Working but Still Poor: The Role of Regional Occupational Structure in Low Income Work

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Research Questions

1. How much does a person's likelihood of being working poor or near poor vary across occupations?

2. Does a person's likelihood of being working poor or near poor vary across regions?

3. Does a region's occupational structure affect a person's likelihood of being working poor or near poor?

Data

- American Community Survey (ACS) 1-year 2011 Public Use Micro Sample (PUMS) file
  - The ACS is a nationally representative survey of 3 million household addresses each year,
  - Which collects housing, social, demographic, and economic information

- Questions on work status refer to the last week before the interview.

- Questions on income refer to the 12 month period preceding the interview date.

- The 2011 survey period covers a year in the early recovery period after the end of the Great Recession. (National Bureau of Economic Research, 2013)

- Regions: Public Use Micro Areas (PUMA) are contiguous geographies of at least 100,000 people that do not cross state boundaries.

How Poverty is Measured

Poverty status is determined by comparing annual income to a set of dollar values called poverty thresholds that vary by:
- family size
- number of children
- age of the householder (for 1 and 2 person households)

If a family's before- tax money income is less than the dollar value of the threshold, then each person in family is considered to be poor.

The **ACS** uses thresholds updated annually to allow for changes in the cost of living from the Consumer Price Index (CPI-U). They do not vary geographically.

In this research, we consider **workers who are poor** (with income up to 100% of the poverty threshold) and **those who are "near poor"** (with income from 101% to 200% of the poverty threshold).

Regional occupational structure is measured by the percent of a region's workforce employed in each of eight occupation groups.

| Occupation Groups	2010 Census Occupation Codes
Management, business, science, and arts occupations (except Education and Healthcare)	0010 - 1965
Education, legal, community service, arts, and media occupations	2000 - 2960
Healthcare practitioners and technical occupations	3000 - 3540
Service occupations (except Protective)	3600 - 3655; 4000 - 4650
Protective service occupations	3700 - 3955
Sales and office occupations	4700 - 5940
Natural resources, construction, and maintenance occupations	6005 - 7630
Production, transportation, and material moving occupations	7700 - 9750

Analysis Sample and Models

- The analysis sample includes residents of all 2,069 PUMAs in the United States who are:
  - At least 16 years of age,
  - White, Black or African American, Asian, or Hispanic, and
  - Employed.

- To model a person's likelihood of being working poor or near poor, we use a two-level, logistic, random-intercept model.
  - 1,351,228 people are nested within 2,069 PUMAs.
  - A person's likelihood of being working poor or near poor varies randomly across PUMAs.

- Models separately test the effects of individual and regional characteristics on the likelihood of being working poor or near poor.

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Many worker characteristics are strongly related to poverty status, including: age, education level, and fertility.

Young adults account for fully 29% of workers with poverty level income, but less than 10% of non-poor workers.
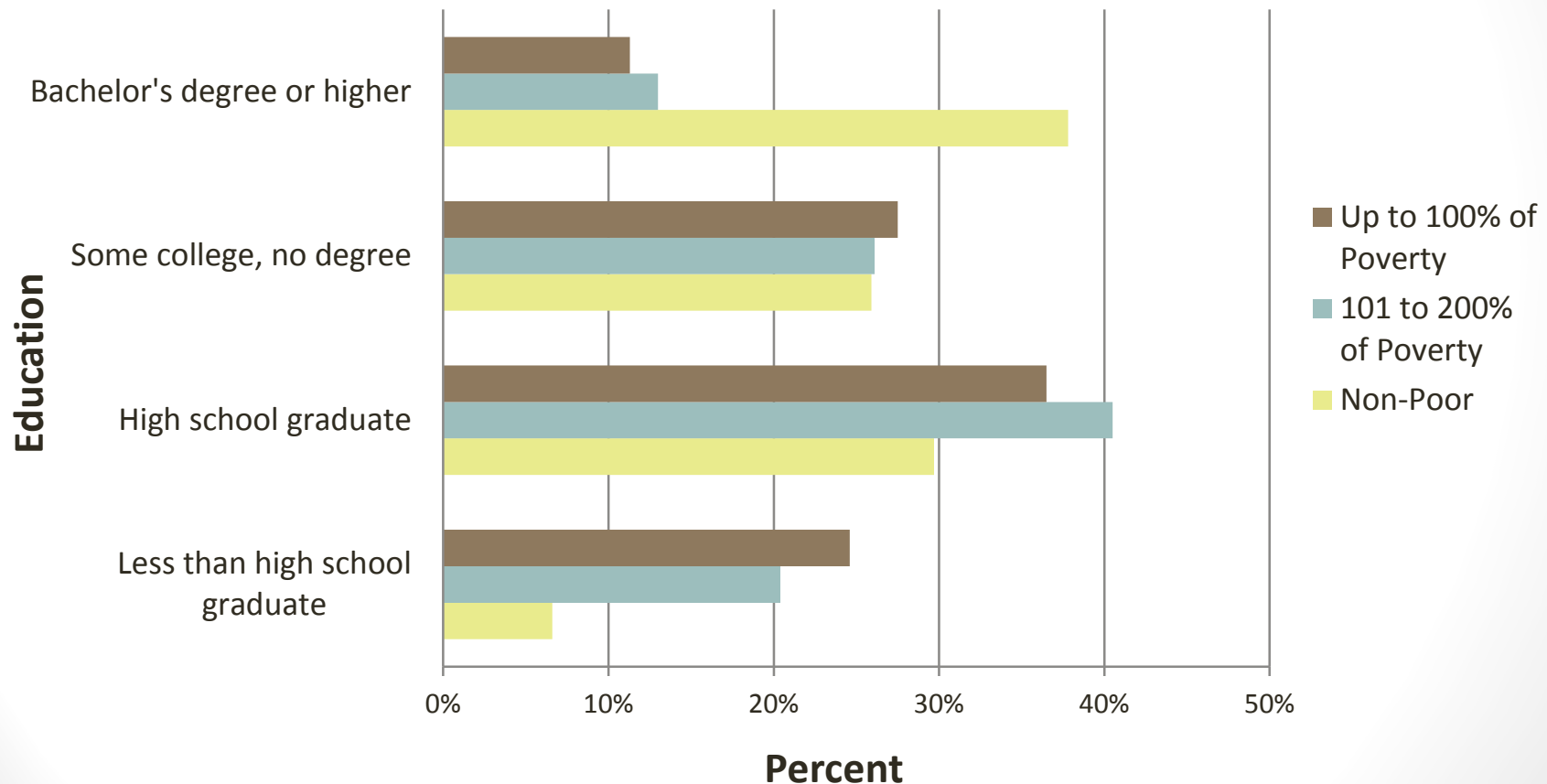
Poverty Among Workers by Age
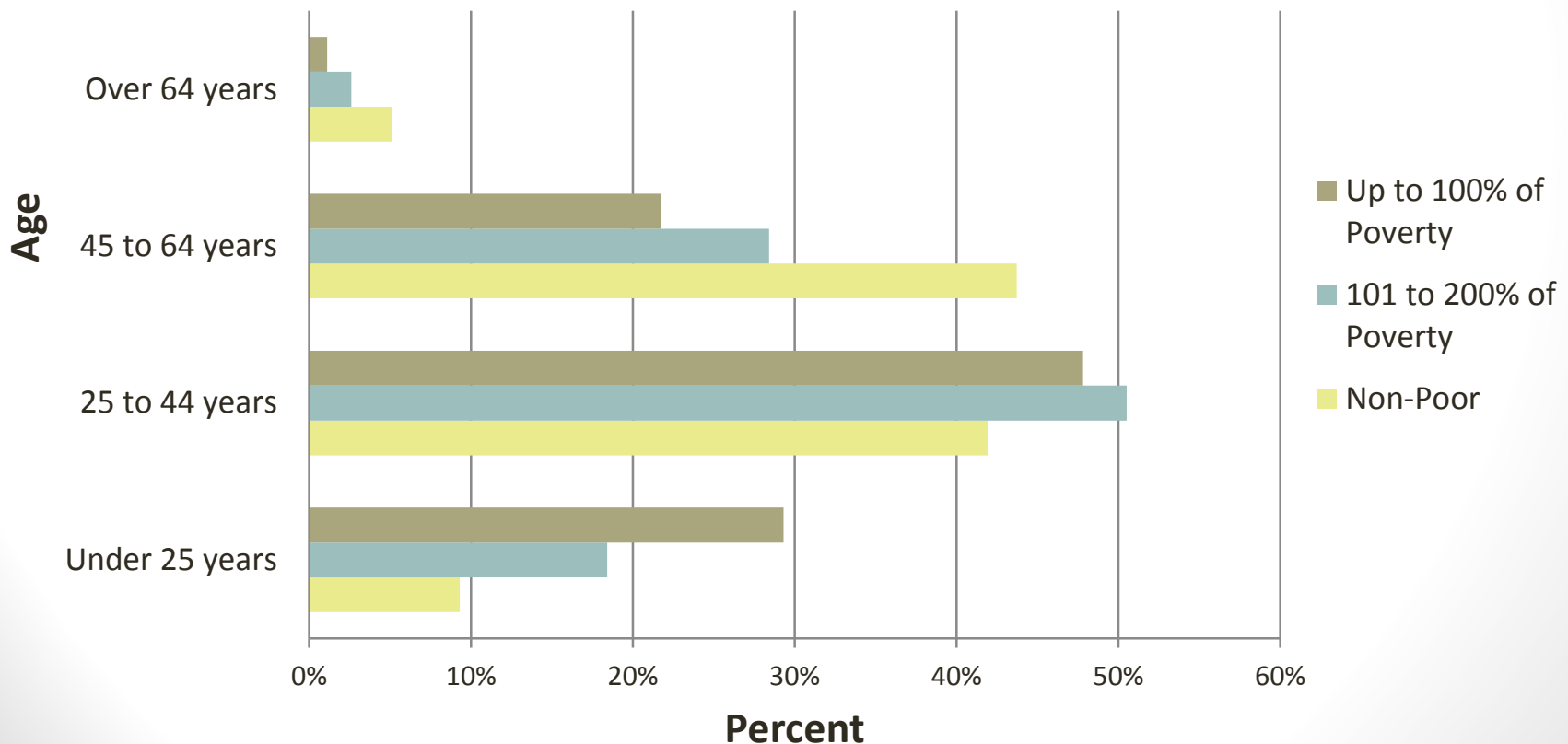
Source: American Community Survey, 2011

Individuals with only a high school diploma or GED represent 40% of workers with near poverty level income but 30% of non-poor workers.

Poverty Among Workers by Education Level

**Education** (y-axis)
- Bachelor's degree or higher
- Some college, no degree
- High school graduate
- Less than high school graduate

Percent (x-axis): 0% 10% 20% 30% 40% 50%

Legend:
- Up to 100% of Poverty
- 101 to 200% of Poverty
- Non-Poor

About 40% of workers with near poverty and poverty level incomes have minor children in the household, compared with 31% of non-poor workers.

Poverty Among Workers by Social and Employment Characteristics
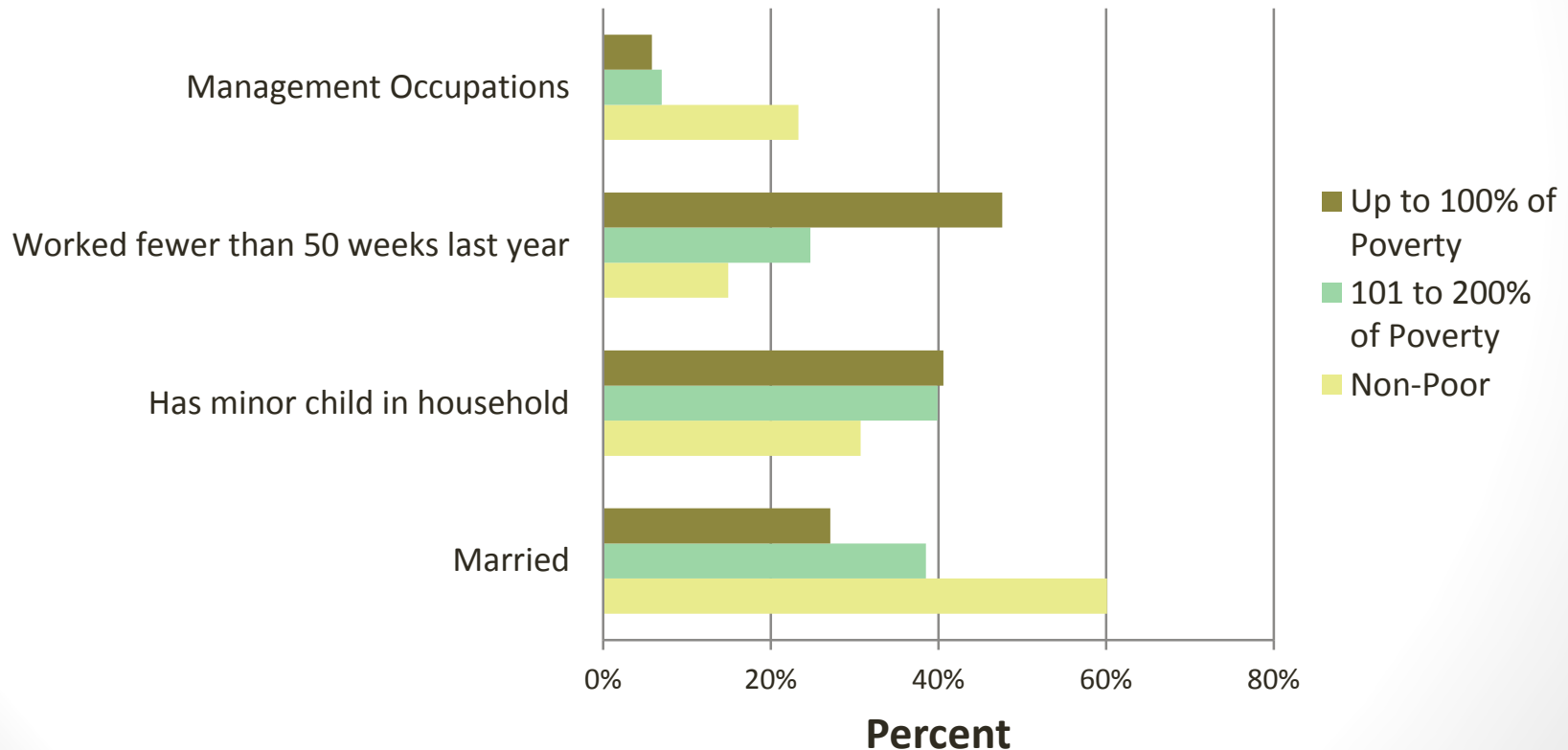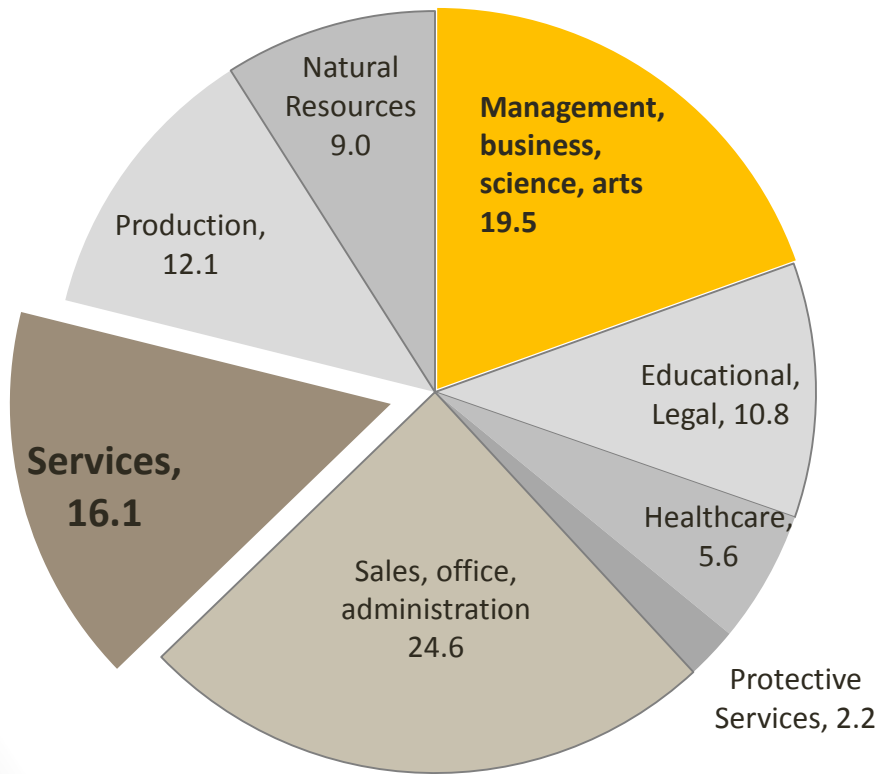
Source: American Community Survey, 2011

Regions vary substantially by demographic and economic characteristics, especially the percentage of working poor and near poor residents.
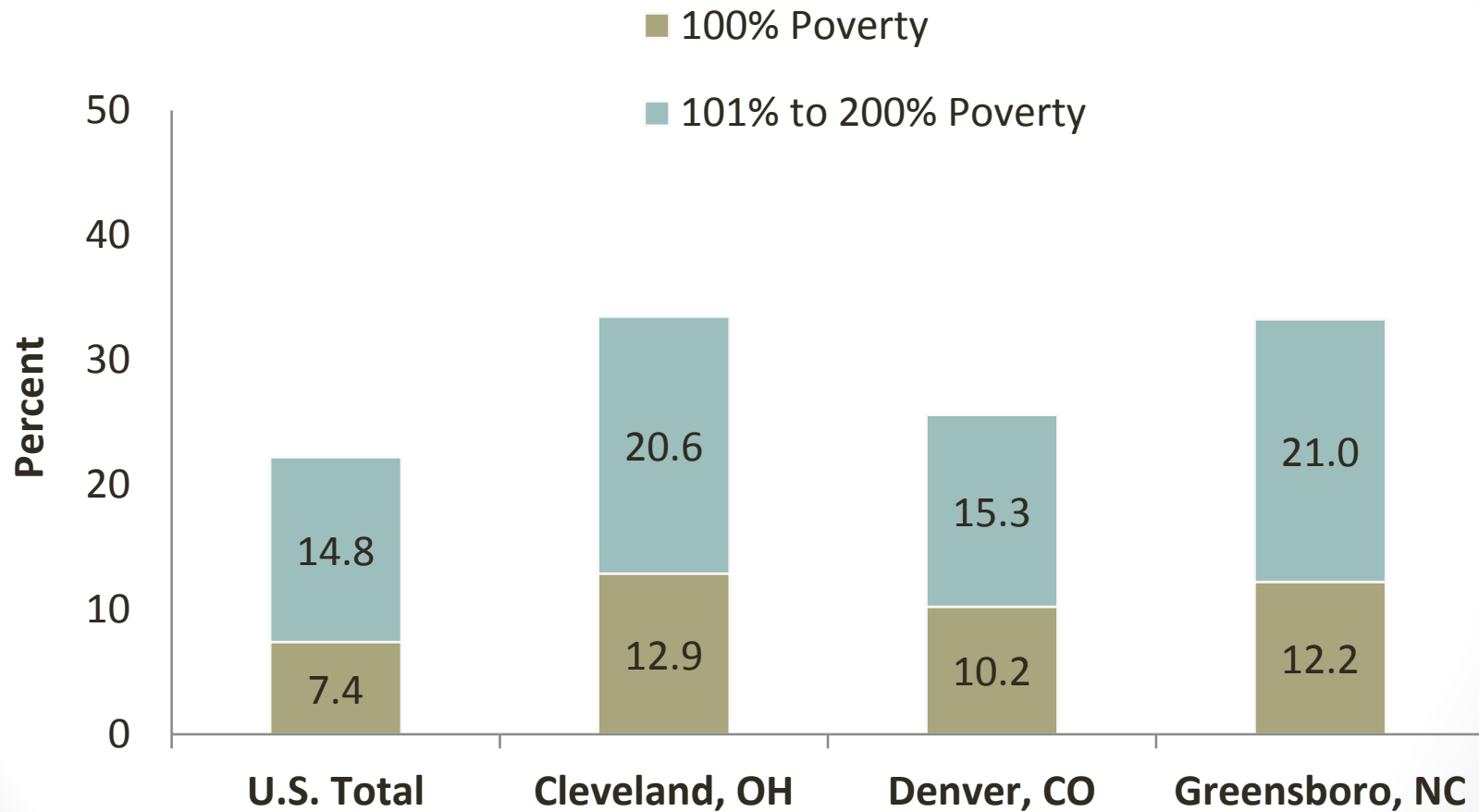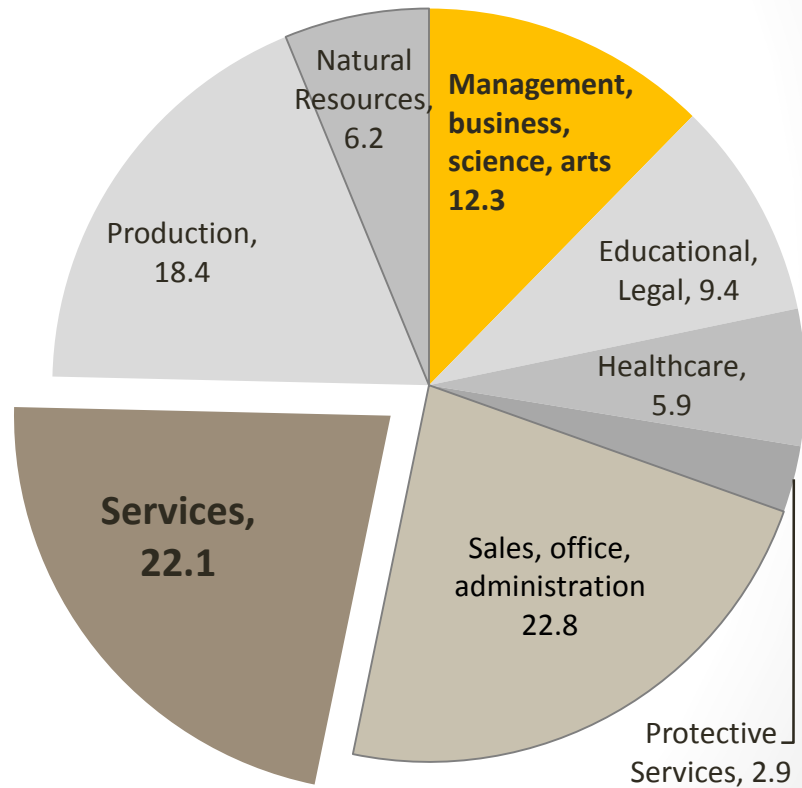

American Community Survey, 2011

Occupational structure varies substantially by region, especially for service occupations and management, business, science, and arts occupations.

U.S. Total

- Natural Resources 9.0
- Management, business, science, arts 19.5
- Production, 12.1
- Educational, Legal, 10.8
- Services, 16.1
- Healthcare, 5.6
- Sales, office, administration 24.6
- Protective Services, 2.2

Cleveland, OH

- Natural Resources, 6.2
- Management, business, science, arts 12.3
- Production, 18.4
- Educational, Legal, 9.4
- Services, 22.1
- Healthcare, 5.9
- Sales, office, administration 22.8
- Protective Services, 2.9
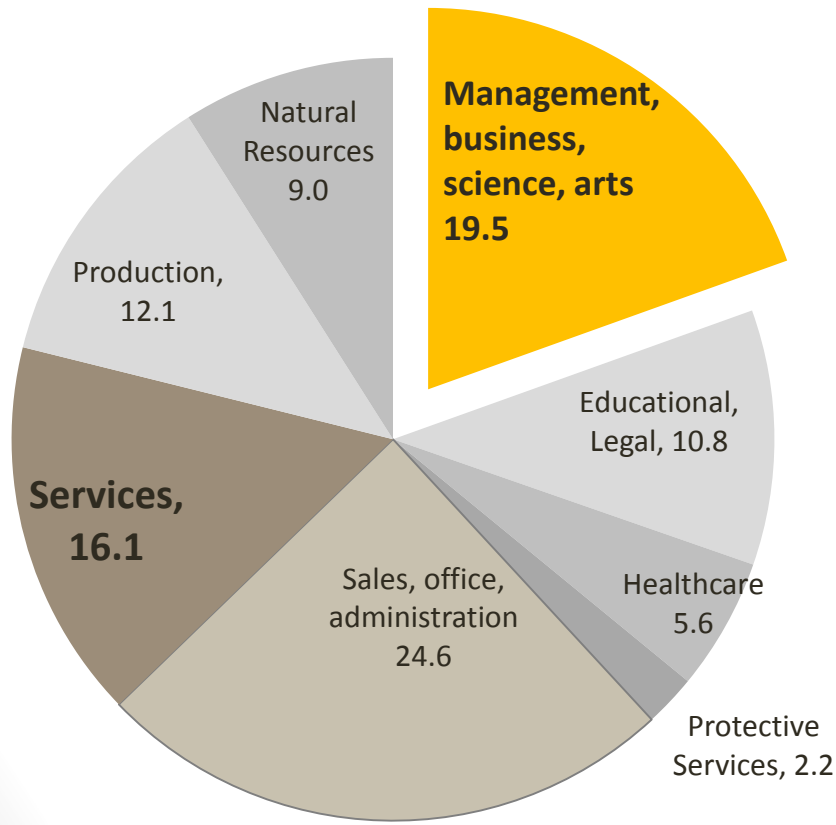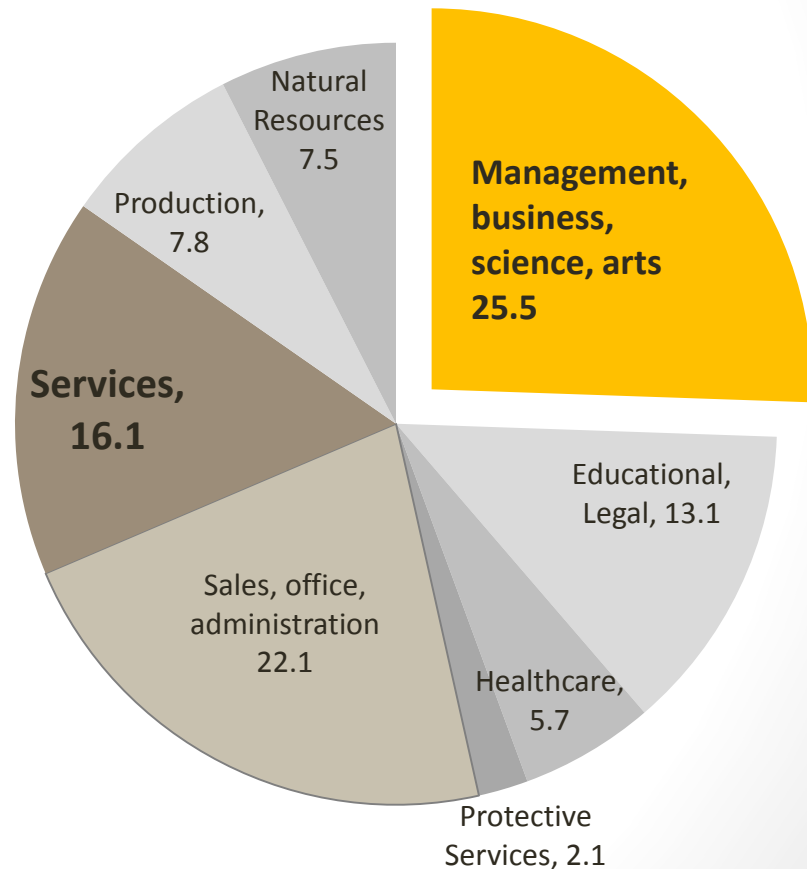
American Community Survey, 2011

Denver has a larger share of its workforce in management, business, science, and arts occupations than the U.S. overall.

U.S. Total

- Management, business, science, arts 19.5
- Natural Resources 9.0
- Production, 12.1
- Services, 16.1
- Sales, office, administration 24.6
- Educational, Legal, 10.8
- Healthcare 5.6
- Protective Services, 2.2

Denver, CO

- Management, business, science, arts 25.5
- Natural Resources 7.5
- Production, 7.8
- Services, 16.1
- Sales, office, administration 22.1
- Educational, Legal, 13.1
- Healthcare, 5.7
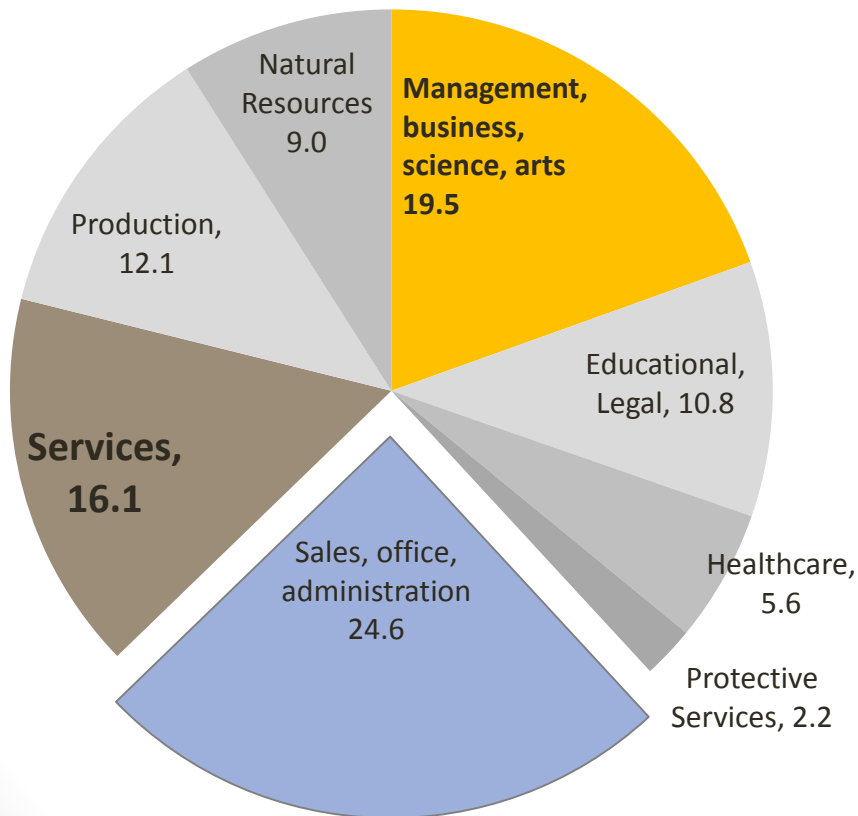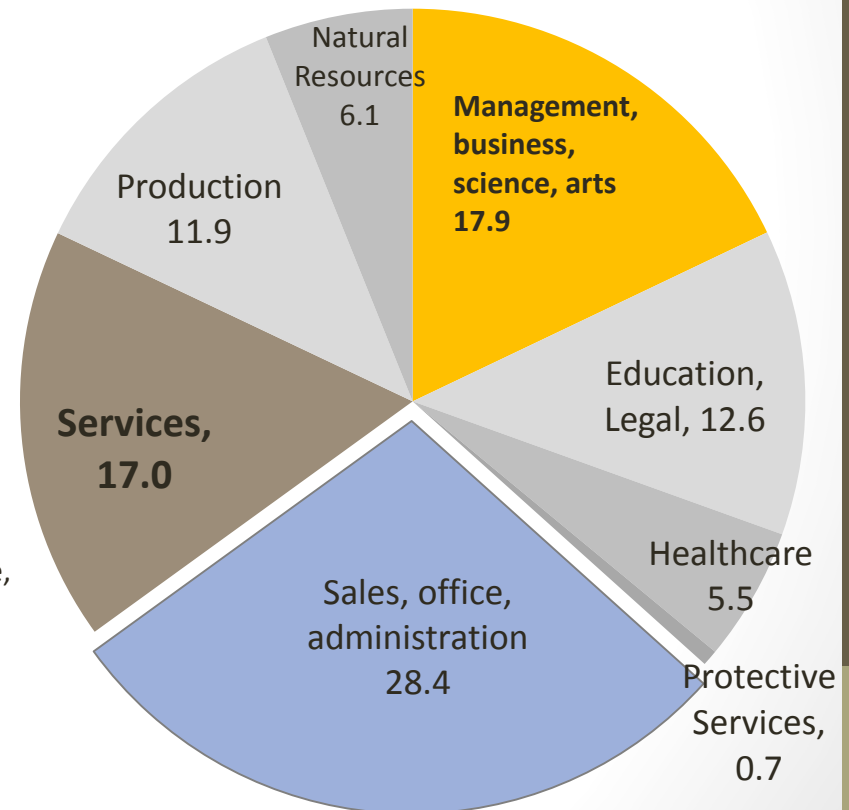- Protective Services, 2.1

American Community Survey, 2011

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Greensboro, North Carolina has a larger share of its workforce in sales and office administration occupations than the U.S. overall.

U.S. Total

- Natural Resources 9.0
- Management, business, science, arts 19.5
- Production, 12.1
- Educational, Legal, 10.8
- Services, 16.1
- Sales, office, administration 24.6
- Healthcare, 5.6
- Protective Services, 2.2

Greensboro, NC

- Natural Resources 6.1
- Management, business, science, arts 17.9
- Production 11.9
- Education, Legal, 12.6
- Services, 17.0
- Sales, office, administration 28.4
- Healthcare 5.5
- Protective Services, 0.7
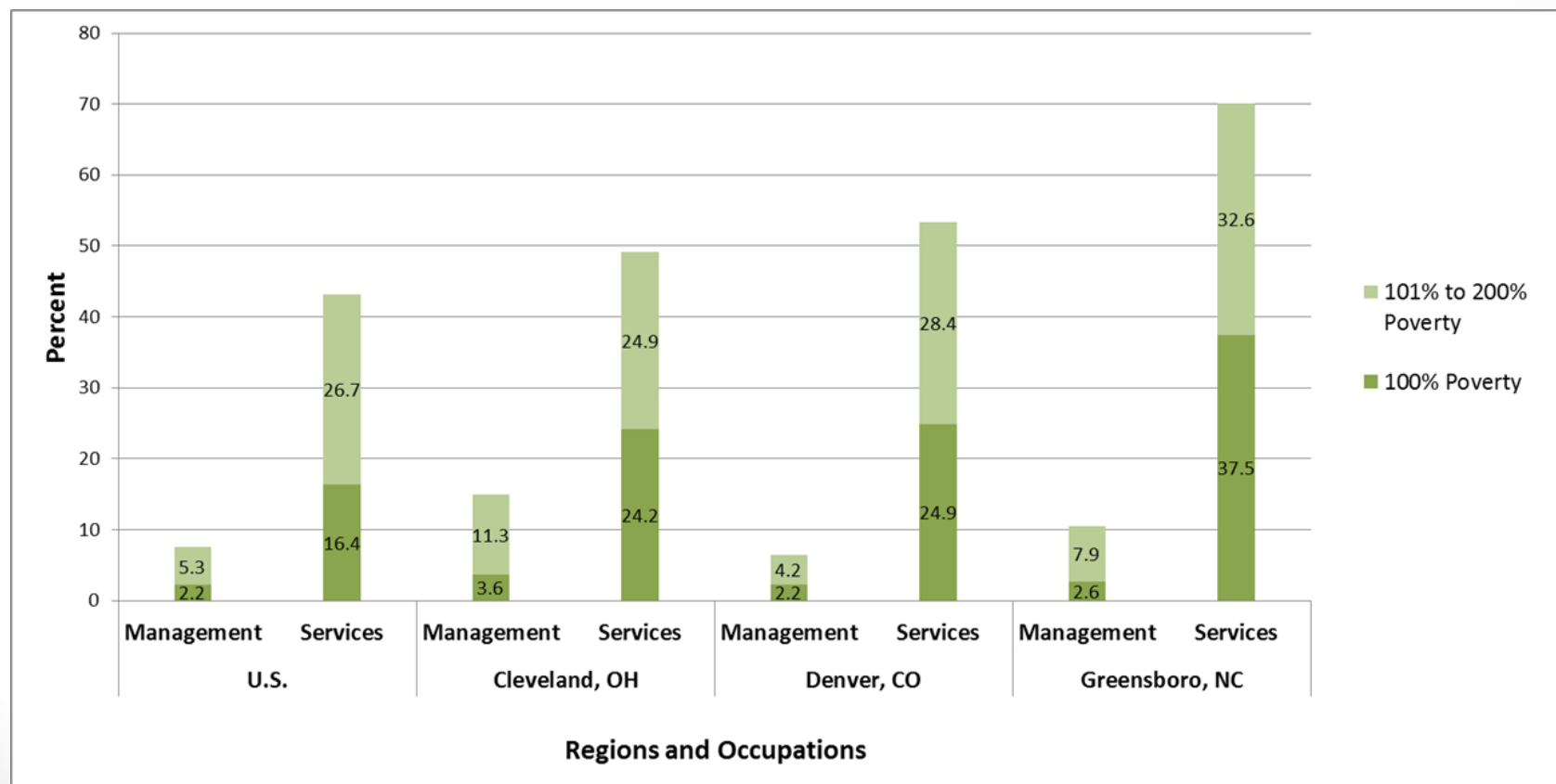
American Community Survey, 2011

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Poverty rates vary substantially across occupations, particularly service occupations, and management, business, science and arts occupations.

American Community Survey, 2011

Model One Results – Worker Characteristics

	Up to 100% of Poverty	101% to 200% of Poverty
	Odds Ratio	Odds Ratio
Worker Characteristics		
Education Occupations	1.26 ***	1.75 ***
Healthcare Occupations	0.65 ***	1.00
Services Occupations	2.25 ***	2.77 ***
Protective Services Occupations	0.98	1.48 ***
Sales and Office Occupations	1.49 ***	1.94 ***
Natural Resources Occupations	1.95 ***	2.13 ***
Production Occupations	1.75 ***	2.30 ***
Black	1.76 ***	1.52 ***
Asian	1.24 ***	1.46 ***
Hispanic	1.40 ***	1.57 ***
Other Race	1.54 ***	1.35 ***
Female	1.03 **	1.03 ***
Age	0.99 ***	1.00 ***
Less than High School Diploma	1.27 ***	1.19 ***
Some College	0.87 ***	0.80 ***
Bachelor's Degree or Higher	0.57 ***	0.47 ***
Not a Citizen	1.88 ***	1.53 ***
Low English Proficiency	1.63 ***	1.36 ***
Married	0.27 ***	0.44 ***
Has a Minor Child	3.39 ***	2.27 ***
Has a Disability	1.43 ***	1.35 ***
Works Fewer Than 35 Hours Per Week	2.80 ***	1.26 ***
Works Fewer Than 50 Weeks Per Year	2.60 ***	1.08 ***
PUMA Control Characteristics		
PUMA Occupations		
Constant	0.02 ***	0.08 ***

*** < 0.001, ** < 0.01, * < 0.05

	Estimate	Std. Error	Estimate	Std. Error
Variance of Constant	0.213	0.008	0.122	0.005
Psuedo Intra-Class Correlation	0.061	0.002	0.036	0.001

	Estimate		Estimate	
Proportionate Reduction in Variance	n/a		n/a	
BIC	514099.6		946858.3	

|	Chi-Square	Significance	Chi-Square	Significance
LR vs. Logistic Regression Test - DF (1)	8649.24	0	9826.84	0

Workers in services occupations are much more likely to be working poor compared with workers in management occupations.

Likelihood of Being Working Poor Across Occupations

Legend:
- Other Occupations
- Management Occupation

Y-axis: Predicted Probability

X-axis: Occupations — Production Occupation, Education Occupation, Healthcare Occupation, Services Occupation, Protective Services Occupation, Sales and Office Occupation, Natural Resources Occupation

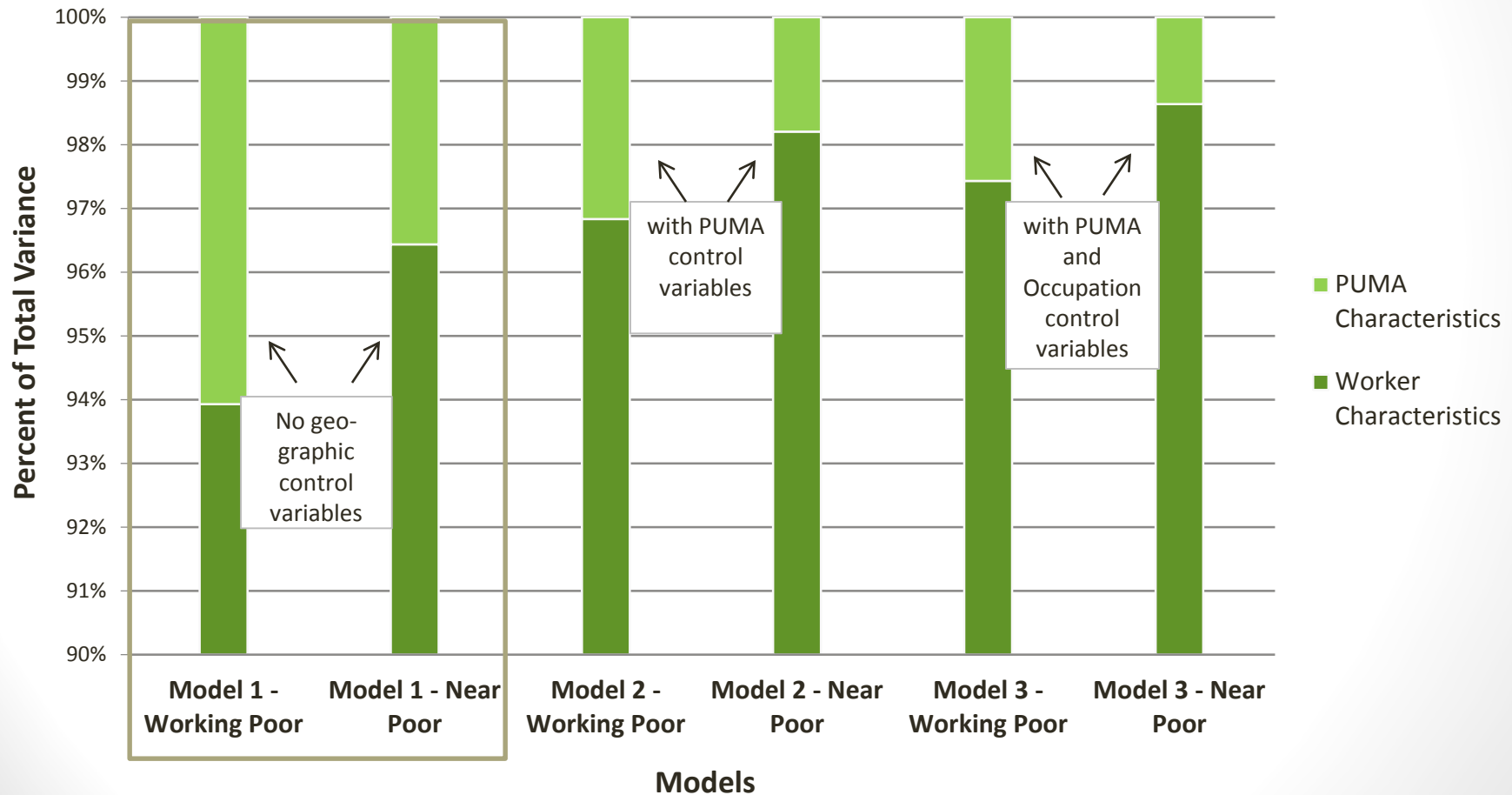Model results based on data from the American Community Survey, 2011
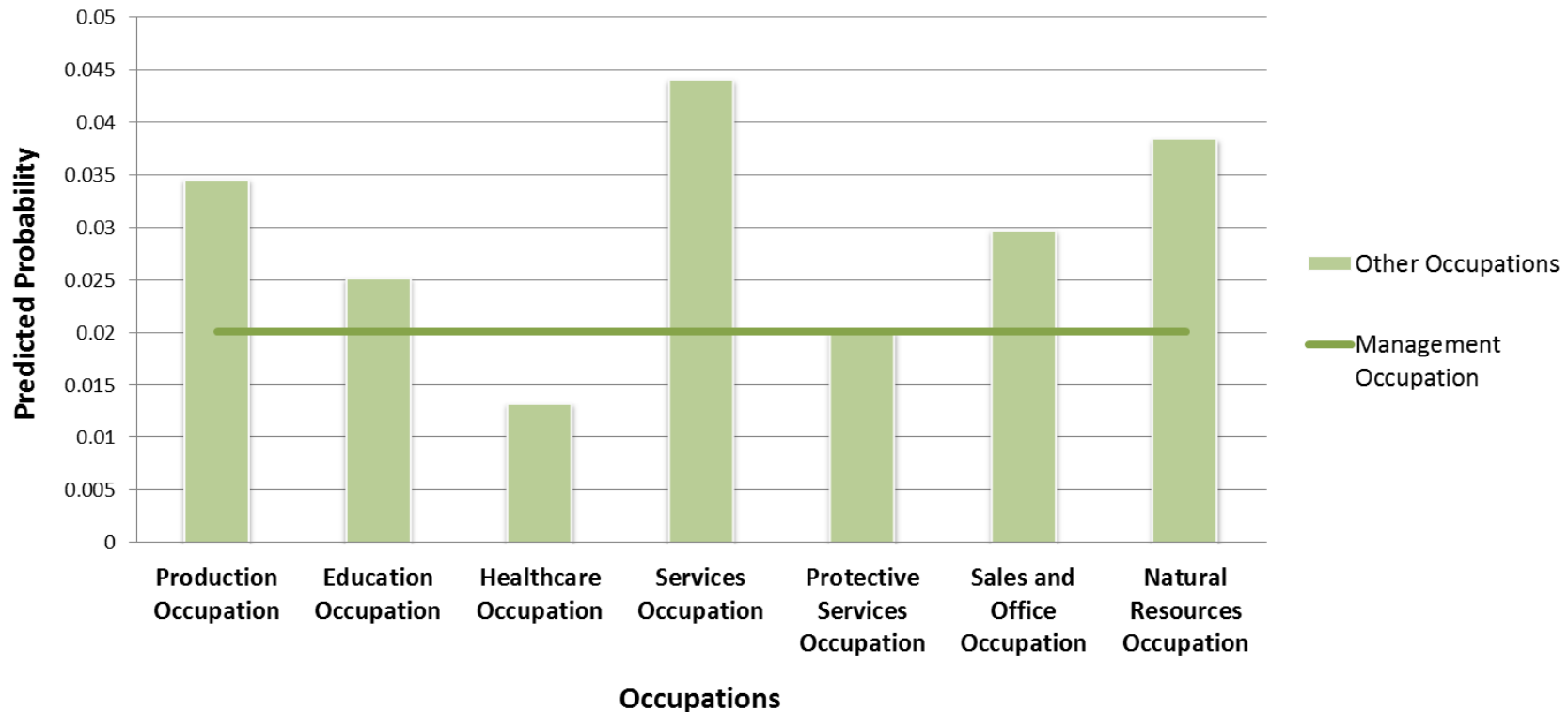
Workers in services occupations are also much more likely to have a near poor level of income compared with workers in management occupations.
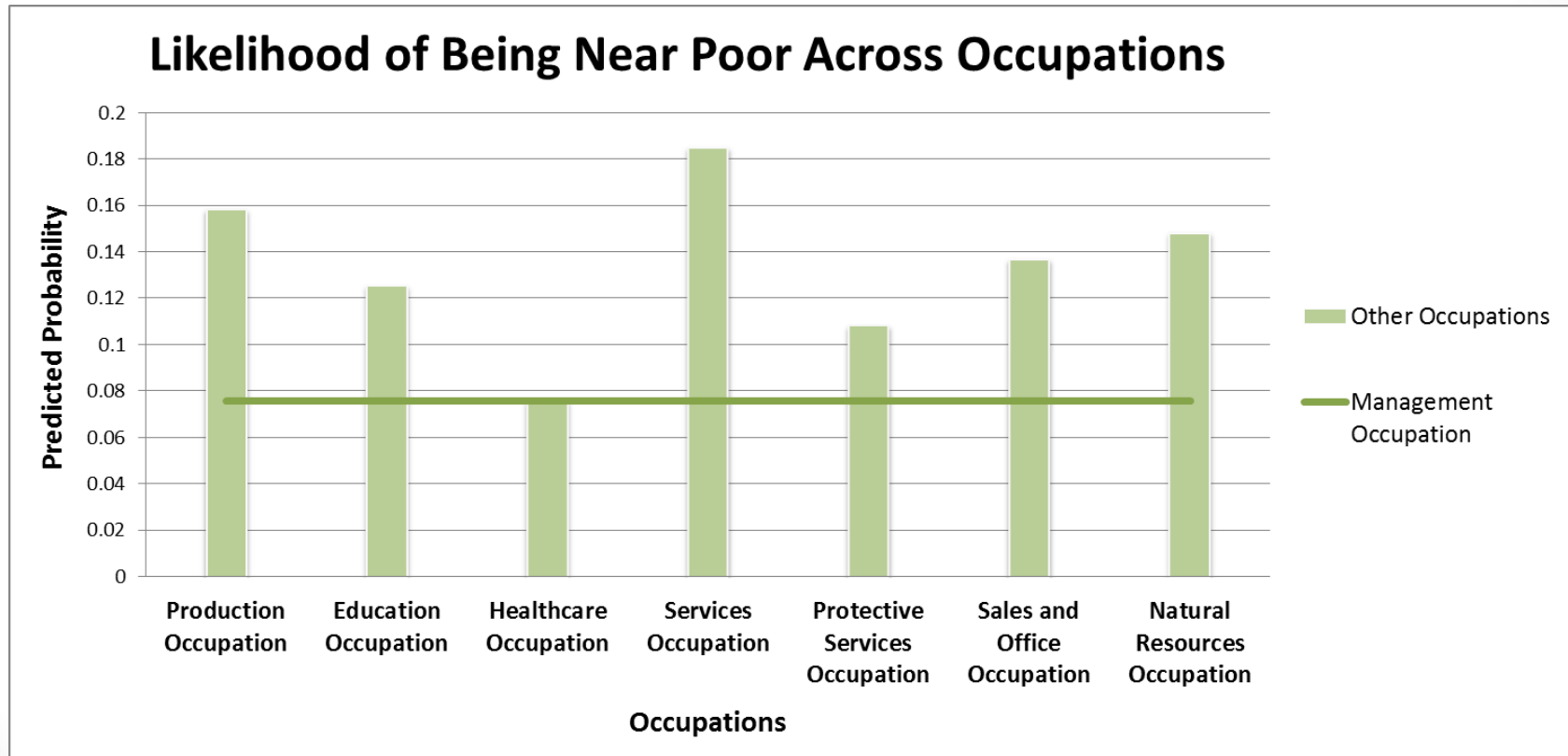
Where workers live accounts for a small, but significant, share of their overall likelihood of being working poor or near poor.

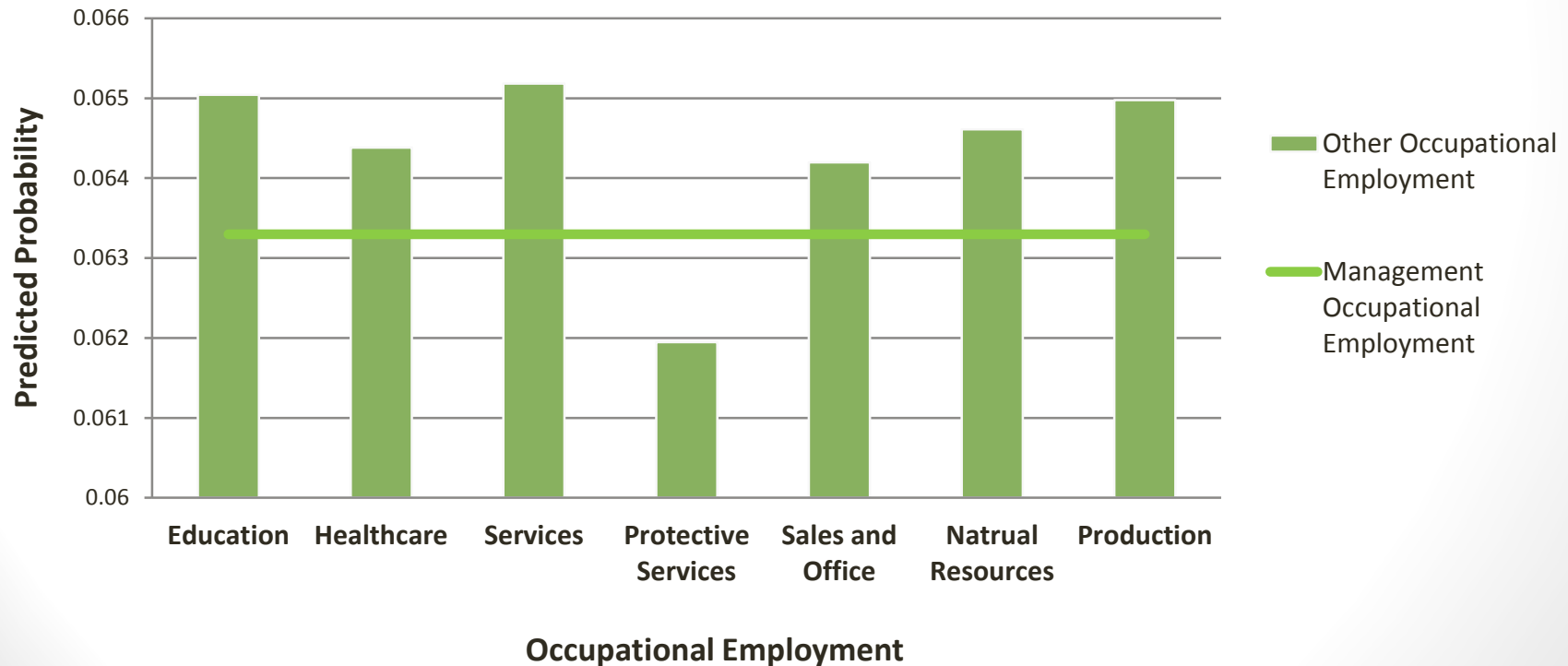# Model Three Results – Regional Occupational Structure

	Up to 100% of Poverty	101% to 200% of Poverty
	Odds Ratio	Odds Ratio
Worker Characteristics		
PUMA Control Characteristics		
Residents with Less Than a High School Diploma	1.01 ***	1.00
Part-time and Part-Year Workers	1.01 ***	1.01 ***
Minimum Wage	1.02	1.03
Union Representation	0.98 ***	0.98 ***
Indexed Gross Domestic Product	1.04 ***	1.01
New Residents	1.04 ***	1.01 ***
Non-citizens	0.99 ***	1.00
Labor Force Participation Rate	0.98 ***	0.98 ***
Labor Force Size	1.00	1.00
PUMA Occupations		
Education Employment	1.05 ***	1.03 ***
Healthcare Employment	1.02 **	1.02 ***
Services Employment	1.04 ***	1.03 ***
Protective Services Employment	0.97 ***	0.98 ***
Sales and Office Employment	1.01 **	1.02 ***
Natural Resources Employment	1.01 *	1.02 ***
Production Employment	1.02 ***	1.03 ***
Constant	0.02 ***	0.07 ***

*** < 0.001, ** < 0.01, * < 0.05

	Estimate	Std. Error	Estimate	Std. Error
Variance of Constant	0.087	0.004	0.045	0.002
Psuedo Intra-Class Correlation	0.026	0.001	0.014	0.001

	Estimate		Estimate	
Proportionate Reduction in Variance (Model 1 to 2)	47.5%		50.0%	
Proportionate Reduction in Variance (Model 1 to 3)	57.4%		61.1%	
BIC	512812.2		945283.6	

Workers in regions with more people in services or education employment are more likely to be working poor than in regions with more workers in management employment.
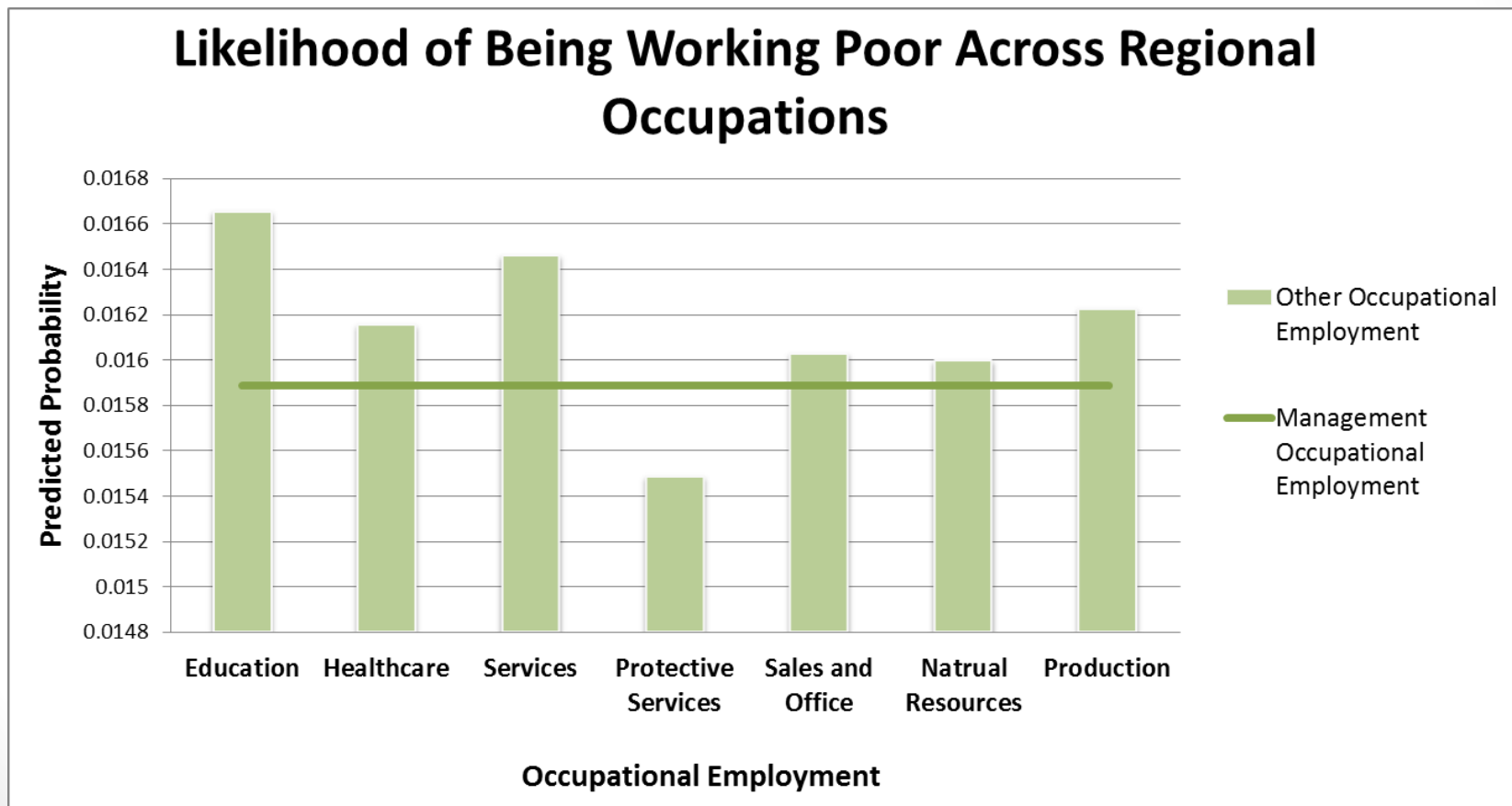
Likelihood of Being Working Poor Across Regional Occupations

Workers in regions with more people in services or education employment are more likely to be near poor than in regions with more people in management employment.

Likelihood of Being Near Poor Across Regional Occupations

Predicted Probability (y-axis): 0.06, 0.061, 0.062, 0.063, 0.064, 0.065, 0.066

Occupational Employment (x-axis): Education, Healthcare, Services, Protective Services, Sales and Office, Natrual Resources, Production

Legend:
- Other Occupational Employment
- Management Occupational Employment

Regional characteristics, including occupational structure, help explain some of a worker's overall likelihood of being working poor or near poor.
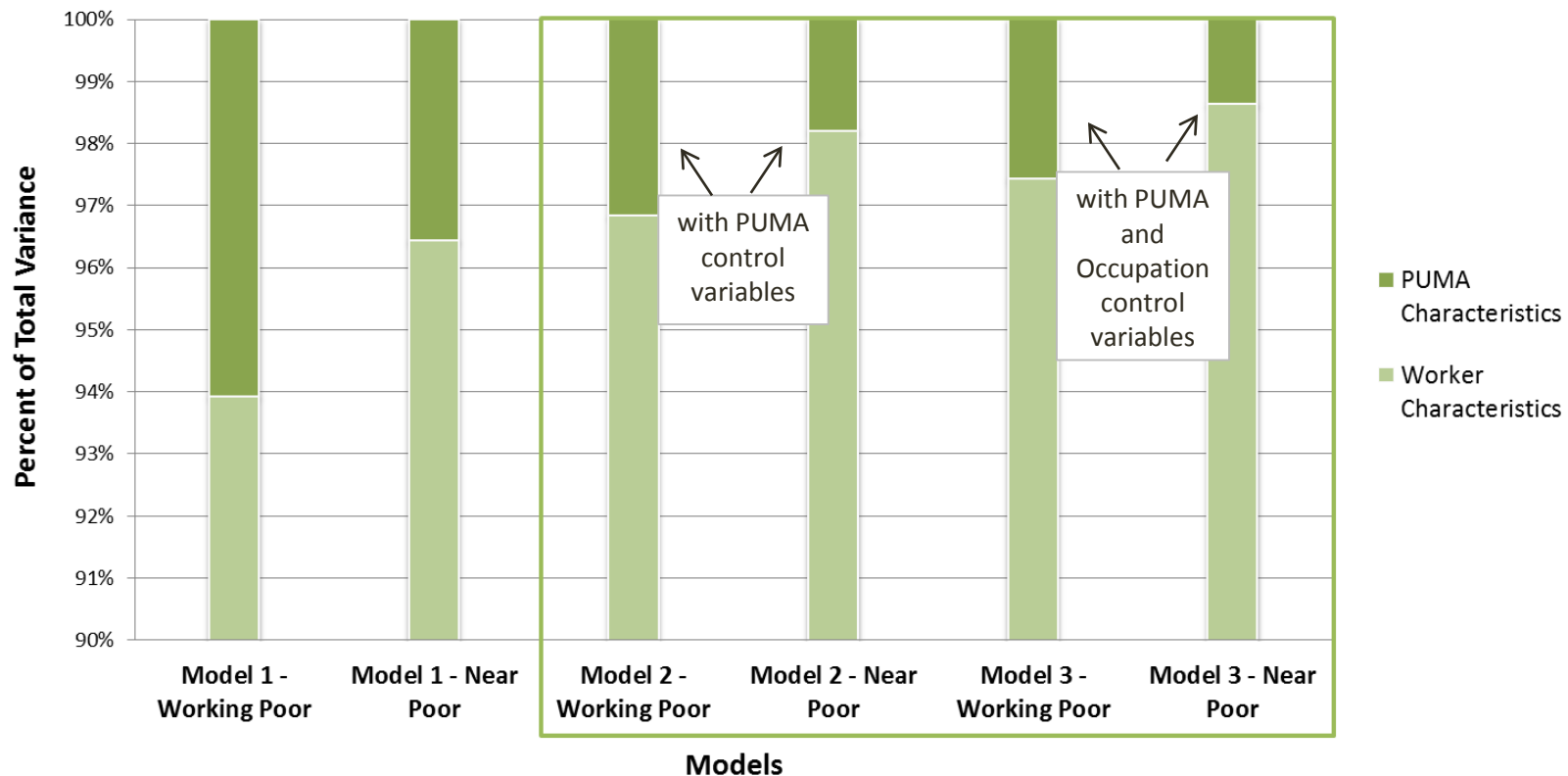
Conclusions:
For the Working Poor and Near Poor

➢Their occupation matters…

➢Workers in certain occupations are more likely to be working poor or near poor.

➢Where they live also matters…

➢Workers in some regions are more likely to be working poor or near poor.

➢A small share of a worker's overall likelihood of being working poor or near poor is dependent on where the worker lives.

For the Working Poor and Near Poor

➢ Because the occupational mix of where they live matters…

➢ Workers in regions with greater employment in certain occupations are more likely to be working poor or near poor.

➢ A region's occupational mix helps explain a worker's overall likelihood of being working poor or near poor.