



Vogt Strategic Insights

Analysis of Housing Need for the Columbus Metropolitan Statistical Area

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With support from: Columbus REALTORS and Columbus 2020

Effective Date: December 5, 2018
VSI Job Reference Number: 14435NY

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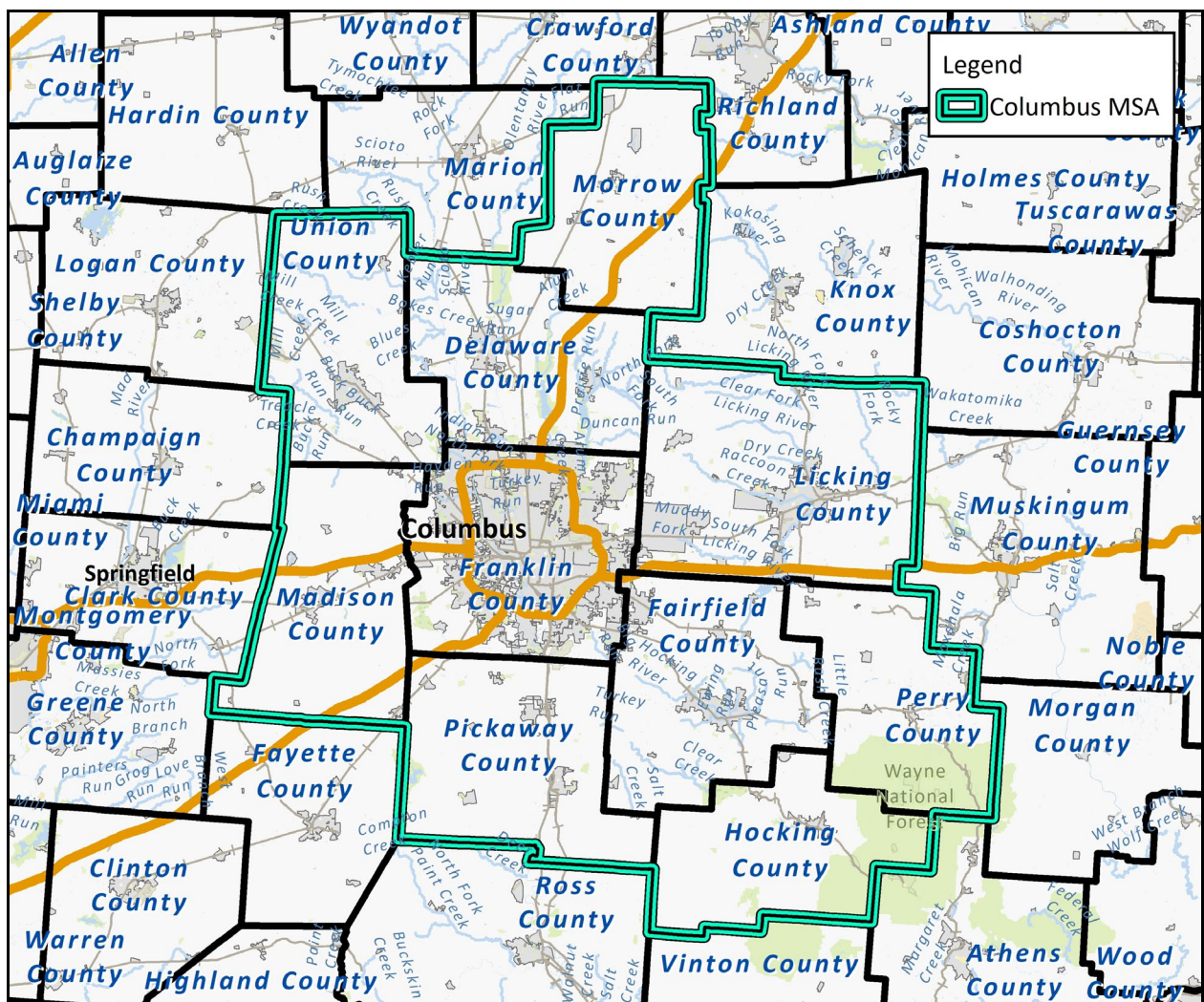
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I. Introduction

Purpose

The purpose of this report is to estimate the need for new residential housing alternatives (for-sale and multifamily rental) in the Columbus, Ohio Metropolitan Statistical Area (MSA) based on the projected job growth in the region through year 2050.

This analysis will forecast housing need for the Columbus MSA and each of the 10 counties that comprise the MSA. The housing need estimates are segmented by tenure and income cohort. The following map details the Columbus MSA and the 10 counties that comprise the Columbus MSA.



For this analysis, VSI completed the following work elements:

Demographic and Economic Analysis

Demographic and economic characteristic trends will be collected for the Columbus MSA and each of the 10 counties that comprise the Columbus MSA. Demographic and economic variables that are documented in this report include the following:

- Population (2000 Census, 2010 Census and 2017 Estimate)
- Population by Age (2017 Estimate)
- Households (2000 Census, 2010 Census and 2017 Estimate)
- Households by Age (2017 Estimate)
- Household Tenure (2010 Census and 2017 Estimate)
- Income Trends (2010 Census and 2017 Estimate)
- Employment Statistics
- Projected Employment Growth

Housing Inventory

Through access of national database providers and various third-party sources, VSI inventoried the current for-sale and rental housing environment within the MSA and the 10 counties that comprise the Columbus MSA. The aggregation of data is limited to the geographies provided by these sources.

The residential housing analysis will provide (predicated on the availability of data) the following:

- Structure by Year Built
- Structure by Type
- Bedroom Composition
- Housing Cost as a Percentage of Income
- Monthly Housing Cost
- Distribution Monthly Gross Rent Expenditure
- Median Sale Price
- Median Sale Price Per Square Foot
- Building Permit Activity (Single-Family and Multifamily)

Housing Need Projections

Vogt Strategic Insights (VSI) has estimated, in broad terms, the distribution of job growth by income segments projected in the Columbus MSA and each of the 10 counties that comprise the Columbus MSA using economic projections based on historical trends at various look-back periods. This allows VSI to estimate, in broad terms, the projected housing need by tenure and income segmentation in year 2050.

This analysis does not consider demand for various housing types in that consumer preferences, availability of current housing alternatives, demographic shifts and natural movement within the market (i.e. households moving from one dwelling to another) have not been taken into consideration.

Sources

Vogt Strategic Insights uses various sources to gather and confirm data used in this analysis. These sources include the following:

- The 2000 and 2010 Census
- American Community Survey
- ESRI
- Urban Decision Group
- Redfin.com
- Zillow.com
- Central Ohio Board of REALTORS
- Vogt Strategic Insight's Proprietary Data
- Bureau of Labor Statistics
- Regionomics

Statement on the U.S. Census and the American Community Survey

Since 2005, the American Community Survey (ACS) has been a critical element of the U.S. Census Bureau's reengineered decennial census program. During previous decennial censuses, most households received a short-form questionnaire, while one household in six received a long form that contained additional questions and provided socioeconomic information about the population that is more detailed.

The 2010 Census was the first exclusively short-form census and it counted all residents living in the United States and asked for name, sex, age, date of birth, race, ethnicity, relationship and housing tenure, resulting in a total of seven variables.

The more detailed socioeconomic information, once collected via the long-form questionnaire, is now collected by the American Community Survey.

Direct comparisons between ACS data and the 2010 decennial census should not be made because the sample sizes and collection methods are completely different; the ACS is an average of estimates, while the decennial census is a count. In addition, the ACS data should not be compared to third-party data that provides current-year estimates and five-year projections.

In addition to the data retrieved from the Census Bureau, VSI utilizes data from several different third-party providers, including ESRI and Urban Decision Group. Each of these data providers has undergone significant internal changes to incorporate the results of both the 2010 decennial census and the most recent ACS into the algorithms used to calculate demographic estimates.

II. Executive Summary

Based upon a report issued by the Urban Land Institute and Mid-Ohio Regional Planning Commission, Central Ohio is expected to add as many as 1,000,000 people by 2050. The report concluded the area may not be able to accommodate the expected number of new households without reducing the land necessary to provide an adequate number of choices. Further, current housing production is only providing a small share of needed new housing.

The purpose of this report is to estimate the need for new residential housing (for-sale and multifamily rental) in the Columbus, Ohio Metropolitan Statistical Area (MSA) based on projected job growth scenarios for the region through year 2050.

This report concluded that the Columbus MSA and the 10 counties within are projected to gain a million more people from the significant number of jobs expected to be generated through year 2050. There will be a corresponding need for additional housing units to accommodate and realize this job growth. This report also concluded that there are indicators that the Columbus region may not be positioned to address the housing need to accommodate the projected job growth. These indicators included current permitting activity and challenges to affordability.

National peer cities were profiled to provide context to the housing need challenges the Columbus region may face if development activity does not keep pace with job growth projections.

A summary of our findings is detailed as follows:

Housing Need Estimates

The table below summarizes estimated housing need projections by tenure to year 2050 for all geographic areas of study. For detailed figures on projected housing need by income cohorts, see the individual MSA and County profiles detailed in Section VII.

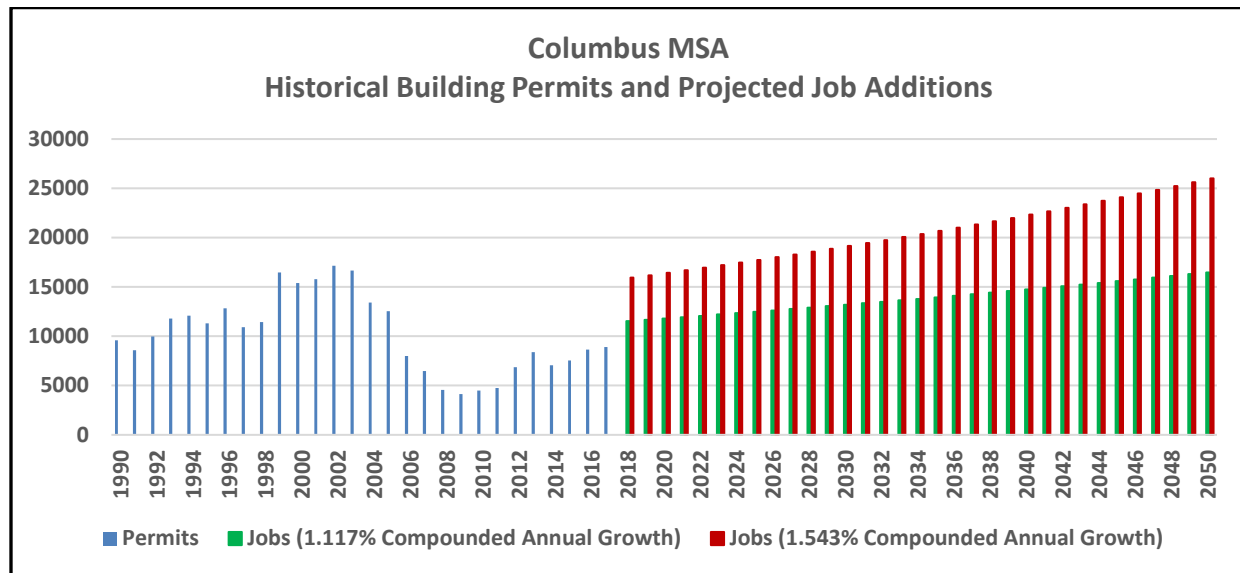
| Housing Unit Need to Year 2050 | | | | | | |
|--------------------------------|--|--|--|--|--|--|
| Geography | Renter | | Owner | | All | |
| | 1990 to 2017 Historical Growth Trend | 2010 to 2017 Historical Growth Trend | 1990 to 2017 Historical Growth Trend | 2010 to 2017 Historical Growth Trend | 1990 to 2017 Historical Growth Trend | 2010 to 2017 Historical Growth Trend |
| Columbus MSA* | 233,351 | 346,392 | 224,246 | 332,877 | 457,597 | 679,269 |
| Delaware County | 63,320 | 24,734 | 195,918 | 76,530 | 259,238 | 101,264 |
| Fairfield County | 15,798 | 13,512 | 25,736 | 22,012 | 41,533 | 35,524 |
| Franklin County | 120,534 | 283,988 | 84,356 | 198,750 | 204,890 | 482,739 |
| Hocking County | 956 | 216 | 1,625 | 367 | 2,581 | 583 |
| Licking County | 16,033 | 14,334 | 23,745 | 21,229 | 39,778 | 35,563 |
| Madison County | 1,422 | 1,994 | 2,268 | 3,180 | 3,689 | 5,174 |
| Morrow County | 1,393 | 1,236 | 3,411 | 3,027 | 4,804 | 4,263 |
| Perry County | 1,373 | 1,367 | 2,212 | 2,202 | 3,585 | 3,569 |
| Pickaway County | 2,472 | 3,695 | 4,676 | 6,990 | 7,148 | 10,686 |
| Union County | 7,296 | 4,439 | 17,614 | 10,716 | 24,911 | 15,155 |

Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; ESRI

*The aggregate of individual county data does not equal the MSA data due to rounding carried through individual year-end calculations for each respective county.

Building Permit Trends

The following chart details historical building permits from 1990 to 2017 and the yearly job additions projected in the Columbus MSA to year 2050 under two compounded annual job growth scenarios (see Section VII for each individual county):

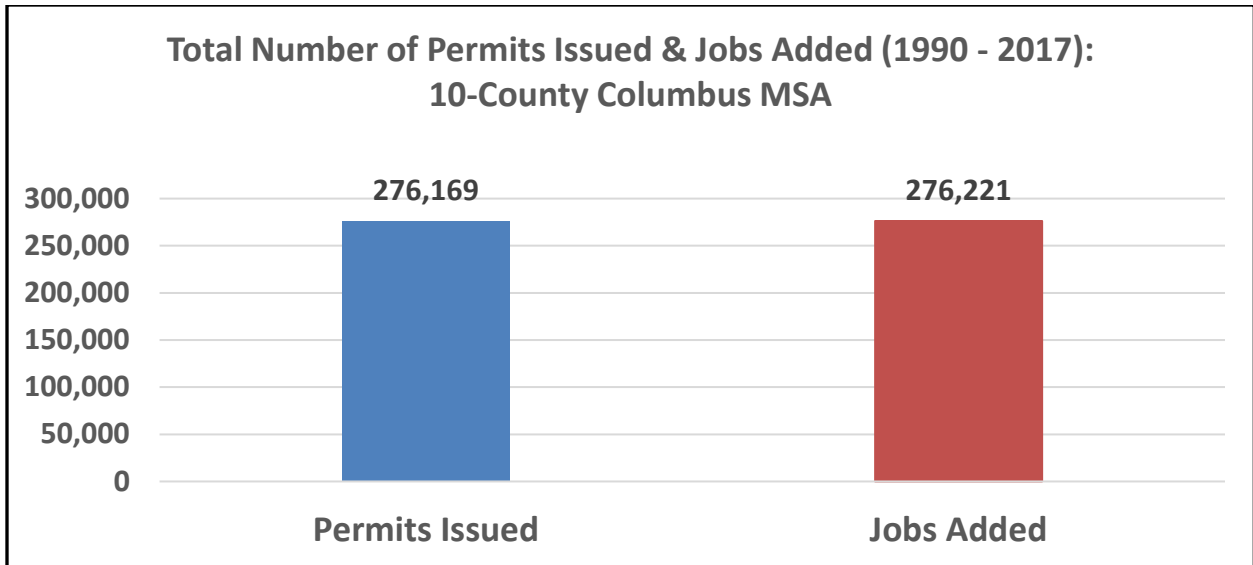


Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)

In the preceding chart, the green growth trend bars assume a compounded annual job growth rate of 1.117%. This is the historical compounded annual job growth rate in the Columbus MSA from 1990 to 2017. The red growth trend bars assume a compounded annual job growth rate of 1.543%. This is the historical compounded annual job growth rate in the Columbus MSA from 2010 to 2017.

Clearly, if historical building permit activity continues, the Columbus MSA will **not** meet the housing need based on the anticipated job growth projections through year 2050. In the Columbus MSA, the yearly average number of building permits from 1990 to 2017 was 10,205 (single-family and multifamily permits). If considering the time period from 2010 to 2017, the Columbus MSA averaged 7,077 building permits per year. Based on our job growth projections, the Columbus MSA will average 14,300 to 21,227 new jobs every year through year 2050. This further highlights the inadequate housing development in the Columbus MSA to meet the housing need that will be generated by new jobs added to the region over the next three decades. **Based on our estimates, permitting activity needs to increase two- to three-fold to meet the projected housing need over the next several decades.**

The following chart details the change in employment and reported permits issued in the Columbus MSA from 1990 to 2017.



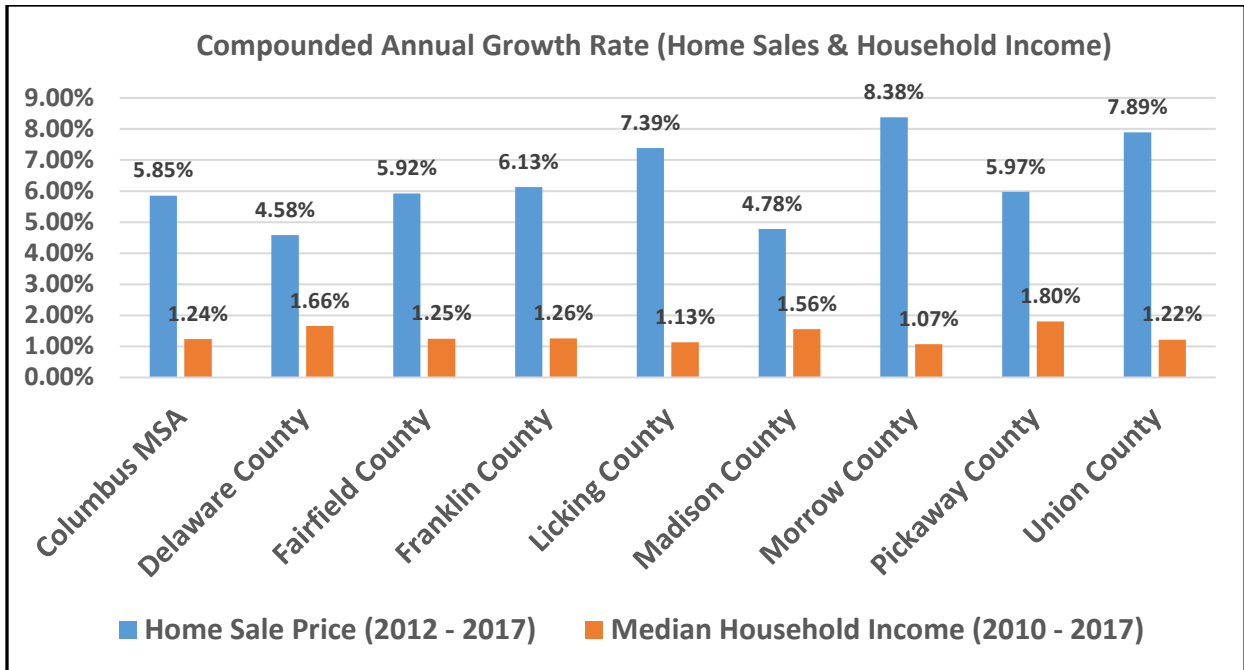
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)

Within the Columbus MSA, the aggregate change in seasonally adjusted employment from 1990 to 2017 was 276,221 while the number of permits reported in the Columbus MSA during this same time period was 276,169. This is a deviation of less than 0.1%. **Based on the historical employment growth and permitting activity in the Columbus MSA from 1990 to 2017, the job growth to housing need ratio assumption to year 2050 is one-to-one (1:1).**

Affordability

A factor that impacts a region’s ability to provide the housing to meet job growth expectations is affordability.

The chart on the following page details the compounded annual growth rates for home sales (years 2012 to 2017) and median household incomes (years 2010 to 2017) for the Columbus MSA and the 10 counties that comprise the MSA.

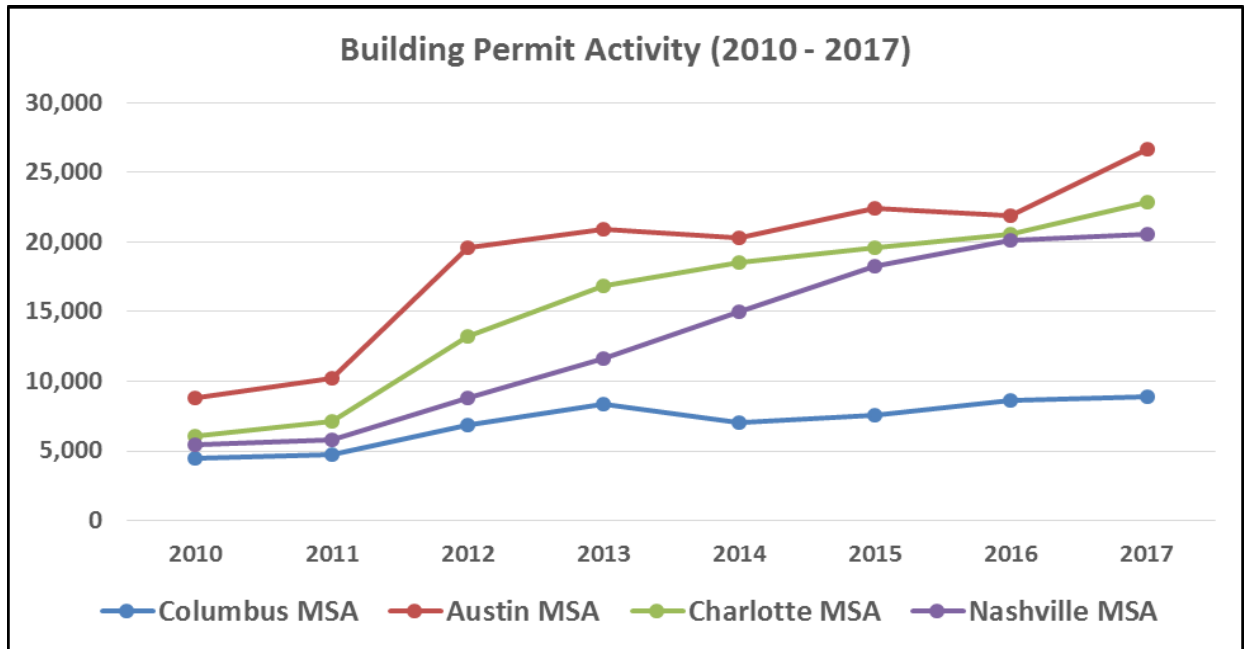


Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group; Redfin

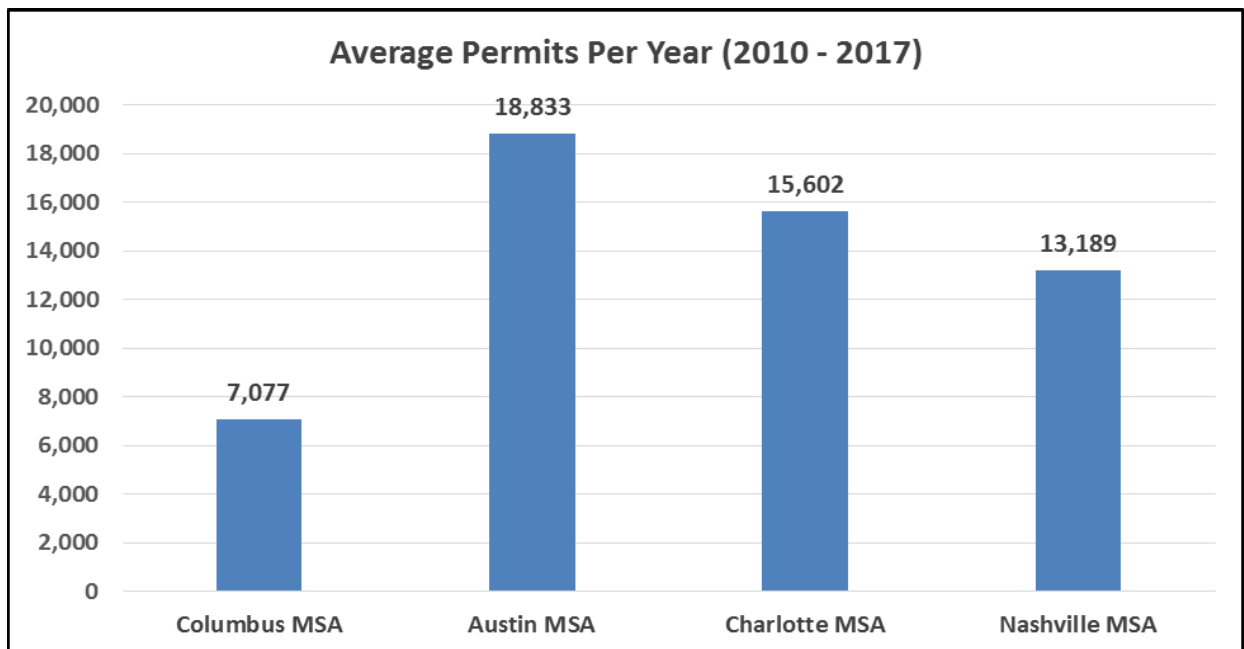
Within all geographic areas of study, the increases in median home sale prices have far outpaced the median household income growth. **In the Columbus MSA, the compounded annual growth rate in home price is nearly five times the compounded annual growth rate in the median household income.** These trends will further exacerbate affordability housing challenges in the Columbus region and will limit the Columbus market from realizing job growth projections.

National Comparable Cities

We have compared Central Ohio permitting activity to other peer regions. VSI case studied three national MSAs that have relative socioeconomic similarities to Central Ohio. The three national MSAs evaluated are Austin, Charlotte and Nashville (see the charts on the following page).



Source: Vogt Strategic Insights; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; State of the Cities Data Systems (SOCDS)

Since 2010, the Columbus MSA has averaged just under 7,100 permits per year (single-family and multifamily) whereas the national peers have averaged two to three times more permitting activity during the same time period. Clearly, the Columbus MSA is not keeping pace with national peers. There are a multitude of factors that are contributing to this including, but not limited to, the following: zoning, land availability, regulatory guidelines, construction costs and availability of skilled workers. If permitting activity does not increase, Columbus will not realize its job growth projections and housing affordability challenges will be exacerbated.

III. Demographic Trends

Population Trends

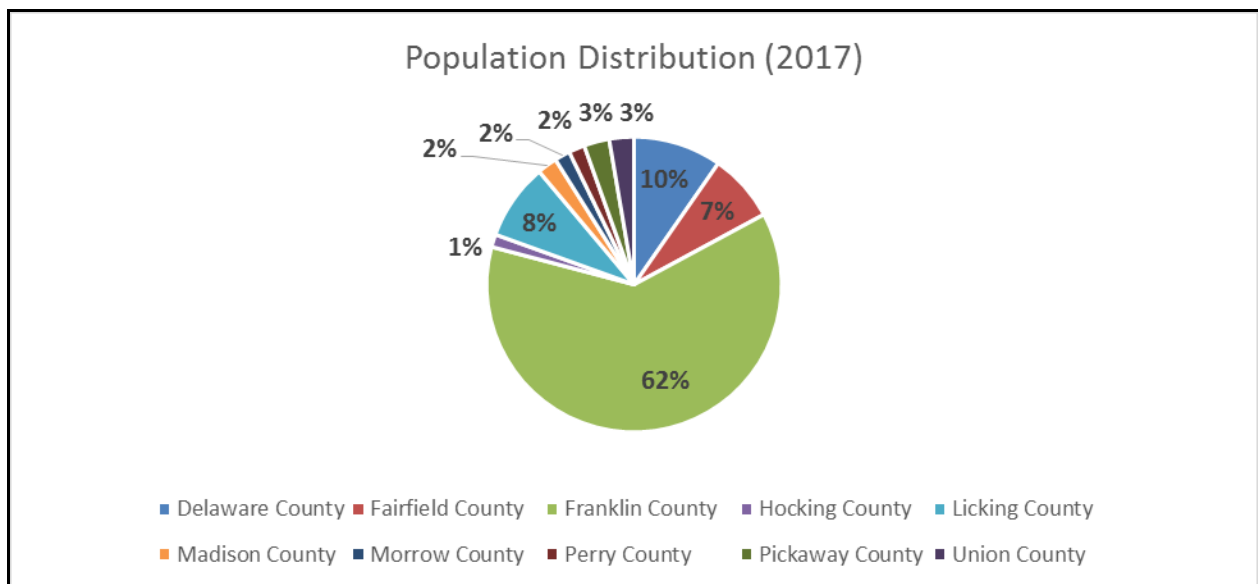
The following table details population trends for the Columbus Metropolitan Statistical Area (MSA) and the 10 counties that comprise the Columbus MSA for years 2000, 2010 and 2017.

| Geography | Population | | | | | | |
|------------------|------------------|----------------|---------------------|-------------------------|---------|-------------------------|---------|
| | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Columbus MSA* | 1,612,418 | 1,836,536 | 2,006,223 | 224,118 | 13.9% | 169,687 | 9.2% |
| Delaware County | 109,989 | 174,214 | 200,271 | 64,225 | 58.4% | 26,057 | 15.0% |
| Fairfield County | 122,759 | 146,156 | 154,686 | 23,397 | 19.1% | 8,530 | 5.8% |
| Franklin County | 1,068,978 | 1,163,414 | 1,283,688 | 94,436 | 8.8% | 120,274 | 10.3% |
| Hocking County | 28,241 | 29,380 | 28,798 | 1,139 | 4.0% | -582 | -2.0% |
| Licking County | 145,491 | 166,492 | 173,198 | 21,001 | 14.4% | 6,706 | 4.0% |
| Madison County | 39,937 | 43,435 | 45,193 | 3,498 | 8.8% | 1,758 | 4.0% |
| Morrow County | 31,628 | 34,827 | 35,214 | 3,199 | 10.1% | 387 | 1.1% |
| Perry County | 34,078 | 36,058 | 36,317 | 1,980 | 5.8% | 259 | 0.7% |
| Pickaway County | 52,727 | 55,698 | 57,777 | 2,971 | 5.6% | 2,079 | 3.7% |
| Union County | 40,909 | 52,300 | 56,196 | 11,391 | 27.8% | 3,896 | 7.4% |

Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

*As reported by the Census and ACS, MSA figures deviate slightly from the aggregate of the individual counties

The following chart details the distribution of the population shares of each of the 10 counties that comprise the Columbus MSA.



Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group


As the preceding table illustrates, all geographic areas of study reported population growth from both 2000 to 2010 and 2010 to 2017 (with the exception of the 2% decline reported in Hocking County from 2010 to 2017). From 2010 to 2017, Delaware and Franklin counties reported the most significant population growth at rates of 15.0% and 10.3%, respectively.

As detailed in the preceding pie chart, Franklin County represents 62% of the population base of the overall Columbus MSA in 2017. Combined with Delaware, Licking and Fairfield counties, these four counties account for 87% of the population of the Columbus MSA.

The map on the following page details population growth trends by census tract within the Columbus MSA. Additional maps detailing population growth trends for the four counties that comprise the majority of the demographic size of the MSA (Franklin, Delaware, Licking and Fairfield counties) can be found in Addendum A of this report.







Columbus, OH MSA Population Growth 2010 - 2017

Legend

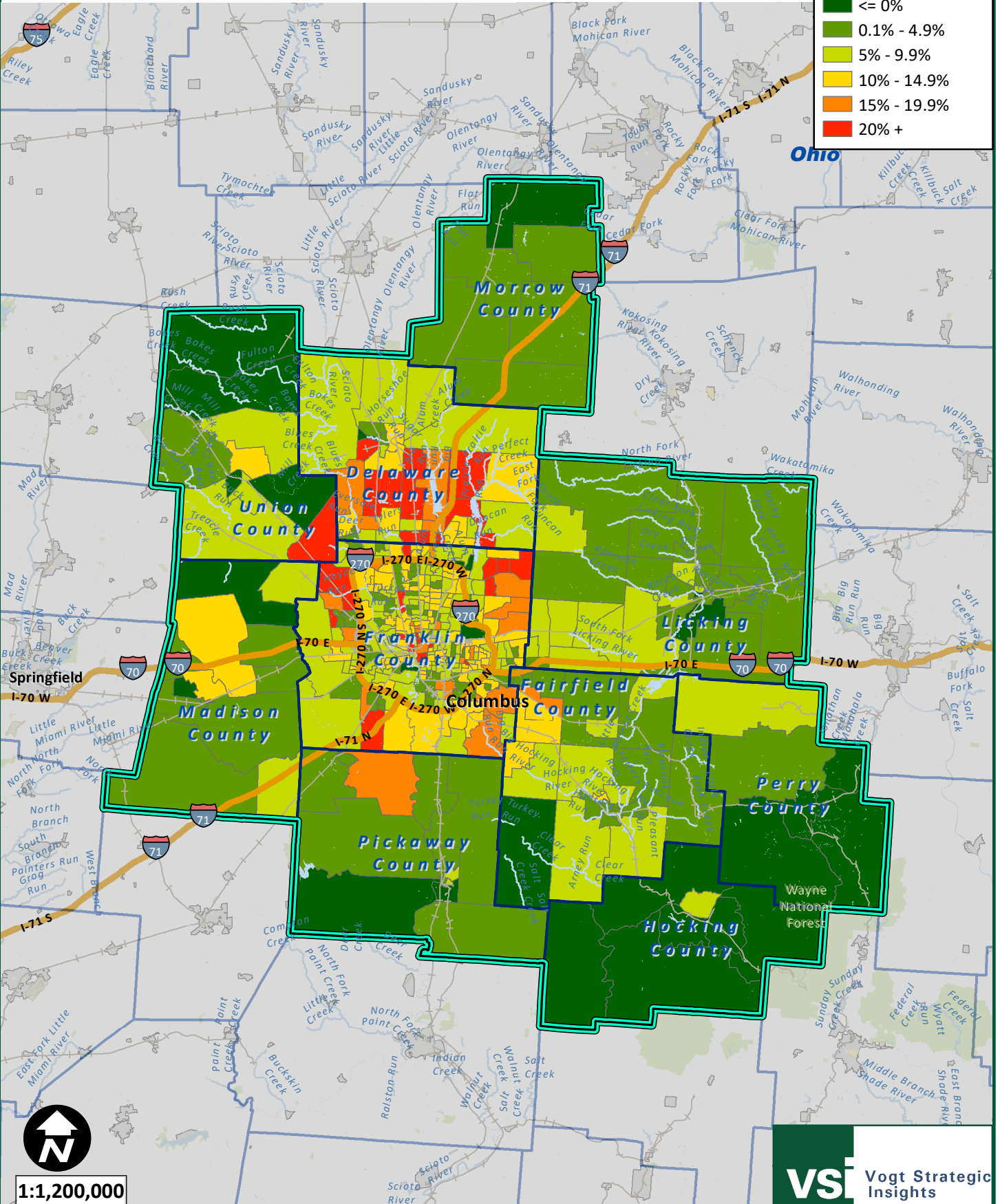
 Columbus MSA

Census Tracts

Pop. Growth 2010-2017

-  <= 0%
-  0.1% - 4.9%
-  5% - 9.9%
-  10% - 14.9%
-  15% - 19.9%
-  20% +

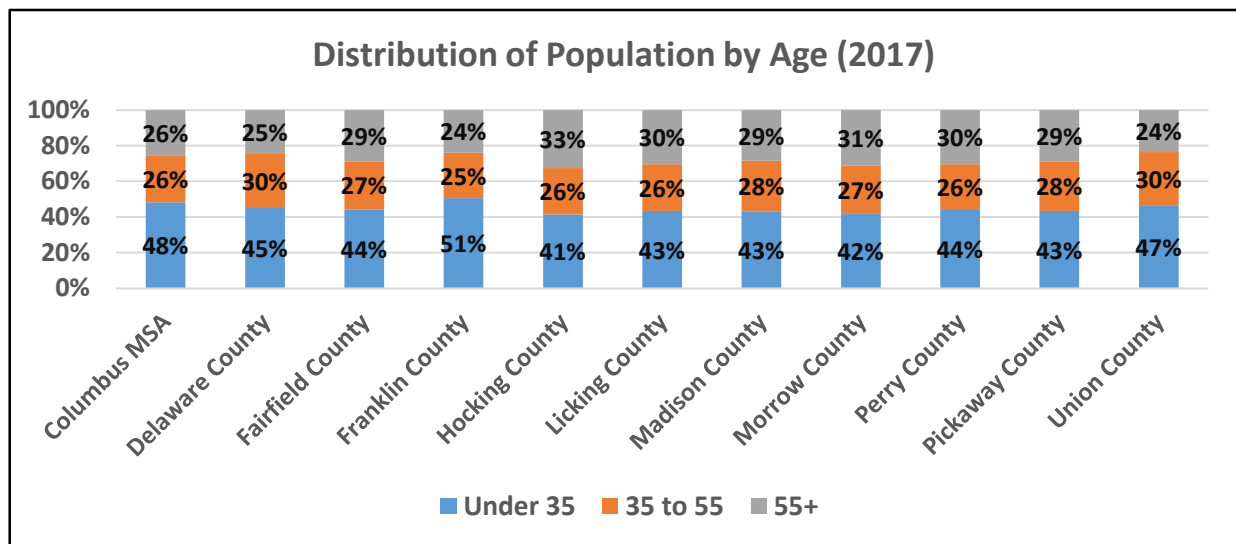
0 7.5 15 22.5 30 37.5 45 52.5 60 67.5 Miles



The summary of the population bases by age among the geographic areas of study is detailed in the table and chart below:

| Population by Age (Year 2017) (Share of Population) | | | | | | | | | |
|--|---------|---------|---------|---------|---------|---------|---------|---------|-----------|
| | < 19 | 20-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65-74 | 75+ | Total |
| Columbus MSA | 521,719 | 158,018 | 287,734 | 266,104 | 262,574 | 245,795 | 159,994 | 104,285 | 2,006,223 |
| | 26.0% | 7.9% | 14.3% | 13.3% | 13.1% | 12.3% | 8.0% | 5.2% | 100% |
| Delaware County | 60,131 | 10,032 | 20,773 | 29,509 | 30,119 | 25,319 | 15,712 | 8,676 | 200,271 |
| | 30.0% | 5.0% | 10.4% | 14.7% | 15.0% | 12.6% | 7.8% | 4.3% | 100% |
| Fairfield County | 40,214 | 9,615 | 18,754 | 19,680 | 21,936 | 20,735 | 14,416 | 9,336 | 154,686 |
| | 26.0% | 6.2% | 12.1% | 12.7% | 14.2% | 13.4% | 9.3% | 6.0% | 100% |
| Franklin County | 328,587 | 116,230 | 202,532 | 168,602 | 158,421 | 149,518 | 95,519 | 64,279 | 1,283,688 |
| | 25.6% | 9.1% | 15.8% | 13.1% | 12.3% | 11.6% | 7.4% | 5.0% | 100% |
| Hocking County | 6,923 | 1,544 | 3,451 | 3,533 | 3,970 | 4,251 | 3,238 | 1,888 | 28,798 |
| | 24.0% | 5.4% | 12.0% | 12.3% | 13.8% | 14.8% | 11.2% | 6.6% | 100% |
| Licking County | 43,904 | 10,705 | 20,408 | 21,119 | 24,280 | 24,466 | 17,193 | 11,123 | 173,198 |
| | 25.3% | 6.2% | 11.8% | 12.2% | 14.0% | 14.1% | 9.9% | 6.4% | 100% |
| Madison County | 10,353 | 2,762 | 6,381 | 6,151 | 6,641 | 6,078 | 4,077 | 2,750 | 45,193 |
| | 22.9% | 6.1% | 14.1% | 13.6% | 14.7% | 13.4% | 9.0% | 6.1% | 100% |
| Morrow County | 8,925 | 1,969 | 3,932 | 4,445 | 4,908 | 5,230 | 3,606 | 2,199 | 35,214 |
| | 25.3% | 5.6% | 11.2% | 12.6% | 13.9% | 14.9% | 10.2% | 6.2% | 100% |
| Perry County | 9,185 | 2,259 | 4,490 | 4,321 | 5,019 | 5,257 | 3,593 | 2,193 | 36,317 |
| | 25.3% | 6.2% | 12.4% | 11.9% | 13.8% | 14.5% | 9.9% | 6.0% | 100% |
| Pickaway County | 13,845 | 3,676 | 7,510 | 7,887 | 8,216 | 7,678 | 5,449 | 3,516 | 57,777 |
| | 24.0% | 6.4% | 13.0% | 13.7% | 14.2% | 13.3% | 9.4% | 6.1% | 100% |
| Union County | 15,760 | 3,029 | 7,444 | 8,711 | 8,053 | 6,771 | 4,022 | 2,406 | 56,196 |
| | 28.0% | 5.4% | 13.2% | 15.5% | 14.3% | 12.0% | 7.2% | 4.3% | 100% |

Source: 2000, 2010 Census; ESRI; Urban Decision Group; VSI



Source: 2000, 2010 Census; ESRI; Urban Decision Group; VSI

A notable statistic in the preceding table is that Franklin County has a higher share of individuals under age 35 (51%) relative to the other nine counties (41% to 47%).

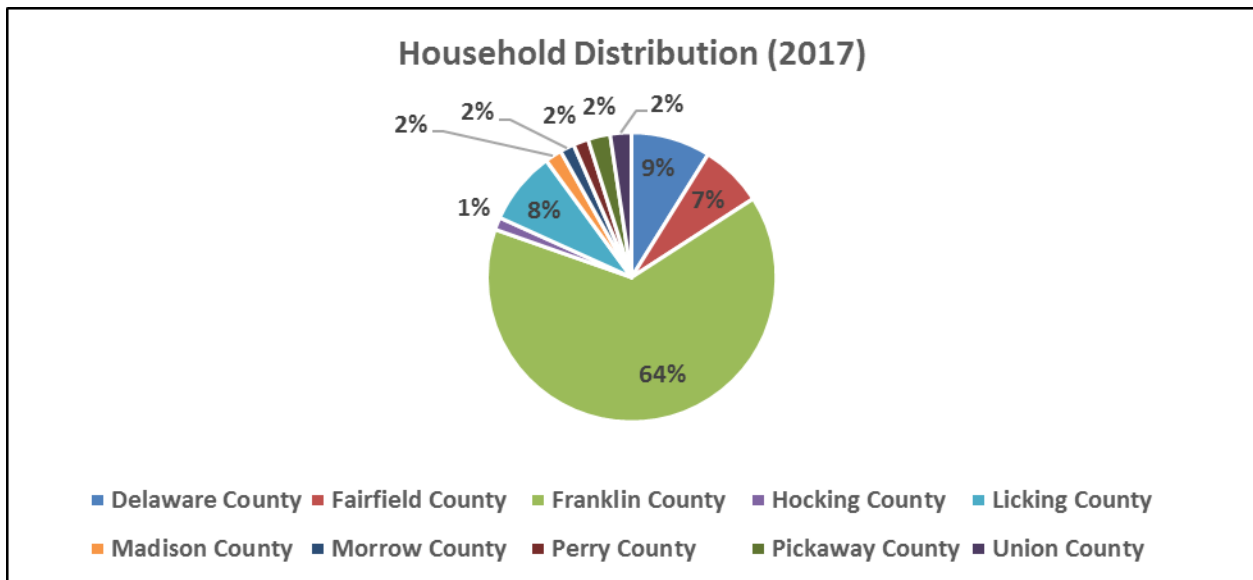
Household Trends

The following table details household trends for the Columbus MSA and the 10 counties that comprise the Columbus MSA for years 2000, 2010 and 2017.

| Households | | | | | | | |
|------------------|------------------|----------------|---------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Columbus MSA | 636,596 | 723,572 | 788,276 | 86,976 | 13.7% | 64,704 | 8.9% |
| Delaware County | 39,674 | 62,760 | 72,068 | 23,086 | 58.2% | 9,308 | 14.8% |
| Fairfield County | 45,425 | 54,310 | 57,072 | 8,885 | 19.6% | 2,762 | 5.1% |
| Franklin County | 438,778 | 477,235 | 524,493 | 38,457 | 8.8% | 47,258 | 9.9% |
| Hocking County | 10,843 | 11,369 | 11,307 | 526 | 4.9% | -62 | -0.5% |
| Licking County | 55,609 | 63,989 | 66,665 | 8,380 | 15.1% | 2,676 | 4.2% |
| Madison County | 13,669 | 14,734 | 15,310 | 1,065 | 7.8% | 576 | 3.9% |
| Morrow County | 11,499 | 12,855 | 13,022 | 1,356 | 11.8% | 167 | 1.3% |
| Perry County | 12,500 | 13,576 | 13,758 | 1,076 | 8.6% | 182 | 1.3% |
| Pickaway County | 17,596 | 19,624 | 20,257 | 2,028 | 11.5% | 633 | 3.2% |
| Union County | 14,346 | 18,065 | 19,389 | 3,719 | 25.9% | 1,324 | 7.3% |

Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

The following chart details the distribution of the household shares of each of the 10 counties that comprise the Columbus MSA.



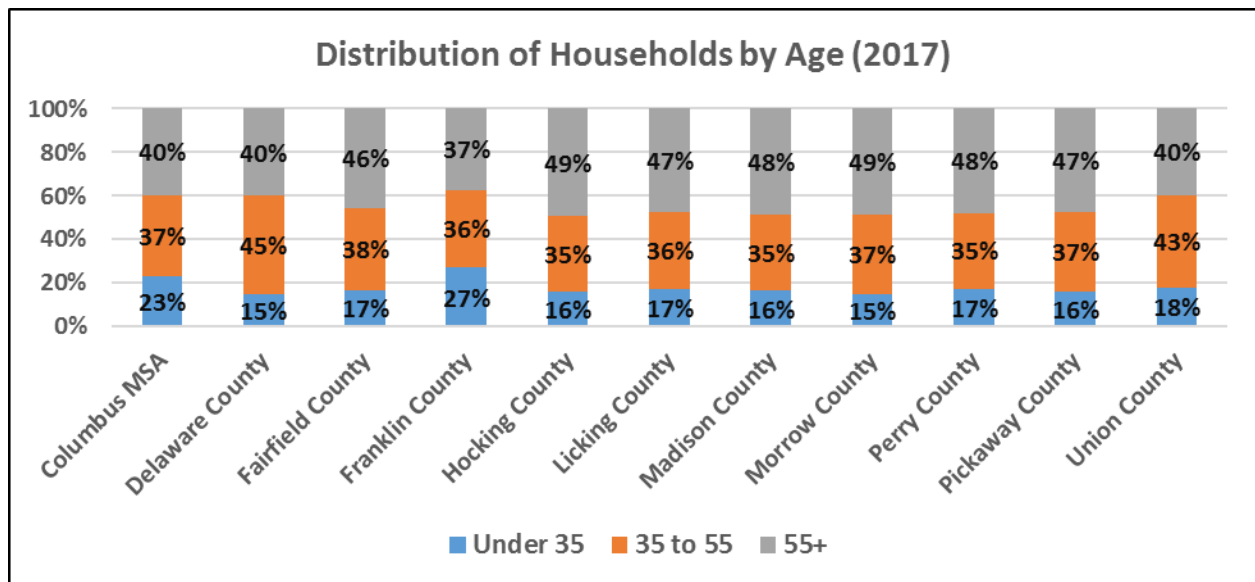
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

The four largest counties, with respect to demographic size, represent 88% of all households within the Columbus MSA.

The summary of the households by age among the geographic areas of study are detailed in the table and chart below:

| Households by Age (Year 2017) (Share of Households) | | | | | | | | | |
|--|----------------|------------------|------------------|------------------|------------------|-----------------|----------------|----------------|-----------------|
| | < 25 | 25-34 | 35-44 | 45-54 | 55-64 | 65-74 | 75-84 | 85+ | Total |
| Columbus MSA | 44,940 5.7% | 139,028 17.6% | 144,068 18.3% | 147,033 18.7% | 144,825 18.4% | 99,438 12.6% | 48,979 6.2% | 19,952 2.5% | 788,263 100% |
| Delaware County | 1,555 2.2% | 9,207 12.8% | 15,738 21.8% | 16,696 23.2% | 14,263 19.8% | 9,192 12.8% | 4,031 5.6% | 1,386 1.9% | 72,068 100% |
| Fairfield County | 1,729 3.0% | 7,836 13.7% | 9,997 17.5% | 11,547 20.2% | 11,425 20.0% | 8,542 15.0% | 4,344 7.6% | 1,652 2.9% | 57,072 100% |
| Franklin County | 37,539 7.2% | 103,732 19.8% | 95,338 18.2% | 92,068 17.6% | 91,442 17.4% | 61,154 11.7% | 30,068 5.7% | 13,140 2.5% | 524,481 100% |
| Hocking County | 360 3.2% | 1,475 13.0% | 1,782 15.8% | 2,121 18.8% | 2,337 20.7% | 1,958 17.3% | 948 8.4% | 326 2.9% | 11,307 100% |
| Licking County | 2,260 3.4% | 9,061 13.6% | 10,773 16.2% | 13,001 19.5% | 13,785 20.7% | 10,431 15.6% | 5,349 8.0% | 2,005 3.0% | 66,665 100% |
| Madison County | 440 2.9% | 2,045 13.4% | 2,393 15.6% | 3,020 19.7% | 3,178 20.8% | 2,391 15.6% | 1,349 8.8% | 494 3.2% | 15,310 100% |
| Morrow County | 319 2.4% | 1,612 12.4% | 2,169 16.7% | 2,586 19.9% | 2,851 21.9% | 2,139 16.4% | 1,010 7.8% | 336 2.6% | 13,022 100% |
| Perry County | 435 3.2% | 1,935 14.1% | 2,193 15.9% | 2,620 19.0% | 2,934 21.3% | 2,225 16.2% | 1,043 7.6% | 373 2.7% | 13,758 100% |
| Pickaway County | 576 2.8% | 2,624 13.0% | 3,533 17.4% | 3,963 19.6% | 4,123 20.4% | 3,236 16.0% | 1,658 8.2% | 544 2.7% | 20,257 100% |
| Union County | 522 2.7% | 2,911 15.0% | 4,127 21.3% | 4,152 21.4% | 3,758 19.4% | 2,353 12.1% | 1,121 5.8% | 444 2.3% | 19,388 100% |

Source: 2010 Census; ESRI; Urban Decision Group; VSI



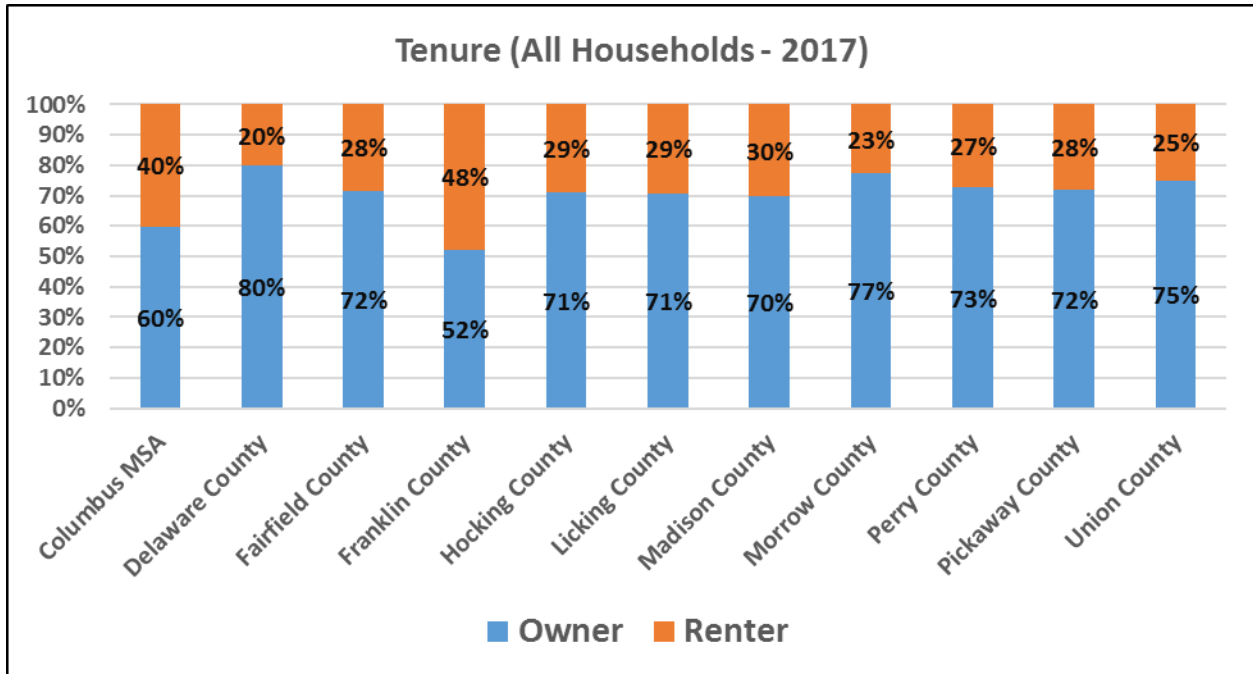
Source: 2000, 2010 Census; ESRI; Urban Decision Group; VSI

Note the younger household composition in Franklin County relative to the MSA and the other nine counties. This is to be expected considering the educational institutions and employment nodes in Franklin County.

The summary of tenure among the geographic areas of study for years 2010 and 2017 are detailed in the table below and the chart on the following page:

| | | Households by Tenure | | | |
|-------------------------|-----------------|----------------------|---------------|------------------|---------------|
| | | 2010 (Census) | | 2017 (Estimated) | |
| Columbus MSA | Owner-Occupied | 452,499 | 62.5% | 469,280 | 59.5% |
| | Renter-Occupied | 271,073 | 37.5% | 318,996 | 40.5% |
| | Total | 723,572 | 100.0% | 788,276 | 100.0% |
| Delaware County | Owner-Occupied | 51,354 | 81.8% | 57,482 | 79.8% |
| | Renter-Occupied | 11,406 | 18.2% | 14,586 | 20.2% |
| | Total | 62,760 | 100.0% | 72,068 | 100.0% |
| Fairfield County | Owner-Occupied | 40,238 | 74.1% | 40,884 | 71.6% |
| | Renter-Occupied | 14,072 | 25.9% | 16,188 | 28.4% |
| | Total | 54,310 | 100.0% | 57,072 | 100.0% |
| Franklin County | Owner-Occupied | 264,583 | 55.4% | 273,827 | 52.2% |
| | Renter-Occupied | 212,652 | 44.6% | 250,666 | 47.8% |
| | Total | 477,235 | 100.0% | 524,493 | 100.0% |
| Hocking County | Owner-Occupied | 8,345 | 73.4% | 8,013 | 70.9% |
| | Renter-Occupied | 3,024 | 26.6% | 3,294 | 29.1% |
| | Total | 11,369 | 100.0% | 11,307 | 100.0% |
| Licking County | Owner-Occupied | 46,908 | 73.3% | 47,227 | 70.8% |
| | Renter-Occupied | 17,081 | 26.7% | 19,438 | 29.2% |
| | Total | 63,989 | 100.0% | 66,665 | 100.0% |
| Madison County | Owner-Occupied | 10,641 | 72.2% | 10,680 | 69.8% |
| | Renter-Occupied | 4,093 | 27.8% | 4,630 | 30.2% |
| | Total | 14,734 | 100.0% | 15,310 | 100.0% |
| Morrow County | Owner-Occupied | 10,231 | 79.6% | 10,061 | 77.3% |
| | Renter-Occupied | 2,624 | 20.4% | 2,961 | 22.7% |
| | Total | 12,855 | 100.0% | 13,022 | 100.0% |
| Perry County | Owner-Occupied | 10,227 | 75.3% | 9,992 | 72.6% |
| | Renter-Occupied | 3,349 | 24.7% | 3,766 | 27.4% |
| | Total | 13,576 | 100.0% | 13,758 | 100.0% |
| Pickaway County | Owner-Occupied | 14,557 | 74.2% | 14,558 | 71.9% |
| | Renter-Occupied | 5,067 | 25.8% | 5,699 | 28.1% |
| | Total | 19,624 | 100.0% | 20,257 | 100.0% |
| Union County | Owner-Occupied | 13,987 | 77.4% | 14,561 | 75.1% |
| | Renter-Occupied | 4,078 | 22.6% | 4,828 | 24.9% |
| | Total | 18,065 | 100.0% | 19,389 | 100.0% |

Source: 2000, 2010 Census; ESRI; Urban Decision Group; VSI




Source: 2000, 2010 Census; ESRI; Urban Decision Group; VSI

As detailed in the preceding chart, the renter share in Franklin County (48%) is substantially higher than the MSA and the other nine counties. The next highest renter share among the remaining nine counties is 30% in Madison County. The lowest renter share is in Delaware County at 20%.

The map on the following page details renter shares by census tract within the Columbus MSA. Additional maps detailing renter shares for the four counties that comprise the majority of the demographic size of the MSA can be found in Addendum A of this report.







Columbus, OH MSA 2017 Renter Share of Households

Legend

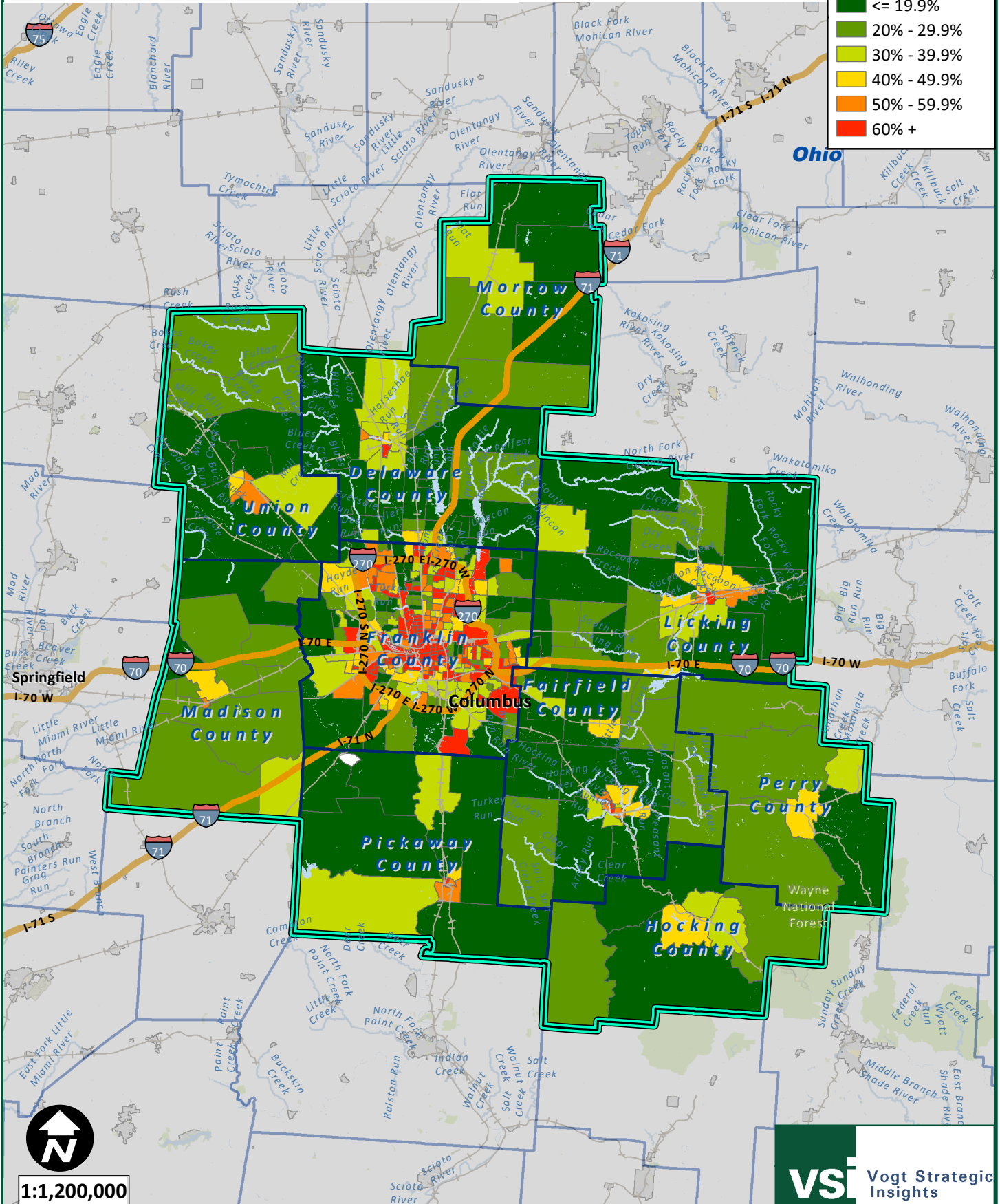
 Columbus MSA

Census Tracts

Renter Share

-  ≤ 19.9%
-  20% - 29.9%
-  30% - 39.9%
-  40% - 49.9%
-  50% - 59.9%
-  60% +

0 7.5 15 22.5 30 37.5 45 52.5 60 67.5 Miles



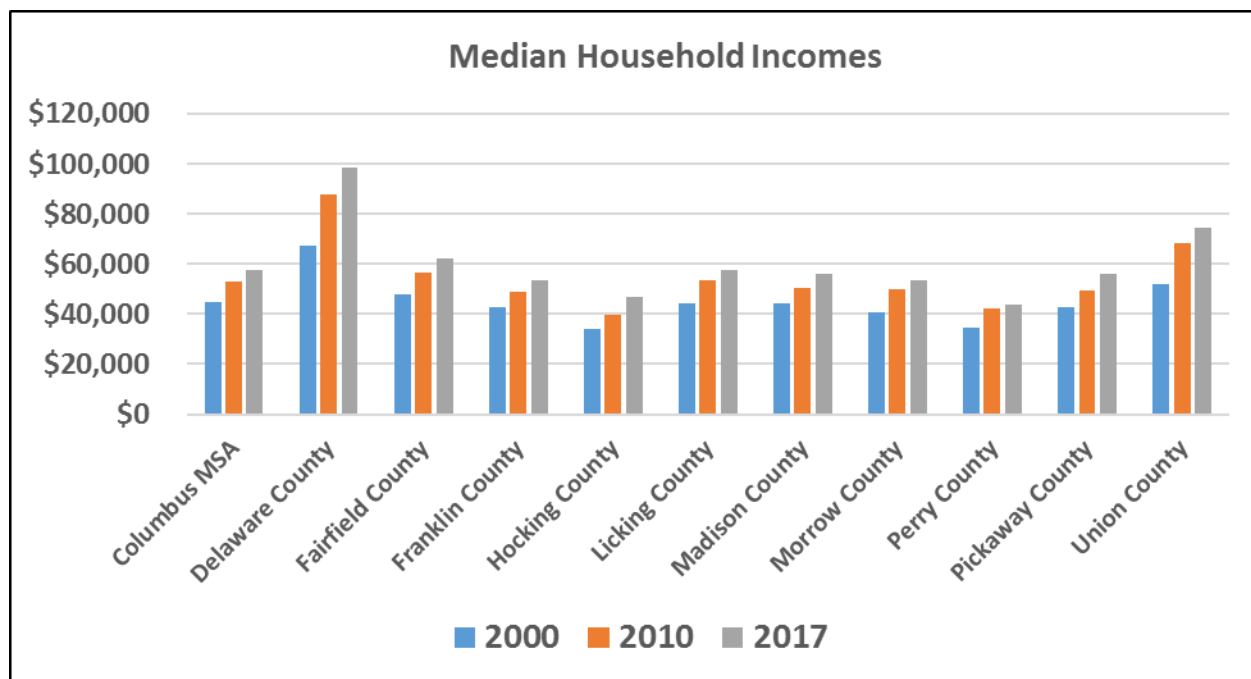
1:1,200,000

Income Trends

The summary of the median household income among the geographic areas of study for 2000, 2010 and 2017 is detailed in the table and chart below:

| Median Household Incomes | | | | | | | |
|--------------------------|------------------|----------------|---------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Columbus MSA | \$44,841 | \$52,910 | \$57,684 | \$8,069 | 18.0% | \$4,774 | 9.0% |
| Delaware County | \$67,258 | \$87,908 | \$98,635 | \$20,650 | 30.7% | \$10,727 | 12.2% |
| Fairfield County | \$47,962 | \$56,796 | \$61,975 | \$8,834 | 18.4% | \$5,179 | 9.1% |
| Franklin County | \$42,734 | \$49,087 | \$53,567 | \$6,353 | 14.9% | \$4,480 | 9.1% |
| Hocking County | \$34,261 | \$39,586 | \$46,946 | \$5,325 | 15.5% | \$7,360 | 18.6% |
| Licking County | \$44,124 | \$53,291 | \$57,669 | \$9,167 | 20.8% | \$4,378 | 8.2% |
| Madison County | \$44,212 | \$50,533 | \$56,300 | \$6,321 | 14.3% | \$5,767 | 11.4% |
| Morrow County | \$40,882 | \$49,891 | \$53,753 | \$9,009 | 22.0% | \$3,862 | 7.7% |
| Perry County | \$34,383 | \$42,388 | \$43,958 | \$8,005 | 23.3% | \$1,570 | 3.7% |
| Pickaway County | \$42,832 | \$49,262 | \$55,832 | \$6,430 | 15.0% | \$6,570 | 13.3% |
| Union County | \$51,743 | \$68,452 | \$74,501 | \$16,709 | 32.3% | \$6,049 | 8.8% |

Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group




Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

From 2010 to 2017, Hocking County reported the greatest percentage increase in median household income at 18.6%. In spite of this strong growth from 2010 to 2017, Hocking County is reporting the second lowest median household income at \$46,946 (year 2017). Delaware County is reporting the highest median household income in year 2017 at \$98,635. Note the significant median household income growth in Delaware County from 2000 to 2010 (30.7%).

The map on the following page details median household income trends by census tract within the Columbus MSA. Additional maps detailing median household income trends for the four counties that comprise the majority of the demographic size of the MSA can be found in Addendum A of this report.







Columbus, OH MSA 2017 Median Household Income

Legend

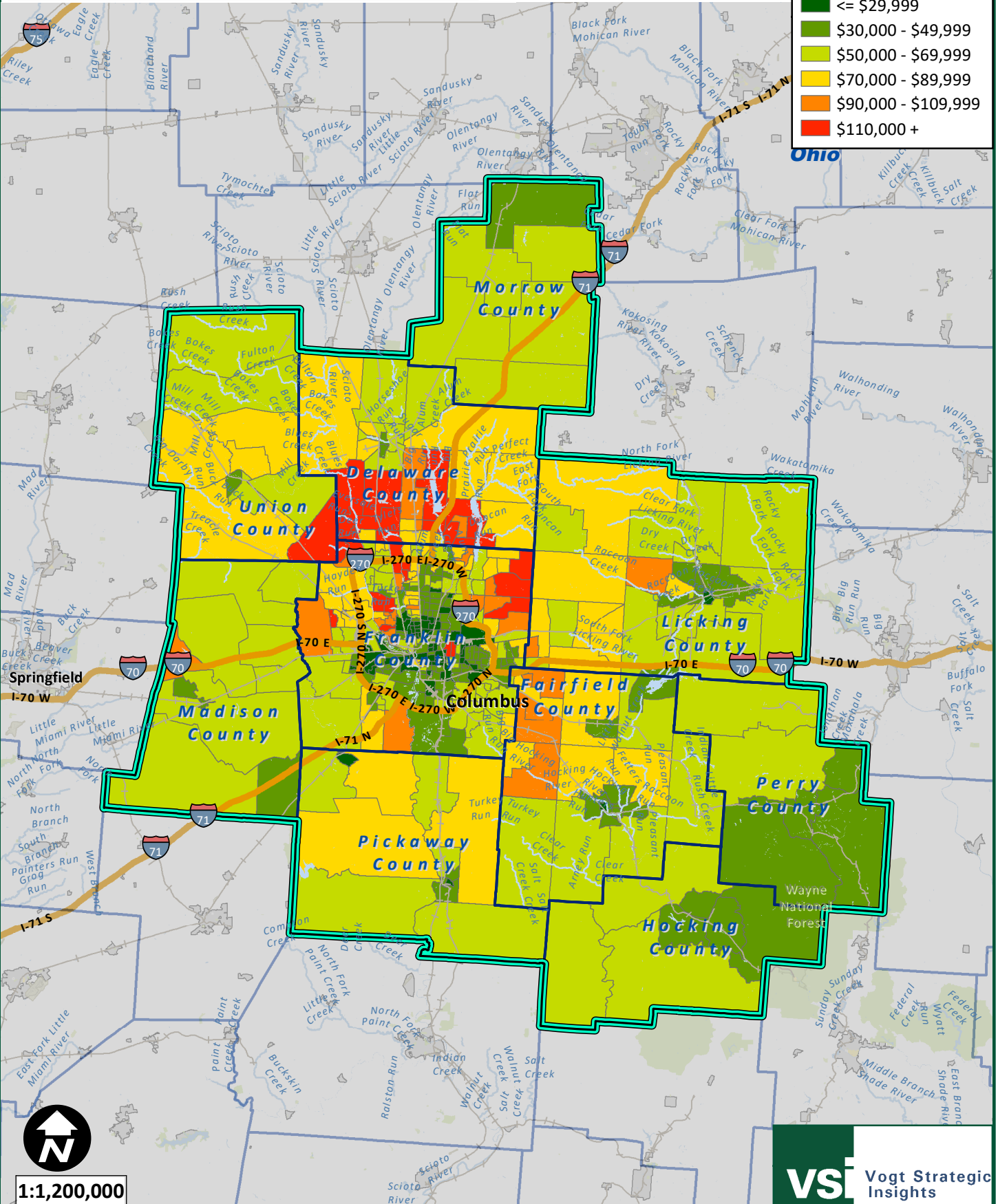
 Columbus MSA

Census Tracts

Median Household Income

-  <= \$29,999
-  \$30,000 - \$49,999
-  \$50,000 - \$69,999
-  \$70,000 - \$89,999
-  \$90,000 - \$109,999
-  \$110,000 +

0 7.5 15 22.5 30 37.5 45 52.5 60 67.5 Miles

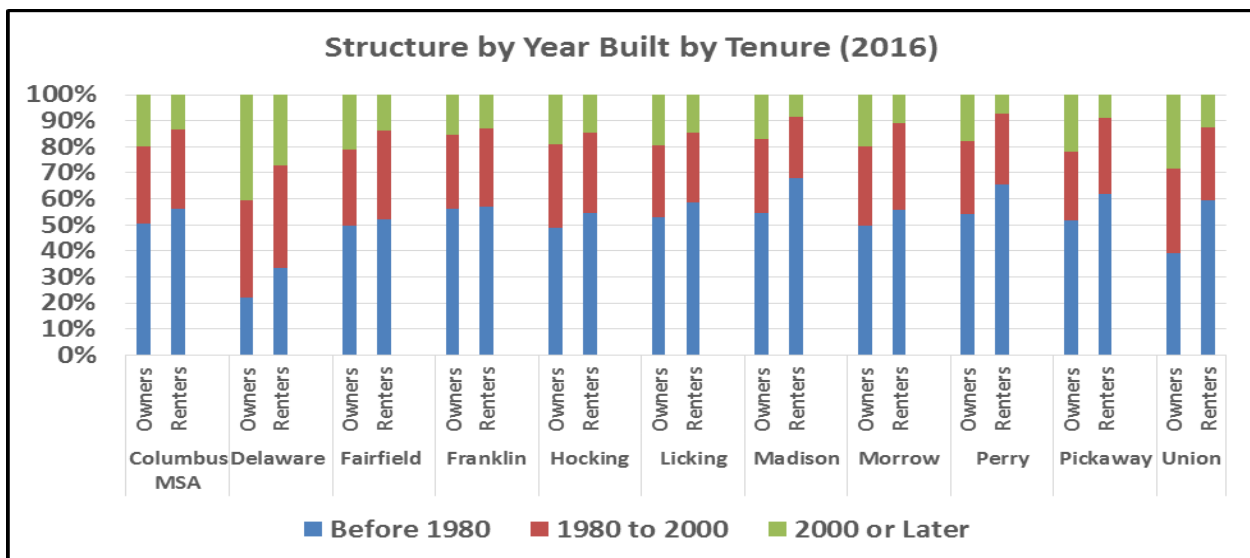


IV. Housing Supply Analysis

The existing housing market was evaluated to provide a benchmark from which housing need projections were made. This also provides context in comparing one county to another. The summary of the structure by year built by tenure among the geographic areas of study is detailed in the table and chart below:

| | | Structure by Year Built by Tenure (2016 ACS) as a Percentage | | | | | | | | |
|------------------|---------|--|--------------|--------------|--------------|--------------|--------------|--------------|---------------|-------|
| | | Before 1950 | 1950 to 1959 | 1960 to 1969 | 1970 to 1979 | 1980 to 1989 | 1990 to 1999 | 2000 to 2009 | 2010 or Later | Total |
| Columbus MSA | Owners | 15.5% | 10.6% | 11.3% | 13.0% | 11.1% | 18.5% | 18.4% | 1.6% | 100% |
| | Renters | 15.7% | 10.5% | 12.5% | 17.4% | 14.3% | 16.0% | 10.9% | 2.6% | 100% |
| Delaware County | Owners | 7.6% | 2.5% | 4.6% | 7.4% | 9.9% | 27.6% | 36.7% | 3.7% | 100% |
| | Renters | 12.1% | 4.0% | 6.8% | 10.7% | 11.5% | 27.8% | 22.6% | 4.5% | 100% |
| Fairfield County | Owners | 16.3% | 7.8% | 8.8% | 16.7% | 8.6% | 20.6% | 20.2% | 1.0% | 100% |
| | Renters | 20.6% | 10.0% | 7.6% | 14.0% | 16.2% | 17.8% | 12.0% | 1.6% | 100% |
| Franklin County | Owners | 15.6% | 13.6% | 13.6% | 13.5% | 12.2% | 16.1% | 14.0% | 1.4% | 100% |
| | Renters | 14.2% | 11.1% | 13.4% | 18.3% | 15.0% | 15.0% | 10.2% | 2.7% | 100% |
| Hocking County | Owners | 24.5% | 7.0% | 7.1% | 10.4% | 11.5% | 20.3% | 17.6% | 1.6% | 100% |
| | Renters | 21.1% | 8.4% | 6.9% | 18.0% | 15.9% | 15.1% | 11.2% | 3.4% | 100% |
| Licking County | Owners | 17.6% | 9.7% | 11.4% | 14.3% | 9.2% | 18.4% | 18.5% | 1.0% | 100% |
| | Renters | 23.3% | 9.8% | 11.9% | 13.8% | 10.9% | 15.8% | 12.2% | 2.3% | 100% |
| Madison County | Owners | 21.2% | 8.9% | 9.9% | 14.6% | 12.3% | 16.0% | 15.5% | 1.6% | 100% |
| | Renters | 27.6% | 7.2% | 12.9% | 20.3% | 8.6% | 14.9% | 8.5% | 0.1% | 100% |
| Morrow County | Owners | 22.6% | 6.3% | 7.3% | 13.5% | 11.1% | 19.5% | 18.0% | 1.7% | 100% |
| | Renters | 33.1% | 8.4% | 4.0% | 10.4% | 13.3% | 19.9% | 10.8% | 0.0% | 100% |
| Perry County | Owners | 29.8% | 8.4% | 6.1% | 9.8% | 12.0% | 15.9% | 16.9% | 1.0% | 100% |
| | Renters | 36.4% | 4.9% | 7.6% | 16.8% | 13.0% | 13.9% | 7.4% | 0.0% | 100% |
| Pickaway County | Owners | 21.6% | 7.1% | 10.0% | 12.9% | 10.4% | 16.2% | 20.7% | 1.2% | 100% |
| | Renters | 29.4% | 11.1% | 8.1% | 13.3% | 11.2% | 18.0% | 8.5% | 0.3% | 100% |
| Union County | Owners | 18.7% | 4.8% | 5.8% | 9.8% | 8.0% | 24.5% | 26.1% | 2.4% | 100% |
| | Renters | 17.6% | 8.8% | 13.4% | 19.7% | 7.1% | 20.8% | 12.0% | 0.7% | 100% |

Source: 2016 American Community Survey; VSI



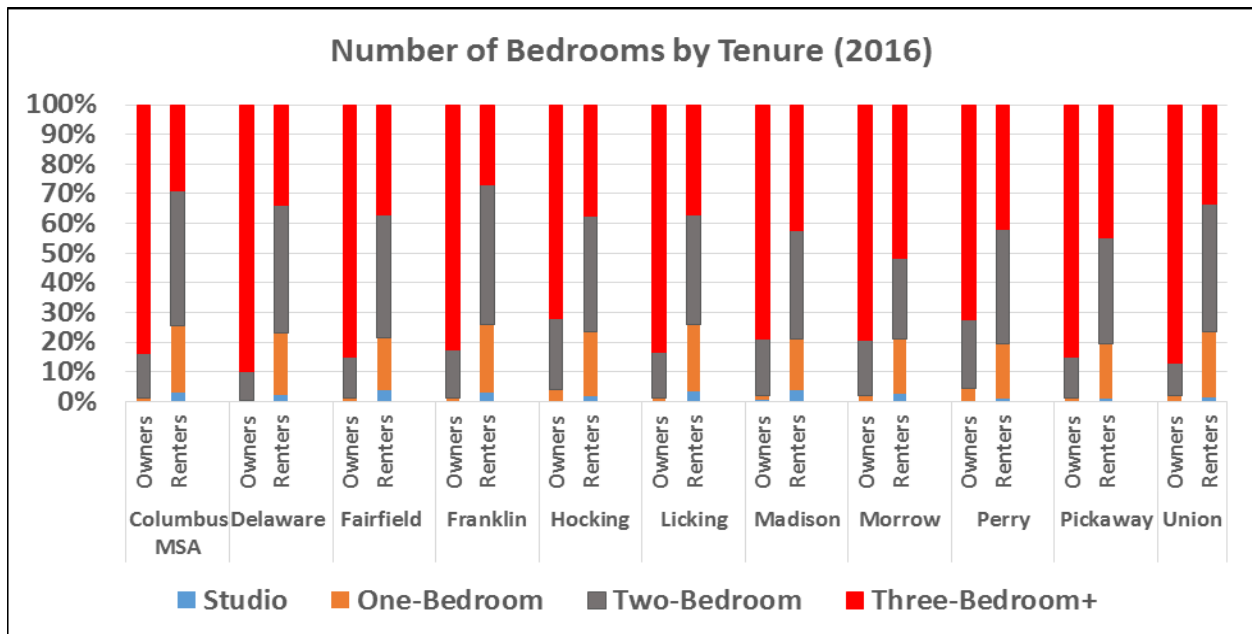
Source: 2016 American Community Survey; VSI

The notable variance in the preceding chart is that Delaware County is comprised of newer housing stock (both owner- and renter-occupied). This is to be expected considering the demographic growth in the county since 1980.

The summary of the number of bedrooms by tenure among the geographic areas of study is detailed in the table and chart below:

| | Tenure | Number of Bedrooms by Tenure (2016 ACS) as a Percentage | | | | |
|------------------|---------|---|-------------|-------------|----------------|-------|
| | | Studio | One-Bedroom | Two-Bedroom | Three-Bedroom+ | Total |
| Columbus MSA | Owners | 0.1% | 1.1% | 15.0% | 83.9% | 100% |
| | Renters | 2.8% | 22.6% | 45.4% | 29.2% | 100% |
| Delaware County | Owners | 0.0% | 0.4% | 9.7% | 89.9% | 100% |
| | Renters | 2.2% | 21.0% | 43.1% | 33.8% | 100% |
| Fairfield County | Owners | 0.0% | 1.3% | 13.7% | 85.0% | 100% |
| | Renters | 3.9% | 17.6% | 41.5% | 37.0% | 100% |
| Franklin County | Owners | 0.1% | 1.1% | 16.2% | 82.7% | 100% |
| | Renters | 2.8% | 23.3% | 47.1% | 26.8% | 100% |
| Hocking County | Owners | 0.2% | 3.9% | 23.8% | 72.0% | 100% |
| | Renters | 1.6% | 21.9% | 39.0% | 37.5% | 100% |
| Licking County | Owners | 0.1% | 1.1% | 15.4% | 83.4% | 100% |
| | Renters | 3.4% | 22.6% | 37.0% | 37.1% | 100% |
| Madison County | Owners | 0.6% | 1.3% | 19.3% | 78.8% | 100% |
| | Renters | 3.9% | 17.0% | 36.5% | 42.6% | 100% |
| Morrow County | Owners | 0.1% | 2.0% | 18.5% | 79.3% | 100% |
| | Renters | 2.7% | 18.2% | 27.3% | 51.9% | 100% |
| Perry County | Owners | 0.0% | 4.6% | 23.1% | 72.3% | 100% |
| | Renters | 1.0% | 18.6% | 38.3% | 42.1% | 100% |
| Pickaway County | Owners | 0.0% | 1.1% | 13.7% | 85.3% | 100% |
| | Renters | 1.1% | 18.3% | 35.6% | 45.0% | 100% |
| Union County | Owners | 0.2% | 1.8% | 10.8% | 87.3% | 100% |
| | Renters | 1.5% | 21.9% | 43.1% | 33.6% | 100% |

Source: 2016 American Community Survey; VSI



Source: 2016 American Community Survey; VSI

As expected, the majority of owner-occupied units are comprised of those with at least three bedrooms. Among renter-occupied units, two-bedroom units represent the highest share.

The summary of the housing cost as a percentage of income by tenure among the geographic areas of study is detailed in the table below:

| | | Housing Cost as a Percentage of Income by Tenure (2016 ACS) | | | | |
|------------------|---------|---|------------|-------------|--------------|-------|
| | Tenure | Less than 20% | 20% to 29% | 30% or More | Not Computed | Total |
| Columbus MSA | Owners | 52.0% | 24.9% | 22.6% | 0.5% | 100% |
| | Renters | 25.4% | 24.7% | 44.1% | 5.8% | 100% |
| Delaware County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 29.3% | 25.4% | 40.3% | 4.9% | 100% |
| Fairfield County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 25.7% | 21.3% | 45.9% | 7.1% | 100% |
| Franklin County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 25.1% | 24.9% | 44.5% | 5.4% | 100% |
| Hocking County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 22.9% | 29.6% | 37.4% | 10.2% | 100% |
| Licking County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 23.9% | 23.2% | 46.2% | 6.7% | 100% |
| Madison County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 33.2% | 22.6% | 31.9% | 12.3% | 100% |
| Morrow County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 23.0% | 17.6% | 43.4% | 16.0% | 100% |
| Perry County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 21.9% | 22.1% | 40.8% | 15.2% | 100% |
| Pickaway County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 22.7% | 30.1% | 40.3% | 7.0% | 100% |
| Union County | Owners | 50.8% | 26.4% | 22.3% | 0.5% | 100% |
| | Renters | 27.0% | 27.0% | 39.5% | 6.5% | 100% |

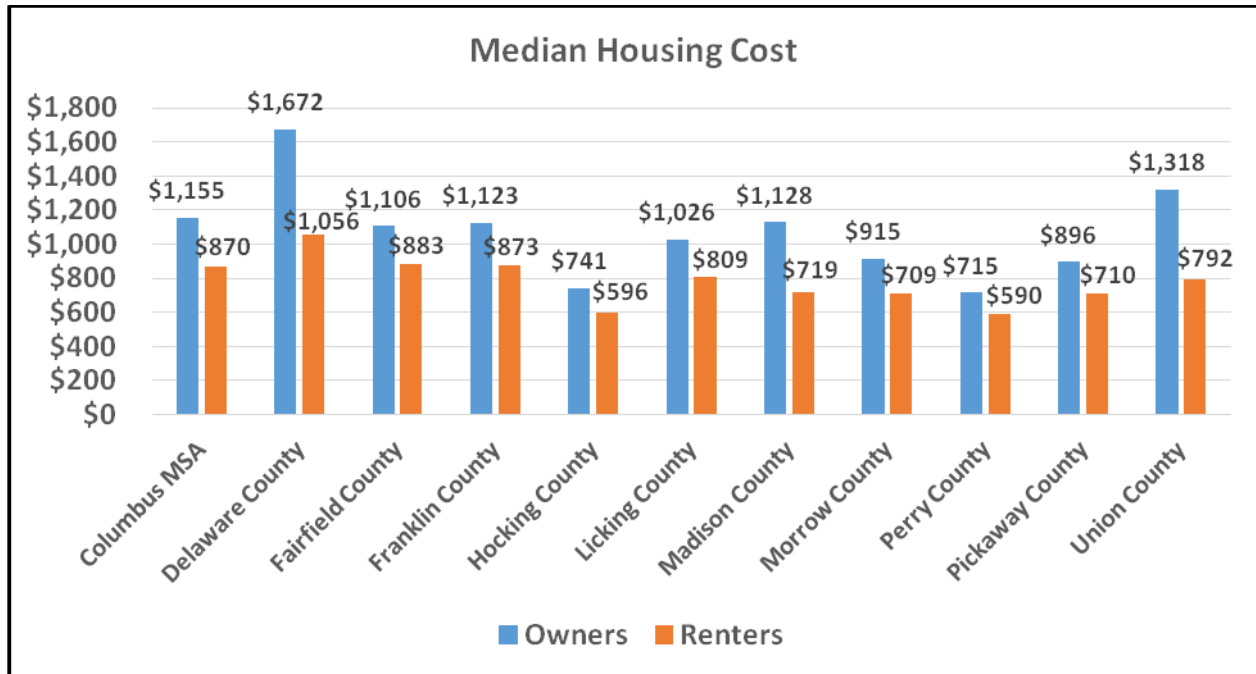
Source: 2016 American Community Survey; VSI

Generally, a household is considered to be cost overburdened if the household is paying more than 30% of their income to housing. Among owner-occupied housing units, the cost overburdened shares among the geographic areas of study deviate very little with overburdened shares of approximately 22%. The percentage of renter-occupied households that are cost overburdened is much higher ranging from 31.9% to 46.2%. In Franklin County, the largest county with respect to demographic size, nearly 45% of renter-occupied households are cost overburdened. This reflects a significant housing affordability issue in the Columbus region.

The summary of the housing cost by tenure among the geographic areas is detailed in the table below and the chart on the following page:

| Tenure | Monthly Cost by Tenure (2016 ACS) | | | | | | | | | | |
|---------|-----------------------------------|-----------------|------------------|-----------------|----------------|----------------|----------------|---------------|--------------|-----------------|--------------|
| | Columbus MSA | Delaware County | Fairfield County | Franklin County | Hocking County | Licking County | Madison County | Morrow County | Perry County | Pickaway County | Union County |
| Owners | \$1,155 | \$1,672 | \$1,106 | \$1,123 | \$741 | \$1,026 | \$1,128 | \$915 | \$715 | \$896 | \$1,318 |
| Renters | \$870 | \$1,056 | \$883 | \$873 | \$596 | \$809 | \$719 | \$709 | \$590 | \$710 | \$792 |

Source: 2016 American Community Survey; VSI



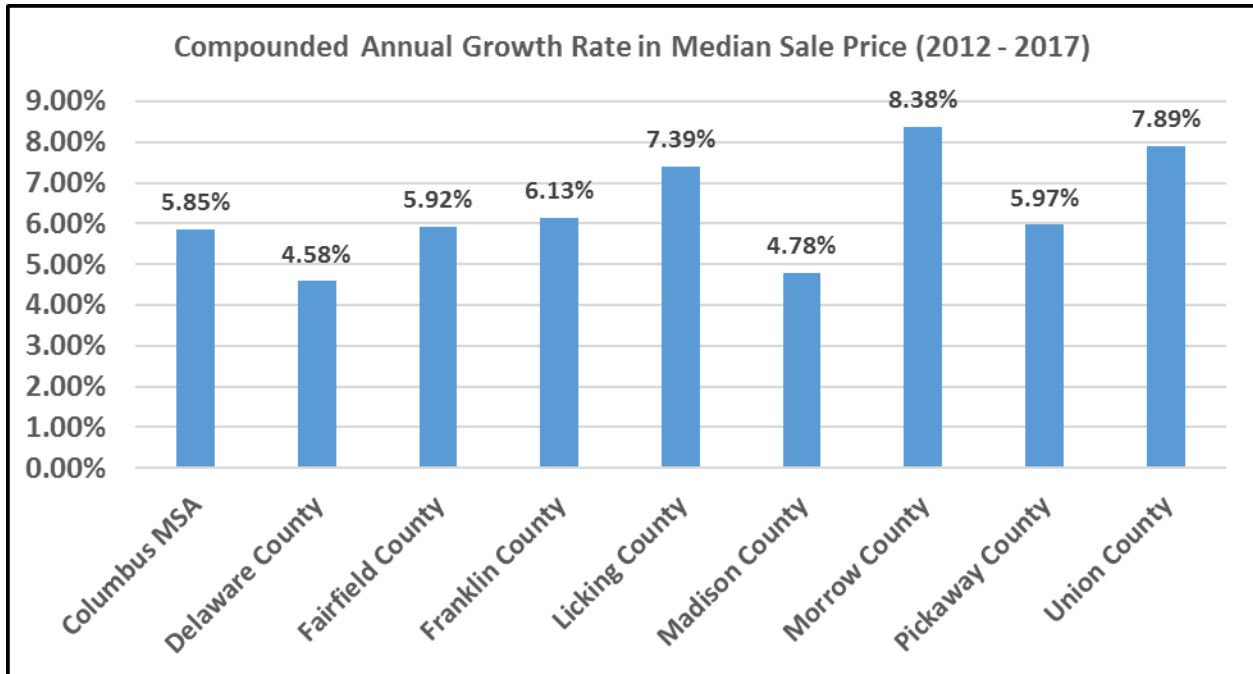
Source: 2016 American Community Survey; VSI

As detailed in the preceding chart and table, housing costs are highest in Delaware County while housing costs are lowest in Perry County. This is primarily a function of the housing that has been developed in Delaware County with much of that development occurring in the past 20 years.

The summaries of the annual median home sale prices (rounded to the nearest thousand), the percentage change from 2012 to 2017 and the compounded annual growth rates from 2012 to 2017 among the geographic areas of study are detailed in the table below and the chart on the following page. Data was not reported for Hocking or Perry counties. Combined, these two counties represent only 3% of the population base of the Columbus MSA.

| Geography | Annual Median Sale Price | | | | | | Percent Change (2012 – 2017) | Compounded Annual Growth (2012 – 2017) |
|------------------|--------------------------|-----------|-----------|-----------|-----------|-----------|------------------------------|--|
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | | |
| Columbus MSA | \$140,000 | \$145,000 | \$154,000 | \$162,000 | \$172,000 | \$186,000 | 32.9% | 5.85% |
| Delaware County | \$243,000 | \$244,000 | \$259,000 | \$271,000 | \$277,000 | \$304,000 | 25.1% | 4.58% |
| Fairfield County | \$141,000 | \$143,000 | \$153,000 | \$160,000 | \$174,000 | \$188,000 | 33.3% | 5.92% |
| Franklin County | \$127,000 | \$131,000 | \$141,000 | \$148,000 | \$159,000 | \$171,000 | 34.6% | 6.13% |
| Licking County | \$126,000 | \$134,000 | \$143,000 | \$151,000 | \$160,000 | \$180,000 | 42.9% | 7.39% |
| Madison County | \$118,000 | \$122,000 | \$134,000 | \$141,000 | \$147,000 | \$149,000 | 26.3% | 4.78% |
| Morrow County | \$103,000 | \$114,000 | \$128,000 | \$138,000 | \$140,000 | \$154,000 | 49.5% | 8.38% |
| Pickaway County | \$122,000 | \$126,000 | \$139,000 | \$139,000 | \$149,000 | \$163,000 | 33.6% | 5.97% |
| Union County | \$158,000 | \$177,000 | \$172,000 | \$195,000 | \$211,000 | \$231,000 | 46.2% | 7.89% |

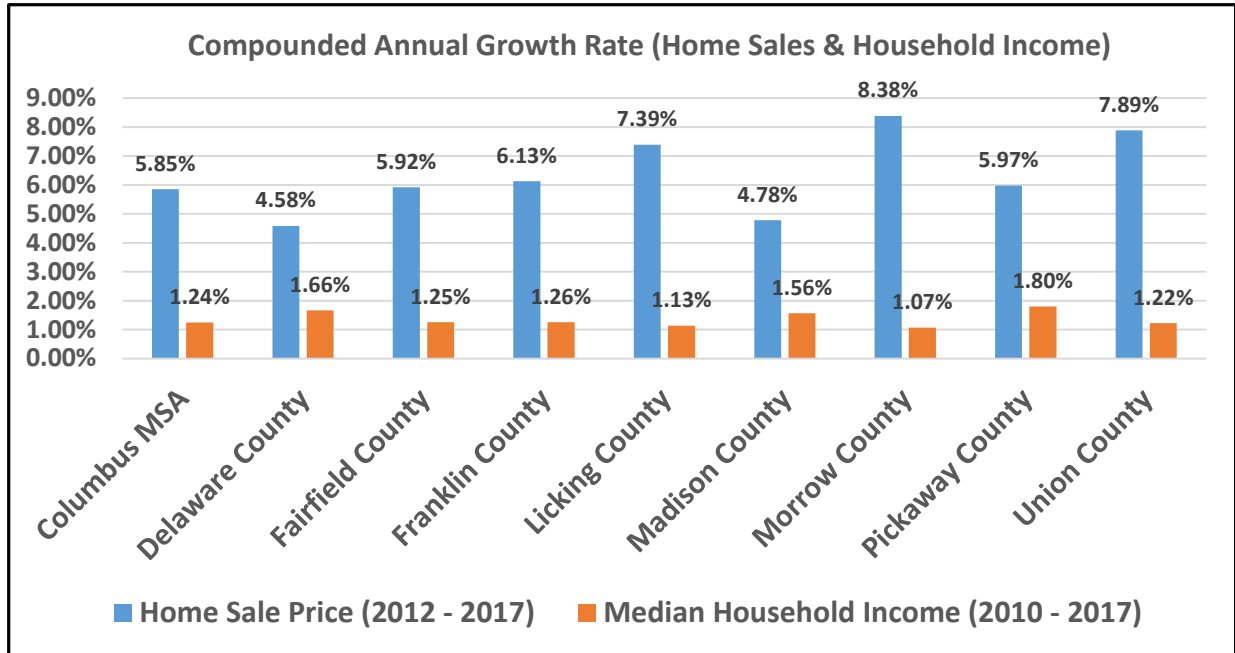
Source: Redfin; VSI



Source: Redfin; VSI

As detailed in the preceding chart and table, home prices have increased in all counties and the MSA over the past five years with compounded annual growth rates ranging from 4.58% to 8.38%. While Morrow County is reporting the highest compounded annual growth rate over the past five years, it has the second lowest median home sale price in year 2017 at \$154,000. The two outliers, with respect to median home sale price in year 2017, are Delaware and Union counties with median home sale prices of \$304,000 and \$231,000, respectively.

The chart on the following page details the compounded annual growth rates for home sales (years 2012 to 2017) and median household incomes (years 2010 to 2017) for the respective geographic areas of study.




Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group; Redfin

Within all geographic areas of study, the increase in median home sale prices has far outpaced the median household income growth. In the Columbus MSA, the compounded annual growth rate in home price is nearly five times the compounded annual growth rate in the median household income. These trends will further exacerbate affordability housing challenges in the Columbus region and will limit the Columbus market from realizing job growth projections.

The maps on the following pages detail median home values and median gross rents by census tract for the Columbus MSA. The source of this data is the American Community Survey (ACS). Additional maps detailing home value and rent trends for the four counties that comprise the majority of the demographic size of the MSA can be found in Addendum A of this report.







Columbus, OH MSA 2017 Median Home Value

Legend

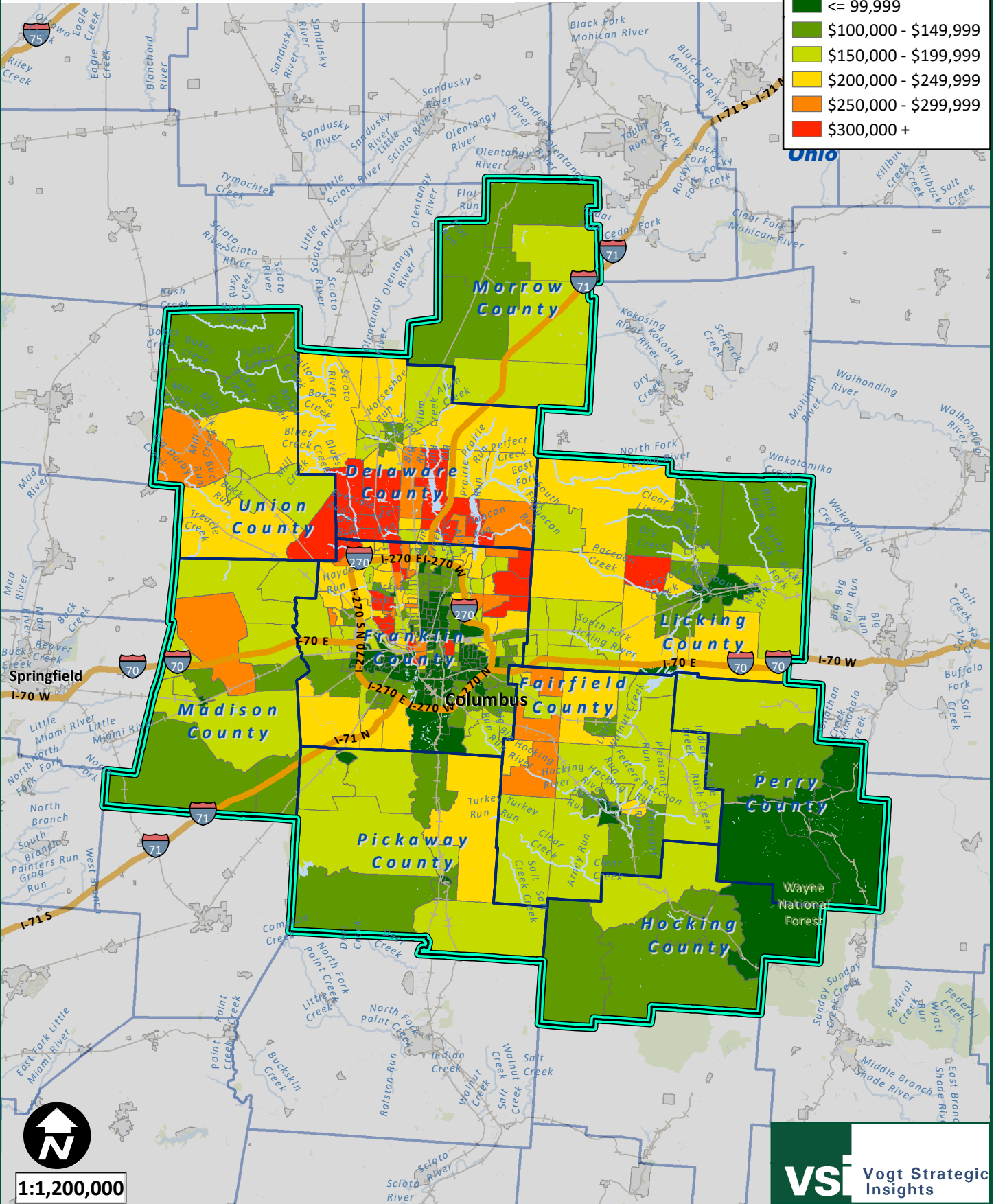
 Columbus MSA

Census Tracts

Median Home Value


-  <= 99,999
-  \$100,000 - \$149,999
-  \$150,000 - \$199,999
-  \$200,000 - \$249,999
-  \$250,000 - \$299,999
-  \$300,000 +

0 7.5 15 22.5 30 37.5 45 52.5 60 67.5 Miles




Columbus, OH MSA 2012-2016 ACS Median Gross Rent

Legend

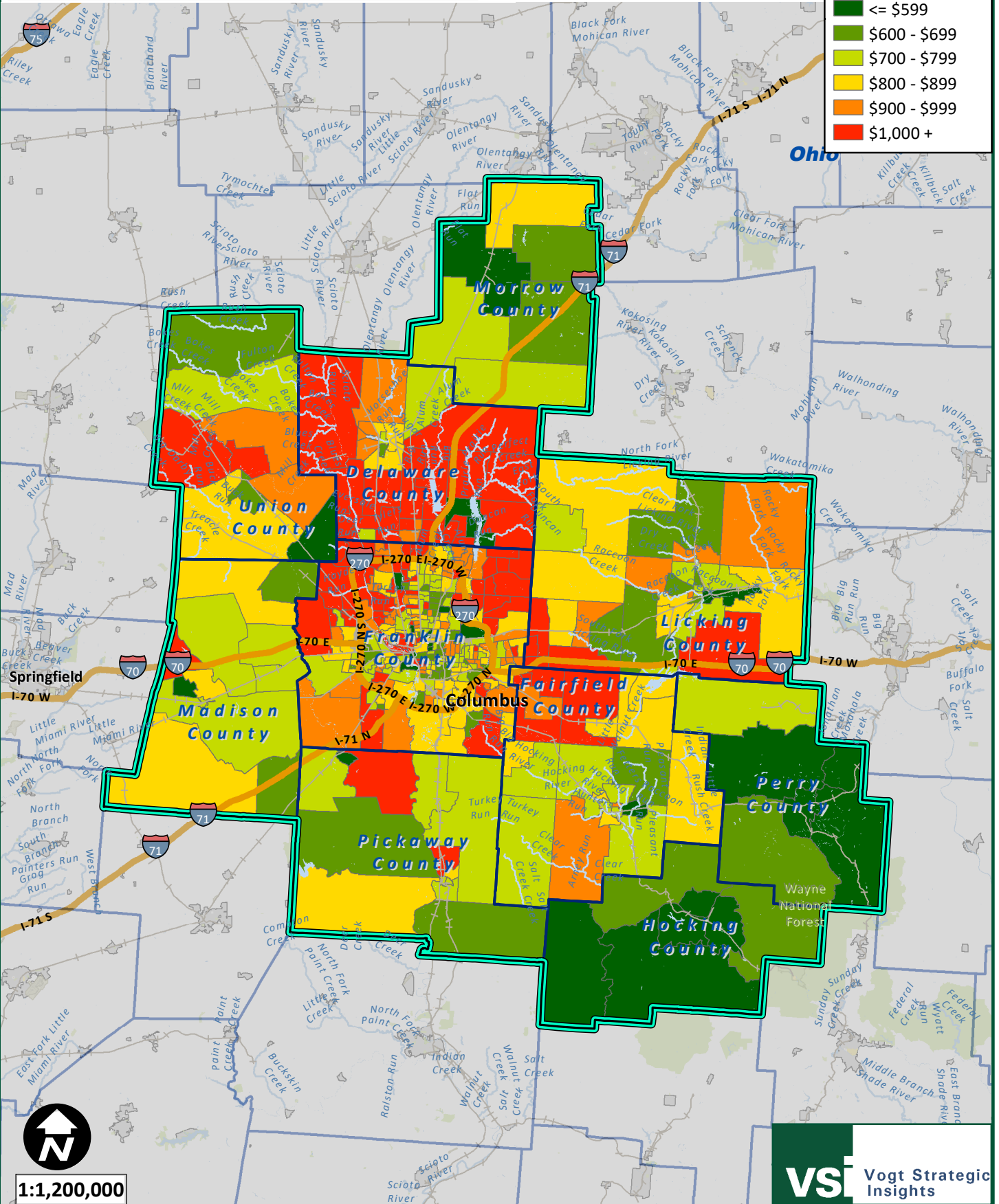
 Columbus MSA

Census Tracts

Median Gross Rent

-  ≤ \$599
-  \$600 - \$699
-  \$700 - \$799
-  \$800 - \$899
-  \$900 - \$999
-  \$1,000 +

0 7.5 15 22.5 30 37.5 45 52.5 60 67.5 Miles



1:1,200,000

V. Housing Need Estimates

To estimate the incremental housing need by year 2050, an accepted methodology is to evaluate job growth projections. The methodology of evaluating job growth and its impact on housing need does not consider consumer preferences, availability of current housing alternatives, demographic shifts or migration within the market.

For this analysis, VSI evaluated historical employment trends within the Columbus Metropolitan Statistical Area (MSA) and the 10 counties that comprise the MSA and projected the number of jobs expected to be added to the respective geographic areas through to year 2050. The following table details the actual seasonally adjusted employed workforce for years 1990, 2000, 2010 and 2017 (Note the reported year totals are averages of individual monthly totals for each geographic area of study and are not 'year-end' totals).

| Seasonally Adjusted Employed Workforce (Yearly Average) | | | | |
|---|---------|---------|---------|-----------|
| Geography | 1990 | 2000 | 2010 | 2017 |
| Columbus MSA* | 756,816 | 878,783 | 919,928 | 1,033,037 |
| Delaware County | 35,531 | 60,944 | 87,413 | 103,174 |
| Fairfield County | 50,834 | 63,301 | 67,429 | 74,141 |
| Franklin County | 518,262 | 573,769 | 571,246 | 653,246 |
| Hocking County | 10,696 | 12,304 | 12,400 | 12,537 |
| Licking County | 62,339 | 74,456 | 79,134 | 86,055 |
| Madison County | 17,210 | 18,643 | 18,800 | 19,884 |
| Morrow County | 13,020 | 15,789 | 15,333 | 16,225 |
| Perry County | 12,673 | 15,240 | 14,415 | 15,172 |
| Pickaway County | 20,589 | 22,863 | 23,336 | 25,409 |
| Union County | 15,662 | 21,474 | 24,424 | 27,193 |

Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics

*MSA figures do not equal the aggregate of the 10 counties due to the methodology of deriving yearly totals by averaging monthly totals.

We have used historical performance of the region to anticipate the expected future job growth.

To estimate projected job growth to year 2050, two historical employment look-back periods were considered (years 1990 to 2017 and years 2010 to 2017). The 1990 to 2017 look-back period (27 years) is commensurate to the forward projection period to year 2050 (33 years). This period includes the significant recessions of the early 2000s and 2008 to 2010.

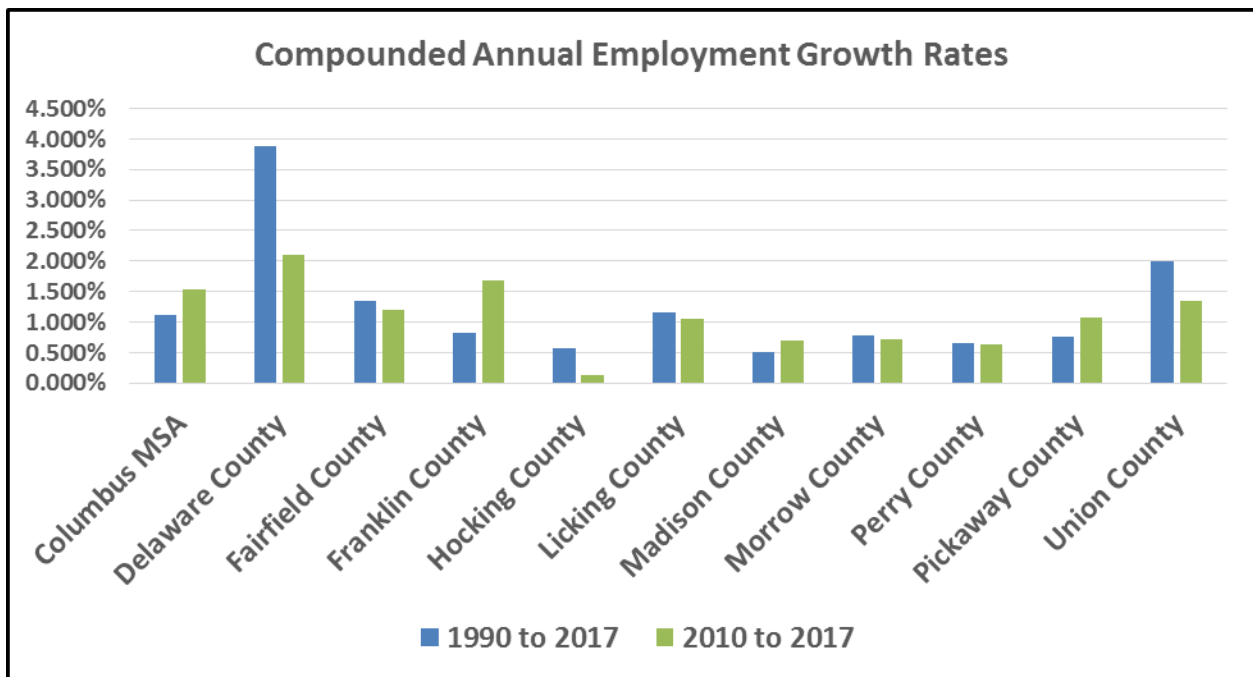
The second look-back period considers the much shorter and most recent period of 2010 to 2017. This period was considered so as to evaluate the most recent employment trends within the respective geographic areas of study and to capture some of the economic velocity occurring in select counties and the MSA. This look-back period obviously generates more robust projections since it does not include a recession.

When considering the Columbus MSA, the change in employment from 1990 to 2017 was 276,221 (276,221 = 1,033,037 – 756,816). This yields a compounded annual employment growth rate of 1.117% from 1990 to 2017. In comparison, the compounded annual employment growth rate from 2010 to 2017 was 1.543%.

The following table and chart detail compounded annual employment growth rates for the two look-back periods of 1990 to 2017 and 2010 to 2017 for the Columbus MSA and the 10 counties that comprise the Columbus MSA.

| Compounded Annual Employment Growth Rates by Look-Back Period | | |
|---|--------------|--------------|
| Geography | 1990 to 2017 | 2010 to 2017 |
| Columbus MSA | 1.117% | 1.543% |
| Delaware County | 3.881% | 2.094% |
| Fairfield County | 1.357% | 1.193% |
| Franklin County | 0.830% | 1.691% |
| Hocking County | 0.569% | 0.138% |
| Licking County | 1.158% | 1.054% |
| Madison County | 0.517% | 0.703% |
| Morrow County | 0.789% | 0.709% |
| Perry County | 0.645% | 0.642% |
| Pickaway County | 0.754% | 1.069% |
| Union County | 1.990% | 1.351% |

Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics

As the preceding chart and table illustrate, the two counties reporting the most significant deviations in compounded annual employment growth rates between the two look-back periods are Delaware and Franklin counties. This is to be expected as growth in Delaware County during the 1990s and 2000s was significant as there was a general trend of business relocation and new establishments migrating out of the Columbus core. In recent years, there has been an increasing trend of businesses moving back to Columbus and suburban areas thereby resulting in higher compounded annual employment growth trends reported in Franklin County from 2010 to 2017 than the compounded annual employment growth trend reported from 1990 to 2017.

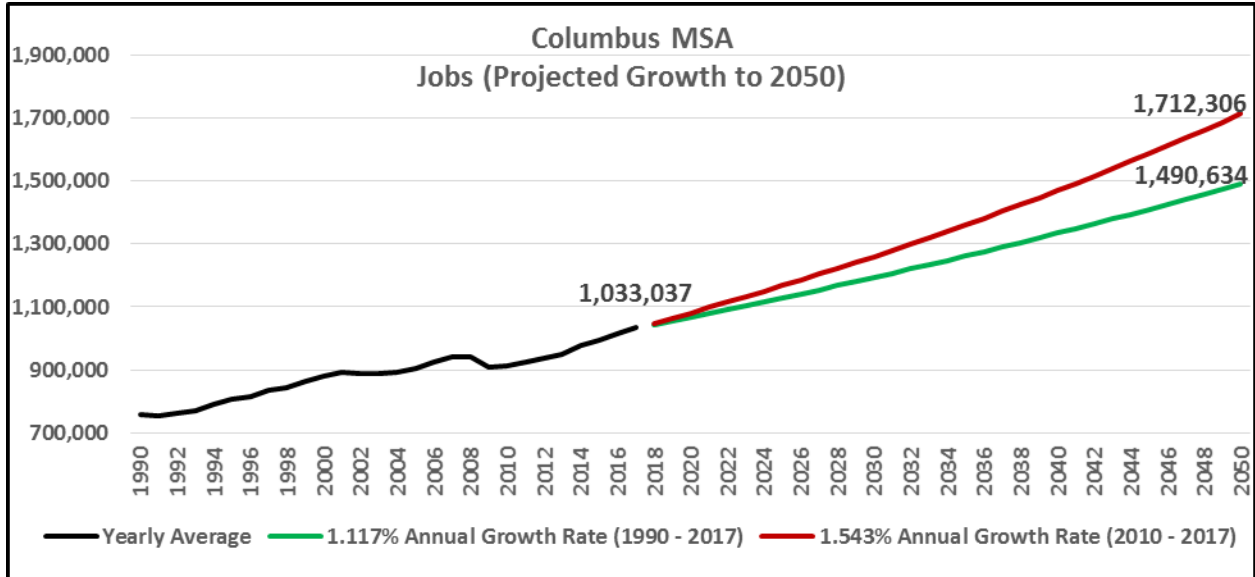
Applying the historical compounded annual employment growth trends to the year 2017 employment totals yields the projected workforce within the geographic area of study during a particular year. In this analysis, we consider a projected year of 2050. In the case of the Columbus MSA, the derived compounded annual growth rates for the two look-back periods are 1.117% and 1.543%, respectively. Applying these rates to the year 2017 seasonally adjusted employed workforce (1,033,037) yields projected year 2050 workforces of 1,490,634 (compounded annual growth rate of 1.117%) and 1,712,306 (compounded annual growth rate of 1.543%). Subtracting the year 2017 seasonally adjusted workforce (1,033,037) yields job growth projections of 457,597 ($457,597 = 1,490,634 - 1,033,037$) and 679,269 ($679,269 = 1,712,306 - 1,033,037$).

The following table summarizes job growth projections for the geographic areas of study under the compounded annual employment growth scenarios. Note the figures in the table below represent the projected number of jobs to be added rather than the actual number of jobs in 2050.

| Job Growth Projections to Year 2050 | | |
|-------------------------------------|---------------------------|---------------------------|
| Geography | 1990 to 2017 Growth Trend | 2010 to 2017 Growth Trend |
| Columbus MSA | 457,597 | 679,269 |
| Delaware County | 259,238 | 101,264 |
| Fairfield County | 41,533 | 35,524 |
| Franklin County | 204,890 | 482,739 |
| Hocking County | 2,581 | 583 |
| Licking County | 39,778 | 35,563 |
| Madison County | 3,689 | 5,174 |
| Morrow County | 4,804 | 4,263 |
| Perry County | 3,585 | 3,569 |
| Pickaway County | 7,148 | 10,686 |
| Union County | 24,911 | 15,155 |

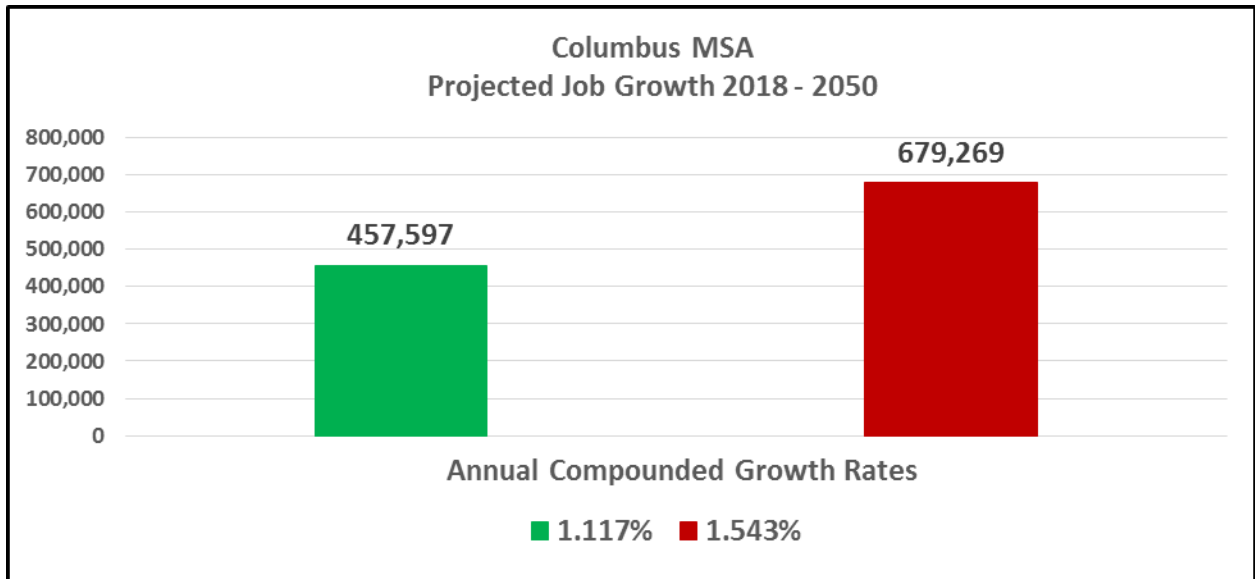
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics

For reference, the chart on the following page details yearly average seasonally adjusted employment from 1990 to 2017 (**black line**) and projected yearly average employment to year 2050 under the two compounded annual employment growth scenarios (**red** and **green** lines) for the Columbus MSA. For brevity, the following table is only detailed for the Columbus MSA in this section of the report. A similar table for each of the 10 counties that comprise the Columbus MSA can be found in Section VII.



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics

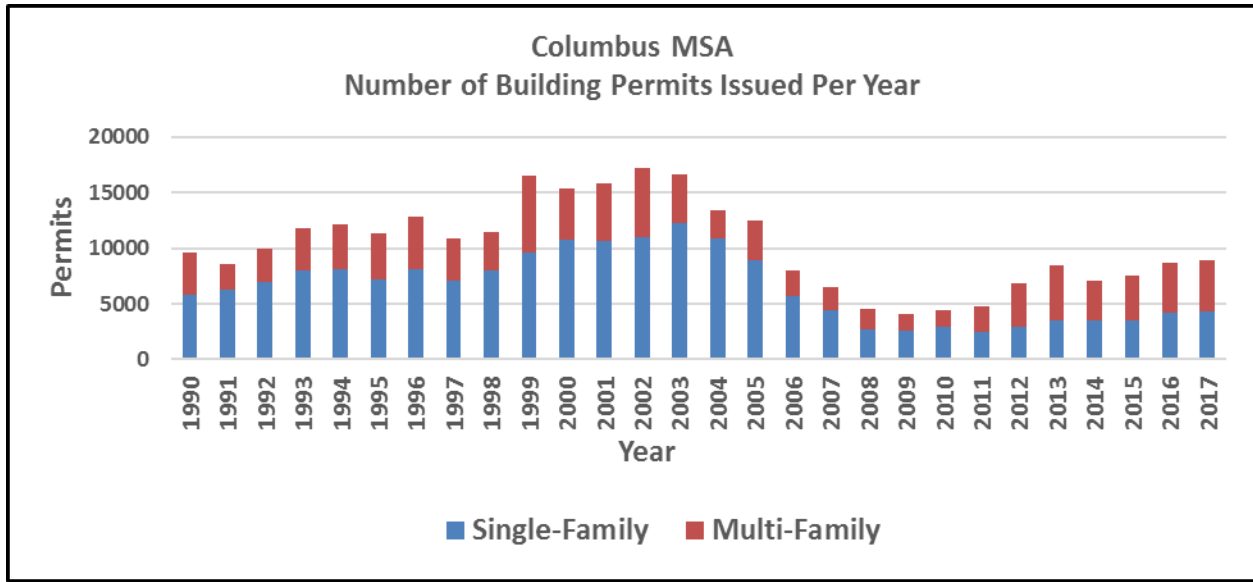
To reiterate, the projected job growth in the Columbus MSA from 2017 to 2050 is projected to be 457,597 under the compounded annual growth rate of 1.117% (based on the look-back period from 1990 to 2017) or 679,269 under the compounded annual growth rate of 1.543% (based on the look-back period from 2010 to 2017). These figures are summarized in the following chart. Again, for brevity, the following chart is presented only for the Columbus MSA in this section of the report. A similar chart for each county of study is detailed in Section VII.



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics

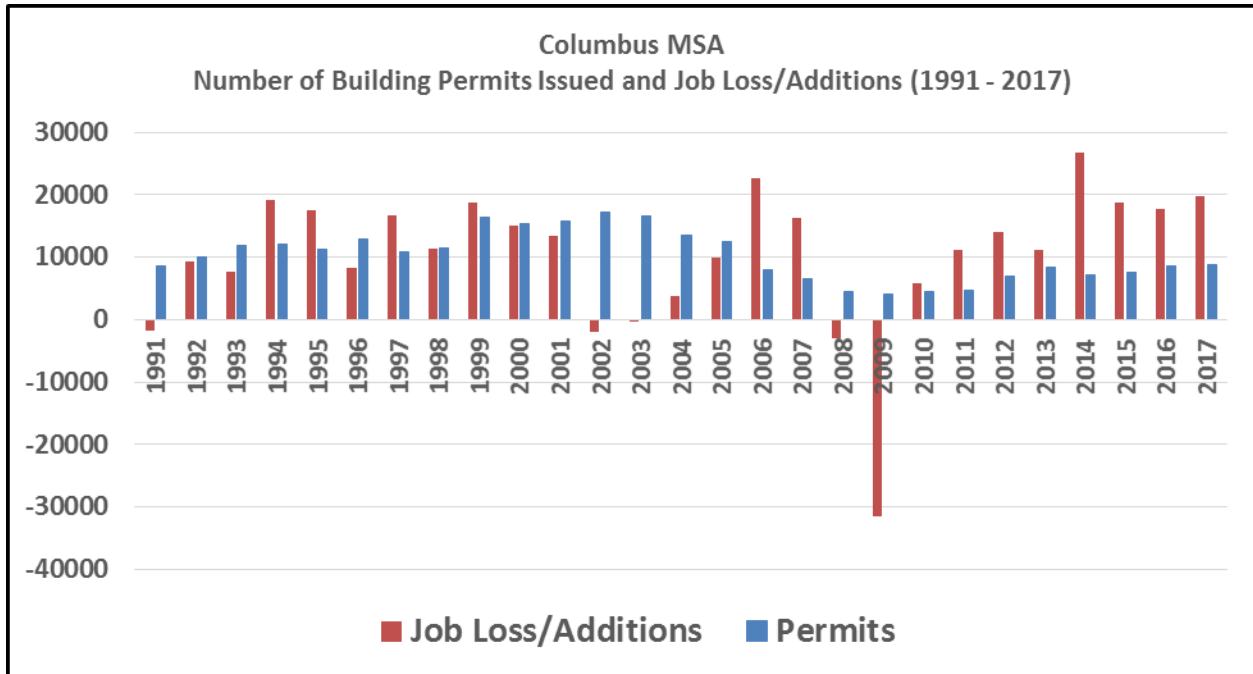
In estimating the projected housing need based solely on job growth, VSI considered the relationship between historical job growth and building permit activity. The thesis being that evaluating the ratio of job growth to permitting activity yields a reasonable estimate of the housing need within a geographic area.

The following table details single-family and multifamily permitting within the Columbus MSA from 1990 to 2017 (see Section VII for each county):



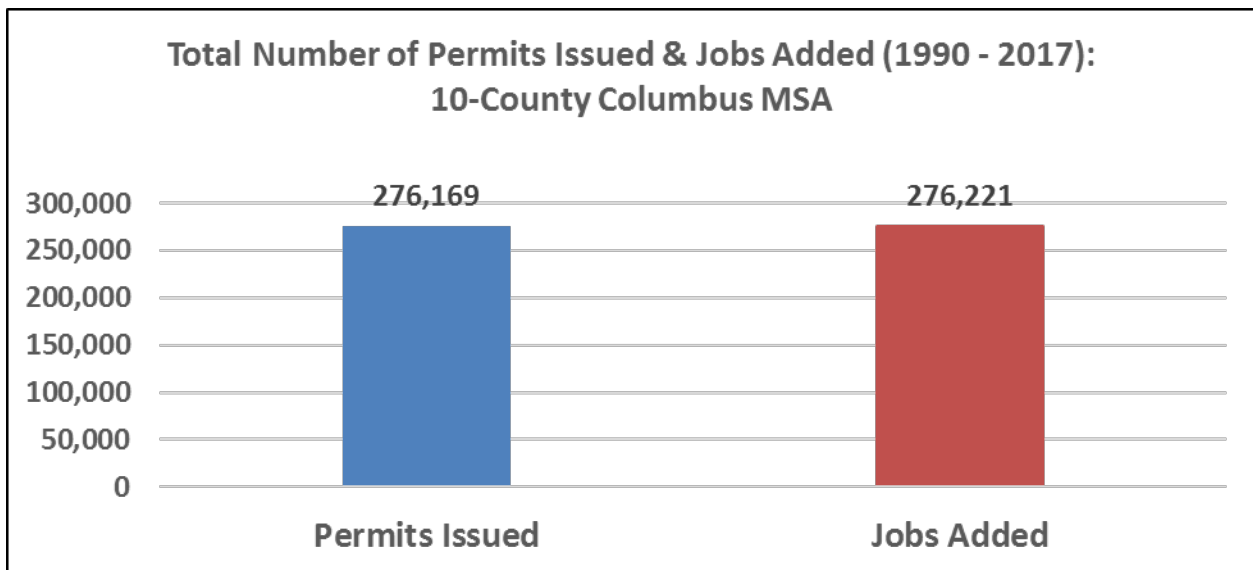
Source: Vogt Strategic Insights; State of the Cities Data Systems (SOCDS)

The table on the following page details total permitting (single-family and multifamily) and job loss/additions by year for years 1991 to 2017 within the Columbus MSA.



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)

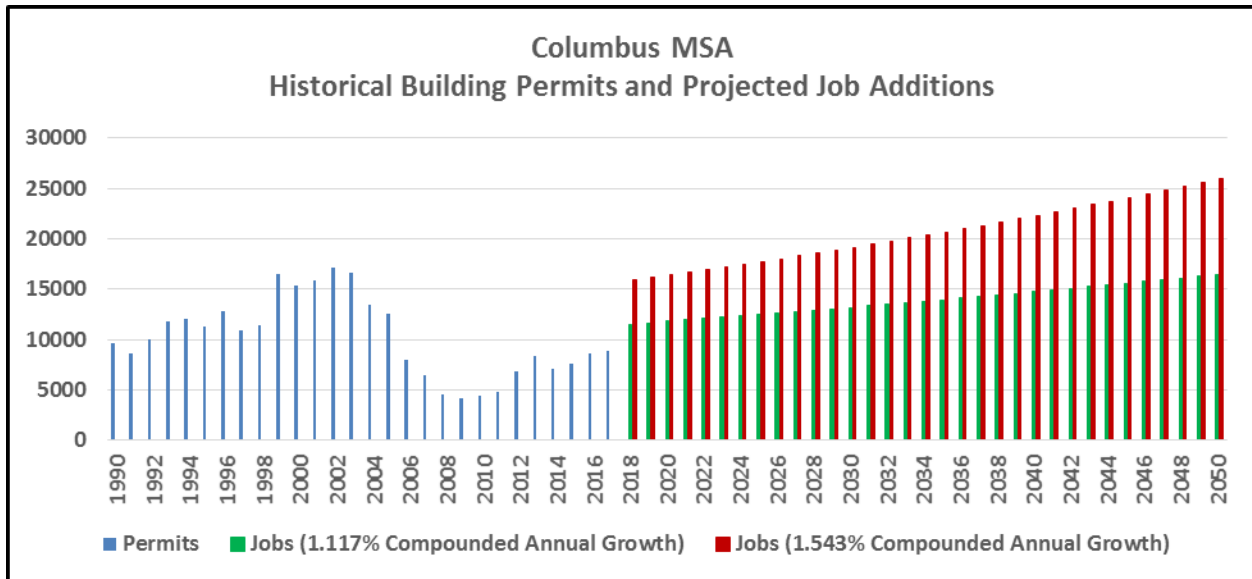
The following chart details the change in employment and reported permits issued in the Columbus MSA from 1990 to 2017.



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)

Within the Columbus MSA, the aggregate change in seasonally adjusted employment from 1990 to 2017 was 276,221 while the number of permits reported in the Columbus MSA during this same time period was 276,169. This is a deviation of less than 0.1%. Based on the historical employment growth and permitting activity in the Columbus MSA from 1990 to 2017, the job growth to housing need ratio assumption to year 2050 is one-to-one (1:1).

The following table details historical building permits from 1990 to 2017 and the yearly job additions projected in the Columbus MSA to year 2050 under two compounded annual job growth scenarios (see Section VII for each individual county):



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)

In the preceding chart, the green growth trend bars assume a compounded annual job growth rate of 1.117%. This is the historical compounded annual job growth rate in the Columbus MSA from 1990 to 2017. The red growth trend bars assume a compounded annual job growth rate of 1.543%. This is the historical compounded annual job growth rate in the Columbus MSA from 2010 to 2017.

Clearly, if historical building permit activity continues, the Columbus MSA will **not** meet the housing need based on the anticipated job growth projections through year 2050. In the Columbus MSA, the yearly average number of building permits from 1990 to 2017 was 10,205 (single-family and multifamily permits). If considering the time period from 2010 to 2017, the Columbus MSA averaged 7,077 building permits per year. Based on our job growth projections, the Columbus MSA will average 14,300 to 21,227 new jobs every year through year 2050. This further highlights the inadequate housing development in the Columbus MSA to meet the housing need that will be generated by new jobs added to the region over the next three decades. **Based on our estimates, permitting activity needs to increase two- to three-fold to meet the projected housing need over the next several decades.**

The following table summarizes yearly average permitting (four different time periods) and average yearly job growth within the geographic areas of study.

| Geography | Average Yearly Building Permits Issued | | | | Average Yearly Jobs Added to Year 2050 | |
|------------------|--|--------------|--------------|--------------|---|---|
| | 1990 to 1999 | 2000 to 2009 | 2010 to 2017 | 1990 to 2017 | Based on 1990 to 2017 Job Growth Trends | Based on 2010 to 2017 Job Growth Trends |
| Columbus MSA* | 11,504 | 11,410 | 7,077 | 10,205 | 14,300 | 21,227 |
| Delaware County | 1,743 | 1,977 | 1,003 | 1,615 | 8,101 | 3,165 |
| Fairfield County | 793 | 825 | 386 | 688 | 1,298 | 1,110 |
| Franklin County | 7,113 | 6,755 | 4,938 | 6,364 | 6,403 | 15,086 |
| Hocking County | 22 | 46 | 14 | 28 | 81 | 18 |
| Licking County | 906 | 940 | 290 | 742 | 1,243 | 1,111 |
| Madison County | 204 | 142 | 42 | 135 | 115 | 162 |
| Morrow County | 54 | 128 | 36 | 75 | 150 | 133 |
| Perry County | 52 | 65 | 32 | 51 | 112 | 112 |
| Pickaway County | 202 | 153 | 60 | 144 | 223 | 334 |
| Union County | 415 | 379 | 278 | 363 | 778 | 474 |

Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)

The following table summarizes the projected housing needs within the geographic areas of study to year 2050 under two compounded annual growth trend scenarios (note the housing unit needs equal the job growth projections).

| Housing Unit Need to Year 2050 | | |
|--------------------------------|---------------------------|---------------------------|
| Geography | 1990 to 2017 Growth Trend | 2010 to 2017 Growth Trend |
| Columbus MSA* | 457,597 | 679,269 |
| Delaware County | 259,238 | 101,264 |
| Fairfield County | 41,533 | 35,524 |
| Franklin County | 204,890 | 482,739 |
| Hocking County | 2,581 | 583 |
| Licking County | 39,778 | 35,563 |
| Madison County | 3,689 | 5,174 |
| Morrow County | 4,804 | 4,263 |
| Perry County | 3,585 | 3,569 |
| Pickaway County | 7,148 | 10,686 |
| Union County | 24,911 | 15,155 |

Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics

*The aggregate of individual county data does not equal the MSA data due to rounding carried through individual year-end calculations for each respective county.

Housing Need by Tenure and Income

To further segment the projected housing need estimates, VSI evaluated tenure by various income bands. For this analysis, VSI considered tenure by income segmentation among those households under the age of 55. The rationale for considering this age segmentation is that most job growth in the Columbus MSA over the next three decades will likely be among those under age 55 since those older are mostly retired and outside the workforce. Tenure statistics specific to each county were used to derive the housing need estimates by tenure and income.

Note that all housing need estimate projections by income segmentation assume year 2017 dollars.

For this analysis, seven income segments are considered, which are summarized as follows:

| Income Band Considerations |
|----------------------------|
| \$0 - \$29,999 |
| \$30,000 - \$44,999 |
| \$45,000 - \$59,999 |
| \$60,000 - \$74,999 |
| \$75,000 - \$89,999 |
| \$90,000 - \$104,999 |
| \$105,000+ |

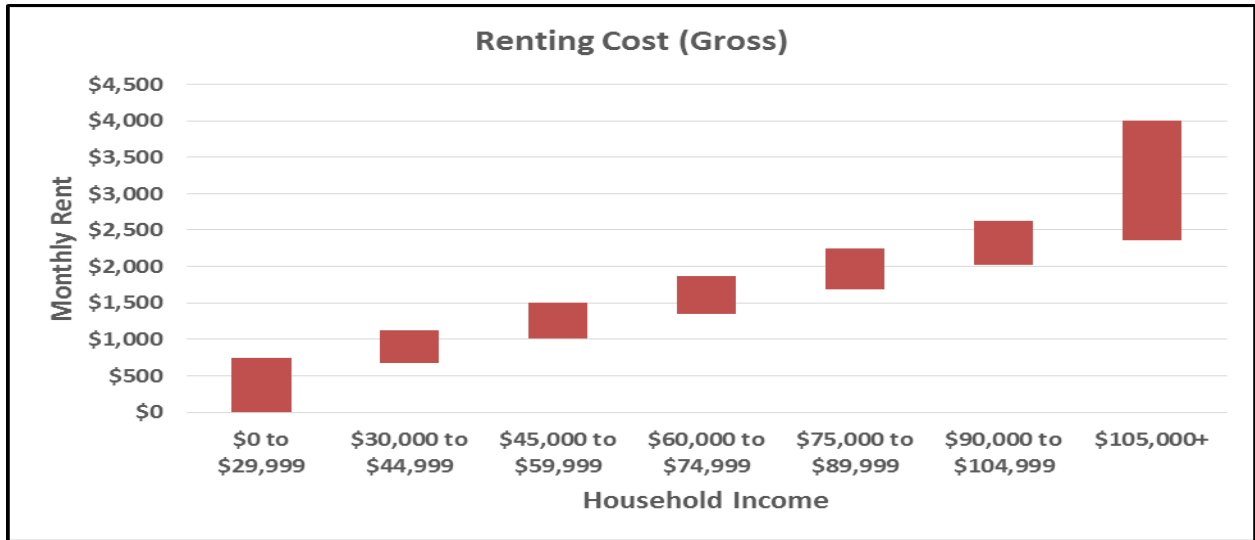
Source: Vogt Strategic Insights

To estimate what the preceding income bands equate to in actual housing cost dollars (monthly rent and for-sale home cost), VSI considered two scenarios for both owner and renter housing need estimates. For renter housing need, monthly rental housing cost was based on rent-to-income ratios of 27% and 30%. For for-sale housing cost, yearly household incomes at 3X and 3.5X multipliers were considered. The reasons the different income-qualification scenarios were considered is to account for different underwriting qualifications. Of course, the preceding assumptions are rather broad and will fluctuate depending on interest rates, taxes and other variables. Even a household’s willingness to take on additional debt and/or pay higher rents that what is generally accepted will impact these projections.

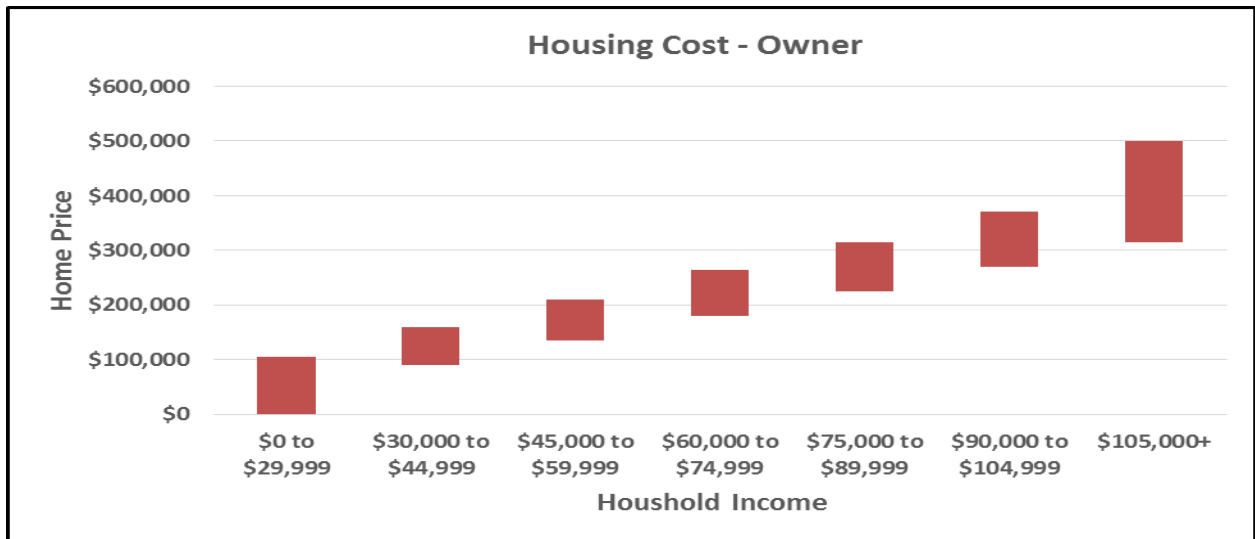
The rental rate and home cost ranges under the various scenarios for the seven income bands being considered are summarized in the table and charts below:

| Income Bands | Renter (Monthly Rent) | | Owner (For-Sale Price) | |
|----------------------|--------------------------|-------------------|---------------------------|-----------------------|
| | 27% RTI | 30% RTI | 3X Yearly Income | 3.5X Yearly Income |
| \$0 - \$29,999 | \$0 - \$674 | \$0 - \$749 | \$0 - \$89,999 | \$0 - \$104,999 |
| \$30,000 - \$44,999 | \$675 - \$1,012 | \$750 - \$1,124 | \$90,000 - \$134,999 | \$105,000 - \$157,499 |
| \$45,000 - \$59,999 | \$1,013 - \$1,349 | \$1,125 - \$1,499 | \$135,000 - \$179,999 | \$157,500 - \$209,999 |
| \$60,000 - \$74,999 | \$1,350 - \$1,687 | \$1,500 - \$1,874 | \$180,000 - \$224,999 | \$210,000 - \$262,499 |
| \$75,000 - \$89,999 | \$1,688 - \$2,024 | \$1,875 - \$2,249 | \$225,000 - \$269,999 | \$262,500 - \$314,999 |
| \$90,000 - \$104,999 | \$2,025 - \$2,362 | \$2,250 - \$2,624 | \$270,000 - \$314,999 | \$315,000 - \$367,499 |
| \$105,000+ | \$2,363+ | \$2,625+ | \$315,000+ | \$367,500+ |

Source: Vogt Strategic Insights
RTI – Rent-To Income Ratio

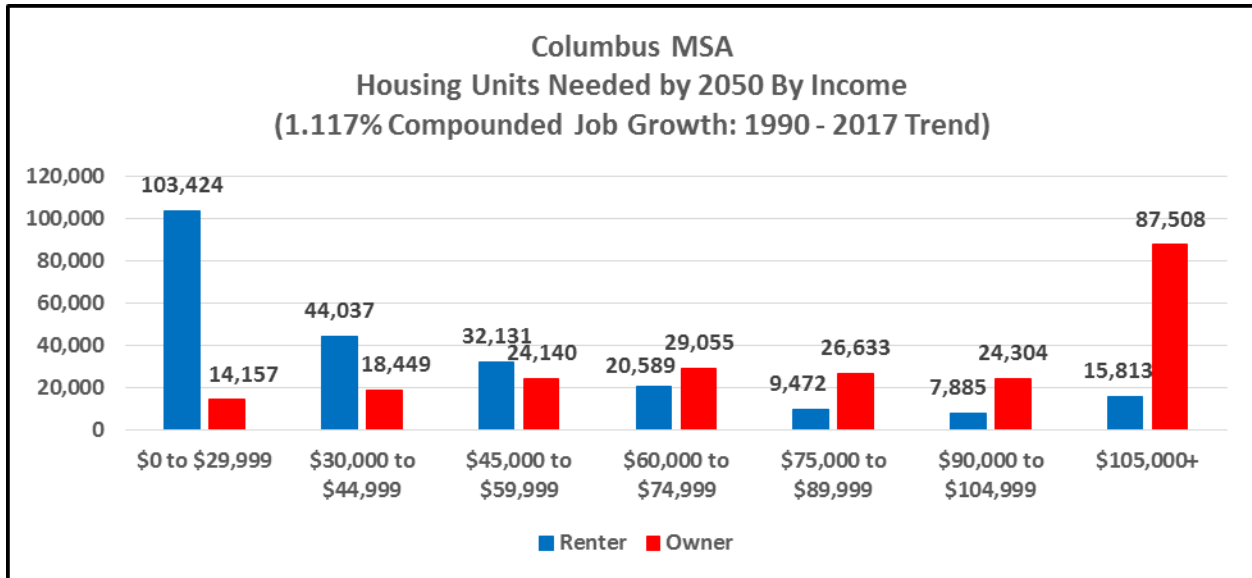


Source: Vogt Strategic Insights

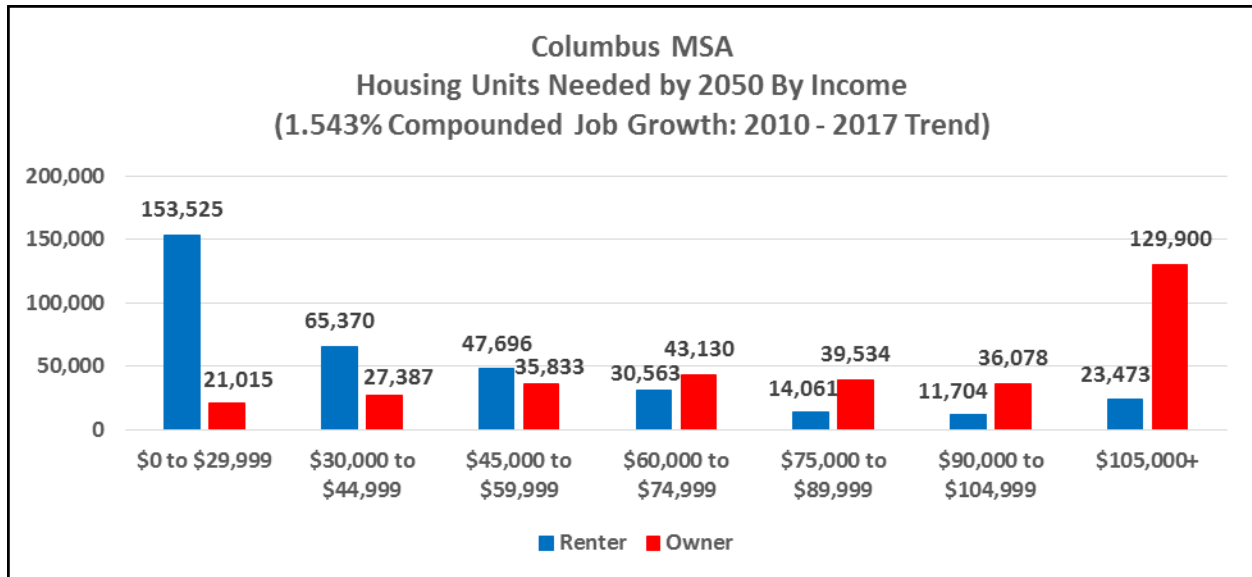


Source: Vogt Strategic Insights

Applying the tenure shares by various income brackets for the Columbus MSA to the projected total housing need estimates yield the following housing need estimates by tenure and income by year 2050 (see Section VII for each individual county):



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; ESRI



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; ESRI

As expected, the housing need for rental housing units is highest among the lower income-earning cohorts while the housing need for owner-occupied housing units is highest among the higher income-earning cohorts. Note, however, the estimated need for owner-occupied housing units at mid-tier income cohorts is still substantial at approximately 50,000 to 75,000 housing units targeting households earning between \$45,000 and \$75,000 (year 2017 dollars).

The table on the following page summarizes estimated housing need projections by tenure to year 2050 for all geographic areas of study. For detailed figures on projected housing need by income cohorts, see the individual MSA and County profiles detailed in Section VII.

| Housing Unit Need to Year 2050 | | | | | | |
|--------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Geography | Renter | | Owner | | All | |
| | 1990 to 2017 Historical Growth Trend | 2010 to 2017 Historical Growth Trend | 1990 to 2017 Historical Growth Trend | 2010 to 2017 Historical Growth Trend | 1990 to 2017 Historical Growth Trend | 2010 to 2017 Historical Growth Trend |
| Columbus MSA* | 233,351 | 346,392 | 224,246 | 332,877 | 457,597 | 679,269 |
| Delaware County | 63,320 | 24,734 | 195,918 | 76,530 | 259,238 | 101,264 |
| Fairfield County | 15,798 | 13,512 | 25,736 | 22,012 | 41,533 | 35,524 |
| Franklin County | 120,534 | 283,988 | 84,356 | 198,750 | 204,890 | 482,739 |
| Hocking County | 956 | 216 | 1,625 | 367 | 2,581 | 583 |
| Licking County | 16,033 | 14,334 | 23,745 | 21,229 | 39,778 | 35,563 |
| Madison County | 1,422 | 1,994 | 2,268 | 3,180 | 3,689 | 5,174 |
| Morrow County | 1,393 | 1,236 | 3,411 | 3,027 | 4,804 | 4,263 |
| Perry County | 1,373 | 1,367 | 2,212 | 2,202 | 3,585 | 3,569 |
| Pickaway County | 2,472 | 3,695 | 4,676 | 6,990 | 7,148 | 10,686 |
| Union County | 7,296 | 4,439 | 17,614 | 10,716 | 24,911 | 15,155 |

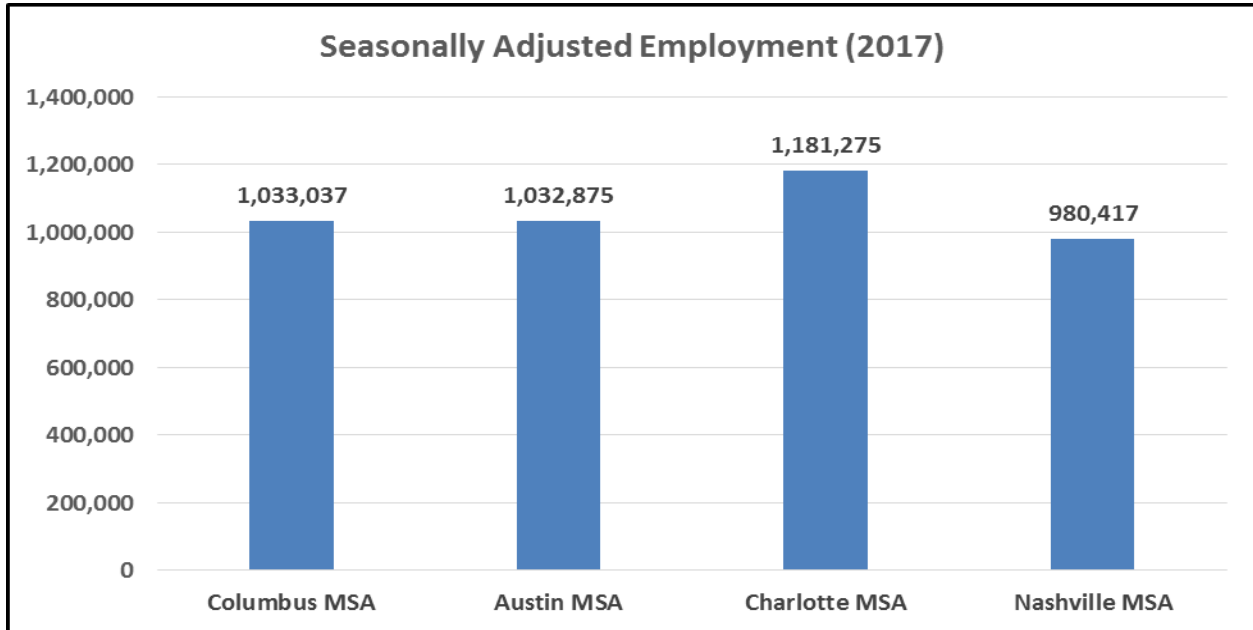
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; ESRI

*The aggregate of individual county data does not equal the MSA data due to rounding carried through individual year-end calculations for each respective county.

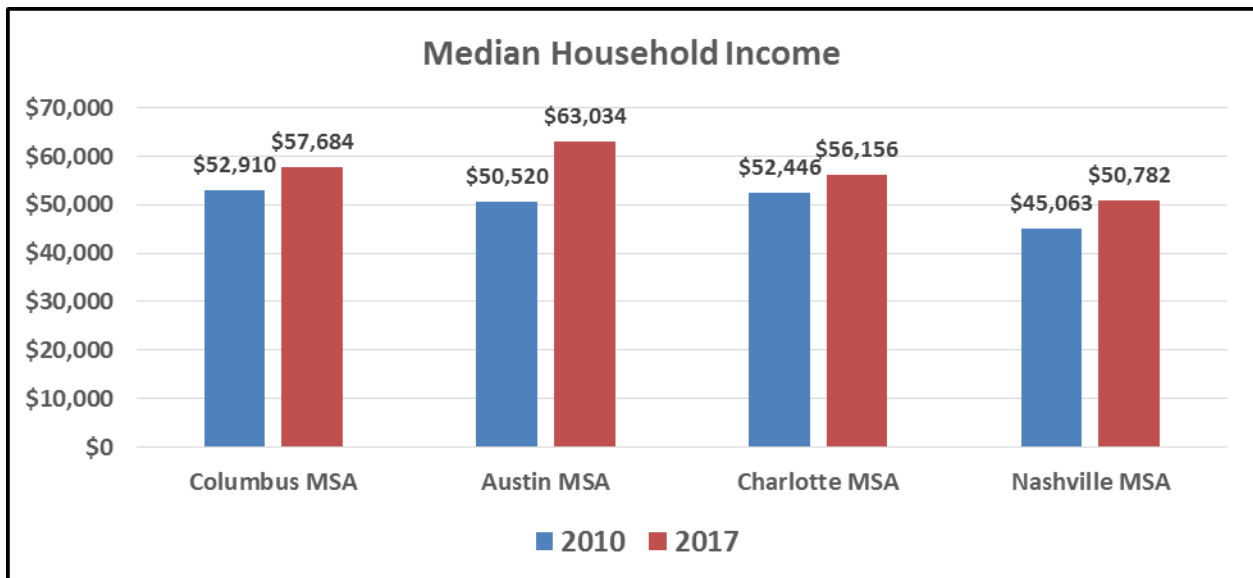
VI. Peer Regions

We have compared Central Ohio employment and housing need performance relative to other peer regions. VSI case studied three national MSAs that have relative socioeconomic similarities to Central Ohio. The three national MSAs evaluated are Austin, Charlotte and Nashville.

The following two charts detail seasonally adjusted employment (annual total for year 2017) and the median household incomes for the three national MSAs and the Columbus MSA.



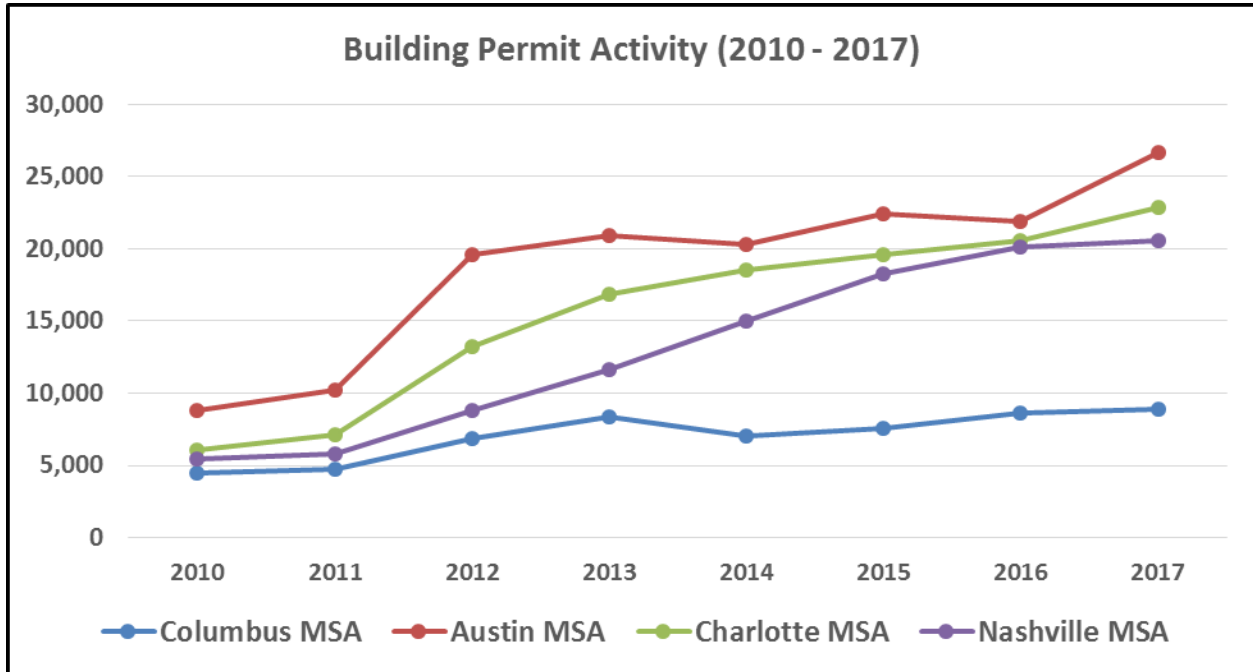
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



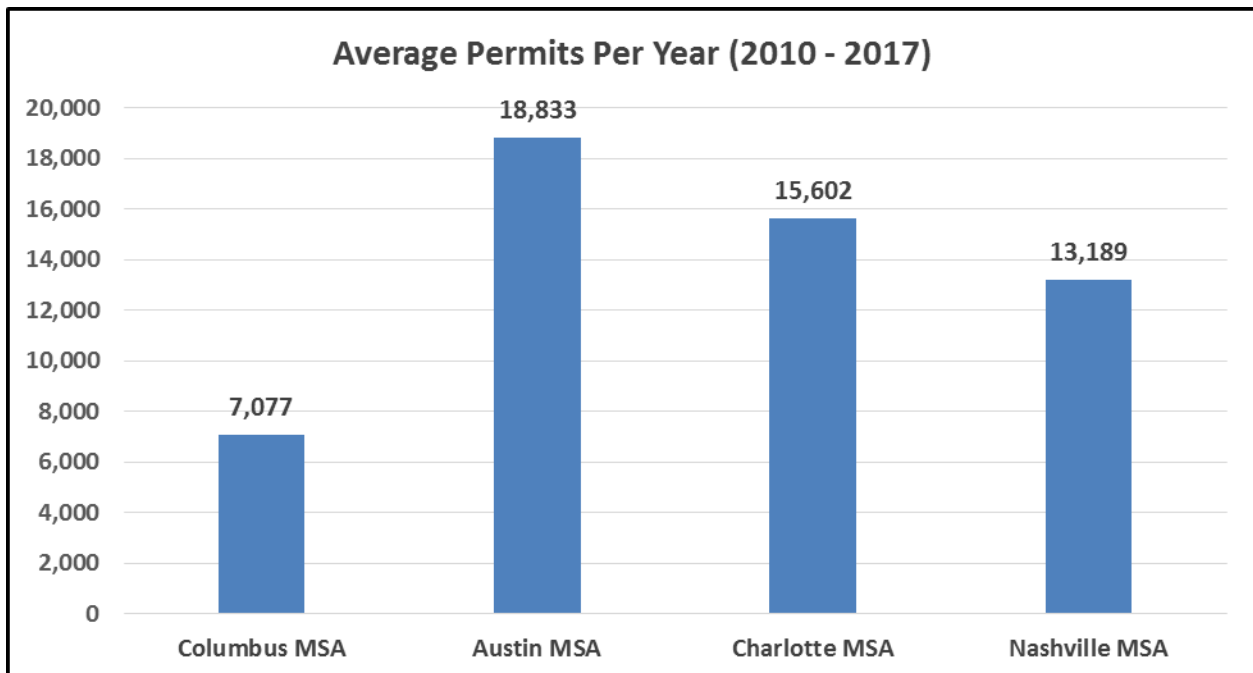
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

As the preceding tables illustrate, the Columbus MSA is relatively similar to the three other MSAs with respect to seasonally adjusted employment and median household incomes.

The following tables summarize building permit activity in the comparable MSAs and the Columbus MSA from 2010 to 2017.



Source: Vogt Strategic Insights; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; State of the Cities Data Systems (SOCDS)

Since 2010, the Columbus MSA has averaged just under 7,100 permits per year (single-family and multifamily) whereas the national peers have averaged two to three times more permitting activity during the same time period. Clearly, the Columbus MSA is not keeping pace with national peers. There are a multitude of factors that are contributing to this including, but not limited to, the following: zoning, land availability, regulatory guidelines, construction costs and availability of skilled workers. If permitting activity does not increase, Columbus will not realize its job growth projections and housing affordability challenges will be exacerbated.

VII. MSA and County Profiles

The following pages contain profiles for the MSA and all 10 counties with 'high level' summary data presented for each area. The profiles are organized as follows:

- A. Columbus MSA
- B. Delaware County
- C. Fairfield County
- D. Franklin County
- E. Hocking County
- F. Licking County
- G. Madison County
- H. Morrow County
- I. Perry County
- J. Pickaway County
- K. Union County

A. Columbus Metropolitan Statistical Area (MSA)

| Housing Need Demand Summary (2050) | | | |
|--|------------------|---------|---------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 1.117%) | 233,351 | 224,246 | 457,597 |
| Compounded Yearly Growth Rate (2010 to 2017: 1.543%) | 346,392 | 332,877 | 679,269 |
| Average Yearly Housing Need (2018 to 2050) | 14,300 to 21,227 | | |
| Average Yearly Permits Issued (1990 to 2017) | 10,205 | | |

| Population | | | | | | | |
|--------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Columbus MSA | 1,612,418 | 1,836,536 | 2,006,223 | 224,118 | 13.9% | 169,687 | 9.2% |

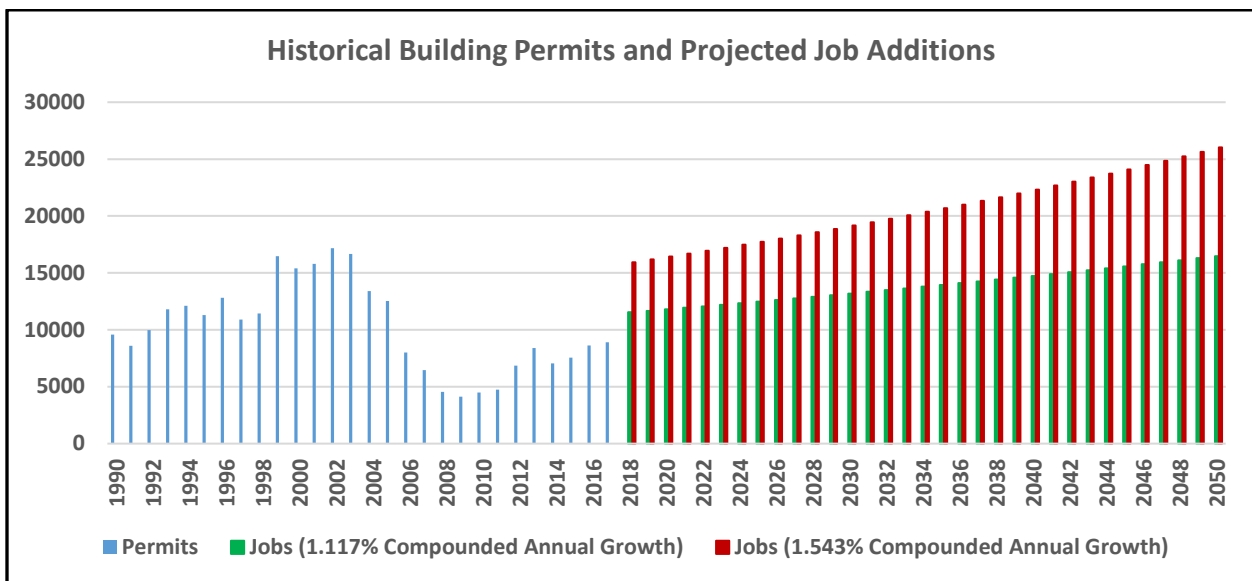
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|--------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Columbus MSA | 636,596 | 723,572 | 788,276 | 86,976 | 13.7% | 64,704 | 8.9% |

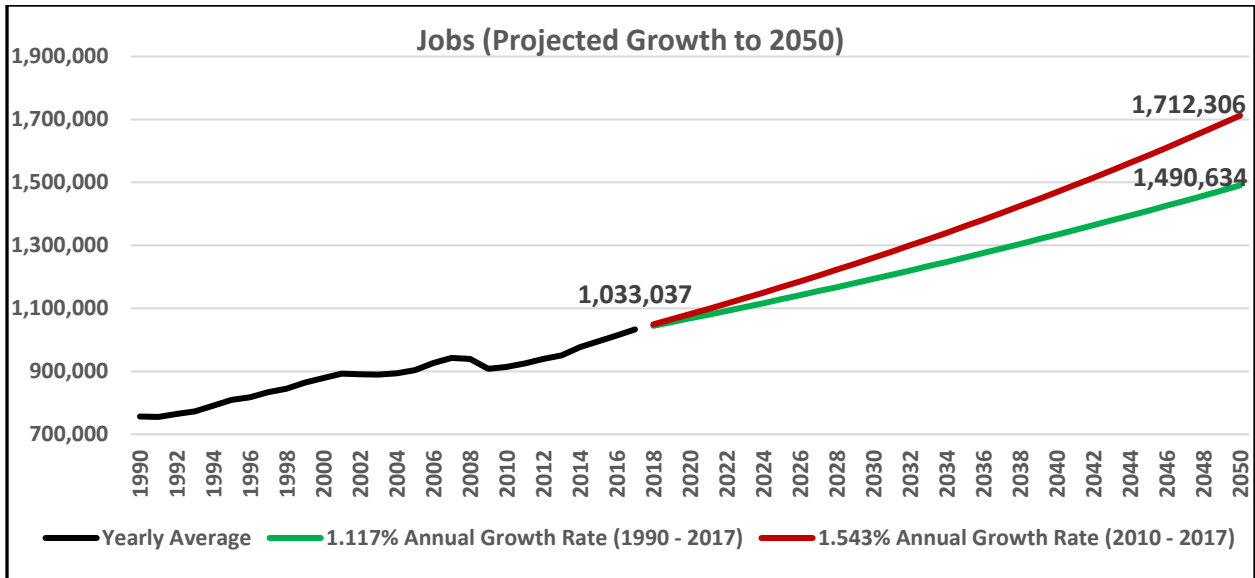
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Columbus MSA | \$44,841 | \$52,910 | \$57,684 | \$8,069 | 18.0% | \$4,774 | 9.0% |

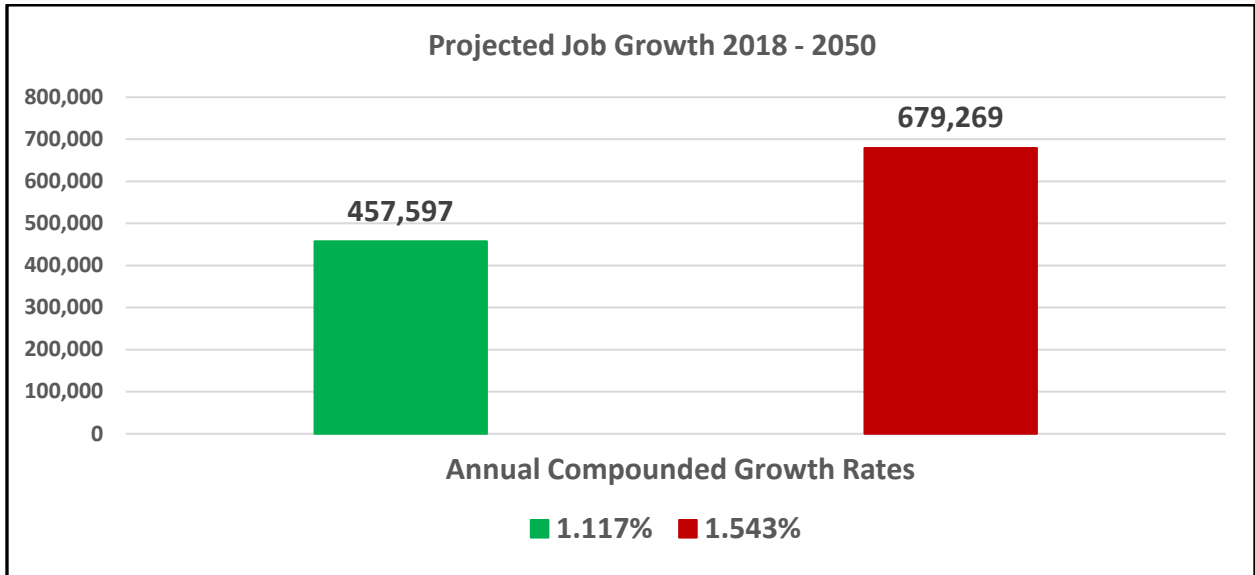
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



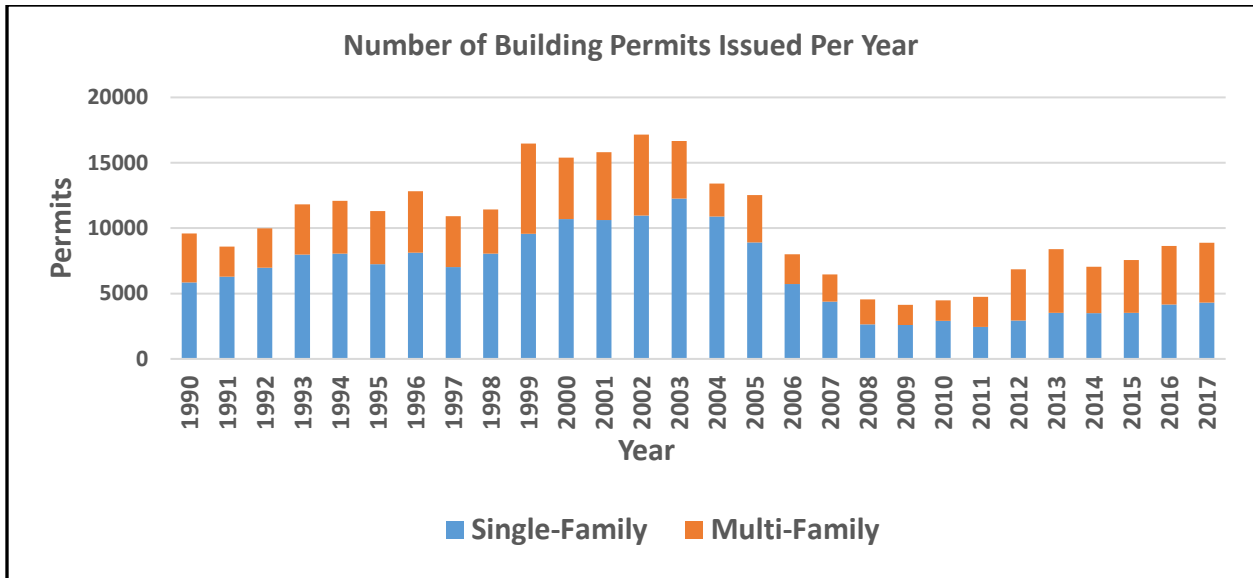
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



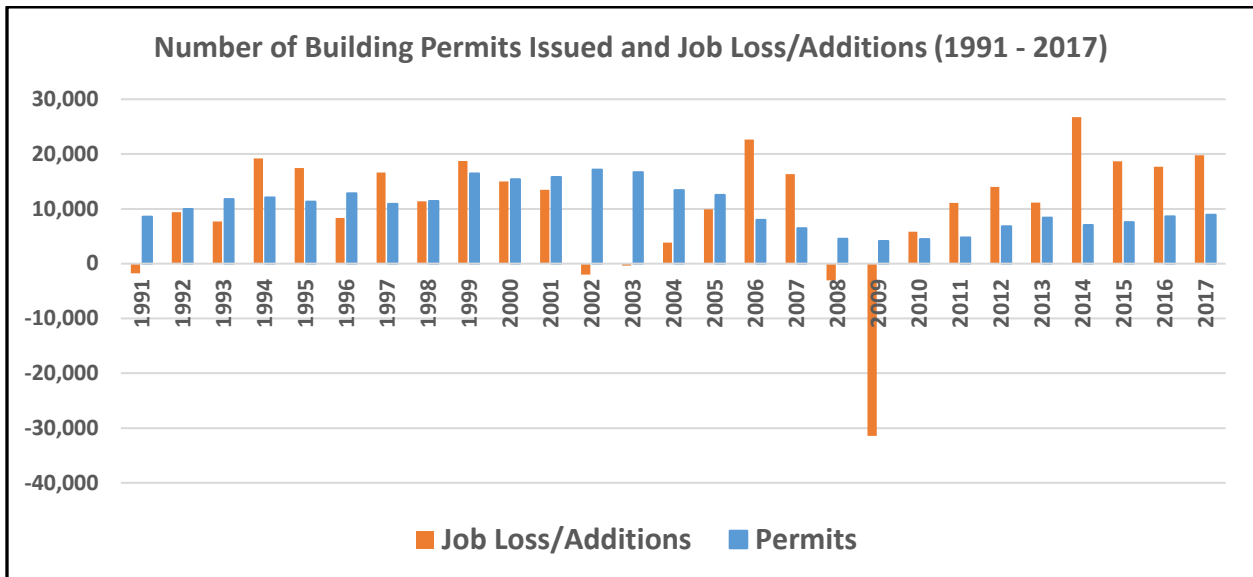
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



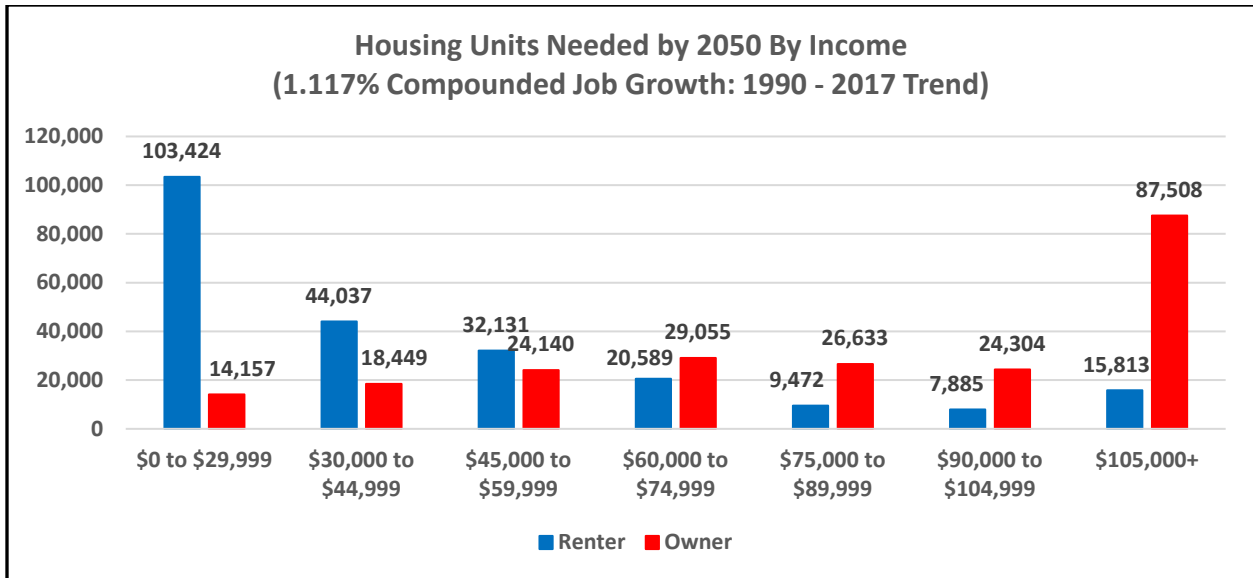
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



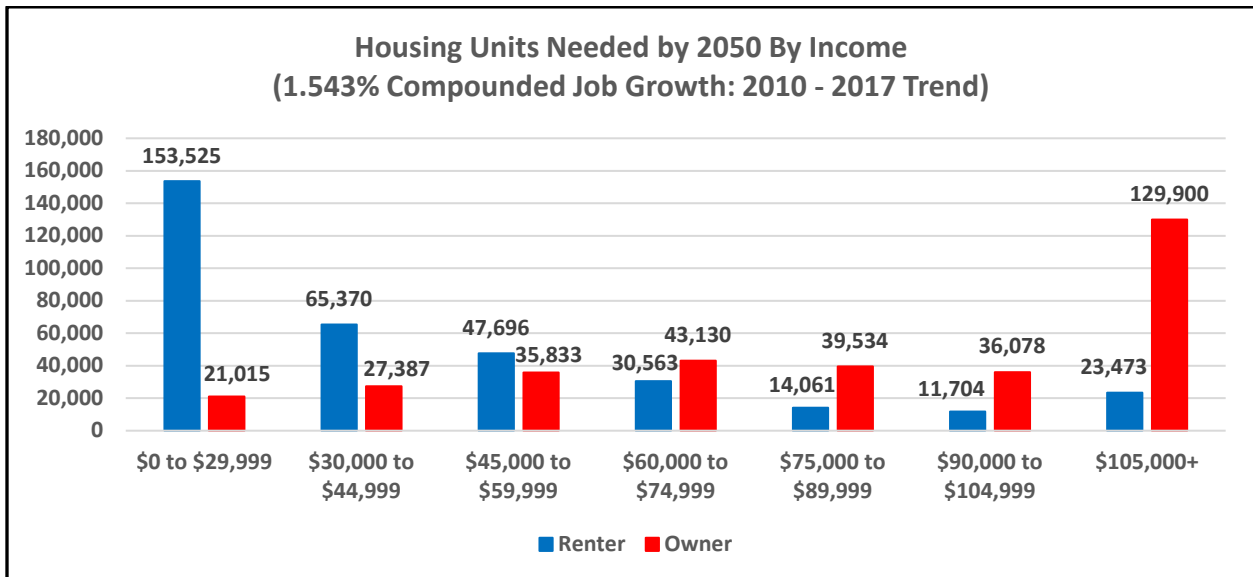
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

B. Delaware County

| Housing Need Demand Summary (2050) | | | |
|--|----------------|---------|---------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 3.881%) | 63,320 | 195,918 | 259,238 |
| Compounded Yearly Growth Rate (2010 to 2017: 2.094%) | 24,734 | 76,530 | 101,264 |
| Average Yearly Housing Need (2018 to 2050) | 3,165 to 8,101 | | |
| Average Yearly Permits Issued (1990 to 2017) | 1,615 | | |

| Population | | | | | | | |
|-----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Delaware County | 109,989 | 174,214 | 200,271 | 64,225 | 58.4% | 26,057 | 15.0% |

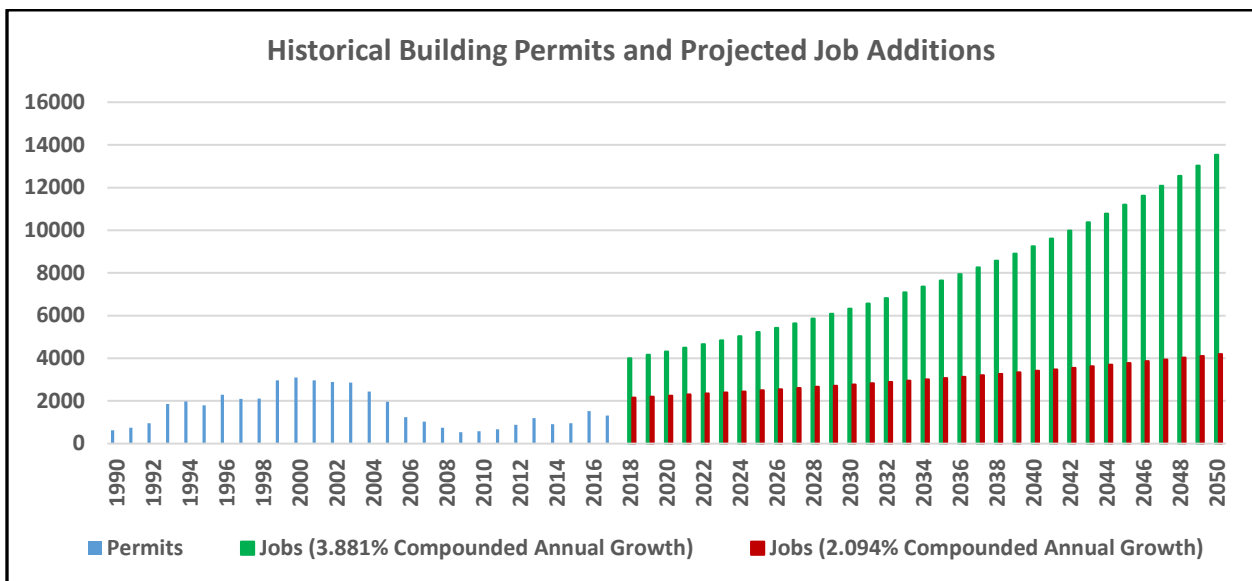
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|-----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Delaware County | 39,674 | 62,760 | 72,068 | 23,086 | 58.2% | 9,308 | 14.8% |

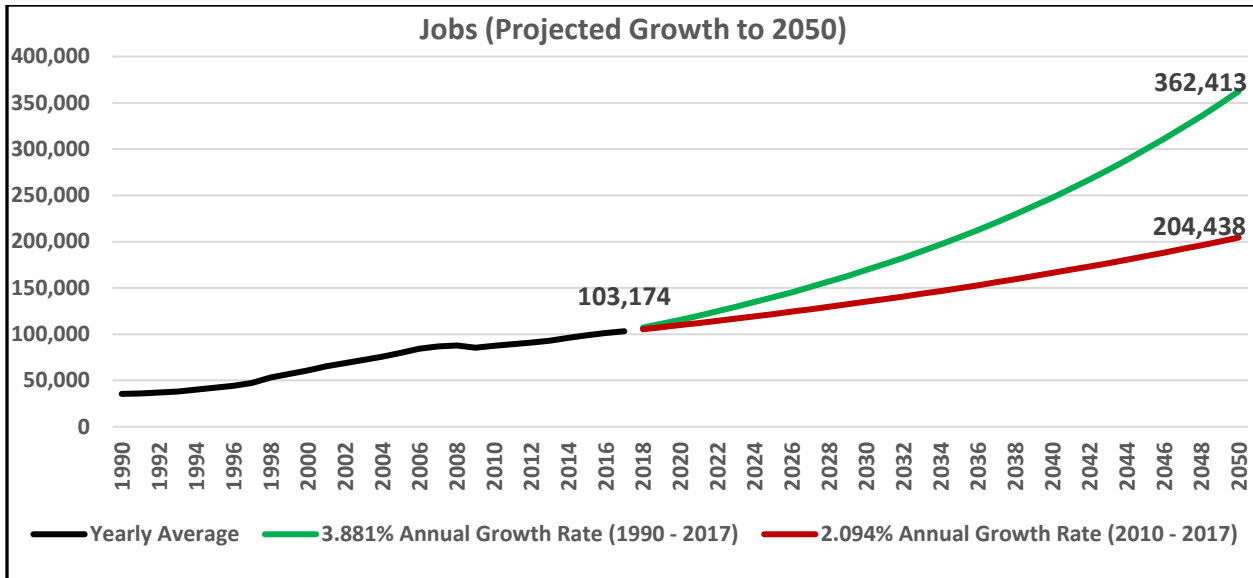
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Delaware County | \$67,258 | \$87,908 | \$98,635 | \$20,650 | 30.7% | \$10,727 | 12.2% |

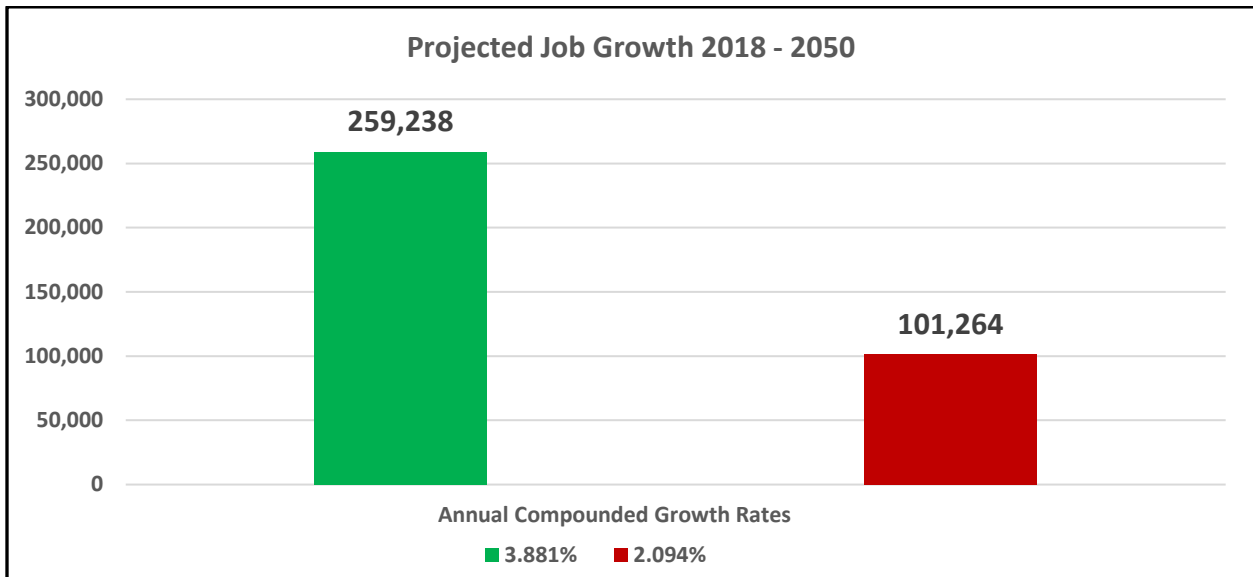
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



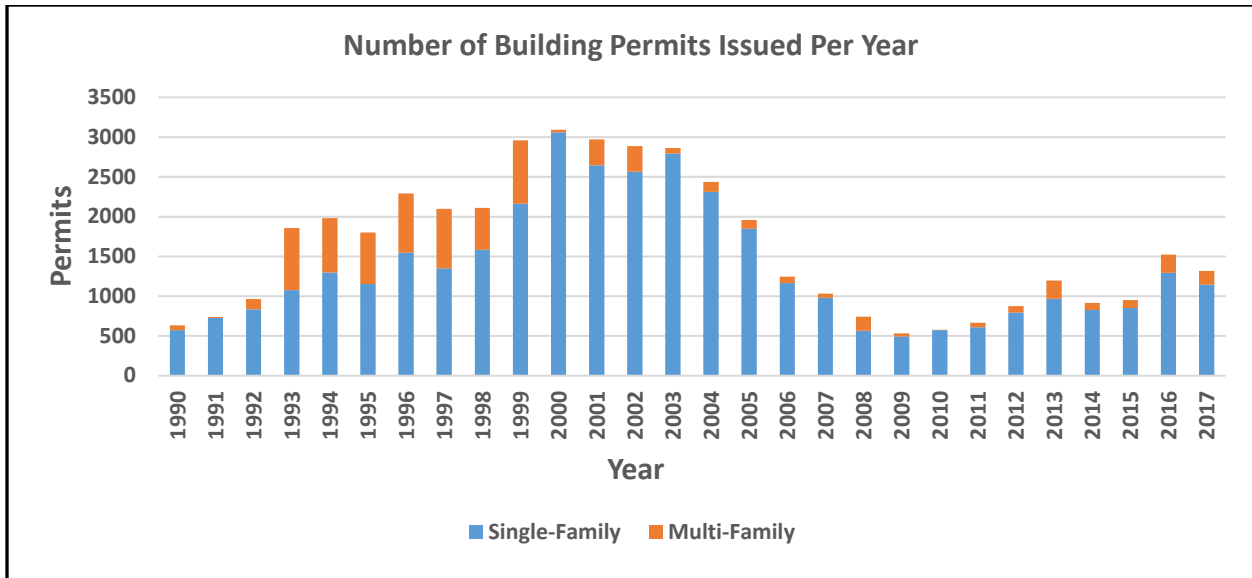
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



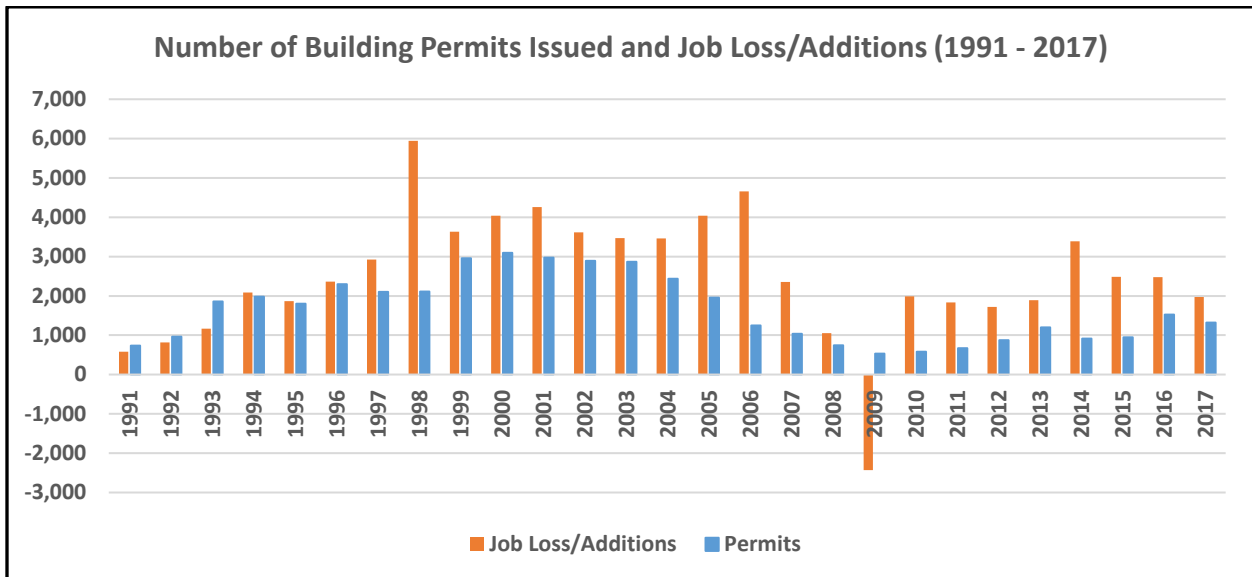
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



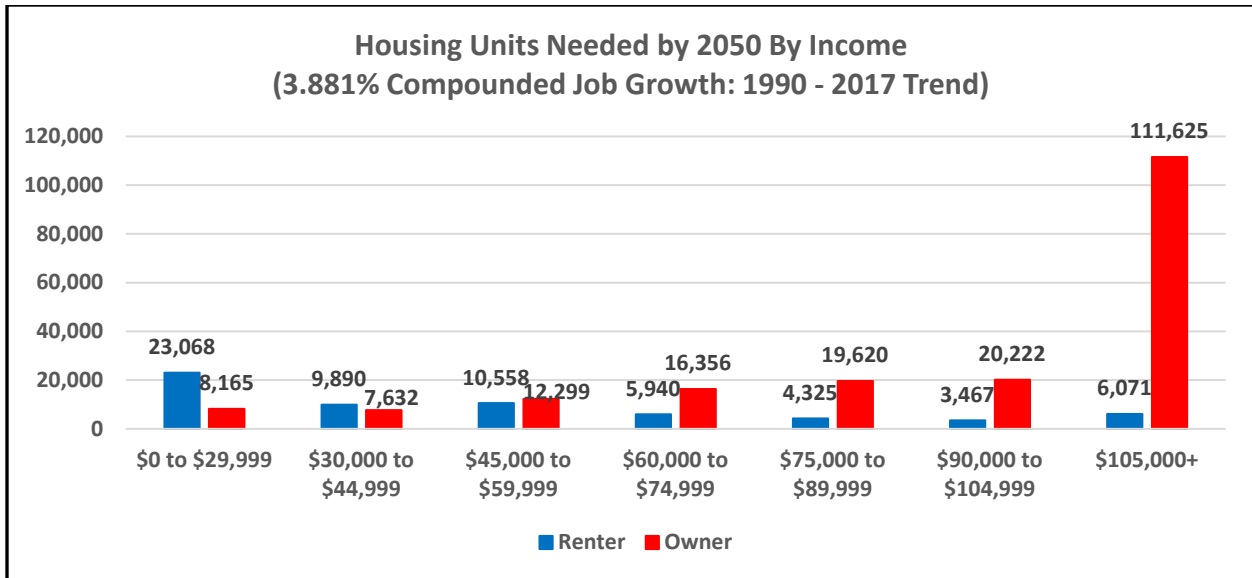
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



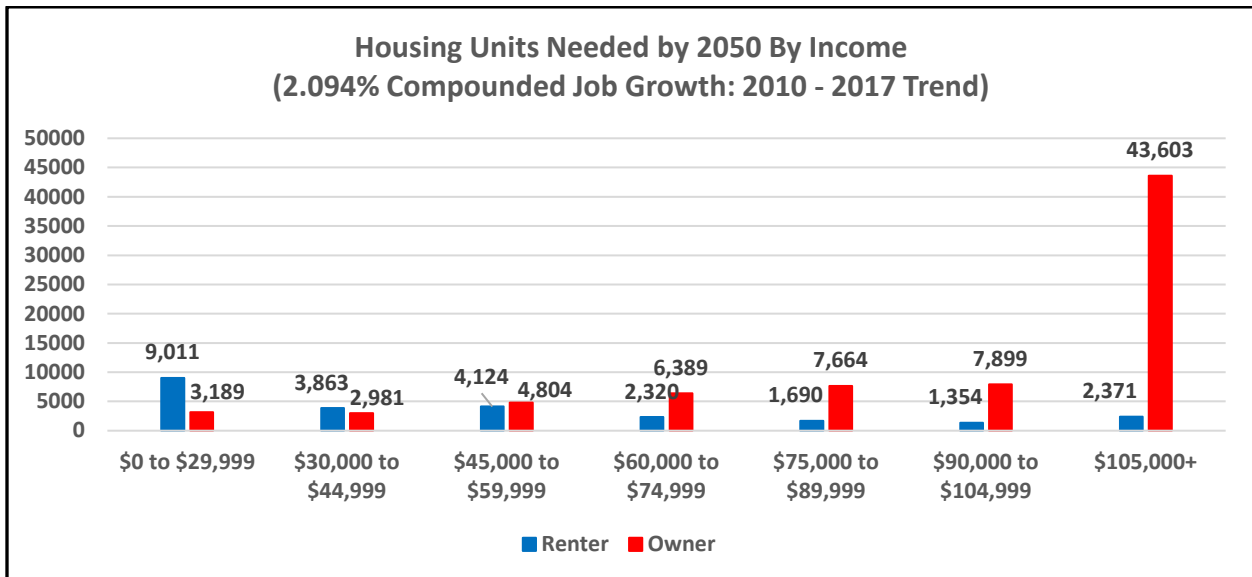
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

C. Fairfield County

| Housing Need Demand Summary (2050) | | | |
|--|----------------|--------|--------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 1.357%) | 15,798 | 25,736 | 41,533 |
| Compounded Yearly Growth Rate (2010 to 2017: 1.193%) | 13,512 | 22,012 | 35,524 |
| Average Yearly Housing Need (2018 to 2050) | 1,110 to 1,298 | | |
| Average Yearly Permits Issued (1990 to 2017) | 688 | | |

| Population | | | | | | | |
|------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Fairfield County | 122,759 | 146,156 | 154,686 | 23,397 | 19.1% | 8,530 | 5.8% |

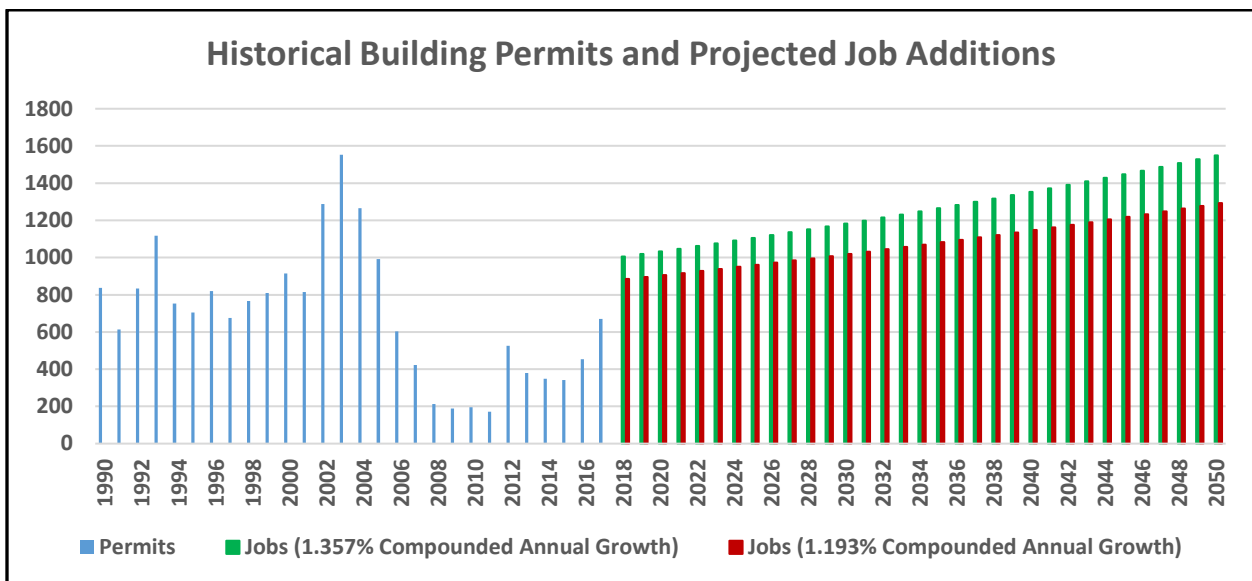
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Fairfield County | 45,425 | 54,310 | 57,072 | 8,885 | 19.6% | 2,762 | 5.1% |

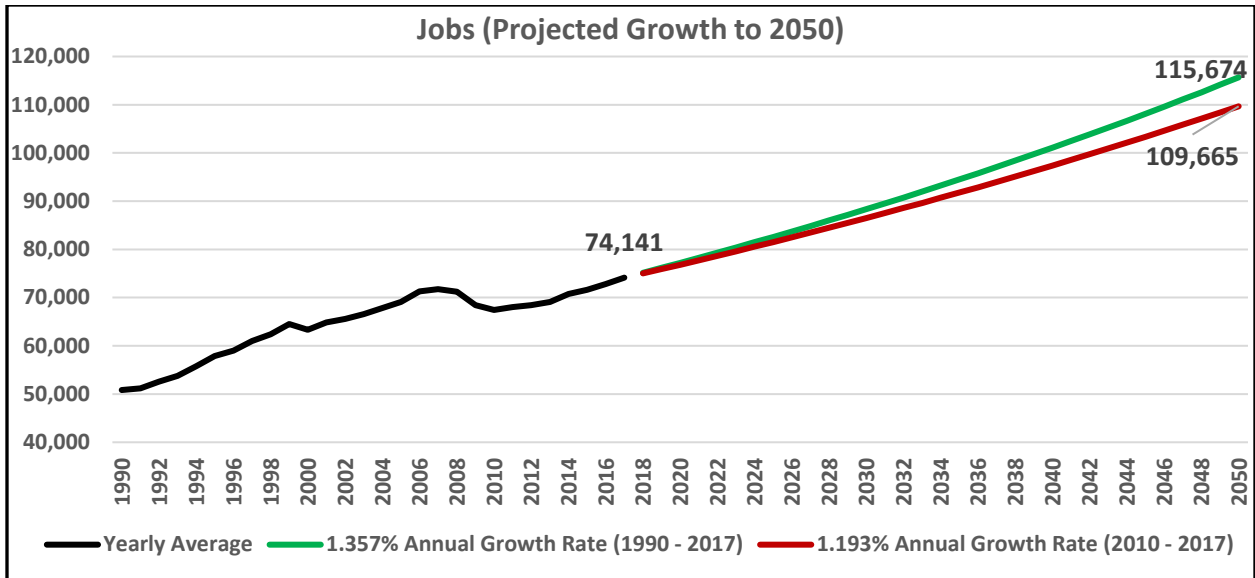
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Fairfield County | \$47,962 | \$56,796 | \$61,975 | \$8,834 | 18.4% | \$5,179 | 9.1% |

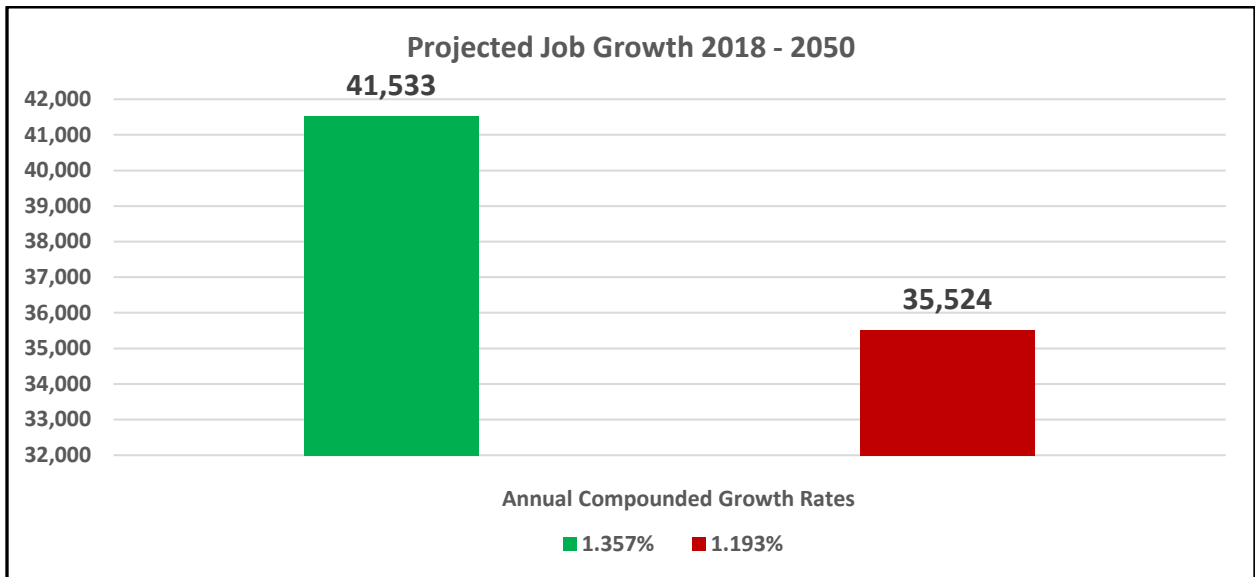
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



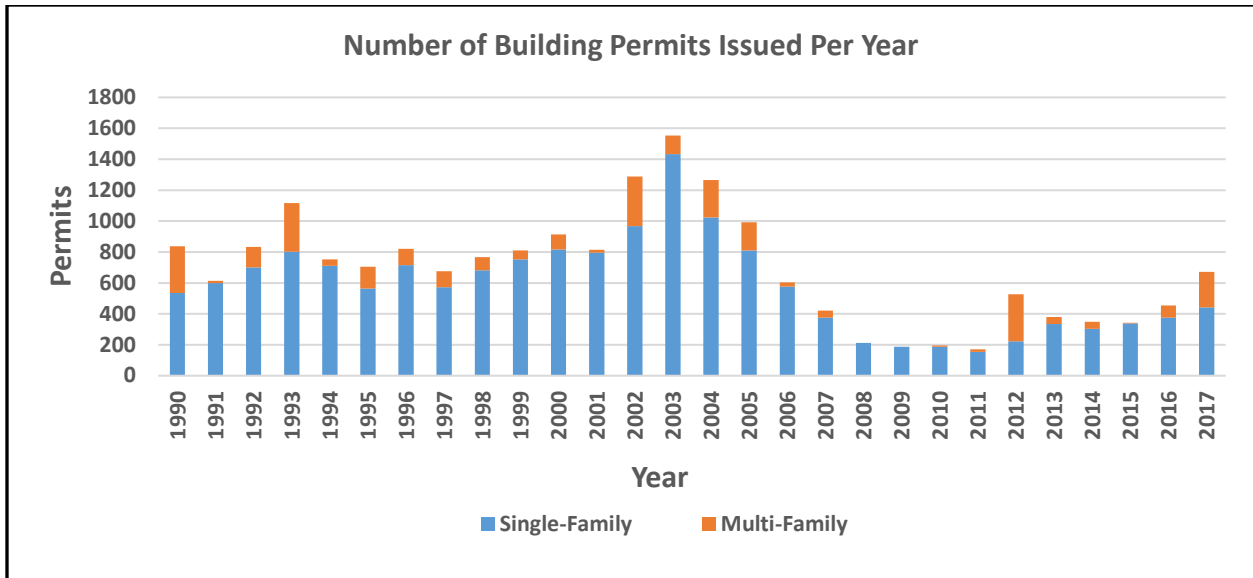
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



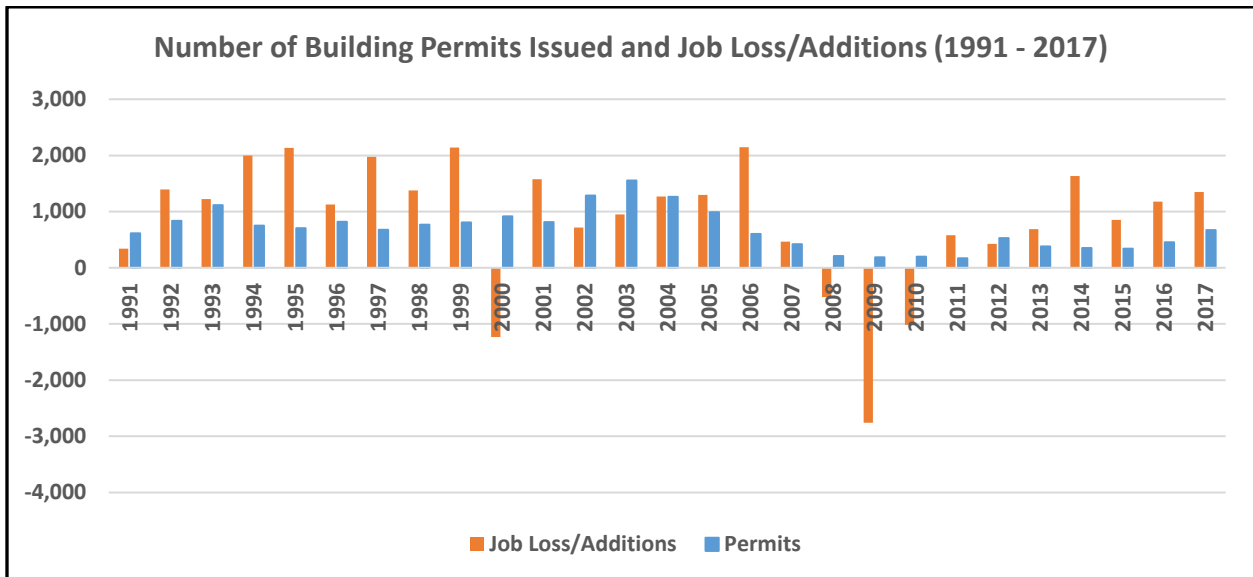
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



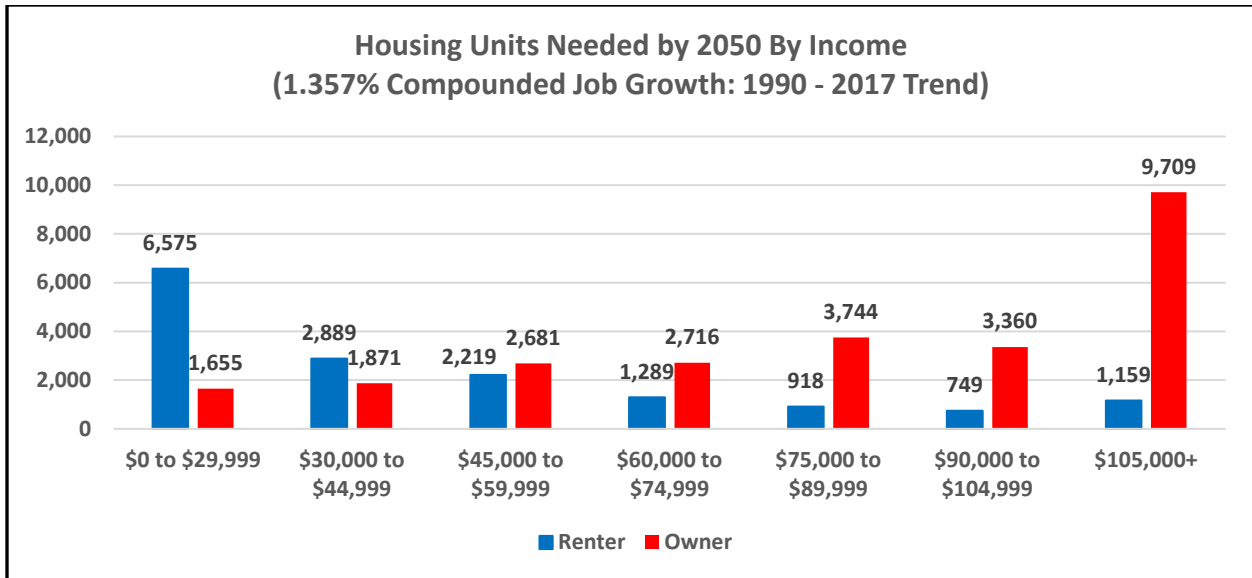
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



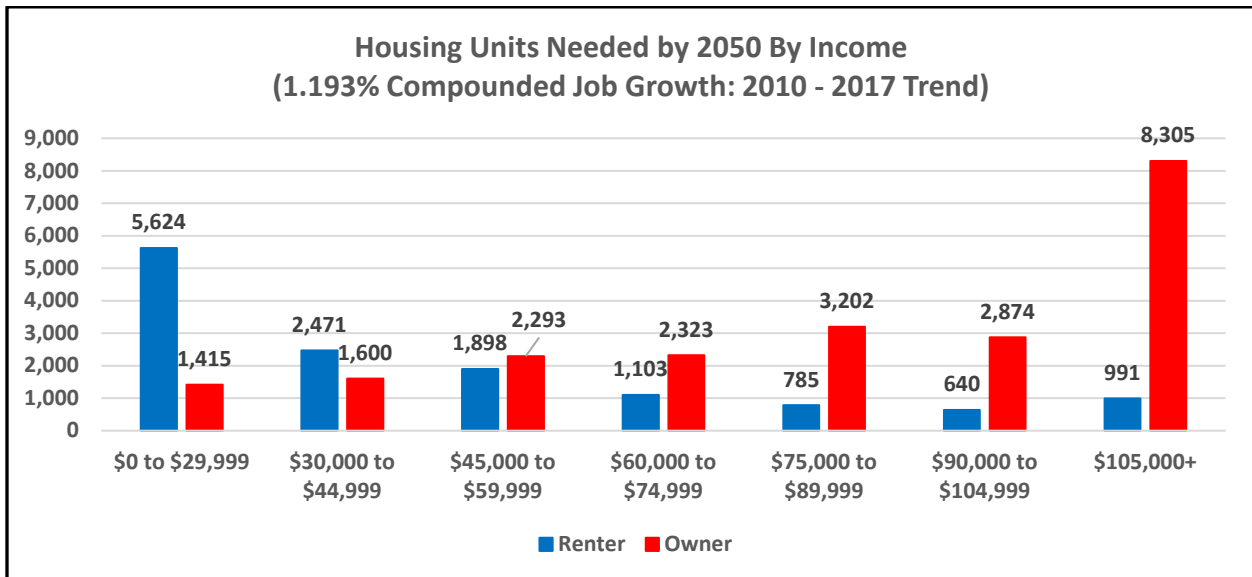
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

D. Franklin County

| Housing Need Demand Summary (2050) | | | |
|--|-----------------|---------|---------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 0.830%) | 120,534 | 84,356 | 204,890 |
| Compounded Yearly Growth Rate (2010 to 2017: 1.691%) | 283,988 | 198,750 | 482,739 |
| Average Yearly Housing Need (2018 to 2050) | 6,402 to 15,086 | | |
| Average Yearly Permits Issued (1990 to 2017) | 6,364 | | |

| Population | | | | | | | |
|-----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Franklin County | 1,068,978 | 1,163,414 | 1,283,688 | 94,436 | 8.8% | 120,274 | 10.3% |

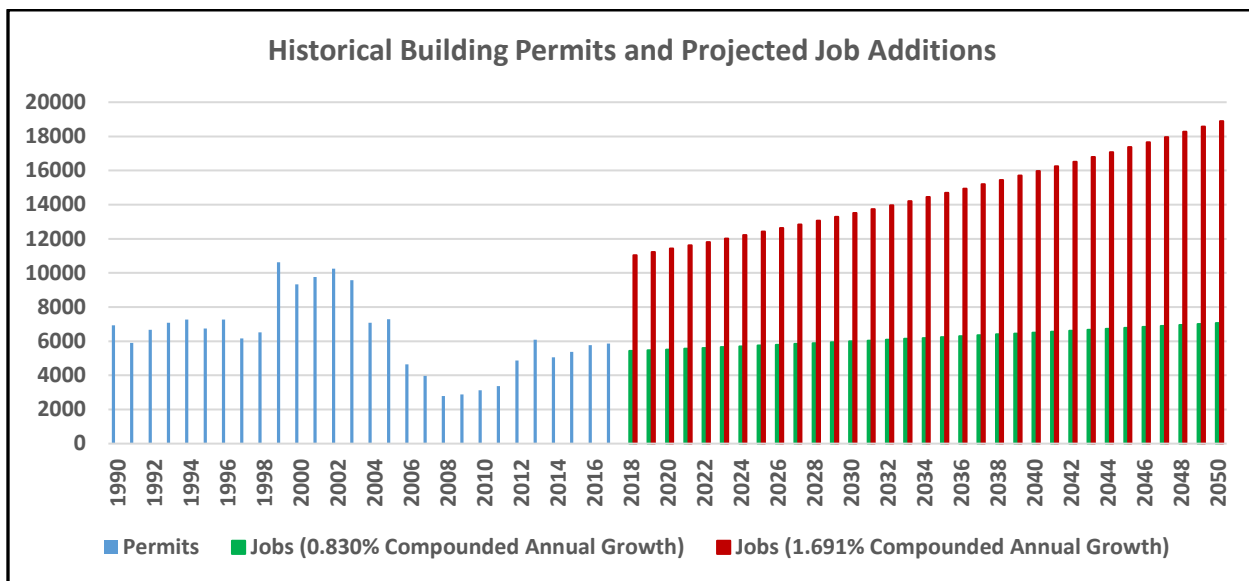
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|-----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Franklin County | 438,778 | 477,235 | 524,493 | 38,457 | 8.8% | 47,258 | 9.9% |

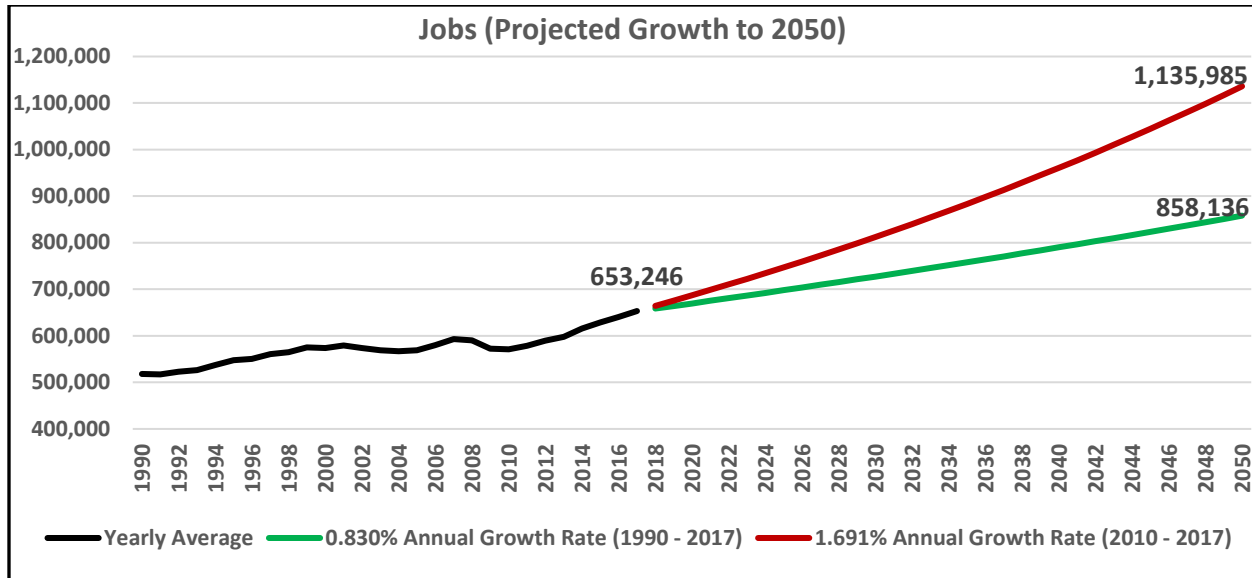
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Franklin County | \$42,734 | \$49,087 | \$53,567 | \$6,353 | 14.9% | \$4,480 | 9.1% |

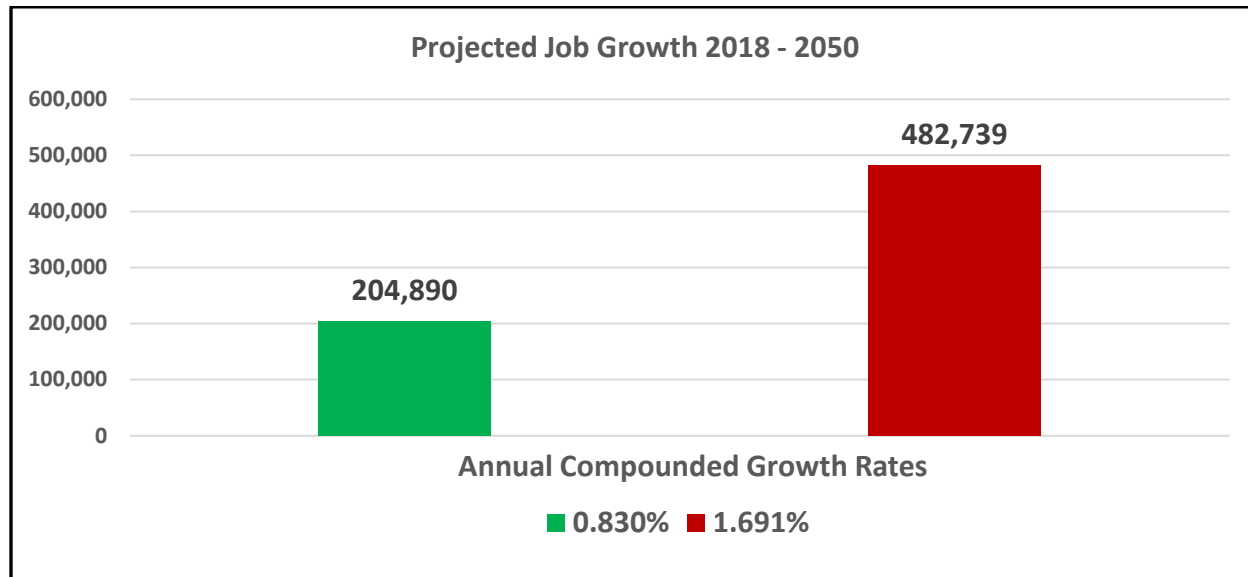
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



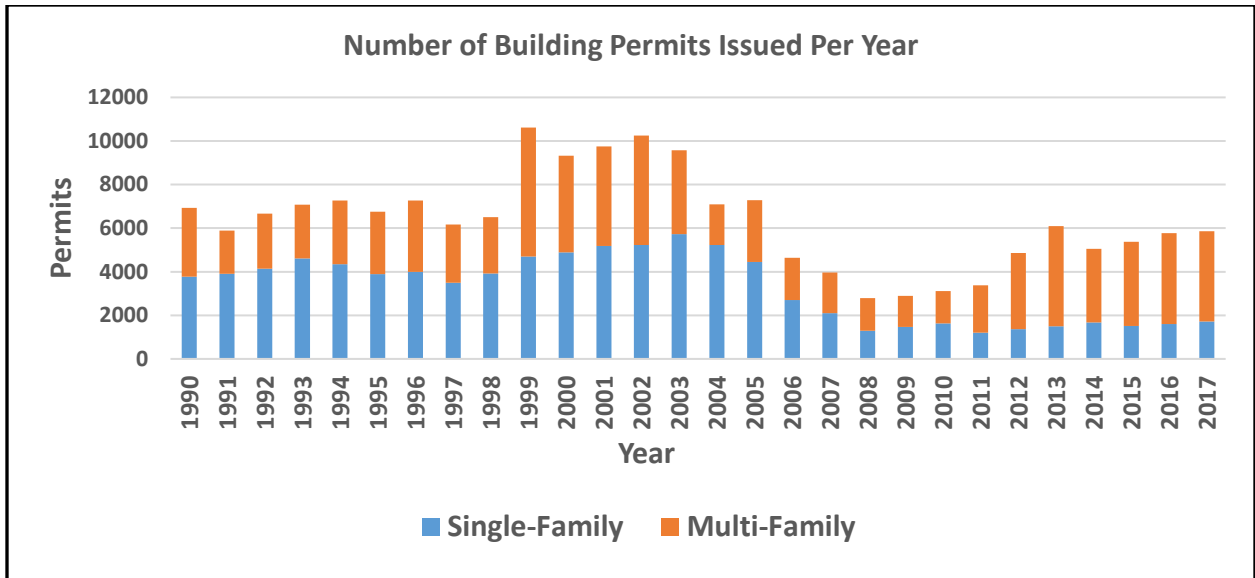
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



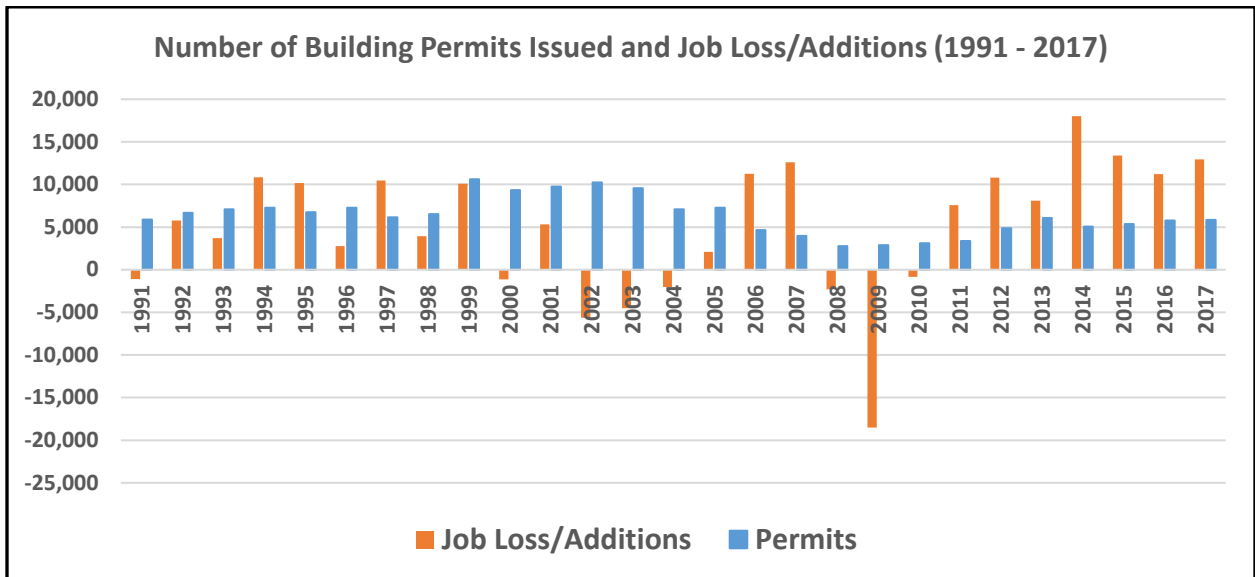
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



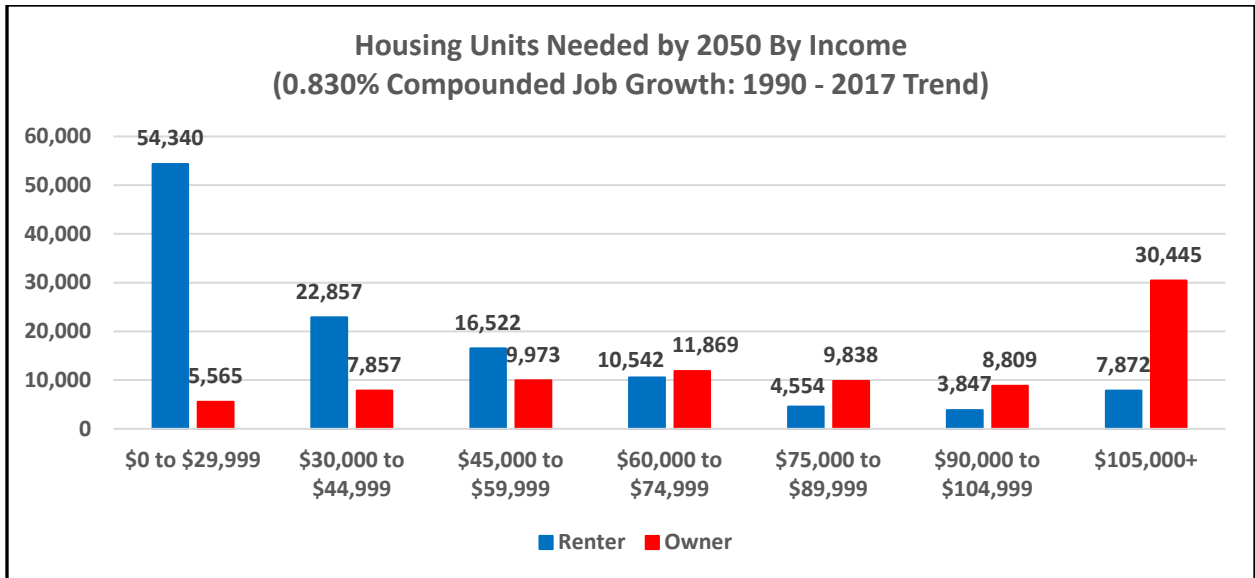
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



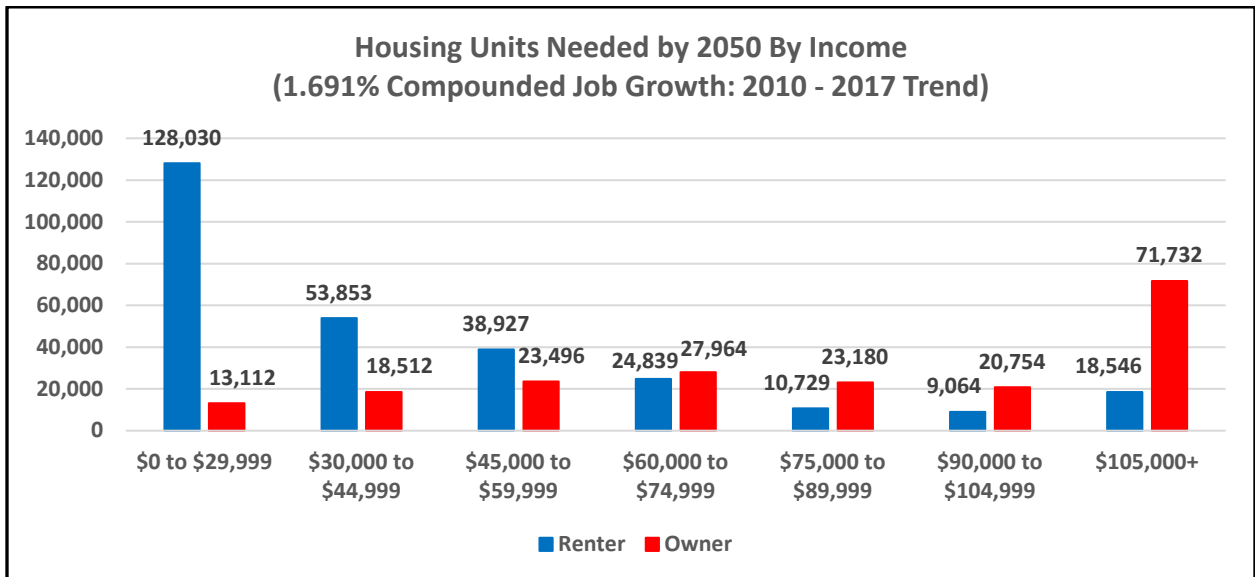
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

E. Hocking County

| Housing Need Demand Summary (2050) | | | |
|--|----------|-------|-------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 0.569%) | 956 | 1,625 | 2,581 |
| Compounded Yearly Growth Rate (2010 to 2017: 0.138%) | 216 | 367 | 583 |
| Average Yearly Housing Need (2018 to 2050) | 18 to 81 | | |
| Average Yearly Permits Issued (1990 to 2017) | 28 | | |

| Population | | | | | | | |
|----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Hocking County | 28,241 | 29,380 | 28,798 | 1,139 | 4.0% | -582 | -2.0% |

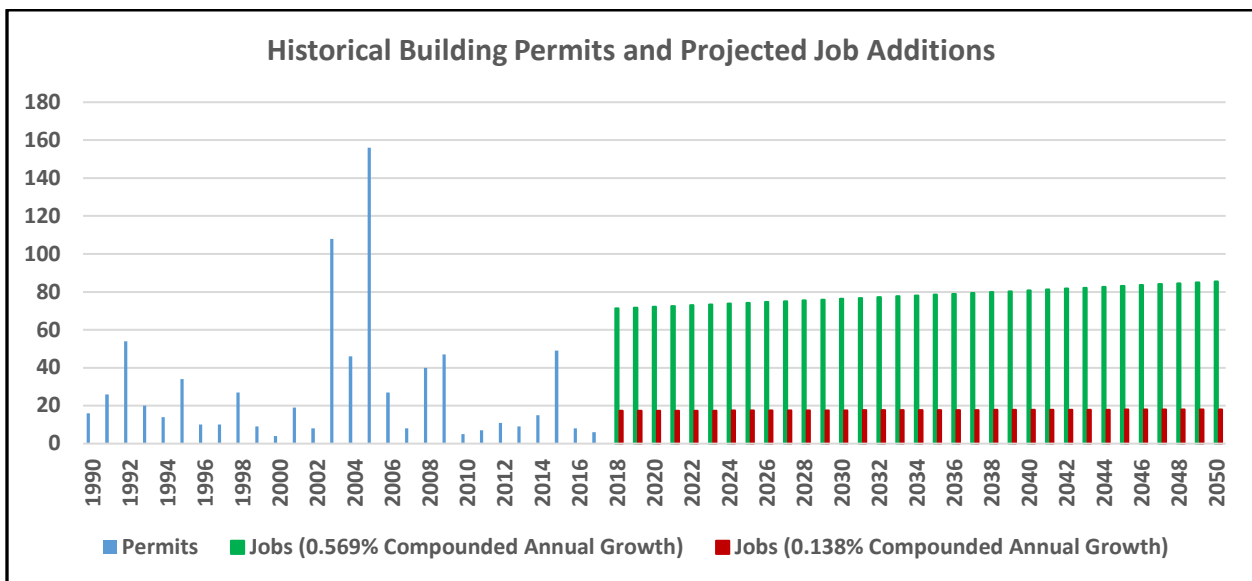
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Hocking County | 10,843 | 11,369 | 11,307 | 526 | 4.9% | -62 | -0.5% |

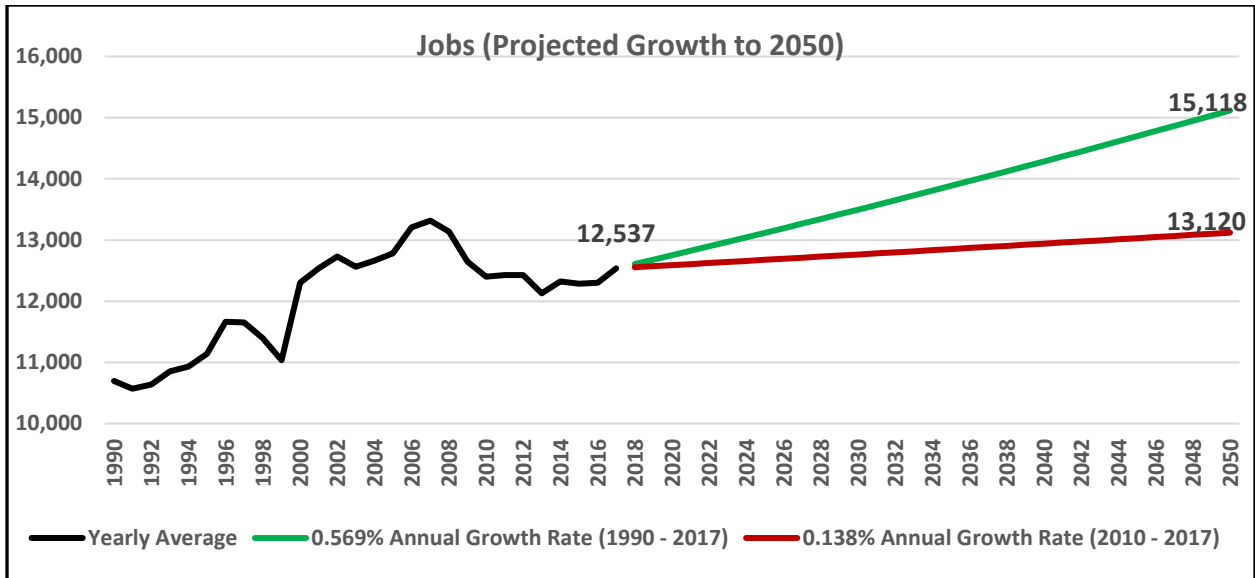
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Hocking County | \$34,261 | \$39,586 | \$46,946 | \$5,325 | 15.5% | \$7,360 | 18.6% |

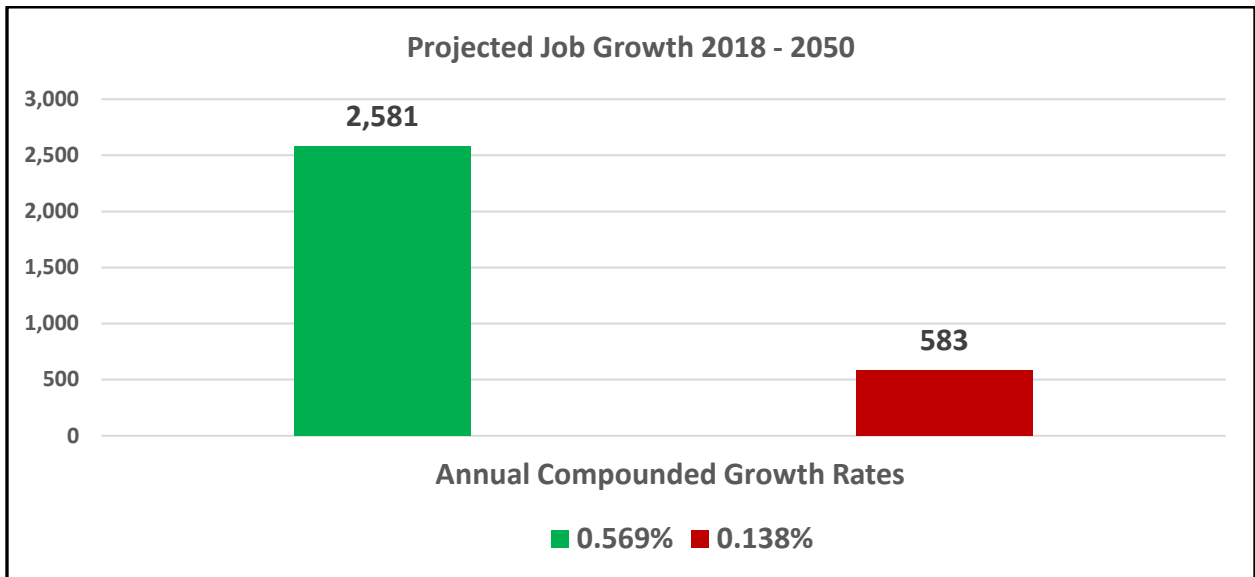
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



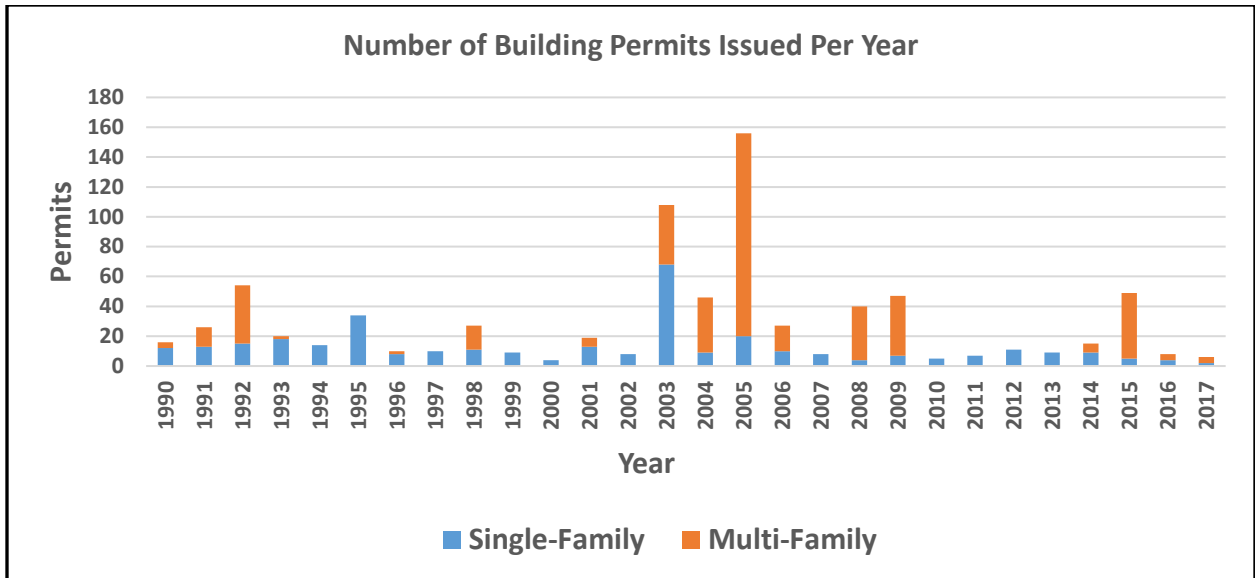
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



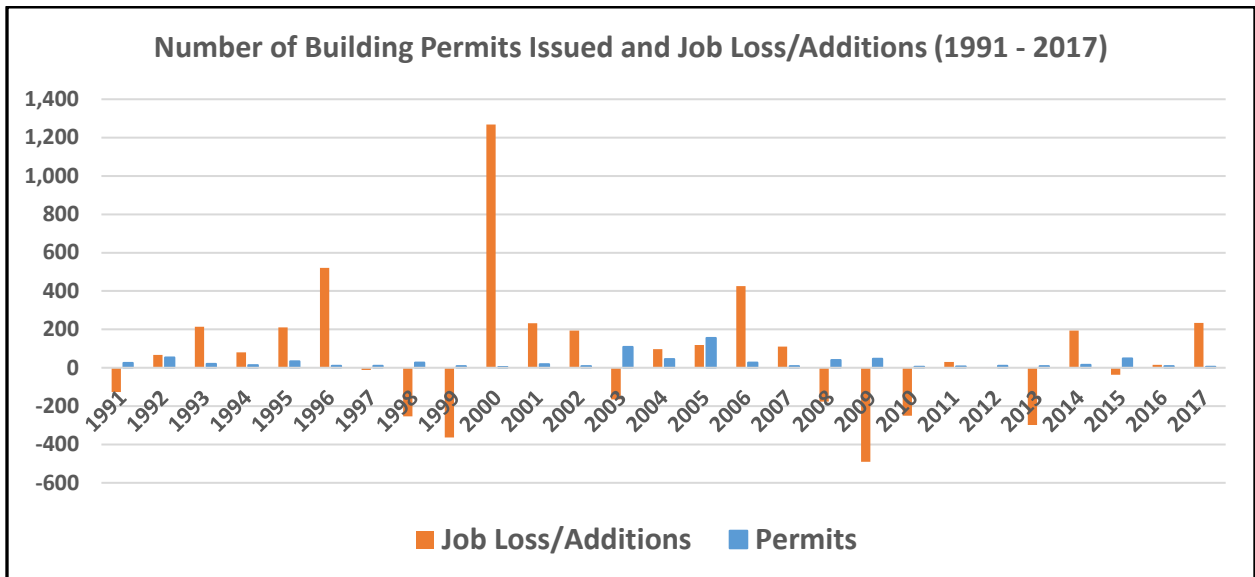
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



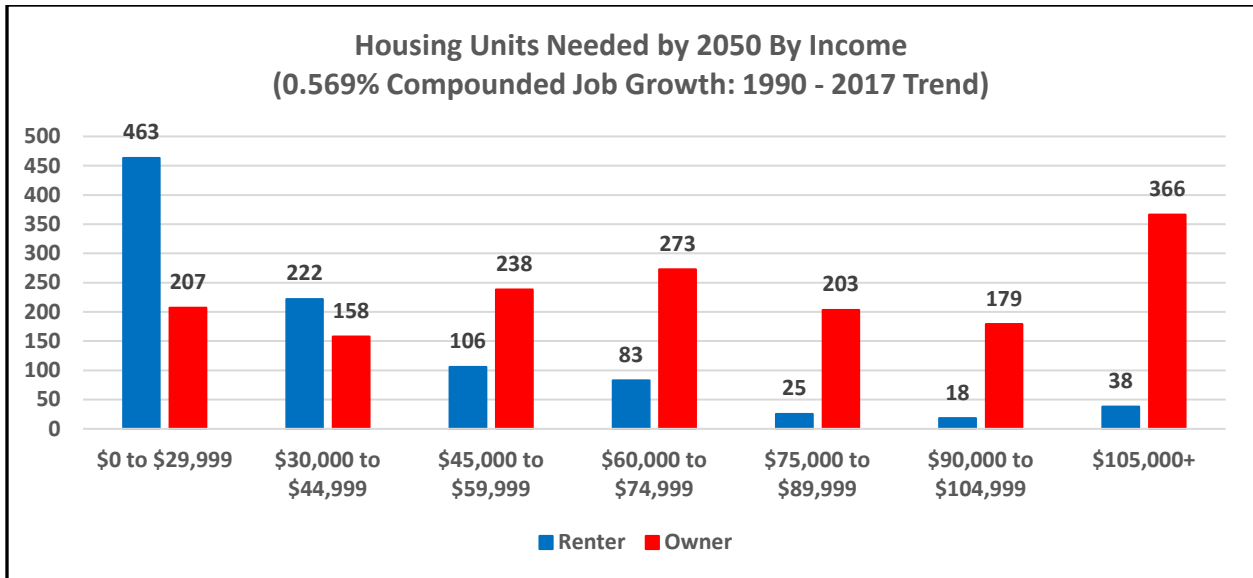
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics



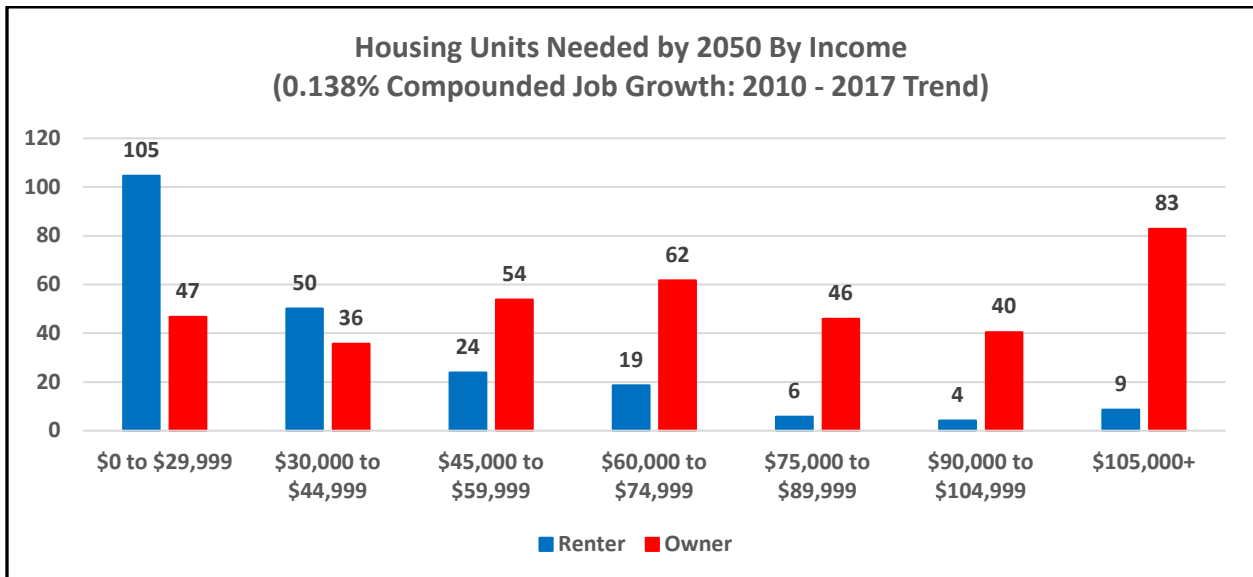
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

F. Licking County

| Housing Need Demand Summary (2050) | | | |
|--|----------------|--------|--------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 1.158%) | 16,033 | 23,745 | 39,778 |
| Compounded Yearly Growth Rate (2010 to 2017: 1.054%) | 14,334 | 21,229 | 35,563 |
| Average Yearly Housing Need (2018 to 2050) | 1,111 to 1,243 | | |
| Average Yearly Permits Issued (1990 to 2017) | 742 | | |

| Population | | | | | | | |
|----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Licking County | 145,491 | 166,492 | 173,198 | 21,001 | 14.4% | 6,706 | 4.0% |

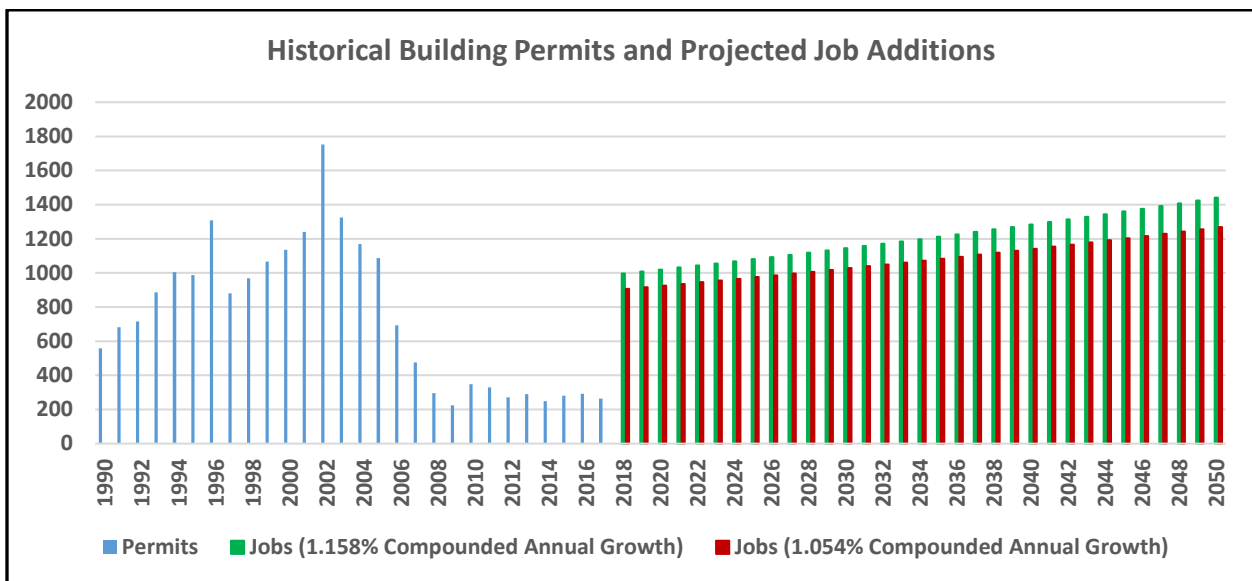
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Licking County | 55,609 | 63,989 | 66,665 | 8,380 | 15.1% | 2,676 | 4.2% |

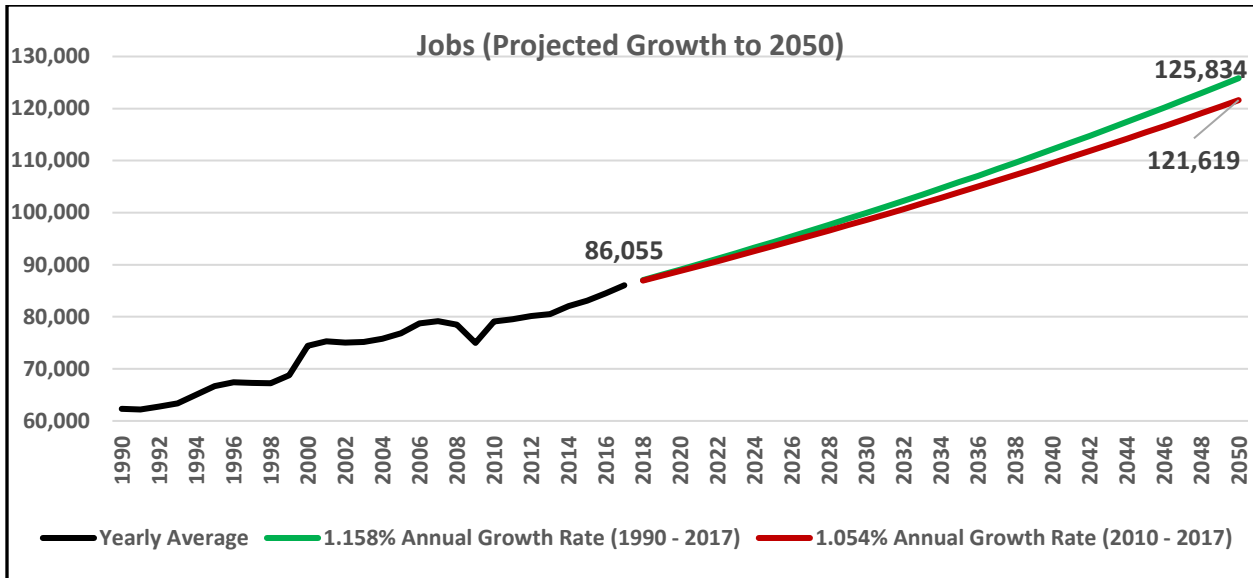
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Licking County | \$44,124 | \$53,291 | \$57,669 | \$9,167 | 20.8% | \$4,378 | 8.2% |

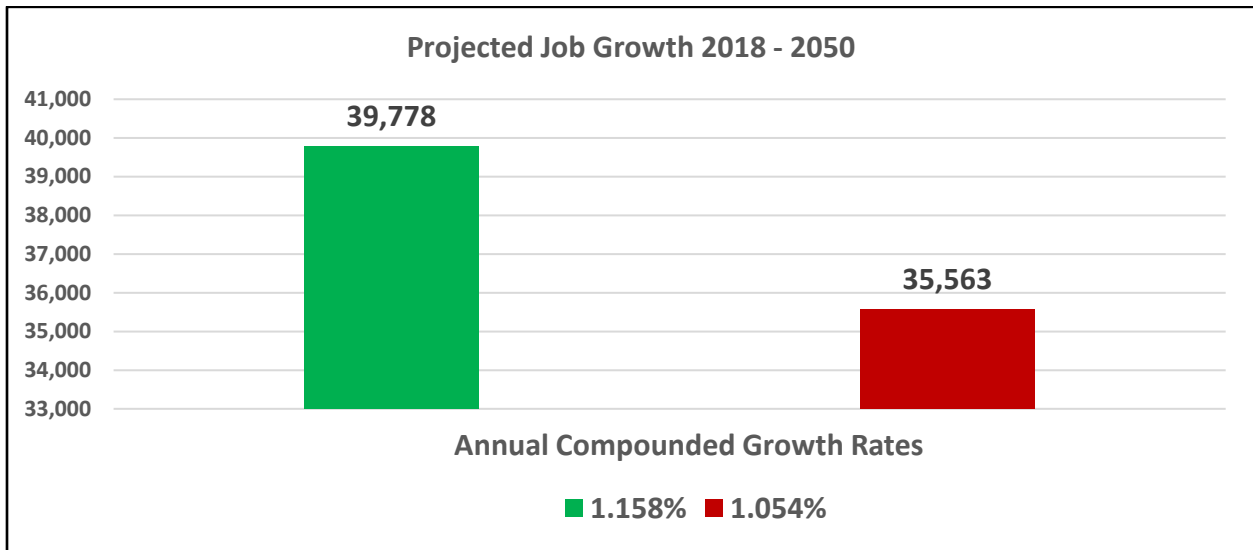
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



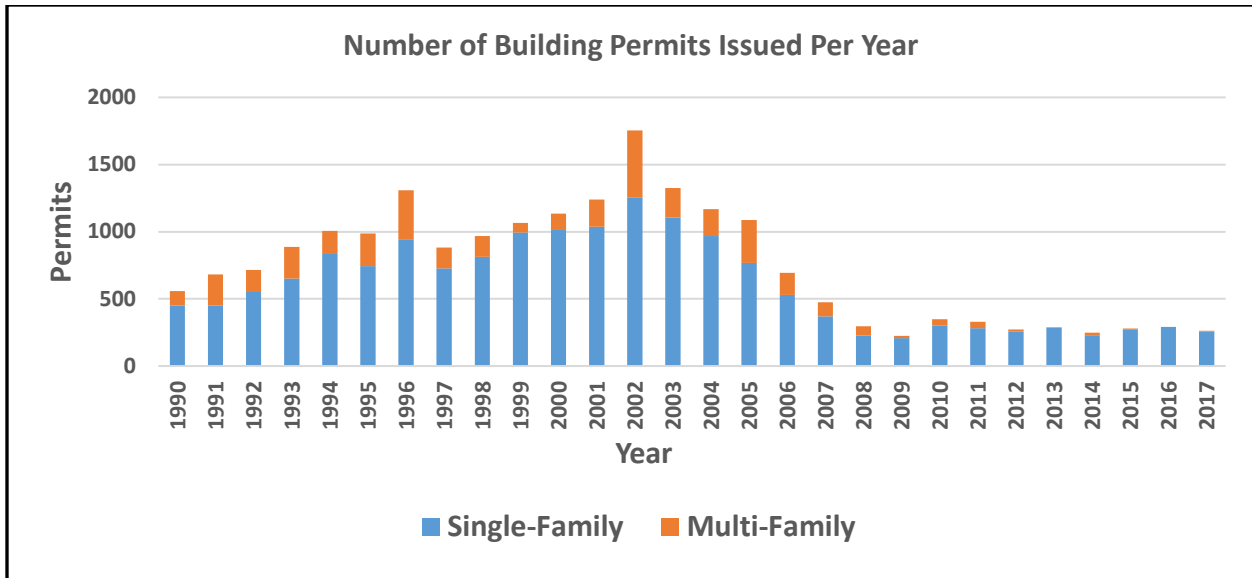
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



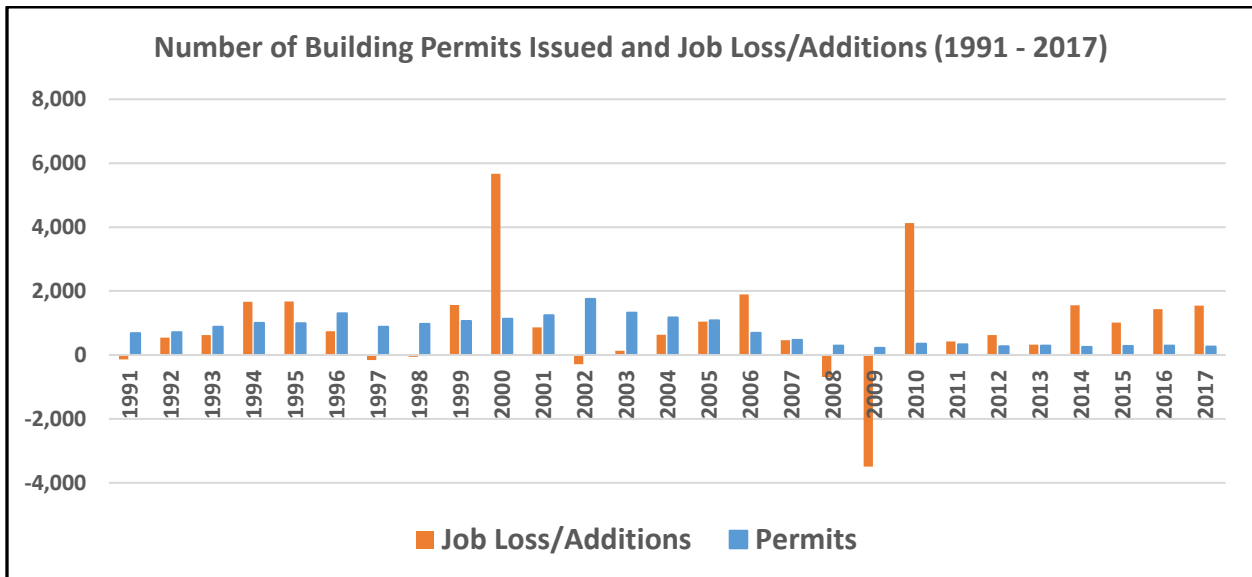
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



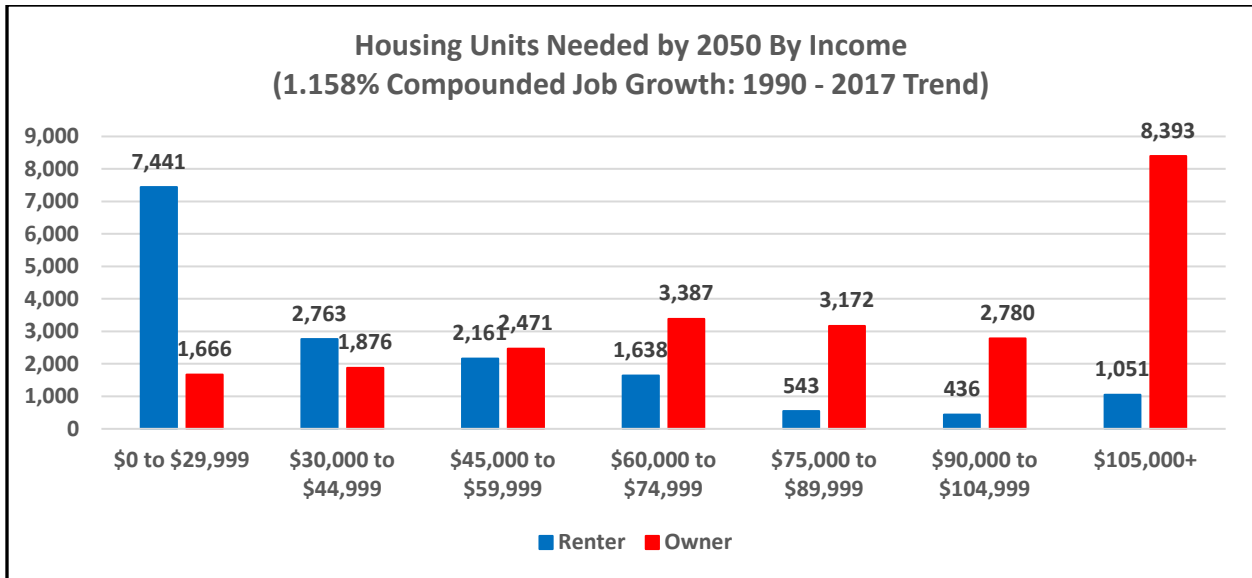
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



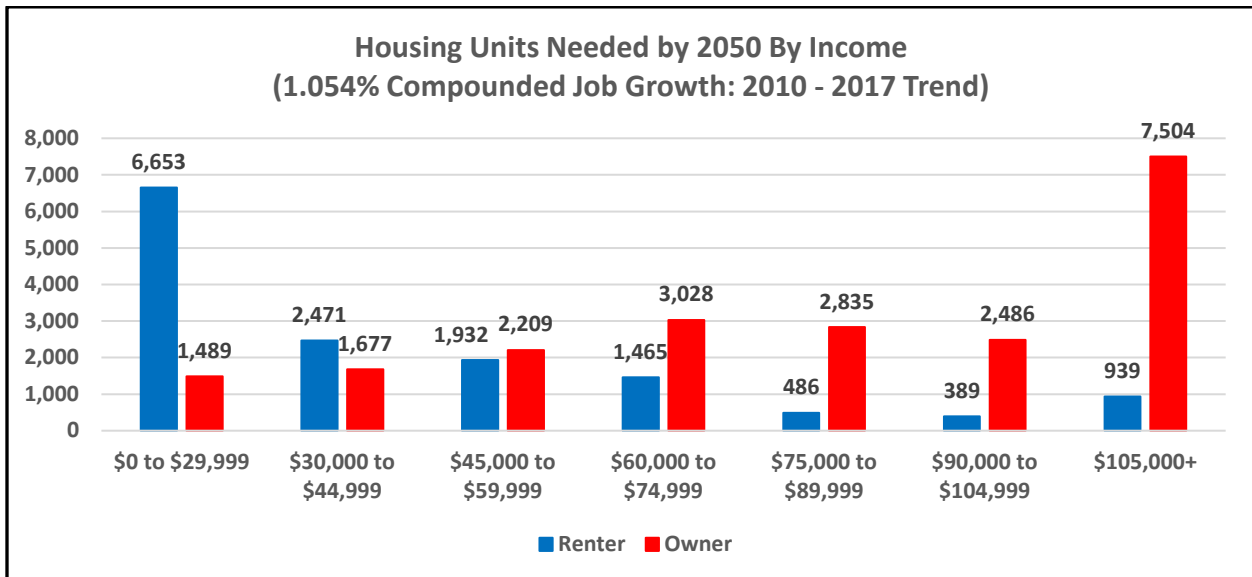
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

G. Madison County

| Housing Need Demand Summary (2050) | | | |
|--|------------|-------|-------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 0.517%) | 1,422 | 2,268 | 3,689 |
| Compounded Yearly Growth Rate (2010 to 2017: 0.703%) | 1,994 | 3,180 | 5,174 |
| Average Yearly Housing Need (2018 to 2050) | 115 to 162 | | |
| Average Yearly Permits Issued (1990 to 2017) | 135 | | |

| Population | | | | | | | |
|----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Madison County | 39,937 | 43,435 | 45,193 | 3,498 | 8.8% | 1,758 | 4.0% |

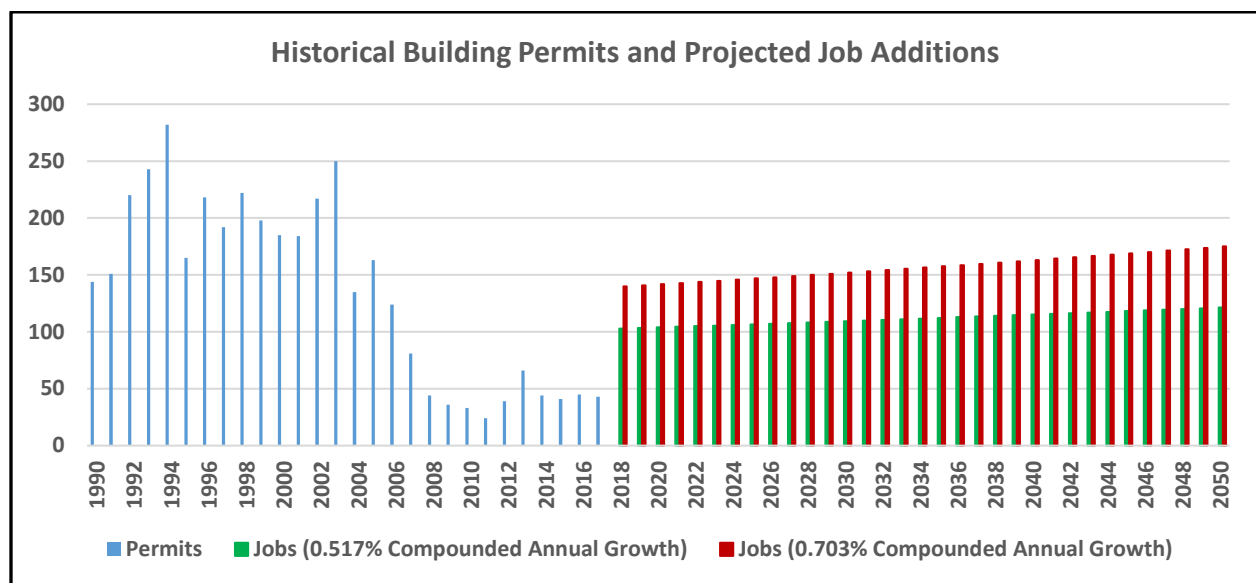
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Madison County | 13,669 | 14,734 | 15,310 | 1,065 | 7.8% | 576 | 3.9% |

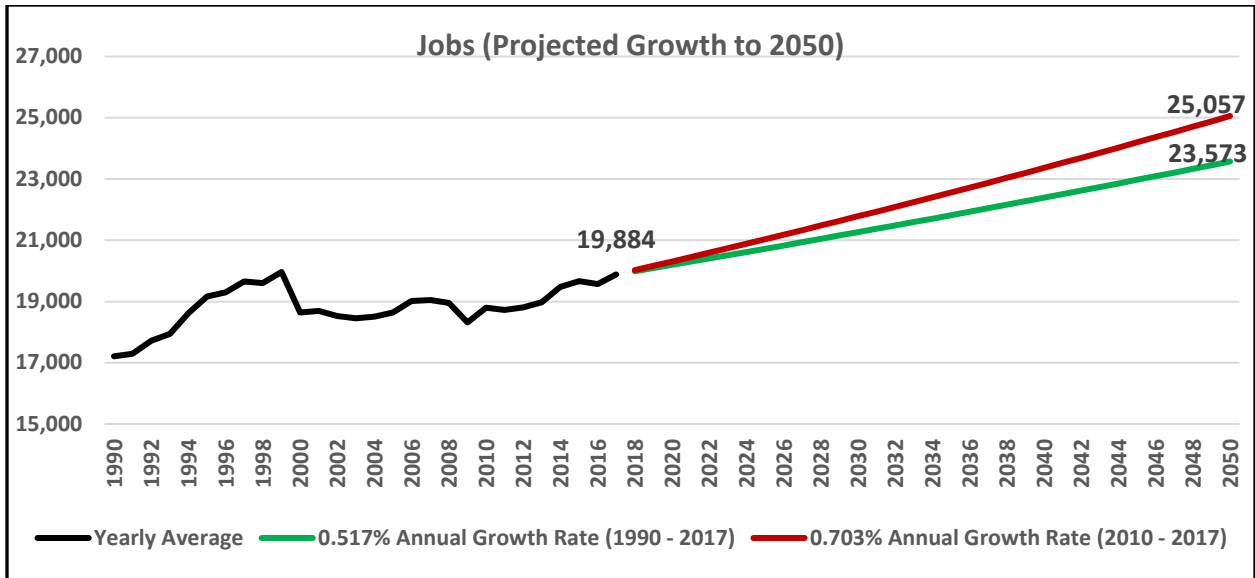
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Madison County | \$44,212 | \$50,533 | \$56,300 | \$6,321 | 14.3% | \$5,767 | 11.4% |

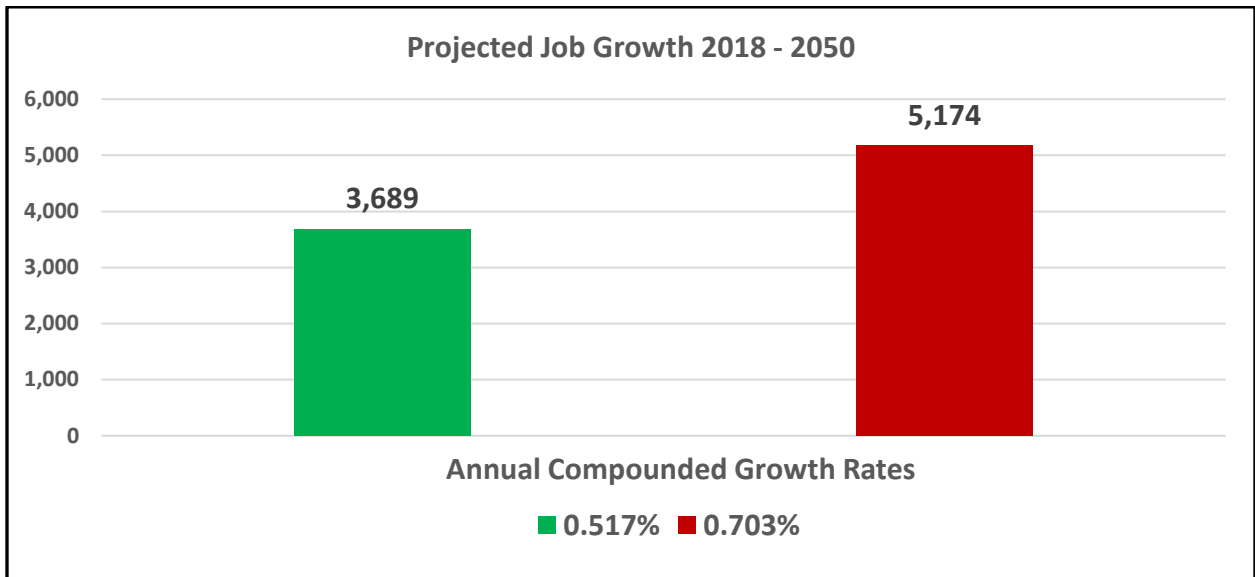
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



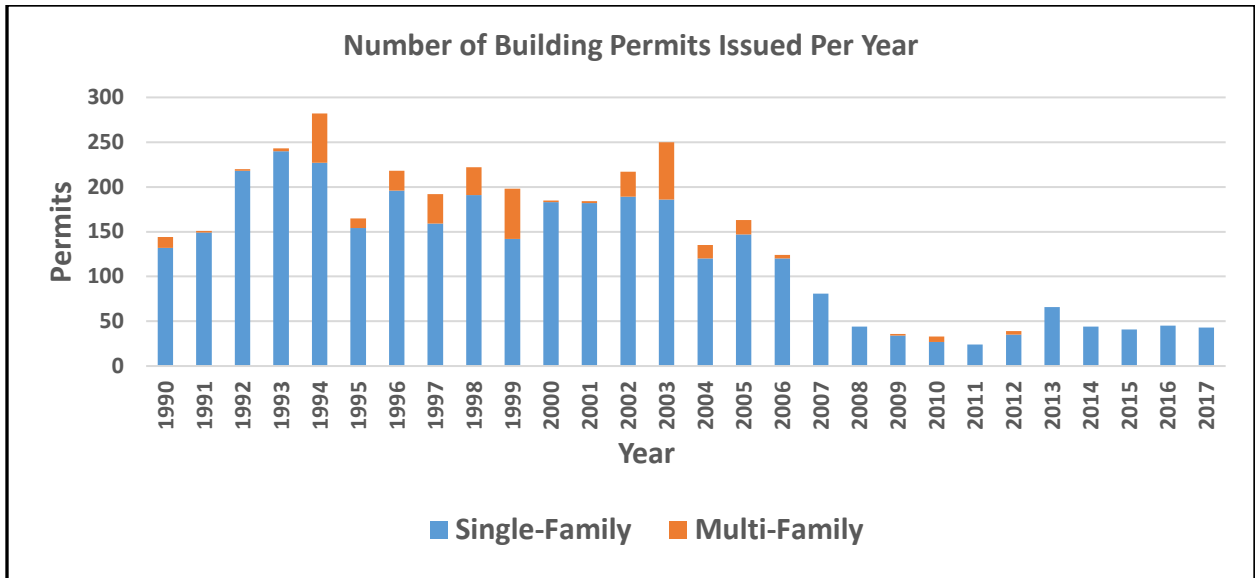
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



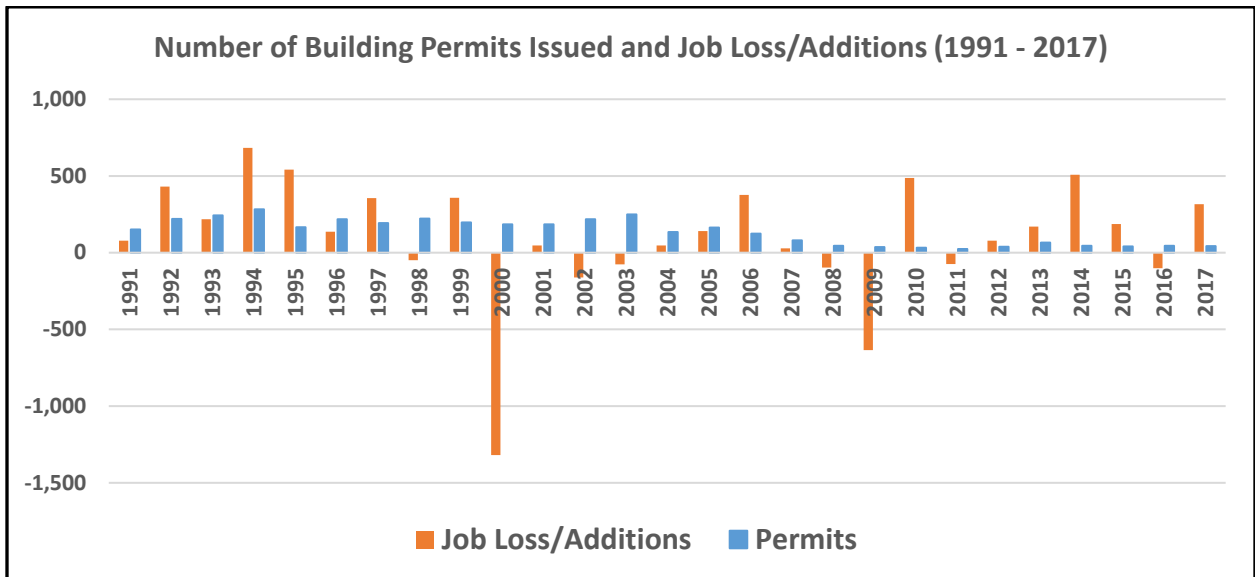
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



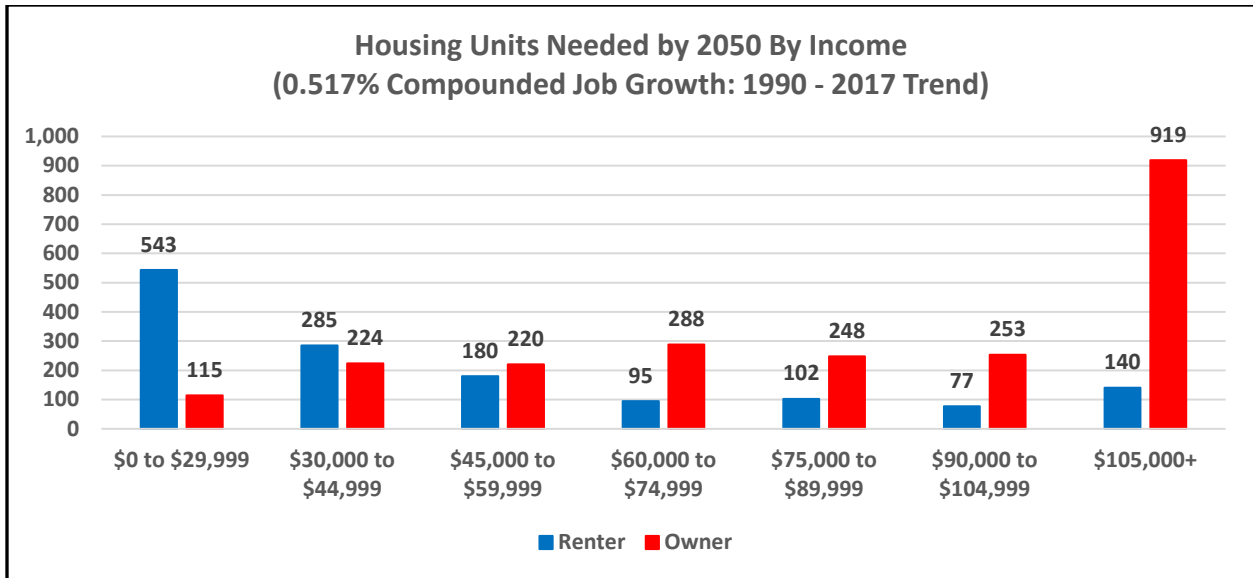
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



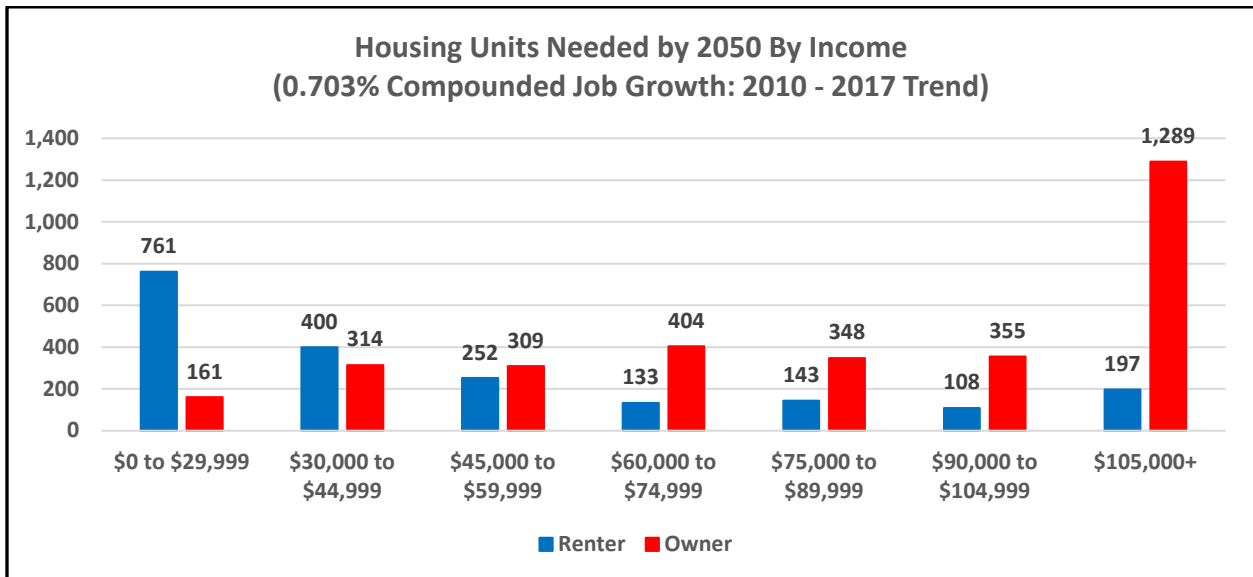
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

H. Morrow County

| Housing Need Demand Summary (2050) | | | |
|--|------------|-------|-------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 0.789%) | 1,393 | 3,411 | 4,804 |
| Compounded Yearly Growth Rate (2010 to 2017: 0.709%) | 1,236 | 3,027 | 4,263 |
| Average Yearly Housing Need (2018 to 2050) | 133 to 150 | | |
| Average Yearly Permits Issued (1990 to 2017) | 75 | | |

| Population | | | | | | | |
|---------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Morrow County | 31,628 | 34,827 | 35,214 | 3,199 | 10.1% | 387 | 1.1% |

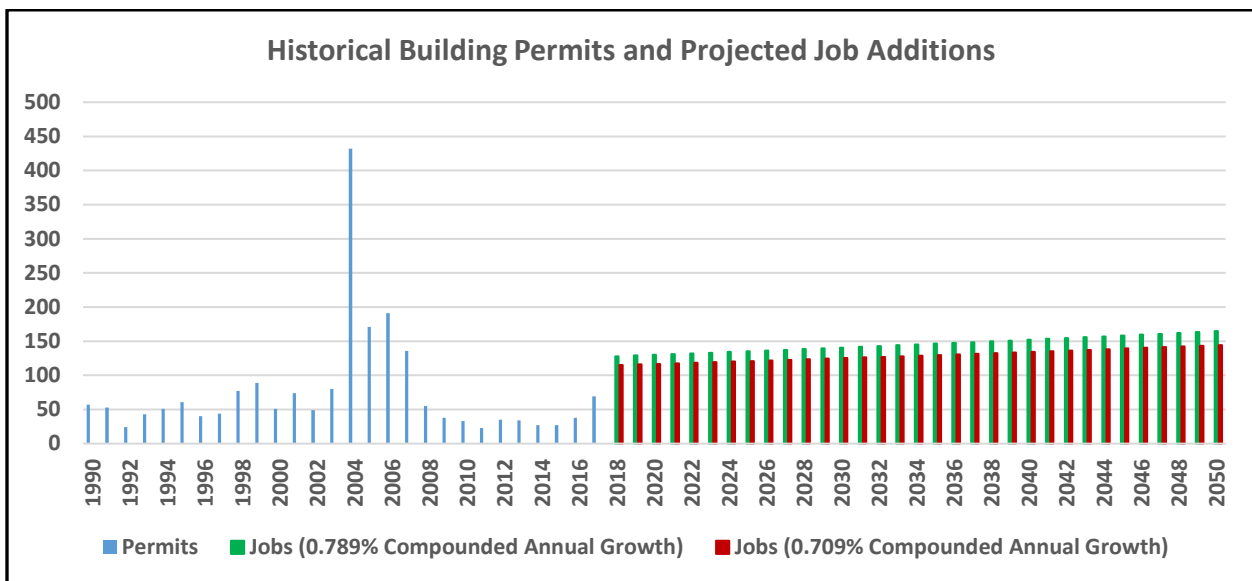
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|---------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Morrow County | 11,499 | 12,855 | 13,022 | 1,356 | 11.8% | 167 | 1.3% |

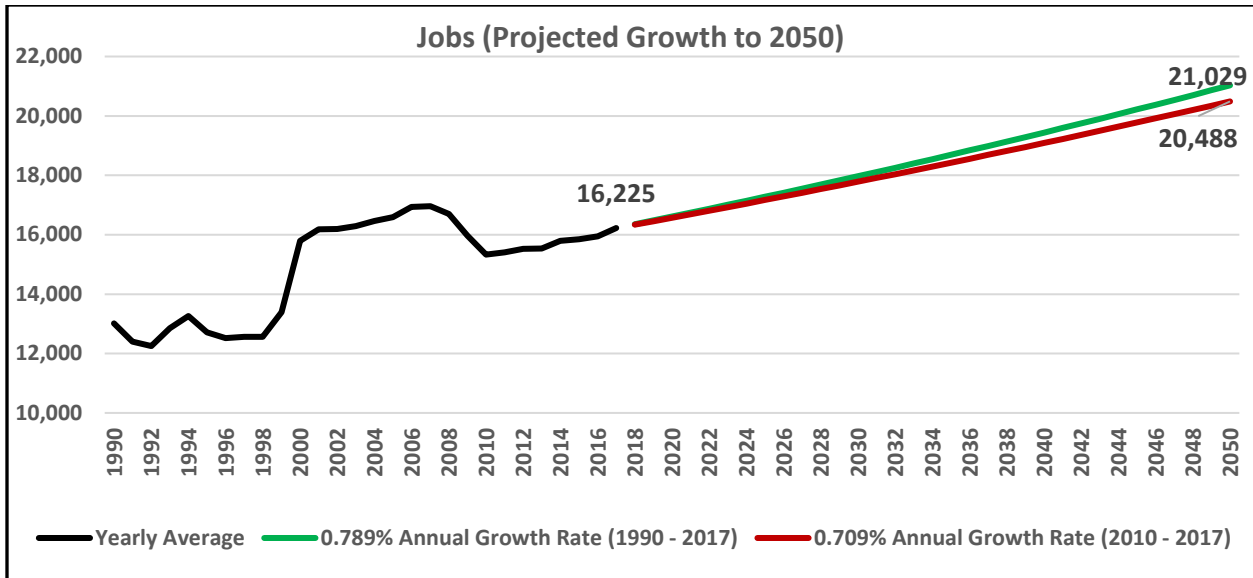
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Morrow County | \$40,882 | \$49,891 | \$53,753 | \$9,009 | 22.0% | \$3,862 | 7.7% |

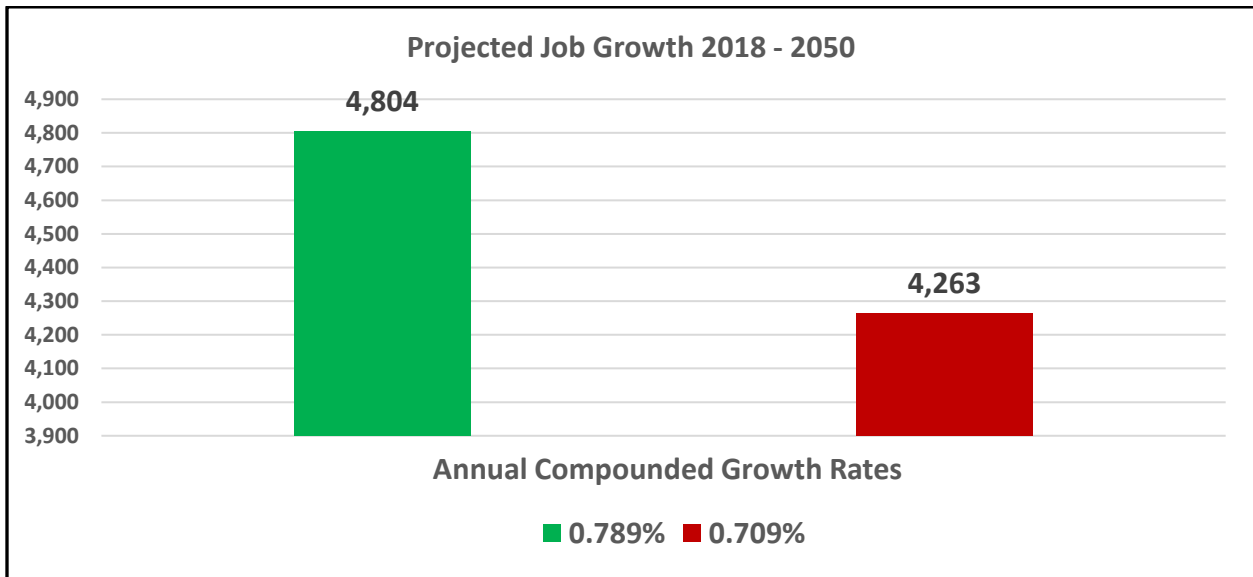
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



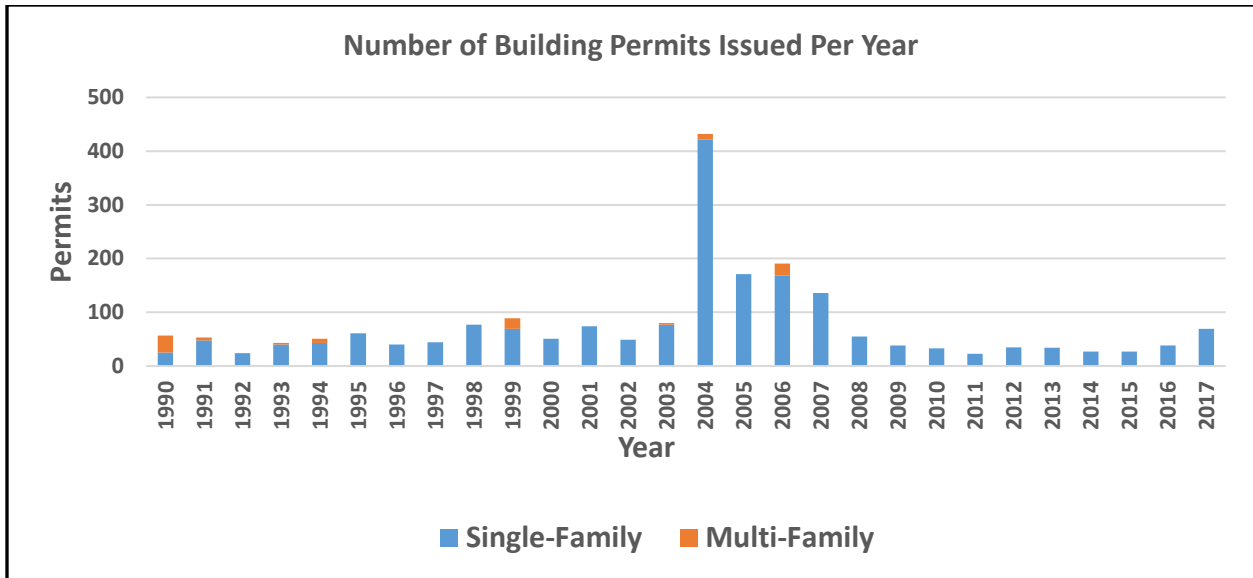
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



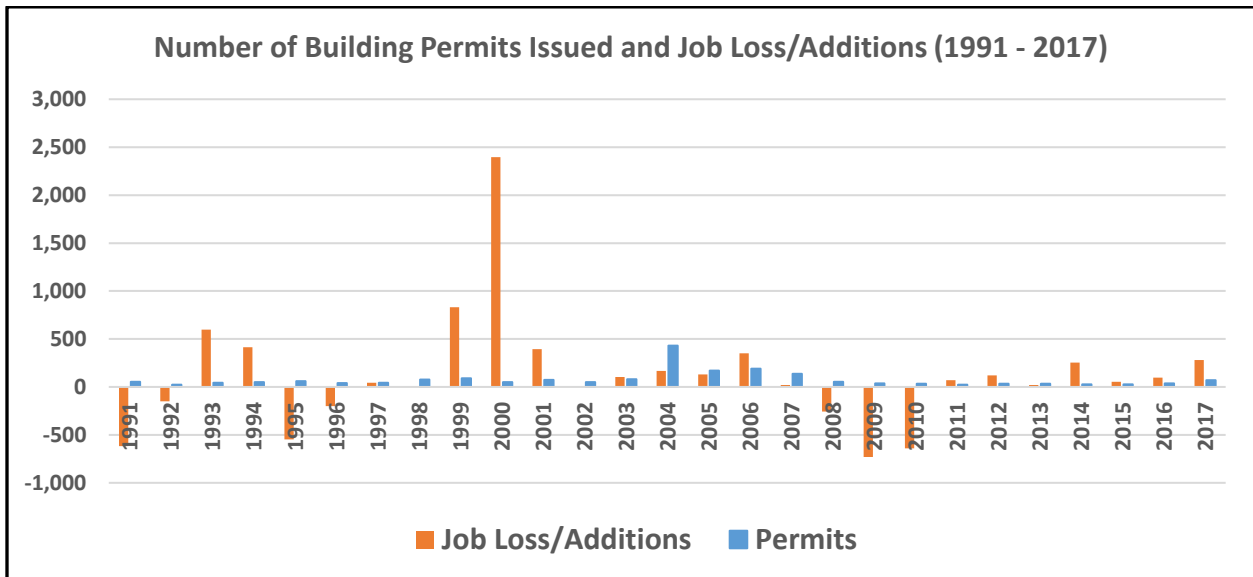
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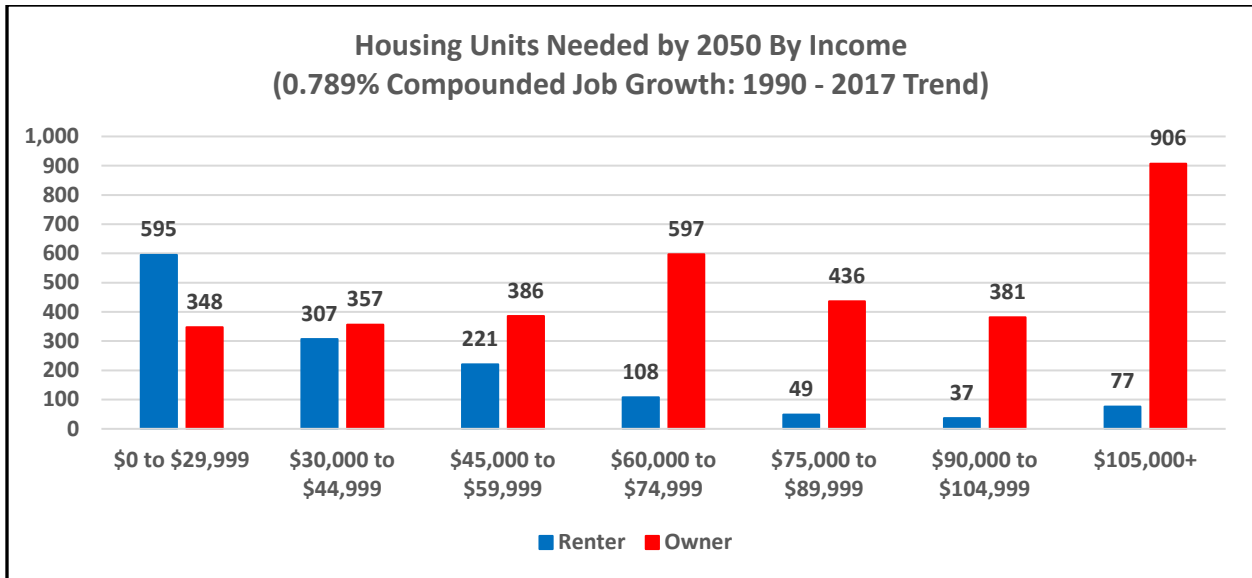
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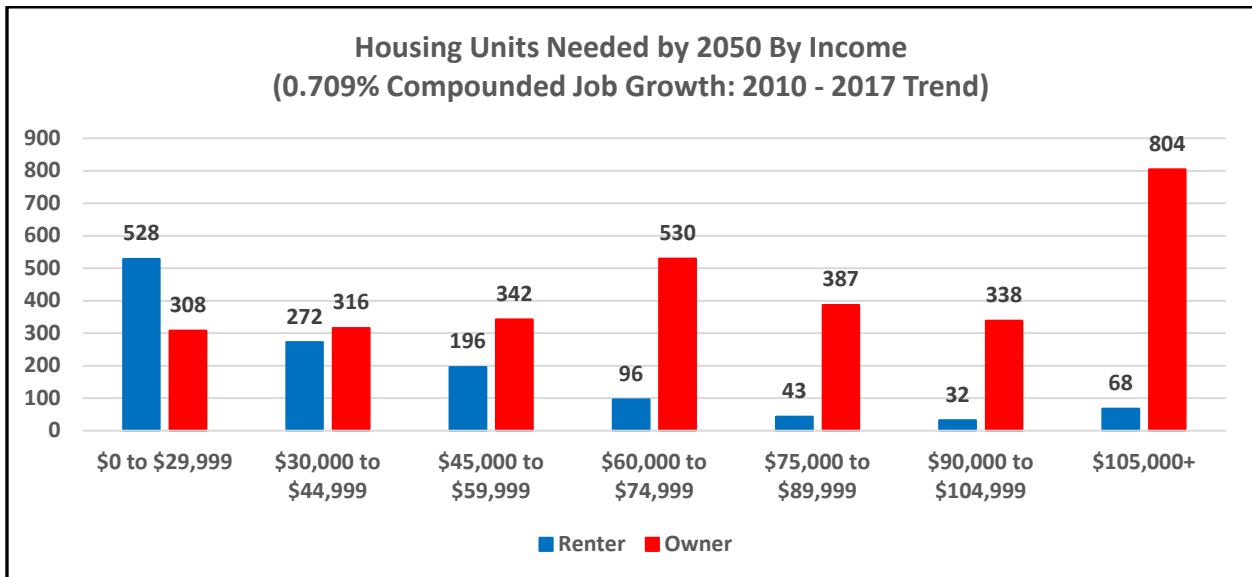
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

I. Perry County

| Housing Need Demand Summary (2050) | | | |
|--|--------|-------|-------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 0.645%) | 1,373 | 2,212 | 3,585 |
| Compounded Yearly Growth Rate (2010 to 2017: 0.642%) | 1,367 | 2,202 | 3,569 |
| Average Yearly Housing Need (2018 to 2050) | 112 | | |
| Average Yearly Permits Issued (1990 to 2017) | 51 | | |

| Population | | | | | | | |
|--------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Perry County | 34,078 | 36,058 | 36,317 | 1,980 | 5.8% | 259 | 0.7% |

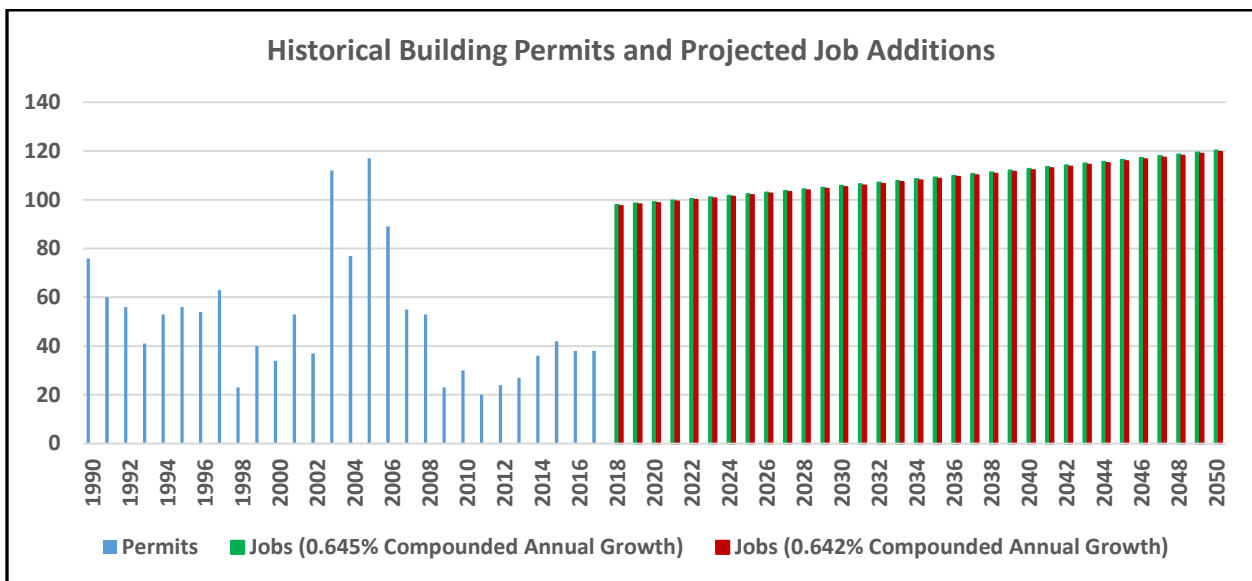
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|--------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Perry County | 12,500 | 13,576 | 13,758 | 1,076 | 8.6% | 182 | 1.3% |

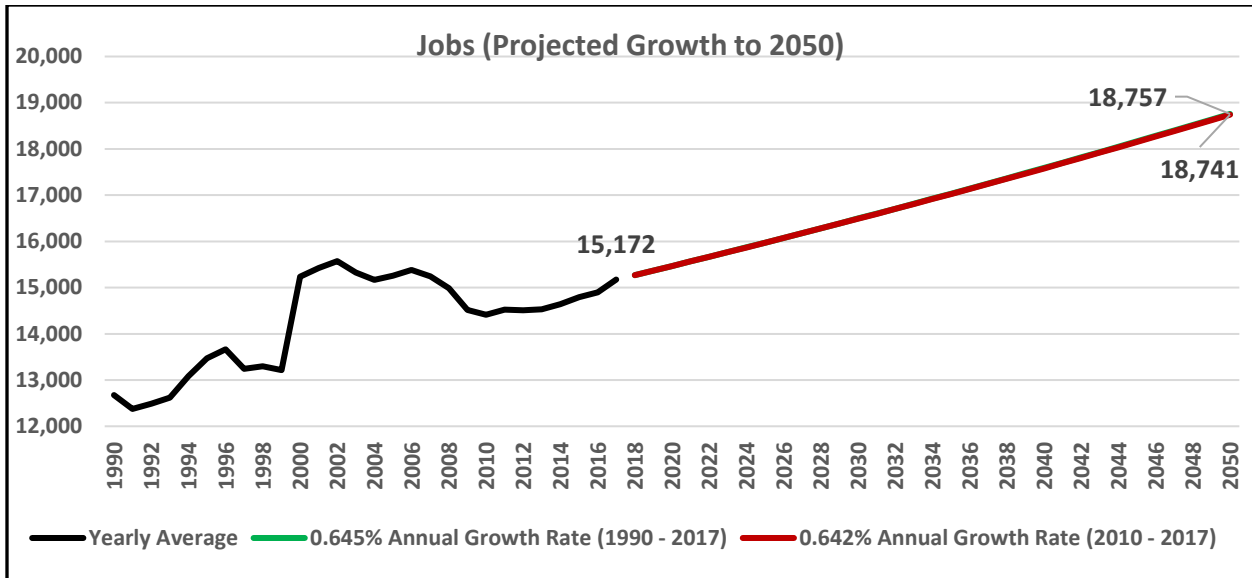
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Perry County | \$34,383 | \$42,388 | \$43,958 | \$8,005 | 23.3% | \$1,570 | 3.7% |

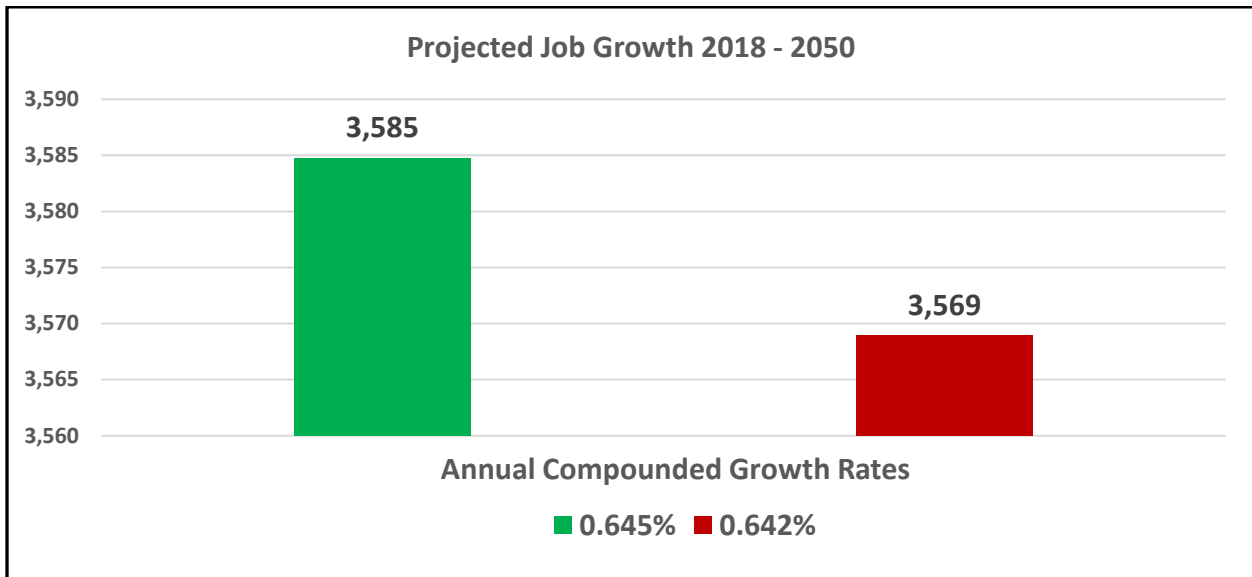
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



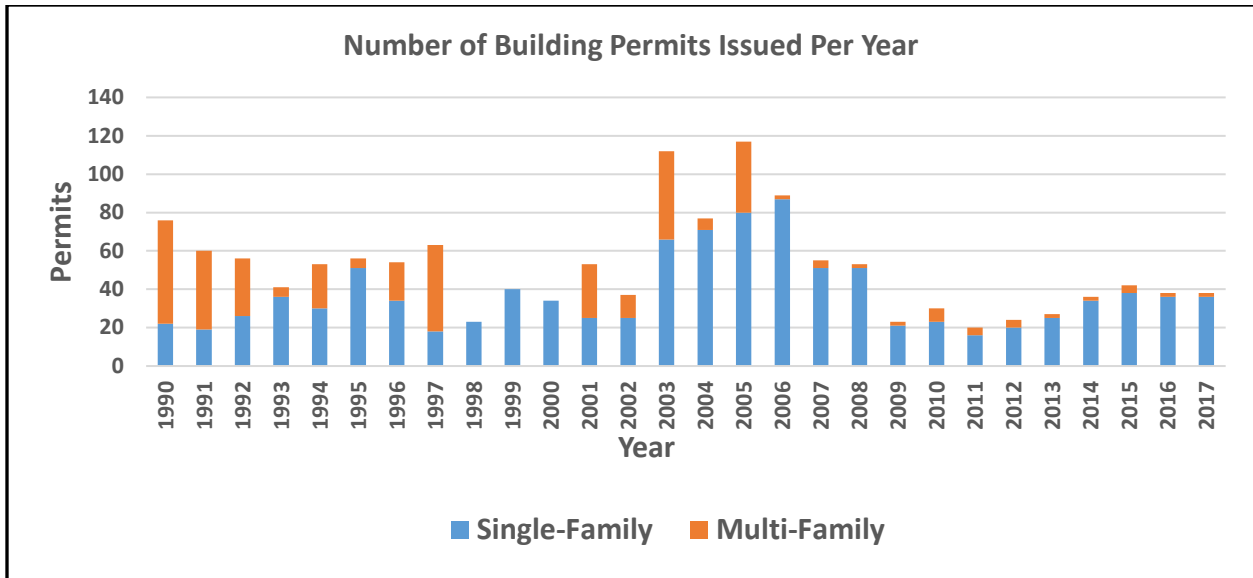
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



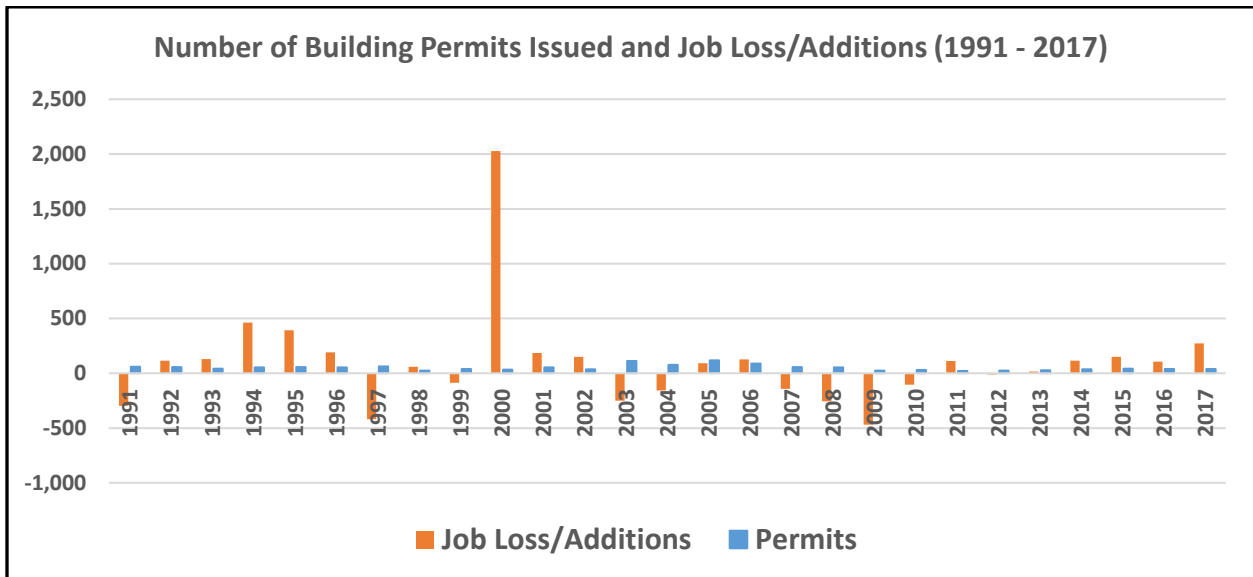
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



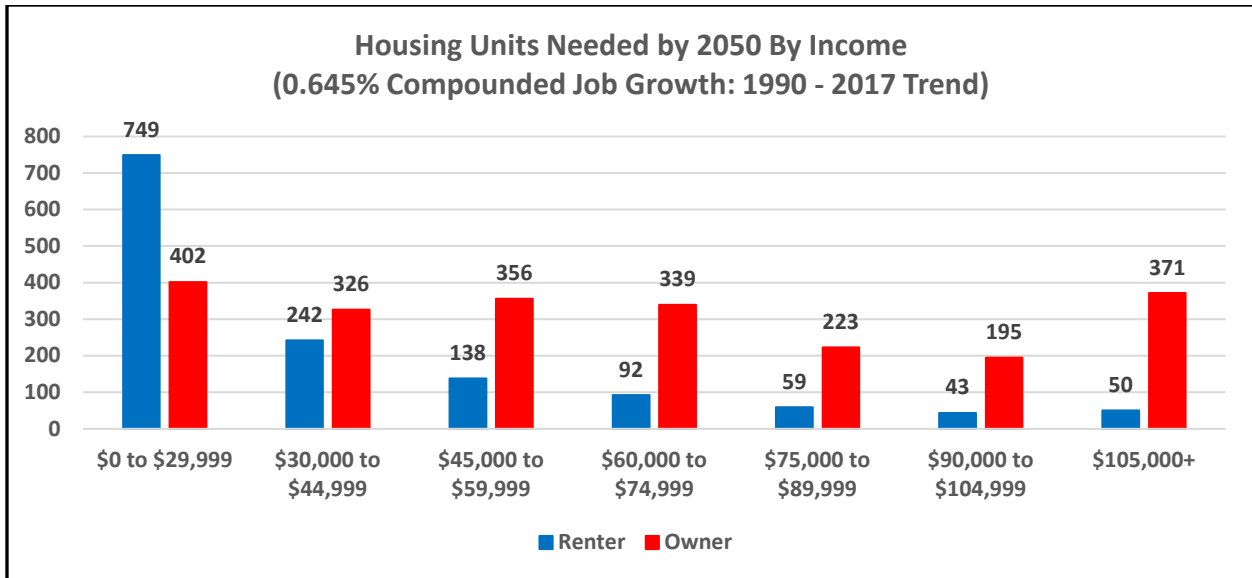
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



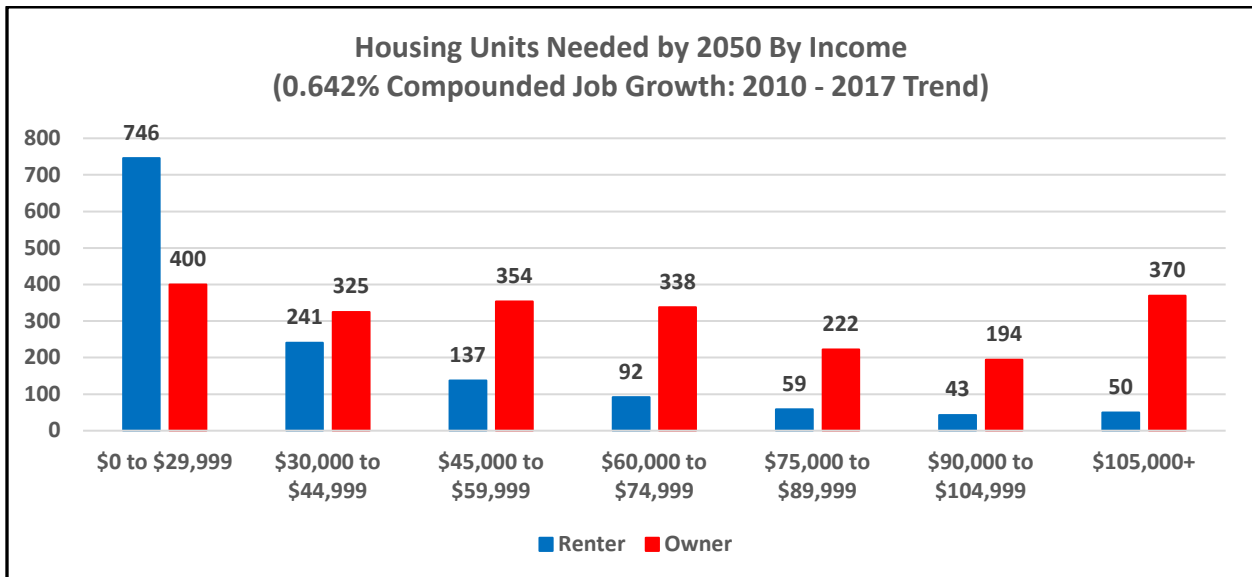
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

J. Pickaway County

| Housing Need Demand Summary (2050) | | | |
|--|------------|-------|--------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 0.754%) | 2,472 | 4,676 | 7,148 |
| Compounded Yearly Growth Rate (2010 to 2017: 1.069%) | 3,695 | 6,990 | 10,686 |
| Average Yearly Housing Need (2018 to 2050) | 223 to 334 | | |
| Average Yearly Permits Issued (1990 to 2017) | 144 | | |

| Population | | | | | | | |
|-----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Pickaway County | 52,727 | 55,698 | 57,777 | 2,971 | 5.6% | 2,079 | 3.7% |

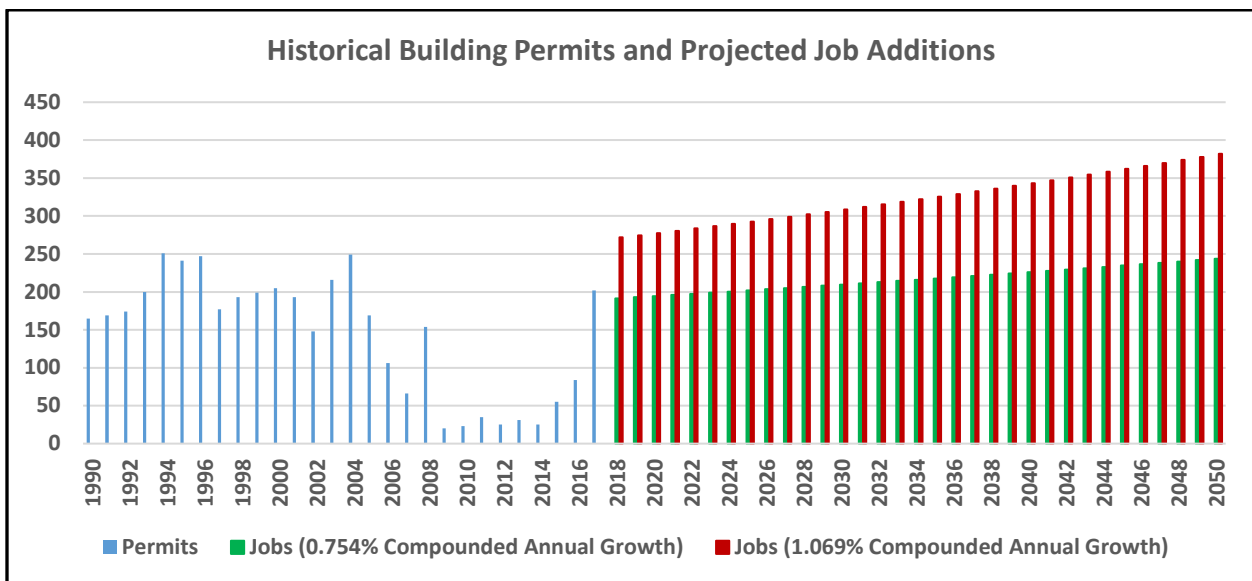
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|-----------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Pickaway County | 17,596 | 19,624 | 20,257 | 2,028 | 11.5% | 633 | 3.2% |

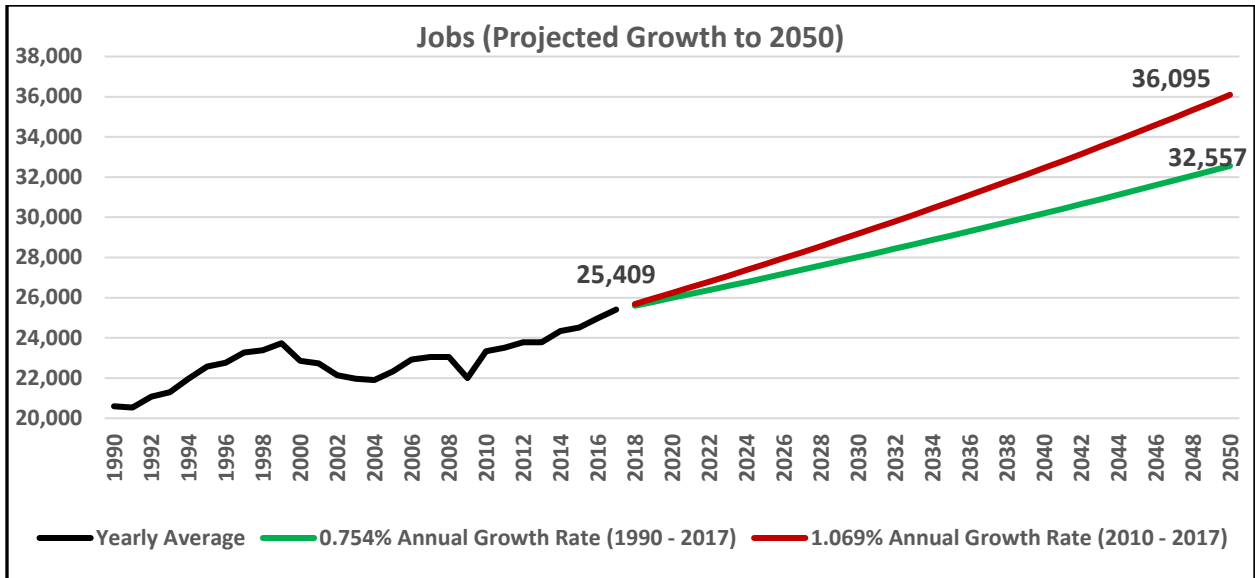
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Pickaway County | \$42,832 | \$49,262 | \$55,832 | \$6,430 | 15.0% | \$6,570 | 13.3% |

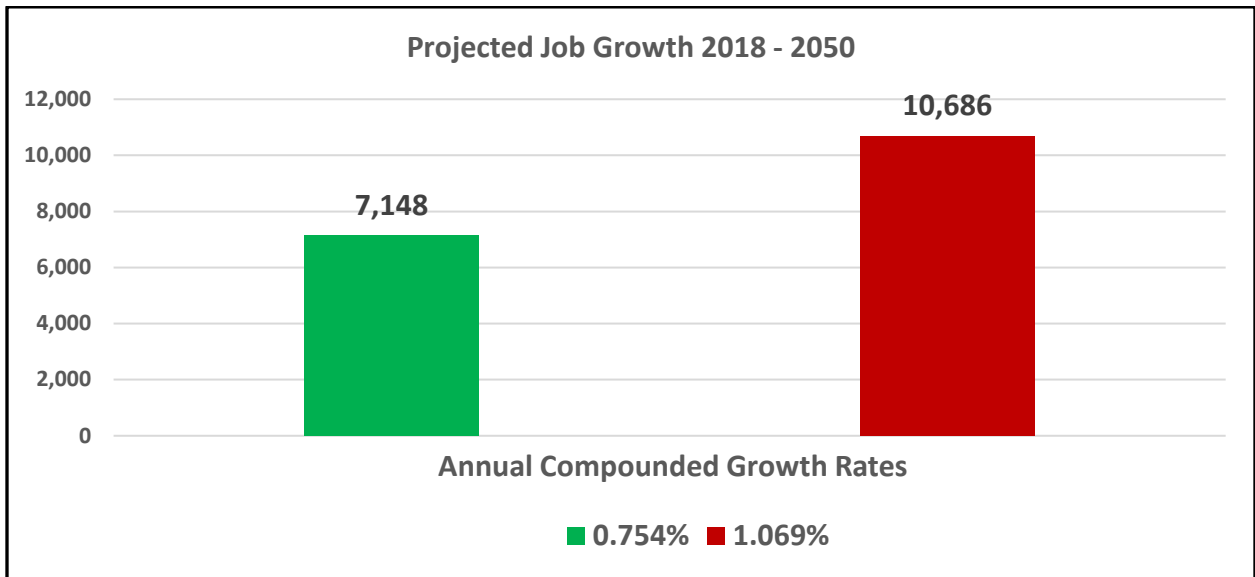
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



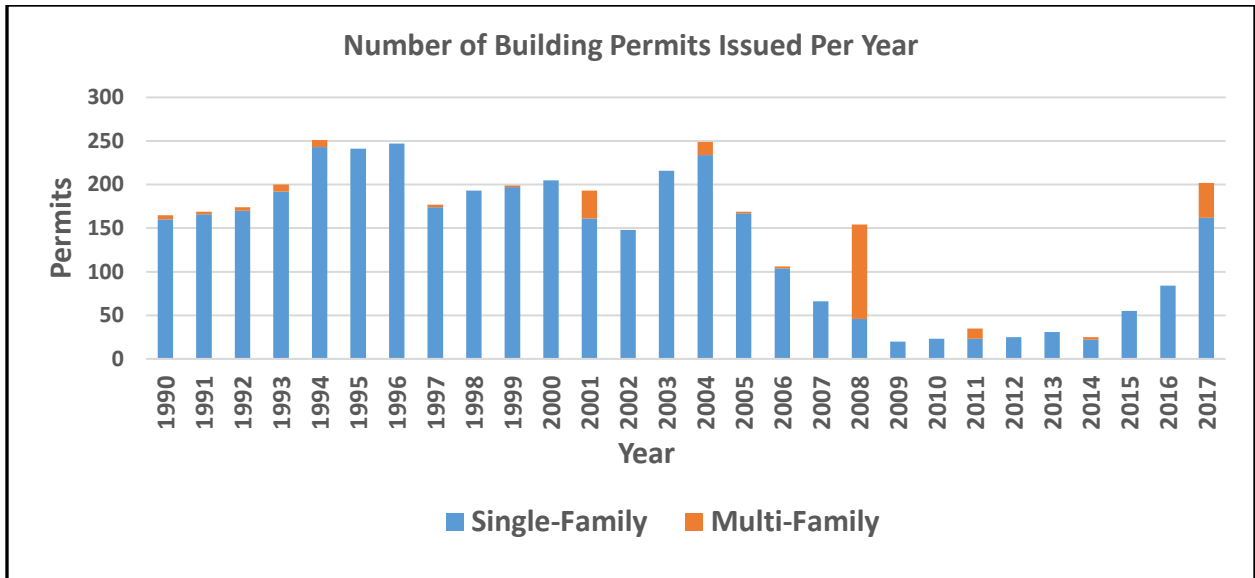
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



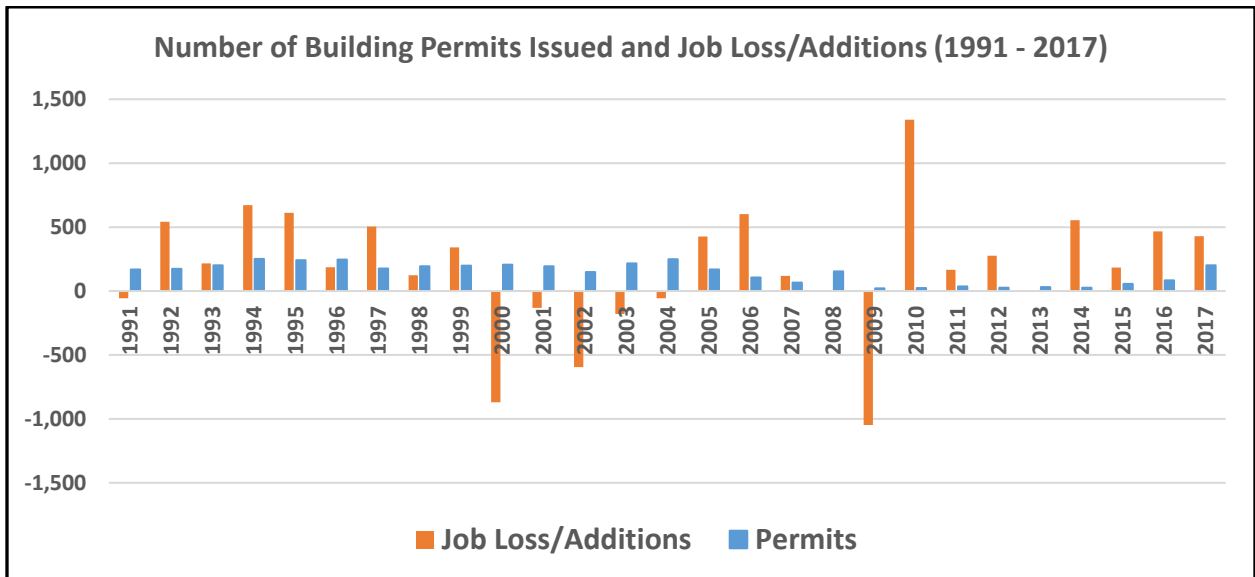
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



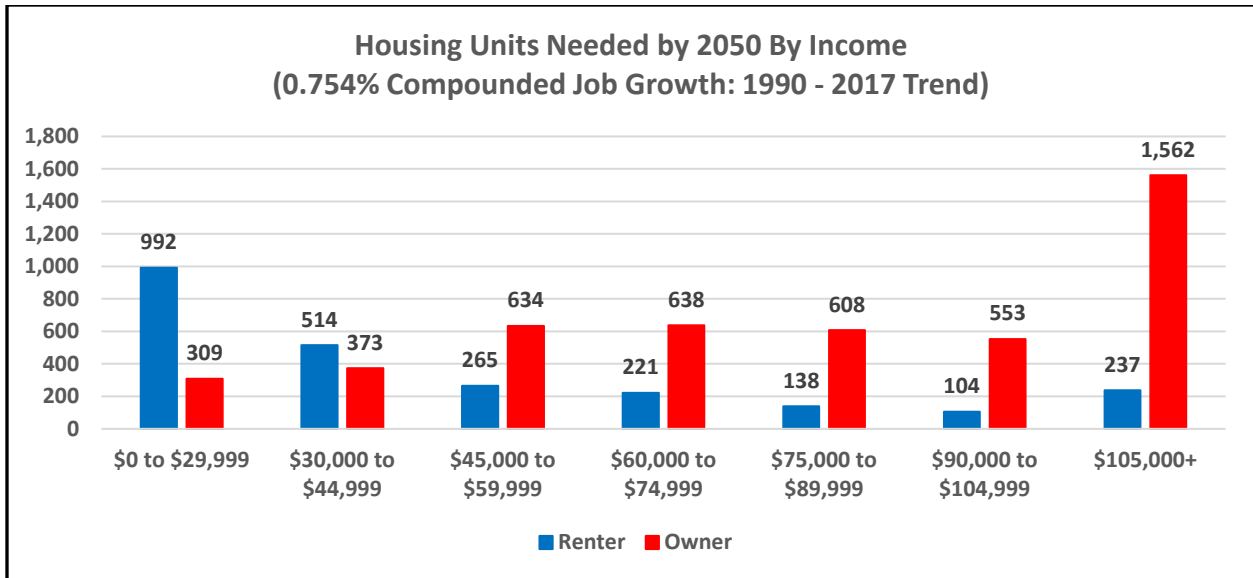
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



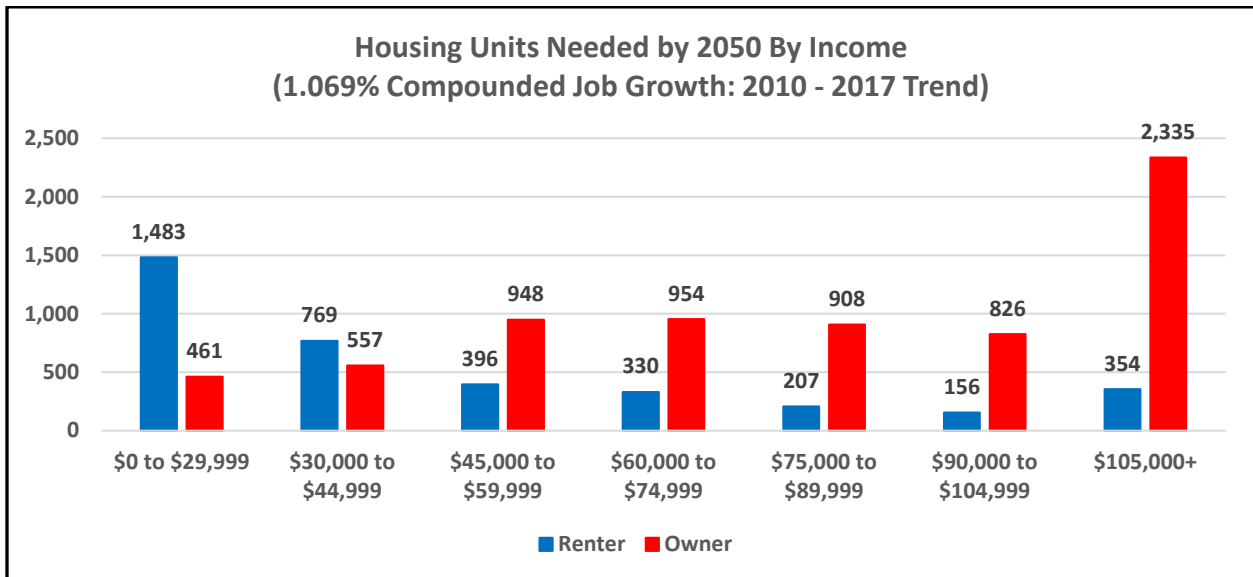
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

K. Union County

| Housing Need Demand Summary (2050) | | | |
|--|------------|--------|--------|
| | Renter | Owner | All |
| Compounded Yearly Growth Rate (1990 to 2017: 1.990%) | 7,296 | 17,614 | 24,911 |
| Compounded Yearly Growth Rate (2010 to 2017: 1.351%) | 4,439 | 10,716 | 15,155 |
| Average Yearly Housing Need (2018 to 2050) | 474 to 778 | | |
| Average Yearly Permits Issued (1990 to 2017) | 363 | | |

| Population | | | | | | | |
|--------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Union County | 40,909 | 52,300 | 56,196 | 11,391 | 27.8% | 3,896 | 7.4% |

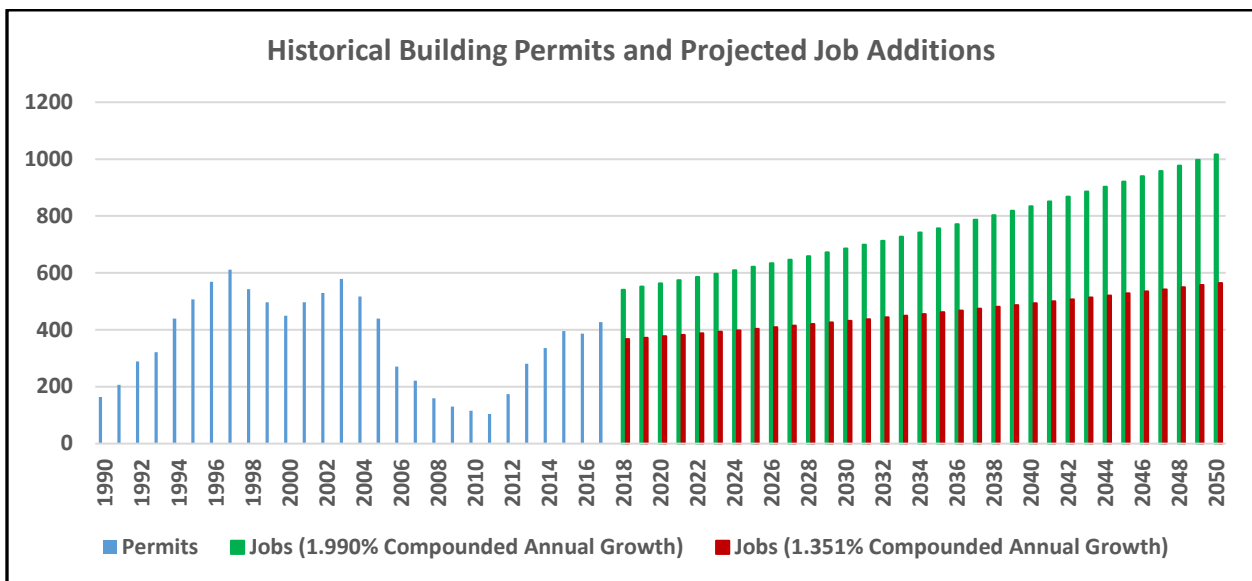
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Households | | | | | | | |
|--------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Union County | 14,346 | 18,065 | 19,389 | 3,719 | 25.9% | 1,324 | 7.3% |

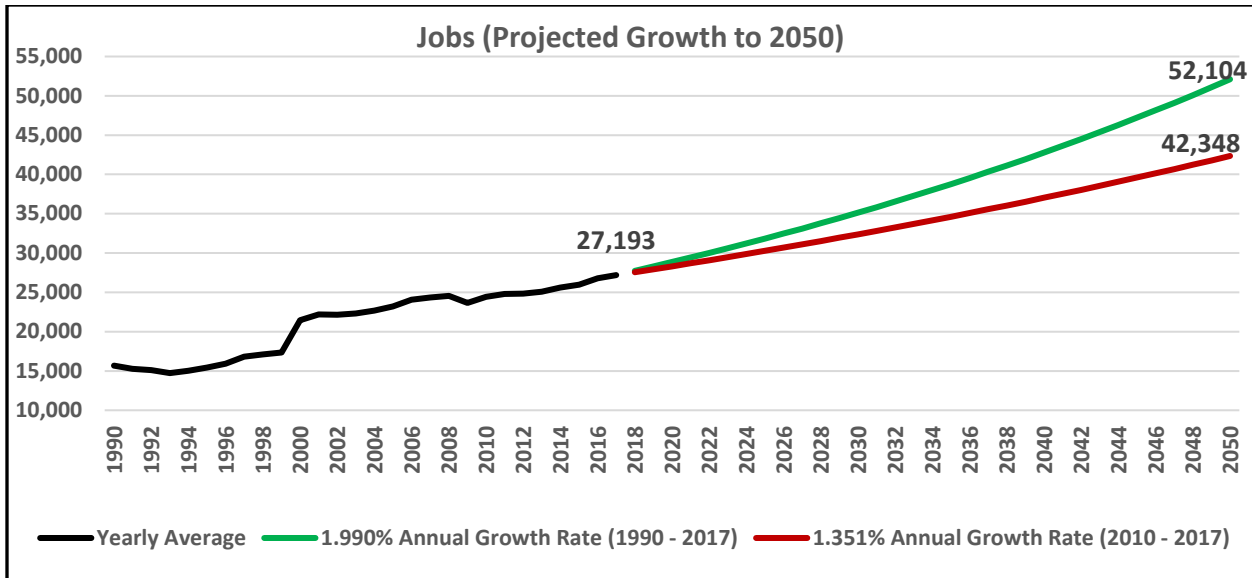
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group

| Median Household Incomes | | | | | | | |
|--------------------------|---------------|-------------|------------------|-------------------------|---------|-------------------------|---------|
| Geography | 2000 (Census) | 2010 Census | 2017 (Estimated) | Change from 2000 - 2010 | | Change from 2010 - 2017 | |
| | | | | Number | Percent | Number | Percent |
| Union County | \$51,743 | \$68,452 | \$74,501 | \$16,709 | 32.3% | \$6,049 | 8.8% |

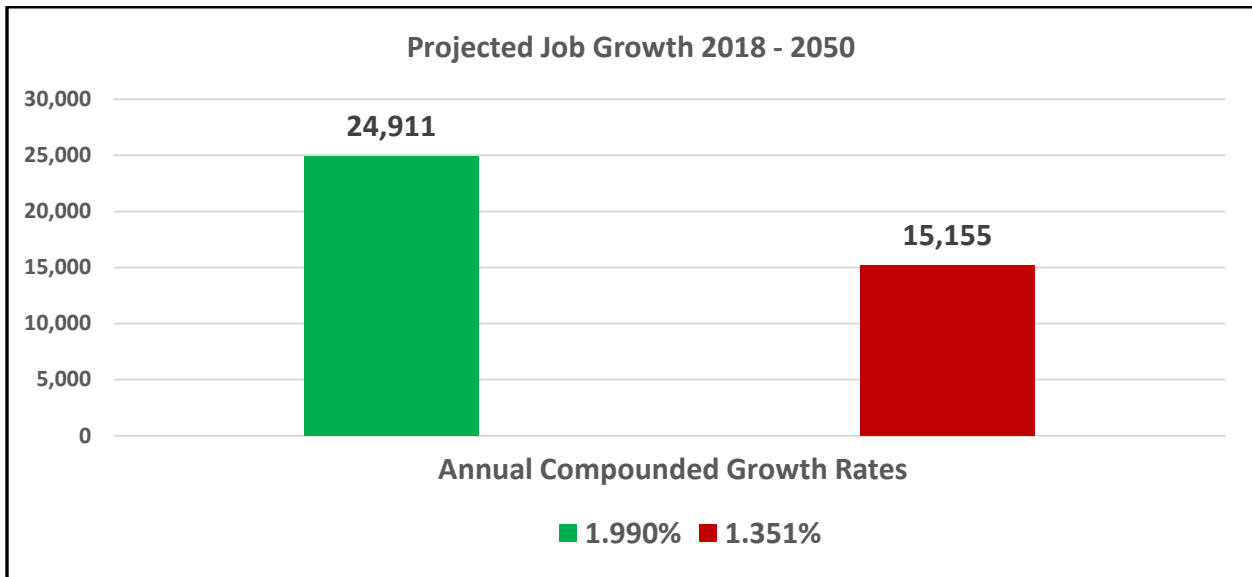
Source: U.S. Census; Vogt Strategic Insights; American Community Survey (ACS); ESRI; Urban Decision Group



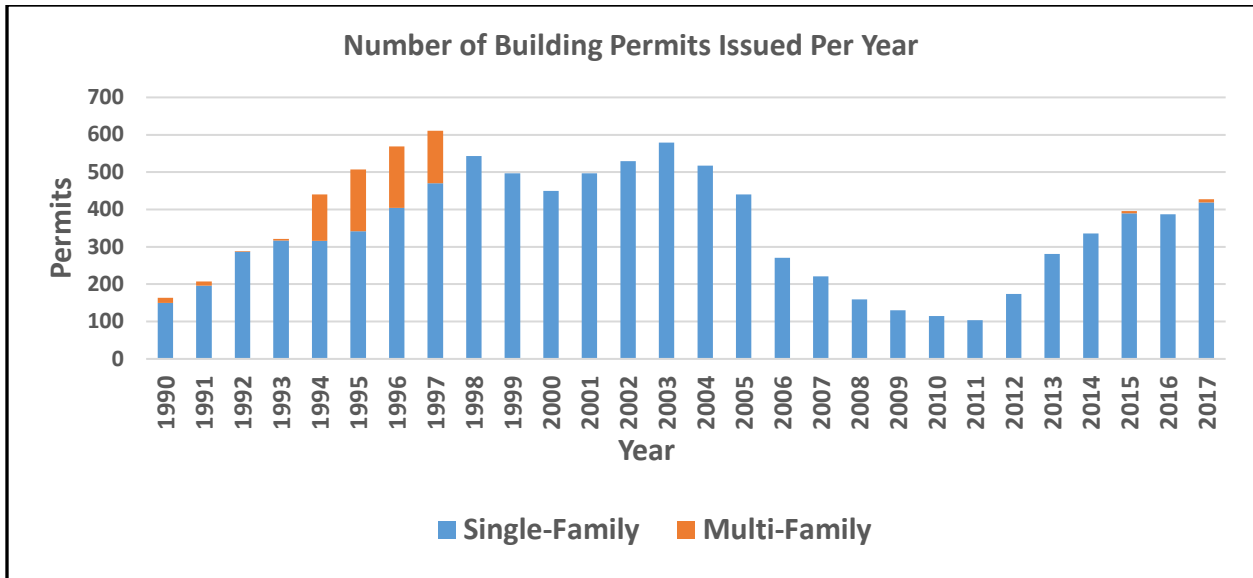
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



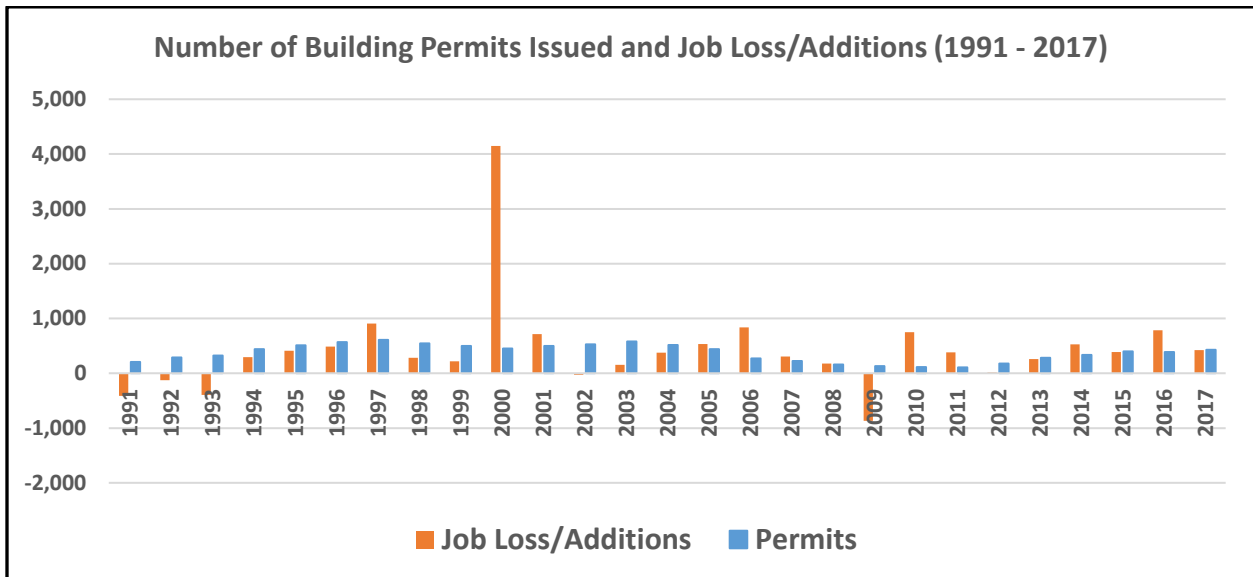
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



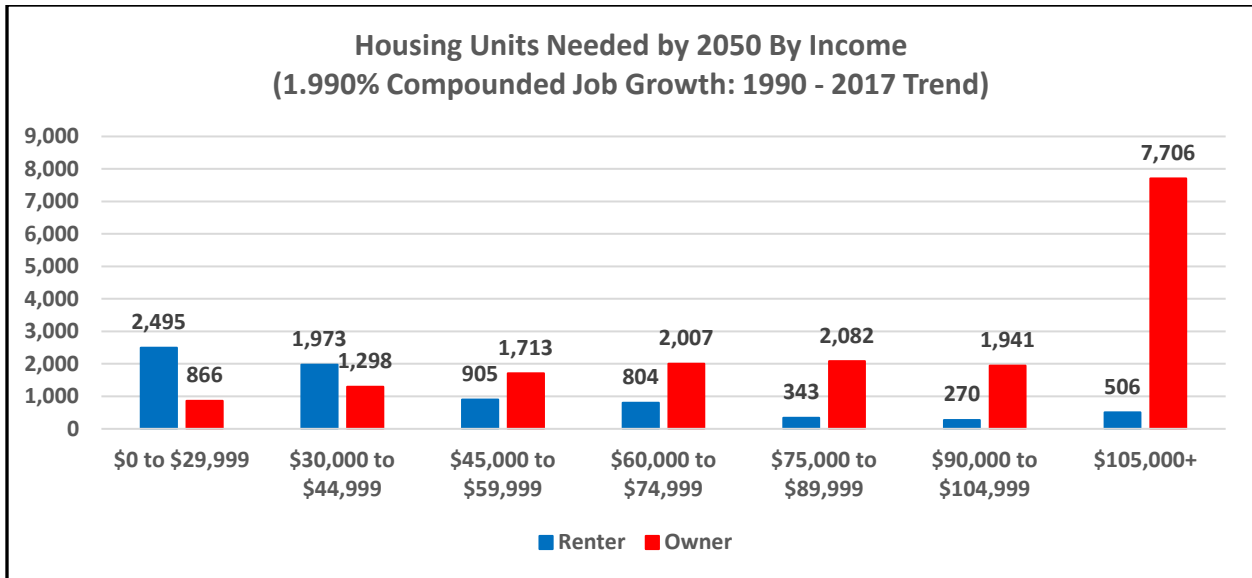
Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



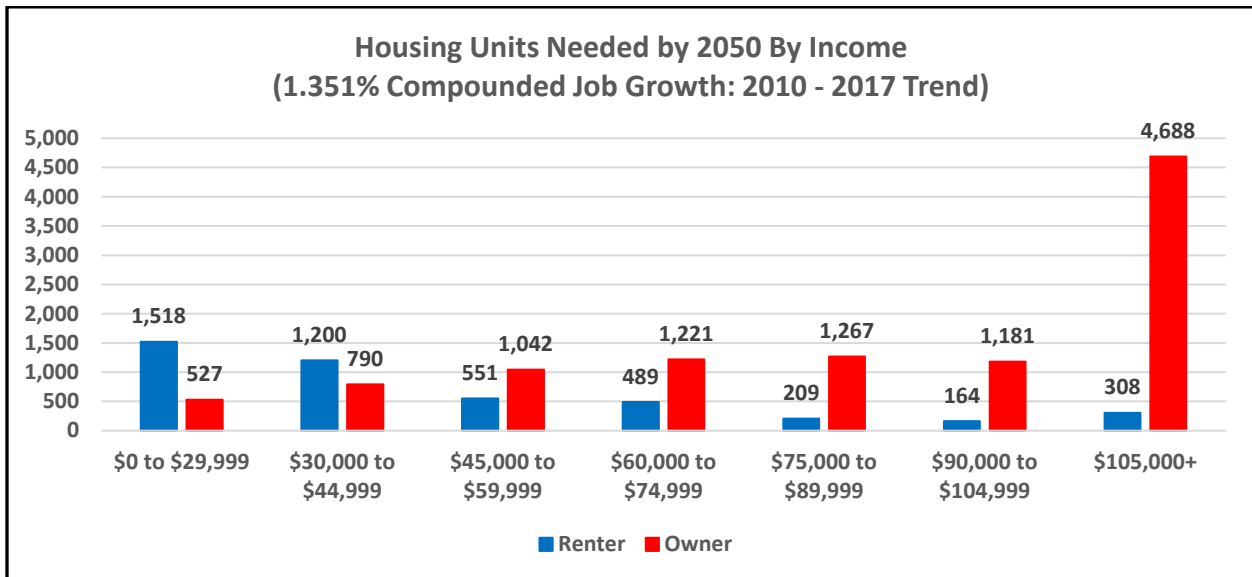
Source: State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights; Regionomics LLC; Department of Labor Statistics; State of the Cities Data Systems (SOCDS)



Source: Vogt Strategic Insights



Source: Vogt Strategic Insights

VIII. Qualifications

The Company

Vogt Strategic Insights is a real estate research firm established to provide accurate and insightful market forecasts for a broad range client base. The principal of the firm, Robert Vogt, has more than 35 years of real estate market feasibility experience throughout the United States.

The Staff

Robert Vogt has conducted and reviewed more than 8,000 market analyses over the past 35 years for market-rate and Low-Income Housing Tax Credit apartments as well as studies for single-family, golf course/residential, office, retail and elderly housing throughout the United States. Mr. Vogt is a founding member and the past chairman of the National Council of Housing Market Analysts (formerly known as the National Council of Affordable Housing Market Analysts), a group formed to bring standards and professional practices to market feasibility. He is a frequent speaker at many real estate and state housing conferences. Mr. Vogt has a bachelor's degree in finance, real estate and urban land economics from The Ohio State University.

Andrew W. Mazak has more than 15 years of experience in the real estate market research field. He has personally written more than 1,200 market feasibility studies in markets throughout the United States, Canada, Puerto Rico and the U.S. Virgin Islands. These studies include the analysis of Low-Income Housing Tax Credit, market-rate and government-subsidized apartments, student housing developments, farmworker housing projects, condominium communities, single-family subdivisions and senior-living developments, as well as overall community, city, county and statewide housing needs assessments. Mr. Mazak has a bachelor's degree in Business Management and Marketing from Capital University in Columbus, Ohio.

Nathan Young has more than a decade of experience in the real estate profession. He has conducted field research and written market studies in hundreds of rural and urban markets throughout the United States. Mr. Young's real estate experience includes analysis of apartment (subsidized, Tax Credit and market-rate), senior housing (i.e. nursing homes, assisted living, etc.), student housing, condominium, retail, office, self-storage facilities and repositioning of assets to optimize feasibility. Mr. Young has experience in working with the U.S. Department of Housing and Urban Development and has FHA LEAN program training. Mr. Young has a bachelor's degree in Engineering (Civil) from The Ohio State University and a Master of Business Administration from Ohio Dominican University.

Jim Beery has more than 30 years' experience in the real estate market feasibility profession. He has written market studies for a variety of development projects, including multifamily apartments (market-rate, affordable housing, and government-subsidized), residential condominiums, hotels, office developments, retail centers, recreational facilities, commercial developments, single-family developments and assisted living properties for older adults. Other consulting assignments include numerous community redevelopment and commercial revitalization projects. Mr. Beery has attended the HUD MAP Training for industry partners and received continuing education certification from the Lender Qualification and Monitoring Division. Mr. Beery has a bachelor's degree in Business Administration (Finance major) from The Ohio State University.

Jennifer Tristano has been involved in the production of more than 2,000 market feasibility studies during the last several years. While working as an editor, Ms. Tristano became well acquainted with the market study guidelines and requirements of state finance agencies as well as various U.S. Department of Housing and Urban Development programs. In addition, Ms. Tristano has researched market conditions for a variety of project types, including apartments (Tax Credit, subsidized and market-rate), senior residential care, student housing and condominium communities. Ms. Tristano graduated *summa cum laude* from The Ohio State University.

Jimmy Beery has analyzed real estate markets in more than 35 states over the past seven years. In this time, Mr. Beery has conducted a broad range of studies, including Low-Income Housing Tax Credit apartments, luxury market-rate apartments, student housing analysis, rent comparability studies, condominium and single-family home communities, mixed-use developments, lodging, retail and commercial space. Mr. Beery has a bachelor's degree in Human Ecology from The Ohio State University.

Chuck Ewing has analyzed over 200 real estate markets in over 35 states since 2009. Mr. Ewing has conducted a broad range of studies, including Low-Income Housing Tax Credit, homeless supportive housing analysis, student housing analysis, rent comparability studies, condominium and single-family home communities, mixed-use developments, lodging, citywide analysis and workforce housing analysis. Mr. Ewing has a bachelor's degree in Economics from The Ohio State University.

Jarrett Jordan has worked in the real estate market research industry since 2013 and has analyzed nearly 100 real estate markets in 28 states, as well as in the District of Columbia and Puerto Rico. Mr. Jordan has experience evaluating Low-Income Housing Tax Credit apartments, market-rate apartments, subsidized housing, student housing, senior housing, homeless supportive housing, mixed-use developments and commercial space. Mr. Jordan has a Bachelor of Science Degree in Finance from The University of Tennessee.

Tom Mowery has more than 30 years of experience in the housing industry in both the public and private sectors. Prior to joining VSI, Mr. Mowery served as a Vice President at JPMorgan Chase where he analyzed and reviewed market risk and advised on economic results and long-term viability for the national Underwriting effort within Community Development Banking (CDB). He supported \$2.5 billion within four regional portfolios of real estate properties, primarily affordable multifamily. Mr. Mowery has also worked for Arizona Department of Housing and The Danter Company. He is skilled at Market Risk Analysis, Market Study/Appraisal Review, Portfolio Monitoring, Pipeline Management, Affordable/Market-Rate Housing, Underwriting, Community Development and Market Development. Mr. Mowery holds a bachelor's degree in Business Administration and Accounting from Ohio Dominican University.

Eric Pacella has conducted real estate market research in more than 140 markets in 37 states since 2014. Mr. Pacella has experience evaluating a broad range of product types, including senior housing, Low-Income Housing Tax Credit apartments, market-rate apartments, subsidized housing, student housing, homeless supportive housing, single-family housing, condominium housing, mixed-use developments and commercial space. Mr. Pacella holds a Bachelor of Arts degree in Journalism from The Ohio State University.

Field Staff – Vogt Strategic Insights maintains a field staff of professionals experienced at collecting critical on-site real estate data. Each member has been fully trained to evaluate site attributes, area competitors, market trends, economic characteristics and a wide range of issues influencing the viability of real estate development.

Addendum A. Supplemental Thematic Maps

The following pages contain thematic maps for the four largest counties in the Columbus MSA with respect to demographic size (Delaware, Fairfield, Franklin and Licking).

The maps are presented in the following order:

1. Population Growth – Delaware County
2. Population Growth – Fairfield County
3. Population Growth – Franklin County
4. Population Growth – Licking County

5. Renter Share – Delaware County
6. Renter Share – Fairfield County
7. Renter Share – Franklin County
8. Renter Share – Licking County








9. Median Household Income – Delaware County
10. Median Household Income – Fairfield County
11. Median Household Income – Franklin County
12. Median Household Income – Licking County

13. Median Home Value – Delaware County
14. Median Home Value – Fairfield County
15. Median Home Value – Franklin County
16. Median Home Value – Licking County

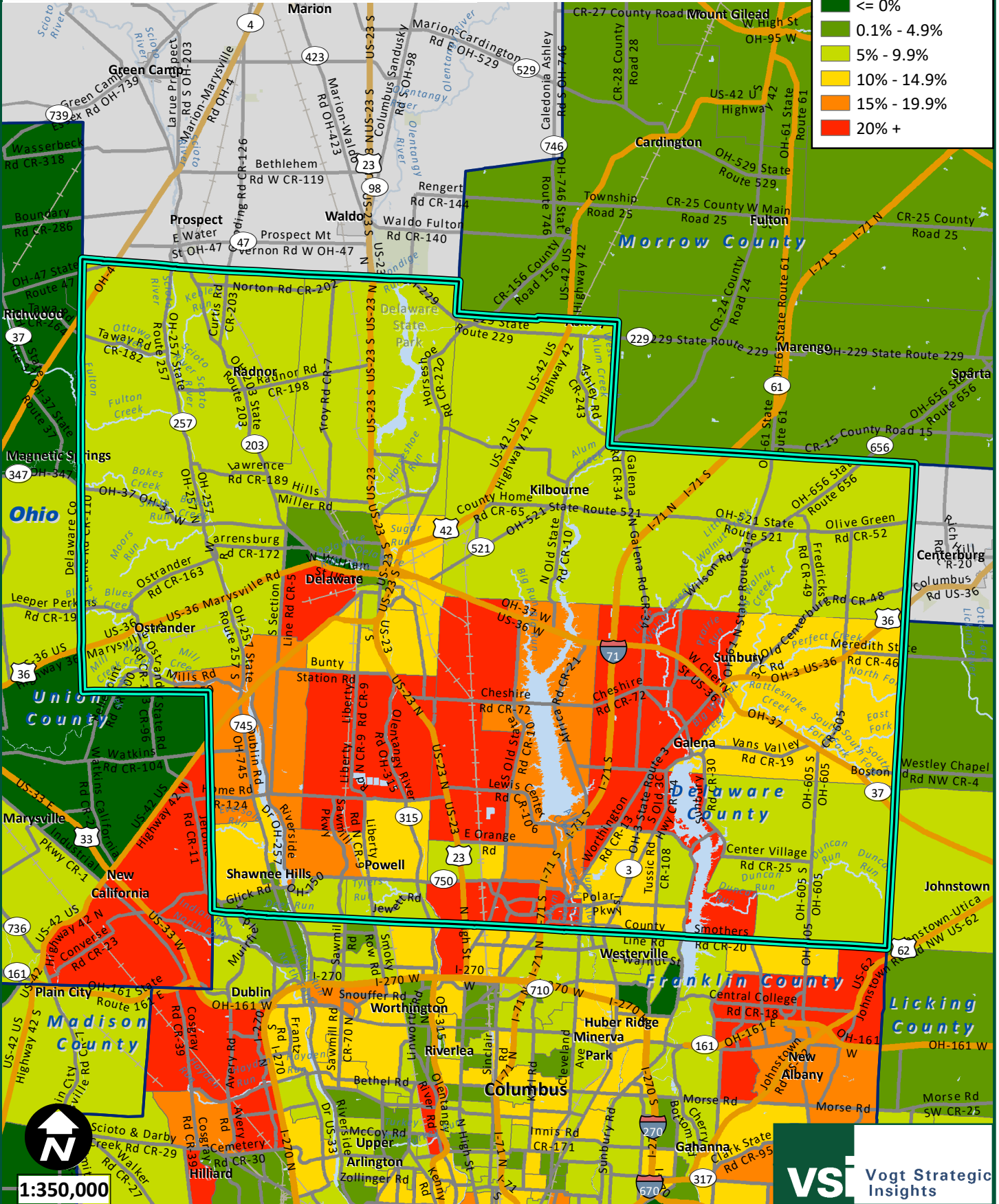
17. Median Gross Rent – Delaware County
18. Median Gross Rent – Fairfield County
19. Median Gross Rent – Franklin County
20. Median Gross Rent – Licking County

Delaware County, OH Population Growth 2010 - 2017

Legend

-  Delaware County
- Census Tracts**
- Pop. Growth 2010-2017**
-  ≤ 0%
-  0.1% - 4.9%
-  5% - 9.9%
-  10% - 14.9%
-  15% - 19.9%
-  20% +








0 2 4 6 8 10 12 14 16 18 Miles



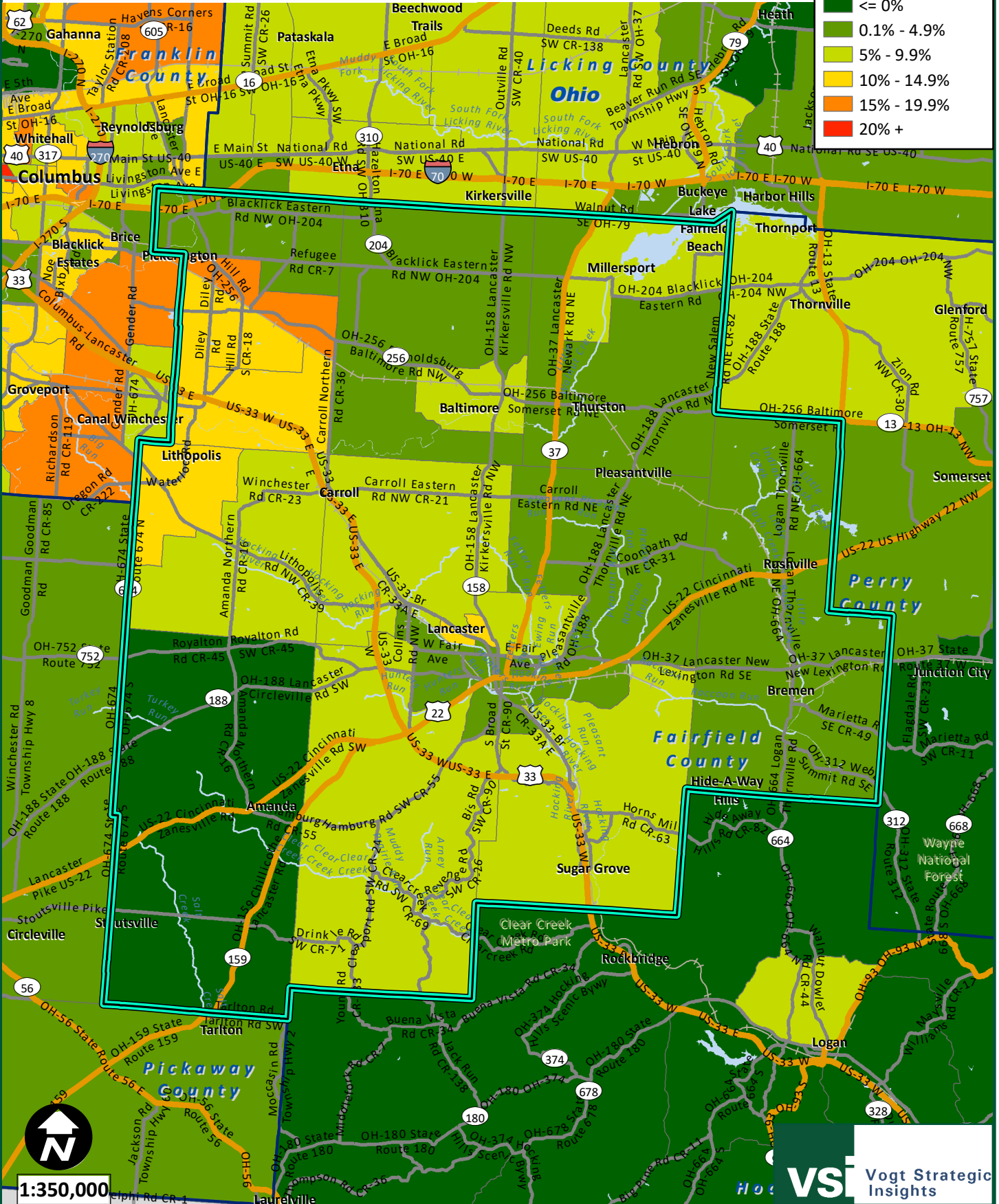

1:350,000

Fairfield County, OH Population Growth 2010 - 2017

Legend

-  Fairfield County
- Census Tracts**
- Pop. Growth 2010-2017**
-  <= 0%
-  0.1% - 4.9%
-  5% - 9.9%
-  10% - 14.9%
-  15% - 19.9%
-  20% +








0 2 4 6 8 10 12 14 16 18 Miles



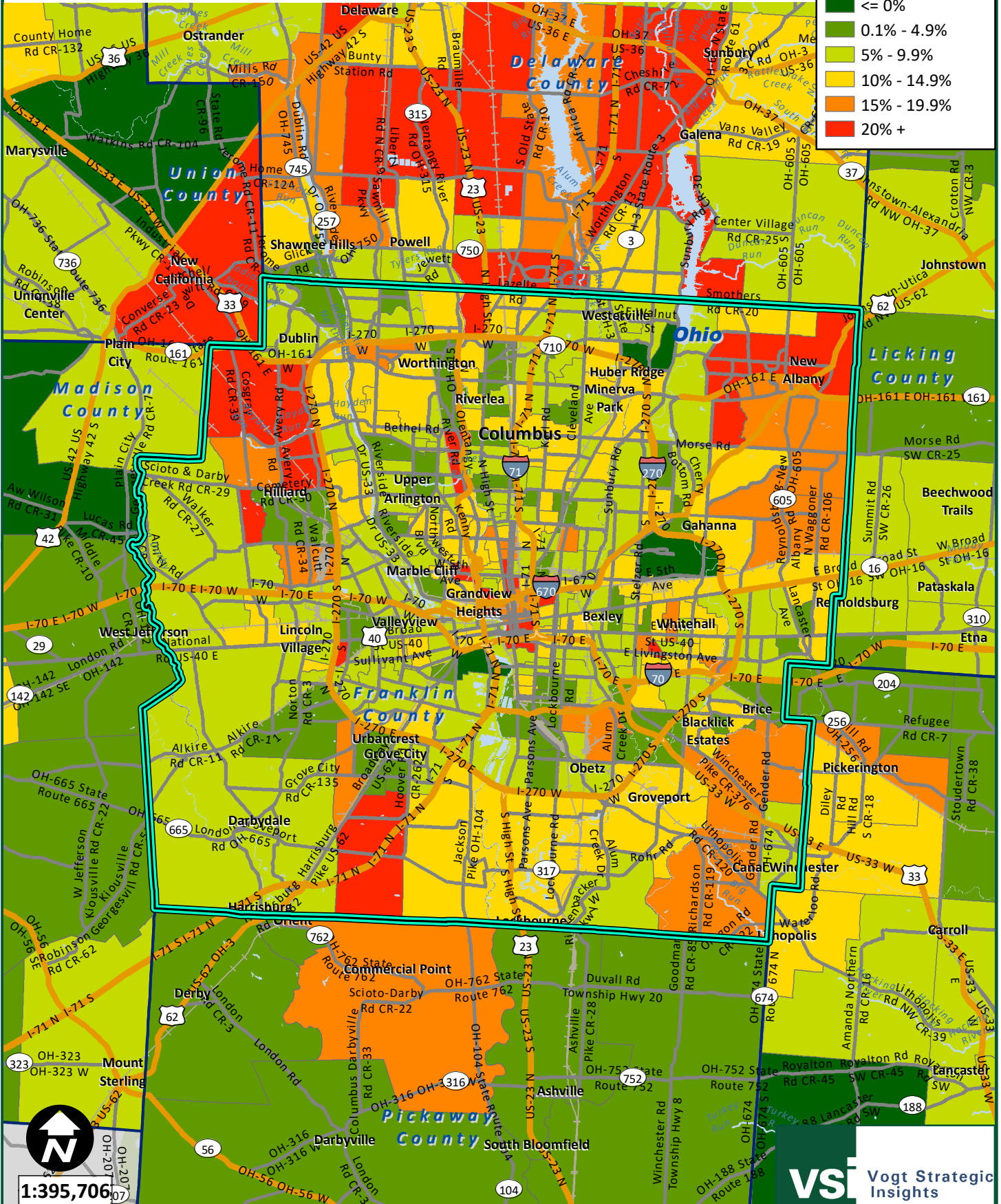
1:350,000

Franklin County, OH Population Growth 2010 - 2017

Legend

-  Franklin County
- Census Tracts**
- Pop. Growth 2010-2017**
-  ≤ 0%
-  0.1% - 4.9%
-  5% - 9.9%
-  10% - 14.9%
-  15% - 19.9%
-  20% +


0 2 4 6 8 10 12 14 16 18 Miles



1:395,706

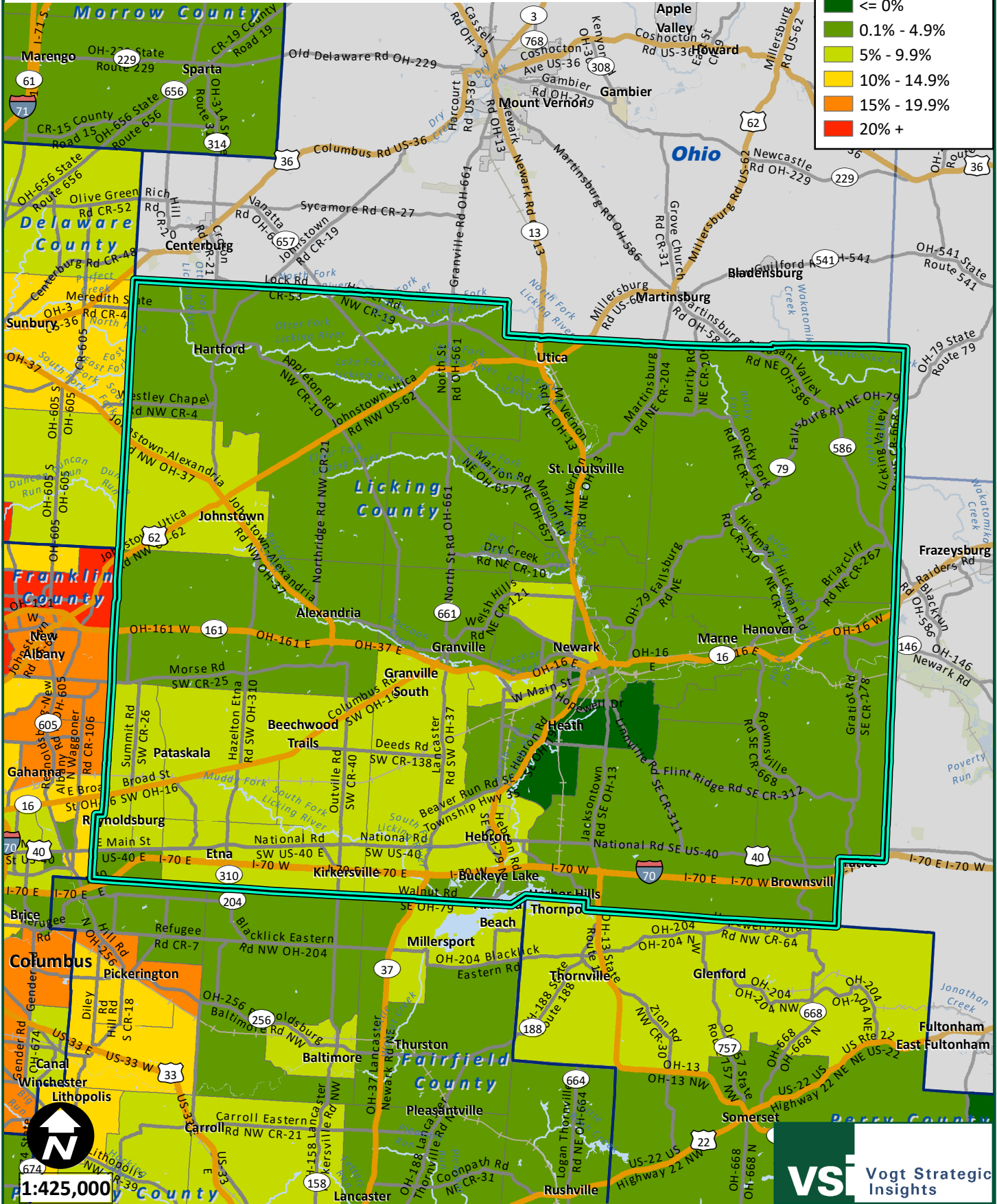
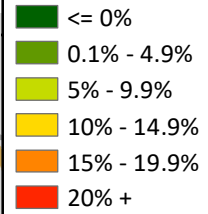
Licking County, OH Population Growth 2010 - 2017

Legend

 Licking County

Census Tracts


Pop. Growth 2010-2017



1:425,000







Delaware County, OH 2017 Renter Share of Households

Legend

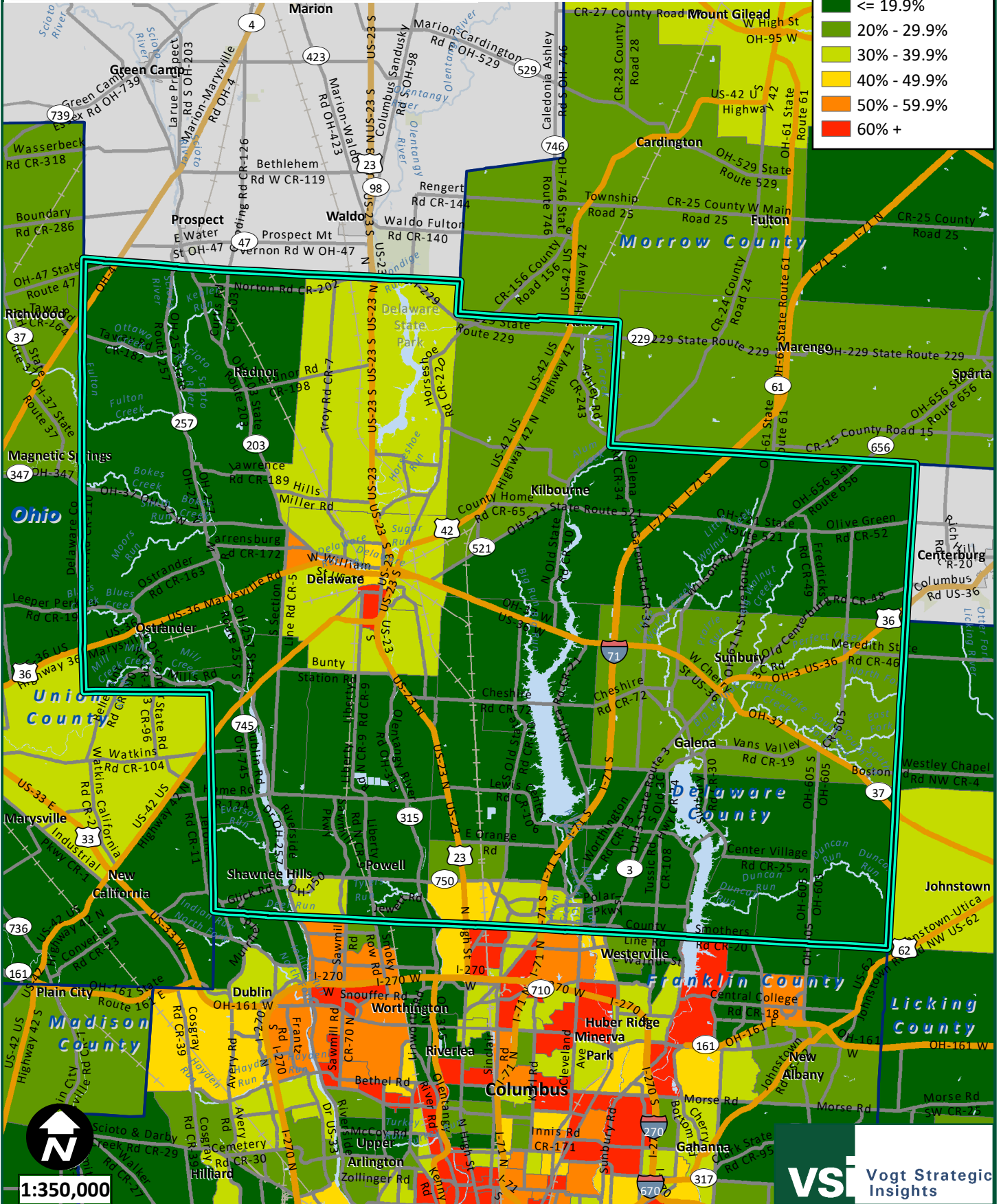
 Delaware County

Census Tracts

Renter Share

-  <= 19.9%
-  20% - 29.9%
-  30% - 39.9%
-  40% - 49.9%
-  50% - 59.9%
-  60% +

0 2 4 6 8 10 12 14 16 18 Miles



1:350,000







Fairfield County, OH 2017 Renter Share of Households

Legend

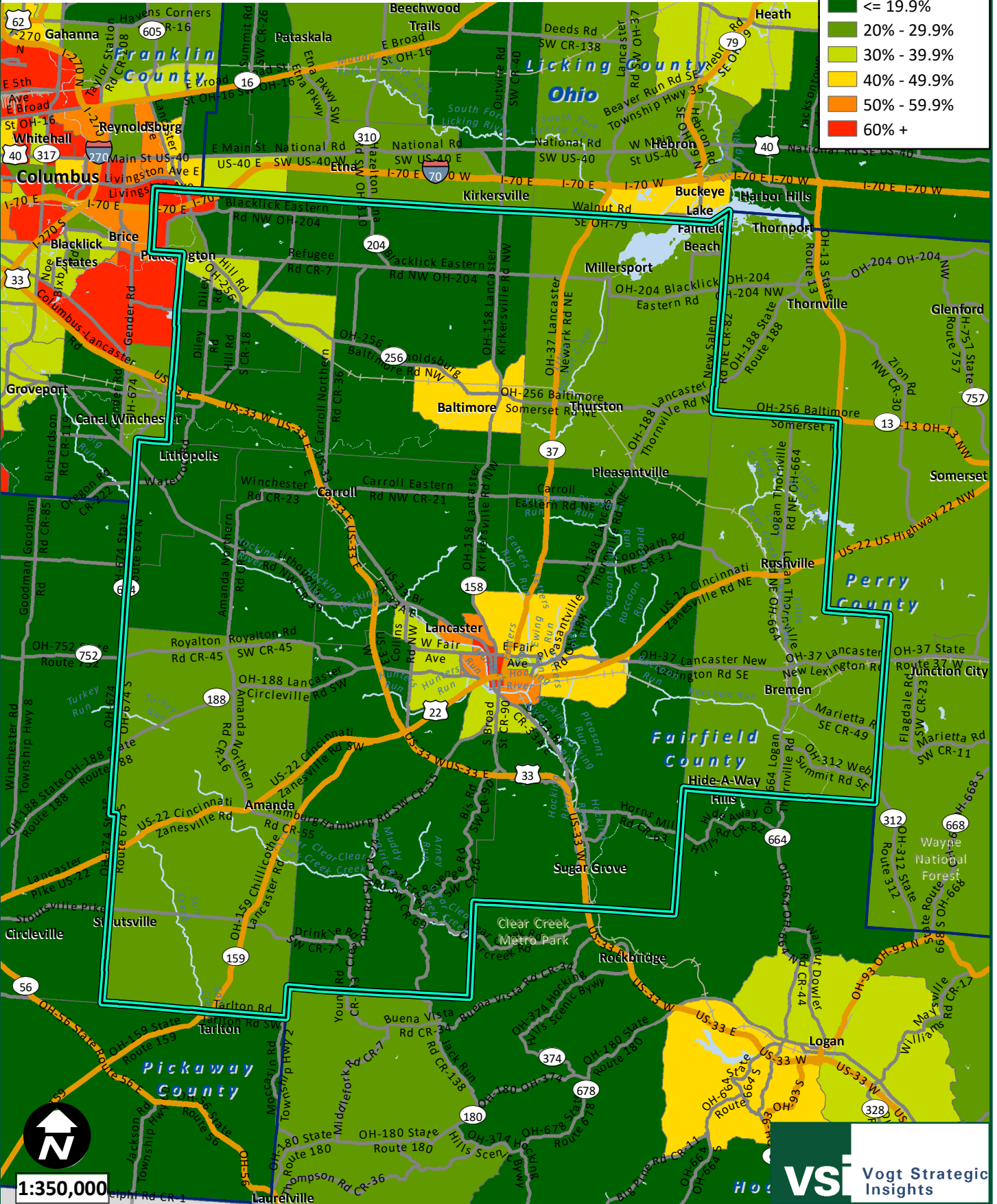
 Fairfield County

Census Tracts

Renter Share








-  <= 19.9%
-  20% - 29.9%
-  30% - 39.9%
-  40% - 49.9%
-  50% - 59.9%
-  60% +

0 2 4 6 8 10 12 14 16 18 Miles

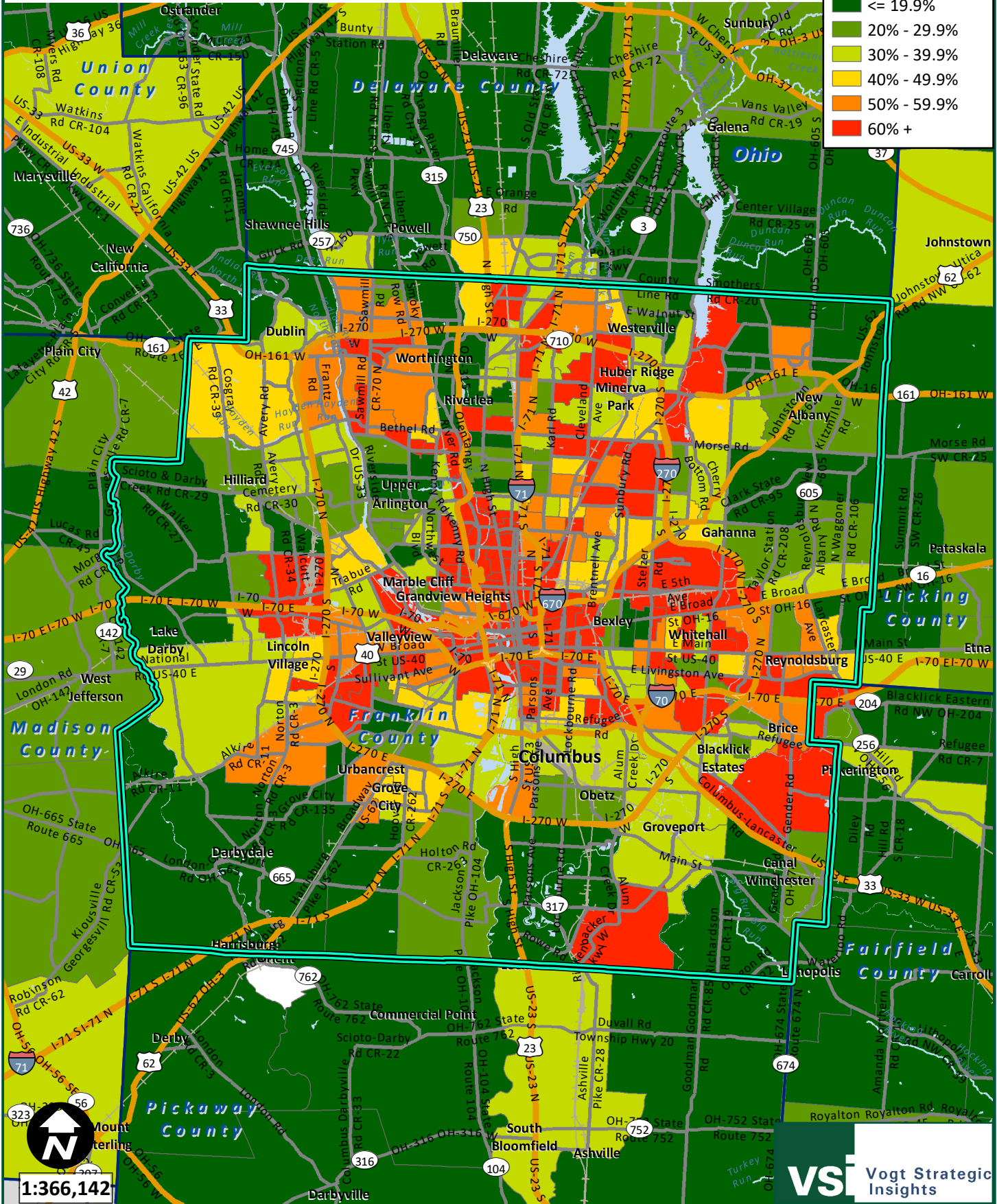


Franklin County, OH 2017 Renter Share of Households

Legend

-  Franklin County
- Census Tracts**
- Renter Share**
-  ≤ 19.9%
-  20% - 29.9%
-  30% - 39.9%
-  40% - 49.9%
-  50% - 59.9%
-  60% +








0 2 4 6 8 10 12 14 16 18 Miles



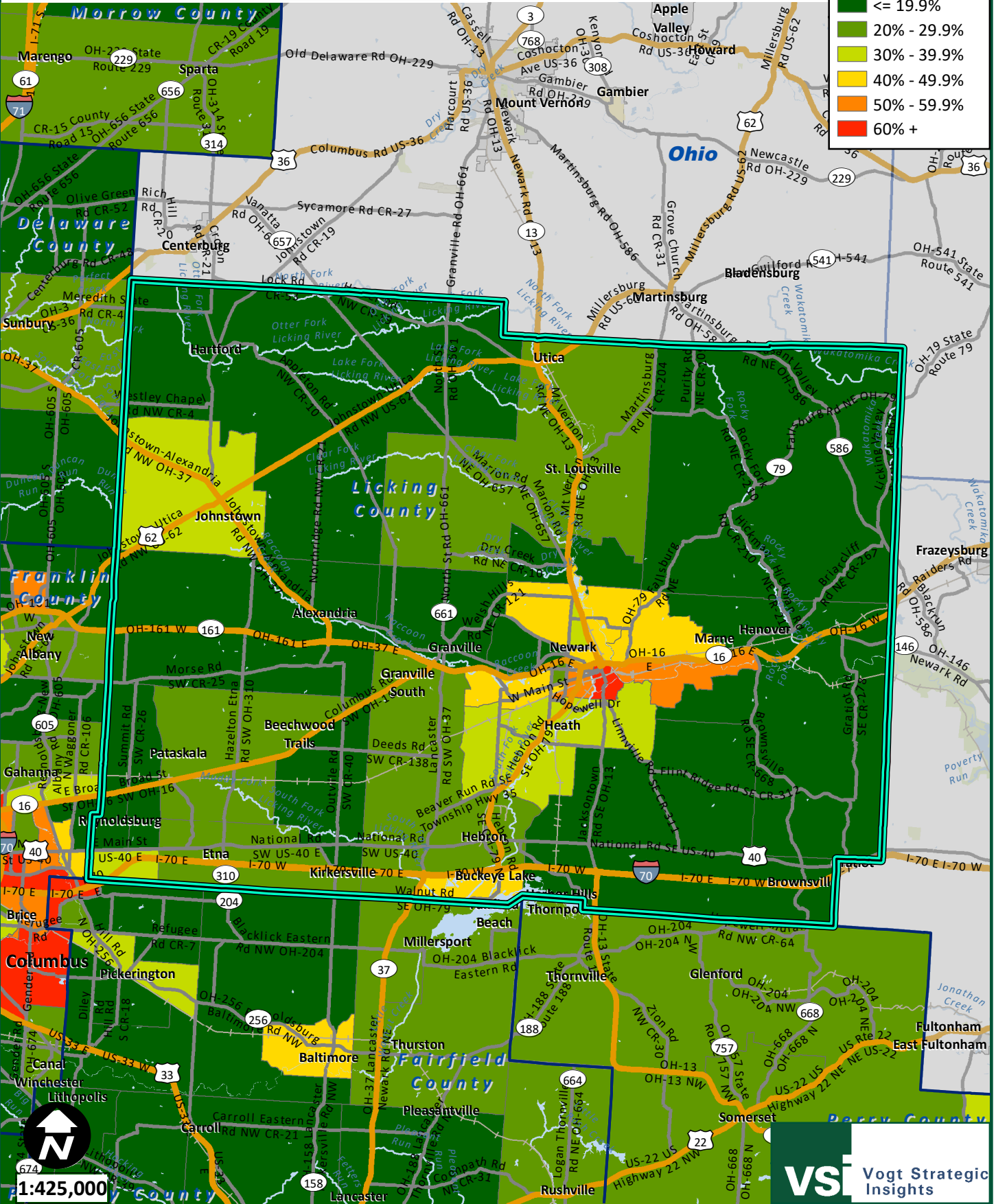

1:366,142

Licking County, OH 2017 Renter Share of Households

Legend


-  Licking County
- Census Tracts**
- Renter Share**
-  ≤ 19.9%
-  20% - 29.9%
-  30% - 39.9%
-  40% - 49.9%
-  50% - 59.9%
-  60% +

0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 Miles









Delaware County, OH 2017 Median Household Income

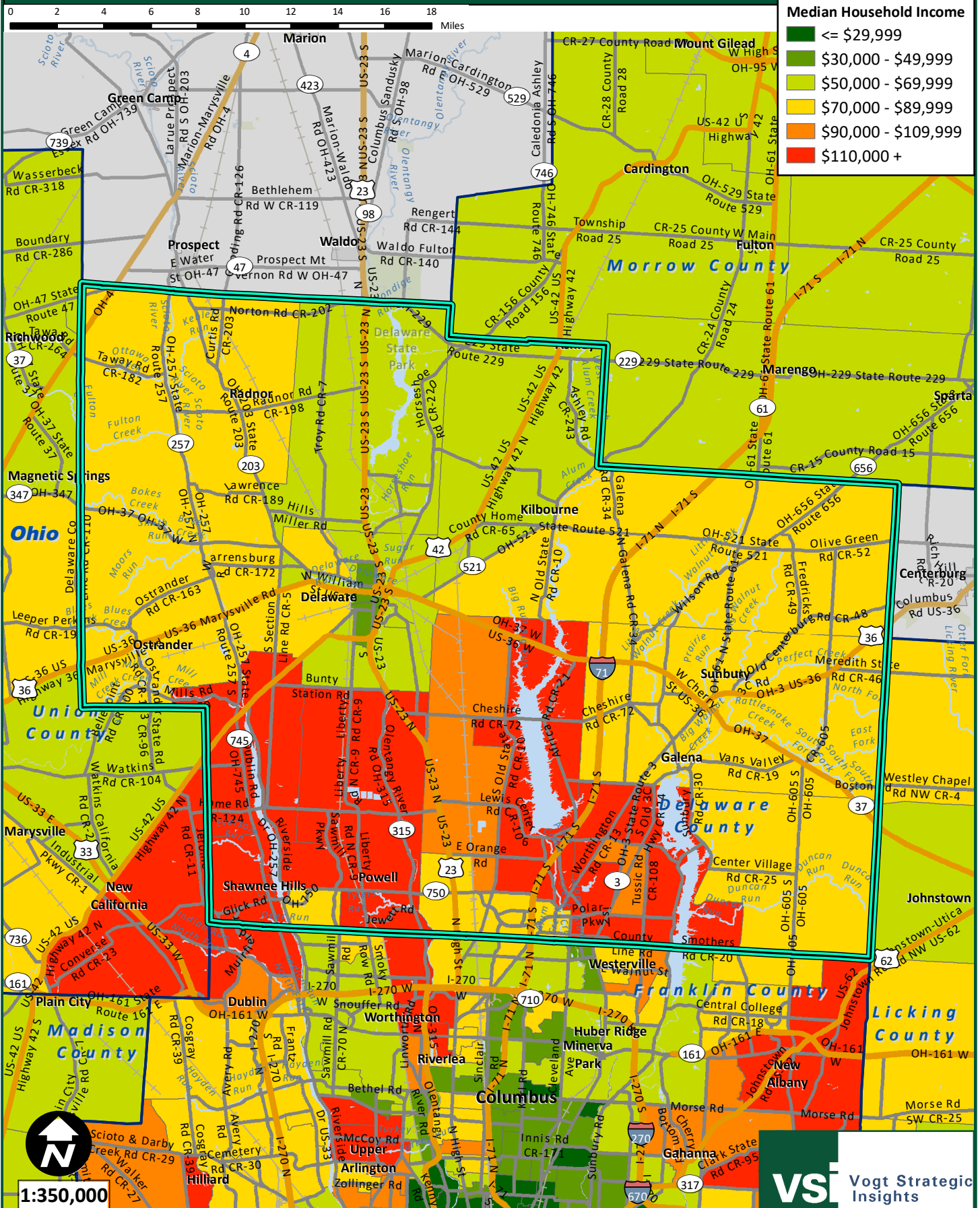
Legend

 Delaware County

Census Tracts


Median Household Income

-  ≤ \$29,999
-  \$30,000 - \$49,999
-  \$50,000 - \$69,999
-  \$70,000 - \$89,999
-  \$90,000 - \$109,999
-  \$110,000 +








Fairfield County, OH 2017 Median Household Income

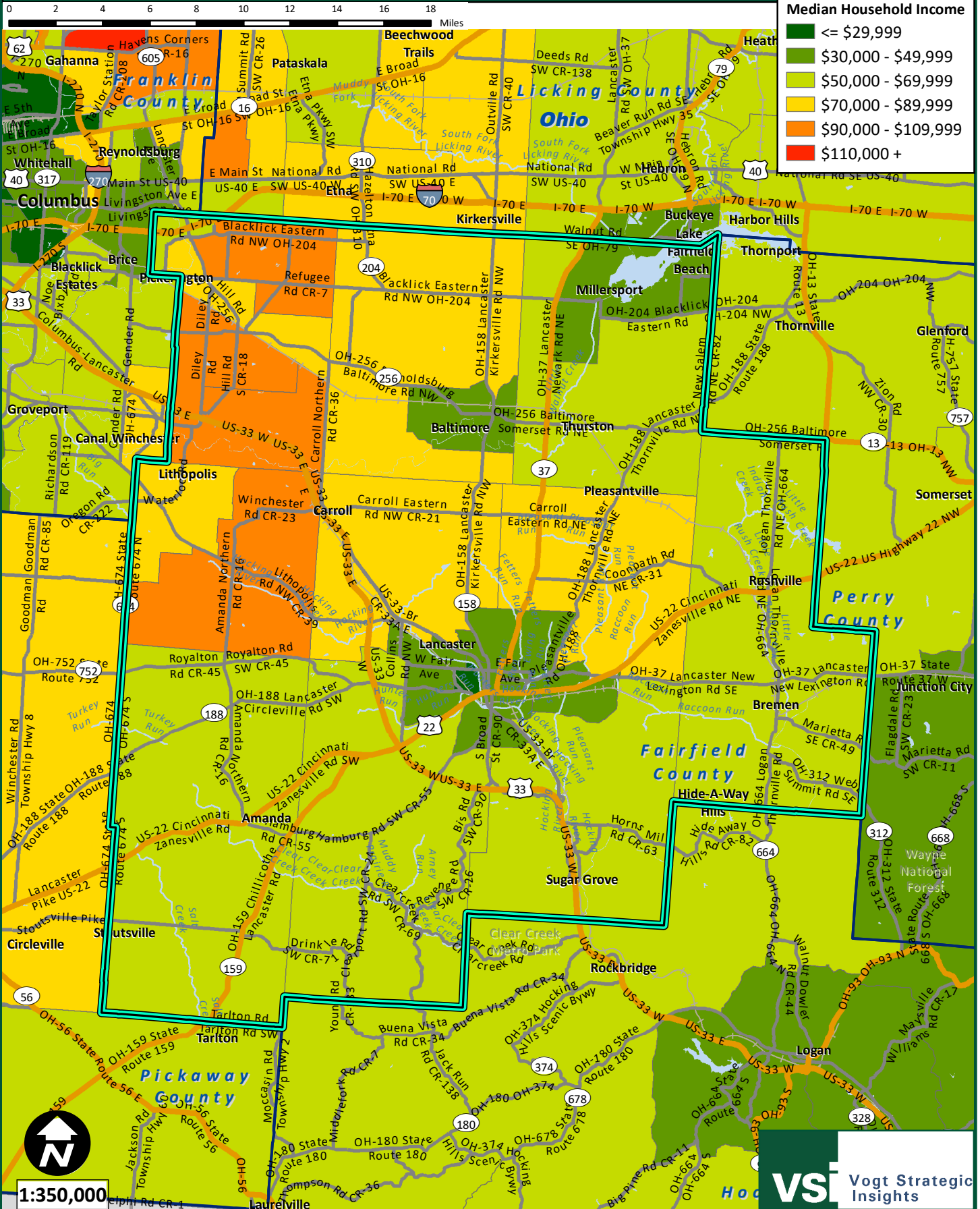
Legend

 Franklin County

Census Tracts


Median Household Income

-  ≤ \$29,999
-  \$30,000 - \$49,999
-  \$50,000 - \$69,999
-  \$70,000 - \$89,999
-  \$90,000 - \$109,999
-  \$110,000 +









Franklin County, OH 2017 Median Household Income

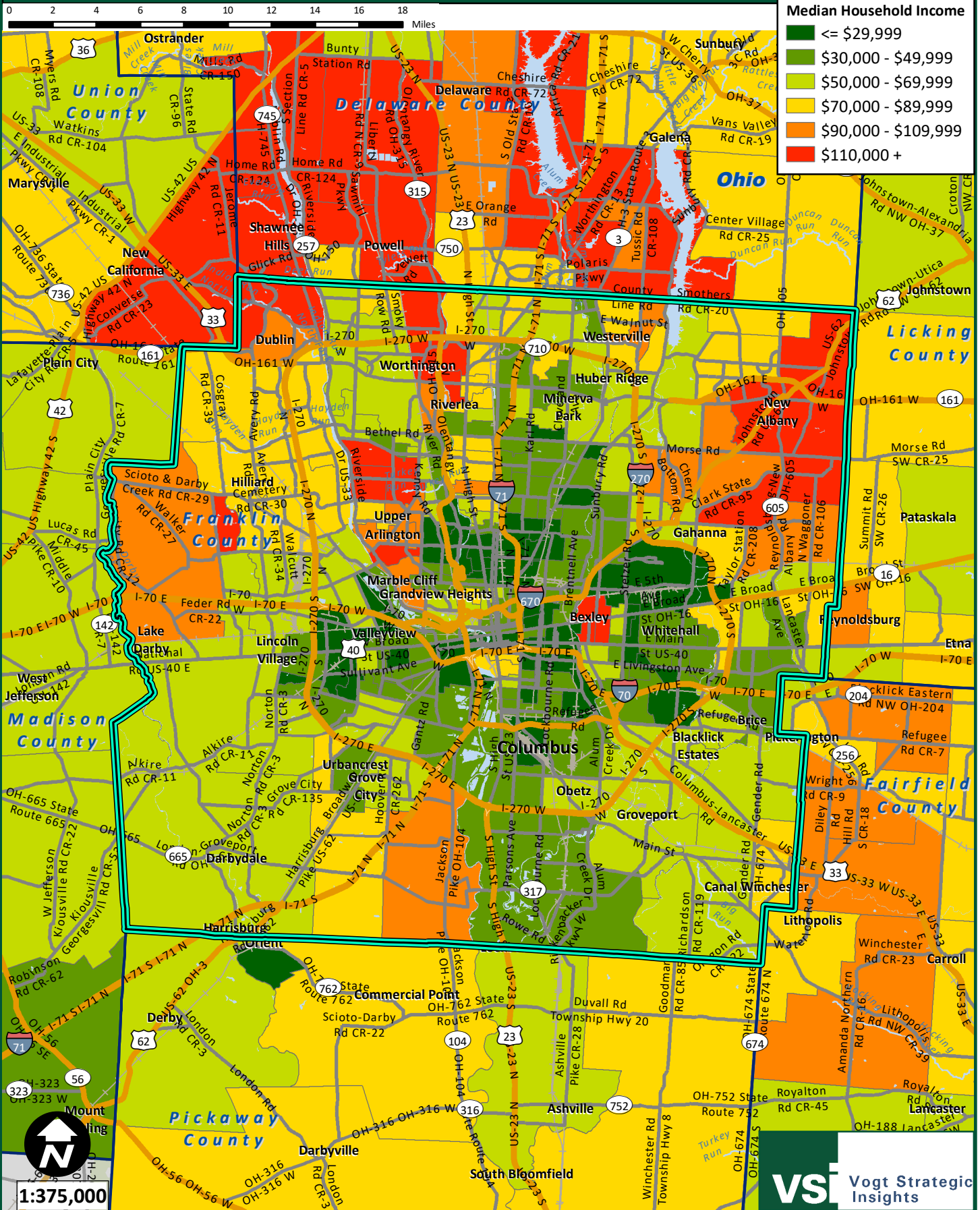
Legend

 Franklin County

Census Tracts


Median Household Income

-  <= \$29,999
-  \$30,000 - \$49,999
-  \$50,000 - \$69,999
-  \$70,000 - \$89,999
-  \$90,000 - \$109,999
-  \$110,000 +



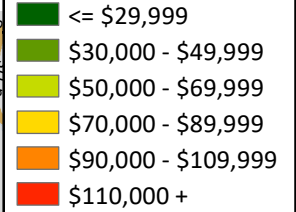
Licking County, OH 2017 Median Household Income

Legend

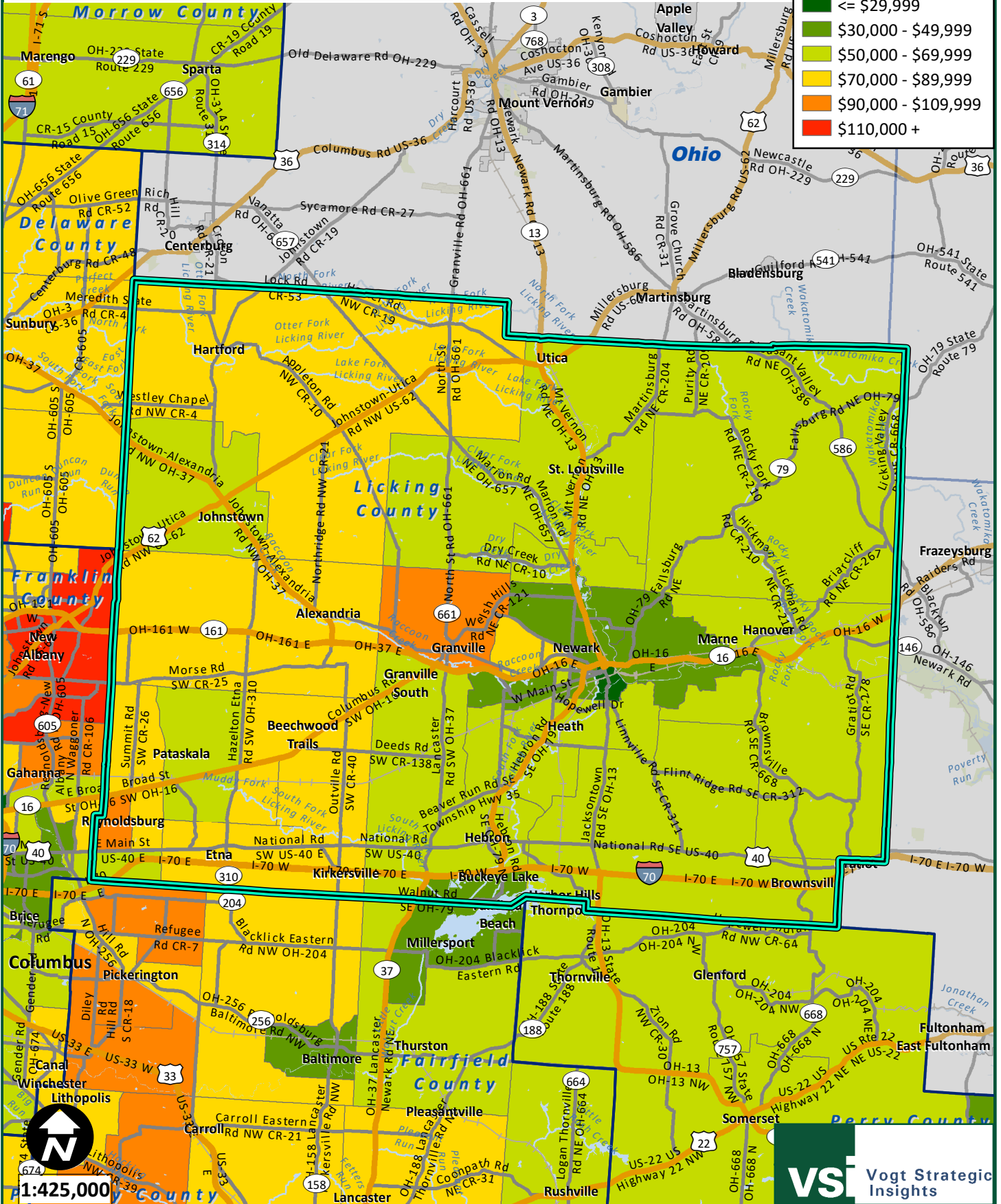
 Licking County

Census Tracts

Median Household Income










0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 Miles



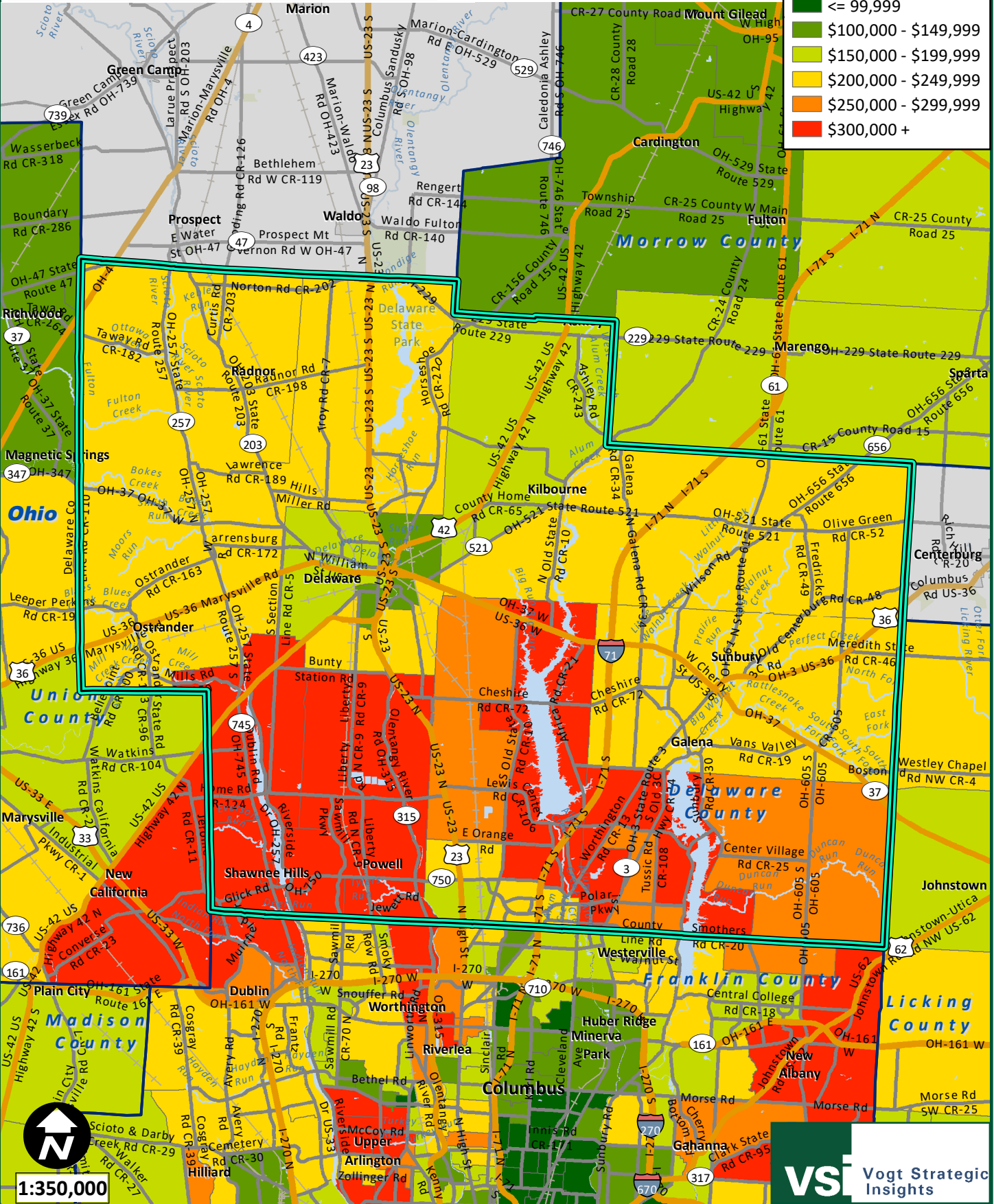
1:425,000

Delaware County, OH 2017 Median Home Value

Legend

-  Delaware County
- Census Tracts**
- Median Home Value**
-  ≤ 99,999
-  \$100,000 - \$149,999
-  \$150,000 - \$199,999
-  \$200,000 - \$249,999
-  \$250,000 - \$299,999
-  \$300,000 +

0 2 4 6 8 10 12 14 16 18 Miles




1:350,000







Fairfield County, OH 2017 Median Home Value

Legend

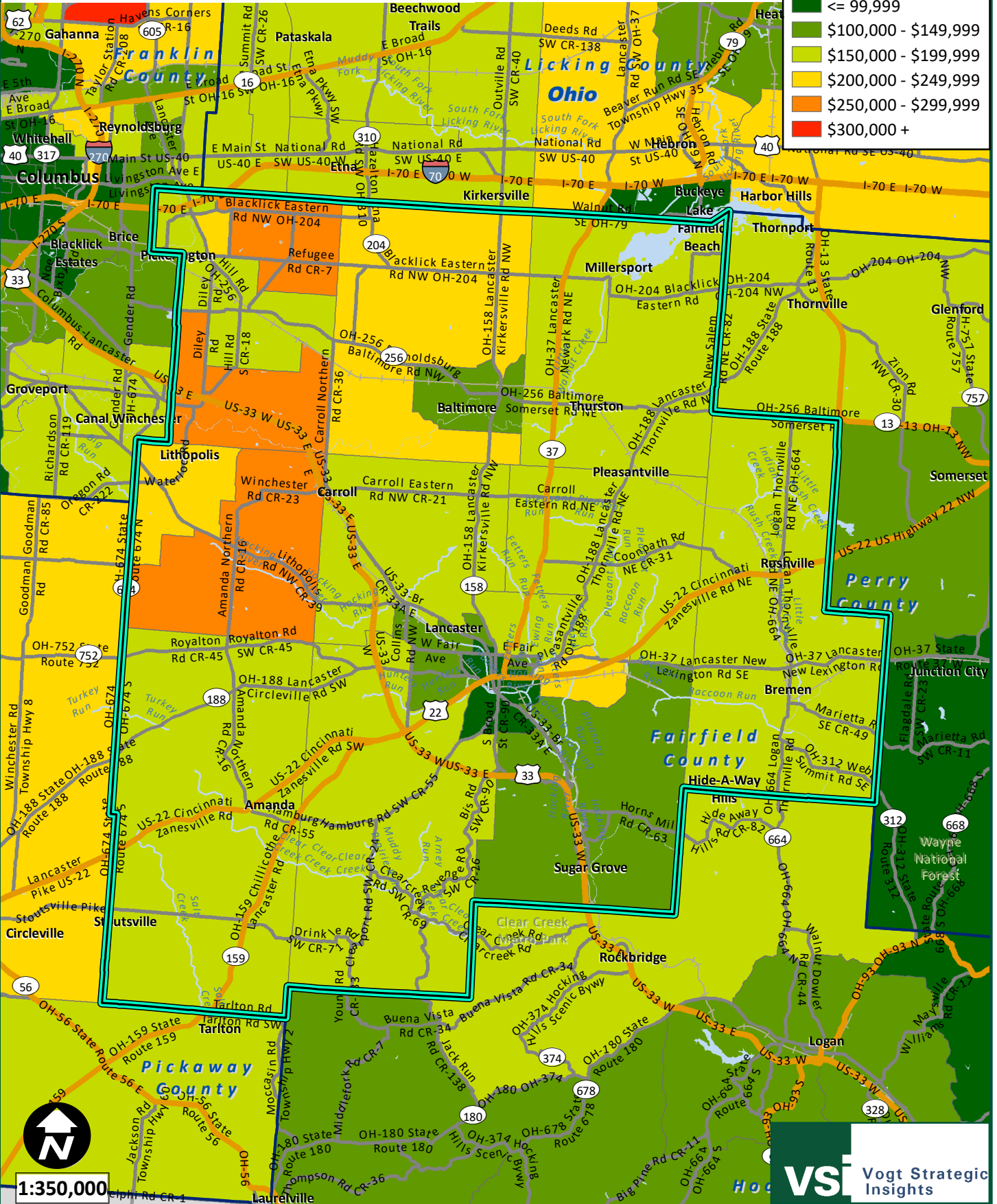
 Fairfield County

Census Tracts

Median Home Value

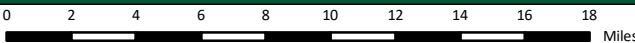
-  ≤ 99,999
-  \$100,000 - \$149,999
-  \$150,000 - \$199,999
-  \$200,000 - \$249,999
-  \$250,000 - \$299,999
-  \$300,000 +

0 2 4 6 8 10 12 14 16 18 Miles



1:350,000

Franklin County, OH 2017 Median Home Value



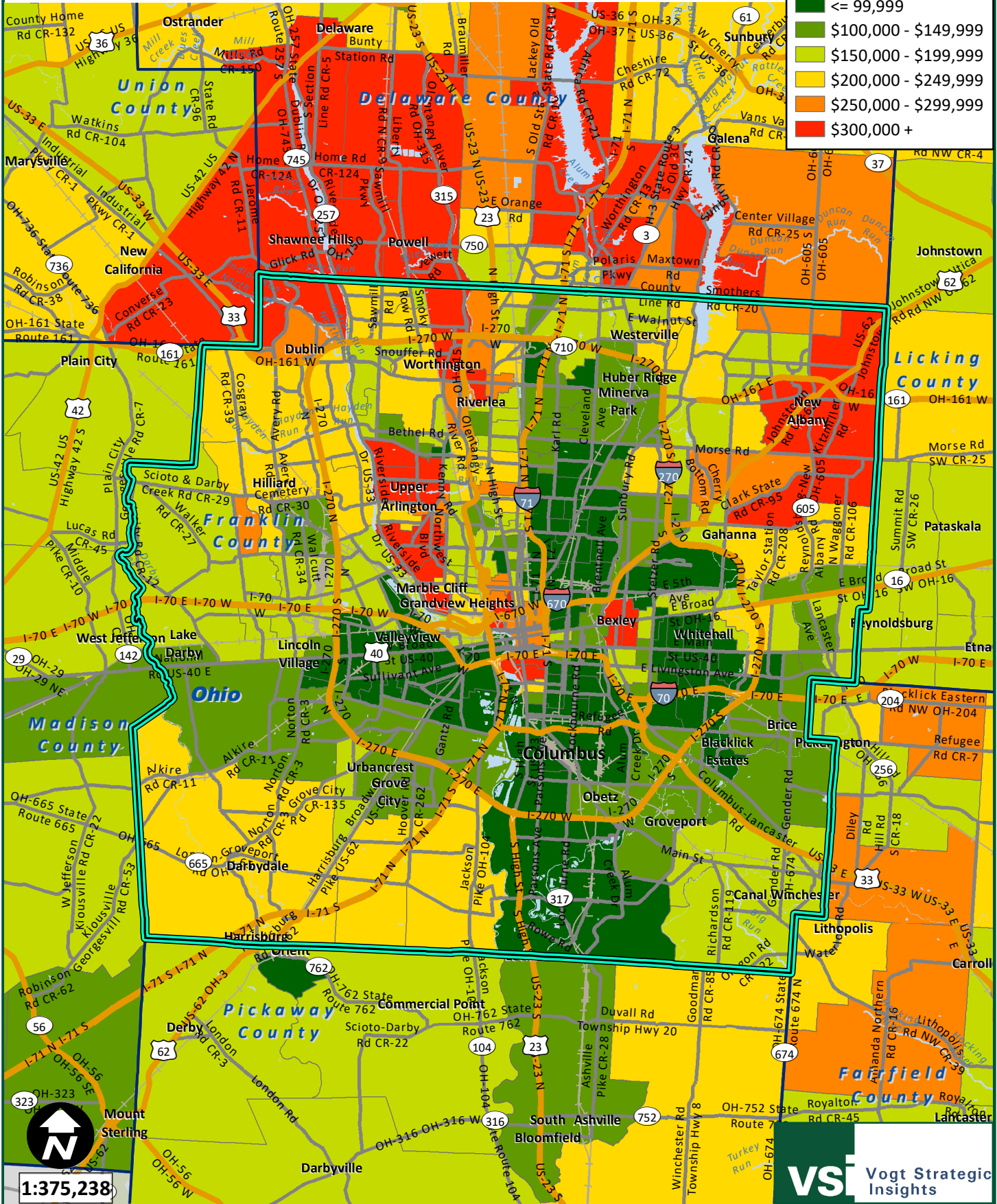
Legend

Franklin County

Census Tracts

Median Home Value


- <= 99,999
- \$100,000 - \$149,999
- \$150,000 - \$199,999
- \$200,000 - \$249,999
- \$250,000 - \$299,999
- \$300,000 +



1:375,238







Licking County, OH 2017 Median Home Value

Legend

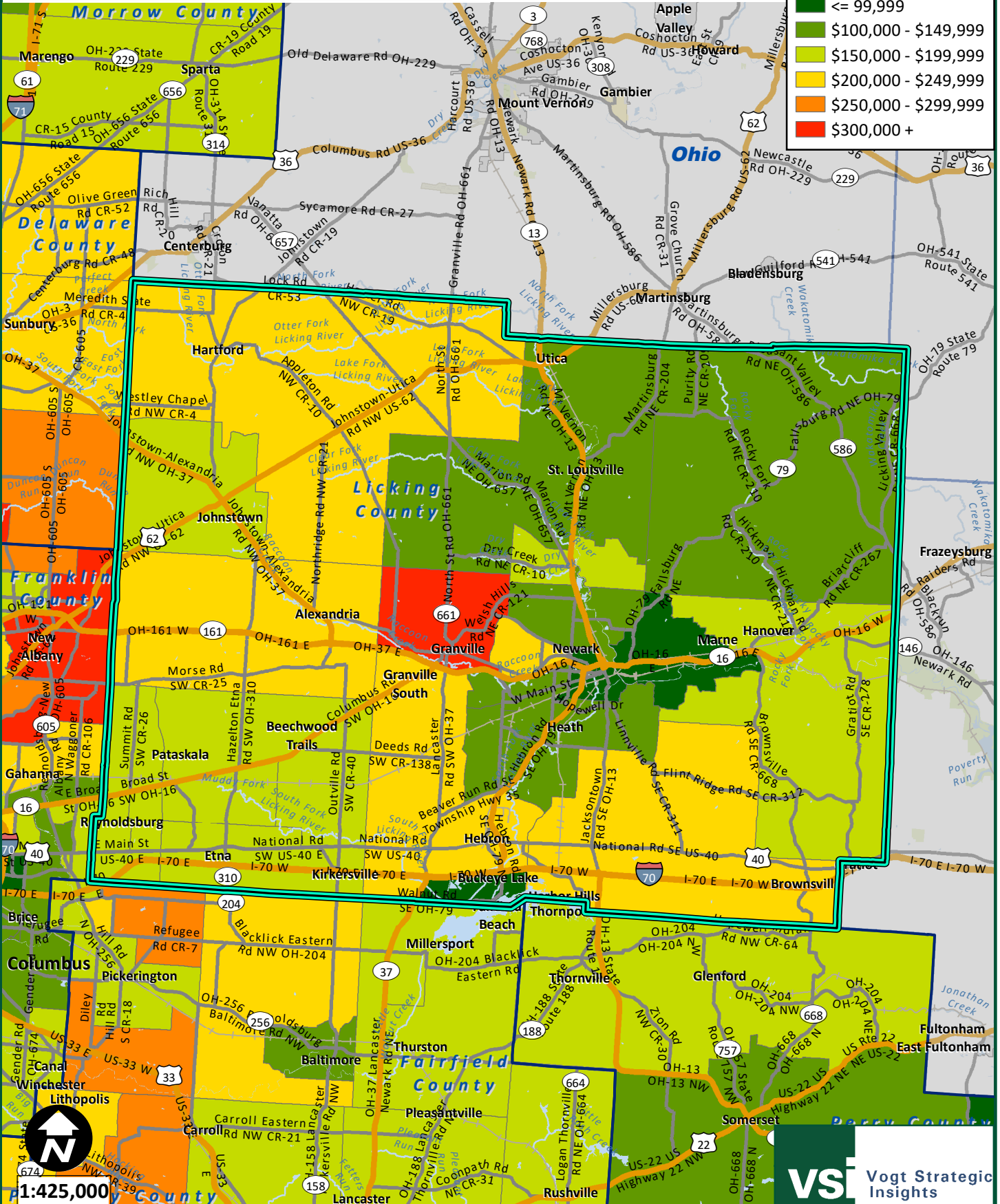
 Licking County

Census Tracts

Median Home Value

-  <= 99,999
-  \$100,000 - \$149,999
-  \$150,000 - \$199,999
-  \$200,000 - \$249,999
-  \$250,000 - \$299,999
-  \$300,000 +








0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 Miles



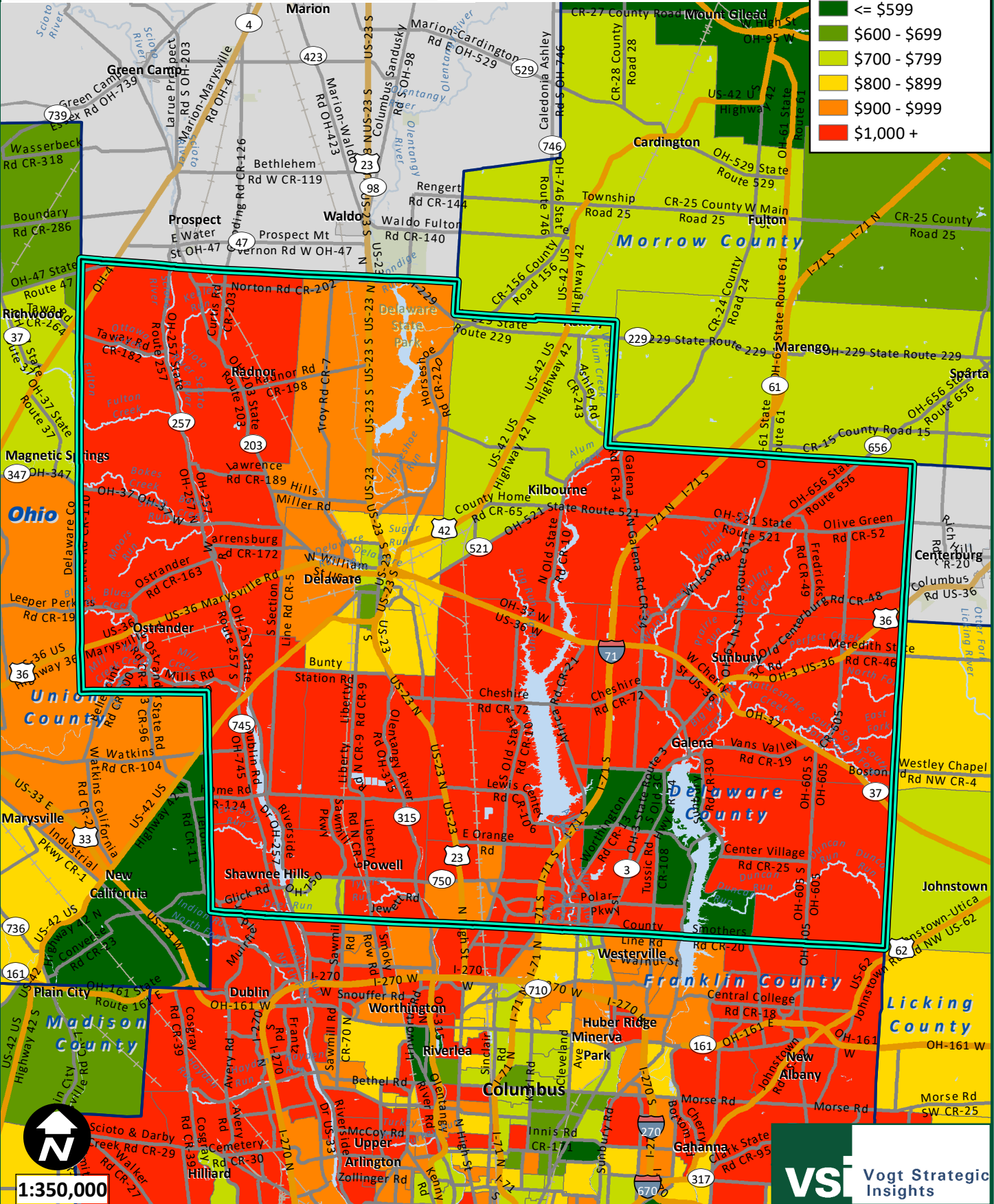
1:425,000

Dealware County, OH 2012-2016 ACS Median Gross Rent

Legend

-  Delaware County
- Census Tracts**
- Median Gross Rent**
-  ≤ \$599
-  \$600 - \$699
-  \$700 - \$799
-  \$800 - \$899
-  \$900 - \$999
-  \$1,000 +

0 2 4 6 8 10 12 14 16 18 Miles

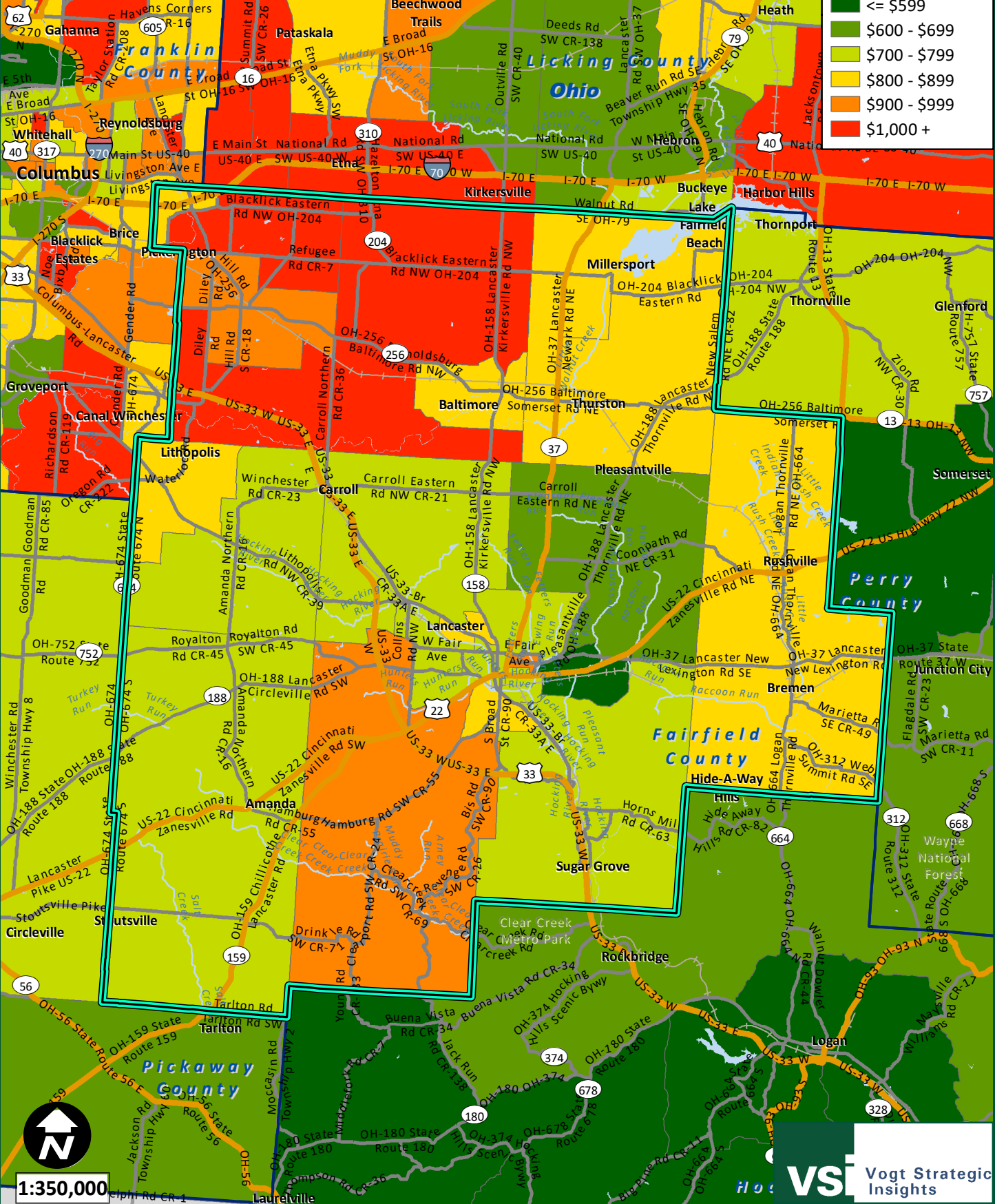


1:350,000

Fairfield County, OH 2012-2016 ACS Median Gross Rent

Legend








- Fairfield County
- Census Tracts**
- Median Gross Rent**
- ≤ \$599
- \$600 - \$699
- \$700 - \$799
- \$800 - \$899
- \$900 - \$999
- \$1,000 +



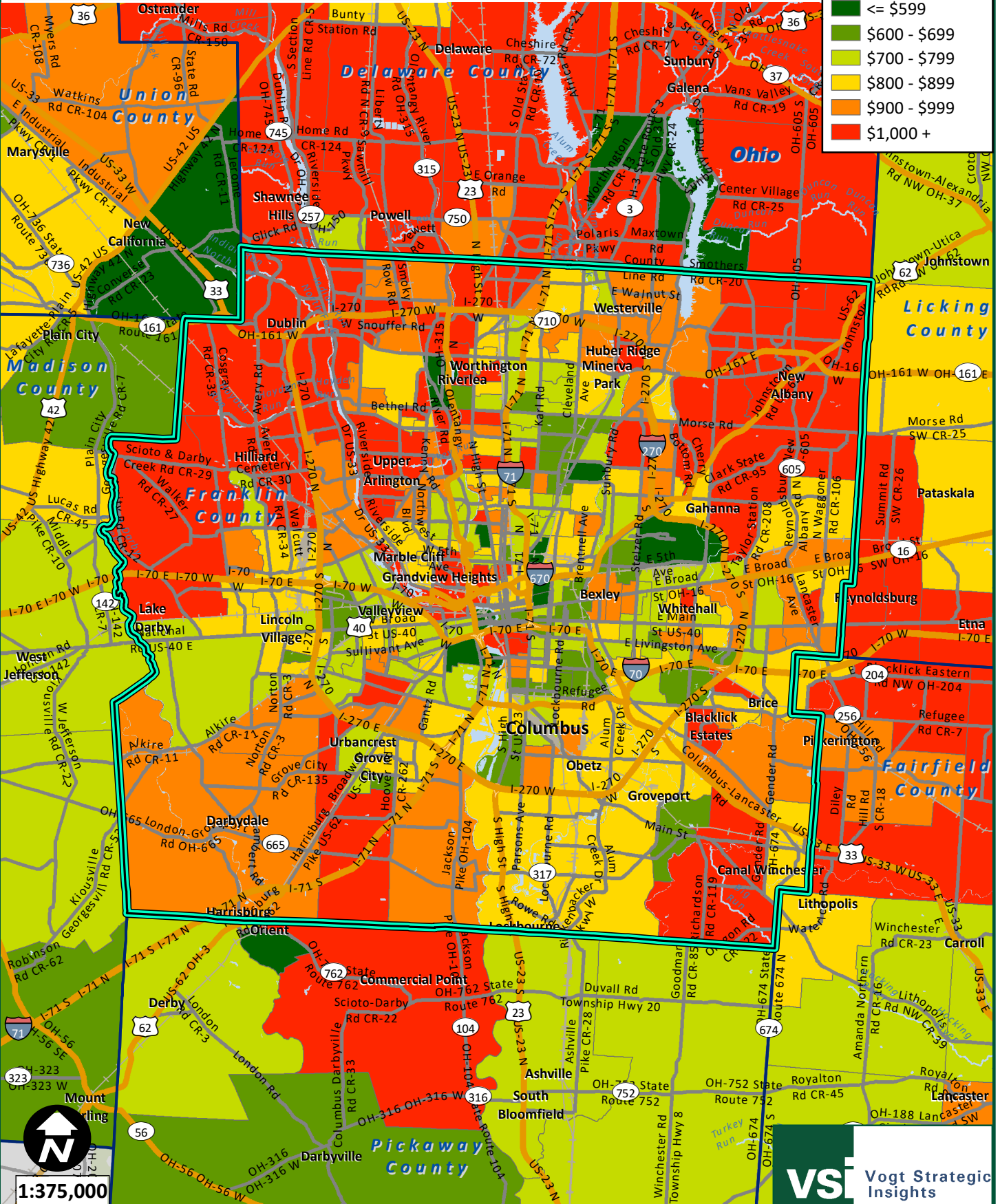
1:350,000

Franklin County, OH 2012-2016 ACS Median Gross Rent

Legend

-  Franklin County
- Census Tracts**
- Median Gross Rent**
 -  ≤ \$599
 -  \$600 - \$699
 -  \$700 - \$799
 -  \$800 - \$899
 -  \$900 - \$999
 -  \$1,000 +

0 2 4 6 8 10 12 14 16 18 Miles



Licking County, OH 2012-2016 ACS Median Gross Rent

Legend

- Licking County
- Census Tracts**
- Median Gross Rent**
- <= \$599
- \$600 - \$699
- \$700 - \$799
- \$800 - \$899
- \$900 - \$999
- \$1,000 +

