Scioto Analysis
Economics | Public Policy

OHIO POVERTY MEASURE MODEL

Findings from the Scioto Analysis Study of 2018 American Community Survey Data

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Executive Summary

This brief provides an overview of the current state of poverty in Ohio as estimated by the Ohio Poverty Measure (OHPM) -- a measure constructed by Scioto Analysis to more precisely measure poverty in Ohio. We find 9.68 percent of Ohioans are living in poverty as defined by the measure. Further breaking down poverty, we find 3.66% of Ohioans live in deep poverty, at 50 percent of their OHPM. The medium income for Ohioans in deep poverty is $4918. Using the OHPM, we find that nearly 1 in 4 Black Ohioans are living in poverty, compared to 1 in 12 for white Ohioans. Children in the state have a poverty rate of 13.3 percent which is about 4 percent higher than the statewide rate. We mapped the OHPM data and found the highest poverty rates are concentrated in cities and the south eastern part of the state (see Figure 5). Finally we look at the impact of existing anti-poverty programs and find that without the patchwork of social safety net programs currently available, 4 percent more Ohioans would be living in poverty.

I.   Introduction

This brief provides an overview of the current state of poverty in Ohio as estimated by the Ohio Poverty Measure (OHPM) -- a measure constructed by Scioto Analysis to more precisely measure poverty in Ohio. We find 9.68 percent of Ohioans are living in poverty as defined by the measure. We further break this down looking at deep poverty, the geographic distribution of poverty, and poverty rates by age and race. Finally, we analyze the efficacy of existing anti-poverty policies and programs by modeling their impact on poverty rates across the state. This brief is part of a larger project to both model the problem of poverty in Ohio and conduct a policy analysis on fiscal solutions to reduce poverty across the state.

The Ohio Poverty Measure draws on methodology used in the California Poverty Measure, New York City Poverty Measure, Oregon Poverty Measure, and Wisconsin Poverty Measure. This new measure constructs a quasirelative poverty measure that includes the impacts of government assistance, the tax system, geography, and unavoidable living expenses in the measure.

II.   Measuring Poverty

In 2018, 12.9 percent of Ohioans lived in poverty according to the Official Poverty Measure and 10.4 percent of Ohioans lived in poverty according to the supplemental poverty measure, an adapted poverty measure calculated by the Census Bureau since

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2011. This discrepancy stems from the way poverty is measured in the United States. The Official Poverty Measure was created in 1969, and the Census Bureau has been reporting on this statistic every year since. The Official Poverty Measure sets the poverty threshold at three times the cost of an economy food plan, adjusted for family size. This is based on a 1955 survey indicating families spent a third of their income on food. Since 1969, this threshold has been adjusted for inflation.[2]

The cost of food and household budget patterns have shifted since the construction of this measure. Housing has overtaken food as the largest part of the typical household budget. Recognizing this shortcoming, the National Academy of Sciences published a report in 1995 recommending features for a new poverty measure. Since 2011, the Census Bureau has published data on both the official poverty measure and this new supplemental poverty measure. The supplemental poverty measure takes into account spending on housing, transportation, food, clothing, utilities and additional essential spending. Further, it accounts for varying costs across geographic regions, the impact of safety net programs, and housing status (rents, owns, or owns with a mortgage).

III.   The Ohio Poverty Measure

The Ohio Poverty Measure (OHPM) aims to create the most accurate measure of poverty in the state to date. It uses methodology inspired by the California Poverty Measure, New York City Poverty Measure, Oregon Poverty Measure, and Wisconsin Poverty Measure, which itself was based on the 1995 study by the National Academies of Sciences's framework. The OHPM constructs a quasi-relative poverty measure, using 2018 American Community Survey 5-year data, a dataset of 561,858 individuals in Ohio. The final measure estimates the impacts of government assistance, the tax system, and unavoidable expenses based on geographical cost-of-living numbers. Including governmental assistance, federal taxation, and cost of living adjustments makes the OHMP more precise than the official poverty measure, which does not consider any of these paramaters.

The OHPM is a micro-simulation model of poverty in Ohio. We used data from The American Community Survey, the Current Population Survey, the Current Population Survey's Social and Economic Supplement Data, and the Survey of Income and Program Participation. This model is the first one to be constructed at the individual and household levels for Ohio. This feature allows us to provide new insights on the poverty landscape in Ohio. It allows us to provide a more granular picture of poverty in Ohio. In this section, we provide figures and tables breaking down poverty in Ohio by age, race, and geography.

We cleaned the data and removed individuals living in group quarters (nursing homes, correctional institutions, dorms, military barracks, etc.). This eliminated 28,742 observations. Further, we removed college students who rely on family income. This eliminated an additional 344 observations.

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[2] Citro CF, Michael RT, editors (1995). National Research Council. Measuring poverty: a new approach.

We conducted the data analysis in R Studio to create poverty units. Poverty units are groups of people, like a family, who share resources who can meaningfully be assigned a designation of being in poverty or not. We constructed Poverty units using the American Community Survey dataset extracted from IPUMS and included all related individuals, unmarried partners, children of unmarried partners, unrelated children without a parent in the household, and foster children

We constructed a poverty threshold for each poverty unit based on the supplemental poverty thresholds for 2018. We adjusted these thresholds for family size, composition, and geography. The supplemental poverty measure uses geographic data by state and differentiates between metro and non-metro areas within the state. The OHPM looks at data by puma, a smaller geographic unit which allows us to more accurately model the cost of living. These adjustments make the OHPM more precise than the supplemental poverty measure. Finally, we calculated the impact of anti-poverty programs and taxation for each poverty unit. These adjusted poverty units were put into TAXSIM, a federal tax policy stimulator that calculated each unit's tax liability. This created the final threshold that we compared each household against to determine the poverty rate.

IV.   Poverty in Ohio

Poverty in Ohio has increased over the past two decades. The poverty rate in Ohio increased from 13.1 percent in 2007 to 15.5 percent in 2011, driven by the economic impact of the great recession[3]. The rate then declined slightly, to 13.8 percent in 2018.

Table 1: Comparing Poverty Measures
Created with OHPM model, shows that the OHPM poverty rate of Ohio is similar to the Supplemental Poverty Measure poverty rate

	Number in dataset	% of Ohions	Estimated Number of Ohioans
Below OHPM	54,441	9.68%	1,132,074 (1.13 million)
Below Federal Poverty Measure[4]	72,220	12.9%	1,507,893 (1.5 million)
Below Supplemental Poverty Measure	N/A	10.4%	1,215,666 (1.2 million)

Sources: Census Bureau Income and Poverty in the United State: 2018
2018 American Community Survey 5-year data
Authors' calculations based on the OHPM model

Using the Ohio Poverty Measure Model, we estimate that 9.7 percent of Ohioans are living in poverty. This number is lower than the federal poverty measure estimate of 13.1

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[3] Bishaw, A and Semega, J. (2008). Income, Earnings, and Poverty Data From the 2007 American Community Survey.
[4] Only accounts for income.

percent.[5] The model found 54,411 people in the sample living in poverty with a median annual individual income of $11,102. Since Ohio currently has an estimated population of 11,693,217, using the OHPM measure, we estimate that 1.13 million Ohioans were living in poverty in 2018.

Table 2 below shows the ACS dataset disaggregated by proximity to poverty.

Table 2: Breakdown of Poverty Across Ohio
Created with OHPM Model, shows breakdown of economic categories and the key finding that 10 percent of Ohioans are "Near Poverty"

|	Deep Poverty	Poverty	Near Poverty	Low Income
Percentage of OHPM	<50%	51-100%	100-150%	150-200%
Amount of Individuals in Model	20,592	33,819	56,959	67,770
Percent of All Individuals in Ohio	3.66%	6.01%	10.1%	12.1%
Median Individual Income	$4,918	$14,900	$26,641	$39,674
Estimated # of Ohioans	427,854	702,569	1,185,087	1,410,021

Source: 2018 American Community Survey 5-year data
Authors' calculations based on the OHPM model

As seen in Figure 1 below, the model estimates that approximately 32 percent of Ohioans are less than 200 percent of their OHPM threshold, with 10 percent near poverty and 4 percent in deep poverty.

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[5] The federal poverty measure threshold for a family of four for 2018 was $25,465.

Figure 1: Breakdown of Poverty Across Ohio

Figure shows breakdown of economic categories and the key finding that 10 percent of Ohioans are Near Poverty
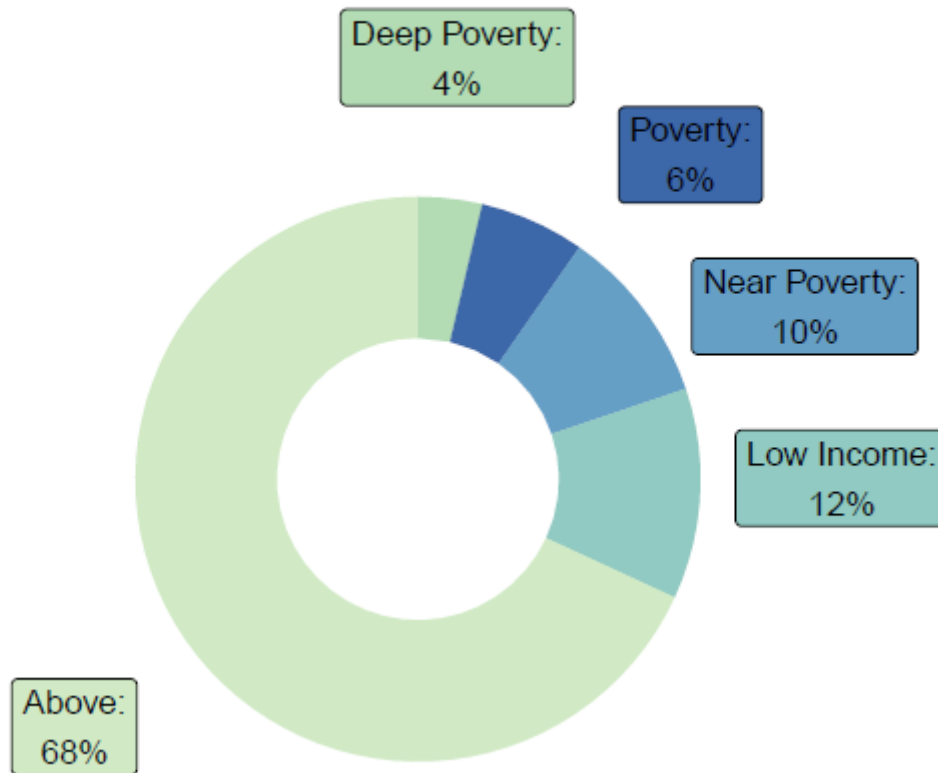
Source: 2018 American Community Survey 5-year data
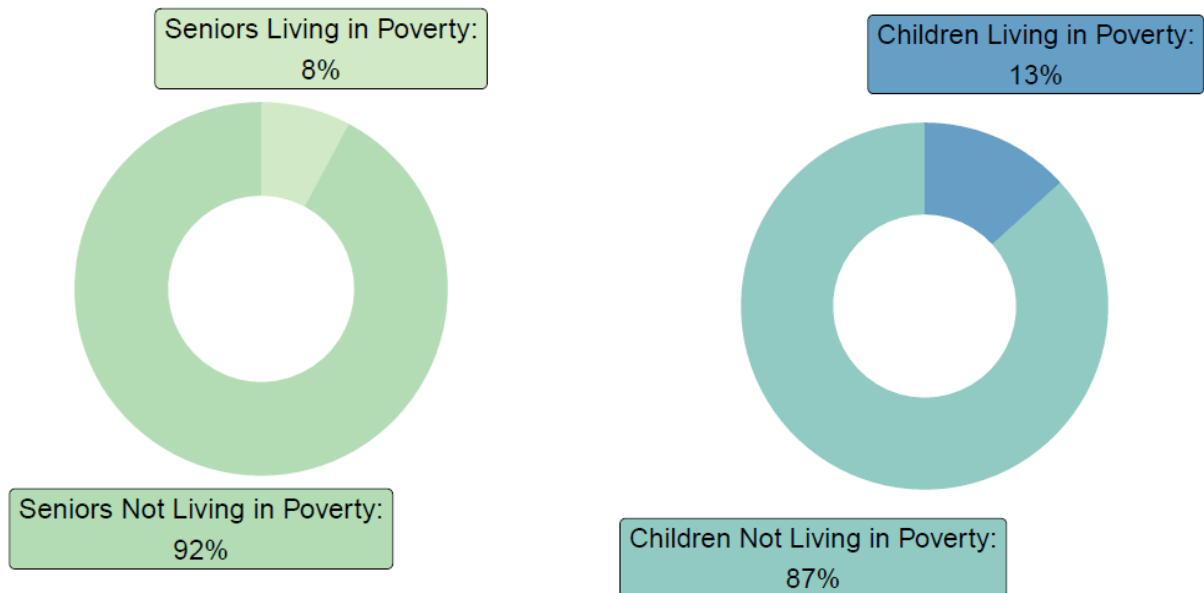Authors' calculations based on the OHPM model

Figure 2, below, shows the poverty rates for children (less than 18 years old) and seniors (above 62 years old). Children account for 22.1 percent of Ohio's population according to the Census Bureau[6] and make up 29.3 percent of all people living in poverty according to OHPM, leading to a poverty rate of 13.3 percent which is about 4 percent higher than the statewide rate.

According to our model, individuals over 62 years old make up around 23.8 percent of the population and constitute for 19.2 percent of all people living in poverty. Their poverty rate of 7.8 percent is also less than the statewide number by almost 2 percent.

Figure 2: Child and Senior Poverty

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[6] US Census Bureau. (2021). Quick Facts: Ohio.

Figure shows that the poverty rate for seniors is 8 percent and children is 13 percent

Seniors Living in Poverty:
8%

Seniors Not Living in Poverty:
92%

Children Living in Poverty:
13%

Children Not Living in Poverty:
87%

Source: 2018 American Community Survey 5-year data
Authors' calculations based on the OHPM model

Using the OHPM we were also able to model how effective existing poverty alleviation benefit programs are at moving people out of poverty. We looked at the impact of several federal benefit programs.

The Supplemental Nutrition Assistance Program (SNAP) provides funding that can only be used for food to eligible individuals and households. Eligibility is based on income, household size, and housing expenses. SNAP includes a general work requirement that can be met by completing a training program and searching for work.

Free lunch and breakfast is a food program for school age children to receive free meals before and during the school day. Eligibility is determined by family income.

Housing support can come in the form of subsidized housing or housing vouchers to benefit families based on income, age, or disability.

The Earned Income Tax Credit (EITC) is one of the largest federal anti-poverty programs. EITC eligibility is also income-based, and a family must earn some income to qualify for any EITC credit. There is an additional EITC child credit for families with minor dependents. Families can begin getting benefits through the EITC on every dollar earned in income, however maximum benefits are received at an annual income of

$14,570 for a married couple with two children or $6,920 for a single filer with no dependents in 2019.[7]

The remaining tax credits considered under all tax credits include child and childcare credits. The child tax credit allows households to receive up to $2,000 per child, and households with a joint filing income up to $400,000 are eligible for the credit. The minimum income to qualify for any child tax credit is $2,500. The additional child tax credit is the refundable portion of this credit that can be claimed by families who owe the IRS less than their child tax credit. This allows families to receive an additional benefit, beyond a tax deduction. The child and dependent care credit may be claimed for childcare expenses for children under 13 up to a maximum benefit of $6,000 for joint filers.

Without any of these anti-poverty programs, the poverty rate in Ohio would be 13.7 percent. The breakdown of each of these programs' effectiveness can be seen below in Table 3.

Table 3: Current Anti-Poverty Policies and their independent impact on Ohio
Created with OHPM Model, shows federal Anti-Poverty Program effectiveness[8]

Program	Model Individuals in Poverty Without Program	Individuals that Move Out of Poverty with Program	Percentage of Individuals (Out of People in Poverty)	Percentage of Individuals (Out of Total Survey)	Estimated Number of Ohioans Moved Out of Poverty
SNAP	59,727	5,316	9.77%	0.95%	111,055
Free Lunch and Breakfast	54,835	424	0.78%	0.08%	8,821
Housing Subsidies	57,426	3,015	5.54%	0.54%	62,730
EITC	61,813	7,402	13.6%	1.32%	154,005
All Child Tax Credits[9]	59,006	4,595	8.44%	0.82%	95,603

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[7] Center on Budget and Policy Priorities. (2019). Policy Basic: The Earned Income Tax Credit.
[8] The estimates laid out in Table 3 are calculated by isolating each program while still including the other anti-poverty programs listed in the table. It is difficult to discern which individual programs lead to an individual moving across the poverty line since many people in and near poverty receive more than one benefit.
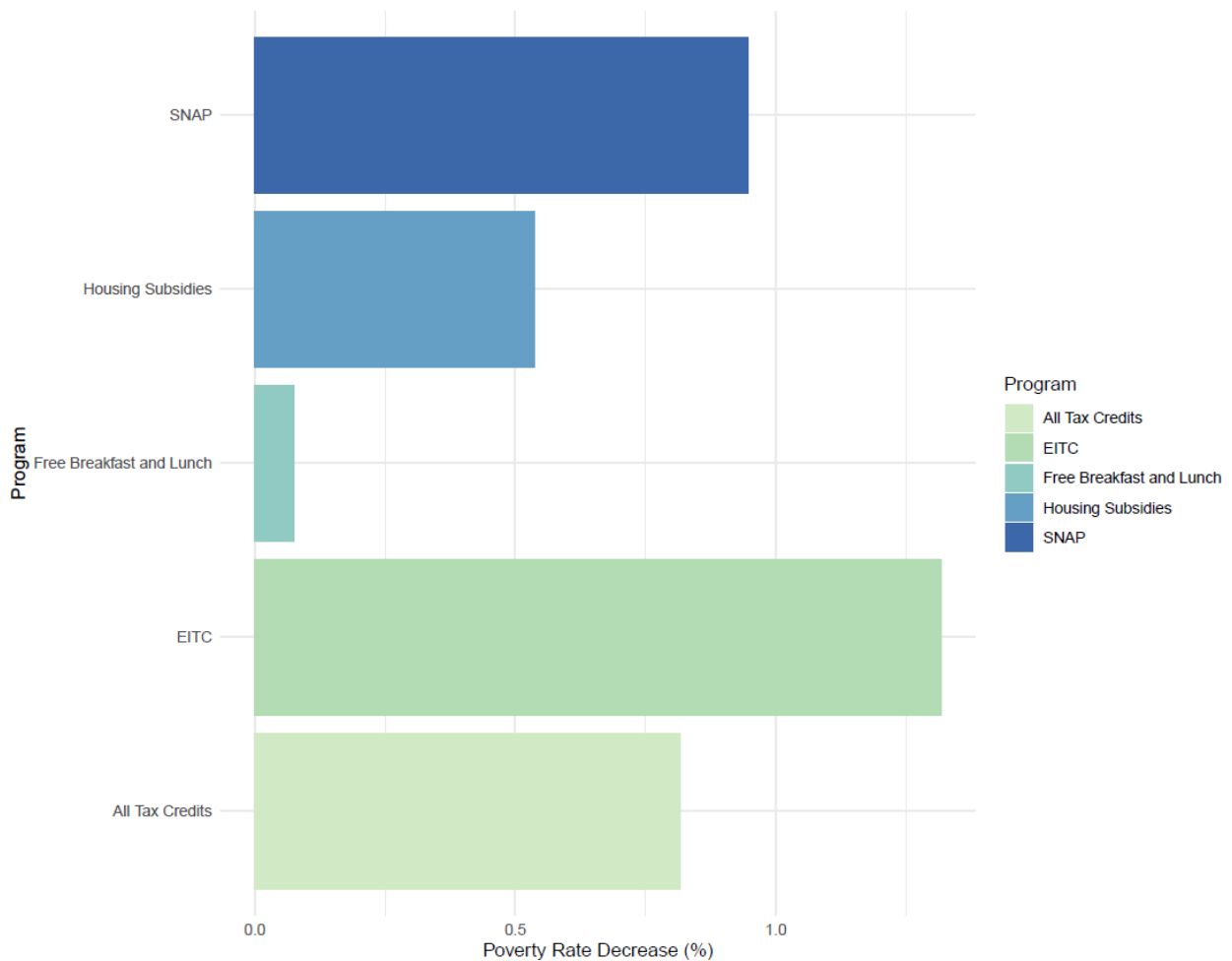[9] Includes: Child Tax Credit, Additional Child Tax Credit, and Child Care Credit

Table 3 shows that the EITC program is the most successful single program at reducing poverty rates. The impacts of these programs can be seen in Figure 3.

Figure 3: Effectiveness of Anti-Poverty Programs

Figure shows that EITC is the most successful single government subsidy program included in model

Despite the availability of anti-poverty programs, not all people in poverty receive benefits. Non-participation in these programs can be due to eligibility issues, accessibility, administrative burden, lack of information, or citizenship status. Figure 4 below breaks down, for each program, the percentage of households with children who are in poverty and receive the benefit, not in poverty and receive the benefit, in poverty and do not receive the benefit, and not in poverty and do not receive the benefit. The

child tax credit has the highest participation rate among people in poverty, indicating that the program is reaching most households who qualify. In contrast, a large percentage of Ohioans in poverty do not participate in SNAP. Although this is not inclusive of the entire population, the figure shows the limitations of existing anti-poverty programs.

Figure 4: Impact of Anti-Poverty Programs on Households with Children
Figure shows that many people in poverty are not in these programs
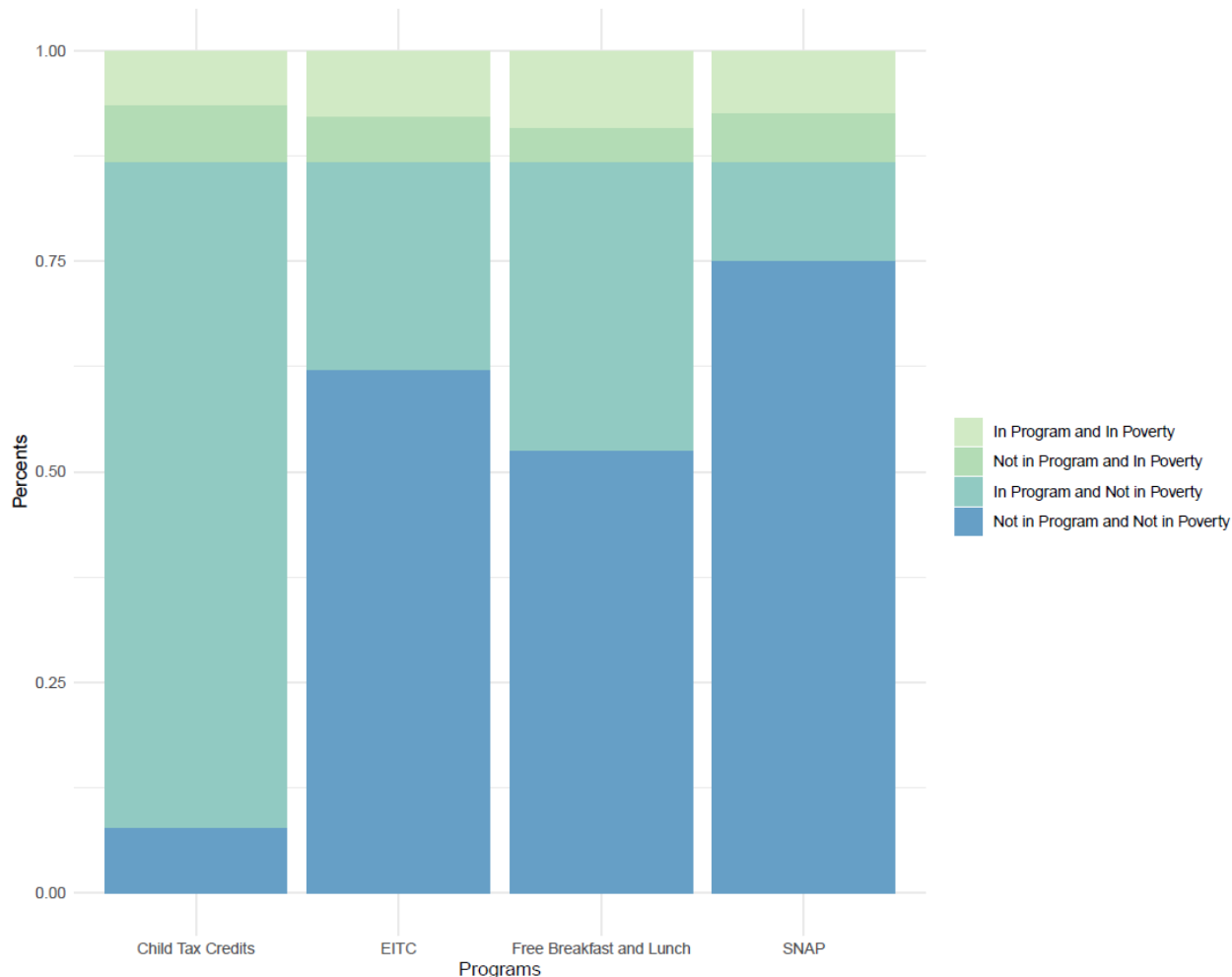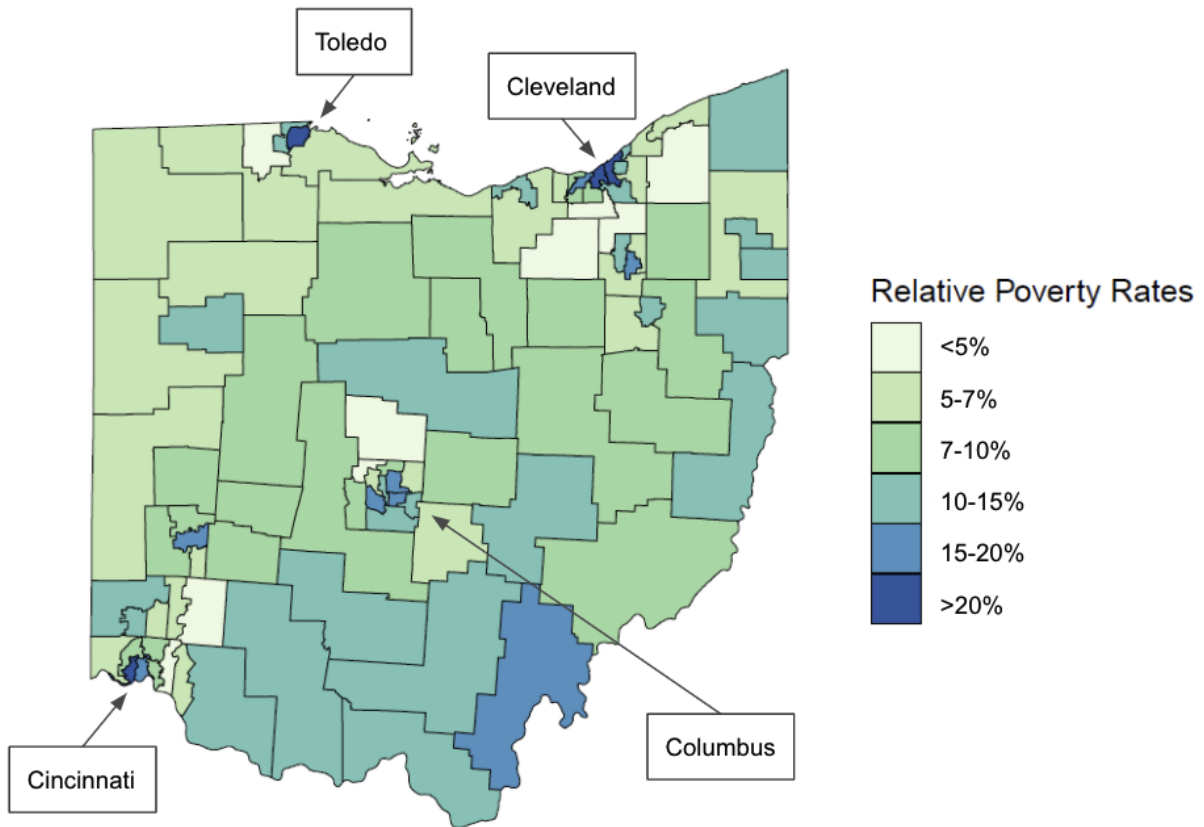

Source: 2018 American Community Survey 5-year data
Authors' calculations based on the OHPM model

When the data are mapped out using Public Use Microdata Areas (PUMA), it is evident that poverty in the state is most concentrated in urban centers and in the southern region of the state, particularly where Ohio overlaps with Appalachia. In contrast, the lowest rates of poverty can be found in the suburbs surrounding metro areas. These findings can be seen in Figure 5 below. These trends are consistent with what has

previously been observed about geographic poverty patterns in Ohio in measures such as the Official Poverty Measure.

Figure 5: Geographic Distribution of Poverty in Ohio
Figure shows that the highest poverty rates are in urban areas and that southeast Ohio has higher poverty rates than northwest Ohio[10]

Source: 2018 American Community Survey 5-year data
Authors' calculations based on the OHPM model

Table 4 below also highlights that the lowest poverty rate is in a suburban area, while Table 5 shows that the highest poverty rate is in a metro area. The range of poverty rates across the state is a 20 percent spread, showing the great geographic cost-of-living differences.

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[10] The bins for poverty rates in the range of 5 to 10 percent are made smaller to increase the granularity because most poverty rates fell into this range

Table 4: Top Five Lowest Poverty Rates by PUMA
Created with OHPM Model, shows that the lowest poverty rate is in the suburbs of Akron

Location	Poverty Rate
04103 - Columbus (Far Northwest), Dublin & Hilliard (North) Cities	3.38%
01801 - Summit County (North & Northwest)--Hudson, Twinsburg & Macedonia Cities	3.46%
00903 - Cuyahoga County (South)--Broadview Heights, North Royalton & Strongsville Cities	3.64%
04000 - Delaware County	3.96%
05507- Hamilton County (East)--Loveland, Montgomery Cities & Forestville	4.40%

Table 5: Top Five Highest Poverty Rates by PUMA
Created with OHPM Model, shows that the and the highest is in Cleveland and the top five highest poverty rates are in urban areas

| Location	Poverty Rate
00908 - Cleveland City (East) & Bratenahl Village	24.3%
00500 - Toledo City (East)	24.3%
00906 - Cleveland City (Central)	22.4%
05503 - Cincinnati City (West)	20.8%
05504 - Cincinnati City (Central)	19.6%

The OHPM also surfaced other inequities in the distribution of wealth by race, shown by Figure 6. These findings are particularly staggering when considering the racial composition of Ohio. Our analysis found that nearly 1 in 4 Black Ohioans are living in poverty, compared to about 1 in 12 white Ohioans. This severe disparity also plays out for smaller populations of racial and ethnic minorities, for example, while there are only estimated to make up 4 percent of Ohio, the model indicates that nearly 18 percent of the Hispanic population[11] is living in poverty. Native Americans (0.3 percent of Ohio)

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[11] Hispanic is an ethnicity, not a race, so this category represents individuals who are also counted in other race categories.

and Pacific Islanders (0.1 percent of Ohio) are also experiencing poverty at disproportionate levels.[12]

Figure 6: Poverty rates in Ohio, by racial groups
Figure shows that Black Ohioans and other Ohioans of color are disproportionately living in poverty when compared to the percentage of impoverished white Ohioans
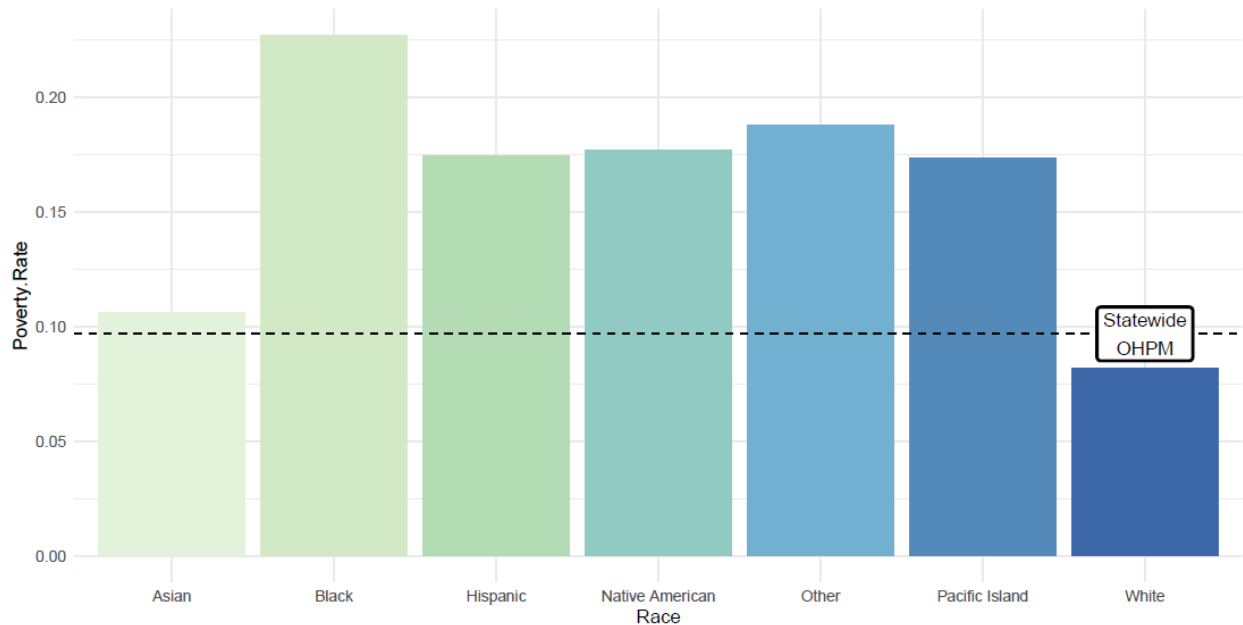
Source: 2018 American Community Survey 5-year data
Authors' calculations based on the OHPM model

Table 6 specifies these findings further. Across racial groups, nonwhite Ohioans are experiencing poverty at a higher rate than communities of color nationally. Black, Hispanic, and Asian peoples' national poverty rates are lower than what our model shows in Ohio.[13] This is an imperfect comparison, since the Census Bureau estimates use the Official Poverty Measure. But still provide a framework for contextualizing the Ohio data.

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[12] Note: Due to the smaller population sizes and thus smaller numbers of representatives in the data, observations about these populations are limited.

[13] The Census Bureau poverty report does not currently include Pacific Islanders, Native Americans, or other racial groups.

Table 6: Poverty Rates by Race
Created with the OHPM Model, shows that Black Ohioans and other Ohioans of color are disproportionately living in poverty when compared to the percentage of impoverished white Ohioans. Data from the Virginia and Oregon poverty measures is included for comparison.

Race	Poverty Rate	Number of Respondents in Data Set (N)	Virginia Poverty Measure	Oregon Poverty Measure
Asian	10.6%	12,792	12.3%	-
Black	22.7%	58,849	18.1%	17.4%
Hispanic[14]	17.4%	16,285	23.1%	16.7%
Native American	17.7%	4,413	-	18.3%
Other	18.8%	5,348	16.1%	13.7%
Pacific Islander	17.3%	542	-	-
White	8.19%	494,024	8.1%	12.4%

Sources: 2018 American Community Survey 5-year data; Oregon Poverty Measure, Oregon State University, October 2020; Virginia Poverty Measure, University of Virginia, May 2013; Authors' calculations based on the OHPM model

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[14] Hispanic is an ethnicity, not a racial group. As such, there is overlap where some Ohioans included in both Black and white racial categories are also included in Hispanic and vice versa.

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