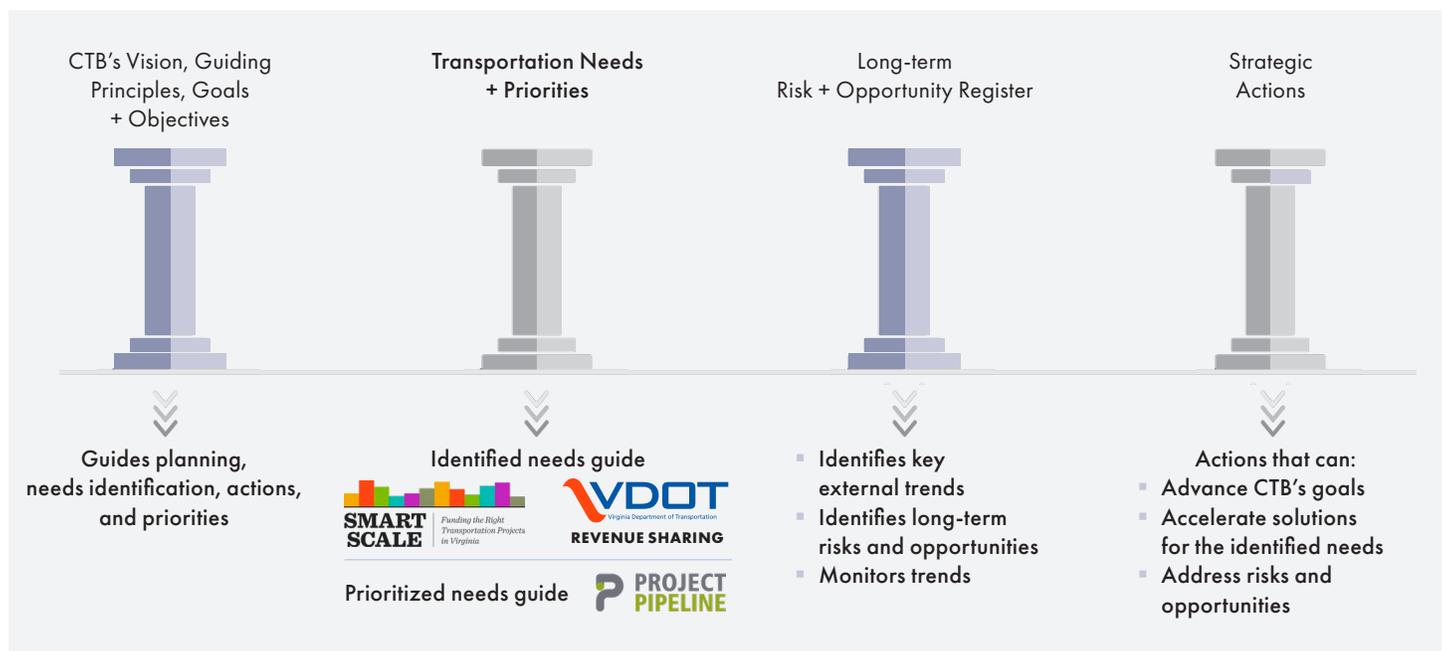# TECHNICAL MEMORANDUM

FROM: Virginia Office of Intermodal Planning and Investment (OIPI), Statewide Transportation Planning Section

TO: VTrans Stakeholders

SUBJECT: Methodology for the 2022 VTrans Biennial Transportation Survey - Version 3

DATE: July 21, 2022

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, Virginia's Transportation Plan, 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, Goals, and Objectives (pillar 1) and VTrans Trend Trackers to monitor the 2021 VTrans Long-term Risk & Opportunity Register (pillar 3).

Figure 1: Major Components of VTrans - Virginia's Transportation Plan

OIPI has retained the services of WBA Research to conduct this effort.

1.2. Purpose of the 2022 VTrans Biennial Transportation Survey

This technical memorandum serves the following purposes:

- Documents the intent of the Survey;
- Documents the methodology used to conduct the Survey; and,
- Documents the questionnaire and invitation letter used for the Survey.

1.3. Structure of the Technical Memorandum

This technical memorandum includes the following appendices:

- Appendix A: Invitation Letter English Version A (where a phone number associated with the address is available)
- Appendix B: Invitation Letter English Version B (where a phone number associated with the address is NOT available)
- Appendix C: Invitation Letter Spanish Version A (where a phone number associated with the address is available)
- Appendix D: Invitation Letter Spanish Version B (where a phone number associated with the address is NOT available)
- Appendix E: Invitation Letter Simplified Chinese Version A (where a phone number associated with the address is available)
- Appendix F: Invitation Letter Simplified Chinese Version B (where a phone number associated with the address is NOT available)
- Appendix G: Questionnaire in English
- Appendix H: Calculations to Determine Sample Size

## 2. SURVEY METHODOLOGY AND SAMPLING PLAN

According to the National Institute of Standards and Technology,[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."

2.1. 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 pre-determined 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 get opinions representing each of the nine construction districts (Figure 2). This method of sampling is often referred to as stratified random sampling.

Figure 2: Sampling Frame or Regions

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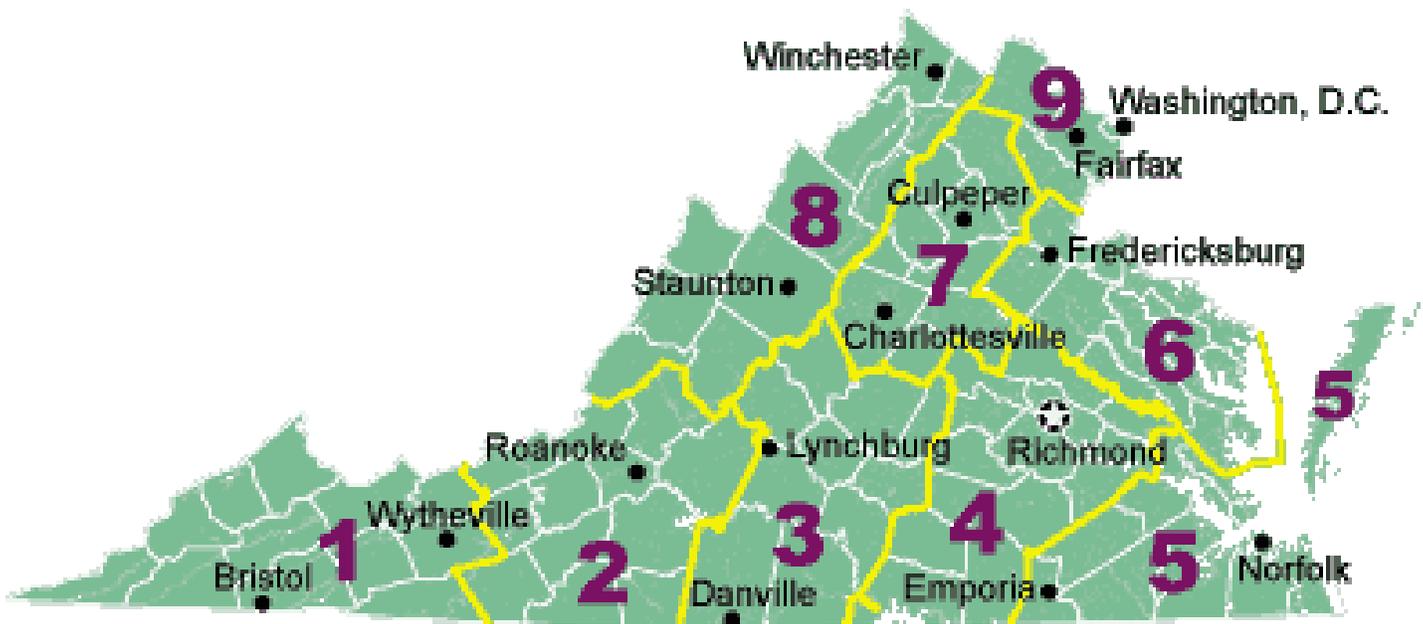
2.2. Sampling Type

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:** Each residential address is sent an enveloped letter introducing the study and explaining the three options with which residents over age 18 can participate:
  - **Online:** A recipient household member over age 18 can complete the Survey online at https://www.vtrans.org/survey. Each letter contains a web address linking to the online Survey and a unique password to access the Survey. Upon entering the unique password from their invitation letter, they will access the questionnaire. The questionnaire itself will be programmed and hosted by WBA in Forsta. The Survey is available in English, Spanish, and Simplified Chinese, so respondents are first asked to select their preferred language.
  - **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 will be informed that they may receive a call from WBA Research asking them to participate (Version A, included as Appendix A). Households without an accompanying telephone number will receive a different mailing, not to mention the possibility of receiving a call. (Version B, included as Appendix B.) Both versions, A and B, are also sent in Spanish (Appendices C and D) and simplified Chinese (Appendices E and F) based on the more common language in a given Census Block Group.
  - Approximately one week after letters are mailed to residential addresses, the outbound calls are made, activating all data collection methods.
- **Send reminders:** To increase the response rate, reminder invitations are sent to non-responders. Approximately one week after each initial mailing goes out, a list of non-responders is generated and sent a second mailing encouraging them to participate.

A webpage on the VTrans website (www.vtrans.org/vision/opinion-survey) is used to share frequently asked questions.

2.3. Sample Size

The sample size was determined using the following steps:

1. WBA Research determined that a minimum sample size of 300 is required for each geographic unit, i.e., VDOT Construction Districts. This would result in a minimum statewide sample size of 2,700 (9 VDOT Construction Districts x 300 unit = 2,700).

2. The total sample size of 2,700 was then distributed across nine VDOT Construction Districts based on the number of households (Table 1).[1]

Table 1: Minimum Statewide Sample Size Proportionately Distributed Across VDOT Construction Districts

VDOT Construction District	Households		Sample Size by 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 resulted in a sample size of less than 300 for six of the nine construction districts. The number of samples in each VDOT Construction District was increased to a minimum of 300 resulting in a statewide oversampling with a total sample size of 3,543 (Table 2).

Table 2: Revised Sample Size by VDOT Construction Districts[a]

VDOT Construction District	Sample Size	
	Original (From Table 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 sample size of 300 for each VDOT Construction District.

[1] Appendix H: Calculations to Determine Sample Size

4. The revised number of samples for each VDOT Construction District was proportionately distributed between urban and non-urban areas (Table 3) within that area based on the number of households.[2]

Table 3: Revised Sample Size Distributed between Urban and Non-urban Areas within Construction District

VDOT Construction District	Sample Size (From Table 2)	Share of Total Construction District Households		Sample Size by Area Type	
		Urban	Non-Urban	Urban	Non-Urban
Bristol	300	17.30%	82.70%	52	248
Culpeper	300	38.30%	61.70%	115	185
Fredericksburg	300	41.40%	58.60%	124	176
Hampton Roads	564	84.60%	15.40%	477	87
Lynchburg	300	37.40%	62.60%	112	188
Northern Virginia	752	94.40%	5.60%	710	42
Richmond	427	75.20%	24.80%	321	106
Salem	300	49.90%	50.10%	150	150
Staunton	300	41.50%	58.60%	124	176
Total	**3,543**			**2,186**	**1,357**

5. Finally, for urban and non-urban areas, the minimum sample size was increased to 100 to ensure the desired margin of error resulting in statewide oversampling and a statewide total of 3,663.

Table 4: Final Sample Size by Area Type and Construction District[b]

VDOT Construction District	Sample Size		Adjusted Sample Size
	Urban	Non-Urban	
Bristol	100	248	348
Culpeper	115	185	300
Fredericksburg	124	176	300
Hampton Roads	477	100	577
Lynchburg	112	188	300
Northern Virginia	710	100	810
Richmond	321	106	427
Salem	150	150	300
Staunton	124	176	300
Total	**2,233**	**1,429**	**3,663**

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

[2] Please refer to Appendix H: Calculations to Determine Sample Size for more details.

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.

Table 5 lists the margins of error that will be achieved overall and at the smallest regional and urban/non-urban levels. The maximum margin-of-error overall for 3,663 surveys is ±1.6 percentage points at the 95% confidence level. For example, with a sample size of 3,663, if a question yielded a percentage of 20% among residents answering the question, then we can be sure that 95 out of 100 times that the actual percentage would lie between 18.4% and 21.6% (20% ±1.6 percentage points). The margin-of-error varies slightly from region to region, depending on each region's population.

However, the variance in margin-of-error will be, at most, ±2.3 percentage points between the largest region, Northern Virginia with a sample size of 811 and a maximum margin-of-error of ±3.4 percentage points, and any region with a sample size of 300 and a margin-of-error of ±5.7 percentage points.

Table 5: Overall Margin-of-Error (n=3,663)

	If the percentage found is around:					
	50%	40% or 60%	30% or 70%	20% or 80%	10% or 90%	1% or 99%
Overall (n=3,663)	±1.6	±1.6	±1.5	±1.3	±1.0	±0.3
Regional Sample Group (n=300)	±5.7	±5.5	±5.2	±4.5	±3.4	±1.1
Regional Sample Group (n=100)	±9.8	±9.6	±9.0	±7.8	±5.9	±2.0

3. PRE-TEST

A test of the designed questionnaire is done 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.

Pre-test interviews are conducted with 18 participants throughout the Commonwealth through one-on-one pretest interviews with at least two participants in Spanish and Simplified Chinese languages. Participants are recruited by a professional focus group facility. To encourage participation, they are paid $40 for their time. Pre-test participants are asked to take the Survey online and then participate in a follow-up interview with a WBA project manager. Spanish and Chinese language interviews are conducted by Ebony Marketing Systems.

During the interview, answers to certain questions are reviewed, learning why a respondent answered the way they did and if there are any questions they misunderstood or did not know how to respond. Possible invitations, including outbound envelopes, will also be reviewed to help determine the most effective invitation to use.

Feedback from the pretesting sessions is collected and the questionnaire is edited to create the final Survey. If the changes are deemed significant enough to warrant it, additional pretest interviews with the modified questionnaire are conducted.

4. DATA ANALYSIS

4.1. Data Weights

The data gathered in each region is "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.
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 sub-regions within each region, for a total of 18 subregions.
3. The target number of residents for each sub-region is calculated by multiplying the number of completed surveys from each sub-region by each sub-regions proportion of the population.
4. Finally, the weights are calculated by dividing each sub-regions target by the number of residents.

The data is 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.

5. SURVEY TIMELINE

The latest milestone schedule for the 2022 Survey is included in Table 6. The dates are subject to change based on the number of responses received. The actual Survey may take longer if WBA Research does not have the required number of surveys from nine construction districts.

Table 6: Milestone Schedule (as of July 15, 2022)

Activity	Brief Description	Start Date	End Date
Pretest recruiting	Invite select participants to test the questionnaire	May 31	June 10
Conduct pretest	Test questions to ensure that they are clear to as many respondents as possible	June 13	June 15
Mail invitations to participate in the Survey	Invite residents over age 18 at the randomly selected address to participate in the Survey	July 29	August 15
Send reminders	Send reminders to residents over age 18 to complete the Survey	August 19	September 2
Analyze results	Perform analysis and gather insights to inform transportation vision	September 6	October 14
Final Report	Develop a summary document	October 17	November 11

APPENDIX A:
INVITATION LETTER ENGLISH VERSION A
(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS AVAILABLE)

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

APPENDIX B:
INVITATION LETTER ENGLISH VERSION B
(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

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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We look forward to your participation.

Sincerely,

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

APPENDIX C:
INVITATION LETTER SPANISH VERSION A
(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS AVAILABLE)

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

APPENDIX D:
INVITATION LETTER SPANISH VERSION B
(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

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

[MES] 2022

Estimado Residente,

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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.**

¿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.

¿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 E:
INVITATION LETTER SIMPLIFIED CHINESE VERSION A
(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS AVAILABLE)

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
密码：	[PASSWORD]

二维码：

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

APPENDIX F:
INVITATION LETTER SIMPLIFIED CHINESE VERSION B
(WHERE A PHONE NUMBER ASSOCIATED WITH THE ADDRESS IS **NOT** AVAILABLE)

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 G:
QUESTIONNAIRE IN ENGLISH

S1. Are you 18 years or older?

01   Yes   CONTINUE

02   No   THANK & 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 & 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**

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

		Very dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Very satisfied	Not Applicable
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

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

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) 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)

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)

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 US automakers and technology companies are developing self-driving or "autonomous" vehicles that **can selectively perform the task of driving by themselves <u>with</u> a human** capable of intervening present?

01   Yes

02   No

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 <u>without</u> 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 <u>with</u> 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) <u>**with**</u> 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 <u>with</u> 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) <u>**without**</u> 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 <u>without</u> 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.)**

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

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
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

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

		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

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

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")? **(CLARIFY IF FREE OR PAID.)**

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.	A scooter-share such as Lime or Bird	01	02	99
M.	A personal bicycle	01	02	99
N.	An e-bike	01	02	99

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

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

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:

D3. What is your age? **(READ LIST IF NECESSARY.)**

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

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

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

01   Yes

02   No

98   Prefer not to respond

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

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

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

01   One

02   Two

03   Three

04   Four

05   Five

06   Six or more

98   Prefer not to respond

99   Don't know

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.)**

00   None

01   One

02   Two

03   Three

04   Four

05   Five

06   Six or more

98   Prefer not to respond

ASK EVERYONE:

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

APPENDIX H:
CALCULATIONS TO DETERMINE SAMPLE SIZE

The steps taken to calculate the total number of urban households in each VDOT Construction District 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 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 used as the source for the number of households in each block group.

3. The 2010 Census Urban Areas were developed using the file available at: https://www2.census.gov/geo/tiger/TIGER2021/UAC/

Figure H-1: 2010 Census Urban Areas
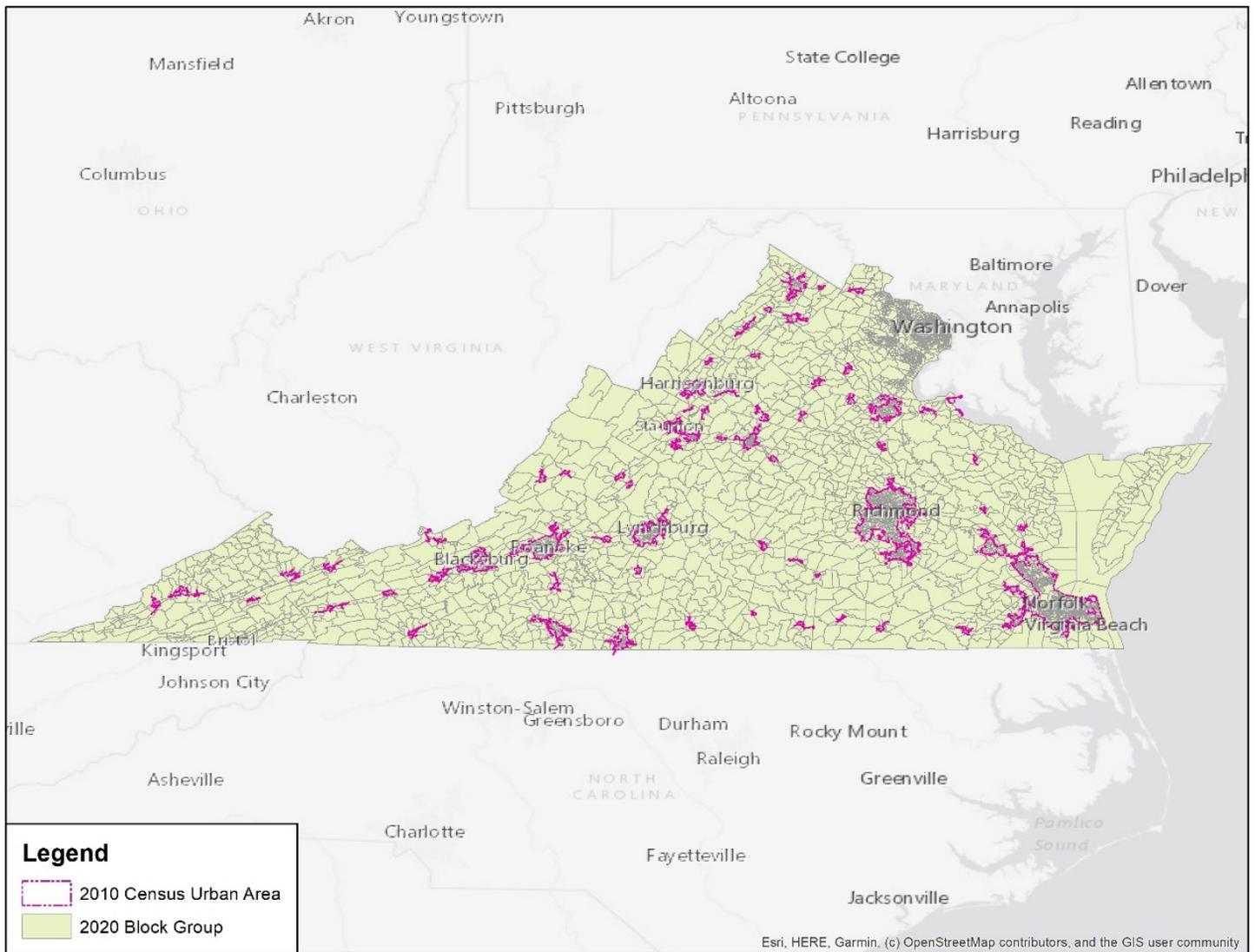
4. Tigerline for the Census Block Group Boundary was retrieved from https://www2.census.gov/geo/tiger/TIGER2020/BG/

5. The 2010 Census Urban Areas had partial overlap with the 2010 Census Urban Area in many instances. To address that, first, the area of the Census Block Group that is within the urban area boundary is divided by the total area of the block group. As shown in Figure 2, Block Group 510411010092 is partially covered by the Richmond urban area boundary. Therefore, only a portion of the households of this block group must be allocated to Richmond.

Figure H-2: Example: Partial Overlap between the 2010 Census Urban Area and Census Block Group

Legend
- Richmond
- 2020 Block Group
- 2020 Block Group
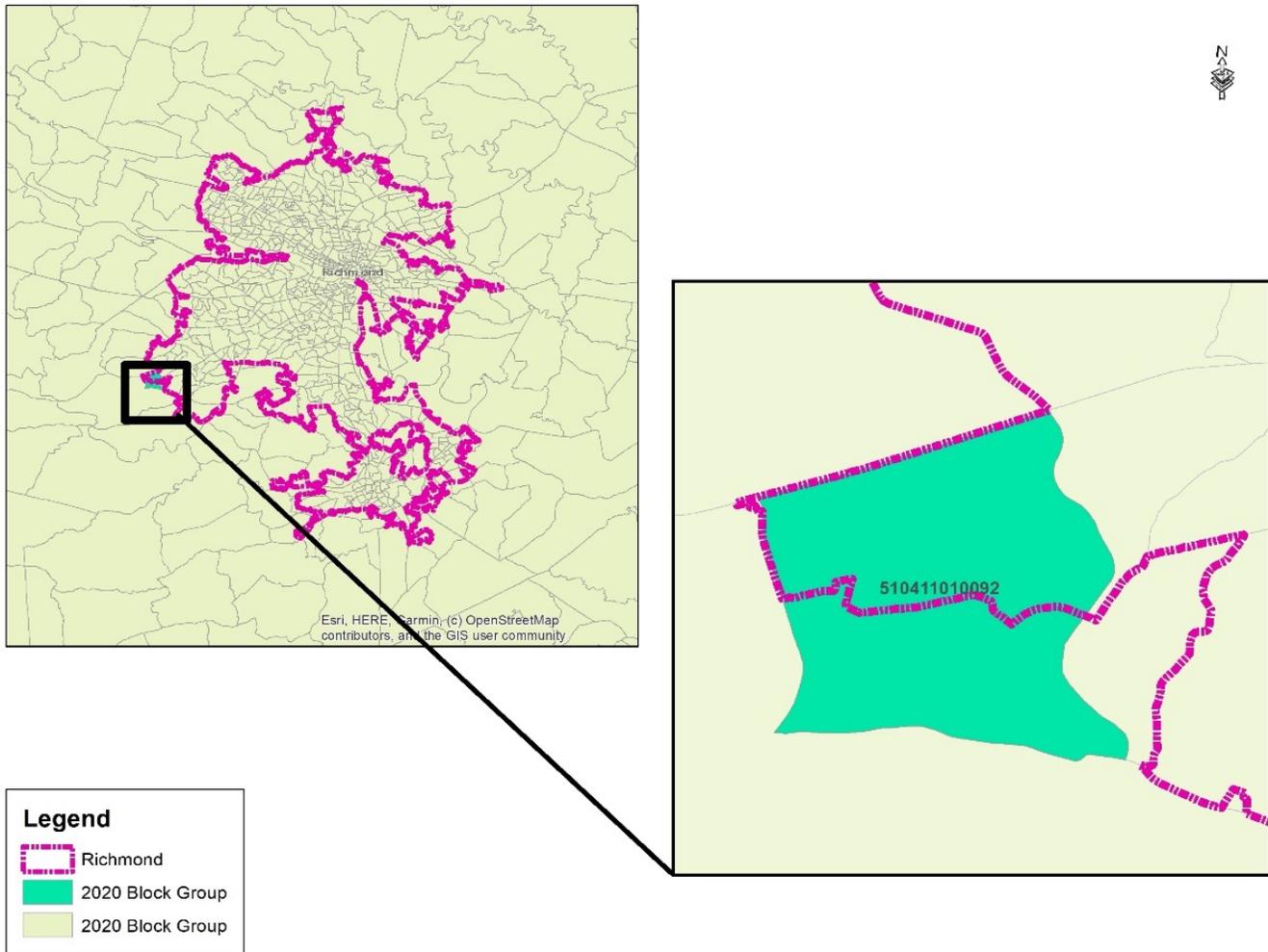
6. By using the geographical area of the block group that is shown in Figure 2, it is determined that 55.2% of the households of the block group boundary of 510411010092 must be allocated to the Richmond Urban Area.
7. After allocating the number of households to each urban area, in the next step, the 9 VDOT Construction Districts were intersected with the urban households data to determine the number of urban households in each district. The result of this calculation is shown in Table 1.

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

Construction District	Number of Households
Bristol	24,100
Culpeper	60,152
Fredericksburg	76,264
Hampton Roads	562,359
Lynchburg	58,780
Northern Virginia	837,920
Richmond	378,722
Salem	138,512
Staunton	88,567