urban areas, as designated by the United States Census, and the non-urban regions outside the Census-designated urbanized areas. Urban and non-urban areas within each region will be sampled and, in some cases, oversampled. The intent is to collect opinions representing each of the nine Construction Districts (Figure 1-1). This method of sampling is often referred to as stratified random sampling.

Figure 1-1: Sampling Frame or Regions


Winchester
Washington, D.C.
Fairfax
9
8
Culpeper
7
Fredericksburg
Staunton
Charlottesville
6
Richmond
Lynchburg
Roanoke
3
2
4
1
Wytheville
5
Norfolk
Emporia
Bristol
Danville

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[1] Source: https://www.itl.nist.gov/div898/handbook/ppc/section3/ppc33.htm

Sampling Type

The sample is drawn using an address-based sampling (ABS) method. Then, a combination of landline, cell phone, and online media are used to collect the data. The following steps are used:

- **Draw sample:** A random sample of residential addresses is pulled from each of the nine Construction Districts defined in the sampling frame (Section 2.1).
- **Send invitation letters:** At the outset of the survey planning effort, a response rate of 3 percent is assumed. Approximately 132,000 invitations are sent in two batches, referred to as the first mailing and the second mailing. Additionally, a reminder mailing was also conducted.
  - **First Mailing:** a random sample of 66,220 households was mailed the invitation to participate.
  - **Second mailing:** a random sample of 66,182 households are mailed the invitation to participate. Note that this is exclusive from the initial set of 66,220 households who already received the first mailing.
  - **Third mailing:** An an additional mailing (third mailing) was sent to non-urban areas in Hampton Roads, Richmond, and Northern Virginia because of the lower than desired response rate.
  - **Reminder mailing:** To increase the response rate, reminder invitations are sent to non-responders.

  Each randomly selected household received a letter in two languages: English (Appendix 4 for Versions A and B, respectively), and Spanish (Appendix 5 for Versions A and B, respectively), or Chinese (Appendix 6 for Versions A and B, respectively) based on the more common language in a given household's Census Block Group. Each residential address is sent an enveloped letter introducing the Survey and explaining the three options in which residents over age 18 can participate. Both versions of reminders, similar to the initial mailings, are also sent in two of the following languages: English (Appendix 7 for Versions A and B, respectively), Spanish (Appendix 8 for Versions A and B, respectively), or Simplified Chinese (Appendix 9 for Versions A and B, respectively). Selection between Spanish and Simplified Chinese is based on the more common language in a given household's Census Block Group.
- **Data Collection Methods**
  - **Online:** A recipient household member over age 18 is requested to complete the Survey online at https://www.vtrans.org/survey.[1] Each letter contains a website address linking to the online Survey and a unique password to access the Survey. Upon entering the unique password from their invitation letter, respondents will access the questionnaire. The questionnaire is programmed and hosted in Forsta software. The respondents are initially asked to select their preferred language to complete the Survey.
  - **Call to schedule:** A recipient household member over age 18 can call a toll-free telephone number, where they will be asked to leave a message providing their name, telephone number, and a time when they can be reached.
  - **Receive a call:** For each address with an accompanying telephone number, that household is informed that they may receive a call asking them to participate. Approximately 1 week after letters are mailed to residential addresses, the outbound calls are made, activating all data collection methods. This allows respondents to complete the Survey online first. When outbound calling begins, only those who have not yet completed the Survey are called.
- **Survey languages:** The Survey is made available in three languages: English, Spanish, and Simplified Chinese.

A web page on the VTrans website (www.vtrans.org/vision/opinion-survey) is used to share frequently asked questions and to provide other helpful information about the Survey.

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[1] The web page was discontinued after October 3, 2022.

Required Number of Completed Surveys

The required number of completed surveys is determined using the following criteria:

1. A minimum of 300 surveys is required for each geographic unit, i.e., VDOT Construction Districts. This results in a minimum of 2,700 surveys for the entire state (nine VDOT Construction Districts x 300 units = 2,700 surveys).
2. The minimum number of completed surveys, 2,700, is then distributed across nine VDOT Construction Districts based on the number of households (Table 1-1).[1]

Table 1-1: Minimum Number of Required Surveys Proportionately Distributed Across VDOT Construction Districts

VDOT Construction District	Households		Number of Surveys per VDOT Construction District
	Number	District Share of the Total State	
Bristol	139,076	4%	118
Culpeper	156,978	5%	133
Fredericksburg	184,066	6%	156
Hampton Roads	664,805	21%	564
Lynchburg	157,013	5%	133
Northern Virginia	887,314	28%	752
Richmond	503,549	16%	427
Salem	277,638	9%	235
Staunton	213,682	7%	181
Total	**3,184,121**	**100%**	**2,700**

3. However, a proportional distribution based on the number of households[2] results in less than 300 surveys for six of the nine Construction Districts. The minimum number of required surveys in each VDOT Construction District was increased to 300, resulting in a statewide total of 3,543 (Table 1-2).

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[1] Appendix N: Calculations to Determine Sample Size

[2] 2020 household data at the Census Block Group level were obtained from the United States Census Bureau (2016– 2020). American Community Survey: ACS 5-Year Estimates Detailed Tables retrieved from hts://data.census.gov/cedsci/ table?q=Household%20Size%20and%20Type&g=0400000US51%241500000&d=ACS%205-Year%20Estimates%20 Detailed%20Tables&tid=ACSDT5Y2020.B11001

Table 1-2: Minimum Number of Required Surveys by VDOT Construction Districts[a]

VDOT Construction District	Number of Required Surveys	
	Original (From Table 1-1)	Revised (Minimum 300)
Bristol	118	300
Culpeper	133	300
Fredericksburg	156	300
Hampton Roads	564	564
Lynchburg	133	300
Northern Virginia	752	752
Richmond	427	427
Salem	235	300
Staunton	181	300
Total	**2,700**	**3,543**

[a] The highlighted cells indicate an increase to ensure a minimum of 300 surveys for each VDOT Construction District.

4. The revised number of surveys for each VDOT Construction District is proportionately distributed between urban and non-urban areas (Table 1-3) within that area based on the number of households.[1]

Table 1-3: Revised Number of Completed Surveys Distributed between Urban and Non-Urban Areas Within each Construction District

VDOT Construction District	Number of Required Surveys (From Table 1-2)	Share of Total Construction District Households		Number of Required Surveys by Area Type	
		Urban	Non-Urban	Urban	Non-Urban
Bristol	300	17.18%	82.82%	52	248
Culpeper	300	37.57%	62.43%	113	187
Fredericksburg	300	41.00%	59.00%	123	177
Hampton Roads	564	80.30%	19.70%	453	111
Lynchburg	300	37.12%	62.88%	111	189
Northern Virginia	752	93.51%	6.49%	704	48
Richmond	427	74.12%	25.88%	316	110
Salem	300	49.72%	50.28%	149	151
Staunton	300	41.24%	58.76%	124	176
Total	**3,543**			**2,145**	**1,391**

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[1] Refer to Appendix N: Calculations to Determine Sample Size for more details.

5. Finally, for urban and non-urban areas, the minimum number of required surveys was increased to 100 to ensure the desired margin of error resulting in a statewide total of 3,642.

Table 1-4: Final Number of Required Surveys by Area Type and Construction District[b]

VDOT Construction District	Number of Required Surveys		Adjusted Number of Required Surveys
	Urban	Non-Urban	
Bristol	100	248	348
Culpeper	113	187	300
Fredericksburg	123	177	300
Hampton Roads	453	111	564
Lynchburg	111	189	300
Northern Virginia	704	100	804
Richmond	316	110	426
Salem	149	151	300
Staunton	124	176	300
Total	**2,193**	**1,449**	**3,642**

[b] The highlighted cells indicate an increase to ensure a minimum number of required surveys of 100 for urban or non-urban areas.

6. Finally, in addition to regional (i.e., VDOT Construction Districts) and urban/non-urban subgroups, another subgroup of interest is transit users. At least 200 to 300 completed surveys of transit users will be conducted.

APPENDIX 2:
DATA COLLECTION

Testing Questionnaire

The pretest's primary purpose is to validate the wording and flow of all questions. In addition, the survey invitation and any other materials used during the Survey are also tested. Secondarily, the pretest is an opportunity to ensure the quality of Spanish and Chinese translations and to understand any adjustments needed by speaking with those fluent in these other languages.

Pretest interviews were conducted with 18 participants throughout the Commonwealth through one-on-one pretest interviews with two participants each in Spanish and Simplified Chinese. Participants were recruited by a professional focus group facility to encourage. To encourage participation, participants were paid $40 for their time. Pretest participants took the Survey online and then participated in a follow-up in-depth interview.

During the interview, answers to specific questions are reviewed to understand why a respondent answered the way they did and if there are any questions they misunderstood. Possible invitations, including outbound envelopes, were also examined to help determine the most compelling invitation.

Feedback from the pretesting sessions was collected, and the questionnaire was edited to create the final Survey.

This pretest was conducted from May 31 to June 15, 2022.

Data Collection

Data collection began on July 29. On July 29, the first mailing was sent out, with the second mailing following closely on August 15, 2022. The third mailing and reminders were mailed on September 9, 2022. The survey remained active online and over the phone through October 3, 2022.

In total, 7,146 complete surveys were fielded (Table 2-1), providing a response rate of 5.1% (Table 2-2). This includes 28 Spanish surveys and 17 Simplified Chinese surveys. A total of 6,817 surveys were completed online and 329 were completed using phone calls (Table 2-3).

Table 2-1: Number of Surveys

VDOT Construction District	1st Mailing		2nd Mailing		3rd Mailing		Completed Surveys			Required Number of Surveys (Goal)	
	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban	Total	Urban	Non-Urban
Bristol	1,908	4,418	1,908	4,415	0	0	167	390	557	100	248
Culpeper	2,637	2,635	3,000	2,634	0	0	342	278	620	113	187
Fredericksburg	2,497	2,959	2,494	2,957	0	0	253	296	549	123	177
Hampton Roads	9,425	829	9,423	827	2,259	0	913	98	1,011	453	111
Lynchburg	2,377	3,260	2,375	2,894	0	0	208	269	477	111	189
Northern Virginia	14,143	475	14,140	472	3,677	0	1,858	85	1,943	704	100
Richmond	6,580	1,166	6,578	1,163	1,442	0	683	158	841	316	110
Salem	3,159	2,297	3,157	2,294	0	0	348	231	579	149	151
Staunton	2,917	2,538	2,915	2,536	0	0	307	262	569	124	176
Total	**45,643**	**20,577**	**45,990**	**20,192**	**7,378**	**0**	**5,079**	**2,067**	**7,146**	**2,193**	**1,449**

Table 2-2: Response Rate

VDOT Construction District	Response Rate		
	Urban	Non-Urban	Total
Bristol	4.4%	4.4%	4.4%
Culpeper	6.1%	5.3%	5.7%
Fredericksburg	5.1%	5.0%	5.0%
Hampton Roads	4.3%	5.9%	4.4%
Lynchburg	4.4%	4.4%	4.4%
Northern Virginia	5.8%	9.0%	5.9%
Richmond	4.7%	6.8%	5.0%
Salem	5.5%	5.0%	5.3%
Staunton	5.3%	5.2%	5.2%
Total	**5.1%**	**5.1%**	**5.1%**

Table 2-3: Survey Source

VDOT Construction District	Survey Source		
	Telephone	Online	Total
Bristol	45	512	557
Culpeper	31	589	620
Fredericksburg	46	503	549
Hampton Roads	29	982	1011
Lynchburg	35	442	477
Northern Virginia	21	1,922	1,943
Richmond	74	767	841
Salem	24	555	579
Staunton	24	545	569
Total	**329**	**6,817**	**7,146**

APPENDIX 3:
DATA ANALYSIS

Data Weights

The data gathered in each region are "smoothed" (i.e., weighted) to reflect the population of residents 18 years of age and older using the following process:

1. First, for each sampling region, the total population of those 18 or older is determined from the 2020 Census and 2021 American Community Survey data. Please refer to Appendix 18 for more details.
2. Each region's population relative to the total population of residents 18 years of age or older in Virginia is determined using the 2020 Census data for urban and non-urban areas, creating subregions within each region, for a total of 18 subregions.
3. The target number of residents for each subregion is calculated by multiplying the number of completed surveys from each subregion by each subregion's proportion of the population.
4. Finally, the weights are calculated by dividing each subregion's target by the number of residents.

The data are also "smoothed" or weighted to reflect socioeconomic or demographic characteristics. For example, if the demographic results of the Survey are significantly different (i.e., more than one standard deviation) from the actual demographics of each region, then weighting is considered.

The variables that are examined include age, race/ethnicity, household income, gender, and employment status. Random Iterative Method (RIM) weighting ensures that the weights result in a representative sample. One variable (e.g., age) is used to calculate the initial weight, then that weight is adjusted by a second variable so that the total sample is equal proportionately to each of the first two variables. This process is then repeated one by one for each of the subsequent variables so that the total sample is within an acceptable range of the correct proportion for each variable.

Weighting Procedure

This section discusses weighting or "smoothing" of the data to represent the population of Virginia residents 18 years of age or older more accurately. What follows is the procedure used to weight the Biennial Survey data.

1. The survey questions to be used in the weighting process were identified. These questions are outlined in Table 3-1.

Table 3-1: Biennial Survey Questions used in weighting process

Question Number	Question Text
D3	What is your age?
D4	Are you of Hispanic, Latino, or Spanish origin?
D5	Please choose one or more races you consider yourself to be.
D8	How much did all members of your household earn in income last year? Your total household income is for all people in the household from jobs, businesses, farms, rent, social security, etc.

2. Any survey responses that do not have an answer for at least one of the questions from Step 1 were identified and removed. Each question included the response "Prefer not to respond" and/or "Don't know" in the response list. Surveys that have a "Prefer not to respond" and/or "Don't know" response to all four questions cannot be weighted. The number of surveys collected and the number of surveys that could be weighted are shown in Table 3-2. In total, 238 respondents did not meet the criteria to be weighted and therefore were removed from the dataset.

Table 3-2: Number of survey responses

Construction District	Survey Responses Collected	Number of Survey Responses Removed	Usable Survey Responses
Bristol	568	11	557
Culpeper	639	18	621
Fredericksburg	570	21	549
Hampton Roads	1,049	38	1,011
Lynchburg	490	13	477
Northern Virginia	2,032	89	1,943
Richmond	864	24	840
Salem	585	7	578
Staunton	587	17	570
Total	7,384	238	7,146

3. Values for missing data were imputed. In Step 2, those who responded with "Prefer not to respond" or "Don't know" to all four questions were removed. In this step a missing value imputation process was applied to the remaining surveys – those with a missing response to one, two, or three of the questions used for weighting. Using IBM SPSS Statistics software,[1] linear and logistic regression models were applied to impute values for the missing data.[2]

4. The response categories for each Survey question were aligned with those used in the Census data (Appendix O). Survey questions D4 and D5 on the survey had more response categories than the Census. For these questions, the additional response categories were combined (or "netted') together with similar categories from the Census so that they matched the census data cohorts. Survey question D8 had some categories that match those of the Census while there are others that needed to be netted together to create a comparable category. Tables 3-3, 3-4, and 3-5 show how each response category matched to the Census and the new "aligned" response category. No changes were needed for question D3.

---

[1] A discussion of how this process is conducted in IBM SPSS Statistics can be found here https://www.ibm.com/docs/en/SSLVMB_28.0.0/pdf/IBM_SPSS_Missing_Values.pdf

[2] For D8, the response categories were converted to the mid-point of the range and treated as continuous data in the imputation process. Therefore, the procedure focused on keeping the mean of the income question consistent instead of the distribution of the response categories.

Table 3-3: Question D4 response category alignment

Survey Response	Census Cohort	Aligned Response
No; Not of Hispanic, Latino, or Spanish Origin	Not Hispanic	Not Hispanic
Yes; Mexican, Mexican American, Chicano Yes; Puerto Rican Yes; Cuban Yes, Colombian Yes, Dominican Yes, Ecuadorian Yes, El Salvadoran Yes, Panamanian Yes, Spaniard Yes, Honduran Yes, Peruvian Yes, Nicaraguan Yes, Argentinian Yes, Guatemalan Yes, Bolivian Yes, Uruguayan Yes, another Hispanic, Latino, or Spanish origin (e.g., Salvadoran, Dominican, Colombian, Guatemalan, Spaniard, Ecuadorian)	Hispanic	Hispanic
Prefer not to respond	N/A	Prefer not to respond

Table 3-4: Question D5 response category alignment

Survey Response	Census Cohort	Aligned Response
White/Caucasian	White	White
Black/African American	Black and African American	Black and African American
Asian	Asian	Asian
Pacific Islander	Native Hawaiian and Other Pacific Islander	Native Hawaiian and Other Pacific Islander
Native American	American Indian and Alaska Native	American Indian and Alaska Native
Multiracial	Two or More Races	Two or More Races
Middle Eastern Hispanic/Latino Something else	Some Other Race	Some Other Race
Prefer not to respond	N/A	Prefer not to respond

Table 3-5: Question D8 response category alignment

Survey Response	Census Cohort	Aligned Response
Less than $13,000 $13,000 to $17,499 $17,500 to $26,499 $26,500 to $30,999 $31,000 to $35,499	Less than $10,000 $10,000 to $14,999 $15,000 to $19,999 $20,000 to $24,999 $20,000 to $24,999 $25,000 to $29,999 $30,000 to $34,999	Less than $35,499[3]
$35,500 to $49,999	$35,000 to $39,999 $40,000 to $44,999 $45,000 to $49,999	$35,500 to $49,999
$50,000 to $74,999	$50,000 to $59,999 $60,000 to $74,999	$50,000 to $74,999
$75,000 to $99,999	$75,000 to $99,999	$75,000 to $99,999
$100,000 to $124,999	$100,000 to $124,999	$100,000 to $124,999
$125,000 to $149,999	$125,000 to $149,999	$125,000 to $149,999
$150,000 to $199,999	$150,000 to $199,999	$150,000 to $199,999
$200,000 or more	$200,000 or more	$200,000 or more
Prefer not to respond Don't know	N/A	Not combined

5. The data was weighted. Section 4.1 gives a brief description of Random Iterative Method (RIM) weighting and how it has been applied to the Biennial Survey data. The four demographic questions discussed above were used to create a weight for each survey response within each Construction District by urban and non-urban areas. For example, weights were created for each response from those residing in an urban area of the Bristol Construction District. Then weights were created for those living in a non-urban area of the Bristol Construction District and so on until the process is completed for each Construction District.

   RIM weighting requires a "target" percentage for the response to each question used in the weighting process.[4] For the Biennial Survey, the percentages found in the Census data in Appendix O were used. Specifically, the household population statistics were used because the sample was initially drawn based on households. The responses belonging to the individual who responded to the survey were designated as the household's response. Additionally, targets were set using the aligned responses from Tables 3-3, 3-4, and 3-5.

   Because not every possible race response in every urban/non-urban area of every Construction District was found in the respondent data, the targets from the Census data needed to be recalculated for race after excluding any response category not found in the data.

---

[3] While $49,999 could have been a natural point for combining responses, doing so would have resulted in the loss of the ability to look at a lower income group that has been weighted to represent the population. Therefore, it was decided to use a lower income break where the difference between the survey and census categories was relatively small ($500).

[4] A discussion of the statistical methods used by Wincross software in RIM can be found here https://www.analyticalgroup.com/download/sambal.pdf.

As an example, Tables 3-6, 3-7, and 3-8 below show the Census data, unweighted Survey responses, and weighted Survey responses for urban areas of the Bristol Construction District. In Table 3-8, the Census data shows a small number of Asian residents; however, none of the respondents from that region selected that response. Therefore, the weighted response reflects the distribution of responses excluding Asians.

Table 3-6 Age/D3 in Bristol Urban Households

	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 or older	Total
Census	10.08%	15.14%	15.00%	14.71%	17.26%	14.63%	13.29%	100%
Unweighted Survey response	5.39%	14.37%	18.56%	19.16%	13.77%	19.16%	9.58%	100%
Weighted Survey response	10.08%	15.14%	15.00%	14.71%	17.16%	14.63%	13.28%	100%

Table 3-7 Ethnicity/D4 in Bristol Urban Households

	Not Hispanic	Hispanic	Total
Census	98.63%	1.37%	100%
Unweighted Survey response	100%	0%	100%
Weighted Survey response	100%	0%	100%

Table 3-8 Race/D5 in Bristol Urban Households

	White Alone	Black and African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Total
Census	93.01%	5.03%	0.03%	0.75%	0.02%	0.04%	1.12%	100%
Unweighted Survey response	95.81%	3.59%	0.00%	0.00%	0.60%	0.00%	0.00%	100%
Weighted Survey response	94.85%	5.13%	0.00%	0.00%	0.02%	0.00%	0.00%	100%

Table 3-9 Household Income/D8 in Bristol Urban Households

	Less than $34,999	$35,000 to $49,999	$50,000 to $74,999	$75,000 to $99,999	$100,000 to $124,999	$125,000 to $149,999	$150,000 to $199,999	More than $200,000	Total
Census	44.00%	14.78%	17.19%	9.52%	5.43%	2.73%	3.73%	2.63%	100%
Unweighted Survey response	35.33%	11.38%	13.77%	11.38%	13.17%	8.98%	2.99%	2.99%	100%
Weighted Survey response	44.00%	14.78%	17.19%	9.52%	5.43%	2.73%	3.73%	2.63%	100%

APPENDIX 4:

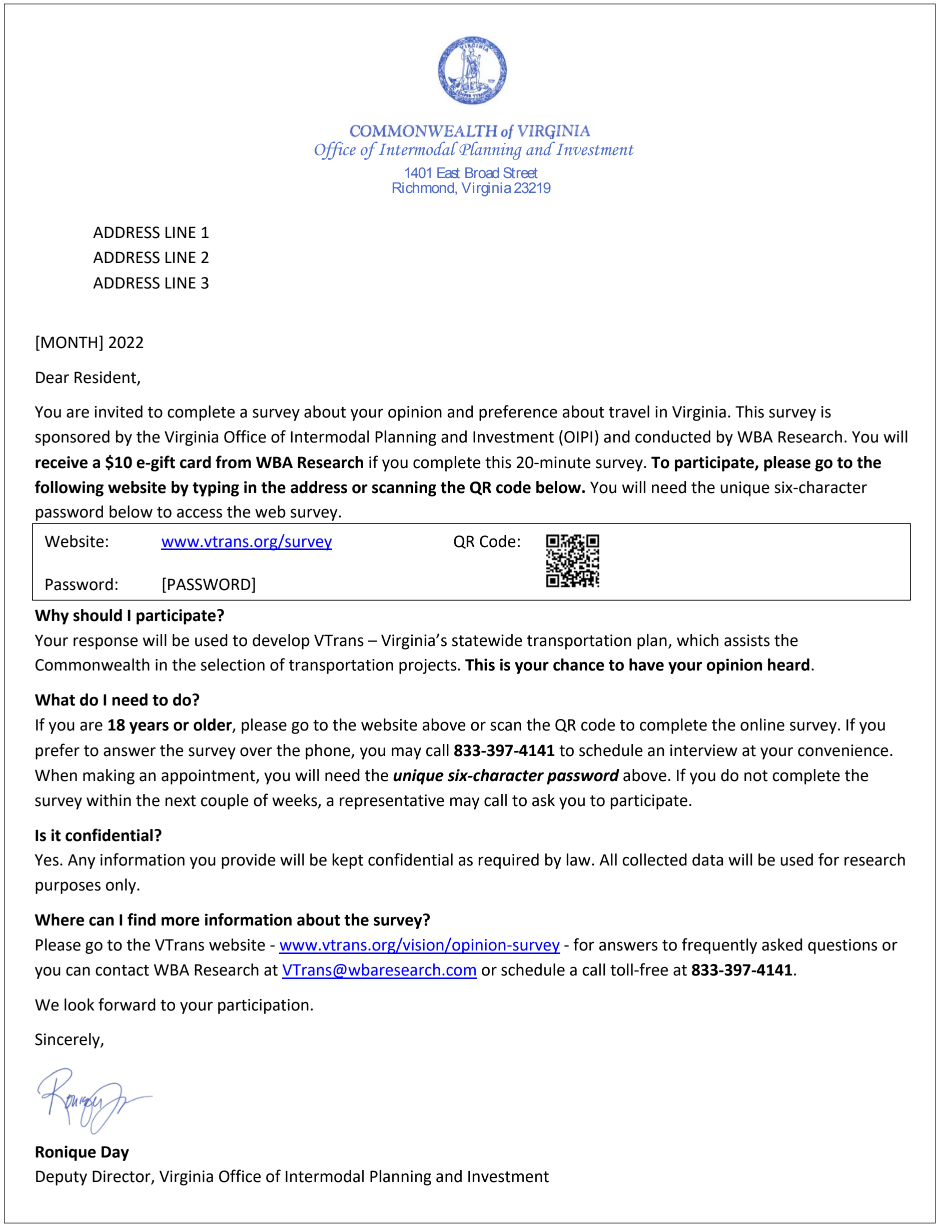
INVITATION LETTER ENGLISH VERSION A

(WHERE A PHONE NUMBER ASSOCiATED WITH THE ADDRESS IS AVAILABLE)

INVITATION LETTER ENGLISH VERSION B

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

Invitation Letter English Version A



COMMONWEALTH *of* VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

ADDRESS LINE 1
ADDRESS LINE 2
ADDRESS LINE 3

[MONTH] 2022

Dear Resident,

You are invited to complete a survey about your opinion and preference about travel in Virginia. This survey is sponsored by the Virginia Office of Intermodal Planning and Investment (OIPI) and conducted by WBA Research. You will **receive a $10 e-gift card from WBA Research** if you complete this 20-minute survey. **To participate, please go to the following website by typing in the address or scanning the QR code below.** You will need the unique six-character password below to access the web survey.

Website: www.vtrans.org/survey QR Code:
Password: [PASSWORD]

Why should I participate?
Your response will be used to develop VTrans – Virginia's statewide transportation plan, which assists the Commonwealth in the selection of transportation projects. **This is your chance to have your opinion heard**.

What do I need to do?
If you are **18 years or older**, please go to the website above or scan the QR code to complete the online survey. If you prefer to answer the survey over the phone, you may call **833-397-4141** to schedule an interview at your convenience. When making an appointment, you will need the ***unique six-character password*** above. If you do not complete the survey within the next couple of weeks, a representative may call to ask you to participate.

Is it confidential?
Yes. Any information you provide will be kept confidential as required by law. All collected data will be used for research purposes only.

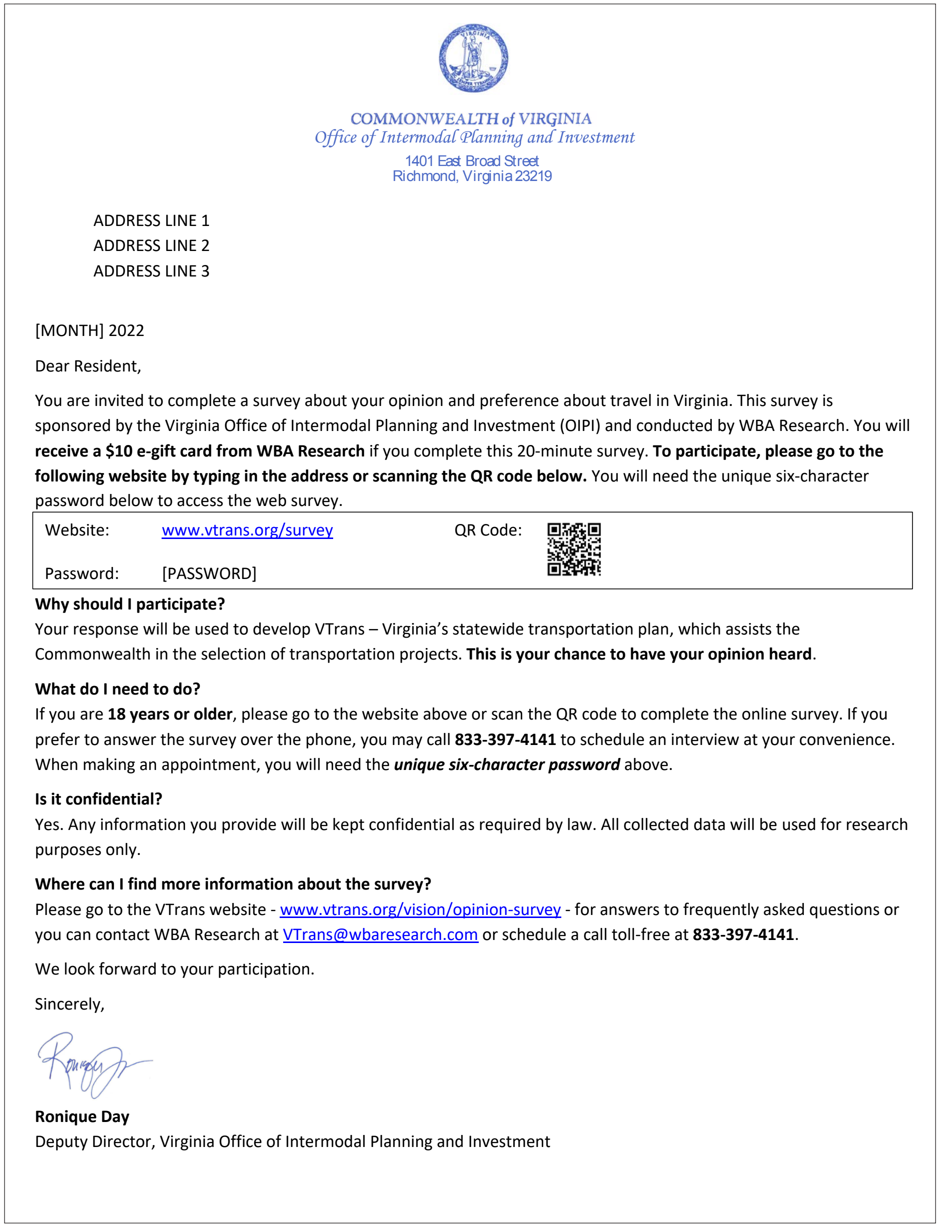
Where can I find more information about the survey?
Please go to the VTrans website - www.vtrans.org/vision/opinion-survey - for answers to frequently asked questions or you can contact WBA Research at VTrans@wbaresearch.com or schedule a call toll-free at **833-397-4141**.

We look forward to your participation.

Sincerely,

Ronique Day
Deputy Director, Virginia Office of Intermodal Planning and Investment

Invitation Letter English Version B



COMMONWEALTH *of* VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

ADDRESS LINE 1
ADDRESS LINE 2
ADDRESS LINE 3

[MONTH] 2022

Dear Resident,

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We look forward to your participation.

Sincerely,

Ronique Day
Deputy Director, Virginia Office of Intermodal Planning and Investment

APPENDIX 5:

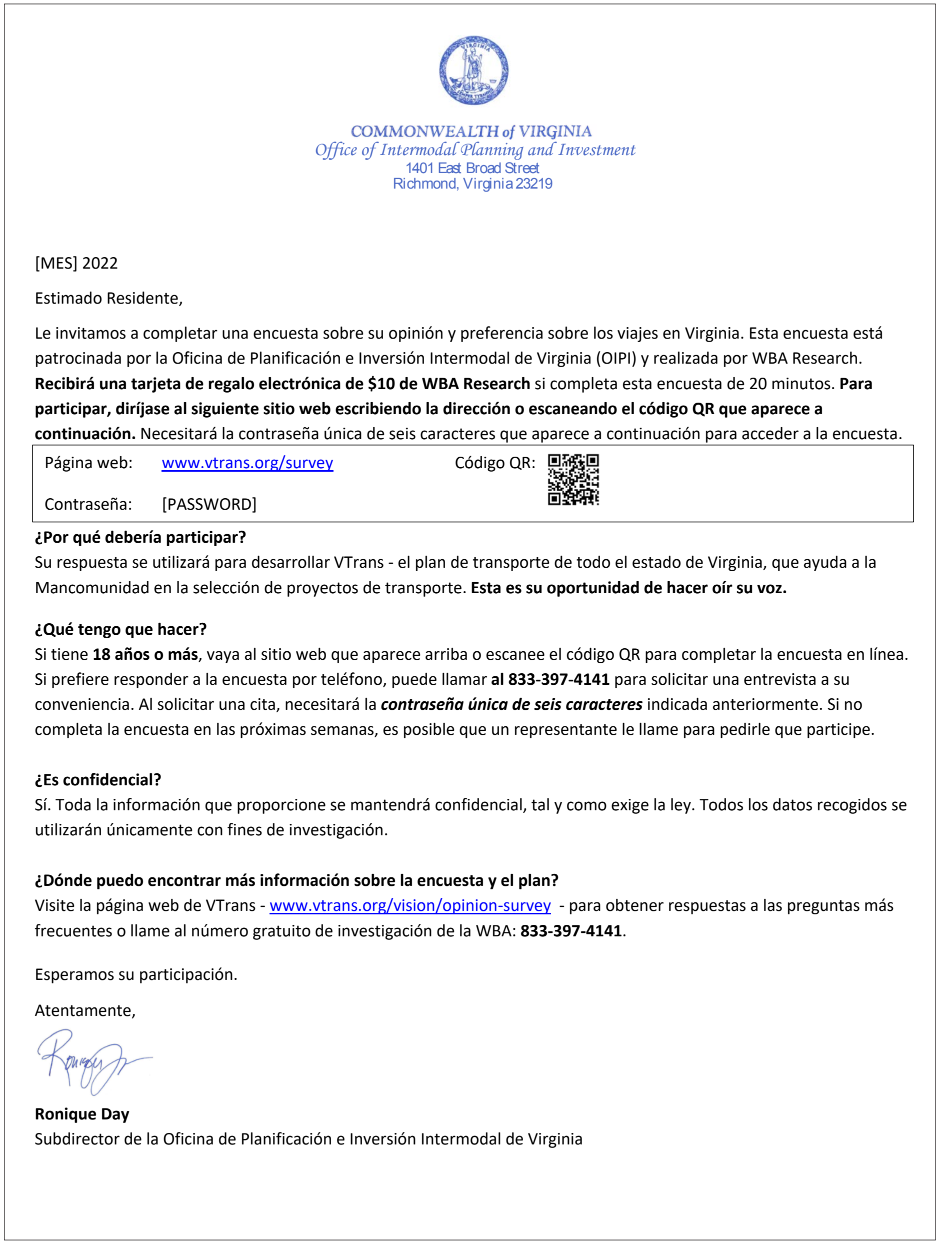
INVITATION LETTER SPANISH VERSION A

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS AVAILABLE)

INVITATION LETTER SPANISH VERSION B

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

Invitation Letter Spanish Version A



COMMONWEALTH *of* VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

[MES] 2022

Estimado Residente,

Le invitamos a completar una encuesta sobre su opinión y preferencia sobre los viajes en Virginia. Esta encuesta está patrocinada por la Oficina de Planificación e Inversión Intermodal de Virginia (OIPI) y realizada por WBA Research. **Recibirá una tarjeta de regalo electrónica de $10 de WBA Research** si completa esta encuesta de 20 minutos. **Para participar, diríjase al siguiente sitio web escribiendo la dirección o escaneando el código QR que aparece a continuación.** Necesitará la contraseña única de seis caracteres que aparece a continuación para acceder a la encuesta.

Página web: www.vtrans.org/survey
Código QR:
Contraseña: [PASSWORD]

¿Por qué debería participar?
Su respuesta se utilizará para desarrollar VTrans - el plan de transporte de todo el estado de Virginia, que ayuda a la Mancomunidad en la selección de proyectos de transporte. **Esta es su oportunidad de hacer oír su voz.**

¿Qué tengo que hacer?
Si tiene **18 años o más**, vaya al sitio web que aparece arriba o escanee el código QR para completar la encuesta en línea. Si prefiere responder a la encuesta por teléfono, puede llamar **al 833-397-4141** para solicitar una entrevista a su conveniencia. Al solicitar una cita, necesitará la ***contraseña única de seis caracteres*** indicada anteriormente. Si no completa la encuesta en las próximas semanas, es posible que un representante le llame para pedirle que participe.

¿Es confidencial?
Sí. Toda la información que proporcione se mantendrá confidencial, tal y como exige la ley. Todos los datos recogidos se utilizarán únicamente con fines de investigación.

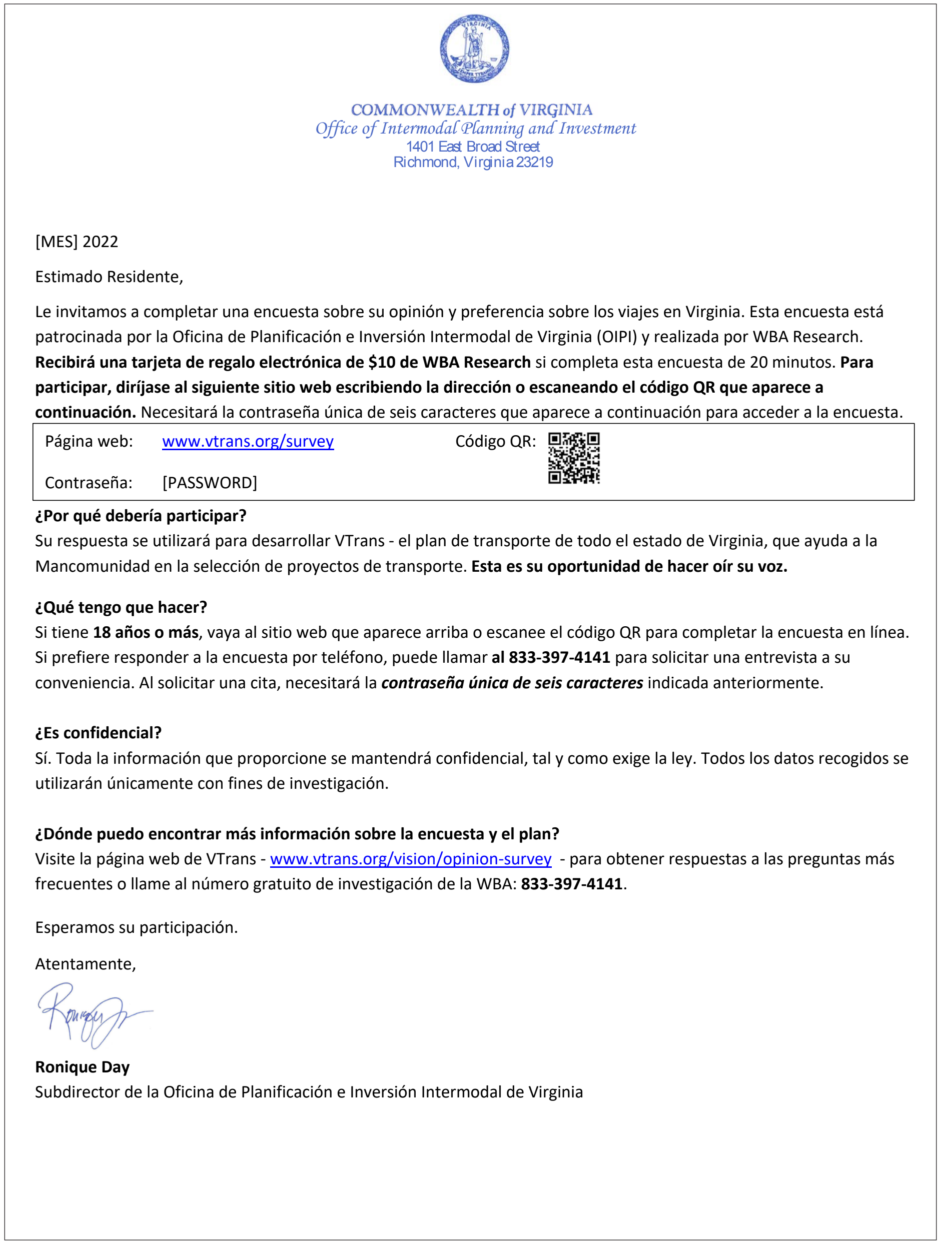
¿Dónde puedo encontrar más información sobre la encuesta y el plan?
Visite la página web de VTrans - www.vtrans.org/vision/opinion-survey - para obtener respuestas a las preguntas más frecuentes o llame al número gratuito de investigación de la WBA: **833-397-4141**.

Esperamos su participación.

Atentamente,

Ronique Day
Subdirector de la Oficina de Planificación e Inversión Intermodal de Virginia

Invitation Letter Spanish Version B



COMMONWEALTH *of* VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

[MES] 2022

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Página web: www.vtrans.org/survey
Código QR:
Contraseña: [PASSWORD]

¿Por qué debería participar?
Su respuesta se utilizará para desarrollar VTrans - el plan de transporte de todo el estado de Virginia, que ayuda a la Mancomunidad en la selección de proyectos de transporte. **Esta es su oportunidad de hacer oír su voz.**

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Si tiene **18 años o más**, vaya al sitio web que aparece arriba o escanee el código QR para completar la encuesta en línea. Si prefiere responder a la encuesta por teléfono, puede llamar **al 833-397-4141** para solicitar una entrevista a su conveniencia. Al solicitar una cita, necesitará la ***contraseña única de seis caracteres*** indicada anteriormente.

¿Es confidencial?
Sí. Toda la información que proporcione se mantendrá confidencial, tal y como exige la ley. Todos los datos recogidos se utilizarán únicamente con fines de investigación.

¿Dónde puedo encontrar más información sobre la encuesta y el plan?
Visite la página web de VTrans - www.vtrans.org/vision/opinion-survey - para obtener respuestas a las preguntas más frecuentes o llame al número gratuito de investigación de la WBA: **833-397-4141**.

Esperamos su participación.

Atentamente,

Ronique Day
Subdirector de la Oficina de Planificación e Inversión Intermodal de Virginia

APPENDIX 6:

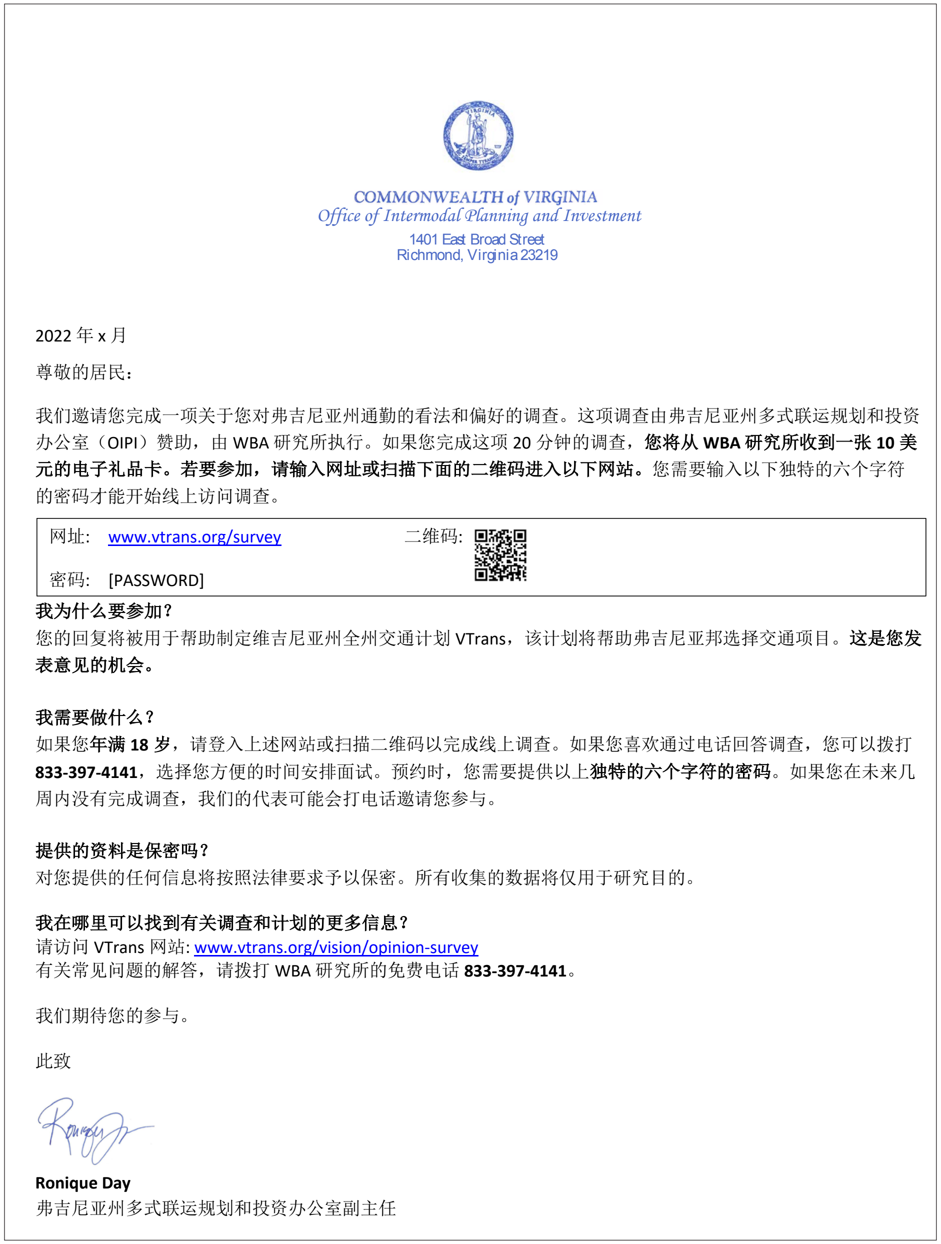
INVITATION LETTER SIMPLIFIED CHINESE VERSION A

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS AVAILABLE)

INVITATION LETTER SIMPLIFIED CHINESE VERSION B

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

Invitation Letter Simplified Chinese Version A



COMMONWEALTH *of* VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

2022 年 x 月

尊敬的居民：

我们邀请您完成一项关于您对弗吉尼亚州通勤的看法和偏好的调查。这项调查由弗吉尼亚州多式联运规划和投资办公室（OIPI）赞助，由 WBA 研究所执行。如果您完成这项 20 分钟的调查，**您将从 WBA 研究所收到一张 10 美元的电子礼品卡。若要参加，请输入网址或扫描下面的二维码进入以下网站。**您需要输入以下独特的六个字符的密码才能开始线上访问调查。

网址： www.vtrans.org/survey　二维码：
密码： [PASSWORD]

我为什么要参加？
您的回复将被用于帮助制定维吉尼亚州全州交通计划 VTrans，该计划将帮助弗吉尼亚邦选择交通项目。**这是您发表意见的机会。**

我需要做什么？
如果您**年满 18 岁**，请登入上述网站或扫描二维码以完成线上调查。如果您喜欢通过电话回答调查，您可以拨打 **833-397-4141**，选择您方便的时间安排面试。预约时，您需要提供以上**独特的六个字符的密码**。如果您在未来几周内没有完成调查，我们的代表可能会打电话邀请您参与。

提供的资料是保密吗？
对您提供的任何信息将按照法律要求予以保密。所有收集的数据将仅用于研究目的。

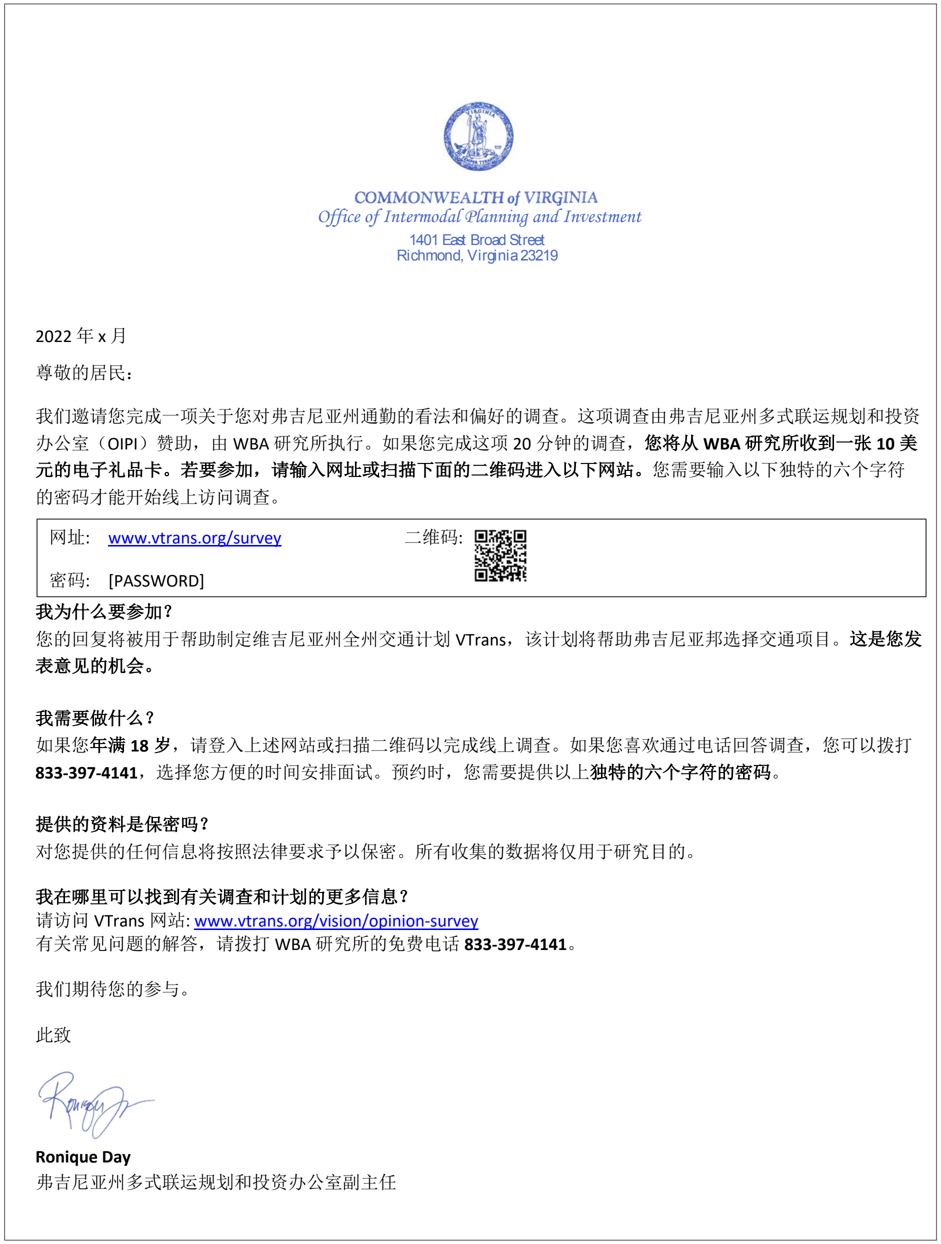
我在哪里可以找到有关调查和计划的更多信息？
请访问 VTrans 网站: www.vtrans.org/vision/opinion-survey
有关常见问题的解答，请拨打 WBA 研究所的免费电话 **833-397-4141**。

我们期待您的参与。

此致

Ronique Day
弗吉尼亚州多式联运规划和投资办公室副主任

Invitation Letter Simplified Chinese Version B



COMMONWEALTH *of* VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

2022 年 x 月

尊敬的居民：

我们邀请您完成一项关于您对弗吉尼亚州通勤的看法和偏好的调查。这项调查由弗吉尼亚州多式联运规划和投资办公室（OIPI）赞助，由 WBA 研究所执行。如果您完成这项 20 分钟的调查，**您将从 WBA 研究所收到一张 10 美元的电子礼品卡。若要参加，请输入网址或扫描下面的二维码进入以下网站。**您需要输入以下独特的六个字符的密码才能开始线上访问调查。

网址： www.vtrans.org/survey　二维码：
密码： [PASSWORD]

我为什么要参加？
您的回复将被用于帮助制定维吉尼亚州全州交通计划 VTrans，该计划将帮助弗吉尼亚邦选择交通项目。**这是您发表意见的机会。**

我需要做什么？
如果您**年满 18 岁**，请登入上述网站或扫描二维码以完成线上调查。如果您喜欢通过电话回答调查，您可以拨打 **833-397-4141**，选择您方便的时间安排面试。预约时，您需要提供以上**独特的六个字符的密码**。

提供的资料是保密吗？
对您提供的任何信息将按照法律要求予以保密。所有收集的数据将仅用于研究目的。

我在哪里可以找到有关调查和计划的更多信息？
请访问 VTrans 网站: www.vtrans.org/vision/opinion-survey
有关常见问题的解答，请拨打 WBA 研究所的免费电话 **833-397-4141**。

我们期待您的参与。

此致

Ronique Day
弗吉尼亚州多式联运规划和投资办公室副主任

APPENDIX 7:

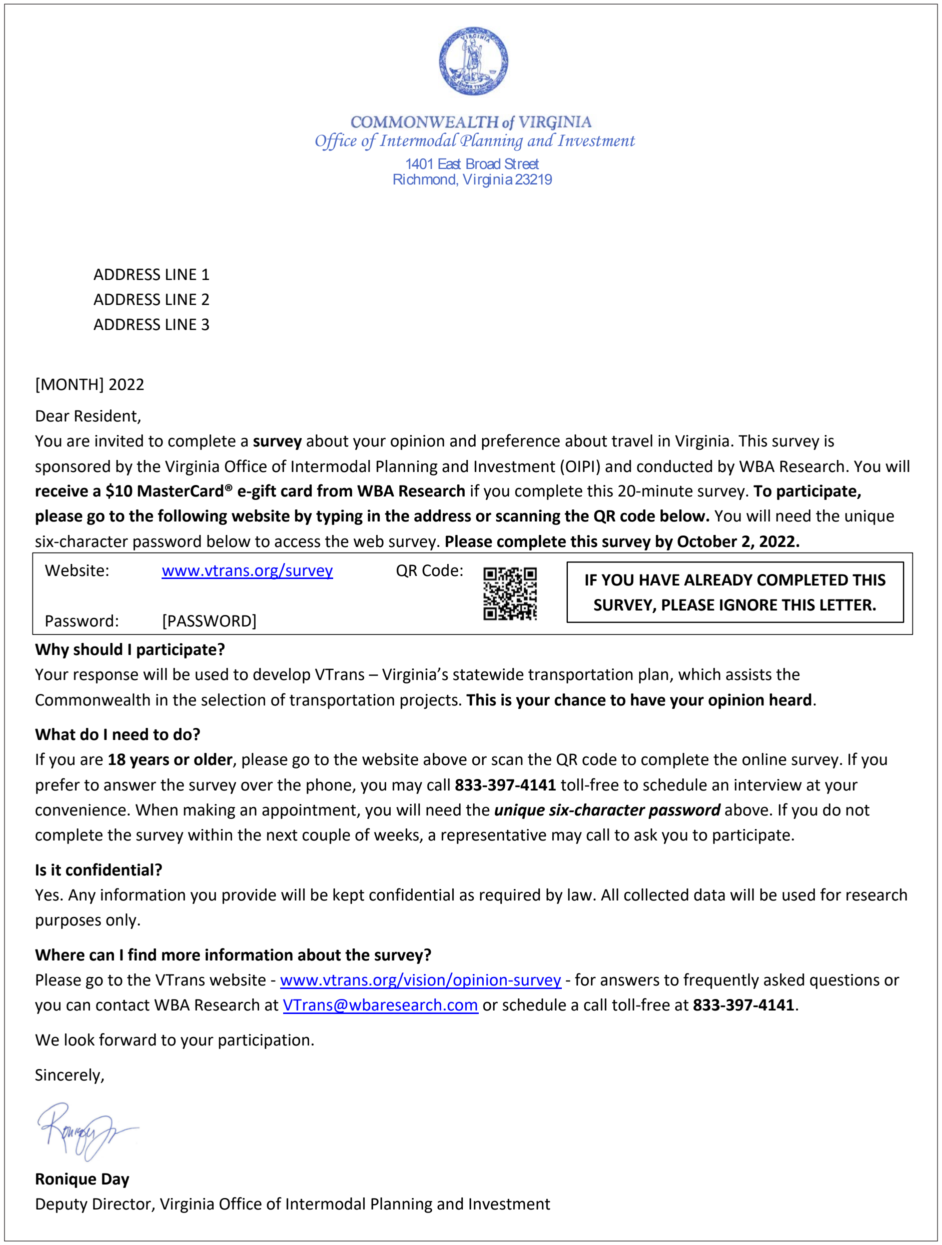
REMINDER LETTER ENGLISH VERSION A

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS AVAILABLE)

REMINDER LETTER ENGLISH VERSION B

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

Reminder Letter English Version A



COMMONWEALTH of VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

ADDRESS LINE 1
ADDRESS LINE 2
ADDRESS LINE 3

[MONTH] 2022

Dear Resident,

You are invited to complete a **survey** about your opinion and preference about travel in Virginia. This survey is sponsored by the Virginia Office of Intermodal Planning and Investment (OIPI) and conducted by WBA Research. You will **receive a $10 MasterCard® e-gift card from WBA Research** if you complete this 20-minute survey. **To participate, please go to the following website by typing in the address or scanning the QR code below.** You will need the unique six-character password below to access the web survey. **Please complete this survey by October 2, 2022.**

Website: www.vtrans.org/survey
QR Code:
Password: [PASSWORD]

IF YOU HAVE ALREADY COMPLETED THIS SURVEY, PLEASE IGNORE THIS LETTER.

Why should I participate?

Your response will be used to develop VTrans – Virginia's statewide transportation plan, which assists the Commonwealth in the selection of transportation projects. **This is your chance to have your opinion heard**.

What do I need to do?

If you are **18 years or older**, please go to the website above or scan the QR code to complete the online survey. If you prefer to answer the survey over the phone, you may call **833-397-4141** toll-free to schedule an interview at your convenience. When making an appointment, you will need the ***unique six-character password*** above. If you do not complete the survey within the next couple of weeks, a representative may call to ask you to participate.

Is it confidential?

Yes. Any information you provide will be kept confidential as required by law. All collected data will be used for research purposes only.

Where can I find more information about the survey?

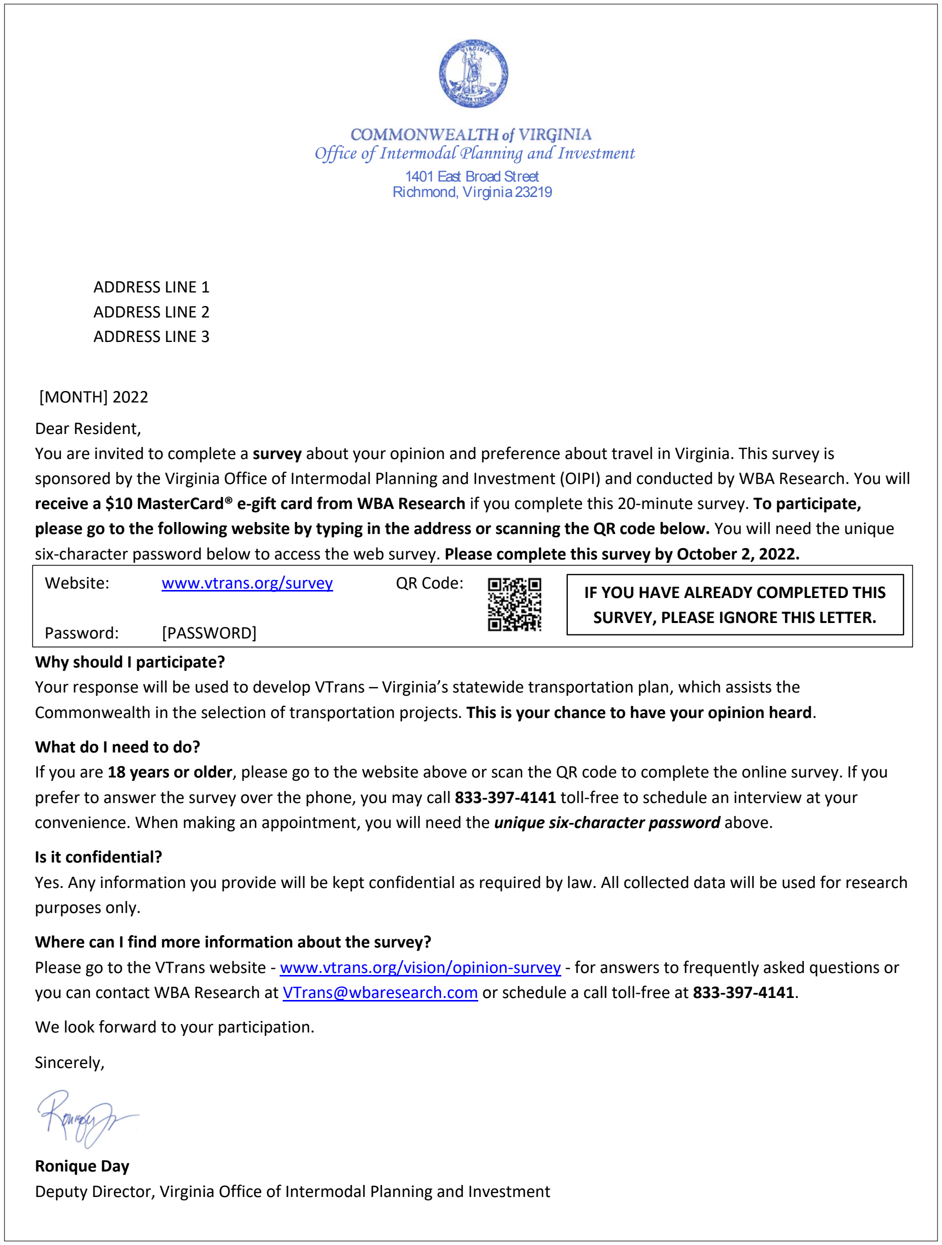
Please go to the VTrans website - www.vtrans.org/vision/opinion-survey - for answers to frequently asked questions or you can contact WBA Research at VTrans@wbaresearch.com or schedule a call toll-free at **833-397-4141**.

We look forward to your participation.

Sincerely,

Ronique Day
Deputy Director, Virginia Office of Intermodal Planning and Investment

Reminder Letter English Version B



COMMONWEALTH of VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

ADDRESS LINE 1
ADDRESS LINE 2
ADDRESS LINE 3

[MONTH] 2022

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QR Code:
Password: [PASSWORD]

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What do I need to do?

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We look forward to your participation.

Sincerely,

Ronique Day
Deputy Director, Virginia Office of Intermodal Planning and Investment

APPENDIX 8:

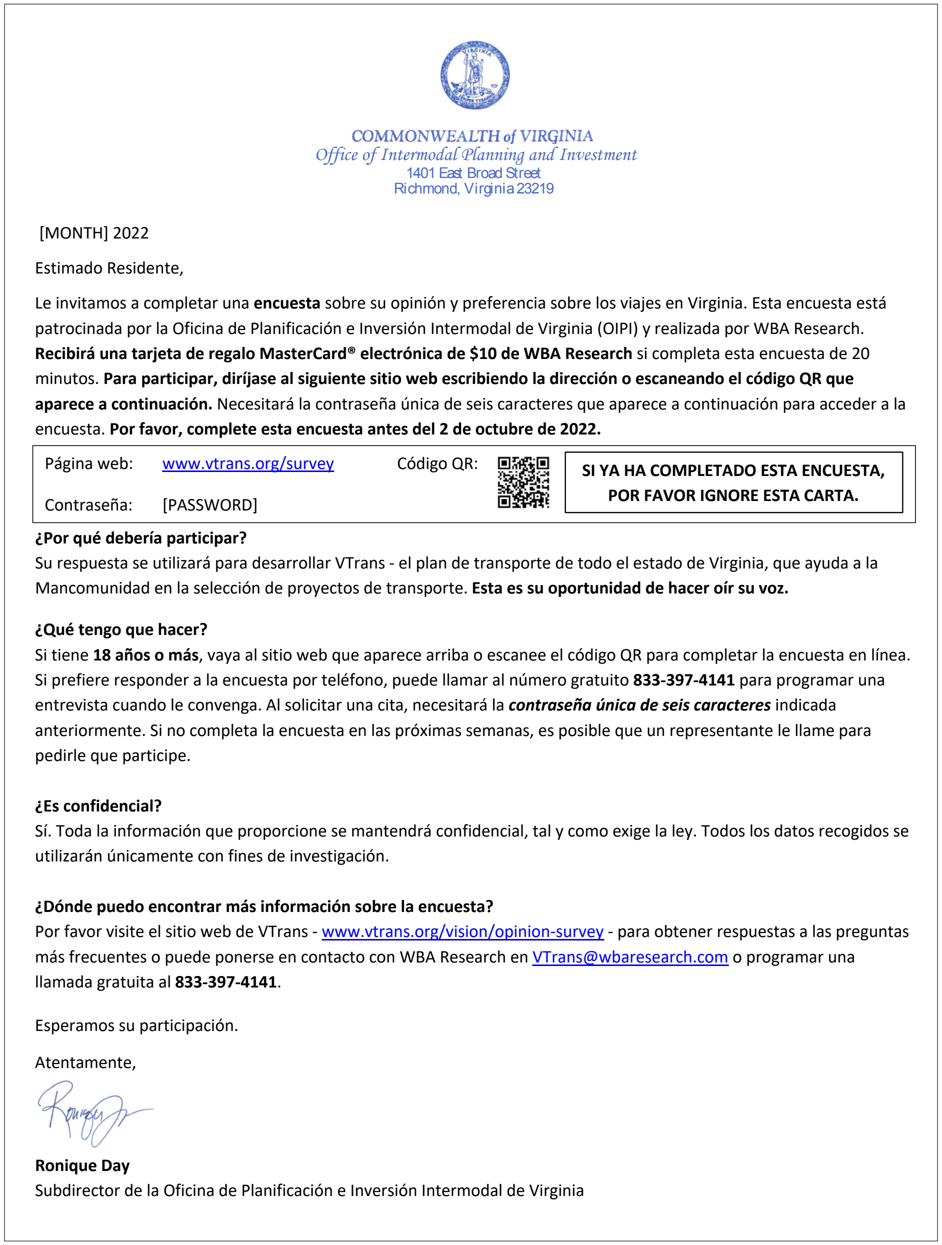
REMINDER LETTER SPANISH VERSION A

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS AVAILABLE)

REMINDER LETTER SPANISH VERSION B

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

Reminder Letter Spanish Version A



COMMONWEALTH of VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

[MONTH] 2022

Estimado Residente,

Le invitamos a completar una **encuesta** sobre su opinión y preferencia sobre los viajes en Virginia. Esta encuesta está patrocinada por la Oficina de Planificación e Inversión Intermodal de Virginia (OIPI) y realizada por WBA Research. **Recibirá una tarjeta de regalo MasterCard® electrónica de $10 de WBA Research** si completa esta encuesta de 20 minutos. **Para participar, diríjase al siguiente sitio web escribiendo la dirección o escaneando el código QR que aparece a continuación.** Necesitará la contraseña única de seis caracteres que aparece a continuación para acceder a la encuesta. **Por favor, complete esta encuesta antes del 2 de octubre de 2022.**

Página web: www.vtrans.org/survey
Código QR:
Contraseña: [PASSWORD]

SI YA HA COMPLETADO ESTA ENCUESTA, POR FAVOR IGNORE ESTA CARTA.

¿Por qué debería participar?
Su respuesta se utilizará para desarrollar VTrans - el plan de transporte de todo el estado de Virginia, que ayuda a la Mancomunidad en la selección de proyectos de transporte. **Esta es su oportunidad de hacer oír su voz.**

¿Qué tengo que hacer?
Si tiene **18 años o más**, vaya al sitio web que aparece arriba o escanee el código QR para completar la encuesta en línea. Si prefiere responder a la encuesta por teléfono, puede llamar al número gratuito **833-397-4141** para programar una entrevista cuando le convenga. Al solicitar una cita, necesitará la ***contraseña única de seis caracteres*** indicada anteriormente. Si no completa la encuesta en las próximas semanas, es posible que un representante le llame para pedirle que participe.

¿Es confidencial?
Sí. Toda la información que proporcione se mantendrá confidencial, tal y como exige la ley. Todos los datos recogidos se utilizarán únicamente con fines de investigación.

¿Dónde puedo encontrar más información sobre la encuesta?
Por favor visite el sitio web de VTrans - www.vtrans.org/vision/opinion-survey - para obtener respuestas a las preguntas más frecuentes o puede ponerse en contacto con WBA Research en VTrans@wbaresearch.com o programar una llamada gratuita al **833-397-4141**.

Esperamos su participación.

Atentamente,

Ronique Day
Subdirector de la Oficina de Planificación e Inversión Intermodal de Virginia

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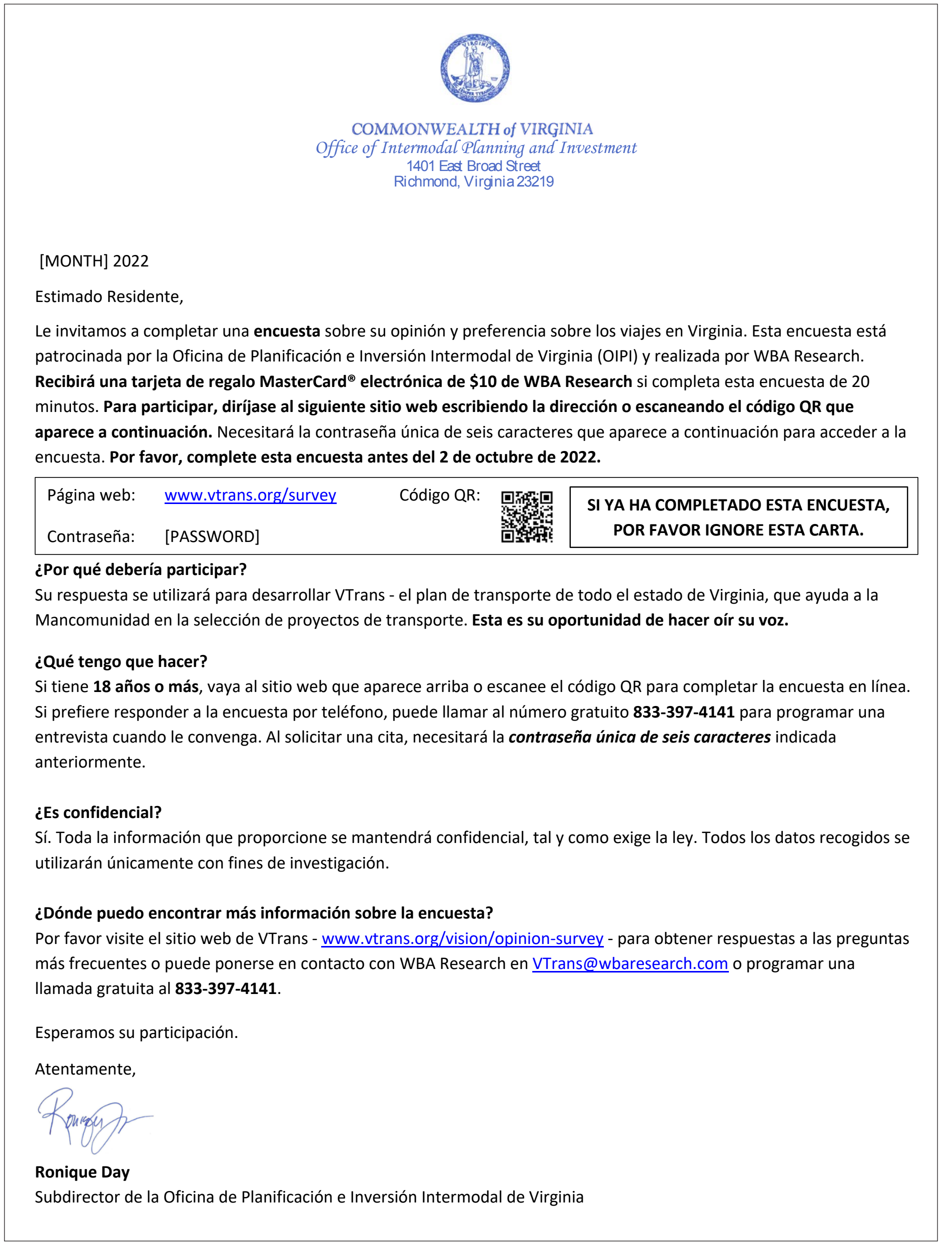
Reminder Letter Spanish Version B



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1401 East Broad Street
Richmond, Virginia 23219

[MONTH] 2022

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Página web: www.vtrans.org/survey
Código QR:
Contraseña: [PASSWORD]

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Sí. Toda la información que proporcione se mantendrá confidencial, tal y como exige la ley. Todos los datos recogidos se utilizarán únicamente con fines de investigación.

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Esperamos su participación.

Atentamente,

Ronique Day
Subdirector de la Oficina de Planificación e Inversión Intermodal de Virginia

APPENDIX 9:

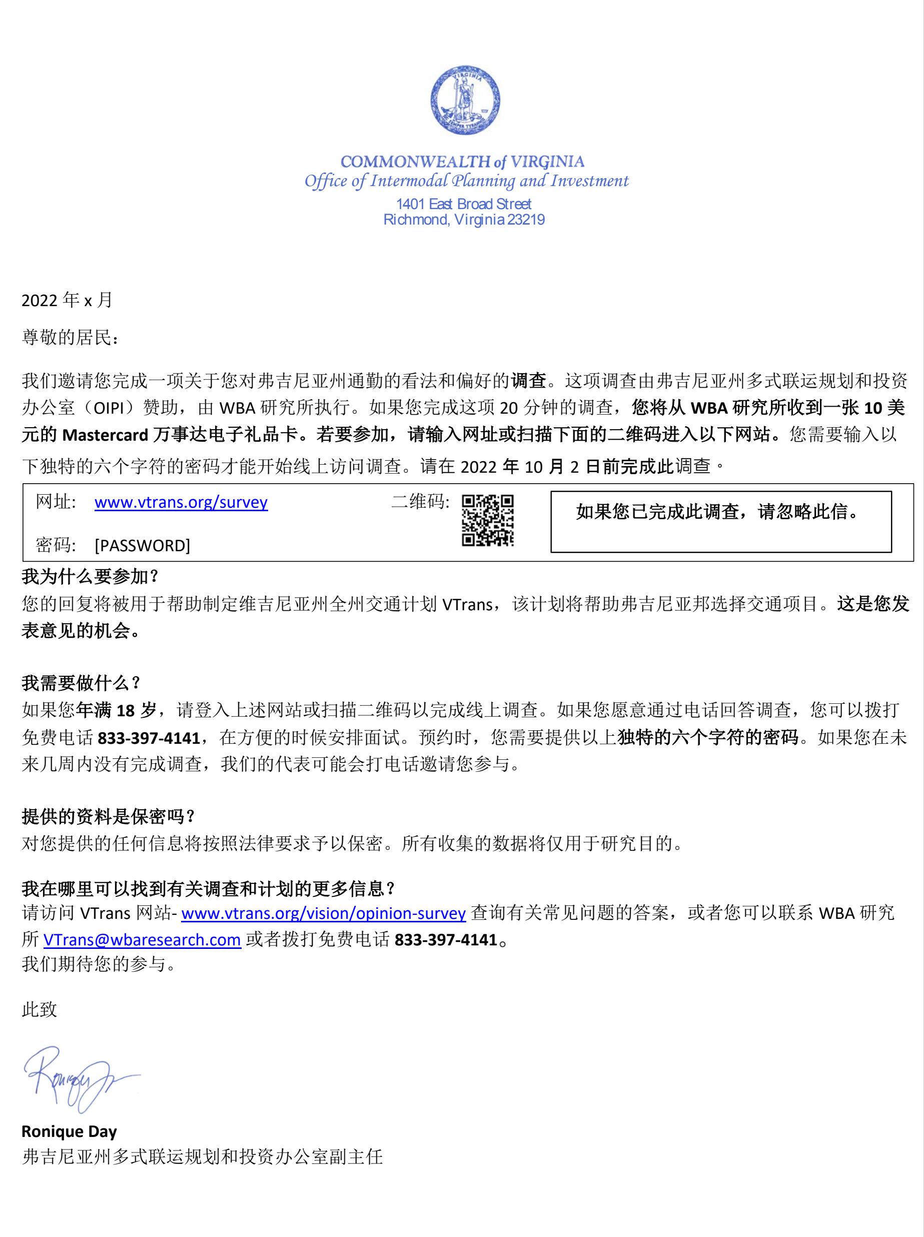
REMINDER LETTER SIMPLIFIED CHINESE VERSION A

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS AVAILABLE)

REMINDER LETTER SIMPLIFIED CHINESE VERSION B

(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

Reminder Letter Simplified Chinese Version A



COMMONWEALTH of VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

2022 年 x 月

尊敬的居民：

我们邀请您完成一项关于您对弗吉尼亚州通勤的看法和偏好的**调查**。这项调查由弗吉尼亚州多式联运规划和投资办公室（OIPI）赞助，由 WBA 研究所执行。如果您完成这项 20 分钟的调查，**您将从 WBA 研究所收到一张 10 美元的 Mastercard 万事达电子礼品卡。若要参加，请输入网址或扫描下面的二维码进入以下网站。**您需要输入以下独特的六个字符的密码才能开始线上访问调查。请在 2022 **年 10 月 2 日前完成此**调查 。

网址： www.vtrans.org/survey
密码： [PASSWORD]
二维码：

如果您已完成此调查，请忽略此信。

我为什么要参加？
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提供的资料是保密吗？
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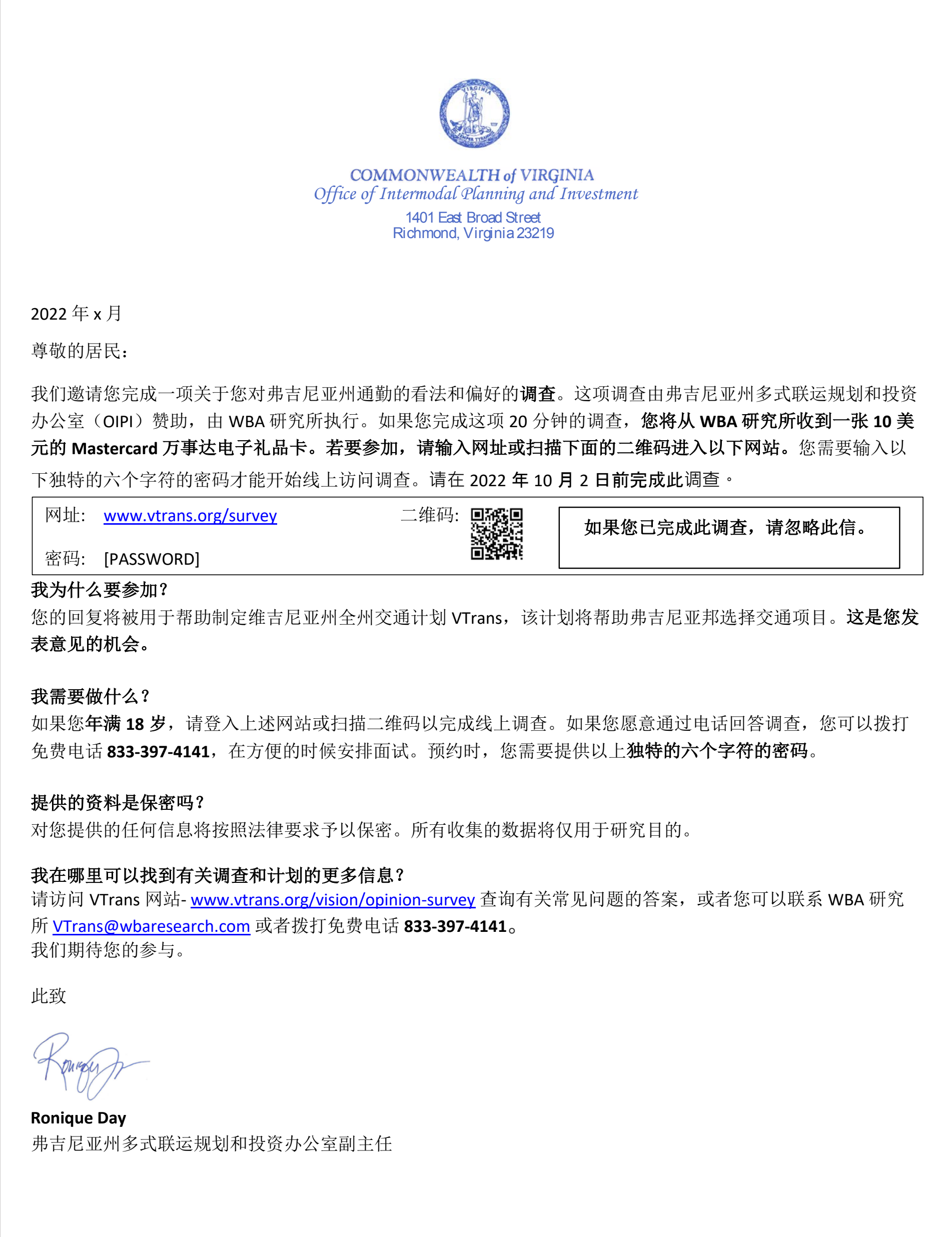
我们期待您的参与。

此致

Ronique Day
弗吉尼亚州多式联运规划和投资办公室副主任

Reminder Letter Simplified Chinese Version B



COMMONWEALTH of VIRGINIA
Office of Intermodal Planning and Investment
1401 East Broad Street
Richmond, Virginia 23219

2022 年 x 月

尊敬的居民：

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网址： www.vtrans.org/survey
密码： [PASSWORD]
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如果您已完成此调查，请忽略此信。

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此致

Ronique Day
弗吉尼亚州多式联运规划和投资办公室副主任

APPENDIX 10:
QUESTIONNAIRE IN ENGLISH

S1. Are you 18 years or older?

01	Yes	CONTINUE
02	No	THANK YOU & TERMINATE

QS1 Term:
Thank you for participating in this survey. Unfortunately, you must be 18 years or older to qualify. If you would like to receive a summary of the results or would like more information, please visit: www.vtrans.org/vision/opinion-survey.

S2. Have you lived or anticipate living in the state of Virginia for at least 6 months in 2022?

01	Yes	CONTINUE
02	No	THANK YOU & TERMINATE

QS2 Term:
Thank you for participating in this survey. Unfortunately, you must anticipate living in Virginia for at least 6 months in 2022 to qualify. If you would like to receive a summary of the results or would like more information, please visit: www.vtrans.org/vision/opinion-survey.

Q1. Which of the following statements do you agree with most? **(RANDOMIZE. ACCEPT ONE RESPONSE ONLY.)**

01 Transportation should be **safe and secure**
02 Transportation should **support the economy by reducing congestion and making travel more reliable**
03 Transportation should be **well-maintained and in good condition**
04 Transportation should allow for efficient **access to jobs and services**
05 Transportation should be **environmentally friendly**
06 Transportation should **promote healthy lifestyles**

Question numbering reflects the programmed question number and may not be contiguous throughout.

Q2. How satisfied are you with each of the following in your area? **(RANDOMIZE.)**

		Very Dissatisfied	Somewhat Dissatisfied	Neither Satisfied nor Dissatisfied	Somewhat Satisfied	Very Satisfied	Not Applicable
A.	The traffic congestion in your area	01	02	03	04	05	97
B.	Being able to get through areas with high truck traffic near you	01	02	03	04	05	97
C.	Being able to get to places on-time reliably	01	02	03	04	05	97
D.	The reliability of the public transportation (buses, rail) available in your area	01	02	03	04	05	97
E.	Being able to get to employment opportunities in your area by **driving**	01	02	03	04	05	97
F.	Being able to get to employment opportunities in your area by **public transit**	01	02	03	04	05	97
G.	Being able to get to employment opportunities in your area by **walking**	01	02	03	04	05	97
H.	Being able to get to employment opportunities in your area by **biking**	01	02	03	04	05	97
I.	Being able to get to employment opportunities in your area by **rideshare services, such as Uber or Lyft**	01	02	03	04	05	97
J.	The level of safety from automobile accidents in your area	01	02	03	04	05	97
K.	The level of safety from non-motorized vehicle accidents, such as bicycles and scooters, in your area	01	02	03	04	05	97
L.	The condition of **bridges** in your area	01	02	03	04	05	97
M.	The condition of **highways and roads** in your area	01	02	03	04	05	97
N.	The condition of public transit vehicles such as **buses or rail cars** in your area	01	02	03	04	05	97
O.	The condition of bus stops, park-and-ride, or rail stations in your area	01	02	03	04	05	97
P.	The condition of **sidewalks** in your area	01	02	03	04	05	97
Q.	The condition of **bicycle lanes** in your area	01	02	03	04	05	97
R.	Virginia's progress towards reducing transportation-related pollution	01	02	03	04	05	97
S.	Roadway closures due to flooding or other weather-related events	01	02	03	04	05	97
T.	The level of disruption caused by construction zones	01	02	03	04	05	97

Question numbering reflects the programmed question number and may not be contiguous throughout.

Q3A. Does your household have any of the following? **(MULTIPLE RESPONSES ACCEPTED)**

01 Bicycle(s) - # of bicycles: ________________

02 Scooter(s) - # of scooters: ________________

03 E-bicycle(s) - # of e-bicycles: ________________

04 E-scooter(s) - # of e-scooters: ________________

05 Moped(s) (less than 50cc) - # of mopeds: ________________

06 Motorcycle(s) (more than 50cc) - # of motorcycles: ________________

97 None of these

Q3. Now I will ask you a few questions about cars, trucks or SUVs you may own.

How many working cars, trucks, or SUVs are in your household?

00	None
01	One
02	Two
03	Three
04	Four
05	Five
06	Six or more

ASK THOSE WHO HAVE A VEHICLE [Q3(01-06)]:

Q4. What is the make, model, and year of **[IF Q3>1, INSERT:** "each working vehicle in your household?" **IF Q3=1, INSERT:** "this vehicle?"**]**

A. Make ________________________________ [SHOW AS DROP DOWN MENU]

B. Model ________________________________ [SHOW AS DROP DOWN MENU]

C. Year ________________________________ [SHOW AS DROP DOWN MENU]

99 Don't know

Question numbering reflects the programmed question number and may not be contiguous throughout.

Q5. Do you currently own any electric or hybrid cars or trucks? **(ACCEPT ONE RESPONSE ONLY.)**

01	Yes; an electric vehicle
02	Yes; a hybrid vehicle
03	Both an electric and hybrid vehicle
04	No; neither

ASK THOSE WHO OWN A VEHICLE BUT NOT ELECTRIC CAR OR TRUCK OR WHO DON'T OWN A VEHICLE [Q3(0) AND Q5(02,04)]:

Q6. How willing would you be to buy an electric car or truck for your next vehicle?

05	Very willing
04	Somewhat willing
03	Undecided
02	Somewhat unwilling
01	Not at all willing
97	Do not plan to purchase another vehicle
99	Don't know

ASK THOSE WHO OWN AN ELECTRIC VEHICLE [Q5(01,03)]:

Q5A. Where do you typically charge your electric vehicle(s)? **(MULTIPLE RESPONSES ACCEPTED.)**

01	At your home
02	At your work
03	A public charging station close to home
04	A public charging station close to where you work
05	Some other place **(specify)**

Question numbering reflects the programmed question number and may not be contiguous throughout.

Q5B. Do you use your electric vehicle for long-distance travel?

01 Yes, it is my primary long-distance vehicle
02 Yes, but it is not my primary long-distance vehicle
03 I do not use this vehicle for long-distance travel
04 I do not drive for long-distance travel

Q5C. How concerned are you about your access to charging stations when traveling long distances with your electric vehicle(s)?

01 Not at all concerned
02 Not very concerned
03 Somewhat concerned
04 Very concerned

ASK IF NOT VERY WILLING TO CONSIDER BUYING AN ELECTRIC CAR OR TRUCK: [Q6(01-04)]:

Q7. Why aren't you very willing to buy an electric car or truck? **(RANDOMIZE. MULTIPLE RESPONSES ACCEPTED.)**

01 I am concerned about the range of an electric vehicle
02 There are no charging stations close enough to me or where I travel
03 Electric vehicles are too expensive to purchase
04 Electric vehicles are too expensive to maintain
05 There are not electric vehicles with the features I look for in a vehicle
06 Electric vehicles do not perform as well as gasoline powered vehicles
07 I do not know enough about electric vehicles to feel comfortable purchasing one
95 Other reasons **(specify)**

Question numbering reflects the programmed question number and may not be contiguous throughout.

ASK THOSE WHO NAMED A VEHICLE [Q4A OR Q4B]. ASK FOR EACH VEHICLE:

Q8. Which of the following features does your household's **[INSERT YEAR] [INSERT MAKE] [INSERT MODEL]** have? **(READ LIST. MULTIPLE RESPONSES ACCEPTED.)**

01	Blind spot warning
02	Forward collision warning
03	Lane departure warning
04	Parking collision warning
05	Rear cross traffic warning
06	Automatic emergency braking
07	Automatic emergency steering
08	Reverse automatic emergency braking
09	Adaptive cruise control
10	Lane keeping assistance
11	Backup camera
12	Surround view camera that allows you to see some or all sides of your vehicle
13	Active parking assistance
14	Remote parking assistance
15	Trailer assistance
95	Something else **(specify)**
96	None of these

ASK EVERYONE:

Q9. Are you aware that major U.S. automakers and technology companies are developing self-driving or "autonomous" vehicles that **can selectively perform the task of driving by themselves with a human** capable of intervening present?

01	Yes
02	No

Question numbering reflects the programmed question number and may not be contiguous throughout.

Q9A. Are you aware that major US automakers and technology companies are developing self-driving or "autonomous" vehicles that **can perform the task of driving by themselves without a human** capable of intervening present?

01 Yes

02 No

Q10. How willing would you be to buy a vehicle with self-driving capabilities if it was available to you? Self-driving or "autonomous" vehicles **can selectively perform the task of driving by themselves with a human** capable of intervening.

Very willing	Somewhat willing	Undecided	Not very willing	Not at all willing	Don't know
05	04	03	02	01	99

ASK THOSE WHO ARE NOT VERY WILLING TO RIDE IN A SELF-DRIVING CAR [Q10(01-04,99)]:

Q10A. Why wouldn't you be very willing to buy a vehicle with self-driving/autonomous capabilities if it was available? **(OPEN-ENDED.)**

ASK EVERYONE:

Q11. How willing would you be to take a ride in a self-driving service (i.e., autonomous taxi or public transit) **with** an operator present to get to your destination if it was available to you? A self-driving service **can selectively perform the task of driving by itself with a human present that is capable of intervening.**

Very willing	Somewhat willing	Undecided	Not very willing	Not at all willing	Don't know
05	04	03	02	01	99

Q11B. How willing would you be to take a ride in a self-driving service (i.e. autonomous taxi or public transit) **without** an operator present to get to your destination if it was available to you? A self-driving service **can selectively perform the task of driving by itself without a human** that is capable of intervening.

Very willing	Somewhat willing	Undecided	Not very willing	Not at all willing	Don't know
05	04	03	02	01	99

ASK THOSE WHO ARE NOT VERY WILLING TO RIDE IN A SELF-DRIVING SERVICE [Q11(01-04,99) OR Q11B(01-04,99)]:

Q11A. Why wouldn't you be very willing to take a ride in a self-driving service (i.e., autonomous taxi or autonomous public transit) to get to your destination if it was available? **(OPEN-ENDED.)**

Question numbering reflects the programmed question number and may not be contiguous throughout.

ASK EVERYONE:

Q12. If a self-driving vehicle service where you pay per trip were available for all your trips, would you see a need to own a vehicle?

05	Yes, I definitely would still need to own a vehicle
04	I probably would
03	I might or might not
02	I probably would not
01	No, I definitely would not need to own a vehicle

Q13. Have you ever received or purchased food, groceries, or other goods through...? **(RANDOMIZE.)**

		Yes	No
A.	Restaurant delivery or takeout services (For example DoorDash, GrubHub, UberEats)	01	02
B.	Online grocery shopping **through a third-party app** (For example, Instacart or AmazonFresh)	01	02
C.	Online grocery ordering with **in-store/curbside pickup**	01	02
D.	An online retailer or app (For example, Amazon.com, Walmart.com, Ebay.com)	01	02
E.	Some other service that delivers to your home **(specify)**	01	02

Q14. Would you use an automated delivery service to receive or purchase food, groceries, or other goods if it was available to you? These are ground-based robots that would deliver goods to the front of your home.

01	Yes
02	No

Q15. Would you use an airborne drone to receive or purchase food, groceries, or other goods if it was available to you?

01	Yes
02	No

Question numbering reflects the programmed question number and may not be contiguous throughout.

Q16. Now, we would like to ask you some questions regarding your current transportation use. However, first we need to know your work status. Are you...? **(MULTIPLE RESPONSES ACCEPTED IF (01 OR 02) AND 04.)**

01	Employed full-time
02	Employed part-time
03	Unemployed
04	Student
05	Homemaker
06	Retired
99	Don't know

PROGRAMMING NOTE: FOR FUTURE LOGIC, THOSE WHO SELECTED [Q16((01 OR 02) AND 04)], SELECTION HIERARCHY AS FOLLOWS:

1. EMPLOYED FULL TIME

2. STUDENT

3. EMPLOYED PART TIME

ASK IF CURRENTLY EMPLOYED OR A STUDENT [Q16(01-02,04)]:

Q17. What travel options are available to you to get to **[IF EMPLOYED FULL OR PART TIME, INSERT:** "work"; **IF STUDENT, INSERT:** "school")**]**, regardless of whether or not you use them?

	For **[IF EMPLOYED FULL OR PART TIME, INSERT:** "work"; **IF STUDENT, INSERT:** "school")**]**:	Available	Not Available	Don't Know
A.	Personal car, truck, SUV, moped, or motorcycle	01	02	99
B.	Personal car, truck, SUV, moped, or motorcycle driven by a friend or family	01	02	99
C.	Taxis	01	02	99
D.	Rideshare services, such as Uber or Lyft	01	02	99
E.	Commuter rail, such as VRE	01	02	99
F.	Local or City Bus	01	02	99
G.	Commuter Bus	01	02	99
H.	Subway	01	02	99

Question numbering reflects the programmed question number and may not be contiguous throughout.

	For **[IF EMPLOYED FULL OR PART TIME, INSERT:** "work"; **IF STUDENT, INSERT:** "school")]:	Available	Not Available	Don't Know
I.	Ferries	01	02	99
J.	Light Rail, such as The Tide in Hampton Roads	01	02	99
K.	Carpools or vanpools	01	02	99
L.	A shared service for bikes, e-bikes, or scooters such as Lime or Bird	01	02	99
M.	A personal bicycle	01	02	99
N.	A personal e-bike or scooter	01	02	99

Q18. Does your current **[IF EMPLOYED FULL OR PART TIME, INSERT:** "employer"; **IF STUDENT, INSERT:** "school")**]** provide you with an option to (work/attend school) remotely all or some days of the week?

01 Yes; I have the option to (work/attend school) remotely everyday

02 Yes; I have the option to (work/attend school) remotely some days

03 No; I do not have an option to (work/attend school) remotely all or some days of the week

ASK THOSE WHO ARE EMPLOYED OR A STUDENT AND HAVE OPTION TO WORK OR ATTEND SCHOOL REMOTELY [Q16(01-02,04) AND Q18(01-02)]:

Q19. In a typical week, for **[IF EMPLOYED FULL OR PART TIME, INSERT:** "work"; **IF STUDENT, INSERT:** "school")], how many days do you...? **(RANGE 0-7. TOTAL MUST NOT EXCEED 7.)**

		# of Days/ Week	It Varies
A.	**[IF EMPLOYED FULL OR PART TIME, INSERT:** "Work from home"; **IF STUDENT, INSERT:** "Attend school from home")**]**		97
B.	**[IF EMPLOYED FULL OR PART TIME, INSERT:** "Work remotely from a location that is not your home or primary place of employment"; **IF STUDENT, INSERT:** "Attend school remotely from a location that is not your home or school")**]**		97
C.	**[IF EMPLOYED FULL OR PART TIME, INSERT:** "Work in person at your primary place of employment"; **IF STUDENT, INSERT:** "Attend school in person")**]**		97

Question numbering reflects the programmed question number and may not be contiguous throughout.

ASK IF NOT WORKING REMOTELY, BUT HAVE THE OPTION TO WORK REMOTELY [(Q19A(00) AND Q19B(00)) AND Q18(01-02)]:

Q20. What is the **primary reason** you don't **[IF EMPLOYED FULL OR PART TIME, INSERT:** "work"**; IF STUDENT, INSERT:** "attend school"**)]** remotely? **(OPEN ENDED.)**

ASK THOSE WHO COMMUTE [Q16(01-02,04) AND (Q18(03) OR (Q19B(1-7, 97) OR Q19C(1-7,97))]:

Q21. In a typical week, how many one-way trips do you take using each of the following to travel **to or from [IF EMPLOYED FULL OR PART TIME, INSERT:** "work"**; IF STUDENT, INSERT:** "school"**)]?** If more than one method is used for a **one-way** trip, please count the method used for most of the distance of that trip.

Please count each round trip as two one-way trips.

(RANDOMIZE, LEAVING 'OTHER' LAST. SHOW ONLY MODES AVAILABLE AT Q17.)

	For **[IF EMPLOYED FULL OR PART TIME, INSERT:** "work"; **IF STUDENT, INSERT:** "school"**)]:**	1 to 2 one-way trips	3 to 6 one-way trips	7 to 10 one-way trips	11 to 14 one-way trips	15 or more one-way trips	Do not use in a typical week
A.	Walk	01	02	03	04	05	00
B.	**IF Q17M(01):** Ride a personal bicycle	01	02	03	04	05	00
C.	**IF Q17A(01):** Drive a personal car, truck, SUV, or motorcycle	01	02	03	04	05	00
D.	**IF Q17B(01):** Ride in a personal car, truck, SUV, or motorcycle driven by a friend or family	01	02	03	04	05	00
E.	**IF Q17C(01):** Take a taxi	01	02	03	04	05	00
F.	**IF Q17D(01):** Use a rideshare service, such as Uber or Lyft	01	02	03	04	05	00
G.	**IF Q17E-J(01):** Use a city bus, subway, commuter rail, light rail, or ferry	01	02	03	04	05	00
H.	**IF Q17K(01):** Use a carpool or vanpool	01	02	03	04	05	00
I.	**IF Q17L(01):** Use a shared service for bikes, ebikes, or scooters such as Lime or Bird	01	02	03	04	05	00
J.	**IF Q17N(01):** Ride a personal e-bike or scooter	01	02	03	04	05	00
K.	Use another form of transportation **(specify)**	01	02	03	04	05	00

Question numbering reflects the programmed question number and may not be contiguous throughout.

		Minutes
Q22.	Thinking about your **typical** daily commute to **[IF EMPLOYED FULL OR PART TIME, INSERT:** “work”; **IF STUDENT, INSERT:** “school”**)]** last week, how many minutes does it take, on average, for you to get from home to your **[IF EMPLOYED FULL OR PART TIME, INSERT:** “primary job/work”; **IF STUDENT, INSERT:** “school”)] **door-to-door**?	
Q23.	**THOSE WHO COMMUTE BUT DO NOT WALK [Q16(01-02,04) AND (Q18(03) OR (Q19B(1-7) OR Q19C(1-7,97))) AND Q21B-K(01-05)]**: What about on a day when you **encounter high congestion**? *Note that your answer should be greater than or equal to your **typical** daily commute.*	
Q24.	**THOSE WHO COMMUTE BUT DO NOT WALK [Q16(01-02,04) AND (Q18(03) OR (Q19B(1-7) OR Q19C(1-7,97))) AND Q21B-K(01-05)]:** What about on a day when you **encounter no congestion**? *Note that your answer should be less than or equal to your **typical** daily commute.*	

ASK THOSE WHO COMMUTE [Q16(01-02,04) AND (Q18(03) OR (Q19B(1-7,97) OR Q19C(1-7,97)))]:

Q25. How many **miles** do you travel **one-way** to **[IF EMPLOYED FULL OR PART TIME, INSERT:** “work”; **IF STUDENT, INSERT:** “school”**)]**? Please answer even if you **[IF EMPLOYED FULL OR PART TIME, INSERT:** “work”; **IF STUDENT, INSERT:** “attend school”**)]** from home or remotely every day. Your best guess is fine.

__________Miles

999 Don’t know

Q26. What is the ZIP code of your (workplace/school)?

____ ____ ____ ____ ____

99999 Don’t Know

Question numbering reflects the programmed question number and may not be contiguous throughout.

ASK FOR EACH MODE USED IN Q21:

Q27. How would you rate your satisfaction with your commuting experience for each of the travel options you use in a typical week?

(ASK FOR ONLY MODES USED FROM Q21)

		Very Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied
A.	Walking	05	04	03	02	01
B.	Riding a personal bicycle	05	04	03	02	01
C.	Driving a personal car, truck, SUV, or motorcycle	05	04	03	02	01
D.	Riding in a personal car, truck, SUV, or motorcycle **driven by a friend or family**	05	04	03	02	01
E.	Taking a taxi	05	04	03	02	01
F.	Using a rideshare service, such as Uber or Lyft	05	04	03	02	01
G.	Using city buses, subways, commuter rail, light rail, and ferries	05	04	03	02	01
H.	Using a carpool or vanpool	05	04	03	02	01
I.	Using a shared service for bikes, ebikes, or scooters such as Lime or Bird	05	04	03	02	01
J.	Riding an e-bike	05	04	03	02	01
K.	**Insert Other**	05	04	03	02	01

ASK THOSE WHO ARE EMPLOYED OR A STUDENT [Q16(01-02,04)]:

Q28. Whether or not you use it, does your **(IF EMPLOYED FULL OR PART-TIME, INSERT:** "employer"; **IF STUDENT, INSERT:** "school"**)** offer any transit benefit for you to commute to work or school? And if so, do you use it?

01 Yes, it is offered, and I use it

02 Yes, it is offered, but I do not use it

03 No, it is not offered

97 Not applicable; my employer does not offer me a physical work location option

99 Don't know

Question numbering reflects the programmed question number and may not be contiguous throughout.

Q29. Whether or not you use it, is there free or paid parking available where you **(IF EMPLOYED FULL OR PART-TIME INSERT:** "work", **IF STUDENT INSERT:** "go to school"**)**?

01 Yes, it is free parking for me
02 Yes, it is paid parking for me
03 No, there is no paid or free parking
95 It varies (specify)
97 Not applicable; my employer does not offer me a physical work location option
99 Don't know

ASK EVERYONE:

Q30. [IF EMPLOYED OR A STUDENT Q16(01-02,04), READ]: Now we'd like to talk about **[IF EMPLOYED FULL OR PART TIME, INSERT:** "non-work"; **IF STUDENT, INSERT:** "non-school"**)]** travel.

What travel options are available to you to travel to or from places **that are not related to school or work**, regardless of whether or not you use them?

	For places not related to **[IF EMPLOYED FULL OR PART TIME, INSERT:** "work"; **IF STUDENT, INSERT:** "school"**)]**:	Available	Not Available	Don't Know
A.	Personal car, truck, SUV, moped, or motorcycle	01	02	99
B.	Personal car, truck, SUV, moped, or motorcycle **driven by a friend or family**	01	02	99
C.	Taxis	01	02	99
D.	Rideshare services, such as Uber or Lyft	01	02	99
E.	Commuter rail, such as VRE	01	02	99
F.	Local or City Bus	01	02	99
G.	Commuter Bus	01	02	99
H.	Subway	01	02	99
I.	Ferries	01	02	99
J.	Light Rail, such as The Tide in Hampton Roads	01	02	99
K.	Carpools or vanpools	01	02	99
L.	Scooter-share such as Lime or Bird	01	02	99
M.	Personal bicycle	01	02	99
N.	E-bike	01	02	99

Question numbering reflects the programmed question number and may not be contiguous throughout.

Q31. In a typical week, how many **one-way** trips do you take using each of the following for personal trips and other travel to or from places **not related to school or work**? These trips may include errands, recreation, taking a child to daycare or school, or any other personal trips. If more than one method is used for a **one-way** trip, please count the method used for most of the distance of that trip.

Please count each round trip as two one-way trips.

(RANDOMIZE, LEAVING 'OTHER' LAST. ASK ONLY FOR MODES AVAILABLE AT Q30.)

	For places not related to **[IF EMPLOYED FULL OR PART TIME, INSERT:** "work"; **IF STUDENT, INSERT:** "school"**)]**:	1 to 2 one-way trips	3 to 6 one-way trips	7 to 10 one-way trips	11 to 14 one-way trips	15 or more one-way trips	Do not use in a typical week
A.	Walk	01	02	03	04	05	00
B.	**IF Q30M(01):** Ride a personal bicycle	01	02	03	04	05	00
C.	**IF Q30A(01):** Drive a personal car, truck, SUV, or motorcycle	01	02	03	04	05	00
D.	**IF Q30B(01):** Ride in a personal car, truck, SUV, or motorcycle **driven by a friend or family**	01	02	03	04	05	00
E.	**IF Q30C(01):** Take a taxi	01	02	03	04	05	00
F.	**IF Q30D(01):** Use a rideshare service, such as Uber or Lyft	01	02	03	04	05	00
G.	**IF Q30E-J(01):** Use a city bus, subway, commuter rail, light rail, or ferry	01	02	03	04	05	00
H.	**IF Q30K(01):** Use a carpool or vanpool	01	02	03	04	05	00
I.	**IF Q30L(01):** Use a shared service for bikes, ebikes, or scooters such as Lime or Bird	01	02	03	04	05	00
J.	**IF Q30N(01):** Ride an e-bike	01	02	03	04	05	00
K.	Use another form of transportation **(specify)**	01	02	03	04	05	00

Question numbering reflects the programmed question number and may not be contiguous throughout.

ASK IF USED ANY MODE FOR NON-WORK TRAVEL [Q31A-K(01-05)]:

Q32. How would you rate your experience traveling to and from places **not related** to school or work using each of the following modes of transportation that you use in a typical week?

(ASK FOR MODES USED FROM Q31.)

	For places not related to work or school	Very Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied
A.	Walking	05	04	03	02	01
B.	Riding a personal bicycle	05	04	03	02	01
C.	Driving a personal car, truck, SUV, or motorcycle	05	04	03	02	01
D.	Riding in a personal car, truck, SUV, or motorcycle **driven by a friend or family**	05	04	03	02	01
E.	Taking a taxi	05	04	03	02	01
F.	Using a rideshare service, such as Uber or Lyft	05	04	03	02	01
G.	Using city buses, subways, commuter rail, light rail, and ferries	05	04	03	02	01
H.	Using a carpool or vanpool	05	04	03	02	01
I.	Using a scooter-share such as Lime or Bird	05	04	03	02	01
J.	Riding an e-bike	05	04	03	02	01
K.	Insert Other	05	04	03	02	01

ASK EVERYONE:

And finally, for classification purposes only...

D1. Does your household have...? A smartphone is a cell phone that can access the internet. **(ACCEPT ALL THAT APPLY.)**

01 A landline

02 A smartphone (A smartphone is a cell phone that can access the internet.)

03 A regular cell phone (Not a smartphone)

97 We do not have a phone in our household **(EXCLUSIVE)**

99 Don’t know/Prefer not to respond

Question numbering reflects the programmed question number and may not be contiguous throughout.

ASK THOSE WHO ARE EMPLOYED [Q16(01-02)]:

D2. What type of industry are you employed in? (ACCEPT ONE RESPONSE ONLY.)

01 Agriculture, forestry, or mining
06 Data infrastructure or telecommunications
08 Education
03 Energy or utilities
13 Financial services
07 Healthcare
11 Hospitality, food, or leisure travel
02 Industrials (E.g. manufacturing or construction)
09 Life sciences
05 Media or creative industries
14 Professional services such as law or consulting
12 Public or social services
10 Retail or e-commerce
04 Transport or logistics
95 Something else **(specify)**
99 Don't know

ASK EVERYONE:

D9. How many people live in your household, including yourself and your children?

_____ **Number of people**
98 Prefer not to respond

Question numbering reflects the programmed question number and may not be contiguous throughout.

IF MORE THAN ONE PERSON LIVES IN HOUSEHOLD [D9(02-06)]:

D10. How many people under the age of 18 live in your household? **(RESPONSE≤D6.)**

_____ **Number of children**

98 Prefer not to respond

THOSE WITH 2+ ADULTS IN THEIR HOUSEHOLD [D9-D10≥2], ASK:

This means there are **[D9-D10]** adults in your household. The next questions are about each of these adults.

D3A. Beginning with yourself, what is the age of each adult in your household? **(ASK FOR UP TO 10 ADULTS.)**

	Yourself	2nd adult	3rd adult	10th adult
18 to 24	01	01	01	01
25 to 34	02	02	02	02
35 to 44	03	03	03	03
45 to 54	04	04	04	04
55 to 64	05	05	05	05
65 to 74	06	06	06	06
75 or older	07	07	07	07
Prefer not to respond	98	98	98	98

D4A. Beginning with yourself, is each adult in your household of Hispanic, Latino, or Spanish origin? **(ASK FOR UP TO 10 ADULTS.)**

	Yourself	2nd adult	3rd adult	10th adult
No; not of Hispanic, Latino, or Spanish origin	01	01	01	01
Yes; Mexican, Mexican American, Chicano	02	02	02	02
Yes; Puerto Rican	03	03	03	03
Yes; Cuban	04	04	04	04
Yes; another Hispanic, Latino, or Spanish origin (E.g. Salvadoran, Dominican, Colombian, Guatemalan, Spaniard, Ecuadorian, etc.) **(specify)**	05	05	05	05
Prefer not to respond	98	98	98	98

Question numbering reflects the programmed question number and may not be contiguous throughout.

D5A. Again, beginning with yourself, what race or races does each adult in your household consider themselves to be?
(ASK FOR UP TO 10 ADULTS. MULTIPLE RESPONSES ACCEPTED.)

	Yourself	2nd adult	3rd adult	10th adult
White/Caucasian	01	01	01	01
Black/African American	02	02	02	02
Asian	03	03	03	03
Pacific Islander	04	04	04	04
Native American	05	05	05	05
Middle Eastern	06	06	06	06
Or something else **(specify)**	95	95	95	95
Prefer not to respond	98	98	98	98

THOSE WITH 1 ADULT IN THEIR HOUSEHOLD OR WHO DO NOT RESPOND TO HH SIZE QUESTIONS [(D9-D10=1) OR D9(98) OR D10(98)], ASK:

D3. What is your age?

01	18 to 24
03	25 to 34
04	35 to 44
05	45 to 54
06	55 to 64
07	65 to 74
08	75 or older
98	Prefer not to respond

Question numbering reflects the programmed question number and may not be contiguous throughout.

D4. Are you of Hispanic, Latino, or Spanish origin?

01 No; not of Hispanic, Latino, or Spanish origin
02 Yes; Mexican, Mexican American, Chicano
03 Yes; Puerto Rican
04 Yes; Cuban
05 Yes; another Hispanic, Latino, or Spanish origin (E.g. Salvadoran, Dominican, Colombian, Guatemalan, Spaniard, Ecuadorian, etc.) **(specify)**
98 Prefer not to respond

D5. Please choose one or more races you consider yourself to be. **(ACCEPT MULTIPLE RESPONSES)**

01 White/Caucasian
02 Black/African American
03 Asian
04 Pacific Islander
05 Native American
06 Middle Eastern
95 Or something else **(specify)**
98 Prefer not to respond

ASK EVERYONE:

D6. Is there a language other than English spoken in your household?

01 Yes
02 No
98 Prefer not to respond

Question numbering reflects the programmed question number and may not be contiguous throughout.

IF ANOTHER LANGUAGE SPOKEN AT HOME [D6(01)], ASK:

D7. What other languages are spoken in your household? (ACCEPT ALL THAT APPLY.)

01 Spanish/Spanish Creole
02 Chinese (including Mandarin)
03 Vietnamese
04 Russian
05 French (including Patois, Cajun)
95 Other **(specify)**
98 Prefer not to respond

ASK EVERYONE:

D8. How much did **all** members of your household earn in income last year? Your total household income is for all people in the household from jobs, businesses, farms, rent, social security, etc. **(READ LIST.)**

01 Less than $13,000
02 $13,000 to $17,499
03 $17,500 to $26,499
04 $26,500 to $30,999
05 $31,000 to $35,499
06 $35,500 to $49,999
07 $50,000 to $74,999
08 $75,000 to $99,999
09 $100,000 to $124,999
10 $125,000 to $149,999
11 $150,000 to $199,999
12 $200,000 or more
98 Prefer not to respond
99 Don’t know

Question numbering reflects the programmed question number and may not be contiguous throughout.

D11. Which of the following best describes your gender identity?

01 Male/Man,
02 Female/Woman,
95 Or another identity? **(specify)**
98 Prefer not to respond

D12. What is your home ZIP Code?

____ ____ ____ ____ ____

99999 Prefer not to respond

Those are all the questions we have today. Thank you for your participation in this survey. As mentioned in your invitation, you will be compensated with a $10 MasterCard® e-gift card as a thank you for your valuable time and opinions.

D13. In order for **WBA Research** to send you your $10 MasterCard® e-gift card, please provide your name and the best email to send this card to. Your email will only be used for this purpose. Your e-gift card will be sent to you via email within the **next two weeks.**

You will receive your e-gift card through Rybbon. If you have any questions about your e-gift card, please visit help.rybbon.net

A. Name: ____

B. Email: ____

C. Please confirm your email address: ____
[FORCE D13B AND D13C TO MATCH]

98 Not interested in receiving an e-gift card

CLOSING:

Thank you for participating in this survey. If you would like to receive a summary of the results or would like more information, please visit: www.vtrans.org/vision/opinion-survey

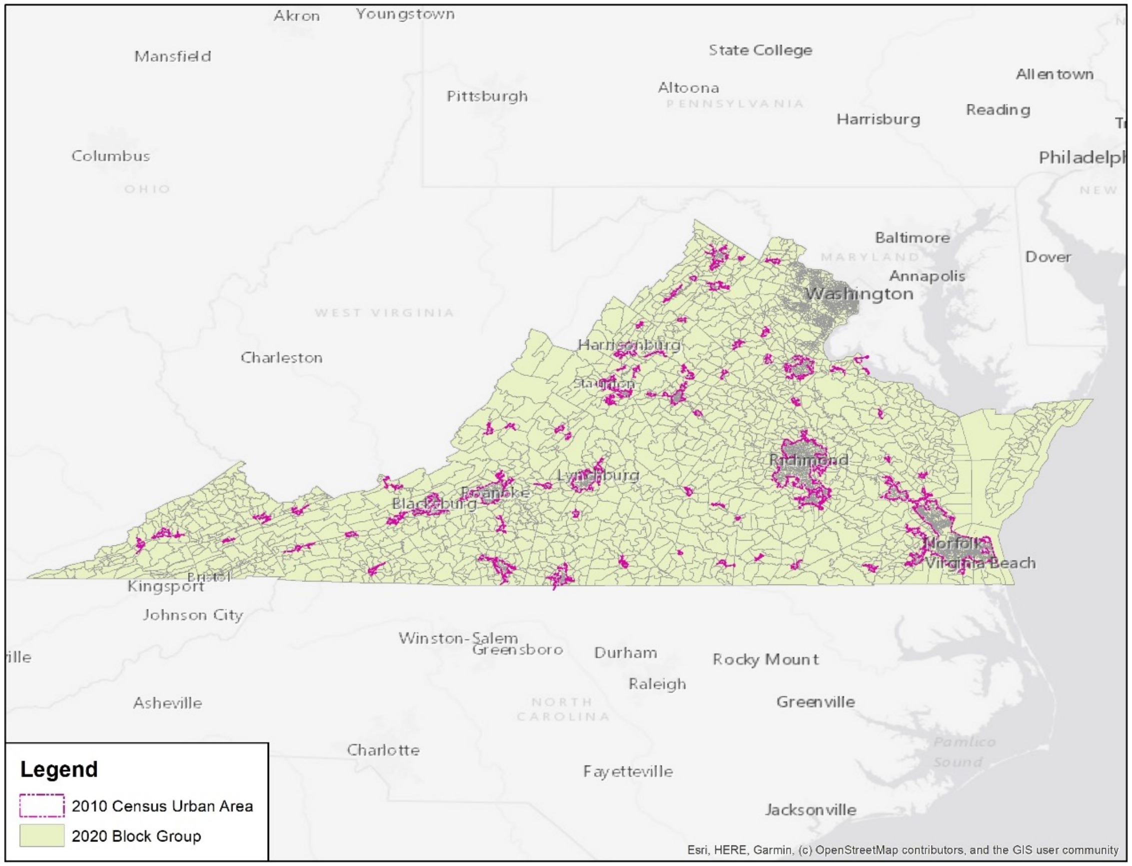
Question numbering reflects the programmed question number and may not be contiguous throughout.

APPENDIX 11:
CALCULATIONS TO DETERMINE SAMPLE SIZE

The steps taken to calculate the total number of urban households in the nine Construction Districts of the State of Virginia are as follows.

1. The 2020 household data at the Census block group level were obtained from the United States Census Bureau (2016 – 2020). American Community Survey: ACS 5-Year Estimates Detailed Tables were retrieved from https://data.census.gov/cedsci/table?q=Household%20Size%20and%20Type&g=0400000US51%241500000&d=ACS%205-Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2020.B11001
2. The attribute “B11001_001E(Estimate!!Total:)” in the table household type (including living alone) was the source for the number of households in each block group.

Figure 11-1: 2021 Census Urban Area Boundaries


Akron
Youngstown
Mansfield
State College
Allentown
Pittsburgh
Altoona
PENNSYLVANIA
Harrisburg
Reading
Columbus
Philadelph
OHIO
NEW
Baltimore
MARYLAND
Dover
Annapolis
Washington
WEST VIRGINIA
Charleston
Harrisonburg
Staunton
Richmond
Lynchburg
Roanoke
Blacksburg
Norfolk
Virginia Beach
Kingsport
Bristol
Johnson City
Winston-Salem
Greensboro
Durham
Rocky Mount
ille
Raleigh
Asheville
NORTH CAROLINA
Greenville
Charlotte
Pamlico Sound
Fayetteville
Jacksonville
Legend
2010 Census Urban Area
2020 Block Group
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

3. To distribute the number of households in the block groups partially covered by an urban area,[1] the waterbodies are first taken out from the area of the Census Block Group.[2] Then the area of the remainder of the block group is calculated. In the next step, block groups were overlaid with the Census urban area boundaries to determine the ratio of the blocks located within an urban boundary to the total area of the block group. Note, the water area was also removed from the urban area boundaries to get an accurate ratio for allocating the number of households.
4. As shown in Figure 11-2, Block Group 510411010092 is partially covered by the Richmond urban area boundary. Therefore, only a portion of the households in this block group must be allocated to Richmond.
5. Using the geographical area of the block group shown in Figure 11-3, it is determined that 54.5% of the households of the block group boundary of 510411010092 must be allocated to the Richmond Urban Area.

Figure 11-2: Areas within Virginia Beach Urban Area Covered by Water

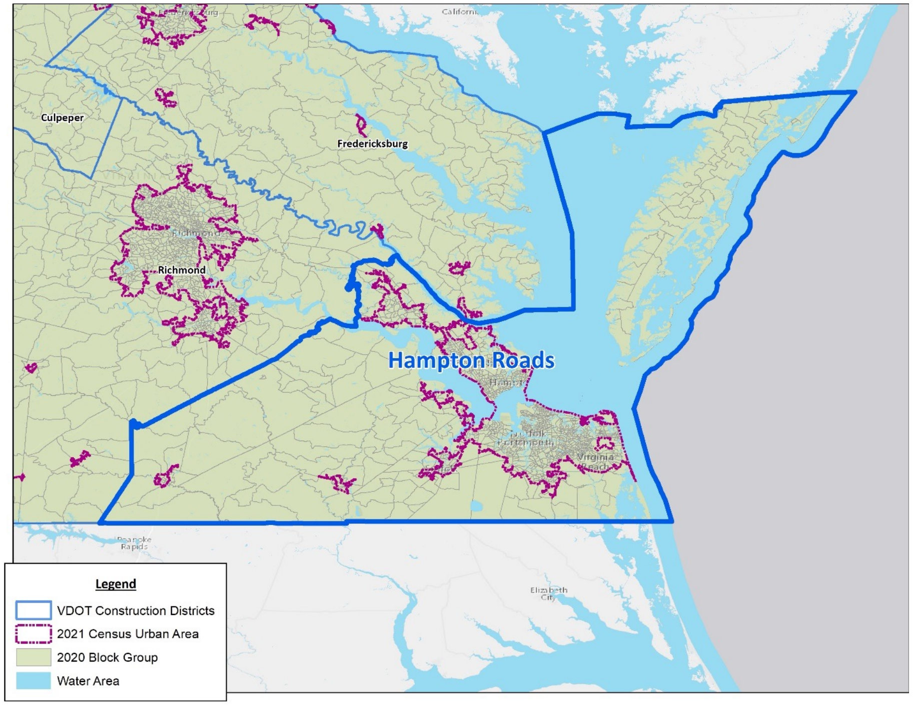
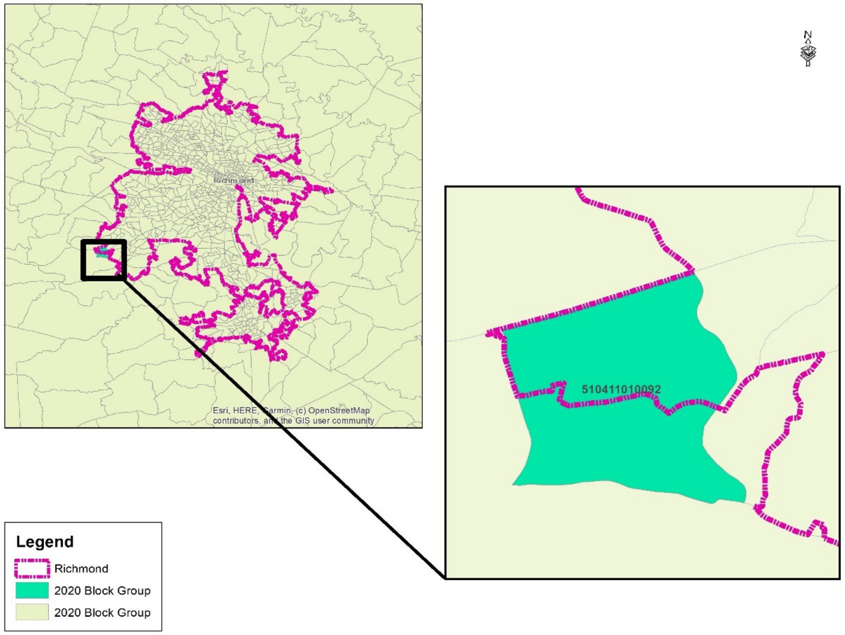

Culpeper
Fredericksburg
Richmond
Hampton Roads
Legend
VDOT Construction Districts
2021 Census Urban Area
2020 Block Group
Water Area

Figure 11-3: Example: Census Block Group Spanning Across the Census Urbanized Area Boundary


510411010092
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Legend
Richmond
2020 Block Group
2020 Block Group

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[1] 2021 Census Urban Area was retrieved from https://www2.census.gov/geo/tiger/TIGER2021/UAC/

[2] 2021 Water Area Boundaries was retrieved from https://www2.census.gov/geo/tiger/TIGER2021/AREAWATER/

6. After allocating the number of households to each urban area, the next step entails that the nine Construction Districts of the State of Virginia be intersected with the urban households data to determine the number of urban households in each district.[3] The result of this calculation is shown in Table 11-1.

Table 11-1: Number of Urban Households in VDOT Construction Districts

Construction District	Number of Urban Households
Bristol	24,157
Culpeper	60,177
Fredericksburg	78,011
Hampton Roads	574,575
Lynchburg	59,017
Northern Virginia	839,829
Richmond	379,650
Salem	138,714
Staunton	88,756
Total	**2,242,886**

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[3] Construction District Boundaries https://vtrans.org/interactvtrans/map-explorer?layer=Construction+Districts&field=Default+Symbology&center=-79.42091791156685%2C38.018031417766714&zoom=8

APPENDIX 12:
CALCULATIONS FOR WEIGHTING

This appendix documents the development of urban and non-urban census attributes for race, ethnicity, age distribution, income distribution, and group quarter population by type in Virginia Department of Transportation (VDOT) Construction Districts. The variables were developed using the 2020 American Community Survey (ACS) Five-Year Estimates data at the block group level and state level specifically for the group quarter population by type variables.

ASSUMPTIONS

According to ACS Design Methodology report,[1] the ACS residency rules consider anyone who has been living at the sample housing unit 2 months or more to be a current resident with the residency determined as of the date of the interview. As a result, all persons who have been living in the unit 2 months or more are included as a current resident unless an individual, at the time of the interview, has been or intends to be away from the unit for a period of more than 2 months. The only exceptions to this are:

- Children (under college age) who are away at boarding school or summer camp for more than 2 months are always considered current residents of their parent's home.
- Children who live under joint custody agreements and move between residences are always considered current residents of the sample unit where they are staying at the time of the interview.
- People who stay at a residence close to work and return regularly to another residence to be with their families are always considered current residents of the family residence.

It is therefore implicitly assumed that the data for all attributes developed from the ACS for the VDOT Construction Districts were extracted from residents in Virginia who have been living in the state a minimum of 2 months or more. Note, only residents above age 18 who have lived or plan to live in Virginia for more than 6 months are eligible to participate in the 2022 VTrans Biennial Survey, hereinafter referred to as "the Survey."

DATA COLLECTION AND ANALYSIS

To develop urban and non-urban population and household-based attributes in the VDOT Construction Districts, the study team obtained the following data for the State of Virginia (VA):

- 2020 ACS Five-Year Estimates data downloaded from the United States (U.S.) Census.
- 2020 Census Block Group geographic boundary shapefiles[2]
- 2021 Census Urban area files and the water area shapefiles[3,4]
- VDOT Construction District files obtained from InteractVTrans MapExplorer.

The 2020 ACS Five-Year Estimates data represents the attributes of race, ethnicity, age distribution, income distribution, and group quarter population by type developed in this study. The attributes of ethnicity, race, age, and income are at the block group level and the attribute of group quarter population by type is at the state level. The respective ACS tables used to develop each attribute are shown in Table 12-1. The "Universe" column in Table 12-1 shows the either total population or households for each data table.

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[1] United States Census Bureau, American Community Survey Design and Methodology Report (2014), Version 2.0, https://www.census.gov/programs-surveys/acs/methodology/design-and-methodology.html

[2] United States Census Bureau, Geography Division, 2020 TIGER/Line Shapefiles: Block groups, https://www2.census.gov/geo/tiger/TIGER2020/BG/

[3] United States Census Bureau, Geography Division, 2021 TIGER/Line Shapefiles: Urban Areas, https://www2.census.gov/geo/tiger/TIGER2021/UAC/

[4] United States Census Bureau, Geography Division, 2021 TIGER/Line Shapefiles: Water, https://www2.census.gov/geo/tiger/TIGER2021/AREAWATER/

The methodology thus developed both population- and household-based tables for each of the listed attributes in Table 12-1p/i8. To accomplish this, total population was divided by total households for each block group, reflecting the persons per household at the block group level. The persons per household were used to:

- Convert population-based attributes to household-based attributes by dividing the population-based attribute by the persons per household.
- Convert the household-based attributes to population-based attributes by multiplying the household-based attributes by the persons per household.

In addition, three ACS data tables were used to support the development of the Survey attributes and are summarized in Table 12-1. The supporting tables were used as checks in the conversion of population-based attributes to household-based attributes and vice versa by ensuring the sum of categories for each of these attributes at a block group level would match the totals from these tables at the block group level. For instance, if population-based age categories were converted to household-based categories, then the household-based categories must sum to the total households from Table B11001. Similarly, for an attribute-like income, which was converted from household-based categories to population-based categories at the block group level, the sum of the population-based categories for a block group must equal the total population in the block group in Table B01003.

In the case of group quarters, the group quarter population by type must sum to the total group quarter population at the block group. The total group quarter population in a block group was determined by subtracting the household population in Table B11002 from the total population in Table B01003.

Table 12-1: 2020 ACS Five-Year Estimates Table Data for Development of Attributes

Attribute	Table	Table Description	Geographic Level	Universe
Ethnicity	B03003	Hispanic or Latino Origin	Block group	Total Population
Race	B11001A	Household Type (Including Living Alone) (White Alone)	Block group	Households
	B11001B	Household Type (Including Living Alone) (Black Or African American Alone)	Block group	Households
	B11001C	Household Type (Including Living Alone) (American Indian And Alaska Native Alone)	Block group	Households
	B11001D	Household Type (Including Living Alone) (Asian Alone)	Block group	Households
	B11001E	Household Type (Including Living Alone) (Native Hawaiian And Other Pacific Islander Alone)	Block group	Households
	B11001F	Household Type (Including Living Alone) (Some Other Race Alone)	Block group	Households
	B11001G	Household Type (Including Living Alone) (Two Or More Races)	Block group	Households
Age	B01001	Sex by Age	Block group	Total Population
Income	B19001	Household Income In The Past 12 Months (In 2020 Inflation-Adjusted Dollars)	Block group	Households
Group Quarters by Type (Three Types)	B26103	Group Quarter Type (Three Types)	State	Total Population

Table 12-2: 2020 ACS Five-Year Estimates Table Data used to Support the Development of Attributes

Attribute	Table	Table Description	Geographic Level	Universe
Household Population	B11002	Household Type By Relatives And Nonrelatives For Population In Households	Block group	Population in Households
Households	B11001	Household Type (Including Living Alone)	Block group	Households
Population	B01003	Total Population	Block group	Total Population

The block group level ACS attributes were then defined into urban and non-urban area types using an area disaggregation approach. The procedure begins by overlaying shapefiles of the block groups, urban areas, and the water areas in ArcMap to identify developable land areas, as shown in Figures 12-1 and 12-2. The areas covered by water are considered undevelopable and will not be used in the data allocation procedure described in the next section.

Next, the alignment of the overlayed layers is assessed because there are several instances where the boundaries do not align, resulting in areas of partial overlap between the two layers, as shown in Figure 12-3. To address this, the developable land in the urban areas is allocated to the developable land in the block group areas by intersecting the two layers in ArcMap. This allows the determination of the area of overlap between the block group area and urban area.

The result of these procedures is a layer of developable land area of the block group that belongs in an urban area from which data allocation factors can be calculated.

Figure 12-1: Census Urban Area Boundary Overlaid on Block group Layer

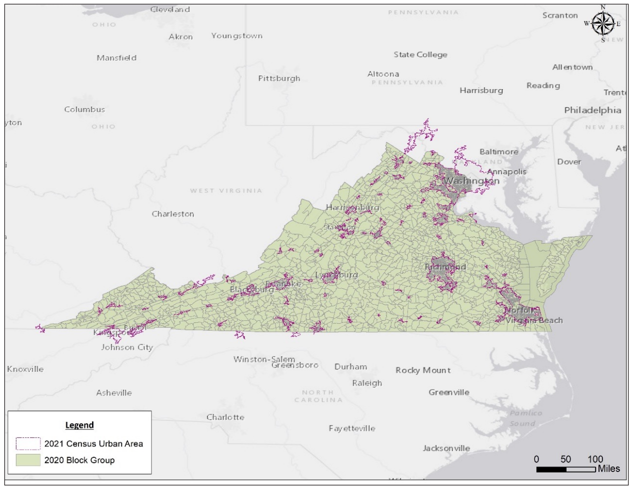

Cleveland
OHIO
Akron
Youngstown
PENNSYLVANIA
Scranton
N
W
E
S
Mansfield
State College
Allentown
Pittsburgh
Altoona
PENNSYLVANIA
Harrisburg
Reading
Trent
Columbus
Philadelphia
OHIO
NEW JER
Baltimore
MARYLAND
Dover
Annapolis
Washington
WEST VIRGINIA
Harrisonburg
Charleston
Staunton
Richmond
Lynchburg
Roanoke
Blacksburg
Norfolk
Virginia Beach
Kingsport
Bristol
Johnson City
Winston-Salem
Greensboro
Durham
Rocky Mount
Knoxville
Raleigh
Asheville
NORTH CAROLINA
Greenville
Charlotte
Pamlico Sound
Fayetteville
Jacksonville
Legend
2021 Census Urban Area
2020 Block Group
0
50
100
Miles

Figure 12-2: Areas Within Virginia Beach Urban Area Covered by Water

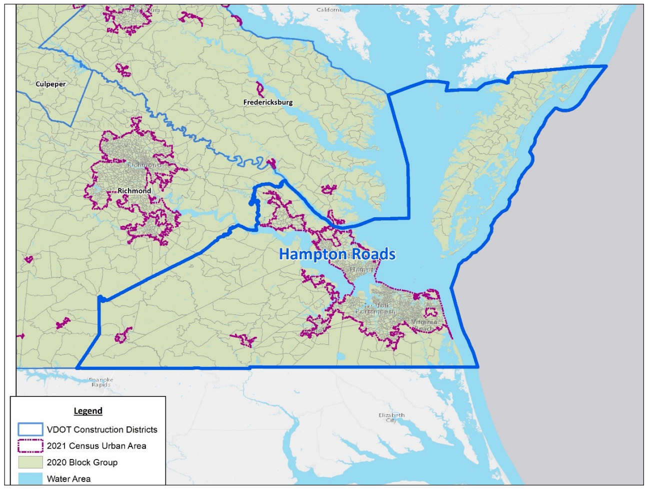
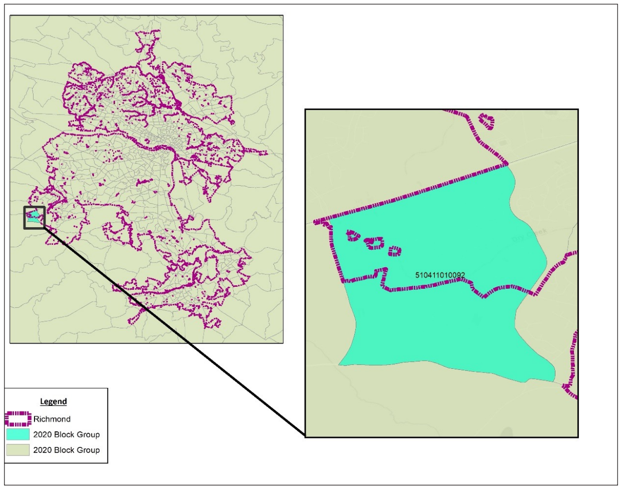

California
Culpeper
Fredericksburg
Richmond
Hampton Roads
Hampton
Norfolk
Portsmouth
Virginia Beach
Roanoke Rapids
Elizabeth City
Legend
VDOT Construction Districts
2021 Census Urban Area
2020 Block Group
Water Area

Figure 12-3: Example of a Census Block group Partially Covered by an Urban Area


510411010092
Legend
Richmond
2020 Block Group
2020 Block Group

DATA ALLOCATION PROCEDURE

The following steps outline the procedure for determining factors for allocating ACS block group attribute data to urban areas and VDOT Construction Districts.

1. Using the developable land area defined in the Data Collection and Analysis section, ArcMap was used to calculate the land area of both the total block group and the intersected block group layer.
2. Ratio of the intersected land area of the block group to the total developable area of the block group is then calculated as the allocation factor, which in turn determines the proportion of block group ACS data that are allocated to the urban area.
3. Allocation factors are then multiplied by the block group ACS data to determine the proportion of the data the urban area boundaries receive. For example, by using the geographical area of the block group that is shown in Figure 12-3, it is determined that 54.5% of the ACS data within the boundary of the block group with Geoid 510411010092 must be allocated to the Richmond Urban Area.
4. Crosswalk is then established between the urban areas and the VDOT Construction Districts and the allocated urban area data from Step 3 are summed by district.
5. To determine the non-urban Construction District ACS data, the block group ACS data are allocated directly to the VDOT Construction Districts by establishing a crosswalk between the Census Block Groups and the districts, and then the Urban Construction District ACS data developed in Step 4 are subtracted from this data.

ATTRIBUTES

Age

Table B01001, Sex by Age of the ACS, provides the age distribution by sex at the block group level and is a population-based table. Summing the number of males and females in each age group cohort results in the total population of the age cohort. The sum of all the populations for each age cohort, for each block group, is equal to the total population of the block group. To convert the population-based age distribution to a household-based distribution, the total population within the block group is divided by the total households in the block group to obtain the 'persons per household' for the block group and then each population-based age cohort is divided by the persons per household to determine the number of households within that age cohort. The sum of all the households in the age categories must equal the total households for the block group. The total population and total household data are contained in ACS Tables B01003–Total Population, and B11001–Household Type (Including Living Alone), respectively.

Note, the group quarter population was excluded from the development of the age variable so that the population-based age categories were based on household population. The age attribute categories were further refined to aggregate population in ages less than 18 years in one cohort and aggregate the population in ages 75 and over in another cohort. The age distribution within the population and households in the VDOT Construction Districts are summarized in **Table 12-3 and 12-5**. The percentage distribution of the age attribute for population and households in the VDOT Construction Districts are shown in **Table 12-4 and 12-6**, respectively. The age attribute was further refined to exclude the under 18 age group in the categories and is summarized in **Table 12-7 through 12-10**.

Table 12-3: Population by Age Cohorts in VDOT Construction Districts

Construction District	Under 18	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	Total
Total Population (Urban + Non-Urban) by Age (2020)									
Bristol	64,767	25,348	38,995	40,411	46,814	52,203	43,508	31,906	343,952
Culpeper	87,511	41,977	52,378	51,133	53,352	58,455	44,129	29,719	418,654
Fredericksburg	118,319	45,713	63,860	63,948	70,230	69,074	48,720	32,704	512,568
Hampton Roads	385,179	178,466	267,880	216,384	208,154	222,359	152,655	105,915	1,736,992
Lynchburg	77,215	45,594	48,103	40,855	47,706	54,975	45,058	33,855	393,361
Northern Virginia	606,126	204,261	368,274	388,008	357,964	292,215	180,404	114,238	2,511,490
Richmond	283,299	114,753	188,924	167,738	174,232	178,408	127,388	82,779	1,317,521
Salem	131,763	66,537	80,892	75,055	90,927	97,715	79,153	58,099	680,141
Staunton	114,118	61,174	67,172	63,937	71,703	76,723	58,914	44,867	558,608
Total	1,868,297	783,823	1,176,478	1,107,469	1,121,082	1,102,127	779,929	534,082	8,473,287
Census Urbanized Area Population by Age (2020)									
Bristol	10,821	4,742	7,003	6,829	6,692	7,666	6,380	5,844	55,977
Culpeper	32,111	24,712	24,690	20,056	17,326	17,925	13,435	10,073	160,327
Fredericksburg	58,011	22,696	32,281	31,204	30,364	26,763	16,245	10,052	227,616
Hampton Roads	333,317	159,324	240,410	187,894	176,263	188,169	125,599	86,875	1,497,851
Lynchburg	30,375	24,703	21,269	14,804	15,699	17,926	13,658	11,897	150,331
Northern Virginia	563,596	193,760	354,837	364,804	334,012	273,445	169,239	107,511	2,361,204
Richmond	214,804	88,918	151,801	127,211	127,903	125,591	87,851	58,588	982,666
Salem	66,150	42,104	46,159	38,656	41,273	41,973	33,540	26,803	336,659
Staunton	48,855	37,677	32,095	28,055	27,348	28,033	21,331	16,538	239,932
Total	1,358,040	598,636	910,544	819,513	776,879	727,490	487,279	334,181	6,012,563
Census Non-Urbanized Area Population by Age (2020)									
Bristol	53,946	20,606	31,992	33,582	40,122	44,537	37,128	26,062	287,975
Culpeper	55,400	17,265	27,688	31,077	36,026	40,530	30,694	19,646	258,327
Fredericksburg	60,308	23,017	31,579	32,744	39,866	42,311	32,475	22,652	284,952
Hampton Roads	51,862	19,142	27,470	28,490	31,891	34,190	27,056	19,040	239,141
Lynchburg	46,840	20,891	26,834	26,051	32,007	37,049	31,400	21,958	243,030
Northern Virginia	42,530	10,501	13,437	23,204	23,952	18,770	11,165	6,727	150,286
Richmond	68,495	25,835	37,123	40,527	46,329	52,817	39,537	24,191	334,855
Salem	65,613	24,433	34,733	36,399	49,654	55,742	45,613	31,296	343,482
Staunton	65,263	23,497	35,077	35,882	44,355	48,690	37,583	28,329	318,676
Total	510,257	185,187	265,934	287,956	344,203	374,637	292,650	199,901	2,460,724

Table 12-4: Percentage Distribution of Population by Age Cohorts in VDOT Construction Districts

Construction District	Under 18	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	Total
Percentage Distribution of Total Population (Urban + Non-Urban) by Age Cohorts (2020)									
Bristol	18.83%	7.37%	11.34%	11.75%	13.61%	15.18%	12.65%	9.28%	100.00%
Culpeper	20.90%	10.03%	12.51%	12.21%	12.74%	13.96%	10.54%	7.10%	100.00%
Fredericksburg	23.08%	8.92%	12.46%	12.48%	13.70%	13.48%	9.51%	6.38%	100.00%
Hampton Roads	22.18%	10.27%	15.42%	12.46%	11.98%	12.80%	8.79%	6.10%	100.00%
Lynchburg	19.63%	11.59%	12.23%	10.39%	12.13%	13.98%	11.45%	8.61%	100.00%
Northern Virginia	24.13%	8.13%	14.66%	15.45%	14.25%	11.64%	7.18%	4.55%	100.00%
Richmond	21.50%	8.71%	14.34%	12.73%	13.22%	13.54%	9.67%	6.28%	100.00%
Salem	19.37%	9.78%	11.89%	11.04%	13.37%	14.37%	11.64%	8.54%	100.00%
Staunton	20.43%	10.95%	12.02%	11.45%	12.84%	13.73%	10.55%	8.03%	100.00%
Total	22.05%	9.25%	13.88%	13.07%	13.23%	13.01%	9.20%	6.30%	100.00%
Percentage Distribution of Census Urban Area Population by Age Cohorts (2020)									
Bristol	19.33%	8.47%	12.51%	12.20%	11.96%	13.69%	11.40%	10.44%	100.00%
Culpeper	20.03%	15.41%	15.40%	12.51%	10.81%	11.18%	8.38%	6.28%	100.00%
Fredericksburg	25.49%	9.97%	14.18%	13.71%	13.34%	11.76%	7.14%	4.42%	100.00%
Hampton Roads	22.25%	10.64%	16.05%	12.54%	11.77%	12.56%	8.39%	5.80%	100.00%
Lynchburg	20.21%	16.43%	14.15%	9.85%	10.44%	11.92%	9.09%	7.91%	100.00%
Northern Virginia	23.87%	8.21%	15.03%	15.45%	14.15%	11.58%	7.17%	4.55%	100.00%
Richmond	21.86%	9.05%	15.45%	12.95%	13.02%	12.78%	8.94%	5.96%	100.00%
Salem	19.65%	12.51%	13.71%	11.48%	12.26%	12.47%	9.96%	7.96%	100.00%
Staunton	20.36%	15.70%	13.38%	11.69%	11.40%	11.68%	8.89%	6.89%	100.00%
Total	22.59%	9.96%	15.14%	13.63%	12.92%	12.10%	8.10%	5.56%	100.00%
Percentage Distribution of Census Non-Urban Area Population by Age Cohorts (2020)									
Bristol	18.73%	7.16%	11.11%	11.66%	13.93%	15.47%	12.89%	9.05%	100.00%
Culpeper	21.45%	6.68%	10.72%	12.03%	13.95%	15.69%	11.88%	7.60%	100.00%
Fredericksburg	21.16%	8.08%	11.08%	11.49%	13.99%	14.85%	11.40%	7.95%	100.00%
Hampton Roads	21.69%	8.00%	11.49%	11.91%	13.34%	14.30%	11.31%	7.96%	100.00%
Lynchburg	19.27%	8.60%	11.04%	10.72%	13.17%	15.24%	12.92%	9.03%	100.00%
Northern Virginia	28.30%	6.99%	8.94%	15.44%	15.94%	12.49%	7.43%	4.48%	100.00%
Richmond	20.46%	7.72%	11.09%	12.10%	13.84%	15.77%	11.81%	7.22%	100.00%
Salem	19.10%	7.11%	10.11%	10.60%	14.46%	16.23%	13.28%	9.11%	100.00%
Staunton	20.48%	7.37%	11.01%	11.26%	13.92%	15.28%	11.79%	8.89%	100.00%
Total	20.74%	7.53%	10.81%	11.70%	13.99%	15.22%	11.89%	8.12%	100.00%

Table 12-5: Households by Age Cohorts in VDOT Construction Districts

Construction District	Under 18	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	Total
Total Households (Urban + Non-Urban) by Age Cohorts (2020)									
Bristol	25,926	9,962	15,353	16,094	19,031	21,472	18,175	13,443	139,456
Culpeper	32,149	13,391	20,096	19,160	20,097	22,444	17,473	12,168	156,978
Fredericksburg	40,772	14,648	22,552	22,463	25,426	25,721	19,179	13,305	184,066
Hampton Roads	143,817	58,495	104,363	82,583	80,905	88,587	62,185	43,869	664,805
Lynchburg	31,006	15,244	19,493	16,239	19,425	22,703	18,780	14,123	157,013
Northern Virginia	199,831	68,714	142,786	137,925	124,719	103,360	65,700	44,279	887,314
Richmond	103,786	40,900	74,709	63,170	66,145	69,245	50,987	34,606	503,549
Salem	52,098	24,843	33,416	30,290	37,355	40,952	33,510	24,794	277,258
Staunton	43,170	19,314	25,992	24,360	27,952	30,542	23,784	18,568	213,682
Total	672,555	265,512	458,760	412,283	421,056	425,027	309,773	219,154	3,184,121
Census Urbanized Area Households by Age Cohorts (2020)									
Bristol	4,554	1,976	2,967	2,940	2,884	3,364	2,867	2,605	24,157
Culpeper	11,827	7,118	9,932	7,692	6,639	7,014	5,516	4,438	60,177
Fredericksburg	19,209	7,168	11,268	10,596	10,449	9,405	6,086	3,828	78,011
Hampton Roads	124,659	52,229	94,461	72,167	68,826	75,101	51,202	35,931	574,575
Lynchburg	12,174	7,838	8,761	5,916	6,445	7,365	5,619	4,899	59,017
Northern Virginia	186,747	65,540	138,590	130,752	117,102	97,225	61,948	41,925	839,829
Richmond	78,804	31,764	61,523	48,768	49,080	49,161	35,534	25,015	379,650
Salem	26,443	15,502	19,579	15,978	17,390	17,766	14,402	11,653	138,714
Staunton	18,307	10,242	12,463	10,660	10,633	11,064	8,587	6,799	88,756
Total	482,724	199,379	359,546	305,469	289,447	277,465	191,762	137,094	2,242,886
Census Non-Urbanized Area Households by Age Cohorts (2020)									
Bristol	21,373	7,985	12,386	13,153	16,147	18,108	15,307	10,839	115,299
Culpeper	20,322	6,273	10,164	11,468	13,458	15,430	11,957	7,730	96,801
Fredericksburg	21,563	7,480	11,284	11,866	14,977	16,316	13,093	9,476	106,055
Hampton Roads	19,158	6,267	9,902	10,416	12,079	13,487	10,983	7,938	90,230
Lynchburg	18,832	7,406	10,732	10,323	12,980	15,338	13,162	9,223	97,996
Northern Virginia	13,084	3,174	4,196	7,173	7,618	6,135	3,752	2,353	47,485
Richmond	24,981	9,136	13,185	14,403	17,065	20,084	15,453	9,591	123,899
Salem	25,654	9,341	13,837	14,312	19,965	23,186	19,107	13,140	138,544
Staunton	24,863	9,071	13,529	13,700	17,319	19,478	15,197	11,769	124,926
Total	189,831	66,133	99,214	106,815	131,609	147,562	118,011	82,060	941,235

Table 12-6: Percentage Distribution of Households by Age Cohorts in VDOT Construction Districts

Construction District	Under 18	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	Total
Percentage Distribution of Total Households (Urban + Non-Urban) by Age Cohorts (2020)									
Bristol	18.59%	7.14%	11.01%	11.54%	13.65%	15.40%	13.03%	9.64%	100.00%
Culpeper	20.48%	8.53%	12.80%	12.21%	12.80%	14.30%	11.13%	7.75%	100.00%
Fredericksburg	22.15%	7.96%	12.25%	12.20%	13.81%	13.97%	10.42%	7.23%	100.00%
Hampton Roads	21.63%	8.80%	15.70%	12.42%	12.17%	13.33%	9.35%	6.60%	100.00%
Lynchburg	19.75%	9.71%	12.41%	10.34%	12.37%	14.46%	11.96%	8.99%	100.00%
Northern Virginia	22.52%	7.74%	16.09%	15.54%	14.06%	11.65%	7.40%	4.99%	100.00%
Richmond	20.61%	8.12%	14.84%	12.55%	13.14%	13.75%	10.13%	6.87%	100.00%
Salem	18.79%	8.96%	12.05%	10.92%	13.47%	14.77%	12.09%	8.94%	100.00%
Staunton	20.20%	9.04%	12.16%	11.40%	13.08%	14.29%	11.13%	8.69%	100.00%
Total	21.12%	8.34%	14.41%	12.95%	13.22%	13.35%	9.73%	6.88%	100.00%
Percentage Distribution of Census Urban Area Households by Age Cohorts (2020)									
Bristol	18.85%	8.18%	12.28%	12.17%	11.94%	13.92%	11.87%	10.78%	100.00%
Culpeper	19.65%	11.83%	16.51%	12.78%	11.03%	11.66%	9.17%	7.38%	100.00%
Fredericksburg	24.62%	9.19%	14.44%	13.58%	13.39%	12.06%	7.80%	4.91%	100.00%
Hampton Roads	21.70%	9.09%	16.44%	12.56%	11.98%	13.07%	8.91%	6.25%	100.00%
Lynchburg	20.63%	13.28%	14.85%	10.02%	10.92%	12.48%	9.52%	8.30%	100.00%
Northern Virginia	22.24%	7.80%	16.50%	15.57%	13.94%	11.58%	7.38%	4.99%	100.00%
Richmond	20.76%	8.37%	16.21%	12.85%	12.93%	12.95%	9.36%	6.59%	100.00%
Salem	19.06%	11.18%	14.11%	11.52%	12.54%	12.81%	10.38%	8.40%	100.00%
Staunton	20.63%	11.54%	14.04%	12.01%	11.98%	12.47%	9.68%	7.66%	100.00%
Total	21.52%	8.89%	16.03%	13.62%	12.91%	12.37%	8.55%	6.11%	100.00%
Percentage Distribution of Census Non-Urban Households by Age Cohorts (2020)									
Bristol	18.54%	6.93%	10.74%	11.41%	14.00%	15.71%	13.28%	9.40%	100.00%
Culpeper	20.99%	6.48%	10.50%	11.85%	13.90%	15.94%	12.35%	7.98%	100.00%
Fredericksburg	20.33%	7.05%	10.64%	11.19%	14.12%	15.38%	12.35%	8.94%	100.00%
Hampton Roads	21.23%	6.95%	10.97%	11.54%	13.39%	14.95%	12.17%	8.80%	100.00%
Lynchburg	19.22%	7.56%	10.95%	10.53%	13.25%	15.65%	13.43%	9.41%	100.00%
Northern Virginia	27.55%	6.68%	8.84%	15.11%	16.04%	12.92%	7.90%	4.96%	100.00%
Richmond	20.16%	7.37%	10.64%	11.62%	13.77%	16.21%	12.47%	7.74%	100.00%
Salem	18.52%	6.74%	9.99%	10.33%	14.41%	16.74%	13.79%	9.48%	100.00%
Staunton	19.90%	7.26%	10.83%	10.97%	13.86%	15.59%	12.16%	9.42%	100.00%
Total	20.17%	7.03%	10.54%	11.35%	13.98%	15.68%	12.54%	8.72%	100.00%

Table 12-7: Population by Age Cohorts (Under 18 Age Category Excluded) in VDOT Construction Districts

Construction District	Under 18	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	Total
Total Population (Urban + Non-Urban) by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		25,348	38,995	40,411	46,814	52,203	43,508	31,906	279,185
Culpeper		41,977	52,378	51,133	53,352	58,455	44,129	29,719	331,143
Fredericksburg		45,713	63,860	63,948	70,230	69,074	48,720	32,704	394,249
Hampton Roads		178,466	267,880	216,384	208,154	222,359	152,655	105,915	1,351,813
Lynchburg		45,594	48,103	40,855	47,706	54,975	45,058	33,855	316,146
Northern Virginia		204,261	368,274	388,008	357,964	292,215	180,404	114,238	1,905,364
Richmond		114,753	188,924	167,738	174,232	178,408	127,388	82,779	1,034,222
Salem		66,537	80,892	75,055	90,927	97,715	79,153	58,099	548,378
Staunton		61,174	67,172	63,937	71,703	76,723	58,914	44,867	444,490
Total		783,823	1,176,478	1,107,469	1,121,082	1,102,127	779,929	534,082	6,604,990
Census Urbanized Area Population by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		4,742	7,003	6,829	6,692	7,666	6,380	5,844	45,156
Culpeper		24,712	24,690	20,056	17,326	17,925	13,435	10,073	128,216
Fredericksburg		22,696	32,281	31,204	30,364	26,763	16,245	10,052	169,605
Hampton Roads		159,324	240,410	187,894	176,263	188,169	125,599	86,875	1,164,534
Lynchburg		24,703	21,269	14,804	15,699	17,926	13,658	11,897	119,955
Northern Virginia		193,760	354,837	364,804	334,012	273,445	169,239	107,511	1,797,608
Richmond		88,918	151,801	127,211	127,903	125,591	87,851	58,588	767,862
Salem		42,104	46,159	38,656	41,273	41,973	33,540	26,803	270,509
Staunton		37,677	32,095	28,055	27,348	28,033	21,331	16,538	191,077
Total		598,636	910,544	819,513	776,879	727,490	487,279	334,181	4,654,523
Census Non-Urbanized Area Population by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		20,606	31,992	33,582	40,122	44,537	37,128	26,062	234,029
Culpeper		17,265	27,688	31,077	36,026	40,530	30,694	19,646	202,927
Fredericksburg		23,017	31,579	32,744	39,866	42,311	32,475	22,652	224,644
Hampton Roads		19,142	27,470	28,490	31,891	34,190	27,056	19,040	187,279
Lynchburg		20,891	26,834	26,051	32,007	37,049	31,400	21,958	196,191
Northern Virginia		10,501	13,437	23,204	23,952	18,770	11,165	6,727	107,756
Richmond		25,835	37,123	40,527	46,329	52,817	39,537	24,191	266,360
Salem		24,433	34,733	36,399	49,654	55,742	45,613	31,296	277,869
Staunton		23,497	35,077	35,882	44,355	48,690	37,583	28,329	253,413
Total		185,187	265,934	287,956	344,203	374,637	292,650	199,901	1,950,467

Table 12-8: Percentage Distribution of Population by Age Cohorts (Under 18 Age Category Excluded) in VDOT Construction Districts

Construction District	Under 18	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	Total
Percentage Distribution of Total Population (Urban + Non-Urban) by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		9.08%	13.97%	14.47%	16.77%	18.70%	15.58%	11.43%	100.00%
Culpeper		12.68%	15.82%	15.44%	16.11%	17.65%	13.33%	8.97%	100.00%
Fredericksburg		11.59%	16.20%	16.22%	17.81%	17.52%	12.36%	8.30%	100.00%
Hampton Roads		13.20%	19.82%	16.01%	15.40%	16.45%	11.29%	7.84%	100.00%
Lynchburg		14.42%	15.22%	12.92%	15.09%	17.39%	14.25%	10.71%	100.00%
Northern Virginia		10.72%	19.33%	20.36%	18.79%	15.34%	9.47%	6.00%	100.00%
Richmond		11.10%	18.27%	16.22%	16.85%	17.25%	12.32%	8.00%	100.00%
Salem		12.13%	14.75%	13.69%	16.58%	17.82%	14.43%	10.59%	100.00%
Staunton		13.76%	15.11%	14.38%	16.13%	17.26%	13.25%	10.09%	100.00%
Total		11.87%	17.81%	16.77%	16.97%	16.69%	11.81%	8.09%	100.00%
Percentage Distribution of Census Urbanized Area Population by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		10.50%	15.51%	15.12%	14.82%	16.98%	14.13%	12.94%	100.00%
Culpeper		19.27%	19.26%	15.64%	13.51%	13.98%	10.48%	7.86%	100.00%
Fredericksburg		13.38%	19.03%	18.40%	17.90%	15.78%	9.58%	5.93%	100.00%
Hampton Roads		13.68%	20.64%	16.13%	15.14%	16.16%	10.79%	7.46%	100.00%
Lynchburg		20.59%	17.73%	12.34%	13.09%	14.94%	11.39%	9.92%	100.00%
Northern Virginia		10.78%	19.74%	20.29%	18.58%	15.21%	9.41%	5.98%	100.00%
Richmond		11.58%	19.77%	16.57%	16.66%	16.36%	11.44%	7.63%	100.00%
Salem		15.56%	17.06%	14.29%	15.26%	15.52%	12.40%	9.91%	100.00%
Staunton		19.72%	16.80%	14.68%	14.31%	14.67%	11.16%	8.66%	100.00%
Total		12.86%	19.56%	17.61%	16.69%	15.63%	10.47%	7.18%	100.00%
Percentage Distribution of Census Non-Urbanized Area Population by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		8.80%	13.67%	14.35%	17.14%	19.03%	15.86%	11.14%	100.00%
Culpeper		8.51%	13.64%	15.31%	17.75%	19.97%	15.13%	9.68%	100.00%
Fredericksburg		10.25%	14.06%	14.58%	17.75%	18.83%	14.46%	10.08%	100.00%
Hampton Roads		10.22%	14.67%	15.21%	17.03%	18.26%	14.45%	10.17%	100.00%
Lynchburg		10.65%	13.68%	13.28%	16.31%	18.88%	16.00%	11.19%	100.00%
Northern Virginia		9.74%	12.47%	21.53%	22.23%	17.42%	10.36%	6.24%	100.00%
Richmond		9.70%	13.94%	15.22%	17.39%	19.83%	14.84%	9.08%	100.00%
Salem		8.79%	12.50%	13.10%	17.87%	20.06%	16.42%	11.26%	100.00%
Staunton		9.27%	13.84%	14.16%	17.50%	19.21%	14.83%	11.18%	100.00%
Total		9.49%	13.63%	14.76%	17.65%	19.21%	15.00%	10.25%	100.00%

Table 12-9: Total Households by Age Cohorts (18 years and Under Age Category Excluded) in VDOT Construction Districts

Construction District	Under 18	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	Total
Total Households (Urban + Non-Urban) by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		9,962	15,353	16,094	19,031	21,472	18,175	13,443	113,530
Culpeper		13,391	20,096	19,160	20,097	22,444	17,473	12,168	124,829
Fredericksburg		14,648	22,552	22,463	25,426	25,721	19,179	13,305	143,294
Hampton Roads		58,495	104,363	82,583	80,905	88,587	62,185	43,869	520,988
Lynchburg		15,244	19,493	16,239	19,425	22,703	18,780	14,123	126,007
Northern Virginia		68,714	142,786	137,925	124,719	103,360	65,700	44,279	687,483
Richmond		40,900	74,709	63,170	66,145	69,245	50,987	34,606	399,763
Salem		24,843	33,416	30,290	37,355	40,952	33,510	24,794	225,160
Staunton		19,314	25,992	24,360	27,952	30,542	23,784	18,568	170,512
Total		265,512	458,760	412,283	421,056	425,027	309,773	219,154	2,511,566
Census Urbanized Area Households by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		1,976	2,967	2,940	2,884	3,364	2,867	2,605	19,604
Culpeper		7,118	9,932	7,692	6,639	7,014	5,516	4,438	48,350
Fredericksburg		7,168	11,268	10,596	10,449	9,405	6,086	3,828	58,802
Hampton Roads		52,229	94,461	72,167	68,826	75,101	51,202	35,931	449,916
Lynchburg		7,838	8,761	5,916	6,445	7,365	5,619	4,899	46,843
Northern Virginia		65,540	138,590	130,752	117,102	97,225	61,948	41,925	653,082
Richmond		31,764	61,523	48,768	49,080	49,161	35,534	25,015	300,846
Salem		15,502	19,579	15,978	17,390	17,766	14,402	11,653	112,271
Staunton		10,242	12,463	10,660	10,633	11,064	8,587	6,799	70,449
Total		199,379	359,546	305,469	289,447	277,465	191,762	137,094	1,760,162
Census Non-Urbanized Area Households by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		7,985	12,386	13,153	16,147	18,108	15,307	10,839	93,926
Culpeper		6,273	10,164	11,468	13,458	15,430	11,957	7,730	76,479
Fredericksburg		7,480	11,284	11,866	14,977	16,316	13,093	9,476	84,493
Hampton Roads		6,267	9,902	10,416	12,079	13,487	10,983	7,938	71,072
Lynchburg		7,406	10,732	10,323	12,980	15,338	13,162	9,223	79,164
Northern Virginia		3,174	4,196	7,173	7,618	6,135	3,752	2,353	34,401
Richmond		9,136	13,185	14,403	17,065	20,084	15,453	9,591	98,917
Salem		9,341	13,837	14,312	19,965	23,186	19,107	13,140	112,889
Staunton		9,071	13,529	13,700	17,319	19,478	15,197	11,769	100,063
Total		66,133	99,214	106,815	131,609	147,562	118,011	82,060	751,404

Table 12-10: Percentage Distribution of Households by Age Cohorts (Under 18 Age Category Excluded) in VDOT Construction Districts

Construction District	Under 18	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75	Total
Percentage Distribution of Total Households (Urban + Non-Urban) by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		8.77%	13.52%	14.18%	16.76%	18.91%	16.01%	11.84%	100.00%
Culpeper		10.73%	16.10%	15.35%	16.10%	17.98%	14.00%	9.75%	100.00%
Fredericksburg		10.22%	15.74%	15.68%	17.74%	17.95%	13.38%	9.29%	100.00%
Hampton Roads		11.23%	20.03%	15.85%	15.53%	17.00%	11.94%	8.42%	100.00%
Lynchburg		12.10%	15.47%	12.89%	15.42%	18.02%	14.90%	11.21%	100.00%
Northern Virginia		10.00%	20.77%	20.06%	18.14%	15.03%	9.56%	6.44%	100.00%
Richmond		10.23%	18.69%	15.80%	16.55%	17.32%	12.75%	8.66%	100.00%
Salem		11.03%	14.84%	13.45%	16.59%	18.19%	14.88%	11.01%	100.00%
Staunton		11.33%	15.24%	14.29%	16.39%	17.91%	13.95%	10.89%	100.00%
Total		10.57%	18.27%	16.42%	16.76%	16.92%	12.33%	8.73%	100.00%
Percentage Distribution of Census Urbanized Area Households by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		10.08%	15.14%	15.00%	14.71%	17.16%	14.63%	13.29%	100.00%
Culpeper		14.72%	20.54%	15.91%	13.73%	14.51%	11.41%	9.18%	100.00%
Fredericksburg		12.19%	19.16%	18.02%	17.77%	15.99%	10.35%	6.51%	100.00%
Hampton Roads		11.61%	21.00%	16.04%	15.30%	16.69%	11.38%	7.99%	100.00%
Lynchburg		16.73%	18.70%	12.63%	13.76%	15.72%	11.99%	10.46%	100.00%
Northern Virginia		10.04%	21.22%	20.02%	17.93%	14.89%	9.49%	6.42%	100.00%
Richmond		10.56%	20.45%	16.21%	16.31%	16.34%	11.81%	8.31%	100.00%
Salem		13.81%	17.44%	14.23%	15.49%	15.82%	12.83%	10.38%	100.00%
Staunton		14.54%	17.69%	15.13%	15.09%	15.71%	12.19%	9.65%	100.00%
Total		11.33%	20.43%	17.35%	16.44%	15.76%	10.89%	7.79%	100.00%
Percentage Distribution of Census Non-Urbanized Area Households by Age Cohorts (2020) - (Under 18 Excluded)									
Bristol		8.50%	13.19%	14.00%	17.19%	19.28%	16.30%	11.54%	100.00%
Culpeper		8.20%	13.29%	15.00%	17.60%	20.18%	15.63%	10.11%	100.00%
Fredericksburg		8.85%	13.35%	14.04%	17.73%	19.31%	15.50%	11.22%	100.00%
Hampton Roads		8.82%	13.93%	14.66%	17.00%	18.98%	15.45%	11.17%	100.00%
Lynchburg		9.36%	13.56%	13.04%	16.40%	19.38%	16.63%	11.65%	100.00%
Northern Virginia		9.23%	12.20%	20.85%	22.14%	17.83%	10.91%	6.84%	100.00%
Richmond		9.24%	13.33%	14.56%	17.25%	20.30%	15.62%	9.70%	100.00%
Salem		8.27%	12.26%	12.68%	17.69%	20.54%	16.93%	11.64%	100.00%
Staunton		9.07%	13.52%	13.69%	17.31%	19.47%	15.19%	11.76%	100.00%
Total		8.80%	13.20%	14.22%	17.52%	19.64%	15.71%	10.92%	100.00%

Ethnicity

The ethnicity attribute was developed using Table B03003, Hispanic or Latino Origin, which provides ethnicity based on the total population. The table categorizes the total population within a block group as either people with a Hispanic or Latino origin or people without a Hispanic or Latino origin. Like the other attributes, the population-based ethnicity data were converted to household-based data by dividing the population within each ethnicity category by the persons per household within the block group. The sum of households within each ethnic category within the block group was compared to the total households within the block group to ensure the amounts were the same. The group quarter population was excluded in ethnicity variable so that there were no population-based ethnicity categories within a block group with zero households because the entire block group was a group quarter. The ethnicity within VDOT Construction Districts is summarized in **Table 12-11 through 12-14**.

Table 12-11: Household Ethnicity by VDOT Construction Districts

Construction District	Not Hispanic	Hispanic	Total
Total Households (Urban + Non-Urban) (2020)			
Bristol	137,591	1,865	139,456
Culpeper	147,612	9,366	156,978
Fredericksburg	169,093	14,973	184,066
Hampton Roads	618,707	46,098	664,805
Lynchburg	152,366	4,647	157,013
Northern Virginia	741,230	146,084	887,314
Richmond	473,062	30,487	503,549
Salem	267,232	10,026	277,258
Staunton	198,633	15,049	213,682
Total	2,905,526	278,595	3,184,121
Within Census Urbanized Area Households (2020)			
Bristol	23,827	331	24,157
Culpeper	55,501	4,677	60,177
Fredericksburg	68,638	9,373	78,011
Hampton Roads	533,007	41,568	574,575
Lynchburg	56,577	2,440	59,017
Northern Virginia	697,592	142,237	839,829
Richmond	353,418	26,232	379,650
Salem	132,447	6,267	138,714
Staunton	79,464	9,292	88,756
Total	2,000,470	242,416	2,242,886
Within Census Non-Urbanized Area Households (2020)			
Bristol	113,765	1,534	115,299
Culpeper	92,111	4,690	96,801
Fredericksburg	100,455	5,600	106,055
Hampton Roads	85,700	4,530	90,230
Lynchburg	95,788	2,208	97,996
Northern Virginia	43,638	3,846	47,485
Richmond	119,644	4,255	123,899
Salem	134,784	3,759	138,544
Staunton	119,169	5,757	124,926
Total	905,055	36,179	941,235

Table 12-12: Percentage Distribution of Household Ethnicity by VDOT Construction Districts

Construction District	Not Hispanic	Hispanic	Total
Percentage Distribution of Household Ethnicity (Urban + Non-Urban) (2020)			
Bristol	98.66%	1.34%	100.00%
Culpeper	94.03%	5.97%	100.00%
Fredericksburg	91.87%	8.13%	100.00%
Hampton Roads	93.07%	6.93%	100.00%
Lynchburg	97.04%	2.96%	100.00%
Northern Virginia	83.54%	16.46%	100.00%
Richmond	93.95%	6.05%	100.00%
Salem	96.38%	3.62%	100.00%
Staunton	92.96%	7.04%	100.00%
Total	91.25%	8.75%	100.00%
Percentage Distribution of Household Ethnicity within Census Urbanized Areas (2020)			
Bristol	98.63%	1.37%	100.00%
Culpeper	92.23%	7.77%	100.00%
Fredericksburg	87.99%	12.01%	100.00%
Hampton Roads	92.77%	7.23%	100.00%
Lynchburg	95.87%	4.13%	100.00%
Northern Virginia	83.06%	16.94%	100.00%
Richmond	93.09%	6.91%	100.00%
Salem	95.48%	4.52%	100.00%
Staunton	89.53%	10.47%	100.00%
Total	89.19%	10.81%	100.00%
Percentage Distribution of Household Ethnicity within Census Non-Urbanized Areas (2020)			
Bristol	98.67%	1.33%	100.00%
Culpeper	95.16%	4.84%	100.00%
Fredericksburg	94.72%	5.28%	100.00%
Hampton Roads	94.98%	5.02%	100.00%
Lynchburg	97.75%	2.25%	100.00%
Northern Virginia	91.90%	8.10%	100.00%
Richmond	96.57%	3.43%	100.00%
Salem	97.29%	2.71%	100.00%
Staunton	95.39%	4.61%	100.00%
Total	96.16%	3.84%	100.00%

Table 12-13: Population Ethnicity by VDOT Construction Districts

Construction District	Not Hispanic	Hispanic	Total
Population Ethnicity (Urban + Non-Urban) (2020)			
Bristol	338,763	5,189	343,952
Culpeper	391,964	26,690	418,654
Fredericksburg	467,509	45,059	512,568
Hampton Roads	1,612,999	123,993	1,736,992
Lynchburg	381,104	12,257	393,361
Northern Virginia	2,067,790	443,700	2,511,490
Richmond	1,233,427	84,094	1,317,521
Salem	655,329	24,812	680,141
Staunton	516,288	42,320	558,608
Total	7,665,173	808,114	8,473,287
Population Ethnicity within Census Urbanized Areas (2020)			
Bristol	55,164	813	55,977
Culpeper	146,727	13,601	160,327
Fredericksburg	199,544	28,072	227,616
Hampton Roads	1,386,972	110,879	1,497,851
Lynchburg	143,716	6,615	150,331
Northern Virginia	1,929,809	431,394	2,361,204
Richmond	910,547	72,119	982,666
Salem	321,270	15,389	336,659
Staunton	212,909	27,023	239,932
Total	5,306,658	705,905	6,012,563
Population Ethnicity within Census Non-Urbanized Areas (2020)			
Bristol	283,599	4,376	287,975
Culpeper	245,237	13,089	258,327
Fredericksburg	267,965	16,987	284,952
Hampton Roads	226,027	13,114	239,141
Lynchburg	237,388	5,642	243,030
Northern Virginia	137,981	12,306	150,286
Richmond	322,880	11,975	334,855
Salem	334,059	9,423	343,482
Staunton	303,379	15,297	318,676
Total	2,358,515	102,209	2,460,724

Table 12-14: Percentage Distribution of Population Ethnicity by VDOT Construction Districts

Construction District	Not Hispanic	Hispanic	Total
Percentage Distribution of Population Ethnicity (Urban + Non-Urban) (2020)			
Bristol	98.49%	1.51%	100.00%
Culpeper	93.62%	6.38%	100.00%
Fredericksburg	91.21%	8.79%	100.00%
Hampton Roads	92.86%	7.14%	100.00%
Lynchburg	96.88%	3.12%	100.00%
Northern Virginia	82.33%	17.67%	100.00%
Richmond	93.62%	6.38%	100.00%
Salem	96.35%	3.65%	100.00%
Staunton	92.42%	7.58%	100.00%
Total	90.46%	9.54%	100.00%
Percentage Distribution of Population Ethnicity within Census Urbanized Areas (2020)			
Bristol	98.55%	1.45%	100.00%
Culpeper	91.52%	8.48%	100.00%
Fredericksburg	87.67%	12.33%	100.00%
Hampton Roads	92.60%	7.40%	100.00%
Lynchburg	95.60%	4.40%	100.00%
Northern Virginia	81.73%	18.27%	100.00%
Richmond	92.66%	7.34%	100.00%
Salem	95.43%	4.57%	100.00%
Staunton	88.74%	11.26%	100.00%
Total	88.26%	11.74%	100.00%
Percentage Distribution of Population Ethnicity within Census Urbanized Areas (2020)			
Bristol	98.48%	1.52%	100.00%
Culpeper	94.93%	5.07%	100.00%
Fredericksburg	94.04%	5.96%	100.00%
Hampton Roads	94.52%	5.48%	100.00%
Lynchburg	97.68%	2.32%	100.00%
Northern Virginia	91.81%	8.19%	100.00%
Richmond	96.42%	3.58%	100.00%
Salem	97.26%	2.74%	100.00%
Staunton	95.20%	4.80%	100.00%
Total	95.85%	4.15%	100.00%

Race

The race attribute for each block group is developed using the total estimates of households with a particular race from the household-based race tables listed in Table 12-1. The total household estimates for each race within Race Tables B11001A, B11001B, B11001C, B11001D, B11001E, B11001F, and B11001G, within each block group, is equal to the total households in a block group from Table B11001. Each race table is converted into a person table by multiplying the number of households in each race by the persons per household for the block group. Like the age attribute, the group quarter population for the block group was excluded in the population-based race variable so that the resulting population-based race categories were based on the household population. The race attribute by households and population within the VDOT Construction Districts is summarized in **Table 12-15 through Table 12-18**.

Table 12-15: Population by Race in VDOT Construction Districts

Construction District	White Alone	Black and African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Total
Population by Race (Urban + Non-Urban) (2020)								
Bristol	334,327	4,796	575	1,391	78	303	2,481	343,952
Culpeper	349,717	45,502	1,088	9,292	74	3,733	9,248	418,654
Fredericksburg	373,356	97,861	1,658	10,146	88	14,787	14,672	512,568
Hampton Roads	1,037,832	542,976	4,253	59,942	1,662	27,784	62,542	1,736,992
Lynchburg	273,832	105,292	880	3,805	56	2,234	7,263	393,361
Northern Virginia	1,622,909	308,816	7,758	355,282	2,029	101,569	113,125	2,511,490
Richmond	836,720	379,774	3,656	44,883	486	21,655	30,346	1,317,521
Salem	581,468	69,605	1,464	14,227	270	3,674	9,434	680,141
Staunton	511,933	22,454	809	6,016	147	3,848	13,401	558,608
Total	5,922,094	1,577,078	22,141	504,984	4,890	179,587	262,513	8,473,287
Population by Race within Census Urbanized Areas (2020)								
Bristol	52,272	2,645	17	372	11	23	637	55,977
Culpeper	126,478	20,145	354	7,102	50	2,211	3,988	160,327
Fredericksburg	154,320	47,412	812	6,788	88	9,622	8,574	227,616
Hampton Roads	868,987	483,895	4,052	56,811	1,618	26,733	55,754	1,497,851
Lynchburg	92,836	49,838	204	2,676	40	1,369	3,368	150,331
Northern Virginia	1,509,730	299,451	7,428	334,995	1,921	100,431	107,247	2,361,204
Richmond	588,682	308,090	2,407	40,507	263	19,184	23,533	982,666
Salem	265,363	50,538	678	11,964	267	2,098	5,751	336,659
Staunton	209,183	16,583	354	3,739	34	2,371	7,669	239,932
Total	3,867,853	1,278,597	16,305	464,953	4,292	164,041	216,521	6,012,563
Population by Race within Census Non-Urbanized Areas (2020)								
Bristol	282,055	2,152	558	1,019	67	280	1,845	287,975
Culpeper	223,239	25,357	734	2,191	24	1,522	5,260	258,327
Fredericksburg	219,036	50,449	846	3,358	0	5,165	6,098	284,952
Hampton Roads	168,845	59,081	201	3,131	44	1,051	6,788	239,141
Lynchburg	180,995	55,454	676	1,129	16	865	3,895	243,030
Northern Virginia	113,179	9,365	331	20,287	108	1,138	5,879	150,286
Richmond	248,038	71,684	1,249	4,376	223	2,471	6,813	334,855
Salem	316,105	19,067	786	2,263	3	1,576	3,682	343,482
Staunton	302,750	5,872	455	2,277	113	1,477	5,732	318,676
Total	2,054,241	298,481	5,836	40,031	597	15,546	45,992	2,460,724

Table 12-16: Percentage Distribution of Population by Race in VDOT Construction Districts

Construction District	White Alone	Black and African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Total
Percentage Distribution of Race in Total Population (Urban + Non-Urban) (2020)								
Bristol	97.20%	1.39%	0.17%	0.40%	0.02%	0.09%	0.72%	100.00%
Culpeper	83.53%	10.87%	0.26%	2.22%	0.02%	0.89%	2.21%	100.00%
Fredericksburg	72.84%	19.09%	0.32%	1.98%	0.02%	2.88%	2.86%	100.00%
Hampton Roads	59.75%	31.26%	0.24%	3.45%	0.10%	1.60%	3.60%	100.00%
Lynchburg	69.61%	26.77%	0.22%	0.97%	0.01%	0.57%	1.85%	100.00%
Northern Virginia	64.62%	12.30%	0.31%	14.15%	0.08%	4.04%	4.50%	100.00%
Richmond	63.51%	28.82%	0.28%	3.41%	0.04%	1.64%	2.30%	100.00%
Salem	85.49%	10.23%	0.22%	2.09%	0.04%	0.54%	1.39%	100.00%
Staunton	91.64%	4.02%	0.14%	1.08%	0.03%	0.69%	2.40%	100.00%
Total	69.89%	18.61%	0.26%	5.96%	0.06%	2.12%	3.10%	100.00%
Percentage Distribution of Race in Census Urbanized Areas Population (2020)								
Bristol	93.38%	4.72%	0.03%	0.66%	0.02%	0.04%	1.14%	100.00%
Culpeper	78.89%	12.57%	0.22%	4.43%	0.03%	1.38%	2.49%	100.00%
Fredericksburg	67.80%	20.83%	0.36%	2.98%	0.04%	4.23%	3.77%	100.00%
Hampton Roads	58.02%	32.31%	0.27%	3.79%	0.11%	1.78%	3.72%	100.00%
Lynchburg	61.75%	33.15%	0.14%	1.78%	0.03%	0.91%	2.24%	100.00%
Northern Virginia	63.94%	12.68%	0.31%	14.19%	0.08%	4.25%	4.54%	100.00%
Richmond	59.91%	31.35%	0.24%	4.12%	0.03%	1.95%	2.39%	100.00%
Salem	78.82%	15.01%	0.20%	3.55%	0.08%	0.62%	1.71%	100.00%
Staunton	87.18%	6.91%	0.15%	1.56%	0.01%	0.99%	3.20%	100.00%
Total	64.33%	21.27%	0.27%	7.73%	0.07%	2.73%	3.60%	100.00%
Percentage Distribution of Race in Census Non-Urbanized Areas Population (2020)								
Bristol	97.94%	0.75%	0.19%	0.35%	0.02%	0.10%	0.64%	100.00%
Culpeper	86.42%	9.82%	0.28%	0.85%	0.01%	0.59%	2.04%	100.00%
Fredericksburg	76.87%	17.70%	0.30%	1.18%	0.00%	1.81%	2.14%	100.00%
Hampton Roads	70.60%	24.71%	0.08%	1.31%	0.02%	0.44%	2.84%	100.00%
Lynchburg	74.47%	22.82%	0.28%	0.46%	0.01%	0.36%	1.60%	100.00%
Northern Virginia	75.31%	6.23%	0.22%	13.50%	0.07%	0.76%	3.91%	100.00%
Richmond	74.07%	21.41%	0.37%	1.31%	0.07%	0.74%	2.03%	100.00%
Salem	92.03%	5.55%	0.23%	0.66%	0.00%	0.46%	1.07%	100.00%
Staunton	95.00%	1.84%	0.14%	0.71%	0.04%	0.46%	1.80%	100.00%
Total	83.48%	12.13%	0.24%	1.63%	0.02%	0.63%	1.87%	100.00%

Table 12-17: Households by Race in VDOT Construction Districts

Construction District	White Alone	Black and African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Total
Household Race (Urban + Non-Urban) (2020)								
Bristol	135,272	2,122	224	639	34	125	1,040	139,456
Culpeper	131,329	17,204	407	3,325	31	1,281	3,401	156,978
Fredericksburg	135,202	34,945	586	3,445	32	4,767	5,089	184,066
Hampton Roads	398,666	207,689	1,663	22,182	559	10,746	23,300	664,805
Lynchburg	109,372	42,045	379	1,455	20	869	2,873	157,013
Northern Virginia	579,745	109,611	2,712	122,592	673	32,761	39,220	887,314
Richmond	320,382	144,828	1,384	17,068	167	7,947	11,773	503,549
Salem	236,926	28,491	610	5,722	108	1,495	3,906	277,258
Staunton	195,917	8,753	324	2,429	70	1,360	4,829	213,682
Total	2,242,811	595,688	8,289	178,857	1,694	61,351	95,431	3,184,121
Household Race in Census Urbanized Areas Population (2020)								
Bristol	22,468	1,216	8	180	5	10	270	24,157
Culpeper	47,596	7,739	144	2,477	23	742	1,456	60,177
Fredericksburg	53,148	16,172	280	2,278	32	3,265	2,836	78,011
Hampton Roads	335,201	185,040	1,584	21,053	543	10,375	20,779	574,575
Lynchburg	36,335	19,616	86	1,076	15	509	1,380	59,017
Northern Virginia	543,654	106,743	2,603	116,383	638	32,402	37,405	839,829
Richmond	228,635	118,247	892	15,540	96	6,988	9,252	379,650
Salem	109,389	20,770	273	4,890	107	889	2,397	138,714
Staunton	77,213	6,382	154	1,504	17	803	2,684	88,756
Total	1,453,640	481,923	6,026	165,380	1,476	55,984	78,458	2,242,886
Household Race in Census Non-Urbanized Areas Population (2020)								
Bristol	112,804	906	216	459	29	115	770	115,299
Culpeper	83,733	9,465	263	848	8	539	1,945	96,801
Fredericksburg	82,054	18,773	306	1,167	0	1,502	2,253	106,055
Hampton Roads	63,465	22,649	79	1,129	16	371	2,521	90,230
Lynchburg	73,037	22,429	293	379	5	360	1,493	97,996
Northern Virginia	36,091	2,868	109	6,209	35	359	1,815	47,485
Richmond	91,747	26,581	492	1,528	71	959	2,521	123,899
Salem	127,537	7,721	337	832	1	606	1,509	138,544
Staunton	118,704	2,371	170	925	53	557	2,145	124,926
Total	789,171	113,765	2,263	13,477	218	5,367	16,973	941,235

Table 12-18: Percentage Distribution of Household Race in VDOT Construction Districts

Construction District	White Alone	Black and African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Total
Household Race (Urban + Non-Urban) (2020)								
Bristol	97.00%	1.52%	0.16%	0.46%	0.02%	0.09%	0.75%	100.00%
Culpeper	83.66%	10.96%	0.26%	2.12%	0.02%	0.82%	2.17%	100.00%
Fredericksburg	73.45%	18.99%	0.32%	1.87%	0.02%	2.59%	2.76%	100.00%
Hampton Roads	59.97%	31.24%	0.25%	3.34%	0.08%	1.62%	3.50%	100.00%
Lynchburg	69.66%	26.78%	0.24%	0.93%	0.01%	0.55%	1.83%	100.00%
Northern Virginia	65.34%	12.35%	0.31%	13.82%	0.08%	3.69%	4.42%	100.00%
Richmond	63.62%	28.76%	0.27%	3.39%	0.03%	1.58%	2.34%	100.00%
Salem	85.45%	10.28%	0.22%	2.06%	0.04%	0.54%	1.41%	100.00%
Staunton	91.69%	4.10%	0.15%	1.14%	0.03%	0.64%	2.26%	100.00%
Total	70.44%	18.71%	0.26%	5.62%	0.05%	1.93%	3.00%	100.00%
Household Race in Census Urbanized Areas Population (2020)								
Bristol	93.01%	5.03%	0.03%	0.75%	0.02%	0.04%	1.12%	100.00%
Culpeper	79.09%	12.86%	0.24%	4.12%	0.04%	1.23%	2.42%	100.00%
Fredericksburg	68.13%	20.73%	0.36%	2.92%	0.04%	4.18%	3.64%	100.00%
Hampton Roads	58.34%	32.20%	0.28%	3.66%	0.09%	1.81%	3.62%	100.00%
Lynchburg	61.57%	33.24%	0.15%	1.82%	0.03%	0.86%	2.34%	100.00%
Northern Virginia	64.73%	12.71%	0.31%	13.86%	0.08%	3.86%	4.45%	100.00%
Richmond	60.22%	31.15%	0.23%	4.09%	0.03%	1.84%	2.44%	100.00%
Salem	78.86%	14.97%	0.20%	3.52%	0.08%	0.64%	1.73%	100.00%
Staunton	86.99%	7.19%	0.17%	1.69%	0.02%	0.90%	3.02%	100.00%
Total	64.81%	21.49%	0.27%	7.37%	0.07%	2.50%	3.50%	100.00%
Household Race in Census Non-Urbanized Areas Population (2020)								
Bristol	97.84%	0.79%	0.19%	0.40%	0.02%	0.10%	0.67%	100.00%
Culpeper	86.50%	9.78%	0.27%	0.88%	0.01%	0.56%	2.01%	100.00%
Fredericksburg	77.37%	17.70%	0.29%	1.10%	0.00%	1.42%	2.12%	100.00%
Hampton Roads	70.34%	25.10%	0.09%	1.25%	0.02%	0.41%	2.79%	100.00%
Lynchburg	74.53%	22.89%	0.30%	0.39%	0.01%	0.37%	1.52%	100.00%
Northern Virginia	76.00%	6.04%	0.23%	13.08%	0.07%	0.76%	3.82%	100.00%
Richmond	74.05%	21.45%	0.40%	1.23%	0.06%	0.77%	2.03%	100.00%
Salem	92.06%	5.57%	0.24%	0.60%	0.00%	0.44%	1.09%	100.00%
Staunton	95.02%	1.90%	0.14%	0.74%	0.04%	0.45%	1.72%	100.00%
Total	83.84%	12.09%	0.24%	1.43%	0.02%	0.57%	1.80%	100.00%

Income

The income attribute was developed using Table B19001, Household Income in the Past 12 Months (in 2020 Inflation-Adjusted Dollars), which provides the number of households within 16 income categories based on the household income for the past 12 months in 2020 inflated adjusted dollars. The sum of all households in the 16 income categories within a block group was equal to the total households within that same block group. The household income data were converted to population-based income data by multiplying the number of households in each income category by the persons per household. The sum of all the populations within each income category for a block group was compared to the total household population for the block group to ensure the amounts matched. Like all other variables, the group quarter population was excluded from the developed population-based income tables so that there was no block group data with 'zero households but with population-based income' because the entire block group was a group quarter.

The income by household and population categories within the VDOT Construction Districts is summarized in **Table 12-19 through Table 12-22**.

Table 12-19: Households by Income Categories in VDOT Construction Districts

Construction District	Less than $10,000	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $29,999	$30,000 to $34,999	$35,000 to $39,999	$40,000 to $44,999	$45,000 to $49,999	$50,000 to $59,999	$60,000 to $74,999	$75,000 to $99,999	$100,000 to $124,999	$125,000 to $149,999	$150,000 to $199,999	More than $200,000	Total
Total Household (Urban + Non-Urban) Income (2020)																	
Bristol	12,429	9,958	10,118	9,799	8,318	8,468	7,747	6,979	6,638	10,743	13,490	15,410	8,706	4,098	3,529	3,026	139,456
Culpeper	6,559	4,571	5,263	5,247	4,097	6,018	4,946	5,593	5,711	11,458	15,076	22,718	16,157	12,136	15,109	16,319	156,978
Fredericksburg	6,491	4,510	4,871	5,495	5,052	6,984	6,701	6,512	6,230	12,975	17,438	25,680	20,946	14,870	19,840	19,471	184,066
Hampton Roads	35,434	21,009	23,105	27,605	26,157	26,546	25,679	27,906	28,331	53,909	70,541	92,024	70,001	45,931	47,862	42,765	664,805
Lynchburg	11,903	9,884	8,015	9,560	8,919	9,300	7,807	8,147	7,087	13,125	15,987	19,802	11,619	6,653	5,336	3,869	157,013
Northern Virginia	23,468	11,585	11,283	15,458	16,382	16,570	17,011	19,044	18,227	39,562	62,032	105,122	95,601	84,085	132,309	219,575	887,314
Richmond	25,076	18,578	19,248	18,292	18,829	20,052	20,774	20,066	19,649	39,267	48,232	65,981	52,770	35,128	38,574	43,033	503,549
Salem	19,968	14,674	13,756	15,075	14,321	12,568	12,261	11,941	11,535	24,414	29,544	34,531	23,937	13,378	12,299	13,056	277,258
Staunton	10,411	8,747	9,787	9,857	8,925	9,530	10,019	10,321	9,757	17,204	23,680	30,312	20,005	12,673	12,637	9,817	213,682
Total	151,739	103,516	105,446	116,388	111,000	116,036	112,945	116,509	113,165	222,657	296,020	411,580	319,742	228,952	287,495	370,931	3,184,121
Census Urbanized Area Household Income (2020)																	
Bristol	2,410	1,885	1,629	1,678	1,656	1,371	1,606	865	1,098	2,006	2,145	2,301	1,311	660	901	634	24,157
Culpeper	3,764	1,337	2,410	2,407	1,559	2,637	1,596	2,203	2,239	4,111	5,364	8,010	6,289	4,664	6,111	5,478	60,177
Fredericksburg	2,177	1,311	1,676	2,187	1,773	2,789	2,522	2,608	2,679	5,464	6,944	10,411	9,270	7,002	10,031	9,166	78,011
Hampton Roads	31,257	18,137	19,374	23,503	22,739	23,087	22,012	24,304	24,781	47,298	62,126	79,730	60,019	39,394	40,693	36,121	574,575
Lynchburg	4,809	3,892	3,032	3,760	3,859	3,801	3,141	3,293	2,702	4,831	5,817	6,931	3,982	2,193	1,830	1,144	59,017
Northern Virginia	22,895	11,292	10,859	15,047	15,957	15,996	16,506	18,254	17,519	38,025	60,077	101,525	91,848	79,966	123,986	200,078	839,829
Richmond	20,072	14,438	14,973	14,168	14,685	15,683	16,846	15,630	14,907	29,486	36,772	48,349	39,479	25,110	27,659	31,392	379,650
Salem	12,081	7,466	7,249	8,077	7,277	6,381	5,942	5,890	5,812	12,145	14,210	16,065	11,636	5,992	5,751	6,739	138,714
Staunton	4,913	4,099	4,533	4,279	4,334	4,189	4,141	4,389	4,224	6,855	9,449	11,866	7,892	4,806	4,956	3,833	88,756
Total	104,379	63,856	65,735	75,105	73,839	75,936	74,313	77,435	75,960	150,221	202,903	285,188	231,726	169,786	221,918	294,585	2,242,886
Census Non-Urbanized Area Household Income (2020)																	
Bristol	10,019	8,073	8,489	8,121	6,662	7,097	6,141	6,114	5,540	8,737	11,345	13,109	7,395	3,438	2,628	2,392	115,299
Culpeper	2,795	3,234	2,853	2,840	2,538	3,381	3,350	3,390	3,472	7,347	9,712	14,708	9,868	7,472	8,998	10,841	96,801
Fredericksburg	4,314	3,199	3,195	3,308	3,279	4,195	4,179	3,904	3,551	7,511	10,494	15,269	11,676	7,868	9,809	10,305	106,055
Hampton Roads	4,177	2,872	3,731	4,102	3,418	3,459	3,667	3,602	3,550	6,611	8,415	12,294	9,982	6,537	7,169	6,644	90,230
Lynchburg	7,094	5,992	4,983	5,800	5,060	5,499	4,666	4,854	4,385	8,294	10,170	12,871	7,637	4,460	3,506	2,725	97,996
Northern Virginia	573	293	424	411	425	574	505	790	708	1,537	1,955	3,597	3,753	4,119	8,323	19,497	47,485
Richmond	5,004	4,140	4,275	4,124	4,144	4,369	3,928	4,436	4,742	9,781	11,460	17,632	13,291	10,018	10,915	11,641	123,899
Salem	7,887	7,208	6,507	6,998	7,044	6,187	6,319	6,051	5,723	12,269	15,334	18,466	12,301	7,386	6,548	6,317	138,544
Staunton	5,498	4,648	5,254	5,578	4,591	5,341	5,878	5,932	5,533	10,349	14,231	18,446	12,113	7,867	7,681	5,984	124,926
Total	47,360	39,660	39,711	41,283	37,161	40,100	38,632	39,074	37,205	72,436	93,117	126,392	88,016	59,166	65,577	76,346	941,235

Table 12-20: Percentage Distribution of Households by Income Categories in VDOT Construction Districts

Construction District	Less than $10,000	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $29,999	$30,000 to $34,999	$35,000 to $39,999	$40,000 to $44,999	$45,000 to $49,999	$50,000 to $59,999	$60,000 to $74,999	$75,000 to $99,999	$100,000 to $124,999	$125,000 to $149,999	$150,000 to $199,999	More than $200,000	Total
Percentage Distribution of Total Household (Urban + Non-Urban) Income (2020)																	
Bristol	8.91%	7.14%	7.26%	7.03%	5.96%	6.07%	5.56%	5.00%	4.76%	7.70%	9.67%	11.05%	6.24%	2.94%	2.53%	2.17%	100.00%
Culpeper	4.18%	2.91%	3.35%	3.34%	2.61%	3.83%	3.15%	3.56%	3.64%	7.30%	9.60%	14.47%	10.29%	7.73%	9.62%	10.40%	100.00%
Fredericksburg	3.53%	2.45%	2.65%	2.99%	2.74%	3.79%	3.64%	3.54%	3.38%	7.05%	9.47%	13.95%	11.38%	8.08%	10.78%	10.58%	100.00%
Hampton Roads	5.33%	3.16%	3.48%	4.15%	3.93%	3.99%	3.86%	4.20%	4.26%	8.11%	10.61%	13.84%	10.53%	6.91%	7.20%	6.43%	100.00%
Lynchburg	7.58%	6.30%	5.10%	6.09%	5.68%	5.92%	4.97%	5.19%	4.51%	8.36%	10.18%	12.61%	7.40%	4.24%	3.40%	2.46%	100.00%
Northern Virginia	2.64%	1.31%	1.27%	1.74%	1.85%	1.87%	1.92%	2.15%	2.05%	4.46%	6.99%	11.85%	10.77%	9.48%	14.91%	24.75%	100.00%
Richmond	4.98%	3.69%	3.82%	3.63%	3.74%	3.98%	4.13%	3.98%	3.90%	7.80%	9.58%	13.10%	10.48%	6.98%	7.66%	8.55%	100.00%
Salem	7.20%	5.29%	4.96%	5.44%	5.17%	4.53%	4.42%	4.31%	4.16%	8.81%	10.66%	12.45%	8.63%	4.83%	4.44%	4.71%	100.00%
Staunton	4.87%	4.09%	4.58%	4.61%	4.18%	4.46%	4.69%	4.83%	4.57%	8.05%	11.08%	14.19%	9.36%	5.93%	5.91%	4.59%	100.00%
Total	4.77%	3.25%	3.31%	3.66%	3.49%	3.64%	3.55%	3.66%	3.55%	6.99%	9.30%	12.93%	10.04%	7.19%	9.03%	11.65%	100.00%
Percentage Distribution of Household Income in Census Urbanized Areas (2020)																	
Bristol	9.98%	7.81%	6.74%	6.95%	6.86%	5.68%	6.65%	3.58%	4.54%	8.30%	8.88%	9.52%	5.43%	2.73%	3.73%	2.63%	100.00%
Culpeper	6.26%	2.22%	4.01%	4.00%	2.59%	4.38%	2.65%	3.66%	3.72%	6.83%	8.91%	13.31%	10.45%	7.75%	10.16%	9.10%	100.00%
Fredericksburg	2.79%	1.68%	2.15%	2.80%	2.27%	3.58%	3.23%	3.34%	3.43%	7.00%	8.90%	13.35%	11.88%	8.98%	12.86%	11.75%	100.00%
Hampton Roads	5.44%	3.16%	3.37%	4.09%	3.96%	4.02%	3.83%	4.23%	4.31%	8.23%	10.81%	13.88%	10.45%	6.86%	7.08%	6.29%	100.00%
Lynchburg	8.15%	6.59%	5.14%	6.37%	6.54%	6.44%	5.32%	5.58%	4.58%	8.19%	9.86%	11.74%	6.75%	3.72%	3.10%	1.94%	100.00%
Northern Virginia	2.73%	1.34%	1.29%	1.79%	1.90%	1.90%	1.97%	2.17%	2.09%	4.53%	7.15%	12.09%	10.94%	9.52%	14.76%	23.82%	100.00%
Richmond	5.29%	3.80%	3.94%	3.73%	3.87%	4.13%	4.44%	4.12%	3.93%	7.77%	9.69%	12.74%	10.40%	6.61%	7.29%	8.27%	100.00%
Salem	8.71%	5.38%	5.23%	5.82%	5.25%	4.60%	4.28%	4.25%	4.19%	8.76%	10.24%	11.58%	8.39%	4.32%	4.15%	4.86%	100.00%
Staunton	5.54%	4.62%	5.11%	4.82%	4.88%	4.72%	4.67%	4.95%	4.76%	7.72%	10.65%	13.37%	8.89%	5.41%	5.58%	4.32%	100.00%
Total	4.65%	2.85%	2.93%	3.35%	3.29%	3.39%	3.31%	3.45%	3.39%	6.70%	9.05%	12.72%	10.33%	7.57%	9.89%	13.13%	100.00%
Percentage Distribution of Household Income in Census Non-Urbanized Areas (2020)																	
Bristol	8.69%	7.00%	7.36%	7.04%	5.78%	6.15%	5.33%	5.30%	4.81%	7.58%	9.84%	11.37%	6.41%	2.98%	2.28%	2.07%	100.00%
Culpeper	2.89%	3.34%	2.95%	2.93%	2.62%	3.49%	3.46%	3.50%	3.59%	7.59%	10.03%	15.19%	10.19%	7.72%	9.30%	11.20%	100.00%
Fredericksburg	4.07%	3.02%	3.01%	3.12%	3.09%	3.96%	3.94%	3.68%	3.35%	7.08%	9.89%	14.40%	11.01%	7.42%	9.25%	9.72%	100.00%
Hampton Roads	4.63%	3.18%	4.13%	4.55%	3.79%	3.83%	4.06%	3.99%	3.93%	7.33%	9.33%	13.63%	11.06%	7.24%	7.95%	7.36%	100.00%
Lynchburg	7.24%	6.11%	5.09%	5.92%	5.16%	5.61%	4.76%	4.95%	4.47%	8.46%	10.38%	13.13%	7.79%	4.55%	3.58%	2.78%	100.00%
Northern Virginia	1.21%	0.62%	0.89%	0.87%	0.90%	1.21%	1.06%	1.66%	1.49%	3.24%	4.12%	7.57%	7.90%	8.67%	17.53%	41.06%	100.00%
Richmond	4.04%	3.34%	3.45%	3.33%	3.34%	3.53%	3.17%	3.58%	3.83%	7.89%	9.25%	14.23%	10.73%	8.09%	8.81%	9.40%	100.00%
Salem	5.69%	5.20%	4.70%	5.05%	5.08%	4.47%	4.56%	4.37%	4.13%	8.86%	11.07%	13.33%	8.88%	5.33%	4.73%	4.56%	100.00%
Staunton	4.40%	3.72%	4.21%	4.47%	3.68%	4.28%	4.71%	4.75%	4.43%	8.28%	11.39%	14.77%	9.70%	6.30%	6.15%	4.79%	100.00%
Total	5.03%	4.21%	4.22%	4.39%	3.95%	4.26%	4.10%	4.15%	3.95%	7.70%	9.89%	13.43%	9.35%	6.29%	6.97%	8.11%	100.00%

Table 12-21: Total Population by Income Categories in VDOT Construction Districts

Construction District	Less than $10,000	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $29,999	$30,000 to $34,999	$35,000 to $39,999	$40,000 to $44,999	$45,000 to $49,999	$50,000 to $59,999	$60,000 to $74,999	$75,000 to $99,999	$100,000 to $124,999	$125,000 to $149,999	$150,000 to $199,999	More than $200,000	Total
Total Population (Urban + Non-Urban) by Income Category (2020)																	
Bristol	30,198	24,118	24,426	24,088	20,442	20,530	18,878	17,285	16,278	26,782	33,538	38,773	21,973	10,476	8,801	7,365	343,952
Culpeper	18,874	11,843	13,279	13,662	10,759	15,773	12,761	14,738	14,635	30,467	39,290	60,495	42,950	32,562	42,969	43,595	418,654
Fredericksburg	17,344	11,156	13,334	15,289	13,224	18,620	17,918	17,537	16,520	34,538	48,534	70,915	58,805	43,068	58,477	57,288	512,568
Hampton Roads	91,261	53,241	58,491	69,583	66,966	69,609	66,368	71,457	72,886	137,668	183,512	240,999	186,452	125,073	129,203	114,224	1,736,992
Lynchburg	29,369	24,237	19,426	23,473	22,071	23,502	19,745	20,202	18,008	33,348	39,416	50,257	29,518	17,614	13,404	9,770	393,361
Northern Virginia	61,572	30,503	31,056	41,314	45,780	45,942	48,617	53,475	49,966	108,650	168,833	289,240	265,699	238,414	380,810	651,619	2,511,490
Richmond	64,309	48,123	49,566	46,272	47,287	50,500	51,520	50,548	49,908	99,433	124,108	175,808	141,452	94,621	105,269	118,796	1,317,521
Salem	49,410	34,837	33,073	36,052	34,690	30,129	29,589	28,800	27,872	59,731	72,601	84,848	59,873	34,014	31,896	32,727	680,141
Staunton	26,627	21,837	25,189	24,550	22,627	24,066	25,662	27,858	25,586	44,093	62,257	78,540	54,376	34,582	34,781	25,978	558,608
Total	388,964	259,895	267,841	294,283	283,846	298,671	291,059	301,900	291,658	574,711	772,090	1,089,875	861,098	630,425	805,610	1,061,362	8,473,287
Census Urbanized Area Population by Income Category (2020)																	
Bristol	5,558	4,165	3,769	3,920	3,822	3,092	3,578	1,992	2,566	4,740	5,132	5,247	3,140	1,684	2,109	1,463	55,977
Culpeper	11,599	3,367	5,965	6,086	4,145	6,875	3,935	5,799	5,657	10,738	13,912	20,749	16,044	12,229	18,181	15,047	160,327
Fredericksburg	6,097	3,301	4,696	6,617	4,884	7,514	7,257	7,595	7,181	14,750	20,693	29,391	27,342	21,351	30,780	28,167	227,616
Hampton Roads	80,929	46,085	49,185	59,522	58,004	60,833	56,677	62,317	63,573	120,810	161,225	208,423	158,686	106,677	109,172	95,732	1,497,851
Lynchburg	12,069	9,826	7,457	9,214	9,471	9,815	8,623	8,304	7,368	12,614	14,352	17,694	10,552	5,502	4,614	2,855	150,331
Northern Virginia	59,822	29,614	29,877	40,090	44,475	44,144	47,114	51,042	47,753	103,967	162,777	277,978	253,832	225,462	354,299	588,956	2,361,204
Richmond	51,321	37,585	37,905	35,248	36,715	38,820	41,303	38,916	37,817	73,276	93,234	127,876	104,481	67,363	74,685	86,121	982,666
Salem	30,468	17,711	17,265	18,941	17,237	15,177	14,182	14,053	13,932	29,250	34,375	38,818	28,600	14,909	15,067	16,673	336,659
Staunton	12,820	10,391	11,853	10,896	10,960	10,784	11,088	11,990	11,374	17,712	26,137	31,498	23,234	14,118	14,514	10,564	239,932
Total	270,683	162,046	167,971	190,535	189,714	197,053	193,758	202,009	197,220	387,858	531,837	757,673	625,909	469,296	623,421	845,579	6,012,563
Census Non-Urbanized Area Population by Income Category (2020)																	
Bristol	24,640	19,953	20,657	20,168	16,620	17,438	15,301	15,293	13,713	22,042	28,406	33,526	18,833	8,792	6,692	5,902	287,975
Culpeper	7,275	8,476	7,314	7,576	6,614	8,899	8,826	8,939	8,978	19,729	25,378	39,746	26,907	20,333	24,787	28,548	258,327
Fredericksburg	11,247	7,855	8,639	8,672	8,340	11,106	10,661	9,942	9,338	19,788	27,842	41,524	31,464	21,717	27,696	29,122	284,952
Hampton Roads	10,332	7,156	9,306	10,061	8,962	8,776	9,690	9,139	9,313	16,858	22,286	32,576	27,766	18,395	20,031	18,491	239,141
Lynchburg	17,300	14,410	11,969	14,259	12,600	13,687	11,122	11,898	10,640	20,734	25,064	32,563	18,966	12,112	8,790	6,915	243,030
Northern Virginia	1,750	889	1,179	1,223	1,304	1,799	1,503	2,433	2,213	4,683	6,056	11,262	11,867	12,952	26,511	62,662	150,286
Richmond	12,988	10,538	11,661	11,024	10,572	11,680	10,217	11,632	12,091	26,157	30,875	47,932	36,971	27,258	30,584	32,675	334,855
Salem	18,942	17,126	15,808	17,110	17,453	14,952	15,406	14,747	13,940	30,481	38,226	46,030	31,273	19,105	16,829	16,054	343,482
Staunton	13,807	11,446	13,336	13,654	11,667	13,282	14,574	15,868	14,212	26,381	36,120	47,042	31,143	20,463	20,267	15,414	318,676
Total	118,281	97,849	99,870	103,748	94,132	101,618	97,300	99,892	94,438	186,853	240,253	332,201	235,189	161,128	182,188	215,783	2,460,724

Table 12-22: Percentage Distribution of Population by Income Categories in VDOT Construction Districts

Construction District	Less than $10,000	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $29,999	$30,000 to $34,999	$35,000 to $39,999	$40,000 to $44,999	$45,000 to $49,999	$50,000 to $59,999	$60,000 to $74,999	$75,000 to $99,999	$100,000 to $124,999	$125,000 to $149,999	$150,000 to $199,999	More than $200,000	Total
Percentage Distribution of Total Population (Urban + Non-Urban) by Income Category (2020)																	
Bristol	8.78%	7.01%	7.10%	7.00%	5.94%	5.97%	5.49%	5.03%	4.73%	7.79%	9.75%	11.27%	6.39%	3.05%	2.56%	2.14%	100.00%
Culpeper	4.51%	2.83%	3.17%	3.26%	2.57%	3.77%	3.05%	3.52%	3.50%	7.28%	9.38%	14.45%	10.26%	7.78%	10.26%	10.41%	100.00%
Fredericksburg	3.38%	2.18%	2.60%	2.98%	2.58%	3.63%	3.50%	3.42%	3.22%	6.74%	9.47%	13.84%	11.47%	8.40%	11.41%	11.18%	100.00%
Hampton Roads	5.25%	3.07%	3.37%	4.01%	3.86%	4.01%	3.82%	4.11%	4.20%	7.93%	10.56%	13.87%	10.73%	7.20%	7.44%	6.58%	100.00%
Lynchburg	7.47%	6.16%	4.94%	5.97%	5.61%	5.97%	5.02%	5.14%	4.58%	8.48%	10.02%	12.78%	7.50%	4.48%	3.41%	2.48%	100.00%
Northern Virginia	2.45%	1.21%	1.24%	1.64%	1.82%	1.83%	1.94%	2.13%	1.99%	4.33%	6.72%	11.52%	10.58%	9.49%	15.16%	25.95%	100.00%
Richmond	4.88%	3.65%	3.76%	3.51%	3.59%	3.83%	3.91%	3.84%	3.79%	7.55%	9.42%	13.34%	10.74%	7.18%	7.99%	9.02%	100.00%
Salem	7.26%	5.12%	4.86%	5.30%	5.10%	4.43%	4.35%	4.23%	4.10%	8.78%	10.67%	12.48%	8.80%	5.00%	4.69%	4.81%	100.00%
Staunton	4.77%	3.91%	4.51%	4.39%	4.05%	4.31%	4.59%	4.99%	4.58%	7.89%	11.14%	14.06%	9.73%	6.19%	6.23%	4.65%	100.00%
Total	4.59%	3.07%	3.16%	3.47%	3.35%	3.52%	3.44%	3.56%	3.44%	6.78%	9.11%	12.86%	10.16%	7.44%	9.51%	12.53%	100.00%
Percentage Distribution of Population by Income Category within Census Urbanized Areas (2020)																	
Bristol	9.93%	7.44%	6.73%	7.00%	6.83%	5.52%	6.39%	3.56%	4.58%	8.47%	9.17%	9.37%	5.61%	3.01%	3.77%	2.61%	100.00%
Culpeper	7.23%	2.10%	3.72%	3.80%	2.59%	4.29%	2.45%	3.62%	3.53%	6.70%	8.68%	12.94%	10.01%	7.63%	11.34%	9.39%	100.00%
Fredericksburg	2.68%	1.45%	2.06%	2.91%	2.15%	3.30%	3.19%	3.34%	3.15%	6.48%	9.09%	12.91%	12.01%	9.38%	13.52%	12.37%	100.00%
Hampton Roads	5.40%	3.08%	3.28%	3.97%	3.87%	4.06%	3.78%	4.16%	4.24%	8.07%	10.76%	13.91%	10.59%	7.12%	7.29%	6.39%	100.00%
Lynchburg	8.03%	6.54%	4.96%	6.13%	6.30%	6.53%	5.74%	5.52%	4.90%	8.39%	9.55%	11.77%	7.02%	3.66%	3.07%	1.90%	100.00%
Northern Virginia	2.53%	1.25%	1.27%	1.70%	1.88%	1.87%	2.00%	2.16%	2.02%	4.40%	6.89%	11.77%	10.75%	9.55%	15.01%	24.94%	100.00%
Richmond	5.22%	3.82%	3.86%	3.59%	3.74%	3.95%	4.20%	3.96%	3.85%	7.46%	9.49%	13.01%	10.63%	6.86%	7.60%	8.76%	100.00%
Salem	9.05%	5.26%	5.13%	5.63%	5.12%	4.51%	4.21%	4.17%	4.14%	8.69%	10.21%	11.53%	8.50%	4.43%	4.48%	4.95%	100.00%
Staunton	5.34%	4.33%	4.94%	4.54%	4.57%	4.49%	4.62%	5.00%	4.74%	7.38%	10.89%	13.13%	9.68%	5.88%	6.05%	4.40%	100.00%
Total	4.50%	2.70%	2.79%	3.17%	3.16%	3.28%	3.22%	3.36%	3.28%	6.45%	8.85%	12.60%	10.41%	7.81%	10.37%	14.06%	100.00%
Percentage Distribution of Population by Income Category within Census Non-Urbanized Areas (2020)																	
Bristol	8.56%	6.93%	7.17%	7.00%	5.77%	6.06%	5.31%	5.31%	4.76%	7.65%	9.86%	11.64%	6.54%	3.05%	2.32%	2.05%	100.00%
Culpeper	2.82%	3.28%	2.83%	2.93%	2.56%	3.44%	3.42%	3.46%	3.48%	7.64%	9.82%	15.39%	10.42%	7.87%	9.60%	11.05%	100.00%
Fredericksburg	3.95%	2.76%	3.03%	3.04%	2.93%	3.90%	3.74%	3.49%	3.28%	6.94%	9.77%	14.57%	11.04%	7.62%	9.72%	10.22%	100.00%
Hampton Roads	4.32%	2.99%	3.89%	4.21%	3.75%	3.67%	4.05%	3.82%	3.89%	7.05%	9.32%	13.62%	11.61%	7.69%	8.38%	7.73%	100.00%
Lynchburg	7.12%	5.93%	4.93%	5.87%	5.18%	5.63%	4.58%	4.90%	4.38%	8.53%	10.31%	13.40%	7.80%	4.98%	3.62%	2.85%	100.00%
Northern Virginia	1.16%	0.59%	0.78%	0.81%	0.87%	1.20%	1.00%	1.62%	1.47%	3.12%	4.03%	7.49%	7.90%	8.62%	17.64%	41.70%	100.00%
Richmond	3.88%	3.15%	3.48%	3.29%	3.16%	3.49%	3.05%	3.47%	3.61%	7.81%	9.22%	14.31%	11.04%	8.14%	9.13%	9.76%	100.00%
Salem	5.51%	4.99%	4.60%	4.98%	5.08%	4.35%	4.49%	4.29%	4.06%	8.87%	11.13%	13.40%	9.10%	5.56%	4.90%	4.67%	100.00%
Staunton	4.33%	3.59%	4.18%	4.28%	3.66%	4.17%	4.57%	4.98%	4.46%	8.28%	11.33%	14.76%	9.77%	6.42%	6.36%	4.84%	100.00%
Total	4.81%	3.98%	4.06%	4.22%	3.83%	4.13%	3.95%	4.06%	3.84%	7.59%	9.76%	13.50%	9.56%	6.55%	7.40%	8.77%	100.00%

Group Quarters by Type

It was essential to develop group quarters for the VDOT Construction Districts because the group quarter population was excluded from the development of the population-based age, ethnicity, race, and income attributes.

Group quarters (GQ) are places where people reside within a group living arrangement that is owned or managed by an entity or organization providing housing and/or services for the residents. These services may include custodial or medical care, as well as other types of assistance, and residency is commonly restricted to those receiving these services. People living in GQs usually are not biologically related to each other. GQs include such places as college residence halls, residential treatment centers, skilled-nursing facilities, group homes, military barracks, prisons, workers' dormitories, and facilities for people experiencing homelessness. GQs are defined according to the housing and/or services provided to residents and are identified by Census GQ-type codes.

Institutional – Facilities that house those who are primarily ineligible, unable, or unlikely to participate in the labor force while in residence.

- Correctional Facilities for Adults – Federal detention centers, federal prisons, state prisons, local jails and other municipal confinement facilities, military disciplinary barracks, and jail
- Juvenile Facilities – Group homes for juveniles, residential treatment centers for juveniles, and correctional facilities intended for juveniles
- Nursing/Skilled-Nursing Facilities
- Other Institutional Facilities – Psychiatric hospitals and units in other hospitals, hospitals with patients who have no usual home elsewhere, in-patient hospice facilities, military treatment facilities with assigned patients, and residential schools for people with disabilities

Non-Institutional – Facilities that house those who are primarily eligible, able, or likely to participate in the labor force while in residence.

- College/University Housing
- Military Quarters – Military Quarters, Military Ships
- Other Non-institutional Facilities – Emergency or Transitional Shelters for people experiencing homelessness, group homes intended for adults, residential treatments centers for adults, workers' group living quarters and job corps centers, other non institutional group quarters

The ACS provides three types of group quarters, which are available at national, regional, and state geographic levels and provided in Table B26103–Group Quarter Type (Three Types). Table B2603 was downloaded for the State of Virginia from the 2020 ACS five-year estimate subject tables and provides the total population, the total group quarter population, institutionalized, and non-institutionalized group quarter population. The table further categorizes the institutionalized group quarter population into adult correctional facilities and nursing facilities/skilled-nursing facilities, and the non-institutionalized group quarter population into college/university student housing population.

To determine the group quarter population in juvenile correctional facilities for Virginia, the sum of the group quarter population in the adult correctional facilities and the nursing facilities/skilled-nursing facilities is subtracted from the total institutional group quarter population for the state. Similarly, to determine the military group quarter population for the state, the college/university housing group quarter population is subtracted from the institutionalized group quarter population for the state.

To develop group quarter population by type at the block group level, the total group quarter population for each block group in Virginia is calculated by subtracting the household population of the block group in Table 11002 of the ACS from the total population of the block group from Table B01003 of the ACS. This total group quarter population is then used to calculate an allocation factor for the statewide data in Table B26103 by dividing the total group quarter population in a block group by the sum of group quarter population for all block groups in the State of Virginia. These allocation factors are then multiplied by the different types of group quarter population at the statewide level from Table B26103 to collect them at the block group level.

A check is performed to ensure the sum of all group quarter population by type within a block group is equal to the total group quarter population within the block group. The developed block group level group quarter population by type is then allocated to urban areas and then VDOT Construction Districts using the procedure described in the Data Collection and Analysis section.

The group quarter population by type within the VDOT Construction Districts is summarized in **Table 12-23 through Table 12-24.**

Table 12-23: Total Group Quarter Population and Group Quarter Population by Type in VDOT Construction Districts

Construction District	Group Quarter Population in Adult Correctional Facilities	Group Quarter Population in Nursing Facilities/Skilled-Nursing Facilities	Group Quarter Population in Juvenile Correctional Facilities	Group Quarter Population in College University Student Housing	Group Quarter Population in Military Camps	Total
Total Group Quarter Population (Urban + Non-Urban) (2020)						
Bristol	3,595	1,724	300	5,103	3,237	13,959
Culpeper	3,768	1,807	310	5,345	3,391	14,621
Fredericksburg	3,158	1,514	257	4,475	2,839	12,243
Hampton Roads	19,408	9,320	1,593	27,527	17,459	75,307
Lynchburg	6,080	2,922	493	8,625	5,484	23,604
Northern Virginia	5,368	2,586	424	7,614	4,831	20,823
Richmond	9,223	4,432	749	13,079	8,288	35,771
Salem	6,431	3,091	532	9,123	5,775	24,952
Staunton	5,967	2,865	488	8,464	5,368	23,152
Total	62,998	30,261	5,146	89,355	56,672	244,432
Group Quarter Population in Census Urbanized Areas (2020)						
Bristol	640	307	54	908	577	2,486
Culpeper	2,704	1,296	223	3,831	2,437	10,491
Fredericksburg	1,085	519	88	1,539	980	4,210
Hampton Roads	14,997	7,200	1,228	21,263	13,494	58,182
Lynchburg	3,546	1,702	290	5,029	3,191	13,758
Northern Virginia	4,897	2,360	384	6,948	4,409	18,997
Richmond	6,035	2,905	487	8,565	5,420	23,412
Salem	5,069	2,437	422	7,191	4,552	19,672
Staunton	4,555	2,187	376	6,463	4,096	17,678
Total	43,529	20,914	3,551	61,736	39,155	168,885
Group Quarter Population in Census Non-Urbanized Areas (2020)						
Bristol	2,955	1,417	246	4,195	2,660	11,473
Culpeper	1,064	511	87	1,514	954	4,130
Fredericksburg	2,073	995	169	2,936	1,859	8,033
Hampton Roads	4,411	2,120	365	6,264	3,965	17,125
Lynchburg	2,534	1,220	203	3,596	2,293	9,846
Northern Virginia	471	226	40	666	422	1,826
Richmond	3,188	1,527	262	4,514	2,868	12,359
Salem	1,362	654	110	1,932	1,223	5,280
Staunton	1,412	678	112	2,001	1,272	5,474
Total	19,469	9,347	1,595	27,619	17,517	75,547

Table 12-24: Percentage Distribution of Total Group Quarter Population and Group Quarter Population by Type in VDOT Construction Districts

Construction District	Group Quarter Population in Adult Correctional Facilities	Group Quarter Population in Nursing Facilities/Skilled-Nursing Facilities	Group Quarter Population in Juvenile Correctional Facilities	Group Quarter Population in College University Student Housing	Group Quarter Population in Military Camps	Total
Percentage Distribution of Total Group Quarter Population (Urban + Non-Urban) (2020)						
Bristol	25.75%	12.35%	2.15%	36.56%	23.19%	100.00%
Culpeper	25.77%	12.36%	2.12%	36.56%	23.19%	100.00%
Fredericksburg	25.79%	12.37%	2.10%	36.55%	23.19%	100.00%
Hampton Roads	25.77%	12.38%	2.12%	36.55%	23.18%	100.00%
Lynchburg	25.76%	12.38%	2.09%	36.54%	23.23%	100.00%
Northern Virginia	25.78%	12.42%	2.04%	36.57%	23.20%	100.00%
Richmond	25.78%	12.39%	2.09%	36.56%	23.17%	100.00%
Salem	25.77%	12.39%	2.13%	36.56%	23.14%	100.00%
Staunton	25.77%	12.37%	2.11%	36.56%	23.19%	100.00%
Total	25.77%	12.38%	2.11%	36.56%	23.19%	100.00%
Percentage Distribution of Group Quarter Population within Census Urbanized Areas (2020)						
Bristol	25.75%	12.35%	2.16%	36.52%	23.21%	100.00%
Culpeper	25.78%	12.35%	2.13%	36.51%	23.23%	100.00%
Fredericksburg	25.76%	12.33%	2.08%	36.55%	23.27%	100.00%
Hampton Roads	25.78%	12.38%	2.11%	36.55%	23.19%	100.00%
Lynchburg	25.77%	12.37%	2.11%	36.56%	23.20%	100.00%
Northern Virginia	25.78%	12.42%	2.02%	36.57%	23.21%	100.00%
Richmond	25.78%	12.41%	2.08%	36.58%	23.15%	100.00%
Salem	25.77%	12.39%	2.14%	36.56%	23.14%	100.00%
Staunton	25.77%	12.37%	2.13%	36.56%	23.17%	100.00%
Total	25.77%	12.38%	2.10%	36.56%	23.18%	100.00%
Percentage Distribution of Group Quarter Population within Census Non-Urbanized Areas (2020)						
Bristol	25.75%	12.35%	2.15%	36.56%	23.18%	100.00%
Culpeper	25.76%	12.38%	2.10%	36.67%	23.09%	100.00%
Fredericksburg	25.81%	12.38%	2.11%	36.55%	23.14%	100.00%
Hampton Roads	25.76%	12.38%	2.13%	36.58%	23.16%	100.00%
Lynchburg	25.74%	12.39%	2.07%	36.52%	23.29%	100.00%
Northern Virginia	25.80%	12.38%	2.20%	36.49%	23.13%	100.00%
Richmond	25.79%	12.36%	2.12%	36.52%	23.21%	100.00%
Salem	25.79%	12.38%	2.09%	36.58%	23.16%	100.00%
Staunton	25.79%	12.38%	2.04%	36.56%	23.24%	100.00%
Total	25.77%	12.37%	2.11%	36.56%	23.19%	100.00%

APPENDIX 13:

KNOWN LIMITATIONS AND OPPORTUNITIES FOR CONTINUOUS IMPROVEMENT

While the results of the 2022 VTrans Biennial Transportation Survey help provide valuable information, the data have limitations. These limitations should be considered when looking at specific results. The following highlights the critical limitations of the sampling approach and survey results.

- Reasoning for responses: Several responses indicate seemingly inconsistent or inaccurate responses. For example, Bristol residents indicated the availability of subway as a mode of transportation (which does not exist in the Bristol Construction District). This may happen for a variety of reasons. While the results represent a macro view of the Commonwealth, a Construction District, or other subgroups, they are made up of thousands of individuals' lives and experiences, all of which are unique. For example, one respondent appears to live part-time in the Bristol Construction District but commutes to the greater Washington area 2 days a week. There will be anomalous cases like this throughout the data as people live their individual lives, and their solitary situations will not impact the analysis. If there are multiple cases, then perhaps the seemingly illogical is, in fact, true and may lead to a reexamining of preconceived notions or biases and, ultimately, to a better understanding of residents' views and behaviors.

  Finally, respondents may also misinterpret or misunderstand questions, despite all efforts to make questions clear and easy to understand. Ultimately, the reason for these responses may never indeed be known, and this needs to be kept in mind when reading and interpreting the results.

- Seasonal biases: The survey data was collected from August to October 2022 (i.e., late summer and fall). This may result in seasonal differences in responses to some questions, particularly those related to current travel behavior, which is often affected by weather and when schools are or are not in session.
- Question phrasing: The survey results were compared to those drawn from the U.S. Census American Community Survey (ACS) for similar questions. The ACS is conducted continuously, relying on a combination of mail questionnaires, telephone interviews, and field interviews.[1] The 2022 VTrans Transportation Survey was conducted from August to October 2022 and relied on address-based sampling utilizing a combination of online and telephone interviews. These differences in data collection methods may yield slightly different results. Furthermore, while attempts were made to use similar question wording to the ACS when possible, questions were not always identical in all cases. Even subtle wording differences in questions can yield very different results.
- Recency bias (i.e., the tendency to favor recent events) or anchoring bias (i.e., the tendency to use current knowledge or reference points when predicting future behavior): Framing questions with an indeterminate period (e.g., in a typical week) can lead to recency bias. This was anticipated, and the vast majority of questions focused on a specific period, such as the past 7 days, to mitigate the impact of this bias. Questions about future behavior can still be subject to anchoring bias. An example of this is a person's reported likelihood to purchase an electric car in the future, which may be impacted based on current technology, the current availability of charging stations, or other variables that are likely to change in the future.
- The margin of error: Not all survey respondents answered all questions. As a result, response rates vary by question. The margin of error varies based on the question and the combination of attributes reported. The survey-wide margin of error is ±1.2 percentage points at the 95% confidence level, with many results having a margin of error of less than ±1.0 percentage point. At the same time, specific results have larger margins of error due to smaller sample sizes. With this in mind, it is recommended not to examine survey results drawn from sample sizes of fewer than 50 respondents, as the margin of error is greater than ±14 percentage points.
  - Quotas for the number of required responses were established for each of the nine construction VDOT Construction Districts. These quotas were based on the number of households in each Construction District and the number of households within census urbanized areas and non-urbanized areas within each Construction District. A minimum target of 100 surveys per Construction District urban/non-urban subgroup was established. The survey results were then weighted by age, race, ethnicity, and household income to represent each Construction District, urban and non-urban area. If a respondent did not respond to the age, race, ethnicity, and household income questions, they were removed from the final dataset. Appendix 1 provides more details about the survey methodology and

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[1] *American Community Survey (ACS) Questions and Answers*. United States Bureau of Labor Statistics. https://www.bls.gov/lau/acsqa.htm#:~:text=The%20ACS%20is%20a%20large,3.5%20million%20household%20addresses%20annually, Accessed November 2022.

sampling plan and Appendix 3 contains data analysis methods and procedures. Of the 7,384 surveys collected, 238 were removed; therefore, the final count of usable survey responses (from the Construction District urban/non-urban subgroup) fell below 100 in two instances—Northern Virginia Non-Urban and Hampton Roads Non-Urban. This resulted in a higher-than-the-desired margin of error in these two Construction Districts.

- Limitations of the data collection method: Data collection was conducted using a combination of online and telephone surveys, with the basis of the sample being addressed. Appendix 2 provides more details on the data collection methods. This method, a combination of online and telephone surveys, yields a very large sampling frame. However, it is still subject to non-response bias. Furthermore, the results are subject to mode effects because responses were disproportionately collected online. Some of these effects include:
  - Respondents are more likely to respond to sensitive questions (e.g., household income) online and respond more accurately.
  - Respondents are more likely to provide greater detail when responding by telephone to a live interviewer who can probe and clarify.
  - Respondents are more likely to favor the first answer choice presented in an online survey (i.e., what they read first). In contrast, they are more likely to favor the last answer choice given in a telephone survey (i.e., what they are most likely to remember). However, the randomization of response options in both methods helps to mitigate this.

Table 13-1: Survey Source

VDOT Construction District	Survey Source		
	Telephone	Online	Total
Bristol	45	512	557
Culpeper	31	589	620
Fredericksburg	46	503	549
Hampton Roads	29	982	1011
Lynchburg	35	442	477
Northern Virginia	21	1,922	1,943
Richmond	74	767	841
Salem	24	555	579
Staunton	24	545	569
Total	**329**	**6,817**	**7,146**

- Addressing non-response biases: "Nonresponse bias is the bias that occurs when the people who respond to a survey differ significantly from the people who do not respond to the survey."[2] When survey nonresponses present a stronger correlation with one respondent characteristic over another—rather than being randomly distributed across the population—survey nonresponse bias becomes a limitation when examining the survey results. In this case, the nonresponse rate was higher among non-urban area residents than among urban-area residents.

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[2] Source: https://www.statology.org/nonresponse-bias/

Table 13-2: Response Rate

VDOT Construction District	Response Rate		
	Urban	Non-Urban	Total
Bristol	4.4%	4.4%	4.4%
Culpeper	6.1%	5.3%	5.7%
Fredericksburg	5.1%	5.0%	5.0%
Hampton Roads	4.3%	5.9%	4.4%
Lynchburg	4.4%	4.4%	4.4%
Northern Virginia	5.8%	9.0%	5.9%
Richmond	4.7%	6.8%	5.0%
Salem	5.5%	5.0%	5.3%
Staunton	5.3%	5.2%	5.2%
Total	**5.1%**	**5.1%**	**5.1%**

To mitigate the impact of non-response bias, the data were weighted to be representative of the population based on age, ethnicity/race, household income, and the population at both the Construction District and within urban and non-urban areas within each Construction District.

- Utilization of incentive to collect responses: Incentives are used because they can increase the reach and representativeness of surveys as they have been proven to increase response among those less likely to respond to surveys in general or because of the survey topic. Furthermore, research has shown that incentives have a minimal negative impact on the representativeness of the sample and can improve it, particularly in terms of representativeness by age.[3] To identify those who are only completing the survey for the incentive and are not responding seriously, quality control measures were utilized. As data were being collected, survey times were flagged that were too short to be feasible, as well as records with responses to open-ended questions that were gibberish. These records were then examined and, if deemed unusable, deleted from the data set.
- Limitations of the data analysis: Appendix 3 contains more details about the data analysis methods and techniques. The known limitations related to data analysis are as follows:
  - Limitations of Random Iterative Method (RIM): RIM was used for data analysis. It uses a set of target percentages for each variable considered for weighting. However, a respondent may choose not to respond to one or more of the questions used in the weighting process. To address this limitation, two steps are taken. First, if the respondent chooses not to answer any questions, they are eliminated from the analysis because they cannot be weighted. Next, the remaining survey responses are analyzed to determine if they have responses to all of the survey questions used in weighting. For those that did not, an imputation process was used to provide a value for those questions to which they did not respond.

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[3] Smyth, J. Olson, K. M., Stange, M. (2019). *Within-Household Selection Methods: A Critical Review and Experimental Examination.* University of Nebraska – Lincoln. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1763&context=sociologyfacpub

[4] Brick, J.M., Montaquila, J., and Roth, S. (2003). *Identifying Problems with Raking Estimators.* American Statistical Association. http://www.asasrms.org/Proceedings/y2003/Files/JSM2003-000472.pdf

  - Control totals: This type of weighting is inconsistent in the control totals. In this case, sampling and weighting were done at the household level rather than the individual level. Race/ethnicity and age targets had to be established at the household level rather than the individual level.[4]
  - Measurement bias: Finally, measurement bias can be present between the survey data and the source data for weighting, the latter being the American Community Survey (ACS). As they use different sampling and data collection methodologies, this can lead to some differences in the measurements taken. Note that non-response bias is not factored into the margin of error calculations as it is a form of non-sampling error, whereas the margin of error estimates sampling error.
  - Assignment of group quarter populations: The ACS only reports the group quarter sample at the state level. The methodology distributed the group quarter populations by type for each block group by developing a disaggregation factor using the ratio of block group quarters population to the total group quarters population of the Commonwealth of Virginia. Then, the disaggregation factor was used to allocate the total group quarter population at each block group between the institutional and non-institutional group quarters. Appendix 11provides calculations to determine the sample size. The uncertainty in this methodology is that the institutional and non-institutional group quarters population is assumed to be distributed with the ratio of the state's block group quarter population to the group quarter population. However, a complete assessment of the methodology is impossible owing to the absence of counts of the group quarter population by type at lower geographical levels.

    Those living in some group quarters, such as on college campuses, military bases, etc., are included in the sample drawn for this study. Those living in correctional facilities are not, nor are those living in temporary housing or onboard maritime vessels.

    Similar to the 2022 VTrans Biennial Transportation Survey, there are some general quarter types that are out of scope in the ACS and, therefore, are not included. These primarily include temporary housing domestic violence shelters, soup kitchens, regularly scheduled mobile food vans, targeted non-sheltered outdoor locations, crews on maritime vessels, and living quarters for victims of natural disasters. This will result in a bias in some ACS estimates.[5,6]
  - Residency status of the group quarter populations used for control totals: The ACS uses the concept of "current residence," in which everyone currently living or staying at an address for more than 2 months is considered a current resident of that address. However, residency in the group quarter facilities is determined differently. In group quarters, all people residing in the selected facility at the time of the interview, regardless of the length of stay, are eligible to be selected to be interviewed in the ACS.
- Comparison with previous surveys: This survey was conducted in the second half of 2022, more than 2 years since the beginning of the COVID-19 pandemic. COVID-19 has significantly impacted the labor market, travel behavior, and many other aspects of people's lives. Many differences in the results found in this study compared to previous research can be attributed to the pandemic, making comparisons to previous research difficult.

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[5] *Understanding and Using American Community Survey Data: What All Data Users Need to Know.* (2020). United States Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2020/acs/acs_general_handbook_2020.pdf, Accessed November 2022.

[6] *Introduction to American Community Survey Group Quarters Data.* United States Census Bureau. https://www.census.gov/data/academy/webinars/2022/introduction-to-american-community-survey-group-quarters-data.html, Accessed November 2022.