Subject: Ann Arbor's Place in the Knowledge Economy - Released Version
Attachments: Ann Arbor's Place in the Knowledge Economy - Benchmarking Ann Arbor's Growth and Development with Peer University Cities - Working Paper #3 - 12-13-23.pdf

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From: BRIAN CHAMBERS
Sent: Wednesday, December 13, 2023 2:27 PM
To: City Council <CityCouncil@a2gov.org>; Dohoney Jr., Milton <MDohoney@a2gov.org>
Cc: Fournier, John <JFournier@a2gov.org>; Higgins, Sara <SHiggins@a2gov.org>; Planning <Planning@a2gov.org>; Lenart, Brett <BLenart@a2gov.org>; Stults, Missy <MStults@a2gov.org>; Delacourt, Derek <DDelacourt@a2gov.org>; Reynolds, Kelly <KReynolds@a2gov.org>
Subject: Ann Arbor's Place in the Knowledge Economy - Released Version

Mayor Taylor, City Administrator Dohoney, and Council:

It took me some additional time, so, here is the first fully released draft.

My focus has been on treating the U-M executives and Regents as key stakeholders, so I've essentially embraced their growth agenda. If the U-M's continued growth tracks the last 20 years, it would imply an additional campus population (students and staff) of over 73,000 by 2050. If continued growth is only the toss of a coin (50:50), then the expected growth outcome would be an additional 32,000.

Either way, Ann Arbor will continue to experience growth, housing demand-based pricing, and congestion.

This paper proposes to continue to add density to the downtown core, for an additional 6,700 units of housing (100 per DDA block), as well as on-campus employee housing of between 7,200 and 14,000 units on North Campus. Still, all of the likely growth will not be accommodated, and the additional TC1 Districts and other zoning changes by the City could still provide for significantly more housing.

This working paper is a bit longer than I had planned, but I recently was appointed to the Board of Equitable Ann Arbor Land Trust (EA2), and we are engaging the U-M CFO's office with some student projects next semester, and I wanted to have this with the appropriate scope.

The Preface (1 page), Executive Summary (10 pages) and Conclusion (1 page) are the main sections, and everything else can be considered technical back-up.

Hopefully, this provides a contribution to our local planning needs with both the City and the U-M.

Next week, I'll be also sending this to my contacts at the U-M.

Let me know your thoughts or concerns, if any.

Brett - please forward this as a formal submission to the Planning Commission.

Thank you.

Brian Chambers
Ward 3

On 11/05/2023 11:36 AM EST BRIAN CHAMBERS wrote:

Mayor Taylor, City Administrator Dohoney and Council:

Attached is a draft of my Conclusion section of my current working paper. It was inspired by recent dialogue regarding TC1 along the Washtenaw to Stadium corridor, and I realized it would work as an overall conclusion.

To me it addresses the core challenge of adding significant housing scale within the City, proper, and the risk if may pose to Ann Arbor's culture.

It is meant to also work in the logic of "*Ann Arbor for Everyone*."

Let me know your thoughts and if you find this positioning logic compelling or not.

Here is to equity-based sustainable development,

Brian

Ann Arbor's Place in the Knowledge Economy:

Benchmarking Ann Arbor's Growth and Development with Peer University Cities

WORKING PAPER #3

December 13, 2023

> *"Educated, skilled, and talented people are mobile and can choose where they live. Fortunately, Michigan has an incredibly diverse portfolio of places to attract and retain them — gritty urban centers, affordable suburbs, verdant rural areas, and lakefront communities. But one advantage that the state has not leveraged nearly enough is its college towns.*
>
> *"From Palo Alto and Cambridge to Austin and Boulder, college towns not only produce top talent; they are where young tech workers often choose to live. Michigan must act now to grow and scale Ann Arbor, East Lansing, and its other college towns and strengthen their connections to Detroit and other economic centers across the state."*
>
> **Michigan's Great Inflection: A Strategy for the Age of Technology and Talent**, R. Florida.[1] [2] Presented to the Detroit Regional Chamber's Mackinac Policy Conference, May 31st 2023.

Over the past 20+ years Palo Alto, Cambridge, Austin and Boulder have each experienced significantly more rapid housing price escalation than Ann Arbor. Ann Arbor's housing demand is fueled by The University of Michigan's (U-M) growth, the high-technology-based businesses it fosters, and the City's *'preferred places'* status. Framed by a knowledge economy lens, this paper compares Ann Arbor to the U-M's *'Official Peer'* university cities against the backdrop of housing price growth, to highlight those appropriate for follow-on best practices research on university-city collaborative efforts on housing.

I greatly appreciate the encouragement on this initiative and feedback on earlier drafts.

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Program in Urban, Technological and Environmental Planning, Rackham Graduate School and School of Business Administration, University of Michigan

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University of Michigan Alumni Society – Lifetime Membership

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Contents

LAND ACKNOWLEDGEMENTS

For the topic of land use planning, it is important that Land Acknowledgements be shared.

Office of Sustainability and Innovation, City of Ann Arbor [3]

We acknowledge that the land the City of Ann Arbor occupies is the ancestral, traditional, and contemporary lands of the Anishinaabe and Wyandot peoples. We further acknowledge that our city stands, like almost all property in the United States, on lands obtained, generally in unconscionable ways, from indigenous peoples. The taking of this land was formalized by the Treaty of Detroit in 1807. Knowing where we live, work, study, and recreate does not change the past, but a thorough understanding of the ongoing consequences of this past can empower us in our work to create a future that supports human flourishing and justice for all individuals.

Taubman College of Architecture and Urban Planning, the University of Michigan [4] [5]

Anishinaabeg gaa bi dinokiiwaad temigad manda Michigan Kichi Kinoomaagegamig. Mdaaswi nshwaaswaak shi mdaaswi shi niizhawaaswi gii-sababoonagak, Ojibweg, Odawaag, minwaa Bodwe'aadamiig wiiba gii-miigwenaa'aa maamoonjiniibina Kichi Kinoomaagegamigoong wi pii-gaa aanjibiigaadeg Kichi-Naakonigewinning, debendang manda aki, mampii Niisaajiwan, gewiinwaa niijaansiwaan ji kinoomaagaazinid. Daapanaming ninda kidwinan, megwaa minwaa gaa bi aankoosejig zhinda akiing minwaa gii-miigwewaad Kichi-Kinoomaagegamigoong aanji-daapinanigaade minwaa mshkowenjigaade.

The University of Michigan is located on the territory of the Anishinaabe people. The Ann Arbor campus currently resides on land ceded through the Treaty of Detroit in 1807. Additionally, in 1817, the Ojibwe, Odawa, and Bodewadami Nations made the largest single land transfer to the University of Michigan, ceded through the Treaty of Fort Meigs, with the hope that their children could be educated.

We acknowledge the sovereignty of tribal lands and the painful history of genocide, forced assimilation, and displacement of Native communities that facilitated the establishment of the University. We affirm contemporary and ancestral Anishinaabek ties to this land, the profound contributions of Native Americans to this institution, and the University's commitment to educate the children of Native ancestors.

Preface

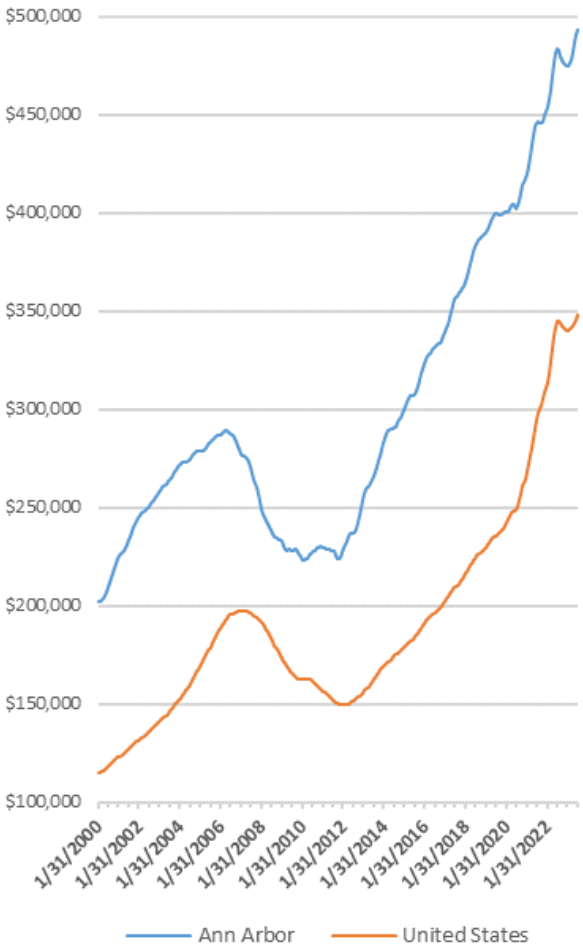
Ann Arbor has an imbalance of housing inventory on the market, with a higher proportion of luxury priced homes than would be considered standard (i.e., between 5 – 10%) for housing markets. [6] [7] In-spite of the luxury home market declining nationally by 45% in 2022, Ann Arbor has over 20% of current home sales listings above the $1 million single family luxury home listing threshold for the area, and over 28% of sold homes above the July 2023 closing price threshold of $725,000 for luxury homes in the area.[8] [9]

Nationally, the modern escalation of home prices goes back to the boom of 1995 to 2006, which was followed by a housing bust from 2006 to 2012.[10] [11] Financial market deregulation in the 1990s was a contributing factor to housing price inflation. As the tech-stock bubble came to an end in 2000, investors focused on real estate as an alternative investment vehicle. The low interest rates set by the Federal Reserve over the ensuing years drove further incentives for home buying. Relaxed lending standards during this initial boom period helped demand continue up through 2005, when prices reached levels that most people could not otherwise have afforded.

Ongoing low interest rates drove the resurgence in housing price escalations from 2012 through 2019, before the 2020 COVID lockdowns began. As the COVID pandemic lockdown reduced the housing inventory on both the national and local housing markets, prices continued to escalate, due to the supply shortages and ongoing low interest rates. See Figure 1. [12]

The Federal Reserve's interest rate increases through 2023 further reduced home listings, as fewer potential sellers can afford new mortgage rates, accounting for the higher distribution of luxury homes. Ann Arbor's listed housing inventory is down 29% and median listing prices, at $550,000 for July, 2023, are up 10%+ year-over-year.[13] [14] [15] [16] Since 2017, all cash offers have been over 40% for Ann Arbor; and over 30% for Washtenaw County.[17]

Figure 1. Zillow Home Value Index: Ann Arbor versus National, 2000 – 2023 (07/31)



Ann Arbor's area housing demand is driven by both (1) the University of Michigan's (U-M) growth and technology related business generation, and (2) Ann Arbor's preferred-city attractiveness.[18] [19] Since the U-M is the area's main economic development engine, it is relevant to compare the U-M's peer universities cities' housing price growth histories to better understand Ann Arbor's. On this basis, this working paper benchmarks Ann Arbor's housing price growth in relation to the U-M's *'Official Peer'* university-cities.[20] By focusing on U-M's *'Official Peer'* universities, this approach differs from Ann Arbor SPARK's 2022 benchmarking update which evaluated 'competitor' cities without an explicit reference criteria.[21]

It is hoped by providing comparative housing pricing trend data across U-M's Official Peer university cities, especially those who are either way above, or way below, Ann Arbor's home value growth, that the City of Ann Arbor and the University of Michigan can better anticipate potential impacts, and be further motivated to collaboratively address the Ann Arbor area's ongoing housing affordability and market supply challenges.

Executive Summary

The key to attract and retain talent and build a more vibrant knowledge-based urban community is place-making—creating communities of all types and sizes where talented people from different backgrounds and economic status will want to live, work and play. [22] [23] [24] [25] [26]

Tech-hubs and Knowledge Workers – U-M's Foundational Role

Ann Arbor is noted as a top (#3) and leading tech-hub, based on a 'brain concentration' metric to directly focus on 'knowledge worker' presence. [27] See Table 1.

Table 1. Bloomberg Brain Concentration Index: Top Ten

City	Score	STEM jobs	Science & Engineering Degree Holders	Advanced Degree Holders
Boulder, CO	99.8	8.1%	19.5%	18.5%
San Jose, CA	99.6	10.2%	21.1%	17.3%
Ann Arbor, MI	**99.0**	**6.6%**	**15.5%**	**18.3%**
Washington, DC	98.7	6.4%	15.8%	17.4%
San Francisco, CA	98.4	6.6%	17.6%	15.3%
Ithaca, NY	98.1	5.6%	15.1%	18.0%
Boston, MA	97.4	5.5%	14.9%	15.9%
Durham, NC	97.0	5.0%	14.0%	16.1%
Charlottesville, VA	96.4	4.1%	14.2%	16.2%
Madison, WI	95.8	5.7%	12.8%	12.5%

The availability of a 'knowledge ecosystem' and infrastructure for it contributes to Ann Arbor's tech-hub status.[28] Understanding these local drivers of economic growth and development is a main focus of this paper, as well as its impact on local housing costs. By benchmarking U-M's 'Official Peer' cities housing cost experiences, Ann Arbor and the U-M can more effectively collaborate to minimize the downside risks of continued economic growth.

Ann Arbor, through the U-M, has a long history of being a literal and foundational tech-hub: [29] [30]

MERIT Network
- In 1966 the U-M, with Michigan State University and Wayne State University, created the Michigan Educational Research Information Triad (MERIT), as funded by the National Science Foundation (NSF) and the State of Michigan to connect the universities' mainframe computers.
- Participation in ARPANET (Advanced Research Project Agency network) began in 1969.

1st Internet Backbone
- In 1988, U-M won the next gen NSFNET bid with MERIT, the State of Michigan, IBM and MCI.
- The newer, faster NSFNET connected 13 regional networks and supercomputer centers, and set the standard for using open protocols (TCP/IP), with more than 170 constituent campus networks.
- In 1993, U-M launched Internet2, which then was relocated to Washington, DC.

Knowledge Management Charter – School of Information
- In 1993 the U-M established the School of Information, and put Dan Atkins in charge, with the charge of developing new academic programs in "***knowledge management***," the first in the US.
- In 2003 Atkins Chaired the NSF panel which proposed NSF's R&D program in cyberinfrastructure.

Global Information Digitization and Access – Pioneering Search, Retrieval and Aggregation
- In 1995, JSTOR (short for Journal Storage) was established at the U-M.
  - By 2002, there were 218 journals online, across 62,170 issues, 1,504,372 articles, for a total of 9,169,564 pages, with 1,321 participating libraries from over 60 countries.
  - As of 2023, JSTOR offers more than 12 million academic journal articles, 100,000 books, and millions of images and primary source materials in 75 disciplines.[31]
- Google Co-founder Larry Page worked at JSTOR while at U-M in the mid-90s.
  - In 2004 Page proposed a Google partnership to digitize the entire U-M library (8 million volumes), which became the HathiTrust consortium of 80+ digitized libraries (18 million+ volumes by 2020).

Clearly, these initiatives established the U-M, hence Ann Arbor, as core to our global knowledge economy.

Ann Arbor's Place in the Knowledge Economy

This working paper begins with a brief history of "**Ann Arbor's Place in the Knowledge Economy**," going back a century. The knowledge economy should be understood as core to our cultural heritage, and not something having been imposed on Ann Arbor by external forces.

First and foremost, this working paper acknowledges the larger economic disparities that have developed over time, which impact the Ann Arbor community. As the State of Michigan funding declined over the past 40^{+} years, U-M had to re-orient its public mission to a 'market-based' one. The U-M responded by accepting more out-of-state and international students and pursuing research funding to fuel growth, making it now one of the top-three research universities in the United States. Based on strong economic and endowment performance, U-M, along with SPARK, has been fostering significant business, employee and student growth in and around Ann Arbor. Understanding the housing demand and price implications of continued growth, based on peer universities, is the focus of the next section.

Figure 2. U-M – the #1 Public Research University in the US, every year since 2011

Benchmarking Ann Arbor with U-M's Official Peer University Cities

The section that follows, **Benchmarking Ann Arbor with U-M's Official Peer University Cities**, compares Ann Arbor's housing price increases over the past 20 years with those of the U-M's 'Official Peer' University cities. Comparisons are made to university cities by segments, including those:

1. Above Ann Arbor's area median luxury price threshold of $725,000
2. Below Ann Arbor's area median luxury price threshold, and
    a. Higher than Ann Arbor's median home values
    b. Lower than Ann Arbor's median home values, and higher than the US median of the index
3. Lower than the US median home value index

A range of cities are identified for possible further investigation, including those just ahead of Ann Arbor's home value growth, to anticipate what may lie ahead for Ann Arbor. These cities include Princeton, NJ (Princeton), Chapel Hill, NC (University of North Carolina), and Austin, TX (University of Texas). All experienced much higher population growth rates over the past 20 years, than Ann Arbor.

Those with home values lower than Ann Arbor, which would also be worth additional study, include Charlottesville, VA (University of Virginia), Durham, NC (Duke), and Madison, WI (University of Wisconsin). Charlottesville, Durham, and Madison all experienced much higher population and home value growth, yet did not exceed Ann Arbor's median home values in this period. There may be lessons-learned opportunities. Since Chapel Hill, Durham and Raleigh, NC make up the Research Triangle Park area, they were investigated separately for additional benchmarking consideration.

Those peer university cities with home value less than the US median were also assessed. Ithaca, NY (Cornell), New Haven, CT (Yale), and Urbana-Champaign, IL (University of Illinois) are primarily university towns in ways similar to Ann Arbor without other major employers, but are a greater distance from a major metropolitan area. They each had similar to lower population growth rates compared to Ann Arbor, so on that basis, they may have fewer lessons-learned to offer, as their housing demand pressures are presumably less that Ann Arbor's.

Ann Arbor Home Value Growth versus Additional University Cities

Ann Arbor Home Value Growth versus Additional University Cities, is covered in the next section. Research Triangle Park, with Raleigh, NC, at a much larger population than Ann Arbor's, also exhibited a much higher population growth rate. All three of these cities have much lower population densities, however.

Additional national university cities in the 2022 Top-40 US News Rankings were also analyzed for greater comprehensiveness. Providence, RI (Brown), Gainesville FL (University of Florida), Winston-Salem, NC (Wake Forest), and South Bend, IN (Notre Dame) are of comparable size to Ann Arbor. However, Providence's population density is more than twice Ann Arbor's and Winston-Salem's is less than ½ Ann Arbor's. So, it would be Gainesville, FL and South Bend, IN that would be most appropriate for further benchmarking.

University Cities Comparable in Scale to Ann Arbor

The final university-city benchmarking section specifically focused on **University Cities Comparable in Scale to Ann Arbor** size and density, from 50% less to 200% greater. Palo Alto (Stanford), Santa Barbara, Irvine and Davis (University of California), Pasadena (CalTech), as well as Newton (Boston College) and Medford (Tufts), MA are all above the luxury home value range. At most they can offer lessons-learned in cities that have essentially priced out everyone but the wealthy.

The same cities previously identified with lower home values, but higher population growth or lower population growth were the same as before, and together provide a good summary of the findings. See Table 12 on page 14 of the main body of the working paper.

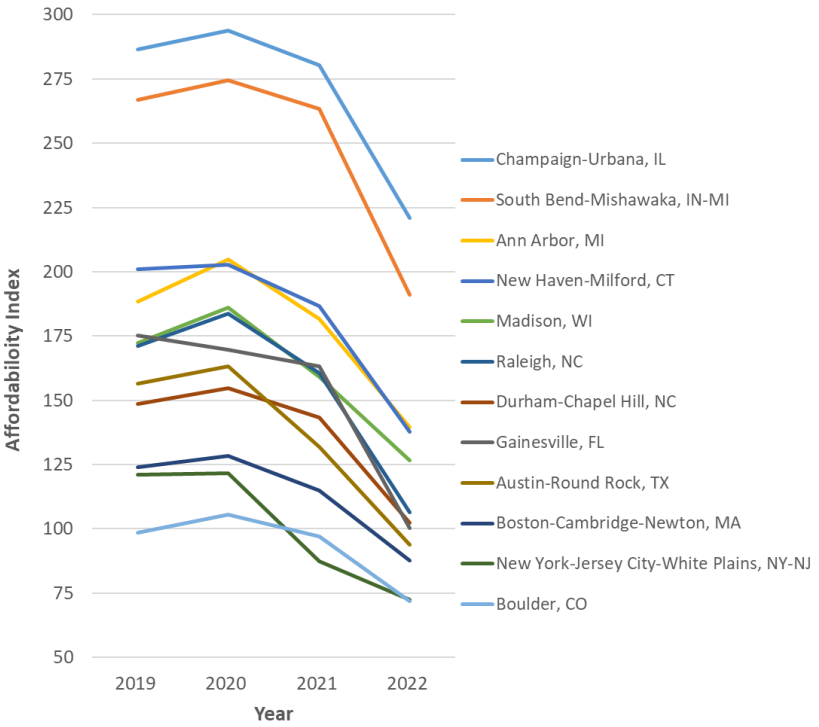
Ann Arbor's Housing Affordability versus Select Metropolitan Areas

The next section on **Ann Arbor's Housing Affordability versus Select Metropolitan Areas**, used the National Association of Realtors Housing Affordability Index. The index measures whether a median family income is enough for a median-priced single family home mortgage, based on the MSA's recent price and income data.

As shown in Figure 3, housing affordability is plummeting in all urban areas assessed. Champaign-Urbana and South Bend housing affordability is the highest of those reviewed. Ann Arbor and New Haven have higher affordability than all remaining metro areas charted, including Madison, and the Research Triangle of Raleigh, Durham & Chapel Hill. Gainesville, FL, Austin, TX, Cambridge, MA, NY, NY and Boulder, CO all have significantly lower housing affordability.

Ann Arbor and the University of Michigan may still have time to address this declining trend in housing affordability, but need to act now. Housing affordability was a major 2022 campaign theme of City Council.

Figure 3. Affordability Index of Existing Single-Family Homes, 2019 – 2022
Ann Arbor versus Select Metropolitan Areas



The university cities noted for potential follow-up, as well as any of those benchmarked, should be prioritized by the U-M and Ann Arbor City Administration. The additional work should be in response to specific comparative questions that can support policy and decision analysis. For example:

- Are there Public, Private Partnerships (P3) being conducted by any of these cities, jointly, with the major university, for housing and related development?
- Which universities have developed on-campus employee housing?
    - Do the universities target the housing to middle and / or low income staff?
- How integrated are their transit systems with housing?
    - In other words, are they adopting Transit Oriented Development, scale-based, best practices?
- Are "innovation districts" or technology parks being developed, and what are the university's roles?
    - Are the universities fostering corporate research development projects on their own land?
    - What is the role of housing and mixed use development for university innovation districts?

Ann Arbor Area's Economic Basis and Population and Migration Patterns

Pending the U-M and Ann Arbor officials clarifying their further benchmarking interests, the Discussion section covers a range of topics starting with the **Ann Arbor Area's Economic Basis** and **Population and Migration Patterns**.

The area employment is dominated by Government Services, followed by Professional and Business Services, then Education and Health Services. Manufacturing, and Leisure / Hospitality Services sectors, though significant, are each lest than 10% of the area's employment.

Management, Legal, Computer & Math, Healthcare & Technical, Business & Finance, and Science occupations have higher incomes in the Ann Arbor area. These higher income sectors represent 34% of the Ann Arbor Area employment. Area employment has already recovered to pre-COVID levels based on US Bureau of Labor Statics.

Population-wise, the Ann Arbor area has declined slightly from pre-COVID levels. Migration is occurring to areas outside of the cities of Ann Arbor and Ypsilanti, within the County. The highest level of out-migration from Ann Arbor, before COVID, was to Lenawee County, MI, with Adrian and Tecumseh, each with 2020 populations below 21,000. People are clearly looking for a more rural community. Pre-COVID, migration from Ann Arbor also went significantly to San Francisco County, CA and Maricopa County, Arizona, which includes the Phoenix metro area.

Use of pre-COVID US Census migration data is limited due to post-COVID relocation dynamics, and the likelihood of confounding student movement patterns. Given that, Oakland, Saginaw and Genesee Counties in Michigan have been a source of entrants to the Ann Arbor area, as well as Fairfield County (Yale), CT, Miami-Dade County (Florida International University), FL, Montgomery County (Johns Hopkins), MD, and Orange County (UofC Irvine), CA. To the extent these patterns are still at play, the question becomes one of retention to Ann Arbor.

Worthy to note, however, are data on those searching online to relocate to or from Ann Arbor. Twenty-six percent of Ann Arbor homebuyers searched to move out of Ann Arbor, while seventy-four percent looked to stay within the Ann Arbor metropolitan area. Grand Rapids, Michigan was the most popular destination among Ann Arbor area potential emigrants followed by Cape Coral and Miami, as well as Orlando, Sarasota and Tampa Florida. Retirement, weather and maybe taxes could be the main drivers of those leaving Ann Arbor.

San Francisco homebuyers searched to move into Ann Arbor more than any other metro followed by Los Angeles, Washington DC and New York City. Each of these are described by Richard Florida as 'super-cities', with the highest concentration of millionaires. [32] It would be these high-end entrants that will most impact the Ann Arbor housing pricing. Over 40% of home purchases in Ann Arbor over the past 5 years have been all-cash.

Mitigating Price Growth Pressures by Increasing Housing Supply

A key issue regarding increases to housing supply, is whether there is evidence that significant increases to supply will actually affect housing prices. There have been ample studies on the impact of increasing housing supply on an area's local housing prices. As discussed, in **Mitigating Price Growth Pressures by Increasing Housing Supply**, new market-rate construction has been found to loosen the market for lower-quality housing through a series of moves known in the housing community as filtering and chain migration. [33] [34] [35]

The preponderance of the evidence shows that restricting supply increases housing prices and that adding supply helps to make housing more affordable.[36] [37] [38] [39] [40] In particular, regulation appears to raise housing prices, reduce construction levels, and reduce the elasticity of housing supply. Housing supply inelasticity, due to land use and local development regulations, leads to the escalating price of housing, both rental and owner-occupied.

Adding new homes moderates price increases and helps keep housing more accessible to those that otherwise would not be able to afford it. There are additional reasons to be concerned about inadequate supply response, including preventing workers from moving to areas with growing job opportunities.

As presented in this section, Federal Reserve home sales tracking data for Ann Arbor showed price growth accelerating post-COVID and listing inventories down year-over-year. Prices further escalated, as supply decreased.

Public Land-Lease / Land Trust Models, Tax Increment Financing and Project Efficiency Gains

The core question for housing supply, regards how to increase supply affordable to those middle and lower income households that are now effectively priced out of the Ann Arbor housing market.

Ann Arbor homeownership has become unaffordable to most middle-income households, and renting exposes households to increasing year-over-year rents. **Public land-lease** or **community land trusts** models are introduced to provide a way to price housing at controlled price-points, essentially keeping the units out of the open market. The land-trust model is similar to the public-land home-ownership development recently approved in Ypsilanti, Michigan, for middle-income owner-occupied housing using income-based deed restrictions.[41] [42] [43]

The ground-lease method, common to all Community Land Trusts (CLTs), by which both the land as well as the housing units are offered to users through a long-term lease (99 years), is both automatically renewable and inheritable. The user pays the trust for the housing purchase and associated fees or makes regular monthly 'rent' for the housing, and the trust in turn pays the property taxes as well as the cost of the land purchased from the income. Properly managed and financed, the income generated is generally sufficient to create a revolving loan fund for the purchase of additional land. CLTs acquire the land that the housing is on and maintain ownership of it through a ground lease document and use of a resale formula to determine a fair sale price of the home.

A public land trust (PLT) is where public ownership, as in Ypsilanti or on U-M's Ann Arbor campus, avoids the need to finance a land sale, and can enable sustained access to ongoing technical assistance and professional expertise, reducing burdens on community capacity. The properties built on the land are then taxable.[44]

The land-lease / trust model provides a means of developing housing outside of the open-market pricing. How do we then make this new housing possible, as even basic construction costs are more than most can afford?

Tax Increment Financing (TIF) enables a loan against future property taxes to pay for some of the cost of construction. The State of Michigan's Missing Middle Program, based on TIF, seeks to increase the supply of workforce housing to support the growth and economic mobility of employees by providing grant funds to developers, defraying the cost of construction and rehabilitation of properties specifically targeted to households in the 60% - 120% Area Median Income (AMI).[45] [46]

In addition, new **modular construction techniques** with the use of a local prefabrication facility, can improve the efficiency of the construction process, while significantly reducing costs. Modular construction techniques could allow developers to accelerate end-to-end project timelines by 20 to 50 percent, while reducing costs by up to 20 percent, and delivering greater whole-building energy efficiencies.[47] [48] [49] [50] [51]

Finally, a **Public Private Partnership** (P3) delivery model of the projects would limit the upfront capital needed by either the University or City of Ann Arbor, to quickly and efficiently deliver housing in a fiscally constrained environment, and result in positive cash flows to the campus or city through ground rent.[52] [53]

Faculty and Staff Housing Programs at U-M Official Peer Universities

This brief section provides an initial summary of faculty and staff housing programs at U-M Official Peer universities. Of note, is that the majority of these Universities do have them. More research into these programs is needed, especially given their prevalence. Please see Table 21 on page 29 of this working paper.

Transit Oriented Development in the Downtown Core

Can the U-M necessarily rely on Ann Arbor's objective to increase housing within the City of Ann Arbor, to accommodate the U-M's growth agenda? Can it be done without continuing to severely impact housing demand pricing and traffic congestion into an out of Ann Arbor?

One approach to this question is to assess the ability of Ann Arbor's two regional transit centers to support additional growth. The Ann Arbor Area Transit Authority (AAATA) Blake Transit Center and the AMTRAK rail station are both within walkable distances to the U-M Main and Medical campuses. Increased housing density around these core downtown transit centers is part of an effective Transit Oriented Development strategy. The housing in these areas can be accessible to U-M staff as well as those who might take transit (bus or rail) to other destinations. Approximately, 6,775 units of additional housing are estimated to be needed to support mixed-used walkable density for the core downtown of Ann Arbor, with transit integration. [54] See Figure 4.

Figure 4. AAATA Blake Transit Center and AMTRAK Station Walkability Radii

On this basis, Main Campus and a portion of the Medical Campus walkability requirements can be met from increased housing density in Ann Arbor's downtown core areas around the two regional transit centers. In addition, those transit centers can provide walkable access to Main Campus and the Medical Campus (via Amtrak Station) for those using transit from either the housing established in the TC1 Districts, or more regionally through the Amtrak Station. U-M's coordination with Ann Arbor on their Comprehensive Land Use Plan will be important to resolve whether this increased housing density gets planned.

However, neither offer direct walkability to North Campus from those regional transit centers. Additional connectivity between the City and the U-M Ann Arbor campuses is a major objective for the ongoing U-M Campus 2050 long range planning project currently underway. On-campus employee housing is also a consideration for the U-M's Campus 2050 long range plan land use program.[55]

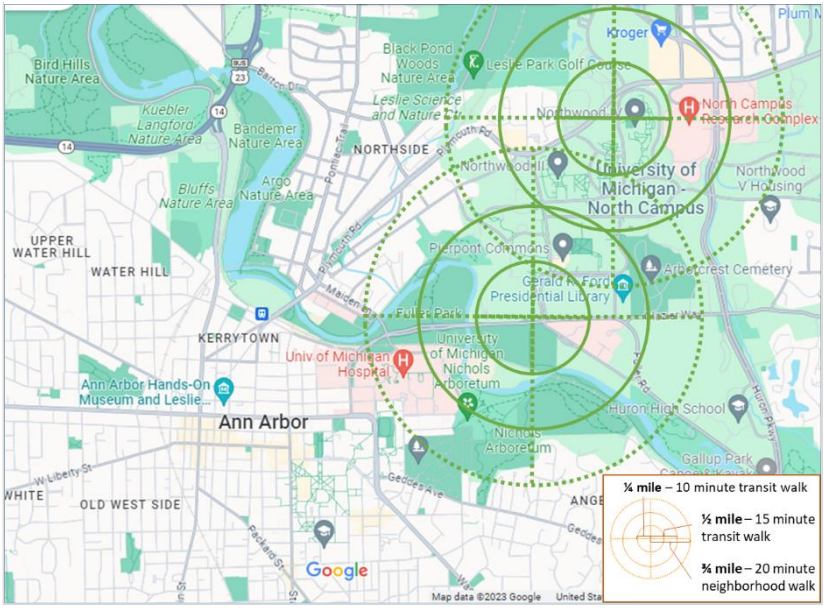
Transit Oriented Development for North Campus Connectivity and Employee Housing

U-M employee housing development at Fuller and Bonisteel roads, and on Mitchell Field, would have neighborhood walkability to the Michigan Medicine campus for U-M employees. See Figure 5.

A Plymouth road development on U-M property would have neighborhood walkability for U-M employees to the North Campus Research Complex. It would also align with the of Ann Arbor's TC1 District, for additional housing density and mixed use development along Plymouth Road.

Based on Transit Oriented Development best practices, these development sites could be developed with 1,200 housing units a piece, for a total of 2,400 per location. On this basis, a significant scale of U-M employee housing can be developed based on Transit Oriented Development and walkability best practices.

Figure 5. Transit Oriented Development Sites Offering Walkability to Medical Campus and North Campus Research Complex



University of Michigan Ann Abor and Medical Campus Growth Scenarios

How significant is the need for additional housing? This will depend on the U-M's growth through this century.

As covered in this section, the University of Michigan's Ann Arbor and Medical Campus student and employee population grew at an overall 1.9% compound annual growth rate (CAGR) over the past 20 years. It begs the question, of how much growth can be anticipated or projected for the future. The Michigan population, overall, is decreasing, so it may be that the past 20 years of growth is not sustainable.

In a relatively unconstrained growth scenario, projecting the past 20 years of growth out to 2050, the U-M Ann Arbor and Medical campuses could grow by over 73,000 students and employees. It may be that the U-M continues to acquire land outside of the City of Ann Arbor and its freeway ring to accommodate such growth.

It may also be that continued growth is the toss of a coin (50:50), which would be projected at only 50% of the previous 20-year rates. That overall growth, to about 32,000 additional students and employees, would achieve nearly the same numeric growth as U-M attained over the previous 20 years. Even under a moderate growth scenario the housing demand and increased pricing from the increased population could continue unabated.

These linear growth projections, are just that. They are not specifically forecasting growth to be at any of these rates. However, given the U-M's status as a top-tier national public research university, it will likely continue to grow, even though most Michigan public universities are experiencing significant declines.

The State of Michigan as a Key Stakeholder to U-M's Growth and Development

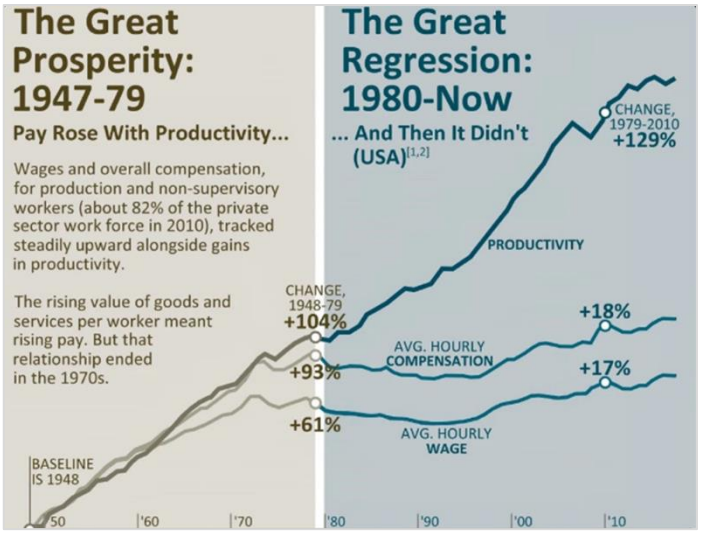
Michigan public universities have been experiencing a significant enrollment decline over the past decade, with an overall 10-year decline of 9.7%. However, the University of Michigan's Ann Arbor campus enrollment has been the major exception with 19.4% growth in that period.

Michigan public universities, nationally, have experienced the second highest enrollment declines over the past 20 years, down 20.5%, while the University of Michigan in Ann Arbor grew by 29%, 15th highest of the 50 largest public universities in the country.

In terms of R&D growth, and hence research staff, the U-M research budget grew by ~40% over the last 10 years. U-M has been ranked #1 in Public Research University funding over the past 11 years, and 3rd among all public and private US universities.

The Michigan and larger US economy, however, paints a very different picture. In addition to the financial reforms referenced in the Preface, the US and Michigan economies have been wracked by the phenomenon known as the **Great Regression** that followed the Post-WWII era of **Great Prosperity**.[56] Following WW-II, the US was the only functioning industrial economy in the world, hence, it experienced broad wealth. Yet, by 1980 the US had to deal with globalization of industry across automotive, electronics, and industrial equipment, among many other retail sectors. Since 1980, under Reaganomics, there has also been a decline of the progressive income tax leading to a rise in inequality. See Figure 6.

Figure 6. The Great Prosperity followed by the Great Regression



Labor union bargaining power was greatly reduced in this timeframe, and a common refrain for the auto sector was for the *'last one leaving Detroit, to turn off the lights.'*[57] Detroit had been a super-city, growing 468% from 1900 – 1940, with the advent of the auto industry. However, after WW-II it declined from a peak 1950 population of 1,850,000 to 1,203,000 by 1980, a drop of 35%, mainly due to white-flight. From 1980 to 2020, Detroit declined another 47%, furthered by the impact of globalization on the auto industry, for a total decline of 65%. Especially since 2013, these adverse economic trends have been increasingly blamed on technological unemployment, from increased automation.[58]

This certainly had ripple effects through the rest of Michigan's economy, which ranks 49th in population growth in the US since 1990.[59] This in turn, led to a significant reduction in Michigan's higher education enrollments. Whereas the U-M grew enrollments by 19% over the last 10 years, the rest of Michigan's public university enrollments declined by 15%, as the remaining population is now concentrated within older demographics.[60] Future Michigan population growth depends on net positive domestic and/or international youth in-migration.

The Ann Arbor area and the U-M have been outliers to much of this dynamic, with the Ann Arbor campus enrollments increasing by 35% since 2000, with the U-M total Ann Arbor employment growing by over 70%. Given this student and employment growth, even while the Ann Arbor population is estimated to have decreased slightly over the recent three years (~3%), the demand on housing has caused prices to continue to increase, with July, 2023 median home listing prices up 10% year-over-year. Continued growth for U-M will be determined by how the University and the City of Ann Arbor manage these countervailing challenges.

Place-making within the Knowledge Economy

To meet its 2050 growth objectives, the U-M is essentially competing with its peer universities and their ability to attract and retain talent. The lifestyle and location preferences of knowledge workers needs to be understood.

The University's growth and its impact on the local Ann Arbor housing and labor markets requires an appreciation of the U-M and Ann Arbor for its knowledge economy, place-making potential. In places with robust entrepreneurial ecosystems, as Ann Arbor and the U-M are developing with SPARK, there also needs to be a balance of the benefits for startups and entrepreneurs along with the more established companies seeking proximity to talent.[61]

Knowledge workers are seeking urban communities based on livability and walkability. The City's attractiveness, let alone the attractiveness of the University's Ann Arbor campus area will determine whether or not the U-M will be able to maintain its powerhouse and growth momentum. An extremely compelling sense of place, in a community context, is needed to enable the University's growth plans. Place making that improves the livability, affordability and social connection for everyone in the community, such that they stay long-term, will be critical.[62] [63] Effective place-making means joint collaboration between the U-M, Ann Arbor and its community.[64]

Corporations and start-ups view these innovation generators as key to modern economic development, and find their walkability, livability, and connected transit leads to more effective recruitment and retention of research, technical and support services. [65] Walkable urbanism is where mixed-use, higher-density development is found, whether in downtowns, suburban town centers, innovation districts, or high-amenity neighborhoods. These places have a high concentration of economic activity and jobs, as well as rental and for-sale housings.

Universities and corporations are fostering 'innovation districts' as the next generation of technology parks. An innovation district is a concentrated area of physical spaces that cluster entrepreneurs, medical institutions, start-ups and academia. They are based on housing density, proximity, accessibility and mixed-use spaces for what's needed to create an environment ripe for collaborating, networking and living.[66] SPARK, as reviewed in this paper, has a hybrid approach, as an innovation generator. However, U-M with its EV, Semiconductor, Quantum Computing and other research centers, will need to prioritize place-making urbanism for them.

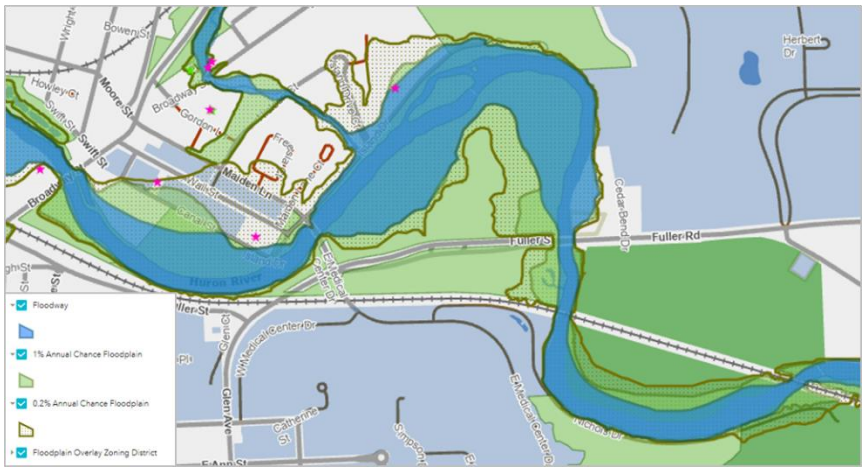
In brief, the Huron River corridor, pictured below, offers a walkable place-making opportunity for U-M to develop dense, mixed use employee housing along transit lines. Figure 7 presents the Huron River corridor. Presently, that stretch of Fuller Road is heavily used for employee parking, without any orientation to the Huron River.

Figure 7. Huron River Corridor between the U-M Medical Campus and North Campus

Many top-peer universities have utilized their riverfronts as showcases. Equitable Ann Arbor Land Trust provides a vision for opening up the Huron River corridor and establishing a series of bridges for walkable connectivity between the Medical and North Campus sides of the river. Please see: https://www.ea2landtrust.org/riverfront

Figure 8 provides a view of the Huron River's 500-year floodplain boundaries,[67] [68] reflecting the area that could be restored, opened up and utilized in a more compelling manner. The floodplain boundaries are shown to emphasize the required buffers, since the total annual precipitation falling within *'the heaviest 1 percent of events'* (i.e., the 100-year floodplain) is estimated to increase by 40 percent or greater by the late 21st Century.[69]

Figure 8. Huron River Flood Plain and 500-year Food Boundaries



Design competitions should be held both for the bridges, using Ann Arbor, Native and U-M history themes, and for the most advanced sustainable buildings based on Passive House,[70] Net-Zero,[71] [72] modular, and low embodied-carbon construction.[73] With the U-M conducting their Campus 2050 land use plan project, it would be fitting to consider such a dramatic set of Huron River corridor and housing developments, on a showcase basis, to further raise the stature of the U-M and Ann Arbor as a knowledge-based community place.

Concluding Synopsis

Ann Arbor's Place in the Knowledge economy is at a cross-roads. Given the complexity, it is worth summarizing.

1. **Population and Employment Growth and Housing Affordability**
   - If U-M's continued growth at its previous 20-year rate is only the toss of a coin (i.e., 50:50), then there is still an expected increase by 2050 of about 32,000 people in enrollments and employment.
   - Between 2000 and 2022, U-M employment grew by 21,629, while Washtenaw County employment grew by only 21,300. The U-M employment growth accounted for the County-wide growth.
     - U-M student enrollments increased by 13,157, just over 30% of area population growth.
     - The City of Ann Arbor's population grew by only 9,310, or 8%, in this time period.
     - The City of Ann Arbor's home values increased by 135% during this time period.
     - Ann Arbor no longer has housing affordable to middle-income ownership, nor low-income rental.
2. **Transit Oriented Development (TOD) for Housing at Scale**
   - The ¼ to ½ mile radius around Ann Arbor's core downtown regional transit centers, based on TOD best practices, could be a basis for an additional 6,700 units of mixed-use, market-rate housing, providing walkable access to the Main and Medical campus buildings.
   - TOD best practices could include substantial mixed-use U-M employee housing on North Campus with walkability to the Medical complex (2,400 – 4,800 units at Fuller and Bonisteel), as well as the North Campus Research Complex (2,400 – 4,800 units along Plymouth Road).
3. **Land-Leases** can be used to govern the U-M employee housing to prioritize middle and low-income households that are experiencing the most housing stress, to effectively control rents and sale prices.
4. **The Huron River Corridor** should be restored, showcasing natural landscaping and connecting bridges with history themes, between the new housing and the Medical Campus for compelling walkability.
5. **Creative Place-Making by both the U-M and City of Ann Arbor** is critical to achieve growth objectives, by being attractive to knowledge workers at all economic levels, and building community to retain them.
6. **Competitive, World-class Environmental Design Competitions** for the Huron River corridor bridges and all campus housing should be conducted, as a part of the creative place-making initiative.

Ann Arbor's Place in the Knowledge Economy

Peter Drucker, in 1993, defined the modern economy as no longer based on geographic resources, but he defined it as knowledge based.[74] Drucker wrote about the economic shift transitioning from a society built upon the acquisition and use of capital -- labor, hardware, land -- in production, into a knowledge based society, where the creation and application of knowledge primarily drives the production of wealth.

Ann Arbor's history in the knowledge economy is well ingrained, and goes back to the start of the previous century, at the beginning of the industrial revolution. The Carnegie Library, originally at Huron and State Street, opened in 1907. [75] It was Ann Arbor's first public library, serving both the high school and the general public. The facade is retained on the University's North Quad building complex. [76]

Figure 9. Carnegie Library, Ann Arbor 1907

Figure 10. University of Michigan's North Quad and School of Information Building,

In the US, there is a strong tradition of libraries as a key element of social equity for personal and community betterment. Since before the founding of the United States (ala Benjamin Franklin and his Junto Club) libraries have been established on these principles: [77]

1. Essential to a literate, well-read, and informed public
2. Core to a community's responsibility for its own welfare
3. A foundation for innovation
4. Instrumental to an individual's route to social and economic empowerment

This is in part what Carnegie believed, and why, as a philanthropist he funded city libraries. A total of 1,689 Carnegie libraries were built in the US from 1883 to 1929.[78] The cities receiving his funding had to commit to maintain the operating budget going forward, in writing, before Carnegie would release the funds for the building. This is what Ann Arbor did back before 1907 (Figure 9).

Fast forward 115 years and into the 21st Century finds Ann Arbor with the University of Michigan well integrated into the modern knowledge society. The façade of the Carnegie Library is now part of the University's current School of Information building in North Quad, harking back to its knowledge economy heritage (Figure 10). Ann Arbor, with 54 percent of its workforce belonging to the ranks of knowledge, professional, and creative workers, now is fourth on this metric out of all 380-plus U.S. metros, behind only San Jose (i.e., Silicon Valley), Washington, D.C., and Boulder, Colorado.[79]

The internet and digital technologies are the basis of both the global and local economy, and the largest impact technological innovations are based on them. For example, web-based engineering design tools on the market provide a '*design anywhere / build anywhere*' capability that has impacted the distribution of manufacturing, and the ensuing international logistics and trade based on it. The global response to COVID, including vaccine development, testing, and distribution, was dramatically facilitated by digital technology, artificial intelligence and machine learning.[80] These digital technologies are generally being referenced as Industry 4.0, to emphasize the fourth industrial revolution, currently underway.[81] [82]

As Ann Arbor and the University of Michigan work to maintain and promote their place in the global knowledge economy, it will be important to understand both the drivers of their ongoing and constant transformation, while also acknowledging and mitigating the downside risks.

Figure 11. Semiconductor Company KLA's Ann Arbor, Michigan Campus, $200M Second US Headquarters, Cleanroom and R&D Center

For example, The State of Michigan and the U-M are developing Electric Vehicle, Semiconductor and Quantum Research Centers.[83] [84] [85] [86] [87] [88] These investments will increase housing demand from the highly skilled workforce they attract.

Revolutions, by definition, are full of tumult. Economic development reflects investments made in our future. How capital flows shift, both in property, land, labor and technology, have a basis in what has been termed Schumpeterian 'creative destruction,' as investments shift from older forms of technology and labor (i.e., the destruction as disinvestment from those previous forms), into new forms (i.e., the creative investments).[89] [90] Understanding and mitigating the potential fallout and downsides of economic development are critically important, as well as working to embrace these new economic forms.

Ann Arbor Area's Economic Segregation and the New Urban Crisis

The Ann Arbor area, with the University of Michigan as its largest employer and main economic engine, is typical of many mid-sized college towns across America that experience high levels of economic segregation. In 2015, Florida and Mellander reported that the Ann Arbor area was the eighth most economically segregated in the US.[91] They described this college town segregation dynamic as being due to: (1) the town/gown divide between well-paid professors and lower-paid service workers; (2) the "creative class" attracted to the University and technology community; as well as (3) the large concentrations of students, who are often temporarily low-income residents while they are working toward their degree.[92] The Ann Arbor Metropolitan Statistical Area (MSA); i.e., Washtenaw County, is the area in which this economic segregation was identified.

Additionally, Florida has defined a "New Urban Crisis" as it closely tracks the concentrations of high-tech industry, adults who hold college degrees, and the creative class; all three defining features of leading tech and knowledge hubs like Ann Arbor.[93] [94] The back-to-the-city movement of the affluent and the educated[95] — accompanied by rising inequality, deepening economic segregation, and increasingly unaffordable housing, defines this New Urban Crisis for the Ann Arbor area.

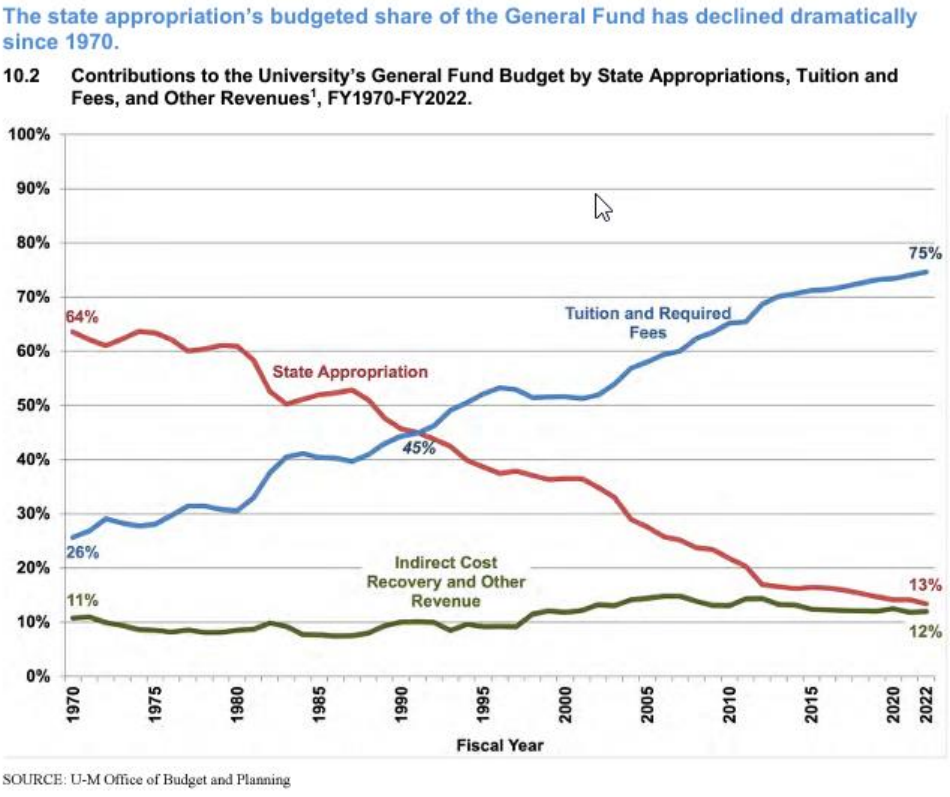
The economic development fostered by the creative class has clear benefits to the Ann Arbor area, in terms of the economic opportunity and vitality it brings.[96] [97] However, with benefits come the costs associated with them. For Ann Arbor, the economic drivers from having the top US public research university, a local tech / knowledge hub, and high levels of education, comes with costs, as experienced by the economic segregation they foster.[98] [99] [100] [101] Call it a '*yin/yang*', double-edged sword dynamic.

Recasting U-M's Public Mission – National and State Policy Drivers

The impact of universities on urban areas is not new. As college enrollments rose steeply with the GI Bill and subsequent government support for university research after World War II, many existing universities, as with those in rustbelt city regions, expanded their campuses, while new ones, especially in the Sunbelt, were built to accommodate increased demand. [102] [103] [104] More recently, Federal place-based industrial policies link research universities with local industry clusters and their communities.[105]

Historically, in the early 1970s, three-quarters of state university education funding came from the State of Michigan and one quarter from tuition.[106] For the 1970-71 academic year, average in-state tuition and fees in the United States for one year at a public non-profit university was $394. [107] Voter referenda (e.g., California's Proposition 13 and Michigan's Headlee Amendments of 1978) passed that severely limited a state's ability to increase residential or corporate taxes to cover needed improvements or investment in public education. Similar measures were passed nationwide, including the Reagan tax cuts of the 1980s.

Figure 12. U-M General Fund Budget Trends - 1970 - 2022



SOURCE: U-M Office of Budget and Planning

In the 1980s, differences between Sunbelt and Rustbelt cities narrowed as deindustrialization, globalization, and federal cutbacks led local and state governments to embrace policy frameworks that elevated the role of markets while minimizing public sector roles. By 2012 the ratio between State funding and tuition was reversed, and Michigan's public universities got a greater share of their funding from tuition than public universities did in 44 other states.[108] Nationally, by 2020, in-state tuition and fees at public non-profit universities across the US had jumped 2,580% over what it was in 1970.[109] As shown in Figure 12, U-M went from 26% of its 1970 general fund derived from tuition and fees to 75% in 2022. [110]

Because of these economic dynamics, to increase the revenue from students U-M raised tuition and grew the share of out-of-state and international undergraduates. By 2012, they were over a third of the undergraduate population. By the fall of 2022 it was 49 percent, the highest compared to its public university peers.[111] U-M's undergrad tuition for in-state students increased from $13,000 in 2012 to $16,700 in the fall of 2022, a 29% increase, whereas out-of-state students went from $39,000 per year to $55,000, a 40% increase.[112] International graduate student growth in the STEM fields was even greater across the US, from 50 – 80% in most disciplines.[113] Efforts have started to retain this international skilled workforce in Michigan.[114]

Figure 13. New Central Campus Residential Development Project

U-M also grew the size of the Ann Arbor student population. From 2000 to 2022 the U-M increased overall enrollment at its Ann Arbor campus 35%, with 13,157 additional students.[115] [116] In 2004, the university's undergraduate student-to-bed ratio was 40 percent, but today it has dropped to just 28 percent.[117] The U-M has only just begun to invest in on-campus student housing development to support its growth, after actually reducing it in the previous decade.[118] [119] [120] See Figure 13 and Table 2.

In addition, U-M grew its research and medical programs. From 2000 to 2022, U-M's total Ann Arbor Campus and Hospital employment grew 72%, with 21,629 additional employees (faculty and staff). [121] [122] Since 2000, the U-M has increased the Ann Arbor student and employee population by nearly 35,000, while Ann Arbor's resident population grew only by 7,990, or 7%. By the Fall of 2023, student enrollment was up another 2%, to 52,065.[123] This means that U-M's growth has been driving a significant increase to local housing demand and hence, its price escalation. See Table 2.

Table 2. U-M Ann Arbor Campus and Hospital Student and Employment Growth

U-M - Ann Arbor Campus & Hospital			
Year Period	**Enrollment**	**Employment**	**Overall**
2000-2001	38,103	30,099	68,202
2021-2022	51,260	51,728	102,988
Difference:	13,157	21,629	34,786
% Growth:	35%	72%	51%

Nationally, universities have placed a greater emphasis on market-based income-generating ventures like grantsmanship, local technology transfer, intellectual property management, endowment funding campaigns, and real estate development.[124] From their very effective efforts, U-M has ranked No. 1 in research volume among U.S. public universities for 12+ years.[125] [126] [127]

Table 3. Top-10 University Endowments Ordered by Size

SCHOOL (STATE)	END OF FISCAL YEAR 2021 ENDOWMENT
Harvard University (MA)	$53.2B
Yale University (CT)	$42.3B
Stanford University (CA)	$37.8B
Princeton University (NJ)	$37.0B
Massachusetts Institute of Technology	$27.4B
University of Pennsylvania	$20.5B
University of Notre Dame (IN)	$18.4B
Texas A&M University	$16.9B
University of Michigan—Ann Arbor	$16.8B
Washington University in St. Louis (MO)	$13.7B

The 10 largest University endowment funds in the US in 2022 range from $14 billion to $53 billion.[128] [129] [130] The University of Michigan's long-term investment portfolio grew 2.2% in the 2022 fiscal year to a market value of $17.3 billion, following the previous year's explosive 40% growth.[131] [132] See Table 3.

Despite these funding and growth challenges, in the modern global knowledge economy attracting and retaining talent is now the most important mutual goal of universities and cities. They need to work together in the global competition for talent. Universities play an important role in the competitive profile of cities and regions since they concentrate human capital. The idealized university campus is increasingly resembling a city, with hotels and housing, restaurants, cafés, cultural and sports facilities, business space, and the traditional office and academic space.[133]

University-based Innovation Centers and Smart-Zone Districts

Universities have redefined a market-based public mission to include real estate development projects. For example, the University of Michigan Center for Innovation (UMCI) will be design led and built by the university to accommodate academic and community programs. Those programs include three distinct types of activity—graduate education, talent-based community development and community engagement—all in the service of economic development and job growth for Detroit.[134] The UMCI will provide downtown Detroit with a world-class research, education and entrepreneurship center designed to advance innovation and talent-focused community development.

The UMCI is funded with a $100 million donation from Stephen M. Ross and $100 million from the State of Michigan. An additional $50 million will be raised from donors, and Olympia Development is donating the four-acre property to U-M. Ground breaking, required for State funding begins in 2023.[135]

The Downtown Detroit Partnership will act as a fiduciary for the State funding, and administer those funds through a nonprofit subsidiary.

Figure 14. University of Michigan Center for Innovation in Detroit, MI (project site in orange)

Following the approval by the Board of Regents, the U-M will handle construction of the $250 million, 200,000-square-foot building to be located on Grand River near the I-75 / Fischer Freeway as shown in Figure 14. [136]

The University of Michigan's primary approach to fostering innovation centers began in 2002, when it assessed its low ranking in technology transfer across all metrics of patents, licensing, and commercializing promising research.[137] A National Advisory Board was convened which concluded that Ann Arbor lacked an effective private-public-academic platform outside the physical and intellectual capital of the university.[138] This platform was needed to create a nurturing environment to receive potential companies that could be spawned once the U-M Technology Transfer Office improved its processes to commercialize new technologies and create start-ups and early-stage companies.

The conclusion was to not create a distinct science and technology park affiliated with the university, but rather to build an innovation-supportive ecosystem within and around the City of Ann Arbor. In other words, Ann Arbor was ripe for development into an area of innovation but there needed to be a "SPARK".

In 2006, a new non-profit, SPARK, was created, funded, and led by a board of the key regional stakeholders from the private sector, public sector, the two regional universities (U-M and Eastern Michigan University), and Washtenaw Community College. The State of Michigan's initiatives on 'smart zones' known as a Local Development Finance Authority (LDFA), provided additional funding from a portion of the revenues generated from taxing real estate value growth. In 2017, this funding for the Ann Arbor smart-zone was renewed through 2032.[139] Since 2017, this LDFA raised $1.22 billion in private equity.[140]

Over the past decade, SPARK has enabled the development of the new venture community with the following results: 352 company growth projects, resulting in $1.6 billion in new capital investment and 9,000 new jobs; 732 start-ups employing 2,600 Full-time Employees (FTEs), assisted through intensive accelerator services; $56.6 million in investment from federal and state government in the community; and $982,000 in private equity investment in SPARK's family of early-stage companies. [141] [142]

In 2021 U-M startups raised $760 million in capital through investments, mergers and acquisitions and IPOs. In addition, U-M's Office of Innovation Partnerships team worked with U-M inventors on 438 new invention disclosures, 278 license and option agreements with industry, and the launch of 16 new startup companies. [143] [144]

For 2022, it was $786 million raised by start-ups, 580 invention disclosures, 311 license and option agreements, and 25 new start-ups being launched through U-M.

$1.5 billion in capital was raised and 41 new business started by U-M in the last two years alone. See Table 4.

Table 4. SPARK and the U-M New Ventures

SPARK and U-M New Venture Funding		
Period	**Capital Raised**	**Start-Ups**
SPARK - 2011 to 2020	$1.6B	732
U-M - 2021 to 2022	$1.5B	41

Ann Arbor along with the U-M, through all of these start-up and growth initiatives with students, faculty, researchers, medical professionals, R&D funding, U-M's endowment fund, U-M Innovation Partnerships, SPARK, the Tech Transfer Talent (T3N) Network, the U-M Accelerate Blue Fund, and State place-making investments, is incredibly well poised for their next phase of growth.

Understanding the 20 year housing price growth of U-M's official peer university cities, especially with the universities with the largest endowment funds that can invest in growth (see Table 2), should be instructive to the U-M and the Ann Arbor community for what might lay ahead.

The U-M is likely to engage corporate sponsors for the development of their technology research centers who expect 'new town' developments with employee housing, transit, walkability and mixed-use developments surrounding their research centers, rather than as car-dependent research campuses.

Benchmarking Ann Arbor with U-M's Official Peer University Cities

While Ann Arbor area housing costs have rapidly increased since 2000, there are many university cities across the US which have experienced even greater price escalation. Ann Arbor's cost of living is moderate comparatively, and hence is attractive to many technology and business services professionals that can take advantage of the preferred status that Ann Arbor holds, while even working remotely. [145]

It is important and critical for both the City of Ann Arbor, its residents, as well as the University of Michigan, to learn from the experiences of other university cities that have already dealt with even greater housing price escalation during the last 20 years of economic growth and development. This is also true for those cities with populations that have grown significantly, but have not experienced the rapid housing price escalation. On this basis, this effort can be considered a university-city benchmarking exercise.

In any benchmarking exercise, Ann Arbor and the University of Michigan community should always strive to become something more of itself, rather than a me-too mimicry of others. Lessons-learned is therefore the objective, rather than imitation, per se. The City of Ann Arbor cannot structurally replicate *any* of these other city's growth and home value pricing dynamics. However, they do provide ample data for comparative knowledge or understanding gained from what other cities have experienced.

Last year, in May of 2022, Ann Arbor SPARK released its own benchmarking report comparing Ann Arbor to a set of peer cities. Competitor regions were chosen because they appear in the same "best-of" lists as Ann Arbor and due to their inclusion in anecdotal comparisons to the Ann Arbor region.[146] SPARK selected each city / region and their metrics with input from community members, local CEOs, and a review of the existing benchmarking literature from local economic development agencies, think tanks, and academics. This is a sound approach to benchmarking, and has its framing done independent of the official peers declared by the University of Michigan.

With the U-M as the major employer in Ann Arbor and Washtenaw County, and as the main driver of economic development, framing a benchmarking exercise based on the U-M's "Official Peer" universities and their city locations, should yield insights on the continued impact of the U-M on the Ann Arbor area. In addition, this benchmarking exercise will seek to categorize U-M "Official Peer" university cities based on their housing pricing trends. Through this approach, lessons-learned relevant to Ann Arbor with regard to the U-M's economic development trajectory can be investigated.

The Appendix Table 22 lists the 24 US universities that the University of Michigan officials in the Office of Budget and Planning have stated are *"Official Peer"* universities.

This university-city data was consolidated based on their Zillow Home Value Index as well as US Census population size and density. Thresholds were established to identify university cities in these ranges:

1. Ann Arbor versus Peer University Cities above the Area Median Luxury Price Threshold. [147]
2. Ann Arbor versus Peer University Cities below the Area Median Luxury Price Threshold
    - Higher than Ann Arbor's Zillow Home Value Index
    - Lower than Ann Arbor's Zillow Home Value Index and Higher than the US, Nationally
3. Lower than the US, National Zillow Home Value Index
4. Ann Arbor Home Value Index Growth versus Additional University Cities
    - Research Triangle Park
    - Additional ones in the Top-40 US News Rankings (2022)
    - University cities comparable in scale to Ann Arbor

Ann Arbor versus Peer University Cities above the Area Median Luxury Price Threshold

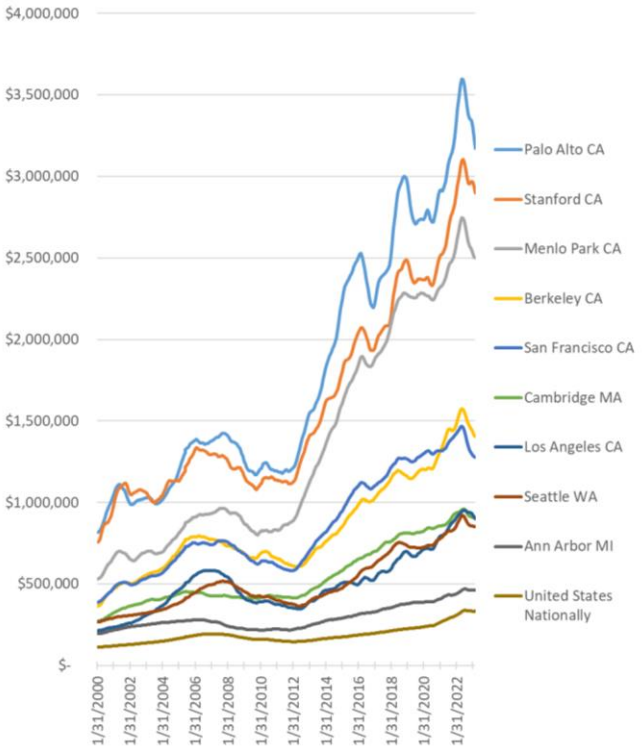
U-M Peer University cities above Ann Arbor's area median price threshold of luxury home sales occur in three major groups of Zillow Home Value Index clusters.

Group 1: Very extreme price escalations, averaging over 325% over the past 20 years, have occurred around Stanford University, for Palo Alto, Stanford, and Menlo Park, California. Combined they are about the same population as Ann Arbor, and are at or below Ann Arbor's population density. See Figure 15 and Table 5.

Group 2: UofC Berkeley and UofC San Francisco are in a middle range for this group of university cities. While Berkeley is comparable in population size to Ann Arbor, both it and San Francisco have two to three times the density.

Group 3: The next group includes Cambridge, Massachusetts (Harvard / M.I.T.), Los Angeles (UCLA / University of Southern California) and Seattle (University of Washington). Cambridge is close in population to Ann Arbor, but over four times the density. Los Angeles and Seattle, much larger cities, have 2 - 3 times the density.

Figure 15. Zillow Home Value Index 2000 – 2022 for Ann Arbor versus U-M Peer University Cities, above the Area Median Luxury Price Threshold



Notice Ann Arbor's comparatively marginal home value growth over this 20-year period. Given the high portion of luxury homes on the Ann Arbor market, understanding how these cities have worked to address housing affordability and supply challenges, given their extremely high rate of price escalation, should provide important lessons learned for Ann Arbor and the U-M.

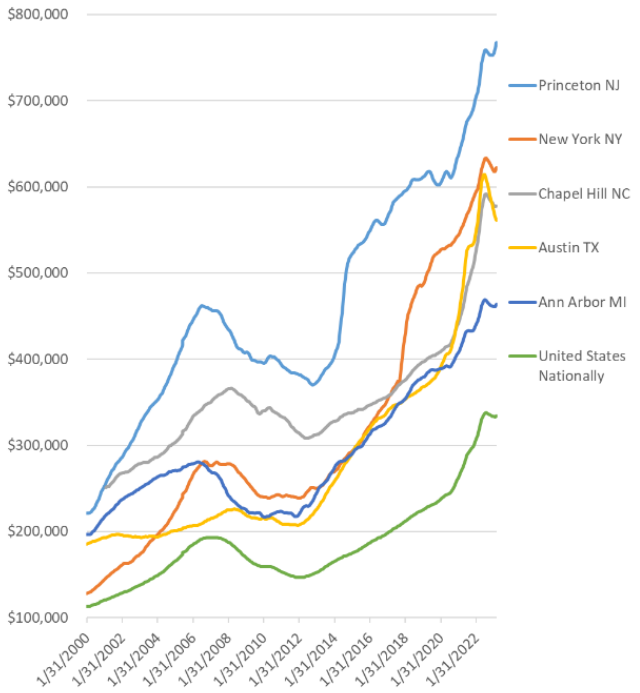
Table 5. Ann Arbor versus U-M Official Peer University Cities above the Area Median Luxury Price Threshold

City	State	Top Tier University	Zillow Home Value Index March 31, 2023	Index Growth Rate 2000 - 2022	Population Growth Rate 2000 - 2020	Population 2000 (1,000s)	Population 2020 (1,000s)	Population Density 2022 # / Square-mile
Palo Alto	CA	Stanford	$3,171,651	309%	17%	59	69	2,697
Stanford	CA	Stanford	$2,897,766	293%	59%	13	21	4,975
Menlo Park	CA	Stanford	$2,501,483	381%	9%	31	34	3,271
Berkeley	CA	University of California Berkeley	$1,403,186	297%	16%	103	119	10,755
San Francisco	CA	University of California San Francisco	$1,277,409	235%	12%	777	870	18,790
Cambridge	MA	Harvard & Massachusetts Institute of Technology	$908,129	235%	16%	102	118	18,521
Los Angeles	CA	University of California Los Angeles & University of Southern California	$901,291	337%	5%	3,700	3,890	8,485
Seattle	WA	University of Washington	$850,175	223%	31%	564	738	8,775
Ann Arbor	MI	University of Michigan	$463,726	135%	8%	115	124	4,392
United States			$334,269	196%	17%	282,200	329,500	
Ann Arbor >		Averages	$1,597,202	272%	19%	607	665	8,962

Ann Arbor versus Peer University Cities below the Area Median Luxury Price Threshold Higher than Ann Arbor's Zillow Home Value Index

U-M Peer university cities below Ann Arbor's area median price threshold of luxury home sales, and still above Ann Arbor's Zillow Home Value Index level occur in two major groups.

Figure 16. Zillow Home Value Index 2000 – 2022 for Ann Arbor versus U-M Peer University Cities below the Area Median Luxury Price Threshold



Group 1: Princeton, New Jersey, is just under Ann Arbor's median luxury home price threshold. While far smaller in population size to Ann Arbor, it has grown at a much higher rate (129% versus 8%), and has 50% more density.

Group 2: What is surprising is that New York City (Columbia and New York University), is comparable in home values to Chapel Hill (University of North Carolina) and Austin (University of Texas). Chapel Hill and Austin have much lower density than Ann Arbor, but experienced significantly higher population growth since 2000, 28% and 43%, respectively.

These cities, with their relatively lower home value price escalation than those above Ann Arbor's median luxury price threshold, may reflect the near-term housing price growth dynamics Ann Arbor will yet experience. They are closer to Ann Arbor's immediate growth path, with home values increasing in a more comparable, but higher, fashion with Ann Arbor's. The NYC and Austin populations are considerably higher, of course.

The housing price escalations that Chapel Hill and Austin experienced were accelerated through COVID, as prior to 2020, they were more closely tracking to Ann Arbor's home value index. It may be that those households relocating throughout and after COVID, based on opportunities for remote work, were favoring Chapel Hill and Austin, over cities such as Ann Arbor. Again, housing challenges and public, private partnership engagements with their area universities may also provide critical lessons-learned.

Table 6. Ann Arbor versus U-M Official Peer University Cities below the Area Median Luxury Price Threshold and above the US Home Value Index across Key Metrics

City	State	Top Tier University	Zillow Home Value Index March 31, 2023	Index Growth Rate 2000 - 2022	Population Growth Rate 2000 - 2020	Population 2000 (1,000s)	Population 2020 (1,000s)	Population Density 2022 # / Square-mile
Princeton	NJ	Princeton University	$767,477	241%	129%	14	31	6,678
New York	NY	Columbia & New York University	$622,280	385%	10%	8,000	8,777	26,261
Chapel Hill	NC	University of North Carolina at Chapel Hill	$577,881	129%	28%	48	61	2,826
Austin	TX	University of Texas at Austin	$561,613	212%	43%	675	963	3,020
Ann Arbor	MI	University of Michigan	$463,726	135%	8%	115	124	4,392
United States			$334,269	196%	17%	282,200	329,500	
Ann Arbor ≥		Averages	$598,595	221%	43%	1,770	1,991	8,635

Lower than Ann Arbor's Zillow Home Value Index and Higher than the US, Nationally

Charlottesville, Virginia (University of Virginia) is just below Ann Arbor's Home Value Index, with comparable density, but about 40% the population. See Figure 17 and Table 7.

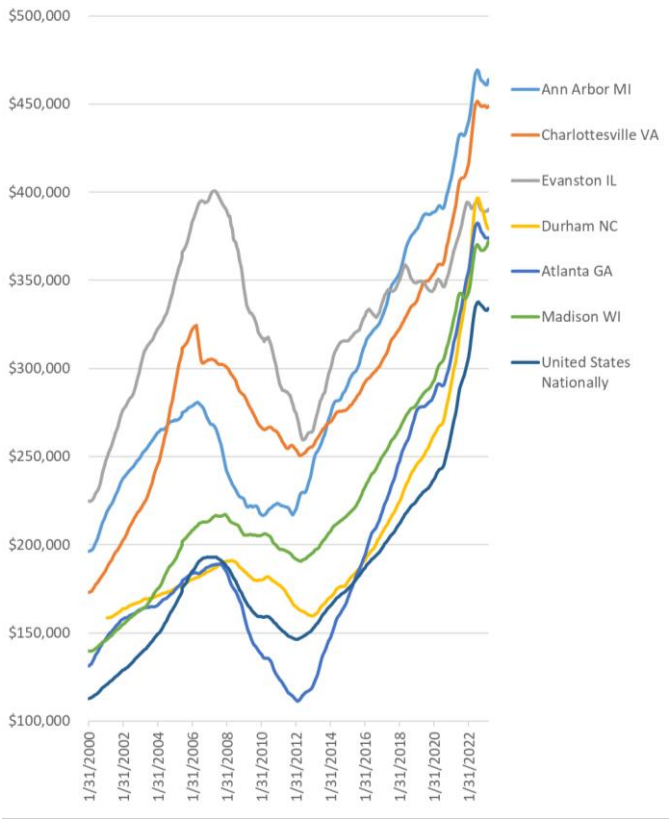
Evanston, Illinois (Northwestern), a suburb of Chicago is clustered with Durham, North Carolina (Duke), Atlanta, Georgia (Emory) and Madison, Wisconsin (University of Wisconsin).

Evanston has not experienced the significant housing price escalation, with prices growing only 73% since 2000. It is also only 57% the population size of Ann Arbor. Chicago's Home Value Index is significantly below the US Index, nationally, potentially thereby also reducing Evanston's by its immediacy.

Durham and Madison average almost 125% larger in population than Ann Arbor. Ann Arbor's density is 2.8 times (280%) that of Durham's, and about 30% greater than Madison's. However, their population growth since 2000 were 51% and 28%, respectively.

Atlanta, with a larger population, also grew at a much faster rate (19%) than Ann Arbor (8%).

Figure 17. Zillow Home Value Index 2000 - 2022 Ann Arbor versus U-M Peer University Cities below Ann Arbor's Home Value Index and above the US Index



Durham, North Carolina and Madison, Wisconsin are both good candidates for further benchmarking Ann Arbor. While Durham only experienced a 39% increase in home values since 2000, Madison's increased by 163%, even greater than Ann Arbor's 135%.

Since Chapel Hill, Durham and Raleigh, North Carolina define the Research Triangle Park technology campus, they will be compared to Ann Arbor jointly, as shown in Figure 19 and Table 9, below.

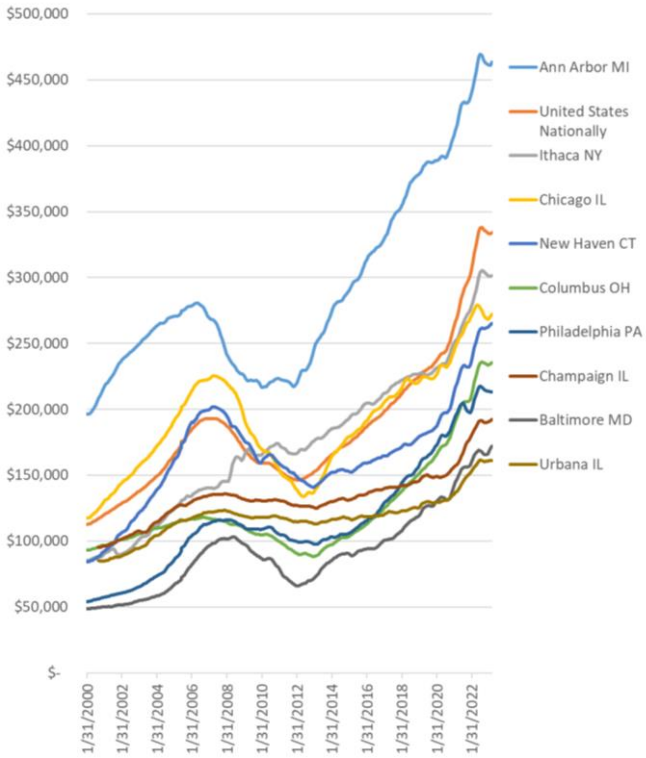
Table 7. Ann Arbor versus U-M Official Peer University Cities below the Ann Arbor Home Value Index and above the US Home Value Index across Key Metrics

City	State	Top Tier University	Zillow Home Value Index March 31, 2023	Index Growth Rate 2000 - 2022	Population Growth Rate 2000 - 2020	Population 2000 (1,000s)	Population 2020 (1,000s)	Population Density 2022 # / Square-mile
Ann Arbor	MI	University of Michigan	$463,726	135%	8%	115	124	4,392
Charlottesville	VA	University of Virginia	$448,709	160%	12%	41	46	4,315
Evanston	IL	Northwestern University	$390,159	73%	6%	74	79	10,013
Durham	NC	Duke University	$379,313	39%	51%	189	284	1,134
Atlanta	GA	Emory & Georgia Institute of Technology	$374,081	185%	19%	419	500	3,612
Madison	WI	University of Wisconsin, Madison	$372,275	163%	28%	210	269	3,391
United States			$334,269	196%	16.8%	282,200	329,500	
Ann Arbor ≥		Averages	$404,710	126%	21%	175	217	4,476

Lower than the US, National Zillow Home Value Index

University-cities with home values lower than the national index beg the question as to why home values are so much lower. Figure 18.

Figure 18. Zillow Home Value Index 2000 - 2022, Ann Arbor versus U-M Peer University Cities below the US Home Value Index.



For example, Columbus, Ohio appears in the Top-10 preferred cities listings maintained by Ann Arbor SPARK, but that was only for remote workers. So does Champaign, Illinois, but only for a Top-10 *'best value'* college town.

Ithaca, New York (Cornell), New Haven, Connecticut (Yale), and Urbana-Champaign, Illinois (University of Illinois) are primarily university towns in ways similar to Ann Arbor without other major employers, but are each a greater distance from any metropolitan areas.

Ithaca's median home sale price is 20% lower than nationally, with an overall cost of living just 1% higher than the national average.[148]

New Haven, is close to Ann Arbor in population size and 20 year growth rate, yet Ann Arbor is 67% the density of New Haven. New Haven's median home sale price is 24% lower than the national average, with an overall cost of living that is 13% higher than the national average.[149] In addition, New Haven has a much lower homeownership rate (28 percent) than its suburbs (73 percent), and is known for racial segregation. [150] However, Washtenaw is 43% of New Haven County's population.

For Urbana-Champaign, the median home sale price is more than 50% lower than the national average, with an overall cost of living that is 11% lower than the national average.[151]

The far greater population sizes of Chicago, Columbus, Philadelphia and Baltimore effectively rule them out as direct benchmarks with Ann Arbor. However, Columbus does have a *comparable density.*

Table 8. Ann Arbor versus U-M Official Peer University Cities below the US Home Value Index across Key Metrics

City	State	Top Tier University	Zillow Home Value Index March 31, 2023	Index Growth Rate 2000 - 2022	Population Growth Rate 2000 - 2020	Population 2000 (1,000s)	Population 2020 (1,000s)	Population Density 2022 # / Square-mile
Ann Arbor	MI	University of Michigan	$463,726	135%	8%	115	124	4,392
United States			$334,269	196%	17%	282,200	329,500	
Ithaca	NY	Cornell University	$301,608	254%	10%	29	32	5,835
Chicago	IL	University of Chicago	$272,270	128%	-5%	2,896	2,742	12,060
New Haven	CT	Yale University	$265,230	212%	8%	124	134	7,348
Columbus	OH	Ohio State University	$235,471	150%	27%	715	906	4,116
Philadelphia	PA	University of Pennsylvania	$213,244	294%	6%	1,510	1,600	11,937
Champaign	IL	University of Illinois	$192,471	100%	26%	70	88	3,964
Baltimore	MD	Johns Hopkins University	$171,867	240%	-10%	649	583	7,428
Urbana	IL	University of Illinois	$161,404	88%	3%	37	38	3,326
Ann Arbor ≥		Averages	$253,032	178%	8%	683	694	6,712

Ann Arbor Home Value Index Growth versus Additional University Cities

This section reviews the Zillow Home Value Index trends for additional university cities beyond the U-M Official Peer list. These will include the Research Triangle Park, with Raleigh with North Carolina State University, as well as additional university cities in the 2022 Top-40 US News national university rankings.

Research Triangle Park

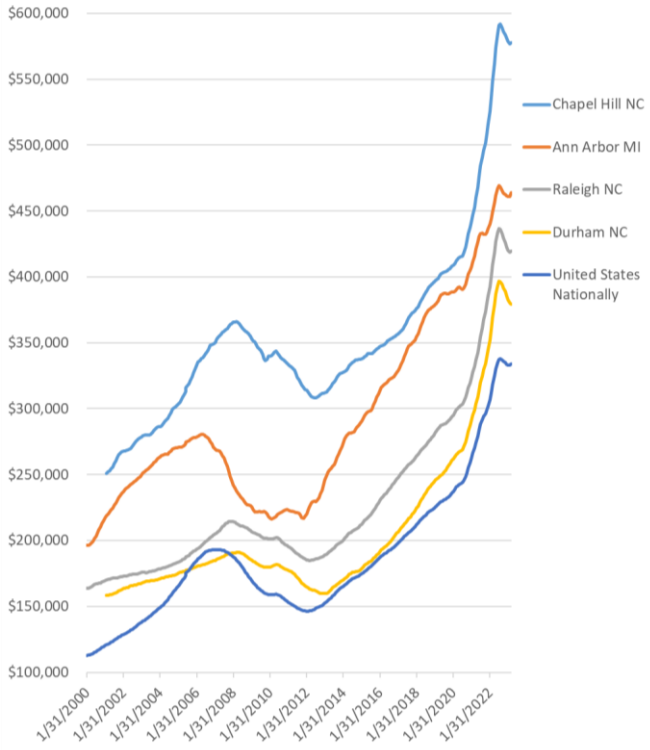
What is interesting in considering Raleigh, NC, is that as a Top-10 ranked college town,[152] it has experienced much faster growth (61%) over the past 20 years, with a much lower density than Ann Arbor. See Figure 19 and Table 9.

However, Chapel Hill (University of North Carolina) has a much higher increase in home values through COVID, as previously noted.

Like Ann Arbor, these cities consistently are ranked in the Top-10 preferred cities, including most educated, best-value colleges, top public universities, and best places to live.[153]

Research Triangle Park and the surrounding area has a diverse range of advanced technology employers including companies such as IBM, SAS Institute, Cisco Systems, NetApp, Red Hat, EMC Corporation, and Credit Suisse First Boston. Area life science companies include BASF, Biogen, GlaxoSmithKline, Merck, Novo Nordisk, Novozymes, and Pfizer.

Figure 19. Zillow Home Value Index 2000 – 2022, Ann Arbor versus Research Triangle Park University Cities



These three university cities around the Research Triangle Park provide a good basis for further benchmarking, as Ann Arbor pursues economic development based on the its local technology hub already developing in high tech domains such as semiconductors, electric vehicles, and healthcare.

Table 9. Ann Arbor versus Research Triangle Park University Cities across Key Metrics

City	State	Top Tier University(s)	Zillow Home Value Index March 31, 2023	Index Growth Rate 2000 - 2022	Population Growth Rate 2000 - 2020	Population 2000 (1,000s)	Population 2020 (1,000s)	Population Density 2022 # / Square-mile
Chapel Hill	NC	University of North Carolina at Chapel Hill	$577,881	129%	28%	48	61	2,826
Ann Arbor	MI	University of Michigan	$463,726	135%	8%	115	124	4,392
Raleigh	NC	North Carolina State University (#72)	$419,719	158%	61%	290	467	2,963
Durham	NC	Duke University	$379,313	39%	51%	189	284	1,134
United States			$334,269	196%	17%	282,200	329,500	
Ann Arbor >		Averages	460,160	115%	37%	160	234	2,829

Ann Arbor versus Additional University Cities in the Top-40 US News Rankings, 2022

A number of additional university cities in the Top-40 of the 2022 US News and World Report National University rankings have Zillow Home Value Index levels at or above the current Ann Arbor area median selling price of luxury homes. These include the University of California campuses in Santa Barbara, Irvine, San Diego and Davis, California, as well as Boston College and Tufts University in the Boston area.

Since such higher home value university cities have already been evaluated, based on U-M Official Peers, we will focus on the university cities not yet assessed. These include Providence, Rhode Island; Gainesville, Florida; Houston, Texas; Winston-Salem, North Carolina; Pittsburgh, Pennsylvania, South Bend, Indiana; and Saint Louis, Missouri. See Tables 10 and 11.

Table 10. Ann Arbor versus Additional University Cities in the Top-40 US News University Rankings

City	State	Top Tier Universities	Zillow Home Value Index March 31, 2023
Santa Barbara	CA	University of California, Santa Barbara	$1,607,903
Newton	MA	Boston College	$1,285,751
Irvine	CA	University of California, Irvine	$1,239,792
Pasadena	CA	California Institute of Technology	$1,066,851
San Diego	CA	University of California, San Diego	$893,457
Davis	CA	University of California, Davis	$848,428
Medford	MA	Tufts University	$719,208
Ann Arbor	**MI**	**University of Michigan**	**$463,726**
Providence	RI	Brown University	$343,564
United States			**$334,269**
Gainesville	FL	University of Florida	$285,603
Houston	TX	Rice University	$261,071
Winston-Salem	NC	Wake Forest University	$232,856
Pittsburgh	PA	Carnegie Mellon University	$219,162
South Bend	IN	University of Notre Dame	$161,417
Saint Louis	MO	Washington University in St. Louis	$155,721

These additional university cities are all either at or below the US Home Value Index. Providence, Gainesville, Winston-Salem and South Bend are all of a similar size to Ann Arbor. However, Providence's population density is more than twice Ann Arbor's and Winston-Salem's is less than ½ Ann Arbor's.

Providence is a major industrial, commercial, medical, and financial center for New England with an economy based on manufacturing and service enterprises.[154]

Gainesville's largest employers are the University of Florida, the Shands Healthcare System and city government, yet without a major technology industry sector.

Winston-Salem's major employers are in healthcare, financial services, tobacco manufacturing, government & higher education.

South Bend's economy primarily consists of education, wholesale & retail trade, healthcare and government. Notre Dame is the city's largest employer and has a significant impact on the local economy. Memorial Health Systems is the South Bend area's second largest employer.

Figure 20. Zillow Home Value Index 2000 – 2022, Ann Arbor versus Select Top US News Ranked University Cities

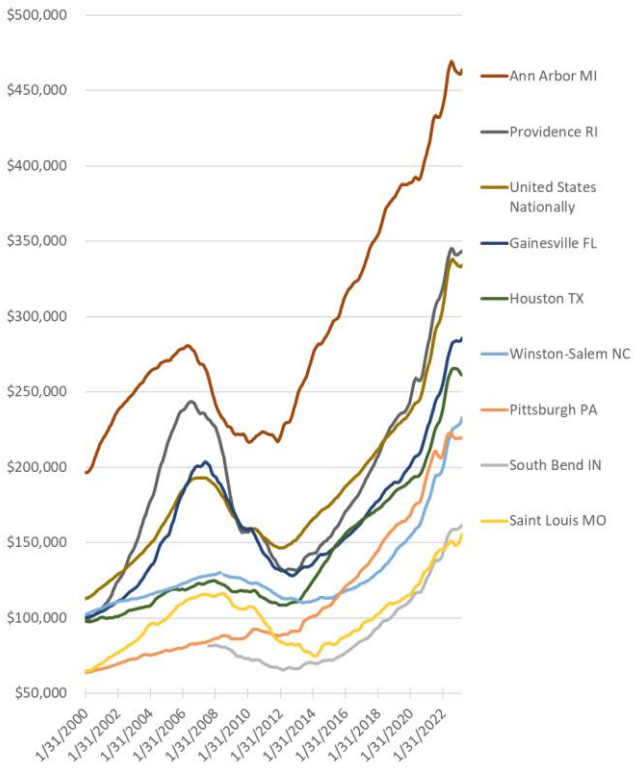


Table 11. Ann Arbor versus Select Top US News Ranked University Cities across Key Metrics

City	State	Top Tier Universities	Zillow Home Value Index March 31, 2023	Index Growth Rate 2000 - 2022	Population Growth Rate 2000 - 2020	Population 2000 (1,000s)	Population 2020 (1,000s)	Population Density 2022 # / Square-mile
Ann Arbor	MI	University of Michigan	$463,726	135%	8%	115	124	4,392
Providence	RI	Brown University	$343,564	248%	9%	174	190	10,262
United States			$334,269	196%	17%	282,200	329,500	
Gainesville	FL	University of Florida	$285,603	184%	19%	118	140	2,234
Houston	TX	Rice University	$261,071	171%	16%	1,977	2,300	4,743
Winston-Salem	NC	Wake Forest University	$232,856	123%	24%	202	249	1,902
Pittsburgh	PA	Carnegie Mellon University	$219,162	243%	-9%	334	303	5,471
South Bend	IN	University of Notre Dame	$161,417	95%	-4%	108	104	2,637
Saint Louis	MO	Washington University in St. Louis	$155,721	129%	-13%	347	301	5,158
Ann Arbor ≥		Averages	$265,390	166%	6%	422	464	4,600

University Cities Comparable in Scale to Ann Arbor

Table 12, below, aggregates the data across a larger set of top national universities, for cities within one-half to two times the Ann Arbor population in 2000 and density in 2022. The data provide an ability to understand the growth implications for home value increases, but with a set of more similarly sized and scaled university cities to compare with Ann Arbor.

Table 12. University Cities of Similar Size and Density of Ann Arbor, ordered by population growth rate

City	State	Top Tier Universities	Zillow Home Value Index March 31, 2023	Index Growth Rate 2000 - 2022	Population Growth Rate 2000 - 2020	Population 2000 (1,000s)	Population 2020 (1,000s)	Population Density 2022 # / Square-mile
Palo Alto	CA	Stanford	$3,171,651	309%	17%	59	69	2,697
Santa Barbara	CA	University of California, Santa Barbara	$1,607,903	274%	-1%	90	89	4,547
Newton	MA	Boston College	$1,285,751	203%	6%	84	89	4,777
Irvine	CA	University of California, Irvine	$1,239,792	314%	109%	147	306	4,689
Pasadena	CA	California Institute of Technology	$1,066,851	329%	3%	134	138	6,040
Boulder	CO	University of Colorado, Boulder	$987,815	271%	11%	94	105	3,948
Davis	CA	University of California, Davis	$848,428	232%	12%	59	67	6,785
Medford	MA	Tufts University	$719,208	232%	8%	56	60	8,097
Ann Arbor	MI	University of Michigan	$463,726	135%	8%	115	124	4,392
Raleigh	NC	North Carolina State University	$419,719	158%	61%	290	467	2,963
Madison	WI	University of Wisconsin, Madison	$372,275	163%	28%	210	269	3,391
Gainesville	FL	University of Florida	$285,603	184%	19%	118	140	2,234
New Haven	CT	Yale University	$265,230	212%	8%	124	134	7,348
Champaign	IL	University of Illinois at Urbana-Champaign	$192,471	100%	26%	70	88	3,964
South Bend	IN	University of Notre Dame	$161,417	95%	-4%	108	104	2,637
Ann Arbor ≥		Averages:	$872,523	214%	21%	117	150	4,567

The average home value for this set of university cities is $872,500, with an average growth of that index over the past 20 years of 214%. This compares to Ann Arbor's lower home value index of $463,726 for March of 2023, and the 135% increase, also lower, to it over the past 20 years.

Luxury priced cities – Across the resulting list, there are cities experiencing extreme home pricing pressures, well above Ann Arbor's luxury home price threshold, such as Palo Alto, Santa Barbara, Irvine, Pasadena and Davis, California; as well as Newton and Medford, Massachusetts. So, Ann Arbor has been relatively protected from the much greater home value growth of other similar cities in population size and density located in major economic centers of the US.

Lower home value university cities - The following university cities would be good to analyze more for lessons learned, as they developed in ways that did not escalate home value growth, as least not as severely as the luxury priced cities.

Cities with lower home values – These include Raleigh, NC; Madison, WI; Gainesville, FL; New Haven, CT; Champaign, IL; and South Bend, IN. Their 2022 home value index ranges from $419,700 to $161,400, compared with $463,700 for Ann Arbor. These cities were previously reviewed in the home value breakdowns in previous sections.

Cities with lower home values and higher population growth rates – These include Raleigh, NC; Madison, WI; Champaign, IL; and Gainesville, FL. They all have much higher population growth rates, from between 19 – 61%, compared to Ann Arbor's 8% growth over the past 20 years. These cities were previously reviewed in the home value breakdowns in earlier sections. Higher growth rates for these cities did not mean higher home value increases, beyond what Ann Arbor has experienced. Each have lower densities.

Cities with lower home value index growth – These include Champaign, Illinois and South Bend, Indiana. Both are very distant from a large metropolitan area. Their 20-year home value index growth is 100% and 95%, respectively, compared with Ann Arbor's index growth of 135%. These warrant further discussion.

Champaign, Illinois, a much smaller city of 88,000, is adjacent to Urbana, a city of 38,681, which together makes them comparable in size to Ann Arbor. Its largest employer is the University of Illinois, with 14,817 employees, and a number of large firms have offices there, including Abbott, Archer Daniels Midland (ADM), Caterpillar, John Deere, Dow Chemical Company, IBM, and State Farm.

The total employment base of the Urban Champaign MSA is about 119,000, compared with the Ann Arbor area's 230,000, based on US Bureau of Labor Statistics monthly averages for 2023.

South Bend, Indiana, at 104,000 is not too dissimilar in population from Ann Arbor, but at a much lower density. Its largest employers are Notre Dame and the area hospitals. The South Bend area's total employment through 2023, to date, is around 139,000.

Both of these university cities are not too dissimilar from Ann Arbor. Mainly university and health care based. Neither, however, are viewed as fostering a technology-hub, on the same basis as Ann Arbor. They are further isolated from a major metropolitan area, and do not have the same pricing pressures from employment growth.

Urbana Champaign averaged 9% employment growth over the past 10 years, compared to the Ann Arbor area's 12% employment growth, and South Bend's 3% over the same period.

Ann Arbor Housing Affordability versus other University Metro Regions

Ann Arbor's housing affordability can be assessed with the Affordability Index from the National Association of Realtors. See Table 13.[155] [156] The Housing Affordability Index measures whether or not a median family income is enough income to qualify for a mortgage loan on a median-priced, existing single-family home at the metropolitan statistical area level (MSA), based on the price and income data.

To interpret the indices, a value of 100 means that a family with the median income has exactly enough income to qualify for a mortgage on a median-priced home. An index above 100 signifies that family

earning the median income has more than enough income to qualify for a mortgage loan on a median-priced home, assuming a 20 percent down payment, with the monthly principal and interest payments not exceeding 25 percent of the median family monthly income.

Figure 21 presents the Affordability Index over the past four years for Ann Arbor and select peer university-city municipal areas.

Champaign Urbana and South Bend housing affordability is the highest.

Table 13. Single Family Homes Affordability Index for Select Metropolitan Areas

Metropolitan Statistical Area	Housing Affordabilty Index				
	2019	2020	2021	2022	Average
Champaign-Urbana, IL	287	294	280	221	270
South Bend-Mishawaka, IN-MI	267	275	263	191	249
New Haven-Milford, CT	201	203	187	138	182
Ann Arbor, MI	188	205	182	139	179
Madison, WI	172	186	159	127	161
Raleigh, NC	171	184	161	107	156
Gainesville, FL	175	170	163	100	152
Durham-Chapel Hill, NC	149	155	143	102	137
Austin-Round Rock, TX	157	163	132	94	136
Boston-Cambridge-Newton, MA	124	128	115	88	114
New York-Jersey City-White Plains, NY-NJ	121	122	87	72	101
Boulder, CO	99	105	97	72	93
San Francisco-Oakland-Hayward, CA	71	75	66	47	65
San Jose-Sunnyvale-Santa Clara, CA	61	65	58	42	56
Los Angeles-Long Beach-Glendale, CA	61	66	55	43	56

Ann Arbor and New Haven are more affordable on this basis than all of the remaining metro areas charted, including Madison, and the Research Triangle of Raleigh, Durham and Chapel Hill.

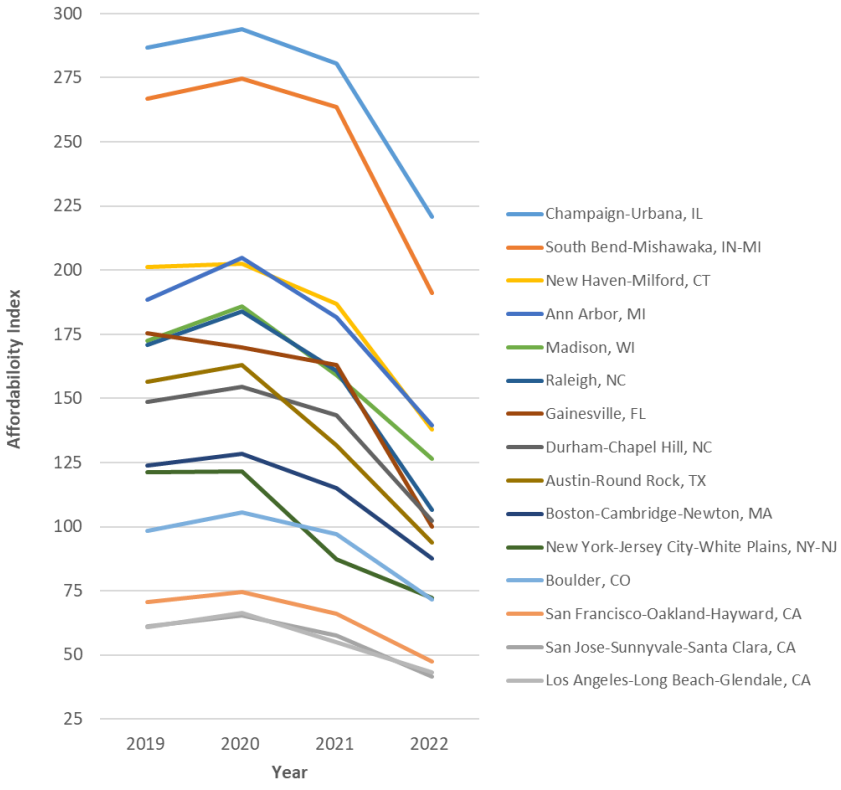
It should not be a surprise that these metros are more affordable than the Boston, New York City, Boulder, San Francisco, San Jose and Los Angeles metro areas. Housing affordability is the lowest for these metro areas.

However, all of the relatively affordable metros of Champaign-Urbana, South Bend, New Haven, Ann Arbor, Madison, Research Triangle Park cities, and Gainesville, are in steep decline for affordability.

Notice the steep decline of affordability for the Austin, TX metro, which used to be more affordable than Durham yet by 2022 was close to the Boston metro's affordability, which are both now below the 100 index level for affordability.

So, Ann Arbor and the University of Michigan may still have time to address this declining trend in housing affordability, but we need to act now.

Figure 21. Affordability Index of Existing Single-Family Homes, 2019 – 2022 Ann Arbor versus Select Metropolitan Areas



Discussion

Richard Florida's seven key pillars for addressing the New Urban Crisis are targeted to local governments, but some are also key priorities for the U-M to consider for their long range planning with Ann Arbor:[157] [158]

1. Reform zoning and building codes, as well as tax policies, to ensure that the clustering force works to the benefit of all.
2. Invest in the infrastructure needed to spur density and clustering and limit costly and inefficient sprawl.
3. Build more affordable housing in central locations.
4. Expand the middle class by turning low-wage service jobs into family-supporting work.
5. Tackle concentrated poverty head-on by investing in people and places
6. Engage in a global effort to build stronger, more prosperous cities in rapidly urbanizing parts of the emerging world.
7. Empower communities and enable local leaders to strengthen their own economies and cope with the challenges of the New Urban Crisis.

In terms of the 'knowledge economy', Ann Arbor is very unlike the super-star cities that generate the greatest levels of innovation, attract the largest shares of global capital and investment, have huge concentrations of leading-edge finance, media, entertainment, and tech industries, and are home to a disproportionate share of the world's talent. [159] Florida determined that 80% of luxury home owners in the United States were in these super-star cities of New York, Los Angeles, and San Francisco metro areas.

Housing price escalation in the cities has reached heights that efforts to address are being addressed by measures such as the $1+ billion housing measure passed by Santa Clara, CA voters in 2016. Unfortunately, Santa Clara, as well as Ann Arbor, have challenges in spending the millage funding.[160] [161] [162] [163] There are also local government challenges to universities campus expansion plans that seek on-campus housing to match every increase in student enrollments and university employees. Stanford University is being challenged on this basis by their County,[164] and UofC Berkeley had to take a comparable City of Berkeley measure to their State Legislature for resolution.[165] [166]

Across the US, nationally, 56% of zip codes have median home values of less than $200,000, and roughly 15 percent have median home values of less than $100,000. Think of Urbana Champaign (University of Illinois), Baltimore (Johns Hopkins), South Bend (Notre Dame) and St Louis (Washington University). All very competitive Universities.

However, the likelihood that U-M would down play their development rivalry with other top 'Official University Peers' that have excessively high housing value escalations, such as Princeton (Princeton, NJ), MIT (Cambridge, MA), Harvard (Cambridge, MA) and Stanford (Stanford, CA), is remote. Even U-M's 25th place in the 2022 US News rankings was tied with NYU (New York, NY), UCLA (Los Angeles), and the University of Virginia (Charlottesville, VA).

Official Peer university cities with comparable home value and greater growth than Ann Arbor include Charlottesville, VA (University of Virginia), Durham NC (Duke), and Madison, WI (University of Wisconsin). They all were similar in population size and home value growth, but at much higher population growth rates over the past 10 years (see Table 17 in the Appendix).

The Ann Arbor Area's Economic Basis

Ann Arbor is similar to other mid-size university cities that are dominated by the university and healthcare employers. Table 13 shows the Ann Arbor area's top employers ordered by employment size.

The employment breakdown by industry sector for the Ann Arbor Area is shown in Table 14.[167] The four largest sectors, (1) Government, (2) Professional and Business Services, (3) Education and Health Services, and (4) Trade, Transportation and Utilities, which make up 77% of the area employment (Table 15).

Table 14. Ann Arbor Area Largest Employers

Company Name	City	Type of Organization	# of Employees*
University of Michigan	Ann Arbor	Public university and health care system	34,800 – 34,899
Trinity Health Michigan (multiple locations)	Ann Arbor Area	Health care system	5,900 – 5,999
VA Ann Arbor Healthcare System	Ann Arbor	Health care system	3,500 – 3,599
Ann Arbor Public Schools	Ann Arbor	Public school district	2,500 – 2,599
IHA Health Services Corp.	Ann Arbor	Multi-specialty physician group practice	1,600 – 1,699
Toyota Motor North America R&D	Ann Arbor/ Saline	OEM research	1,400 – 1,499
Eastern Michigan University	Ypsilanti	Public university	1,300 – 1,399
Washtenaw County Government	Ann Arbor	County government	1,200 – 1,299
Faurecia Interior Systems (Forvia)	Saline	Automotive component manufacturer	1,100 – 1,199
Thomson Reuters	Ann Arbor	Software and IT services for professionals	1,100 – 1,199
Domino's Pizza	Ann Arbor	Corporate headquarters	1,100 – 1,199

*SPARK Data, Ann Arbor, MI (January 2023)

Table 15. Ann Arbor Employment by Sector - June 2023

Ann Arbor Area Employment by Major Sector	1,000s	%
Government	85.3	37%
Professional and Business Services	33.0	14%
Education and Health Services	30.8	13%
Trade, Transportation, and Utilities	28.3	12%
Leisure and Hospitality	16.9	7%
Manufacturing	12.7	6%
Financial Activities	7.1	3%
Other Services	6.1	3%
Information	5.7	2%
Mining, Logging, and Construction	5.0	2%
Total Nonfarm (1,000s)	**230.9**	**100%**

Government is the largest employment sector, at 37%, and is composed of Federal, State and local government entities.

Professional and Business Services at 14% consists of Professional, Scientific and Technical Services; Management; and Administrative and Support and Waste Management Services.

Education and Health Services, at 13% is self-described, including the post-secondary, secondary and other schools, as well as the health care organizations of hospitals and clinics.

Trade, Transportation and Utilities, at 12% of the area workforce includes Wholesale Trade, Retail Trade, Transportation and Warehousing, and Utilities.

The Professional and Business Services sector is also significant for its higher incomes of those employed in this sector.

Table 16, below, breaks-down incomes by major occupation for the Ann Arbor area, ordered by the upper quartile (75th percentile) income thresholds.[168] It also provides the 50th percentile and 90th percentile thresholds to depict the dispersion of incomes, and to highlight the upper 10%.

Management, Legal, Computer & Math, Healthcare & Technical, Business & Finance, and Science occupations have higher incomes in the Ann Arbor area. These higher income sectors represent 34% of the Ann Arbor Area employment.

The U-M's Research Seminar in Quantitative Economics (RSQE) 2023 – 2025 Economic Outlook for Washtenaw County forecasted, with data from 2022, that County employment is expected to return to its pre-pandemic level by Q2 2024.[169] RSQE also forecasted continued decline in the County's automotive manufacturing sector. Service industry jobs lost during the pandemic (i.e., administrative support, retail, food prep and serving, healthcare support, and personal care services, etc.) are not expected to fully recover in Washtenaw County by the end of 2025.

Industries employing highly educated workers, the basis for the higher income sectors described above, fully recovered to pre-pandemic employment levels by the end of 2022, as estimated by the RSQE program. The industry employment growth is expected to continue, rising to 6 percent above pre-pandemic levels by the end of 2025.[170]

The US Bureau of Labor Statics data shows that the Ann Arbor Area recovered its pre-COVID total employment in early 2023.[171] See Figure 22.

The U-M and technology-based business growth will most likely foster further growth for these higher income occupations, so there will be continued upward pressure on housing prices.

Table 16. Ann Arbor Area - Major Occupation Median Incomes

Major Occupational Title		Total Area Employment	Annual Indivual Income		
			50th Percentile	75th Percentile	90th Percentile
First Quartile Income Tier	Management	12,850	$114,210	$161,930	$213,490
	Legal	1,120	$79,890	$111,620	$189,420
	Computer and Mathematical	8,630	$85,040	$108,920	$137,690
	Architecture and Engineering	5,810	$84,090	$105,580	$131,650
	Healthcare Practitioners and Technical	25,710	$79,030	$100,920	$166,300
Second Quartile Income Tier	Business and Financial Operations	13,150	$75,570	$97,570	$125,120
	Life, Physical, and Social Science	3,880	$61,820	$81,430	$108,030
	Educational Instruction and Library	26,110	$53,320	$78,510	$133,280
	Construction and Extraction	4,230	$58,510	$77,320	$85,960
	Arts, Design, Entertainment, Sports, and Media	3,120	$53,060	$74,560	$99,670
Third Quartile Income Tier	Installation, Maintenance, and Repair	5,320	$51,350	$67,050	$86,080
	Protective Service	2,670	$52,090	$64,490	$81,840
	Community and Social Service	4,470	$46,240	$62,100	$77,230
	Sales and Related	13,290	$35,500	$61,120	$105,070
	Office and Administrative Support	24,700	$39,860	$50,790	$63,890
Fourth Quartile Income Tier	Production	9,820	$38,650	$49,320	$65,830
	Transportation and Material Moving	10,630	$37,310	$49,110	$63,510
	Healthcare Support	9,870	$36,890	$41,430	$46,660
	Building and Grounds Cleaning and Maintenance	5,100	$36,100	$41,310	$47,730
	Farming, Fishing, and Forestry	100	$37,590	$39,800	$60,000
	Food Preparation and Serving Related	14,490	$29,130	$36,220	$47,530
	Personal Care and Service	6,120	$26,730	$31,670	$46,070
All Occupations		211,200	$49,150	$79,030	$115,970

Ann Arbor Area Population and Migration Patterns

The Ann Arbor Area (i.e., Washtenaw County) population grew by 1,378 residents between July of 2021 and July of 2022, with net in-migration of 1,062. However, the Ann Arbor area has not recovered from its 2020 - 2021 pandemic population loss of 7,267 residents.[172] See Figure 23.

Figure 22. Ann Arbor Area / Washtenaw County Annualized Average Monthly Employment 2000 - 2023 (July)

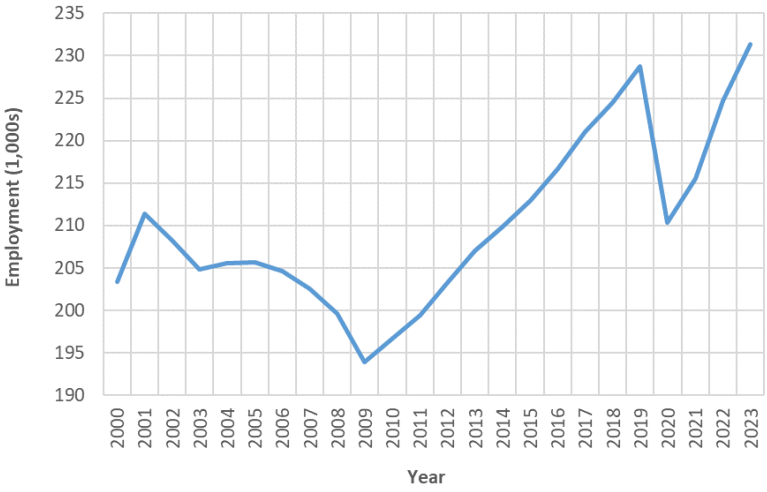
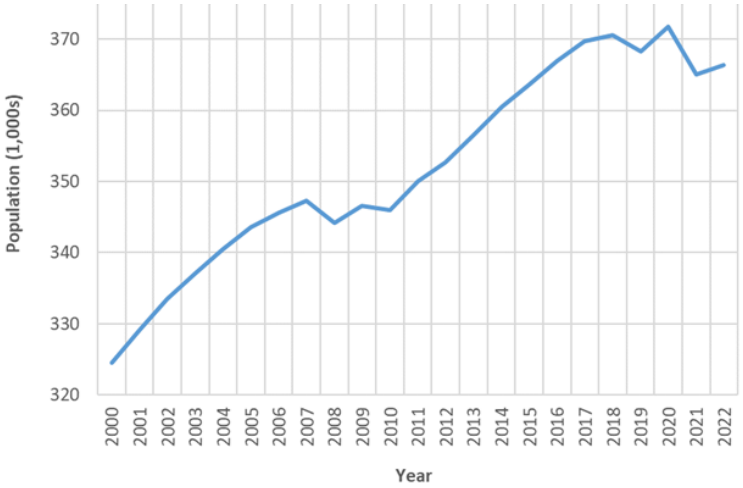


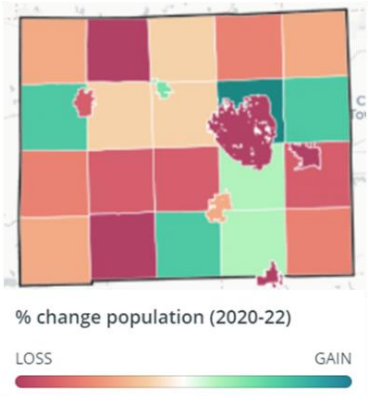
Figure 24 shows the areas of population increase and decline within Washtenaw County since April of 2020.[173] As of the last Census in 2020, seven Washtenaw County municipalities have grown, and many are townships surrounding cities. They are: Ann Arbor Township (5.2%), Sylvan Township (2.6%), Saline Township (2.6%), Superior Township (1%), City of Dexter (0.6%), York Township (0.1%) and Pittsfield Township (0.1%). The other 21 cities, villages and townships have seen population drops. Ypsilanti (-4.5%) had the steepest decline, followed by the City of Ann Arbor (-3.2%).

Figure 23. Washtenaw County Population 2000 - 2022



Given the sharp decline in employment during COVID, it may be that those seeking work relocated to job centers outside of the County. Michigan, as a State, is also experiencing an overall population decline, even though some counties did grow in population, like Ingham (+4.7%).[174] Since Washtenaw County has continued to lose its manufacturing base, Ingham County is potentially attractive. Washtenaw County's population growth has been relatively consistent over the years until COVID, so employment growth should aide in its population recovery.

Figure 24. Washtenaw County Population Change 2020 - 2022



In-migration to Washtenaw County has been tracked by the US Census American Community Survey through 2020, just as the COVID pandemic occurred. Tables 17 – 19, below, show net-migration within Michigan, as well as from Counties outside of Michigan.[175] The US Census data covered 5 years of statistical sampling from the American Community Survey, and provides a 90% confidence margin of error for their data. The tables show net migration, given that the margin of error provided a positive and significant net migration estimate.

Table 18. Net Migration into Washtenaw County from within Michigan 2016 - 2019

County Name	State Name	Total	Margin of Error (+/-)	Difference from 0
Oakland County	Michigan	1713	651	1062
Saginaw County	Michigan	274	152	122
Genesee County	Michigan	297	244	53
Berrien County	Michigan	117	67	50
Allegan County	Michigan	118	78	40
Ionia County	Michigan	89	57	32
Bay County	Michigan	89	68	21
St. Clair County	Michigan	109	93	16

Table 17. Net Migration out of Washtenaw County 2016 - 2019

County Name	State Name	Total	Margin of Error (+/-)	Difference from 0
Lenawee County	Michigan	-702	494	208
San Francisco County	California	-315	170	145
Maricopa County	Arizona	-82	69	13

Table 19. Net Migration into Washtenaw County from outside Michigan 2016 - 2019

County Name	State Name	Total	Margin of Error (+/-)	Difference from 0
Fairfield County	Connecticut	193	84	109
Miami-Dade County	Florida	210	160	50
Montgomery County	Maryland	131	84	47
Orange County	California	127	89	38
Marion County	Indiana	170	133	37
Pulaski County	Arkansas	94	59	35
Bergen County	New Jersey	399	380	19
Johnson County	Kansas	79	61	18
Orange County	Florida	126	109	17
Lake County	Illinois	133	117	16
Hillsborough County	Florida	92	76	16
Hartford County	Connecticut	69	54	15
Tippecanoe County	Indiana	93	79	14
Somerset County	New Jersey	97	84	13
Vermilion County	Illinois	78	65	13
Hampshire County	Massachusetts	78	66	12

These net-migration data need to be considered in light of two factors, (1) migration within the US has changed dramatically due to COVID, leading to high office vacancy rates with relocations based on preferred cities for remote work, and (2) net migration in and out of Ann Arbor is likely impacted by students locating to Ann Arbor for their studies, and then relocating once they've completed them.

Student migration could also explain the high net migration to Ann Arbor from Oakland County, Michigan, as well as the migration from Ann Arbor to San Francisco and / or Maricopa County, Arizona, with the large metropolitan area of Phoenix–Mesa–Chandler. In addition, Fairfield and Hartford Counties in Connecticut are those just outside New Haven, where Yale University resides, so in-migration from there could also have been student based.

Migration from Washtenaw County to Lenawee County, Michigan, however, is likely explained by people relocating to a more rural area, with the cities of Adrian and Tecumseh, with populations under 21,000.

For the U-M's growth and development agenda, increasing retention of the educated and skilled workforce in the area is presumably a priority. This requires economic incentives from increased business and employment opportunities, but also increasing the attractiveness and livability of the area in ways that can compete with the options people might have in others geographic areas.

More contemporary data on the intent to migrate can be found on Redfin, which tracks where people are searching from for moving into Ann Arbor, and to, for moving out.[176] Table 20, below, shows interest in moving to, or from, Ann Arbor in the third quarter of 2023.

Table 20. Redfin Data on Relocation Searches to and from Ann Arbor, Michigan

People seeking to move to Ann Arbor from:		People seeking to leave Ann Arbor for:	
Inbound Metros	Net inflow* Jul '23 - Sep '23	Outbound Metros	Net outflow* Jul '23 - Sep '23
1 San Francisco, CA	252	1 Grand Rapids, MI	1,036
2 Los Angeles, CA	250	2 Cape Coral, FL	289
3 Washington, DC	228	3 Miami, FL	234
4 New York, NY	219	4 Chicago, IL	233
5 Evansville, IN	147	5 Saginaw, MI	183
6 Dayton, OH	68	6 Orlando, FL	178
7 San Diego, CA	67	7 Lansing, MI	174
8 Seattle, WA	66	8 Sarasota, FL	174
9 Denver, CO	43	9 Memphis, TN	157
10 Philadelphia, PA	26	10 Tampa, FL	157

* Net inflow / outflow is the number of home searchers looking to move into or out of a metro area, minus the number of searchers looking to leave or move in.

Twenty-six percent of Ann Arbor homebuyers searched to move out of Ann Arbor, while seventy-four percent looked to stay within the Ann Arbor metropolitan area.

San Francisco homebuyers searched to move into Ann Arbor more than any other metro followed by Los Angeles, Washington DC and New York City.

Grand Rapids, Michigan was the most popular destination among Ann Arbor area emigrants followed by Cape Coral and Miami, Florida. Florida cities also include Orlando, Sarasota and Tampa. One might assume these moves are mostly for retirement.

Homebuyers looking to relocate to Ann Arbor are predominantly from the super-star cities referenced by Richard Florida, having the greatest investment resources and wealth over other markets. [177]

Mitigating Price Growth Pressures by Increasing Housing Supply

There have been ample studies on the impact of increasing housing supply on local housing prices. For example, new market-rate construction has been found to loosen the market for lower-quality housing through a series of moves known in the housing community as filtering and chain migration.[178] [179] [180]

Market-rate development of new housing has been found to increase affordability in the surrounding areas. The preponderance of the evidence shows that restricting supply increases housing prices and that adding supply helps to make housing more affordable.[181] [182] [183] [184] [185] Adding new homes moderates price increases and therefore helps keep housing more accessible to those that otherwise would not be able to afford it. There are additional reasons to be concerned about inadequate supply response, including preventing workers from moving to areas with growing job opportunities.[186]

There is also an abundance of research on how land use regulations affect housing prices and production.[187] In particular, regulation appears to raise house prices, reduce construction, and reduce the elasticity of housing supply.[188] [189]

Minneapolis has addressed housing supply and zoning reform, resulting in low area inflation - its 1.8% pace of price increases was the lowest of any region that month.[190] The Minneapolis area has seen an increase in rental units, thanks to a regional effort that included new zoning rules.

It is clear with housing economists that housing supply inelasticity, due to land use and local development regulations, leads to the escalating price of housing, both rental and owner-occupied. [191] [192] Local regulations affect the housing development process through a variety of channels, including direct construction costs, compliance costs, and by altering financial risks and returns. Regulatory barriers make it riskier, longer, and more expensive, which has consequences for housing affordability.

New-build home sales in August 2023 fell nationally nearly 9 percent year-over-year across the US.[193] Higher interest rates price out demand, but also increase the cost of financing for builder and developer loans, adding another hurdle for building.

There are a number of opportunities to reduce development risks, by simplifying City development ordinances, as well as by developing on University land that is not under the jurisdiction of City regulations. Higher land costs obviously contribute to the lack of housing affordability.[194] In addition, decreases in housing affordability have a negative effect on economic growth in metropolitan areas.[195]

Below is the Federal Reserve's view of Ann Arbor home pricing and inventory trends. Figure 18 shows the Ann Arbor House Price Index growth from 1978 to Q2 2023.[196] The area price growth coming out of the Great Recession (2007 – 2012) has only accelerated since the COVID rebound (post-2021). This pricing growth can be viewed as the increasing level of demand for housing in the Ann Arbor area.

Figure 19 shows the new listings tracked by the Federal Reserve from Realtor.com sources. It shows the year over year decline in new listings, explaining, in part the increasing price growth (Figure 18). Combined, high effective demand for fewer listings acts jointly to drive the price growth.

Figure 25. Federal Reserve Data on Ann Arbor Area House Price Index

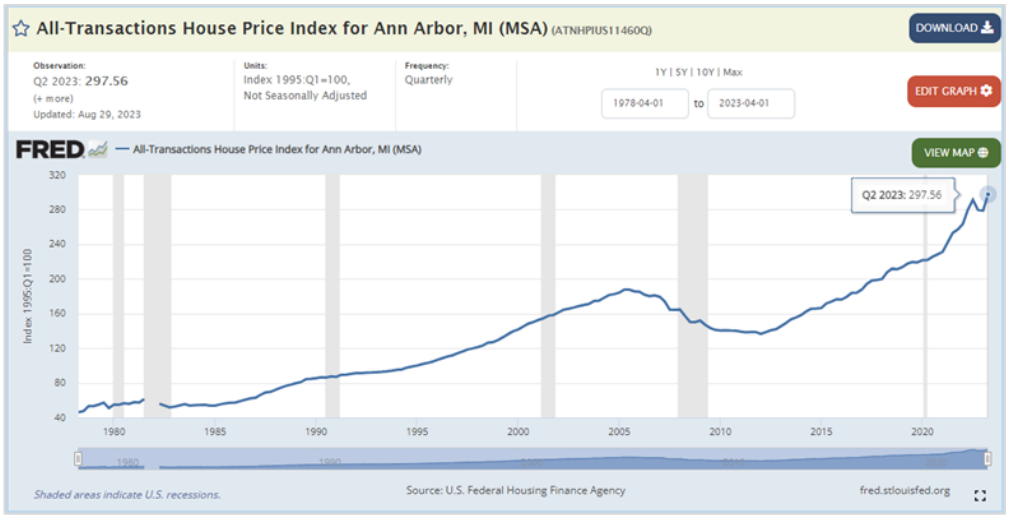
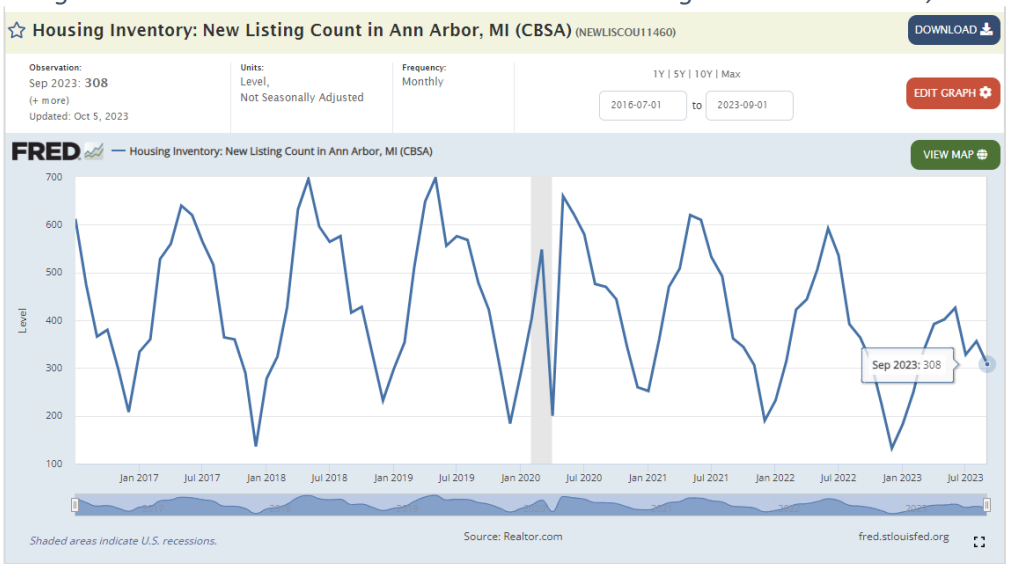


Figure 26. Federal Reserve Tracked Data on New Listing Count in Ann Arbor, MI



Public Land-Lease/Land Trust Models, Tax Increment Financing & Project Efficiency Gains, co-authored by Sarah Lorenz

Alternative land-use models, such as public land-lease or community land trusts, provide a way to price housing at controlled price-points, essentially keeping the units out of the open market.

We need to rethink housing. The private market will never again build "starter" homes or other new middle income housing in Ann Arbor. We can start with nonprofit development that prioritizes middle and lower income Ann Arbor workers and creates homes for them to buy. We can do this with a Community Land Trust.[197] [198] (See: https://groundedsolutions.org/community-land-trust-census)

The land-trust model is similar to the public-land home-ownership development recently approved in Ypsilanti, Michigan, for middle-income owner-occupied housing using income-based deed restrictions. For the Ypsilanti development, half the 46 for-sale units in the project — which includes two-bedroom cottages, duplexes and townhomes — will be set aside as affordable, limiting home sales prices to the specified levels of household incomes within middle and lower-income ranges. Those units will be deed-restricted to maintain affordability, and the development will be 100%-homeowner occupied. It's a big deal for a city where homeowners are in the minority, which is also the case for Ann Arbor. [199]

The ground-lease method, common to all Community Land Trusts (CLTs) in the country, by which both the land as well as the house sites are offered to users through a long-term lease (99 years), is both automatically renewable and inheritable.[200] The user pays the trust for the housing purchase and associated fees or makes regular monthly 'rent' for the land, and the trust in turn pays the taxes as well as the cost of the land purchased from the income. Properly managed and financed, the income generated is generally sufficient to create a revolving loan fund for the purchase of additional land. CLTs acquire the land that the housing is on and maintain ownership of it through a ground lease document and use of a resale formula to determine a fair sale price of the home.

Grounded Solutions, a national network providing resources on affordable housing solutions as the National CLT Network, offers a ground lease template that many CLTs across the country use.[201] [202]

The CLT home-owner resale formula is designed to ensure permanent affordability by establishing an upper limit on the price at which a CLT home may be resold. The goal of the resale formula is to both allow the current owner to receive a fair return on their investment and ensure an affordable price for the next owner. The resale formula is typically included in a section of the ground lease.

A public land trust (PLT) is where public ownership, as in Ypsilanti, avoids the need to finance a land sale, and enable sustained access to ongoing technical assistance and professional expertise, reducing burdens on community capacity.[203] While a degree of community control can be maintained with public ownership, it may be at greater risk when political changes occur. While PLTs secure affordable contracts and community control, they may warrant greater policy and planning considerations.

Community Land Trust – Tripartite Governance

The board of directors of the "classic" CLT is composed of three parts, each containing an equal number of seats. [204] This classic structure occurred in about 30% of Community Land Trusts in a 2007 study.[205]

1. **Leaseholder representatives** – One third of the board represents the interests of people who lease land from the CLT).

2. **Community representatives** – One third represents the interests of residents from the surrounding "community" who do not lease CLT land or live in CLT housing.
3. **Public representatives** – One third is made up of public officials, local funders, nonprofit providers of housing or social services, and other individuals presumed to speak for the public interest.

Control of the CLT's board is to be diffused and balanced to ensure that all interests are heard but that no interest is predominant.

Although every CLT board is distinguished by both a diversity of interests and a balance of interests, the actual make-up of the governing board can vary widely. Some CLTs subdivide the leaseholder board category among directors who represent the interests of leaseholders occupying single-family homes and those occupying co-op units or commercial buildings. CLTs that are managing rental housing may reserve a leaseholder seat for a tenant. Some CLTs fill the public representative seats exclusively with representatives of local or state government, while others include representatives of local churches, foundations, banks, social service agencies, tenant rights organizations, or community development corporations within this "public" category.[206]

A Community or Public Land Trust can preserve and create housing in many ways:

- retaining the land under public ownership;
- accepting property donations into the Land Trust
- buying houses that would otherwise be flipped or apartment buildings/complexes that are at risk of being turned into high-end units with huge rent increases;
- creating a capital fund and consulting for longtime residents who have properties with value that they can't unlock-- black residents and others shut out of economic gains in gentrifying neighborhoods--so they can add an ADU for retirement income, or "flip" their own house instead of letting someone else take the profit, redevelop the property, etc.

But for the greatest impact, the most important strategy will be to build new housing. This housing will be forever deed-protected and overseen by the trust for the middle and lower income career workers and families that are integral and essential to life in Ann Arbor and the University of Michigan. To keep the housing accessible for future generations, buyers who purchase at below-market rates will also sell at a lower rate--still building equity, but with a CLT shared-equity model determined by the CLT board.

Tax Increment Financing (TIF) and Project Efficiency Gains

How do we make this new housing possible with even basic construction costs more than most can afford? We already have a way---Tax Increment Financing (TIF).[207] TIF enables us to take a loan against future property taxes to pay for some of the cost of construction. TIF is used for brownfield redevelopment all the time. We can also consider using municipal bonds with low interest rates, and we can create homes at a mix of prices points, so that the higher cost homes boost the bottom line. We'll also need those dense, market-rate developments in the city and on U-M or other public land, so their tax revenue will offset the tax increment financing and maintain city services.

This is a new approach to housing for Ann Arbor. We'll need a groundswell of community support, as well as anchor institutions, such as the University of Michigan and City of Ann Arbor, that commit to collective impact for broad housing affordability. If the community coalesces around this idea, we will have a roadmap for a sustainable, equitable, affordable third century for Ann Arbor.

In addition, new **modular construction techniques** with the use of a local prefabrication facility, can improve the efficiency of the construction process, while significantly reducing costs. Modular construction techniques could allow developers to accelerate end-to-end project timelines by 20 to 50 percent, while reducing costs by up to 20 percent, and delivering greater whole-building energy efficiencies.[208] [209] [210] [211] [212]

Finally, a **Public Private Partnership** (P3) delivery model of the projects would limit the upfront capital needed by either the University or City of Ann Arbor, quickly and efficiently deliver housing in a fiscally constrained environment, and result in positive cash flows to either through ground rents.[213] [214]

Public private partnerships (P3) may provide opportunities to deliver facilities for the benefit of campuses and medical centers with limited or no commitment of university capital funds.[215] The University of California has found the P3 model to be efficient for those building types commonly developed privately, such as rental and for-sale housing.[216] Their Capital Financial Plan for 2022 - 2028 includes $3.9 billion of proposed P3s, including $2.6 billion for housing.

The Stanford University Land Trust Model

The Stanfords left about 8,000 acres to the university – with the condition that the land could never be sold.[217] Alumnus Alf Brandin developed an innovative solution – lease the land, instead of selling it. So in the 1950s Stanford began leasing portions of its off-campus land to developers who built the Stanford Shopping Center, bringing in high-end retail to the south bay area, Stanford Research Park in Palo Alto. They also built residential neighborhoods in Menlo Park for the public, taking advantage of the post-war boom.

Stanford | Land, Buildings & Real Estate
Caretakers of a Legacy

It also was a pivotal moment for Silicon Valley. Stanford's new research park housed companies such as Hewlett Packard, Varian Associates, Lockheed, Skype, General Electric and Fairchild Semiconductor, and the Stanford Linear Accelerator (2 miles long).

The vast majority of the university's residential units are offered exclusively to Stanford students, faculty and staff – a perk that helps mitigate the impact of the local real estate market on its own employees, allowing them to live on or close to campus.

Stanford's holdings include $14.7 billion in academic, medical, commercial and other nonresidential land, $1.1 billion in single-family homes – that's more than 700 houses – $881 million in multi-family residential buildings and $3.1 billion in equipment, machinery and other taxable property. The value of Stanford's property empire is larger than those of Google, Apple and Intel combined.

Stanford has not disclosed how much money it makes from the research park and its other real estate holdings, and its financial records are not public. But the revenue is used to help subsidize tuition, research and other university costs, with the largest percentage going to support affordable housing programs for university employees.[218] [219]

Figure 27. Mayfield Place, Palo Alto, CA

A Stanford / Related Public Private Partnership in Palo Alto, CA

Developer Related California and Stanford University opened Mayfield Place, a new affordable community in Palo Alto, California in 2017.[220] The community resulted from a 2005

agreement between the city of Palo Alto and Stanford University to create housing for Stanford faculty and the surrounding community.

The 70-unit property features one- to three-bedroom apartments ranging from 650 square feet to 1,200 square feet. Priced from $1,000 to $1,700, it targets residents earning between 50 and 60 percent of the area median income. See Figure 27.

Princeton Public Private Partnership

The Princeton-American Campus Communities (ACC) partnership began in 2010 when Princeton awarded ACC its first development through a competitive procurement process.[221] Their partnership has expanded to include 1,912 beds in three communities delivered over four phases in response to the University's Housing Master Plan.

ACC has served as developer, construction manager and operations manager. ACC provides facilities maintenance and operations services while Princeton handles leasing placements and rent collection.

All of ACC's developments at Princeton are built to our rigorous sustainability standards and are LEED-certified. Meadows Graduate Housing at Princeton is the first Passive House-designed project for ACC and Princeton, and one of the largest Passive House projects in the nation.

The all-electric Meadows community conserves energy through high-performance building systems and a highly efficient building envelope with increased heat recovery ventilation, deep sun-shading, triple glazed windows and enhanced exterior insulation. The energy the community does use for heating and cooling is thermal, sourced from 150 geo-exchange well bores located through the adjacent softball stadium.

The University of British Columbia Properties Trust Model

The University of British Columbia (UBC) also has a Finance & Operations portfolio that includes the UBC Properties Trust (UBCPT). UBC Properties Trust functions to assist UBC, through optimization of land assets to achieve the academic and community goals by:[222]

- Servicing and marketing lands for residential builds
- Developing, leasing, and management of Village Gates Homes (Staff/Faculty Rentals) and Wesbrook Properties
- Development, leasing, and property management of an office and retail portfolio
- Analyzing projects as requested by UBC
- Managing the construction of institutional projects

Figure 28. Brock Commons Tall Wood
The first mass hybrid timber residential high-rise building in North America.

UBC Properties has built over 12 million square feet of space for UBC and is one of the largest developers in the Province. UBCPT has created 32 residential rental buildings providing 1,700+ homes for UBC faculty, staff, students, and the general public. In addition, UBCPT has managed highly complex and innovative projects for UBC, including Pharmaceutical Sciences, UBC Health Sciences, Life Sciences, Student Union Building (The Nest), UBC Aquatic Centre, Tall Wood[223] and The Exchange Residences. Figure 20 shows UBC's Tall Wood tower.

Faculty and Staff Housing at UBC

In 2022, faculty and staff at UBC's Vancouver campus moved into one of the largest buildings targeting Passive House certification in Canada.[224] The six-story, 110-unit development, called Evolve, aims to be one of the most energy-efficient, multi-family residential buildings in Canada. It will consume up to 90 per cent less energy than a conventional building, with rooftop solar panels to supply the building's common and amenity areas. See Figure 29.

Figure 29. Building exterior at Evolve faculty and staff housing at UBC.

The project was partially funded by a $3.5-million grant from Natural Resources Canada. It was designed by ZGF Architecture and built by Peak Construction Group for UBC Properties Trust.

To date, UBCPT has generated $2 billion for the UBC endowment fund.[225] Over the last 30 years, market rentals, staff and faculty rentals, communities with retail shops, grocery, and restaurants have transformed the UBC campus to a vibrant community with over 15,000 residents. This could not have been achieved without the revenue earned and value created by UBC Properties Trust.

City-based Community Land Trusts and Other University Land-Lease Models

Other universities have also pursed Community Land Trusts for housing, protected from the open market demand-based pricing.[226] In 2005, at the request of residents, Irvine, CA formed a task force to define a program that would create permanently affordable housing that would not be lost to the market at some future date.

Though CLTs were relatively new to California, the University of California had long used land leases to preserve faculty housing around its Irvine campus, providing the city unique insight into the benefits of the land trust model.[227] [228] The Irvine CLT, resulting from initial Irvine City funding, includes both rental and owned housing.

The University of California (UC) is also investing $4 billion in a real estate fund managed by private equity firm Blackstone to acquire rental and student housing.[229] UC's investment could be a case study for other cash-flush higher education institutions, like the University of Michigan.

Faculty and Staff Housing Programs at U-M Official Peer Universities

Table 21 provides an initial summary of faculty and staff housing programs at U-M Official Peer universities. Of note, is that the majority of these Universities have them to deal with recruitment and retention. More research into these programs is needed, especially given their prevalence.

Table 21. Faculty and Staff Housing Programs at U-M Official Peer Universities

City	State	Top Tier University(s)	Zillow Home Value Index	University Owned Faculty / Staff Housing
Palo Alto	CA	Stanford	$3,171,651	**Stanford housing programs** are designed to make home ownership more affordable for eligible **faculty, executive staff, and clinician educators**. These programs include monthly cash supplements, various loans which lower monthly mortgage costs, and unique long-term ground leases with reduced housing prices.
Stanford	CA		$2,897,766	
Menlo Park	CA		$2,501,483	
Berkeley	CA	University of California, Berkeley	$1,403,186	Faculty and staff housing as part of **Long Range Development Plan** **UofC system-wide** - **The Mortgage Origination Program**, is a fully-amortizing first deed of trust loan with a one-year adjustable interest rate based upon an internal University index (MOP Index).
San Francisco	CA	University of California-San Francisco	$1,277,409	**40% Affordable below 120% AMI - integrated with transit** - in 2021 UCSF proposed to dedicate a share of its overall housing portfolio (i.e. existing plus new) as affordable to UCSF employee households at up to 90% of AMI and up to 120% AMI, with the affordable units split evenly between 90% AMI and 120% AMI, so that by 2050: 40% of all UCSF portfolio units will be affordable **UofC system-wide - The Mortgage Origination Program**
Cambridge	MA	Harvard Massachusetts Institute of Technology	$908,129	**MIT** - **Faculty Housing Mortgage Assistance Program** and staff rental housing **Harvard University Housing** offers housing and real estate services to the University's graduate students, faculty, and employees. Harvard has about 3,000 units ranging from studios to four bedrooms, all located conveniently near Harvard's graduate and professional schools.
Los Angeles	CA	University of California, Los Angeles & University of Southern California	$901,291	**UCLA**-owned apartments and condominiums for faculty and some staff **Transformative Climate Communities (TCC) City Program** on workforce housing **UofC system-wide - The Mortgage Origination Program**
Seattle	WA	University of Washington	$850,175	None identified
Princeton	NJ	Princeton University	$767,477	**(1) Princeton Faculty Residential Purchase Plan** (PFRPP) enables eligible faculty and staff to purchase homes near campus at a fair-market value-based price directly from Princeton University. **(2) Tenancy-In-Common Program (TIC)**, eligible faculty and staff may enter into a co-ownership agreement with Princeton within a nine-mile radius of Nassau Hall or within the city of Trenton. **(3) Faculty & Staff Rental Housing** also exists

New York	NY	Columbia & New York University (NYU)	$622,280	**Columbia** - Faculty, Staff and Postdoc Housing - limited availability **NYU** - Rental housing for faculty
Chapel Hill	NC	University of North Carolina, Chapel Hill	$577,881	None identified
Austin	TX	University of Texas at Austin	$561,613	None identified
Ann Arbor	**MI**	**University of Michigan**	**$463,726**	None identified
Charlottesville	VA	University of Virginia	$448,709	Faculty & Staff have a 4-year limit for 'on-grounds' housing options
Evanston	IL	Northwestern University	$390,159	None identified
Durham	NC	Duke University	$379,313	**Duke-Durham Neighborhood Partnership Initiative** - see: https://community.duke.edu/program/duke-durham-neighborhood-partnership/
Atlanta	GA	Emory & Georgia Institute of Technology	$374,081	**Emory** - Faculty and Staff Campus Housing **Georgia Tech** - Visiting faculty housing only
Madison	WI	University of Wisconsin, Madison	$372,275	**University Apartments** residents are primarily graduate students, postdoctoral researchers, academic staff, university staff, faculty, and their families.
Ithaca	NY	Cornell University	$301,608	None identified
Chicago	IL	University of Chicago	$272,270	500+ University-owned Residential Properties for Faculty and Staff
New Haven	CT	Yale University	$265,230	None identified
Columbus	OH	Ohio State University	$235,471	None identified
Philadelphia	PA	University of Pennsylvania	$213,244	**Penn Home Ownership Services (PHOS**) - offers eligible employees the opportunity to apply for closing cost assistance for home purchasing and funds towards home improvement. Homes are to be located within the PHOS boundaries of West Philadelphia.
Champaign	IL	University of Illinois at Urbana-Champaign	$192,471	None identified
Baltimore	MD	Johns Hopkins University	$171,867	**The Johns Hopkins Live Near Your Work** program offers grants of up to $17,000 toward a down payment and closing costs associated with buying a house in designated city neighborhoods.
Urbana	IL	University of Illinois at Urbana-Champaign	$161,404	None identified

Transit Oriented Development in the Downtown Core

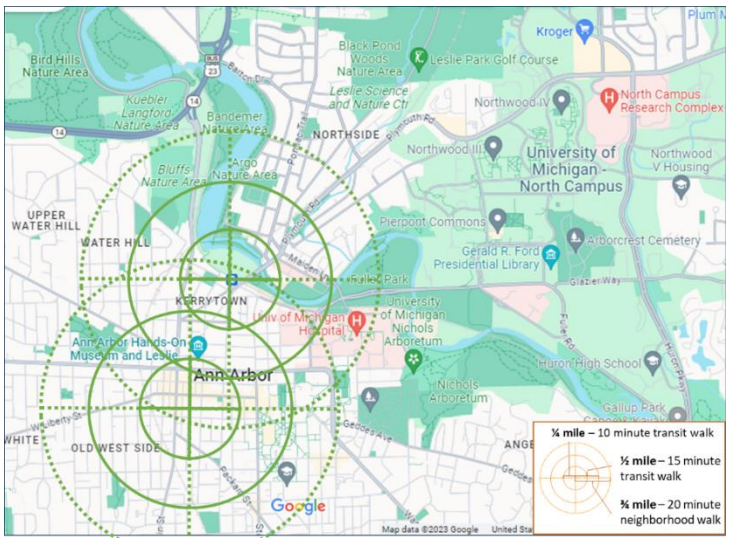
Can the U-M necessarily rely on Ann Arbor's objective to increase housing within the City of Ann Arbor, to accommodate the U-M's growth agenda? Can it be done without continuing to severely impact housing pricing demand and traffic congestion into an out of Ann Arbor?

One approach to this question is to assess the ability of Ann Arbor's two regional transit centers, the Ann Arbor Area Transit Authority (AAATA) Blake Transit Center, and the AMTRAK rail station, that are both within walkable distances to the Main and Medical campuses. See Figure 30.

Core downtown development based on Transit Oriented Development (TOD) best practices, with walkable neighborhoods, is based on connecting the TC1 Districts for an integrated housing and transit system. An assessment on the walkable areas around each transit center to meet this need is appropriate.

The logic is that requisite TOD housing densities need to be within ¼ - ½ mile radius around the transit centers.[230] In Figure 30, the inner circle is a ¼ mile, and the intermediate one is a ½ mile radius for transit walkability. The dashed outer circle is the 15-20 minute neighborhood walkability radius of ¾ mile.[231]

Figure 30 AAATA Blake Transit Center and Amtrak Station Walkability Radii



TOD housing densities increase from the ½ mile to the ¼ mile radii.

The requisite downtown core housing densities to complement a TOD-based system were covered in a previous working paper addendum.[232] Approximately, 6,775 units of additional housing are estimated to be needed to support mixed-used walkability density for the core downtown of Ann Arbor.

As shown in Figure 30, the Blake Transit Station is too far from the Michigan Medicine Campus for transit walkability, but does support Main Campus neighborhood walkability. The Amtrak Station is within a neighborhood walk distance to a major portion of the Michigan Medicine and Main campus areas, too.

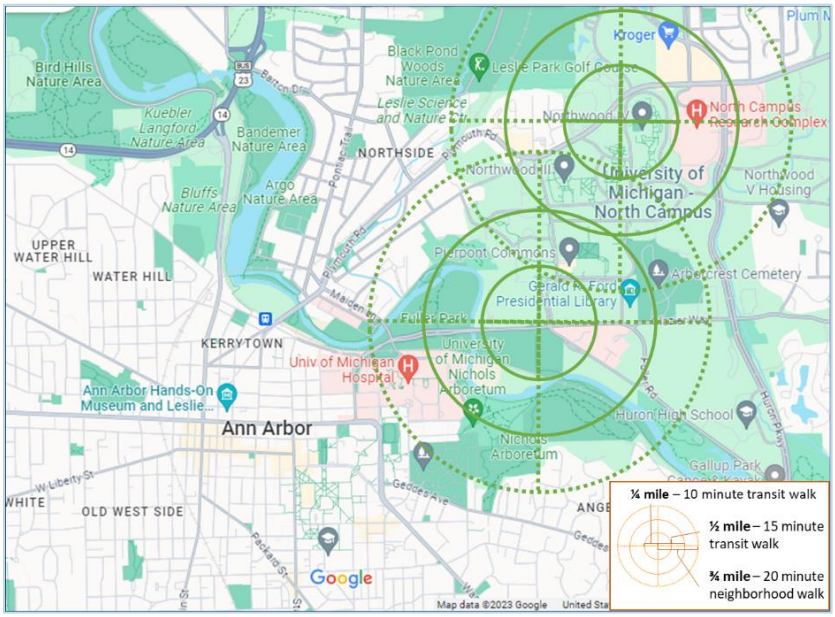
On this basis, Main Campus and a portion of the Medical Campus walkability requirements can be met from increased housing density in Ann Arbor's downtown core areas around the two regional transit centers. In addition, those transit centers can provide walkable access to Main Campus and the Medical Campus (via Amtrak Station) for those using transit from either the housing established in the TC1 Districts, or more regionally through the Amtrak Station. U-M's coordination with Ann Arbor on their Comprehensive Land Use Plan will be important to resolve whether this increased density gets planned.

However, neither offer direct walkability to North Campus from those regional transit centers. Additional connectivity between the City and the U-M Ann Arbor campuses is a major objective for the ongoing U-M Campus 2050 long range planning project currently underway. On-campus employee housing is also a priority for the U-M's 2050 long range plan land use program assessment.[233] [234] [235]

Transit Oriented Development for North Campus Connectivity and Employee Housing

U-M employee housing development at Fuller and Bonisteel roads, and on Mitchell Field, would have neighborhood walkability to the Michigan Medicine campus for U-M employees. See Figure 31.

Figure 31. Transit Oriented Development Sites Offering Walkability to Medical Campus and North Campus Research Complex



A Plymouth road development on U-M property would have neighborhood walkability for U-M employees to the North Campus Research Complex. It would also align with Ann Arbor's TC1 District, for additional housing density and mixed use development along Plymouth Road.

The two North Campus development locations can provide reasonable walkable bus transit to other AAATA and U-M bus-line service areas. On this basis, there is increased connectivity between the Medical and North Campus areas. If the University proceeds with its plans for an elevated rail line, that would also increase connectivity between the campuses.

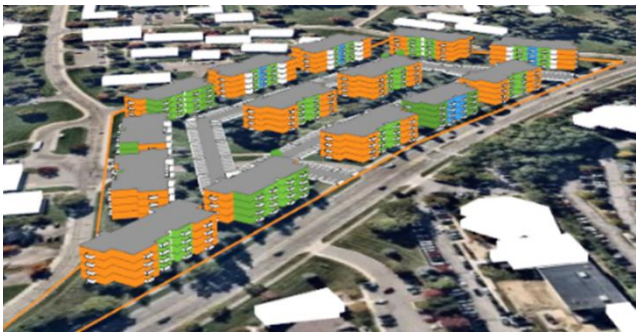
TOD Best Practices include scale-based housing targets for the areas around transit centers (see Table 22).[236] Fifteen to twenty-five units / acre would presumably be a lower floor for minimal U-M employee housing targets, or at least for those between the ¼ mile and ½ mile radii.

Table 22. Transit-Oriented Development Housing Densities

Scale	Housing units / acre TOD standard for bus transit	Units per 1/4 square mile
Village scale	≥ 15	≥ 2,400
City-center scale	≥ 25	≥ 4,000

Two development sites at each of these two locations with 1,200 units a piece, for a total of 2,400 per location, would have each site with a configuration of 1,200 housing units as shown in Figure 32. On this basis, a significant scale of U-M employee housing can be developed based on Transit Oriented Development and walkability best practices.

Figure 32. U-M Plymouth Road site for Employee Housing 1,200 Housing Unit Capacity - South-facing View



The question remaining is, what portion of U-M's future growth in students and employees can be met with on-campus housing?

The last section of this working paper discusses the implications for U-M's growth through at least the Campus 2050 planning horizon being evaluated.

University of Michigan Ann Abor and Medical Campus Growth Scenarios

The University of Michigan's Ann Arbor and Medical Campus student and employee population overall grew at a 1.93% compound annual growth rate (CAGR) over the past 20 years. It begs the question, of how much growth can be anticipated or projected for the future. The Michigan population, overall, is decreasing, so it may be that the past 20 years of growth is not sustainable.

Tables 21 – 24 outline potential growth scenarios. Table 21 provides the historic totals for the U-M Ann Arbor Campus (including Medical) growth from 2000 – 2022, for student enrollment and employees. The overall population increased by nearly 35,593, with a 13,962 increase in student enrollment, and a 21,629 increase in employees. The CAGRs are 1.93%, 1.43% and 2.49%, respectively.

Table 23. U-M Ann Arbor Campus 20 Year Growth History 2000 - 2022

	Compounded Growth Rate	2022 Population	Increase over 2000
Overall	1.93%	103,793	35,593
Enrollment	1.43%	52,065	13,962
Employment	2.49%	51,728	21,629

Projecting Historic Rate of Growth

50% Historic Rate

25% Historic Rate

*Table 24. U-M Ann Arbor Campus Estimated Growth to 2050 at Historic Rates**

	Compounded Growth Rate	2050 Est. Population	Increase over 2022
Overall	1.93%	177,144	73,351
Enrollment	1.43%	77,456	25,391
Employment	2.49%	103,052	51,324

*Table 25. U-M Ann Arbor Campus Estimated Growth to 2050 at 50% Historic Rate**

	Compounded Growth Rate	2050 Est. Population	Increase over 2022
Overall	0.96%	135,769	31,976
Enrollment	0.71%	63,549	11,484
Employment	1.25%	73,166	21,438

*Table 26. U-M Ann Arbor Campus Estimated Growth to 2050 at 25% Historic Rate**

	Compounded Growth Rate	2050 Est. Population	Increase over 2022
Overall	0.48%	118,748	14,955
Enrollment	0.36%	57,531	5,466
Employment	0.62%	61,553	9,825

* Columns do not sum – they are annually compounded growth estimates, by row

Table 24 provides an estimate of the potential 2050 campus population if the historic growth rates of the past 20 years were to continue at the same rates, overall and for enrollment and employment. In this relatively unconstrained growth scenario, the U-M Ann Arbor and Medical campuses would grow by over 73,000 students and employees. It may be that the U-M continues to acquire land outside of the City of Ann Arbor and its freeway ring to accommodate this growth.

Table 25 provides an estimate of the potential 2050 U-M Ann Arbor population if growth occurred at only 50% of the previous 20-year rates, assuming that continued growth is the toss of a coin (50:50). Notice that the overall growth, about 32,000 additional students and employees, would achieve nearly the same numeric growth as U-M attained over the previous 20 years. Even under a moderate growth scenario the housing demand and increased pricing from the increased population will continue fairly unabated.

Table 26 provides an estimate of the potential 2050 U-M Ann Arbor population if growth occurred at only 25% of the previous 20-year rates, assuming growth is significantly lower over the coming decades.

These linear growth projections, are just that. They are not specifically forecasting growth to be at any of these rates. However, given the U-M's status as a top-tier national public research university, it will likely continue to grow, even though most Michigan public universities are experiencing significant declines.

Michigan public universities have been experiencing a significant enrollment decline over the past decade, with an overall 10-year decline of 9.7%.[237] However, the University of Michigan's Ann Arbor campus enrollment has been the major exception with 19.4% growth. See Table 27.

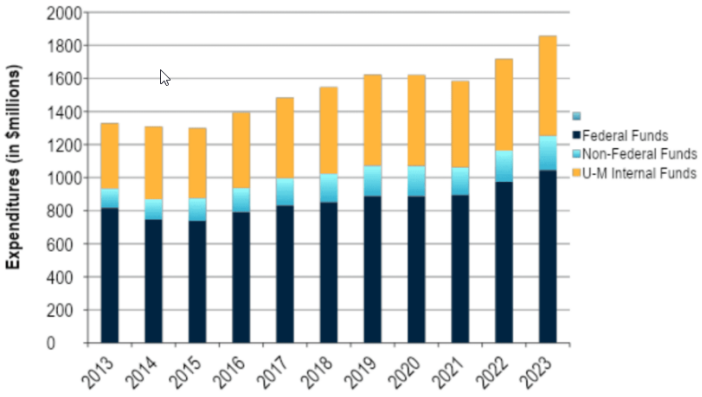
Table 27. Michigan Higher Education 10 Year Public University Enrollment Trends

University	FY 2011-12	FY 2021-22	10 Year # Change	10 Year % Change
Central Michigan	22,510	13,993	(8,517)	(37.8%)
Eastern Michigan	18,434	12,199	(6,235)	(33.8%)
Ferris State	12,217	8,608	(3,609)	(29.5%)
Grand Valley	22,347	20,341	(2,006)	(9.0%)
Lake Superior	2,418	1,460	(958)	(39.6%)
Michigan State	44,738	47,253	2,515	5.6%
Michigan Tech	6,378	6,619	241	3.8%
Northern Michigan	8,568	6,374	(2,194)	(25.6%)
Oakland	16,319	15,229	(1,090)	(6.7%)
Saginaw Valley	9,190	6,482	(2,708)	(29.5%)
UM-Ann Arbor	42,918	51,260	8,342	19.4%
UM-Dearborn	6,669	6,571	(98)	(1.5%)
UM-Flint	6,731	5,478	(1,253)	(18.6%)
Wayne State	23,873	21,587	(2,286)	(9.6%)
Western Michigan	21,603	15,673	(5,930)	(27.4%)
TOTAL	**264,913**	**239,127**	**(25,786)**	**(9.7%)**

Michigan public universities, nationally, have experienced the second highest enrollment declines over the past 20 years, down 20.5%.[238] Michigan's population has aged as a whole — meaning there are fewer high school graduates. However, the University of Michigan in Ann Arbor grew by 29% over this 20 year period, 15th highest of the 50 largest public universities in the country.[239]

Based on both the comparative State of Michigan and national data, and the rank of the University of Michigan's enrollments, one may assume that the U-M will still experience significant growth in enrollments in the coming decades.

Figure 33. U-M Research Volume over Time



In terms of U-M employee growth, given U-M's top tier standing among public research universities, U-M is well positioned to continue its employee growth trajectory. In 2013 the total volume of research at the University of Michigan rose by 4.3 percent to a record $1.33 billion. During Fiscal Year 2023, the University reported $1.86 billion in research volume, an 8.15% increase compared to Fiscal Year 2022.[240] This amounts to a ~40% increase over the last 10 years. See Figure 33.

Table 28. Top 10 Universities by R&D Expenditures - All Fields

Institution	Rank
Johns Hopkins / Applied Physics Laboratory	1
U. California, San Francisco	2
U. Michigan, Ann Arbor	3
U. Pennsylvania	4
U. Washington, Seattle	5
U. California, Los Angeles	6
U. California, San Diego	7
U. Wisconsin-Madison	8
Stanford U.	9
Harvard U.	10

Across all US universities, both public and private, the University of Michigan has recently been ranked 3rd overall in R&D expenditures.[241] See Table 28.

U-M is continuing to foster its R&D capacity with a faculty support program for funding development, "Strategy to Amplify Research and Scholarship."[242] As the powerhouse that is the U-M, one can assume that growth will continue along a similar path, in student, research and medical campus employee growth. That said, there are no guarantees, just a highly likely expectation, barring no unforeseen economic circumstances.

The knowledge economy will continue to be the fulcrum that drives the University of Michigan, SPARK and the City of Ann Arbor's creative culture and economic growth. It is up to Ann Arbor's collective community to enable this for everyone's benefit.

Conclusion

This is the conundrum we face: How to build housing capacity without destroying what we all have loved, each in our own way, about Ann Arbor. There are no easy answers, of course.

Ann Arbor housing is getting priced more and more out of reach for middle-income households, with the only growing homeownership segment in Ann Arbor occurring for those earning above $150,000 per year. Renters and homeowners who cannot afford Ann Arbor are getting pushed out to surrounding areas, driving up those housing costs, and exacerbating housing stress for families in those areas, too.

The University grew by 35,000 students and employees over the last 20 years, with no additional on-campus housing. While the U-M is now adding student housing, and is considering adding employee housing, it will be for only a fraction of that prior growth, let alone the future growth for which they are planning (potentially, 30,000 - 70,000^{+} net additional students and employees by 2050).

So, Ann Arbor can continue to work to add more housing at scale in the City, both in the new TC1 Districts and the downtown core. Maybe the Comprehensive Land Use Plan project will support adding multiplex units in the 70% of total Ann Arbor land parcels currently dedicated to only single-family homes.

A Community Land Trust set of middle-income focused developments in Ann Arbor and the U-M adding on-campus employee housing are worthwhile and important for equity purposes. These initiatives seek to add middle-income housing on land held outside of the open market. However, each of these efforts will still only amount to meeting a small portion of the overall housing demand within the City.

Market-rate housing development is critical to continue to meet the demand, if there is any hope of reducing the growth of housing prices (rentals and ownership). Over 40+% of the home purchases in Ann Arbor, even before the pandemic, are all cash purchases. Most of those seeking housing in Ann Arbor are from New York, Los Angeles, San Francisco and Washington DC.

So, yes, market rate housing prices will likely still continue to escalate. The real issue is how to dampen it.

Coming out of Ann Arbor's Post-WWII growth, a dynamic and creative culture emerged, especially through the end of the 70s.[243] Free John Sinclair concerts, Students for a Democratic Society (SDS), antiwar teach-ins/marches (including U-M President Fleming),[244] a Black Mayor, Human Rights Party on Council with the first openly gay person, $5 pot fine & Hash-Bash, Grateful Dead in West Park, etc.[245]

Those arriving in the 80s were told that Ann Arbor's heyday had passed. Then U-M became foundational to the Internet.

Certainly the Ann Arbor of 1940 has been long-gone following the 260%+ Post WWII population growth. We need to remember that Ann Arbor had a growth-based culture from that 40-year housing boom, which led to the 1970's creative culture. That creative culture has been at risk over the last 40 years.

Our approach to all of this should be to treat the reality of the situation as real and matter of fact. No one is disputing the basics at play. However, it is still critically important to foster the housing growth needed, and to continue to base it from a standpoint of equity for everyone involved: existing residents experiencing housing stress, commuters who live through housing stress to get here, as well as the residents who more or less can 'effectively demand' to be in Ann Arbor, because they can easily afford it.

Accepting this reality as a given requires an element of stoicism. Equitable growth is a *'both / and'*, rather than an *'either / or'*. Facilitating growth is certainly a path to re-energizing Ann Arbor's creative culture.

Appendix

Table 29. University of Michigan Official Peer Universities from the Office of Budget and Planning

Columbia University in the City of New York	University of California-Los Angeles
Cornell University	University of California-San Francisco (added 2020)
Duke University (added 2022)	University of Chicago
Emory University (added 2022)	University of Illinois at Urbana-Champaign
Harvard University	University of North Carolina at Chapel Hill
Johns Hopkins University	University of Pennsylvania
Massachusetts Institute of Technology	University of Southern California
Princeton University (added 2022)	University of Texas at Austin
Northwestern University	University of Virginia-Main Campus
Ohio State University	University of Washington-Seattle Campus
Stanford University	University of Wisconsin-Madison
University of California-Berkeley	Yale University

Table 30. U-M Official Peer University Cities, Ordered by Zillow Home Value Index, with Population and Density Data

City	State	Top Tier University(s)	Zillow Home Value Index March 31, 2023	Zillow Home Value Index Difference 2000 - 2022	Index Growth Rate 2000 - 2022	Population Growth Rate 2000 - 2020	Population 2000 (1,000s)	Population 2020 (1,000s)	Population Change 2000 - 2020 (1,000s)	Population Density 2022 # / Square-mile
Palo Alto	CA	Stanford	$3,171,651	$2,354,716	309%	17%	59	69	10	2,697
Stanford	CA	Stanford	$2,897,766	$2,143,093	293%	59%	13	21	8	4,975
Menlo Park	CA	Stanford	$2,501,483	$1,970,976	381%	9%	31	34	3	3,271
Berkeley	CA	University of California, Berkeley	$1,403,186	$1,038,322	297%	16%	103	119	17	10,755
San Francisco	CA	University of California-San Francisco	$1,277,409	$888,732	235%	12%	777	870	93	18,790
Cambridge	MA	Harvard & Massachusetts Institute of Technology	$908,129	$635,627	235%	16%	102	118	16	18,521
Los Angeles	CA	University of California, Los Angeles & University of Southern California	$901,291	$687,297	337%	5%	3,700	3,890	190	8,485
Seattle	WA	University of Washington	$850,175	$584,248	223%	31%	564	738	174	8,775
Princeton	NJ	Princeton University	$767,477	$546,546	241%	129%	14	31	17	6,678
New York	NY	Columbia & New York University	$622,280	$494,353	385%	10%	8,000	8,777	777	26,261
Chapel Hill	NC	University of North Carolina at Chapel Hill	$577,881	$327,038	129%	28%	48	61	13	2,826
Austin	TX	University of Texas at Austin	$561,613	$376,310	212%	43%	675	963	288	3,020
Ann Arbor	**MI**	**University of Michigan**	**$463,726**	**$267,471**	**135%**	**8%**	**115**	**124**	**9**	**4,392**
Charlottesville	VA	University of Virginia	$448,709	$275,855	160%	12%	41	46	5	4,315
Evanston	IL	Northwestern University	$390,159	$163,925	73%	6%	74	79	5	10,013
Durham	NC	Duke University	$379,313	$220,820	139%	51%	189	284	96	1,134
Atlanta	GA	Emory & Georgia Institute of Technology	$374,081	$242,749	185%	19%	419	500	80	3,612
Madison	WI	University of Wisconsin, Madison	$372,275	$232,480	163%	28%	210	269	59	3,391
United States		**National Data**	**$334,269**	**$221,453**	**196%**	**17%**	**282,200**	**329,500**	**47,300**	**N.A.**
Ithaca	NY	Cornell University	$301,608	$216,452	254%	10%	29	32	3	5,835
Chicago	IL	University of Chicago	$272,270	$154,546	128%	-5%	2,896	2,742	-154	12,060
New Haven	CT	Yale University	$265,230	$181,093	212%	8%	124	134	10	7,348
Columbus	OH	Ohio State University	$235,471	$142,066	150%	27%	715	906	191	4,116
Philadelphia	PA	University of Pennsylvania	$213,244	$159,049	294%	6%	1,510	1,600	90	11,937
Champaign	IL	University of Illinois at Urbana-Champaign	$192,471	$192,471	100%	26%	70	88	18	3,964
Baltimore	MD	Johns Hopkins University	$171,867	$122,962	240%	-10%	649	583	-66	7,428
Urbana	IL	University of Illinois at Urbana-Champaign	$161,404	$161,404	88%	3%	37	38	1	3,326

END NOTES

[1] Michigan's Great Inflection: A Strategy for the Age of Technology and Talent Richard Florida. May 31, 2023. Creative Class Group.

[2] Richard Florida Presents Findings of Study on National High-Tech Talent Hubs, Where Michigan Stands MichAuto. May 31, 2023. MichAuto partnered with Richard Florida's Creative Class Group on a comprehensive study that benchmarks regions across North America that are succeeding in attracting and retaining high-tech talent and businesses.

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