
ASSESSING
HOUSING
AVAILABILITY
UNDER OHIO'S SEX
OFFENDER
RESIDENCY
RESTRICTIONS

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*Prepared by Beth Red Bird
Ohio State University
265 Campbell Hall
1787 Neil Ave.
Columbus, OH 43210
Red-bird.1@osu.edu*

For the Franklin County Public Defender

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EXECUTIVE SUMMARY

This study assesses some of the fundamental assumptions underlying residency restrictions and questions whether these laws have the desired effect. Previous research is tested and results are placed in a community context, in order to shed light on the true impact of residency restrictions on housing availability, given the economic realities faced by both offenders and general county residents. The study specifically asks whether such restrictions place a more substantial burden on the economically most vulnerable. The following conclusions are drawn:

1. Compared to the county as a whole, offenders are substantially more likely to live in lower-income neighborhoods. Nearly three-quarters live in areas where the number of individuals in poverty is above the county median, compared with only 38.77 percent of the county as a whole. An overwhelming majority (83%) live in areas where median rent is below the county median, compared with half of all county land as a whole.
2. Residency restrictions render substantial portions of the county 'off limits'. Overall, 59.53% of all residential parcels samples were restricted. When adjusted to include non-residential parcels, an estimated 65.32 percent of the county is unlivable under current restrictions.
3. The proportion of parcels restricted is directly related to economic factors of the area. Among high poverty areas, an astounding 80 percent of sampled parcels are within a prohibited buffer zone. Within all four economic variables, based on regression analysis and modeling, the proportion of parcels violating a residential buffer is highest in areas with worst economic conditions.
4. While housing in the county is available, albeit only moderately, the availability of *affordable* housing, given the economic conditions where offenders tend to reside, is much more significantly constrained. For example, when examined by income, less than 32% of parcels are estimated to be available in areas with the lowest median per-capita income, but more than 42 percent of all offenders live in these areas. This pattern is evident across all economic indicators.
5. This study was able to empirically demonstrate that there is no relationship between offender location and proportion of area homes with children. In fact, as the proportion of area homes with children increases, the likelihood of an offender residing in the area decreases.

6. Economic factors play an important role in predicting where offenders live. In areas with the lowest median income, nearly half (47.18%) of all offenders are living in prohibited areas. In other words, offenders living in poor areas are more likely to be in violation. This relationship is most likely the cumulative result of offender concentration and increased restrictiveness in such areas. To put it simply, offenders in such areas are in violation of residency restrictions because they cannot find housing (either because of economic restraints or due to other factors) that does not violate their restrictions.
7. There are practical implications to the high proportion of offenders who are violating current residency restrictions. Should county officials suddenly seek full enforcement of these restrictions, this would immediately displace 515 offenders, placing them at increased risk for homelessness or transience, given the limitations on affordable, available housing.

Acknowledgements

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INTRODUCTION AND BACKGROUND

Lawmakers, confronted by sensationalized media accounts and panic-inspired public pressure for swift action, may create policies that, while publicly pleasing and powerfully symbolic, adapt poorly to social reality. This is a common criticism leveled at the growing number of laws governing the registration and monitoring of sex offenders (Levenson and Cotter 2005; Levenson and D'Amora 2007; Meloy, Saleh et al. 2007).

In 1994, the United States Congress passed the “Jacob Wetterling Crimes Against Children and Sexually Violent Offender Registration Act”, requiring all fifty states to create and maintain registries tracking those convicted of a specific sub-set of crimes (Wetterling Act 1994). This law is generally regarded as the first broad attempt at long-term identification and monitoring of convicted sex offenders and child victimizers, with an eye toward prevention of future such crimes (Meloy, Saleh et al. 2007).

Since the Wetterling Act, the federal government and individual states have experimented with various models of targeted recidivism prevention. The late 1990s saw the enactment of many state-level laws, indiscriminately referred to as “Megan’s Law”, providing for the public release of information about offenders (Tewksbury and Lees 2007). Today, all fifty states have substantial registration systems and, at last count, thirty states also have residency restrictions, laws that prevent sex offenders and child victimizers from living within a certain distance of prohibited locations (Meloy, Miller et al. 2007).

The first Ohio residency restriction took effect in 2003, barring “sexually oriented offenders” and “child-victim oriented offenders” from living within one thousand feet of a school (S.B. 5, 2003). The introductory section of S.B. 5 described its function as “prohibiting an offender who is subject to the law from establishing a residence within 1,000 feet of any school premises, [and] permitting landlords to evict such an offender from residential premises located within 1,000 feet of school premises” (S.B. 5, 2003). In 2005, the General Assembly expanded the law, granting count prosecutors and city attorney the right to file civil suits against offenders violating the restriction (H.B. 473, 2005).

In 2006, Ohio adopted the Federal Adam Walsh Child Protection and Safety Act, which in part expanded the thousand-foot residential restriction to include pre-schools and child care facilities (S.B. 10, 2007). In Columbus, Ohio’s capital city, this expansion doubled the number of protected areas. Offenders are now barred from living within one thousand feet of the county’s 397 elementary, middle, and high schools (Ohio Department of Education 2008), 388

licensed child care centers (Ohio Department of Job and Family Services 2008), and unknown number of pre-schools.

The enactment provisions of Ohio's Adam Walsh Act declare it to be "an emergency measure necessary for the immediate preservation of the public peace, health, and safety" and "crucially needed to provide increased protection and security for the state's residents" (S.B. 10, 2006). Similar justification has been used nationwide as other states adopt similar legislation.

Research on residency restriction has centered around the effect on released offenders and criminal justice practices and institutions (for a review, see Nieto and Jung 2006). However, little research to date has focused on the larger economic and housing effects of such laws in the community within which they are implemented. This research will examine the efficacy of sex offender registration laws within the community context, focusing on economic and geographic consequences, and correcting several methodological issues that have limited the applicability of earlier research.

PREVIOUS RESEARCH

In 1995, the first state residency restrictions appeared on the books (Meloy, Miller et al. 2008). Such laws create exclusionary zones, designed to prohibit offenders from residing within a specified proximity of vulnerable populations (Levenson and D'Amora 2007). A survey of state policies revealed thirty states with current residency restrictions (Meloy, Miller et al. 2008). Of those that create an 'exclusionary zone' around schools, playgrounds, or other places where children tend to congregate,, the most common (48%) restriction was 1,000 feet, followed by prohibitions of less than 1,000 feet (24%), 1,500 feet (8%), and 2,000 feet (2%)(Meloy, Miller et al. 2008). An additional unknown number of municipalities and local jurisdictions have their own residency requirements (Meloy, Miller et al. 2008).

The purpose of Ohio's restrictions is ostensibly to "protect the public from sex offenders and offenders against children, and in response to vicious attacks by violent predators" ("Adam Walsh Child Protection and Safety Act of 2006", 2006). Specifically, residency restrictions built on the assumption that proximity to potential victims, particularly in the school environment, facilitates recidivism.

However, no research has yet linked residency restrictions to reductions in recidivism or increases in community safety and protection. A review of 165 Florida offenders re-arrested for a repeat sex crime found that, after controlling for other risk factors, offender proximity to schools and day-care centers explained virtually none of the variation in sexual recidivism (Levenson, Zandbergen et al. 2008). After following 329 high-risk offenders over a two-year period, the Minnesota Department of Corrections found that residential factors showed no connection to victim choice for re-offense (Minnesota Department of Corrections 2003). No studies known to the author have yet addressed the effect of residency restrictions on non-sex crime re-offense.

A survey of 193 Florida resident found that the majority (58%) of community members support residency restrictions (Levenson, Brannon et al. 2007). However, despite this public support, legal scholars and social researchers have roundly criticized residency restrictions. Substantial criticism has been leveled at the assumptions underlying residency restrictions, arguing that such laws have no logical basis in practical fact. For example, restrictions are based on the assumptions that stranger-based assault is a common form of sex crime, that previously-identified offenders are responsible for most new sex crimes, and that where an offender "sleeps at night" has a direct effect on the commission of new crimes or chosen victims (Delson, Kokish et al. 2008). None of these are supported by demonstrable facts or

empirical evidence (Levenson, Brannon et al. 2007; Levenson and D'Amora 2007; Meloy, Miller et al. 2008). Even if such assumptions have merit, researchers also challenge the efficacy of restrictions, as applied, since those who victimized children are no more likely to be subject to housing restrictions than adult or noncontact offenders (Mercado, Alvarez et al. 2008).

Given the lack of empirical support for a recidivism reduction effect, offenders and their advocates argue that such expansive residency restrictions violate offender's constitutional rights (Gehring 2001), suggesting that such restrictions overreach so as to impair an offender's ability to live (for a discussion of constitutional issues, see Lester 2007).

Detractors also argue that residency restrictions cause substantial and unwarranted 'collateral damage' to offenders. Surveys of offenders and their families have found that registration and notification laws cause job loss, threats and harassment against offenders, offender property damage, and suffering among members of offenders families (Levenson and Cotter 2005; Tewksbury 2005; Levenson and Tewksbury 2009).

In addition to psychological and social consequences, residency restrictions can have direct economic and housing effects on offenders. Several Studies utilizing surveys of offenders have found that restrictions caused housing displacement and interruption. One such survey found that, as a result of such restrictions, 22% of offenders reported being unable to return to their home upon release from prison, an additional 36% were forced to move from a later address, and 54% reported difficulty finding affordable housing (Mercado, Alvarez et al. 2008). Other researchers found that, as the size of residential buffer zones increases, offenders' family members were more likely to experience housing displacement (Levenson and Tewksbury 2009).

Researchers have argued that, as a result, practical offender housing options are severely limited (Zandbergen and Hart 2006) and that difficulty in finding affordable housing presents a substantial barrier to successful re-entry (Bumby, Talbot et al. 2007). Some argue that substantial housing limitations may result in increased homelessness, transience, and instability (Levenson, Zandbergen et al. 2008), thus undermining the purpose of such laws by inadvertently exacerbating risk factors known to relate to recidivism, such as loss of stability, community support, and family support (Levenson and Cotter 2005; Bumby, Talbot et al. 2007; Levenson, D'Amora et al. 2007; Levenson, Zandbergen et al. 2008). Additionally, transience may decrease community safety by making post-release supervision difficult (Bumby, Talbot et al. 2007). One study found that vast majority (82%) of offenders questioned the efficacy of

residency restrictions to prevent re-offense (Mercado, Alvarez et al. 2008), and at least one advocacy group has called for a repeal of residency restrictions (Delson, Kokish et al. 2008).

Despite substantial research into the effects of residency restrictions on offenders and their families, little attention has been paid to the effects of such legislation on communities. Focusing on community notification, not residency restrictions, a survey of 588 households and businesses found limited evidence that placement of a sex offender in the area caused anxiety, anger and resentment among residents (Zevitz 2003). A few studies have found that, geographically, offenders tend to be clustered in poorer communities (Mustaine, Tewksbury et al. 2006; Hughes and Kadleck 2008). Hughes and Kadleck argue that this effect is connected to community notification and the result of affluent community members utilizing resources to drive out offenders (2008). However, their data does not support this contention, and in fact, Zevitz's review of neighborhood effects found no evidence of collective action (2003).

Mustaine and Tewksbury (2006) note that offenders tend to live in areas of high social disorganization and economic deprivation, though the authors suggest that it is not clear whether offenders choose to live in such areas to gain anonymity and a greater chance to reoffend, or because it is the only viable housing option.

Mustaine et al. (2006) found that the majority of offenders change residences following conviction, and that those who lived in more affluent neighborhoods at time of their arrest tended to have downward residential movement, moving to more socially disorganized locations, but this effect seems to be limited to urban offenders (Tewksbury, Mustaine et al. 2007). Unfortunately, no comparison group was utilized, so conclusions could not be drawn as to whether these findings are unique to sex offenders (compared to other offender groups), or the direct result of residency restrictions.

Others have found that, despite current restrictions, a substantial number of offenders continue to reside within residential buffer zones (Levenson and Cotter 2005; Tewksbury and Mustaine 2006; Grubestic, Mack et al. 2007). Early researchers argued that this proximity was the result of offenders seeking proximity to potential victims (Walker, Golden et al. 2001), but subsequent research has failed to support this view. Additionally, a link has been found between area economics and likelihood of buffer zone violation (Hughes and Burchfield 2008), though no explanation has yet been offered.

Previous studies encountered significant methodological obstacles. Surveys of offenders have been plagued by very low response rates (i.e. 9.5% (Mercado, Alvarez et al. 2008); 15.4%

(Tewksbury 2005)). Additionally, such surveys rely on offender understanding of complex legal realities and concepts such as ‘grandfathering’, yet no evidence has been presented to indicate that such an assumption is valid.

Studies of offenders based on residency information, rather than survey response, is less subject to methodological criticism, but has yet to yield substantial conclusions. For example, the clustering of offenders in poor locations has been noted, yet has never been placed into a community context (although Hughes and Kadleck (2008) make such an attempt). Additionally, the comparison groups utilized for such studies are frequently limited in their explanatory usefulness. Research by Tewksbury and Mustaine (Mustaine, Tewksbury et al. 2006; Tewksbury, Mustaine et al. 2007) has done the best job in this respect, but use of county and national averages for comparison purposes limits descriptive depth.

Similarly, the number of offenders violating buffer zones has been linked with economic variables (Hughes and Burchfield 2008), but without comparisons placing such data within a community context, possible explanations remain pure conjecture. Exploration of the reasons behind such results has significant potential for practical value. If it can be demonstrated that residency restrictions are disproportionately felt by those living in or near poverty, making them more susceptible to civil or prosecutorial action, such a demonstration would have significant importance for groups questioning the fairness and validity of such restrictions.

This study seeks to replicate and verify previous findings, correcting for specific methodological concerns, and then place such findings into a community context. Comparing previous research is empirically treacherous, as differing regulations, jurisdictions, definitions and enforcement methods create a minefield of confounding factors. A replication of previous work will not only lead robustness to previous conclusions, but also will allow for more direct comparisons and expand the conclusive power of such research, providing more definitive answers to the questions surrounding the impact of residency restrictions on offenders and communities.

Additionally, this study will examine one of the most basic, yet heretofore unaddressed assumptions underlying residency restrictions: that they limit proximity to potential child victims. This assumption is at the heart of the policy, but has yet to be assessed.

DATA AND METHODOLOGY

The area selected for this study is Franklin County, Ohio. Franklin County is located in central Ohio and has an estimated total population of 1,109,535 (U.S. Census Bureau). Franklin county also includes the capital city of Columbus, estimated total population of 724,095 (65.26% of the county) (U.S. Census Bureau). The county contains approximately 518,000 housing units, approximately 52 percent of which are owner-occupied (U.S. Census Bureau). The county is also economically diverse with areas of low poverty, with fewer than two percent of individuals living below the poverty line, and areas of extreme poverty where more than 40 percent of individuals live in poverty (U.S. Census Bureau). Franklin County is also demographically similar to the country as a whole in many ways (U.S. Census Bureau).

Parcel Data and Land Use Information

To assess the availability of housing, data was collected on all land parcels located in the county from the County Auditor (Franklin County Auditor 2009). There are a total of 421,427 address parcels registered with the County Auditor, including vacant land, non-residential buildings, and residential addresses (made up of private residences, group homes, apartment complexes, etc.). Each street address is assigned a unique parcel number so that each parcel represents one household unit. For example each apartment within an apartment building is assigned its own parcel number.

A sample of 1,884 parcels was randomly selected, stratified proportionally across all 45 county zip codes (see Table 1). One parcel did not have a valid address, most likely an error in the Auditor's database, and was removed from further analysis, for a final sample of 1,883 parcels. To improve accuracy, the smallest geographic areas were oversampled.

This stratification process provides several benefits. First, stratification concentrates urban, suburban, and near-rural areas (no areas of Franklin County are strictly rural). Because the average distance between residential parcels and the nearest prohibited location (school, daycare, etc.) is likely larger in areas where the population is less concentrated, stratification reduces estimated variance of the number of prohibited locations within one-thousand feet, increasing precision ($V[\text{Stratified}] = 0.000115734$, $V[\text{SRS}] = 0.000467$, Design Effect=0.247824924). Stratification also helps prevent a 'bad' sample that may miss parcels located in sparsely-populated areas.

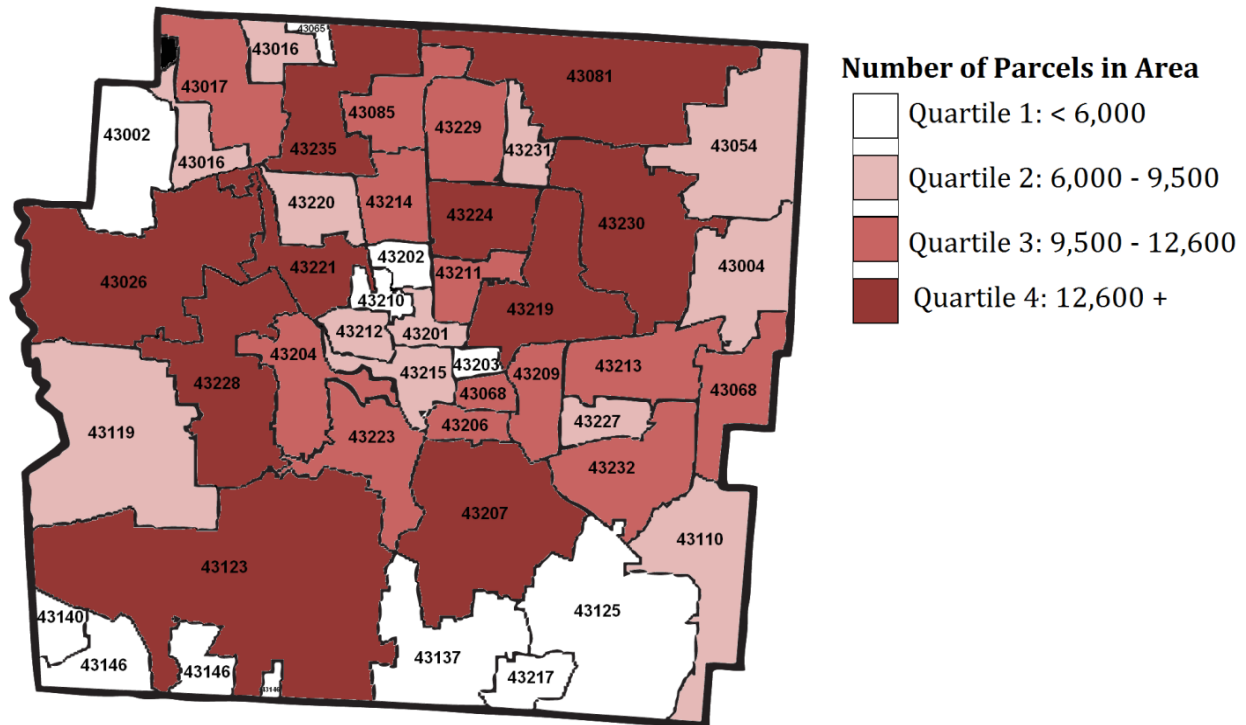
Geographic dispersion of parcels is displayed in Figure 1. Color coding indicates division of areas into quartiles by number of parcels in each area.

Table 1: Total & Sampled Parcels by Zip Code

Zip Code	Total Parcels	Sampled Parcels	Proportion Sampled	Strata Weight (W _h)
43002	3,974	18	0.00453	220.778
43004	7,340	33	0.00450	222.424
43016	7,471	33	0.00442	226.394
43017	10,478	46	0.00439	227.783
43026	18,069	80	0.00443	225.863
43054	6,635	29	0.00437	228.793
43065	2,610	12	0.00460	217.500
43068	12,498	55	0.00440	227.236
43081	21,227	93	0.00438	228.247
43085	9,549	42	0.00440	227.357
43110	8,953	40	0.00447	223.825
43119	8,316	37	0.00445	224.757
43123	25,251	111	0.00440	227.486
43125	4,908	22	0.00448	223.091
43137	857	10	0.01167+	85.700
43140	126	10	0.07937+	12.600
43146	1,000	10	0.01000+	100.000
43201	8,771	39	0.00445	224.897
43202	5,765	26	0.00451	221.731
43203	3,668	16	0.00436	229.250
43204	14,947	66	0.00442	226.470
43205	5,680	25	0.00440	227.200
43206	10,477	46	0.00439	227.761
43207	18,766	83	0.00442	226.096
43209	9,535	42	0.00440	227.024
43210	160	10	0.06250+	16.000
43211	10,433	46	0.00441	226.804
43212	6,536	29	0.00444	225.379
43213	10,524	46	0.00437	228.783
43214	10,236	45	0.00440	227.467
43215	6,869	30	0.00437*	228.967
43217	196	10	0.05102+	19.600
43219	12,725	56	0.00440	227.232
43220	9,287	41	0.00441	226.512
43221	12,791	57	0.00446	224.404
43222	2,374	11	0.00463	215.818
43223	9,773	43	0.00440	227.279
43224	13,112	58	0.00442	226.069
43227	7,948	27	0.00340	294.370
43228	17,481	77	0.00440	227.026
43229	11,799	42	0.00356	280.929
43230	19,520	86	0.00441	226.977
43231	6,038	27	0.00447	223.630
43232	12,503	55	0.00440	227.327
43235	14,246	63	0.00442	226.127
421,422	1,883	0.00447		

*Oversampled *One Invalid Parcel Removed

Figure 1: Map of County Zip Codes by Number of Parcel



Weights were used while analyzing results so that estimates will reflect the county as a whole. Strata weights ranged from 12.6 to 294.370. Weights were not truncated for two reasons. First, the vast majority of weights (84.4%) fell between 215.0 and 230.0. Second, many of the analyses require that the sample ‘mirror’ the county as a whole.

Sampled parcels come from thirty different cities, towns, or municipalities; however the vast majority (72.6%) come from Ohio’s capital city of Columbus (see Table 2).

Utilizing the Auditor’s parcel data is mildly limiting, in that it does not provide any information about household size, composition, or economics. This limitation means that statements about economic factors are of median *area* economic conditions, and not *household* economic conditions. For example, more than 50 percent of land *parcels* may be in areas where the median *household* income is above the county median. However, as the question of interest revolves around housing availability, the use of parcel data is particularly appropriate

Table 2: Sampled Parcels by City

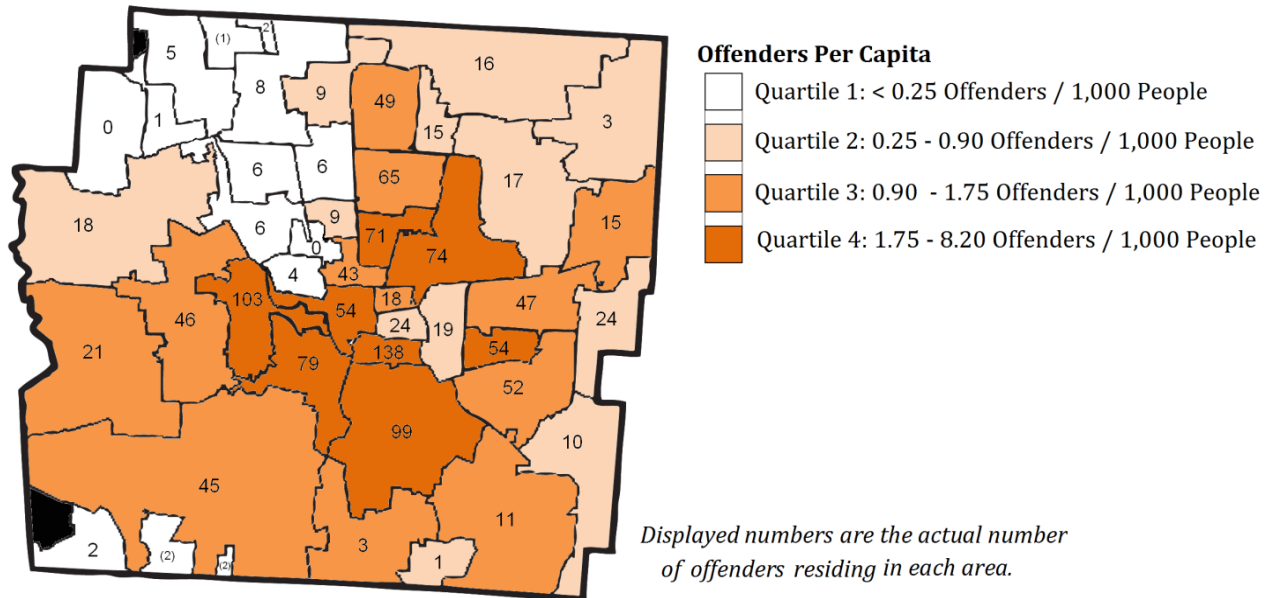
City	N	P	City	N	P
Bexley	17	0.90%	Lockbourne	1	0.05%
Blacklick	0	0.00%	Marble Cliff	1	0.05%
Brice	1	0.05%	Minerva Park	5	0.27%
Canal Winchester	16	0.85%	New Albany	15	0.80%
Carrousel	1	0.05%	Obetz	13	0.69%
Columbus	1367	72.60%	Orient	0	0.00%
Dublin	55	2.92%	Powell	0	0.00%
Gahanna	59	3.13%	Reynoldsburg	40	2.12%
Galloway	0	0.00%	Riverlea	2	0.11%
Grandview Heights	5	0.27%	Upper Arlington	62	3.29%
Grove City	56	2.97%	Urbancrest	10	0.53%
Groveport	12	0.64%	Valleyview	1	0.05%
Harrisburg	1	0.05%	Westerville	52	2.76%
Hilliard	38	2.02%	Whitehall	31	1.65%
			Worthington	22	1.17%
			Total	1883	

Sex Offender Data

The Ohio Attorney General's office maintains a database of home addresses for all sex offenders residing within the state, searchable by county. Registered offender information includes the current living address for any offender not currently incarcerated. Under current registration and community notification laws, every sex offender or child-victim offender currently living, working, or attending school in Ohio is listed on a public database (found at <http://www.esorn.ag.state.oh.us/>). Members of the public can access an offender's address, demographic information, and photograph, by entering part or all of his name, or by searching for all sex offenders near a certain address.

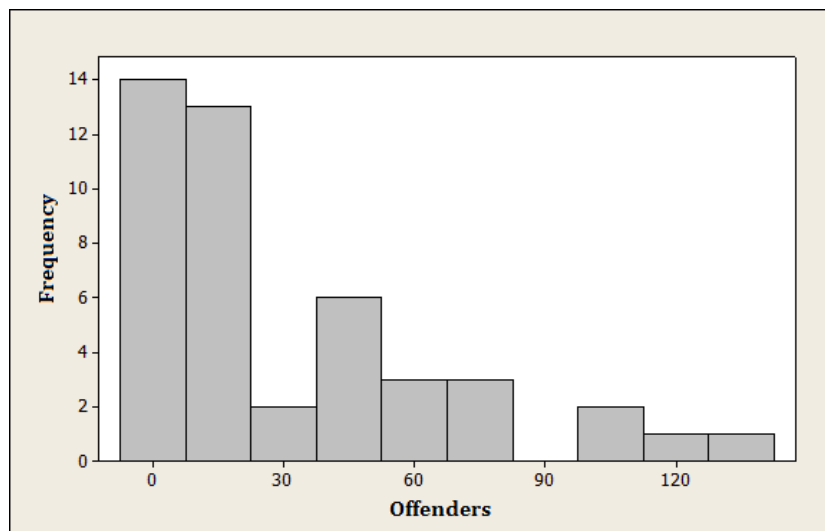
Currently, 1,561 offenders are registered within the county (Ohio Attorney General 2009). An additional 207 offenders work in the county but reside in neighboring counties, so these offenders were excluded from analysis. Overall, 133 (8.52%) sex offenders were registered at unlocatable addresses, most likely the result of typographic errors in the Attorney General's database. These invalid addresses were also excluded from analysis, leaving a total of 1,428 offender addresses. This is a much higher response rate than those obtained by survey studies, and should have dramatically decreased any resulting bias. A map of sex offender registered addresses is displayed in Figure 2. Color coding represents number of offenders per capita residing in the area.

Figure 2: Number of Sex Offender Residences per Area



Geographically, offenders seem to be clustered in areas near the middle of the county. This trend will be discussed later. The following analyses utilize binary logistic regression on observed proportions of offenders in tract areas. This is preferable as a dependent variable, because counts of offenders in various areas are highly skewed (see Figure 3).

Figure 3: Histogram of Number of Offenders per Area



Prohibited Address Data

Addresses from both parcel and sex offender data sets were entered into a database portal provided by the Franklin County Sheriff, which identifies any restricted facility (school, pre-school, or child care provider) within a thousand foot radius of any address. Addresses

were entered in the database and the number of prohibited items within the statutory one-thousand foot restriction were noted. Use of this system is particularly appropriate, as it is currently used by Franklin County as a first-stage enforcement tool. Offenders are notified of “violations” and directed to relocate based on outputs from this source.

Economic and Geographic Data

Economic census data was collected on the tract area surrounding each parcel. Tract information represents the smallest unit of analysis for which economic and geographic variables of interest are available. Information on area median per-capita income, number of individuals in poverty (poverty rate), median rent cost for renter-occupied units, and median single-family house value was collected for the Census tract area surrounding every sampled parcel. As residency restrictions are primarily designed to protect children, the proportion of households with children under age eighteen in each tract was also collected. Additionally, the total population and land area was collected, to produce population density per square mile.

RESULTS

Description of County Housing Availability

To determine type and location of housing available within the county, the randomly selected sampled parcels were divided into residential and non-residential land use. Residential land uses include single-family homes, multi-family homes, apartments, condominiums, trailers or modular homes, nursing homes or care facilities, motels, hotels, and programs designed to house ex-offenders. The county also classifies miscellaneous housing types as “other” residential units. The majority of sampled parcels were single-family homes (60.65%). Other common residence types included multi-family homes (4.04% of sample), apartments (1.81%), condominiums (13.75%), and other residential units (4.78%). Interestingly, sampled parcels also included one modular home, two motels, and two programs designed to help ex-offenders find housing (see Table 3).

Based on sample proportions and stratification design data, the weighted estimated proportion of county housing was calculated for each type of land use. An estimated 85.89 percent of county parcels are designated as residential ($\hat{P}= 0.8589$, $SE=.00775$), with a $\pm 2\%$ margin of error ($\alpha=.01$). Approximately 14 percent of county land parcels are non-residential ($\hat{P}= 0.1400$, $SE=.00773$), with a $\pm 1.99\%$ margin of error ($\alpha=.01$).

Table 3: Estimated County Parcels by Land Use

Land Use	Parcels in Sample	Sample Proportion	Estimated County Proportion	Standard Error	Margin of Error*
Residential	1606	85.29%	85.89%	0.775%	$\pm 2.00\%$
Single-Family House	1142	60.65%	61.89%	1.071%	$\pm 2.76\%$
Multi-Family House	76	4.04%	4.10%	0.444%	$\pm 1.14\%$
Apartment	34	1.81%	1.84%	0.307%	$\pm 0.79\%$
Condominium	259	13.75%	13.70%	0.774%	$\pm 1.99\%$
Trailer or Modular Home	1	0.05%	0.05%	0.054%	$\pm 0.14\%$
Nursing/Care Facilities	0	0.00%	N/A	N/A	N/A
Motel or Hotel	2	0.11%	0.12%	0.086%	$\pm 0.22\%$
Offender/Housing Programs	2	0.11%	0.11%	0.076%	$\pm 0.20\%$
Other Residential	90	4.78%	4.26%	0.454%	$\pm 1.17\%$
Not Residential	277	14.71%	14.00%	0.773%	$\pm 1.99\%$
Total	1883				<i>*$\alpha=.01$</i>

Economic & Geographic Factors for Sampled Parcels

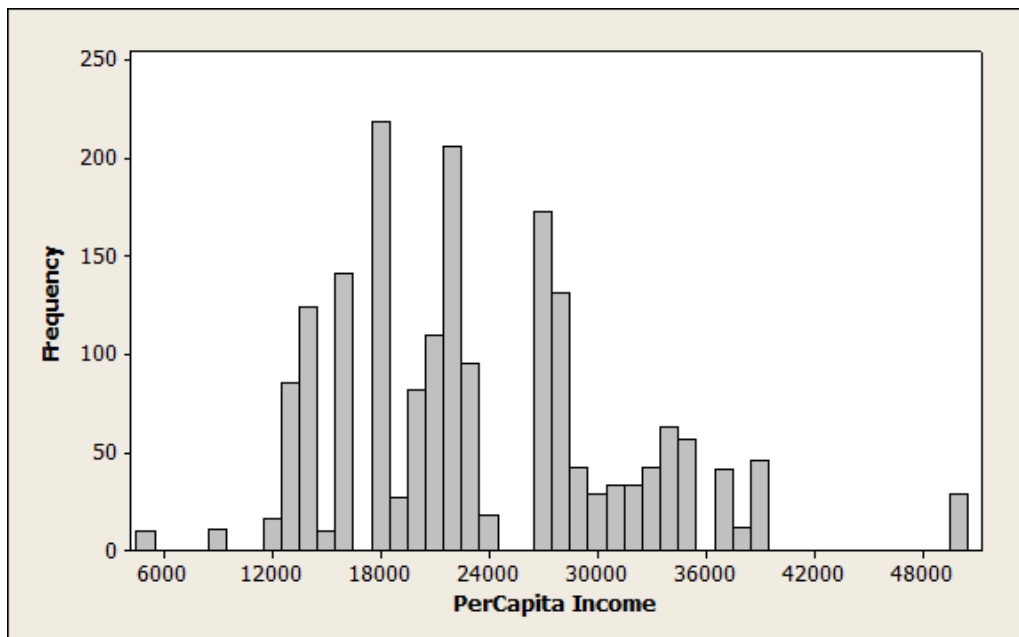
Median Annual Per-Capita Income: Per-capita income in the county ranges from \$5,369 to \$50,394, with a county median of \$26,473 (margin of error = +/- \$342) (U.S. Census Bureau). When parcels are displayed, for clarity purposes, grouped roughly into quartiles constructed from census data, 427 of the parcels sampled fall into the first quartile, 427 into the second quartile, 622 in the third quartile, and 427 in the fourth quartile (see Table 4). The distribution of parcels is somewhat normal, and not as skewed right as might be expected (see Figure 4).

The number of county parcels within each income group was estimated. In the largest quartile, an estimated 33.03 percent of county land parcels ($\hat{P}=0.3303$, $SE=0.01082$), fall between \$26,474 and \$28,958 per-capita income. An estimated 44.29 percent ($n=824$, $\hat{P}=0.4429$, $SE=0.0191$) of county residences are in an area where the per-capital income is below the county median.

Table 4: Estimated County Parcels by Income

Quartile	Per-Capita Income	Parcels in Sample	Estimated County Proportion	Standard Error	Margin of Error*
First Quartile	Less than \$17,851	407	21.61%	0.947%	±2.44%
Second Quartile	\$17,851 - 26,473	427	22.68%	0.963%	±2.48%
Third Quartile	\$26,474 - 28,958	622	33.03%	1.082%	±2.79%
Fourth Quartile	Greater than \$28,959	427	22.68%	0.963%	±2.48%
Total		1883			<i>*$\alpha=.01$</i>

Figure 4: Distribution of Sampled Parcels by Income



Individuals Living in Poverty: The county's area poverty rate ranges from 1.70% to 46.30%, with a county median of 12.40% (U.S. Census Bureau). Of the parcels sampled, 739 fell into the first poverty quartile, 414 into the second, 471 in the third, and 259 in the fourth (see Table 5). The distribution of parcels by poverty rate is highly skewed to the right (Figure 5).

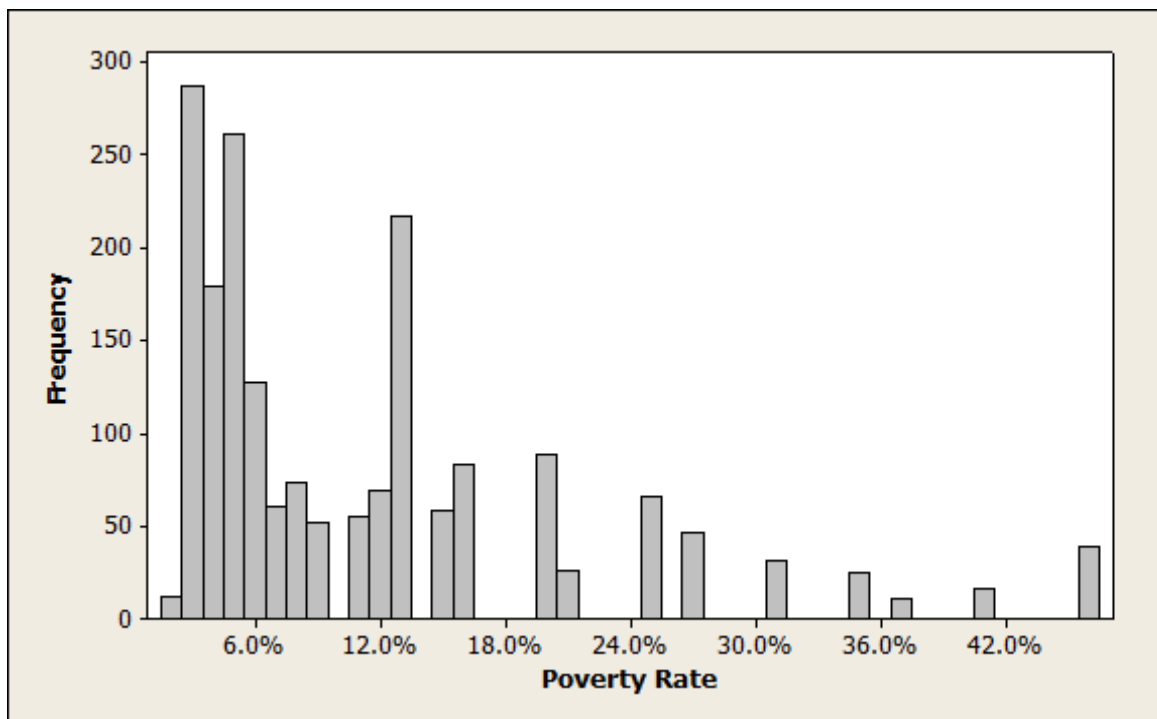
The number of county parcels within each quartile was estimated. The largest quartile contains an estimated 39.25 percent of county land parcels ($\hat{P}= 0.3925$, $SE=0.01123$). An estimated 61.24 percent ($\hat{P}= 0.6124$, $SE=0.02076$) of land parcels are in areas where the poverty rate is below the county median.

Table 5: Estimated County Parcels by Poverty Rate

Quartile	Poverty Rate	Parcels in Sample	Estimated County Proportion	Standard Error	Margin of Error*
First Quartile	1.70% - 5.30%	739	39.25%	1.123%	±2.89%
Second Quartile	5.30% - 12.40%	414	21.99%	0.953%	±2.45%
Third Quartile	12.40% - 20.35%	471	25.01%	0.996%	±2.57%
Fourth Quartile	20.35% - 46.30%	259	13.75%	0.792%	±2.04%
Total		1883			

* $\alpha=.01$

Figure 5: Distribution of Sampled Parcels by Poverty Rate



Median Renter-Occupied Rent: Area median rent ranges from \$352 dollars per month to \$995, with a county median of \$602 (margin of error = +/- \$5) (U.S. Census Bureau). Of the parcels sampled, 399 fall into the first quartile, 512 into the second quartile, 421 in the third quartile, and 541 in the fourth quartile (see Table 6). A distribution is pictured in Figure 6.

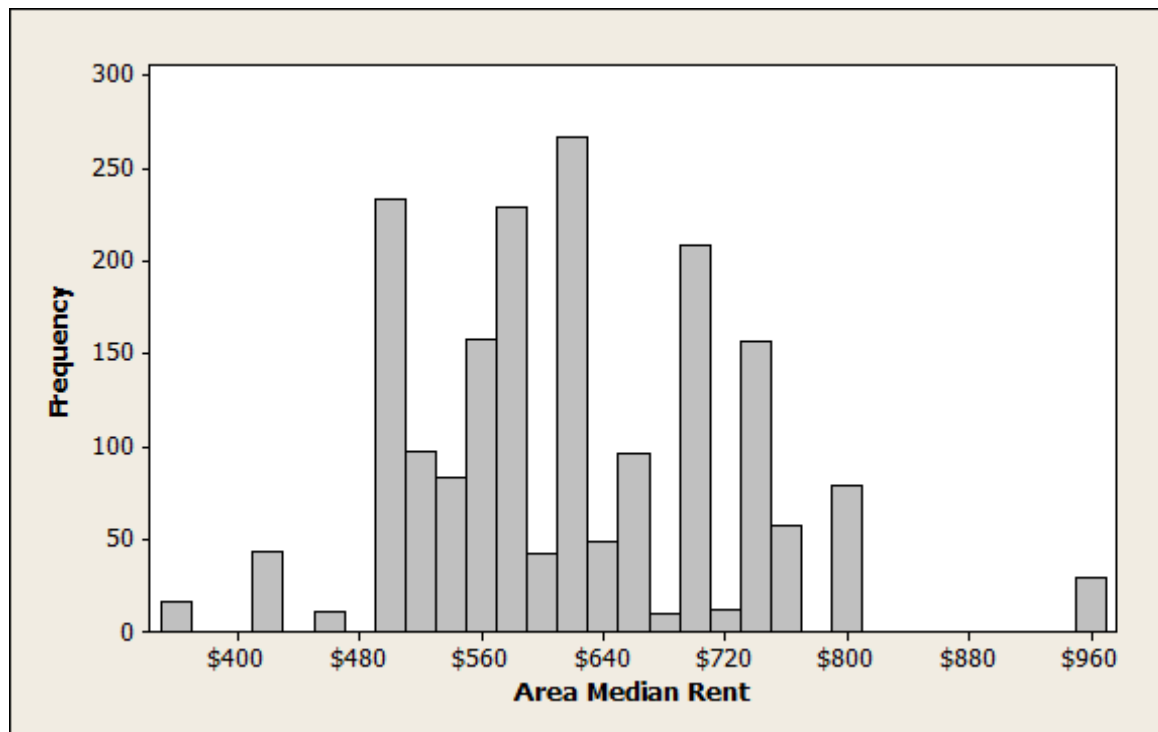
The number of county parcels within each quartile was estimated. Parcels are distributed into quartiles fairly evenly with the largest quartile contains an estimated 28.73 percent of county land parcels ($\hat{P}= 0.2873$, $SE=0.01041$). An estimated 48.38 percent ($\hat{P}= 0.4838$, $SE=0.01963$) of parcels are in areas where area rent is below the county median.

Table 6: Estimated County Parcels by Median Rent

Quartile	Median Area Rent	Parcels in Sample	Estimated County Proportion	Standard Error	Margin of Error*
First Quartile	Less than \$522	399	21.19%	0.940%	±2.42%
Second Quartile	\$522 - \$602	512	27.19%	1.023%	±2.64%
Third Quartile	\$602 - \$686	421	22.36%	0.958%	±2.47%
Fourth Quartile	Greater than \$686	541	28.73%	1.041%	±2.68%
Total		1873⁺			*$\alpha=.01$

⁺ One tract is excluded from analysis

Figure 6: Distribution of Sampled Parcels by Median Rent



Median Home Value: Median area home values range from \$48,100 to \$287,300, with a county median of \$119,600 (margin of error = +/- \$1,296) (U.S. Census Bureau). The distributions of parcels by home values is not particularly symmetric (Figure 7).

Based on sampling weights, the number of county parcels within each quartile was estimated. For example, an estimated one-third of county land parcels ($\hat{P}= 0.3330$, $SE=0.01084$) fall into the third quartile. An estimated 43.50 percent ($\hat{P}= 0.4350$, $SE=0.01899$) of parcels are in areas where home values fall below the county median (see Table 7).

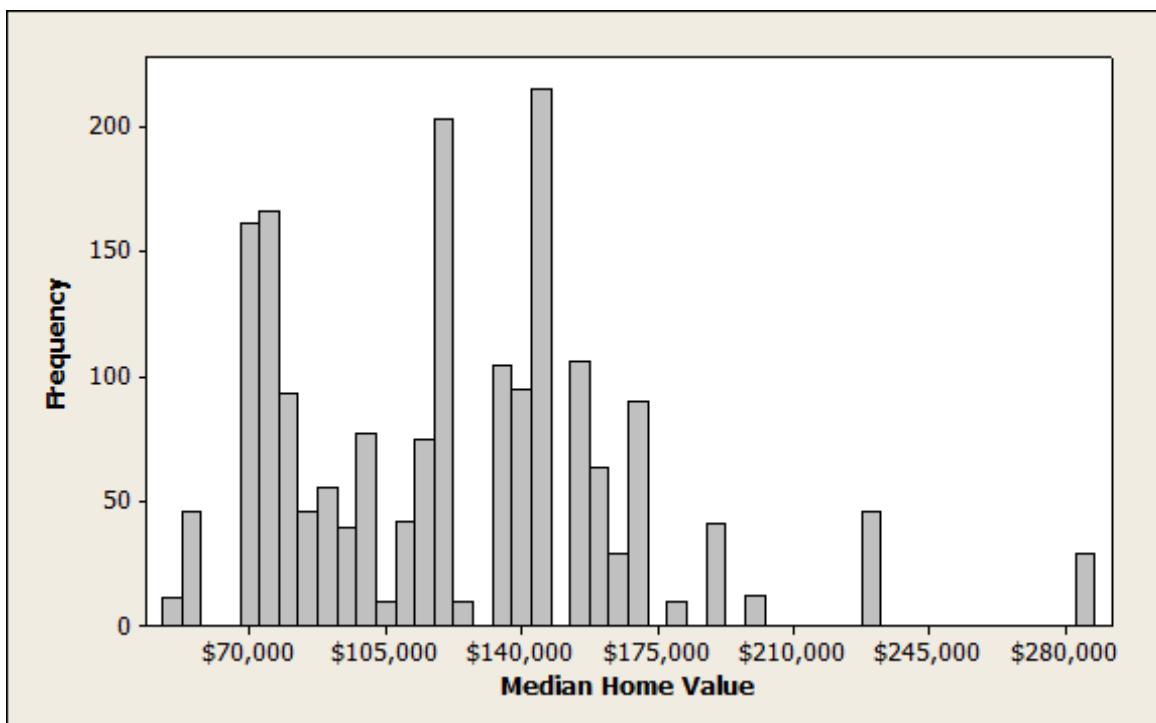
Table 7: Estimated Parcels by Median Home Value

Quartile	Median Home Value	Parcels in Sample	Estimated County Proportion	Standard Error	Margin of Error*
First Quartile	Less than \$80,200	411	21.83%	0.950%	±2.45%
Second Quartile	\$80,200 - \$119,600	410	21.77%	0.949%	±2.45%
Third Quartile	\$119,600 - \$149,750	627	33.30%	1.084 %	±2.79%
Fourth Quartile	Greater than \$149,750	425	22.57%	0.961%	±2.48%
		Total	1873⁺		

* $\alpha=.01$

⁺ One tract is excluded from analysis

Figure 7: Distribution of Sampled Parcels by Home Value



Households with Children Under 18: Information was also collected on the proportion of households with children under age eighteen in each census tract. Proportions ranged from

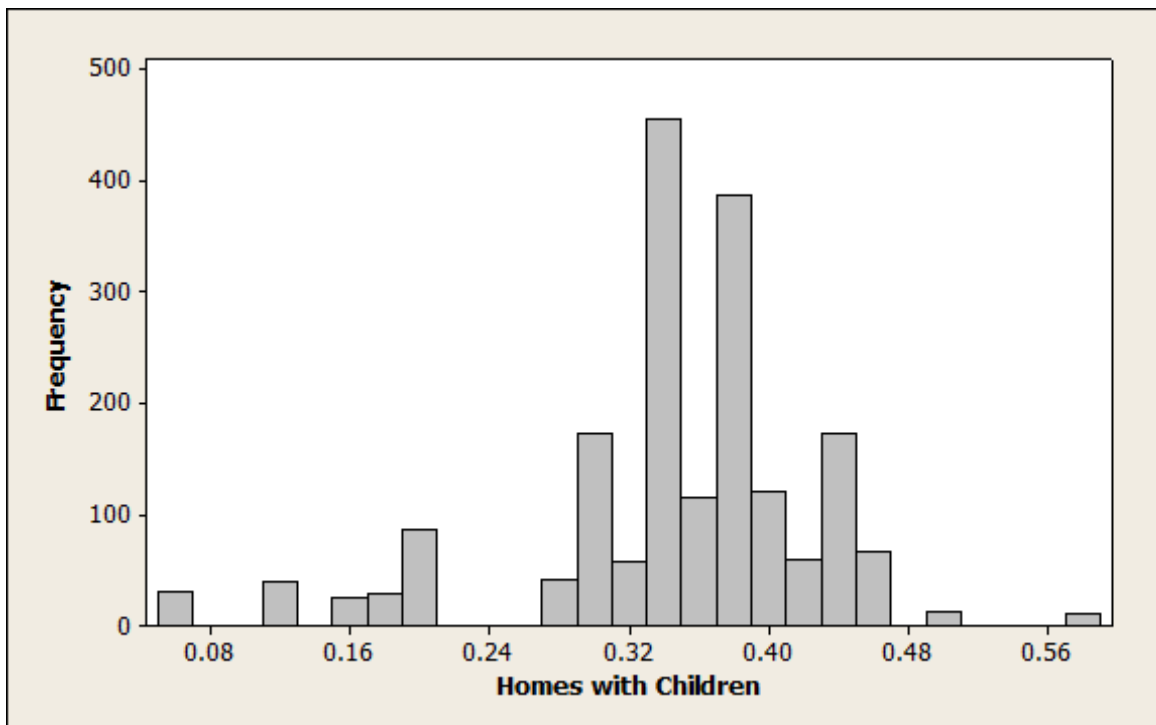
a low of 6.7 percent of households, to a high of 57.1 percent. Dividing tracts into quartiles resulted in 425 sampled parcels in the first quartile, 514 into the second quartile, 503 in the third quartile, and 441 in the fourth quartile (see Table 8). The distribution is surprisingly symmetrical, though slightly skewed to the left. Only slightly more one-half of county parcels ($\hat{P}= 0.5385$, $SE=0.0201$) are estimated to be in areas with a population density below the county median.

Table 8: Estimated Parcels by Proportion of Children

Quartile	Homes with Children	Parcels in Sample	Estimated County Proportion	Standard Error	Margin of Error*
First Quartile	6.7% - 31%	425	22.57%	0.704%	±1.81%
Second Quartile	32% - 35%	514	27.30%	0.946%	±2.44%
Third Quartile	35% - 40%	503	26.71%	1.006%	±2.59%
Fourth Quartile	40% - 57.1%	441	23.41%	0.908%	±2.34%
		Total	1883		

* $\alpha=.01$

Figure 8: Distribution of Sampled Parcels by Homes with Children



Population Density: Information on total tract population was combined with total land area to produce an estimate of population density per square mile. Population density ranges from 77.789 persons per square mile in near-rural areas to 10,577.645 persons on the campus of a major university (see Table 9). Slightly more one-half of county parcels ($\hat{P}= 0.5385$, $SE=0.0201$) are estimated to be in areas with a population density below the county median.

Table 9: Estimated Parcels by Population Density

Quartile	Population Density	Parcels in Sample	Estimated County Proportion	Standard Error	Margin of Error*
First Quartile	77.789 - 1,341.366	378	20.07%	0.921%	±2.37%
Second Quartile	1,341.366 - 2,790.306	636	33.78%	1.088%	±2.80%
Third Quartile	2,790.306 - 4,802.003	485	25.76%	1.006%	±2.59%
Fourth Quartile	4,802.003 - 10,577.645	364	19.33%	0.908%	±2.34%
		Total	1873⁺		

* $\alpha=.01$

⁺ One tract is excluded from analysis

Relationship among Economic and Geographic Factors

Correlation analysis of economic and geographic factors (see Table 10) revealed a moderate negative relationship between median income and poverty rate, as well as strong positive relationships between median income and rent and home values. Thus, as median income increases, housing costs increase and poverty decreases. The relationship between poverty rate and both median area rent and home values was moderate and, unsurprisingly, negative.

The strong relationship indicates that analysis of both income and housing data may be redundant. The more moderate relationship among poverty rate and housing values indicates that each captures some variability in the data not explained by the other. Scatter plot analysis confirms that there is a strong non-linear relationship between poverty rate and the other three economic factors (Figure 9). However, log-linear, exponential and inverse-exponential transformation of poverty rate did not result in an improved linear relationship.

The relationship between population density and economic factors is less clear. Mild but significant negative relationships exist between population density and income, rent, and home value factors. There is a stronger, positive linear relationship between population density and poverty rate. Thus, as population density increases, so does poverty.

The proportion of homes with children is generally uncorrelated with median income and home value, but mildly negatively correlated with population density, indicating that the proportion of families with children tends to be smaller in areas with higher population density. A weighted scatterplot of these factors by each economic indicator is included in Figure 10 and Figure 11.

Table 10: Correlation among Economic and Geographic Factors

	Area Median Income	Poverty Rate	Median Area Rent	Median Home Value	Homes with Children
Poverty Rate (<i>p-value</i>)	-0.678*** (0.000)				
Median Area Rent (<i>p-value</i>)	0.854*** (0.000)	-0.731*** (0.000)			
Median Home Value (<i>p-value</i>)	0.934*** (0.000)	-0.592*** (0.000)	0.809*** (0.000)		
Homes with Children (<i>p-value</i>)	0.011 (0.944)	-0.334** (0.025)	0.304 (0.045)	0.147 (0.339)	
Population Density (<i>p-value</i>)	-0.399*** (0.007)	0.664*** (0.000)	-0.362** (0.017)	-0.447*** (0.003)	-0.478*** (0.001)

p≤.10 * *p*≤.05 ** *p*≤.01 ***

Population density is included in this analysis as a possible moderating variable that affects the relationship between economic factors and number of prohibited locations within one-thousand feet. For example, inner city areas may have fewer positive economic factors and more prohibitions, because of the close proximity residents have to each other. Interestingly, however, the correlation analysis indicates only mild relationship between population density and any of the four included economic factors.

Factors by area zip code are included in Table 11.

Figure 9: Scatterplot of Economic Factors

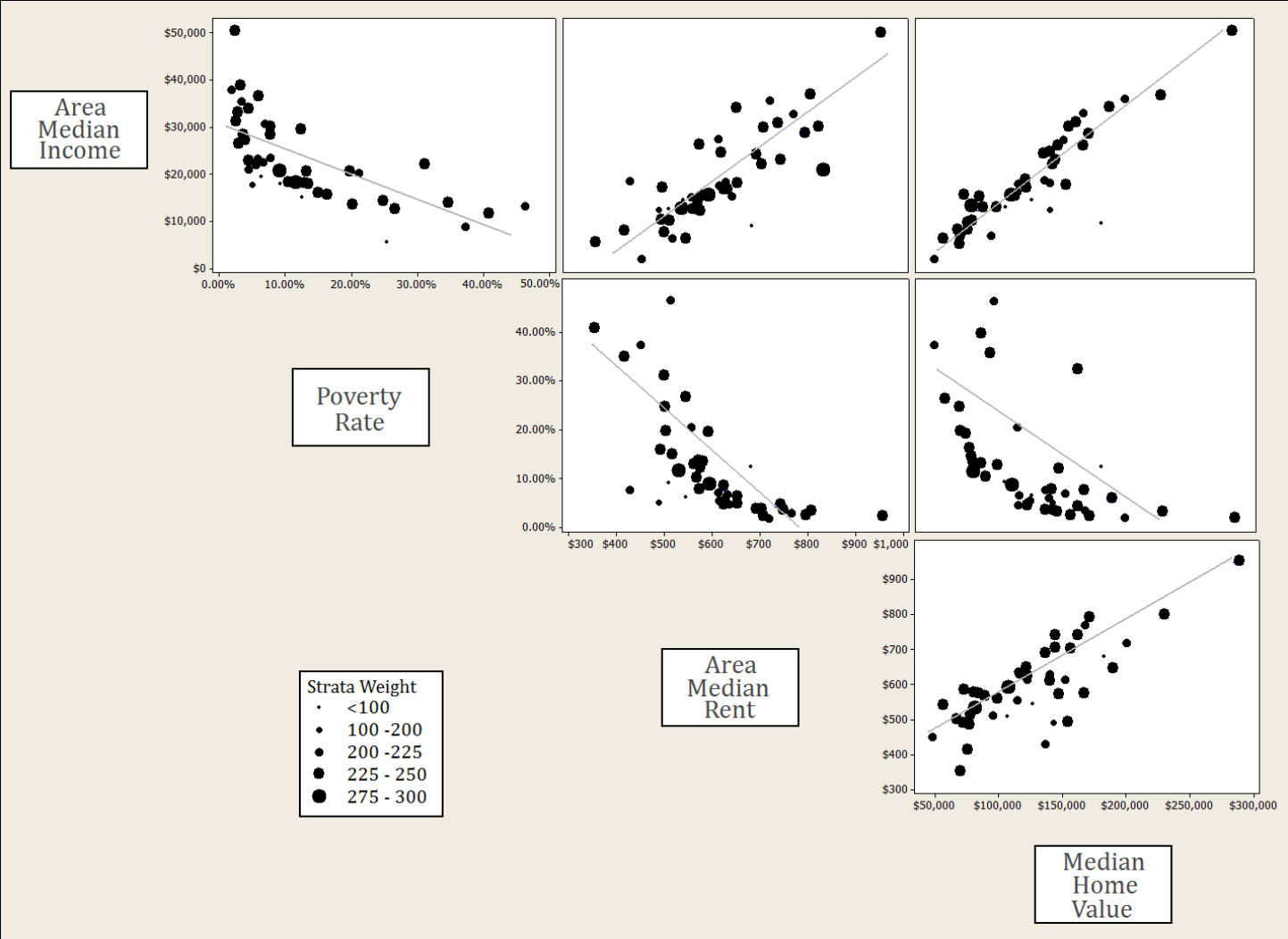


Figure 10: Scatterplot of Homes with Children and Economic Factors

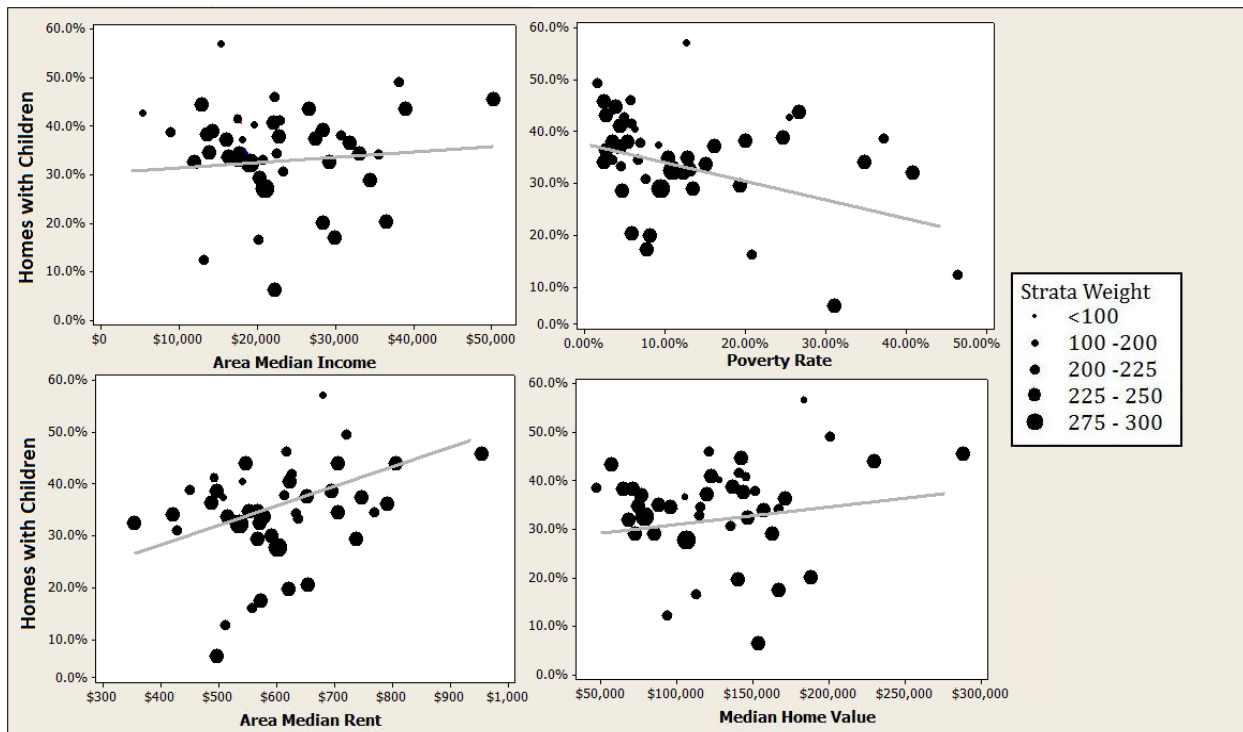


Figure 11: Scatterplot of Population Density and Economic Factors

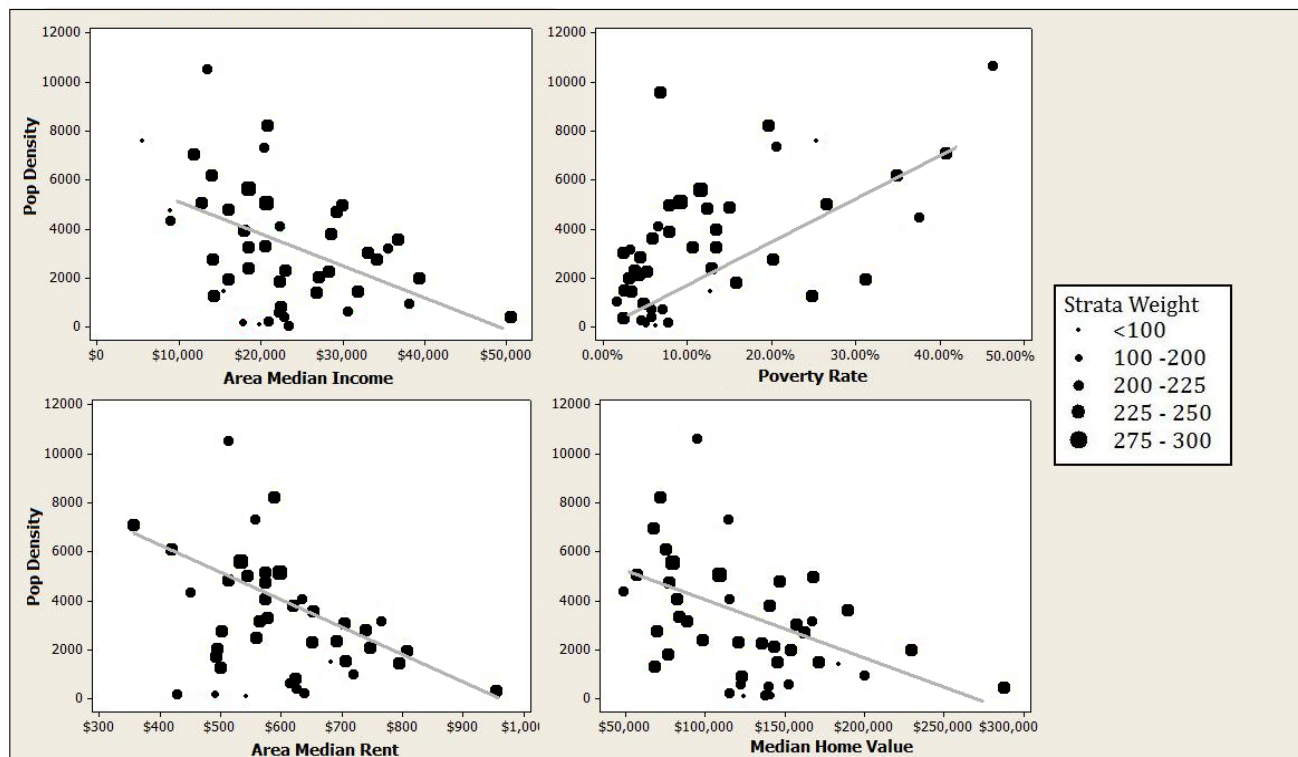


Table 11: Economic & Geographic Factors by Zip Code

Zip Code	Area Median Income	Poverty Rate	Area Median Rent	Median Home Value	Homes with Children	Pop Density
43002	\$23,344	7.70%	\$428	\$136,700	30.90%	137.8233
43004	\$30,748	7%	\$613	\$152,500	37.90%	631.5857
43016	\$31,891	2.60%	\$792	\$171,200	36.40%	1463.944
43017	\$39,035	3.20%	\$804	\$229,900	43.70%	1963.541
43026	\$26,644	3.40%	\$704	\$143,700	44.40%	1489.978
43054	\$50,394	2.50%	\$955	\$287,300	45.60%	387.3034
43065	\$38,060	1.70%	\$720	\$200,500	49.30%	963.2137
43068	\$22,957	5.10%	\$651	\$120,800	37.50%	2289.639
43081	\$27,128	3.90%	\$745	\$143,600	37.40%	2130.551
43085	\$33,105	2.70%	\$706	\$156,400	34.10%	3058.55
43110	\$22,844	5.70%	\$626	\$140,300	41.50%	376.4508
43119	\$22,164	5.50%	\$615	\$122,200	46.30%	642.8523
43123	\$22,213	4.80%	\$624	\$122,000	40.80%	813.114
43125	\$20,953	4.50%	\$636	\$115,700	33.00%	270.241
43137	\$19,625	6.20%	\$542	\$125,300	40.40%	77.78915
43140	\$18,194	9.10%	\$508	\$105,500	37.30%	+
43146	\$17,666	5%	\$490	\$141,400	41.30%	173.2262
43201	\$13,237	46.30%	\$512	\$94,800	12.50%	10577.65
43202	\$20,195	20.70%	\$556	\$113,800	16.30%	7319.704
43203	\$11,853	40.70%	\$354	\$68,300	32.10%	7097.374
43204	\$18,035	13.20%	\$573	\$80,800	33.50%	4028.419
43205	\$14,069	34.70%	\$417	\$74,800	34.60%	6126.333
43206	\$20,675	19.60%	\$589	\$71,900	29.60%	8242.383
43207	\$15,893	16%	\$492	\$75,600	36.90%	1841.27
43209	\$29,430	12.30%	\$573	\$147,000	32.60%	4782.367
43210	\$5,369	25.40%	+	+	42.80%	7631.923
43211	\$12,801	26.50%	\$543	\$56,400	43.90%	5074.325
43212	\$29,738	7.80%	\$575	\$167,000	17.30%	4951.079
43213	\$20,301	13.20%	\$570	\$84,400	29.20%	3303.024
43214	\$28,486	7.80%	\$620	\$139,900	19.90%	3849.369
43215	\$22,265	31.10%	\$495	\$153,800	6.70%	1920.341
43217	\$15,343	12.60%	\$681	\$182,100	57.10%	1525.052
43219	\$14,377	24.70%	\$500	\$67,900	38.50%	1238.788
43220	\$36,560	5.90%	\$650	\$188,900	20.30%	3606.234
43221	\$35,475	3.20%	\$767	\$168,200	34.30%	3173.976
43222	\$8,943	37.30%	\$450	\$48,100	38.60%	4362.925
43223	\$13,923	20%	\$498	\$69,400	38.40%	2764.565
43224	\$15,916	15%	\$512	\$77,100	34.00%	4821.64
43227	\$18,509	11.50%	\$532	\$79,600	33.00%	5608.495
43228	\$18,347	12.80%	\$560	\$98,000	34.70%	2426.834
43229	\$20,684	9%	\$595	\$108,100	28.50%	5111.335
43230	\$28,102	3.70%	\$691	\$135,900	38.50%	2309.893
43231	\$22,480	6.50%	\$632	\$115,600	34.30%	4062.197
43232	\$18,486	10.60%	\$568	\$87,500	34.70%	3222.26
43235	\$34,050	4.50%	\$737	\$161,600	29.00%	2816.048
	\$21,587	12.40%	\$602	\$119,600	33.10%	2,790.306

* No Census Data Available

Sex Offender Residency under Current Restrictions

Of the 1,561 offenders currently registered within the county, 133 (8.52%) were registered as living at unlocatable addresses (most likely the result of typographic errors). These addresses were excluded from analysis, leaving a total of 1428 offender addresses utilized in this analysis. This provides an interesting commentary on the Franklin County registration system, as the number of unlocatable offenders within the county actually exceeds the number of unlocatable offenders in the *entire* state of Nebraska, as measured by Hughes and Kadleck (2008).

A total of 593 of the total 1561 offenders are registered as working within the county, for an employment rate of 37.99 percent. Seventeen of the 1,561 offenders (1.1%) are currently in school. While ten (0.7%) offenders are officially registered as homeless, an additional 60 (4.2%) are registered as residing in a homeless shelter or program, bringing the total homelessness rate to 4.9 percent. An additional 122 (8.54%) reside in programs that help offenders transition from incarceration back into society. Fifteen offenders (1.1%) are currently living in a nursing home or health care facility, sixteen (1.1%) reside at motels, and nine (0.63%) live in trailers or modular homes. Because residence at transitional centers, homeless programs, hotels, motels, and nursing and care facilities most likely reflect processes other than those of interest to this study, these offenders were excluded from most analyses.

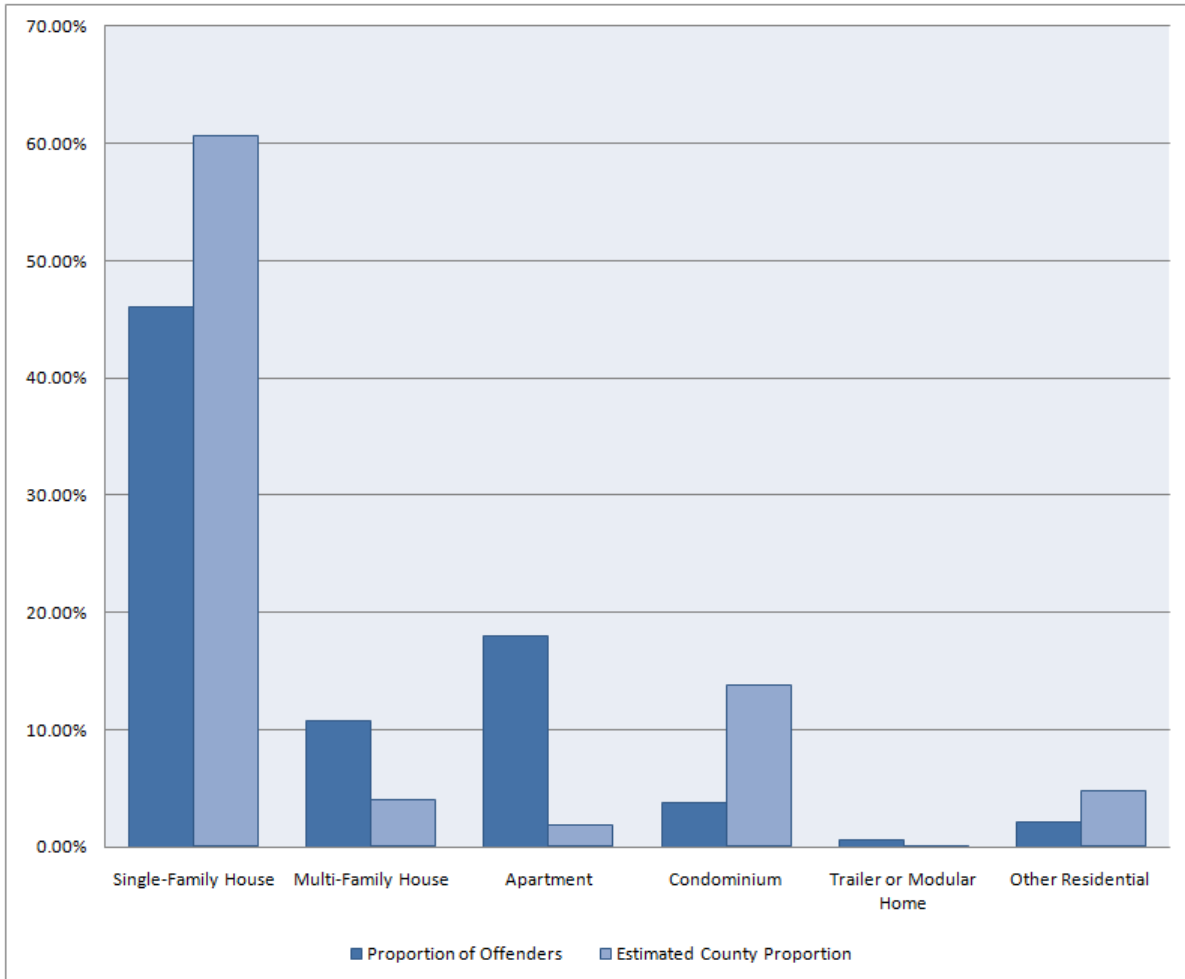
Of offenders residing in more traditional residences, 658 (46.08%) are residing in single-family homes, 154 (10.78%) reside in multi-family homes and 258 (18.07%) are living in apartments.

Fisher's Exact Test was used to determine whether the proportion of offenders residing in certain housing types differs from the weighted estimates of housing availability of the county in general. The test was utilized because some land use types resulted in small cell sizes. Fisher's test utilizes a hypergeometric distribution and is thus more accurate for small sample sizes. The comparison revealed that, compared to county land use as a whole, offenders are much more likely to reside in multi-family homes, apartments, or "other" residential situations, and much less likely to reside in single-family homes or condominiums. Interestingly, 42 offenders are registered as residing in buildings not zoned as residential, though this proportion is, unsurprisingly, much less than in the county land use distribution as a whole (see Table 12). The general county sample did not contain any nursing or care facilities, so no test could be conducted. A comparison of the distribution of offender and weighted sampled parcels is presented in Figure 12.

Table 12: Offender Residency by Land Use

Land Use	Number of Offenders	Proportion of Offenders	Confidence Interval [†] for Proportion in County Sample	Estimate for Difference	Fisher's Exact Test P-Value
Residential	1376	96.36%	(83.29% - 87.29%)	11.07%	0.000***
Single-Family House	658	46.08%	(59.13% - 64.65%)	-14.57%	0.000***
Multi-Family House	154	10.78%	(2.96% - 5.24%)	6.75%	0.000***
Apartment	258	18.07%	(1.05% - 2.63%)	16.26%	0.000***
Condominium	54	3.78%	(11.71% - 15.69%)	-9.97%	0.000***
Trailer or Modular Home	9	0.63%	(-0.09% - 0.19%)	-0.52%	0.003***
Nursing/Care Facilities	15	1.05%	—	—	—
Motel or Hotel	16	1.12%	(-0.10% - 0.34%)	1.01%	0.000***
Offender/Housing Programs	182	12.75%	(-0.09% - 0.31%)	12.64%	0.000***
Other Residential	30	2.10%	(3.09% - 5.43%)	2.68	0.000***
Homeless	10	0.70%	—	—	—
Not Residential	42	2.94%	(12.01% - 15.99%)	-11.77%	0.000***
Total	1428		[†] α=.01	p≤.10 * p≤.05 ** p≤.01 ***	

Figure 12: Distribution of Offenders and Parcels by Land Use



Using Fisher's test, to compare the county as a whole to areas where offenders live, reveals a substantial difference among per-capita income categories (see Table 13). Slightly less than half of offenders (42.16%) live in areas in the lowest quartile of median per-capita income. Additionally, only 5.46 percent of offenders live in the highest quartile range, compared to an estimated 22.68 percent of the county as a whole. Overall, compared to the county as a whole, offenders are substantially more likely to live in lower-income areas.

Table 13: Offender Residency by Median Income

Per-Capita Income	Number of Offenders	Proportion of Offenders	Confidence Interval ⁺ for Proportion in County Sample	Estimate for Difference	Fisher's Exact Test P-Value
Less than \$17,851	602	42.16%	(19.17%, 24.05%)	20.54%	0.000***
\$17,851 - 26,473	512	35.85%	(20.20%, 25.16%)	13.18%	0.000***
\$26,474 - 28,958	226	15.83%	(30.24%, 35.82%)	-17.21%	0.000***
Greater than \$28,959	78	5.46%	(20.20%, 25.16%)	-17.21%	0.000***
Total	1418⁺		⁺ $\alpha=.01$	$p \leq .10$ * $p \leq .05$ ** $p \leq .01$ ***	+homeless excluded

A distribution of parcel and offender addresses shows that, while parcels are fairly evenly distributed, offenders are much more concentrated (see Figure 13). Figure 14 provides a map of offenders living in areas coded by median income quartiles.

Figure 13: Distribution of Offenders and Parcels by Income

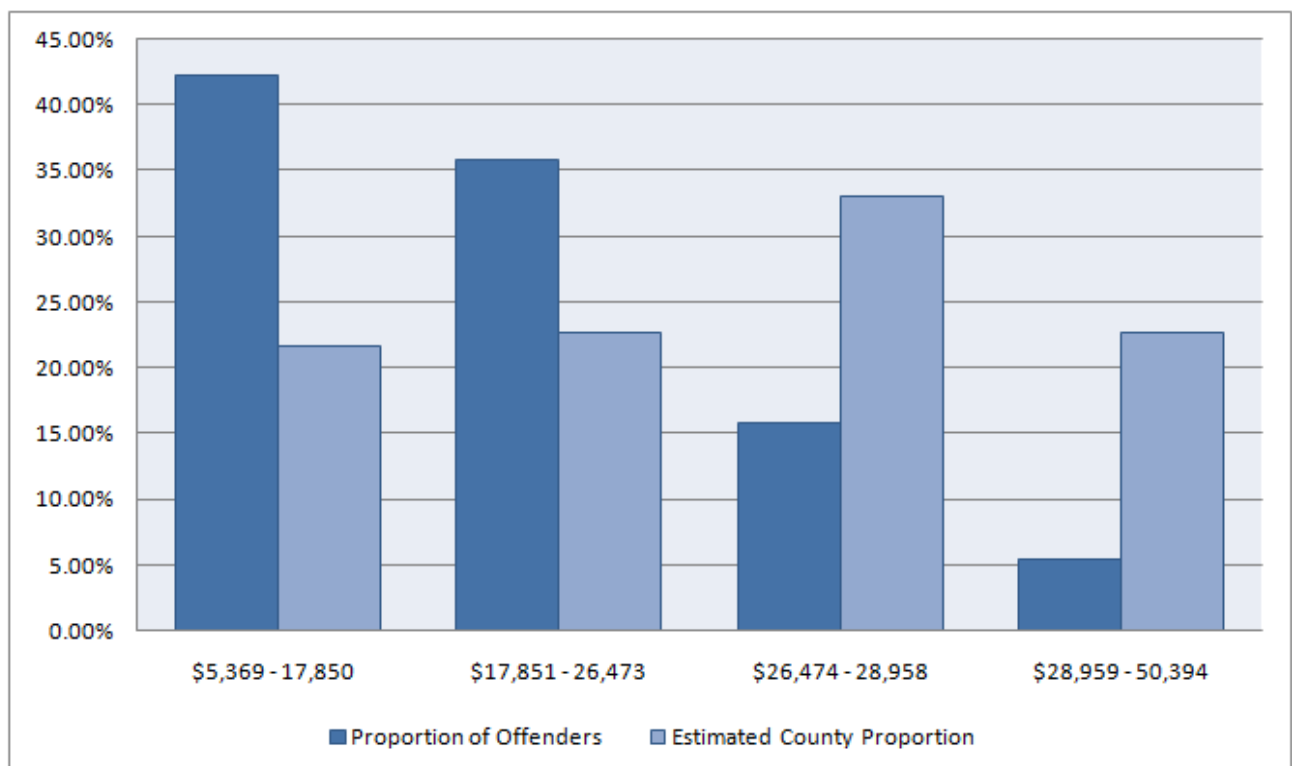
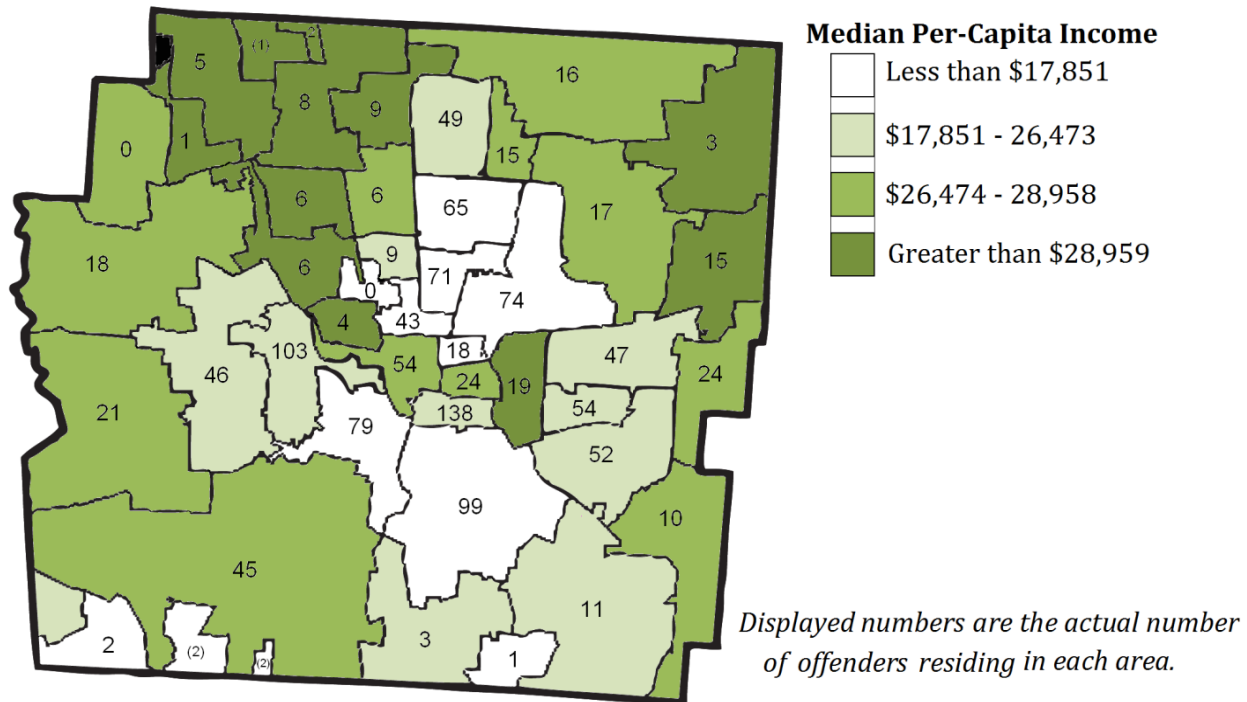


Figure 14: Map of Offenders Residences by Income



Fisher's Exact Test yielded similar results among poverty rate categories (see Table 14). Nearly three-quarters of offenders (71.15%) live in areas where the number of individuals in poverty is above the county median, compared with only 38.77 percent of the county land parcels as a whole, indicating that offenders are disproportionally distributed in higher poverty areas. A distribution is depicted in Figure 15 and a map illustrating offenders residences by poverty rate is provided in Figure 16.

Table 14: Offender Residency by Poverty Rate

Poverty Rate	Number of Offenders	Proportion of Offenders	Confidence Interval ⁺ for Proportion in County Sample	Estimate for Difference	Fisher's Exact Test P-Value
1.70% - 5.30%	167	11.69%	(36.81%, 41.69%)	-27.55%	0.000***
5.30% - 12.40%	235	16.46%	(19.51%, 24.47%)	-5.53%	0.000***
12.40% - 20.35%	597	41.81%	(22.53%, 27.49%)	16.79%	0.000***
20.35% - 46.30%	419	29.34%	(11.27%, 16.23%)	15.59%	0.000***
Total	1428⁺		⁺ α=.01	p≤.10 * p≤.05 ** p≤.01 ***	+homeless excluded

Figure 15: Distribution of Offenders and Parcels by Poverty Rate

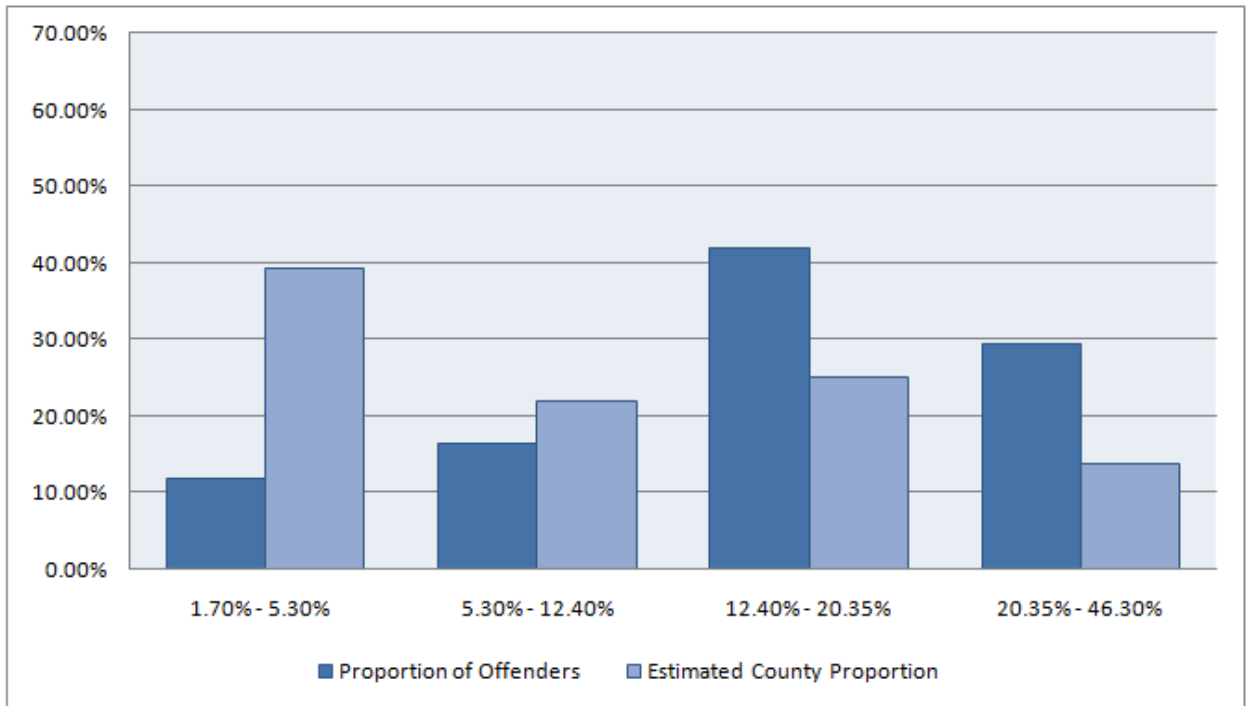
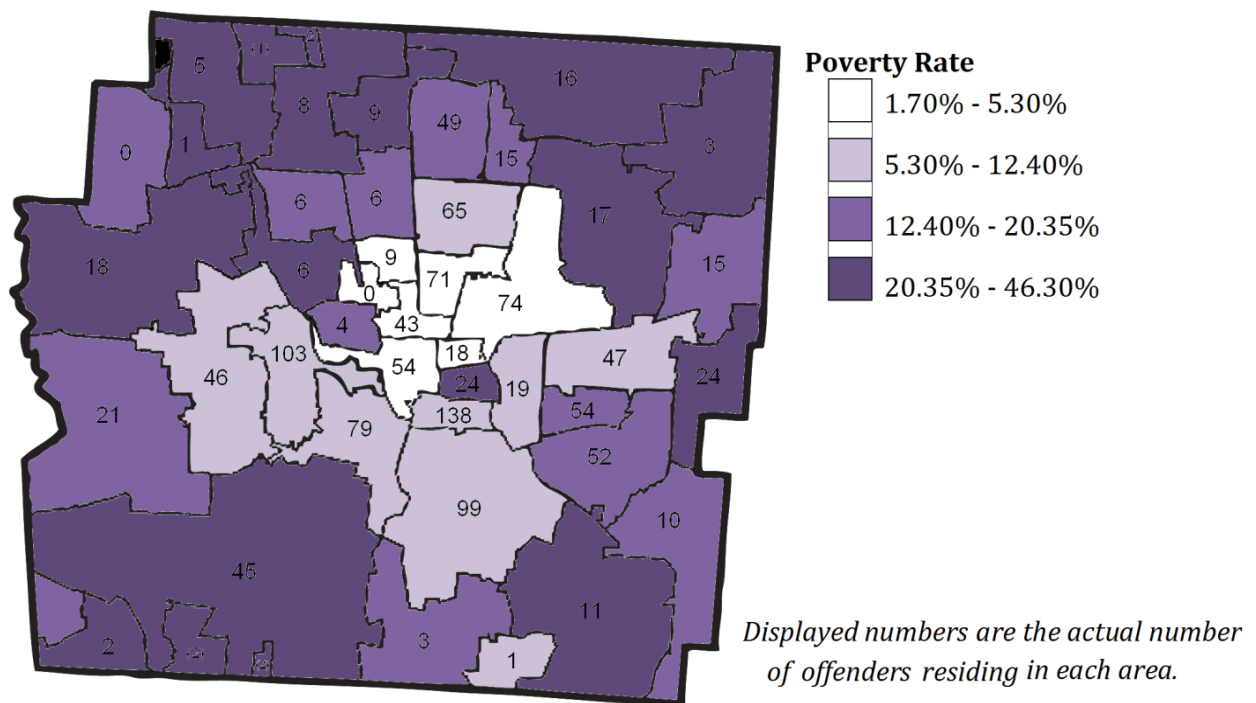


Figure 16: Map of Offenders Residences by Poverty Rate



Again the proportion of offenders residing in certain areas was compared to the weighted general county estimates (see Table 15). An overwhelming majority of offenders (83.14%) live in areas where median rent is below the county median, compared with approximately

half (48.64%) of county parcels, indicating that offenders are disproportionately distributed in areas with lower rent costs. Again, while parcels are evenly distributed, the offender address distribution is substantially skewed (Figure 17). A map of offender residency by median rent is included as Figure 18.

Table 15: Offender Residency by Median Rent

Median Area Rent	Number of Offenders	Proportion of Offenders	Confidence Interval ⁺ for Proportion in County Sample	Estimate for Difference	Fisher's Exact Test P-Value
Less than \$522	584	41.18%	(18.88%, 23.72%)	19.88%	0.000***
\$522 - \$602	595	41.96%	(24.70%, 29.98%)	14.62%	0.000***
\$602 - \$686	154	10.86%	(20.01%, 24.95%)	-11.62%	0.000***
Greater than \$686	85	5.99%	(26.20%, 31.56%)	-22.89%	0.000***
Total	1418^{##}		⁺ $\alpha=.01$	$p \leq .10$ * $p \leq .05$ ** $p \leq .01$ ***	+homeless excluded #One tract excluded

Figure 17: Distribution of Offenders and Parcels by Median Rent

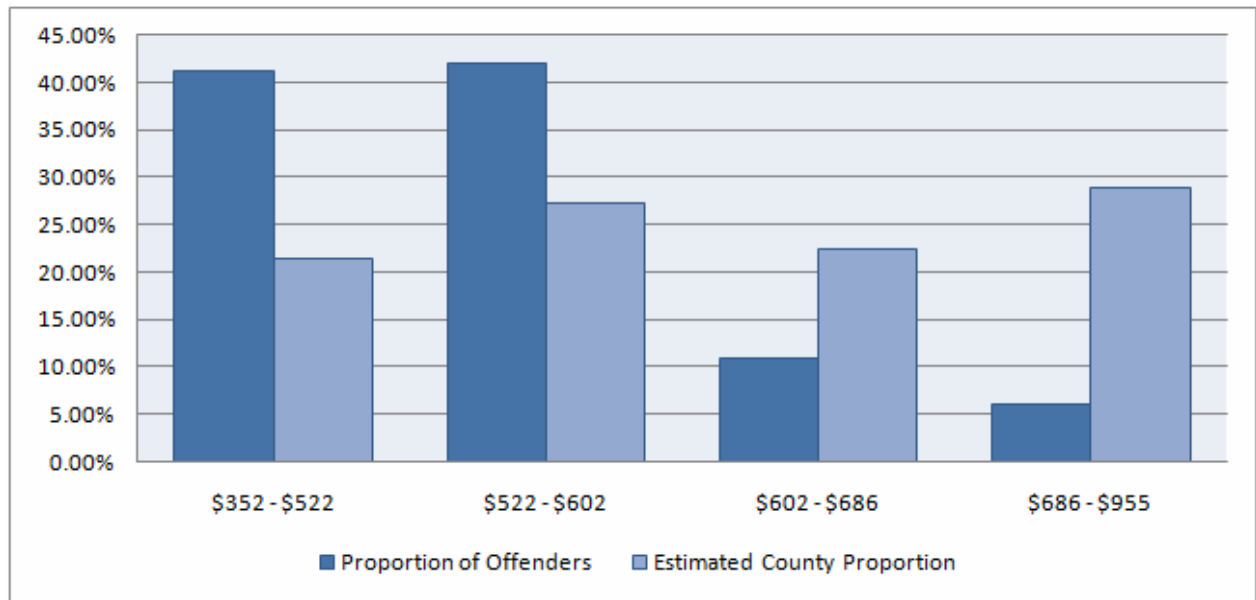
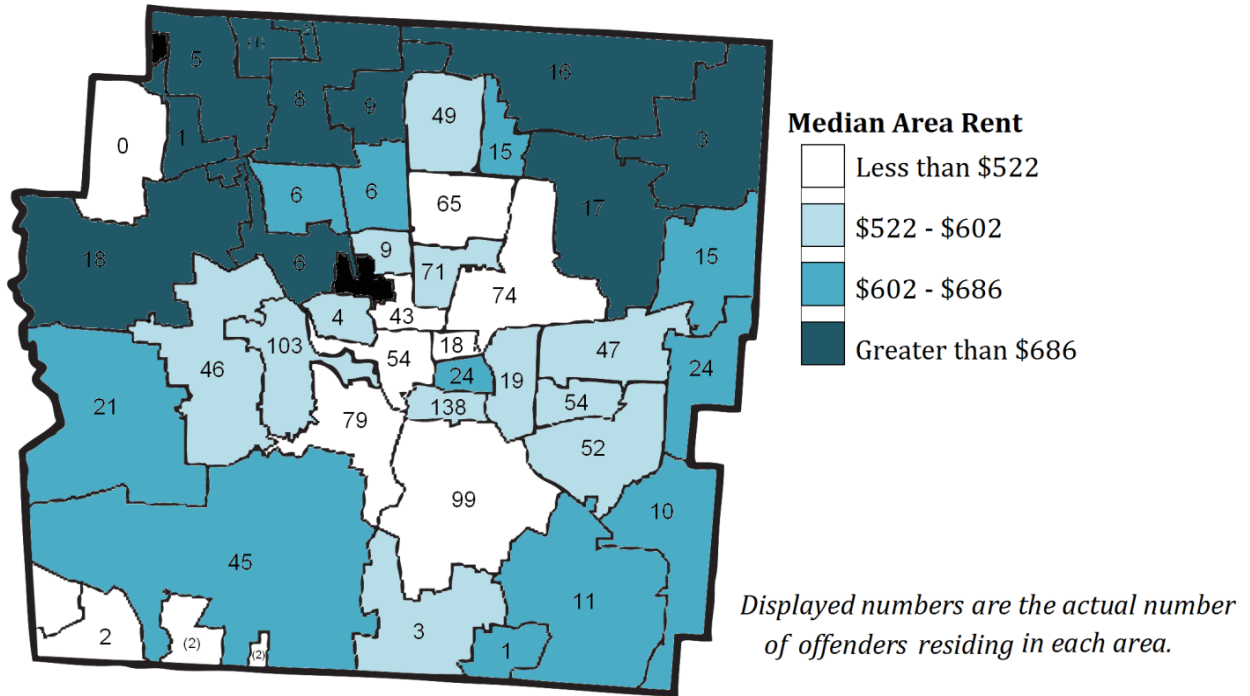


Figure 18: Map of Offenders Residences by Median Rent



When comparing the proportion of offenders to the weighted general county estimates, again offenders tend to be distributed in lower-cost areas (see Table 16). The *majority* of offenders (52.75%) live in the lowest home value quartile, compared with approximately one-third (30.81%) of the county. A distribution of both groups is presented in Figure 19 and a map of offender residences in Figure 20.

Table 16: Offender Residency by Median Home Value

Median Home Value	Number of Offenders	Proportion of Offenders	Confidence Interval ⁺ for Proportion in County Sample	Estimate for Difference	Fisher's Exact Test P-Value
Less than \$80,200	748	52.75%	(19.49%, 24.39%)	30.81%	0.000***
\$80,200 - \$119,600	375	26.45%	(19.44%, 24.34%)	4.56%	0.000***
\$119,600 - \$149,750	181	12.76%	(30.69%, 36.27%)	-20.71%	0.000***
Greater than \$149,750	114	8.04%	(20.21%, 25.17%)	-14.65%	0.000***
Total	1418^{+#}				

⁺α=.01

p≤.10 *

p≤.05 **

p≤.01 ***

+homeless excluded
#One tract excluded

Figure 19: Distribution of Offenders and Parcels by Home Value

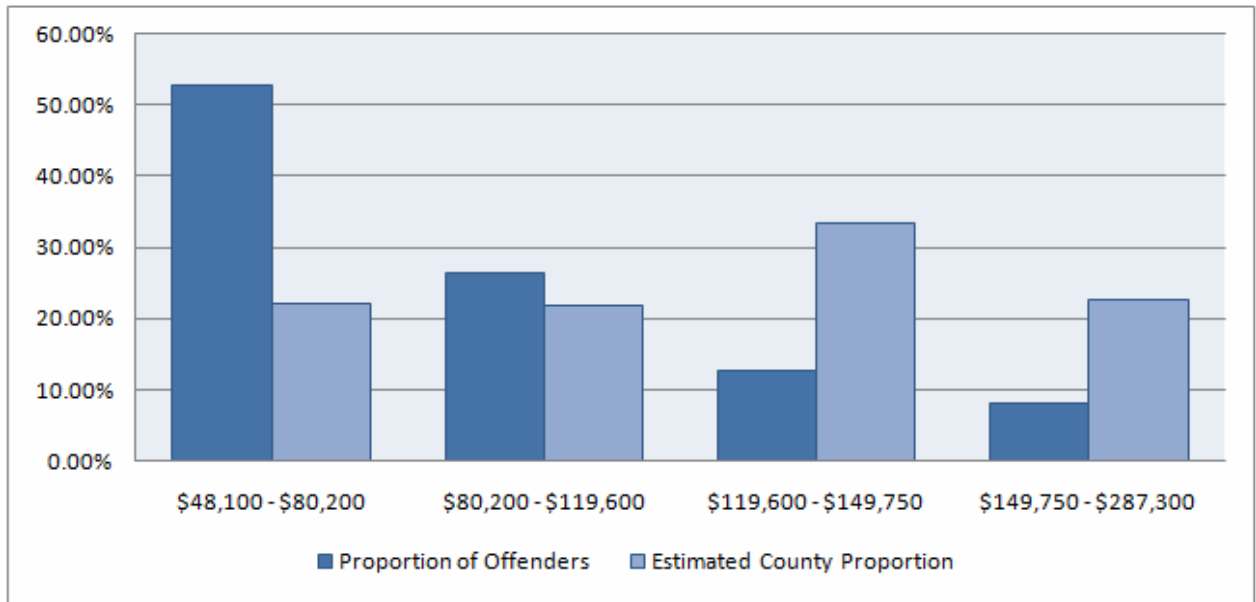
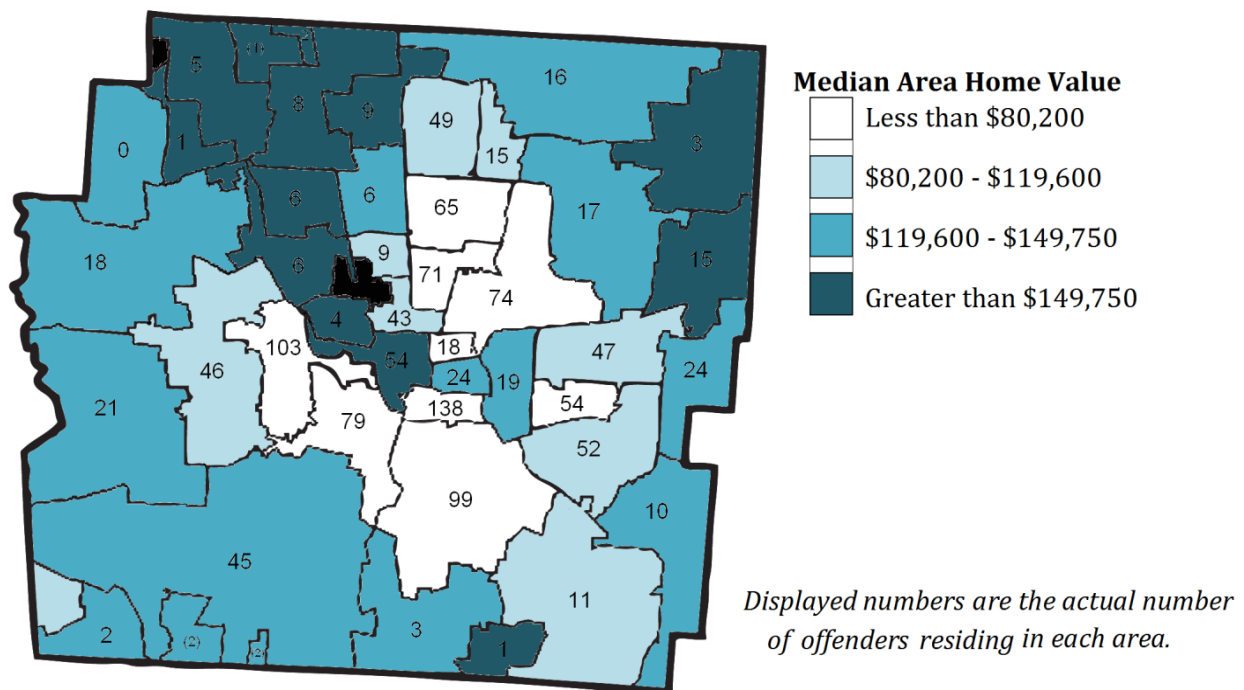


Figure 20: Map of Offenders Residences by Median Home Value



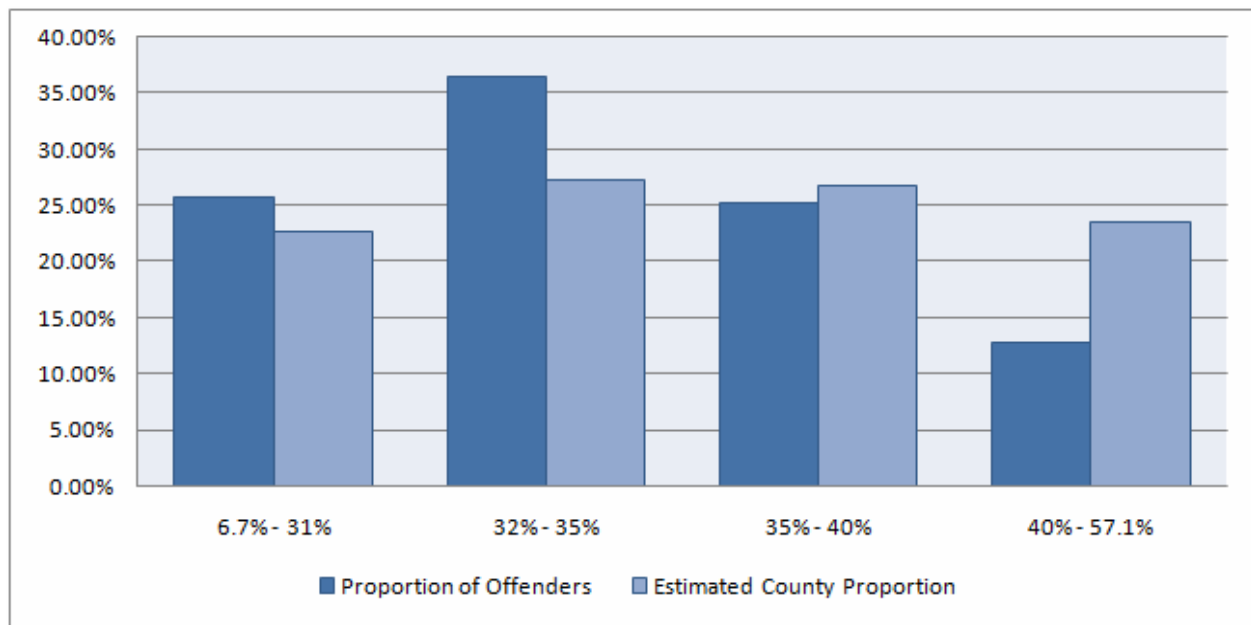
When comparing the proportion of offenders to the weighted general county estimates, offenders tend to be slightly, but significantly, more concentrated in areas where *fewer* homes have children (see Table 17). Only 12.76 percent of offenders live in areas included in the top quartile of tracts compared to 23.41 percent of general county parcels, a significant difference of more than ten percent. This indicates that offenders do *not* tend to gravitate their

residences around areas where children tend to live. A distribution of both groups is presented in Figure 21.

Table 17: Offender Residency by Homes with Children

Homes with Children	Number of Offenders	Proportion of Offenders	Confidence Interval ⁺ for Proportion in County Sample	Estimate for Difference	Fisher's Exact Test P-Value
6.7% - 31%	364	25.67%	(20.76%, 24.38%)	3.10%	0.039**
32% - 35%	517	36.46%	(24.86%, 29.74%)	9.16%	0.000***
35% - 40%	356	25.11%	(24.12%, 29.30%)	-1.60%	0.316
40% - 57.1%	181	12.76%	(21.07%, 25.75%)	-10.66%	0.000***
Total	1418⁺		⁺ α=.01	<i>p</i> ≤.10 * <i>p</i> ≤.05 ** <i>p</i> ≤.01 ***	⁺ homeless excluded

Figure 21: Distribution of Offenders and Parcels by Homes with Children



Binomial logistic regression models were fit to each of the economic variables, to predict the probability of an offender residing in certain economic areas ($\text{logit}(p[\text{offender}]) = \beta_0 + \beta_1 \text{FACTOR}$). Pearson's chi-square test for goodness of fit and review of residuals indicate that each model fits the data well (see Table 18). Economically, logistic regression analysis determined:

- (1) For every dollar increase in yearly median income, an offender is 0.999 times as likely to live in the area. Conversely, for every dollar decrease in yearly median income, a sex offender is 1.01 times as likely to live in the area. Or, scaled in more everyday terms, for every \$10,000 decrease in median income, an offender is 3.22 ($CI_{Z\alpha=.01}= 2.75, 3.78$) times more likely to live in the area.
- (2) For every percent increase in area poverty rate, an offender is 1.07 times as likely to live in the area. Additionally, for every five percent increase in poverty, an offender is 64.31 times more likely to live in the area, though the curvilinear nature of county poverty rates makes the confidence interval very wide ($CI_{Z\alpha=.01}= 36.40, 113.62$).
- (3) For every dollar decrease in median monthly rent, a sex offender is 1.01 times as likely to live in the area. Alternately, for every \$100 decrease in median rent, an offender is 1.25 ($CI_{Z\alpha=.01}= 1.22, 1.29$) times more likely to live in the area.
- (4) For every dollar increase in median home value, an offender is 0.99 times as likely to live in the area. For every \$10,000 increase in median home value, an offender is more, than half as likely ($0.799, CI_{Z\alpha=.01}= 0.77, 0.822$) to live in the area. Conversely, for every \$10,000 decrease in median home value, an offender is 1.25 ($CI_{Z\alpha=.01}= 1.22, 1.29$) times more likely to live in the area.

Table 18: Regression Analysis of Offender Residency across Economic Measures

	Pearson's χ^2	P-Value	Coefficient ($\hat{b}_1$)	SE(Coefficient)	P-Value	$e^{\hat{b}_1}$
Area Mean Income	306.104	0.000***	-0.0001170	0.0000062	0.000***	0.99988
Poverty Rate	361.127	0.000***	0.0657577	0.003726-	0.000***	1.06797
Median Rent Amount	291.669	0.000***	-0.0083274	0.0004419	0.000***	0.99171
Median House Value	241.134	0.000***	-0.0000224	0.0000011	0.000***	0.99998
Homes with Children	620.272	0.000***	-.0189920	0.00419174	0.000***	0.981187

$p \leq .10$ * $p \leq .05$ ** $p \leq .01$ ***

Examining the relationship between offender residence and homes with children revealed that, as the proportion of homes with children increases by one percent, an offender is 1.019 times less likely to live in the area.

While there is a relationship between economic factors and the probability that an offender lives in the area, it is not clear that this is not influenced by a relationship between economic factors and population density. However, after controlling for population density, the coefficients for economic variables remain significant, indicating that economic variables still play a substantial role. Coefficients change little and remain significant. For example, after controlling for population density, for every dollar increase in yearly median income, an

offender is 0.9999 times as likely to live in the area, compared to 0.9998 when density is not controlled (Table 19). Scaled more appropriately, for every \$10,000 decrease in median income an offender is 2.84 times as likely to live in the area, compared to 3.22 times when population is not controlled. Thus, while population density can *help* predict sex offender residence, economic factors remain *vital*.

Table 19: Regression Analysis of Offender Residency Controlling for Population Density

	Pearson's χ^2	P-Value	Population Density Coefficient	Economic Coefficient ($\hat{b}_2$)	SE(Economic Coefficient)	P-Value	$e^{\hat{b}_2}$
Area Mean Income	267.501	0.000***	0.0001157 ^{n.s.}	-0.0001043	0.0000064	0.000***	0.9999
Poverty Rate	391.979	0.000***	0.0000640 ^{n.s.}	0.0057957	0.0004352	0.000***	1.00581
Median Rent Amount	234.443	0.000***	0.0001228 ^{n.s.}	-0.0075093	0.0004615	0.000***	0.99252
Median House Value	209.064	0.000***	0.0000843 ^{n.s.}	-0.0000202	0.0000012	0.000***	0.99998

p≤.10 * *p*≤.05 ** *p*≤.01 ***

Overall, the data indicates that economic factors are strongly predictive of the areas where sex offenders tend to live. Offenders are disproportionally clustered in areas with low income, high poverty, and lower housing costs. These relationships remain significant even after accounting for population density. These findings are consistent with previous studies (Mustaine, Tewksbury et al. 2006; Hughes and Kadleck 2008).

Parcels Restricted by Residency Requirements

To determine the availability of housing for sex offenders, it is necessary to determine how many parcels violate current residency restrictions. Each sampled parcel was analyzed to determine whether it fell within the statutory one-thousand foot buffer zone of a prohibited location (school, pre-school, or child care facility). If the parcel violated the proximity restriction, the total number of violations (how many prohibited locations fell within one-thousand feet) was noted. Data was not collected on non-residential parcels as, while it is possible to reside in a non-residential building, such residency would not be considered legitimate and the offender would (theoretically) be subject to the same action as one living in a restricted residential unit.

Overall, 955 of the 1,606 residential parcels (59.53%) sampled were restricted. Of parcels that are restricted, the average number of prohibitions within one-thousand feet is 1.68 ($CI_{Z\alpha=.01} = 1.56, 1.79$). Sampled single family homes had the least proportion of units prohibited under residency requirements (58.23%) while multifamily homes had the most (66.23%), however Fisher's Exact Test revealed no significant difference between the two proportions ($p=0.149$) (see Table 20).

Adjusting for the effect of survey design, an estimated 60.03 percent of the county's residential parcels violate the residency restriction ($\hat{P}$ = 0.60026, SE=0.000311), with a margin of error of ± 0.802 percent. Thus, including non-residential parcels, an estimated 65.32 percent ($\hat{P}$ = 0.65322, SE=0.00324) of the county is *unlivable* under current residency restrictions. This represents a substantial proportion of the county that offenders are barred from occupying. Results are similar to the findings of a previous study, which found that approximately 50 percent of county parcels were restricted, though that work did not distinguish land use differences (Grubestic, Mack et al. 2007). These results can be directly compared, as both studies were conducted within the same state, under the same legal framework (though enforcement factors may vary).

Table 20: Restricted Parcels by Land Use

Land Use	Parcels in Sample	Parcels Violating Restrictions	Proportion of Parcels that are Restricted	Estimated County Proportion Restricted	Standard Error	Margin of Error*
Residential	1606	956	59.53%	60.026%	0.311%	$\pm 0.802\%$
Single-Family House	1142	665	58.23%	58.838%	0.314%	$\pm 0.810\%$
Multi-Family House	77	51	66.23%	70.842%	0.502%	$\pm 1.293\%$
Apartment	34	22	64.71%	55.386%	0.271%	$\pm 0.698\%$
Condominium	259	156	60.23%	60.581%	0.331%	$\pm 0.852\%$
Trailer or Modular Home	1	0	0.00%	N/A	N/A	N/A
Nursing/Care Facilities	0	0	N/A	N/A	N/A	N/A
Motel or Hotel	2	2	100.00%	N/A	N/A	N/A
Offender/Housing Programs	2	1	50.00%	N/A	N/A	N/A
Other Residential	90	58	64.44%	63.828%	0.382%	$\pm 0.984\%$
Not Residential	277	277	100.00%	100.00%	N/A	N/A
Total	1883	1232	65.43%	65.322%	0.324%	$\pm 0.835\%$

** $\alpha=.01$

Of parcels sampled in areas where median area per-capita income is in the lowest quartile, 68.30 percent of parcels were restricted. This compares to 62.76 percent in the second bracket, 66.88 percent in the third, and 63.23 percent in the fourth. No immediate trend is evident. Adjusted for sampling design, weighted estimates of the proportion of county housing restricted remain largely unchanged (see Table 21).

Table 21: Restricted Parcels by Median Income

Per-Capita Income	Parcels in Sample	Parcels Violating Restrictions	Proportion of Parcels that are Restricted	Estimated County Proportion Restricted	Standard Error	Margin of Error*
Less than \$17,851	407	278	68.30%	68.028%	1.454%	±3.746%
\$17,851 - 26,473	427	268	62.76%	62.773%	1.306%	±3.363%
\$26,474 - 28,958	622	416	66.88%	66.870%	1.062%	±2.736%
Greater than \$28,959	427	270	63.23%	63.203%	1.182%	±3.046%

** $\alpha=.01$

Sampled parcels examined by poverty rate revealed no immediate trend. However, among high-poverty areas sampled, an astounding 80.69 percent of sampled parcels (weighted $\hat{P}=0.80008$, $SE=0.00246$) were within one-thousand feet of a prohibited location (see Table 22).

Table 22: Restricted Parcels by Poverty Rate

Poverty Rate	Parcels in Sample	Parcels Violating Restrictions	Proportion of Parcels that are Restricted	Estimated County Proportion Restricted	Standard Error	Margin of Error*
1.70% - 5.30%	739	472	63.87%	63.738%	0.884%	±2.277%
5.30% - 12.40%	414	274	66.18%	66.129%	1.239%	±3.190%
12.40% - 20.35%	471	277	58.81%	59.204%	1.247%	±3.211%
20.35% - 46.30%	259	209	80.69%	80.008%	2.046%	±5.271%

** $\alpha=.01$

Examination of restricted parcels by median area rent (Table 23) and median area home value (Table 24) again revealed no immediate trend. However, in all four economic characteristics the proportion of parcels violating a residential buffer is highest in the areas with the worst economic conditions.

Table 23: Restricted Parcels by Median Rent

Median Area Rent	Parcels in Sample	Parcels Violating Restrictions	Proportion of Parcels that are Restricted	Estimated County Proportion Restricted	Standard Error	Margin of Error*
Less than \$522	399	280	70.18%	69.285%	1.417%	±3.651%
\$522 - \$602	512	336	65.63%	66.235%	1.085%	±2.796%
\$602 - \$686	421	265	62.95%	63.435%	1.413%	±3.639%
Greater than \$686	541	341	63.03%	63.017%	1.143%	±2.946%

** $\alpha=.01$

Table 24: Restricted Parcels by Median Home Value

Median Home Value	Parcels in Sample	Parcels Violating Restrictions	Proportion of Parcels that are Restricted	Estimated County Proportion Restricted	Standard Error	Margin of Error*
Less than \$80,200	411	278	67.64%	67.906%	1.352%	±3.482%
\$80,200 - \$119,600	410	254	61.95%	61.245%	1.335%	±3.438%
\$119,600 - \$149,750	627	417	66.51%	66.614%	1.080%	±2.781%
Greater than \$149,750	425	273	64.24%	64.765%	1.209%	±3.113%

** $\alpha=.01$

Surprisingly, there does not appear to be any pattern in the number of restricted parcels when examined by the proportion of homes with children (Table 25). While it is expected that the number of prohibited locations would be higher in areas where more children tend to live, no such pattern is evident in this data.

Table 25: Restricted Parcels by Homes with Children

Homes with Children	Parcels in Sample	Parcels Violating Restrictions	Proportion of Parcels that are Restricted	Estimated County Proportion Restricted	Standard Error	Margin of Error*
6.7% - 31%	425	296	15.72%	69.619%	1.234%	± 3.179%
32% - 35%	514	304	16.14%	59.525%	1.018%	± 2.623%
35% - 40%	503	315	16.73%	61.891%	1.254%	± 3.230%
40% - 57.1%	441	317	16.83%	72.266%	1.547%	± 3.986%

** $\alpha=.01$

Fitting logistic regression models to each of the economic variables, to predict the probability that a parcel would violate a restricted buffer zone, yielded interesting results (see Table 26):

- (1) For every dollar increase in yearly median income, a parcel is 0.999 times as likely to be restricted, or for every dollar *decrease* in yearly median income a parcel is 1.01 times as likely to be restricted. Phrased more practically, for every \$10,000 decrease in median income, a parcel is 1.133 ($CI_{Z\alpha=.01} = 0.968, 1.325$) times more likely to be restricted. While this result is statistically significant (at $\alpha=.05$), the confidence interval is quite wide, and because it crosses one, indicates the error may be too large to support conclusions about the effect median income has on restrictiveness.
- (2) For every percent increase in area poverty rate, a parcel is 1.024 times as likely to be restricted. Additionally, for every five percent increase in poverty rate, a parcel is 1.125 times more likely to be restricted ($CI_{Z\alpha=.01} = 1.207, 1.049$).

- (3) For every dollar decrease in median monthly rent, a parcel is 1.01 time as likely to be restricted. Further, for every \$100 decrease in median rent a parcel is 1.143 times more likely to be restricted ($CI_{Z\alpha=.01} = 1.014, 1.289$).
- (4) For every dollar increase in median home value, a parcel is 0.99 times as likely to be restricted and 1.008 times for every \$10,000 increase in median home value ($CI_{Z\alpha=.01} = 0.980, 1.036$). However, this effect was not significant.

Table 26: Regression Analysis of Restriction across Economic Measures

	Pearson's χ^2	P-Value	Coefficient ($\hat{b}_1$)	SE(Coefficient)	P-Value	$e^{\hat{b}_1}$
Area Mean Income	145.961	0.000***	-0.0000125	0.0000061	0.041**	0.9999875
Poverty Rate	108.501	0.000***	0.0235579	0.545301	0.000***	1.023558
Median Rent Amount	122.865	0.000***	-0.0013403	0.0004652	0.004***	0.9986606
Median Home Value	142.503	0.000***	-0.0000008	0.0000011	0.479 ^{n.s.}	0.9999992
Homes with Children	141.294	0.000***	-0.0050182	0.0059000	0.395 ^{n.s.}	0.994994

$p \leq .10$ * $p \leq .05$ ** $p \leq .01$ ***

Pearson's chi-square test for goodness of fit and review of residuals indicate that the median income, poverty rate, and median rent amount models fit the data well, indicating that there is a relationship between these variables and the probability that a parcel is restricted. The proportion of homes with children is *not* a significant predictor of restricted parcels.

After controlling for population density, the coefficients for poverty rate and median rent remain significant predictors. However, the effect from area median home value largely disappears (Table 27). Overall, the data indicates that parcels are more likely to be restricted in areas of higher poverty rate and median rent value. These findings are consistent with earlier research (Hughes and Burchfield 2008), though proportions of land restricted cannot be directly compared, due to differences in residency restriction laws.

Table 27: Regression Analysis of Restriction Controlling for Population Density

	Pearson's χ^2	P-Value	Population Density Coefficient	Economic Coefficient ($\hat{b}_2$)	SE(Economic Coefficient)	P-Value	$e^{\hat{b}_2}$
Area Mean Income	138.132	0.000***	0.0395288*	-0.0000093	0.0000062	0.132 ^{n.s.}	0.999991
Poverty Rate	124.529	0.000***	0.0399185*	0.0227181	0.0054539	0.000***	1.022978
Median Rent Amount	132.896	0.000***	0.0238959 ^{n.s.}	-0.0012573	0.0004659	0.007***	0.998743
Median House Value	137.539	0.000***	0.0252916 ^{n.s.}	-0.0000007	0.0000011	0.501 ^{n.s.}	0.999999

$p \leq .10$ * $p \leq .05$ ** $p \leq .01$ ***

This analysis indicates the availability of unrestricted housing for the county in general, but fails to consider the clustering of offenders within economic groups. For example, an estimated 39.419 percent of county condominium parcels, adjusted for survey design

considerations, are unrestricted, but only 5.22 percent of the 1418 registered offenders live in condominiums. If only the 1237 offenders from tracts where the offender per-capita rate is above county median are considered (82.14% of offenders are concentrated in these areas), the proportion living in condominiums is reduced further to 3.56 percent (see Table 28).

Because offenders tend to be clustered in economically poor areas, and parcels in these areas also tend to be more restrictive, the net effect is more substantially limited as to housing options than the overall 34.678 percent of unrestricted parcels would suggest. While housing in the county is available, albeit only moderately, the availability of *affordable* housing is much more significantly constrained. Examined by income, while less than 32 percent of parcels are estimated to be available in areas with the lowest median per-capita area income, more than 42 percent of offenders live in these areas. This pattern is evident across all economic indicators (Table 29), emphasizing the need to consider sex offender housing availability within the larger community context in which it is relevant.

Table 28: Unrestricted Parcels Compared to Offender Residency by Land Use

Land Use	Unrestricted Residential Parcels	Estimated Proportion of County Parcels	Proportion of Offenders		Proportion of Offenders (Concentrated)	
Residential	650	34.678%	97.04%	1376	96.93%	1199
Single-Family House	477	41.162%	47.04%	667	45.51%	563
Multi-Family House	26	29.158%	10.86%	154	11.08%	137
Apartment	12	44.614%	18.19%	258	19.56%	242
Condominium	103	39.419%	5.22%	74	3.56%	44
Other Residential	32	36.172%	2.12%	30	1.86%	23
Not Residential	0	0.00%	2.96%	42	3.07%	38
Total	650	34.678%	100.0%	1418	100.0%	1237

Table 29: Unrestricted Parcels Compared to Offender Residency by Income

Per-Capita Income	Unrestricted Residential Parcels	Estimated Proportion of County Parcels	Proportion of Offenders		Proportion of Offenders (Concentrated)	
Less than \$17,851	129	31.972%	42.52%	603	48.50%	600
\$17,851 - 26,473	159	37.227%	36.18%	513	40.74%	504
\$26,474 - 28,958	206	33.130%	15.80%	224	9.54%	118
Greater than \$28,959	157	36.797%	5.50%	78	1.21%	15
Poverty Rate						
1.70% - 5.30%	267	36.262%	11.78%	167	4.53%	56
5.30% - 12.40%	140	33.871%	16.57%	235	15.68%	194
12.40% - 20.35%	194	40.796%	42.17%	598	46.73%	578
20.35% - 46.30%	50	19.992%	29.48%	418	33.06%	409
Median Area Rent						
Less than \$522	119	30.715%	41.04%	582	46.89%	580
\$522 - \$602	176	33.765%	42.10%	597	45.68%	565
\$602 - \$686	156	36.565%	10.86%	154	7.44%	92
Greater than \$686	200	36.983%	5.99%	85	0.00%	0
Median Home Value						
Less than \$80,200	133	32.094%	52.82%	749	60.55%	749
\$80,200 - \$119,600	156	38.755%	26.52%	376	28.46%	352
\$119,600 - \$149,750	210	33.386%	12.76%	181	5.58%	69
Greater than \$149,750	152	35.235%	7.90%	112	5.42%	67

Violations of Residency Restriction Law

Of the valid 1,428 offender addresses, more than one-third (515, 36.22%) currently identify residences that are within one thousand feet of a prohibited location. On average, violating offenders reside within one thousand feet of 1.47 prohibited properties, significantly less than the 1.86 average violations for restricted parcels ($t=7.82$, $p=0.000$), indicating that residency restrictions may have *some* effect on residency choices, discouraging offenders from residing near prohibited locations. This proportion is consistent with findings from Hughes and Burchfield (2008), though the legal schemes differ substantially, so such comparability may be coincidental.

Nearly half (47.18%) of all offenders living in areas with the lowest median income are in violation of current residency restrictions. This group makes up more than half (55.15%) of all violations occurring within the county (Table 30). A similar trend can be seen within the other economic indicators: offenders living in poorer areas are disproportionally more likely to violate.

Table 30: Offender Violations by Economic Factors

Per-Capita Income	Number of Offenders	Number of Violations	Cumulative	Proportion Violating	Proportion of Violators	Cumulative
Less than \$17,851	602	284	284	47.18%	55.15%	55.15%
\$17,851 - 26,473	512	131	415	25.59%	25.44%	80.58%
\$26,474 - 28,958	226	80	495	35.40%	15.53%	96.12%
Greater than \$28,959	78	20	515	25.64%	3.88%	100.0%
Poverty Rate						
1.70% - 5.30%	167	34	34	20.36%	6.60%	6.60%
5.30% - 12.40%	235	69	103	29.36%	13.40%	20.00%
12.40% - 20.35%	597	151	254	25.29%	29.32%	49.32%
20.35% - 46.30%	419	261	515	62.29%	50.68%	100.0%
Median Rent						
Less than \$522	584	293	293	50.17%	56.89%	56.89%
\$522 - \$602	595	14	467	29.24%	33.79%	90.68%
\$602 - \$686	154	25	492	16.23%	4.85%	95.53%
Greater than \$686	85	23	515	27.06%	4.47%	100.0%
Median Home Value						
Less than \$80,200	748	312	312	41.71%	60.58%	60.58%
\$80,200 - \$119,600	375	107	419	28.53%	20.78%	81.36%
\$119,600 - \$149,750	181	34	453	18.78%	6.60%	87.96%
Greater than \$149,750	114	62	515	54.39%	12.04%	100.0%
Homes with Children						
6.7% - 31%	364	126	126	34.62%	24.47%	24.47%
32% - 35%	517	216	342	41.78%	41.94%	66.41%
35% - 40%	356	116	458	32.58%	22.52%	88.93%
40% - 57.1%	181	57	515	31.49%	11.07%	100.00%
Total	1418	515		36.32%		

Interestingly, the number of offenders in violation does not seem to be readily related to the number of homes with children in the area.

Logistic regression was used to model the proportion of offenders in violation of current restrictions. Coefficients for each economic variable, excepting home value, were significant, indicating a relationship between community economic condition and the likelihood of offender violation. Whether these results are due to the increased concentration of offenders in poor areas, or the increased likelihood of violation in general for these areas, is not clear. In reality, the effect is probably the result of both causes. For example, median home value was a significant predictor of sex offender location, but was not a predictor of probability of

restriction. In this analysis, home value does not predict likelihood of offender violation. Proportion of homes with children was not a significant predictor of offender violations.

Table 31: Regression Analysis of Violation across Economic Measures

	Pearson's χ^2	P-Value	Coefficient ($\hat{b}_1$)	SE(Coefficient)	P-Value	$e^{\hat{b}_1}$
Area Mean Income	259.472	0.000***	-0.0000635	0.0000117	0.000***	0.999937
Poverty Rate	159.365	0.000***	0.0588564	0.0054996	0.000***	1.060623
Median Rent Amount	194.884	0.000***	-0.0087235	0.0008563	0.000***	0.991314
Median Home Value	283.152	0.000***	-0.0000025	0.0000018	0.161 ^{n.s.}	0.999998
Homes with Children	141.294	0.000***	-0.501819	0.589998	0.395 ^{n.s.}	0.605428

$p \leq .10$ * $p \leq .05$ ** $p \leq .01$ ***

After controlling for population density, the significance of coefficients remains unchanged (Table 32), confirming that economic factors impact the likelihood of offender violation. These findings are consistent with earlier research (Hughes and Burchfield 2008).

Table 32: Regression Analysis of Violation Controlling for Population Density

	Pearson's χ^2	P-Value	Population Density Coefficient	Economic Coefficient ($\hat{b}_2$)	SE(Economic Coefficient)	P-Value	$e^{\hat{b}_2}$
Area Mean Income	258.697	0.000***	-0.321477***	-0.0000668	0.0000118	0.000***	0.999933
Poverty Rate	170.497	0.000***	-0.219780**	0.0576924	0.0054500	0.000***	1.059389
Median Rent Amount	185.815	0.000***	-0.216697**	-0.0085760	0.0008545	0.000***	0.991461
Median House Value	280.530	0.000***	-0.275909***	-0.0000026	0.0000018	0.139 ^{n.s.}	0.999997

$p \leq .10$ * $p \leq .05$ ** $p \leq .01$ ***

CONCLUSION AND DISCUSSION

Offender advocates, legal scholars and social researchers level a variety of claims against laws restricting the areas in which sex offenders may live. Much of the criticism has focused on ‘collateral consequences’ of such restrictions, arguing that such laws so restrict offender housing that they may even amount to serious constitutional violations. This study assesses some of the fundamental assumptions underlying residency restrictions and questions whether these laws have the desired effect. Previous research is tested and results are placed in a community context, in order to shed light on the true impact of residency restrictions on housing availability, given the economic realities faced by both offenders and general county residents. The study specifically assesses whether such restrictions place a more substantial burden on the economically most vulnerable.

Results indicate little relationship between the proportion of area homes with children under the age of eighteen and the likelihood that a parcel was restricted. This suggests that the creation of buffer zones around schools may not relate to the insulation of children from offenders. Logically, the rationale behind restrictions designed to protect children while they are in school, arguably one of the most supervised and structured environments, fails to address the true habits and vulnerabilities of children. This point is poignantly demonstrated by the stories of child violence that inspired much of this legislation, none of which took place on school grounds. This study concludes that such buffer zones, while unrelated to child residence, render a substantial portion of county housing unavailable to registered offenders. Expanding these zones to incorporate areas that more appropriately capture child living arrangements and whereabouts, might ultimately make the county generally uninhabitable.

Consistent with previous work, this study finds that offenders are disproportionately clustered in economically disadvantaged areas. Compared to the county as a whole, offenders are substantially more likely to live in lower-income neighborhoods. Nearly three-quarters live in areas where the number of individuals in poverty is above the county median, compared with only 38.77 percent of the county as a whole. An overwhelming majority (83%) live in areas where median rent is below the county median, compared with half of all county land as a whole. For every \$10,000 decrease in median income, an offender is 3.22 times more likely to live in that area. Additionally, for every \$10,000 increase in median home value, an offender is half as likely to live in the area. Overall, data indicates that economic factors are strongly predictive of areas where offenders tend to live, with offenders disproportionately concentrated in areas with low income, high poverty, and low housing value.

This analysis takes a step beyond previous comparisons, in that it uses county characteristics, based on sampled housing parcels and adjusted to mirror county living conditions in general, instead of broad county or national averages. This direct, local comparison improves the robustness of findings and the reliability of indications that offenders are distributed in ways that distinguish them from residents in general.

The study also finds that residency restrictions render substantial portions of the county 'off limits'. Overall, 59.53% of all residential parcels samples were restricted. When adjusted to include non-residential parcels, an estimated 65.32 percent of the county is unlivable under current restrictions. This 'off limits' proportion represents an effective minimum on the limitation of housing. Previous studies have documented other difficulties faced by offenders seeking housing (Levenson and Cotter 2005; Tewksbury 2005; Mercado, Alvarez et al. 2008; Levenson and Tewksbury 2009), indicating that further housing restrictions may apply to registered offenders, imposed by landlords and other private interveners.

The proportion of parcels restricted is directly related to economic factors of the area. Among high poverty areas, an astounding 80 percent of sampled parcels are within a prohibited buffer zone. Within all four economic variables, based on regression analysis and modeling, the proportion of parcels violating a residential buffer is highest in areas with worst economic conditions. For example, for every 5% increase in poverty rate, a parcel is 1.125 times more likely to be restricted and for every \$100 decrease in median rent a parcel is 1.143 times more likely to be restricted, indicating that economics also play a role in predicting parcel restriction.

However, this conclusion, while similar to other studies, tells only half the tale, and must be placed within the relevant community context in order to be fully understood. Because offenders tend to be clustered in economically poor areas, and parcels in these areas tend to be more restrictive, the net effect is more substantially limited as to housing options than the overall 34.679% rate of unrestricted parcels would suggest. While housing in the county is available, albeit only moderately, the availability of affordable housing, given the economic conditions where offenders tend to reside, is much more significantly constrained. For example, when examined by income, less than 32% of parcels are estimated to be available in areas with the lowest median per-capita income, but more than 42 percent of all offenders live in these areas. This pattern is evident across all economic indicators. Although no cause-effect relationship can be established, it is evident that economic factors play a substantial part in

predicting where offenders are able to live, both in terms of residency restrictions and affordability.

Hughes and Kadleck (2008) argue that concentration of offenders in low-income areas may be the result of collective action on the part of residents in more affluent areas, using their resources to force offenders out of their neighborhoods. However, Zevitz (2003) found that, while the presence of a sex offender tended to create resident anxiety and anger, no collective reactions were evident. This supports a more simple explanation, that offenders live in poor areas because they cannot afford to live elsewhere. Surveys by Levenson and colleagues (Levenson and D'Amora 2007; Levenson and Tewksbury 2009) find that offenders report difficulty with jobs and financial stability, and this study's employment rate of 37.99 percent is also supportive of such a conclusion.

Mustaine and Tewksbury et al. (2006) appropriately point out that the cause of offender concentration in poor areas cannot be definitively assessed with studies such as this. It is possible, given the increased probability that parcels within poor areas are within buffer zones, that offenders locate themselves in poor areas to be closer to potential victims. However, this study rejects that possibility as specious, for two reasons. First, economic factors play a substantial role in predicting where sex offenders live, but have a reduced (though still substantial) role in determining parcel restriction. Thus, offenders would still have access to restricted locations, and by extension possible victims, in more affluent areas. Second, in Ohio, where the minority of offenders are child-victim offenders (Office of Criminal Justice Services 2006), the majority of offenders would have no reason to position themselves within a buffer zone, even if they had the intention to re-offend. A more rational explanation for the clustering of offenders in economically disadvantaged areas is that offenders are themselves economically disadvantaged.

Moreover, this study was able to empirically demonstrate that there is no such relationship between offender location and proportion of area homes with children. In fact, as the proportion of area homes with children increases, the likelihood of an offender residing in the area decreases. Also, there was no relationship between homes with children and likelihood of offenders violating residency restrictions.

Nevertheless, this limitation raises interesting questions for further research. Temporal comparisons across offenders and jurisdictions would allow a further assessment of the causes and consequences of offender clustering. To date, no research has found negative effects of

offenders living in close proximity to one another (Minnesota Department of Corrections 2003), but additional research could reveal the extent of the stigma attached to sex offenders, compared to other types of offenders, and the economic cost of such stigma.

Lastly, this study finds that more than a third of offenders are currently violating county residency restrictions, and that economic factors play a substantial role in predicting such violations. In areas with the lowest median income, nearly half (47.18%) of all offenders are living in prohibited areas. In other words, offenders living in poor areas are more likely to be in violation. This relationship is most likely the cumulative result of offender concentration and increased restrictiveness in such areas. To put it simply, offenders in such areas are in violation of residency restrictions because they cannot find housing (either because of economic restraints or due to other factors) that does not violate their restrictions.

Additionally, there are practical implications to the high proportion of offenders who are violating current residency restrictions. Should county officials suddenly seek full enforcement of these restrictions tomorrow, this would immediately displace 515 offenders, placing them at increased risk for homelessness or transience, given the limitations on affordable, available housing.

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