

Reversing Population Decline in Rural Pennsylvania

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Abstract:

Historical population decline in rural Pennsylvania runs counter to polling data suggesting that many Americans prefer to live in rural areas if they could live anywhere they wished. The purpose of this study was to explore this disconnect guided by two research questions: What are the factors that lure (i.e., pull toward) or block (i.e., push away) people from relocating to, and staying in, rural areas, and how do those factors align with existing population shrinkage strategies, specifically for rural communities? To explore these research questions, the researchers conducted an online survey that incorporated both quantitative and qualitative data collected from residents of Pennsylvania and 10 states adjacent to Pennsylvania. Participants were recruited through Amazon Mechanical Turk. Overall, the results of the study support the argument that there are individuals living in both neighboring states and in non-rural Pennsylvania that are not attached to where they currently live, would prefer to live in a rural area, and may respond positively to relocation incentives that are tailored to their needs and wants. Key highlights include: respondents from both samples who are married, white, have school-aged children in their household, have some level of student debt, hold conservative political views, and currently work remote in some capacity seem to be more likely than respondents without those characteristics to be open to relocating to rural Pennsylvania. The results from both samples revealed that primary healthcare access is not as prominent in the minds of respondents when considering relocation to rural Pennsylvania, compared to factors such as a strong K-12 education system or seemingly secondary needs like access to outdoor activities, a relaxed pace of life, and opportunities for civic involvement. Pennsylvania residents appear receptive to a 10-year state income tax credit as a relocation incentive.

Keywords: Rural population, population shrinkage, relocation, economic development, survey, Amazon Mechanical Turk

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Executive Summary

From 2010 to 2020, rural America collectively experienced population decline – commonly referred to as “population shrinkage” – for the first time in history (Johnson, 2022). Pennsylvania rural counties largely followed that trend (Johnson, 2022). While there were slight population increases due to in-migration in some parts of rural America between 2017 and 2019, most rural counties in Pennsylvania did not experience similar in-migration. In fact, when considered as an aggregate, these counties experienced a decline of 2.63 percent in population from 2010 to 2019. (USDA Economic Research Service, 2020; 2023).

This population shrinkage in rural Pennsylvania contrasts with recent Gallup polling data suggesting that many Americans prefer to live in rural areas if they could live anywhere they wished – in November 2018, 27 percent of poll respondents chose “rural area” as their top choice out of six geographic living options, and this increased to 31 percent in a poll conducted in December of 2020 (Saad, 2021).

The purpose of this study was to explore this disconnect guided by two research questions: What are the factors that lure (i.e., pull toward) or block (i.e., push away) people from relocating to rural areas and engages them to stay, and how do those factors align with existing population shrinkage strategies, specifically for rural communities? We explored these and related questions within this study by using a cross-sectional survey that collected both qualitative and quantitative data from residents of Pennsylvania and neighboring states. We offered several policy considerations based on the results of the survey analysis.

Methods Used

To develop the survey, we adopted a multidisciplinary research approach using existing research that informs how rural areas survive and thrive in the 21st century knowledge economy in a post-pandemic world (Li, Westlund, & Liu, 2019), with a particular focus on understanding how to reverse or stop population shrinkage. This included exploring perceptions of social (e.g., community cohesion) and economic (e.g., employment) push and pull factors for relocation and understanding the relation to resident characteristics. We also incorporated innovative survey methods to explore multiple aspects of relocation decisions.

Participants were recruited via Amazon Mechanical Turk (MTurk) and the survey was developed in and delivered via Qualtrics. Participants included two samples of two different populations – residents of Pennsylvania and residents of 10 states adjacent to Pennsylvania that are largely within 200 miles of rural Pennsylvania (i.e., Connecticut, Delaware, Massachusetts, Maryland, New Jersey, New York, Ohio, Rhode Island, Virginia, and West Virginia). We collected the two samples concurrently beginning in October 2022 and ending in February 2023. We followed established procedures for collecting human subject data via MTurk, including posting the survey at different days and times

(Litman & Robinson, 2020). The survey questions included place attachment to their current living status; familiarity with Pennsylvania and rural Pennsylvania; measures on where they prefer to live; thinking, willingness, and intentions around moving to rural areas; economic factors (e.g., employment) and non-economic factors (e.g., healthcare access) that push to and pull from individuals relocating to rural areas; imagery perceptions and affective responses to rural Pennsylvania; and choices on hypothetical incentives to move to rural areas. We also included items that assessed multiple demographics characteristics.

Project Results

We obtained a final sample size of 2,621 for the Other State sample and 1,318 for the Pennsylvania sample and compared each sample to their respective population demographics from 2020 U.S. Census data (U.S. Census Bureau, 2023). Both samples were substantially younger and whiter than their respective populations, and females were also slightly more represented in the samples. Thus, we weighted each sample based on these demographics (i.e., gender, age, and race) to be more representative of their respective populations and used this weighted data in the analyses. Highlights of the results are presented below in relation to the sections of the survey:

- *Attachment to Current Living*
 - Roughly two-thirds of both Other State and Pennsylvania non-rural residents appear attached to where they currently live, but between 15 percent and 25 percent may not be attached, demonstrating a possible openness to relocating.
 - Feelings of place attachment for Pennsylvania respondents do not differ between urban and rural populations, as defined by either self-classification as rural or urban or by county population density as rural or urban.
- *Preference of Where to Live*
 - Out of six categories, “rural area” accounted for about one-quarter of respondents’ most preferred place to live for the Other State (24 percent) and Pennsylvania (27 percent) samples.
 - “Rural area” also accounted for 21 percent of Other State and 30 percent of Pennsylvania respondents least preferred place to live.
 - According to their place preference selections, respondents in Massachusetts and Rhode Island appear most interested in living in rural areas across the 10 states sampled.
- *Influence of Demographics and Push/Pull Factors on Relocating to Rural PA*
 - Respondents from both the Other State and Pennsylvania non-rural samples who are more likely to move to rural Pennsylvania over the next five years are 1) married, 2) living in a household with school-aged

- children (K-12), 3) currently working remote in some capacity, 4) have some level of student debt, and 5) hold conservative political views.
- The five characteristics above along with identifying as white were characteristics of Other State and Pennsylvania non-rural respondents that were found to be statistically significant in at least five of the eight statistical models that assessed thinking about moving to rural Pennsylvania, willing to move, and intending to move within the next five years or within one's lifetime.
 - The three most prevalent pull factors for both Pennsylvania non-rural and Other State respondents when considering relocation to rural Pennsylvania were: 1) access to a strong K-12 education system, 2) access to outdoor activities, and 3) having a place with a relaxed pace of life. Conversely, access to primary healthcare and access to multiple food options were not incentives for either sample.
 - *Affective Perceptions of "Rural Pennsylvania"*
 - Pennsylvania and Other State residents have similar but subtly nuanced perceptions of rural Pennsylvania – both lean toward thinking of something related to the environment and rural landscape when thinking of rural Pennsylvania, with "farms" as a top response. However, Pennsylvania residents more frequently think of quite different rural landscapes, such as forests and mountains.
 - Pennsylvania residents appear to have a more negative affective response to "rural Pennsylvania" than Other State residents – 14 percent of Other State respondents compared to 24 percent of Pennsylvania respondents reported a negative affective response to the first, second, and third thoughts or images that came to their mind when they thought of "rural Pennsylvania."
 - Rural Pennsylvania residents view "rural Pennsylvania" more favorably than their urban Pennsylvania counterparts, with 78 percent reporting a positive rating to their first thought or image compared to 64 percent, respectively.
 - *Testing Potential Relocation Incentives via Discrete Choice Experiments*
 - The most popular selection was Pennsylvanians choosing the 10-year state income tax credit rather than a \$15,000 relocation grant. For example, Pennsylvanians chose the 10-year state income tax credit 73 percent of the time, compared to 61 percent for the Other State sample. This suggests Pennsylvania residents may be familiar with the burden of the state's income tax and may be more receptive to such an incentive than residents in other states and as opposed to a lump sum relocation grant.
 - The most preferred relocation incentives were those in which shorter driving times for certain amenities were paired with less lucrative

economic incentives. For example, \$10,000 in relocation grants and a 20-minute drive to amenities were preferred over \$15,000 in relocation grants and a 40-minute drive to amenities.

Conclusions

Overall, the results of the study support the argument that there are people living in both neighboring states and in non-rural Pennsylvania that are not attached to where they currently live, would prefer to live in a rural area, and may respond positively to relocation incentives that are tailored to their needs and wants. The policy considerations that align with the findings include:

- Target marketing of rural Pennsylvania based on individual characteristics of people more likely than others to relocate.
- Support community development based on the needs and wants of unique rural communities.
- Ensure marketing of rural Pennsylvania covers the wide variety of what “rural” means in Pennsylvania.
- Further explore and pilot test both economic and non-economic relocation incentives at both state and local levels.
- Enhance local government capacity and expertise to address population shrinkage.
- Foster civic engagement with current residents to increase place attachment.

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Introduction

According to U.S. Census data, rural population decline in the U.S. – commonly referred to as “population shrinkage” – began in 2006 and persisted through 2012; however, the trend reversed, and small gains of 0.15 percent were made between 2012 and 2019 (USDA Economic Research Service, 2023). Decline was seen again between 2019 and 2020 but reversed between 2020 and 2021 (USDA Economic Research Service, 2023). This reversal has been driven largely by net in-migration from urban areas, as the natural change in rural population (births over deaths) continues to trend downward (USDA Economic Research Service, 2019). Unfortunately, most rural Pennsylvania counties have not seen the same increase in net in-migration (USDA Economic Research Service, 2019). In fact, these counties, at an aggregate level, have experienced a decrease in population from 2010 to 2019 of 2.63 percent, while urban Pennsylvania counties experienced a 2.06 percent increase during that same time (USDA Economic Research Service, 2020).

Understanding such changes related to rural population shrinkage has been a topic of research since the 1960s, with most studies focusing on the local economic base. This research suggests that by the 1990s, most nonmetropolitan counties in the northeast U.S. shifted to a service sector economy and were no longer largely extractive or manufacturing economies; however, many rural Pennsylvania counties did not shift to a service economy, but instead, were still based on a shrinking manufacturing economy (Luloff, 1999). Some rural counties near or part of metropolitan areas grew and prospered along with their metropolitan centers; while more geographically remote rural counties did not (Luloff, 1999), a common scenario in rural areas in developed countries (Westlund & Liu, 2019).

This population shrinkage in rural Pennsylvania contrasts with recent Gallup polling data suggesting that many Americans prefer to live in rural areas if they could live anywhere they wished – in November 2018, 27 percent of poll respondents chose “rural area” as their top choice out of six geographic living options, and this increased to 31 percent in a poll conducted in December 2020 (Saad, 2021). Additionally, about half of the individuals currently living in a city or suburb would prefer to live there, and 30 percent of those would prefer to live in a rural area or town. This differs with 75 percent of individuals currently living in a rural area or town who prefer it to other options (Saad, 2021). These figures suggest that many Americans are interested in relocating to rural settings, and that most Americans living in rural areas prefer to stay. Some speculate that such a turn may be fueled by the COVID-19 pandemic and, for many Americans, the possibility of working remote for the long-term (Popken, 2020; Rose, 2020); however, there remains skepticism around how employers will embrace remote work in the long term and how people’s living preferences (e.g., city versus suburbs) will be shaped by these decisions (Demsas, 2021). This comes at a time when people currently living in rural areas are experiencing significant negative social, physical, and

economic impacts due to COVID-19, but are optimistic about the rebound (Mueller et al., 2021).

This positive support for rural living coupled with the shift in the way many people work presents state and local policymakers and public administrators looking to reverse or stop rural population shrinkage an opportunity to attract new residents and/or keep existing residents. This opportunity may counter data suggesting that the U.S. national mobility rate has been in a slow but steady decline from 1985 to 2019, indicating people are relocating less than in the past and driven largely by decreases in local intra-state moving (Frost, 2020). Rationale for relocating is largely centered around broad job-related, housing, and familial reasons (Frost, 2020); however, little is known about the details behind general relocation perceptions and preferences (Bryer et al., 2020), and even less about relocating to rural areas and rural Pennsylvania specifically. What are the factors that lure (i.e., pull toward) or block (i.e., push away) people from relocating to rural areas and engages them to stay? How do those factors align with existing population shrinkage strategies, specifically for rural communities?

We explored these and related questions within this study by using a cross-sectional survey that collected both qualitative and quantitative data, an approach that is well-suited for research in rural studies (Luloff, 1999; Strijker, Bosworth, & Bouter, 2020). To inform survey development we adopted a multidisciplinary approach to existing research that explores how rural areas – those linked and not linked to large metropolitan areas – survive and thrive in the 21st century knowledge economy in a post-pandemic world (Li, Westlund, & Liu, 2019). We particularly focused on understanding how to reverse or stop population shrinkage. Within the survey we assessed perceptions of social (e.g., community cohesion) and economic (e.g., employment) push and pull factors of residents of Pennsylvania and neighboring states and relate these to resident characteristics. The results of the study inform how state and local governments may approach population shrinkage through various means, such as building capacity to foster rural entrepreneurship (Belson, 2020; Deller, Kures, & Country, 2019) and build upon rural amenities, infrastructure, and community cohesion (Cabras & Lau, 2019).

Literature Review

We used a multidisciplinary approach when reviewing existing literature to frame the research questions and inform survey development. This included reviewing research in rural studies that focused on population shrinkage, research in public administration that focused on state and local government responses to population changes, and additional literature across various disciplines that focused on understanding relocation preferences, to rural areas or otherwise.

Rural Population Shrinkage

While there were some increases with population growth in rural America through in-migration between 2019 and 2020 (USDA Economic Research Service, 2023), over the

most recent decade – 2010 to 2020 – rural America collectively experienced population shrinkage for the first time in history (Johnson, 2022). Pennsylvania rural counties largely followed that trend (Johnson, 2022).

With talk and research of rural population shrinkage comes talk and research related to rural economic conditions and economic development (e.g., Belson, 2020; Deller et al., 2019; Johnson, 2022). Li and colleagues (2019) conceptualize the development of rural areas into two types of content:

The "material" content indicates those what we can see, such as physical space, geographic characteristics, population and resource endowments while the "immaterial" content includes those intangible things such as personal relationships, values, attitudes, culture and institutions. (p. 137)

In response to external forces related to population shrinkage (e.g., urbanization), rural communities and their local governments implement strategies that largely fall under material or immaterial, such as improving local infrastructure and collective population planning or growing social capital by improving social bonds within the community, respectively (Li et al., 2019). Most rural local government interventions related to rural population shrinkage – such as attempting to limit out-migration or increase in-migration – are primarily linked to material economic development in the form of attracting industry or businesses to their jurisdiction (Deller et al., 2019).

While intervention can occur at all levels of government – federal, state, county, and municipality – much of the burden falls on local governments. The ability of local government to make an impact depends on several factors, including the capacity of local actors to self-govern and build community, and the institutional capacity of the local government to assist with such agency (Murray & Dunn, 1995; Cigler, 1993). Many state-level programs exist in Pennsylvania to assist with building such local capacity, with many being delivered through the Governor's Center for Local Government Services (GCLGS) under the Department of Community and Economic Development (DCED; Pennsylvania Department of Community and Economic Development, 2023).

Despite the importance of rural local government, Hall (2022, p. 615) notes rural areas and their governments as a context have “been much-neglected” within the mainstream public administration field – the study of how governments and nonprofit organizations deliver public goods and services. Yet, Hall (2022, p. 615) also notes how these areas hold vast importance for the rest of the nation, such as the importance of “the rural hinterlands that keep us all fed.” While researchers strive to generalize their findings, it is difficult, if not impossible, to generalize research done within an urban or international context – such as large and complex performance management systems of city governments – to rural local governments. Concerns of capacity, resources, and lack of economies of scale are too much to overlook. Thus, it is vital to study rural areas and their governments as a specific context of study in public administration.

The lack of research within the field of public administration can also be extended to understanding population shrinkage and the government response. Few public

administration studies exist that focus on emigration, migration, and shrinkage, and governments' response to such. Those that do tend to focus on governance of cross-country migration and immigration management, and not within a United States context (e.g., Tantardini & Tolay, 2020; Valero et al., 2020).

Individual Characteristics in Relation to Relocation Decisions

Bryer and colleagues (2020) highlighted the deficit in understanding government response to emigration and population shrinkage, whether it be urban cities losing residents to suburbs or rural areas moving to urban areas. They also put forth what they believe is the first step to furthering knowledge in this area – “Before considering what an activating government might do in practice, it is necessary to assess the multitude of non-economic factors [in addition to the economic] contributing to individual and family decisions to emigrate” (Bryer et al., 2020, p. 3). Through their systematic literature review, they discovered that much of the literature “flows through a lens of push/pull factors” that apply to both economic – commonly related to employment opportunities and wages – and non-economic factors (Bryer et al., 2020, p. 5). Focusing on the non-economic space, they identified “50 overlapping but distinct factors” that they categorized into seven groups: personal ambition; personal relationships; quality of life; quality of working life; future opportunities; quality of governance; and fitness to enter a new society.

Similarly, Ulrich, Plutt, and Büttgen (2015) explored the mediating influence of non-economic factors – family and spousal factors – in career relocation decisions. Specifically, they found that employee willingness to relocate for their career depends strongly on their spouse's willingness to join them. They also found a gender difference such that “women thus appear more likely to sacrifice their own career in favor of their husbands'” (p. 11).

Lastly, several researchers note the importance of the concept of place attachment to current living and relocation decisions. For example, Hidalgo and Hernández (2001) highlight the importance of social attachment to place over physical attachment to place. Also, Weng and colleagues (2018) highlight the relationship between place attachment, intent to relocate, and the intent to quit one's job.

Understanding Affective Perceptions of Place

The feelings and emotions that embody the attachment to the place people *currently live* are prominent factors in influencing relocation decisions (Hidalgo and Hernández, 2001; Weng et al., 2018). Understanding the feelings and emotions related to a place that they *could potentially live* is also a prominent factor to relocation but is much less researched and understood. How people think about specific places (or people or things) incorporates various mental representations, such as thoughts or images, which will vary from person to person based on their lived experience. These thoughts or images are often connected with affect, how someone “feels” about that mental representation in a

positive or negative manner. The combination of these mental representations and feelings are called “affective images” – “evaluative feelings of good/positive or bad/negative associated with particular concepts or stimuli” (Leiserowitz and Smith, 2017, p. 2). A common example is how the term “cancer” typically evokes a negative affective response with associated negative thoughts or images, while something like “sushi” will vary substantially from person to person (Leiserowitz and Smith, 2017).

Affective image analysis is a method to measure these affective images and responses and is typically accomplished through free word association. This is done by asking someone what thought(s) or image(s) come to mind when thinking about certain stimulus, and then having that person rate their affective judgement of their response(s), typically on a scale ranging from positive to negative. This method has been used with a variety of stimuli across multiple topics, such as substance abuse (Szalay, Strohl, & Doherty, 1999), global warming and climate change (Lorenzoni et al., 2006), energy transition pathways (Böhm, Dorn, & Pfister, 2018), wind power (Cousse, Wüstenhagen, & Schneider, 2020), and city/state vacation preferences (Slovic, MacGregor, & Peters, 1998). The open-ended nature of the method minimizes researcher bias (other than the choice of the stimulus) in comparison to using closed-ended questions and provides a rich source of qualitative data to analyze. The downside is that the data received are unstructured and complex, making it time-consuming to analyze. Using the affective imagery approach for understanding perceptions of a potential relocation locale is a novel approach but holds substantial potential on providing insight on what the “market” of potential residents think about locales.

Understanding Choices of Potential Relocation Public Policy Programs via Discrete Choice Experiments

As stated previously, public policy interventions and locally based programs to encourage relocation to rural areas focus largely on targeting economic factors, most frequently employment. Many of these interventions deal with the demand side of employment by attempting to attract employers, which is difficult to implement by itself, unless there is a workforce ready and waiting for the new employers. In contrast, some other interventions have focused on the supply side that focus on the individual, such as job-training programs. The use of individual interventions that target potential residents by offering various incentives to move to a specific locale – particularly rural areas – have sky-rocketed in the wake of the COVID-19 pandemic, largely due to the boom in remote working. For example, Kansas offers student loan repayment assistance and state income tax credits for moving to designated “Kansas rural opportunity zones” (Kansas Commerce, 2023). Minnesota’s “Northland” offers a “218 Relocate” program with various incentives, including free (time-limited) high-speed internet and free co-working space (218 Relocate, 2023). Similarly, Pennsylvania’s “Wilds are Working” program looks to link remote workers with “host” towns in the PA Wilds (PA Wilds Center for Entrepreneurship, 2023).

The various incentives offered by these programs are based in logical understanding of potential residents' needs and desires, both economic and non-economic. However, exploring how certain trade-offs impact choices between incentives is largely unexplored. Discrete choice experiments (DCE) are a quantitative research method that are used to measure those trade-offs. DCEs model a real-world decision situation in a hypothetical context. Respondents are presented a scenario with a decision and are forced to choose between two (or more) options where the options have slight differences between them, called attributes. This slight difference allows the researcher to measure the impact of certain trade-offs between attributes when the data are aggregated. This method has been used to measure trade-offs in numerous situations, ranging from pandemic lockdowns versus loss of life (Belle & Cantarelli, 2022) to trade-offs in job attributes for healthcare workers in rural areas (World Health Organization, 2012) to wine label preferences (Boncinelli et al., 2020) to landuse policy and housing demand (Torquati, Giacchè, & Tempesta, 2020). The DCE approach is well-suited to explore trade-offs between relocation incentives and related attributes about the relocation destination.

Project Purpose and Goals

The purpose of the project was to develop a survey that incorporated multiple innovative methods to explore aspects of relocation decisions based on the multidisciplinary literature reviewed above. Two research questions guided survey development: What are the factors that lure (i.e., pull toward) or block (i.e., push away) people from relocating to rural areas and engages them to stay, and how do those factors align with existing population shrinkage strategies, specifically for rural communities? The survey was delivered to two samples of two different populations – residents of Pennsylvania and residents of 10 states adjacent to Pennsylvania (i.e., Connecticut, Delaware, Massachusetts, Maryland, New Jersey, New York, Ohio, Rhode Island, Virginia, and West Virginia). There were three primary goals of the survey:

- Goal One: Uncover and explore characteristics of potential new residents for rural Pennsylvania.
- Goal Two: Uncover and explore perceptions of rural Pennsylvania of Pennsylvania residents and residents of neighboring states.
- Goal Three: Begin to uncover the preferences of potential residents for rural Pennsylvania regarding incentive and inducement policies that can motivate them to relocate.

We accomplished these goals through the survey by developing approaches and questions based on the existing literature:

- Assessing current living status (four questions; adapted from Saad, 2021)

- Measuring current place attachment (five questions; adapted from Hidalgo & Hernandez, 2001; and Weng et al., 2018)
- Ranking place preference (one question; adapted from Saad, 2021)
- Capturing affective imagery and affective ratings (six questions; informed by Böhm et al., 2018; Couse et al., 2020; Lorenzoni et al., 2006)
- Measuring economic and non-economic relocation push and pull factors (21 questions; informed by Byer et al., 2021; Ulrich et al., 2015)
- Measuring relocation perceptions (i.e., thinking, willing, and intending to relocate; informed by Bryer et al., 2020; Weng et al., 2018)
- Measuring policy preferences through a discrete choice experiment (four questions presented to each respondent, two for each two policy proposals; informed by Belle & Cantarelli, 2021; Hauber et al., 2016; Johnson et al., 2013; Lerusse & Van de Walle, 2021)
- Capturing demographics (19 questions; informed by numerous sources)

The full survey with the question prompts, questions themselves, and the potential responses are provided in Appendix 1.

Methods

The survey was delivered to two samples of two separate populations – Pennsylvania residents and residents of neighboring states. The participants were recruited via Amazon Mechanical Turk (MTurk) and the survey was delivered via Qualtrics. Questionnaires were centered on understanding the characteristics of potential people who could relocate to rural Pennsylvania, and to gain insight on what may influence their decision to relocate. Before the survey was conducted, the study was reviewed and granted exempt research status by the Penn State University Institutional Review Board (IRB Study ID# STUDY00019917).

Participants and MTurk

All participants were recruited from the online crowd-sourcing platform called MTurk, which is an increasingly popular source of human subject data collection in the social sciences, including psychology (Buhrmester, Kwang, & Gosling, 2016), political science (Dowling & Wichowsky, 2013), and public administration (Bozeman, 2019). Amazon has described MTurk as, “a marketplace for work that requires human intelligence... gives businesses access to a diverse, on-demand, scalable workforce and gives workers a selection of thousands of tasks to complete whenever it’s convenient” (University of Massachusetts Amherst, 2019). Anyone 18 years of age and older can register with MTurk and become MTurk “workers.” The workers are paid a nominal fee to complete various online “human intelligence tasks” (HITs) – which commonly include completing surveys – that are created and posted to the platform by “requesters” – which are

commonly researchers, both market researchers and academic researchers. The MTurk pool of U.S.-based workers is at least 226,000 and can range to 500,000 (Robinson, Rosenzweig, Moss, & Litman, 2019). Most researchers use MTurk solely as a recruitment method and route workers to an online survey site (e.g., Qualtrics, Survey Monkey) as these sites offer more survey functionality than the MTurk platform itself. It also affords some level of anonymity between researchers and participants and has a third party (Amazon) serve as an intermediary to oversee the payment process (University of Massachusetts Amherst, 2019).

The first sample was drawn from the MTurk population of Pennsylvania residents and the second was the MTurk population of residents of 10 neighboring states. MTurk affords the ability to screen workers based on their state of residency (at no extra cost to the requester), so only workers who were registered with MTurk as one of these states as their place of residency were able to access and complete the survey. All workers were paid a nominal fee (\$1.75) for completing the survey, which is based on average MTurk payments for tasks of similar length and complexity.

There is a growing body of research that suggests responses received from MTurk workers have the quality and validity that is comparable to that of traditional human subject recruitment (Huff & Tingley, 2015; Landers & Behrend, 2015). However, MTurk worker respondent groups “to some extent over-represent younger persons, whites and Asians, more educated persons, identifiers with the Democratic party, and computer owners” (Bozeman, 2019). To improve representativeness of the participants in the study, both samples were weighted on gender, race, and age based on the Pennsylvania and the aggregated 10 adjacent states population data from the 2020 U.S. Census data (U.S. Census Bureau, 2023).

Procedure

We collected the two samples concurrently beginning in October 2022 and ending in February 2023. To receive a diverse group of MTurk workers, we stratified data collection in each of the samples by four groups based on the number of human intelligence tasks (HITs) that MTurk workers previously completed, which we used as a screening requirement. This ensured that the sample was not overrepresented by MTurk “super workers” who tend to be the first group of individuals who always complete any tasks when it is posted (and such participants may exhibit survey fatigue and may not give due attention to surveys). Additionally, HIT completion rates slow after three days as the HIT posting drops down the list on MTurk workers’ HIT job board. Thus, we created and managed eight separate HITs, posting and reposting throughout the course of data collection (Litman & Robinson, 2020). For example, if we posted the HIT for each of the eight groups to access on Monday morning, we would typically end the posting by Wednesday or Thursday morning and then re-post the HIT. At that time the completed HITs and surveys were verified before payment to ensure workers completed the task appropriately. We verified completion of the survey by comparing an automatic

completion code provided to workers once they completed the survey in Qualtrics to the code they entered in MTurk. When verified, workers were paid through the MTurk platform. We also tracked all MTurk worker IDs on an ongoing master list to ensure that a worker did not complete the survey more than once – after a worker completed the survey their worker ID was added to this master list and uploaded to MTurk to prevent duplication, however a small number of duplicates came through due to workers moving from one group to another over the course of a HIT posting. These cases were flagged and were removed from the final data analysis.

We created the HITs following recommended practices to provide basic information about the HIT to MTurk workers but kept it limited and vague to reduce self-selection bias (Litman & Robinson, 2020). MTurk workers that accepted the HIT were directed to take the survey via Qualtrics, an online survey tool licensed by Penn State University. Qualtrics enables researchers to collect, store, and export results for analysis in external software. Social science researchers using MTurk have largely used MTurk for recruitment while constructed surveys in third-party software such as Qualtrics (University of Massachusetts Amherst, 2019). We followed MTurk’s step-by-step instructions for ensuring accurate results when using Qualtrics with MTurk. (Amazon Mechanical Turk, 2017). The linkages between Amazon MTurk and Qualtrics were tested and verified before launching the survey. Qualtrics survey results and MTurk HIT completion records were constantly monitored during the data collection period and survey completion was verified (as described above) before payment was made.

Questionnaires

The battery of questionnaires delivered within the survey covered several areas centered on understanding respondent perceptions about relocating to rural Pennsylvania and were based largely off existing literature (see Literature Review section). We assessed 1. place attachment to their current living status; 2. familiarity with Pennsylvania and rural Pennsylvania; 3. preferences on where they prefer to live; 4. thinking, willingness, and intentions around moving to rural areas; 5. economic factors (e.g., employment) and non-economic factors (e.g., healthcare access) that push and pull individuals relocating to rural areas; 6. imagery perceptions and affective responses to rural Pennsylvania; and 7. choices on hypothetical incentives to move to rural areas. We also included items that assessed multiple demographics characteristics, including: age; gender; race; education; marital status; household size and children in household; housing status; income; student debt; political party and political views; employment status, type, and location; and remote working status. All questions are provided in Appendix 1. The survey was piloted with Penn State Harrisburg graduate students and minor changes to wording were made based on feedback.

Data Cleaning

All respondents in both the Pennsylvania and Other State samples were routed to the same Qualtrics survey, so the final dataset that was retrieved from Qualtrics required substantial cleaning. This included separating the two populations via the “select your current state” question; matching respondent survey completion codes in the Qualtrics dataset with the responses in the MTurk HIT completion records (i.e., backwards verification); filtering out “junk” responses, which included those that selected a state that wasn’t in the study (there were instances of this despite having an MTurk pre-survey screening in place) and those that were not fully completed; and identifying and flagging potential poor-quality responses to remove.

The process for identifying poor-quality responses involved using the two attention check questions embedded in the survey (“I have never used a computer” and “Please select “strongly agree” to show you are paying attention to this question”) and the qualitative responses to the first affective imagery question (i.e., “What is the first thought or image that comes to your mind when you think of rural Pennsylvania”). We noticed that some of the responses to this affective imagery question appeared to be “copy and pasted” sentences (or fragments of such) from websites thus we marked those as low-quality. We identified and removed entire cases from the final dataset that met two or three of the following three criteria: failed attention check number one; failed attention check number two; or identified as a low-quality response to the first affective imagery question. This resulted in a removal of 226 cases for the Other State sample and 99 for the Pennsylvania sample. We believe this process strengthened the quality of the data and did not extensively remove potentially valid responses, as complete verification of validity is not possible.

Data Analysis

We analyzed the two samples – Other State residents and Pennsylvania residents – separately but the analysis process was largely the same for each sample. For certain analyses we also stratified the samples by current living status as rural versus non-rural based on the participant’s response to the question “How do you define where you currently live?” presented in the survey. Unless otherwise noted, rural was defined as the single response “rural” and non-rural was defined as all other responses (i.e., big city, small city, suburb of a big city, suburb of a small city, or town not a suburb of a city) to align with recent Gallup polling (Saad, 2021). Defining “rural” in this sense is most applicable to our study as we are interested in personal perceptions, as opposed to using a legal or scientific definition of rural, such as one based on a guideline of population density. Analyses were completed in Microsoft Excel and IBM SPSS. Frequency counts were conducted on all survey questions but are not reported in length here due to space constraints. Associations between certain responses were conducted based on our review of the data and the ability of these associations to shed light on the research questions. Eight binominal logistic regression analyses were conducted to

determine which respondent characteristics most influence a respondents' likelihood of relocating to a rural area. We also analyzed the qualitative data received from the affective imagery questions via thematic coding and conducted frequency count analysis of the quantitative discrete choice experiment data.

Results

We obtained a final sample size of 2,621 respondents for the Other State sample and 1,318 respondents for the Pennsylvania sample, both only include persons 18 years of age or older. The speed at which we were able to collect Pennsylvania respondents was substantially slower than that of the Other State sample (likely due to the difference in possible population sizes of 13 million vs. 68.9 million, respectively). The size of the Other State sample affords the ability to analyze the full sample with a 2 percent margin of error and 95 percent confidence level (when assessing sample percentages), and the size of the Pennsylvania sample affords the ability to analyze the full sample with a 3 percent margin of error and 95 percent confidence level (while assessing sample percentages).

After cleaning the dataset for each sample, we compared each sample to their respective population demographics from 2020 U.S. Census data. (U.S. Census Bureau, 2023). Both samples were substantially younger and whiter than their respective populations, and females were also slightly more represented in the samples. Thus, we weighted each sample based on these demographics (i.e., gender, age, and race) to be more representative of their respective populations (see Appendix 2 for the changes in sample demographics for gender, age, and race in pre- and post-weighting). All results reported below were calculated with weighted data (unless otherwise stated).

Place Attachment and Place Preference

In this section we review the survey results for five questions related to respondents' attachment to their current place of living and a question that asked respondents to rank their preference for place of living (i.e., "If you could live anywhere you wished, where would you prefer to live?"). We also explored associations between these place attachments and preferences and other respondent characteristics.

Place Attachment

Table 1 displays the response percentages across the five place attachment questions for the Other State sample. Respondents largely demonstrated a strong attachment to where they currently live, with 71 percent of respondents agreeing somewhat or strongly agreeing to having a strong sense of belonging and 73 percent feeling emotionally attached where they currently live. Sentiment was less affirmative (i.e., somewhat or strongly agree) when asked about moving away without others (56 percent), others moving away (68 percent), or both moving away from where they currently live (62 percent). In contrast, when looking across all five items, it appears that

between 15 percent and 25 percent of the respondents disagree strongly or somewhat about being attached to where they currently live, demonstrating a possible openness to relocating.

Table 1: Other State Sample Place Attachment Responses

Place Attachment Question	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I feel a strong sense of belonging to the area where I currently live.	4%	12%	13%	46%	25%
I feel emotionally attached to area where I currently live.	6%	9%	10%	44%	29%
I would be sorry to move out of my area, without the people who live there.	11%	14%	19%	37%	19%
I would be sorry if the people who I appreciate in my area moved out.	6%	9%	16%	42%	26%
I would be sorry if I and the people who I appreciate in my area moved out.	7%	10%	21%	37%	25%

Note: Sample size of 2,621

Table 2 shows response percentages across the five place attachment questions for the Pennsylvania sample. The responses largely followed a pattern like the Other State sample – respondents indicated a strong sense of belonging and emotional attachment to where they currently live, with slightly over two-thirds of respondents somewhat or strongly agreeing to both items; but they demonstrated less affirmative sentiment (i.e., somewhat or strongly agree) when asked about moving away without others (52 percent), others moving away (68 percent), or both moving away from where they currently live (56 percent). Like the Other State sample, when looking across all five items it appears that between 15 percent and 26 percent of the respondents disagree strongly or somewhat about being attached to where they currently live, suggesting a possible openness to relocate. This suggests a fair number of Pennsylvania residents may be open to relocate.

Table 2: Pennsylvania Sample Place Attachment Responses

Place Attachment Question	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I feel a strong sense of belonging to the area where I currently live.	5%	12%	15%	35%	32%
I feel emotionally attached to area where I currently live.	7%	12%	12%	35%	33%
I would be sorry to move out of my area, without the people who live there.	11%	15%	22%	30%	22%
I would be sorry if the people who I appreciate in my area moved out.	6%	9%	16%	39%	29%
I would be sorry if I and the people who I appreciate in my area moved out.	8%	15%	22%	30%	26%

Note: Sample size of 1,318

We combined the above five place attachment items into a single “place attachment” scale to further analyze whether place attachment differs across states or current living status. The internal consistency of the scale was tested and was found to be appropriate for analysis. For the Other State sample, we calculated the mean average and standard deviation scores for respondents by state of residence (see Appendix 3) and by current living status (see Appendix 3). All mean scores for states and current living statuses were within a single standard deviation, indicating there may not be differences in levels of place attachment depending on the state of residence (e.g., Delaware versus Ohio) or current living status (e.g., big city versus rural area).

For the Pennsylvania sample, we calculated the mean average and standard deviation scores for respondents by current living status (see Appendix 3) and by urban versus rural status (see Appendix 3). For the latter we created two definitions of urban versus rural – the first combined the five non-rural current living statuses in the survey to “urban”, with “rural” being the single “rural area” response; the second used the county-based definition of rural versus urban used by the Center for Rural Pennsylvania (Center for Rural Pennsylvania, 2022). Like the results for the Other State sample, means did not vary substantially across current living statuses, and did not vary across the definitions of urban versus rural. This suggests that feelings of place attachment for Pennsylvanians does not differ between urban and rural populations, as defined by either self-classification as rural or urban or by county population density as rural or urban (i.e., the Center for Rural Pennsylvania definition).

Place Preference Ranking

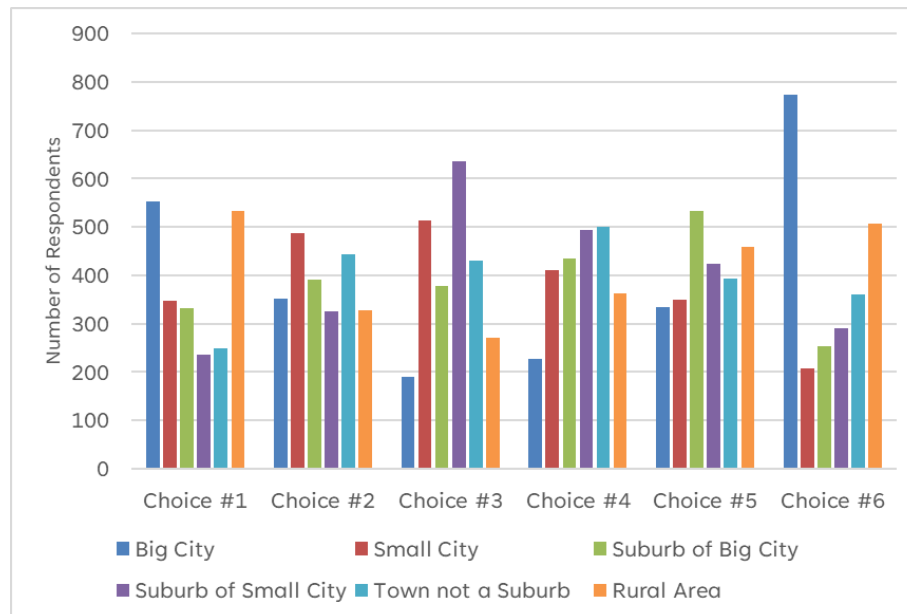
Respondents ranked six types of places in response to the question “If you could live anywhere you wished, where would you prefer to live?” Table 3 and Figure 1 provide the Other State sample responses by rank of choice by type of place. Respondents indicated “Big City” as the most preferred choice (i.e., Choice #1, 25 percent) but also the least preferred choice (i.e., Choice #6, 32 percent). “Rural Area” was a close second for most preferred choice (i.e., Choice #1, 24 percent) but did not receive nearly as many responses as the least preferred choice (i.e., Choice #6, 21 percent) as did “Big City”.

Table 3: Other State Sample Place Preference by Type of Place

	Big City	Small City	Suburb of Big City	Suburb of Small City	Town not a Suburb	Rural Area
Choice #1	25%	15%	15%	10%	11%	24%
Choice #2	15%	21%	17%	14%	19%	14%
Choice #3	8%	21%	16%	26%	18%	11%
Choice #4	9%	17%	18%	20%	21%	15%
Choice #5	13%	14%	21%	17%	16%	18%
Choice #6	32%	9%	11%	12%	15%	21%

Note: Sample size of 2,621

Figure 1: Other State Sample Place Preference by Type of Place



Like the Other State sample, the Pennsylvania sample demonstrated variability in terms of place preference largely for either “Big City” or “Rural Area” (see Table 4 and

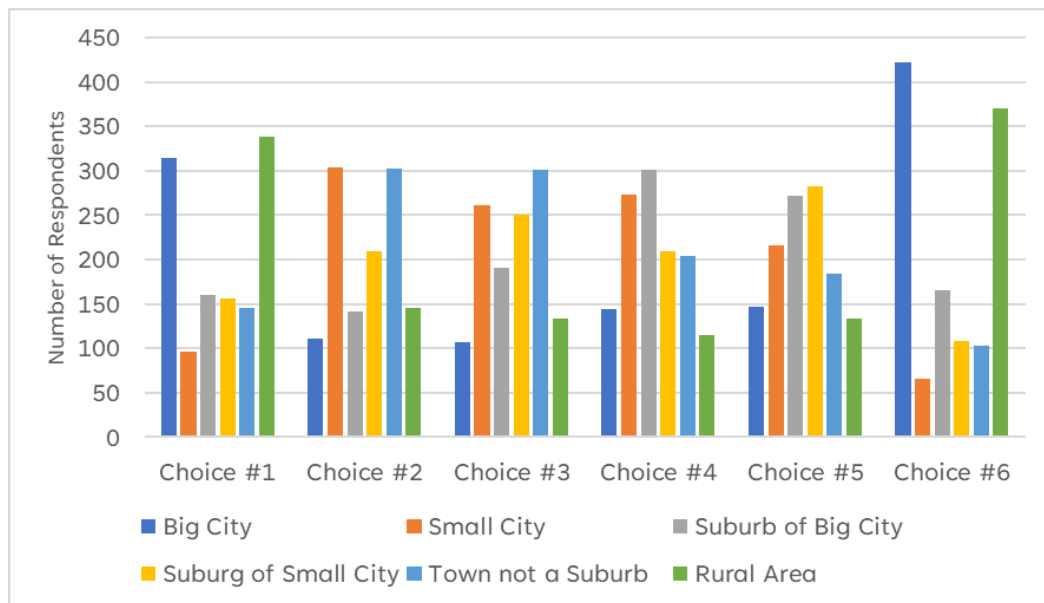
Figure 2). Respondents indicated “Rural Area” as most preferred choice (i.e., Choice #1, 27 percent), followed closely by “Big City” (i.e., Choice #1, 25 percent). “Big City” was the least preferred choice (i.e., Choice #6, 34 percent) followed by “Rural Area” (i.e., Choice #6, 30 percent). While Other State and Pennsylvania respondents were similar in proportion of “Big City” being the least preferred, a larger proportion of Pennsylvania respondents (i.e., 9 percentage points larger) selected “Rural Area” as their least preferred choice compared to the Other State sample.

Table 4: Pennsylvania Sample Place Preference by Type of Place

	Big City	Small City	Suburb of Big City	Suburb of Small City	Town not a Suburb	Rural Area
Choice #1	25%	8%	13%	13%	12%	27%
Choice #2	9%	25%	12%	17%	24%	12%
Choice #3	9%	22%	16%	21%	24%	11%
Choice #4	12%	23%	25%	17%	16%	9%
Choice #5	12%	18%	22%	23%	15%	11%
Choice #6	34%	5%	13%	9%	8%	30%

Note: Sample size of 1,318

Figure 2: Pennsylvania Sample Place Preference by Type of Place



Place Preference Associations

We conducted statistical tests (i.e., chi-square tests of independence) to explore associations between place preference and select respondent characteristics. Two tests

were conducted for the Other State sample and one for the Pennsylvania sample. In the first for the Other State sample, we tested the association between state of residence and whether the respondent selected “rural area” as their first or second choice as place of preference. The association was statistically significant; however, the strength of the association was weak to moderate according to the Cramer’s V statistic (Cohen, 1988) – a strong association is generally around 0.5 and the association we found was 0.183. To understand which states contributed most to the significant finding, we examined all possible combinations of state of residence and “rural area” as first or second choice (see Appendix 3). We found that respondents from Massachusetts and Rhode Island who reported “rural area” as their first or second choice and respondents from New York and West Virginia who did not report “rural area” as their first or second choice contributed the most to the significant finding. This indicates that Massachusetts and Rhode Island residents may be more open to living in a rural area than those living in New York and West Virginia.

For the second test for the Other State sample, we repeated the same test of association but replaced state of residence with current living status. The association was statistically significant, but it was weak (i.e., Cramer’s V of 0.12). According to all possible combinations (see Appendix 3), it was only respondents living in a “rural area” who did not report “rural area” as their first or second choice as place of preference that contributed the most to the statistically significant finding. This suggests that residents in adjacent states living in rural areas may not actually prefer living there.

For the test for the Pennsylvania sample, we tested the association between current living status and “rural area” as the first or second choice as place of preference. The association was statistically significant and it was moderate to strong (i.e., Cramer’s V of 0.31). According to all possible combinations (see Appendix 3), respondents living in a “big city” who did not report “rural area” as their first or second choice and respondents living in a “rural area” who did report “rural area” as their first or second choice were the biggest contributors to the statistically significant finding. This suggests that the place preference of those Pennsylvania respondents aligns with their current living status.

Predicting Relocation with Potential Resident Characteristics

We used binominal logistic regression to determine the influence of each resident characteristic on relocation-related outcomes assessed in the survey. These outcomes came from four separate statements within the survey:

1. “I have thought about moving to a rural area IN Pennsylvania.” (“Thought”)
2. “I am willing to move to a rural area IN Pennsylvania.” (“Willing”)
3. “I intend to move to a rural area IN Pennsylvania sometime within the next 5 years.” (“Intent-5years”)
4. “I intend to move to a rural area IN Pennsylvania sometime within my lifetime.” (“Intent-Lifetime”)

The responses to the above statements were grouped into two categories: 1) respondents who indicated they strongly agree or agree, and 2) all other responses. This was done to determine the influence of each resident characteristic specifically on an affirmative response to each of the above four statements.

These four outcomes were collected for every respondent in both samples – respondents living in other states and respondents living in Pennsylvania who indicated they were currently living anywhere other than a rural area. We examined two sets of resident characteristics that influence each of these four outcomes: demographic factors (e.g., age, gender) and push-and-pull factors related to why they might want to move (e.g., employment, pace of life). This leads to a total of sixteen separate regression models – one for each of the four outcomes for each two sets of resident characteristics for each of the two samples of respondents. This approach allowed us to assess the different influences within either demographics or push-and-pull factors within either sample. We checked that all the models met the requirements for this type of analysis (e.g., tests of linearity for continuous variables, multicollinearity for independent variables). See Appendix 4 for a full listing and description of the factors (i.e., variables) in each model. The sections below provide highlights of the eight demographic models (four for each sample) and eight push-and-pull models (four for each sample).

Models for Demographics

Detailed results of the four regression models for the Other State sample using demographic variables are in Appendix 5. All models were statistically significant (i.e., Model Fit), explained a moderate amount of variance in the dependent variable (i.e., Pseudo R^2), and had good predictive power (i.e., overall percent correct predictions).

When looking across all four models, the most important factors as determined by statistical significance were a household with school-aged children (“Household Kids”), presence of student debt (“Student Debt Yes”), having conservative political views (“Conservative”), and working remote in some capacity (“Work-Remote”), as each of these variables were significant in each of the four models. In other words, these demographic characteristics of respondents were found to be statistically significant to predict respondents’ agreement with each of the statements about moving to rural Pennsylvania – they have thought about it, they are willing to move, they are intending to move within the next five years, or they are intending to move sometime within their lifetime. The demographic characteristics that do not appear to influence moving to rural Pennsylvania – those that were not statistically significant in any of the four models – were age, employment status, and amount of workday spent on a computer. The rest of the variables received varying levels of support across all four models.

Table 5 details which variables were and were not statistically significant for each of the four models by reporting the odds ratios for each variable in each model. Odds ratios are a useful approach to understanding the level of influence of each statistically significant variable on the outcome in logistic regression models. In short, they tell us the

odds of the outcome happening over it not happening based on each variable, so in this case, they tell us the odds of agreeing over not agreeing to the statements about moving to rural Pennsylvania when possessing certain demographic characteristics. The odds ratios are reported only if the variable was statistically significant in that model, so blank entries in Table 5 indicate no statistically significant findings for that variable. For example, the independent variable “Rural” was found to be a statistically significant predictor of the outcome in model 1 and model 2, but not model 3 and 4. The level of influence for that variable in models 1 and 2 are interpreted as such: for model 1, the odds of having *thought about moving* to rural Pennsylvania are 1.8 times greater for respondents that indicated “rural” as their current living status as opposed to respondents not currently living in a rural area; and for model 2, the odds of *willing to move* to rural Pennsylvania are 2.2 times greater for respondents that indicated “rural” as their current living status as opposed to respondents not currently living in a rural area. When there is a negative sign next to the number in the table it means that the variable was statistically significant but in the opposite direction – for example, in model 1 for the variable “Female”, the odds of having thought about moving to rural Pennsylvania were 1.4 times greater for respondents who indicated that they were *not* female (i.e., male, non-binary, or other) than respondents who indicated they were female.

According to Table 5, the most influential variable across all four models appears to be having school-aged children living in the household (“Household Kids”). For example, respondents with school-aged children in their household (i.e., children currently enrolled in K-12 school) have 3.1 times greater odds to have thought about moving, 3.2 times greater odds to be willing to move, 2.4 times greater odds to intend to move in five years, and 3.1 times greater odds to intend to move within their lifetime than respondents without school-aged children in their household. The largest odds ratio across all models and variables occurs in model 3 (i.e., intent to move within five years) when respondents indicated they had some level of student debt (“Student Debt Yes”). These respondents have 4.2 greater odds to intend to move within five years than those who indicated they had no student debt.

Table 5: Odds Ratios for Other State Sample Demographics

Independent Variables	Model 1 Thought Exp (b)	Model 2 Willing Exp (b)	Model 3 Intent-5years Exp (b)	Model 4 Intent-Life Exp (b)
Rural	1.8	2.2		
Age				
Female	1.4 (-)			
White	1.8	1.6		1.5
Bachelors	1.6		1.7	1.5
Married	1.5		3.4	2.4
Household >=3		1.4 (-)		1.5
Household Kids	3.1	3.2	2.4	3.1
Rent	1.4	1.4 (-)		
Income <\$75K		1.5		
Student Debt Yes	1.9	2.2	4.2	2.9
Student Debt <\$20K			1.6	1.3
Democrat		1.4 (-)		
Conservative	2.2	1.6	2.1	2.2
Work-Employee				
Work-Office	1.25 (-)			1.4 (-)
Work-Remote	1.3	2.3	3.7	1.8
Work-Computer				
Work-Internet		2.0 (-)	1.7 (-)	

Note. Details about survey phrasing and coding for each independent variable can be found in Appendices 1 and 4.

The detailed results of the four regression models for the Pennsylvania non-rural sample using demographic variables are in Appendix 5. This included only the respondents who entered something other than “rural area” when asked about their current living status, as the individuals in rural areas were not asked the same questions about their thoughts, willingness, and intentions to move to rural Pennsylvania since they already live there. Like the demographic models for the Other State sample, all models were statistically significant (i.e., Model Fit), explained a small to moderate amount of variance in the dependent variable (i.e., Pseudo R^2), and had fair to good predictive power (i.e., overall percent correct predictions).

When looking across all four models, the most important demographic characteristics as determined by statistical significance were age (“Age”) and holding conservative political views (“Conservative”), as both variables were significant in each one of the four models. The demographic characteristics that do not appear to influence moving to rural Pennsylvania – those that were not statistically significant in any of the four models – were household size (“Household >=3”), income (“Income <\$75K”), working status (“Work-Employee”), and work location (“Work-Office”). The rest of the variables received varying levels of support across all four models.

Like Table 5, Table 6 provides the odds ratios for each variable in each of the four models, with blanks indicating no statistical significance. Unlike the Other State sample, age was an influential factor for the Pennsylvania non-rural sample – such that as age decreases the odds of having thought about moving, willing to move, intending to move in five years, and intending to move in ones’ lifetime to rural Pennsylvania increases. In other words, younger respondents were more open to moving to rural Pennsylvania. Other than age, respondents holding conservative political views (“Conservative”) was influential – these respondents have 1.6 times greater odds to have thought about moving, 1.5 times greater odds to be willing to move, 1.9 times greater odds to intend to move in five years, and 1.7 times greater odds to intend to move within their lifetime than respondents without conservative political views. The largest odds ratio across all models and variables occurs in model 3 (i.e., intent to move within five years) with respondents living in households with any number of school-aged children having 4.6 times greater odds of intending to move to rural Pennsylvania within five years than those with no school-aged children.

Table 6: Odds Ratios for Pennsylvania Non-rural Sample Demographics

Independent Variables	Model 1 Thought Exp (b)	Model 2 Willing Exp (b)	Model 3 Intent-5years Exp (b)	Model 4 Intent-Life Exp (b)
Big City	1.4 (-)	1.4 (-)		
Age	1.0 (-)	1.0 (-)	1.0 (-)	1.0 (-)
Female	1.4			
White	2.2	1.8		1.8
Bachelor’s				1.6
Married		1.4	2.3	
Household >=3				
Household Kids		1.6	4.6	2.6
Rent			1.8	
Income <\$75K				
Student Debt Yes	3.2	1.9	2.0	
Student Debt <\$20K	2.8			
Democrat	1.4 (-)	2.0 (-)		
Conservative	1.6	1.5	1.9	1.7
Work-Employee				
Work-Office				
Work-Remote			2.6	
Work-Computer	3.3 (-)	2.0 (-)		2.5 (-)
Work-Internet	2.0	1.4		3.1

Note. Details about survey phrasing and coding for each independent variable can be found Appendices 1 and 4.

Models for Push and Pull Factors

Detailed results of the four regression models for the Other State sample using push and pull factors are in Appendix 5. All models were statistically significant (i.e., Model Fit), explained a moderate amount of variance in the dependent variable (i.e., Pseudo R^2), and had good predictive power (i.e., overall percent correct predictions).

Across the four models, the most important factors as determined by statistical significance were needing access to K-12 education (“Education1”), outdoor activities (Outdoor), healthcare services (“Healthcare1”), and reliable high-speed internet (“Internet”), as each of these variables were significant in each of the four models. However, while *needing access* to K-12 education and outdoor activities predicted respondents’ agreement with each of the statements about moving to rural Pennsylvania – they have thought about it, they are willing to move, they are intending to move within the next five years, or they are intending to move sometime within their lifetime – *not needing access* to healthcare services and reliable high-speed internet were predictors of agreeing with those statements. The push and pull factors that do not appear to influence moving to rural Pennsylvania – those that were not statistically significant in any of the four models – were access to arts and culture opportunities (“Arts”), having racial and cultural diversity (“Diversity”), and having an active and responsive local government and public services (“PublicServices”). The rest of the variables received varying levels of support across all four models.

Like the analysis for the regression models with the demographic variables, Table 7 provides the odds ratios for each push and pull factor in each of the four models for the Other State sample, with blanks indicating no statistical significance. The most influential factor appears to be access to reliable highspeed internet but with an inverse interpretation, meaning respondents who *do not need* access to reliable highspeed internet have 1.4 times greater odds to have thought about moving, 1.1 times greater odds to be willing to move, 2.5 times greater odds to intend to move in five years, and 1.7 times greater odds to intend to move within their lifetime than respondents who do need access to reliable highspeed internet. The largest odds ratio across all models and variables was also for reliable highspeed internet in model 3, such that respondents who *do not need* access to reliable highspeed interest have 2.5 times greater odds to intend to move to rural Pennsylvania in five years than respondents who do not such access.

Table 7: Odds Ratios for Other State Sample Push and Pull Factors

Independent Variables	Model 1 Thought Exp (b)	Model 2 Willing Exp (b)	Model 3 Intent-5years Exp (b)	Model 4 Intent-Life Exp (b)
Employ1		1.1 (-)		
Employ2			1.1	
Employ3		1.1		
Housing		1.2	1.2	
CostsLiving1			1.3 (-)	
Education1	1.3	1.2	1.5	1.5
Education2	1.2	1.1	1.2	
Healthcare1	1.4 (-)	1.3 (-)	1.1 (-)	1.4 (-)
Healthcare2	1.1	1.1		1.3
Arts				
Sports-Leisure	1.1 (-)	1.1 (-)		1.2
Food	1.1 (-)	1.3 (-)		1.3 (-)
Outdoor	1.3	1.5	1.4	1.3
Diversity				
Family	1.3 (-)		1.4 (-)	1.4 (-)
RelaxLifePace	1.6	1.2		1.3
Community	1.2		1.1 (-)	
PublicServices				
Internet	1.4 (-)	1.1 (-)	2.5 (-)	1.7 (-)
Civic		1.2	1.6	1.2
Commute			1.2	

Note. Details about survey phrasing and coding for each independent variable can be found Appendices 1 and 4.

The detailed results of the four regression models for the Pennsylvania non-rural sample using push and pull factors are in Appendix 5. All models were statistically significant (i.e., Model Fit), explained a small to moderate amount of variance in the dependent variable (i.e., Pseudo R^2), and had good predictive power (i.e., overall percent correct predictions).

No push and pull factors were significant across all four models, but access to K-12 education (“Education1”), multiple food options (“Food”), outdoor activities (“Outdoor”), racial and cultural diversity (“Diversity”), and relaxed pace of life (“RelaxLifePace”) were significant across three of the four models. The push and pull factors that do not appear to influence moving to rural Pennsylvania – those that were not statistically significant in any of the four models – were needing a job that allows to work remote (“Employ2”), access to long-term care services for the elderly (“Healthcare2”), access to multiple arts and culture options (“Arts”), active and responsive local government and

public services (“PublicServices”), and access to reliable high-speed internet (“Internet”). The rest of the factors received varying levels of support across all four models.

Table 8 provides the odds ratios for each push and pull factor in each of the four models for the Pennsylvania non-rural sample, with blanks indicating no statistical significance. The most influential push and pull factors appears to be respondents who need a relaxed pace of life (“RelaxedLifePace”), such that those respondents have 2.3 times greater odds to have thought about moving, 2.9 times greater odds to be willing to move, and 2.3 times greater odds to intend to move within their lifetime than respondents who do not need a relaxed pace of life.

Table 8: Odds Ratios for Pennsylvania Non-rural Sample Push and Pull Factors

Independent Variables	Model 1 Thought Exp (b)	Model 2 Willing Exp (b)	Model 3 Intent-5years Exp (b)	Model 4 Intent-Life Exp (b)
Employ1	1.7			
Employ2				
Employ3			1.9	
Housing			1.9	1.7
CostsLiving1	1.5	1.5		
Education1		1.7	2.7	1.6
Education2	2 (-)	1.4 (-)		
Healthcare1			2.5 (-)	2 (-)
Healthcare2				
Arts				
Sports-Leisure	2.5 (-)	3.3 (-)		
Food	2 (-)	1.7 (-)		1.7 (-)
Outdoor	2	2	1.8	
Diversity	1.7 (-)	1.7 (-)		1.5
Family				
RelaxLifePace	2.3	2.9		2.3
Community	2		1.7 (-)	
PublicServices				
Internet				
Civic			2.2	2.1

Note. Details about survey phrasing and coding for each independent variable can be found Appendices 1 and 4.

Predicted Probabilities

Across both the Other State and Pennsylvania non-rural samples, the outcome of a respondent indicating they intend to move to rural Pennsylvania within five years is the

outcome with the best predictive capability and fit to the data. This is also the most determinate outcome as people indicated they intend to move within a specified short period of time. Thus, we used the two models with this outcome (one for each sample) to calculate predicted probabilities for various combinations of variables – demographic characteristics of respondents – to produce profiles of respondents who appear to be more open to moving to rural Pennsylvania than other respondents.

As noted in the “Models for Demographics” section, there were 19 demographic characteristics (i.e., variables) in the models. We used the mean averages of each of the 19 variables to create a baseline prediction that has a predicted probability of 12.4 percent for the Pennsylvania non-rural sample and a predicted probability of 26.4 percent for the Other State sample – meaning the chance a respondent with the average demographic characteristics of each sample indicated that they intend to move to rural Pennsylvania within five years is 12.4 percent for the Pennsylvania non-rural sample and 26.4 percent for the Other State sample.

To calculate predicted probabilities for respondents who appear to be more open to moving to rural Pennsylvania than others we can change the values (from the mean averages) for select variables that are statistically significant for both samples to indicate that a respondent possesses that characteristic and keep the other variables at the mean average.

The variables that are statistically significant for both samples and have some of the largest odds ratios (see Tables 5 and 6) are respectively: 1) living in a household with school-aged children; 2) working remote in some capacity; and 3) being married. For example, if we change the value for living in a household with school-aged children, for the Pennsylvania non-rural sample the chance a respondent indicated they intend to move to rural Pennsylvania within five years almost doubles to 23.7 percent over the baseline of 12.4 percent; for the Other State sample it jumps to 34 percent from the baseline of 26.4 percent. Thus, living in a household with school-aged children has a large substantive effect on intending to move to rural Pennsylvania within five years. Changing the values for all three variables – living in a household with school-aged children, working remote in some capacity, and being married – has a combined effect that increases the predicted probability to 41.3 percent for the Pennsylvania non-rural sample and 55.6 percent for the Other State sample. Conversely, if we calculate a predicted probability for respondents *without* those three characteristics, the predicted probability decreases from baseline of 12.4 percent to 2.5 percent for the Pennsylvania non-rural sample and from baseline of 26.4 percent to 4 percent for the Other State sample.

Further exploration of these two sub-sets of respondents in each sample with and without the three characteristics – living in a household with school-aged children, working remote in some capacity, and being married – provides further insight of potential residents who appear to be most attracted to rural Pennsylvania compared to those who are least attracted. Table 9 focuses on the comparison in the Pennsylvania

non-rural sample and Table 10 focuses on the comparison in the Other State sample. Each table presents the same eight data elements – other than “state” of residence for the Other State sample and “county” of residence for the Pennsylvania non-rural sample – to inform our understanding of these groups.

Table 9: Pennsylvania Non-rural Sample Comparison of Respondents with and without Top Characteristics

Data Element about Respondents	With Top Characteristics (n = 272)	Without Top Characteristics (n = 202)
Predicted probability of intending to move to rural Pennsylvania within 5 years	41.3%	2.5%
Top type of place where they are currently living	Big City (32%)	Big City (23%)
Top county of residence	Philadelphia (16%)	Philadelphia (18%)
Percent that previously lived in rural Pennsylvania	67%	34%
Percent that reported a positive first thought when thinking about “rural Pennsylvania”	78%	60%
Top two categories of first thought when thinking about “rural Pennsylvania”	“Farm” (11%) and “Good” (8%)	“Farm” (28%) and “Forest” (9%)
Push and pull factor with the most support for moving to a rural area (i.e., agree, somewhat agree, or strongly agree with the factor)	“I need a place that supports the needs of my family, spouse, and/or partner.” (86%)	“I need a place that has access to reliable high-speed internet at least similar to where I currently live.” (97%)
Push and pull factor with the least support for moving to a rural Pennsylvania (i.e., agree, somewhat agree, or strongly agree with the factor)	“I need a place that has housing costs (rent or own) LESS THAN where I currently live.” (71%)	“I need a place that has access to long-term care services for the elderly at least similar to where I currently live.” (37%)

Note: “Top characteristics” include living in a household with school-aged children; working remote in some capacity; and being married.

Table 10: Other State Sample Comparison of Respondents with and without Top Characteristics

Data Element about Respondents	With Top Characteristics (n = 1039)	Without Top Characteristics (n = 357)
Predicted probability of intending to move to rural Pennsylvania within 5 years	55.6%	4%
Top type of place where they are currently living	Big City (45%)	Big City (22%)
Top state of residence	Connecticut (31%)	New York (29%)
Percent that previously lived in rural Pennsylvania	67%	34%
Percent that reported a positive first thought when thinking about “rural Pennsylvania”	79%	62%
Top two categories of first thought when thinking about “rural Pennsylvania”	“Good” (11%) and “Peaceful” (6%)	“Farm” (17%) and “Amish” (16%)
Push and pull factor with the most support for moving to a rural Pennsylvania (i.e., agree, somewhat agree, or strongly agree with the factor)	“I need a place that supports the needs of my family, spouse, and/or partner.” (87%)	“I need a place that has access to healthcare services (hospitals, doctors, specialists, etc.) at least similar to where I currently live.” (90%)
Push and pull factor with the least support for moving to a rural Pennsylvania (i.e., agree, somewhat agree, or strongly agree with the factor)	“I need a place that has costs of living other than housing LESS THAN where I currently live.” (76%)	“I need a place that has a K-12 public education system at least similar to where I currently live.” (39%)

Note: “Top characteristics” include living in a household with school-aged children; working remote in some capacity; and being married.

Affective Images of Rural Pennsylvania

Each respondent was asked to produce three “affective images” when they were prompted with the phrase “Rural Pennsylvania.” In other words, they were asked to write the first, second, and third thoughts or images that came to their mind when they thought of “Rural Pennsylvania.” They were then asked to rate each of these three affective images on a scale from very negative to very positive. The categorization of the qualitative responses of affective images and the quantitative ratings of the images are provided in the following sections.

Categorization of Affective Images

We hand-coded both Other State and Pennsylvania respondents first reported affective image into first, second, and third level categories. As expected, the responses

were extremely wide ranging in terms of both structure and content based on each respondent’s personal understanding of rural Pennsylvania. Regarding structure, the responses included wide-ranging nouns (e.g., “Amish”, “Dunder Mifflin”), basic adjectives or descriptions (e.g., “nice”, “backwards”, “silent”, “flat”), and complex phrases (e.g., “different from Phil[adelphia] and Pitt[sburgh]”). This complicated the analysis and required thorough combing of all responses.

Out of 2,621 responses for the first reported affective image for the Other State sample only 302 were unable to be categorized due to various reasons (e.g., did not fit a category, incomprehensible response) and were classified as “Other.” Figure 3 visualizes the 10 top categorized responses and Table 11 provides the counts and percent of total. The top two categories – “Farm” and “Amish” – are somewhat related and accounted for 17 percent of the total, which is a sizable portion of the total. Collective categories (those that contain multiple basic categories) were also created that provide additional insight on responses – the top two collective categories included 848 responses (32 percent of the total) categorized as “Environment” (such as “forest” and “farm”) and 673 responses (26 percent of the total) categorized as “Description” (such as “good” and “beautiful”, but also included negative responses such as “boring”). “Specific Place” was also a collective category and accounted for 146 responses (6 percent of the total); the top “Specific Place” response was “Tionesta,” with 19 responses.

Figure 3: Other State Sample Top 10 Categories of First Affective Image

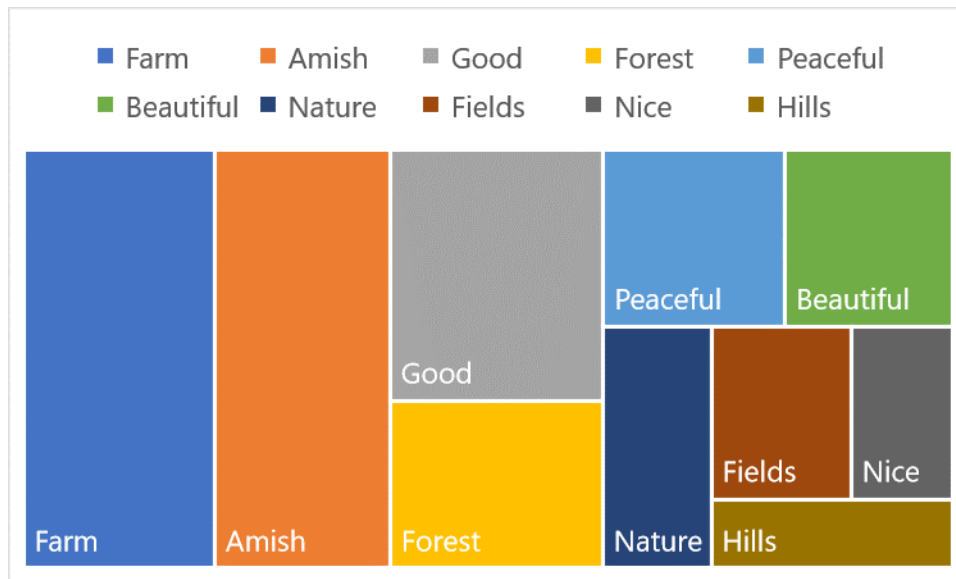


Table 11: Other State Sample Top 10 Counts of First Affective Image

Category	Count	Percent of Total
Farm	236	9%
Amish	216	8%
Good	158	6%
Forest	105	4%
Peaceful	95	4%
Beautiful	88	3%
Nature	77	3%
Fields	71	3%
Nice	52	2%
Hills	49	2%

Out of the 1,318 responses for the first reported affective image for the Pennsylvania sample, only 71 were unable to be categorized due to various reasons (e.g., did not fit a category, incomprehensible response) and were classified as “Other.” Figure 4 visualizes the 10 top categorized responses and Table 12 provides the counts and percent of total. Like the Other State sample, “Farm” topped the list but was over double the portion (i.e., 21 percent of the total as opposed to 9 percent); next was “Forest,” which was also double the portion of the Other State response (i.e., 8 percent as opposed to 4 percent); and “Amish” was third, accounting for 6 percent of the total, as opposed to the Other State sample of 8 percent of the total. In terms of top collective categories, like the Other State sample “Environment” and “Description” were the top, accounting for 582 responses (44 percent of the total) and 225 responses (17 percent of the total), respectively. “Specific Place” accounted for 58 responses (4 percent of the total) and the top response was “Lancaster,” with seven responses.

Figure 4: Pennsylvania Sample Top 10 Categories of First Affective Image

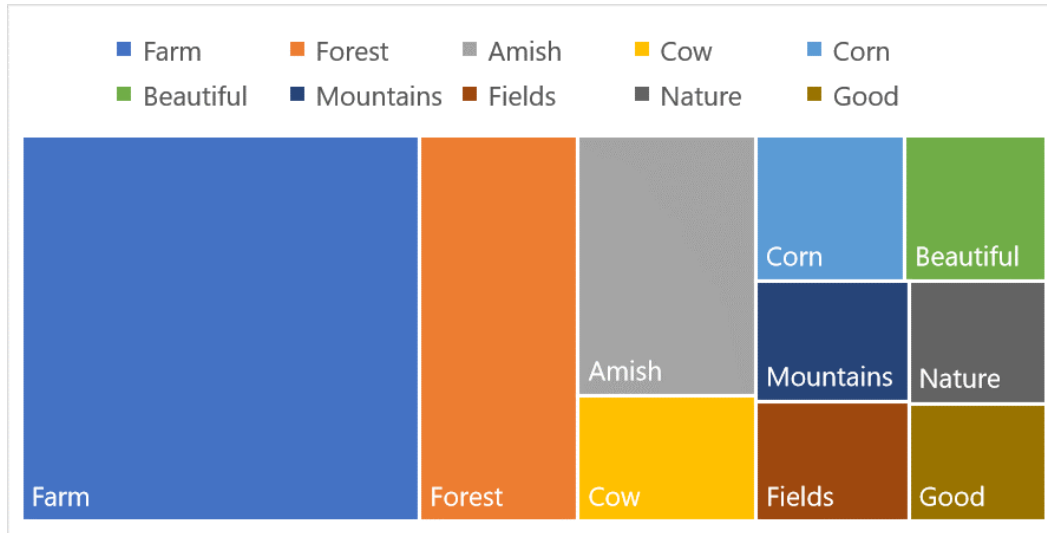
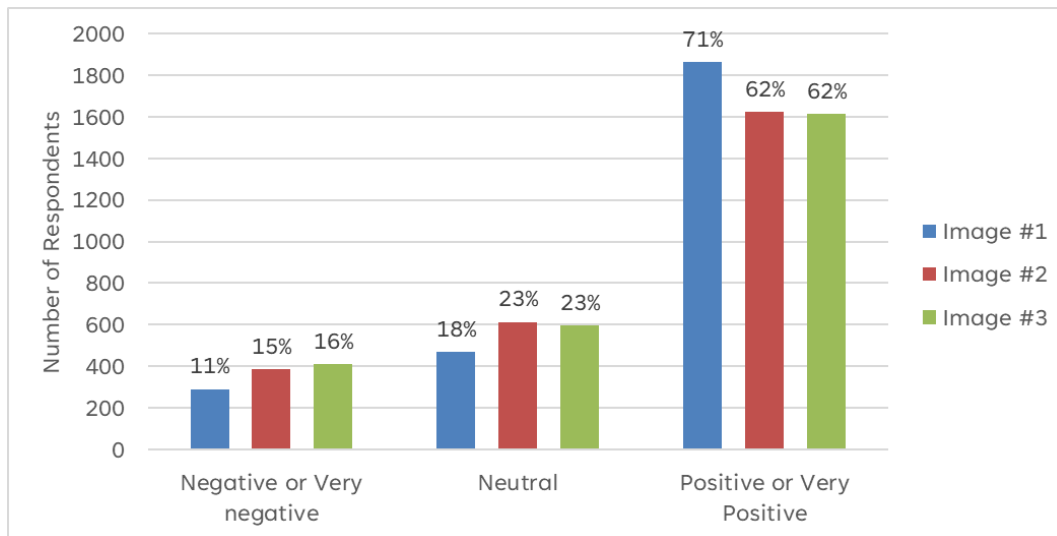


Table 12: Pennsylvania Sample Top 10 Counts of First Affective Image

Category	Count	Percent of Total
Farm	276	21%
Forest	110	8%
Amish	83	6%
Cow	40	3%
Corn	39	3%
Beautiful	37	3%
Mountains	33	3%
Fields	33	3%
Nature	30	2%
Good	29	2%

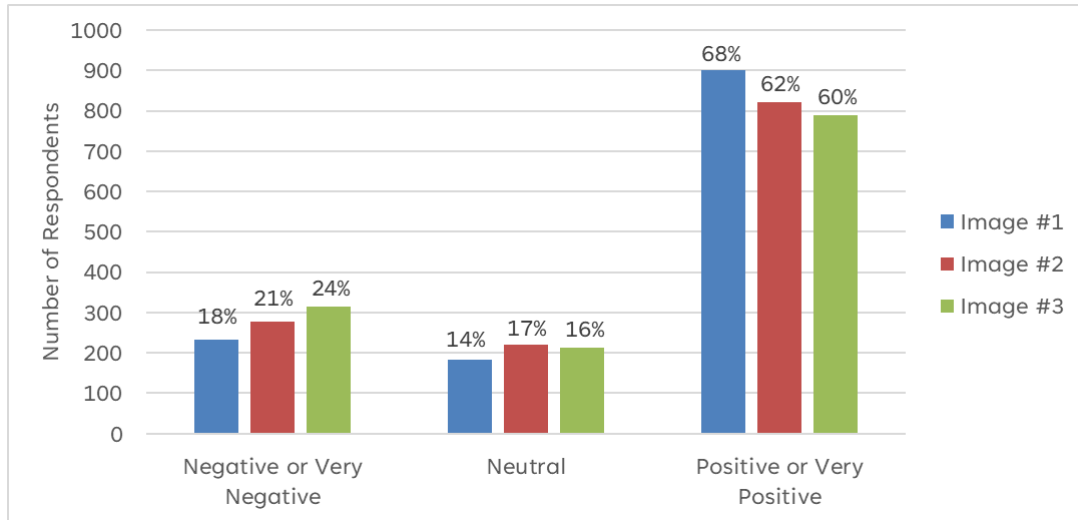
Ratings of Affective Images and Associations

The ratings of the affective images produced by the respondents in the Other State sample are provided in Figure 5. There is generally positive sentiment when it comes to “rural Pennsylvania” from neighboring states as 71 percent, 62 percent, and 62 percent of respondents rated their first, second, and third thoughts or images as positive or very positive. On the other hand, between 11 percent and 16 percent of respondents rated at least one of their responses as very negative or negative, with a total 14 percent of all responses across all three images being indicated as negative or very negative.

Figure 5: Other State Sample Ratings of Affective Images

The ratings of the affective images produced by the respondents in the Pennsylvania sample are provided in Figure 6. Like the Other State sample, respondents in the Pennsylvania sample demonstrated general positive sentiment when it comes to “rural Pennsylvania,” as 68 percent, 62 percent, and 60 percent of respondents rated their first, second, and third thoughts or images as positive or very positive. However, between 18 percent and 24 percent of respondents rated at least one of their responses as very negative or negative. In total, 24 percent of responses across all three images were reported as being negative or very negative, which is sizably larger than that of the Other State sample at 14 percent. This indicates that Pennsylvania respondents do not perceive rural Pennsylvania as favorably – as measured through thought or images that come to mind – as Other State respondents. However, it’s worth noting that more respondents tend to have first (and second) images that are positive as opposed to the third, suggesting initial affective reactions are more positive than subsequent reactions.

Figure 6: Pennsylvania Sample Ratings of Affective Images



We conducted statistical tests (i.e., chi-square tests of independence) to explore associations between these ratings of affective images and select respondent characteristics. Two tests were conducted for each sample, Other State and Pennsylvania. In the first for the Other State sample, we tested the association between state of residence and whether the respondent rated their first thought of image as positive (i.e., positive or very positive) or non-positive (i.e., neutral, negative, or very negative). The association was statistically significant; however, the strength of the association was weak to moderate according to the Cramer’s V statistic (Cohen, 1988) – a strong association is generally around 0.5 and the association we found was 0.19. To understand which states of residence contributed most to the significant finding, we examined all possible combinations of state of residence and the rating (see Appendix 6). We found that respondents from Delaware and Massachusetts who reported non-positive ratings about their first image of rural Pennsylvania and respondents from Maryland who reported positive ratings about their first image of rural Pennsylvania contributed the most to the significant finding. This suggests that residents in these states may have stronger feelings toward rural Pennsylvania than residents in other adjacent states.

We repeated the same test of association in the Other State sample but replaced state of residence with current living status. We found a statistically significant association, but it was weak (i.e., Cramer’s V of 0.09), which was weaker than the state of residence association. According to all possible combinations (see Appendix 6), respondents living in a suburb of a big city who reported a non-positive rating to their first image of rural Pennsylvania and respondents living in a town that is not a suburb of a city who reported a positive rating contributed the most to the significant finding. This suggests that Other State respondents living in big city suburbs and towns may have stronger feelings toward rural Pennsylvania than residents in other areas.

We repeated the same test of association between current living status and rating of first affective image with the Pennsylvania sample. We again found a statistically significant association, but with a weak to moderate association (i.e., Cramer's V of 0.2). According to all possible combinations (see Appendix 6), respondents living in a big city who reported a non-positive rating to their first image of rural Pennsylvania and respondents living in a rural area who reported a positive rating contributed the most to the significant finding. This differs from the Other State sample, suggesting Pennsylvania residents living in the same type of place as Other State residents (such as big cities or rural areas) may not have similar strong feelings toward rural Pennsylvania.

The last test of association for the Pennsylvania sample was between rural versus urban status according to the Center for Rural Pennsylvania definition by county and whether the respondent rated their first thought of image as positive or non-positive. We again found a statistically significant association, but with a weak association (i.e., Cramer's V of 0.14). According to the reported percentages (see Appendix 6), Pennsylvania rural residents view "rural Pennsylvania" more favorably than their urban counterparts, with 78 percent reporting a positive rating to their first thought or image compared to 64 percent, respectively. This coupled with the previous finding suggests that Pennsylvania residents living in self-defined and population-defined rural areas of Pennsylvania have a more positive perception of rural Pennsylvania (according to ratings of affective images) than those living in self-defined big cities and population-defined urban areas.

Discrete Choice Experiment

The data collected from the discrete choice experiment (DCE) required substantial manipulation for analysis. Each respondent was randomly assigned to two choice-sets from a possible 16 choice-sets from each of the two policy proposals (i.e., relocation grant and state income tax credit). In other words, they received two comparisons between two scenarios for the relocation grant and two more for the tax credit (see the full survey in Appendix 1 for an example of how this was delivered). This resulted in a dataset of 5,242 responses for each policy proposal for the Other State sample and 2,636 responses for the Pennsylvania sample (including current rural residents).

Other State Sample – Relocation Grant

Table 13 displays the analysis of the three attributes and two attribute levels per attribute that were used within the 16 possible choice-sets for the relocation grant policy proposal. The "Percent Selected" for each level of each attribute was calculated by "counting the number of times each attribute level was chosen by each respondent, summing these totals across all respondents, and dividing this sum by the number of times each attribute level was presented" across all Other State sample respondents (Hauber et al., 2016, p. 302). Based on these scores, we can infer preferences across the sample for each attribute: for the relocation grant, respondents preferred \$15K over

\$10K, which was selected 63 versus 37 percent of the time, respectively; for drive-times to local social amenities, respondents preferred 20-minutes over 40-minutes, which was selected 60 versus 41 percent of the time, respectively; and for drive-times to primary healthcare, respondents preferred 20-minutes over 40-minutes, which was selected 59 versus 40 percent of the time, respectively. These results confirm that most of the time the respondents were selecting the assumed best benefit (i.e., more money and less travel time). The results also demonstrate that there were no extreme preferences across all three attributes such that any single attribute level was not chosen more than 63 percent of the time (i.e., the \$15K relocation grant). This indicates that trade-offs between attributes – grant money and drive-times – were being made by respondents.

Table 13: Other State Sample Relocation Grant Choice Set Counts

Attribute	Attribute Levels	Count of Time Chosen	Count of Times Presented	Percent Selected
Relocation Grant	\$10K	1930	5242	37%
	\$15K	3312	5242	63%
Personally Used Local Social Amenities	20-minute drive-time	3061	5102	60%
	40-minute drive-time	2181	5382	41%
Primary Healthcare Needs	20-minute drive-time	3214	5445	59%
	40-minute drive-time	2028	5039	40%

To better understand how respondents made decisions on trade-offs between the three attributes, we analyzed the individual results of each of the 16 choice-sets. Several choice-sets provide additional insight on trade-off decisions. Table 14 displays three choice-sets, the attribute levels in those choice-sets for each of the two scenarios in the choice-set, and the percent chosen for each scenario in each choice-set. Each choice-set in the table has the same attribute levels in scenario #1: the smaller \$10K relocation grant and shorter 20-minute drive-times to both local social amenities and primary healthcare. For choice-set #10 respondents overwhelmingly chose scenario #1 (81.5 percent) as opposed to scenario #2 with the larger relocation grant and 40-minute drive-times (18.5 percent). This pattern continues in choice-set #9 but the percentage choosing scenario #1 drops slightly (75 percent); and the pattern further drops for choice-set #12 where it falls within the 6 percent margin of error, so the choice between scenarios is not statistically distinguishable. In this last choice-set, a 20-minute drive-time to local social amenities was coupled with the \$15k relocation grant, suggesting that this shifted many respondents’ decision to select the scenario with the larger

relocation grant (i.e., scenario #2). These results support the finding that Other State sample respondents are willing to sacrifice a larger relocation grant for shorter drive-times, and even more so for shorter drive-times to local social amenities than primary healthcare.

Table 14: Other State Sample Trade-offs Between Relocation Grant and Drive-times

		Relocation Grant	Local Social Amenities	Primary Healthcare	Percent Chosen
Choice-set #10	Scenario #1	\$10K	20-minute	20-minute	81.5%
	Scenario #2	\$15K	40-minute	40-minute	18.5%
Choice-set #9	Scenario #1	\$10K	20-minute	20-minute	75%
	Scenario #2	\$15K	40-minute	20-minute	25%
Choice-set #12	Scenario #1	\$10K	20-minute	20-minute	55%
	Scenario #2	\$15K	20-minute	40-minute	45%

Pennsylvania Sample – Relocation Grant

We conducted the same analyses for the Pennsylvania sample relocation grant policy proposal as we did for the Other State relocation grant. Table 15 displays the percent selected analysis of the attributes and attribute levels – it closely mirrors that of the Other State sample with each attribute level falling within 1 or 2 percentage points of the results of Other State sample, indicating that the Pennsylvania sample also preferred the \$15K relocation grant and 20-minute drive-times. This also indicates that trade-offs between attributes – grant money and drive-times – were being made by Pennsylvania respondents as no preferences were extreme, with the highest being 65 percent for the \$15K relocation grant.

Table 15: Pennsylvania Relocation Grant Choice Set Counts

Attribute	Attribute Levels	Count of Time Chosen	Count of Times Presented	Percent Selected
Relocation Grant	\$10K	919	2636	35%
	\$15K	1717	2636	65%
Personally Used Local Social Amenities	20-minute drive-time	1669	2820	59%
	40-minute drive-time	967	2452	39%
Primary Healthcare Needs	20-minute drive-time	1570	2693	58%
	40-minute drive-time	1066	2579	41%

Table 16 displays the results of individual choice-sets that provide insight on the trade-offs. These results mirror that of the Other State sample such that Pennsylvania respondents were willing to sacrifice a larger relocation grant for shorter drive-times, and even more so for shorter drive-times to local social amenities than primary healthcare. However, for choice-set #12 there was a statistically distinguishable difference between scenario selections for the Pennsylvania respondents, which was not the case for the Other State sample. This indicates that the Pennsylvania respondents were more willing to give up the larger grant money for shorter drive-times to primary healthcare than were the Other State respondents.

Table 16: Pennsylvania Sample Trade-offs Between Relocation Grant and Drive-times

		Relocation Grant	Local Social Amenities	Primary Healthcare	Percent Chosen
Choice-set #10	Scenario #1	\$10K	20-minute	20-minute	76%
	Scenario #2	\$15K	40-minute	40-minute	24%
Choice-set #9	Scenario #1	\$10K	20-minute	20-minute	70%
	Scenario #2	\$15K	40-minute	20-minute	30%
Choice-set #12	Scenario #1	\$10K	20-minute	20-minute	63%
	Scenario #2	\$15K	20-minute	40-minute	37%

Other State Sample – State Income Tax Credit

We conducted the same analyses for the state income tax credit policy proposal as we did for the relocation grant. Table 17 displays the three attributes and two attribute levels per attribute that were used within the 16 possible choice-sets for the state income tax credit policy proposal. The preferences mirror that of the relocation grant with respondents preferring the 10-year credit over the 5-year and 20-minute drive-times over the 40-minute; however, the pattern is much less pronounced than the relocation grant, suggesting that the state income tax credit may be more attractive as an incentive than the relocation grant when trade-offs about drive-times are considered.

Table 17: Other State Sample State Income Tax Credit Choice Set Counts

Attribute	Attribute Levels	Count of Time Chosen	Count of Times Presented	Score
State Income Tax Credit	5-years	2024	5230	37%
	10-years	3206	5230	61%
Personally Used Local Social Amenities	20-minute drive-time	2894	5216	55%
	40-minute drive-time	2336	5276	44%
Primary Healthcare Needs	20-minute drive-time	2878	5106	56%
	40-minute drive-time	2352	5376	44%

Table 18 displays the results of the individual choice-sets that provide insight on the trade-offs made between length of the state income tax credit and drive-times to primary healthcare and local social amenities. These results differ somewhat from that of the relocation grant such that there is a similar but much less pronounced pattern with a sizable percentage of participants selecting scenario #2 with the 10-year state income tax regardless of drive-times. Thus, the 10-year state income tax credit appears to be more enticing than the \$15K relocation grant when drive-times are part of the decision.

Table 18: Other State Sample Trade-offs Between State Income Tax Credit and Drive-times

		State Income Tax Credit	Local Social Amenities	Primary Healthcare	Percent Chosen
Choice-set #10	Scenario #1	5-years	20-minute	20-minute	62%
	Scenario #2	10-years	40-minute	40-minute	38%
Choice-set #9	Scenario #1	5-years	20-minute	20-minute	54%
	Scenario #2	10-years	40-minute	20-minute	46%
Choice-set #12	Scenario #1	5-years	20-minute	20-minute	50%
	Scenario #2	10-years	20-minute	40-minute	50%

Pennsylvania Sample – State Income Tax Credit

Table 19 displays the percent selected analysis of the attributes and attribute levels for the state income tax credit policy proposal for the Pennsylvania sample. The results followed a consistent pattern with the 10-year state income tax credit preferred to the 5-year, and the 20-minute drive-times preferred over 40-minute drive-times for both local social amenities and primary healthcare needs. However, the Pennsylvania sample appear to place more value

in the 10-year credit in trade-offs with drive-times than the Other State sample as it was selected 73 percent of the time (Pennsylvania sample) as opposed to 61 percent of the time (Other State sample).

Table 19: Pennsylvania Sample State Income Tax Credit Choice Set Counts

Attribute	Attribute Levels	Count of Time Chosen	Count of Times Presented	Percent Selected
State Income Tax Credit	5-years	715	2628	27%
	10-years	1913	2628	73%
Personally Used Local Social Amenities	20-minute drive-time	1465	2581	57%
	40-minute drive-time	1163	2675	43%
Primary Healthcare Needs	20-minute drive-time	1438	2424	59%
	40-minute drive-time	1190	2832	42%

Table 20 displays the results of the individual choice-sets that provide insight on the trade-offs made between the state income tax credit and length of drive-times to primary healthcare and local social amenities for the Pennsylvania sample. The results for choice-set #10 align with the results for the relocation grant (both samples) and the Other State sample state income tax credit such that respondents greatly prefer the shorter drive-time coupled with the shorter tax credit length as opposed to longer tax credit length coupled with longer drive-times. The differences between scenario selections for choice-set #9 and #10 are largely negligible suggesting that the draw of the state income tax has its limits when it competes with shorter drive-times for either primary healthcare (choice-set #9) and local social amenities (choice-set #12).

Table 20: Pennsylvania Sample Trade-offs Between State Income Tax Credit and Drive-times

		State Income Tax Credit	Local Social Amenities	Primary Healthcare	Percent Chosen
Choice-set #10	Scenario #1	5-years	20-minute	20-minute	73%
	Scenario #2	10-years	40-minute	40-minute	27%
Choice-set #9	Scenario #1	5-years	20-minute	20-minute	46%
	Scenario #2	10-years	40-minute	20-minute	54%
Choice-set #12	Scenario #1	5-years	20-minute	20-minute	47%
	Scenario #2	10-years	20-minute	40-minute	53%

Discussion and Policy Considerations

Overall, the results of the study support the argument that there are people living in both neighboring states and in non-rural Pennsylvania that are not attached to where they currently live, would prefer to live in a rural area, and may respond positively to relocation incentives that are tailored to their needs and wants. Given this, it is important to consider public policy strategies that may tap into this pool of people and reverse, or stop, population shrinkage in rural Pennsylvania.

There is no shortage of public policy strategies that address population shrinkage – it is a concern for policymakers and public administrators regardless of the type of setting (i.e., urban, suburb, or rural) due to its potential to greatly change the shape of the community. The key is to determine which combination of strategies best align with the uniqueness of each community, or each unique part of rural Pennsylvania. Hospers (2014) offers a useful conceptualization of four public policy approaches to population shrinkage in an urban context that is also applicable to a rural context. These types are summarized below (adapted from Hospers, 2014, p 1511-1514):

- Trivializing shrinkage – view shrinkage as inevitable and not respond; “doing nothing”; maintaining the status quo;
- Countering shrinkage – view shrinkage as reversable; fostering growth with “market-based pro-growth policy” (e.g., place marketing, attracting businesses); differentiating one’s community from surrounding communities;
- Accepting shrinkage – view shrinkage as the new norm; focus on retaining current residents and mitigate effects of shrinkage;
- Utilizing shrinkage – view shrinkage as positive and “take advantage of it,” encourage entrepreneurship and innovation to adapt.

Taking the “trivializing” approach is not an option for rural Pennsylvania – U.S. Census data show that population shrinkage in rural Pennsylvania has been an issue for longer than population shrinkage in collective rural America; and recent data has demonstrated that collective rural America is heading the way of Pennsylvania, suggesting that the trend is unlikely to turn without intervention. “Countering” is the approach that most rural communities and governments have historically adopted (Deller et al., 2019). Results on this approach are mixed, and while some strategies may work, they are very context-specific (Deller et al., 2019). “Accepting” and “Utilizing” approaches are less often considered yet are appropriate for rural areas in Pennsylvania given the range of types of rural communities that exist within Pennsylvania, such as farm versus forest, meadow versus mountain.

Below are six policy considerations that align with countering, accepting, and utilizing. The results of this study are discussed below within the context of these six considerations. The examples and ideas discussed within these considerations are not exhaustive but link to results of the study. It is important to note that the amount of data collected in this study is too vast to report and discuss in full within a single report.

The discussion and policy considerations provided here are those that provide some of the best insight on the research questions; however, further exploration of the data is recommended to uncover new associations between collected data elements.

Policy Consideration #1: Target marketing of rural Pennsylvania based on individual characteristics of people more likely than others to relocate.

The results of the regression models for the Other State and Pennsylvania non-rural samples to determine the influence of resident characteristics on relocation to rural Pennsylvania paint a picture of potential residents. If we focus on the single relocation outcome of intending to move to rural Pennsylvania within the next five years – which is the most finite of the outcomes and the outcome with the best predictive capability and fit to the data in both samples – we see similarities across both samples. Table 21 shows the demographic characteristics that were statistically significant for both samples and the odds ratios for those characteristics. Respondents with these characteristics have greater odds of intending to move to rural Pennsylvania within five years than respondents without these characteristics, with some of the characteristics having substantially large odds. This suggests these characteristics may be more universal than others when it comes to relocating to rural Pennsylvania. The profiles that were developed of respondents with and without three of these characteristics – living in a household with school-aged children, working remote in some capacity, and being married (see Tables 9 and 10) – demonstrated that respondents in both the Pennsylvania non-rural and Other State samples have differing perceptions of and experience with rural Pennsylvania that may influence their attraction (or lack thereof) to relocating to rural Pennsylvania. For example, roughly two-thirds of respondents in both samples with the characteristics have previously lived in rural Pennsylvania – such experience may have influenced positive perceptions of and attraction to rural Pennsylvania. People that do not have personal experience with rural Pennsylvania may be defaulting to their perceived stereotype of “rural,” which appears to be farmland without reliable internet or access to healthcare. It would be worthwhile to challenge such stereotypes as much as possible, possibly limiting the use of the term “rural” given individuals’ varying – and sometimes negative – perceptions of what evaluative labels such as rural, urban, and suburban represent (Billingham & Kimelberg, 2018).

Table 21: Greater Odds of Respondents with these Demographic Characteristics to Move to Rural Pennsylvania within Five Years

Characteristic	Other State Sample	Pennsylvania Non-rural Sample
Being married	3.4	2.3
Living in a household with school-aged children	2.4	4.6
Having some level of student debt	4.2	2
Having conservative political views	2.1	1.9
Working remote in some capacity	3.7	2.6

Note: Values represent greater odds of respondents with these characteristics intending to move to rural Pennsylvania within five years than respondents without these characteristics.

While “intent” indicates behavioral action, it does not necessarily indicate that those respondents with the characteristics in Table 21 will indeed move to rural Pennsylvania. Creating policy strategies that target people with those characteristics may “tip the scales” for some to make the move to rural Pennsylvania. These strategies could range from marketing efforts to new incentive programs. For example, at the state level Kansas offers a program to assist paying down student loans in exchange for relocating to rural areas (Kansas Commerce, 2023), which would appear to be a worthwhile strategy to explore in Pennsylvania given the results of this study. More locally based strategies may be developing community amenities or programs that may benefit married individuals with school-aged children.

Another approach to the results is to find similar demographics characteristics across all eight regression models as each model measures the possibility, in different capacities, of relocating to rural Pennsylvania. Several demographic characteristics were statistically significant in more than half of the models, suggesting they are worth considering as influential characteristics for individuals relocating to rural Pennsylvania:

- **Holding conservative political views** (8 out of 8 models)
- **Households with school-aged children** (7 out of 8 models)
- **Presence of some level of student debt** (7 out of 8 models)
- **White** (5 out of 8 models)
- **Married** (5 out of 8 models)
- **Working remote in some capacity** (5 out of 8 models)

In contrast, several characteristics received little to no support as being influential characteristics of individuals relocating to rural Pennsylvania (i.e., they were statistically significant in two or less of the models):

- **Employment status** (e.g., working, not working) (0 out of 8 models)
- **Income level** (1 out of 8 models)
- **Gender** (2 out of 8 models)

- **Household size** (2 out of 8 models)
- **Work location** (2 out of 8 models)

What this approach tells us is that some traditional demographics (e.g., employment) may not be influential in decisions to relocate to rural Pennsylvania; and other less traditional demographics (e.g., having student debt) may be better predictors of peoples' decisions to relocate to rural Pennsylvania.

Commonalities across the Other State sample and the Pennsylvania non-rural sample outside of those above are less consistent. One striking difference is that age was not statistically significant in the Other State sample but important in all models in the Pennsylvania non-rural sample, with younger respondents more likely than older respondents to move to rural Pennsylvania. This indicates some differences in the pool of potential residents.

Existing state-level programs that offer technical assistance to local rural communities – such as the Governor's Center for Local Government Services (GCLGS) in the Department of Community and Economic Development (DCED) – may use these results to support place-marketing strategies for local governments. Place-marketing efforts could also be coordinated on a statewide level through the Visit Pennsylvania Tourism Office, using the information within this study to create tailored “nudges” to relocate to rural Pennsylvania by either targeting specific demographics or focusing on certain amenities (both of which were explored in this study). Committees in the General Assembly – such as Community, Economic & Recreational Development (Senate) and Local Government; and Tourism & Recreational Development (House) – may find the results of the study insightful to craft new programs that support specific place-marketing strategies. One approach may be to focus on the collection of amenities that certain rural communities offer (or do not) and assist communities in marketing those amenities.

Policy Consideration #2: Support community development based on the needs and wants of unique rural communities.

The results of the regression models using push and pull factors across both Other State and Pennsylvania non-rural samples demonstrated that certain factors carry more weight than others – rural communities ought to consider designing community development efforts around these factors. For example, the models demonstrated that primary healthcare access and access to multiple food options are not top of mind when people consider relocating (i.e., they are inversely related to relocation outcomes across six of the eight models) and may instead be ancillary factors. What does appear to be top of mind is having a strong K-12 education system (significant across seven of eight models) and seemingly secondary needs, such as access to outdoor activities (significant across seven of eight models), having a place with a relaxed pace of life (significant across six of eight models), and having opportunities for involvement in civic life (significant across five of eight models). Also, access to multiple arts and culture options

was the only factor across all eight models that received no support (i.e., it was not statistically significant).

A surprising finding was that most economic-related push and pull factors appear rather unimportant across all eight models (e.g., “I need a job that pays at least equal to that of my current job; “Employ1”). There was also little support for level of income being an influential demographic characteristic as it was only statistically significant in one of the eight models. This suggests that people may be less inclined to place weight in the financial impacts of moving to rural Pennsylvania and may not need a high paying job to relocate. That is not to say that people do not need a stable income. However, there are creative ways to capitalize on the lack of interest in the pay of existing jobs in relation to new jobs. One way could be to better advertise existing jobs within rural Pennsylvania communities. Consider someone looking to move to a rural area for the lifestyle – such as access to outdoor activities and a relaxed pace of life, both significant findings in our study –with no limited idea of where they want to live but willing to leave their current job to relocate for the right mix of lifestyle factors. Creating rural area job postings that include (or link to) local community activities/offerings may assist with attracting these people.

Another method would be to create and offer relocation incentives to relocate to start a *new* job (like remote work relocation incentives but leaving your existing job). The countryside Calabria region of southern Italy is doing just that through an “active residency income” program by asking local communities “what type of professionals they’re missing” (Marchetti, 2021). Potential residents are provided incentives, but they must “commit to kickstarting a small business, either from scratch or by taking up preexisting offers of specific professionals wanted by the project” and are also held to other specific requirements (e.g., age, timeframe, citizenship; The Italian Lawyer, 2023).

Policy Consideration #3: Ensure marketing of rural Pennsylvania covers the wide variety of what “rural” means in Pennsylvania.

The results of the affective imagery analysis revealed that residents of neighboring states and Pennsylvania residents have similar but subtly nuanced perceptions of rural Pennsylvania. Respondents in both samples lean towards thinking of something related to the environment and rural landscape when thinking of rural Pennsylvania – one in three in the Other State sample and nearly half of the Pennsylvania sample. Farms are top of mind in both, but Pennsylvania residents appear to more frequently think of quite different rural landscapes, such as forests and mountains. This is just one distinction that could be made when marketing “rural Pennsylvania” to potential residents, as these two landscapes and living situations may offer vastly different living experiences and opportunities.

Efforts to market the uniqueness of rural Pennsylvania to potential residents could take many forms. For example, one existing effort is “Marketing Hometown America,” an educational program developed by the University of Nebraska extension that

“engages communities through small groups... to help a rural community look at itself and the recruitment and retention of new residents in a new way” (Institute of Agriculture and Natural Resources, 2023). This program has been replicated in rural areas in Nebraska, South Dakota, North Dakota, Minnesota, Iowa, and Wisconsin, and it was piloted in Pennsylvania in 2022 through the Penn State Extension with a grant through the Northeast Regional Center for Rural Development (Penn State Extension, 2022). Based on the results of the pilot, it may be beneficial to expand the capacity of this program or similar ones.

Another method to highlight rural “uniqueness” would be to market local events, such as cultural festivals that depict the nature of “rural” within the locale, introduce potential residents to rural communities, and, in the process, could help bolster the “festival economy” that can be crucial to some rural areas (Chhabra, Sills, & Cabbage, 2003; Mahon & Hyyryläinen, 2019). While there appear to be multiple websites in existence that market (or at least list) these festivals, none appear to be comprehensive, making it difficult for potential visitors to see the whole picture (e.g., VisitPA.com, 2023; Festival Guides and Reviews, 2023; PaMidState Media, 2023). There is also concern that many rural festivals are bottom-up endeavors, and the future of their existence is in question; bolstering the capacity to continue key rural festivals through external support may help ensure continuation (Qu & Cheer, 2021).

Policy Consideration #4: Further explore and pilot test both economic and non-economic relocation incentives at both state and local levels.

The discrete choice experiment (DCE) within this study was just the tip of the iceberg when it comes to better understanding relocation incentives and how they are considered in trade-offs people make when deciding to move to rural areas. In our study, preferences were largely consistent across both the Other State and Pennsylvania sample. There was nothing largely surprising that respondents chose the optimal attribute option for all three attributes. However, the most popular selection was Pennsylvanians choosing the 10-year state income tax credit 73 percent of the time compared to 61 percent for the Other State sample, and 65 percent (Pennsylvania sample) and 63 percent (Other State sample) for the \$15K relocation grant. This suggests Pennsylvania residents may be familiar with the burden of the state’s income tax and may be more receptive to such an approach than residents in other states and as opposed to a lump sum relocation grant.

What was striking across both the relocation grant and state income tax credit experiments was that the choice sets that had the largest difference in choice selection percentages were those where the less lucrative incentives (i.e., \$10K versus \$15K in relocation grant and five years versus 10 years in state income tax credit) were paired with the shorter 20-minute drive-times for both local social amenities and primary healthcare, as opposed to 40-minute drive-times. This suggests that offering broad-brush financial incentives will likely not be as effective as creating a more nuanced

approach to incentives, perhaps by offering a package of incentive options for people willing to relocate. Several other incentive options that were not tested here also align well with the results of our study. For example, offering access to worker training programs is a potential option that holds promise in the light of the increase in remote work and could be part of a relocation incentive package. For example, Utah State University Extension delivers a Rural Online Initiative targeted at developing a remote worker workforce in rural areas: “The Rural Online Initiative will educate, coach, and mentor citizens of the rural workforce who are currently unemployed, underemployed, or have dropped out of the workforce to obtain freelance jobs, remote employment, or online commerce opportunities” (Utah State University Extension, 2022). Within Pennsylvania, such programs could be delivered through existing university satellite extension programs (such as in Utah), through the DCED GCSLS, or through regional CareerLink offices through the Department of Labor and Industry. Collaboration across all those entities in delivering such a program may be the best approach.

An alternative worker-related-relocation incentive could be to offer access to business incubators to assist budding –or not-yet-budding – entrepreneurs to develop new businesses (Bryer et al., 2020). Given the expanding role of e-commerce, some of these start-up businesses could not only serve local rural populations but also focus on starting hybrid or all-virtual businesses and could thus be based where they please. Spurring entrepreneurial activity such as this in rural areas is a consistent theme in current rural policy research (e.g., Belson, 2020; Li et al., 2019; Pipa & Geismer, 2020) and building the capacity to do such has many potential ripple effects.

Policy Consideration #5: Enhance local government capacity and expertise to address population shrinkage.

Navigating the constellation of federal programs related to rural funding is no easy task. Many local governments do not have the capacity or resources to effectively find programs for which they’re eligible, let alone apply. There are at least 400 existing federal programs for rural communities and new Congressional legislative initiatives (e.g., Infrastructure Investment and Jobs Act of 2021) continue to increase the number of programs (Pipa & Geismer, 2020). Several of these programs can be used to address population shrinkage, in some capacity, but vary based on the specifics of rural communities. The Rural Partners Network (RPN) is a recent federal program implemented by the USDA that puts federal workers “on the ground in selected RPN Community Networks to help navigate and access programs from across the federal government and other providers, secure technical assistance, and develop local capacity” (Rural.gov, 2023). Pennsylvania does not have any pilot rural communities in this program, and expansion is unknown, but there is potential to mirror such a program at the state or regional level, potentially through DCED GCLGS.

Additionally, this consideration aligns with the recommendation made by Dewey and colleagues (2022, p. 102) in a recent Center for Rural Pennsylvania report that is

grounded in their finding that “training in development management remains a significant issue.” While their recommendation focuses on planning and land use in general, we believe a focus on building capacity of community development planning is essential. They suggested exploring the capacity of the PA Local Government Training Partnership (i.e., PA Training Hub for Municipal Learning, or PATH), which is a program supported by GCLGS.

Another potential approach is to use the existing expertise within the Commonwealth by collaborating with universities who have expertise in planning and administering public programs (Cigler, 1993). A place to start is with Pennsylvania universities that offer a master’s degree in public administration (MPA) – the standard in graduate training in public management – to provide education and training to local government officials, whether via their existing MPA program or singular continuing education courses. While several universities offer MPAs, the programs accredited by the Network of Schools of Public Policy, Affairs, and Administration (NASPAA) are “the global standard in public service education.” Pennsylvania has four NASPAA accredited MPA programs through Penn State Harrisburg, University of Pittsburgh, Villanova University, and West Chester University (NASPAA, 2023). However, there are several other MPA (or similar) programs within several other Pennsylvania universities (e.g., Shippensburg University, Kutztown University, University of Pennsylvania, Marywood University, Gannon University, Widener University, Carnegie Mellon University, Indiana University of Pennsylvania). In addition, exploring the public management expertise within the existing network of rural community colleges and potentially increasing their capacity to serve their local governments – as suggested by a recent Center for Rural Pennsylvania research report (Saboe, Ocean, & Condliffe, 2020) – would be another approach.

Policy Consideration #6: Foster civic engagement with current residents to increase place attachment.

Pennsylvania and the Other State sample provided very similar responses when it came to how attached they are to their current place of living. This held true across different types of living statuses and in urban versus rural comparisons. This policy consideration aligns squarely with the “accepting” and “utilizing” population shrinkage approaches discussed above and focuses on retention of current residents. Fostering civic engagement with current residents offers two key benefits within the context of rural population shrinkage. The first is to increase place attachment of current residents, which is likely to occur when thoughtful engagement and public participation practices are designed and implemented according to best practices research (e.g., Bryson, Quick, & Slotterback, 2013; Lowndes, Pratchett, & Stoker, 2006). Enhancing place attachment of current residents may lead to reduced out-migration.

The second key benefit is collaborative development of community and economic development plans – local public officials working together with current residents. A recent report by the Center for Rural Pennsylvania identified that counties in largely rural

regions of the state are less likely to have economic development plans than urban regions of the state (Dewey et al., 2022). Such plans are typically those that contain the community's vision and plan for addressing fluctuations in population and economic conditions (e.g., "establishes policy direction(s) for economic growth or revitalization," Dewey et al., 2022, p. 109). While not specifically addressing population shrinkage within the list of "stated goal of municipal planning and land use regulation," the closest goal appears to be "Guide type of development," which was only found in 27 percent of rural county plans. And those with that goal were not very confident in how well municipal regulations achieve that goal (slightly better than "sometimes"; Dewey et al., 2022, p. 78). Thus, we echo the suggestion of Dewey and colleagues (2022) to provide funding for rural planning and plan updates and add that such plans encompass how the communities plan to address population shrinkage, which typically involves economic development. Given the lack of resources and capacity of many rural communities, as well as the necessary scope of planning, encouraging regional planning, intergovernmental cooperation between municipalities, and partnering with local universities (see Policy Consideration #5) may be a preferred approach (Cigler, 1993).

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Appendix 1 – Survey

[This does not include the informed consent page, which was presented first, and the Amazon MTurk completion code page, which was presented last.]

Thank you for agreeing to participate in this survey!

Please respond to the following questions on this page about where you currently live.

How do you define where you currently live?

- Big city
- Small city
- Suburb of a big city
- Suburb of a small city
- Town not a suburb of a city
- Rural area

Please select which state and county in which you currently live.

State [drop-down list]

County [drop-down list]

How long have you lived where you currently live? Please estimate in years and months, such as 3 years and 2 months.

- Years _____
- Months _____

Please respond to the following 5 statements about where you currently live on the scale below.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

1. I feel a strong sense of belonging to the area where I currently live.
2. I feel emotionally attached to area where I currently live.
3. I would be sorry to move out of my area, without the people who live there.
4. I would be sorry if the people who I appreciate in my area moved out.
5. I would be sorry if I and the people who I appreciate in my area moved out.

Please answer the following questions about your prior living status before where you currently live.

We are defining “rural” as a place that is NOT urban or suburban.

Have you previously ever lived in a rural area?

- Yes
- No

About how long have you previously ever lived in a rural area?

- Months _____
- Years _____

Have you previously ever lived in a rural area in Pennsylvania?

- Yes
- No

About how long have you previously ever lived in a rural area in Pennsylvania?

- Months _____
- Years _____

Have you previously ever lived in a non-rural area in Pennsylvania?

- Yes
- No

About how long have you previously ever lived in a non-rural area in Pennsylvania?

- Months _____
- Years _____

If you could live anywhere you wished, where would you prefer to live? Please rank the options below with 1 being your first preference and 6 being your last preference.

- _____ Big city
- _____ Small city
- _____ Suburb of a big city
- _____ Suburb of a small city
- _____ Town not a suburb of a city
- _____ Rural area

For the questions on this page please answer spontaneously and swiftly but without rushing and enter your responses in the open boxes below the question.

What is the first, second, and third thought or image that comes to your mind when you think of "rural Pennsylvania"? It can be a single word, multiple words or a phrase.

First thought or image that comes to your mind when you think of "rural Pennsylvania":

Second thought or image that comes to your mind when you think of "rural Pennsylvania":

Third thought or image that comes to your mind when you think of "rural Pennsylvania":

Please rate each of the three thoughts or images that you wrote on the previous page on the following scale to describe your feeling towards that thought or image. Your responses are included below.

- Very negative
- Negative
- Neutral
- Positive

- o Very positive
1. Your first thought or image: *[piped text from response to question above]*
 2. Your second thought or image: *[piped text from response to question above]*
 3. Your third thought or image: *[piped text from response to question above]*

Please respond to the following two statements about your familiarity with rural Pennsylvania on the scale provided below the statement.

- o Strongly disagree
 - o Disagree
 - o Neither agree nor disagree
 - o Agree
 - o Strongly agree
1. I am familiar with rural Pennsylvania as a place to live.
 2. I am familiar with rural Pennsylvania in general.

Please provide any comments about your familiarity with rural Pennsylvania.

I have never used a computer. *[Attention Check Question #1]*

- o Strongly disagree
- o Disagree
- o Neither agree nor disagree
- o Agree
- o Strongly agree

We would like to learn about your opinions of moving to rural areas. We are defining “rural” as a place that is NOT urban or suburban. We are defining “rural Pennsylvania” as such a place located within Pennsylvania. Please respond to the questions and statements below using the scales provided.

[This section was dependent on the response to “state” and “current living status”]

Other State – Rural:

- o Strongly disagree
 - o Disagree
 - o Neither agree nor disagree
 - o Agree
 - o Strongly agree
1. I have thought about moving to a rural area IN Pennsylvania.
 2. I am willing to move to a rural area IN Pennsylvania.
 3. I intend to move to a rural area IN Pennsylvania sometime within the next 5 years.
 4. I intend to move to a rural area IN Pennsylvania sometime within my lifetime.

Pennsylvania – Rural:

- o Strongly disagree
- o Disagree

- o Neither agree nor disagree
- o Agree
- o Strongly agree

1. I have thought about moving to a non-rural area NOT IN Pennsylvania.
2. I have thought about moving to a non-rural area IN Pennsylvania.
3. I am willing to move to a non-rural area NOT IN Pennsylvania
4. I am willing to move to a non-rural area IN Pennsylvania
5. I intend to move to a non-rural area NOT IN Pennsylvania within the next 5 years.
6. I intend to move to a non-rural area NOT IN Pennsylvania sometime within my lifetime.
7. I intend to move to a non-rural area IN Pennsylvania within the next 5 years.
8. I intend to move to a non-rural area IN Pennsylvania sometime within my lifetime.

Other State and Pennsylvania – Not rural

- o Strongly disagree
- o Disagree
- o Neither agree nor disagree
- o Agree
- o Strongly agree

1. I have thought about moving to a rural area NOT IN Pennsylvania.
2. I have thought about moving to a rural area IN Pennsylvania.
3. I am willing to move to a rural area NOT IN Pennsylvania.
4. I am willing to move to a rural area IN Pennsylvania.
5. I intend to move to a rural area NOT IN Pennsylvania within the next 5 years.
6. I intend to move to a rural area NOT IN Pennsylvania sometime within my lifetime.
7. I intend to move to a rural area IN Pennsylvania sometime within the next 5 years.
8. I intend to move to a rural area IN Pennsylvania sometime within my lifetime.

We would like to learn about your opinions toward moving to rural areas. We are defining “rural” as a place that is NOT urban or suburban. Please read each statement below and using the scale indicate your level of agreement with each statement. Each statement is asking what you personally feel you need to move to a rural area.

For me to move to a rural area...

- o Strongly disagree
 - o Disagree
 - o Somewhat disagree
 - o Neither agree nor disagree
 - o Somewhat agree
 - o Agree
 - o Strongly agree

1. I need a job that pays at least equal to that of my current job.
2. I need a job that allows me to work remotely.
3. I need a job that has opportunities for professional advancement.
4. I need a place that has housing costs (rent or own) LESS THAN where I currently live.
5. I need a place that has costs of living other than housing LESS THAN where I currently live.
6. I need a place that has a K-12 public education system at least similar to where I currently live.

7. I need a place that has access to a local college or university to obtain higher education or life-long learning at least similar to where I currently live.
8. I need a place that has access to healthcare services (hospitals, doctors, specialists, etc.) at least similar to where I currently live.
9. I need a place that has access to long-term care services for the elderly at least similar to where I currently live.
10. I need a place that has access to multiple arts and culture options, such as festivals, music concerts, museums, etc., at least similar to where I currently live.
11. I need a place that has access to multiple sports and leisure options, such as movie theaters, sporting events, public parks and courts (tennis, basketball, etc.), at least similar to where I currently live.
12. I need a place that has access to multiple food options, such as restaurants, bars, coffee shops, etc., at least similar to where I currently live.
13. I need a place that has access to multiple outdoor activities, such as hiking, camping, kayaking, etc., at least similar to where I currently live.
14. I need a place that has racial and cultural diversity at least similar to where I currently live.
15. I need a place that supports the needs of my family, spouse, and/or partner.
16. I need a place that provides a relaxed pace of life.
17. I need a place that provides me with a sense that I belong to the community at least similar to where I currently live.
18. I need a place that has an active and responsive local government and public services at least similar to where I currently live.
19. I need a place that has access to reliable high-speed internet at least similar to where I currently live.
20. I need a place that offers multiple ways for me to be involved in my community and local government at least similar to where I currently live.
21. I need a place that has a commuting time to my work at least similar to where I currently live.

Are there any other factors not covered in the previous questions that you feel you need to move to a rural area?

Please select "strongly agree" to show you are paying attention to this question. [Attention Check Question #2]

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

In this section we would like to learn about your opinions towards potential programs that would encourage people like yourself to move to a rural area. We are defining "rural" as a place that is NOT urban or suburban.

Imagine that you were thinking about moving to a rural area and were presented with a Relocation Grant that would be given to you if you decided to move.

Below are 2 questions that are pairs of scenarios. Assume that the scenarios are identical in all regards and differ on only three things: 1) the amount given to you in the relocation grant, 2) the driving time to local social amenities from where you will live, and 3) the driving time to healthcare facilities from where you will live.

Please read each pair of scenarios carefully and select which one of the two scenarios you would prefer if you had to choose. There are no right or wrong answers.

[Respondents were presented two of the tables below and asked to pick one of the two scenarios. The bolded text in the scenarios changed based on the choice set to which respondents were randomly assigned out of 16 choice sets available.]

	Scenario #1	Scenario #2
Relocation Grant – You receive \$_____ to spend on local housing (rent or buy), food, moving expenses, co-working space, or teleworking tools/training.	You receive \$10,000 for the relocation grant	You receive \$15,000 for the relocation grant
Local Social Amenities – The social amenities that you personally use (e.g., shops, restaurants, bars, library, etc.) are within a _____ minute drive of where you will live.	The amenities are within 40 minutes of driving time.	The amenities are within 40 minutes of driving time.
Healthcare – Your primary healthcare needs (hospital, primary doctor) are met within a _____ minute drive of where you will live.	Healthcare is within 20 minutes of driving time.	Healthcare is within 20 minutes of driving time.

Which scenario would you prefer?

- Scenario #1
- Scenario #2

In this section we would like to learn about your opinions towards potential programs that would encourage people like yourself to move to a rural area. We are defining “rural” as a place that is NOT urban or suburban.

Imagine that you were thinking about moving to a rural area and were presented with a State Income Tax Credit program that would be given to you if you decided to move.

Below are 2 questions that are pairs of scenarios. Assume that the scenarios are identical in all regards and differ on only three things: 1) the number of years of the tax credit, 2) the driving time to local social amenities from where you will live, and 3) the driving time to healthcare facilities from where you will live.

Please read each pair of scenarios carefully and select which one of the two scenarios you would prefer if you had to choose. There are no right or wrong answers.

[Respondents were presented two of the tables below and asked to pick one of the two scenarios. The bolded text in the scenarios changed based on the choice set to which respondents were randomly assigned out of 16 choice sets available.]

	Scenario #1	Scenario #2
State Income Tax Credit – You would not be required to pay any state income taxes over the first ____ years while living in a rural area.	You would not pay state income taxes for the first 5 years	You would not pay state income taxes for the first 10 years
Local Social Amenities – The social amenities that you personally use (e.g., shops, restaurants, bars, library, etc.) are within a ____ minute drive of where you will live.	The amenities are within 40 minutes of driving time.	The amenities are within 40 minutes of driving time.
Healthcare – Your primary healthcare needs (hospital, primary doctor) are met within a ____ minute drive of where you will live.	Healthcare is within 20 minutes of driving time.	Healthcare is within 20 minutes of driving time.

Which scenario would you prefer?

- Scenario #1
- Scenario #2

Demographic Questions

What is your age?

What gender do you identify as?

- Male
- Female
- Non-binary / third gender
- Other

How do you describe your racial/ethnic background?

- African-American (Black)
- Asian
- Caucasian (White)
- Latino or Hispanic
- Native American
- Native Hawaiian or Pacific Islander
- Two or more racial/ethnic backgrounds
- Other

What is the highest level of school you have completed or the highest degree you have received?

- Some high school
- High school graduate (HSD, or equivalent GED)
- Some college but no degree
- Associate degree in college (2-year)
- Bachelor's degree in college (4-year)
- Master's degree
- Doctoral degree
- Professional degree (JD, MD)

How do you describe your marital status?

- Married
- Widowed
- Divorced
- Separated
- Never married (Single)
- Other

How many people are currently living in your household (including yourself)?

- 1
- 2
- 3
- 4
- More than 4

How many of those living in your household are school-aged children (i.e., children currently enrolled in K-12 school)?

- None
- 1
- 2
- 3
- More than 3

Do you currently rent or own where you live?

- Rent
- Own with a mortgage
- Own with no mortgage
- Other

What is your estimated, entire annual household income before taxes for the prior year?

- Less than \$25,000
- \$25,000-\$49,999
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000-\$149,999
- \$150,000-\$199,000
- \$200,000-\$249,000
- More than \$249,000

What is your estimated, entire household current student loan debt?

- \$0 (no current student loan debt)
- Less than \$5,000
- \$5,000-\$9,999
- \$10,000-\$19,999
- \$20,000-\$29,999
- \$30,000-\$39,999
- \$40,000-\$49,999
- \$50,000-\$75,000
- More than \$75,000

How do you describe your political party affiliation?

- Democrat
- Republican
- Independent
- No preference
- Other

How do you describe your political views?

- Very conservative
- Conservative
- Moderate
- Liberal
- Very liberal
- Other

Which statement best describes your current employment status?

- Working (paid employee)
- Working (self-employed)
- Not working (temporary layoff from a job)
- Not working (looking for work)
- Not working (retired)
- Not working (disabled)
- Not working (full-time student)
- Not working (other)

What is your current job or occupation (or your typical job if not currently working)?

Which statement best describes your current type of job (or your typical job if not currently working)?

- Private-for-profit company/business for wages, salary, or commissions
- Private-not-for-profit charitable or nonprofit organization;
- Local Government (city, county, municipality)
- State Government
- Federal Government
- Self-employed in own non-incorporated business, professional practice, or farm
- Self-employed in own incorporated business, professional practice, or farm
- Working without pay in family business or farm

- o Not working/unemployed
- o Other

What type of location best describes where you work (or your typical job if not working)?

- o Office (home or employer)
- o Factory or warehouse
- o Retail or entertainment
- o Food or accommodation
- o Construction, agriculture, or mining
- o School or university
- o Hospital or other healthcare
- o Other

Which statement best describes your remote working situation in your current job (or your typical job if not currently working)?

- o I don't work remote, I work at one or multiple employer-designated offices or worksites
- o I work remotely from anywhere I choose
- o I work remotely from anywhere I choose but at employer-designated offices or worksites at least once a week
- o I work remotely from anywhere I choose but at employer-designated offices or worksites about once a month
- o I work remotely from anywhere I choose but at employer-designated offices or worksites less frequent than once a month
- o Other

When working in your current job (or your typical job if not working), what percentage of the time are you:

- o Using a laptop or desktop computer? Enter a number between 0-100%

- o Actively using an internet connection? Enter a number between 0-100%

Appendix 2 – Sample Weighting

Table 22: Other State Sample Weighting on Gender, Age, and Race

	Percent of Total Unweighted	Percent of Total Weighted
Female	53%	51%
Male	47%	49%
18-24y	8%	11%
25-34y	50%	17%
35-44y	23%	16%
45-54y	11%	16%
55-64y	5%	17%
65-74y	2%	13%
75 and older	0%	9%
Caucasian (White)	77%	61%
African-American (Black)	9%	15%
Two or more racial/ethnic backgrounds	5%	8%
Other	0%	8%
Asian	5%	7%
Native American	4%	1%
Native Hawaiian or Pacific Islander	0%	1%

Table 23: Pennsylvania Sample Weighting on Gender, Age, and Race

	Percent of Total Unweighted	Percent of Total Weighted
Female	54%	51%
Male	46%	49%
18-24y	10%	11%
25-34y	34%	17%
35-44y	32%	15%
45-54y	14%	16%
55-64y	7%	18%
65-74y	3%	14%
75 and older	0%	10%
Caucasian (White)	81%	74%
African-American (Black)	6%	11%
Two or more racial/ethnic backgrounds	4%	6%
Other	0%	4%
Asian	5%	4%
Native American	3%	1%
Native Hawaiian or Pacific Islander	0%	1%

Appendix 3 – Additional Result Tables for Place Attachment and Place Preference

Table 24: Other State Sample Mean and Standard Deviation for Place Attachment by State

State	Total Responses	Mean	Standard Deviation
Connecticut	236	19.06	3.96
Delaware	38	14.50	5.89
Maryland	391	17.80	4.57
Massachusetts	241	17.29	4.21
New Jersey	359	19.40	4.04
New York	589	18.39	4.47
Ohio	367	18.34	4.44
Rhode Island	51	17.98	5.34
Virginia	282	17.47	4.79
West Virginia	67	19.67	3.77

Table 25: Other State Sample Mean and Standard Deviation for Place Attachment by Current Living Status

Current Living Status	Total Responses	Mean	Standard Deviation
Big city	801	18.19	4.28
Small city	450	18.83	4.93
Suburb of a big city	579	17.91	4.47
Suburb of a small city	304	18.08	4.52
Town not a suburb of a city	261	18.60	4.22
Rural area	226	18.18	4.53

Table 26: Pennsylvania Sample Mean and Standard Deviation for Place Attachment by Current Living Status

Current Living Status	Total Responses	Mean	Standard Deviation
Big city	370	18.83	5.68
Small city	143	17.71	4.73
Suburb of a big city	249	17.91	4.48
Suburb of a small city	168	17.35	4.26
Town not a suburb of a city	181	17.49	5.13
Rural area	208	18.78	4.25

Table 27: Pennsylvania Sample Mean and Standard Deviation for Place Attachment by Rural vs. Urban

Rural vs. Urban	Total Responses	Mean	Standard Deviation
Rural – Center for Rural PA Definition by County	424	18.23	4.37
Urban – Center for Rural PA Definition by County	894	18.12	5.17
Rural – survey self-classification	208	18.78	4.25
Urban – survey self-classification	1110	18.04	5.04

Table 28: Other State Sample Association between State of Residence and “Rural Area” as First or Second Choice for Place Preference

State	Rural Area First or Second Choice	Rural Area NOT First or Second Choice
Connecticut	151 (-1)	84 (1)
Delaware	33 (2.6)	5 (-2.6)
Maryland	282 (2.3)	109 (-2.3)
Massachusetts	196 (4.9) *	45 (-4.9)
New Jersey	225 (-2)	135 (2)
New York	363 (-3.2)	226 (3.2) *
Ohio	247 (0.1)	120 (-0.1)
Rhode Island	46 (3.5) *	5 (-3.5)
Virginia	192 (0.4)	89 (-0.4)
West Virginia	24 (-5.5)	43 (5.5) *

Note: Adjusted residuals appear in parentheses next to the observed counts; “*” indicates an adjusted residual greater than three (Agresti, 2007).

Table 29: Other State Sample Association between Current Living Status and “Rural Area” as First or Second Choice for Place Preference

Current Living Status	Rural Area First or Second Choice	Rural Area NOT First or Second Choice
Big city	539 (0.2)	261 (-0.2)
Rural area	119 (-4.8)	107 (4.8) *
Small city	287 (-1.7)	163 (1.7)
Suburb of a big city	411 (2.3)	167 (-2.3)
Suburb of a small city	212 (1)	92 (-1)
Town not a suburb of a city	190 (2.1)	71 (-2.1)

Note: Adjusted residuals appear in paratheses next to the observed counts; “*” indicates an adjusted residual greater than three (Agresti, 2007).

Table 30: Pennsylvania Sample Association between Current Living Status and “Rural Area” as First or Second Choice for Place Preference

Current Living Status	Rural Area First or Second Choice	Rural Area NOT First or Second Choice
Big city	81 (-7)	289 (7) *
Rural area	125 (7.6) *	83 (-7.6)
Small city	50 (-0.5)	93 (0.5)
Suburb of a big city	58 (-4.9)	191 (4.9) *
Suburb of a small city	86 (4.2) *	82 (-4.2)
Town not a suburb of a city	84 (3.0) *	96 (-3.0)

Note: Adjusted residuals appear in paratheses next to the observed counts; “*” indicates an adjusted residual greater than three (Agresti, 2007).

Appendix 4 – List of Variables in Regression Models

Table 31: Variables in the Demographics Binomial Logistic Regression Models

Variable	Description
Dependent Variables	
1. Thought of moving to Rural PA	1 = Strongly agree or agree 0 = all other responses
2. Willing to move to Rural PA	
3. Intend to move to Rural PA in 5years	
4. Intent to move to Rural PA in lifetime	
Independent Variables	
Age	Continuous variable
Current Living Status	1 = Rural; 0 = Not rural
Gender	1 = Female; 0 = Not female
Race	1 = White; 0 = Not white
Education	1 = Bachelors; 0 = all else
Marital Status	1 = Married; 0 = Not married
Household Size	1 = 3 or more; 0 = more than 3
Household Kids Yes	1 = kids in house; 0 = no kids
Housing Status	1 = Renting; 0 = Not renting
Annual Household Income	1 = <\$75k; 0 = \$75K or more
Student Debt	1 = Yes; 0 = No
Student Debt Amount	1 = <\$20K; 0 = \$20K or more
Political Party	1 = Democrat; 0 = Not Democrat
Political Views	1 = Conservative; 0 = Not conservative
Employment Status	1 = Working employee; 0 = all else
Employment Location	1 = Office (home/employer); 0 = all else
Remote Working	1 = Work remote (varies); 0 = no remote
Use Computer at Work	1 = 90-100% of time; 0 = < 90% of time
Use Internet Connection at Work	1 = 90-100% of time; 0 = < 90% of time

Table 32: Variables in the Push and Pull Factors Binomial Logistic Regression Models

Variable	Description
Dependent Variables	
1. Thought of moving to Rural PA	1 = Strongly agree or agree 0 = all other responses
2. Willing to move to Rural PA	
3. Intend to move to Rural PA in 5years	
4. Intent to move to Rural PA in lifetime	
Independent Variables	
	1 = Strongly agree or agree; 0 = all other responses
PP-Employ1	For me to move to a rural area I need a job that pays at least equal to that of my current job.
PP-Employ2	For me to move to a rural area I need a job that allows me to work remotely.
PP-Employ3	For me to move to a rural area I need a job that has opportunities for professional advancement.
PP-Housing	For me to move to a rural area I need a place that has housing costs (rent or own) LESS THAN where I currently live.
PP-CostsLiving1	For me to move to a rural area I need a place that has costs of living other than housing LESS THAN where I currently live.
PP-Education1	For me to move to a rural area I need a place that has a K-12 public education system at least similar to where I currently live.
PP-Education2	For me to move to a rural area I need a place that has access to a local college or university to obtain higher education or life-long learning at least similar to where I currently live.
PP-Healthcare1	For me to move to a rural area I need a place that has access to healthcare services (hospitals, doctors, specialists, etc.) at least similar to where I currently live.
PP-Healthcare2	For me to move to a rural area I need a place that has access to long-term care services for the elderly at least similar to where I currently live.
PP-Arts	For me to move to a rural area I need a place that has access to multiple arts and culture options, such as festivals, music concerts, museums, etc., at least similar to where I currently live.
PP-Sports-Leisure	For me to move to a rural area I need a place that has access to multiple sports and leisure options, such as movie theaters, sporting events, public parks and courts (tennis, basketball, etc.), at least similar to where I currently live.
PP-Food	For me to move to a rural area I need a place that has access to multiple food options, such as restaurants, bars, coffee shops, etc., at least similar to where I currently live.
PP-Outdoor	For me to move to a rural area I need a place that has access to multiple outdoor activities, such as hiking, camping, kayaking, etc., at least similar to where I currently live
PP-Diversity	For me to move to a rural area I need a place that has racial and cultural diversity at least similar to where I currently live.
PP-Family	For me to move to a rural area I need a place that supports the needs of my family, spouse, and/or partner.

Variable	Description
PP-RelaxLifePace	For me to move to a rural area I need a place that provides a relaxed pace of life.
PP-Community	For me to move to a rural area I need a place that provides me with a sense that I belong to the community at least similar to where I currently live.
PP-PublicServices	For me to move to a rural area I need a place that has an active and responsive local government and public services at least similar to where I currently live.
PP-Internet	For me to move to a rural area I need a place that has access to reliable high-speed internet at least similar to where I currently live.
PP-Civic	For me to move to a rural area I need a place that offers multiple ways for me to be involved in my community and local government at least similar to where I currently live.
PP-Commute	For me to move to a rural area I need a place that has a commuting time to my work at least similar to where I currently live.

Appendix 5 – Additional Result Tables for Regression Models

Table 33: Other State Sample Regression Models with Demographics

Independent Variables	Model 1	Model 2	Model 3	Model 4
	Thought	Willing	Intent-5years	Intent-Life
	β coefficient (s.e.)	β coefficient (s.e.)	β coefficient (s.e.)	β coefficient (s.e.)
Rural	0.57** (0.16)	0.79** (0.16)	0.25 (0.19)	0.12 (0.18)
Age	-0.001 (0.002)	0 (0.001)	0 (0.001)	-0.001 (0.002)
Female	-0.43** (0.1)	-0.1 (0.09)	0.2 (0.12)	-0.02 (0.11)
White	0.58** (0.11)	0.49 (0.12)	0.09 (0.13)	0.4** (0.12)
Bachelors	0.5** (0.1)	-0.15 (0.1)	0.5** (0.12)	0.4** (0.12)
Married	0.42** (0.12)	0.09 (0.11)	1.22** (0.14)	0.89** (0.12)
Household >=3	0.12 (0.12)	-0.29** (0.11)	-0.02 (0.14)	0.4** (0.13)
Household Kids	1.14** (0.12)	1.15** (0.12)	0.88** (0.14)	1.14** (0.13)
Rent	0.32** (0.11)	-0.29** (0.1)	-0.02 (0.12)	0.13 (0.12)
Income <\$75K	-0.12 (0.11)	0.37** (0.1)	0.18 (0.13)	0.19 (0.12)
Student Debt Yes	0.64** (0.13)	0.78** (0.12)	1.42** (0.17)	1.07** (0.15)
Student Debt <\$20K	-0.12 (0.12)	0.08 (0.12)	0.47** (0.13)	0.28* (0.13)
Democrat	-0.01 (0.1)	-0.33** (0.1)	0.13 (0.12)	0.02 (0.12)
Conservative	0.79** (0.11)	0.45** (0.1)	0.75** (0.12)	0.79** (0.11)
Work-Employee	-0.03 (0.1)	0.15 (0.1)	-0.09 (0.13)	0.22 (0.12)
Work-Office	-0.29** (0.11)	0.1 (0.1)	-0.09 (0.12)	-0.32** (0.12)
Work-Remote	0.26** (0.11)	0.84** (0.1)	1.3** (0.13)	0.6** (0.12)
Work-Computer	0.07 (0.15)	-0.1 (0.14)	-0.32 (0.17)	-0.1 (0.17)
Work-Internet	-0.23 (0.14)	-0.61** (0.14)	-0.53** (0.17)	-0.11 (0.16)
Number of observations	2621	2621	2621	2621
Model fit (p-value)	<.001	<.001	<.001	<.001
Pseudo R ² (Cox & Snell - Nagelkere)	0.217-0.305	0.207-0.279	0.317-0.462	0.283-0.414
Overall % correct predictions	77.4%	74.2%	84.7%	82.9%

Note. *, ** denote significant p-value at the 0.05, and 0.01 levels; details about survey phrasing and coding for each independent variable can be found in Appendix 1 and 4

Table 34: Pennsylvania Non-rural Sample Regression Models with Demographics

Independent Variables	Model 1	Model 2	Model 3	Model 4
	Thought	Willing	Intent-5years	Intent-Life
	β coefficient (s.e.)	β coefficient (s.e.)	β coefficient (s.e.)	β coefficient (s.e.)
Big City	-0.33* (0.16)	-0.42** (0.16)	-0.17 (0.23)	-0.05 (0.19)
Age	-0.01** (0)	-0.02** (0)	-0.03** (0.01)	-0.02** (0)
Female	0.33* (0.15)	0.12 (0.14)	-0.17 (0.21)	0.07 (0.17)
White	0.78** (0.17)	0.61** (0.17)	0.39 (0.24)	0.58** (0.2)
Bachelors	0.01 (0.15)	-0.05 (0.15)	-0.27 (0.21)	0.44 ** (0.17)
Married	0.2 (0.17)	0.33* (0.17)	0.85** (0.26)	0.23 (0.2)
Household >=3	0.13 (0.17)	-0.12 (0.17)	-0.2 (0.26)	0.17 (0.21)
Household Kids	0.02 (0.18)	0.49** (0.18)	1.54** (0.26)	0.95** (0.21)
Rent	-0.27 (0.16)	0.01 (0.16)	0.56* (0.22)	0.08 (0.18)
Income <\$75K	0.23 (0.16)	0.18 (0.16)	-0.05 (0.21)	0.21 (0.18)
Student Debt Yes	1.15** (0.22)	0.63** (0.21)	0.67* (0.29)	0.05 (0.25)
Student Debt <\$20K	1.05** (0.21)	0.25 (0.21)	-0.06 (0.26)	-0.22 (0.23)
Democrat	-0.36* (0.14)	-0.62** (0.14)	0 (0.2)	0.08 (0.16)
Conservative	0.47* (0.18)	0.4* (0.18)	0.62** (0.22)	0.55** (0.2)
Work-Employee	0.16 (0.15)	-0.28 (0.15)	-0.09 (0.22)	0.12 (0.18)
Work-Office	0.15 (0.15)	-0.09 (0.15)	-0.32 (0.21)	-0.31 (0.18)
Work-Remote	-0.03 (0.16)	-0.14 (0.15)	0.94** (0.22)	0.21 (0.18)
Work-Computer	-1.18** (0.25)	-0.72** (0.23)	-0.42 (0.32)	-0.94** (0.27)
Work-Internet	0.67** (0.24)	0.21 (0.23)	0.08 (0.31)	1.13** (0.26)
Number of observations	1087	1087	1087	1087
Model fit (p -value)	<.001	<.001	<.001	<.001
Pseudo R^2 (Cox & Snell - Nagelkere)	0.157-0.212	0.165-0.221	0.224-0.378	0.169-0.254
Overall % correct predictions	66.3%	66.2%	86.2%	77.7%

Note. *, ** denote significant p -value at the 0.05, and 0.01 levels; details about survey phrasing and coding for each independent variable can be found in Appendix 1 and 4

Table 35: Other State Sample Regression Models with Push and Pull Factors

Independent Variables	Model 1	Model 2	Model 3	Model 4
	Thought	Willing	Intent-5years	Intent-Life
	β coefficient (s.e.)	β coefficient (s.e.)	β coefficient (s.e.)	β coefficient (s.e.)
Employ1	0.02 (0.05)	-0.1* (0.04)	-0.01 (0.06)	-0.05 (0.06)
Employ2	0.07 (0.04)	0.06 (0.04)	0.11* (0.05)	0.07 (0.05)
Employ3	0.01 (0.04)	0.08* (0.04)	0.01 (0.05)	0.1 (0.05)
Housing	0.05 (0.05)	0.16** (0.05)	0.16** (0.05)	-0.01 (0.05)
CostsLiving1	0.06 (0.05)	-0.08 (0.04)	-0.25** (0.06)	0.03 (0.06)
Education1	0.26** (0.04)	0.17** (0.03)	0.37** (0.05)	0.4** (0.05)
Education2	0.22** (0.04)	0.08* (0.04)	0.18** (0.05)	0.09 (0.05)
Healthcare1	-0.3** (0.05)	-0.17** (0.05)	-0.13* (0.07)	-0.4** (0.06)
Healthcare2	0.12** (0.04)	0.08* (0.04)	0.08 (0.05)	0.3** (0.05)
Arts	-0.04 (0.05)	-0.05 (0.04)	-0.01 (0.06)	0.04 (0.06)
Sports-Leisure	-0.12** (0.05)	-0.11* (0.04)	0.07 (0.06)	0.19** (0.06)
Food	-0.11* (0.05)	-0.19** (0.05)	-0.05 (0.06)	-0.25** (0.06)
Outdoor	0.26** (0.04)	0.4** (0.04)	0.37** (0.05)	0.24** (0.05)
Diversity	-0.03 (0.04)	-0.08 (0.04)	0.07 (0.05)	0.09 (0.05)
Family	-0.26** (0.05)	-0.09 (0.05)	-0.34** (0.06)	-0.35** (0.06)
RelaxLifePace	0.46** (0.05)	0.22** (0.05)	0.03 (0.06)	0.3** (0.06)
Community	0.14** (0.05)	0.01 (0.05)	-0.15 (0.06)*	-0.01 (0.06)
PublicServices	-0.05 (0.05)	-0.02 (0.05)	0.09 (0.07)	0.06 (0.06)
Internet	-0.3** (0.06)	-0.14** (0.05)	-0.81** (0.07)	-0.46** (0.06)
Civic	0.04 (0.05)	0.2** (0.04)	0.44** (0.06)	0.16** (0.06)
Commute	-0.06 (0.05)	-0.05 (0.04)	0.17** (0.06)	0.03 (0.06)
Number of observations	2574	2574	2574	2574
Model fit (p-value)	<.001	<.001	<.001	<.001
Pseudo R ² (Cox & Snell - Nagelkere)	.205-.289	.178-.240	.284-.415	.256-.377
Overall % correct predictions	73.9%	73%	81.8%	78.9%

Note. *, ** denote significant p-value at the 0.05, and 0.01 levels; details about survey phrasing and coding for each independent variable can be found in Appendix 1 and 4

Table 36: Pennsylvania Non-rural Sample Regression Models with Push and Pull Factors

Independent Variables	Model 1 Thought β coefficient (s.e.)	Model 2 Willing β coefficient (s.e.)	Model 3 Intent-5years β coefficient (s.e.)	Model 4 Intent-Life β coefficient (s.e.)
Employ1	0.54** (0.2)	0.37 (0.19)	0.27 (0.27)	0.3 (0.22)
Employ2	-0.2 (0.17)	-0.15 (0.17)	0.38 (0.24)	0.03 (0.19)
Employ3	0.13 (0.18)	0.05 (0.18)	0.64* (0.25)	0.35 (0.2)
Housing	0.18 (0.18)	0.34 (0.17)	0.62** (0.23)	0.5* (0.2)
CostsLiving1	0.4* (0.19)	0.37* (0.18)	-0.11 (0.23)	0.13 (0.2)
Education1	0.27 (0.17)	0.55** (0.17)	0.98** (0.22)	0.5** (0.18)
Education2	-0.8** (0.17)	-0.35* (0.17)	-0.06 (0.23)	-0.32 (0.19)
Healthcare1	-0.32 (0.27)	-0.3 (0.27)	-0.92** (0.32)	-0.62* (0.28)
Healthcare2	-0.05 (0.16)	-0.22 (0.16)	0.07 (0.22)	-0.25 (0.18)
Arts	-0.21 (0.18)	-0.18 (0.18)	-0.27 (0.23)	0.06 (0.2)
Sports-Leisure	-0.98** (0.19)	-1.07** (0.18)	-0.25 (0.25)	-0.19 (0.21)
Food	-0.78** (0.2)	-0.49* (0.2)	-0.26 (0.26)	-0.58** (0.22)
Outdoor	0.72** (0.17)	0.71** (0.17)	0.58* (0.24)	0.29 (0.19)
Diversity	-0.49** (0.17)	-0.51** (0.16)	0.11 (0.22)	0.42* (0.19)
Family	0.39 (0.22)	-0.01 (0.21)	-0.37 (0.27)	-0.31 (0.23)
RelaxLifePace	0.84** (0.25)	1.07** (0.25)	-0.34 (0.29)	0.85** (0.29)
Community	0.68** (0.19)	0.23 (0.18)	-0.51* (0.24)	-0.15 (0.2)
PublicServices	-0.18 (0.18)	-0.09 (0.18)	0.2 (0.25)	-0.13 (0.2)
Internet	0.22 (0.28)	-0.12 (0.28)	-0.54 (0.32)	-0.3 (0.29)
Civic	0.19 (0.18)	-0.02 (0.17)	0.79** (0.23)	0.72** (0.19)
Number of observations	1087	1087	1087	1087
Model fit (p-value)	<.001	<.001	<.001	<.001
Pseudo R ² (Cox & Snell - Nagelkere)	0.190-0.257	0.184-0.247	0.121-0.205	0.082-0.124
Overall % correct predictions	70.2%	70%	83%	73.6%

Note. *, ** denote significant p-value at the 0.05, and 0.01 levels; details about survey phrasing and coding for each independent variable can be found in Appendices 1 and 4.

Appendix 6 – Additional Result Tables for Affective Images of Rural Pennsylvania

Table 37: Other State Sample Association between Rating of First Affective Image and State of Residence

State	Positive Rating to First Thought or Image	Neutral/Negative Rating to First Thought or Image
Connecticut	185 (2.6)	51 (-2.6)
Delaware	16 (-3.8)	21 (3.8) *
Maryland	339 (7.3) *	52 (-7.3)
Massachusetts	151 (-3.1)	90 (3.1) *
New Jersey	234 (-2.7)	125 (2.7)
New York	402 (-1.8)	187 (1.8)
Ohio	256 (-0.6)	110 (0.6)
Rhode Island	45 (2.7)	6 (-2.7)
Virginia	183 (-2.4)	98 (2.4)
West Virginia	53 (1.2)	15 (-1.2)

Note: Adjusted residuals appear in paratheses next to the observed counts; “*” indicates an adjusted residual greater than three (Agresti, 2007).

Table 38: Other State Sample Association between Rating of First Affective Image and Current Living Status

Current Living Status	Positive Rating to First Thought or Image	Neutral/Negative Rating to First Thought or Image
Big city	581 (1)	220 (-1)
Rural area	169 (1.3)	57 (-1.3)
Small city	305 (-1.8)	146 (1.8)
Suburb of a big city	380 (-3.3)	199 (3.3) *
Suburb of a small city	224 (1)	80 (-1)
Town not a suburb of a city	207 (3.1) *	54 (-3.1)

Note: Adjusted residuals appear in paratheses next to the observed counts; “*” indicates an adjusted residual greater than three (Agresti, 2007).

Table 39: Pennsylvania Sample Association between Rating of First Affective Image and Current Living Status

Current Living Status	Positive Rating to First Thought or Image	Neutral/Negative Rating to First Thought or Image
Big city	210 (-5.6)	159 (5.6) *
Rural area	176 (5.5) *	32 (-5.5)
Small city	93 (-0.9)	50 (0.9)
Suburb of a big city	165 (-0.8)	84 (0.8)
Suburb of a small city	128 (2.3)	40 (-2.3)
Town not a suburb of a city	129 (1.0)	51 (-1.0)

Note: Adjusted residuals appear in paratheses next to the observed counts; “*” indicates an adjusted residual greater than three (Agresti, 2007).

Table 40: Pennsylvania Sample Association between Rating of First Affective Image and Rural Versus Urban

Current Living Status	Positive Rating to First Thought or Image	Neutral/Negative Rating to First Thought or Image
Rural County (Center for Rural PA Definition)	78% 330 (5.1)	22% 94 (5.1)
Urban County (Center for Rural PA Definition)	64% 571 (-5.1)	36% 323 (5.1)

Note: Adjusted residuals appear in paratheses next to the observed counts; “*” indicates an adjusted residual greater than three (Agresti, 2007).

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