BROADBAND

Part Three:

BRIDGING the DIGITAL DIVIDE

January 2021

DELAWARE VALLEY
dvrpc
REGIONAL
PLANNING COMMISSION

The Delaware Valley Regional Planning Commission is the federally designated Metropolitan Planning Organization for a diverse nine-county region in two states: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey.

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

DVRPC's vision for the Greater Philadelphia Region is a prosperous, innovative, equitable, resilient, and sustainable region that increases mobility choices by investing in a safe and modern transportation system; that protects and preserves our natural resources while creating healthy communities; and that fosters greater opportunities for all.

DVRPC's mission is to achieve this vision by convening the widest array of partners to inform and facilitate data-driven decision-making. We are engaged across the region, and strive to be leaders and innovators, exploring new ideas and creating best practices.

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Introduction

As was true with waterways, highways, railways, and electricity in prior decades, broadband is a crucial driver of job creation and economic growth. Internet applications reliant on high-speed broadband are increasingly critical for innovations in health care, education, transportation, business, and communications. The American Recovery and Reinvestment Act of 2009 allocated $7.2 billion to expand broadband services, create jobs, and stimulate economic growth. To build upon prior efforts, investments are still needed at every level (federal, state, and local) to enable all citizens to capitalize upon this technology.

Over the course of the Coronavirus Disease 2019 (COVID-19) pandemic, broadband has proved to be a vital utility. It enabled the requisite social distancing to occur while also facilitating emergency response efforts and continuity of public, private, and personal operations. The pandemic also further underscored the region's digital divide.

Therefore, the Delaware Valley Regional Planning Commission's (DVRPC's) analysis of broadband and the digital divide in Greater Philadelphia will be published as a three-part Broadband series. This enables DVRPC to fully analyze the socioeconomic impacts of the digital divide as understood prior to, and highlighted during the pandemic, and to formulate more relevant and timely recommendations for bridging the divide.

Part One: Discussing the Technology

Part One in the series, published July 2020, maintained a narrow focus, outlining the basics of how broadband works and ascertaining the coverage areas for specific technologies and Internet Service Providers (ISPs) active within the region.

The report found that within the region there is some degree of a digital divide between residential and business consumers, as well as between consumers in New Jersey and Pennsylvania.

Part Two: Understanding the Digital Divide

Part Two in the series was published in October 2020, and in addition to

discussing broadband's importance by sector and the trends it has facilitated, the primary goal was to answer the question:

To what extent does a digital divide exist at the neighborhood level, and what were the ramifications of such a divide during the COVID-19 pandemic?

Part Three: Bridging the Digital Divide

The final report in the series highlights efforts to narrow the divide during the pandemic, and answers the question:

What strategies can be implemented within Greater Philadelphia to help bridge the digital divide so that the inequities that existed before, and that were highlighted during, the pandemic do not persist into the recovery period and beyond?

Digital Readiness

Bridging the digital divide will require more than simply resolving issues of access. It is important to understand which segments of the population are less likely to be empowered to leverage broadband, and where they are located.

Narrowing the Digital Divide During COVID-19

Efforts to narrow the divide were made at all levels of government and within the private sector during the pandemic.

Bridging the Digital Divide

There are numerous short-, mid-, or long-term strategies, and this report categorizes each strategy as one that either: engages, empowers, or enacts.

Engage

The first step towards bridging the digital divide requires open communication with officials, stakeholders, and the public. Examples of specific strategies include:

- Build coalitions.
- Form a Broadband Working Group or Committee.
- Inform the public.
- Meet with the public.

Empower

If people are not empowered to fully utilize and leverage the technology, then providing access to it will be fruitless. Local strategies to achieve this goal include:

- Close the generation gap.
- Develop the workforce.
- Equip students.

Enact

The final step is to enact lasting policies that ensure real, long-term progress. More specifically:

- Anticipate Section 106 notifications. Adopt dig-once ordinances.
- Amend subdivision and development permitting.
- Conduct an inventory for co-location.
- Create gigabit opportunity zones.
- Deploy WiFi buses.
- Launch grant and assistance programs.
- Leverage anchor institutions.
- Prevent a physical divide.
- Protect participation in the economy.
- Provide municipal broadband.

DIGITAL READINESS

The digital divide is not only an issue regarding lack of access to digital technology; it is also a matter of whether or not the population is ready and able to utilize the technology once deployed.

Implementing strategies, policies, and programs, such as the ones discussed later in this report, aimed at bridging the digital divide will be neither equitable nor will they be entirely successful if the issue of digital readiness is not part of their implementation.

A recent Pew Research Center study[1] showed that adoption of technology for personal and job-related activates varies by a person's socioeconomic status, their race and ethnicity, and the level of access to home broadband and smartphones. In fact, some users are unable to make the Internet and smartphones function for activities, including looking for a job. The same research suggested that there is a digital readiness scale comprising five classifications, each describing the degree to which a person falling within that classification is ready to utilize digital technologies. Table 1 on the following page outlines the likely characteristics of these groups.

It is important for policymakers to understand who are the most vulnerable (Unprepared, Traditional Learners, and Reluctant) of broadband users in our region and where they live (Figures 1–6). The demographics that comprise these populations mirror those identified in DVRPC's Indicators of Potential Disadvantage (IPD), which were discussed extensively in Part Two of this series, *Understanding the Digital Divide*.

Furthermore, these populations are at the greatest risk of being left on the wrong side of the digital divide, and stand to benefit the most from policies and programs aimed at bridging the divide. They are also more likely to be negatively impacted by the COVID-19 pandemic, and least likely to benefit from trends accelerated by it that are facilitated by broadband.

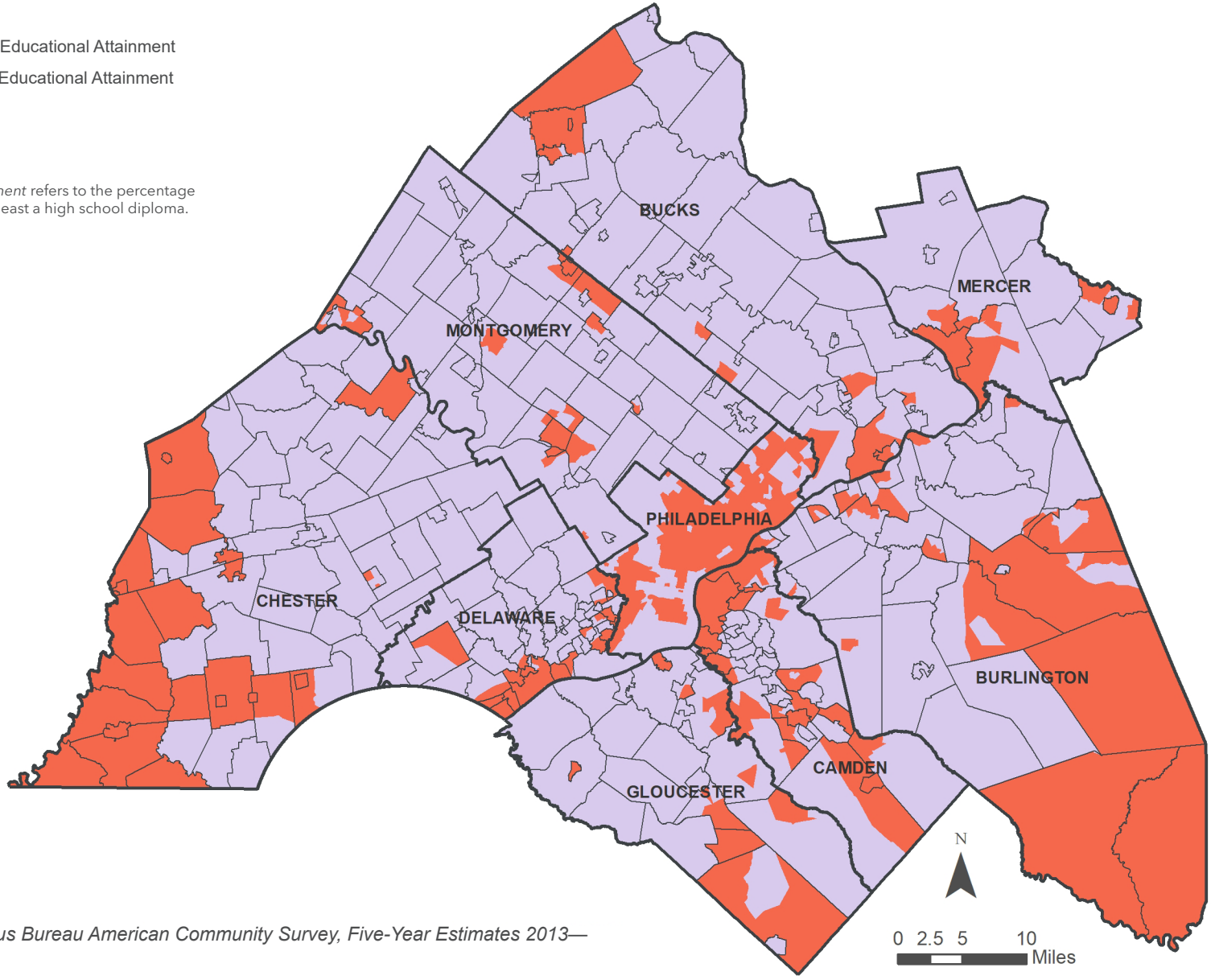
1. John B. Horrigan, "Digital Readiness Gaps," Pew Research Center, September 20, 2016, www.pewresearch.org/Internet/2016/09/20/digital-readiness-gaps.

TABLE 1: Digital Readiness Classifications

Classification	Likely Characteristics
The Unprepared They have relatively lower levels of technology adoption and do not use the Internet for learning; they need help setting up new devices; they are not familiar with "Ed Tech" firms. The unprepared do not have confidence in their computer skills and are not sure how to find trustworthy information online.	• Women • Age 50+ • Lower-income households • Lower levels of formal education
Traditional Learners They are active learners and have technology, but they are less likely to use the Internet as a tool for learning and have concerns about whether to trust online information.	• Women • Minorities • Age 50+ • Lower-income households
The Reluctant They have higher levels of digital skills than the unprepared, but they are not aware of new educational technology concepts. They have low use of the Internet for learning.	• Men • Age 50+ • Lower-income households • Lower levels of formal education
Cautious Clickers They have high levels of technology ownership and confidence with their online abilities to find trustworthy information. They are less familiar with online learning terms and less apt than the Digitally Ready to use online tools for learning.	• Higher-income households • Some college experience • Age 30–50
Digitally Ready Ardent learners for personal enrichment. They have technology and are confident about their skills and abilities to find trustworthy online information. They know the most about online learning resources.	• Higher-income households • Higher education level • Age 30–50

Source: Pew Research Center, Digital Gaps, 2016.

FIGURE 1: Educational Attainment by Census Tract



Note: *Educational Attainment* refers to the percentage of the population with at least a high school diploma.

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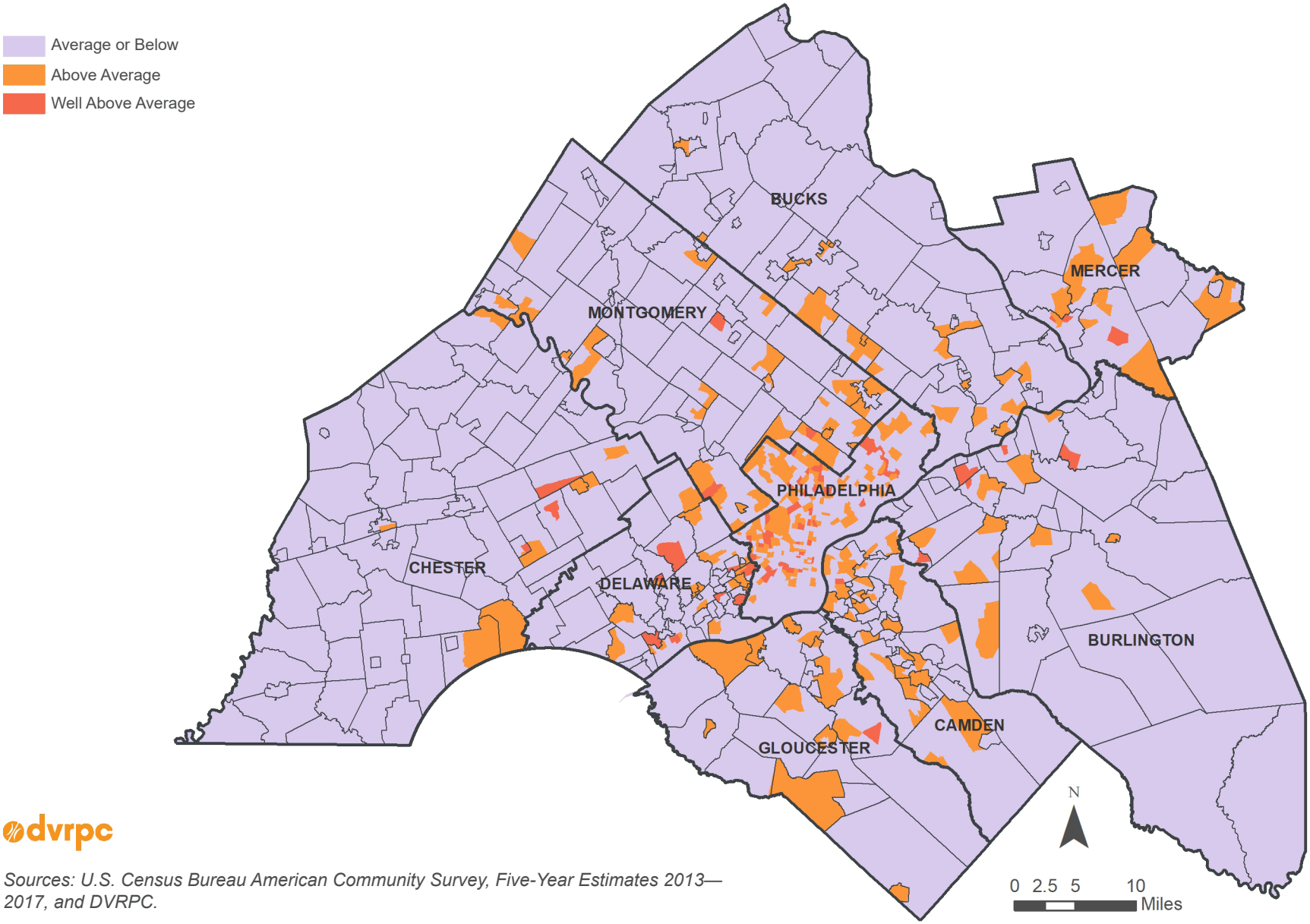
Sources: U.S. Census Bureau American Community Survey, Five-Year Estimates 2013—2017, and DVRPC.

FIGURE 2: Female Population by Census Tract



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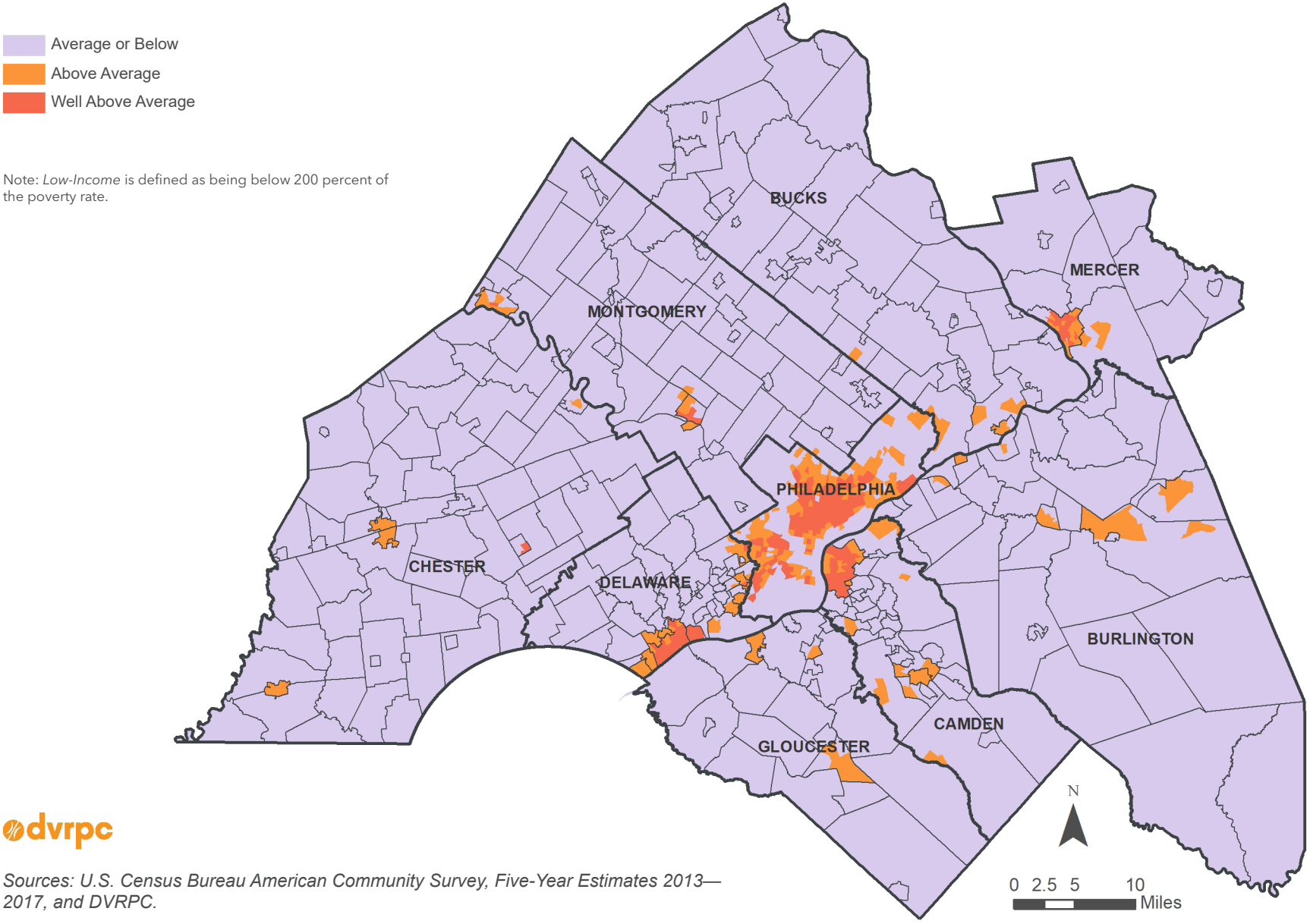
Sources: U.S. Census Bureau American Community Survey, Five-Year Estimates 2013—2017, and DVRPC.

FIGURE 3: Low-Income Popuation by Census Tract



Note: *Low-Income* is defined as being below 200 percent of the poverty rate.

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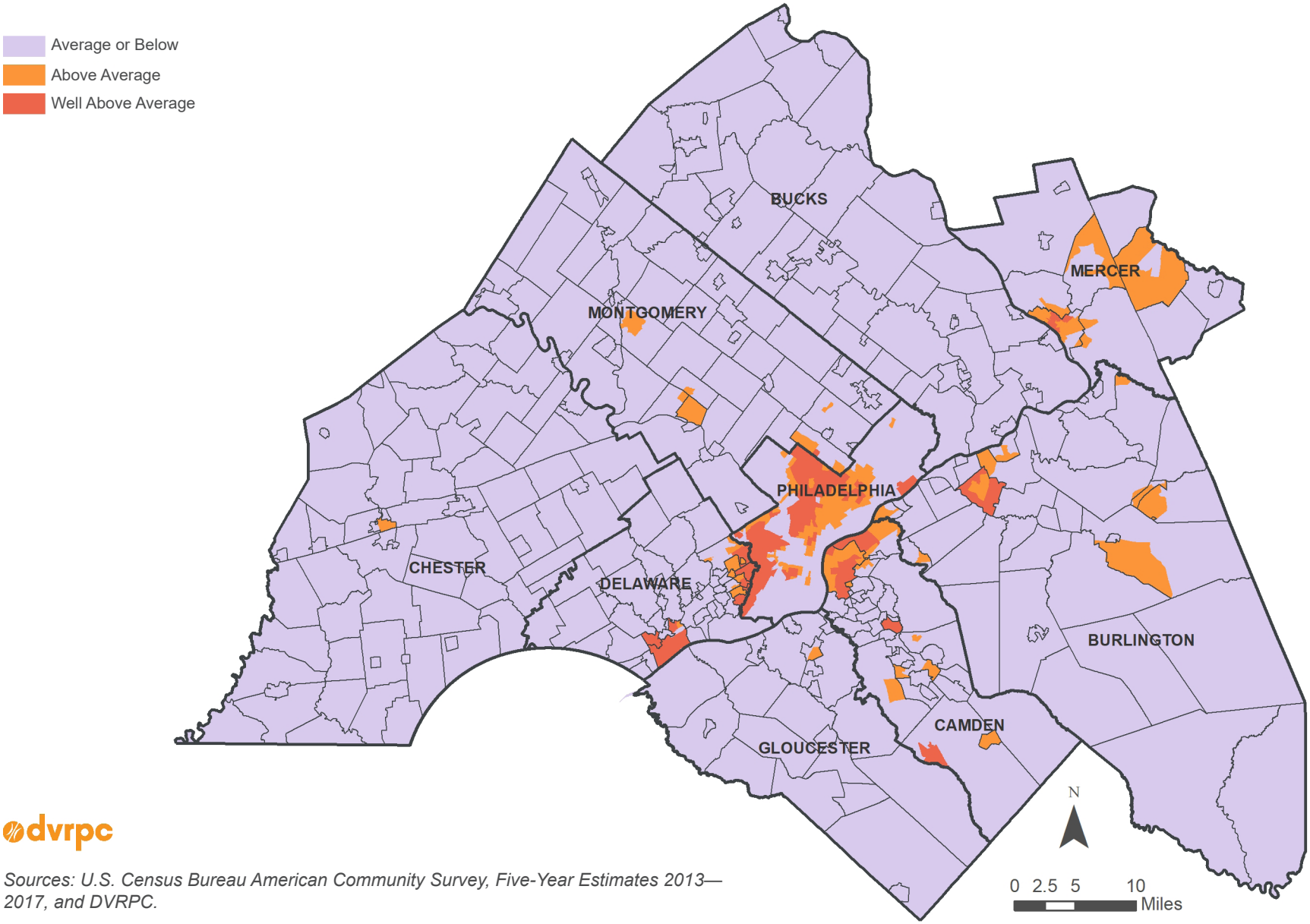
Sources: U.S. Census Bureau American Community Survey, Five-Year Estimates 2013—2017, and DVRPC.

FIGURE 4: Racial Minority Population by Census Tract



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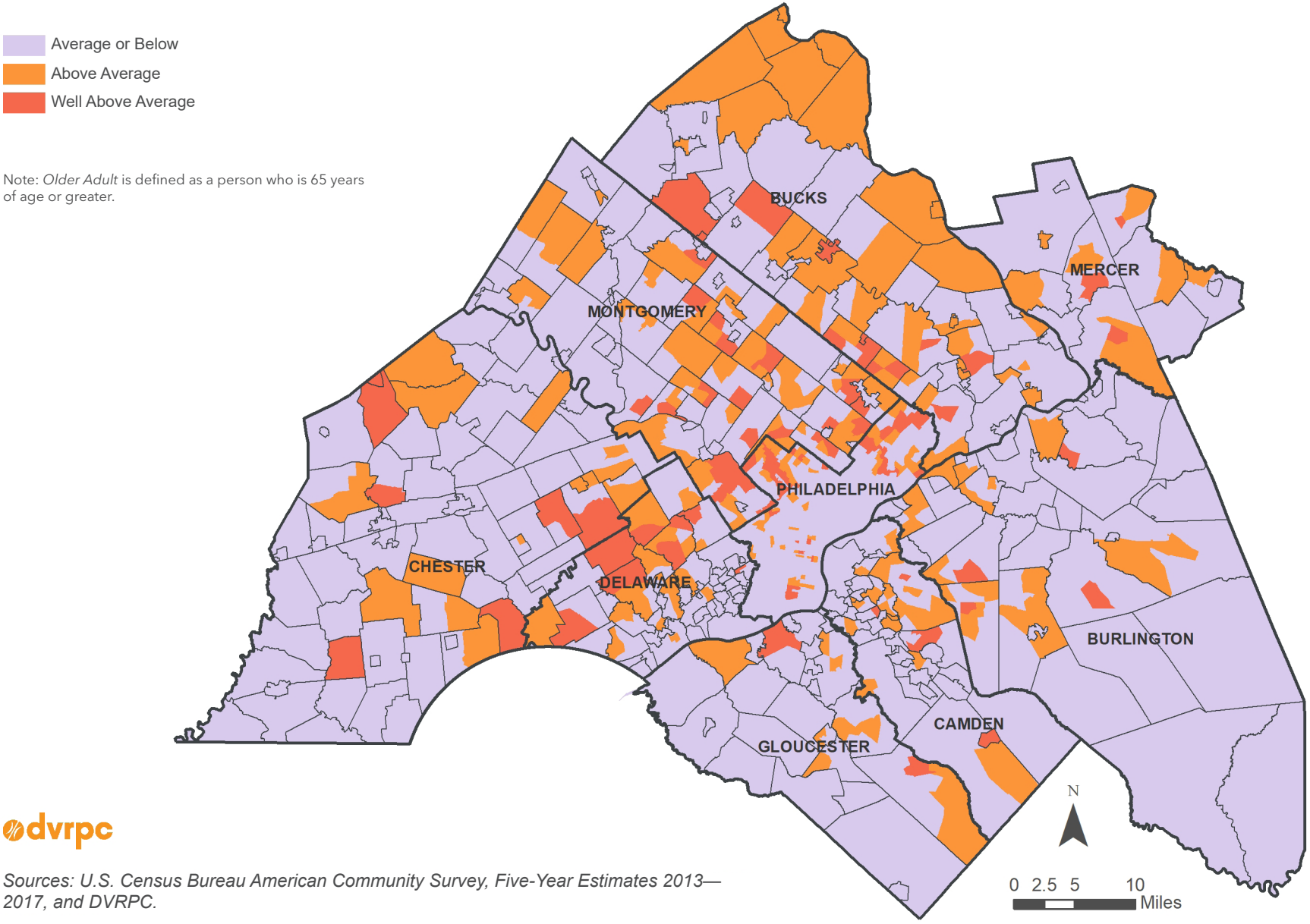
Sources: U.S. Census Bureau American Community Survey, Five-Year Estimates 2013—2017, and DVRPC.

FIGURE 5: Older Adult Population by Census Tract



Note: *Older Adult* is defined as a person who is 65 years of age or greater.

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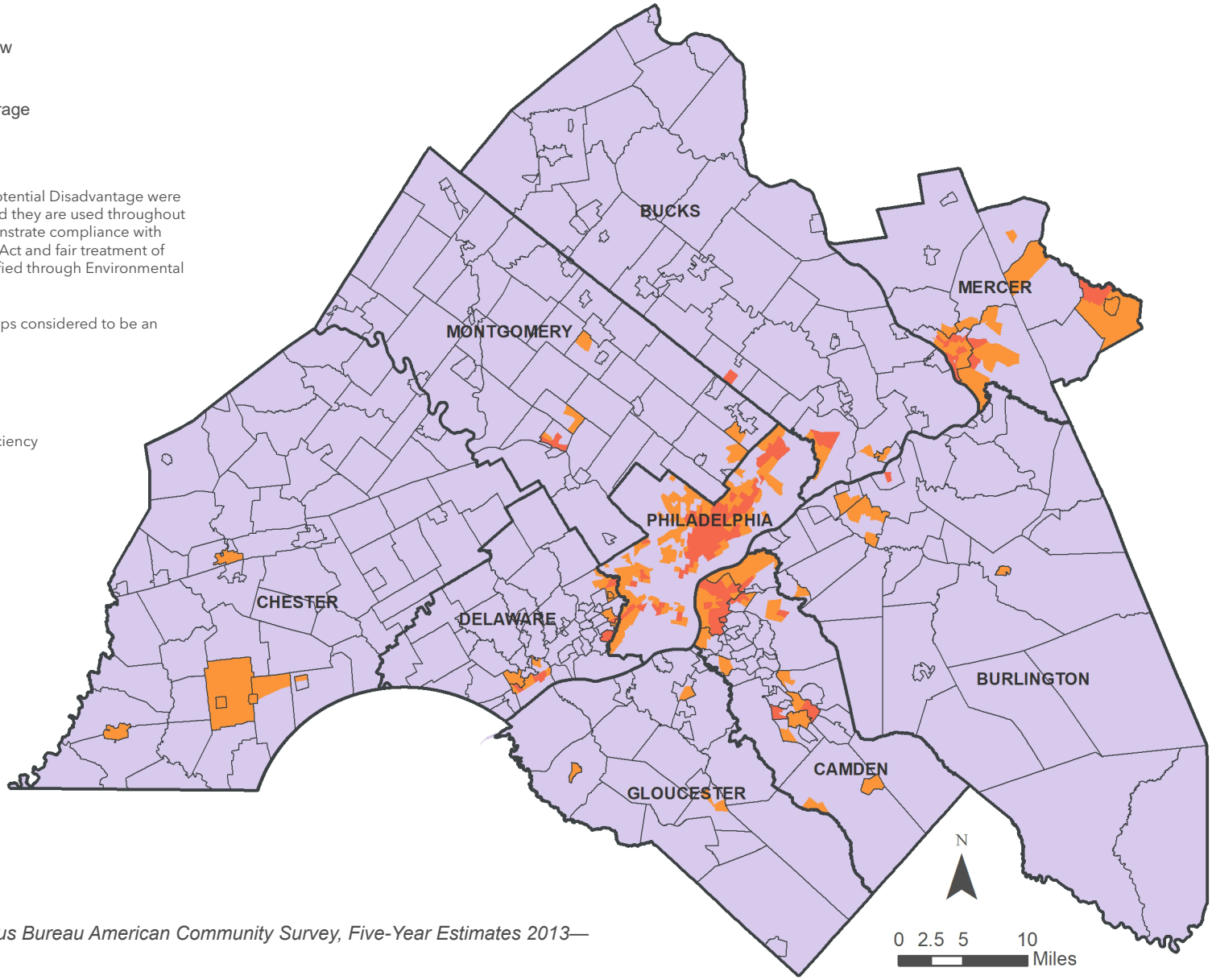
Sources: U.S. Census Bureau American Community Survey, Five-Year Estimates 2013—2017, and DVRPC.

FIGURE 6: Indicators of Potential Disadvantage (IPD) by Census Tract



Note: The Indicators of Potential Disadvantage were developed by DVRPC, and they are used throughout the Commission to demonstrate compliance with Title VI of the Civil Rights Act and fair treatment of population groups identified through Environmental Justice (EJ).

The nine population groups considered to be an indicator are:

- Disabled
- Ethnic Minority
- Female
- Foreign-Born
- Limited English Proficiency
- Low-Income
- Older Adult
- Racial Minority
- Youth

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Sources: U.S. Census Bureau American Community Survey, Five-Year Estimates 2013—2017, and DVRPC.

NARROWING THE DIGITAL DIVIDE DURING COVID-19

Public Sector

As much as the health and economic impacts of the pandemic are ever-evolving, so are the efforts of the public sector to respond. This is equally true for public-sector policies regarding broadband during the pandemic. The following section represents a sampling of these policies and programs, but is not an exhaustive list.

Federal

Funds were appropriated for the Federal Communications Commission (FCC) in the first round of legislation, the Coronavirus Aid, Relief, and Economic Security (CARES) Act; and the FCC adopted the Keep Americans Connected Pledge early in the pandemic. Debates over the second round of legislation aimed at mitigating the impacts of COVID-19 are still ongoing as this report is being written.

CARES Act

In order to facilitate the public's access to telehealth services, the federal government appropriated funding for various telehealth initiatives as part of the CARES Act.[2]

With the $200 million appropriated from this legislation, the FCC created its COVID-19 Telehealth Program, which distributed funds to eligible health care providers to be used for the expansion of telehealth services during the pandemic.[3]

Keep Americans Connected Pledge

More than 800 telecommunications companies signed the Keep Americans Connected Pledge (the Pledge), which was announced by the FCC on March 13, 2020. Companies that signed the Pledge agreed not to disconnect broadband and telephone services for any Americans during the pandemic.[4] However, the Pledge was only in effect until June 30, 2020, despite the fact that the pandemic and broadband's importance are ongoing.

State

New Jersey and Pennsylvania both have legislation currently pending that

2. Danielle Frappier et al., "CARES Act Funding and Support for Telehealth," Davis Wright Tremaine LLP, April 7, 2020, www.dwt.com/insights/2020/04/fcc-cares-act-telehealth-programs.
3. Federal Communications Commission, "COVID-19 Telehealth Program Frequently Asked Questions (FAQs)," accessed April 2020, www.fcc.gov/covid-19-telehealth-program-frequently-asked-questions-faqs.
4. Federal Communications Commission, "Keep Americans Connected Pledge," accessed October 2020, www.fcc.gov/keep-americans-connected.

$2 Million

Would be appropriated for New Jersey's School Connectivity Grant Program if legislation is passed as currently introduced to the General Assembly

would make significant progress towards bridging the digital divide if enacted.

New Jersey

The legislation currently pending before the New Jersey Legislature covers two topics: providing public broadband as a utility and expanding access to broadband for disadvantaged students.

Municipally Provided Broadband

Assembly Number 188 would "allow local units to offer broadband telecommunications service under certain circumstances."[5] At present, states have the authority to expressly prohibit local municipalities from providing broadband service as a public utility. However, this would enable municipalities to provide public broadband, as would the Community Broadband Act of 2019, which is further discussed later in this section.

School Connectivity Grant Program

As introduced on May 11, 2020, Senate Number 2415 would establish the "School Connectivity Grant Program to expand access to online instruction for economically disadvantaged students," and makes an appropriation of $2 million from the General Fund for the program.[6] The status of this bill is still pending.

Statewide Wireless Network

Assembly Number 3649 was introduced on March 16, 2020, requires that the Office of Information Technology establish a statewide wireless network through a public-private partnership.[7]

Urging U.S. Congress

Although this legislative action was taken a month before the region realized the severity of the pandemic, it warrants discussion at this time. On February 13, 2020, Resolution Number 92 was introduced into the New Jersey Assembly with the purpose of urging the U.S. Congress to pass House Bill No. 2785 of 2019–2020, known as the "Community Broadband Act of 2019."[8]

At its core, the Community Broadband Act of 2019 would "prohibit state and

5. Assembly No. 188, S219th Legislature (N.J. 2020–2021), www.njleg.state.nj.us/2020/Bills/A0500/188_I1.HTM.
6. Senate No. 2415, 219th Legislature (N.J. 2020–2021), www.njleg.state.nj.us/2020/Bills/S2500/2415_I1.HTM.
7. Assembly No. 3649, 219th Legislature (N.J. 2020–2021), www.njleg.state.nj.us/2020/Bills/A4000/3649_I1.HTM.
8. Assembly Resolution No. 92, 219th Legislature (N.J. 2020–2021), www.njleg.state.nj.us/2020/Bills/AR/92_I1.HTM.

local entities from blocking the provision of broadband by public providers or public-private partnership providers."[9] The thought is that broadband should be treated as a public utlity, such as water and electiricty, and that the public sector should be allowed to provide this utility.

Pennsylvania

Throughout the duration of the pandemic, numerous bills were introduced into the Pennsylvania House of Representatives that would advance efforts towards bridging the digital divide. However, at this time, none of the following bills have been adopted or enacted into law.

Bridging the Digital Divide in Schools Grant Program

Bill Number 2421 was introduced on April 20, 2020. If passed, it would establish the Bridging the Digital Divide Grant Program "for the purpose of allocating grant money to school entities to provide or expand access to technology and technological equipment for students who do not have the means to purchase technology and technological equipment or who do not have access to the Internet at home."[10]

Emergency Cable and Internet Service Act

House Bill 2410 was introduced on April 14, 2020, and it proposed adoption of the Emergency Cable and Internet Service Act. This act would prohibit ISPs from terminating Internet service during a disaster, but would not absolve the consumer from the obligation to pay.[11]

Emergency Lifeline Broadband Benefit Act

This bill was introduced on June 29, 2020. If passed, Bill Number 2637 would ensure that eligible households had access to "emergency lifeline broadband" during a disaster emergency.[12]

Public Housing Broadband Internet Act

Bill Number 2722 was introducted on July 30, 2020. If passed, this bill would provide a mechanism for ISPs to provide broadband at no cost to eligible households "occupying a dwelling under the jurisdiction of a public housing agency." The ISPs would then be reimbursed by the state.[13]

Underserved and Unserved Broadband Deployment Act

The Underserved and Unserved Broadband Deployment Act was introduced as Bill Number 2786 on August 13, 2020. This act would establish a grant program aimed at expanding broadband into underserved areas, and both municipalities and residents of Pennsylvania could apply for funds.[14]

9. U.S. Congress House, Community Broadband Act of 2019, HR 2785, 116th Congress, 1st sess., introduced in House May 16, 2019, www.congress.gov/bill/116th-congress/house-bill/2785/text?r=5&s=1.
10. G.A. Bill 2421, Regular Session of 2019–2020 (Penn. 2019–2020), www.legis.state.pa.us/CFDOCS/billInfo/billInfo.cfm?syear=2019&sInd=0&body=H&type=B&bn=2421.
11. G.A. Bill 2410, Regular Session of 2019–2020 (Penn. 2019–2020), www.legis.state.pa.us/CFDOCS/billInfo/billInfo.cfm?syear=2019&sInd=0&body=H&type=B&bn=2410.
12. G.A. Bill 2637, Regular Session of 2019–2020 (Penn. 2019–2020), www.legis.state.pa.us/CFDOCS/billInfo/billInfo.cfm?syear=2019&sInd=0&body=H&type=B&bn=2637.
13. G.A. Bill 2722, Regular Session of 2019–2020 (Penn. 2019–2020), www.legis.state.pa.us/CFDOCS/billInfo/billInfo.cfm?syear=2019&sInd=0&body=H&type=B&bn=2722.
14. G.A. Bill 2786, Regular Session of 2019–2020 (Penn. 2019–2020), www.legis.state.pa.us/CFDOCS/billInfo/billInfo.cfm?syear=2019&sInd=0&body=H&type=B&bn=2786.

Local

Beyond legislation at the state and federal levels, local policies and programs can be as complex as the physical deployment of broadband infrastructure or as simple as the dissemination of information.

Camden County

Camden County is moving forward with a feasibility study for development of a microgrid in the City of Camden. The primary purpose is to build a local, self-sustained infrastructure network that is less susceptible to outages during natural disasters and emergencies. Broadband (specfically 5G) will be deployed during buildout of the microgrid.

Montgomery County

The county launched its RESTART Program[15] in an effort to assist communities and small businesses to successfully weather the pandemic, but to also adapt and transition into the recovery period. Topics covered through the program include holding effective public meetings digitally, and how to adapt to the digital economy. Both of these topics are discussed further in the section of this report that covers strategies for bridging the digital divide, as is the importance of informing the public through programs like RESTART.

Private and Non-Profit Sectors

The inequities highlighted by the pandemic were so acute that the private sector, including companies within the telecommunications industry, took action by launching various programs and initiatives aimed at helping to bridge the digital divide for people as well as small businesses.

K-12 Bridge to Broadband

ISPs are working with local school districts to identify students that lack access to broadband, and to find ways in which to offset the cost for low-income households.

Lift Zones

Comcast launched its Lift Zones program in numerous cities across the country, including Philadelphia and Trenton. The goal of the program is to create partnerships that support "the efforts of hundreds of non-profit partners seeking to provide safe spaces for low-income students to participate in distance learning, remote working, and after-school care."[16]

Temple University

Temple University's Institute for Business and Information Technology (IBIT) offered no-cost services to small businesses and non-profits during COVID-19 that were geared towards assisting these entities with adapting to the digital economy.

Specific services offered included:

- creating or improving websites;
- creating or improving digital storefronts and e-commerce capabilities;
- creating or improving digital marketing and advertising; and
- digital transformation consultation.[16]

15. Montgomery County, "RESTART Montco," accessed September 2020, www.montcopa.org/3546/Restart-Montco.
16. Comcast, "Comcast Announces Multiyear Effort to Roll Out 1,000+ WiFi-Connected 'Lift Zones' in Local Community Centers Nationwide," September 17, 2020, www.corporate.comcast.com/press/releases/comcast-announces-1000--liftzones-in-community-centers-in-us-cities.
17. ibit.temple.edu/dt/?s=COVID.

BRIDGING THE DIGITAL DIVIDE

Engage

The first step towards bridging the digital divide requires open communication with stakeholders and members of the public who currently fall on the wrong side of the divide. It is important to build coalitions, and to engage and inform the public.

Build Coalitions

Although state and local programs are important and can be effective, policies enacted at the federal level are better able to bridge the divide in a systemic and holistic way. Therefore, it is imperative that stakeholders at the state and local levels, as well as those from within the telecommunications industry, build coalitions to actively lobby for change at the federal level.

Form a Broadband Working Group or Committee

Create a local or countywide Broadband Working Group or Committee charged with conducting outreach to local residents and businesses to gauge the current status of broadband locally, and to develop locally appropriate policies that work to advance the deployment of, and access to, broadband.

Meet with the Public

Prior to the pandemic, most public meetings were conducted in person, and were often at a location that may not have been proximate or accessible to members of the public from low-income communities. Conversely, during the pandemic public meetings were entirely digital and may not have been accessible to members of the public without access to broadband Internet. Therefore, it will be necessary going forward, both during the pandemic and after, to ensure that broadband is utilized in a way that increases public participation rather than limits it.

Mid-Pandemic

The need to be socially distant obligates an entirely virtual approach to public meetings. Doing so has eliminated the geographic contraints to public

participation. However, it also means that those who fall on the wrong side of the digital divide may also be more disenfranchised than before.

Post-Pandemic

Lessons learned during the pandemic will enable a more inclusive public engagement process to occur in a post-pandemic world. Utilizing a hybrid of in-person and virtual meetings (e.g., live streaming meetings online and at publicly accessible locations, such as local library branches) will ensure that those who can attend in person have the opportunity to do so but will also bring the meeting to those who otherwise might not be able to attend.

Inform the Public

One positive outcome of the COVID-19 pandemic was that it highlighted broadband's role as a necessary utility, and as a result numerous programs were created in an attempt to ensure that low-income households had access to it. However, for these programs to be effective the communities for which they were created must be aware of, and able to utilize them. Therefore, it is important for community leaders and stakeholders to actively engage in public outreach and awareness campaigns that target neighborhoods where household broadband subscription is below average. These neighborhoods were identified in Part Two of the Broadband series, *Understanding the Digital Divide*.

Empower

As previously discussed, access to broadband is only one component of the digital divide. Empowering people to fully utilize and leverage the technology is equally important in bridging the divide.

Close the Generation Gap

Older adults are less likely to be ready to capitalize upon the benefits of broadband even if they have access. Therefore, it is important that this segment of the population be empowered to leverage broadband. Encouraging and funding training programs at local senior centers is one way in which to bridge the digital divide for the region's older population.[18]

Develop the Workforce

The pandemic accelerated the trends toward job automation, which means many of the jobs lost will not be coming back. Additionally, the workforce for the post-pandemic economy will need to be more technologically saavy than it was pre-pandemic. Therefore, it is imperative that significant investment be made in retraining and developing those that are in the workforce to have the skills necessary to remain competitive.[19] Doing so will not only advance efforts to bridge the digital divide, but also close the *skills gap*, which is the term used to describe the mismatch between the skills required by an employer and the skills available in the workforce.

18. William Bleier, "Who's Helping Seniors Bridge the Digital Divide," *Generocity*, May 29, 2019, generocity.org/philly/2019/05/29/whos-helping-seniors-bridge-the-digital-divide.
19. Howard Pinder, "As COVID-19 Deepens the Digital Divide, a Call to Move Beyond Simply Providing Access," *Technical.ly*, April 27, 2020, www.technical.ly/philly/2020/04/27/as-covid-19-deepens-the-digital-divide-a-call-to-move-beyond-simply-providing-access.

Anticipate Section 106 Notifications

Installation of telecommunications equipment, such as broadband infrastructure, falls within the purview of the federal Section 106 guidelines. Municipalities should enact policies that streamline their responses to these notifications.

Section 106 notifications provide municipalities the opportunity to comment on how a proposed project will impact its historical and/or cultural resources, and to offer alternatives to the proposed approach. However, input is purely advisory, and due to restrictions created by the 5G FAST Plan, municipalities have a limited time in which to respond.

Municipalities should work with their local historical or historic district commissions, as they are often the first point of contact when the notifications are received, to identify historically sensitive or appropriate locations for potential broadband infrastructure in anticipation of receiving a Section 106 notification. Doing this preliminary work will enable the municipality to respond to these notifications in a way that is more expeditious, effective, and constructive.

Equip Students

Closing the skills gap in the workforce begins with properly preparing students before they enter the workforce. It is imperative that school-aged children, particularly those in low-income communities, have access to digital tools and technologies at school and at home so that they are afforded the same opportunities as their counterparts in better-connected communities.[20]

Enact

After laying the groundwork through communicating with and empowering the public, the final step towards bridging the digital divide is to enact lasting policies that ensure real and tangible progress.

Adopt Dig-Once Ordinances

A majority of the costs associated with broadband deployment are associated with work requiring significant roadway excavation.[21] Policies and/or practices that minimize the number and scale of excavations when installing telecommunications infrastructure in highway rights-of-way are among many tools available to municipalities that can reduce the cost of broadband infrastructure installation. Such strategies include joint-trench agreements,

20. Amina Fazlullah and Stephanie Ong, The Homework Gap: Teacher Perspectives on Closing the Digital Divide (San Francisco: Common Sense Media, 2019), www.commonsensemedia.org/sites/default/files/uploads/kids_action/homework-gap-report-2019.pdf.
21. Federal Highway Administration, Office of Transportation Policy Studies, "Policy Brief: Minimizing Excavation Through Coordination," October 2013, www.fhwa.dot.gov/policy/otps/policy_brief_dig_once.pdf.

street-excavation moratoriums, and empty conduit installation during road construction, or *microtrenching* (an increasingly popular method for installing broadband infrastructure that only requires digging a small trench, between 1-3 inches, in order to install the fiber).[22]

Amend Subdivision and Development Permitting

Update local permitting processes and policies to require the provision of broadband infrastructure for new subdivisions and development projects. Doing so will ensure that all new development is equipped with the infrastructure necessary for the future deployment of broadband.

Conduct an Inventory for Co-Location

Identify the location of all municipal-owned assets to identify appropriate locations for the co-location of ISP infrastructure. This will facilitate speedy deployment once an ISP expresses interest in installing infrastructure within the municipality and provide an additional revenue stream if rent is included in a lease agreement with the ISP(s).

Create Gigabit Opportunity Zones

To ensure opportunity for economically challenged areas, FCC Commissioner Ajit Pai recommends the creation of Gigabit Opportunity Zones to increase broadband deployment, allow local governments to streamline regulations, assist with job creation, and ultimately revitalize neighborhoods. He proposes creating these in areas where the average household income falls below 75 percent of the national median. Just like Economic Opportunity Zones, a significant tax incentive would be provided, and entrepreneurs would be incentivized to create jobs in these zones.[23]

Deploy WiFi Buses

Although this is not a permanent solution, strategically deploying WiFi-equipped buses[24] into neighborhoods with low rates of broadband subscription can be an effective way of bridging the digital divide in the short term, while more long-term solutions are implemented.

Launch Grant and Assistance Programs

As was discussed in Part Two, much of Greater Philadelphia's digital divide is a result of cost rather than availability. Local municipalities should launch grant programs to offset the cost for low-income households, and to also support local programs whose mission works to bridge the digital divide.

Leverage Anchor Institutions

Anchor institutions typically have either the technical or financial means to assist local efforts to bridge the digital divide, and in many cases they have both. These institutions should be considered as partners in bridging the digital divide.

Public Libraries

Historically, libraries have served as civic

22. Rollie Cole, "Microtrenching Goes Mainstream," July 2019, www.bbcmag.com/technology/microtrenching-goes-mainstream.
23. Federal Communications Commission, "Remarks of FCC Commissioner Ajit Pai at the Brandery, 'A Digital Empowerment Agenda,' Cincinnati, OH," speech, September 13, 2016, www.fcc.gov/document/commissioner-pais-digital-empowerment-agenda.
24. Selena Randhawa, "WiFi-Equipped School Buses Help Students Get Online," CNN.com, October 31, 2017, www.cnn.com/2017/10/31/tech/homework-gap/index.html.

and cultural hubs within a community, as well as repositories for information. This role for libraries endured during the Great Recession of 2009, and will continue into the post-pandemic recovery as well.

Providing free WiFi and computer access has been a tenet for public libraries for decades, but there are additional ways in which these institutions can help bridge the digital divide:

- Provide classes that teach people how to utilize digital technologies.
- Offer space and live-stream public meetings for those that may not be able to attend in person.
- Furnish privacy booths with secure Internet connections for virtual meetings and job interviews, as well as telehealth appointments.

Higher Education

As previously discussed, Temple University leveraged IBIT to assist small businesses throughout the region to adapt to the digital economy in the wake of the pandemic. These types of institutions have a vested interest in the success of the communities in which they are located.

Prevent a Physical Divide

Commercial real estate firm Cushman & Wakefield released a report in February 2019 projecting that 5G's deployment will more effectively enable telecommuting and the development of autonomous vehicles than prior generations of wireless technology. The result will be to decrease the value assigned to home and workplace proximity, as was the case with the development of the interstate highway system in the middle of the last century.[24]

Similarly, these new technologies have the capacity to facilitate a new wave of suburban sprawl. As our region becomes increasingly connected, it is important to consider lessons learned during the last century with regards to infrastructure expansion and its relationship to land use ramifications and policies.[54]

Furthermore, stay-at-home orders issued during the pandemic obligated employers to not only enable, but require, their employees to telecommute en masse. If this increase in telecommuting persists long term, it could potentially impact everything from land use and development patterns, to commercial and residential property values and vacancy rates—not to mention potentially leading to higher-income households leaving the city for suburban locations if efforts to bridge the digital divide fail.

Ways in which the region's less dense, more rural municipalities can mitigate a physical divide and sprawl include:

- increasing open space preservation;
- amending local zoning codes to encourage denser, more walkable communities; and,
- supporting and investing in multi-modal and alternative modes of transportation.

Protect Participation in the Economy

The pandemic has led to a great acceleration of trends that were observed

25. Revathi Greenwood, Mobility Shifts in Commercial Real Estate: Implications of Ridesharing; Autonomous Vehicles; Micro-mobility and Electric Vehicles–Part 3 of the Tech Disruptor Series (Cushman & Wakefield, 2019), cw-gbl-gws-prod.azureedge.net/-/media/cw/global/insights/research/technologyseriespart3-feb2019-interactive.pdf?rev=d98e7a5584dd414db02fb5273edc8efb.
26. Karen Harris et al., "Spatial Economics: The Declining Cost of Distance," Bain & Company, February 10, 2016, www.bain.com/insights/spatial-economics-the-declining-cost-of-distance.

prior to COVID-19, such as the banking industry's prioritization of digital platforms over physical branches and the adoption of frictionless retail. Both of these trends have the capacity to significantly increase the digital divide if efforts to offset and mitigate their impacts are not made.

Accessing Capital

Since 2009, the number of bank branch locations within Philadelphia decreased by 14 percent due to a shift towards online banking platforms, and only 5 percent of branch locations within the city were located within Philadelphia's low-income neighborhoods.[26] Furthermore, since 2006, 30 percent of mortgage applications submitted by minority applicants were denied due to credit history.[27]

Boston

The City of Boston launched its Boston Builds Credit program to assist minority residents with "increasing financial stability, building assets, and creating wealth" by facilitating their access to capital and improving credit scores.

Frictionless Retail

The term *frictionless retail* refers to technology that enables the elimination of person-to-person contact, which has traditionally been needed in order for customers to execute tasks like price checks and even check-out. Amazon Go stores are an extreme example. Customers are automatically billed via their Amazon accounts, with no employee interaction.

Prior to the pandemic, the concept of frictionless retail was a rising trend within the retail industry, and its adoption was accelerated by the pandemic. As a result, frictionless retail is anticipated to persist within the retail industry going forward.[28]

However, there are significant concerns regarding the equitable implementation and adoption of frictionless retail, specifically how it will impact the ability of low-income, unbanked populations to participate in the economy.

Philadelphia

In 2019, Philadelphia became the first major city in the United States to adopt an ordinance that bans retail stores that are entirely cashless, and requires that cash be accepted. The intent behind the law is to ensure that low-income, under-banked populations are not inadvertently precluded from shopping at retail establishments that might otherwise implement an entirely frictionless model.[29]

Provide Municipal Broadband

Unless or until the U.S. Congress passes the Community Broadband Act of 2019, state-level legislation may impact the degree to which a municipality is able to provide broadband. Before considering public broadband as a viable tool for bridging the digital divide, it is important to first understand what is allowed under state law and the status of any legislation that is currently pending.

27. Jeff Blumenthal, "Branched Out," *Philadelphia Business Journal*, May 23, 2019, www.bizjournals.com/philadelphia/news/2019/05/23/the-bank-gap-why-the-poorest-philadelphians.html.
28. LendingPatterns, accessed 2020, www.lendingpatterns.com.
29. Greg Buzek, "How COVID-19 will Usher in the Golden Age of Frictionless Retail," IHL Group, webinar, May 7, 2020. www.ihlservices.com/news/analyst-corner/2020/05/replay-how-covid-19-will-usher-in-the-golden-age-of-frictionless-retail.
30. Christian Hetrick, "It's Official. Philadelphia Bans Cashless Stores with Carve-outs for Some Businesses," *Philadelphia Inquirer*, February 28, 2019, www.inquirer.com/business/philadelphia-cashless-store-ban-jim-kenney-amazon-20190228.html.

SERIES SUMMARY

This report is the final in a three-part series aimed at analyzing the region's digital divide (both prior to and during the COVID-19 pandemic), and providing strategies for bridging that divide.

Part One: Discussing the Technology, identified that there is some degree of a digital divide between residential and business consumers, as well as between New Jersey and Pennsylvania.

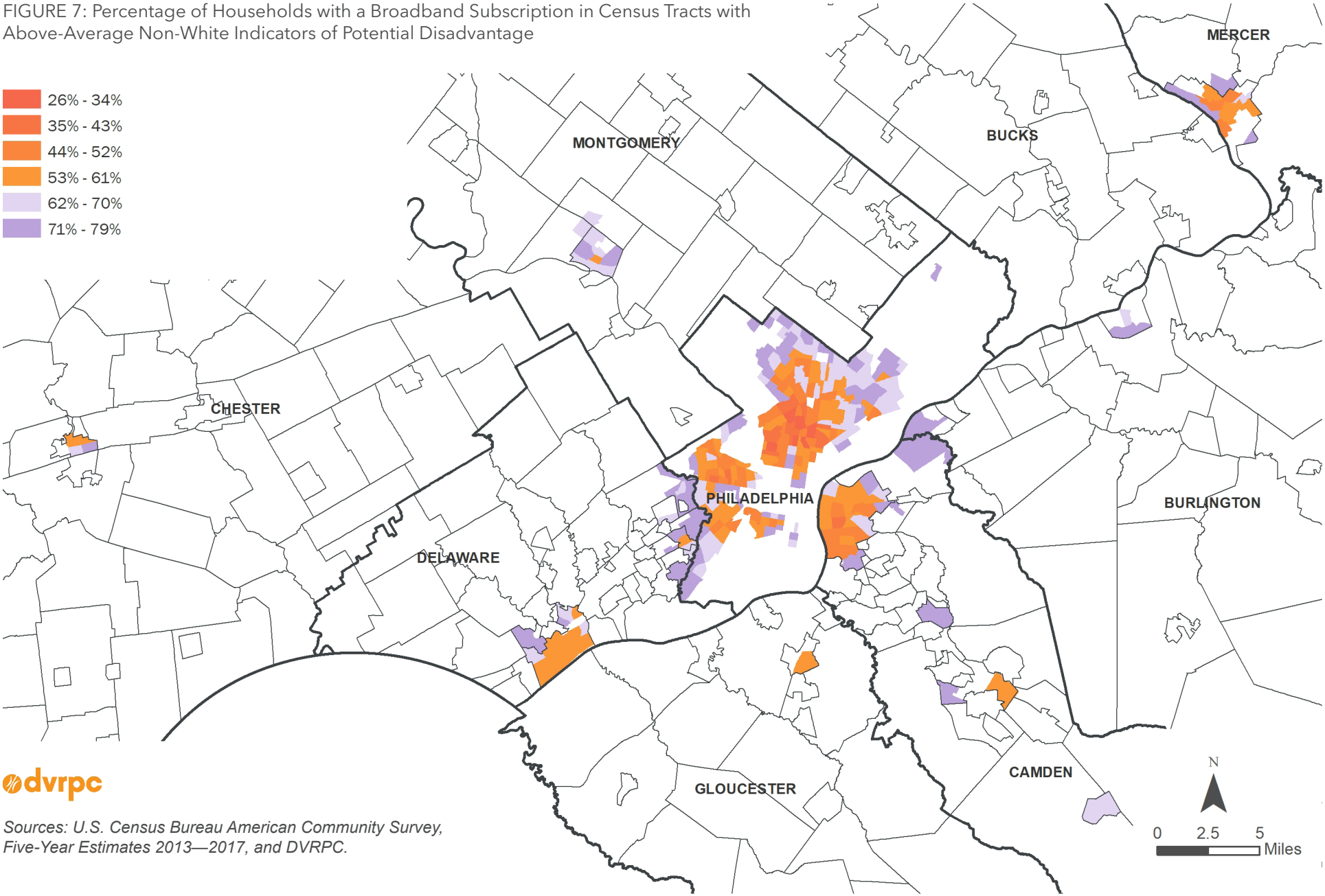
Part Two: Understanding the Digital Divide, took a more detailed look at the digital divide across Greater Philadelphia's, and discovered that it is more an issue of cost than of availability. Low-income, minority communities disproportionately fall on the wrong side of the divide. Furthermore, the COVID-19 pandemic highlighted and exacerbated inequities associated with the region's digital divide, and forecast how it might hinder an equitable recovery.

Part Three: Bridging the Digital Divide, looked at specific demographic groups, and assessed their digital readiness and where they are located throughout the region. Those groups at the greatest risk of being left behind (typically low-income minority neighborhoods in the region's urban areas) are those located in the census tracts depicted in Figure 7 on the following page, as well as those identified in the section on digital readiness.

Efforts to bridge the digital divide should be three-pronged, and can be thought of as short, mid, and long term. However, they can also be categorized by their desired outcome:

1. Engage stakeholders and members of the public who currently fall on the wrong side of the divide, as well as those who have the capacity to advance future efforts to bridge it.
2. Empower people to fully utilize and leverage the technology so that they are fully equipped to capitalize upon its benefits.
3. Enact lasting policies and programs that ensure real and tangible progress is made.

FIGURE 7: Percentage of Households with a Broadband Subscription in Census Tracts with Above-Average Non-White Indicators of Potential Disadvantage



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Sources: U.S. Census Bureau American Community Survey, Five-Year Estimates 2013—2017, and DVRPC.

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ABSTRACT

This is the final report of a three-part series, and it provides strategies for bridging the region's digital divide. Parts One and Two in the series discussed the broadband technology, and assessed the digital divide within the region (both pre- and mid-COVID-19).

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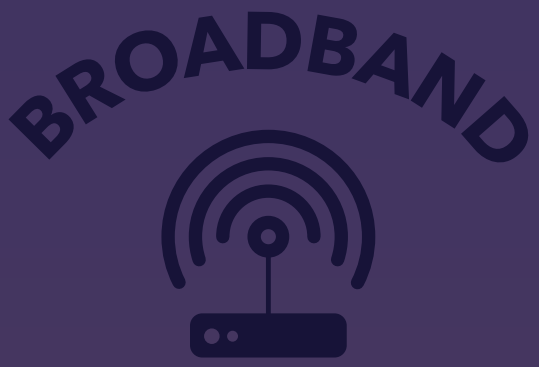

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