



# The “Manufactured Housing Gap” in Tucson and Pima County: Introduction and Preliminary Analysis

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# The Manufactured Housing Gap in Tucson and Pima County: An Introduction and Preliminary Analysis

## Executive Summary:

### Where in Tucson do insecurity and manufactured housing overlap?

The growing need for affordable housing has sparked renewed interest in manufactured housing (MH) as a way to expand housing options for low-income populations. However, MH remains an understudied, often denigrated form of housing whose residents are subject to unique forms of social, financial and environmental insecurity. These insecurities are especially important to understand in Metro Tucson (Pima County)<sup>1</sup> where roughly 10% of all housing units are mobile/manufactured homes—more than twice the percentage found in peer metropolitan areas Phoenix (4.8), Las Vegas (3.3), Portland (4.4) or Los Angeles (1.6) (AHS 2013, 2015).

MH is not an inherently insecure form of housing. However, in Metro Tucson, there is often a wide gap between the merits and promise of MH in theory, and how MH is lived in and experienced by residents. *We call this disjuncture between promise and reality the “MH gap”.*

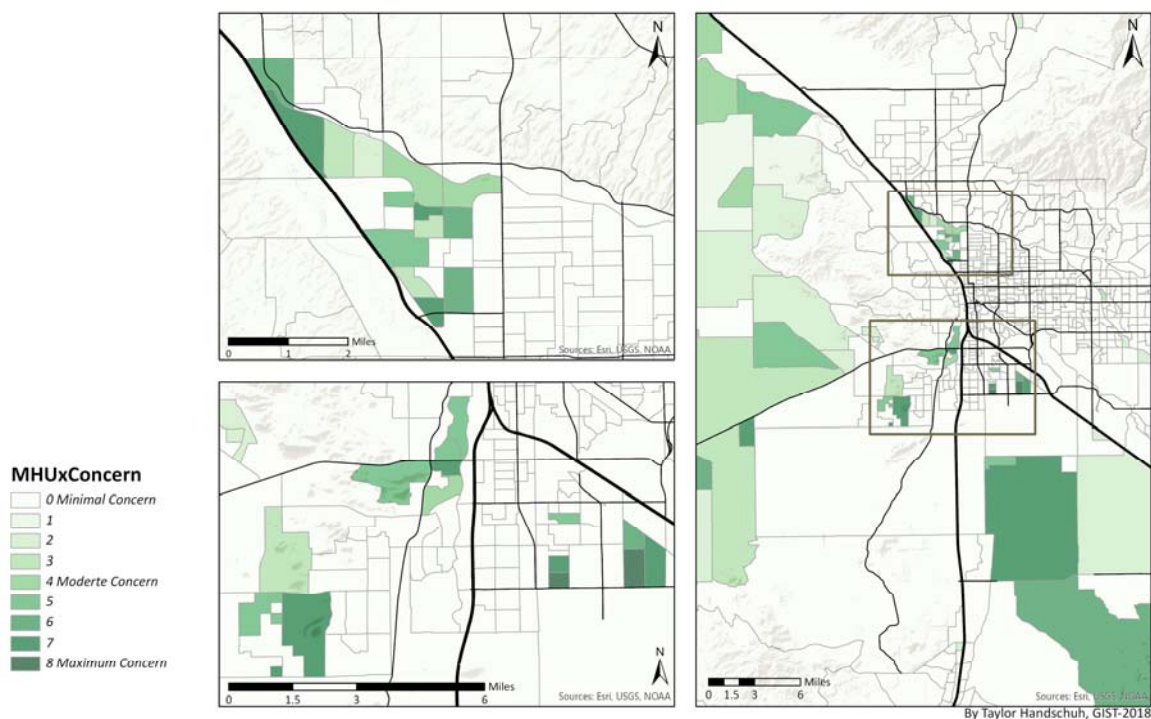


Figure 1: Ranking spaces (block groups) of MH concern in Pima County

This white paper provides insights into the nature and origins of the MH gap in Tucson, but also allows for the identification of specific areas of the city and county in need of the most attention from public and non-profit service providers, resident advocates, industry groups, and researchers.

<sup>1</sup> The Tucson Metropolitan Statistical Area is the same as Pima County.

## Key findings:

### *What are the origins of the MH gap?*

- The present geography of MH distress and socio-economic insecurity is deeply imbricated with the geography of the boom in MH permit issuance and shipments in the 1960s/1970s.
- Thirty-five percent of Pima County's MH stock is pre-1976 MH typically built with hazardous materials (e.g. asbestos and formaldehyde), poor insulation and fire-prone aluminum wiring.
- The divided ownership structure of MH allows for several distinct tenure arrangements (e.g. own MH, rent land; rent MH, rent land; own MH, own land, etc.) each with its own particular geographies and consequences (both positive and negative) for MH residents.
- Most research on the risks and insecurities of divided ownership focuses on "mobile home parks" or "trailer parks"; however, the insecurities of MH extend well beyond "park gates".

### *Factors related to the MH gap are not isolated to mobile home parks*

- Two-thirds of all MH in Pima County is not located in "parks". Approximately 52% of MH located outside of parks in Pima County is personal property – not real property. Non-park MH is often located in similar geographic milieus as MH parks.
- MH titled as real property in Pima County can be associated with mortgage interest rate premiums.

### *Where is the MH gap most severe?*

- In Pima County, MH is predominantly found in urban areas, with especially large clusters found near the City of Tucson's borders with unincorporated Pima County. The Flowing Wells cluster contains two units of MH for every 5 adults.
- Heuristic mapping can be used to identify "spaces of most concern" where concentrations of MH and indicators of socio-economic insecurity overlap the most. Spaces of most concern are concentrated in: i) the Flowing Wells area; ii) between Interstate 10 and Tucson International Airport; and iii) along the Santa Cruz River / Interstate 19 and Ajo Way.

These preliminary findings, while significant, require additional complementary data to produce a more robust assessment beyond what is possible from the analysis of spatial correlations between proxy variables and MH available through public data sources. Figuring out what the most important determinants of MH insecurity are, and how these determinants should be measured mapped and weighted, requires qualitative research.

## Introduction: Opening and Closing the Gap between Promise and Reality

Providing housing accessible to low-income populations is a growing challenge for cities across the United States (US). Today, there is not a single city in the US where households earning less than 30% of their neighborhood's median income can afford to rent an average-priced one-bedroom apartment (NLIHC 2017), and 2.8 million Americans believe they are at risk of imminent eviction (Desmond 2017, AHS 2015). This growing need for affordable housing has sparked renewed interest in manufactured homes as a way to preserve and expand housing options for low-income populations (e.g. AHA 2017, Sullivan 2015, CFED 2011). Indeed, manufactured housing (MH)<sup>2</sup> is already the country's largest and fastest growing source of unsubsidized affordable housing (Sullivan 2017). Despite this fact, MH remains an understudied, often denigrated form of housing whose residents are subject to unique forms of social and environmental vulnerability (MacTavish et al. 2006). These vulnerabilities are especially important to understand in Metro Tucson where roughly 10% of all housing units are mobile/manufactured homes<sup>3</sup> – more than twice the percentage found in peer metropolitan areas Phoenix (4.8), Las Vegas (3.3), Portland (4.4) or Los Angeles (1.6) (AHS 2013, 2015).

MH is not an inherently marginal form of housing. Indeed, housing built in the controlled environment of a factory offers many potential cost and quality advantages over traditional site-built housing. However, in Tucson, and many other cities, various factors often interact to make MH the nexus of myriad social, financial, health and environmental vulnerabilities. Put differently, there is often a wide gap between the merits and promise of MH in theory, and how MH is lived in and experienced by residents, and perceived by the general public, government agencies and politicians. We call this disjuncture between promise and reality the “MH gap”. If MH is to be preserved (or expanded) as an important source of affordable housing in Metro Tucson, and beyond, it is essential that policy makers, lawmakers, and the general public be made more aware of this gap between promise and reality as well as the reasons for this gap and what can be done to close it. Moreover, in addition to identifying vulnerable MH communities, attention should also be paid to identifying, protecting and replicating “resilient” MH communities, which already provide a high quality of life (QoL).

This white paper contributes to these goals of exposing and closing the “MH gap” by investigating the overlaps between various indicators of wellbeing and vulnerability, and concentrations of different types of MH land uses and tenure forms. In doing so, we aim to answer two overarching

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<sup>2</sup> In this white paper the short form “MH” will be used to refer to both “mobile homes” (a term regulators reserve for transportable residential structures built before June 1976) and “manufactured homes” (a term used by regulators to refer to transportable residential structures built after June 1976 and approved by the US Department of Housing and Urban Development). In 1980, amendments made to the Housing Act directed “the term mobile home be changed to manufactured housing in all federal law and literature” (cited in Hart et al. 2002). Locally, Pima County Zoning Code permits pre-1976 MH for residential use in a number of zones (IR, RH, GR-1, SH, TH, CMH-1, CMH-2, MU), on individual lots and in MH parks.

<sup>3</sup> Note that while the terms “trailer” and “mobile” are commonly used to describe the housing structures discussed in this report, we avoid these terms in favor of “manufactured housing”. Both “trailer” and “mobile” imply an ease of movement that is not reflected in the actual use of these structures. Once installed, MH is rarely moved and doing so is prohibitively expensive and can cause structural damage.

questions: what social, economic and environmental indicators of insecurity are most strongly associated with MH, and where in the city do concentrations of MH overlap the most with indicators of insecurity? Answering these questions provides insights into the nature and origins of the MH gap in Tucson, but also allows for the identification of specific areas of the city and MH communities in need of the most attention from public and non-profit service providers, resident advocates, industry groups, and researchers. Put simply, this report is about the origins of the MH gap, its present spatial distribution, where it is most severe, and what can be done to close it. The analysis presented here is preliminary and is intended to inform future research on MH resilience, vulnerability and QoL in Tucson and beyond as well as collaboration with MH communities.

This white paper will also serve as a primer on MH more generally and the various historical, geographical, cultural, legal and financial factors that help to contextualize the MH gap. Its aim is to provide the public with an up-to-date assessment of the state of the city's MH stock, as well as to serve as a foundation for future dialogue among researchers, policy makers, residents and industry groups about how to improve QoL for MH residents. To this end, the report is divided into five parts. The first provides a brief reflection on the history and geography of MH in Tucson. The second describes the different forms of MH in Tucson and the unique features that differentiate them, not only structurally, but also legally, economically and politically. Part three describes and applies a heuristic mapping technique that we use to identify areas of Metro Tucson and Pima County likely experiencing high levels of MH insecurity. Part four is a narrative inventory of select issues affecting the lives of MH residents and in need of action and research. The final section concludes by summarizing key findings and briefly outlining future directions for research and policy development.

## The Manufactured Housing Gap

### Historical Drivers of the MH Gap

Few new MH communities are being built in Tucson. In this regard, Tucson is not unique. One of the features of MH communities that differentiates it from other housing types is the near zero expected construction of new supply. The reasons for this are hard to isolate, but across the US, municipal governments and zoning commissions tend to have a negative view of MH, and getting approval for new developments is often very difficult (Hoya Capital 2016 cited in Sullivan 2018). Barring dramatic changes in attitudes and policy, three implications follow from the not-in-my-backyard aversion to MH for the present and future geography of MH in Tucson in the near-term:

- The provision of new supply is unlikely to significantly alter the extent and spatial distribution of MH.
- Land use change and MH redevelopment or closure are likely to play a larger role than new supply in shaping the extent and spatial distribution of MH.
- The extent and spatial distribution of MH in Tucson will continue to primarily reflect past eras of MH development, especially the 1960 and 1970s.

Put simply, because few new MH parks and subdivisions are being built, their present position in the landscape reflects historical factors that we need to be aware of to understand Tucson's MH geography.

## MH Booms and Busts

*Nearly half of American Families probably cannot afford any more than \$15,000 [\$95,000 in 2018 dollars] for a home, yet today, the only significant number of homes available in that price range are mobile homes. Mobile homes at present constitute a majority if not the largest single source of acceptable new housing available at prices which moderate income families can afford.*

*- President Richard Nixon, April 1970*

The enthusiasm expressed by President Nixon for MH as a market-based solution to shortages in affordable housing in the 1970s might surprise many people today, but in the late 1960s MH stock provided the promise of homeownership for many households. The late 1960s and early 1970s witnessed a dramatic increase in the presence of MH in Pima County that can still be read in the landscape today. In the five years between 1964 and 1969, the number of MH permits issued by Pima County grew by more than 700% (Department of Community Development (DCD) 1971). In 1970, *The Arizona Daily Star* ran a two-page spread with the headline, “Mobile Home Parks Spring Up Like Mushrooms, Are a New Way of Life” (Sortore 1970). This proliferation of MH had profound effects on the city’s built environment, but also on public opinion and policy, acting as both a source of anxiety and as an impetus for regulatory action.

Along with media attention came several studies and reports that would serve as the basis of new ordinances, locational criteria and development standards (e.g. DCD 1971: 2) designed to mitigate MH’s “unique problems and characteristics,” especially MH’s (perceived) deflationary impact on surrounding property values and elevated levels of crime (McCarty and Hepworth 2013). Ever since MH came to occupy a significant space in the US urban landscape it has been treated as both a necessity of affordability and as a likely source of negative externalities (e.g. reduced property values and community stability, and increased traffic and crime) to be controlled and mitigated. Such socio-spatial stigmas (see Inside the MH Gap page 23) have prompted forms of legal regulation—such as zoning barriers—that have resulted in MH developments being located further from positive public services and employment centers, and more often in flood plains, than other forms of housing (Shen 2005).

The dramatic expansion of MH witnessed by Tucson in the 1960s and early 1970s was part of a national trend, which between 1961 and 1973 saw shipments of mobile homes increase by nearly 600% (see Figure 1). This rapid expansion to the industry’s all-time peak of 580,000 units shipped, however, was followed by an even faster collapse to 210,000 units only two years later. Today, shipment levels are roughly half those of the 1970s trough (approximately 80,000 units in 2016). To the knowledge of the authors, no systematic research has been conducted into the causes of this contraction, but it is likely attributable to a combination of factors, including the onset of recession in 1973, widespread tightening of local land use controls and new federal regulations, especially the creation of a national building code for the construction of manufactured homes in 1974.



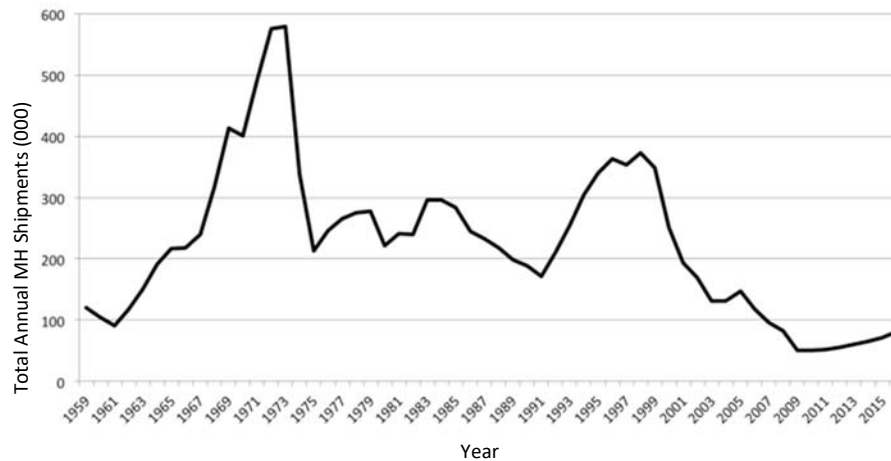


Figure 2: Mobile and Manufactured Home Shipments, United States

Enacted in 1976, the Manufactured Housing Construction and Safety Standards Act, or the “HUD Code” (in reference to the US Department of Housing and Urban Development (HUD), which administers the law), created a uniform minimum standard for MH, effectively dividing the market into two overarching quality and safety classes – pre- and post-1976. Four decades later, pre-1976 MH still constitutes 35% of Pima County’s MH stock (ACS 2016), and its spatial distribution is a map of structural distress. As time has passed this temporal distinction between pre- and post-HUD code MH has become a stronger spatial indicator of various forms of vulnerability. Aging and hazardous materials (e.g. asbestos and formaldehyde), lack of insulation and fire-prone aluminum wiring are some of the reasons that the estimated 16,600 pre-1976 “mobile homes” in Pima County persist as present-day markers of social and environment insecurity. But their enduring presence is also an artifact of the past embrace of MH in Pima County and across the country. The present geography of MH distress and socio-economic insecurity is deeply imbricated with the geography of the 1960s/1970s MH-boom. Indeed, the two largest clusters of MH in Tucson identified by the *Daily Star* in 1970 – Flowing Wells and the Benson Highway corridor near Tucson International Airport – remain the largest in the city today. What it means to live in these places both culturally and materially, however, has changed considerably. To understand why the gap between promise and reality in many of Tucson’s MH communities has gotten wider, it is important to consider the unique features that differentiate MH legally, economically and politically from conventional site-built housing.

## Typology of MH in Tucson and MH’s Changing Legal Status

This section discusses (i) how the tax treatment of MH has changed over time, (ii) the variety of MH tenure and legal arrangements that exist within Pima County, and (iii) some of the consequences of (i) and (ii) for MH resident quality of life.

### Manufactured Housing: “Paying its Fair Share”

The tax and legal context in which MH spread across the US has changed considerably since the 1960s. For example, until 1968, the Arizona Motor Vehicle Department was responsible for the taxation of MH, and owners of pre-1968 MH were charged only a \$6.25 registration fee as well as various sales taxes and levies for improvements (e.g. awnings). Two consequences of this treatment of MH as vehicles for taxation purposes are that through the 1960s (i) MH received a substantial tax subsidy (compared to other forms of housing), unintentionally encouraging its



spread, and (ii) MH development did not “pay its own way” in terms of public services; that is, the costs created by MH developments for municipalities and school districts were greater than the tax revenues they generated.<sup>4</sup> This helped contribute to the perception that MH was an invasive form of development whose residents did not pay their fair share of taxes, especially to support the schools their children attended (*Your Mobile Home* 1970).<sup>5</sup> The actual and perceived cross-subsidization of MH and its residents by other property owners was exacerbated by the fact that the fees and taxes that MH owners did pay went into the state’s general and highway funds – not municipal and county coffers.

Tax reforms were made in 1968 to redress problems associated with such jurisdictional mismatches and cross-subsidization by treating MH as personal property and taxing it at a percentage of assessed value. These reforms did substantially increase tax receipts by local governments; however, MH developments were still often treated as locally unwanted land uses (LULUs) that overburdened public services. Indeed, in 1971, the Sunnyside School District, which covers much of Tucson’s south side and includes two of Pima County’s largest clusters of MH, complained that the County Planning and Zoning Commission was concentrating MH in the District through rezoning, and exacerbating overcrowding problems in District schools (*Daily Star* February 23, 1971).

Concerns about the fiscal and distributional impacts of MH persist to this day, despite tax reforms and structural improvements (e.g. the Manufactured Housing Improvement Act of 2000). This persistence may, in part, be the legacy of a long history of negative associations and the deep seeded (even unconscious) biases against MH and those who live in it.<sup>6</sup> However, such negative associations are also actively reproduced by the unique property relations that characterize MH, which tend to depress its market value, marginalize it as a form of housing and, by association, those who call it home. Consequently, the history of these unique property relations is important to understand.

### Divided Property Rights and the Marginality of Manufactured Housing

Much of the attraction of MH for residents and housing advocates is its (perceived and potential) affordability. MH has been used and promoted in response to crises of housing affordability since at least the Great Depression (Hurly 2001). MH’s low cost relative to site-built housing stems from a variety of sources (e.g. higher-cost financing, lower demand and cultural stigmas, manufacturing efficiencies, etc.), but, most significantly, from the ability to own a manufactured home independently of the land on which it sits. This unusual form of divided tenure offers what Sullivan (2018: 1) calls “half-way homeownership” – the symbolic and emotional rewards of homeownership discounted by the risks and uncertainties that come with living on someone else’s land. This divided ownership structure also allows for several distinct tenure arrangements far less common in other housing types, each with its own particular geographies and consequences (both positive and negative) for MH residents. These include tenure arrangements, for example, in which MH residents own the structure, but rent the land; rent the structure and

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<sup>4</sup> Note that this is a characteristic of non-MH development as well; the need to ensure new development “pays its own way” is part of the rationale for the imposition of “impact fees” and “development charges” for new residential construction.

<sup>5</sup> According to periodicals of the time, there was widespread belief that MH owners paid no taxes at all.

<sup>6</sup> Note that prejudices against MH residents intersect with class (e.g. “trailer trash”) and race in important way, but which are beyond the scope of this white paper.

the land; or own both the structure and the land.

This divided ownership structure is an artifact of the origins of MH as a temporary and mobile form of housing. The antecedents of today's "double-wides" and "triple-wides" were comparatively small structures that could be hitched to the back of a car or truck and moved from place to place. Today, most MH is prohibitively expensive to move (\$5,000 to \$10,000 according to CFED 2010), if it can be moved at all without rendering the structure uninhabitable. Today, 90% of MH moves only once – from the factory floor to the site where it is occupied, and never again (Sullivan 2018, citing the Manufactured Housing Institute). But modern MH's *de facto* immobility has had little impact on its treatment in law, or in common parlance, where MH units are often still described as "mobile" or as "trailers". As already discussed, MH has historically been treated as a type of vehicle and most MH is classified as personal property (i.e. something that can be moved) unless it is legally affixed to a parcel of land. In Pima County, approximately 70% of MH is classified as personal property.

This disjuncture between MH's immobility, in fact, versus mobility, in law, has several effects whose negative impacts are disproportionately borne by MH residents and owners. When property rights to a structure are unbundled from the rights to the land on which it sits, the property's (i.e. the structure's) value is much more susceptible to depreciation, and rarely, if ever, appreciates in value the way conventional site-built housing has historically.<sup>7</sup> Two important consequences follow from this susceptibility to depreciation. First, it is virtually impossible for owners of unaffixed MH to build equity through investments in their homes. Second, this makes unaffixed MH a poor form of collateral (like a car), which increases lending and borrowing costs. As a result, conventional mortgage financing is not available for MH classified as personal property resulting in a niche financing market for MH loans. This market is dominated by lenders specializing in high-interest "chattel" loans (e.g. Vanderbilt Mortgage, 21<sup>st</sup> Century Mortgage), or various forms of "self-financing" by land lease community owners/operators, including contract sales, "buy-here-pay-here" arrangements, as well as lease-option and lease-to-own contracts.

Owning one's home outright, however, does not necessarily protect MH residents from uncompetitive financial practices. MH residents without housing debt, but who do not own the land their home sits on, are susceptible to uncompetitive rent increases because the cost of moving one's home to a lower-rent environment is cost prohibitive and comes with the risk of structural damage. Finally, divided ownership makes the threat of eviction particularly pernicious. The impacts of eviction for "half-way" homeowners are wide and varied (see especially Sullivan 2018 and Desmond 2016); first among them, the loss of a place to live may also mean the loss of one's largest asset. Moreover, tenants of MH parks often do not have the same protections that other renters have, precisely because they own their dwelling.<sup>8</sup> As Sullivan summarizes, "the precarious land tenure [of MH parks] exempts low-income residents from the benefits of homeownership and disposes them to dispossession" (Sullivan 2018: 17) and exploitation by landlords. This power asymmetry between landowners and residents has been likened to "a kind of serfdom" (Salamon cited in Population Research Bureau 2004), which can be exploited to "milk [residents] for income" (Margonelli 2013).

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<sup>7</sup> After three years, a typical manufactured home has a wholesale value about half its original price (FHFA 2015).

<sup>8</sup> For example, "protections for residents of federally subsidized housing include minimum notices of eviction, good cause requirements for evictions, and opportunities for grievance hearings with an unbiased third party, none of which are nationally mandated for residents of mobile home parks" (Sullivan 2017: 25).

For these reasons, most research on the risks and insecurities associated with divided ownership has focused on land lease communities (also known as “mobile home parks” or “trailer parks”). However, the negative cultural associations and stigmas attached to MH, as well as the contradictions of *(im)mobile* personal property, and the insecurities of divided ownership extend well beyond “park gates”. We believe that more attention must be paid to MH resident quality of life outside of parks, as well as inside, for several reasons:

1. For both the US as a whole and Pima County, approximately two-thirds of all MH is not located in “parks”.
2. Approximately 52% of the MH located outside of parks in Pima County is personal property – not real property. This means that there are likely large numbers of “half-way homeowners” living outside of land lease communities / “parks” in Pima County, and across the country. Like their counterparts living in MH parks, owners of personal property / chattel outside of parks cannot get conventional mortgages and must rely on chattel lenders. Chattel lending as a percentage of all MH lending is growing. Between 2009 and 2015 the percentage of new MH titled as personal property increased from 67% to 80% (FHFA 2017). Despite disadvantages of “half-way” homeownership, it appears to be increasingly common.
3. Non-park MH is often co-located with “parks”, meaning that non-park and park MH often exist within similar geographic milieus – relegated to industrial areas, zones of disinvestment, and/or hazard areas (e.g. floodplains).
4. The various public and environmental health concerns associate with MH are not restricted to MH located in parks. For example, pre-1976 MH with dangerous wiring, hazardous construction materials and poor insulation can be found in varying proportions in all of Pima’s four main MH arrangements (see below for a list of these “arrangements”).

It is also important to recognize that even when ownership is not divided, i.e. when MH is affixed to a parcel of land and treated as real property, these “all-the-way homeowners” of MH are still generally disadvantaged in mortgage markets relative to site-built mortgagees. For example, between 2007 and 2017 the average rate spread for higher-priced mortgages in Pima County was often much higher for MH mortgages than non-MH residential mortgages (HMDA 2018, See **Figure 3**).<sup>9</sup>

There are 4 broad categories of manufactured housing arrangements in Pima County (see Table 1):

1. “Parks” (also, called land lease communities), where the land is not owned by residents and lots are rented under common management. Properties must have four or more MH spaces to qualify as a “park” in Pima County.<sup>10</sup> MH residents may either own their home (own-rent) or rent their home (rent-rent). Other financial arrangements are also possible (e.g. lease to own). MH located on land that is not owned by the owner of the MH is almost always classified as personal property (rather than real estate). Unlike other types of MH development, parks are licensed by the Health Department.

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<sup>9</sup> A higher-priced mortgage loan is one with an annual percentage rate, or APR, higher than the Average Prime Offer Rate by a certain amount, which varies according to a number of factors (CFPB 2018).

<sup>10</sup> A “mobile home space” is land for rent which has been designed to accommodate a MH and provide the required sewer and utility connections.

2. Co-ops and resident-owned communities, where residents own the land cooperatively, as shareholders (other variations of shared ownership also exist). Land trusts are another model of common ownership. To the knowledge of the authors there are no MH land trusts in operation in Pima County. There are 4 co-ops.
3. Subdivisions, where land is divided into parcels and sold. Pima County describes MH subdivisions as “‘planned’ with homesites used for single-family manufactured homes”. Open space within the subdivision is generally commonly owned and managed, much like in a condominium. MH in subdivisions is typically legally affixed to the land it sits on and treated as “real” property (i.e. real estate). However, in Pima County nearly 30% of MH units in MH subdivisions are classified as personal property – not real property. For this 30% of MH units, it is ambiguous whether they are examples of divided ownership, or simply examples where a singular owner of land and property has not filed an affidavit of affixture.
4. Subdivided lots, like any other subdivided lot, but with MH as the primary structure. MH on subdivided lots is often legally affixed to the land it is on and treated as real estate/property. Note, however, that nearly 60% of MH on subdivided MH lots in Pima County is classified as personal property – not real property. For this 60% of MH units, it is ambiguous whether they are examples of divided ownership, or simply examples where a singular owner of land and property has not filed an affidavit of affixture.

*Table 1: Types of MH Arrangements and their prevalence in Pima County (2017)*

MH Arrangement	MH Instances	Instances of Personal Property	Percent Personal Property	Average Income by Block Group
<b>Park</b> (Use codes 8-4, 8-5, 8-9)	19,474	19,422	99.7	\$16,110
<b>Co-op</b> (8-6, 8-7)	685	685	100	\$18 009
<b>Subdivision</b> (8-1, 8-8)	7,752	2,204	28.4	\$20,796
<b>Subdivided Lot</b> (8-2, 8-3)	22,353	9,517	42.5	\$24,107
	*50,264	31,828	63.3	\$23,722

\*There are approximately 54,000 MH instances in Pima County, but many lie outside of these four key categories (e.g. they are located on parcels where the primary structure is a site-built home).

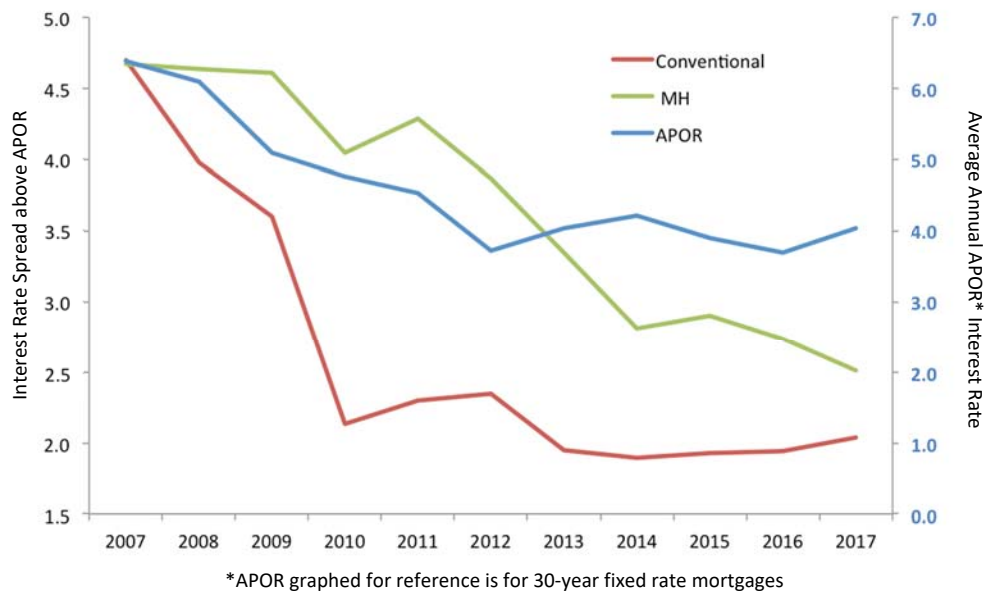
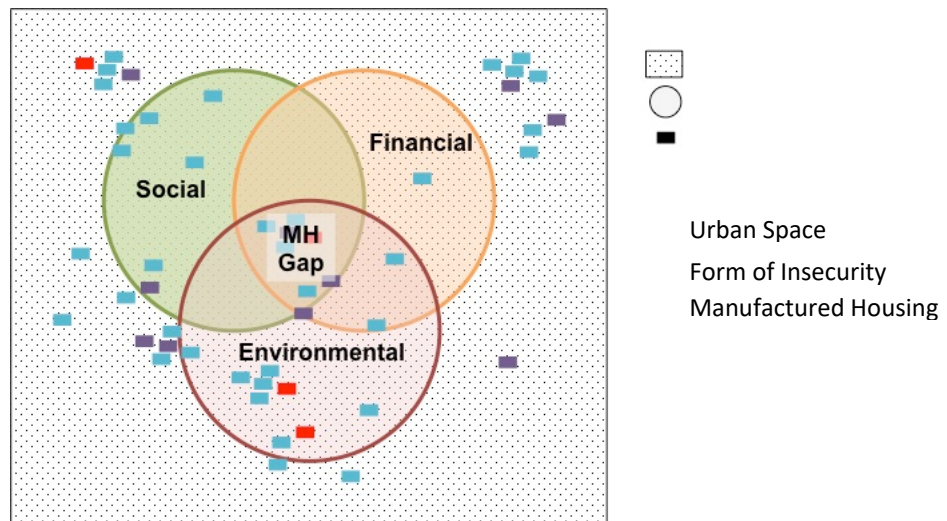


Figure 3: Average Rate Spreads by Year Non-MH Residential Mortgages vs MH Mortgages (spread over Average Prime Offer Rate (APOR))

## Mapping the MH Gap in Tucson and Pima County

Tucson is one of the poorest large cities in the US, ranking 295<sup>th</sup> in terms of real GDP per capita among the 383 census metropolitan areas in the country (Bureau of Economic Analysis 2017).<sup>11</sup> This poverty, however, is experienced unevenly across urban space and by population sub-groups. In this section we explore how Tucson's uneven geography of poverty, as well as various other



<sup>11</sup> \$32,000 in 2015 measured in 2009 US dollars.

indicators of vulnerability and wellbeing, overlaps with the geography of the city’s MH communities. To do this, we have developed a heuristic mapping technique that allows us to rank census block groups according to how much MH they contain and the degree of imbrication among eight indicators of vulnerability and wellbeing.<sup>12</sup>

While, as outlined earlier in this white paper, there are many reasons to expect MH to be associated with various forms of social, economic and environmental insecurity, our goal here is not to explain why MH converges with insecurity in certain areas of the city and not others. More modestly, our aim is simply to identify areas of the city where the “MH gap” is the widest – that is, to identify the census block groups in Pima County where the gap between the promise and reality of MH is likely the widest (see Introduction and Figure 4). To this point, it should be noted that our approach to heuristic mapping is iterative: the maps developed for this white paper will be used to improve our understanding of the MH gap and the causes of MH insecurity in Pima County in order to construct and identify better indicators, which can then be employed to produce more precise maps of the MH gap. This approach to the heuristic mapping of the MH gap can potentially be applied to any city or region, where data is available, and used to facilitate comparison.

In this section, we (i) show the “raw” distribution of MH in Pima County, and (ii) use a MH location quotient to create a series of bivariate maps displaying the spatial correlation of MH and various

*Figure 4: Conceptual map of the MH gap. Overlapping geographies of insecurity produce ranked spaces of concern.*

indicators of QoL and insecurity. We then use this bivariate map series to create a map that ranks block groups by level of MH concern. Finally, we consider some of the limitations of this technique for mapping the MH gap in Tucson and beyond.

## The Geography of MH in Tucson and Pima County

There is MH scattered across the whole of Pima County, but it is predominantly found in urban areas, with especially large clusters found near the City of Tucson’s borders with unincorporated Pima County (see **Table 2** for breakdown MH numbers by municipality).<sup>13</sup> These clusters can cover large areas, producing striking and unique MH-dominant urban forms. Flowing Wells, which, contains two units of MH for every 5 adults, is perhaps the most dramatic example of a “MH city within the city” in Pima County (based on 2010 CDP population).<sup>14</sup>

*Table 2: Distribution of MH in Pima County by Municipality, including census designated places (CDP), with at least 300 MH instances.*

Municipality or CDP	Real Property <sup>15</sup>	Personal Property <sup>16</sup>	Total
<b>Tucson city</b>	1756	13170	14926

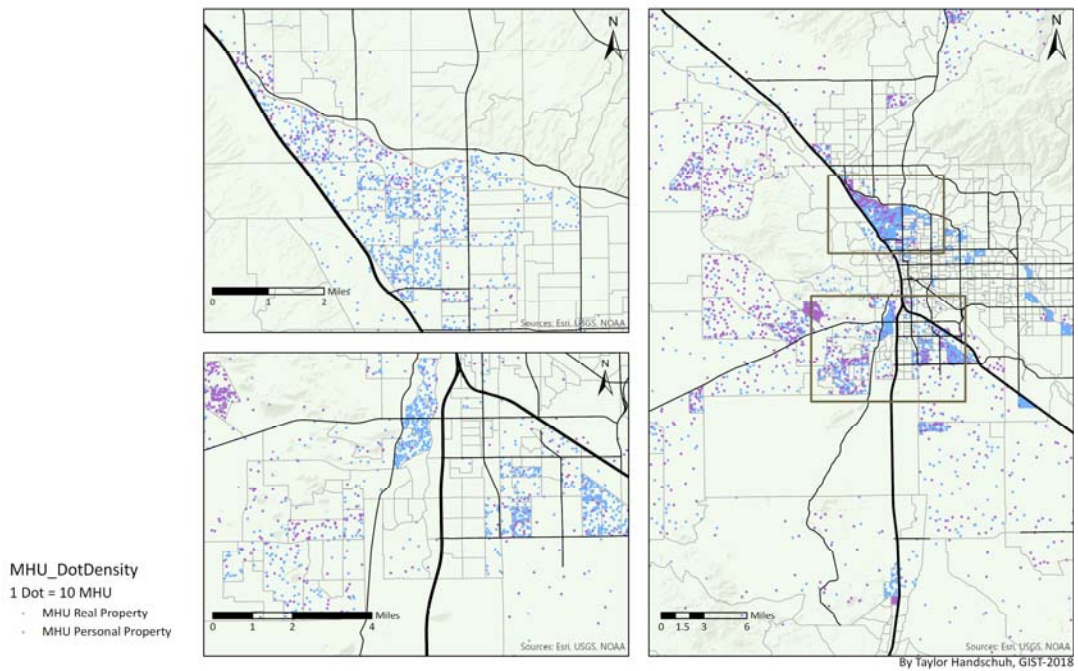
<sup>12</sup> Census block groups are statistical divisions of census tracts. They generally contain between 600 and 3,000 people (US Census Bureau 2018). It is the smallest geographical unit for which the Census Bureau publishes sample data.

<sup>13</sup> While it is beyond the scope of this paper, future research on the political geography of MH may consider how municipalities territorialize space to avoid or exclude MH.

<sup>14</sup> Flowing Wells is a neighborhood that straddles Tucson and parts of unincorporated Pima County. Flowing Wells is also the name of a non-overlapping census designated place.

<sup>15</sup> Property considered “immovable” – usually land or structures legally affixed to land.

<sup>16</sup> Property considered mobile, including structures not legally affixed to land.



<b>Unincorporated Pima County</b>	2123	4898	7021
<b>Flowing Wells CDP</b>	1119	3850	4969
<b>Tucson Estates CDP</b>	3420	1114	4534
<b>Picture Rocks CDP</b>	2142	950	3092
<b>Drexel Heights CDP</b>	1073	1552	2625
<b>Avra Valley CDP</b>	1253	766	2019
<b>Three Points CDP</b>	893	954	1847
<b>Catalina CDP</b>	988	816	1804
<b>Summit CDP</b>	358	1092	1450
<b>Casas Adobes CDP</b>	388	611	999
<b>Green Valley CDP</b>	590	264	854
<b>Vail CDP</b>	691	92	783
<b>Sahuarita</b>	169	556	725
<b>Valencia West CDP</b>	284	243	527
<b>Marana</b>	252	240	492
<b>Oro Valley town</b>	242	67	309

As can be observed from a simple dot-density map of MH in Pima County (see Figure 5), there are three pronounced clusters of MH, Flowing Wells (**Figure 5** top left panel) and along Interstate 19 (**Figure 5** top middle of lower left panel) and between Interstate 10 and Tucson International airport (**Figure 5** right side middle of lower left panel). Note that these clusters, while dominated by personal property, also contain substantial quantities of real property.

*Figure 5: Dot Density map of MH instances in Pima County*



We know that high concentrations of divided ownership, in parks or wherever MH is owned separately from land (i.e. personal property), is likely to produce insecurity. However, clusters of parks and personal property are not necessary or sufficient conditions to define an area as “insecure” or “vulnerable.” We need a way to filter and rank all of the areas of Pima County with high levels of MH based on MH resident QoL and insecurity. Because it is beyond the scope of this white paper to directly observe MH conditions, we use extant, aggregate data on variables that we believe are strong indicators of insecurity and QoL.

More specifically, we explore the relationship between six dimensions of QoL/insecurity and the prevalence of MH. The dimensions and the indicators we use for each are the following:

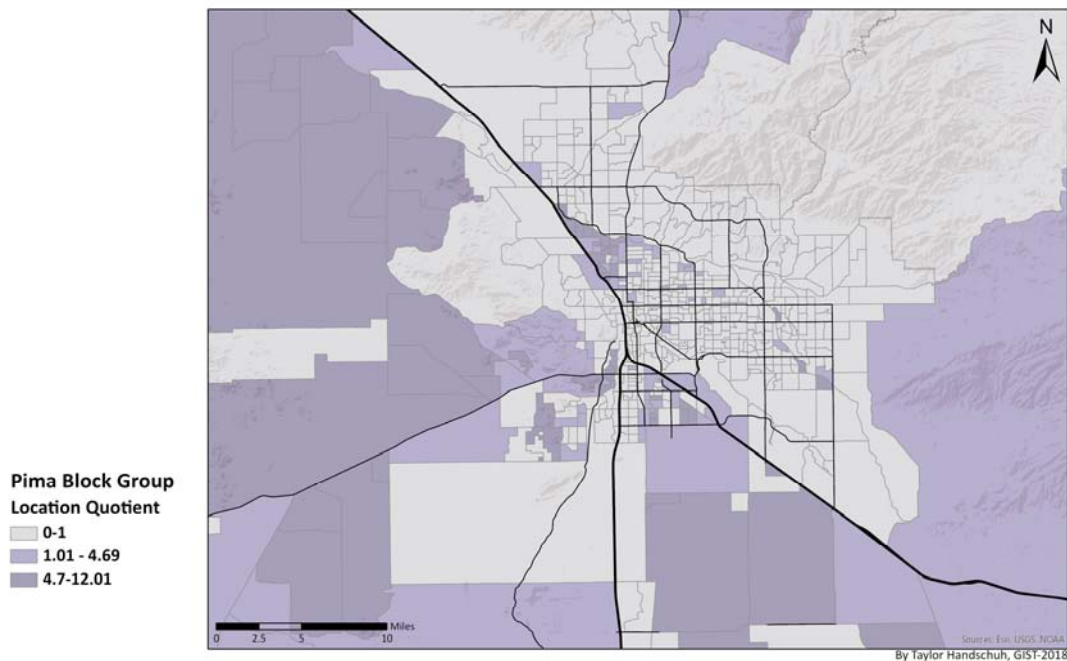
1. **Income and Poverty** – measured by per capita income and poverty rate (at the block group level).
2. **Employment** – measured by unemployment rate and labor force participation (block group).
3. **Age Structure** – percent of population above and less than 18 years old (block group).
4. **Built Environment and Pre-1976 MH** – percent of buildings constructed before 1980<sup>17</sup> and percent of housing units with incomplete plumbing (block group). Another indicator used here is complete plumbing.
5. **Health** – percent of total population without health insurance.
6. **Education** – percentage of population with a college degree or higher.

To graphically represent the spatial relationship between these six dimensions of QoL and MH in Pima County, we created a series of bivariate choropleth maps, each displaying the relationship between the prevalence of MH and one of the nine indicators of QoL described above.

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<sup>17</sup> We do not have data on the age of all MH structures in Pima County.

Our bivariate maps assign each block group in Pima County to one of nine categories based on a 3 by 3 matrix with MH prevalence on the y-axis and a QoL indicator on the x-axis (see legends on Figures 6-11). In order to facilitate the categorization of block groups while ensuring our maps remain visually intelligible, data for each variable was reclassified into three tiers. For all of the QoL indicators a simple equal interval reclassification method was used to divide data in three equal quantiles or “bins” (bin 1 = 0 to 33<sup>rd</sup> percentile, bin 2 = 33<sup>rd</sup> to 66<sup>th</sup> percentile, and bin 3 = 66<sup>th</sup> to 100<sup>th</sup> percentile).<sup>18</sup> A different reclassification procedure was followed for MH prevalence in order to make bin interpretation more straightforward. Before dividing block groups by MH prevalence, we created a location quotient (LQ) for MH by dividing the percentage of all housing units that are MH in each block group by the average percentage of housing units that are MH for all block groups in Pima County. The first MH “bin” is composed of block groups with less than average concentrations of MH (i.e.  $LQ < 1$ ). Bins 2 and 3 were determined by dividing remaining block groups at the 50<sup>th</sup> percentile ( $LQ = 1$  to 4.7 and  $LQ = 4.6$  to 12). Block groups that are colored dark purple contain between 4.7 to 12 times the amount of MH as the average block group in



Source(s): Pima County Assessor (2017) and American Community Survey (2016)

*Figure 6: MH Location Quotient for Pima County (all of Pima County not shown)*

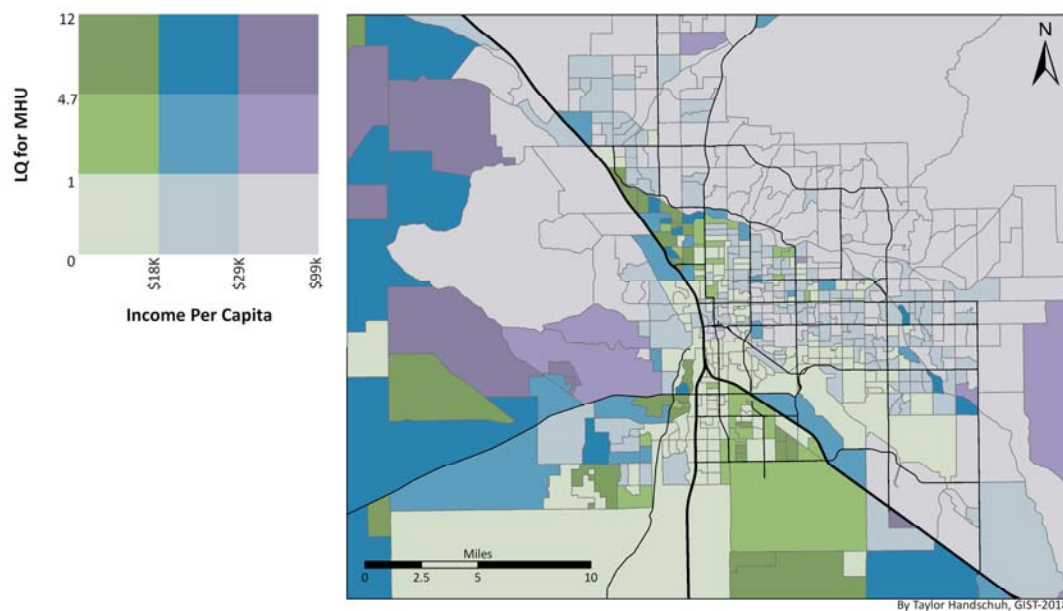
Pima County, and light purple block groups contain between 1 and 4.69 times the county average. All other block groups (those colored grey) contain less than the county average. Our base MH LQ map is displayed in **Figure 6**.

<sup>18</sup> A different method was used for the “incomplete plumbing” variable.

## Bivariate Map Series

Displayed below are six bivariate maps, each representing one of the dimensions of QoL described above. Observational highlights accompany each map. Note also that we have structured the 3x3 matrix legends according to the convention that the cell of greatest concern is always the most saturated/dark green square (i.e., the cell in the top left corner in **Figure 7**). More generally, the level of color saturation corresponds to the level of MH, with darker (i.e. more saturated) colors indicating more MH and lighter shades indicating less MH. Green corresponds to low levels of a QoL indicator (e.g., low income), blue corresponds to moderate levels (e.g. moderate income) and purple to high levels (e.g. high income).

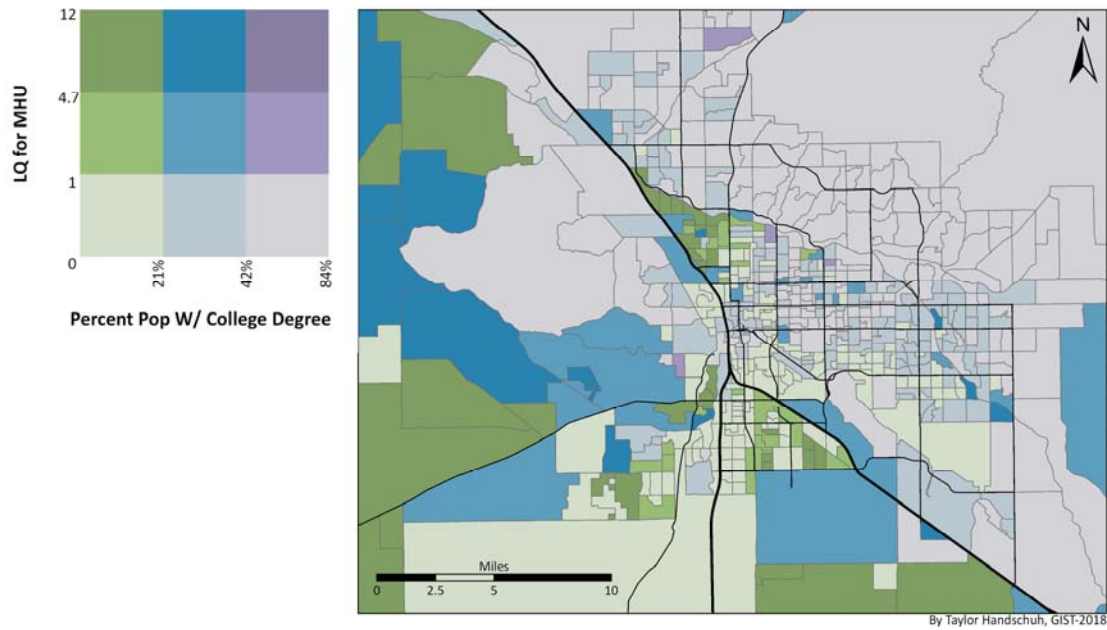
### Income and Poverty



*Figure 7: Prevalence of MH in relation to average income per capita by block group*

- There are no high income (\$29K to \$99K) block groups with high levels of MH anywhere in the City of Tucson. High income and high MH block groups only exist on periphery of the city.
- Conversely, low income-low MH block groups, while concentrated in three urban clusters, can be found in both rural and urban settings. This suggests that the relationship between income/poverty and MH may be different in important ways in rural and urban settings – a topic for future research.

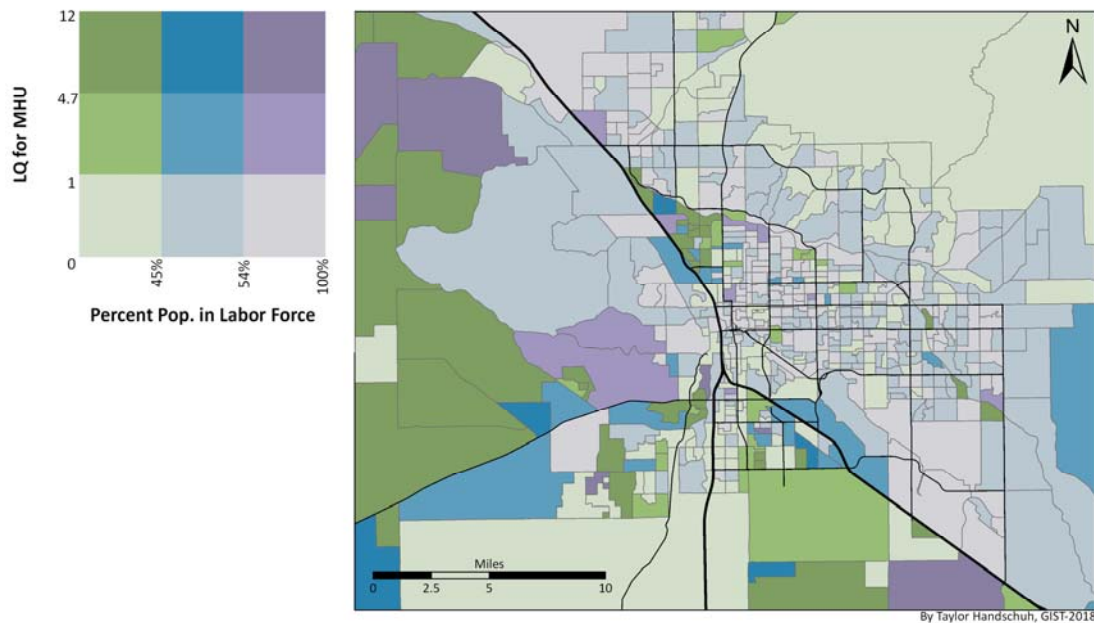
## Education



*Figure 8: Prevalence of MH in relation to level of education. MH LQ by percent of population with college degree by block group*

- There are strong similarities with the pattern of income and poverty (compare **Figures 7 and 8**).
- Some of the rural block groups with high income and high MH have large populations without college attainment.

## Employment



*Figure 9: Prevalence of MH in relation employment. MH LQ by labor force participation by (block group)*

- Here (**Figure 9**) we see the lowest rates of participation coinciding with MH concentration both in the urban clusters and in more rural western block groups. This may be capturing different groups, discouraged and disabled workers in the city versus retirees in the periphery.

## Age Structure

- Here (**Figure 10**) we see considerable age structure diversity among the block groups that make up the dominant urban MH clusters, especially in the Flowing Wells area.

- Several of the rural, low-labor-force participation, high MH block groups do not have particularly high levels of people 65 and older. Note that not displayed here, but included in our ranking analysis, is a map of the under 18 populations.

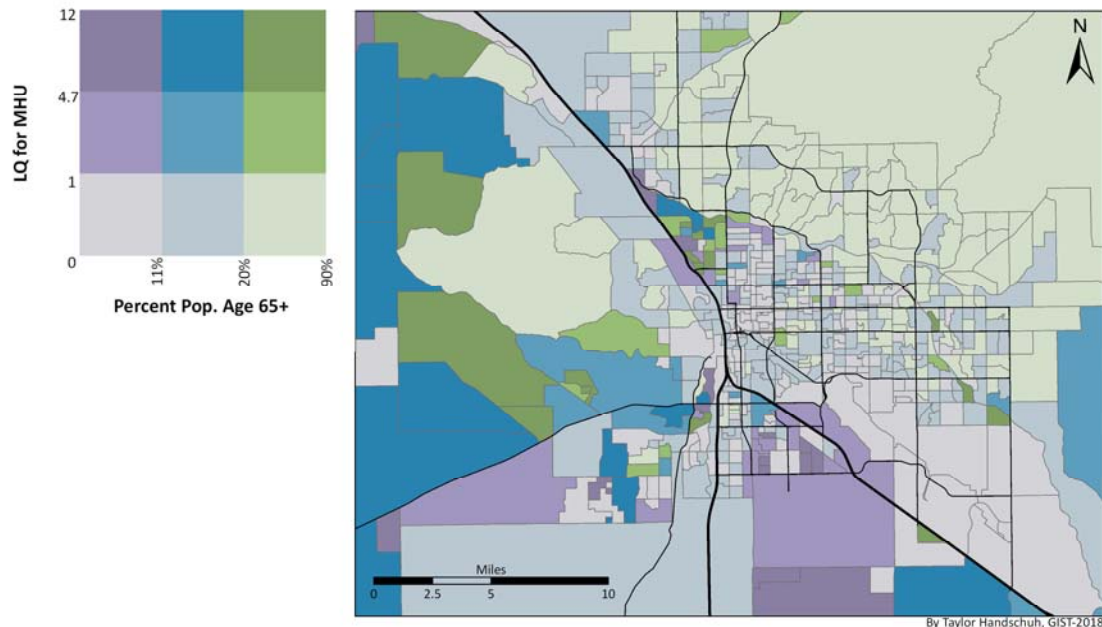


Figure 10: Prevalence of MH in relation to age structure of the block group population. MH LQ by percent of population 65 and older.

### Built Environment / Structure Age

- As can be seen in **Figure 11**, there are very few (4) block groups with both high levels of MH and high levels of pre-1980 housing. This suggests that older MH is very concentrated in a small number of areas. Better, MH-specific data, will help to determine whether this is the case.



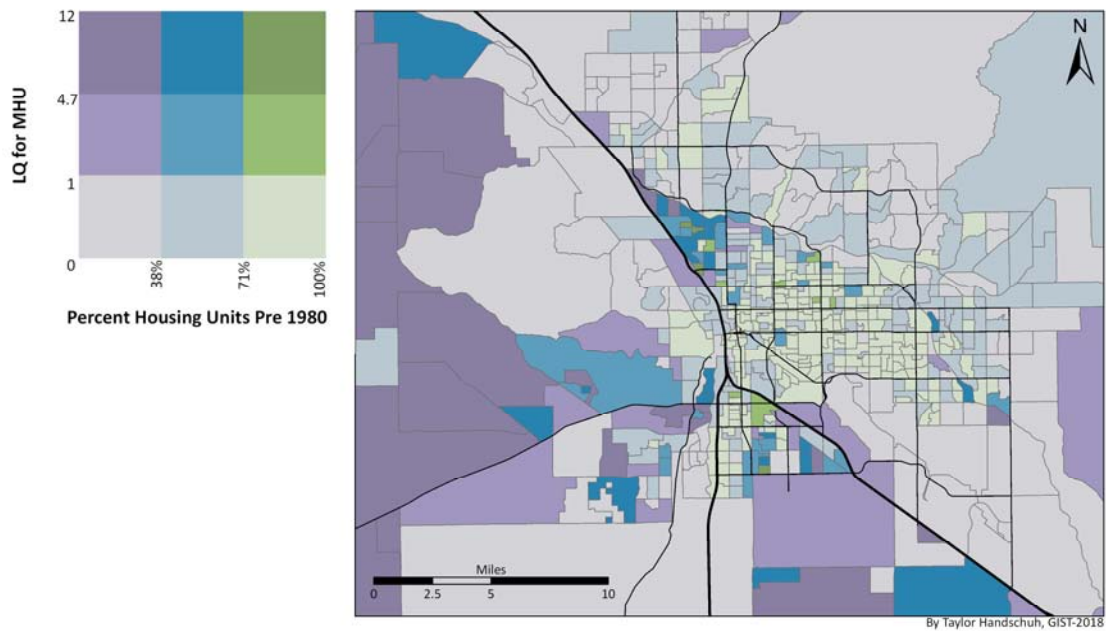


Figure 11: Prevalence of MH in relation to structure age. MH LQ by percent of housing stock built before 1980 (block group).

## Health

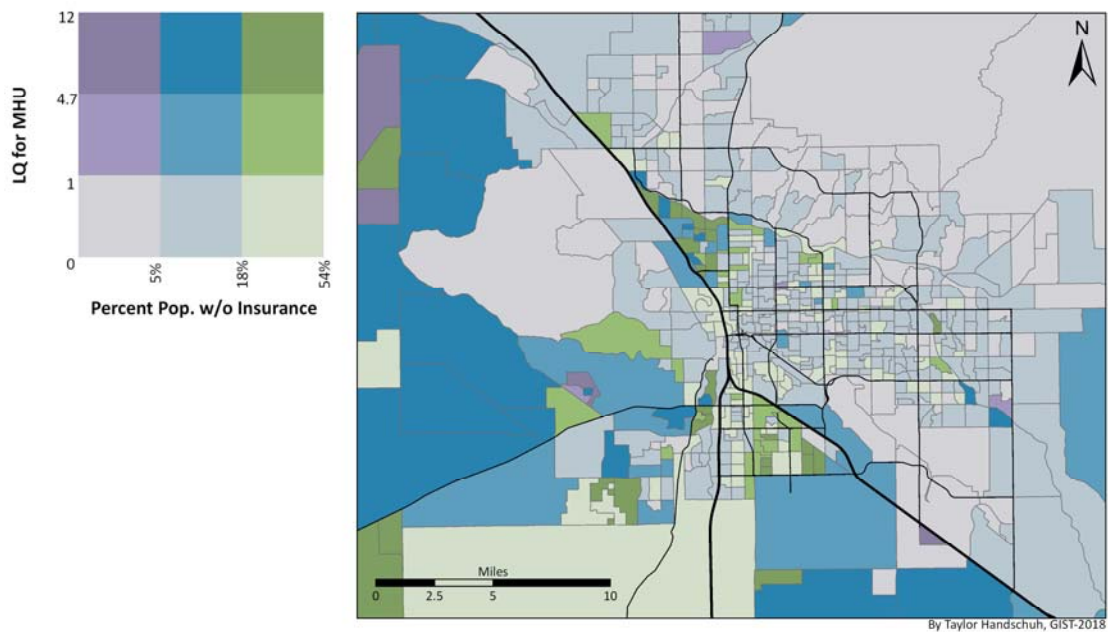


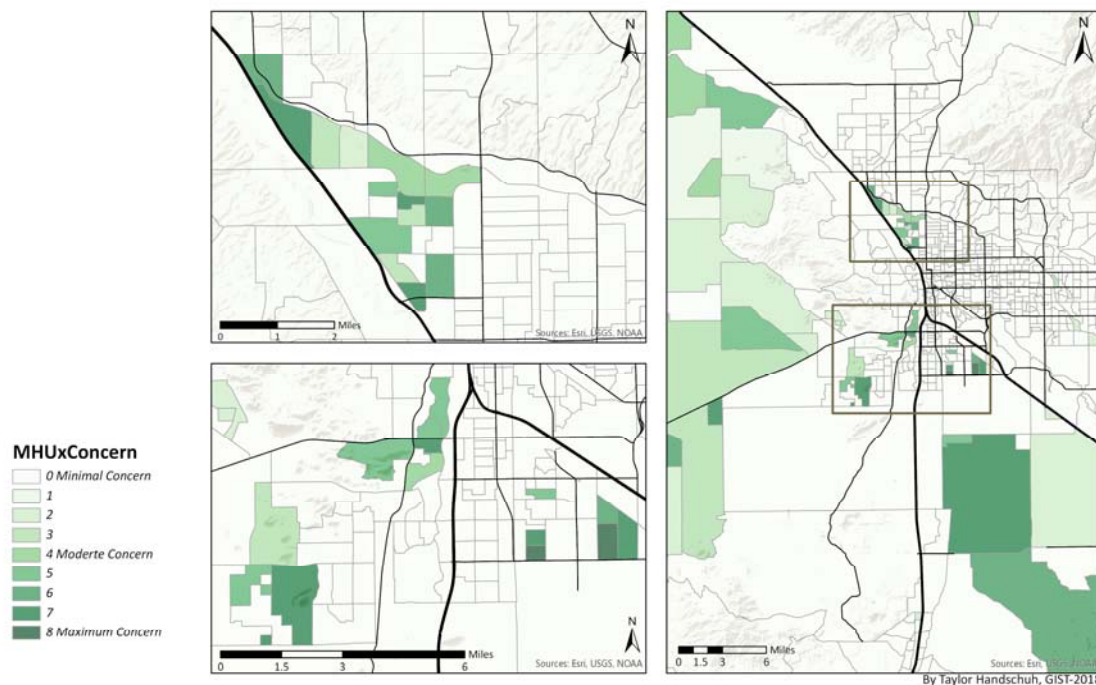
Figure 12: Prevalence of MH in relation to health. MH LQ by percent without health insurance (block group).



- As can be seen in **Figure 12**, there are very few block groups with high levels of MH and high levels of health insurance.
- There is meaningful variation in access to health insurance within urban MH clusters; however, high and medium MH block groups between Tucson International and I-10 have almost uniformly low health insurance rates.

### Spatializing the MH Gap: Converting Bivariate Maps into Concern Rankings

After identifying block groups with both high levels of MH and low QoL indicators, we created a single map summarizing the findings of the bivariate map series. The summary map focuses on block groups that have both high levels of MH and concerning levels of poverty, older structures, health insurance, etc. With this focus in mind, our summary map is a layered composite of all the block groups of greatest concern (dark green) from each bivariate map. By overlapping the “spaces of most concern” (block groups of most concern) from each bivariate map we produce rankings of concern; each block group is ranked according to how many times an indicator identifies that block group as a space of concern. If every indicator identifies a given block group as a space of concern, it will be a block group, or space, of most/greatest concern (i.e. dark green in **Figure 13**). Block groups that no indicator identifies as a space of concern are considered block groups of least concern (off white in **Figure 13**).



*Figure 13: Ranking spaces of MH concern in Pima County*

By applying our heuristic technique to produce concern rankings we are able to narrow our focus considerably to 11 block groups / spaces of “most concern” (i.e. 7 to 8 overlapping indicators of insecurity / QoL).<sup>19</sup>

### Caveats and Limitations of Heuristic Maps

It is important to note that while our analysis identifies specific areas as spaces of concern – where the MH gap is potentially the widest – it does not necessarily follow that the most insecure and vulnerable MH residents with the lowest QoL live in those areas. We temper our conclusions in this way for three main reasons. First, we want to avoid making inferences about individual MH communities or residents based on aggregate (block group) statistics (i.e. ecological fallacy). Simply driving through areas of concern reveals that MH conditions within block groups vary widely, suggesting that more micro-scale data collection is necessary to provide a more robust assessment. Second, the indicators employed in our analysis do not cover the full range of potential sources of social, financial and environmental insecurity experienced by MH residents. For example, we do not consider proximity to natural hazards (e.g. floodplains), noxious land uses (e.g. brownfields), or development pressure from rising land values. Third, our concern rankings give equal weight to each indicator. While this assumption is not supported by any existing research, neither is it unsupported; there is simply no extant MH-specific literature to guide the adjustment of weightings or suggesting what these weightings should be. This is a lacuna that future research will attempt to close. Finally, there is only so much that can be learned about people’s lives and the challenges faced by those living in MH communities from “top-down” analyses limited to mapping spatial correlations between proxy variables and MH. Figuring out what the most important determinants of QoL are for MH residents, as well as how these determinants might be measured, mapped and weighted, requires qualitative research. This research remains to be done in Tucson and Pima County’s MH communities. Notwithstanding the need for restraint in the interpretation of the maps presented in this white paper, our heuristic method is invaluable for homing in on insecure areas of the city where qualitative researchers should invest efforts to forge partnerships with MH communities and residents from whom they can gain insight and with whom they can collaborate.

To help transition from a “top down” statistical analysis at the scale of the block group to a more collaborative analysis at the scale of residents’ everyday lives, we have developed an online MH parcel viewer that allows users to easily obtain information about specific MH parcels and key socio-economic statistics for the surrounding area.<sup>20</sup> While still under development, we believe this online tool has value for both researchers and residents. First, it will aid in the identification of specific parks and communities of concern within the block groups of concern identified by our heuristic maps. Second, it provides access to information about MH parcels that, while publicly available, is not provided in a user-friendly form comprehensible to average citizens and MH residents. Our viewer, though requiring an internet connection, is comparatively easy to navigate and is more engaging than spreadsheets. Third, our viewer provides a platform for researchers in the field, which can potentially be employed to augment existing databases with direct observation of MH conditions made by researchers of all kinds from graduate students to housing advocates and “citizen social scientists.”

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<sup>19</sup> Note that only 10 can be seen in the summary image. The unseen block group of most concern is the Three Points area west along Ajo.

<sup>20</sup> Our MH parcel viewer can be found at:  
<http://uagis.maps.arcgis.com/apps/SummaryViewer/index.html?appid=54360cc1f5f24d8bb9b0c5925a80b36d>

Moreover, both the heuristic maps and the MH viewer are early and necessary steps in what we envision as an iterative research partnership among residents, the university, and community stakeholders (government bodies, MH industry groups, nonprofits, residents, etc.). Our aspiration is for such research partnerships to not only produce new ways of seeing, understanding and mapping MH insecurity, but also to produce more secure and resilient MH communities.

In the final section, we describe some of the dynamics we believe contribute to the MH gap in Metro Tucson and that should be the objects of future of research and policy reform.

## Inside the MH Gap in Tucson and Pima County

In preparing this white paper our team encountered a somewhat paradoxical phenomenon: while there is little formal research on MH, there is no shortage of theories about what the problems with it are, and why these problems exist and persist. We do not dismiss these informal understandings as naïve nor do we accept them at face value. Instead, we view these informal insights as useful products of tacit knowledge – knowledge formed by years of work in fields that are related to MH: law enforcement, urban planning, housing policy and advocacy, etc. Moreover, this is knowledge that is not codified and cannot be obtained from datasets, reports and journal articles. Here we use some of the themes identified by this diverse collection of local MH experts to construct an agenda for future research and policy intervention in Tucson and Pima County.

### Fractured Bureaucratic Field

Effective regulation of the MH industry, from the factory floor to the sales lot and the park pad, requires coordination between different jurisdictions and agencies. Anecdotally, and based on recent amendments to Pima County’s zoning code, there is reason to believe that improving coordination among agencies and jurisdictions may help close the MH gap.

For example, Pima County amended its zoning code in 2018 to require pre-1976 MH rehabilitation certification for any pre-1976 MH unit imported, installed, or relocated within Pima County.<sup>21</sup> Part of the motivation for this change was to prevent owners of MH from other Arizona counties from using Pima to sell, warehouse or dump their distressed pre-1976 units. The incorporation of pre-1976 MH into MH business practices in Pima County is a likely result of lack of coordination among Arizona counties. Several Arizona counties already had pre-1976 restrictions on their books either (i) requiring certification of rehabilitation (Cochise, Graham, Navajo, Yuma), or (ii) various types of bans (Apache, La Paz, Mohave, Pinal, Yavapai, Yuma). This heterogeneous (fractured) regulatory environment created incentives for owners to stave off devaluation of their pre-1976 MH by relocating it to Pima.

While this is just one illustration, and suggesting solutions to such regulatory coordination problems is beyond the scope of this white paper, coordination between ADOH, counties and municipalities is a subject that deserves further attention.

### Blunt Tools and the Regulator’s Dilemma

The tools available to regulators to address poor conditions in MH communities are often difficult to wield without inflicting potential harm on innocent and vulnerable residents. For example, in Pima County, MH parks are licensed by the Department of Health. When health inspectors

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<sup>21</sup> Note that this standard already applied to pre-1976 MH imported from out of state.

encounter repeated code violations, one of the department's only recourses is to revoke a park's license through the court system. This is a blunt tool in the sense that delicensing a park, instead of improving park conditions, may lead to park closure and mass eviction and related deleterious social impacts. In the absence of more moderate remedies to address inhospitable conditions, concerns related to eviction may create regulatory and judicial dilemmas that bias against code enforcement and license revocation. In extreme cases, operators may exploit fear of mass eviction to "milk" parks for revenue, or more perversely, to specialize in attracting tenants so vulnerable that to threaten their landlords with regulatory enforcement would render them homeless and "burdens" of the state.<sup>22</sup>

Such dilemmas can be exacerbated by weak coordination among government agencies (see above), or, put another way, poor alignment of agency powers with responsibilities. For instance, local housing departments may be authorized to provide housing vouchers to residents of substandard housing but do not have the ability to condemn said housing. Thus, greater collaboration among departments is necessary to close the MH gap.

Our goal is to (i) suggest the need for more and sharper tools to regulate MH, and (ii) demonstrate the potential for policy analysis and research to identify policy conflicts (e.g. lack of coordination between counties) and mismatches (e.g. Pima County Housing Department's inability to condemn MH), which if rectified, could help close the MH gap in Pima County.

### **Etiologies of Crime and Socio-Spatial Stigma**

Socio-spatial stigmatization plays an important role in shaping the contemporary geographies of MH. MH has long conjured images in the popular imagination of cramped and decrepit housing inhabited by "low-quality" people, a legacy of stigma from which we get that enduring slur, *trailer trash* (Harry 2004). This stigma has produced much more than slurs, however; it has played a central role in shaping the legal, social, and spatial landscapes of MH.

Stigma results from what the sociologist Erving Goffman (1963) called a "tainted" or "spoiled" social status. Those who are stigmatized are discredited, rendered unfit for full participation in society and pushed to the margins. But stigma can also be attached to places themselves, adding a new layer of "territorial infamy" onto already existing markers of stigma associated with poverty, ethnicity, citizenship status, etc. and further solidifying the marginalization of places and the people who inhabit them (Wacquant 2007: 67).

This "blemish of place" has characterized MH communities for as long as they have been treated as a form of affordable housing – in short, as poor people places. Familiar discourses framing poverty as the product of individual moral failures served to transfer stigma onto the landscape itself, giving rise to persistent stereotypes of MH communities as sites of disorder, crime, and dishonor (Sullivan 2018; Lee et al. 2007).

The issue of crime is worth particular consideration here, as it speaks to the persistent power of such stigma in the popular imagination and in public policy discourse. Given the persistence and intensity of this stigma, not to mention its very real effects on people's lives, it may come as a surprise that academic research on issues of crime in MH communities remains almost

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<sup>22</sup> "Milking" is collecting rent while spending nothing on maintenance and as little as possible on operations, more generally.

nonexistent. In fact, the few studies that have investigated these issues largely contradict popular perceptions. Barthe et al. (2014), for instance, found that MH parks are not “hotbeds of crime” as many believe, and that levels of some types of crime may actually be lower in MH communities than in comparable site-built housing developments. Meanwhile, McCarty (2010) and McCarty and Hepworth (2013) found that the presence of MH communities did not lead to increased levels of violent or property crime in surrounding communities. While this research is by no means comprehensive, it does cast doubt on popular assumptions about MH and call into question public policy frameworks that restrict MH developments.

To this we add another important caveat: criminological research on MH communities—like that on other social formations—should critically interrogate not just its objects of study but the epistemic categories it employs. What counts as “crime”, and what does not, is a social construction, not the reflection of some innate, natural reality (Coyle 2016). This distinction is crucial, and not just for academics. Recent research on MH — the present project included — has increasingly sought to highlight forms of violence and exploitation, such as eviction (Sullivan 2018; Desmond 2016), that is often *not* criminalized but might have disastrous and disorderly effects on social and individual life. Researchers who examine violence, vulnerability, and disorder only through the frame of “crime” run the risk of not only limiting their field of vision but also of reproducing the very forms of stigmatization that marginalize MH residents. Such deeper issues, we argue, must be examined and addressed in future research and policymaking concerning MH.

### Climate Change and Energy Poverty: Southwest Climate Gap

Although available data confirm increased vulnerability to climate change based on housing type, previous studies have largely neglected the nexus among MH, extreme heat, and energy poverty.<sup>23</sup> There has also been comparatively little scholarly attention paid to the environmental health impacts of hazardous construction materials and aging/dilapidated MH structures with poorly insulated walls and roofs, and uninsulated HVAC systems. These environmental, health and social concerns often intersect in pernicious ways. For example, excessive energy cost burdens can lead to unpaid bills, eviction and homelessness (NEADA 2004). Such burdens are especially pronounced for older MH, which is twice as expensive per square foot to heat and cool as site-built housing (GAO 2005: 3-4). MacTavish et al. (2006) found that aging MH in the relatively moderate climate of Oregon produced \$250 monthly energy bills (inflation adjusted). In the more extreme climate of the SW — where average annual and seasonal temperatures are expected to rise significantly, and the number of degree-days above 100°F is projected to increase by as much as a month by mid-late century (Wilder et al. 2013; Cayan et al. 2013) — there are 16,600 pre-1976 “mobile homes” (Pima County Staff 2018), one of the most energy inefficient forms of housing (GAO 2005: 1).<sup>24</sup> Moreover, pre-1976 mobile homes are a greater fire risk due to use of aluminum wiring and hazardous materials, including asbestos and formaldehyde (Pima County Staff 2018). As such, these older homes represent a threat to public health that intersects with social vulnerabilities in ways that climate change is likely to exacerbate.

For these reasons it is important for future research and policy on MH in Tucson and Pima County to consider overlaps between the MH gap and what Wilder et al. (2016) call the “Southwest

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<sup>23</sup> Energy (or “fuel”) poverty is the expenditure of more than 10% of a household’s income on energy (Boardman 1991).

<sup>24</sup> The term “mobile home” is generally reserved for units produced before the enactment of US Department of Housing and Urban Development (HUD) Manufactured Home Construction and Safety Standards, in June 15, 1976.

climate gap”, or the “disproportionate and unequal implications of climate change and climate change mitigation” for “people of color and the poor” (Shonkoff et al. 2011 cited in Wilder et al. 2016).

### **Race and Ethnicity: The MH Gap and “the Environmental Racism Gap”**

MH communities are often socially and demographically homogenous. Sometimes this homogeneity is explicitly promoted as with parks restricted to residents that are 55 years of age or older, but less overt forms of demographic sorting also occur by class and race. All-white and all-Hispanic parks are not uncommon in the US, and epithets like “trailer trash” and “white trash” reflect a long history of intersection among race, class and MH. Despite this fact, the role of racial and ethnic segregation in the production of the MH gap in Tucson was not tackled in this white paper. This silence should not be taken to suggest that this relationship is unimportant for understanding the MH gap in Tucson.

On the contrary, Tucson is one of the most economically segregated major cities in the United States (Florida 2015) and has a long history of racial and ethnic segregation.<sup>25</sup> Moreover, MH’s relegation to flood plains and areas not zoned residential suggest that there may be substantial overlap between what Pulido (2016) calls the “environmental racism gap” – disparities in environmental exposure between white and non-white communities – and the MH gap. Anecdotes further suggest that there is substantial overlap between what we might call the “immigration status gap” – disparities in exposure based on immigration status – and the MH gap. Such relationships deserved more attention than this white paper can provide. The overlaps among “identity gaps” (e.g. race, ethnicity, status, gender, age) and the MH gap deserve greater attention.

### **Rural vs. Urban MH**

Most MH in the US is found in urban settings; however, it is widely perceived as a rural phenomenon and MH often accounts for larger portions of the housing stock in rural areas. A similar statement could be made about Pima County, where most MH is located in, or near, the City of Tucson (see **Table 2**), with substantial amounts of MH also found in outer-lying areas. The focus of this white paper has been urban MH clusters, but our analysis identified block groups of concern in both urban and rural settings. There are good reasons to believe that the social relations and causal mechanisms that produce MH insecurity in a rural context are not identical to those that produce MH insecurity in urban settings. This suggests the need for comparative research on rural and urban MH, which are commonly treated as separate objects of study, in Pima County and beyond.

### **Beyond Insecurity and Vulnerability: What is “MH Security” and How Can It Be Created?**

For this white paper we used heuristic mapping to identify “hot spots” (i.e. block groups) of most concern, where various indicators of insecurity and wellbeing intersected with high MH location quotients. Ignored in this report, are the “cold spots” also identified by our heuristic maps – e.g. block groups with an overrepresentation of MH and high incomes, with an overrepresentation of MH and high levels of health insurance, etc. There may be valuable lessons to be learned about the MH gap from comparing “hot spots” and “cold spots”. Moreover, it is important for research

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<sup>25</sup> The Tucson Unified School District has been under a federal desegregation order for 40 years.



and policy to move beyond identifying and understanding MH insecurity to understanding “MH security”, closing the MH gap and creating high QoL MH communities.

## Conclusions and Looking Forward: A New Habitat for MH in Tucson and Pima County

In this white paper we developed a framework for analyzing MH (in)security – the MH gap. The MH gap is a “neutral” framework in the sense that it does not presuppose the marginality of MH or those who call it home. On the contrary, the MH gap proceeds from the premise that there is nothing intrinsically marginal about housing built in a factory rather than on-site. This “neutrality” is important because, despite the cultural stigmas attached to MH, today factory built housing is also idealized in the tiny house movement and fetishized by popular reality television shows like “Tiny House Big Living,” “Tiny House Hunters,” or “Tiny House Nation.” The deeper question at the heart of the MH gap framework is how MH can be simultaneously a symbol of utopian living and the nexus of myriad forms of social, financial and environmental insecurity? What accounts for the mismatch between the promise and reality of MH in Tucson and beyond?

As we demonstrate in this paper, the historical origins of the gap between the promise and reality of MH is complex and unevenly experienced by MH communities. This unevenness means that in order to understand the MH gap, it is essential to know its geography. To this end, we developed and tested a heuristic mapping technique to identify areas of the city and county where MH and various indicators of insecurity overlap (see p. 21). This is a mapping technique that we have designed from the start to be applied iteratively: used first to locate communities where the MH gap is particularly acute, to learn from those communities through ethnographic and qualitative research methods, and then design better metrics and maps with resident input. This white paper represents only the first step of this iterative process.

The iterative heuristic mapping procedure applied in this white paper has the potential to be applied to peer cities in the Southwest, and scaled up to the level of the region or nation. It can also be augmented by adding indicators and reweighting them to better reflect their impact on people’s QoL and housing security. However, for such augmentations to capture the processes by which the MH gap is produced and reproduced in people’s lives, they must be informed by grounded research – qualitative ethnographic research that goes beyond conventional measures and into people’s lives. In other words, we need to move from a “top-down” approach, whereby key indicators are selected based upon existing data, to a “bottom-up” approach, whereby local participants engage in classification processes and contribute to the resulting indicators, indices and maps (Wilder 2016). We hope that the analysis and tools developed for this white paper will contribute “top-down” insight to better target future “bottom-up” mix-methods approaches to studying MH (in)security.

Finally, in addition to understanding how the MH gap is produced, researchers, lawmakers, and public officials interested in MH security in Pima County should consider how it might be closed – that is, how life in Arizona’s MH communities can be made more secure. There are several ideas being put forward from a variety of sources both locally and nationally that deserve more attention and research. These are not necessarily new ideas, but they are under-explored and under-utilized, especially in Arizona. We conclude by briefly outlining three areas of active experimentation that are receiving very little scholarly attention.



*Co-ops, Resident Owned Communities, and Land Trusts* – One way to reduce the risk of park closure and eviction is for “park” residents to own the land their MH sits on as a group. Co-ops, resident owned communities and land trusts are different models of common ownership with the potential to reduce insecurity associated with land use change and the risk of closure. Common ownership reduces these risks by (i) requiring decisions be made as a group, and (ii) distributing equity in the land among residents (see Bachman 2016 for an Arizona-centered report on these approaches).

*“Duty to Serve” and a Secondary Market for Chattel Loans* – Here the emphasis is placed on improving the accessibility and affordability of MH through financial channels, or more specifically making markets for personal property/chattel loans more liquid. In the 1990s, after two decades of declining shipments, the MH industry experienced a resurgence. This resurgence was fueled by a thriving secondary market for MH asset backed securities (ABS) (Cunha 2013), including private markets for chattel loans. While this market collapsed in the early 2000s due to soaring default rates, evictions, repossessions and lender bankruptcies, today there is a movement to rebuild it. Nearly two decades after the speculative MH bubble burst, it is being brought back to life under the auspices of Fannie Mae and Freddie Mac’s “duty to serve underserved markets” in an effort to make it possible for more people to get cheaper loans to buy MH titled as personal property. This is an MH-specific financial inclusion pilot program overseen by the Federal Housing Finance Agency that should be watched carefully by MH stakeholders and researchers across the country.

*Resident-Centered Redevelopment (RCR)* – RCR does not represent a single model but a constellation of efforts by a variety of actors, including Habitat for Humanity (Habitat for Humanity Charlottesville’s Southwood project) and other housing non-profits, to work with residents of dilapidated and insecure MH communities to create new housing choices. This may or may not involve converting MH to affordable site-built housing. Three of the authors of this report have partnered with City of Tucson Ward 3 Office and Habitat for Humanity Tucson to create an approach to RCR that is guided by the methods and theories outlined in this white paper.<sup>26</sup>

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<sup>26</sup> The principles guiding this work are: non displacement, resident centered, and sustainable and equitable development. This project, A New Habitat for Manufactured Housing, is funded by the generous support of the Haury Program in Environment and Social Justice.

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