# The BEDO Economic Bulletin 2023.

# The Population Replacement Rate of Rural America: A Case Study of Baldwin City

By:

Ejiro U. Osiobe and Emmerth L. Joseph
Department of Business and Economics
Baker University





# Sponsors:



















First Editor

Dr. Darcy Russell

Vice President of Academic Affairs & Dean of the College of Arts and Sciences
Baker University

Second Editor

Dr. Judy Smrha

Chair of the Department of Business and Economics; Director of Baker Economic Development Office; & Site Lead Kansas Data Science Consortium (Baker University)
Baker University

Faculty Grant Reviewer:

#### Dr. Chad Gerber

Assistant Professor of Sports Administration Department of Business and Economics Baker University

Staff Grant Reviewer:

### Ashley Kretzschmer

Director of Career Services Department of Students Affairs Baker University

External Grant Reviewer

#### Dr. William Duncan

Senior Data Analyst

Kansas Data Science Consortium

Lead Researcher and Class Instructor:

# Dr. Ejiro U. Osiobe

Assistant Professor of Data Analytics; Economics and Associate Director of Baker Economic Development Office; & Associate Site Lead Kansas Data Science Consortium (Baker University)
Department of Business and Economics
Baker University

Student Researcher and Baker Economic Development Office Data Analyst

# Emmerth L. Joseph

Business Management & Sports Administration Major; and Data Analytics Minor Department of Business and Economics Baker University

#### How To Cite the Document:

#### APA:

Osiobe, E. U., & Joseph, E. L. (2023). The Population Replacement Rate of Rural America: A Case Study of Baldwin City. Baldwin: The Baker Economic Development Office [BEDO] Bulletin.

# Chicago:

Osiobe, Ejiro U., and Emmerth L. Joseph. 2023. The Population Replacement Rate of Rural America: A Case Study of Baldwin City. Economic Development Technical Report, Baldwin: The Baker Economic Development Office [BEDO] Bulletin.

#### Turabian:

Osiobe, Ejiro U., and Emmerth L. Joseph. *The Population Replacement Rate of Rural America: A Case Study of Baldwin City.* Economic Development Technical Report, Baldwin: The Baker Economic Development Office [BEDO] Bulletin, 2023.

#### MLA:

Osiobe, Ejiro U. and Emmerth L. Joseph. The Population Replacement Rate of Rural America: A Case Study of Baldwin City. Economic Development Technical Report. Baldwin: The Baker Economic Development Office [BEDO] Bulletin, 2023.

# Harvard:

Osiobe, E. U. & Joseph, E. L., 2023. The Population Replacement Rate of Rural America: A Case Study of Baldwin City, Baldwin: The Baker Economic Development Office [BEDO] Bulletin.

# The Population Replacement Rate of Rural America: A Case Study of Baldwin City

Ejiro U. Osiobe and Emmerth L. Joseph

Department of Business and Economics

Baker University, Baldwin City, Kansas, United States

#### Abstract:

Rural population loss has long been a concern for communities across the United States. Slowing population growth rates and migration can create severe problems for rural areas and wreak havoc on their economic stability. This document aims to identify current and future population trends for rural communities, specifically focusing on Baldwin City, Kansas. The study uses census population data to examine changes in growth rates and create population pyramids to evaluate the distribution of the population by age group. This paper will identify the specific age groups which need particular attention: teenagers and young adults, millennial families, and senior citizens. This document will also inform policymakers on recommendations to increase population size through retention of residents and in-migration.

#### Keywords:

Population, Growth rate, Age demographic, Brain drain, Migration

#### Introduction:

Baldwin City, Kansas (KS), is a rural town with a slow population growth in the past ten years. Baldwin City is thirty-three miles northwest of the capital city of Topeka, KS, and currently has a population of 4,900. Historical migration to Baldwin City was determined by its place along the Santa Fe Trail, a popular trade route during the Gold Rush of the 1840s and 1850s. Baldwin City's current population trends are greatly affected by Baker University, the community's major employer and home to many college residents (Osiobe & Quillen, 2023).

Government officials must know their population growth trends and the breakdown of the most affected age groups to continue Baldwin City's development. The economic stability of a rural community such as Baldwin City is greatly affected by a loss in population size. This study argues that addressing concerns within the age groups that are opportunities for growth in Baldwin City will increase the community's population and economic vitality.

#### Literature Review:

Marre (2020) states that rural areas with population loss or slow growth face problems like a shrinking workforce and tax base and an aging population with needs that pressure rustic healthcare options. He asserts that historically, rural communities have been able to compensate for things like urbanization and population loss through natural increases or fertility rates. However, Marre argues that with fertility rates trending downward, rural communities must consider reducing out-

migration and increasing in-migration as the best way to combat population decline. He gives multiple strategies for bringing new residents to rural communities. Still, most revolve around encouraging young adults to stay in the community and attracting middle-aged and older adults. In addition, he emphasizes the need for quality public schooling, linking high school and college students with local career opportunities and expanding broadband access.

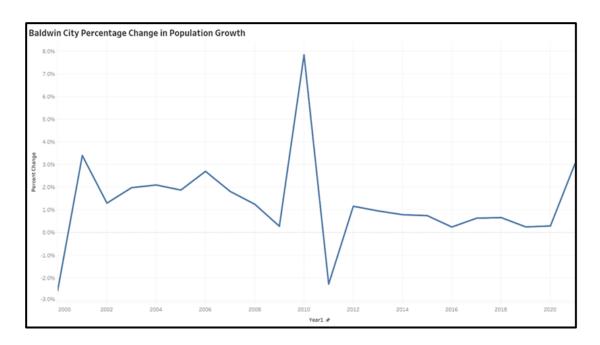
Fiore et al. (2015) focus on brain drain, which is the out-migration of college-educated individuals. The study gathered survey data from public college graduating seniors in rural Iowa. The survey included a comprehensive list of factors that might affect these seniors' migration patterns. Fiore et al. found that the respondents felt that the overall cost of living and a robust local economy were the top-ranked features in their migration decisions. Based on these findings, the study also discusses implementations for policymakers to consider, such as connecting rural economies with local higher education institutions.

# Baldwin City Population Size:

Baldwin City, currently sitting at a population size of 4,900, has seen slow population growth. Over the past twenty years, the population percentage change growth rate averaged 1.2%. Over the past ten years, Baldwin City's percentage change growth rate slowed even more to an average of 0.54%. While the growth rate has not dipped into negative territory within the last ten years, the city is still operating at too low of a

growth rate for any substantial growth in population size (US Census Bureau, 2023). Figure 1 shows spikes in the percentage change in population growth surrounding 2000, 2010, and 2020. Given that these are US population census collection years, the data will be slightly skewed from non-census years, leading to sudden spikes in growth percentage change.

Figure 1
Baldwin City Percentage Change in Population Growth (2000-2021)



Source: U.S. Census Bureau (2023)

# Comparative Growth Rates:

Comparing Baldwin City's population growth to that of the state of Kansas, the surrounding Midwest area, and the United States provides a holistic understanding of Baldwin City's population growth. Figure 2 shows us that Baldwin City has had a percentage change in growth near the level of or better than these areas. Once again, Baldwin City's ten-year average

percentage change in growth is 0.54%. The Midwest region has a 0.32% 10-year average percentage change in growth, while the state of Kansas has a 0.19% 10-year average change in growth. The only area outperforming Baldwin City is the United States at a 10-year average percentage change of 0.59% (US Census Bureau, 2023). It is reassuring to see that Baldwin City has a higher population growth rate on average than the areas that encompass the town. However, it is essential to note that while these are positive numbers, they are still too small to pursue significant growth in Baldwin City.

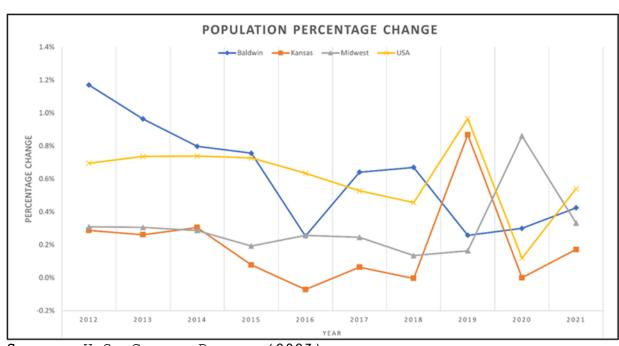


Figure 2
Population Percentage Change (2012-2021)

Source: U.S. Census Bureau (2023)

#### Projected Growth Rates:

While the population growth rate has been relatively minimal in the last five years, the level has remained consistent. However, based on forecasted estimations, the growth

rate will decrease slightly and level out with other surrounding areas moving forward.

# Forecasting Model:

The first-order equation:

$$Y_t = \alpha + \delta_t + \varepsilon_i \dots \dots \dots \dots Equation (1)$$

Where:

 $Y_t$  = Known years population.

 $\alpha$  = Constant within the model.

 $\boldsymbol{\delta_t}$  = Timeseries - time trend accounting for both known and unknown populations.

 $\varepsilon_i$  = Error term within the model.

The  $n^{th}$ -order equation:

$$Y_t = \alpha + \delta_n t + \delta_n t^n + \varepsilon_i \dots \dots Equation (2)$$

Figure 3 showcases the projected growth rates till 2035 for Baldwin City, the Midwest, Kansas, and the United States. Projection techniques cause each growth rate to eventually even out, but these can be used as a valid estimate of the expected rates in the future. For example, Baldwin City's projected population growth rate for about the next ten years is about 0.4% which is right on par with the Midwest, which has a similar estimate (US Census Bureau, 2023).

PROJECTED POPULATION GROWTH RATE Baldwin USA --- Kansas --- Midwest 0.6% 0.5% 0.4% GROWTH RATE 0.3% 0.2% 0.1% 0.0% 2024 2025 2026 2027 2028 2029 2030 2032 2034 2035 2031 2033 YEAR

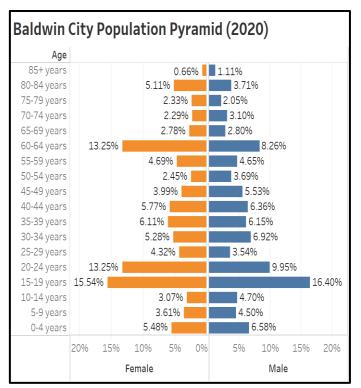
Figure 3
Projected Population Growth Rate (2024-2035)

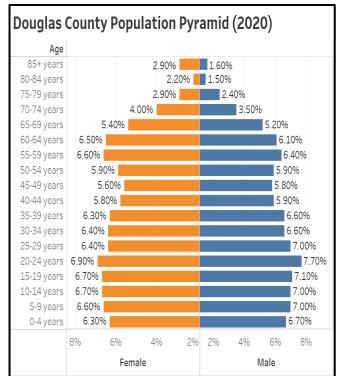
Source: Authors Calculation (2023)

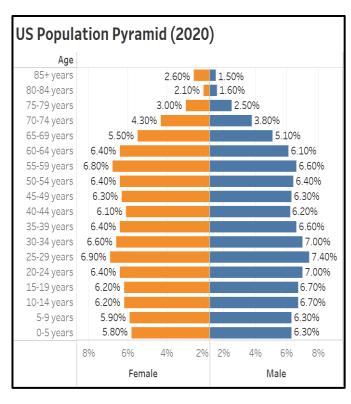
Baldwin City is looking at an almost doubled rate of growth compared to the state of Kansas, which has a projected average growth rate of 0.23% over the next ten years. The United States will continue to grow slightly more than Baldwin City, with a projected growth rate of 0.5% average over the next ten years. A projected growth rate above that of the state of Kansas and similar to the Midwest is a good sign for Baldwin City to be able to maintain its population size and reduce the risk of a declining population shortly. However, a growth rate of 0.4% for the next ten years will not support the desired level of expansion and development of Baldwin City.

# Population Pyramids:

The most recent US Census from 2020 provides the most accurate data points for evaluating the breakdown of age demographics. Therefore, population data cohorts from 2020 will be shown as a pyramid for Baldwin City, Douglas County, and the United States. Figure 4 showcases the severe problems with Baldwin City's age demographics; there is uneven distribution, especially when compared to healthier population pyramids such as Douglas County and the United States in 2020 (US Census Bureau, 2023).



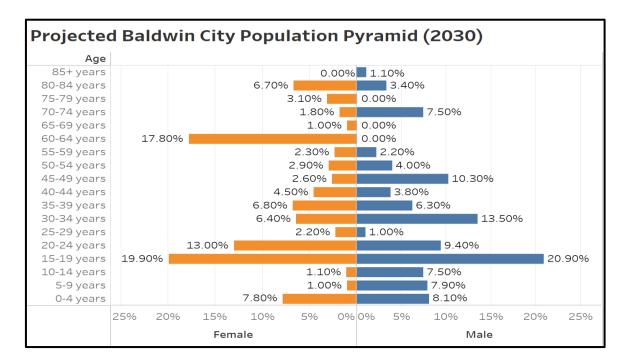




Source: U.S. Census Bureau (2023)

Figure 5 shows a projection of Baldwin City's population pyramid in 2030 based on our forecasting model (see equations 1 & 2). The population appears to be continuing its current path of uneven distribution of age demographics, just in a more extreme manner. Based on these estimations, there is serious concern surrounding multiple age groups. The large percentage of 15-24-year-olds, coupled with the severe drop off into the 25-29-year age range, is an area that needs to be addressed. Another concern is the significant variation in the 35-54-year age range considering both male and female citizens. Finally, the second highest demographic group in 2030 will be females aged 60-64; the following age groups of those 65 and older show drastic variation between genders and have overall low percentages (US Census Bureau, 2023). Therefore, Baldwin City must create more evenly distributed age demographics based on this projected population pyramid to have a sustainable future and growth potential.

Figure 5
Projected Baldwin City Population Pyramid (2030)



Source: Authors Calculation (2023)

# Targeted Age Groups:

Teenagers and Young Adults (15-24 years old):

In Baldwin City's 2030 age demographic projections, 22% of the female and almost 30% of the male population will be between 15 and 24 years old (US Census Bureau, 2023). These high percentages result from the students attending Baldwin High School and Baker University, both in Baldwin City. This demographic skew is understandable due to these two institutions and would be manageable if not for the severe drop-off in the following age group. Based on this data, it can be concluded that once the age of 25 is reached, most Baldwin City citizens complete any educational instruction they receive from Baldwin

City High School or Baker University. Therefore, the young people choose not to remain in Baldwin City after graduating. This is a serious issue that will need to be addressed for sustainable growth to occur.

# Millennials (27-42 years old):

There is little consistency within the 27-42-year age demographic in the projections of Baldwin City's population (US Census Bureau, 2023). In a typical healthy population pyramid, this age range tends to be larger, if not the most significant percentage. Millennials are a vital part of the growth of any city. These individuals are typically more developed in their careers and financially stable. They are also more likely to be looking to start families and put down roots. Therefore, this demographic needs to be attracted to and nurtured in Baldwin City to boost the economy and rapid growth.

#### Senior Citizens (65+ years old):

The 2030 demographic projections of Baldwin City show that the 60-64 age range will be the second highest. However, the drop-off is stark when looking at the following age range of 65-69, and the pattern continues to dwindle as age increases (US Census Bureau, 2023). A drop-off in senior citizens in a Midwest community is not uncommon due to the less beautiful weather. However, the jump in Baldwin City's demographic data is too severe to attribute to standard migration patterns of seniors. There needs to be an active focus on making improvements for

senior citizens, as they must be recognized as an essential part of the community. A city's steps to accommodate and support its senior citizens indicate its dedication to the community's prosperity.

#### Recommendations:

#### Reduce Brain Drain:

Brain drain, the trend of out-migration of college-educated individuals from a community, is a severe concern for Baldwin City (US Census Bureau, 2023). The drastic drop in population percentage after college-age kids indicates they are choosing to leave town and pursue a career elsewhere. To combat this brain drain, policymakers need to understand what features in a community young people value most. For example, Fiore et al. (2015) found that graduating college seniors from rural communities indicated that the cost of living and the strength of the local economy were essential factors.

To ensure a reasonable cost of living for recent graduates, some changes in Baldwin City must be made.

• First, there must be more affordable housing complexes. Baldwin City currently lacks cheap apartments, and part of the strategic plan of the Baldwin City Economic Development Corporation (BCEDC) is to improve housing availability in the community (BCEDC, 2021). There needs to be a concerted effort to build new complexes where young graduates can live in a community together to enhance socialization while

keeping rent costs at a reasonable rate. Without an affordable place to live, there is no sense in making further adjustments to Baldwin City regarding its young people.

• After addressing the housing shortage, Baldwin City must address its lack of access to essential shopping at competitive prices. The currently available businesses to purchase critical household and grocery items are insufficient for most individuals and operate outside the budget of most recent college graduates (Sperling, 2023). The result is that most young people will need to travel to surrounding areas for their necessities and therefore fail to put money back into Baldwin City's economy. Bringing bigger multinational competitive retail stores to the city will ensure affordable essentials for residents and keep their money circulating in Baldwin City's economy.

The economy's strength is the second important factor for attracting recent graduates to rural communities. Young people looking to begin their professional careers are looking to reside in a healthy economy with opportunities for economic and personal growth (Fiore et al., 2015). To ensure this is the case, policymakers need to be aware of their responsibility to ensure that economic instability is not why college graduates overlook Baldwin City. There are various ways that the local government and economic development agencies can enhance these

community features that graduates seek. For example, policies that offer competitive salaries and benefits for locating a business within Baldwin City would be very influential. Also, offering more business loans and ensuring that Baldwin City fully supports entrepreneurial ventures is a great way to keep recent graduates in the town while supporting the overall economy (Fiore et al., 2015).

Additionally, creating an environment where current college students feel connected to their surrounding town and can see a future after graduation is vital to reducing the effects of brain drain. Fiore et al. (2015) stated that "supporting partnerships between local businesses and institutions of higher education that 'fast track' skilled employees" benefits those businesses and encourages graduates to stick around. Therefore, Baldwin City officials must make more concerted efforts to connect with local companies and Baker University. In doing so, students can have more internships, shadowing, and career development opportunities in Baldwin City while still in school and form relationships that might develop into a set job opportunity upon graduation. Ensuring Baker University students are given legitimate career opportunities within Baldwin City would significantly reduce the brain drain and allow these highly educated young people to stick around to improve the community.

#### Attract Millennials:

Millennials, typically known as those in the age range of 27-42 years old, are crucial for the growth of communities (Shaffner, 2021). This age demographic is typically more set in their career path and, therefore, able to contribute to a city's economic growth. This age group is also more likely to be looking to start families and settle down in a town. New residents looking to move to a rural community are greatly influenced by the quality of public schooling (Marre, 2020). Therefore, to attract and retain the millennial age demographic in Baldwin City, there needs to be a continued focus on improving K-12 education. According to Baldwin City Unified School District 348 (BCUSD - 348), Baldwin City is home to four different public schools: Baldwin Elementary School Primary Center (pre-k - 2<sup>nd</sup> grade), Baldwin Elementary School Intermediate Center (3<sup>rd</sup> - 5<sup>th</sup> grade), Baldwin Junior High School  $(6^{th} - 8^{th} \text{ grade})$ , and Baldwin High School  $(9^{th} - 12^{th} \text{ grade})$ .

According to Baldwin City public schools' 2022-2026 strategic plan, there are four target areas of focus for the future: preparing students for success, supporting the needs of students and staff, engagement in schools and school activities, and operational effectiveness (BCUSD - 348, 2023). In addition, a high standard of public schooling is critical for millennial families looking to settle in Baldwin City. Therefore, the Baldwin City school system must continue to improve and follow through on its strategic plan to ensure that families see the community as a great place to raise their children.

Additionally, childcare access goes hand-in-hand with supporting families in a city. Baldwin City currently has very few stand-alone daycare or childcare options besides the program run through the Baldwin City Recreation Commission. This program has before and after-school care for grades pre-k through 5<sup>th</sup> grade and is run primarily out of the Baldwin Elementary School Intermediate Center (Baldwin City Rec Commission, 2023). However, more childcare access is imperative to encourage millennial parents to continue pursuing their career goals and contribute to Baldwin City's economy while raising a family.

Another avenue for attracting millennials to Baldwin City is career incentives. In today's workforce, many people are taking advantage of the option to work remotely. Workers might have a fully-remote job or only go into an office a few times a week. This dramatically increases the opportunities for individuals and families who want to move to a small town but worry about the current job opportunities (Marre, 2020). Continuous broadband upgrades must be throughout the city to ensure remote working ([non]-&-millennials) can move to Baldwin City. There must be equal access to high-speed Internet across the city so that remote work at any level is an option for all ([non]-&-millennial) workers.

Other incentives that would benefit millennials in Baldwin City might be student loan repayments or tax credits for people who move to the community (Shaffner, 2021). The state of Kansas currently has a program called Kansas Rural Opportunity Zones (ROZ) which covers ninety-five counties. Moving to those

counties means the new full-time resident can receive financial incentives such as student loan repayment assistance and a 100% state income tax credit (Kansas Department of Commerce, 2023). Unfortunately, Baldwin City is located in Douglas County, KS, which is not currently considered a Rural Opportunity Zone (ROZ) due to the high population of its neighboring city, Lawrence, KS (Kansas Department of Commerce, 2023). However, this program has had substantial success, so Baldwin City might consider mirroring some of the opportunities and incentives the ROZ program offers on a smaller scale for those who move to the Baldwin community. These incentives can put Baldwin City on the map when millennial families seek suitable places to call home.

Finally, continuing improvements to Baldwin City's downtown could go a long way in attracting millennials. In 2021, Baldwin City announced that it would be included in the Kansas City Main Street program, which gives "technical assistance in all areas of the Main Street Approach designed to further economic development downtown" as well as providing state and national grant funds (Kansas Department of Commerce, 2022). This program will help Baldwin City improve its downtown area and revitalize the community. In addition, Baldwin has made a few plans to update and refresh the town in the past three years. These renovations include their Brick Street Restoration Project to preserve the brick roads in town and the Community Center Project, which has plans to significantly update the current community center to become a "civic community space for all" (Baldwin City, 2023). Continuing to make upgrades to common town

spaces and utilizing the Kansas City Main Street program to strategically increase the vibrancy of Baldwin City's downtown strategically will effectively attract millennials and young families.

# Support Senior Population:

The final age demographic to focus on within Baldwin City is its senior population, age 65 and over. There is currently a spike in the 60-64 age range in Baldwin City that significantly drops off moving into the senior citizen age range (US Census Bureau, 2023). Therefore, city leaders need to understand where the disconnect may be and how to create a healthier, more viable community for senior citizens. The first issue is the lack of senior housing or senior living opportunities within Baldwin City. Researchers at the Rural Health Research Gateway studied aging in place, or the "phenomenon of people remaining in their homes and communities as they get older, even if their health status changes" (Hening-Smith & Lahr, 2022). In this study, a survey of the rural health offices in all fifty US states found that 89% of respondents felt that senior housing was a barrier to aging in place in rural areas (Hening-Smith & Lahr, 2022).

Therefore, there is a significant need for senior-specific housing to adequately accommodate the aging of the older population in communities. Baldwin City has one senior living facility, Vintage Park, which houses about 140 seniors (Vintage Park, 2023). However, the projected range of senior citizens in Baldwin City for the next five years is between 600 and 650

residents (US Census Bureau). Therefore, Baldwin City must consider adding additional senior-specific housing or living facility to support the community's future senior citizens.

Another critical aspect of senior living in rural communities is public transportation. The Rural Health Research Gateway also found in its survey that 81% of respondents strongly agreed that transportation was a barrier to aging in rural areas (Hening-Smith & Lahr, 2022). Unfortunately, there is currently no public transportation available in Baldwin City. This creates serious issues for the senior population, especially for residents who are no longer driving. Vintage Park does offer transportation to medical appointments for its residents, but seniors not residing in that assisted living facility have few options (Vintage Park, 2023.). Baldwin City needs to create public transportation, if not for all of the community, at least focused on the senior population who cannot drive themselves. This will help current seniors feel more comfortable as they continue aging within Baldwin City and let other seniors who may be weary of moving to Badlwin City know that the community will care for and support all residents at any stage.

# Conclusion:

This study aims to identify Baldwin City's population growth trends and age group distribution to provide strategic insights that will inform policymakers. Results show that Baldwin City has had an increasingly slow population growth rate over the last ten years, and its projected growth rate over the

next ten years is 0.04%. Additionally, the age groups unevenly distributed within the community and threaten its growth are teenagers and young adults, millennial families, and senior citizens. Strategies to reduce the out-migration of young, college-educated people in Baldwin City include building affordable housing complexes, bringing a commercial shopping center, implementing economic policies for competitive salaries and business loans, supporting entrepreneurial ventures, and creating connections and career opportunities between local businesses and institutions of higher education. To attract millennial families, Baldwin City should continue improving its K-12 public education system and childcare access, offer career incentives to move to town, such as student loan repayment assistance or tax credit, and continue improving Baldwin City's downtown. Finally, to support the senior citizens in the community, Baldwin City should build more senior-specific housing and create a public transportation system for seniors who are no longer driving.

#### References:

- Baldwin City Rec Commission. (2023). Child Care. After School Care I Baldwin City Rec Commission, KS. Retrieved 2023, from https://www.baldwinrec.org/191/After-School-Care
- Baldwin City USD 348. (2023). Baldwin City USD 348. USD 348
  Baldwin Public Schools. Retrieved 2023, from https://www.usd348.com/
- Baldwin City. (2023). Baldwin City, Kansas. Retrieved 2023, from https://www.baldwincity.org/
- BDEDC. (2021, January). Goals for Baldwin City Economic Development Corp. Baldwin City Economic Development Corporation. Retrieved 2023, from https://www.baldwincity.org/index.php?section=bc-eco-devo&cas\_cscid=32&casid=213
- Fiore, A. M., Niehm, L. S., Hurst, J. L., Son, J., Sadachar, A., Russell, D. W., Swenson, D., & Seeger, C. (2015). Will they stay, or will they go? Community features important in migration decisions of recent university graduates.

  Economic Development Quarterly, 29(1), 23-37. https://doi.org/10.1177/0891242414559070
- Henning-Smith, C., & Lahr, M. (2022, January 18). Aging in Place in Rural America: Challenges, opportunities, and policy initiatives. Rural Health Research Gateway. Retrieved May 1, 2023, from https://www.ruralhealthresearch.org/webinars/aging-in-place
- Kansas Department of Commerce. (2022, February 14). Kansas Main Street. Kansas Department of Commerce. Retrieved 2023, from https://www.kansascommerce.gov/program/communityprograms/main-street/
- Kansas Department of Commerce. (2023, January 6). Rural Opportunity Zones (ROZ). Kansas Commerce. Retrieved 2023, from https://www.kansascommerce.gov/program/taxes-and-financing/rural-opportunity-zones-roz/4
- Marre, A. (2020). Rural Population Loss and Strategies for Recovery. Econ Focus. Retrieved 2023, from chromeextension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.ri chmondfed.org/-/media/RichmondFedOrg/publications/research/econ\_focus/2020 /q1/full\_issue.pdf.

- Osiobe, E. (2018). A Local Economic Development Action Plan for Pennington County, South Dakota.
  10.13140/RG.2.2.11907.55846.
- Osiobe E. U. & Quillen, T. (2023) A Historical Review of Baldwin City, Kansas, USA. The Baker Economic Development Office [BEDO] Bulletin.
- Shaffner, C. (2021, April 14). Millennials could be a boon to smaller communities. How can those towns attract younger workers? Route Fifty. Retrieved 2023, from https://www.route-fifty.com/management/2020/08/millennials-smaller-communities-attract-younger-workers/168084/
- Sperling. (2023). Compare Cost of Living: Baldwin City, KS vs.

  Lecompton, KS. 2023 compare cities' cost of living. Retrieved
  May 2, 2023, from https://www.bestplaces.net/comparecities/baldwin\_city\_ks/lecompton\_ks/costofliving
- US Census Bureau. (2023). Explore census data. Explore Census Data. Retrieved 2023, from https://data.census.gov/