



**BALL STATE
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Population Decline in Muncie Is Accelerating

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Executive Summary

This study seeks to clarify data and projections concerning population in Muncie and Delaware County, which have recently been misreported by two research teams and in the media (Zanola Company, LLC, 2016 and Fallon and Farris, 2017). Both studies suffer significant fundamental flaws that discredit their conclusions regarding the future projections of Muncie's population. These flaws include: citing US Census population projections that do not exist, citing Census population estimates more than six months prior to their actual release, misreporting intercensal population estimates, and performing arithmetic errors in comparison of population growth rates. Further, these errors do not appear random, and they consistently support a single conclusion. Neither study team has been willing to produce their data, which calls into question the validity of their methods and efficacy of their conclusions.

The facts are:

- The population of the Muncie Metropolitan Statistical Area (Delaware County) peaked in 1972 and is projected to continue declining through 2050, according to the state demographer and the authors' calculations.
- Intercensal population estimates report that Muncie is in the second of two accelerating periods of population loss. The first occurred in the late 1970s, and the second started at the end of the Great Recession, in 2010.
- Recent population loss is occurring much faster than projected, and Muncie MSA population has already decreased to a point that it was not expected to until 2025.
- Alternative measures of population decline such as a rapid relative increase in poverty assistance, a decline in home prices and new home construction, and historically low economic performance all corroborate the recent acceleration of population loss.
- Muncie City population decline is more rapid than in surrounding areas; Muncie is likely to drop beneath 50 percent of Delaware County population between 2023 and 2025.

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Based on the above facts and the questionable source of their data, we believe that the analyses provided by Zanola Company, LLC (2016) and the Live Near Your Work Study (Fallon and Farris, 2017) are too flawed to be applicable to policy.

Introduction

Population loss in Muncie, Indiana has accelerated since the end of the Great Recession. Indeed, the 2015 Census population estimates for the city are lower than expected population in 2025, as calculated by population projections produced by the state demographer in 2012. The 2016 Census estimates reflect even deeper declines. This implies population declines in the post-2010 period are occurring at roughly three times the expected rate.¹ This fact has important implications for a wide range of policy decisions in the region. To understand community dynamics, citizens and policymakers require accurate reporting of historical population change. Leaders also need reliable, accurate, and transparently derived projections and forecasts of future population change. This study seeks to provide context for historical facts and report both population projections and forecasts of Muncie's future population.

The motivation for this study is a growing misperception, repeated by the local media and by local elected and appointed officials, that Muncie's population loss has not only slowed, but may reverse trend in the coming years. These misperceptions are based upon a set of recent studies that misreport historical facts on Muncie's population, inaccurately report current population estimates, cite Census Bureau projections that do not exist, and rely on arithmetic errors in their findings.

To remedy these misperceptions, we first provide a historical overview of population in Muncie City and Muncie MSA and report the most accurate population projections available in the state, as calculated by Indiana's state demographer. In the next section, we outline the factual and interpretive errors of two well-publicized studies and the possible source of these errors. We then provide additional evidence of this population decline and its related effect on home values, residential construction, and Gross Domestic Product. Finally, we report a long-term forecast of Muncie and outline the context of population decline with growing urbanization and the likely effects on Muncie. We end with a summary and recommendations.

¹ The population data in this report are drawn from three sources. The first is historical decennial Census, available here: https://www.census.gov/history/www/programs/demographic/decennial_census.html. This is a widely published source that provides the constitutionally mandated reporting of Decennial Census data since 1790. The second source is the officially published intercensal population estimates reported as part of the Bureau of Economic Analysis Regional Economic Information System, Table CA1, Population Series at the County level: <https://www.bea.gov/regional/index.htm>. Our final source of population information reported here is the state population projections produced by the state demographer: http://www.stats.indiana.edu/pop_proj/.

Muncie's Population

Muncie is both a formal City under Indiana Code (IC 36-4-1.1) and a Metropolitan Statistical Area (MSA) (OMB Bulletin No. 15-1). While the boundaries of Muncie City can change with annexation, as they did most recently in 2008, the MSA definition currently consists of the entirety of Delaware County, Indiana. Through most of this report, we refer to the OMB definition of Muncie as a MSA. We do this primarily because county borders do not change as quickly or frequently as city borders, making data available at the MSA level more reliable with more frequent updates and better projections. It is worth noting, however, that Muncie City faces more extreme residential population loss than does the Muncie MSA, meaning that as we outline changes for the metro area, they are likely less extreme than those experienced by Muncie City.

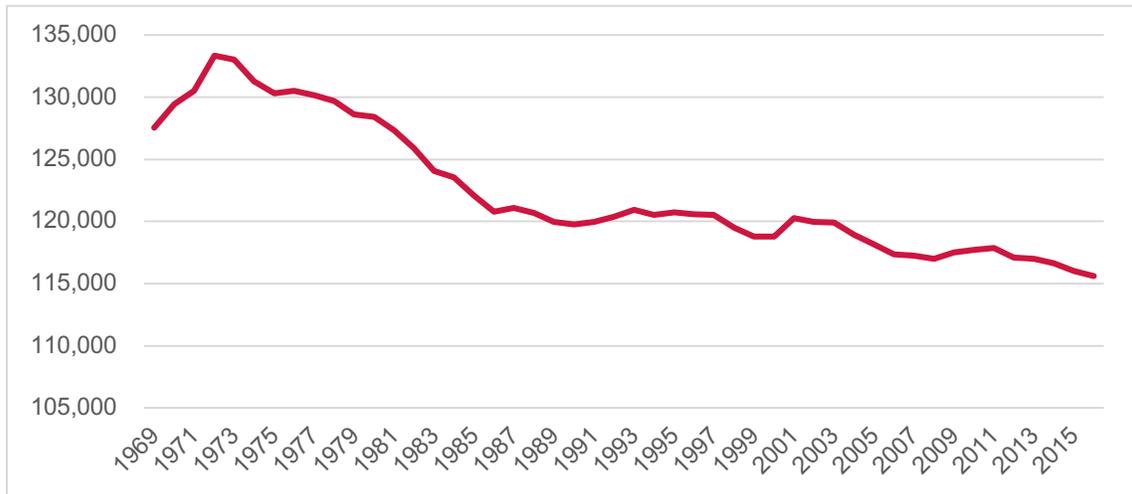
The terminology used to discuss population and population change can be confusing and merits a brief discussion. The US Constitution calls for a Decennial Census, which is the official record of residents for electoral purposes. The Census Bureau also provides *estimates* of population for many geographies in the years between the official decennial census. Estimates speak only to recent and past population and are published with a lag of several months. A population *projection* is a tool used by demographers to project population change over time; projections speak to population in the future by 'aging' cohorts of the population—from birth, through childbearing years, into old age, and finally death. Death rates, birth rates, and some migration trends are applied to these age cohorts to project population into the future.

The Census Bureau conducts national-level population projections. State and sub-state projections are produced by the Federal-State Cooperative for Population Projections (FSCPP). Typically, projections of sub-state geographies (counties and cities) are performed every decade for informational purposes. The Indiana Business Research Center's (IBRC) state demographer produces this type of projection every ten years following the Census using the 'cohort' method described above to project population for each county and some larger regions. Finally, population *forecasts* are modeling tools that use more information, such as economic conditions or adjacent city expansion, to provide forecasts of population in later years.

Population *estimates* fill the gaps between Census years, while *projections* and *forecasts* offer complementary assessments of future population levels using different techniques.

According to population estimates, Muncie's MSA population peaked in 1972 and has declined in all but seven of the past 43 years. From 1969 through 2016 (the current boundaries of intercensal population estimates), Muncie MSA has experienced a 9.34% loss of population, with an annualized population loss of roughly 0.20% over the same period.

Figure 1: Muncie MSA Population Change, 1969-2016 (BEA/U.S. Census Estimates)



The data reported in *Figure 1* are the intercensal year population estimates produced by the Census and reported in the Bureau of Economic Regional Economic Information Systems (see Footnote 1). These intercensal estimates are resolved in each decennial census, and error rates of intercensal years are reported. Error rates are important because, although every effort for accurate counting is made, Census estimates may still over- or under-count population. Analysis of errors across intercensal years suggest Muncie fits many of the categories most likely to result in population *overestimates*, meaning that the estimates of Muncie’s population that we are reporting here are likely optimistic. Sub-county estimates (Muncie City) fits both the size and decline parameters that accompany more optimistic error rates. At the county level, the Muncie MSA has most of the characteristics associated with overestimates, but the presence of a large, non-prison group quarters population (i.e. college dorms) complicates error rates somewhat. Nevertheless, Muncie City’s population and the population of the larger MSA are likely to be revised downward from the current level when a full accounting of residential population occurs with the 2020 Census. (see Harper, Coleman, and Devine, 2001 and Judson, Popoff, and Batutis, 1997)

The Decennial Census counts are also used to provide population projections for the nation. However, the Census Bureau does not now, nor to our knowledge ever has, conduct sub-national population projections. States participate in a state and sub-state partnership to produce population projections. This collaboration has been in place since 1979.² Indiana’s projections are produced by the IBRC following the publication of the new Census population counts every ten years. The last projection was released in 2012, based upon the 2010 Census, and reported county, metropolitan, and workforce region estimates for 2015, 2020, 2025, . . . , 2050. The next update to this projection is scheduled

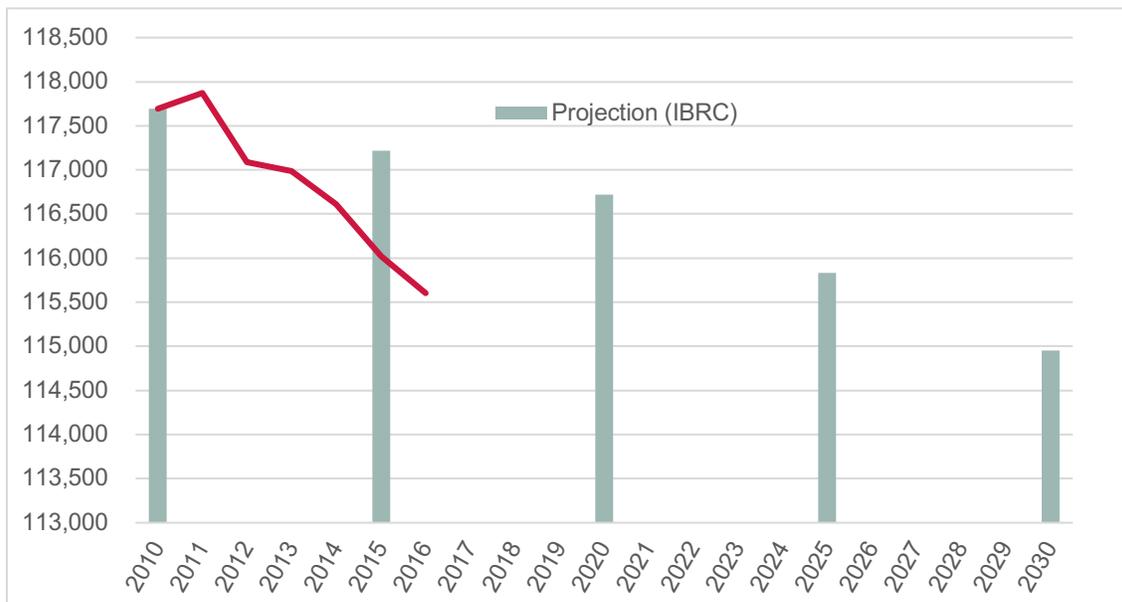
² See the Federal-State Cooperative for Population Projections (FSCPP) at <https://www.census.gov/programs-surveys/popproj/about/fscpp.html>

for release in 2022 with updated population projections for 2025 through 2060 in five-year increments.

A comparison of these projections with recent Census population estimates of Muncie MSA reveal population declines that are more rapid than those projected by the IBRC in 2012 (*Figure 2*). This is especially important for this research for several reasons. First, both the historical population estimates and the IBRC population projections are readily available from a number of sources (see Footnote 1). Second, the population estimates reflect the best current understanding of births, deaths, and net migration, but are historically high for places like Muncie. Thus, the current Muncie population estimate is probably optimistic. Third, population projections represent a linear application of births, deaths, and net migration to a given population. A divergence between estimates and projections reflect significant changes in population dynamics.

It is useful to examine both estimates and projections through 2030 to gain insight into current conditions. Rather than a slowing of population decline, both population estimates and projections make it apparent that population loss is *accelerating*. Not only do official projections anticipate that the Muncie MSA population will continue to decline through at least 2050, estimates of the 2015 population show levels below what was projected for 2025, indicating that Muncie’s population is declining much faster than anticipated when the projection was calculated in 2012. This is especially problematic given the previous point of overly optimistic intercensal population estimates.

Figure 2: Muncie MSA Population Projections Compared to Population Estimates (2010-2030)



Some analysis of the data reported in *Figures 1* and *2* is helpful to contextualize the population losses in recent years. First, declines in recent years are clearly visible in both graphs. Moreover, the rate of population decline is visibly accelerating. While decline is not occurring as quickly as it did in the 1970s and 1980s, population is declining faster today than it did in the 1990s and 2000s. Mathematical analysis confirms what the eye observes (*Table 1*).

Table 1: Change and Rate of Change for Population in Muncie MSA (BEA/Census)

Period	Change dP/dt	Annualized $(dP/dt)/t$	Rate of change d^2P/dt^2	Interpretation
1970-79	-0.6%	-0.06%	...	
1980-89	-6.6%	-0.66%	-0.59%	Accelerating
1990-99	-0.8%	-0.08%	0.57%	Decelerating
2000-09	-1.1%	-0.11%	-0.02%	Constant
2010-16	-1.8%	-0.30%	-0.19%	Accelerating

In summary, Census estimates conclude that Muncie’s MSA population is continuing its decline following the 2010 Census count. While there are no subnational Census population projections, those produced in cooperation with the Census reflect a continued decline through 2050.

From this clear set of facts and analysis, we move to a discussion of two often-cited but highly flawed studies that make false claims about population changes in Muncie.

The Misleading Studies

The unambiguous arithmetic fact of accelerating population decline stands in direct contrast to the conclusions of two recent reports, one by Zanola Company, LLC (2016), and the Live Near Your Work, Muncie (Fallon and Farris, 2017). These reports were prepared for the Muncie Redevelopment Commission and for a consortium of local organizations, respectively.³

We find six fundamental and glaring flaws in both reports:

- Citation of studies that do not exist (Census projections of subnational regions).

³ These are formally Ballard, Rachel, Angelo Zanola and Joe Zanola City of Muncie, Indiana Housing Needs Analysis, Provided for HWC Engineering, November 21, 2016; Fallon, John and Tom Farris Programs, Strategies and Activities, Live Near Your Work, Muncie, Indiana, August 28, 2017.

- Citing 2016 population estimates months prior to the official release of the county and metropolitan Census estimates.
- Misreported Census population data (incorrect data for city and MSA).
- Miscalculated growth rates from flawed data, leading to a counter-factual conclusion regarding recent population losses.
- Misrepresented rates of growth between periods (compared 10-year and 7-year changes to imply a slowing of population loss).
- Misinterpreted accelerating population declines as evidence that future projections imply growth.

We will take each point in turn.

Both reports cite a non-existent “Census Department [sic]” population projection for Muncie through 2021 as one of their primary pieces of evidence of slowing of population losses. As we previously noted, there are no Census projections of subnational areas, including Muncie. We cite from the Zanola Company, LLC study:

“The city of Muncie and Delaware County was well under the national average in population growth but Census statistics indicate they are in the midst of a turnaround. While Muncie lost 2.05 percent of its population in the decade from 2000 to 2010 that population loss has slowed drastically since 2010, and the Census Department [sic.] now projects positive growth over the next five years. This is also the case for Delaware County.” Zanola Company, LLC, 2016, pg. 13

And the Fallon and Farris study:

“The City of Muncie and Delaware County were well under the national average in terms of recent population growth, but U.S. Census statistics indicate they are in the midst of a turnaround. While Muncie [City] lost 2.05% of its population in the decade from 2000 to 2010, that population loss has slowed dramatically since 2010 and the US Census Bureau now projects positive growth from 2016 through 2021.” Fallon and Farris, 2017, pg. 1

The Fallon and Farris study clearly plagiarizes sections of the Zanola study. Though this is worthy of significant public censure, a greater concern is that they plagiarized a study that contained fabricated data and made factually incorrect claims about population growth. While Fallon and Farris corrected the misattribution to “the Census Department” in the Zanola Company, LLC study, they continue to report the possibility for Muncie city growth despite clear inconsistencies with both the 2000 and 2010 Census counts and the 2016 estimates.⁴

Neither study provides additional citations and requests for data were not forthcoming from the authors of either study, referring us to “Census reports” without specifics. After several contacts, the Zanola study team claimed some of the data were from Nielsen reports, but did not produce these data. However, as we note above, the official Census estimates differ from the levels reported in these studies. Additionally, neither report

⁴ The U.S. has maintained a Census Office since the 1790 census, headed initially by Thomas Jefferson, and formally created a Census Bureau in 1902). See online Census historical information at <https://www.census.gov/history/>

included a basic methodology section, nor we have been able to reproduce their estimates.

Table 2: Population Change in Muncie MSA According to the Zanola Company, LLC Report Compared to Change According to Census Estimates, by Time Period and Annualized

	Zanola Company, LLC	Actual Change	Annualized Actual Change
2000-2010	-0.92%	-0.91%	-0.09%
2010-2016	-0.75%	-1.77%	-0.18%

As *Table 2* illustrates, the reported levels of growth by Zanola Company, LLC cannot be deduced from the actual Census Bureau estimates of Muncie MSA population. When growth rates reported in the Zanola study are compared to growth rates derived from US Census data, it is clear that the Zanola facts are simply wrong. For the Muncie City population, the same errors are repeated.

Table 3: Population and Change in Muncie City According to Zanola Company, LLC and Fallon/Farris Reports Compared to Population and Change Reported by the United States Census Bureau

US Census Bureau					Zanola Company, LLC, Fallon/Farris	
	Actual Census Population/ Estimates	Actual Change (base year)	Actual Change (midpoints)	Actual Change (final year)	Reported Population	Reported Change
2000	70,852				71,554	
2010	70,085	-1.08%	-1.09%	-1.09%	70,085	-2.05%
2016	69,010	-1.53%	-1.55%	-1.56%	69,993	-0.13%

We have undertaken exhaustive efforts to locate the source of the population data cited in both the Zanola Company, LLC (2016) and the Fallon/Farris (2017) reports and can find no figures matching the 2000 or 2016 data reported. Repeated requests of Zanola Company, LLC and the authors of the Live Near Your Work, Muncie (Fallon and Farris, 2017) study have yielded no actual publication or website that supports the numbers they use in these reports.

As a standard practice, Census population estimates are typically released in June or July of the following year (2017 population estimates, for example, will likely be available around June of this year). Publication data by the Census shows that 2016 population estimates for counties and cities were released for media embargo on May 17, 2017. The

Zanola Company, LLC study cites 2016 population estimates a full six months before these data were available.

An additional concern we have is related to the failure of either the Zanola Company, LLC or the Fallon and Farris study to recognize the basic logical flaw in comparing the growth rate of two time periods of differing lengths. Both the Zanola Company, LLC and Fallon and Farris studies report differing growth rates between 2000-10 and 2010-16 without normalizing them for different lengths of time. This understates the recent declines, while overstating declines in the earlier period. This error creates an opening to assert that Muncie's population is growing, when every published source we have found and our own calculations clearly indicate otherwise.

Though data errors in published studies are not common, they do occur. We have given considerable thought to the possibility that the errors cited here are simply mistakes and have concluded that the plurality of errors found in these reports is difficult to reconcile as random mistakes. To be clear, this is not simply a consequence of errors in citations or an apparent arithmetic mistake, which would be understandable in a report of this size. The problems found in these reports are much more extensive and appear to support a specific understanding of Muncie's population.

Census Bureau data is readily available from a number of sources, including every public library, the Census Bureau, Department of Commerce, Department of Labor Statistics, university research centers, state libraries, and a number of public policy advocacy groups. Data availability cannot be the challenge to obtaining these data.

The Census decennial numbers are published in final form roughly two years after the Census and are not typically revised ex post facto. Both of these studies were published at least four years after the 2012 publication of the final Census count of 2010. Data revisions cannot be the source of reporting or using inaccurate data.

Census Bureau does not publish subnational population projections. Both reports cite a study that does not exist and never has existed. Although this could perhaps be a misinterpretation of the county and MSA population projections produced by the IBRC, that also appears doubtful. The Zanola Company, LLC study cites a five-year projection date of 2021. The IBRC projections are limited to quinquennial and decennial projections (five and ten years), as is common across most state Census Bureau forecasting partnerships. Moreover, the IBRC projection indicates population decline in each five-year period from 2015 through 2050.

In addition to violating basic ethical rules of research, these reports represent a greater violation due to their intention to inform policy. In our opinion, these studies reflect the most egregious errors in policy-related studies we have encountered in our professional careers, and it is our strong belief that the errors in both studies should render them unusable for policy purposes.

Further, these errors do not constitute symmetrical error that might accompany simple carelessness of analysis. Instead, these errors, misreporting, and misrepresentation clearly favor the operating thesis of their clients – the Muncie Redevelopment Commission and

the LNYW initiative – to wit that there is a housing shortage in Muncie that requires public assistance to mitigate. We also note that Mr. Fallon is president of the MRC and principal of the LNYW initiative.

Conclusions regarding this challenge are unambiguous. Both studies have intentionally or unintentionally misrepresented readily known facts and rely upon Census projections that do not exist from sources that were not available at the time they authored their study. They have no useful analytical merit with regards to population change. Since the Zanola Company, LLC housing demand estimates were based on these population forecasts, those housing estimates likewise have no merit. In both studies, the critical element in their policy objectives is the real or projected population growth in the Muncie area. Those data do not exist, and it appears that at least some of the data presented in both the Zanola Company, LLC and Fallon and Farris (2017) studies have been fabricated. Additionally, portions of the Fallon and Farris (2017) study have clearly been plagiarized from the Zanola (2016) study. Indeed, neither study meets minimal analytical or ethical standards typically expected by research and analysis, funded or otherwise.

Importantly, these criticisms should not be construed to reflect on related studies, specifically the employee survey analysis, which was not part of the population analysis (Russell and Knight, 2017). These studies may be useful for other purposes and were not performed with either the Fallon and Farris or Zanola Company, LLC study teams.

Additional Facts Surrounding Population Decline

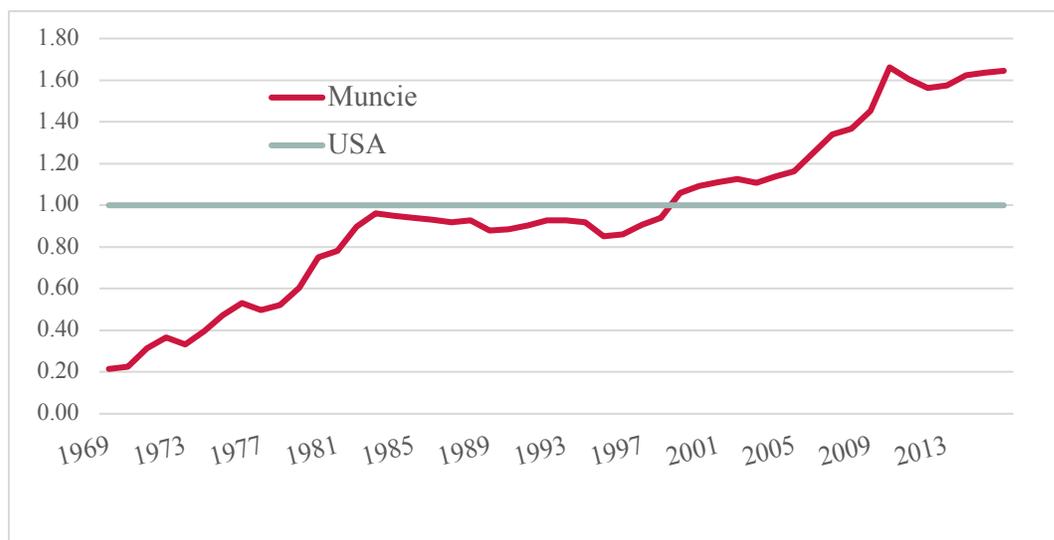
Declining population typically occurs over a very long period and is accompanied by other phenomena that are readily observed. Housing analyses in declining communities frequently find that declining regional population reduces home prices, which, in turn, creates an excess supply of housing (see Glaeser and Gyourko, 2005).⁵ At the same time that population decline reduces housing demand, home prices, and new home construction, it also likely affects Gross Domestic Product in a region, causing long-term decline and attracting a higher share of low-income households. A helpful review of this abundant research is available in Glaeser and Gyourko, 2018; Malone and Redfean, 2018; Sommer and Sullivan, 2018; and VanHeuvelen, 2018.

For the purposes of evaluating the efficacy of Census population estimates and the accuracy of population projections, it is useful to examine the correlations between population loss and the share of low-income households, home prices, new home construction, and GDP.

⁵ This rather obvious understanding of declining housing demand stands in contrast to one leading analytical findings of the Fallon and Farris (2017) study, which concluded “A community with a declining population typically suffers from a lack of new housing developments, new homes and housing option” (pg. 1). In actuality, the lack of new housing developments and new homes is caused by the effect of population decline on housing starts. This is such a fundamental finding of economic theory and research that citing a single study understates the robustness of this truth. For a treatment that includes Muncie, see Glaeser and Gyourko, 2018.

The Bureau of Economic Analysis reports annual data on county- and metropolitan-level transfer payments and earnings. It does not directly report units of participation. The data of interest are supplemental Social Security income, Earned Income Tax Credits, Temporary Assistance for Needy Families (TANF), payments for Women with Infant Children (WIC), Supplemental Nutrition Assistance Programs (SNAP), and miscellaneous federal benefits. In 1969, the ratio of transfer payments to earned income in Muncie was roughly a fifth of the national average. During the period of rapid population decline of the 1970s through early 1980s, this rose to the national average, where it remained until the mid 1990s. Since 1996, however, the relative use of federal assistance programs in Muncie has grown rapidly, to nearly 175 percent of the national average, by the depths of the Great Recession (*Figure 3*).

Figure 3: Reliance on Federal Assistance in Muncie Relative to the Nation as a Whole, 1969-2016

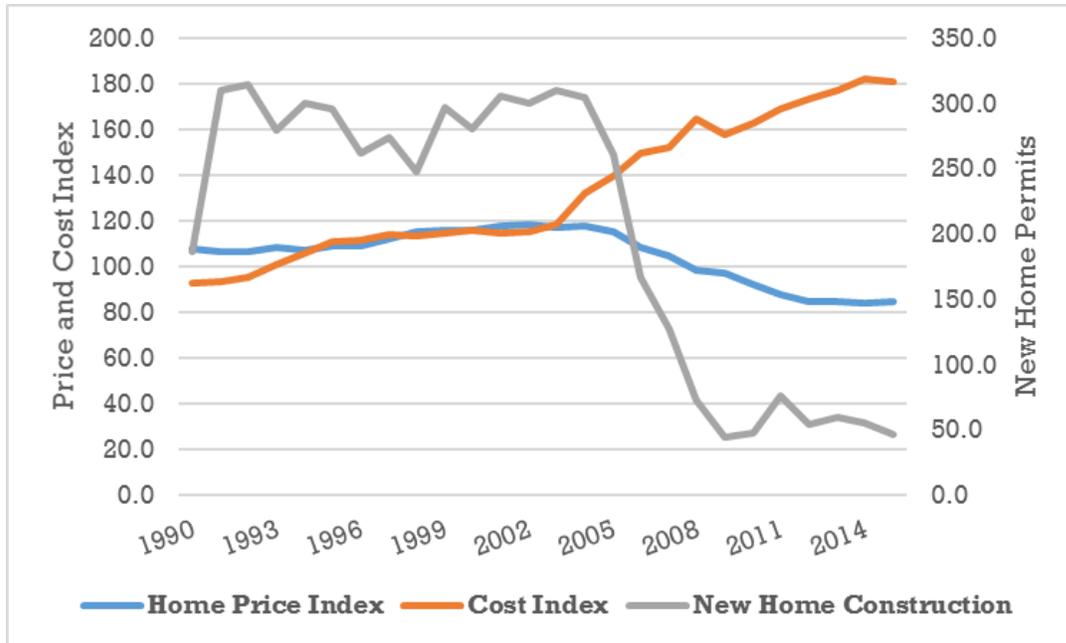


Source: BEA table CA 30 and author's calculations.

These data suggest a lengthy history of population decline and conform closely to the reported data in *Table 1* regarding the acceleration of population loss. There is also evidence regarding home prices (*Figure 4*). This figure is derived from Hicks, 2017, which outlines the method and data sources; they are not repeated here.⁶

⁶ Housing price indices are from the US Department of Housing and Urban Development, Federal Housing Finance Agency, house price indices, new home construction data; and new housing starts from the US Bureau of the Census, New Private Housing Structures Authorized by Building Permits for Delaware County, IN [BPPRIV018035]. Both series are available from the Federal Reserve Economic Data site, housing by the Federal Reserve Bank of St. Louis. <https://fred.stlouisfed.org/> Housing cost index is author's calculations from Hicks, 2017.

Figure 4: Home Prices, Building Cost, and New Home Construction in Muncie, 1990-2015



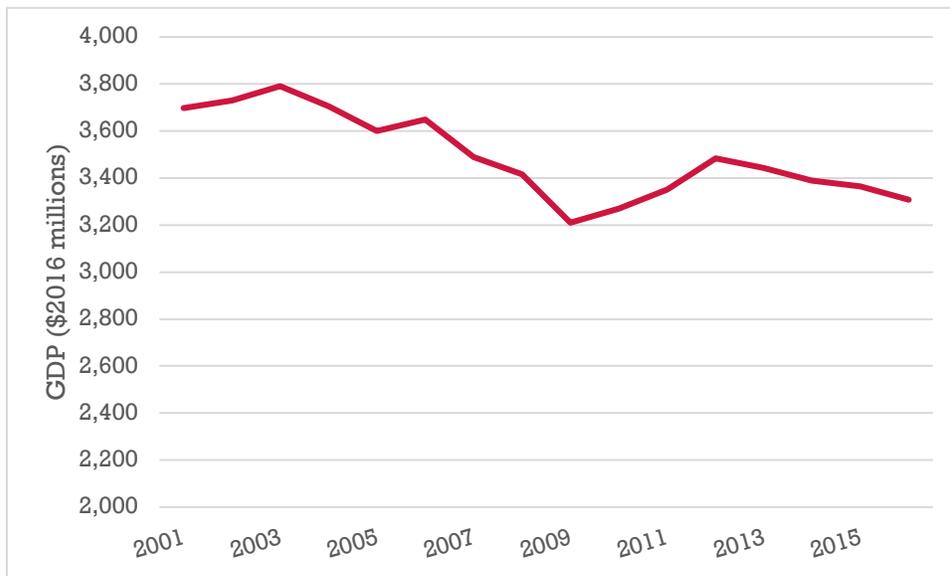
Source: Hicks, 2017

As these Census and HUD data suggest, Muncie home prices stagnated from the beginning of the reported series in 1990 through the early 2000s. The price index then began to decline in the first decade of the 21st century through the end of the Great Recession, and into the mid-2010s. At the same time, new home construction costs rose, eliminating the profitability of building new homes and precipitating a collapse of new home construction in Muncie.

Accompanying the Census estimates and official state projections of population decline, there is clear corroborating evidence of population decline in the rise of transfer payments and the decline of home values and new home starts. The final data we examine is Gross Domestic Product. Released by the Bureau of Economic Analysis, these data series report Muncie’s Gross Domestic Product from 2001 to 2016 (*Figure 5*). During that time period, inflation adjusted GDP declined by 10.6 percent, representing the fourth worst metropolitan performance nationally (out of 382 metropolitan areas) during this period. The four remaining metropolitan areas have experienced growth since the end of the Great Recession, while Muncie’s GDP continues to decline.⁷

⁷ The data can be accessed and downloaded here: <https://www.bea.gov/regional/downloadzip.cfm>

Figure 5: Muncie MSA, Gross Domestic Product, 2001-2016



Source: US Bureau of Economic Analysis

Examining data from Census estimates, state population projections, and correlates of population change, it is clear that not only has Muncie’s population declined, but it is in a period of accelerated decline that is worse than the current projections predicted. The metropolitan area faces a rapidly growing use of federal poverty assistance, home prices have decline profoundly since the middle of the last decade, and new home starts have dropped by more than 90 percent from the 1990s and early 2000s average. Moreover, GDP growth is negative, and is close to the bottom 1% nationally, where it has been for a decade and a half.

There is, in fact, no evidence contrary to Muncie’s population decline except that produced by Zanola Company, LLC (2016) and Fallon and Farris (2017), which are rife with fundamental flaws, as outlined previously.

There can be no doubt Muncie’s population is in decline and has been for decades. One important remaining question is *what does the future hold?*

Longer Projections

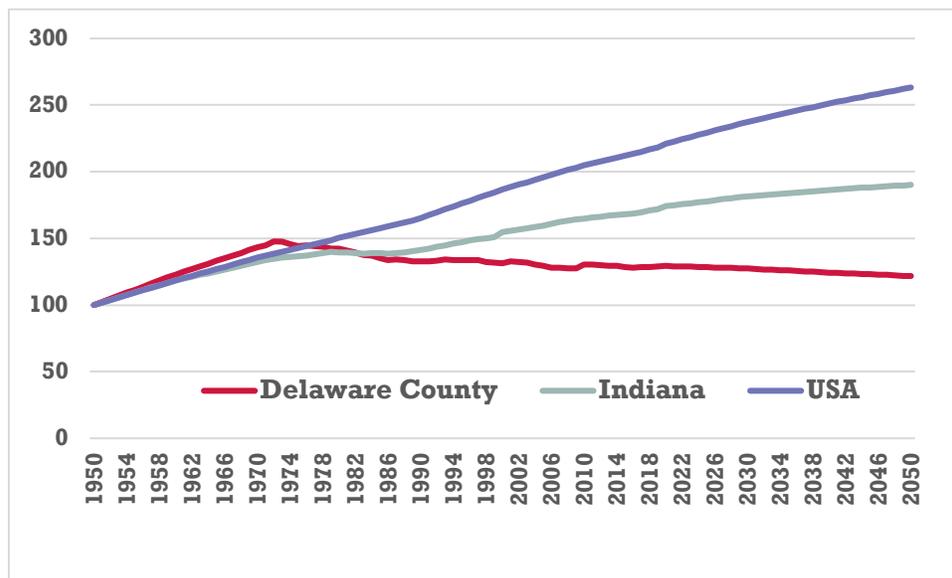
Population projections of the United States are performed by the US Census into the distant future. State and sub-state projections are made over a shorter time horizon through federal and state consortium. In Indiana, the IBRC produces five- and ten-year estimates through a forty-year time horizon. This is completed each decade, following the

release of data from the decennial census. The most recent projection was published in 2012, and projections will be updated in 2022.⁸

These projections are useful for large areas because they use a method that ‘ages’ cohorts into the future, applying fertility rates, mortality rates, and net migration patterns to these groups. Because demographic effects are so persistent, these projections illustrate a clear pattern facing communities.

In order to illustrate the future of Muncie, we construct an index number for the nation, state, and Muncie using historical data from the 1950 Census through the present (*Figure 6*). The intercensal estimates supply the years between the decennial census for 1969 through 2016. From 1950 through 1969, the intercensal years are linearly interpolated. From 2017 to 2050, we employ a combination of the five- and ten-year projections with linear interpolations. This gives us a clear depiction of population dynamics for these three geographies. As should be clear, Muncie is in a period of long-term decline, which began in the early 1970s and will continue through the end of the period of projections.

Figure 6: Population History and Projections



Source: US Census Bureau, and Stats Indiana

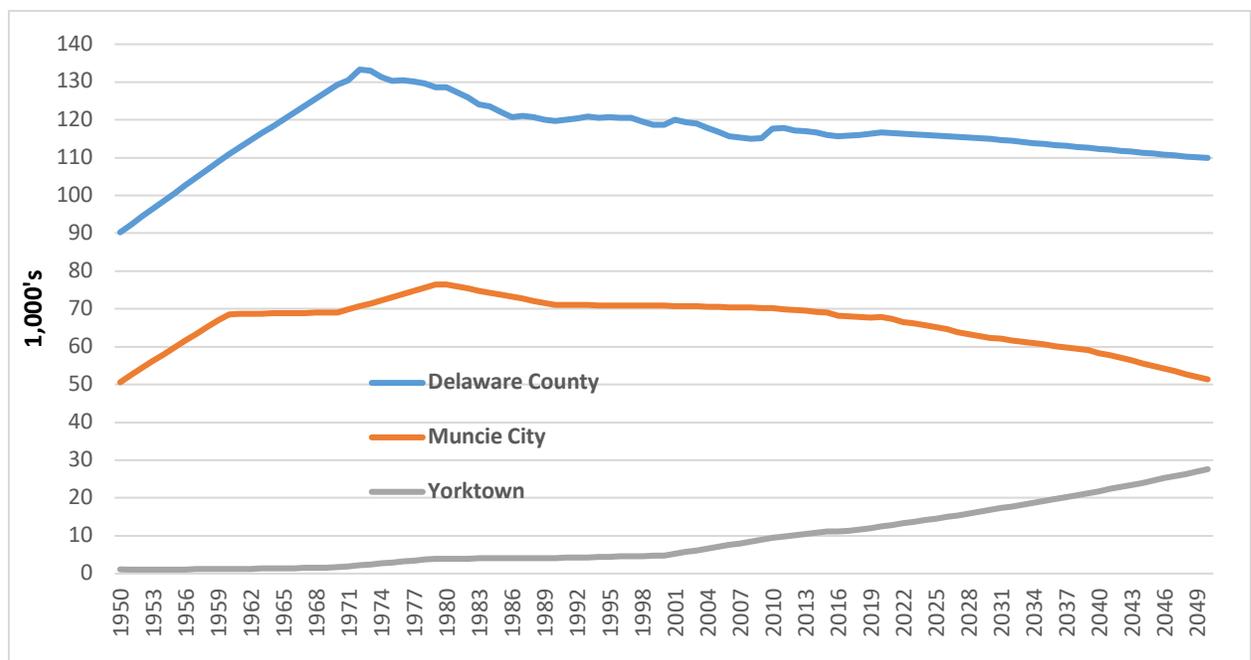
Further, it is useful to point out, again, that these projections are likely optimistic. The intercensal estimates suggest Muncie has lost population at roughly three times the

⁸ The Indiana and sub-state projections are available here: http://www.stats.indiana.edu/pop_proj/. National projections are here: <https://www.census.gov/programs-surveys/popproj.html>.

expected rate since 2010, and in less than five years has crossed beneath the 2025 projections.

Finally, we offer some inter-county population forecasts (*Figure 7*). Population forecasts differ from projections because they employ other correlates of population dynamics, such as growth in adjacent urban places, spatial and temporal correlations and the like. This very simple estimate uses the historical data through 2016, combined with the metropolitan area population projections. The forecast is a very simple time series model, which means it is a naïve extrapolation of trends.

Figure 7: Muncie MSA and Sub-Metro Regions, 1950-2050



Source: American Community Survey, US Census and author's calculations

As with the overall population projections, this forecast is likely optimistic in both overall population and the relative share of Muncie City. Even so, this forecast predicts Muncie City will drop population faster than the county as a whole and will become a minority of the county population between 2023 and 2025. According to this forecast, the Yorktown/Daleville region will likely be larger than Muncie City by 2050. The most probable error in this forecast, or any forecast of population dynamics on the edge of a large urban area such as Indianapolis, is that it understates urbanization effects. That suggests that the movement of Indianapolis-related population into the Muncie Metropolitan area is underway and will accelerate. All the net growth associated with that phenomenon will be confined to the western and southern portions of the MSA.

Muncie's population decline, which began as a demographically predictable event in the mid-1950s and manifested in peak population in 1972, continues at an accelerated rate. Both population projections and forecasts yield continued declines into the second half of the 21st century. Indeed, it is likely that these projections and forecasts are optimistic both in the short and long run.

Summary and Recommendations

Population estimates and projections of the future are important across a wide domain of policy applications. They are also important for decision makers in the private sector, from households to businesses. Reporting data on population requires care and skill. Reporting population projections requires skill and integrity, and it necessitates contextualization of the findings.

A careful analysis of Muncie's past, present, and future makes it clear that population has been in decline, is currently in a period of accelerating decline, and faces several more decades of continued decline. To our knowledge, no honestly reported data nor any reliable analysis suggests otherwise.

Against this fundamental reality stand two studies that fail Muncie's citizens and policymakers. The Zanola Company, LLC (2016) housing study and the LNYW study by Fallon and Farris (2017) misreport Census data, miscalculate growth rates, rely on questionable population data, report data that was not released at the time of their writing, and cite studies that do not exist. These errors are not random mistakes, and in each and every instance support their conclusion that Muncie is in the midst of a population revival and suffers an excess demand for housing.

We note that every other piece of analysis we could find disagrees with this result. Recent studies (Faulk and Fenimore, 2017; Faulk and Law, 2016, 2015) note the rising stock of housing and the decline in residential building permits, and even under periods of relative growth. The Muncie Action Plan reports illustrate continued population decline, as presented to broad community audiences.⁹ The Muncie-Delaware County Economic Development Alliance reports annual Census data to the community and maintains it on their website.¹⁰ Ball State's Center for Business and Economic Research, our research center, has published economic forecasts, with both short- and long-term analysis since the early 1990s, all reporting population declines.¹¹ Academic work on migration, population flows, and recent population declines have received significant media attention and are readily available on Ball State University's website (see Morris and Faulk, 2013; Hicks, Terrell, and Heupel, 2015; and others). Other academic work cites decline in Muncie (Hill, Wolman, Kowalczyk, and St. Clair, 2012; Fraser, 2012; Fee and Hartley, 2013; Malone, 2010; and Morrill, 2014). There was also work specifically

⁹ See <http://muncieactionplan.net/wp-content/uploads/2016/10/Multi-city-comparative-statistics.pdf>

¹⁰ See <http://www.muncie.com/Site-Selection-Data/Data-Demographics.aspx>

¹¹ See <https://projects.cberdata.org/tag/22/forecast>

commissioned to project or forecast local population dynamics (Kinghorn, 2010; Hicks and Schlesinger, 2016; Hicks, 2015).

Some examples of titles in the aforementioned work are: “Muncie Forecast,” and “Shrinking Cities,” and “Middletown No More? Globalization and the Declining Positionality of Muncie, Indiana,” which leaves little confusion as to the content of the analysis. We also note that many of these Ball State studies were published during a time in which one of the authors of the Live Near Your Work study was employed in economic development at the university and would have been exposed to these studies. We provide this information to make the point that both the Zanola Company, LLC (2016) and the Fallon and Farris (2017) studies could not have made any attempt to review any other research on the matter of Muncie population growth without finding these studies. We have done so and find none that offer evidence of anything other than declining population.

We cannot know the intent of the authors of these studies, or whether these misreporting of data and references to non-existent population projections are intentional or merely the result of exceedingly careless work. While errors in published studies do occur, these commissions of error are larger and more meaningful than any we have encountered. Some data appear to have been fabricated, and neither study team has offered any evidence to the contrary. Combined with what appears to be an intentional avoidance of a vast body of research, these research products cannot be viewed as trustworthy.

At the very least, these studies and the analysis derived from these studies can be of no further use to policymakers. We believe that neither the Muncie Redevelopment Commission nor those who funded the Live Near Your Work studies have received analytical products in keeping with minimal standards of research, and we caution against basing policy decisions and the future of Muncie on such flawed products. We recommend a public acknowledgement that Muncie City and the Muncie MSA are in the midst of long-term population decline, and that policies aimed at remedying this be focused on the fundamentals of quality of place, beginning with high-quality public services rather than housing development.

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