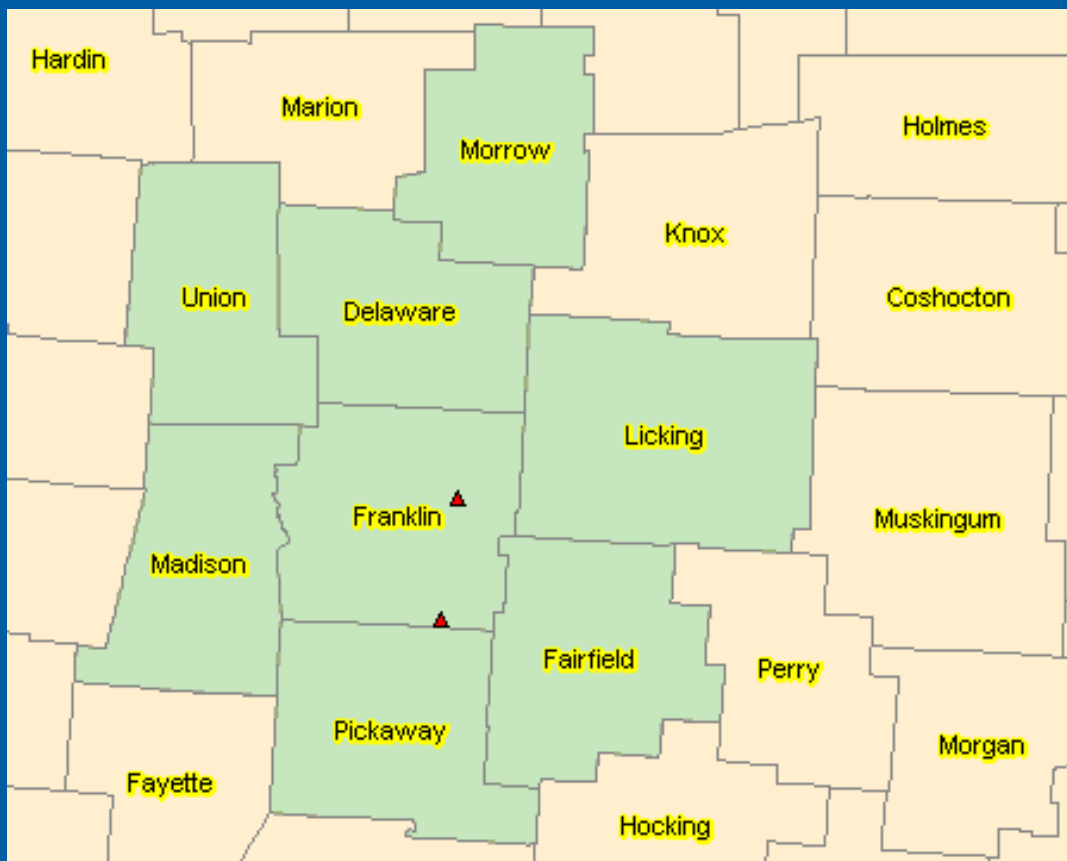


COLUMBUS, OHIO

Metropolitan Area Trends, Preferences, and Opportunities: 2010 to 2030 and to 2040

AUTHOR

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Dr. Nelson has published 25 books and more than 300 other professional and scholarly works. His research has been reported on the front page of such national newspapers as the *Wall Street Journal* and *USA Today*; has been cited in national print media such as the *New York Times*, the *Washington Post*, the *Los Angeles Times*, the *Atlantic*, and *Time* magazine; and has been featured in such national broadcast media as NPR and CBS News. Bloomberg News cites Dr. Nelson as the first to publish predictions of the housing collapse.

Among other national housing-related groups, Dr. Nelson advises the Department of Housing and Urban Development, the U.S. Environmental Protection Agency, the Urban Land Institute, the National Association of Realtors, and the National Multi Housing Council. In 2000–2001, he served as an adviser to HUD's assistant secretary for policy development and research under the Clinton and Bush Administrations.

Dr. Nelson has been an expert representing homebuilding interests in Colorado, Florida, Georgia, Maryland, and Oregon. His expert work helped establish affordable housing case law in Georgia and was cited by Chief Justice Rehnquist in the *Dolan v. Tigard* opinion leading to the landmark "rough proportionality" exactions test.

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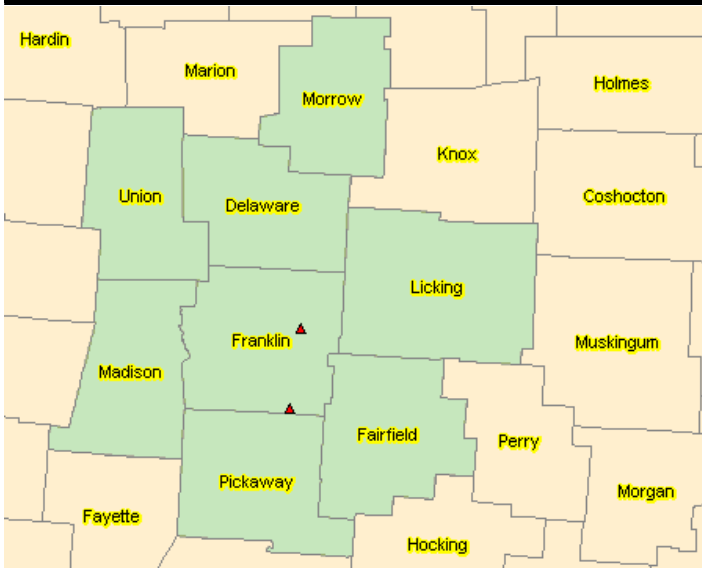
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EXECUTIVE SUMMARY

The jurisdictions within the Columbus, Ohio, Metropolitan Statistical Area (Columbus MSA) are growing at about the national average. Between 2010 and 2040, the Columbus MSA will grow from 1.7 million to 2.2 million residents, or by about 26 percent, somewhat less than the nation’s projected growth rate of 31 percent for that period. About 171,000 households will be added. More than 400,000 space-occupying jobs will also be added, requiring more than 300 million square feet of net new enclosed space. With about 750 million square feet of space requiring replacement, there will be about 1 billion square feet of nonresidential development during this period, representing about 1.8 times the total enclosed nonresidential space supported in 2010.

Figure A: Counties making up the Columbus, Ohio, Metropolitan Statistical Area



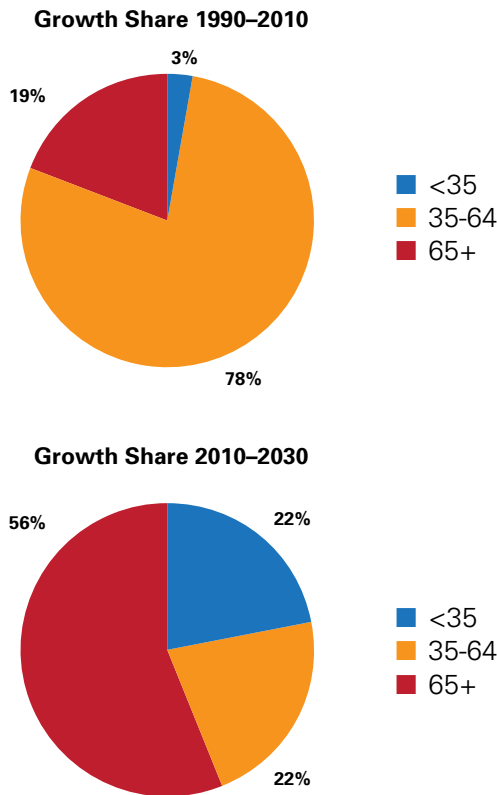
There will be important changes between 2010 and 2040:

- About one-third of the change in population between 2010 and 2040 will be attributable to seniors.
- The “new majority” (comprising all racial and ethnic minorities) will account for nearly all the growth.
- Between 2010 and 2040, households with children will make up about one-fourth of the total household change.
- Single-person households will account for more than half the total change.

As seen in Figure B:

- Between 1990 and 2010, households in their peak housing demand years (with residents between 35 and 64 who want larger homes on larger lots) accounted for about 78 percent of the growth in housing demand. But from 2010 to 2030, that same group will account for just 22 percent of the growth in housing demand.
- From 1990 to 2010, downsizing households (with residents 65 and older who want smaller homes on smaller lots or attached options) made up 19 percent of new housing demand, but over the next 20 years they will account for 56 percent of the demand share.

Figure B: Growth share by householder age, 1990–2010 and projected for 2010–2030



Source: Arthur C. Nelson.

The bottom line is that the most influential drivers of the form, location, and nature of the region’s development since the 1970s are undergoing fundamental changes. Understanding these new drivers and their implications for the built environment, and appropriately planning for and shaping the region’s growth in recognition of these new drivers, may be major factors in determining the region’s future economic competitiveness. Consider:

- The number of households in the peak housing demand period of their life cycle (householders 35–64) grew by about 150,000 between 1990 and 2010. These are the households with families, incomes, and the desire for more space on larger lots.
- That same peak housing demand group will grow by only 40,000 households between 2010 and 2030, about one-fourth as many as seen in the previous 20 years.

- The next wave of demand will be households with residents 65 and older. These householders have mostly empty-nested and are in the downsizing phase of their life cycle. Between 2010 and 2030, their number will grow by more than 120,000 households.
- About half of seniors who own homes become renters after they sell. Between 2010 and 2030, there may be tens of thousands more seniors trying to sell their homes than there are buyers for them.

For the past half-century, housing demand in the Columbus MSA was driven by baby boomers’ parents who wanted to raise their children in suburban, single-family, detached homes on larger lots, and then by boomers themselves as they became parents. Planning throughout metropolitan Columbus continues to be based on the baby boom “time warp.”

The next generation of demand for homes may be driven by different and emerging preferences. Analysis of the National Association of Realtors’ 2013 stated-preference survey indicates that:

- About 56 percent of Ohio respondents would prefer to live in a mixed-use community offering a variety of housing choices, walkable destinations, and other features. No more than one in five households has this option now.
- About 40 percent of Ohio respondents would choose to own or rent an apartment or townhouse if it had an easy walk to shops and restaurants and offered a shorter commute to work. About 60 percent of those preferring detached options would choose smaller lots if they had the same attributes. Given these parameters, respondents would seem to want the following options to 2040:
 - 40 percent attached homes (townhouses, condominiums, and apartments);
 - 35 percent smaller detached homes on smaller lots; and
 - 25 percent larger detached homes on all other lots.
- Yet, even if all new residential units built to 2040 were attached and small lots, there may be up to 24,000 more homes on all other lots than the market may demand. The reason is the dramatic shift in demographics illustrated in Figure B. Put differently, to meet housing demand by type in 2040 about 55 percent of all new residential units will need to be in attached options (apartment, townhouse, condominium) and the rest on small lots.

Moreover, the future of nonresidential development (in which jobs are housed) will be the redevelopment of existing structures and the parking lots on which they sit. The amount of nonresidential development may be nothing less than staggering.

- Nonresidential space will grow by more than 300 million square feet between 2010 and 2040.
- Nearly 750 million square feet of nonresidential space will be repurposed, redeveloped, and otherwise recycled between 2010 and 2040.
- More than 1 billion square feet will be constructed between 2010 and 2040, nearly equivalent to twice the volume of square feet supported in 2010.
- Nearly all the nonresidential recycling will occur on sites that are mostly parking lots.

In many respects the future of the Columbus MSA will be shaped by how policymakers guide the redevelopment of existing nonresidential spaces.

The built environment of the Columbus MSA will be reshaped through a combination of new drivers of housing demand and recycling of existing nonresidential spaces. To accommodate emerging market needs efficiently, effectively, and equitably, a series of actions are needed at the local, regional, and state levels. In summary, they include:

- Updating land use plans and codes to get ahead of the curve, mostly by getting beyond the baby boom time warp.
- Expanding housing choices.

- Rethinking infrastructure investments.
- Using existing public sector tools and inventing new ones to leverage private redevelopment.
- Engaging regional agencies to inform and educate local decision makers and citizens on the implications of the sweeping nature of demographic changes.
- Investing in modern regional transit systems that connect key centers and other nodes along existing commercial corridors.
- Adjusting state policies to address sweeping demographic changes.
- Requiring all communities in the state to plan for and implement policies that broaden housing choices based on sweeping demographic changes.

The challenge for the Columbus MSA is to create public-private-civil partnerships that can facilitate approaches to meet future housing needs and simultaneously reshape the massive commercial redevelopment that will occur. If such an effort is successful, perhaps all new attached housing and all new nonresidential development can occur in mixed-use configurations on existing built spaces, which today are mostly parking lots. This will make feasible modern transit options such as light rail and bus rapid transit. These partnerships are needed to leverage private resources that can unlock these opportunities. If successful, the future Columbus MSA will be more walkable, bikable, vital, and responsive to change than is currently the case.

INTRODUCTION

The Columbus, Ohio, Metropolitan Statistical Area (Columbus MSA), as defined for the 2010 U.S. Census, comprises eight counties in central Ohio: Delaware, Fairfield, Franklin, Licking, Madison, Morrow, Pickaway, and Union. The Columbus MSA population is projected to grow from 1.7 million in 2010 to about 2.0 million by 2030 and then 2.2 million by 2040. To aid local planning and decision-making processes, this report reviews market trends, emerging housing preferences, and opportunities for the redevelopment of commercial corridors and nodes to meet future development needs to 2030 and then to 2040. The report is made up of four parts.

PART 1 explores how sweeping demographic trends and changing home ownership influences will reshape choices to 2040. This part will show that the Columbus MSA will follow national trends in becoming more diverse, somewhat older, and dominated by households without children and households that are downsizing. It will also show how the home ownership rate will fall.

PART 2 synthesizes a recent state preference survey conducted by the National Association of Realtors to show that the future demand for housing will be for more attached (apartment, condominium and townhouse) and small-lot options. It will also show that these emerging preferences are consistent with demographic trends. This part then projects the broad distribution of future housing needs in terms of attached, small-lot, and conventional-lot options.

PART 3 identifies the kinds of jobs that occupy space, estimates the total number of workers who will occupy built space, and estimates the space used by workers in 2010, 2030, and 2040. This part also estimates the volume of work space existing in 2010 that will be replaced and/or repurposed or “recycled” to 2030 and then to 2040. As will be seen, the future of development in the Columbus MSA is redevelopment.

PART 4 synthesizes research, analysis, and findings of the first three parts to show that all the demand for new attached residential and nonresidential development to 2040 could be accommodated through the redevelopment of nonresidential spaces, especially along transit-ready commercial corridors and at nodes.

The Appendix combines selected economic sectors into industrial, retail/lodging, office, and institutional employment groups.

PART 1: DEMOGRAPHIC AND TENURE TRENDS

This part examines two trends: **sweeping demographic changes** that will fundamentally alter the nature of housing demand in the nation, in Ohio, and in the Columbus Metropolitan Statistical Area (MSA); and **changing home ownership influences** that by their nature will reduce home ownership rates. Combined, these trends will affect tenure patterns in terms of home ownership and renter rates. Addressing the challenges presented by these trends, and meeting emerging needs, will require approaches that are different from those relied on in the past.

SWEEPING DEMOGRAPHIC CHANGES

This section outlines demographic changes that will reshape the overall population, racial and ethnic composition, senior share of population, households by type (with children, without children, and single-person), and households by age (starter, peak housing demand, and downsizing). The section ends with some observations for the future of the Columbus MSA.

This section includes numerous projections. I use state projections where possible, but these are limited. Ohio has no forecasts other than population projections by county and by sex in five-year intervals from 2010 to 2040. Those projections are used to estimate the 2030 and 2040 populations for the Columbus MSA. For other projections, I use the Woods & Poole household and job projections published for 2012 as the overall control. To be consistent with state 2030 and 2040 projections, I use the ratio of Woods & Poole population projections to Ohio population projections to adjust Woods & Poole household and job projections proportionately.¹ Because neither Mid-Ohio Regional Planning Commission forecasts nor state projections consider age, race/ethnicity, or households by type or age, I use Woods & Poole data as well to frame my projections (see also Nelson 2013).

Overall Population Changes

The Columbus MSA is a bright spot in Ohio's future. Ohio's growth rate will lag well behind the nation from 2010 to 2030 and 2040, and the growth rate of the Columbus MSA will lag somewhat as well. However, as Table 1.1 shows, growth in the Columbus MSA will exceed that of the state. In fact, *if not for the Columbus MSA, Ohio would lose population from 2010 to 2030 as well as to 2040.*

But the nature of future growth will be nothing like that of the past. Instead of being characterized by growing families in need of large homes often on large suburban lots, as in the past, the future will be dominated by downsizing. The largest wave of new homeowners ever seen in the history of the nation, the baby boomers, will reach retirement age by 2030.

Table 1.1: Columbus MSA Projections to 2030 and 2040 [Figures in thousands]

Metric	United States	Ohio	Columbus MSA	Rest of Ohio
Population 2010	309,350	11,536	1,841	9,696
Population 2030	373,924	11,615	2,148	9,467
Population Change, 2010–2030	64,574	79	307	(229)
Percent Population Change, 2010–2030	21%	1%	17%	–2%
Population 2040	406,417	11,679	2,302	9,377
Population Change, 2010–2040	97,067	143	461	(319)
Percent Population Change, 2010–2040	31%	1%	25%	–3%

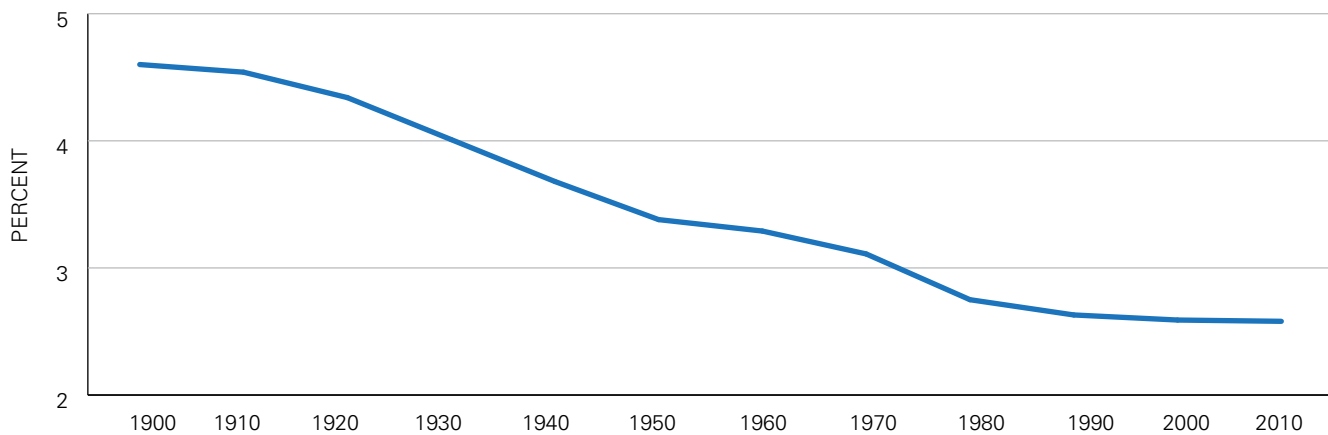
Source: U.S. Census, State of Ohio, Woods & Poole.

Non-Hispanic whites will become less dominant; indeed, nearly all population growth to 2040 will be attributable to racial and ethnic minorities constituting what I call the New Majority, as will be seen later. Household composition will also change: The proportion of American households with children, about 50 percent during the baby boom years of 1946 to 1964, will drop to one-fourth by 2040.

Since the end of the baby boom era, America has been composed mostly of households without children. In 2000, roughly one-third of American households had children, and in 2030 slightly more than one-fourth will. Except for the oldest generation (the Eisenhower Generation), by 2030 America will be composed of a few large household generations each with unique housing needs:

- **Eisenhowers**, born before 1946. There will be about 7 million of them living in 2030, down from about 40 million in 2010. They will make up about 5 million households. People in this generation will be more than 85 years old and live in downsized units, in assisted living facilities or nursing homes, with relatives, or in other forms of group housing.
- **Baby boomers**, born between 1946 and 1964. In 2010 there were about 82 million boomers; in 2035 they will number about 70 million living in around 35 million households. The AARP notes that about 90 percent of older adults would prefer to “age in place” and about 80 percent believe they can do so in their current residence (Keenan 2010). If unable to age in place, they will be actively downsizing, with many millions moving into assisted living facilities, nursing homes, the homes of kith or kin, or other forms of group housing. Many millions who want to move

Figure 1.1: Household size, 1990–2010



Source: U.S. Census.

into homes more suitable to their life stage may not be able to. For them, aging in place will be a necessity for longer than they might have anticipated (see Cisneros 2012). As will be seen below, aging boomers are more likely to rent than to own once they sell their homes.

- **Gen X**, born between 1965 and 1980. There will be about 67 million of them in 2030. Their households will number about 33 million. Being in their 50s to middle 60s in 2035, they will be at the peak of their earning power and likely choosing to live in the most expensive housing of all age groups, whether a “McMansion” in the suburbs, a condominium in the city, or any other major form of owner-occupied housing. But this age group will also consist substantially of empty-nesting households, and Gen Xers will begin to seek types of housing different from the kinds they now occupy.
- **Gen Y**, born between 1981 and 1995. They will number about 75 million and occupy about 35 million households. Being in their mid-30s to mid-50s in 2030 they will also be at the peak of child-rearing age and will also be the group most demanding of larger homes in areas with good public school systems.
- **Millennials**, those born between 1996 and 2010. Like Gen Y, they will number about 75 million, living in about 40 million households mostly as small families and singles. They will be mostly starter-home households and their housing needs will mostly be apartments and small starter homes. Many millions may remain living in their parents’ homes until their late twenties or early thirties, or longer.

These generational changes will usher in other household dynamics. For instance, consider average household size and its effect on overall housing demand. For more than a century, the average household size in the United States has been falling, as shown in Figure 1.1. *Starting at 4.60 persons per household in 1900, average household size fell steadily to 2.59 persons per household in 2000.*² There are many reasons for declining household size: (a) Women are delaying or forgoing marriage and are thus increasingly older when they

have children, and they have fewer children. (b) More women are raising children outside of marriage. (c) extended families are weakened and possibly not needed as the population has moved from rural to urban environments. (d) The education of women leads to more women in the workforce, delaying marriage and reducing the birth rate. (e) Improved birth control since the 1960s is reducing the birthrate (Downs, 2003, and Goldin, 2005). (f) Rising divorce rates also contribute to smaller household sizes.

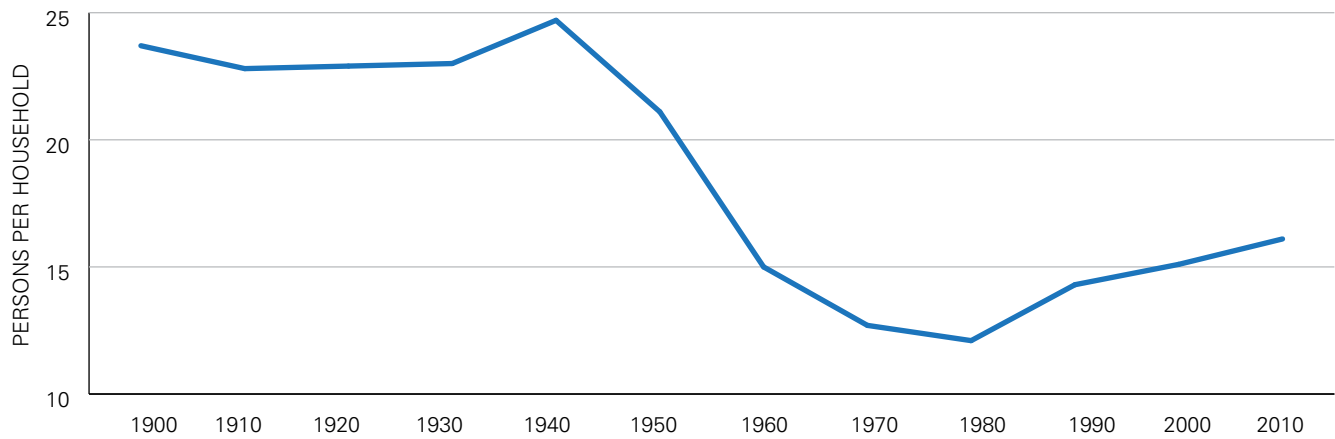
Declining household size means more homes are needed for the same population. For instance, 1 million people in 1900 occupied about 217,000 homes, but in 2000 the same number of people needed about 386,000 homes. *Between 1950 and 2000, the combination of population growth and declining household size made for a robust home-building industry. During this period, the population grew by 87 percent and the number of occupied housing units increased by 144 percent.* Put differently, for every two new residents in the United States, one new home needed to be built.

That has changed. Instead of falling to 2.53 persons per household in 2010 as many demographers projected (see Day 1996, e.g.), average household size was actually 2.58, nearly the same as in 2000.³ The implication is that new housing demand may no longer be driven by further reductions in household size.⁴

Another important trend is the rise of multigenerational households (Taylor et al. 2010). These households take several forms: two generations with parents and adult children age 25 and older; three generations with parents, adult children (perhaps with spouses), and grandchildren; households with a “skipped” generation—grandparents and grandchildren, without parents; and more than three generations (Taylor et al. 2010, 2). Since 1980 the number and share of Americans living in multigenerational households has risen, reaching 49 million and 16 percent, respectively, in 2008. This is illustrated in Figure 1.2. Moreover, the trend since 1980 has affected adults of all ages, especially the elderly and the young.

Taylor et al. (2010) note that as boomers enter retirement age in unprecedented numbers and our racial and ethnic

Figure 1.2: Percentage of multigenerational households, 1900–2008



Source: Pew Research Center (2010).

minorities contribute an increasing share of population growth, the number and proportion of multigenerational households seem destined to increase. But by how much has not been reported. Extrapolation of trends over the period 1980 to 2008 indicates that about 20 percent of Americans may be in multigenerational households by about 2040, though it could be as high as in 1900, when it was about 24 percent. I have not made such an estimate for the Columbus MSA.

I will now present more detailed analysis showing how sweeping demographic changes will be.

The Rise of the New Majority

The U.S. Census projects that by the early 2040s, most Americans will be members of minority racial and ethnic groups. In my view, they will become America’s “New Majority.” Key findings based on Table 1.2, which reports population change for white non-Hispanic Americans and New Majority Americans, include the following:

- Nationally, New Majority population growth will exceed 90 percent between 2010 and 2040.
- In Ohio, all population growth to 2040 will be attributable to the New Majority.
- The New Majority will make up almost all—94 percent—of the population growth in the Columbus MSA to 2040.

These changes, combined with others, will have profound effects on future housing markets. For one, a higher share of the New Majority population lives in multigenerational households than does the white non-Hispanic population. The rise of the New Majority may thus reduce overall new housing demand. For another, New Majority-headed households own homes at a far lower rate than do households headed by white non-Hispanics, about 47 percent compared with about 72 percent. By itself, the rise of the New Majority may reduce overall home ownership rates. This is discussed further in the next section.

Table 1.2: Racial/Ethnic Population, 2010 to 2030 and to 2040 [Figures in thousands]

Metric	United States	Ohio	Columbus MSA	Rest of Ohio
Baseline				
Population Change, 2010–2030	64,574	79	307	(229)
Population Change, 2010–2040	97,067	143	767	(624)
White Non-Hispanic				
Population 2010	201,912	9,537	1,431	8,106
Population 2030	210,837	8,878	1,479	7,400
Population Change 2010–2030	8,925	(659)	48	(706)
Share of Change 2010–2030	14%	0%	16%	0%
Population 2040	210,932	8,456	1,459	6,996
Population Change 2010–2040	9,020	(1,081)	28	(1,109)
Share of Change 2010–2040	9%	0%	6%	0%
New Majority				
Population 2010	107,438	1,999	410	1,590
Population 2030	163,087	2,737	670	2,067
Population Change 2010–2030	55,649	738	260	478
Share of Change 2010–2030	86%	100%	85%	100%
Population 2040	195,485	3,223	843	2,381
Population Change 2010–2040	88,047	1,224	433	791
Share of Change 2010–2040	91%	100%	94%	100%

Source: Arthur C. Nelson, adapted from Woods & Poole.

The Rise of Seniors

Another key change is the aging of America's population, headlined by baby boomers (born between 1946 and 1964) who began to turn 65 in 2011 and will continue to do so until 2029. Table 1.3 shows that for the nation, the share of population age 65+ will rise from 13 percent in 2010 to 19 percent in 2030 and then to 20 percent in 2040. For Ohio the senior share of the population will grow from 14 percent in 2010 to 21 percent in 2030 as well as 2040; for the Columbus MSA, seniors will increase their share of population from 11 percent in 2010 to 15 percent in 2030 and 2040.

Another way to look at how the rise of seniors will reshape housing choices is to consider their share of population growth. Table 1.3 shows that for the United States as a whole, the change in population of those over 65 will be equivalent to half of the overall growth to 2030, and 42 percent of the overall growth to 2040. The figures are higher within Ohio. To 2030, the change in senior population will be equal to the state's population change to both 2030 and 2040. The Columbus MSA is very different from the nation and the state, however. Between 2010 and 2030, the change in senior population will be equivalent to about 43 percent of its overall growth and 44 percent by 2040.

A Population Dominated by Childless Households and Singles

Change from 2010 to 2040 will also be unprecedented on two other fronts: the growth in the number of households without children (and especially single-person households), and the growth in the number of downsizing households.

Consider first the changes in households with children, households without children, and single-person households. Prior to the last third of the 20th century, the United States was a nation mostly of households with children. In 2000, however, only one-third of American households had children in them. By 2040, slightly more than one-fourth of American households will. This can be derived from Table 1.4.

Even more remarkable is this: *Between 2010 and 2040, households with children will account for only 19 percent of the change in households nationally; households without children will drive 81 percent of the change.* Moreover, between 2010 and 2030, single-person households will account for more than half of all household change, falling to about 44 percent between 2010 and 2040. Indeed, nationally, the growth in single-person households will be about 2.5 times the growth of households with children to 2040.

For Ohio as a whole, however, households without children will account for the entire change in households to 2030 and to 2040; more specifically, it is the single-person household that will account for all the net change. Reasons include these: (a) Younger people are moving out of the state seeking

economic opportunities elsewhere. (b) Aging baby boomers are remaining in the state. (c) As boomers age they become empty-nesters and often lose their partners, which results in smaller household size.

Columbus's trends will mostly follow those of the nation. To 2030, the net change in share of households with children and without children will be 13 percent and 87 percent, respectively, the same as for the nation; the share of growth of single-person households will be 63 percent compared with 53 percent for the nation. To 2040, Columbus's share of growth in households with and without children will match the nation at 20 percent and 80 percent, respectively, while Columbus's share of single-person household growth will be higher, 55 percent compared with 44 percent.

Table 1.3: Share of Net Population Change to 2030 and 2040 Attributable to Persons 65+ [Figures in thousands]

Metric	United States	Ohio	Columbus MSA	Rest of Ohio
65+, 2010–2030				
Population 2010	40,331	1,622	195	1,427
Share of Population 2010	13%	14%	11%	15%
Population 2030	72,337	2,416	329	2,087
Share of Population 2030	19%	21%	15%	22%
Population Change 2010–2030	32,006	794	134	660
Population % Change 2010–2030	79%	49%	69%	46%
Share of Net Growth of Population 2010–2030	50%	100%	44%	100%
65+, 2010–2040				
Population 2040	81,250	2,453	398	2,055
Share of Population 2040	20%	21%	17%	22%
Population Change 2010–2040	40,919	831	203	628
Population % Change 2010–2040	101%	51%	104%	44%
Share of Net Growth of Population 2010–2040	42%	100%	44%	100%

Source: Arthur C. Nelson, adapted from Woods & Poole.

Table 1.4: Change in Households by Type, 2010-2030 and 2010-2040 [Figures in thousands]

Metric	United States	Ohio	Columbus MSA	Rest of Ohio
Baseline, 2010				
Households with Children	34,814	1,293	219	1,074
Households Without Children	82,131	3,310	506	2,804
Single-Person Households	31,264	1,329	206	1,123
Household Growth by Type, 2010–2030				
Household Growth	26,287	78	133	(55)
Households with Children	38,358	1,173	236	938
Households with Children Growth	3,544	(120)	17	(137)
Households with Children Share of Growth	13%	0%	13%	0%
Households Without Children	104,874	3,508	623	2,885
Households Without Children Growth	22,743	198	117	81
Households Without Children Share of Growth	87%	100%	87%	100%
Single-Person Households	45,299	1,641	290	1,351
Single-Person Households Growth	14,035	312	84	228
Single-Person Households Share of Growth	53%	100%	63%	100%
Household Growth by Type, 2010–2040				
Household Growth	35,226	(12)	174	(186)
Households with Children	41,486	1,180	253	928
Households with Children Growth	6,672	(113)	34	(146)
Households with Children Share of Growth	19%	0%	20%	0%
Households Without Children	110,685	3,411	647	2,764
Households Without Children Growth	28,554	101	141	(40)
Households Without Children Share of Growth	81%	100%	80%	100%
Single-Person Households	46,902	1,566	302	1,264
Single-Person Households Growth	15,638	238	96	142
Single-Person Households Share of Growth	44%	100%	55%	100%

Note: Figures reflect only share of net growth (negative growth is zero).
Source: Arthur C. Nelson.

A Population Dominated by Downsizing Households

Now consider the change in households based on their life cycle. I divide households into three broad groups:

- **Starter-home** households, with residents under 35. These householders are young people, many with young families, and are starting out in their careers; they tend to rent or buy smaller homes, townhomes, or condominiums.
- **Peak-housing-demand** households, with residents age 35 to 64. These householders are at the peak of their space demands and often at the peak of their income. Dual-income families make up more than half of these households.

- **Downsizing** households, with residents 65+. For the most part these householders have raised their families, are retiring, and no longer wish to care for larger homes, especially on large lots far from services, shopping, and medical assistance.

Table 1.5 shows the number of households by age category for 1990, 2020, 2030, and 2040, and changes between 1990–2010, 2010–2030, and 2010–2040. For the nation, peak-housing-demand households accounted for 78 percent of all the growth in households between 1990 and 2010, followed by empty-nesting/downsizing households at 22 percent; there were actually fewer starter home households in 2010 than in 1990. Trends were similar for both Ohio and the Columbus MSA: The net change in demand for homes

servicing the needs of households during their peak space needs was 78 percent for the state and 79 percent for the Columbus MSA. Demand for housing to meet the needs of starter households fell for the state but rose 3 percent for the Columbus MSA. Downsizing households accounted for the remaining 22 percent and 19 percent for Ohio and Columbus, respectively.

Trends are very different for 2010 to 2030. Nationally, peak-housing-demand households will account for only 14 percent of the growth, with starter households increasing to an 11 percent share of growth while downsizing households will dominate the market with a 75 percent share of growth. Trends for the state and the Columbus MSA will be different at the extremes. This is shown in the Table 1.5 data for the state as a whole, for the Columbus MSA, and for the state excluding the Columbus MSA.

In Ohio as a whole, the number of households in their peak housing consumption stage of life will actually fall from 2010 to 2030 as well as to 2040. Excluding the Columbus MSA from the state, I find that the number of such households will fall by 233,000 by 2030. The number of starter home households will also fall, meaning that outside the Columbus MSA the only growth seen for the rest of the state is in the number of downsizing households. These changes in households based on housing stage may weaken the market for larger homes on larger lots as there may be little or no demand for them. It could also impact the demand for housing among downsizing households, as householders may be unable to move from their current home to one that better suits their needs.

At the other extreme is the Columbus MSA. Between 2010 and 2030, starter and peak-demand households will each command a 22 percent share of growth, with empty-nesting/downsizing households accounting for the rest, 56 percent. Shares to 2040 will be 26 percent, 31 percent, and 44 percent, respectively. The Columbus MSA housing market will be considerably less stressed in meeting the needs of households based on different stages of the life cycle than the rest of the state. Reasons include the presence of large universities that attract and retain younger persons, and a balanced economy that is more resilient to economic downturns than most other metropolitan areas in the United States.

I will next discuss the implications of other influences on home ownership rates.

Table 1.5: Households by Age Group, 1990–2010, 2010–2030, and 2010–2040 [Figures in thousands]

Metric	United States	Ohio	Columbus MSA	Rest of Ohio
Change in Household Growth by Age, 1990–2010				
Household Change	24,629	503	189	314
Change in Households <35	(1,285)	(187)	5	(193)
Change in Households 35–64	20,457	548	149	399
Change in Households 65+	5,779	154	36	118
Households <35 Share of Growth	0%	0%	3%	0%
Households 35–64 Share of Growth	78%	78%	79%	77%
Households 65+ Share of Growth	22%	22%	19%	23%
Change in Household Growth by Age, 2010–2030				
Household Change	26,287	441	196	245
Change in Households <35	2,863	20	43	(23)
Change in Households 35–64	3,759	(190)	43	(233)
Change in Households 65+	19,665	579	121	459
Households <35 Share of Growth	11%	3%	22%	0%
Households 35–64 Share of Growth	14%	0%	22%	0%
Households 65+ Share of Growth	75%	97%	56%	100%
Change in Household Growth by Age, 2010–2040				
Household Change	35,226	461	259	202
Change in Households <35	5,885	75	67	8
Change in Households 35–64	10,041	(89)	79	(168)
Change in Households 65+	19,300	530	128	402
Households <35 Share of Growth	17%	12%	26%	2%
Households 35–64 Share of Growth	29%	0%	31%	0%
Households 65+ Share of Growth	55%	88%	44%	98%

Note: Figures reflect only share of net growth (negative growth is zero).
Source: Arthur C. Nelson.

CHANGING HOME OWNERSHIP INFLUENCES

While home ownership may be a key feature of the American Dream, it will probably become less attainable and perhaps even less desirable by 2040 than it has been in the past. There are four main reasons for this: rising energy costs, falling incomes, shifting wealth, and tighter home finance. The overall effect may be substantially lower home ownership rates in the future.

Rising Energy Costs

Since the end of World War II, home ownership in the United States rose steadily, going from 55 percent in 1950 to a peak of 69 percent in 2004.⁵ One key reason was the vast supply of inexpensive land available for home building outside cities; another was cheap gasoline: The cost of driving to work and other destinations from a suburban home was low.

Since the early 1970s, energy prices have been rising steadily. Living far from work, shopping, and other destinations is now more expensive because of rising vehicle fuel costs and the lack of transit options. Especially between 2002 and late 2012, the national average price of a gallon of gasoline rose more than 10 percent per year, compounded, three to four times faster than inflation.⁶

Steadily increasing gasoline prices may dampen the attractiveness of suburban fringe and exurban areas for home buying. On the other hand, homes closer to urban areas are usually more expensive to purchase. The overall effect of rising gasoline prices may be fewer households able to both buy homes and pay for gasoline. For the nation as a whole, housing costs average about 32 percent of household income, while transportation costs account for 18 percent. *But the typical Columbus MSA household spends about half of its income on housing plus transportation.*⁷

Falling Incomes

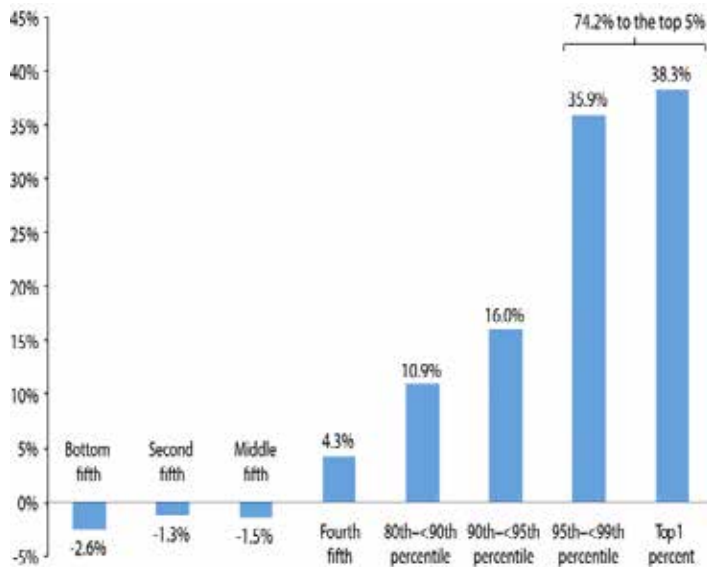
Not only are fuel costs rising, but incomes are falling in real terms. Median household incomes for all age groups in each income category were lower at the end of the 2000s than at the beginning (Harvard Joint Center for Housing 2011, 15). Moreover, the poverty rate increased from 11.3 percent in 2000 (Dalaker 2001) to 15.1 percent in 2010 (DeNavas-Walt et al. 2011). The rate of this increase appears greatest in the suburbs. Between 2000 and 2008, suburban areas accounted for nearly half the increase in the population in poverty (Kneebone and Garr 2010). In contrast, primary cities accounted for just over 10 percent of the increase. By the early 2010s, suburbs had become home to most of the nation's households living in poverty (Kneebone and Berube 2013). Suburbs may be especially hard-hit because of rising gasoline prices (see above) and lagging employment (see below). Combined, those effects may further alter the demand for owner-occupied homes over the next several decades (McKeever 2011).

Shifting Wealth

There is another trend: The nation's wealth has been shifting steadily to more affluent households. In the 1980s, about 80 percent of the nation's wealth was held by the wealthiest fifth of America's households. By 2010, nearly *all* of America's wealth was held by the top quintile, as illustrated in Figure 1.3. The Great Recession of 2008–09 and its aftermath can be blamed for reducing much of the wealth of the middle and lower classes. Historically, a large share of American households' wealth has been the equity in their homes. This wealth was impacted as homeowners lost one-third of their equity during the recent recession. *Indeed, homeowner equity has fallen steadily from the early 1980s, from about 70 percent to about 40 percent* (see Figure 1.4).⁸ New, highly leveraged home purchase opportunities that became widely available during the past generation have contributed to the loss of equity.

Shifting wealth and loss of home equity have contributed to changing market dynamics: Fewer people are able to buy homes. Because of eroded equity, those who do own homes may not be able to refinance to enable a down payment on a new home for their children. And reduced demand further reduces prices and erodes equity.

Figure 1.3: Share of wealth held by household wealth categories, 2010



Note: Wealth is determined by net worth—i.e., assets less liabilities. 2009 data are from Survey of Consumer Finances in 2007 with asset prices adjusted to reflect changes from 2007 to 2009 in Flow of Funds data.

Source: Economic Policy Institute; Federal Reserve Board, Survey of Consumer Finances and Flow of Funds, stateofworkingamerica.org/chart/swa-wealth-figure-6b-share-total-household/.

Figure 1.4: Homeowner equity as share of home value, 1969–2011

Figure 6L Total homeowner equity as a share of total home values, 1969–2011



Note: Data are quarterly and extend from the first quarter of 1969 through the fourth quarter of 2011. Shaded areas denote recessions.

Source: Authors' analysis of Federal Reserve Board Flow of Funds Accounts

Source: Mishel et al (2012: 397).

Tighter Home Financing

The rate of home ownership is largely a function of household income and the ability to make a down payment. Home ownership was pushed to its limits in the mid-2000s, reaching an all-time high of about 69 percent in 2004. Contributors included “subprime” loans with limited, nontraditional paperwork and easy qualifying, “Alternative A” loans for people meeting marginal qualification standards, and “jumbo” loans for those wishing to borrow beyond the Federal Housing Administration limits. Those modes of financing are now either gone or highly restricted. Conventional home financing, reminiscent of the period from the 1960s to the middle 1990s, is now just about the only way to buy a home, and this will likely be the case in the coming decades. The effect may be to push down home ownership rates and increase demand for rental housing. Demographic changes will likely add to lessening home ownership rates.

The Great Recession of 2008–09 was caused in large part by the bursting of the housing bubble of the middle 2000s. Banks and other financial institutions closed, millions of homes were foreclosed (or sold short to avoid foreclosure), and home equity saw its biggest decline since the start of the Great Depression. In the wake of this financial disaster, lending institutions increased their underwriting requirements, thereby reducing the number of people who could qualify for a loan to buy a home.

Since then, the financial market for mortgage underwriting has changed substantially. Home buyers who would formerly qualify for conventional mortgages now need higher

credit scores, longer and more stable work histories, and larger down payments as banks return to the traditional 20 percent down payment standard for conventional mortgages. This move among lending institutions regulated by the federal government has drawn concern from the National Association of Home Builders.⁹ Its concern is that requiring higher downpayments such as 20 percent would disproportionately harm first-time home buyers who account for about 40 percent of home-buying activity. It estimates that such a change would disqualify about 5 million potential home buyers.¹⁰

As seen in Figure 1.5, about two-thirds of all American homeowners in 2009 put no more than 20 percent down for their home.¹¹ Clearly, higher down payment requirements will reduce the number of households that can afford to buy a home.

Figure 1.6: Down payment as share of house purchase

Percent of purchase price	Share	Cumulative
No down payment	14%	14%
Less than 3%	8%	22%
3–5%	12%	34%
6–10%	16%	50%
11–15%	6%	56%
16–20%	13%	69%
21–40%	13%	82%
41–99%	7%	90%
Bought outright	10%	100%

Note: Highlighted range shows households with about 20 percent down payment.

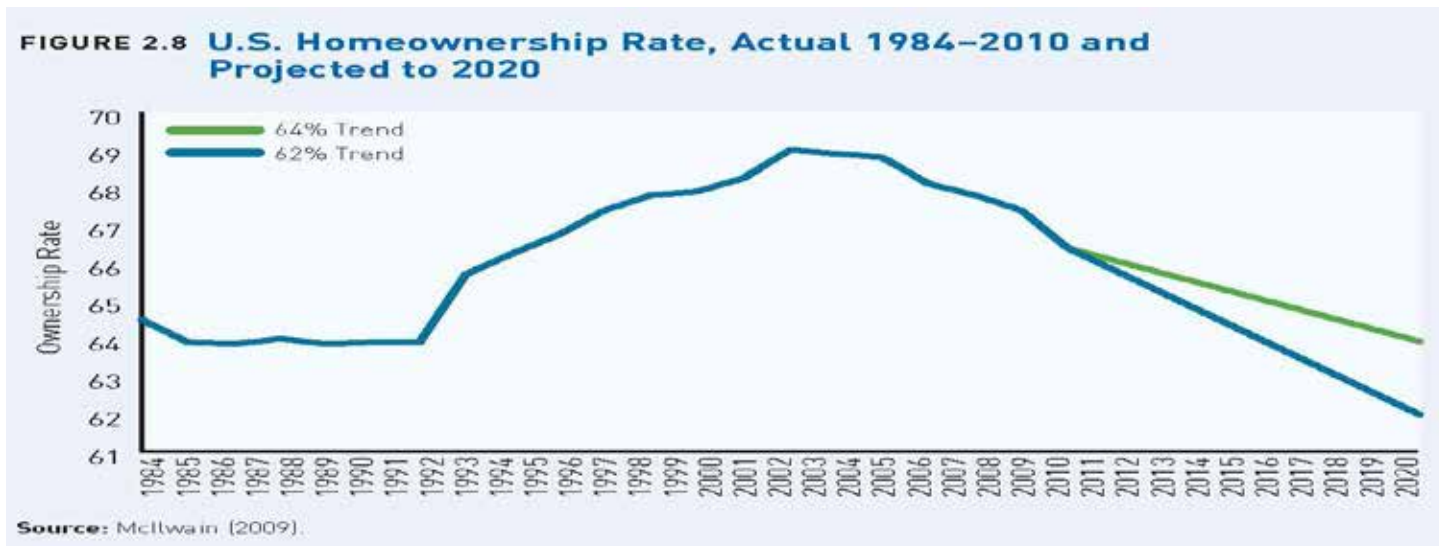
Source: Arthur C. Nelson, adapted from U.S. Census Bureau, American Housing Survey for 2009 (2010).

Overall Home Ownership Outcomes

These emerging trends seem poised to push home ownership rates down, but by how much and by when are subject to speculation. One estimate, from the Urban Land Institute (McIlwain 2009), projects that the home ownership rate in 2020 will range between about 62 percent and 64 percent, as shown in Figure 1.6.

Between 1965 and 1995, the median home ownership rate was about 64 percent. This figure reflected housing demand from a society composed mostly of white non-Hispanic households. Between 2000 and 2010, easy credit masked the effects of a shift in demographics and the home ownership rate did not change much: Overall, the figure stood at 65 percent, and the rate among white non-Hispanics was 72 percent. African-American home ownership dropped from 47 percent to 45 percent during that period, and Hispanic home ownership rose slightly, from 46 percent to 47 percent.¹²

Figure 1.6: Actual and projected home ownership rates, 1984–2020



Source: John McIlwain (2009).

It is unrealistic to assume that home ownership rates will remain constant from 2010 to 2040, however, given the trends reviewed earlier. If the home ownership rate for each racial and ethnic group is just 5 percent lower in 2040 than in 2010—moving from 72 percent to about 68 percent for white non-Hispanics, for instance—the nation’s overall home ownership rate will fall to about 60 percent, the same as it was in the 1960s. Rental housing would accommodate two-thirds or more of the new housing demand, with owner housing accounting for less than one-fourth.

Ownership trends to 2030 and 2040 are reported in Table 1.6 for the nation, Ohio, and the Columbus MSA. The method for estimating tenure change is as follows. The ownership rate for each major racial and ethnic group in 2010 is assumed to be the same for 2030 and 2040. Indeed, the 2010 rate for these groups (white non-Hispanic, Hispanic, Asian, African-American, and all other) was about the average of the annual rates over the period 1994 through 2011. Those rates are applied to my estimate of households based on householder race/ethnicity to 2030 and 2040.

With the constant-race/ethnicity tenure assumption, the national home ownership rate is projected to fall from about 65 percent in 2010 to 63 percent in 2030 and then perhaps to less than 62 percent in 2040. For Ohio the figures are about 68 percent, 65 percent and 64 percent, respectively, while for the Columbus MSA those figures are about 63 percent, 60 percent and 58 percent, respectively. Though these reductions in ownership rate seem small, they lead to important shifts in the demand for owner and rental housing:

- For the United States, the changing tenure rates mean that between 2010 and 2030 48 percent of the net new demand for housing will be for rentals, and to 2040 it will be 49 percent.

- For Ohio as a whole, the figures are both 100 percent, far higher than for the nation.
- The net rental demand share figures for the Columbus MSA are similar to the nation at 57 percent and 59 percent, respectively.

There is another factor that can lead to higher renter rates in the future. As people age they tend to shift from owner to renter, with most moving into apartments as opposed to independent or assisted living facilities. Using national data from the American Housing Survey, Table 1.7 shows the propensity of people over age 70, in five-year increments, to sell and then rent. *Nationally, about 82 percent of householders over 65 own their homes, the highest of any age cohort.* (For the next several years they will also be the age cohort with the highest percentage of white non-Hispanics, but as the New Majority grows, so will its share of the 65+ population and like the ownership rate among this age cohort will likely fall.) Some 4.5 percent of 65+ households sell their homes in any given year. Table 1.7 shows that for all households over 70, more than half of sellers become renters. The renter rate increases with age. Just under 80 percent of all 65+ homeowners will sell their homes and become renters before moving into nursing care or passing on. Rental options include independent living, assisted living, and age-restricted apartments. Age-restricted apartments targeted to seniors also receive preferential legal status in local land-use decisions because seniors are a “protected class” under the Federal Civil Rights Act.

Table 1.6: Tenure Change to 2030 and 2040 [Figures in thousands]

Metric	United States	Ohio	Columbus MSA	Rest of Ohio
Baseline, 2010				
Owners	76,133	3,111	454	2,658
Renters	40,812	1,492	272	1,221
Ownership Rate	65.1%	68%	63%	69%
Renter Rate	34.9%	32%	37%	31%
Tenure Analysis 2010–2030				
Homeowners	89,691	3,053	511	2,542
Renters	53,540	1,628	347	1,281
Ownership Rate	62.6%	65%	60%	66%
Renter Rate	37.4%	35%	40%	34%
Change in Homeowners	13,558	(58)	58	(115)
Change in Renters	12,728	136	76	60
Owner Share of Change	52%	0%	43%	0%
Renter Share of Change	48%	100%	57%	100%
Tenure Analysis 2010–2040				
Homeowners	94,013	2,954	525	2,430
Renters	58,158	1,637	375	1,262
Ownership Rate	61.8%	64%	58%	66%
Renter Rate	38.2%	36%	42%	34%
Change in Homeowners	17,880	(157)	71	(228)
Change in Renters	17,346	145	103	42
Owner Share of Change	51%	0%	41%	0%
Renter Share of Change	49%	100%	59%	100%

Source: Arthur C. Nelson.

Table 1.7: Propensity of Senior Owners by 5-Year Age Group to Move and Rent

Householder Age	Owners Who Move Annually	Owner-to-Renter Percent
All Householders 65+	4.5%	45%
All Householders 70+	4.0%	52%
All Householders 75+	3.9%	60%
All Householders 80+	4.1%	68%
All Householders 85+	4.5%	79%

Note: About 82% of householders 65+ own their homes.

Source: Adapted from American Housing Survey raw data.

There was a time when owning a home was seen as nearly a risk-free way to accumulate wealth and eventually enjoy a modest retirement. This has changed. Demographic trends and shifts in home ownership influences are altering attitudes about owning homes, especially among younger generations. Between the middle 2000s and middle 2010s, American real estate lost more than \$6 trillion in value, or almost 30 percent. Up to one in five American homeowners found themselves owing more on a mortgage than what their home was worth.¹³ Analysis of home values reported by the National Association of Home Builders shows that between 2000 and 2011, the average value of all homes in the United States fell in real terms.¹⁴ While home ownership remains an important element of the nation's economy, there is also an emerging sense among prospective home buyers to be cautious. For instance, the National Foundation for Credit Counseling summarized results of a 2009 survey it commissioned as follows (Cunningham 2009, 1):

The lack of confidence in consumers' ability to buy a home, improve their current housing situation, or trust home ownership to provide a significant portion of their wealth sends a strong message about the impact of the housing crisis. It appears that whether a person was directly affected or not, Americans' attitudes toward home ownership have shifted.

The survey also found that:

- Almost one-third of those surveyed, or roughly 72 million people, do not think they will ever be able to afford to buy a home.
- Forty-two percent of those who once purchased a home, but no longer own it, do not think they will ever be able to afford another one.
- Of those who still own a home, 31 percent do not think they'll ever be able to buy another one (upgrade an existing home, buy a vacation home, etc.).
- Seventy-four percent of those who have never purchased a home feel that they could benefit from first-time home buyer education from a professional.

I will discuss the implications of sweeping demographic changes and changing home ownership influences next.

WHAT SWEEPING DEMOGRAPHIC CHANGES AND CHANGING HOME OWNERSHIP INFLUENCES MEAN

America became a “suburban nation” between 1950 and 2000. During that time, the share of Americans living in suburban areas increased from 27 percent to 52 percent. Suburbia grew by 100 million people, absorbing three-quarters of the nation’s population change.

That was then; this is now. In 1950 more than half of America’s households included children, and single-person households accounted for slightly more than 10 percent of all households; the average household size was 3.4 persons. By 2040 only slightly more than one-fourth of all households will have children living in them, more than one-third of all households will be single-person, and the average household size will be at about 2.58 persons, the same as in 2010. The needs of a society dominated by childless households, a growing share of which have only one person, will be different from the needs seen in the middle of the 20th century, when households with children were in the majority.

Over the next several decades, the Columbus MSA will grow at a pace slightly slower than the national average. As the Columbus MSA grows, it will do so in ways very different from those of the recent past. Between 1990 and 2010, households in the peak-housing-demand period of their life cycle accounted for 78 percent of new housing needs. However, between 2010 and 2030, they will account for just 22 percent of new housing needs, rising to just 31 percent of new housing needs to 2040.

This dramatic change in demand comes because baby boomers will shift from larger homes, usually on larger lots, to downsized options such as smaller homes on smaller lots, townhouses, condominiums, apartments, and independent and assisted-living facilities. Between 2010 and 2030, about 63 percent of the net increase in households will be single-person households, mostly boomers who have lost their partners. The figure will be 55 percent between 2010 and 2040. Older, single-person households likely want housing options that are different from those favored by younger households with children. This may have important

implications for the Columbus MSA housing market. Here are some highlights to 2030 (see Table 1.8 for details):

- Between 2010 and 2030, the number of senior households will nearly double, from about 130,000 to about 250,000.
- About 72 percent of seniors will own their homes in 2030, compared with 76 percent in 2010.
- About 4.5 percent of senior home owners sell their homes each year, and nearly half (45 percent) become renters (see Table 1.7).
- In 2030 there will be only 14,000 more owners of homes in the peak-housing-demand stage of life (householders between 35 and 64) than there were in 2010.
- Between 2010 and 2030, more than 30,000 senior householders will want to sell their homes to become renters, but there may be only 14,000 prospective buyers among households in the peak-housing-demand stage of life.¹⁵ Unless they deeply discount their homes, many thousands of seniors will “age in place” despite their preference to sell.

In 2030, there will be 106,000 more home owners than in 2010 but 81,000 of them will be seniors who will mostly want to be downsizing. Even if all the growth of starter and peak demand home owners bought seniors’ homes, nearly 60,000 seniors may not be able to sell their homes to downsize. For those seniors, the choices are to

- stay in their home far longer than they expected (perhaps also requiring substantially more home-based social service assistance than local agencies have anticipated);
- rent out their home instead of selling, and then incur management responsibilities and expenses;
- convert part of their home into an accessory dwelling unit for either a caregiver or a renter, thus allowing the senior to remain in his or her home;
- sell their home at a deep discount to a real estate investment group that buys such homes for rental purposes; or
- walk away from their home, especially if it is located in a weak submarket.

**Table 1.8: Excess Senior Home Sellers, 2010–2030
[Figures in thousands]**

Analysis Period	Total	Owners	Owner Rate	Renters
<35 Starter-Home Households				
2010	178	61	34%	117
2030	226	72	32%	154
Change	48	11		37
Percent Change	27%	18%		32%
Share of Change		23%		77%
35–64 Peak-Housing-Demand Households				
2010	418	294	70%	124
2030	465	308	66%	157
Change	47	14		33
Percent Change	11%	5%		27%
Share of Change		30%		70%
65+ Downsizing Households				
2010	128	98	76%	30
2030	249	179	72%	70
Change	121	81		40
Percent Change	94%	83%		132%
Share of change		67%		33%

Source: Arthur C. Nelson.

I observe that most state, regional, and local government plans are based on the past, serving mostly the interests of baby boomers first as children and then as parents. The boomers' influence covered a half-century. In planning, what seemed reasonable to meet past needs seemed reasonable to meet future ones as well, albeit with refinements. This attitude is what I referred to earlier as the baby boom time warp. In many respects, the future is going to be an about-face from the past. The Columbus MSA should expect major changes in its overall housing demand based on sweeping demographic changes, and it should make plans to address them.

These changes will not appear instantly. In early years, perhaps into the middle 2010s, demand for more homes on larger lots may seem robust. Indeed, the overall demand for such lots will increase by about 14,000 between 2010 and 2030—about 500 units annually. But demographic changes will occur subtly year over year. Despite the seemingly glacial pace, these shifts will nonetheless become widely apparent well before 2030 as boomers begin trying to sell their larger homes, many on larger lots, to a small pool of buyers. Housing prices would seem poised to fall as the supply of such homes exceeds demand. Homes will sell, of course, but perhaps at much lower prices than hoped, and many thousands of owner-occupied homes will become rentals.

In Part 2, I review recent stated-preference surveys and their implications for estimating future housing demand for the Columbus MSA.

PART 2: MARKET PREFERENCES WITH DEMAND TO 2030 AND 2040

Major corporations, political campaigns, and development interests use *stated preference* or *forced-choice* surveys to help them understand what people want and how they can best meet those desires. These surveys are more sophisticated than a simple preference survey. For instance, a simple preference survey might ask whether someone would prefer to be a billionaire or a member of the middle class; one would expect nearly 100 percent of the respondents to choose to be a billionaire. The stated preference or forced-choice survey would also ask, for instance, whether being a billionaire for just one day (with death somehow certain afterward) would be preferable to being a member of the middle class for several decades; this forces respondents to consider a wider range of their own values. Certainly fewer than 100 percent would choose being a billionaire for a day over being a member of the middle class for the rest of their lives.

So when newspapers report surveys saying that a very large percentage of people would prefer to own homes or live in spacious houses on large lots or have granite kitchen countertops with top-of-the-line appliances, we should question whether respondents were simply endorsing obvious, tradeoff-free benefits or actually considering the pluses and minuses of various options. Could they afford those options? Would they be giving up other options, such as a home that would have a better chance of retaining its value over time even if it had fewer attributes? It is in this vein that the National Association of Realtors (NAR) fielded a *stated preference* survey in 2013.

In this part, I synthesize the NAR survey to get a sense of what Ohioans want for their neighborhoods, communities, and homes. Because the survey is large (1,500 respondents compared with the typical news-agency survey of a few hundred), I can use respondents from Ohio to get a general sense of Ohioans' preferences. Because the survey was not large enough to generate a statistically reliable subsample representing the Columbus MSA, however, I assume the subsample for Ohio reasonably represents the Columbus MSA. Furthermore, for the most part, respondent preferences for both the nation and Ohio are very close.

Because of the quality of the NAR survey, I am also able to estimate broad housing preferences for attached units, small-lot detached homes, and conventional-lot detached homes by major household type (households with and without children, and single-person households) but only based on the national survey for 2013.

I will conclude this part with estimates of future housing needs based on preference surveys, and compare those needs with current supply.

NATIONAL ASSOCIATION OF REALTORS STATED PREFERENCE SURVEY

According to the NAR 2013 survey, about 76 percent of respondents would prefer to live in a single-family detached home right now, if they had the option, with 52 percent wanting large lot while 24 percent wanting a small lot (American Strategies 2013). Yet when confronted with choices of neighborhood and housing attributes they most prefer, people's decisions differ. For instance, although nearly everyone wants to live in a single-family detached home, the NAR survey found that nearly 60 percent wanted access to transit and to be able to walk to schools, and nearly half wanted a mix of housing opportunities. These are features usually associated with smaller lots.

A key element of the NAR survey was having respondents weigh the attributes of two prototype communities. For instance, the 2013 survey asked the following question with percentage responses for the nation and Ohio:¹⁶

Imagine for a moment that you are moving to another community. These questions are about the kind of community you would like to live in. Please select the community where you would prefer to live.

Community A – *There are only single-family houses on large lots. There are no sidewalks. Places such as shopping, restaurants, a library, and a school are within a few miles of your home and you have to drive to most. There is enough parking when you drive to local stores, restaurants and other places. Public transportation, such as bus, subway, light rail, or commuter rail, is distant or unavailable.*

U.S. = 45 percent

Ohio = 44 percent

Community B – *There is a mix of single-family detached houses, townhouses, apartments and condominiums on various sized lots. Almost all of the streets have sidewalks. Places such as shopping, restaurants, a library, and a school are within a few blocks of your home and you can either walk or drive. Parking is limited when you decide to drive to local stores, restaurants and other places. Public transportation, such as bus, subway, light rail, or commuter rail, is nearby.*

U.S. = 55 percent

Ohio = 56 percent

Responses are similar for the nation and Ohio, with 55 percent and 56 percent, respectively, favoring Community B. Though the survey did not attach labels to them, Community B is the “smart growth” option. While a majority of Ohioans would seem to want smart growth communities, I note from the American Housing Survey that less than a fifth of them probably have this option.¹⁷

While I can use the Ohio subsample to estimate preferences for community types among all Ohioans, I cannot do so for further subsets of specific household types such as households with and without children, and single-person households. On the other hand, because the community preferences for Ohioans and the U.S. as a whole are reasonably similar, and because the demographics of the Columbus MSA are similar to that of the U.S., I believe it is reasonable to use the NAR’s national stated preferences to guide estimates of demand for key housing types in the Columbus MSA. Table 2.1 reports preference for attached residential options if certain features are present and for small- and large-lots (as defined by the respondent) with respect to driving or walking to places and commuting to work.

Americans clearly prefer single-family detached homes over attached homes. Generally, about a third of households with children, 39 percent of non-single-person households without children and 49 percent of single-person households prefer the attached housing option (which includes owning or renting apartments, townhouses, condominiums, and multiplex units) if they had an easy walk to shops and restaurants and have a shorter commute to work. Overall, about 40 percent of households would choose an attached option if those conditions were met while 60 percent would choose the detached home.

While 52 percent of Americans are quick to choose the large lot option, nearly 60 percent would choose the small lot option if it included as easy to walk to schools, stores and restaurants, and a shorter commute to work (as defined by the respondent). There is remarkable consistency across household types as well, ranging from 56 percent to more than 60 percent. In the italicized portion of Table 2.1, I weight survey responses by three-quarters for walking or driving to places (schools, stores and restaurants) and one quarter for longer or shorter commutes (see Boustan and Margo 2009). The result is a more refined estimate of overall preference for homes on small or large lots based on certain features.

Table 2.1: Lot Size and House Type Preferences under different Choice Options

Imagine for a moment that you are moving to another community. These questions are about the kind of community you would like to live in. Please select the community where you prefer	All Households	Households with Children	Non-Single-Person HHs without Children	Single-Person Households
Own or rent an apartment or townhouse, and have an easy walk to shops and restaurants and have a shorter commute to work. OR	40%	35%	39%	49%
Own or rent a detached, single-family house, and have to drive to shops and restaurants and have a longer commute to work.	60%	65%	61%	51%
Houses with large yards and you have to drive to get to schools, stores and restaurants. OR	42%	44%	44%	42%
Houses with small yards and it is easy to walk to schools, stores and restaurants	58%	56%	56%	58%
Houses with larger yards and you would have a longer commute to work. OR	39%	44%	44%	38%
Houses with smaller yards and you would have a shorter commute to work.	61%	56%	56%	62%
<i>Large yard weighted 75% drive to places + 25% commute to work.</i>	<i>42%</i>	<i>44%</i>	<i>44%</i>	<i>41%</i>
<i>Small yard weighted 75% drive to places + 25% commute to work.</i>	<i>58%</i>	<i>56%</i>	<i>56%</i>	<i>59%</i>

Source: Adapted from NAR (2013). Italicized analysis is derived from survey data (see text for explanation).

DEMAND FOR HOUSING BY TYPE TO 2030 AND 2040

The NAR survey can be used to create a typology of demand for residential units by type of unit for the Columbus MSA as a whole (as opposed to the central county, Franklin, or the other, more suburban ones). I estimate this as follows. I start first with the stated preference for attached homes by household type. The remaining demand will be for small-lot and all other lot detached homes which are apportioned using the italicized figures in Table 2.1. Table 2.2 shows these distributions. In Table 2.3, I apply the distributions reported in Table 2.2 to the estimates of households by type reported in Part 1 for 2030 and 2040.

In Table 2.4, I compare estimated preferences in 2030 and 2040 with my estimate of dwelling unit supply for 2010 based on the 2011 American Housing Survey for the Columbus MSA, and estimate the share of occupied housing units by type needed to equal preferences. The table shows that the 2010 supply of detached homes on anything other than a small lot already exceeds preferences to 2040. Moreover, the attached units will account for about 55 percent of the overall change in housing demand with the remaining 45 percent attributable to small lots. This is illustrated in Figure 2.1. However, this does not necessarily mean there is no need for new homes on larger lots. Many existing homes on larger lots will be destroyed by fire, another natural hazard, or other means; the land on which others sit may be redeveloped; and there will always be niche markets.

Table 2.2: Stated Preference Shares for Major Housing Unit Types by Major Household Types

Households with Children	35%	36%	29%
Non-Single-Person Households Without Children	39%	34%	27%
Single-Person Households	49%	30%	21%
All Households	40%	35%	25%

Table 2.3: Distribution of Major Housing Unit Types by Major Household Types to 2030 and 2040 [Figures in thousands]

Household Type	Households	Attached	Small Lot	All Other
2030 Households and Demand				
Households with Children	225	79	81	64
Non-Single-Person Households Without Children	318	125	107	85
Single-Person Households	277	135	84	58
Total	819	340	272	207
Share		42%	33%	25%
2040 Households and Demand				
Households with Children	241	85	87	69
Non-Single Person Households Without Children	330	130	112	88
Single-Person Households	288	141	87	60
Total	859	356	286	217
Share		41%	33%	25%

Table 2.4: Housing Preferences by Household and Unit Type in 2030 and 2040 Compared With Supply in 2011 [Figures in thousands]

Housing Type	2010	2030	2040	Net Change 2011-2040	Percent Change	Share of Net Change
Attached	240	342	358	132	58%	55%
Small Lot	175	260	273	107	65%	45%
All Other Lots	310	256	269	(24)	-8%	
Total	725	858	900	216	32%	

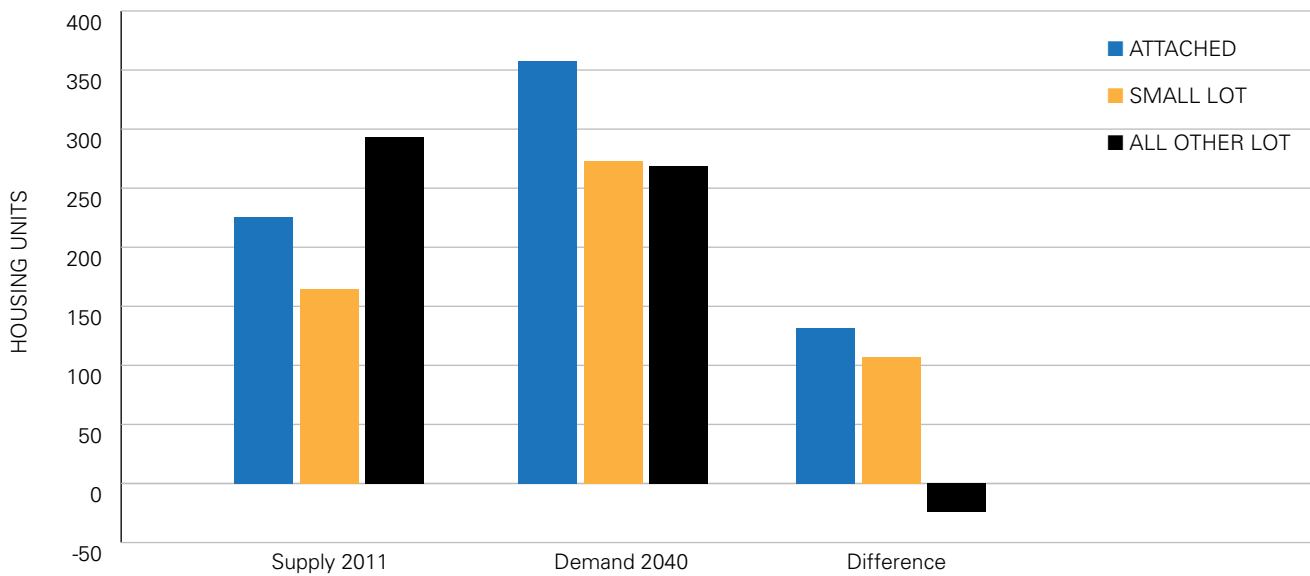
Note: Figures for 2030 and 2040 are for occupied units only.

Nonetheless, preferences based principally on changing demographics suggest that emphasis should be placed on facilitating expansion of attached and small lot residential supply. This may already be happening. Consider the distribution of new residential units constructed in the Columbus MSA between 2002 and 2011.¹⁸ During this time, about 116,000 residential units were added to the inventory. Of this total, about 49,000 (42 percent) were attached units. Of the nearly 67,000 new detached residential units, I estimate that about 37 percent were on small lots (one-sixth

acre or less).¹⁹ In other words, with 42 percent attached, 21 percent small lot and 37 percent all other lot, there seems to be emerging correspondence between what preference surveys indicate the market desires and delivery of those products.

The bottom line is that stated preference surveys reinforce central findings that sweeping demographic changes reported in Part 1 will require more housing choices throughout the Columbus MSA that favor attached and small lot options.

Figure 2.1: Relationship between 2011 housing supply and market preferences in 2040, by housing type



PART 3: SPACE-OCCUPYING EMPLOYMENT AND NONRESIDENTIAL SPACE NEEDS

In Part 3, I will discuss nonresidential development trends. This part of the report does three things. First, it identifies the kinds of jobs that occupy space. Second, it estimates the total number of workers (full- and part-time) who occupy built space. Third, it estimates the space supported by workers in 2010 and projects space needs to 2030 and then to 2040. A special feature of this exercise is estimating the volume of space existing in 2010 that will be replaced and/or repurposed—I use the term *recycled*—to those years. The bottom line is that the equivalent of more than the total nonresidential space existing in 2010 will be recycled by 2040.

SPACE-OCCUPYING EMPLOYMENT GROUPS

My focus is on jobs that need to be housed in built space, such as stores, offices, schools, and the like. Natural resource jobs such as farming, fishing and mining, do not usually require built space in which to work. Construction workers, who build the space people occupy, usually do not have space of their own; they move from job to job. I also do not address military jobs because, although they certainly occupy space, the planning and development of that space is mostly beyond the influence of local governments.

The relevant jobs that occupy space can be loosely organized into four broad land-use groups: industrial, office/services, retail/lodging/food, and institutional. For the most part, local planning and zoning includes a wide range of uses within each of these four nonresidential categories. In the office group, for instance, local zoning codes usually do not differentiate between such activities as real estate and

technical services, but they would restrict industrial and some institutional activities. The Appendix reports in detail how I group space-occupying employment into the four above-mentioned groups for analysis.

SPACE-OCCUPYING EMPLOYMENT PROJECTIONS

Since the 1980s, no federal agency has projected employment over the long term, and few commercial services do. Fortunately, Woods & Poole Economics has been making this kind of projection for decades, and I received permission to use its projections here. Woods & Poole reports jobs based on the Bureau of Economic Analysis definition of what a job is: any person earning a living for which federal income tax forms are filed. This could be a full-time or part-time person, or the same person holding multiple jobs (in which case while there are two jobs for my calculation purposes both are held by the same person).

Table 3.1 reports 2010 employment for each of the space-occupying groups in the Columbus MSA and projects employment to 2030; Table 3.2 does the same to 2040. Three important trends among the employment groups emerge: The industrial sector will shrink, though not by much; this follows national trends. All other sectors will grow at or above the population growth rate. This is because people living outside the MSA will commute to those jobs, and part-time jobs will make up a larger percentage of total jobs.

I turn next to estimating the amount of space needed to accommodate these jobs.

Table 3.1: Columbus MSA Space-Occupying Employment, 2010–2030 [Figures in thousands]

Sector	2010	2030	Change 2010–2030	Percent Change 2010–2030	Share of Change 2010–2030
Industrial	186	176	(10)	–5%	–4%
Office/Services	591	714	123	21%	52%
Retail/Lodging/Food	220	274	54	24%	23%
Institutional	185	254	69	37%	29%
Total	1,182	1,418	236	20%	

Source: Adapted from Woods & Poole Economics (2011), adjusting for State of Ohio projections for the Columbus MSA.

Table 3.2: Columbus MSA Space-Occupying Employment, 2010–2040 [Figures in thousands]

Sector	2010	2040	Change 2010–2040	Percent Change 2010–2040	Share of Change 2010–2040
Industrial	186	177	(9)	–5%	–2%
Office/Services	591	815	224	38%	51%
Retail/Lodging/Food	220	315	95	43%	22%
Institutional	185	310	125	67%	29%
Total	1,182	1,617	435	37%	

Source: Adapted from Woods & Poole Economics (2011), adjusting for State of Ohio projections for the Columbus MSA.

NONRESIDENTIAL SPACE PROJECTIONS

Most workers need space within which to work. Government agencies need to fulfill many functions inside buildings. In most urbanized areas, nonresidential space accounts for one-third or more of the built environment (excluding rights-of-way and other public spaces), and half or more of the taxable value.²⁰

Estimating employment-based space needs can be complex and fraught with uncertainties about how technology will influence the use of space in the future. The requirement for nonresidential space may be decreasing due to trends including working at home, telecommuting, Internet retailing, even office “hotelling,” a practice wherein workers who often travel have no assigned work area but use space when needed, according to the task.

It is uncertain whether these factors will result in less space needed in the future. For example, working at home involves a very small share of workers despite its growing prevalence. In 1990, people working at home made up 3 percent of the workforce; in 2000 it was just 3.3 percent. Moreover, telecommuting does not necessarily reduce office space needs. Telecommuters may work from home part of a day or some days of the week but still have an office. Office hotelling applies to workers who need places to function on the road—but does this mean they need less space than if working in a permanent office or cubicle? Or is *more* space needed to meet their office requirements when aggregated across several locations? Internet retailing is growing but may plateau because people tend to prefer the tactile and social aspects of shopping.

In fact, a decade of advances in telecommuting, office use, and retailing technologies has not reduced overall nonresidential space needs. In fact, the trend seems to be an increase in square feet per person. Total nonindustrial space in the United States averaged 233 square feet per person in 1992 and 246 square feet per person in 2003.²¹

While the nonresidential space needs per capita may be increasing over time, the actual need per worker has not changed much (see Nelson 2004). There seems to be a debate on how small office worker stations will become, principally because of electronic file keeping and interactions that do not require meeting spaces, but there is no consensus. For one thing, productive people still need productive space to work in, and office buildings still need halls, meeting rooms, restrooms, lobbies, and so forth. Office buildings are also adding exercise space, day care facilities, and space for other

activities. On the whole, I do not see much reduction in office space per worker, though we assume it may go down to some degree, as discussed next.

To estimate space needs per worker, I used the total square feet of space for each category of activities reported by the U.S. Department of Energy’s Commercial Buildings Energy Consumption Survey (CBECS 2003) and the Manufacturing Energy Consumption Survey (MECS 2006), and divided that space by workers in each activity group for the respective years. The result is the average square feet per worker for all workers in the industrial and nonindustrial categories reported in Table 3.3. These figures include vacant space and other space used for ancillary purposes such as building lobbies, restrooms, staircases, exercise rooms, day care facilities, and so forth. I apply these figures to Woods & Poole’s estimates of employees in each employee group and aggregate them into a total amount of space that is estimated to be supported by the economy.

THE FUTURE IS REDEVELOPMENT

There is another consideration: Nonresidential space is not as durable as residential space. The typical residential unit can last easily two centuries and perhaps several more. In contrast, the typical nonresidential space lasts on average around 40 to 45 years, as illustrated in Figure 3.1. Over time, nonresidential spaces will need to be recycled through demolition, rebuilding, or renovations that renew structures for kinds of uses different from those for which they were originally built.

The speed with which nonresidential structures are recycled depends on two major factors: the rate of depreciation of the building and the rate of appreciation of the land on which it sits. Buildings depreciate at widely varying rates. Depreciation for most kinds of properties ranges from about 30 years to about 60 years (adapted from Marshall & Swift 2010). But this assumes the structure is used until its intended purpose has run its course. In dynamic metropolitan areas, few nonresidential structures are used for their original purpose through the expected useful life of the building. The reason is that as the structure depreciates, land value usually appreciates, and at some point the land is worth more than the structure. The owner of the structure may see a better return on investment by recycling the land use.

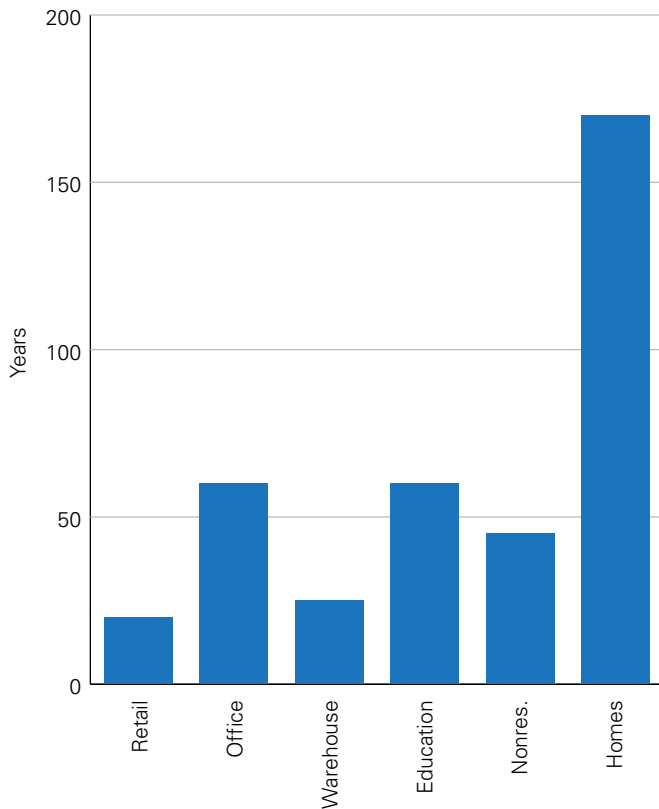
Table 3.3: U.S. Space Consumed per Industrial and Nonindustrial Worker

Land Use	Square Feet Per Worker
Industrial	
Utilities	300
Manufacturing	900
Transportation & Warehousing	1,800
Wholesale Trade	1,300
Nonindustrial	
Office & Office-Based Services	300
Education and the Arts	750
Lodging/Food Service	720
Retail Trade	605
Health Care	500

Note: Space includes: all occupied areas such as work spaces, lobbies, conference rooms, assembly areas, hallways, and elevator shafts; collateral service areas such as cafeterias, theaters, exercise and day care space; and vacant space. Figures are rounded.

Sources: Nonindustrial space estimated from CBECS (Energy Information Administration 2005); industrial space estimated from CBECS and MECS (Energy Information Administration 2009).

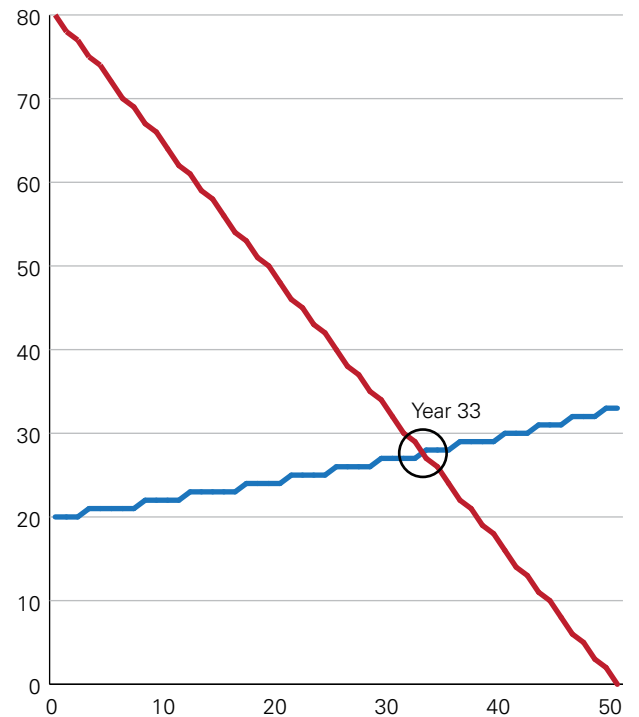
Figure 3.1: Life Span of Major Building Types



Source: Arthur C. Nelson, based on Commercial Buildings Energy Consumption Survey (2006).

Consider how the recycling decision is made: Assume the structure has a depreciable life of 50 years, which is a common period for nonresidential structures. Suppose that when the structure is built, about 80 percent of the total property value is in the structure itself and 20 percent is in the land. Suppose also that the annual appreciation of land (after inflation) is 1 percent, which is a rough average. A 50-year structure depreciating at 2 percent annually with land appreciating at 1 percent annually (compounded) will be worth less than the land in about the 33rd year. This is illustrated in Figure 3.2. It is at about the 25th year, if not before, that the typical property owner begins to consider recycling: demolishing and building a new structure, or renovating the existing structure (perhaps adding to it) to serve a higher and better use. However, the actual moment of recycling is often deferred until market forces justify the cost of demolition and reinvestment. Thus, assuming all nonresidential stock is built for a 50-year useful life, *the equivalent of the entire nonresidential stock in the United States recycles about every 40 years.* (Nelson 2013).

Figure 3.2: Conversion Timing of Nonresidential Buildings



Note: Timing is based on structure depreciation (red line) and land value appreciation (green line).

Source: Arthur C. Nelson.

Table 3.4: Columbus MSA Nonresidential Space Development 2010–2030 [Figures in millions]

Nonresidential Space	2010	2030	Change 2010–2030	Percent Change 2010–2030	Share of Change
Square Feet Supported	587	773	186	32%	31%
Square Feet Recycled			408		69%
Total New Construction, Square Feet			594		
New Construction as Share of Square Feet Supported 2010					101%

Source: Arthur C. Nelson.

Table 3.5: Columbus MSA Nonresidential Space Development 2010–2040 [Figures in millions of square feet]

Nonresidential Space	2010	2040	Change 2010–2040	Percent Change 2010–2040	Share of Change
Square Feet Supported	587	907	320	55%	30%
Square Feet Recycled			747		70%
Total New Construction, Square Feet			1,067		
New Construction as Share of Square Feet Supported 2010					182%

Source: Arthur C. Nelson.

For this analysis, I assume that the average life of all nonresidential structures will be as shown in Figure 3.1. Certainly some structures, such as cheaply built big box stores, may become ripe for recycling after just 15 years or so, while class-A high-rise office buildings may last a century or longer. The average will underestimate the pace at which nonresidential structures will become ripe for recycling on the basis of land value appreciation. In addition, I start the depreciation “clock” in 2010; that is, I estimate ripeness for recycling assuming all existing structures were built in 2010. This will tend to underestimate the total supply of nonresidential structures that may be replaced or repurposed by 2030. However, I make one more adjustment based on the discussion for Figure 3.2. Land value growth is largely a function of location combined with metropolitan area growth. To account for this, I estimate the average annual rate of metropolitan area population growth over the analysis period and use it to accelerate the conversion rate. Suppose the compounded rate of growth in a given metropolitan area over 20 years was 20 percent. Suppose further that the structure being depreciated has a depreciable life of 50 years. I therefore adjust the effective rate from 50 years to 40 years ($50 \times (1 - 0.20)$).

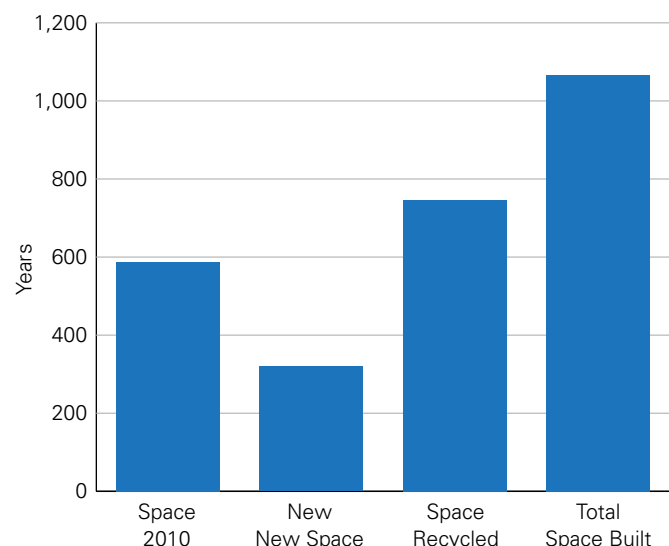
Table 3.4 reports the net change to the inventory of all nonresidential groups; the estimated volume of space to be recycled; and the total space that is estimated to be built, rebuilt, or renovated for the Columbus MSA to 2030. Table 3.5 reports these figures to 2040.

In a word, the amount of development and especially redevelopment of nonresidential space in the Columbus MSA will be *staggering*.

- The inventory of nonresidential space will grow by about 186 million square feet between 2010 and 2030 and about 320 million square feet to 2040.
- An even larger amount of space will be recycled from 2010 to 2030 and then to 2040: about 408 million and 747 million square feet, respectively.

- Nearly 600 million square feet of nonresidential space will be built or rebuilt between 2010 and 2030, about equivalent to the volume of space supported in 2010. More than 1 billion square feet will be constructed between 2010 and 2040, nearly twice the volume of square feet supported in 2010. This is illustrated in Figure 3.3.
- In many respects the future of the Columbus MSA will be shaped by how it guides the redevelopment of existing nonresidential spaces.

In Part 4, I outline a strategy to leverage the opportunity to redevelop commercial corridors to meet the emerging demand for walkable communities, mixed residential and mixed-use development, and transit accessibility. The role of redevelopment is the key to taking advantage of emerging opportunities.

Figure 3.3: Space Supported 2010, Net Additions to Inventory Needed Between 2010 and 2040, Space Recycled by 2040, and Total Construction Needed 2010–2040

PART 4: A STRATEGY TO MEET EMERGING MARKET DEMAND

Market trends (Part 1) and stated-preference surveys (Part 2) allow us to conservatively estimate the built space demands for communities of the future. I estimate that at least one-third of households in 2030 will want the option to live in walkable communities with mixed residential and mixed-use development, urban amenities (such as shops, restaurants, and services within walking distance), and transit options such as bus rapid transit, streetcars, and light rail. In shorthand, I call these “smart growth” communities. Analysis of preference surveys in Part 2 showed that:

- More than half (56 percent) of Ohioans prefer to live in smart growth communities. I estimate that no more than one in five have this option now.
- By 2040, about 40 percent of Columbus MSA residents will want the option to live in attached housing units, but only about one-third have this option now.
- Also by 2040, about 35 percent of Columbus MSA residents will want the option to live in homes on small lots but less than a quarter have this option now.
- In contrast, while more than 40 percent of all occupied homes in the Columbus MSA sit on larger lots there may be up to 24,000 such homes in excess of demand by 2040.

In Part 3, I showed that the equivalent of about 70 percent of all nonresidential space existing in 2010 will become a candidate for redevelopment by 2030, rising to 1.27 times the 2010 supply by 2040 because many spaces built between now and 2040 will also be recycled. I further estimate that half of these are one-floor structures and another one-quarter are two-floor structures.²² Those structures are at very low floor-to-area ratios (FAR). FAR is a measure of land-use intensity; it relates total building area to total land area. A structure of 100,000 square feet sitting on a parcel of 400,000 square feet has an FAR of 0.25. For the Columbus MSA, I estimate that about three-quarters of all nonresidential parcels have an FAR of less than 0.20, which means 80 percent of the land area is used for parking, loading, storage, and other nonstructural purposes. In my view, it is the sheer volume of nonresidential space to be recycled and the land it sits on that can substantially reshape the Columbus MSA. My reasoning follows.

THE REDEVELOPMENT OPPORTUNITY

Research indicates that achieving FARs of 0.50 to 0.80 maximizes land-use intensity at low cost per square foot of structure and provides adequate on-site parking, especially if there are “smart parking” designs that allow for more efficient shared-use of parking spaces for different activities, or tuck-under parking options that avoid the need to build parking structures (see Dunham-Jones and Williamson 2009; Williamson 2013). FAR above 1.0 can be achieved where there are reasonable transit options such as light rail, bus rapid transit, and streetcar. One of the key design opportunities possible in achieving FARs of more than 0.50 is mixed uses, which can reduce vehicle trips. At FARs above 1.0, mixed uses can generate one-quarter to one-third fewer trips (see Ewing and Cervero 2010).

In my view, the redevelopment opportunities presented by commercial corridors are largely under-estimated by both the public and the private sectors. Public-private partnerships can be formed to leverage resources of both to meet emerging market demand. After all, many of the sites along these corridors have attributes making them ideal candidates for redevelopment:

1. They are already flat and reasonably well drained, so this part of the development process is largely finished.
2. Almost all of these sites sit along major highways with four or more lanes, often with wide rights-of-way for easements. Because they are along multilane corridors that connect urban and suburban nodes, these sites are “transit-ready.”
3. Large-scale utilities run along those major highways and are easily accessed for upgrading if needed. As they age, these utilities will need to be replaced. The conundrum facing local government is the choice between approving new greenfield development, where initial utility capital costs are low, or bracing for the upgrades of major utility infrastructure along built-out corridors that would have to be done anyway and at lower long-term cost per unit of service delivery. Prudent fiscal management would seem to favor the latter investment decision.
4. Prior development approvals have already committed these sites to other than low-density residential development.
5. These sites have motivated owners interested in maximizing their return. This is important because impediments to redevelopment include the inability to assemble multiple, small ownerships; to gain the confidence of owners that it is in their best interest to redevelop; and to acquire clear title. This is not the case with most large, commercially developed sites.

6. As these sites age—Part 3 shows that most of them age rapidly—the deterioration of structures compromises the value of nearby residential property.
7. Those neighbors may be motivated to simultaneously deflect development pressure away from their neighborhoods into these aging commercial sites, especially if they have a constructive say in how they are redeveloped; in other words, potential NIMBYs (not-in-my-backyard) may become YIMBYs (yes-in-my-backyard).

There are a number of qualifications and cautionary observations that can reduce redevelopment opportunities. First, tearing down the old to replace it with something more contemporary or at higher land-use intensity can be inappropriate or even damaging if an existing structure is important to the character and/or residents of a place. Preservation of neighborhoods to advance community character, create stability in the market, and even to elevate long-term property values are among many reasons to preserve older structures. Nonetheless, many older structures sit on larger tracts of land that can be redeveloped, and older structures can be repurposed (from warehousing to office or residential) while retaining their historical and architectural character. My purpose here is to offer the broad perspective that for the most part applies to most nonresidential properties existing in urban and suburban areas that are not worth preserving but instead are at the heart of meeting future development needs in the Columbus MSA area.

Second, will low-intensity parcels be redeveloped at a density to support walkable, mixed-use, transit-oriented neighborhoods? This is uncertain. In most metropolitan areas, land values increase over time at least in proportion to population growth, and the higher the land value, the more intensively land needs to be used to justify the cost of acquiring the property and redeveloping it. Indeed, a major roadblock to timely redevelopment is uncertainty by property owners about when to redevelop; they usually err on the side of caution so that redevelopment is deferred perhaps longer than may be efficient. Public officials and planners need to be proactive in identifying those parcels that may become ripe for redevelopment within various time frames, such as between 2010 and 2030, to 2040, and beyond.

Unfortunately, there is a third reason why property—both residential and nonresidential—may not be efficiently redeveloped: local land use policies (Arora 2007). For instance, a study by the Transportation Research Board concludes that for business parks, a parking ratio of 2.0 per 1,000 square feet would be sufficient to take care of the overall needs (Kuzmyak et al. 2003). Devoting more land for parking reduces the potential for more construction to occur, and with it the ability to support more jobs and add more value to the local fiscal base. My professional experience is that local zoning codes, especially those in suburban

areas, require at least half again as much parking space as is needed. These excessive parking requirements reduce economic development. For another, land use policies that reduce residential density below what the market supports have the twin effect of increasing public facility costs per unit while reducing overall value per acre of land.

The bottom line is that the place where much of this redevelopment can occur will be in suburbia. This is where most Columbus MSA residents live and where most jobs are found. It is also mostly composed of low-rise structures along commercial corridors with occasional activity nodes, also at low-intensity use. *Retrofitting Suburbia*, by Ellen Dunham-Jones and June Williamson (2008), and Williamson's *Designing Suburban Futures* (2013) show how communities can turn transit-ready corridors into transit corridors, and developers, perhaps through public-private partnerships, can also transform aging suburban centers into vibrant, mixed-use ones. Education and leadership may be needed from the transit and planning communities. *In combination with some new Greenfield community development, most of the Columbus MSA's development needs between 2010 and 2030 and to 2040 can be accommodated by retrofitting suburbs, and this can be done without invading established residential neighborhoods.* The challenge is creating public-private-civic collaborations that can accomplish this.

AN AGENDA FOR RESHAPING METROPOLITAN COLUMBUS, OHIO

What can be done now to meet emerging market demands and be responsive to emerging preferences? Several ideas emerge that may be addressed at the local, regional, and state levels.²³

Local

- Planners must update land-use plans and land-use codes to get ahead of the curve by adequately addressing realistic housing needs to 2040. The parents of the boomers and the boomers as parents remade the built landscape to serve their needs. Those needs have largely been met, but the very land-use tools used to achieve this are ill suited to meeting the needs of a much more culturally, socially, economically, and household-structurally diverse society. New land-use plans and implementing ordinances need to get beyond the baby boom time warp.
- Housing choices will need to be expanded to include more attached and small-lot options. Gone are the days of predictable household formations with traditional mother-father-children compositions who want larger homes on larger lots in the suburbs. The future of metropolitan Columbus is in meeting the very different needs of single persons—most of whom will be boomers who lose their

partners between now and 2040—and younger households who will mostly rent until they decide to buy. And when they buy, a large share of next-generation households will want neighborhoods different from what they may have been raised in. Yet, most of the demand for these housing options will be in the suburbs.

- Those options must include greatly expanded accessory dwelling unit options, to give seniors more options to age in place as well as provide more choices for younger and more diverse households.
- Water, sewer, and drainage infrastructure planners, especially in suburban fringe areas, may need to rethink their investment-return assumptions before jurisdictions become financially stressed, especially if those assumptions are based on extrapolation of past trends.
- Economic competitiveness cannot be viewed as opening the next distant office or industrial park but rather as the redevelopment of existing commercial corridors and nodes. Existing and new public sector tools should be used to leverage private redevelopment of these opportunities.

Regional

- Regional agencies can use their information and education tools to elevate regional knowledge of the sweeping nature of demographic changes that will occur. In many respects, the year 2030 is just around the corner and the year 2040 is barely around the next.
- Regional agencies should show the effects of different land use and transportation scenarios, being sure that extrapolation of the past is not an option. Otherwise, regional transportation plans will be based on outdated and inaccurate information.
- Regional education efforts can be used to show the benefits of improved housing choices, jobs-housing balance, and other benefits of improved regional distribution of development among local governments.
- There should be a modern regional transit system that connects key centers and other nodes along existing commercial corridors. Metropolitan areas with growth rates comparable to that of the Columbus MSA, such as Kansas City and St. Louis, are already heavily invested in light rail and bus rapid transit. Emerging studies are showing that the economic development returns are impressive. The Columbus MSA may lag the nation in seizing the benefits these modern transportation systems offer.

- The metropolitan planning organization should consider using some of its planning funds to help local governments engage in land-use and transportation planning that improves the regional distribution of growth and development. It should also use a portion of its federal transportation investment revenue to help implement those plans. I recommend the Atlanta Regional Commission's Livable Centers Initiative as a model to adapt in central Ohio.²⁴

State

- The state of Ohio will be especially stressed, given that, outside the Columbus MSA, it is projected to lose population, with the growth in seniors and in downsizing households equivalent to all growth. The state will need to adjust its policies to address these sweeping changes.
- Because many communities cannot make the changes they need to on their own to prepare for sweeping demographic shifts, the state needs to assume leadership. This can include requiring all communities to plan for and implement policies that broaden housing choices.
- Many homeowner associations (HOAs) have bylaws based on conditions that no longer exist; these bylaws can interfere with broadening housing choices but cannot be changed practicably because of super-majority voting requirements. Therefore, the state should consider laws that supersede such bylaw provisions.
- While the Columbus central city is already taking the lead in addressing important demographic changes, the future of the region is really in the hands of its suburbs. For the most part, suburban communities do not have the resources to understand the implications of changes that are already reshaping them, let alone make and implement plans that facilitate change efficiently, effectively, and equitably. State and regional agencies need to partner with those suburban communities to help them get ahead of the curve.

The challenge for the Columbus MSA is to create public-private-civil partnerships that can facilitate approaches to meet future housing needs and reshape the massive commercial redevelopment that will occur, and do so simultaneously. If this can be done, perhaps all new attached housing and all new nonresidential development can occur in mixed-use configurations on existing built spaces—which today are mostly parking lots. Doing so will make feasible modern transit options such as light rail and bus rapid transit. These partnerships are needed to leverage private resources that can unlock these opportunities. If successful, the future Columbus MSA will be more walkable, bikable, vital, and responsive to change than it is at present.

APPENDIX: SPACE-OCCUPYING GROUPS

INDUSTRIAL GROUP

Here I describe the kinds of jobs making up the industrial sectors for which I synthesize employment projections. Our figures for employment and associated space needs for industrial development were based on the North American Industry Classification System (NAICS) two-digit codes (unless otherwise noted) published by the Bureau of Economic Analysis of the U.S. Department of Commerce:

Utilities This sector includes Utilities (NAICS 22). The Utilities sector comprises establishments engaged in the provision of the following utility services: electric power, natural gas, steam supply, water supply, and sewage removal. Within this sector, the specific activities associated with the utility services provided vary by utility: electric power includes generation, transmission, and distribution; natural gas includes distribution; steam supply includes provision and/or distribution; water supply includes treatment and distribution; and sewage removal includes collection, treatment, and disposal of waste through sewer systems and sewage treatment facilities.

Manufacturing This sector includes all firms and employment in NAICS sectors 31-33. These establishments are usually described as plants, factories, or mills and often use power-driven machines and materials-handling equipment. Establishments engaged in assembling component parts of manufactured products are also considered manufacturing if the new product is neither a structure nor other fixed improvement. Also included is the blending of materials, such as lubricating oils, plastics, resins, or liquors. The materials processed by manufacturing establishments include products of agriculture, forestry, fishing, mining, and quarrying as well as products of other manufacturing establishments. The new product of a manufacturing establishment may be finished in the sense that it is ready for utilization or consumption, or it may be semi-finished to become a raw material for an establishment engaged in further manufacturing. For example, the product of the copper smelter is the raw material used in electrolytic refineries; refined copper is the raw material used by copper wire mills; and copper wire is the raw material used by certain electrical equipment manufacturers.

Wholesale Trade NAICS sector 42 comprises establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The merchandise described in this sector includes the outputs of agriculture, mining, manufacturing, and certain information industries, such as publishing. The wholesaling process is an intermediate step in the distribution of merchandise. Wholesalers are organized to sell or arrange the purchase or sale of (a) goods for resale (i.e., goods sold to other wholesalers or retailers), (b)

capital or durable non-consumer goods, and (c) raw and intermediate materials and supplies used in production.

Transportation and Warehousing The Transportation and Warehousing sector, NAICS 48-49, includes industries providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation. Establishments in these industries use transportation equipment or transportation-related facilities as a productive asset. The type of equipment depends on the mode of transportation. The modes of transportation are air, rail, water, road, and pipeline. The Transportation and Warehousing sector distinguishes three basic types of activity: subsectors for each mode of transportation, a subsector for warehousing and storage, and a subsector for establishments providing support activities for transportation. In addition, there are subsectors for establishments that provide passenger transportation for scenic and sightseeing purposes, postal services, and courier services.

OFFICE AND OFFICE-BASED SERVICES GROUP

Several activities make up the office land-use group. Building spaces are often fungible among these activities.

Information The Information sector, NAICS 51, comprises establishments engaged in the following processes: (a) producing and distributing information and cultural products, (b) providing the means to transmit or distribute these products as well as data or communications, and (c) processing data. The main components of this sector are the publishing industries, including software publishing, and both traditional publishing and publishing exclusively on the Internet; the motion picture and sound recording industries; the broadcasting industries, including traditional broadcasting and those broadcasting exclusively over the Internet; the telecommunications industries; Web search portals; data processing industries; and the information services industries. The expressions “information age” and “global information economy” are used with considerable frequency today. The general idea of an information economy includes both the notion of industries primarily producing, processing, and distributing information, as well as the idea that every industry is using available information and information technology to reorganize and become more productive.

Finance and Insurance The Finance and Insurance sector, NAICS 52, comprises establishments primarily engaged in financial transactions (those involving the creation,

liquidation, or change in ownership of financial assets) and/or in facilitating financial transactions. Three principal types of activities are identified:

1. Raising funds by taking deposits and/or issuing securities, and in the process incurring liabilities. Establishments engaged in this activity use raised funds to acquire financial assets by making loans and/or purchasing securities. Putting themselves at risk, they channel funds from lenders to borrowers and transform or repackage the funds with respect to maturity, scale, and risk. This activity is known as financial intermediation.
2. Pooling of risk by underwriting insurance and annuities. Establishments engaged in this activity collect fees, insurance premiums, or annuity considerations; build up reserves; invest those reserves; and make contractual payments. Fees are based on the expected incidence of the insured risk and the expected return on investment.
3. Providing specialized services facilitating or supporting financial intermediation, insurance, and employee benefit programs.

In addition, this sector includes authorities charged with monetary control.

Real Estate and Rental and Leasing The Real Estate and Rental and Leasing sector, NAICS 53, comprises establishments primarily engaged in renting, leasing, or otherwise allowing the use of tangible or intangible assets, and establishments providing related services. The major portion of this sector is made up of establishments that rent, lease, or otherwise allow the use of their own assets by others. The assets may be tangible, as is the case with real estate and equipment, or intangible, as is the case with patents and trademarks. This sector also includes establishments primarily engaged in managing real estate for others, selling, renting and/or buying real estate for others, and appraising real estate. These activities are closely related to this sector's main activity, and it was felt that from a production standpoint they would best be included here. In addition, a substantial proportion of property management is self-performed by lessors. The main components of this sector are the real estate leasing industries, including equity real estate investment trusts (REITs); equipment leasing industries (including motor vehicles, computers, and consumer goods); and lessors of nonfinancial intangible assets (except copyrighted works).

Professional and Technical Services The Professional, Scientific, and Technical Services sector, NAICS 54, includes establishments that specialize in performing professional, scientific, and technical activities for others. These activities require a high degree of expertise and training. The establishments in this sector specialize according to expertise and provide these services to clients in a variety of industries and, in some cases, to households. Activities performed include: legal advice and representation; accounting, bookkeeping, and payroll services; architectural, engineering, and specialized design services; computer services; consulting services; research services; advertising services; photographic services; translation and interpretation services; veterinary services; and other professional, scientific, and technical services.

Management of Companies and Enterprises The Management of Companies and Enterprises sector, NAICS 55, comprises (1) establishments that hold the securities of (or other equity interests in) companies and enterprises for the purpose of owning a controlling interest or influencing management decisions, or (2) establishments (except government establishments) that administer, oversee, and manage establishments of a company or enterprise and that normally undertake the strategic or organizational planning and decision-making role of the company or enterprise. Establishments that administer, oversee, and manage may hold the securities of the company or enterprise. Establishments in this sector perform essential activities that are often undertaken in-house by establishments in many sectors of the economy. By consolidating the performance of these activities at one establishment, economies of scale are achieved.

Administrative and Support Services, and Waste Management Administrative and support services and waste management are included in NAICS sector 56. The Administrative and Support Services subsector, NAICS 561, comprises establishments performing routine support activities for the day-to-day operations of other organizations. These essential activities are often undertaken in-house by establishments in many sectors of the economy. The establishments in this sector specialize in one or more of these support activities and provide these services to clients in a variety of industries and, in some cases, to households. Activities performed include office administration, hiring and placing of personnel, document preparation and similar clerical services, solicitation, collection, security and surveillance services, and cleaning. The administrative and management activities performed by establishments in this sector are typically done on a contract or fee basis. These

activities may also be performed by establishments that are part of the company or enterprise. Waste Management is included in NAICS subsector 562. It includes establishments primarily engaged in waste management and remediation services; these establishments also collect, treat, and dispose of waste materials.²⁵ The sector excludes federal-, state-, or local-government-operated utilities and waste management establishments.

Other Services, Except Public Administration The Other Services (except Public Administration) sector, NAICS 81, comprises establishments engaged in providing services not specifically provided for elsewhere in the classification system. Establishments in this sector are primarily engaged in activities such as equipment and machinery repairing; promoting or administering religious activities; grant-making; advocacy; and providing dry cleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services. Private households that engage in employing workers on or about the premises in activities primarily concerned with the operation of the household are included in this sector.

Public Administration—Federal Civilian, State, and Local The Public Administration sector, NAICS 92, as used here, consists of establishments of federal, state, and local government agencies that administer, oversee, and manage public programs and have executive, legislative, or judicial authority over other institutions within a given area. These agencies also set policy, create laws, adjudicate civil and criminal legal cases, provide for public safety and for national defense. In general, government establishments in the Public Administration sector oversee governmental programs and activities that are not performed by private establishments. Establishments in this sector typically are engaged in the organization and financing of the production of public goods and services, most of which are provided for free or at prices that are not economically significant. This sector does not include federal military employment.

RETAIL TRADE AND LODGING GROUP

This land-use group includes the entire retail sector plus the accommodation and food service sector. Normally, food service is considered a retail trade land use, while lodging may be addressed as a different land-use function. The NAICS, however, combines lodging with food service. In any event, food service employment outnumbers lodging employment nationally by a factor of six.

Retail Trade NAICS sector 44 includes establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The retailing process is the final step in the distribution of merchandise; retailers are, therefore, organized to sell it in small quantities to the general public. This sector comprises two main types of retailers: store and nonstore retailers.

Accommodation and Food Service Accommodation and food service are included in the NAICS 72 sector. The Accommodation subsector, NAICS 721, includes hotels, motels, casino hotels, bed-and-breakfasts, campgrounds, and recreational vehicle parks and other lodging places. The other sector, NAICS 722, includes eating and drinking places, including restaurants, bars, and takeout stands. Also included are caterers and food service contractors.

INSTITUTIONAL GROUP

The institutional land-use group includes public, private, and nonprofit activities in education; health care and social services; and arts, entertainment, and recreation.

Educational Services The Educational Services sector, NAICS 61, comprises establishments that provide instruction and training in a wide variety of subjects. This instruction and training is provided by specialized establishments such as schools, colleges, universities, and training centers. These establishments may be privately owned and operated for profit or not for profit, or they may be publicly owned and operated. They may also offer food and/or accommodation services to their students. Educational services are usually delivered by teachers or instructors that explain, tell, demonstrate, supervise, and direct learning. Instruction is imparted in diverse settings, such as educational institutions, the workplace, or the home, and through diverse means, such as correspondence, television, the Internet, or other electronic and distance-learning methods. The training provided by these establishments may include the use of simulators and simulation methods. It can be adapted to the particular needs of the students—for example, sign language can replace verbal language for teaching students with hearing impairments. All industries in the sector share this commonality of process, namely, labor inputs of instructors with the requisite subject matter expertise and teaching ability.

Health Care and Social Assistance The Health Care and Social Assistance sector, NAICS 62, comprises establishments providing health care and social assistance for individuals. The sector includes both health care and social assistance because it is sometimes difficult to distinguish the boundaries between these two activities. The industries in this sector are arranged on a continuum starting with those establishments providing medical care exclusively, continuing with those providing health care and social assistance, and finishing with those providing only social assistance. The services provided by establishments in this sector are delivered by trained professionals. All industries in the sector share this commonality of process, namely, labor inputs of health practitioners or social workers with the requisite expertise. Many of the industries in the sector are defined on the basis of the educational degree held by the practitioners included in the industry.

Arts, Entertainment, and Recreation The Arts, Entertainment, and Recreation sector, NAICS 71, includes a wide range of establishments that operate facilities or provide services to meet the varied cultural, entertainment, and recreational interests of their patrons. This sector comprises (1) establishments that are involved in producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) establishments that preserve and exhibit objects and sites of historical, cultural, or educational interest; and (3) establishments that operate facilities or provide services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure-time interests.

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ENDNOTES

1 Formally: [(State of Ohio Population Projections)/(Woods & Poole Population Projections) X (Woods & Poole Job Projections or Woods & Poole Household Projections)].

2 See "Households by Type and Size: 1900 to 2002," www.census.gov/statab/hist/HS-12.pdf.

3 U.S. Census Bureau, *Current Population Survey*, "America's Families and Living Arrangements: 2010," Annual Social and Economic Supplement, Table AVG1, "Average Number of People per Household, by Race and Hispanic Origin/1, Marital Status, Age, and Education of Householder: 2010," www.census.gov/population/www/socdemo/hh-fam/cps2010.html.

4 Census figures for average household size over time are problematic. The Current Population Survey, for instance, reports the average household size for 2010 was 2.56 while the decennial census reports it was 2.58. While the census reports average household size was 2.59 in 2000, the CPS reports 2.58. Over its history, the CPS seems to underestimate average household size. In this report, I use the household size averages reported for the 2010 decennial census and projected by Woods & Poole to 2030 and 2040.

5 See www.census.gov/housing/hvs/.

6 The coefficient of determination (R²) is 0.70, the t-ratio is 35.86, and p > 0.01.

7 This is based on my analysis of data presented for the Columbus, Ohio MSA as reported in the Housing + Transportation Cost idea accessed at htindex.cnt.org/about.php.

8 Ibid.

9 See "NAHB Credit Risk Retention Letter to Joint Regulators", August 1, 2011, accessed at http://www.nahb.org/fileUpload_details.aspx?contentID=163463&fromGSA=1. 10 Considering there were about 75 million homeowners in 2010, I estimate that losing 5 million would reduce the home ownership rate from above 66 percent to about 60 percent, a rate not seen since 1960.

11 See American Housing Survey of the United States 2009, Table 3-14, www.census.gov/housing/ahs/data/ahs2009.html.

12 From Housing and Household Economic Statistics Division, Census Bureau, www.census.gov/hhes/www/housing/hvs/qtr111/files/q111press.pdf.

13 See Michael F. Ford, "Five myths about the American dream" *Washington Post* op-ed, January 6, 2012, www.washingtonpost.com/opinions/five-myths-about-the-american-dream/2011/11/10/gIQA4t0eP_story.html.

14 See NAHB/Wells Fargo Housing Opportunity Index: Complete History by Metropolitan Area, www.nahb.org/reference_list.aspx?sectionID=135, and compare national average sales prices in 2000 with 2011 prices using the consumer price index calculator, data.bls.gov/cgi-bin/cpicalc.pl?cost1=1&year1=2000&year2=2011.

15 Over 20 years, if 4.5 percent of senior homeowner households sell to become renters, this would account for about 90 percent of all senior home owners. My estimate is conservative.

16 Percentages exclude non-respondents.

17 This is based on analysis of the most recent *American Housing Survey* publications for the Columbus MSA (2011). Because it takes several decades for urban form to be changed significantly, I assume that forms evident in 2011 will persist into the later decades of the 21st century. See www.census.gov/housing/ahs/data/metro.html.

18 These data are from the *American Housing Survey* for 2002 (published by the Census Bureau in 2003, accessed at www.census.gov/prod/2003pubs/h170-02-25.pdf), and for 2011 (made available by the Census Bureau in 2012, accessed at www.census.gov/housing/ahs/data/metro.html).

19 Lot-size data comparability between the 2002 and 2011 *AHS* years was created as follows: The percent distribution of units by lot size category reported in Table 1.3 for each year was multiplied by total detached and mobile-home units. Subtracting 2011 estimates from 2002 estimates generates net change in units by lot size category. “Small” lot was defined as one-sixth of an acre (about 7,200 square feet) which was calculated as all lots less than one-eighth acre plus one-half of lots between one-eighth and one-fourth acre.

20 Most states have homestead exemption policies resulting in assessed values for residential development that are below market value, with the effect of shifting the property tax burden to nonresidential development.

21 The Energy Information Administration of the U.S. Department of Energy conducts a periodic stratified, random-sample Commercial Buildings Energy Consumption Survey of all nonindustrial buildings in the nation. Total space in 1992 was 69.7 billion square feet, and for 2003 it was 71.7 billion square feet, or an average of 233 and 246 square feet per person for populations of 256.5 million and 290.8 million, respectively.

22 Estimated on the basis of the Commercial Buildings Energy Consumption Survey, www.eia.gov/emeu/cbeecs/cbeecs2003/detailed_tables_2003/detailed_tables_2003.html.

23 For many of these ideas and insights, I am indebted to Terry Foegler of the Columbus chapter of the Urban Land Institute.

24 I recommend that all MPOs adapt the Atlanta Regional Commission’s “Livable Centers Initiative”. For details, see www.atlantaregional.com/land-use/livable-centers-initiative.

25 The NAICS combines Administration and Waste Management in the same general category, 56, calling it Administrative Services and Waste Management. It seems to us it would have been more consistent with the actual economic activities to combine utilities with waste management. Accordingly, I needed to manually remove Waste Management, Subsector 562, from NAICS 56