

## ABSTRACT

### Self-Employment in the United States

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The self-employed represent about ten percent of the American workforce. Challenges to a fuller understanding of self-employment in the United States include the ability to generalize the results of research studies. These analyses seek to clarify issues surrounding their earnings and work satisfaction. A taxonomy based on industry and occupation codes closes gaps in this knowledge. Perspectives that express the importance of an independent middle class or petty bourgeoisie guide multilevel models that investigate the role self-employment can play in mitigating the effects of structural conditions such as high poverty. Using public use microdata sample data from the American Community Survey, I find that the self-employed are by no means a homogenous group of individuals who are engaged in similar kinds of work, the success of those who best their peers is usually not the result of human capital differences, and the best explanation for these differences must therefore lie in the social networks built by these individuals to improve their businesses over time.

Self-Employment in the United States

by

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A Dissertation

Approved by the Department of Sociology

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## CHAPTER ONE

### Introduction

#### *Overview*

The available literature on self-employment, including that on entrepreneurship and small business, is extensive and interdisciplinary. Those who are self-employed face higher risk and uncertainty than private wage and salary workers and government workers, who operate within more bureaucratic and hierarchical organizations. It is the original form of employment, indeed the original form of production, and it is important to understand self-employment as it occurs today in a global economy dominated by large, capital-equipped, multi-establishment firms. The 2010 Statistical Abstract of the United States produced by the US Bureau of the Census puts the number of self-employed Americans at around ten million in each year of the past decade.<sup>1</sup>

According to the Organization for Economic Cooperation and Development, about seven and a half percent of the U.S. workforce has been self-employed this decade on average, less than half what it has been for the 31 OECD member countries on average (17%), and only one percent more than the workforces of the Russian Federation and Luxemburg.<sup>2</sup> They are small business owners, entrepreneurs, subcontractors, and many other different types of workers. Those who employ workers themselves may have to perform simultaneously the functions of owner, manager, and employee. Within this economic atmosphere, still nearly one in five Americans works for a firm that employs fewer than twenty workers.<sup>3</sup>

With the overwhelming majority of U.S. workers employed by larger firms, what drives people into self-employment? In occupational choice theory, an individual will choose self-employment when he or she expects that human capital investments will earn greater returns by doing so.<sup>4</sup> This definition may be fitting for those self-employed who can be considered entrepreneurs, but what about the rest of them? Arum (2004) presents the argument that subcontracting is an employment solution for many economically marginal laborers, in a sense the ‘other side’ of self-employment activity. This split labor market produces more income inequality among the self-employed than exists between private wage and salary workers and government workers. Others argue that local economic restructuring (signaled by declining manufacturing employment) has led to higher levels of self-employment in metropolitan areas (Oh 2008).

Yet it is still tempting to think of the self-employed as if they were all Schumpeterian entrepreneurs. They enrich and sustain our capitalist economy through the process of creative destruction. They are innovative and resourceful individuals who enter existing markets with ‘new’ products and services, and are successful when new market share is created and existing market share is destroyed or stolen from large firms. Surely, all of the self-employed and even all small business owners cannot be described in this way.

We can be somewhat certain that small businesses provide a large share of jobs and in this way contribute importantly to the national economy. Neumark, Wall and Zhang (2008) find that in the US private sector between 1992 and 2004 the relationship between net job growth rate and firm size is an inverse one: smaller firms are found to create more net jobs. This finding suggests that small firms are our most important job

creators. However, new evidence leads one to believe that this relationship is conditional. Haltiwanger, Jarmin, and Miranda (2009) show that the relationship between firm size and job growth depends on the age of the firm. Consider the shares of all employment and of all startup employment by firm size. For firms with fewer than twenty workers they are 20% and 30%, and for firms with more than 10,000 workers they are 25% and *one tenth of one percent*. Perhaps the mortality of startups negatively impacts the net growth rate for small business. In an analysis using confidential longitudinal business data from the Census, the authors find that when firm age is controlled for, the largest firms (10,000+ employees) do indeed have higher net growth rates.

Still, smaller firms are responsible for a healthy sum of new jobs. For example, the startup rate for nonemployer firms is triple what it is for employer firms (Acs et al. 2009). In fulfilling this important societal task, small businesses also embed themselves within their localities. Research in the civic community perspective shows that places with more small businesses enjoy better health and social outcomes (Tolbert et al. 1998; Tolbert et al. 2002). Additionally, small businesses can be very resilient: they have not been stomped out of existence by big box retail establishment such as Wal-Mart (Sobel and Dean 2007).

Americans are generally trusting of small business. A PEW Research Center study in March of 2010 finds that 71% of Americans say small business, as an institution, positively affects society. This places small business above other important institutions in American society, such as churches and synagogues (63%), the mainstream media (31%), corporations (25%), congress (24%), and banks (22%) (PEW 2010). Trust is an

important component in economic transactions. Small businesses must in some way be reaping the rewards of this trust.

Conventional wisdom asserts that the self-employed choose this path of economic independence for themselves, lured by the promise of ‘being your own boss,’ rather than have a path chosen for them. Efforts to amount evidence that can inform our common understandings in this regard find that some groups of self-employed do better in economic terms than their wage/salary employee counterparts. Others do worse and ‘choose’ self-employment for its flexibility. What arises is a view of a stratified labor market similar to the wage and salary labor market, separated into management and professional occupations and labor and production occupations. Researchers correctly understand that the self-employed are not a demographically and economically homogenous group. What researchers have been unable to do effectively is identify among the mass of self-employed individuals those who seem to be able to help create positive community outcomes through their own economic pursuits.

Most OECD countries have policies that promote entrepreneurship and American statespersons continually advocate for small business, the first line of job creation and the backbone of free market capitalism. But the term ‘self-employment’ encompasses a far wider variety of workers than only those who run successful, incorporated, employing enterprises. Continuing to operationally define ‘all of the above’ as ‘self-employed’ is problematic because researchers observe heterogeneity within their ranks (Parker 2004). However, some argue that the self-employed are predominantly ‘business owners’ of one kind or another (Kirchhoff 1996; Boden and Nucci 1997; Carree et al 2002).

A complete picture of self-employment in the United States requires some reworking of the conceptual strategies used to categorize them and the analytic strategies used to analyze the data we have on them. Future research would benefit from a new taxonomy of self-employed workers and a multilevel approach to modeling individual outcomes. Characteristics of the local labor market and other structural forces are very much at play and do affect self-employment outcomes, but research limitations have impeded our understanding of them.

### *Data Sources for Research on Self-Employment*

Publicly available data sources used for research on self-employment are primarily large government datasets such as the Decennial Census, Current Population Survey, and Survey of Income and Program Participation; longitudinal datasets such as the National Longitudinal Survey of Youth and National Longitudinal Surveys of Labor Market Experience; and national random samples such as the General Social Survey. Many analyses using these data sources model outcomes at the level of the self-employed individual and are not the same as, but are ultimately intertwined with, studies of entrepreneurs or small businesses and other types of owner-operated firms.

The handful of data sources that are best suited to answer these kinds of questions, including those that match employees with their (self-employed) employers, are usually not available to the general public but only to those with special research privileges. For the rest of us, research in self-employment would benefit from a set of discrete categories that limits within-group differences and maximizes between-group differences. Better yet if these categories were applicable to many different data sources.

This can be achieved with industry and occupation codes used by the US Census.

Clusters of the self-employed can be recoded into units of a typology.

This requires a thorough exploration of the data. The American Community Survey (ACS) is the best publicly available resource for this purpose. One recent release is a pooled 2006-2008 sample of Americans. The 5% PUMS file is the largest source of microdata (9 million individuals) on Americans. It also includes 2007 NAICS industry codes and 2008 PUMS occupation codes (based on 2002 Census and 2000 SOC codes), and a Class of Worker designation which reports independently whether an individual is a paid employee, self-employed in their own unincorporated business, or self-employed in their own incorporated business.

While the ACS is not the ideal resource for studying economic behavior, it is appropriate insofar as researchers keep assumptions and implications within the bounds of a cross-sectional empirical approach. This means confining research to particular domains of self-employment research. These data cannot account for workers movement into and out of self-employment. Those types of studies require the use of longitudinal and employer-employee linked data. Still, a large share of self-employment research does use cross-sectional data and reports on group differences in rates of participation and earnings, topics the data are most readily able to study.

The 5% PUMS release of the ACS contains an enormous amount of demographic data that can produce large numbers of observations for relatively obscure categories of the self-employed. The purpose of using this immense resource is to be able to test hypotheses about the self-employed in even these undersized segments. The pooled 5-



year estimates give researchers this capability for all but the most rural areas and are updated annually.

### *Literature Review and Analyses*

A review of the literature follows this section. The first analysis chapter describes the basic demographic, social and economic characteristics of the self-employed using data from the Census' American Community Survey. A set of discrete categories of the self-employed is derived from the industry and occupational characteristics of the population. This taxonomy is then tested in multivariate models against the prevailing findings about the earnings of the self-employed in the empirical literature. The analyses using this new categorization are expected to replicate some of the major previous findings. The taxonomy is expected to improve upon previous research by revealing the dissimilarities that exist across smaller, less well understood groups within this population.

A second analysis considers the work satisfaction of the self-employed using GSS data. Due to the considerable observed economic variation among the self-employed one should expect to find variation here as well. The taxonomy from the previous chapter can be applied to these analyses as well because the two data sources have comparable industry and occupation codes, which are used to form the subgroups. The result between the two chapters will be a detailed profile that enhances our understanding of an important part of the American workforce.

The final analysis presents a multilevel model incorporating ideas from the civic community perspective. This analysis will attempt to reveal the 'types' of self-employed individuals who sustain local capitalism and contribute to pro-social outcomes in our

communities. As proposed, the preceding analysis chapters are mostly descriptive in nature. This analysis is driven by more advanced statistical methodologies. It is also attentive to the geographic units in which these individuals live and work.

Challenges to a fuller understanding of self-employment in the United States include the ability to generalize the results of research studies. Many of the self-employed are dentists, lawyers, construction managers, real estate brokers, landscapers, hairdressers, carpenters, auto mechanics and truck drivers. They are not all owners of incorporated businesses—in fact, most are not. This research begins to close some of the gaps in this knowledge.

## CHAPTER TWO

### Literature Review

This section describes the empirical literature on self-employment. It begins with a look at what factors push or pull individuals into self-employment, followed by a review of the factors that contribute to their success and their earnings. Then I discuss factors that predict satisfaction with work, review past efforts to count the self-employed, and weigh in with a few classical theorists on the topic. A review on work within the civic community perspective follows, and then I present research questions.

#### *Becoming Self-Employed*

One major line of research considers the decision to enter into self-employment. Wage and salary employment must be tremendously appealing given that around 90 percent of individuals in the US workforce are employees earning a wage or a salary. What, if anything, does the other 10 percent have in common?

One topic of interest to self-employment researchers considers hypotheses about the influence of family background on the likelihood of becoming self-employed. Most research firmly supports the position that the family is tremendously influential with respect to individuals' economic outcomes. For example, children of small business owners have increased odds of becoming self-employed (Dunn and Holtz-Eakin 2000). However, only a third of those who do become self-employed go into the same kind of business as their self-employed parent. Hout and Rosen (2000) also find that children of self-employed fathers are more likely to become self-employed. Children follow their

parents into self-employment, but not always their parents' self-employment. Perhaps parents who are self-employed transmit special knowledge to their children, making them more willing and able to become self-employed themselves.

Sociologists consider the process of socialization to be the force behind the development of legitimate and nonlegitimate forms of social and cultural capital, which in turn affect economic outcomes for individuals. Studies of social capital and self-employment show the importance of resources based on group membership in China (Batjargal and Liu 2004), among immigrant groups (Portes and Bach 1985; Portes and Rumbaut 1990), and among white, Korean, Mexican, and black business owners in the United States (Valdez 2008). Conversely, research on pairs of twins has shown that the entrepreneurial tendency may be 'genetic' (Nicolaou et al. 2008).

Families' financial assets also hold predictive power for self-employment outcomes. Greater family wealth raises the chance that an individual will enter into self-employment (Dunn and Holtz-Eakin 2000; Hout and Rosen 2000). This is considered to be due in part to the variation in families' access to business capital and relevant knowledge. My analyses that follow will not predict entering into or exiting out of self-employment because I will be using cross-sectional data. These studies, however, do have importance for later discussion.

### *Gender*

The family factors mentioned above make self-employment more appealing because they increase the probability of success, 'pulling' individuals into self-employment. Other family factors may 'push' individuals into self-employment. Family responsibilities can create a need for flexibility within one's work that only self-

employment can satisfy. Budig (2006) finds that self-employment in these instances is much more likely to be in nonprofessional occupations. Male nonprofessionals choose self-employment to escape bad wage jobs and female nonprofessionals choose it for family flexibility. The likelihood of a woman's entrance into self-employment is increased if she is married and increases with each additional child. Boden (1999) also finds that the need for flexibility in work drives women with young children into self-employment. It is important to note that these forces do not act uniformly across gender lines. Men make the decision to become self-employed separate from these considerations.

### *Human Capital*

Another set of influences has to do with individual levels of human capital. Budig's (2006) research also informs the self-employment choices of men and women in professional occupations. She finds that both men and women professionals follow a 'careerist model,' where they choose self-employment because their skills will command a higher income than salaried work for an employer. Other research concerned directly with entrepreneurs (rather than all of the self-employed) finds that human capital is more important for success than financial or cultural capital (Kim, Aldrich and Keister 2006). These authors predict growing rates of entrepreneurship in the future due to the growing amounts of human capital in the US labor force.

### *Nativity*

Foreign-born status can also be an important predictor of self-employment for individuals in the United States. Each immigrant group's departure and arrival

experiences are different, and this is reflected in the labor market experience of established and arriving group members. Alejandro Portes has written extensively on the topic of embeddedness and social capital in the enclave economy (Portes 1987; Portes and Sensenbrenner 1993; Portes 1998). The receiving local economy can greatly assist new immigrants' assimilation into the labor market. Being in a community that has higher rates of self-employment is important. This reflects in part differences in background characteristics of the group, among them educational attainment, and can affect access to training/apprenticeships and startup capital.

The self-employed choose this independent way of economic life for many reasons. From just the literature on *entering* self-employment one can begin to see how heterogeneous this category of worker can be. I now turn briefly to factors that predict the success of those who enter into self-employment before discussing the literature on their earnings.

### *Survival of New Business Ventures*

Many (but not all) of the self-employed are small business owners (Kirchhoff 1996). Individuals may begin these new ventures for a variety of reasons, and this is the principle concern of the research described above. Others consider what characteristics contribute to the success of new business ventures. This research question raises some data issues, specifically about how to obtain sufficient information on both the business and the individuals who own them. Plenty of publicly available data resources contain individual-level and firm- and establishment-level information for analysis. However, analyzing the two together would be a useless endeavor—*those* individuals do not own *those* businesses. Fortunately, the self-employment literature includes research by those

who have access to data sources that are able to match individuals and the firms they own.

Boden and Nucci (2000) examine survey data that includes characteristics of business owners and characteristics of the businesses they own in order to determine what factors differentially influence the success of male- and female-owned businesses. These are not necessarily small businesses: the Characteristics of Business Owners data used in their analysis omits only ‘regular (1120-C) corporations... [and] owners of partnerships or small corporations whose businesses have more than ten owners.’ In a survival analysis of those businesses in the retail and service industries, Boden and Nucci find that greater years of education and greater years of work experience are important predictors of the business still being around four years later. In relation to gender the authors find that women who enter into self-employment are less likely to have four or more years of college education and tend to have less management experience and fewer years of prior paid employment, making these ventures less likely to succeed. While the Boden and Nucci analysis answers important questions about the characteristics of successful business owners, we do not know how well these findings can be applied to other groups of self-employed workers.

### *Earnings*

Another major line of research on the topic of the self-employed has to do with their earnings. Most discussions of earnings and self-employment consider the impact of various industries and occupations on workers’ earnings. These analyses do vary, however, in their treatment of small business owners, entrepreneurs, and the self-employed in general. While the sections above concerning the entrance into self-

employment and the likelihood of success are important for an understanding of self-employment in general, my research interests begin here with a review of the literature on the earnings of the self-employed.

If individuals choose self-employment as a means of maximizing the return on their human capital investments, then the self-employed should always, *ceteris paribus*, earn more. This is, in fact, not the case. Studies of the role exercised by earnings differentials on the decision to become self-employed have returned mixed results (Parker 2004). Self-employment, then, either brings with it other benefits or is not always chosen freely. Labor market conditions such as unemployment have been shown to affect the decision to enter into self-employment (Steinmetz and Wright 1989), suggesting that not all who become self-employed are chasing their ‘dream job.’

A study using data from the Survey of Income and Program Participation finds that the self-employed earn less than their employee counterparts (Hamilton 2000). This analysis was careful to select a variety of control variables (educational attainment, disability, marital status, race, and past retirement) and was conducted only for males (to eliminate variation due to gender differences). However, it stands to reason that work in the various industries and occupations that the self-employed are engaged in would return different earnings. The self-employed may make more than their employee counterparts in one industry or occupation and less in another. Often this distinction is made between professional and nonprofessional occupations. When faced with empirical evidence that the self-employed suffer an earnings penalty, researchers tend to rally around the idea that the decision to enter into self-employment is driven by non-pecuniary benefits such as ‘being your own boss.’



### *Gender*

Gender differences exist in the earnings just as they do in the paid wage labor market. Budig (2006) finds that in professional occupations, the gender gap wages closely mirrors the gap in the paid wage labor market. For nonprofessionals, however, the gap between men and women's wages worsens. When comparing the earnings of the self-employed to the earnings of their wage-earning peers, she discovers that self-employed professionals do better than their employee counterparts while the nonprofessional self-employed do worse. These are important findings and they underscore the necessity of breaking down the industry and occupational categories of the self-employed further when discussing their earnings.

### *Nativity*

Self-employment has been shown to have generally positive outcomes for foreign-born workers. Lofstrom (2002) finds that self-employed immigrants tend to earn more and tend to be better educated than wage and salary immigrants and natives. Valdez (2008) looks at minority group business owners to see if different amounts of social capital might explain some variation in the earnings of self-employed Koreans, Mexicans, and blacks (and non-Hispanic whites). Scholarship on ethnic entrepreneurship is concerned with how immigrant groups differentially assimilate into the labor market. Research has generally found that group membership facilitates entrepreneurship (Light 1972; Light and Bonacich 1988; Portes and Bach 1985; Portes and Rumbaut 1990; Sanders and Nee 1996; Waldinger et al. 1990). This work tests the notion that social capital measures can explain away variation in the earnings of business owners in the selected minority groups.

Valdez defines social capital as ‘the ability to access information or generate resources based on group membership’ (2008: 961). This concept is operationalized as the demographic characteristics married and foreign-born, having a relative who owns a business, having acquired startup capital from family, and/or having acquired ‘emergency cash’ from family. Only being married significantly predicts higher earnings (except for blacks, where it predicts lower earnings). Borrowing startup capital or emergency cash from family, where higher rates of this activity might be representative of an enclave economy with predicted benefits for group members, is associated with *lower* earnings. Valdez concludes that earnings variation across ethnic groups is largely a function of human and market capital. Although the confidential Characteristics of Business Owners Survey (N>20,000) contains data on the industry and occupation of these self-employed persons, the analysis provided does not disaggregate individuals in this way.

Scholarship on the earnings of the self-employed stands to benefit from a system of organizing the self-employed into categories based on their occupation and their industrial classification. Simply too much variation exists within the self-employed in general, and between the professional and nonprofessional self-employed specifically, to continue on the current path. Not all available data on entrepreneurs, small business owners (both employers and nonemployers) and other self-employed persons include detailed industry and occupation categories (e.g. NAICS codes). However, many large, publicly available data sources do and this information can be used to allow more thorough analyses to be performed in the future.

### *Satisfaction with Work*

Self-employment rewards individuals with autonomy that workers lack in a traditional business environment. This is the commonly presented ‘being your own boss’ thesis. Data collected in three European countries during the nineties shows some support for this argument. With around 150,000 respondents over the collection periods (Germany 1984-2000, Great Britain 1991-99, Switzerland 1999), Benz and Frey (2008) find that the self-employed are more satisfied with their work than others who are wage-earning or salaried employees, regardless of how much they make or how many hours they work.

On a scale of one to ten, the self-employed on average across the three countries are a bit over a seven, and employees on average are a bit under a seven. The authors propose that work satisfaction has a lot to do with the decision-making process within a firm, a perspective called ‘procedural utility.’ Because the self-employed are independent producers they are able to control how outcomes are reached, allowing them to be more satisfied with their work. Additionally, individuals working in small firms are more satisfied than those working in large organizations, although it should be understood that workers in large firms are not necessarily ‘unsatisfied.’

Some of the difference in job satisfaction varies with respect to occupation. Hundley (2001) finds that self-employed professionals are not necessarily more satisfied with their jobs than professionals who work for organizations. He does find that the self-employed are generally more satisfied than organizationally employed workers. Factors that are associated with higher job satisfaction include the independence the self-employed feel in their jobs, the fuller utilization of their skills, and surprisingly a feeling

of greater job security (Hundley proposes that this may be due to a common feeling among the self-employed that their future is ‘in their own hands.’). Given these factors, it is understandable that the self-employed in professional occupations are not significantly more satisfied with their jobs than organizational employees in professional occupations: The nature of work in established professions tends to be more autonomous.

### *Counting the Self-Employed*

Most of the empirical literature referred to above measures self-employment differently (nearly all datasets arrive at different aggregate rates of self-employment) and/or uses self-employment measures as proxies for ‘small-business owners’ or ‘entrepreneurs.’ Additionally, annual rates of self-employment in the labor force differ between some government datasets for the same year. This confusion has slowed the development of a comprehensive understanding of the self-employed in the United States, starting with who counts as self-employed. For example, Boden and Nucci (1997) find ‘substantial and inexplicable differences’ between the self-employed in Current Population Survey data and Characteristics of Business Owners data in the same years (1982 and 1987). Headd and Saade (2008) observe that while ‘small business’ can include both employer firms and nonemployer firms, research that groups the two together will unintentionally be describing mostly nonemployer firms because they are much more plentiful. And Steinmetz and Wright (1989) are critical of self-employment measures that are unable to separate ‘petty bourgeoisie’ from ‘capitalists’ (nonemployers from large employers).

### *Nonemployer Firms*

Nonemployer firms, as measured in the Economic Census, include ‘sole proprietors and partners of unincorporated businesses that do not have any other employees on the payroll.’ Only a fraction of the unincorporated self-employed employs other individuals. Using data from the Current Population Survey, Hipple (2004) finds that between 1995 and 2003 the incidence of paid employment of others in a self-employed business declined from about one in five to about one in six.<sup>5</sup> The self-employed are employing others less frequently than they once did. This may partially explain the higher growth rates of nonemployers compared to employers and the self-employed between 1992 and 2005 shown by Headd and Saade (2008).

A recent report from the Census Bureau using data from the 2007 Survey of Business Owners estimates that there were about 21.4 million nonemployer firms in the US in 2007, representing almost eighty percent of all 27.1 million businesses.<sup>6</sup> Receipts of these businesses in 2007 total just under one trillion dollars.<sup>7</sup> Although the majority of businesses in the United States are nonemployer firms, they account for less than four percent of the 30.1 trillion in total business revenue. For example, nonemployers’ average annual sales in 2002 were 47,400 dollars while employers’ were 4.2 million dollars (Headd and Saade 2008). The economic impact of nonemployers is not striking when presented in this fashion.

Nonemployer firms are not, however, unimportant. Business startups are much more likely to be nonemployer firms: The startup rate for nonemployers, at 35 percent, is three times higher than for employer firms, at 13 percent (Acs et al. 2009). These types of businesses most closely resemble Marx’s conception of the petty bourgeoisie – their

owners neither work for a wage nor exploit the wage-labor of others by making a profit. Nonemployers have traditionally been truck drivers, barbers, hairstylists, and real estate brokers. Construction workers who sign 1099s handed to them by their employers enter into subcontracting agreements and are therefore self-employed nonemployers. Indeed, the workers in this category are not homogenous.

### *Classical Theorists on Self-Employment*

#### *Max Weber*

The self-employed are different from other workers because of the combination of functions that they perform. This can be understood as a function of the technical division of labor and the classification of different combinations of work services. In *Economy and Society*, Max Weber describes the self-employed as ‘cases of autocephalous occupational specialization’ (1978).<sup>8</sup> For Weber, these include artisans, physicians, lawyers, and artists but not factory workers or government officials (who are ‘heterocephalous’ in their position because they work for an employer). Work functions can be *specified* in that they are technically different from one another. One may perform in combination the technically different duties related to the business, such as both managerial and specialized functions. This was common of craft occupations in the Middle Ages and is what we generally mean today when we speak of ‘small business owners.’

The modernization of organized labor brought about *specialization*, where products are realized through the individual efforts of many workers who specialize in one aspect of production. One such form is ‘propertyless occupational specialization’ in

which workers do not own raw materials but do own their tools. In the case of contemporary self-employment one might think of those involved in sub-contract work, especially construction, whose skilled labor is sold for a wage. This labor is exercised outside of a profit-making enterprise, which controls the raw materials used to make the product (e.g. a home building company). From this perspective we can see two classes of the self-employed: those who are autocephalous (self-governing) and profit-making and those who are independent yet sell their labor for a wage.

Weber treats the placement of the self-employed within the class structure directly later in volume one, where the self-employed are middle class.<sup>9</sup> The self-employed occupy the middle realm of the ‘property classes’: They are not ‘positively privileged’ through their ownership of income-producing property like the *rentiers*, nor are they ‘negatively privileged’ by their lack of ownership like the unfree or the paupers. The self-employed also occupy the middle realm of the ‘commercial classes,’ in between positively privileged entrepreneurs (e.g. merchants, shipowners, bankers and financiers) and negatively privileged skilled or unskilled *laborers*. Among the ‘social classes’ one also finds Weber putting business owners who do not exploit wage labor in the middle, where they are called the petite or *petty bourgeoisie*.

### *Karl Marx*

Marx provides another theoretically meaningful way of looking at the self-employed. In *Capital, Volume III*, he observes that over the course of the development of capitalism, newer, more capitalistic modes of production replace older more traditional modes of production. ‘Subsistence production’ is the creation of goods and services that are intended for use by the primary social group (e.g. the household, other family,

neighbors). As goods and services become sold or traded outside of this small social sphere, exchange relationships develop between producers and merchants and these goods and services are transformed into commodities with exchange values (instead of use values). However, these commodities remain the output of producers who own the means of production used in the production process. This 'simple commodity production' is replaced by 'capitalist commodity production' as the producers either become merchants and capitalists themselves or as the merchants take control over the production process and begin to employ the producers (1991).<sup>10</sup> Thus begins the rise of capitalism which Marx insists is dependent on wage exploitation and 'the fanaticism that the capitalist shows for economizing on the means of production.'<sup>11</sup>

Because more traditional modes of production are replaced by capitalistic production does not mean that they completely disappear. Simple commodity production is to be found 'in both the ancient and modern world, among peasant proprietors and handicraftsmen who work for themselves.'<sup>12</sup> Today, this class of worker may be characterized as entrepreneurs, small business owners, nonemployers, or subcontractors. Some of them are the *petty bourgeoisie*. Their numbers in the United States declined dramatically in the post-WWII era, but experienced a minor resurgence beginning in the late 1970s that Steinmetz and Wright (1989) partially attribute to postindustrial forces. These postindustrial forces may be the result of further economization of the means of production, as employers seek workers who can be retained outside of the traditional employer-employee relationship (which can present significant tax burdens).



### *Civic Community*

A ‘civic community’ is one in which citizens are connected to their social and economic organizations on a local level, which gives the community a strong sense of place (as opposed to ‘space’). Americans are well known for their distinctive pride in all things local, yet they are also driven to be agents of economic progress. These are not always conflicting desires. When they are, some communities struggle to balance them. Powerful economic forces, such as the proliferation of big box retail establishments, can create needed employment opportunities while at the same time erode a community’s ‘local flavor.’ Communities with strong local institutions are thought to be better able to weather the sometimes paradoxical effects of an increasingly global approach to economic organization.

One driving question on the mind of researchers in this perspective is: What is the role of local in a world that is becoming more global? The answer is an important sociological concept: Solidarity. Members are united by their community’s distinctiveness—they collectively share those things which are there and nowhere else. A great local restaurant, an active and inclusive voluntary organization, a church congregation committed to the wellbeing of a neighborhood: these things are community-affirming. Places with the characteristics of a civic community endure because these things are ‘embedded’ in the area.

In a report to the US Senate Small Business Committee at the end of WWII, C. Wright Mills and Melville J. Ulmer describe how communities with a greater prevalence of small business experience ‘a higher level of civic welfare than comparable communities dominated by big business’ (1946). Similarly, Walter Goldschmidt (1946)

found that in two California farm communities, the one with several small family farms enjoyed a higher standard of living and better quality of life than the one dominated by a single large industrial agriculture company. In 1998, Tolbert, Lyson, and Irwin incorporated these two studies into a growing theoretical perspective addressing similar concerns in the post-industrial era. Research questions derived from this perspective have produced an ever-growing body of empirical literature on the topic.

A local orientation toward social and economic organization has been associated with lower levels of poverty, unemployment, and higher income (Tolbert et al. 1998; Tolbert et al. 2002), with higher levels of nonmigration (Irwin et al. 2004), and with lower levels of crime (Lee and Ousey 2001). This relationship between a local orientation and community welfare is also found with respect to the scale of agricultural production in a community (Lyson et al. 2001). All of these studies illustrate the importance of local capitalism or the independent middle class. This form of economic organization can include nonemployers, local manufacturing establishments, family farms, and those who work from home.

The role that local capitalism plays in improving community welfare needs to be better understood. Self-employment and nonemployer rates may be predictive of positive community outcomes, but it is uncertain who among the self-employed drives this association. Disaggregating the self-employed into meaningful groups presents the opportunity to further address the issue.

## CHAPTER THREE

### Classifying the Self-Employed and Answering the Earnings Question

#### *Overview*

Placing research on entrepreneurship, small business, nonemployers, and other arrangements under the umbrella of research on self-employment has created comparability issues. For example, the owner of a venture capital-backed tech startup, the mom and pop of a local retail shop, and the subcontractor who lays floor tile are all ‘self-employed,’ but do they have anything in common other than not having a ‘boss?’ Despite the confusion, it is informative to combine all of these activities into a single annual rate of self-employment in the United States because they all represent something outside of the wage and salary employment that occupies the working days of most Americans. But keeping these heterogeneous activities at such a high level of aggregation in many analyses can skew our understanding of these individuals. This chapter presents a scheme for classifying the self-employed using publicly available Census data and then tests this classification against past efforts to address the earnings question.

#### *Subsets of the Self-Employed*

The ACS uses coding for occupations and industries that make the data comparable with many other information sources. This section will describe self-employment in the United States in terms of the clustering of occupational and industrial classifications of self-employed individuals. These segments of the self-employed labor

force will be probed for socioeconomic similarities and differences within and between categories. This scheme is expected to produce subsets of individuals who perform similar work and earn similar pay. Before beginning this descriptive exercise, let us look at the ways the Census Bureau classifies the type of work people do and the ways in which earnings are categorized in the American Community Survey. I will also briefly discuss business incorporation.

### *Industry and Occupation*

The American Community Survey questionnaire asks six questions about work activity and occupational experience in order to describe the day-to-day activities of the American labor force. The first is a 'class of worker' question which asks for the type of organization in which the respondent works. Responses can check a box indicating a private for-profit business, a private not-for-profit business, a local government, a state government, the federal government, self-employment in the respondent's own incorporated business, self-employment in the respondent's own unincorporated business, or unpaid work in a family business or farm. This classifies the type of ownership of the employing organization. In this research, the class of worker measure is used to differentiate between people who work for pay and people who work for themselves.

The next set of ACS questions relates to the industry the worker is involved in. Two respondent write-in questions follow asking for the name of the company, business, or other employer and for the kind of business or industry activity of the work location. Respondents then check a box indicating whether the business activity is mainly manufacturing, wholesale trade, retail trade, or other (agriculture, construction, service,

government, etc.). This information is used to classify the kind of business conducted by the employing organization.

Two respondent write-in occupation questions complete the section: ‘What kind of work was this person doing?’ and ‘What were this person’s most important activities or duties?’ This is used to classify the kind of work the person does on the job. This results in 269 specific industry categories in 20 sectors and 509 specific occupation categories in 23 major groups.

### *Wages, Earnings, and Income*

The American Community Survey reports eight types of income: Wage or salary income; farm and non-farm self-employment income; interest, dividends, or net rental income; Social Security income; Supplemental Security Income (SSI); public assistance income; retirement, survivor, or disability income; and all other income.<sup>13</sup> Researchers using the ACS dataset have available to them four income variables that are calculated using some or all of the above sources: wage or salary income, total person’s earnings, total person’s income, and self-employment income. Three of these four measures (excluding self-employment income) could be considered appropriate for use in an analysis comparing returns from work-related activities within and between the categories of self-employed and wage-salaried employees. This research will use ‘total person’s earnings’ because it includes both wage and salary income and income from self-employment, but none of the other sources of income that are included in ‘total person’s income.’

### *Incorporated and Unincorporated Businesses*

American Community Survey estimates for 2006-2008 show that about 36 percent of self-employed workers are employed in their own incorporated business. Incorporated businesses can include corporations, limited liability companies, and non-profit organizations. Incorporation provides legal benefits for business owners, such as the protection of personal assets from creditors and lawsuits. All legal businesses must have the licenses and permits required by their state, but this does not always mean that the business must be registered with the state or that it be incorporated.<sup>14</sup>

Unincorporated businesses can include sole proprietorships and partnerships. Sole proprietorships are the most common and simplest form of business organization. The remaining 64 percent of self-employed workers are most likely involved in these types of business structures. Sole proprietors are personally liable for all debts and obligations relating to the business. Partnerships are businesses with shared ownership and usually involve agreements that document how decisions such as dividing profits and resolving disputes will be made, but do not offer the legal protections of incorporation.

### *Top Five Industries and Occupations*

The table on the following page presents a snapshot of the American labor force—both the self-employed and the paid employees of businesses, nonprofit organizations and government. The top half of table 3.1 shows the five most common industries of the self-employed and paid-employees followed by their five most common occupations on the bottom. The industries and occupations listed here are specific categories, not broad industrial sectors or occupational groupings (they are indicated in

Table 3.1. The Five Most Common Industries and Occupations of the Self-Employed and Paid Employees

	Frequency	Percent	Pct LTHS	Pct College	Pct Incorp	Group	Industry/Occupation Label
Industries	Self-Employed	882,726	19.0	17.2	13.4	34.0	CON CONSTRUCTION, INCL CLEANING DURING AND
		252,140	5.4	2.2	46.7	37.7	FIN REAL ESTATE
		145,613	3.1	17.1	13.1	10.6	SCA CHILD DAY CARE SERVICES
		138,519	3.0	35.0	8.9	0.0	SRV PRIVATE HOUSEHOLDS
		136,862	2.9	28.9	12.4	23.3	PRF LANDSCAPING SERVICES
	Paid Employees	2,767,721	6.5	3.6	64.0	-	EDU ELEMENTARY AND SECONDARY SCHOOLS
		2,763,320	6.5	24.0	10.0	-	CON CONSTRUCTION, INCL CLEANING DURING AND
		2,460,831	5.8	29.0	8.3	-	ENT RESTAURANTS AND OTHER FOOD SERVICES
		2,014,026	4.8	3.4	39.9	-	MED HOSPITALS
		1,215,864	2.9	1.8	60.5	-	EDU COLLEGES AND UNIVERSITIES, INCL JUNIOR COLLEGES
Occupations	Self-Employed	198,472	4.3	8.2	31.6	50.0	SAL MANAGERS OF RETAIL SALES WORKERS
		183,177	3.9	6.4	40.1	55.1	MGR MISCELLANEOUS MANAGERS
		164,896	3.6	20.2	11.2	7.0	PRS CHILD CARE WORKERS
		164,814	3.5	17.9	10.5	20.3	CON CARPENTERS
		162,977	3.5	1.2	46.0	34.0	SAL REAL ESTATE BROKERS AND SALES AGENTS
	Paid Employees	1,218,603	2.9	2.8	16.3	-	OFF SECRETARIES AND ADMINISTRATIVE ASSISTANTS
		1,105,883	2.6	0.3	93.2	-	EDU ELEMENTARY AND MIDDLE SCHOOL TEACHERS
		1,063,179	2.5	10.9	17.7	-	SAL RETAIL SALESPERSONS
		1,016,904	2.4	26.4	5.9	-	SAL CASHIERS
		961,566	2.3	19.4	4.7	-	TRN DRIVER/SALES WORKERS AND TRUCK DRIVERS

Data : Weighted ACS PUMS 2006-2008. Frequencies reflect one year of data collection. Pct college includes post graduate education.

the column labeled ‘group’). One immediately noticeable difference between the self-employed and paid employees is that one industry appears to dominate self-employment: construction. One out of every five self-employed individuals works in the construction industry. Paid employees are less concentrated within specific industry categories—the top five for self-employment account for 33 percent while the top five for paid employees account for 26 percent. The most common paid employee industry is elementary and secondary schools, followed by construction and hospitals.

The same table also includes information on the educational attainment of workers. Shown are the percent of workers in a category with less-than-high school education and the percent with a bachelor’s degree or beyond. Within the construction industry, 13 percent of self-employed workers have college degrees while 17 percent have less than a high school diploma. Educational attainment within this industrial category varies. Two of the top five self-employment occupations (shown in the bottom half of the table) are within the construction industry: carpenters and construction managers. Self-employed carpenters are more likely to have less than a high school education rather than a college degree or beyond (21 percent and 9 percent) compared to self-employed construction managers, who are almost exactly the opposite (10 percent and 21 percent).

Business incorporation rate differences within self-employed occupational categories are also evident in the top-five table. Within the construction industry, 34 percent of self-employed workers work for their own incorporated business. Among these workers, only 20 percent of carpenters (occupation) have incorporated their business (compared to 47 percent of construction managers, not shown). This disparity



may be partly due to the tendency of construction managers to subcontract individual carpenters, who may in turn end up self-reporting that they are self-employed on the American Community Survey.

### *Demographic Characteristics*

The self-employed are also different from paid employees in their demographic characteristics. Table 3.2 displays descriptive statistics for the nonfarm self-employed and paid-employee populations, age 25-64, in the United States. The self-employed tend to be older than paid employees: they are less likely to be age 25-34 (15 percent vs. 27 percent) and more likely to be age 55-64 (23 percent vs. 16 percent). The self-employed are also much more likely to be male (64 percent vs. 51 percent). The paid employee population is more racially and ethnically diverse. The self-employed are 76 percent white, 5 percent black (non-Hispanic), and 11 percent Hispanic (non-black). These percentages for paid employees are 68, 12, and 13. The self-employed are also slightly more likely to have been born outside the United States (18 percent vs. 15 percent).

Education and earnings distributions also vary between the two groups. Smaller shares of the self-employed have less than a high school education, high school diploma, and some college compared to paid employees. Larger shares of the self-employed, however, are college graduates and post-graduates. Concerning income, the self-employed are on the tails of the distribution more often than the paid employees. A larger share of the self-employed earns less than ten thousand dollars per year (16 percent vs. 14 percent) and more than fifty thousand dollars per year (34 percent vs. 29 percent). This greater separation of education and earnings within self-employment was

Table 3.2. Descriptive Statistics of the Self-Employed and Paid Employees

Variable	Self-Employed		Paid Employees	
	Frequency	Percent	Frequency	Percent
Age				
25-34	616,859	15.0	9,428,286	27.2
35-44	1,175,874	28.6	9,937,048	28.7
45-54	1,370,397	33.3	9,742,674	28.1
55-64	953,004	23.2	5,553,157	16.0
Gender				
Female	1,631,854	35.1	20,499,811	48.4
Male	3,018,460	64.9	21,861,188	51.6
Race/Ethnicity				
Non-Hispanic White	3,568,542	76.7	28,923,217	68.3
Non-Hispanic Black	247,515	5.3	4,759,580	11.2
Hispanic	530,986	11.4	5,873,023	13.9
Non-Hispanic Other	303,271	6.5	2,805,179	6.6
Foreignborn				
Yes	836,756	18.0	6,484,202	15.3
No	3,813,558	82.0	35,876,667	84.7
Educational Attainment				
Less Than High School	501,753	10.8	4,774,457	11.3
High School Graduate	1,201,314	25.8	11,704,242	27.6
Some College	1,316,006	28.3	13,425,838	31.7
College Graduate	951,544	20.5	8,106,785	19.1
Post-Graduate Degree	679,697	14.6	4,349,676	10.3
Earnings				
Under 10k	777,786	16.7	5,917,607	14.0
10k to 35k	1,670,255	35.9	16,883,258	39.9
35k to 50k	581,311	12.5	7,296,548	17.2
Over 50k	1,620,961	34.9	12,263,585	29.0
Weeks Worked Past 12 Mo.				
Pct Working 50-52 Weeks	-	74.7	-	77.2
Hours Worked Per Week				
Average Hours Worked	-	40.9	-	39.4
Incorporated Business				
Yes	1,681,262	36.2	-	-
No	2,969,052	63.9	-	-

Data : Weighted ACS PUMS 2006-2008. Frequencies reflect one year of data collection. Earnings are adjusted.

foreshadowed in Table 3.1, which showed the self-employed working as carpenters and child care providers, but also in real estate and management occupations.

On average, the self-employed are less likely to work between 50 and 52 weeks throughout the year (74 percent vs. 77 percent). They do, however, log on average nearly one hour more per week at work.

### *Taxonomy*

The two tables above begin to demonstrate the heterogeneity within the population of self-employed workers in the United States. This makes the treatment of the self-employed as a homogenous category of workers problematic. But with over 250 different industrial classifications, and nearly twice as many occupational classifications, where does one begin to draw lines? Table 3.3 presents nine categories that comprise this taxonomy of self-employed workers. This taxonomy groups together individuals who perform similar types of work.

The two largest industrial categories for the self-employed, construction and professional services, are divided into management occupations and labor occupations. The other five categories are groups of similar occupations that cross over multiple industries. Table 3.3 lists the three most common occupations within each category of the taxonomy. The two taxonomic categories derived from the construction industry separate the carpenters, supervisors, and laborers from the managers and chief executives of construction companies. The two categories from the professional services industry separate the groundskeepers and landscapers from the lawyers, analysts, and managers.

Table 3.3. A Taxonomy of the Self-Employed

Category	Frequency	Percent of Total	Top Three Occupations	Percent of Category
Construction Industry - Labor	636,849	13.7	CARPENTERS CONSTRUCTION LABORERS FIRST-LINE SUPERVISORS/MANAGERS OF CONSTRUCTION TRADES AND EXTRACTION WORKERS	25.8 16.4 14.5
Construction Industry - Management and Other	245,877	5.3	CONSTRUCTION MANAGERS MISCELLANEOUS MANAGERS CHIEF EXECUTIVES	58.6 11.2 8.7
Professional Services Industry - Management	592,942	12.8	LAWYERS AND JUDGES, MAGISTRATES, AND OTHER JUDICIAL WORKERS MANAGEMENT ANALYSTS MISCELLANEOUS MANAGERS	19.0 11.4 9.7
Professional Services Industry - Other Occupations	358,251	7.7	GROUND MAINTENANCE WORKERS JANITORS AND BUILDING CLEANERS FIRST-LINE SUPERVISORS/MANAGERS OF LANDSCAPING, LAWN SERVICE, AND	26.6 10.9 8.5
Other Management Occupations	939,041	20.2	MISCELLANEOUS MANAGERS PHYSICIANS AND SURGEONS CHIEF EXECUTIVES	10.4 8.6 7.7
Other Service Occupations	606,961	13.1	CHILD CARE WORKERS HAIRDRESSERS, HAIRSTYLISTS, AND MAIDS AND HOUSEKEEPING CLEANERS	27.1 17.8 15.4
Other Sales and Office Occupations	856,418	18.4	FIRST-LINE SUPERVISORS/MANAGERS OF RETAIL SALES WORKERS REAL ESTATE BROKERS AND SALES AGENTS FIRST-LINE SUPERVISORS/MANAGERS OF NON-RETAIL SALES WORKERS	23.1 18.9 10.8
Installation, Maintenance and Repair Occupations	122,014	2.6	AUTOMOTIVE SERVICE TECHNICIANS AND AUTOMOTIVE BODY AND RELATED REPAIRERS COMPUTER, AUTOMATED TELLER, AND OFFICE MACHINE REPAIRERS	39.7 8.1 5.4
Production, Transportation, and Material Moving Occupations	290,694	6.3	DRIVER/SALES WORKERS AND TRUCK DRIVERS TAXI DRIVERS AND CHAUFFEURS FIRST-LINE SUPERVISORS/MANAGERS OF PRODUCTION AND OPERATING WORKERS	39.6 8.8 4.3

Data : Weighted ACS PUMS 2006-2008. Frequencies reflect one year of data collection.

The largest category in the taxonomy is ‘other management occupations’ and contains medical doctors and various chief executives. The second largest category, ‘other sales and office occupations,’ contains the supervisors of retail and nonretail sales

workers and real estate sales workers. Child care workers, hairdressers, and maids are found within the ‘other service occupations’ category and truck drivers, taxi drivers and production workers are combined into ‘production, transportation, and material moving occupations,’ which also includes most manufacturing occupations. The smallest category in the taxonomy is ‘installation, maintenance and repair occupations,’ which includes auto mechanics and auto body repair workers.

Are all of these categories really necessary? While it is true that a simple professional/nonprofessional classification scheme gets at the heart of the matter, it does not group individuals into similar kinds of work. Rather than a dichotomy, another scheme might create categories based on where the Census’ 15 industrial and 23 occupational categories intersect, but this would result in 345 categories, many representing less than one percent of all self-employed workers. This taxonomy is an effort toward separating, but not over-separating, self-employed workers into meaningful categories. In order to show the uniqueness of this taxonomy’s nine categories, Table 3.4 presents the same descriptive characteristics as Table 3.2 broken down by taxonomic category.

The categories of the taxonomy in Table 3.4 are sorted by their size from left to right. They are each somewhat unique in their distribution across the various characteristics shown. Here I will list some of the standouts on each characteristic. The youngest groupings of workers are in the labor occupations of the construction industry and in ‘other service occupations’ (child care, hairdressers, and maids). On average, the older workers are in management occupations in the professional services industry

Table 3.4. Worker Characteristics within Self-Employment Subgroups

Characteristic	Other Management Occupations	Other Sales and Office Occupations	Construction Industry - Labor	Other Service Occupations	Professional Services Industry - Management	Professional Services Industry - Other Occupations	Production, Trans., and Material Moving Occupations	Construction Industry - Management and Other	Installation, Maintenance and Repair Occupations
Percent in Category	20.2	18.4	13.7	13.1	12.8	7.7	6.3	5.3	2.6
Age									
25-34	12.2	12.5	20.2	20.9	10.5	17.6	14.3	14.4	13.6
35-44	27.4	26.2	30.5	30.8	27.1	31.3	28.1	31.1	27.5
45-54	34.0	34.2	33.0	29.1	34.0	31.6	34.7	35.5	36.7
55-64	26.4	27.1	16.2	19.2	28.3	19.5	22.9	19.1	22.3
Gender									
Female	35.9	40.7	3.3	82.1	33.4	37.2	16.7	17.5	3.1
Male	64.1	59.3	96.7	17.9	66.6	62.8	83.3	82.5	96.9
Race/Ethnicity									
Non-Hispanic White	80.7	79.3	76.3	63.0	85.9	70.1	68.9	84.6	77.1
Non-Hispanic Black	4.2	3.8	4.3	10.1	3.8	6.6	9.3	3.2	5.0
Hispanic	6.4	8.8	16.4	18.9	4.9	19.3	13.8	8.6	13.8
Non-Hispanic Other	8.7	8.1	3.1	8.0	5.5	4.0	8.1	3.6	4.0
Foreignborn									
Yes	16.5	17.5	18.3	25.8	10.9	20.9	24.6	11.4	16.1
Educational Attainment									
Less Than High School	3.6	6.5	20.5	17.8	1.0	19.0	18.8	9.0	18.3
High School Graduate	12.8	23.4	42.1	35.9	5.6	31.1	40.1	33.7	40.4
Some College	23.1	34.5	27.5	33.2	18.6	31.4	27.8	34.5	31.3
College Graduate	27.4	27.8	8.1	10.2	34.4	14.9	10.5	18.3	7.8
Post-Graduate Degree	33.0	7.7	1.8	2.9	40.4	3.7	2.7	4.5	2.1
Earnings									
Under 10k	12.6	15.7	12.9	34.5	9.4	24.6	16.7	7.3	18.9
10k to 35k	26.5	34.5	45.8	49.1	22.4	44.6	40.5	29.3	44.9
35k to 50k	11.6	13.2	16.2	8.2	11.3	11.7	14.3	15.1	14.9
Over 50k	49.4	36.6	25.2	8.1	56.9	19.2	28.5	48.4	21.3
Poverty									
Yes	4.1	5.2	10.2	15.0	2.6	12.4	8.5	4.0	11.0
Weeks Worked Past 12 Mo.									
Pct Working 50-52 Weeks	75.2	81.5	65.4	71.5	76.3	71.5	74.2	81.1	79.0
Hours Worked Per Week									
Average Hours Worked	41.4	41.7	41.5	36.3	41.5	36.5	45.2	44.2	42.9
Incorporated Business									
Yes	47.1	43.6	26.0	15.0	44.0	26.6	29.1	54.9	27.5

Data : Weighted ACS PUMS 2006-2008.

(lawyers and management analysts) and in ‘other management occupations’ (medical doctors and chief executives) and in ‘other sales and office occupations’ (retail sales and real estate). Labor occupations in the construction industry and auto mechanic and body repair occupations are almost exclusively male (96 percent in each), while ‘other sales and office occupations’ is only 59 percent male.

The least racially and ethnically diverse categories include management occupations in the professional services industry (85 percent white) and management occupations in the construction industry (84 percent white). The highest rates of Hispanic workers are in ‘other occupations’ in the professional services industry and ‘other service occupations’ (19 percent and 18 percent). The highest rates of black workers are in ‘other service occupations’ and ‘production, transportation, and material moving occupations’ (10 percent and 9 percent). The foreign born self-employed (18 percent of all self-employed workers), are over-represented in ‘other service occupations,’ production occupations, and ‘other occupations’ in the professional services industry (25, 24, and 20 percent).

Turning to educational attainment categories, the highest rates of less-than-high-school are in the labor occupations of the construction industry and ‘other occupations’ in the professional services industry (20 percent and 19 percent). The only two categories with high rates of post-graduate degree holders are management occupations in the professional services industry and ‘other management occupations’ (40 percent and 33 percent. These are also the modal attainment categories for these groups.). The modal attainment category for the third group of managers, in the construction industry, is ‘some college’ (34 percent).

Concerning the distribution of earnings, those who are most likely to earn over 50 thousand dollars per year are in the three managerial groups of the taxonomy (nearly 50 percent or higher). Those most likely to earn less than ten thousand dollars per year are in ‘other service occupations’ and non-managerial occupations in the professional services industry (34 percent and 24 percent). These self-employed workers are also those most likely to be below the poverty line (15 percent and 12 percent). The earnings question will be addressed in greater detail in the multivariate analysis that follows this section.

Those who are most likely to have worked between 50 and 52 weeks over the past year are in ‘other sales and office occupations’ and management occupations in the construction industry (81 percent each). Those who are least likely to have done so are in labor occupations in the construction industry (65 percent), whose work tends to be outside and influenced by weather conditions. Those with the longest workweek on average, at 45 hours, are in ‘production, transportation, and material moving occupations.’ Those with the shortest workweek on average, at 36 hours, are in ‘other service occupations’ and nonmanagerial occupations in the professional services industry, the only two groups of self-employed workers with shorter workweeks than the average paid employee.

Rates of business incorporation vary from a high of 54 percent (management in the construction industry) to a low of 15 percent (‘other service occupations,’ which includes child care, hairdressers, and maids). Relatively high rates of business incorporation, those that are in the 40s, are found in ‘other management occupations,’ ‘other sales and office occupations,’ and management occupations in the professional



service industry. Lower rates, those that are in the 20s, are found in labor occupations in the construction industry, nonmanagerial occupations in the professional services industry, ‘production, transportation, and material moving occupations,’ and ‘installation, maintenance and repair occupations.’

### *Hypotheses*

Little has been done to explore earnings variation among the self-employed themselves—most studies compare the earnings of the self-employed to their wage and salary earnings peers. This analysis is focused on the self-employed alone using a dataset that is largely untested for this purpose. Based on the literature, I expect educational attainment differences to affect earnings more in professional occupation categories than in nonprofessional occupation categories. I also expect gender gaps to be larger in the nonprofessional occupations. Ultimately, I expect the models to show fairly different earnings profiles for each of the nine categories but still adhere fairly well to the previous observations between professional and nonprofessional self-employed individuals reported above.

### *Dataset*

The American Community Survey is conducted annually by the Census Bureau using a sample of three million US households. The data are available in both summary and microdata form and rolling 3-year estimates have been released annually since 2008. This research uses the 3-year Public Use Microdata Sample (PUMS) for years 2006-2008. This dataset contains person records and housing records for about three percent of all housing units in the country. These records are nested within geographic regions

called Public Use Microdata Areas (PUMAs).<sup>15</sup> This dataset is particularly useful because its twelve million observations of self-employed individuals allow researchers to drill down to relatively small, but important, categories of the self-employed. The analyses use only self-employed individuals in each of nine taxonomy categories.

### *Key Variables*

The earnings outcome will be operationalized as the American Community Survey measure, ‘total person’s earnings,’ divided by the product of hours worked per week and weeks worked per year and then logged. This is similar to a logged wage rate because it includes number of weeks worked and usual hours worked per week on the left-hand-side of the equation (McCall 2001). This measure, though, uses earnings rather than wage and salary income because the ACS earnings measure includes income from self-employment. Like the wage and salary income measure it also excludes other sources of income that are included in ‘total person’s income,’ such as interest, dividends, or net rental income; Social Security income; Supplemental Security Income (SSI); public assistance income; retirement, survivor, or disability income. The logged earnings rate will be regressed on several independent variables including: Human capital variables, measured as educational attainment categories (with ‘some college’ left out as the reference category in the models), family variables (marital status and number of children), demographics (region of the country, age, gender, race/ethnicity, and nativity) and whether the person’s business is incorporated or unincorporated. The nine industrial/occupational subsets of the self-employed developed above are modeled separately.

### *Model*

This analysis will employ an Ordinary Least Squares regression model. The earnings outcome will be regressed on the independent variables within each occupational subset. The resulting estimates will be compared across the taxonomy. These categories are expected to shed light on the nature of the split labor market of self-employment occupations.

### *Analysis*

Nine separate earnings models are shown in Table 3.5. The predictive power of the models ranges from 14 percent to 3 percent and are sorted this way from left to right. The models with the weakest fits lack relationships between educational attainment and earnings, which are traditionally important predictors of how much one makes in their job. The self-employment subgroups of labor occupations in the construction industry and transportation occupations show very little returns on investments in education. Age and race/ethnicity also fail to predict earnings in the taxonomic categories with the poorest fits. The models with better fits have significant effects in all or most of the variable categories than the models with poorer fits.<sup>16</sup>

Business incorporation is an important determinant of self-employed individuals' earnings. It is a consistently strong predictor, having the highest standardized beta in many of the models. Those working in their own incorporated business earn between 23 and 42 percent more per year than those working in their own unincorporated business across the taxonomy. This effect is larger in the managerial categories of the taxonomy. The other consistently important predictor of earnings is gender with a significant negative effect in each category of the taxonomy. Females receive a penalty as high as

Table 3.5. Ordinary Least Squares Regressions of Person's Earnings Rate on Selected Variables for Each of the Nine Categories of the Self-Employment Taxonomy

Variable	Other Management Occupations		Professional Services Industry - Management		Construction Industry - Management and Other		Other Sales and Office Occupations		Professional Services Industry - Other Occupations		Other Service Occupations		Construction Industry - Labor		Installation, Maintenance and Repair Occupations		Production, Trans., and Material Moving Occupations	
	Estimate	$\beta$	Estimate	$\beta$	Estimate	$\beta$	Estimate	$\beta$	Estimate	$\beta$	Estimate	$\beta$	Estimate	$\beta$	Estimate	$\beta$	Estimate	$\beta$
Intercept	2.45	0.00	2.59	0.00	2.40	0.00	2.56	0.00	2.31	0.00	2.29	0.00	2.32	0.00	2.34	0.00	2.49	0.00
Human Capital																		
Less Than High School	-0.21	-0.03	-0.12	-0.01	-0.10	-0.03	-0.29	-0.06	-0.23	-0.08	-0.24	-0.08	-0.08	-0.03	-0.18	-0.06	-0.06	-0.02
High School	-0.11	-0.03	-0.08	-0.02	-0.05	-0.02	-0.14	-0.05	-0.13	-0.05	-0.08	-0.03	-	-	-0.11	-0.04	0.04	0.02
College Graduate	0.24	0.08	0.30	0.12	0.22	0.08	0.25	0.09	0.16	0.05	0.17	0.04	0.03	0.01	-	-	0.09	0.02
Post-Graduate Degree	0.72	0.26	0.57	0.24	0.19	0.04	0.22	0.05	0.27	0.05	0.26	0.04	-	-	0.18	0.02	-	-
Family																		
Married	0.07	0.03	0.11	0.04	0.06	0.02	0.06	0.02	0.17	0.07	0.05	0.02	0.10	0.05	0.10	0.04	0.12	0.05
Number of Children	0.08	0.07	0.07	0.06	0.05	0.05	0.04	0.04	0.02	0.02	-0.04	-0.04	0.04	0.04	-	-	0.03	0.03
Incorporated Business	0.42	0.16	0.23	0.10	0.42	0.19	0.34	0.13	0.27	0.11	0.32	0.10	0.27	0.12	0.38	0.14	0.25	0.09
Region																		
Northeast	0.07	0.02	-	-	-	-	0.07	0.02	0.12	0.04	0.03	0.01	0.12	0.05	0.09	0.03	-0.07	-0.02
Midwest	-0.05	-0.02	-0.12	-0.04	-0.08	-0.03	-0.07	-0.02	-	-	-0.12	-0.04	-	-	-0.09	-0.03	-0.09	-0.03
West	0.09	0.03	0.05	0.02	0.13	0.05	0.16	0.06	0.18	0.07	0.12	0.05	0.19	0.08	0.17	0.06	0.06	0.02
Demographic																		
Age	0.01	0.07	0.01	0.08	0.01	0.09	0.00	0.04	0.00	0.05	0.00	0.04	0.01	0.07	-	-	-	-
Female	-0.36	-0.13	-0.24	-0.10	-0.28	-0.10	-0.29	-0.11	-0.14	-0.06	-0.27	-0.09	-0.20	-0.04	-0.16	-0.02	-0.40	-0.13
Black	-0.13	-0.02	-0.19	-0.03	-0.19	-0.03	-0.14	-0.02	-0.19	-0.04	-0.07	-0.02	-0.11	-0.02	-	-	-	-
Hispanic	-0.09	-0.02	-0.14	-0.03	-0.11	-0.03	-0.16	-0.04	-0.12	-0.04	-0.10	-0.04	-0.22	-0.08	-0.15	-0.05	-	-
Other	-0.10	-0.02	-0.08	-0.01	-	-	-0.21	-0.05	-0.10	-0.02	-0.09	-0.02	-0.12	-0.02	-0.14	-0.02	-0.13	-0.03
Foreignborn	-	-	-0.04	-0.01	-	-	-0.07	-0.02	-0.06	-0.02	0.08	0.03	-	-	-	-	-	-
R-Square	0.14		0.10		0.08		0.07		0.06		0.05		0.05		0.04		0.03	
Number of Observations	88,300		56,748		21,908		81,640		31,462		54,041		56,391		11,734		27,928	

Data : Weighted ACS PUMS 2006-2008. All listed estimates are significant at the .01 level except those that are italicized (which are significant at the .05 level).

40 percent in production occupations and as low as 14 percent in ‘other occupations’ in the professional services industry.

The family variables are significant in nearly all of the models, but are not among the strongest predictors. Budig (2006) shows that family factors contribute to the entrance into nonprofessional self-employment, but these factors seem to have marginal effects on the earnings of these individuals. The effects of marriage and number of children are consistently positive, with one exception: each additional child costs workers in ‘other service occupations’ 4 percent of their earnings. This is somewhat surprising because 27 percent of workers in this taxonomic subset are child care workers.

Different parts of the country also predict different earnings for the self-employed in many of the groups of the taxonomy. The South is the reference category for the region variables. While not particularly strong, regional variation does exist. Workers in western states tend to earn 5 to 16 percent more than those in southern states, while those in the Midwest tend to earn 5 to 12 percent less.

Concerning the influence of demographic characteristics on earnings, gender appears to have the most consistent effect. Females tend to earn less than males within each of the groupings of self-employed workers, and in most groupings this effect is relatively strong compared to other variables in the model. The earnings penalty for females is large not only in proportionately male occupations (such as production), but also in proportionately female occupations (such as services). These effects show the deep importance of gender in the American labor force.<sup>17</sup>

Race and ethnicity categories other than white consistently predict lower earnings across most of the categories, but the standardized betas for these coefficients are

relatively low compared to other effects in the same models. Like gender, these effects show themselves to be fundamentally important once again. The earnings of black workers in installation occupations and production occupations are not significantly different from whites'. In managerial categories, however, blacks' earnings can be up to 19 percent lower than whites'. Age consistently predicts higher earnings in each category except for 'installation, maintenance and repair occupations,' which includes auto mechanics and auto body repair workers, and production occupations. Each additional year increase in age returns one percent or less in earnings.

The foreign born self-employed tend to do as well as their native counterparts in several categories. Earnings of the foreign born in both subsets of the professional services industry, as well as 'other sales and office occupations,' are 4 to 7 percent lower than those of natives. In 'other service occupations,' however, which includes child care workers, hairdressers, and maids, the earnings of the foreign born are 8 percent higher.

### *Discussion*

In this chapter, I develop a taxonomy with nine unique categories of the nation's approximately four and a half million non-agricultural self-employed individuals. I then regress the logged earnings rate of the individuals within each group on several predictor variables that have been used in previous literature.

The education hypothesis finds some support in these results. The professional groups have larger and more consistent returns for additional investments in education. However, the splitting apart of the self-employed into smaller groups now shows variation within the larger professional and nonprofessional groups. For example, some groups of nonprofessional occupations show consistent returns on additional investments

in education (other professional service industry occupations and other service occupations) while some do not (construction labor, installation maintenance and repair, and production transportation and materials moving).

The analysis finds wage gaps for females in both professional and nonprofessional groups. The second hypothesis predicts more wage parity among males and females in the professional occupation groups, but the models suggest the opposite. When controlling for education, family, and other demographic effects, women in professional self-employment do proportionately worse than men compared to women in nonprofessional occupations.

These results also illustrate the importance of business incorporation, a topic which has received less attention. Business incorporation is a strong variable in all nine models and has the strongest effect in models where education is not highly predictive. For the nonprofessionals, whose earnings the models predict rather poorly, incorporation status deserves further attention. This observation will be considered further with multilevel analyses of earnings in chapter five. But first we turn to a more subjective measure of success: job satisfaction.

## CHAPTER FOUR

### Self-Employment and Satisfaction with Work

#### *Overview*

With the taxonomy of self-employed workers established above, I turn now to the question of work satisfaction among the self-employed. Past research finds that the self-employed are more satisfied with their work than their paid employee counterparts. Benz and Frey (2008) show that higher satisfaction among the self-employed results from their independence from the hierarchical organization that is characteristic of wage and salary employment. The freedom from the chain of command results in more positive attitudes about work.

Work by Hundley (2001) shows that the difference in satisfaction between the self-employed and paid employee counterparts is less pronounced among those involved in managerial or professional occupations. Individuals in these occupations already have a high level of autonomy in their work life, so any additional freedoms do not further enhance satisfaction on average. These studies leave room for more research on the topic, including investigations of other sources of variation in job satisfaction among the self-employed and paid employees.

One aspect of satisfaction with work that remains relatively understudied is the influence of religiosity on one's feelings about their work. Functionalist perspectives of religion in society take the position that religion promotes stability and integration. Martinson and Wilkening (1983) find that individuals who identify with a religious group



have enhanced feelings about their work. In their study, those who report their religious affiliation as Catholic or Protestant also report higher job satisfaction than those who report either no religious affiliation or a non-Christian religion.

This may be due to internalized feelings about work that one might develop while participating in religious activities over time. If this is true, the self-employed who are religiously affiliated should also show higher job satisfaction. Another possibility is that the work environment is affected by the religious affiliation of its members. Cunningham (2010) shows that workers who are ‘religiously dissimilar’ from others in the workplace were more likely to be ‘value dissimilar’ from others in the workplace. Those individuals in turn report lower job satisfaction than their coworkers. If this is true, religious affiliation should not affect the job satisfaction of the self-employed on average. Most of the self-employed are nonemployers.

Little job satisfaction research has been directed at differences between traditional paid employees and the self-employed. And measures of the socializing aspects of religion, such as religious service attendance, have been overlooked. This chapter will present a multivariate analysis of job satisfaction among the self-employed that incorporates the religiosity of workers.

### *Hypotheses*

Differences in work satisfaction have been attributed to the higher levels of autonomy the self-employed enjoy in their work life. This is at times known as the ‘being your own boss’ phenomenon and is shown to be more pronounced in nonprofessional occupations. The satisfaction gap is larger among self-employed and non-self-employed workers in these occupations (Benz and Frey 2008; Hundley 2001).

Workers in professional occupations exhibit less variation in job satisfaction between self- and non-self-employed workers because they possess more equal levels of autonomy in their work. To the extent that self-employment affords workers greater flexibility and more opportunity to mix their professional and personal (religious) lives, the positive effects of religiosity on job satisfaction should be more pronounced among the self-employed, and most pronounced among the self-employed in nonprofessional occupations.

### *Dataset*

This analysis uses data from the 1998-2008 General Social Surveys (GSS). The GSS contains basic demographic information as well as information about the attitudes and beliefs of a random sample of Americans. The dataset also contains occupation and industry codes that are comparable to Census designations. Because self-employment is a small subset of the US labor force, and because the GSS, information-rich as it may be, usually handles only a few thousand respondents per release, many waves of the survey must be combined in order to have a sufficiently large self-employed population for study.

### *Occupation Groups*

Because the number of cases in the six merged waves of the GSS is dramatically lower than in the three years of the American Community Survey from the previous analysis, some modification to the taxonomy developed in chapter three is necessary. The simplest solution is to combine similar occupations together while ignoring industry variation within occupational groups. This exercise results in four categories of nonfarm

occupations: managerial and professional specialty occupations (42 percent of the self-employed); technical, sales, and administrative support occupations (20 percent); service occupations (15 percent); and precision production, craft, and repair occupations and operators, fabricators, and laborers (22 percent).

Common self-employment occupations in the first category are ‘managers and administrators, n.e.c.’ (37 percent), ‘lawyers’ (6 percent), and ‘physicians’ (5 percent).<sup>18</sup>

The second category includes ‘supervisors and proprietors, sales occupations’ (25 percent), and ‘real estate sales occupations’ (21 percent). The most common service occupations of GSS respondents are ‘private household cleaners and servants’ (20 percent), ‘hairdressers and cosmetologists’ (18 percent), ‘child care workers’ (both private household (13 percent) and non-private household (15 percent)), and ‘janitors and cleaners’ (7 percent). Labor occupations include ‘carpenters’ (12 percent), ‘construction laborers’ (9 percent), ‘construction supervisors, n.e.c.’ (8 percent), and ‘painters, construction and maintenance’ (6 percent).

### *Key Variables*

#### *Dependent Variable*

The dependent variable in this analysis measures satisfaction with responses to the question: “On the whole, how satisfied are you with the work you do--would you say you are very satisfied, moderately satisfied, a little dissatisfied, or very dissatisfied?” Half of respondents say they are very satisfied with the work they do while less than three percent say they are very dissatisfied. In the middle: 39 percent are moderately satisfied and eight percent are a little dissatisfied. Given the uneven distribution of responses to

the work satisfaction question on the GSS, the outcome being modeled in the following analysis is a binary or ‘dummy’ variable where one equals ‘very satisfied’ and zero equals all other responses.

*Table 4.1. T-Tests of Percent Very Satisfied by Self-Employment Status Within Occupation Groups*

Occupation Group	Self-Employed	N	Pct	Pct Very Satisfied With Their Work	t Value Pr >  t
Managerial and Professional Specialty	Yes	401	0.15	0.65	4.08
	No	2,296	0.85	0.54	0.000
Technical, Sales, and Administrative Support	Yes	200	0.10	0.59	3.91
	No	1,763	0.90	0.45	0.000
Service Occupations	Yes	139	0.14	0.58	2.61
	No	886	0.86	0.46	0.009
Precision Production, Craft, Repair & Operators, Fabricators, and Laborers	Yes	203	0.12	0.62	6.23
	No	1,452	0.88	0.40	0.000

*Data :* Weighted GSS 1998-2008.

At first glance the data show the self-employed are on average more likely to be satisfied with their work. Across all occupational groups, 62 percent of the self-employed report being very satisfied with their work, compared to 47 percent of traditional paid employees. A T-test of these statistics reveals that the difference is significant with a t-value of 9.14. This difference remains significant within each occupational grouping and is largest within, surprisingly, managerial and professional specialty occupations (Table 4.1). The second largest difference is between the self- and non-self-employed labor occupations and is nearly as large, which limits the possibility that job satisfaction in self-employment occupations is largely associated with one’s professional status. The multivariate regression that follows will highlight the important variables that are associated with this outcome within each occupational group.

### *Independent Variables*

The independent variable of interest is church attendance, a measure of the concept of religiosity. The analysis will include control variables, such as whether or not the respondent could find an equally good job, whether or not the respondent is likely to lose their current job, respondent age, gender, racial/ethnic minority status, education, marital status, hours worked per week, weeks worked per year, and income in constant dollars (year 2000 USD for all respondents, 1998-2008).

*Table 4.2. T-Tests of Mean Church Attendance by Self-Employment Status Within Occupation Groups*

Occupation Group	Self-Employed	Church Attendance		t Value Pr >  t
		Mean	Std Dev	
Managerial and Professional Specialty	Yes	3.63	2.74	2.35
	No	3.93	2.67	0.019
Technical, Sales, and Administrative Support	Yes	3.74	2.64	0.78
	No	3.61	2.67	0.433
Service Occupations	Yes	4.24	2.88	3.59
	No	3.48	2.69	0.000
Precision Production, Craft, Repair & Operators, Fabricators, and Laborers	Yes	2.85	2.67	1.47
	No	3.11	2.64	0.143

*Data :* Weighted GSS 1998-2008.

The church attendance variable measures the frequency of contact one has with his or her congregation and indicates a level of socialization into their religious group. Response categories range from ‘never,’ coded zero, to ‘several times a week,’ coded eight. Some variation within occupational groups exists (Table 4.2). Self-employed workers in service occupations are the most frequent attenders of religious services, averaging a little more than monthly attendance. T-test results show that this is

significantly more than non-self-employed workers in service occupations. Self-employed workers in labor occupations attend religious services with the least frequency, on average a little less than several times per year. This is not significantly different from paid employees in these occupations. T-test results also show that self-employed workers in managerial and professional specialty occupations attend *less frequently* than their paid employee counterparts. No other significant differences in attendance exist within occupational groups.

### *Simple Statistics*

Table 4.3 presents simple statistics of the analysis variables. As shown above, the self-employed are more satisfied with their work in each occupation group. Mean church attendance is nearly the same for both sets of workers, although we see above that subgroups of the self-employed are both the highest and lowest attenders. Compared to the majority of US workers who are paid employees, the self-employed tend to be older, male, white, and married. The self-employed tend to have more years of schooling: 37 percent have a college degree or better, compared to 30 percent of paid employees. Reported pre-tax earnings are also higher on average for the self-employed.

Concerning the characteristics of work life, the self-employed appear to work more hours per week, but a T-test reveals that this difference is not significant and more likely due to sampling variability (though the GSS is not the most reliable source for this information).<sup>19</sup> The self-employed do, however, tend to work about one fewer week per year ( $t = 3.39$ ). Over the next twelve months (at the time of the interview), the self-employed are less likely to believe they will lose their job ( $t = 4.16$ ).<sup>20</sup> The self-employed also believe they would have less difficulty finding an equally good job ('with

approximately the same income and fringe benefits;’ ( $t = 2.49$ )).<sup>21</sup> Including these ‘job lose’ and ‘job find’ variables in any model will clearly reduce the number of cases available for analysis. This is unavoidable because past research finds these measures of job stability to be important predictors of satisfaction with work (Hundley 2001).

*Table 4.3. Simple Statistics for Analysis Variables by Self-Employment Status*

Variable	Self-Employed			Paid Employees			Minimum	Maximum
	N	Mean	Std Dev	N	Mean	Std Dev		
'Very Satisfied' with Work	905	0.62	0.49	6,259	0.47	0.50	0	1
Church Attendance	1,169	3.58	2.76	7,937	3.59	2.68	0	8
Demographic Items								
Age	1,183	45.04	10.20	8,011	41.76	10.28	25	64
Female	1,183	0.41	0.50	8,011	0.51	0.50	0	1
Nonwhite	1,183	0.16	0.37	8,011	0.24	0.43	0	1
Married	1,183	0.68	0.48	8,008	0.62	0.49	0	1
Education	1,182	14.22	3.07	7,994	13.86	2.86	0	20
R's Income (\$)	964	57,576	70,103	6,972	38,730	36,967	415	434,612
Work Characteristics								
Hours Worked per Week	1,167	44.02	19.57	7,959	42.89	12.83	1	89
Weeks Worked last Year	1,057	46.41	11.64	7,296	47.67	10.41	0	52
Job Lose	596	3.63	0.78	4,200	3.49	0.78	0	4
Job Find	575	1.99	0.87	4,195	2.08	0.80	0	3

*Data* : Weighted GSS 1998-2008.

### *Model*

The need to collapse the responses to the GSS work satisfaction question necessitates the use of binary logistic regression models. These models, one for each of the four nonfarm occupation groups, will test whether higher religiosity is associated with a higher probability of being very satisfied with one's work. Even with six pooled years of survey responses, the instance of self-employment is limited such that separate models for self- and non-self-employed workers are unworkable. Self-employment status is thus considered an additive effect in the four separate models—an independent variable rather

than a population under analysis. This arrangement does allow for the inclusion of an interaction effect for frequency of church attendance with self-employment status while controlling for the effects of the other variables. The interaction will test whether or not, other things equal, the return of church attendance frequency on work satisfaction is greater for self-employed workers in four occupational subsets.

### *Analysis*

Results from the binary logistic regression models appear in Table 4.4. A mix of demographic items and work characteristics are significant predictors in each model. The interaction between self-employment status and church attendance is significant in only the model for managerial and professional specialty occupations. Coefficients shown for the other three occupation groups in the table come from models that do not include an interaction term. Odds ratios are computed for significant estimates only. Age and weeks worked last year are the only independent variables that do not achieve significance in any of the four models. Still, a substantial amount of variation in satisfaction is left unexplained: model r-squares range from six to eleven percent in these models.

The most consistent predictor of being highly satisfied with work is a lower perceived likelihood of losing one's job. Each additional unit increase in this measure, say from 'fairly likely' to 'not too likely,' is associated with a 52 percent increase in the probability of being very satisfied with one's work in technical, sales, and administrative support occupations; a 42 percent increase in managerial and professional specialty occupations; and a 29 percent increase in labor occupations. Likewise, those in technical, sales, and administrative support occupations who perceive more difficulty in finding an



Table 4.4. Results from Binary Logistic Regressions Predicting the Probability of Being 'Very Satisfied' With One's Work in Each of Four Occupation Groups

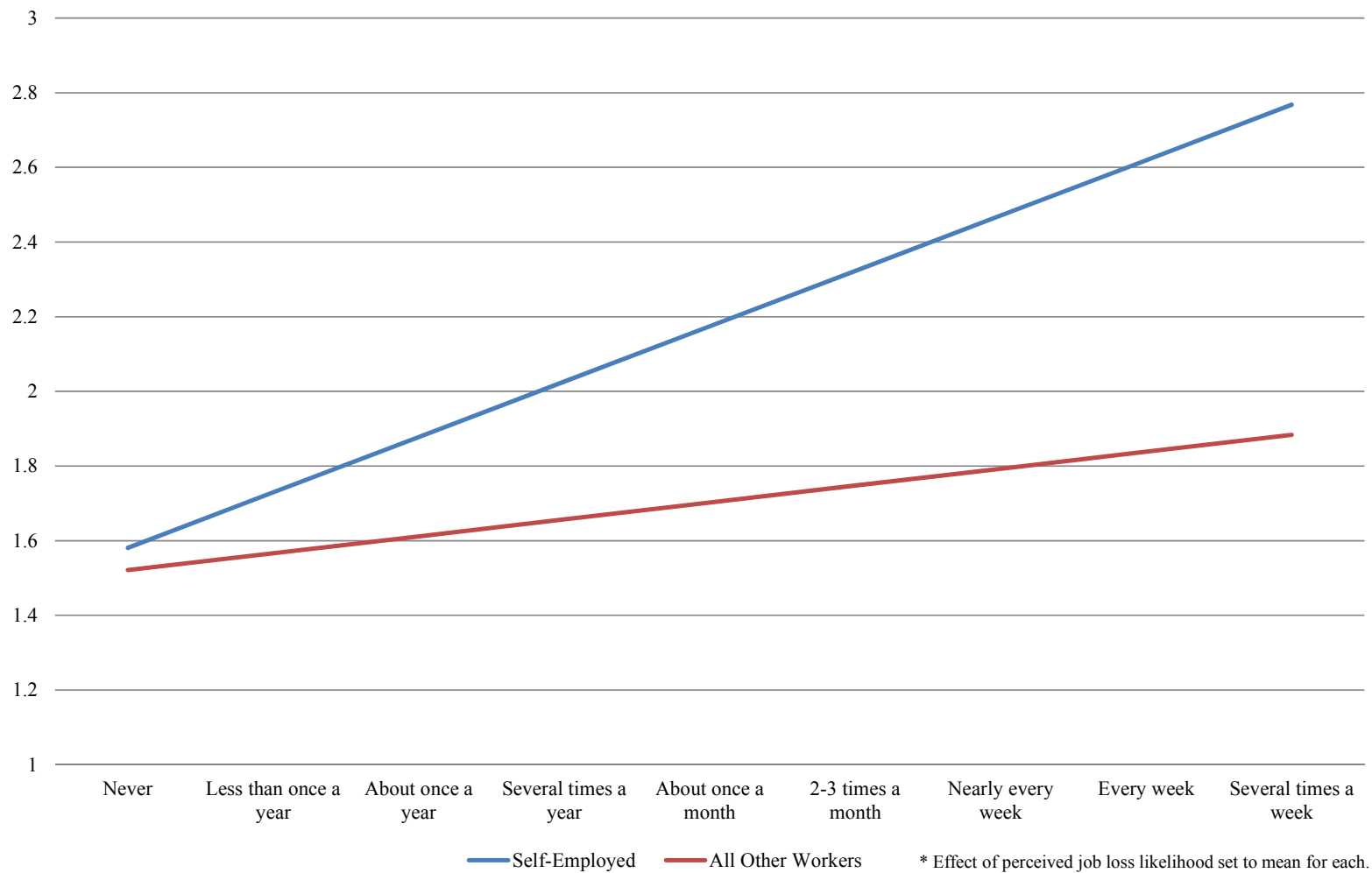
Variable	Managerial and Professional Specialty Occupations					Technical, Sales, and Administrative Support Occupations					Service Occupations					Precision Production, Craft, Repair & Operators, Fabricators, and Laborers				
	Odds Ratio	Estimate	S.E.	Chi-Square	Pr > ChiSq	Odds Ratio	Estimate	S.E.	Chi-Square	Pr > ChiSq	Odds Ratio	Estimate	S.E.	Chi-Square	Pr > ChiSq	Odds Ratio	Estimate	S.E.	Chi-Square	Pr > ChiSq
Intercept	-	-1.006	0.638	2.49	0.115	-	-2.186	0.734	8.87	0.003	-	-2.239	0.900	6.18	0.013	-	-0.422	0.703	0.36	0.549
Demographic Items																				
Age	-	0.008	0.006	2.25	0.134	-	0.009	0.006	1.80	0.179	-	0.011	0.009	1.40	0.236	-	0.003	0.007	0.21	0.650
Female	-	0.120	0.115	1.08	0.299	-	0.137	0.143	0.92	0.338	1.635	0.492	0.209	5.55	0.019	-	0.189	0.193	0.96	0.326
Nonwhite	0.630	-0.462	0.146	9.99	0.002	0.620	-0.479	0.159	9.04	0.003	-	-0.060	0.197	0.09	0.761	-	-0.050	0.173	0.08	0.775
Married	-	0.033	0.120	0.08	0.784	-	0.144	0.134	1.15	0.283	1.755	0.563	0.191	8.64	0.003	-	-0.165	0.149	1.23	0.268
Education (0-20)	-	-0.005	0.022	0.04	0.833	-	0.012	0.031	0.13	0.714	-	0.000	0.038	0.00	0.997	0.942	-0.060	0.030	3.93	0.047
R's Income (\$10k)	-	0.019	0.011	2.84	0.092	-	0.030	0.020	2.18	0.140	-	-0.004	0.069	0.00	0.949	1.197	0.180	0.040	18.69	<.0001
Work Characteristics																				
Hours Worked per Week	-	0.001	0.004	0.04	0.838	-	0.001	0.006	0.02	0.902	1.018	0.018	0.007	6.83	0.009	-	0.005	0.006	0.78	0.377
Weeks Worked Last Year	-	-0.011	0.007	2.85	0.091	-	-0.003	0.007	0.14	0.706	-	0.005	0.009	0.25	0.616	-	-0.003	0.009	0.11	0.736
Job Lose (1-4)	1.424	0.354	0.083	18.14	<.0001	1.522	0.420	0.091	21.13	<.0001	-	0.205	0.107	3.64	0.056	1.294	0.258	0.088	8.49	0.004
Job Find (1-3)	-	-0.134	0.071	3.56	0.059	0.853	-0.159	0.080	3.98	0.046	-	-0.157	0.110	2.05	0.152	0.631	-0.461	0.089	27.00	<.0001
Church Attendance (0-8)	1.045	0.044	0.022	4.05	0.044	1.070	0.068	0.025	7.64	0.006	-	-0.051	0.035	2.22	0.136	-	0.017	0.029	0.36	0.546
Self-Employed	-	-0.042	0.272	0.02	0.877	-	0.398	0.242	2.71	0.100	-	0.061	0.271	0.05	0.821	1.943	0.664	0.223	8.87	0.003
Attendance*Self-Employed	1.148	0.138	0.062	4.99	0.026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-Square	0.066					0.083					0.079					0.117				
No. Observations	1,494					1,091					535					918				

Data : Weighted GSS 1998-2008.

equally good job are 14 percent less likely, per unit increase, to be very satisfied with their work. This effect is quite a bit stronger for those in labor occupations (where the chi-square is 27, compared to 4), whose chances decline by 36 percent with each unit increase.

The self-employed are more likely than other workers to be very satisfied with their work in two of the four groups: managerial and professional specialty occupations and labor occupations. Self-employed workers in the latter group are almost twice as likely to be highly satisfied with their work while controlling for variation in other satisfaction-affecting measures such as education, income, and perceived job stability. And in fact, education and income are significant predictors only here. One additional year of education contributes to a 5 percent *decline* in the probability of high job satisfaction in this group, and an additional 10 thousand dollars per year fetches a near twenty percent increase. Self-employment is not a significant predictor of job satisfaction in technical, sales, and administrative support occupations or in service occupations.

While the self-employment status variable is not significant in the first model *per se*, the null hypothesis is almost certainly false. In a similar model without the interaction (not shown), the self-employed in managerial and professional specialty occupations are 57 percent more likely to be very satisfied with their work.<sup>22</sup> This particular case of nonsignificance means that the y-intercept of the interaction slope (the slope of attendance for the self-employed) is not different from the attendance slope for other workers. The magnitude of the slopes, however, is different (Figure 4.1). A one unit increase in church attendance, say going from ‘several times a year’ to ‘about once a



*Figure 4.1.* Probability of High Work Satisfaction at Varying Levels of Church Attendance for the Self-Employed and All Other Workers in Managerial and Professional Specialty Occupations\*

month,' or from '2-3 times a month' to 'nearly every week' gives a 5 percent increase for paid employees compared to a 15 percent increase in the probability of being highly satisfied for the self-employed. The figure shows that at the highest levels of church attendance, the self-employed are almost twice as likely as their employee counterparts in these occupations to be highly satisfied with their work.<sup>23</sup>

Church attendance is also a significant predictor in the model for technical, sales, and administrative support occupations, where self-employment status is not. A one unit increase in the measure of church attendance yields a 7 percent increase in the likelihood that a worker, self-employed or not, is very satisfied with the work that he or she does in these occupations. The effect of hours worked per week is only significant for workers in service occupations. This is likely due to the fact that 46 percent of self-employed workers and 31 percent of non-self-employed workers in these occupations are working only part-time, the highest of such rates across the occupation groups.<sup>24</sup>

### *Discussion*

Past efforts to address the source of work satisfaction differences between the self-employed and their paid employee counterparts compare the hierarchical nature of paid employment to the less formal nature of self-employment. Research concerning religiosity in work satisfaction focuses on religious similarity in the workplace as a source of satisfaction. This analysis attempts to fill a gap in the literature by testing for an interactive effect on work satisfaction between religious service attendance and self-employment status. Binary logistic regression models reveal that this interaction exists in only one of four occupational subgroups, but the largest: managers and professional specialties. Perhaps these individuals embody the spirit of Max Weber's Protestant Ethic.

Not only do they show evidence of hard work, planning, and self-denial (through running a business), they are religiously oriented individuals who derive satisfaction with their work from their religion.

Other points worthy of continued investigation include gender and racial/ethnic minority statuses. Racial and ethnic minorities are over a third less likely to report very high satisfaction with the work they do in the professional occupations. In service occupations, where 82 percent of respondents are female, women are almost two-thirds more likely to report high satisfaction with their work. Predominantly female occupations in this group include private household cleaners, hairdressers, and child care workers. Predominantly male occupations in this group include janitors and barbers. It appears the hairdressers enjoy their work more than the barbers do.

## CHAPTER FIVE

### Community and the Independent Middle Class

#### *Overview*

Research in the civic community perspective has examined the effects of local capitalism—in the form of small manufacturing, retail shops, service establishments, and family farms—and established its importance for county-level measures of nonmigration, income, poverty, income inequality, and unemployment (Irwin et al. 1999; Tolbert et al. 1998). At the theoretical level, the association between local capitalism and positive community outcomes operates through an attachment to place that improves community solidarity. The self-employed are clear participants in this process, although some likely more so than others. This analysis attempts to present a clearer view of this relationship by identifying those who may be the independent middle class.

Why would someone want to be a part of the independent middle class? The answer has as much to do with self-interest as it does with community embeddedness. Many small business people rely on local networks to grow their businesses. The small business person has a deep interest in maintaining positive relations with administrative and political figures in the city. Mills and Ulmer talk about how members of the independent middle class have a ‘civic spirit.’ They benefit personally from direct engagement in the community that fosters civic improvements.

The characteristics of a community can affect outcomes at the individual level. This section will examine how various community attributes impact the individuals living

there. Previous research points to a split labor market in self-employment, where the self-employed in professional occupations do better than their wage-earnings counterparts and those who are self-employed in nonprofessional occupations fair worse (Budig 2006; Arum 2004). The populations of interest in this analysis are the self-employed who fair better than their wage earning counterparts, whether they are professional or nonprofessional in occupation. The taxonomy developed earlier will be able to hone in on a particular set of self-employed workers better than a professional/nonprofessional dichotomy.

The independent middle class, like civic communities themselves, should be insulated from the effects of economic forces that originate outside of their communities. The dependence of local businesses on the local community is apparent. Their livelihood is localized more so than workers who earn a wage or salary from a corporation which may be headquartered in another part of the country. One way to capture this difference within a particular community is to compare the earnings of the self-employed to the earnings of wage and salary workers in similar occupations. This analysis attempts to do just that.

Another important difference in the independent middle class is their ability to weather structural conditions of the labor market such as high poverty. Higher poverty rates in communities have depressive effects on the earnings of workers in those communities (Lichter 1997; Friedman and Lichter 1998). According to the 2006-2008 American Community Survey data, the correlation coefficient for the association between percent in poverty and mean earnings rate in the 933 combined PUMA areas is -0.686. This indicates that poverty rates are strongly and negatively associated with the average

earnings of workers. Workers who are able to escape this negative effect may be positioned to affect their communities in a positive way.

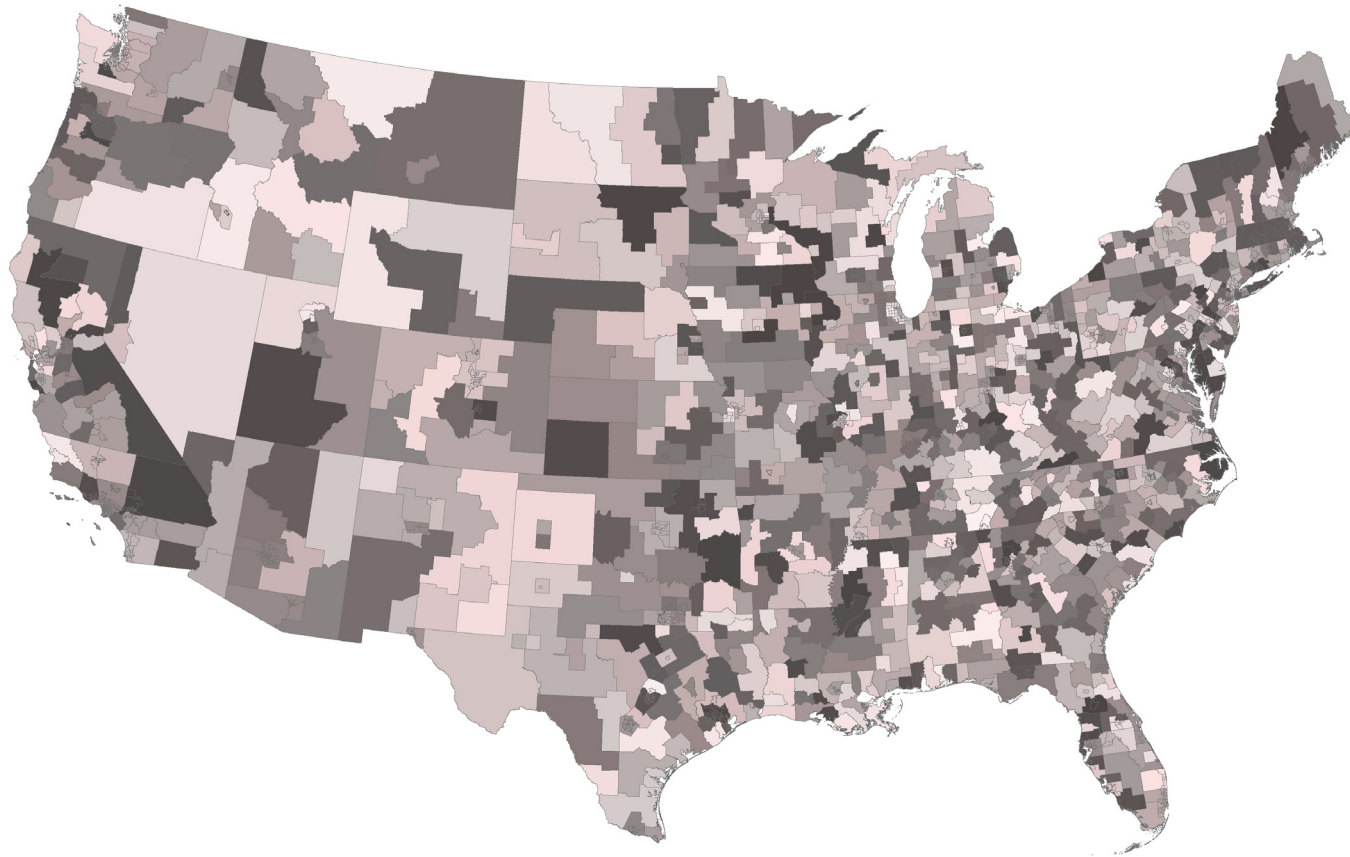
### *Hypotheses*

I hypothesize first that people's earnings rates do actually vary from place to place. With this question satisfied, I hypothesize that community attributes play an important role in predicting people's earnings. Rates of poverty and the age of the housing stock are expected to depress earnings for most workers while population size and percent college degree holders are expected to increase the ratio of earnings to weeks and hours worked over the course of one year. I hypothesize that individual characteristics also matter according to the results of chapter three. Finally, I hypothesize that the poverty effect is interactive with self-employment status. If the independent middle class is separated from economic conditions that affect traditional paid employees, higher poverty will not reduce their wages as much as those of their wage-earning peers.

### *Dataset*

This analysis will use the same American Community Survey microdata from chapter three. The individual and household observations in the ACS are nested within geographic units called PUMAs. These units somewhat approximate communities, but their effectiveness in this regard is debatable. In order to have more meaningful geographies I will manipulate the PUMAs into county-level units. In some cases PUMAs will be aggregated. In other cases the PUMAs are already composed of groups of two or more counties. Combined public use microdata areas ('cpumas') are usually the size of





*Figure 5.1. Combined Public Use Microdata Areas in the Contiguous U.S.*

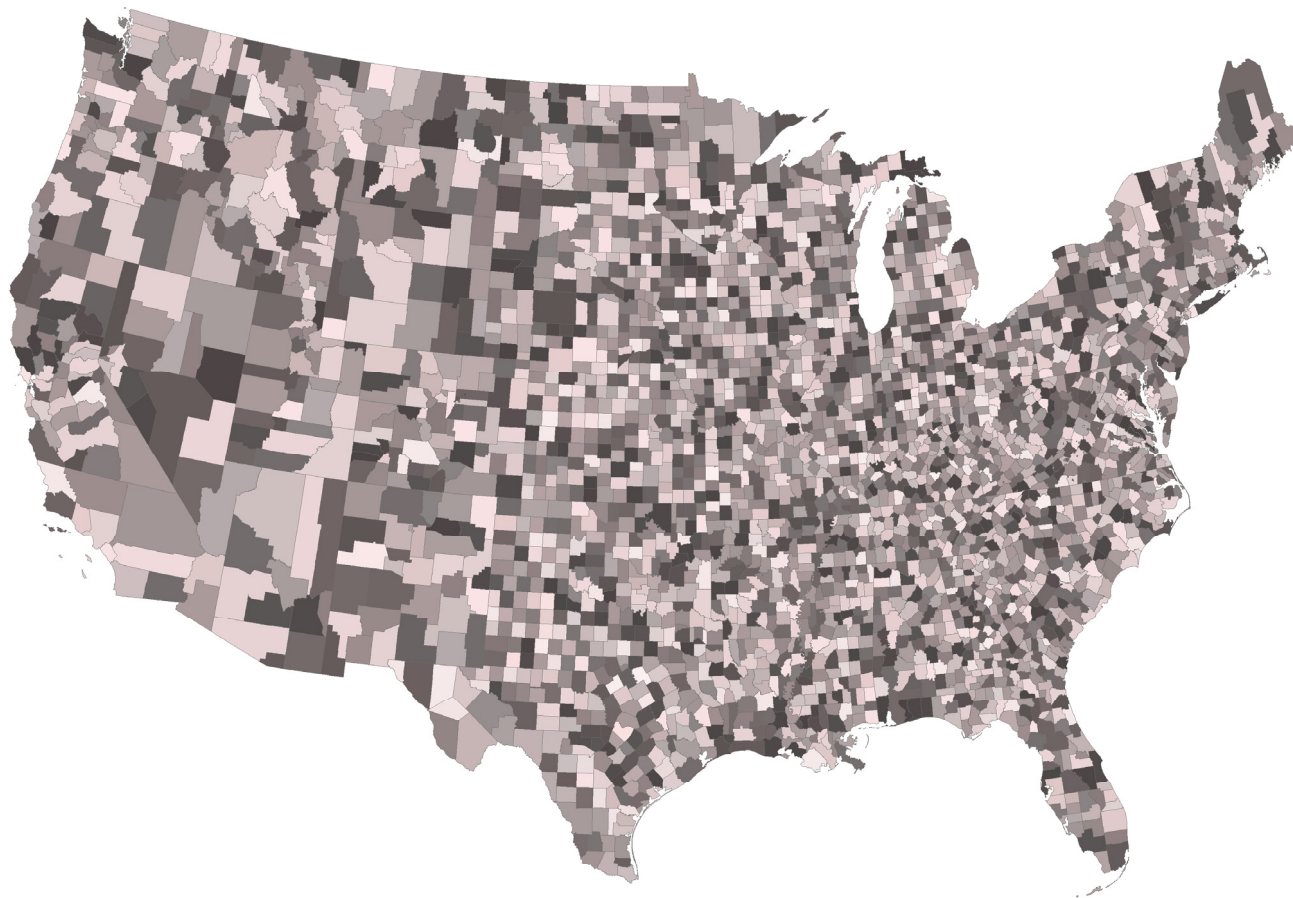


Figure 5.2. Counties in the Contiguous U.S.

counties and sometimes, in less populated places, are groups of counties (see Figures 5.1 and 5.2).

### *Simple Statistics*

Table 5.1 presents summary level statistics for the second level variables. This table describes the 933 combined public use microdata areas by showing the average, standard deviation, and minimum and maximum values for these level two units. These measures will be used in a set of hierarchical linear models. Total person's earnings (adjusted to 2008 dollars) are shown as dollar amounts rather than the logged rates (which include weeks and hours worked in the denominator) that are used in the analysis. The cpuma average, which is the average across all cpumas, taken from the average of workers' earnings within each cpuma, is \$43,873. The cpuma earnings average varies from a low of about \$30k to a high of about \$98k. The cpumas with the lowest average earnings include Texas counties along the Rio Grande Valley in southeastern Texas and a collection of counties in southwestern New Mexico.<sup>25</sup> The cpumas with the highest average earnings are located in New York County, NY, Fairfield County, CT, and Hunterdon County, NJ. Maps of this trend and others described below can be found in Appendix A.

The average population size of the combined puma areas is 229,257, and about 8 percent have over half a million individuals. The original pumas have a minimum threshold of 100,000 persons, but no ceiling. Most of the cpumas are the original pumas as they were drawn, others are aggregated up to the county level. As a result the median population size is 159,464, much smaller than the average. The ten largest combined puma areas in terms of population are Pima County, AZ (contains Tucson); a ten county

area in northwestern Oklahoma (contains Tulsa); Fulton County, GA (contains Atlanta); Los Angeles County, CA; Montgomery County, MD (north of Washington, D.C.); DuPage County, IL (southwest of Chicago); Pinellas County, FL (Tampa Bay area); two counties in the Jacksonville, FL area; Erie County, NY (contains Buffalo); and Shelby County, TN (contains Memphis).<sup>26</sup>

The age of the housing stock, measured as the proportion of homes built before 1970, ranges from a low of just 4 percent of homes in Gwinnett County, GA (outside of Atlanta) to 85 percent of homes in Nassau County, NY (Long Island). Rates of home rentalship range from a low of 7 percent in Hunterdon County, NJ to a high of 72 percent

*Table 5.1 . Simple Statistics for the 933 Combined PUMAs*

Variable	Mean	Std Dev	Minimum	Maximum
Total Person's Earnings	43,873	9,226	30,535	98,719
Population Size	229,257	176,690	93,125	994,411
Percent Pre-1970 Homes	0.3778	0.1548	0.0435	0.8546
Percent Rent Home	0.2392	0.0693	0.0768	0.7289
Percent Nonmover	0.8269	0.0385	0.6516	0.9165
Percent Less than HS	0.0938	0.0454	0.0198	0.3193
Percent College Graduates	0.2716	0.0972	0.1098	0.7114
Percent Poverty	0.1696	0.0569	0.0442	0.4235
Percent Unemployed	0.0645	0.0192	0.0258	0.1873
Percent Self-Employed	0.1113	0.0286	0.0549	0.2323
Percent Incorporated SE	0.0373	0.0140	0.0091	0.1061

in Bronx County, NY. The percent of persons living in the same house as one year ago is lowest in Monroe County, IN at 65 percent and highest in Nassau County, NY at 91 percent.

For educational attainment, the rate of less than high school completion in Delaware County, OH, Hunterdon County, NJ, and Washington County, MN is 2 percent,

the lowest in the country (the average is 9 percent). The highest rates of less than a high school diploma are found in a group of counties in south central Florida (north of the Everglades), and Hidalgo and Webb counties along the Rio Grande valley in southeastern Texas.<sup>27</sup> Rates of college completion or beyond are lowest in a group of counties in northern Florida (east of the panhandle), a group of 11 counties in southern Georgia, and two counties in southeastern North Carolina, at around 11 percent (27 percent is the cpuma average).<sup>28</sup> The cpuma with the highest rate of persons with a college degree or beyond (71 percent) contains Arlington County and Alexandria City, VA.

The rate of individuals living in poverty ranges from 4 percent to 42 percent (the cpuma average is 16 percent). The five highest poverty rates are found in two Mississippi Delta cpumas, two cpumas in the Rio Grande Valley, and an Appalachian cpuma in Kentucky.<sup>29</sup> The lowest is Somerset County, NJ. The unemployment rate, measured as the total unemployed divided by the civilian labor force age 16 and above, ranges from 2 to 18 percent on average during the years 2006 through 2008. 2006-2008 unemployment rates are highest in the three cpumas in the Mississippi Delta (same as above); Muskegon County in eastern central Michigan; and Wayne County, MI (which contains Detroit). These rates are lowest in a cpuma of twelve counties that cover most of northern and western Wyoming; a cpuma of thirteen counties in northwestern South Dakota; Johnson County in eastern Iowa; a cpuma in Virginia that contains Arlington County and Alexandria City; and a cpuma in the Rocky Mountains of Colorado.<sup>30</sup>

### *Self-Employment*

Rates of self-employment range from 5 percent to 23 percent. The ten highest rates are in Marin County, CA (north of San Francisco); a group of counties in the Sierra

Nevada, CA; a group of counties in northwestern Montana; Cape Cod and the islands to the south in Massachusetts; three groups of counties in Colorado, located along the Rocky Mountains (same as above), in central, and in southeastern parts of the state; Humboldt County, CA; a group of 26 counties covering the eastern half of Montana (without Yellowstone); and Deschutes County, OR.<sup>31</sup> The rates are lowest in Cumberland County, NJ; two groups of counties in northern and southern West Virginia; three groups of counties in western, central, and southern Indiana; Charles County, MD; a group of parishes in southern Louisiana (east of New Orleans); Niagara County, NY; and Philadelphia County, PA.<sup>32</sup>

The five highest rates of incorporated self-employment are in the Rocky Mountain counties of Colorado (same as above) and four cpumas in Florida, including Collier County (which includes the city of Naples), Martin County (north of Palm Beach on the Atlantic coast), and Sarasota and Charlotte counties (on the Gulf coast, adjacent but in separate cpumas). The five highest rates of unincorporated self-employment are in Humboldt County, CA; a group of Sierra Nevada counties in California (same as above); Marin County, CA; a group of northwestern Montana counties (same as above); and a cpuma in northwestern California that contains Lake and Mendocino counties.

The average percentage within a cpuma of self-employed workers in a specific category of the taxonomy ranges from 0.6 percent (managerial occupations in the construction industry) to 4 percent of all workers (other managerial occupations not in the construction or professional services industry). The highest concentration of these other managers is in Marin County, CA (north of San Francisco) at 12 percent of the labor force age 25 to 64. Four taxonomic categories have concentrations around 5 percent:

maintenance and repair occupations in Cape Cod and the islands to the south in Massachusetts; labor occupations in the construction industry in Cape Cod and the islands to the south; sales occupations in the Sierra Nevada cpuma in California; and managerial occupations in the professional services industry in Marin County, CA. ‘Other service’ occupations are most highly concentrated in the Sierra Nevada cpuma in California at 4 percent. Self-employed production and transportation occupations represent about 3 percent of the labor force in a group of 13 counties in northwestern Oklahoma.<sup>33</sup> The highest concentration of ‘other occupations’ in the professional services industry (2 percent) is in Martin County, FL. The highest concentration of managerial occupations in the construction industry (2 percent) is in Collier County, FL.

### *Nested Data*

Places are often defined in terms of the individuals who occupy them (as they are above). In both sociological and statistical terms, the populations of these combined PUMA areas are considered to be ‘nested’ within them. The aggregate characteristics of the areas presented above represent the compositions of their own unique populations. Within each area the population is distributed among each of the various characteristics. Population composition and distribution are significant components of what sociologists call social structure. Greater than the sum of its parts, a social structure independently exerts pressure on the individual actors within it. The theoretical untangling of this relationship is at the core of C. Wright Mills’ ‘sociological imagination’ (1959). The empirical untangling of this relationship is realized through hierarchical linear modeling.

Hierarchical linear and nonlinear modeling is a statistical technique that separates the characteristics of actors (the individuals or ‘first level units’) and structures (the group

or ‘second level units’) when using them simultaneously to predict outcomes. In traditional linear and nonlinear regression analyses (such as OLS) these two sets of characteristics are not separated. In a hierarchical linear model, the behavior of residuals (the differences between expected and observed outcomes) from the individuals’ variance-producing characteristics is modeled separately from the behavior of residuals from the groups’ variance-producing characteristics. For the logic and rationale behind hierarchical linear modeling, consider Hofmann (1997) a must-read introduction. Hierarchical Linear Modeling is also a software package (see Raudenbush and Bryk 2002). All multilevel modeling in this analysis will be done in SAS using the ‘mixed procedure’ (Singer 1998).

### *Analysis*

#### *Model 1: The Null Model*

The simplest of four necessary modeling steps examines the dependent variable alone at the group level. Raudenbush and Bryk (2002) refer to this as the one-way ANOVA with random effects (Singer labels it the unconditional means model). It is a test of the between group variance of the dependent variable. Before abandoning traditional linear regression techniques, the data must be determined to necessitate the use of a more advanced method of analysis. The observations of interest within the data need to vary at both the individual (first) level and at the group (second) level to warrant a hierarchical linear model.



Table 5.2. Model 1: One-Way ANOVA

	Total Civilian Nonfarm Labor Force Age 25-64			Other Management Occupations			Professional Services Industry - Management			Construction Industry - Management and Other			Other Sales and Office Occupations		
Variable	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z
Fixed Effect (t)															
Average CPUMA mean, $\gamma_{00}$	2.83	0.01	524	3.09	0.01	548	3.25	0.01	459	3.07	0.01	416	2.71	0.01	521
Random Effect (z)															
CPUMA mean, $u_{0j}$	0.03	0.00	21	0.03	0.00	21	0.04	0.00	18	0.03	0.00	14	0.02	0.00	21
Level-1 effect, $r_{ij}$	19.23	0.01	1,313	16.32	0.02	749	19.07	0.06	324	21.26	0.12	183	16.48	0.03	612
N Subjects	933			933			933			933			933		
N Observations	3,449,193			1,124,214			210,659			67,663			749,831		
Max Obs Per Subject	102,579			32,422			6,915			1,476			22,112		
	Professional Services Industry - Other Occupations			Other Service Occupations			Construction Industry - Labor			Installation, Maintenance and Repair Occupations			Production, Trans., and Material Moving Occupations		
Variable	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z
Fixed Effect (t)															
Average CPUMA mean, $\gamma_{00}$	2.61	0.01	433	2.42	0.01	471	2.79	0.01	477	2.91	0.00	635	2.72	0.00	716
Random Effect (z)															
CPUMA mean, $u_{0j}$	0.03	0.00	17	0.02	0.00	20	0.03	0.00	19	0.02	0.00	18	0.01	0.00	19
Level-1 effect, $r_{ij}$	19.72	0.07	275	18.46	0.04	452	17.64	0.06	307	12.32	0.05	263	13.79	0.03	450
N Subjects	933			933			933			933			933		
N Observations	152,229			409,529			189,695			139,236			406,137		
Max Obs Per Subject	5,727			13,213			4,954			3,229			12,531		

Data : Weighted data. All estimates are significant beyond .0001

The motivation for this model is the question of how much cpumas vary in the mean earnings rate of the individuals within them. The regression equation for this model is:

$$EARNRATE_{ij} = \gamma_{00} + u_{0j} + r_{ij}$$

SAS syntax:<sup>34</sup>

```
proc mixed data=libname.dataset covtest noclprint noitprint;
  class cpuma;
  model earnrate= / solution;
  random intercept / subject=cpuma;
  by taxonomy;
  weight pwgtp;
run;
```

The second level units are specified as the combined puma areas. This model is an analysis of variance in the earnings rate (earnrate) with no predictors on the right hand side of the equation. The syntax requests covariance-variance parameter estimates (covtest), fixed effect parameter estimates (solution), and tells the program not to assume that the intercept for each individual is the same (a fixed effect), but to assume that it varies randomly.

Table 5.2 presents the results of the nine analyses of variance for the earnings outcome. T-values are calculated for the fixed effects estimates and z-values are calculated for the covariance parameter estimates. These values show statistically significant variation in average earnings rate across the 933 PUMAs. The intraclass correlation (the quotient of the level two mean and the sum of the level two mean and level one effect) is small in each model (below .01), meaning that little variance in the dependent variable exists between second level units. However, the null hypothesis is not supported, and a multilevel analysis is required to test hypotheses concerning the individual earnings outcome.

Table 5.3. Model 2: Level Two Effects Alone

Variable	Total Civilian Nonfarm Labor Force Age 25-64			Other Management Occupations			Professional Services Industry - Management			Construction Industry - Management and Other			Other Sales and Office Occupations		
	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z
Fixed Effect (t)															
Average CPUMA mean, $\gamma_{00}$	2.85	0.00	691	3.14	0.01	591	3.28	0.01	470	3.10	0.01	396	2.75	0.00	678
CPUMA Population	0.03	0.00	8	0.06	0.00	13	0.06	0.01	10	0.05	0.01	7	0.04	0.00	11
Percent College Graduate	0.96	0.03	31	0.85	0.04	22	0.95	0.06	17	0.73	0.07	11	0.81	0.03	26
Percent pre-1970 Homes	-	-	-	-0.02	0.02	-1	-	-	-	-0.10	0.03	-3	-	-	-
Percent Poverty	-1.15	0.05	-24	-0.85	0.06	-14	-0.86	0.09	-9	-1.05	0.11	-9	-1.13	0.05	-23
Random Effect (z)															
CPUMA mean, $u_{0j}$	0.01	0.00	20	0.01	0.00	19	0.01	0.00	13	0.01	0.00	10	0.00	0.00	17
Level-1 effect, $r_{ij}$	19.23	0.01	1,313	16.32	0.02	749	19.08	0.06	324	21.27	0.12	183	16.48	0.03	612
Variable	Professional Services Industry - Other Occupations			Other Service Occupations			Construction Industry - Labor			Installation, Maintenance and Repair Occupations			Production, Trans., and Material Moving Occupations		
	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z
Fixed Effect (t)															
Average CPUMA mean, $\gamma_{00}$	2.61	0.01	425	2.45	0.01	397	2.78	0.01	357	2.92	0.01	482	2.70	0.01	539
CPUMA Population	0.01	0.01	2	0.03	0.01	5	-	-	-	0.01	0.01	3	-0.01	0.00	-3
Percent College Graduate	0.67	0.05	13	0.54	0.05	11	0.22	0.06	4	0.23	0.05	5	0.20	0.04	5
Percent pre-1970 Homes	-	-	-	-	-	-	0.25	0.03	8	0.10	0.02	4	0.04	0.02	2
Percent Poverty	-1.35	0.08	-16	-1.11	0.07	-15	-1.59	0.09	-17	-1.06	0.08	-14	-1.12	0.06	-19
Random Effect (z)															
CPUMA mean, $u_{0j}$	0.01	0.00	12	0.01	0.00	18	0.02	0.00	18	0.01	0.00	16	0.01	0.00	18
Level-1 effect, $r_{ij}$	19.72	0.07	275	18.46	0.04	452	17.64	0.06	307	12.32	0.05	263	13.79	0.03	450

Data : Weighted data. All estimates are significant beyond .0001, unless italicized (then .05  $\geq$  Pr  $\geq$  .0001).

### *Model 2: The Means-as-Outcomes Model*

This model includes second level effects alone in order to predict the earnings rate of individuals. The motivating question behind this analysis is whether places with larger populations or proportionately more college graduates have higher earnings rates, and whether places with newer homes or less poverty have higher earnings rates. Like the previous analysis, the model is run separately for each taxonomic category and for the total civilian labor force age 24-65.

The second level measures are centered at their grand mean. This reduces multicollinearity between the predictors at level one and level two. Centering also simplifies the interpretation of the estimates. The intercepts now represent the log earnings rate for an individual living in a cpuma with average characteristics for all of the second level units (cpumas). The regression equation for this model is:

$$EARNRATE_{ij} = \gamma_{00} + \gamma_{01}(POPULATION) + \gamma_{02}(COLLEGE) + \gamma_{03}(AGEHOMES) \\ + \gamma_{04}(POVERTY) + u_{0j} + r_{ij}$$

SAS Syntax:

```
proc mixed data=libname.dataset covtest noclprint noitprint;
  by taxonomy;
  class cpuma;
  model earnrate=clogpop cpctbachp cpctoldhm cpctpov/ solution ddfm=bw;
  random intercept / subject=cpuma;
  weight pwgtp;
run;
```

Table 5.3 shows the results of the second set of models. Larger populations and proportionately more college graduates tend to be associated with higher earnings rates, and higher rates of poverty tend to be associated with lower earnings rates. Higher rates of college graduates appear to be more beneficial to those who are working in professional occupations, and higher poverty rates appear to be more detrimental to those

who are working in nonprofessional occupations. These findings are fairly consistent across all categories of the taxonomy, though population size has less to do with the earnings rate of individuals in nonprofessional occupations (the bottom panel of the table). The age of the housing stock is neither consistently significant nor consistently positive or negative in its effect when significant. Now let's look at the characteristics of the individuals.

### *Model 3: The Random Coefficients Model*

This model includes level one effects only and tests for individual level predictors of individuals' earnings rates. If community characteristics did not matter whatsoever in determining earnings, this would be the only model necessary for this analysis. Table 5.4 presents the results. The regression equation takes the form:

$$\begin{aligned} EARNRATE_{ij} = & \gamma_{00} + \gamma_{10}(AGE) + \gamma_{20}(FEMALE) + \gamma_{30}(HISPANIC) + \gamma_{40}(BLACK) \\ & + \gamma_{50}(FBORN) + \gamma_{60}(MARRIED) + \gamma_{70}(KIDS) + \gamma_{80}(SCHOOL) \\ & + \gamma_{90}(INCORPORATED) + \gamma_{100}(UNINCORPORATED) + u_{0j} + r_{ij} \end{aligned}$$

SAS Syntax:

```
proc mixed data=libname.dataset covtest noclprint noitprint;
  by taxonomy;
  class cpuma;
  model earnrate=agep female hisp black fborn married noc
    schln incorp uninc / solution ddfm=bw notest;
  random intercept / subject=cpuma type=un gcorr;
  weight pwgtp;
run;
```

The effect of age, measured in years, is significant and positive in all models. Female, Hispanic, black, and foreign born are binary variables and are consistently negative predictors of individuals' earnings rates. Married persons earn more than nonmarried persons across all occupational subgroups and each additional child is also

Table 5.4. Model 3: Level One Effects Alone

Variable	Total Civilian Nonfarm Labor Force Age 25-64			Other Management Occupations			Professional Services Industry - Management			Construction Industry - Management and Other			Other Sales and Office Occupations		
	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z
Fixed Effect (t)															
Average CPUMA mean, $\gamma_{00}$	1.55	0.01	296	1.52	0.01	217	1.46	0.01	100	2.06	0.02	93	1.83	0.01	245
Age	0.01	0.00	231	0.01	0.00	179	0.01	0.00	82	0.01	0.00	33	0.01	0.00	87
Female	-0.27	0.00	-360	-0.24	0.00	-189	-0.22	0.00	-68	-0.39	0.01	-61	-0.26	0.00	-165
Hispanic	-0.12	0.00	-86	-0.10	0.00	-37	-0.11	0.01	-16	-0.12	0.01	-10	-0.09	0.00	-30
Black	-0.16	0.00	-119	-0.12	0.00	-50	-0.16	0.01	-23	-0.19	0.02	-12	-0.11	0.00	-40
Foreign Born	-0.13	0.00	-111	-0.05	0.00	-26	-0.08	0.00	-17	-0.11	0.01	-10	-0.19	0.00	-71
Married	0.12	0.00	142	0.07	0.00	48	0.11	0.00	30	0.09	0.01	13	0.10	0.00	59
Number of Children	0.04	0.00	97	0.04	0.00	67	0.06	0.00	40	0.04	0.00	14	0.03	0.00	40
Years in School	0.09	0.00	616	0.09	0.00	287	0.10	0.00	111	0.06	0.00	44	0.07	0.00	174
Incorporated Self-Employed	0.09	0.00	47	0.11	0.00	32	<i>-0.01</i>	<i>0.01</i>	-2	0.04	0.01	5	0.11	0.00	28
Unincorporated Self-Employed	-0.28	0.00	-194	-0.38	0.00	-123	-0.24	0.00	-50	-0.35	0.01	-39	-0.20	0.00	-56
Random Effect (z)															
CPUMA mean, $u_{0j}$	0.02	0.00	21	0.02	0.00	21	0.03	0.00	17	0.03	0.00	14	0.02	0.00	21
Level-1 effect, $r_{ij}$	15.47	0.01	1313	13.80	0.02	749	16.24	0.05	324	18.40	0.10	183	14.57	0.02	612

Variable	Professional Services Industry - Other Occupations			Other Service Occupations			Construction Industry - Labor			Installation, Maintenance and Repair Occupations			Production, Trans., and Material Moving Occupations		
	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z
Fixed Effect (t)															
Average CPUMA mean, $\gamma_{00}$	1.91	0.01	150	1.88	0.01	223	2.28	0.01	212	2.10	0.01	187	2.08	0.01	296
Age	0.01	0.00	28	0.00	0.00	47	0.01	0.00	45	0.01	0.00	53	0.01	0.00	69
Female	-0.14	0.00	-38	-0.28	0.00	-126	-0.17	0.01	-18	-0.10	0.01	-13	-0.27	0.00	-123
Hispanic	-0.15	0.01	-25	-0.06	0.00	-18	-0.17	0.01	-30	-0.12	0.01	-21	-0.09	0.00	-27
Black	-0.20	0.01	-33	-0.05	0.00	-15	-0.17	0.01	-24	-0.10	0.01	-17	-0.09	0.00	-29
Foreign Born	-0.15	0.01	-26	-0.16	0.00	-52	-0.15	0.01	-27	-0.15	0.01	-28	-0.16	0.00	-51
Married	0.13	0.00	34	0.11	0.00	48	0.12	0.00	36	0.13	0.00	35	0.12	0.00	57
Number of Children	0.02	0.00	13	0.01	0.00	14	0.03	0.00	21	0.02	0.00	15	0.03	0.00	27
Years in School	0.05	0.00	74	0.05	0.00	118	0.02	0.00	36	0.04	0.00	57	0.04	0.00	95
Incorporated Self-Employed	0.06	0.01	7	-	-	-	0.04	0.01	6	-0.23	0.01	-21	-	-	-
Unincorporated Self-Employed	-0.18	0.01	-31	-0.29	0.00	-78	-0.20	0.00	-50	-0.56	0.01	-79	-0.20	0.00	-41
Random Effect (z)															
CPUMA mean, $u_{0j}$	0.03	0.00	18	0.02	0.00	20	0.02	0.00	19	0.01	0.00	18	0.01	0.00	19
Level-1 effect, $r_{ij}$	17.49	0.06	275	16.12	0.04	452	16.25	0.05	307	10.81	0.04	263	12.18	0.03	450

Data : Weighted data. All estimates are significant beyond .0001, unless italicized (then .05>=Pr>=.0001).

associated with a higher earnings rate. Level of education is measured in years of school completed rather than as attainment categories. This is done for comparability across the models of different occupational groups (which have vastly different rates of educational attainment categories such as ‘less than high school’ or ‘college graduate’). Schooling matters substantially across the categories with T-values that are among the highest in

many of the models. The estimated effect of additional years in school, however, can be double for professionals what it is for nonprofessionals.

The self-employment variables in the model estimate the effects of incorporated and unincorporated self-employment on a person's earnings. The American Community Survey identifies these self-employed workers separately in the class of worker item. In the model, the comparison group for these variables is the group of paid employee counterparts within the same taxonomy category. Incorporated self-employed workers tend to do better than their counterparts and unincorporated workers tend to do worse in most categories. The following model will include both first and second level effects together.

#### *Model 4: First and Second Level Effects Together*

This final set of models predicts earnings rates for the occupation groups and the civilian labor force as a whole using both individual and community level characteristics. These are hierarchical linear models. The previous models show that earnings vary across geographic areas, that community-level characteristics predict some variance in earnings, and that individual-level characteristics predict some variance in earnings. This model includes all of these characteristics and an additional interaction between percent living in poverty and the two self-employment types (incorporated and unincorporated). This ordering implies that poverty rates affect the wages of the self-employed rather than that an individual's self-employment status affects their local rate of poverty. This is partly because the local poverty rate is only weakly correlated with rates of incorporated, unincorporated and total self-employment, and the directions imply that self-employment rates are associated with *less* poverty.<sup>35</sup> The regression equation takes the form:

$$\begin{aligned}
EARNRATE_{ij} = & \gamma_{00} + \gamma_{10}(AGE) + \gamma_{20}(FEMALE) + \gamma_{30}(HISPANIC) + \gamma_{40}(BLACK) \\
& + \gamma_{50}(FBORN) + \gamma_{60}(MARRIED) + \gamma_{70}(NOC) + \gamma_{80}(SCHOOL) \\
& + \gamma_{90}(INCORPORATED) + \gamma_{100}(UNINCORPORATED) + \gamma_{01}(POP) \\
& + \gamma_{02}(COLLEGE) + \gamma_{03}(AGEHOMES) + \gamma_{04}(POVERTY) \\
& + \gamma_{94}(INCORPORATED * POVERTY) + \gamma_{104}(UNINCORPORATED \\
& * POVERTY) + u_{0j} + r_{ij}
\end{aligned}$$

SAS Syntax:

```

proc mixed data=libname.dataset noclprint covtest noitprint;
    by taxonomy;
    class cpuma;
    model earnrate=agep female hisp black fborn married noc schln
        incorp uninc cpctbachp cpctoldhm clogpop cpctpov
        cpctpov*incorp cpctpov*uninc / solution ddfm = bw
        notest;
    random intercept / subject=cpuma type=un;
    weight pwgtp;
run;

```

These results are consistent with the previous models (Table 5.5). Age is strongly and positively related to earnings for all groups. Being female, Hispanic, black, or foreign-born tends to reduce an individual's earnings rate, regardless of occupational category. For females, the largest earnings gap is in managerial occupations in the construction industry, where they make 39 percent less than men. It is smallest in installation, maintenance and repair occupations (10 percent) and in other occupations in the professional service industry (14 percent). The earnings gap for Hispanics is largest in the labor occupations of the construction industry (17 percent) and smallest in other service occupations (6 percent). The earnings gap for blacks is largest in other occupations in the professional services industry (19 percent) and smallest in other service occupations (5 percent). The earnings gap for foreign born workers is largest in



Table 5.5. Model 4: First and Second Level Effects Together

Variable	Total Civilian Nonfarm Labor Force Age 25-64			Other Management Occupations			Professional Services Industry - Management			Construction Industry - Management and Other			Other Sales and Office Occupations		
	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z
Fixed Effect (t)															
Average CPUMA mean, $\gamma_{00}$	1.61	0.01	293	1.60	0.01	215	1.52	0.01	102	2.12	0.02	93	1.89	0.01	256
Age	0.01	0.00	231	0.01	0.00	179	0.01	0.00	82	0.01	0.00	33	0.01	0.00	87
Female	-0.27	0.00	-360	-0.24	0.00	-189	-0.22	0.00	-68	-0.39	0.01	-61	-0.26	0.00	-165
Hispanic	-0.12	0.00	-86	-0.10	0.00	-37	-0.11	0.01	-16	-0.12	0.01	-10	-0.09	0.00	-30
Black	-0.15	0.00	-119	-0.12	0.00	-50	-0.16	0.01	-23	-0.19	0.02	-12	-0.11	0.00	-40
Foreign Born	-0.13	0.00	-111	-0.05	0.00	-26	-0.08	0.00	-17	-0.12	0.01	-11	-0.19	0.00	-71
Married	0.12	0.00	143	0.07	0.00	48	0.11	0.00	30	0.09	0.01	14	0.10	0.00	59
Number of Children	0.04	0.00	97	0.04	0.00	67	0.06	0.00	40	0.04	0.00	14	0.03	0.00	40
Years in School	0.09	0.00	615	0.09	0.00	286	0.10	0.00	110	0.06	0.00	43	0.07	0.00	173
Incorporated Self-Employed	0.10	0.00	47	0.12	0.00	32	-	-	-	0.06	0.01	7	0.12	0.00	27
Unincorporated Self-Employed	-0.28	0.00	-186	-0.38	0.00	-119	-0.25	0.01	-44	-0.35	0.01	-37	-0.21	0.00	-55
CPUMA Population	0.07	0.00	16	0.08	0.00	16	0.08	0.01	13	0.07	0.01	9	0.07	0.00	16
Percent College Graduate	0.52	0.04	14	0.49	0.04	12	0.62	0.06	11	0.48	0.07	7	0.58	0.04	16
Percent pre-1970 Homes	-0.08	0.02	-4	-0.06	0.02	-3	-0.09	0.03	-3	-0.12	0.03	-3	-0.06	0.02	-3
Percent Poverty	-0.70	0.06	-13	-0.65	0.06	-10	-0.58	0.10	-6	-0.80	0.12	-7	-0.80	0.06	-14
Incorporated*Percent Poverty	0.44	0.04	11	0.46	0.07	7	0.33	0.11	3	0.65	0.16	4	0.31	0.08	4
Unincorporated*Percent Poverty	-0.11	0.03	-4	-0.49	0.06	-8	-	-	-	-	-	-	-0.32	0.07	-5
Random Effect (z)															
CPUMA mean, $u_{0j}$	0.01	0.00	21	0.01	0.00	20	0.01	0.00	14	0.01	0.00	11	0.01	0.00	19
Level-1 effect, $r_{ij}$	15.47	0.01	1,313	13.79	0.02	749	16.24	0.05	324	18.40	0.10	183	14.57	0.02	612
R-Square (OLS)	0.2214			0.1880			0.1804			0.1511			0.1437		
Variable	Professional Services Industry - Other Occupations			Other Service Occupations			Construction Industry - Labor			Installation, Maintenance and Repair Occupations			Production, Trans., and Material Moving Occupations		
	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z	Estimate	SE	t or z
Fixed Effect (t)															
Average CPUMA mean, $\gamma_{00}$	1.96	0.01	148	1.94	0.01	212	2.31	0.01	198	2.14	0.01	179	2.11	0.01	273
Age	0.01	0.00	28	0.00	0.00	47	0.01	0.00	45	0.01	0.00	53	0.01	0.00	69
Female	-0.14	0.00	-39	-0.28	0.00	-126	-0.17	0.01	-18	-0.10	0.01	-13	-0.27	0.00	-123
Hispanic	-0.15	0.01	-25	-0.06	0.00	-18	-0.17	0.01	-30	-0.12	0.01	-21	-0.09	0.00	-27
Black	-0.19	0.01	-33	-0.05	0.00	-15	-0.16	0.01	-24	-0.10	0.01	-17	-0.09	0.00	-28
Foreign Born	-0.15	0.01	-27	-0.16	0.00	-53	-0.15	0.01	-28	-0.16	0.01	-29	-0.16	0.00	-52
Married	0.13	0.00	34	0.11	0.00	48	0.12	0.00	36	0.13	0.00	35	0.12	0.00	58
Number of Children	0.02	0.00	13	0.01	0.00	14	0.03	0.00	21	0.02	0.00	16	0.03	0.00	27
Years in School	0.05	0.00	73	0.05	0.00	117	0.02	0.00	35	0.04	0.00	57	0.04	0.00	94
Incorporated Self-Employed	0.08	0.01	8	-	-	-	0.04	0.01	6	-0.22	0.01	-19	0.02	0.01	2
Unincorporated Self-Employed	-0.17	0.01	-29	-0.30	0.00	-77	-0.20	0.00	-48	-0.56	0.01	-79	-0.19	0.00	-39
CPUMA Population	0.06	0.01	10	0.06	0.01	11	0.05	0.01	7	0.05	0.01	9	0.03	0.00	7
Percent College Graduate	0.58	0.06	10	0.46	0.05	10	0.28	0.06	5	0.19	0.05	4	0.15	0.04	4
Percent pre-1970 Homes	-0.12	0.03	-4	-	-	-	0.11	0.03	4	-	-	-	-	-	-
Percent Poverty	-0.91	0.09	-10	-0.79	0.07	-11	-1.22	0.09	-14	-0.69	0.07	-10	-0.83	0.06	-15
Incorporated*Percent Poverty	0.70	0.18	4	-	-	-	-	-	-	0.43	0.21	2	-	-	-
Unincorporated*Percent Poverty	-	-	-	-0.27	0.07	-4	-	-	-	-0.31	0.13	-2	0.77	0.09	8
Random Effect (z)															
CPUMA mean, $u_{0j}$	0.01	0.00	15	0.01	0.00	18	0.01	0.00	17	0.01	0.00	16	0.01	0.00	18
Level-1 effect, $r_{ij}$	17.49	0.06	275	16.12	0.04	452	16.25	0.05	307	10.81	0.04	263	12.18	0.03	450
R-Square (OLS)	0.1281			0.1391			0.1095			0.1361			0.1278		

Data : Weighted data. All estimates are significant beyond .0001, unless italicized (then .05&gt;=Pr&gt;=.0001).

other sales and office occupations (19 percent) and smallest in other management occupations (5 percent).

Both family variables, married and number of children, are positively associated with earnings. Marriage tends to return slightly proportionately higher earnings for workers in nonprofessional occupations. This return is highest in other occupations in the professional services industry and in installation, maintenance and repair occupations (13 percent) and lowest in other management occupations (7 percent). The largest effect for number of children is found in the managerial occupations of the professional services industry and the smallest is found in other service occupations (1 percent).

Number of years in school is the strongest predictor of the earnings rate in most models and as consistently positive. The schooling effect is nearly twice as strong for the professional occupations (top panel) as it is for the non-professional occupations (bottom panel). Management in the professional services industry benefit the most from an additional year of school, receiving a 10 percent increase in the earnings rates. Construction labor occupations return only 2 percent for each additional year of school, and each of the nonprofessional occupation groups have schooling coefficients below that found in the total civilian labor force model.

The size of the cpuma population and the percent of college graduates are both positive predictors. Earnings are higher in more populated places and in places with a higher quality labor pool—cities. The age of the housing stock is a negative predictor of earnings, when significant, except for individuals in the labor occupations of the construction industry. It seems that for these individuals older homes are good for business.

### *Self-Employment and Places in Poverty*

The measures of self-employment type and poverty rate are interactive in this model. The motivating question here is: Does self-employment, either as incorporated or unincorporated business ownership, alleviate the depressive effect of community poverty on individual earnings? The estimates for the self-employment measures are intercepts for individuals living in areas with average poverty levels (all second level effects are centered around the grand mean). The estimates for the poverty measure are the slopes for the effect of poverty rates on non-self-employed individuals. The estimates for the interaction terms show the poverty slope for incorporated and unincorporated self-employed individuals.

Self-employed individuals who have incorporated their business tend to do better than traditional paid employees in their category (in areas with average rates of poverty). Those who have not do worse without exception. In places with average levels of poverty, unincorporated self-employment costs workers anywhere from 17 percent (other occupations in the professional services industry) to 58 percent (management in professional services) of their earnings compared to their wage and salary earning counterparts. Those who work for their own incorporated businesses do best in ‘other management occupations’ and ‘other sales and office occupations,’ where their earnings rate is 12 percent higher than the average paid employee in the same category. Incorporated status has no effect for workers in management occupations in the professional services industry (professional occupations) or in other service occupations (nonprofessional occupations). The single exception for the business incorporation effect is found in installation, maintenance, and repair occupations, where both types of self-

employed workers do worse. Many of the individuals in this category are automobile mechanics or auto body workers.

Higher poverty rates are devastating for traditional wage and salary workers' earnings in any taxonomic category. For each percentage point increase above the cpuma mean, workers earn anywhere from 58 percent less (professional services—management) to 122 percent less (construction—labor) than individuals in communities with average poverty rates. The coefficient for the full model tells that the average worker's earnings rate declines seventy percent for each percentage point increase in above-average poverty. Higher poverty returns mixed results for the self-employed.

When located in places with above average poverty, the earnings rate of the incorporated self-employed increases relative to their wage and salary earning peers. Again, this is not so for the unincorporated self-employed with but a few exceptions. In the full model, average incorporated self-employed workers' earnings rates increase 44 percent above their peers' when the poverty rate is one percent above the mean.<sup>36</sup> The unincorporated lose eleven percent relative to the same peer group. The other nine models reveal that many (but not all) occupational subsets follow this trend.

The self-employment and poverty rate interactions are charted in Figures 5.3 and 5.4. The interactions reveal that some self-employed workers do better in higher poverty conditions. The effects one would expect from living in more urban places compared to more rural places should be controlled through the variables measuring population size, percent with a college degree, and age of the housing stock. The slope of the poverty effect for non-self-employed workers is negative in every model. For incorporated self-employed workers, additional increases in the poverty rate of their cpuma either do not

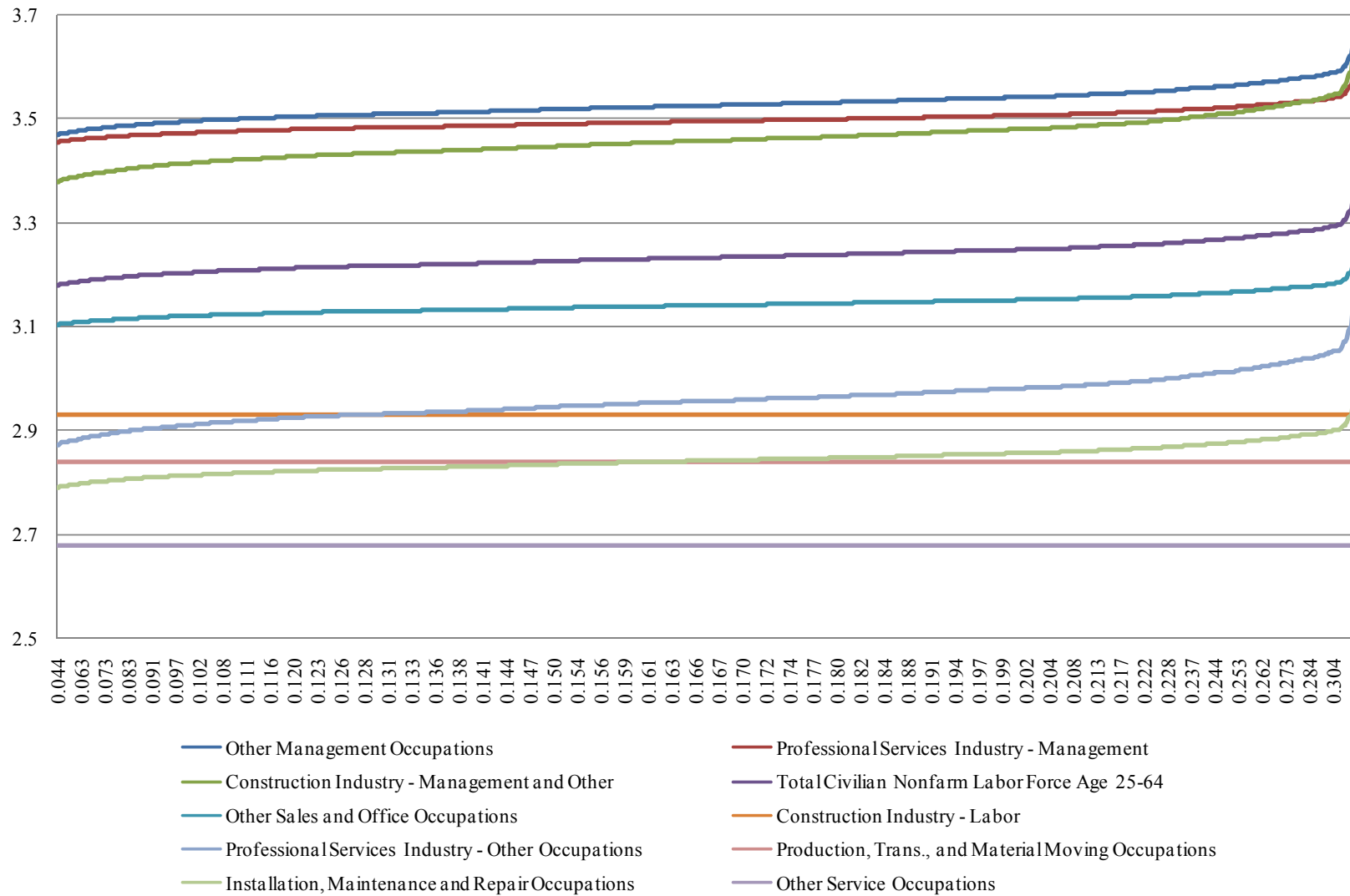


Figure 5.3. Effect of Poverty Rates on Earnings Rates for the Incorporated Self-Employed

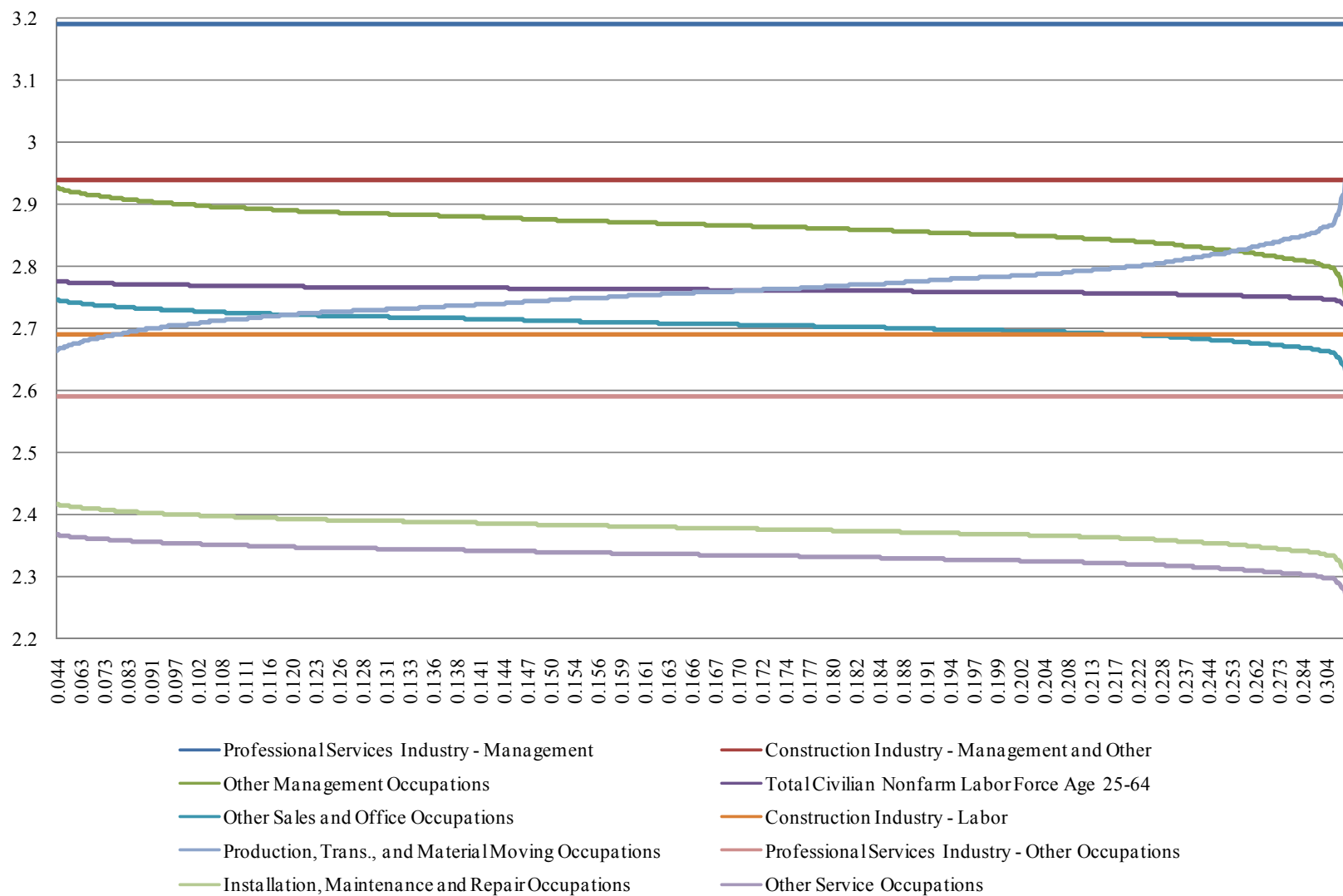


Figure 5.4. Effect of Poverty Rates on Earnings Rates for the Unincorporated Self-Employed

affect their earnings rate (construction—labor; production and transportation occupations; and other service occupations) or increase their earnings rate (all other categories). The incorporated self-employed, regardless of occupational category, seem to be immune to the depressive effects of community poverty on earnings.

The picture for the unincorporated self-employed is different. Most of these workers do not do better in higher poverty areas. In many occupation categories where their incorporated counterparts seem to thrive, the earnings rate for the unincorporated self-employed is either stagnant or turns negative with higher community poverty. However, many of these workers are still better off than their wage and salary earning peers, whose poverty slopes are consistently negative and larger than the interaction slopes. Only one category does better in areas with higher poverty: production and transportation occupations. Many of these workers are truck drivers and production workers.

Five of the occupation categories do worse in areas with higher poverty, while none of the incorporated self-employed do worse. One of these categories is the total civilian nonfarm labor force age 25-64. When analyzed as a single group, the unincorporated seem to do worse in places with higher poverty. In truth it seems that only three categories contribute to this: other management occupations, other sales and office occupations, and other service occupations. These categories are three of the four largest and respectively include 19, 18, and 12 percent of the self-employed (incorporated and unincorporated together). The incorporation rate in other service occupations is 15 percent, the lowest in the taxonomy. The other two are around 50 percent.

### *Discussion*

This chapter looks at self-employed individuals in the context of their communities. The analysis uses the taxonomy of self-employment occupations from chapter three and 933 geographic units called ‘combined PUMAs’ created and described above in order to address effects on these individuals’ earnings. Community effects include the size of the population, the age of the housing stock, the percent with a college degree, and the percent living in poverty. These effects generally perform as expected with the exception that places with aging housing stocks return slightly higher wages for construction laborers.

Business incorporation is shown here to be very important for the earnings of the self-employed across all industries and occupations. In chapter three, models show that the incorporated self-employed earn more than the unincorporated self-employed. In this chapter, models show that owners of incorporated businesses perform better than owners of unincorporated business in high poverty conditions. The unincorporated self-employed in turn perform better than their wage and salary earning peers in about half of the categories of the taxonomy.



## CHAPTER SIX

### Discussion and Conclusion

Challenges to a fuller understanding of self-employment in the United States include the ability to generalize the results of research studies. The self-employed represent about ten percent of the American workforce and are often referred to as small business owners or entrepreneurs. Many of the self-employed are dentists, lawyers, construction managers, real estate brokers, landscapers, hairdressers, carpenters, auto mechanics and truck drivers. They are not all owners of incorporated businesses—in fact, most are not. Most are nonemployers. And characteristics that researchers use routinely to predict the earnings of the majority of Americans do less well for the self-employed. This research begins to close some of the gaps in this knowledge.

#### *First Analysis*

In chapter three I develop a taxonomy of self-employment occupations that sorts individuals who do similar kinds of work into groups. The self-employed have traditionally been analyzed as a single group or separated into professional and nonprofessional groups for analysis. The taxonomy has nine categories and is used to test hypotheses about the earnings rates of self-employed individuals. The taxonomy shows that while traditional earnings models that incorporate human capital, demographic and family variables can work well for traditional workers, they are not as predictive of the earnings rates of the self-employed.

The chapter three models borrow from past efforts to explain individual earnings, yet are not adequately specified for the self-employed. They do, however, reveal variation within the taxonomy. The professional self-employed benefit from more education, but returns vary among the four taxonomy categories in this group. Education benefits are less consistent in the nonprofessional groups, helping service workers almost as much as professionals but trailing off after some college for labor occupations. Marriage returns on earnings are somewhat higher for the nonprofessional groups (although helping service occupations the least overall), but larger family sizes (in terms of the number of children) are only consistently helpful to the professional taxonomy groups.

The most important finding is the effect of business incorporation. Often the strongest predictor of the individual earnings rate and always positive, this characteristic of the self-employed has been overlooked in research on the self-employed. In each of nine models here, it is a more effective predictor than the person's age.

### *Second Analysis*

Chapter four investigates whether religion is a source of job satisfaction for the self-employed. In past research, the self-employed are found to be more satisfied with their work lives than their wage and salary earning counterparts because they have more autonomy at their job (Benz and Frey 2008). This trend is shown to be stronger among nonprofessionals because many professionals have autonomy in their work regardless of self-employment status (Hundley 2001). Concerning religion, having a religious affiliation has been shown to impact worker satisfaction (Martinson and Wilkening 1983), as has working with others in the workplace who share their religious affiliation

(Cunningham 2010). Little or no research, however, investigates the relationship between job satisfaction and self-employment using any characteristics of religiosity as predictors.

In the chapter four analysis, two out of four categories of self-employed workers are shown to find greater satisfaction in their work than their wage and salary earning peers, supporting some previous research. One contains professional occupations such as managers, lawyers and physicians. The other contains nonprofessional occupations such as carpenters, construction supervisors, and painters. More frequent church service attendance in the first of these groups also increases work satisfaction, and at a greater rate for the self-employed. Self-employed managers, lawyers, and physicians who attend church frequently are the happiest workers in the labor force.

### *Third Analysis*

In chapter five, I modify a set of geographic units (public use microdata areas) from the Census Bureau and analyze nested individual level data. The 933 areas cover the United States and are mostly counties and sometimes groups of counties. Community attributes such as population size, the percentage of adults with a college degree, the age of the housing stock, and the poverty rate are shown to affect the earnings of workers. Also unlike the chapter three analysis, the population under study is the total civilian nonfarm labor force age 25-64, not just the self-employed. This allows for comparisons between self- and non-self-employed individuals within each group of the taxonomy. Findings indicate that business incorporation tends to increase the earnings rate of the self-employed compared to their peers, and the lack of incorporation places earnings below their peers', regardless of professional status or taxonomy group.

The chapter five analyses also include interactions between the local poverty rate and the self-employment types (incorporated and unincorporated). The self-employed are shown to fare relatively well in areas with higher poverty rates—their earnings do not decline as quickly as those of their counterparts, and the earnings of many groups increase. The clearest winners are the self-employed who work in their own incorporated businesses; the results for the unincorporated self-employed are mixed.

### *Taxonomy*

Part of this research is exploratory. One of the purposes of the taxonomy is to divide self-employed workers into meaningful groups beyond the professional/nonprofessional dichotomy used in much of the literature. In each chapter, the taxonomy demonstrates that substantial variation within the professional occupations and the nonprofessional occupations exists. This section summarizes the important findings for each category and discusses the utility of the taxonomy in future research.

### *Other Management Occupations*

This largest category (twenty percent of the total) contains almost one million self-employed individuals. It includes a fairly wide variety of occupations, including physicians and dentists, ‘miscellaneous’ managers and executives, but also artists and musicians. Nearly half have incorporated their business. Incorporation benefits these workers the most compared to their nonincorporated peers, with earnings rates that are 42 percent higher. The category has the third highest concentration of whites, the highest earnings gap for females, and the largest share of foreign-born workers (who do not earn significantly more or less than their native peers). Gains in income attributed to

educational attainment are the largest and most consistent in this category, and the statistical model explains more variance in earnings here than for any other group.

The job satisfaction analysis combines some of the taxonomy categories due to size limitations of the GSS dataset. The group labeled ‘managerial and professional specialty occupations’ includes this group and the following two taxonomy groups in this section (professional services managers and construction managers). Self-employed individuals in this category are more likely to be highly satisfied with their job than their paid employee counterparts (65 percent vs. 54 percent). That makes the self-employed in this group the most satisfied overall. They are also in the occupation group with the smallest satisfaction gap between self-employed and non-self-employed individuals. And while they attend church somewhat less frequently, the gains in job satisfaction attributed to their frequency of church attendance increase at a faster rate than that of their peers. High church attenders that are self-employed in these three managerial groups can be nearly twice as satisfied with their jobs, and some of this satisfaction is derived from their religion. The strongest relationship in the model (according to chi-square statistics), however, is the perceived security of the respondent’s job.

#### *Professional Services Industry – Management*

Over half a million self-employed workers are in management occupations in the professional services industry. The largest occupation groups in this category are lawyers and management analysts. It also includes architects, accountants and veterinarians. These are on average the oldest (almost two thirds are over 45 years), most likely to be white (86 percent), and best educated (40 percent with post-graduate degree) among the self-employed. As for the category above, education is the driving force behind their

earnings, and while incorporation does increase their earnings rate, it does so by only about half as much.

#### *Construction Industry – Management and Other*

Including just under a quarter of a million individuals in total, construction managers make up the bulk of this category (almost 60 percent). Other top occupations include ‘miscellaneous’ managers and chief executives in the industry. Almost half are under age 45, making this the youngest of the professional occupation categories. They are also the most likely to be male and least likely to be college graduates. Business incorporation increases one’s earnings rate here as much as it does for the doctors and dentists above, and education effects are the lowest of all the professional occupation groups.

#### *Other Sales and Office Occupations*

The last of the professional occupation groups, this second-largest category (850,000) is composed of workers in retail sales and real estate brokerage. It has the highest concentration of foreign-born in the professional occupations, the highest likelihood of having worked 50-52 weeks in the past year, and the lowest concentration of individuals earning over 50 thousand dollars per year. This category of self-employed workers has some of the largest earnings gaps in the professional occupation groups. Earnings gaps for females and African-Americans are high and the gaps for Hispanics, other racial and ethnic minorities, and the foreign born are the highest of the professional groups. Age does not predict higher earnings quite as much as it does for the other professional categories, and business incorporation is the strongest effect in the model.

This taxonomy group stands alone in the job satisfaction analysis as ‘technical, sales, and administrative support occupations.’ T-test results indicate that the self-employed in this group are more satisfied with their jobs, but in multivariate analysis this relationship disappears. More frequent church attendance does increase job satisfaction in the category, but not in different fashions for the self- and non-self-employed. Job security is very important for this group, too. Those who believe they are less likely to lose their job report higher satisfaction.

#### *Professional Services – Other*

These individuals work in nonprofessional occupations in an industry that provides services to organizations of professional workers. Many of them are maintenance workers, janitors, and landscapers (about 8 percent of the self-employed workforce). In some ways this is the ‘other side’ of the professional services industry. Their poverty rate is ten percentage points higher than it is for the managerial positions in this industry and is the second highest of the nine taxonomy categories. Rates of less-than-high-school educational attainment are also higher here than in most categories. This category has the largest share of Hispanic workers.

Of the five nonprofessional occupation groups, the traditional earnings models in chapter three predict theirs best, but not well. Returns on education, or the lack of education, are consistent, as are the effects of the family variables (marital status and number of children). Females, all racial and ethnic minorities, and the foreign born earn statistically significantly less than white males in this group, the only nonprofessional category with this broad trend.

The job satisfaction analysis combines this group and the following group into ‘service occupations.’ T-tests show that the self-employed in this group are more satisfied with their work, but again this relationship does not hold up in multivariate analysis. This group has the largest church attendance gap with the self-employed reporting on average almost one full scale unit higher frequency. In the regression model, neither church attendance nor self-employment predicts higher satisfaction for these workers. This group starts out with the lowest intercept, and working more hours per week, being female, and being married predict higher satisfaction.

#### *Other Service Occupations*

The majority of workers in this category of the taxonomy are child care workers, hairdressers, and maids. These individuals are overwhelmingly female: at 82 percent, this concentration is double that of the next-most-female group (other sales and office occupations). Still, the earnings gap for females in this group is the second highest of the nonprofessional occupations, just behind the group that includes mostly truck drivers and is 3 percent female. Earnings gains attributed to educational attainment are similar to those of the group just above—the only two groups of nonprofessional occupations with consistent returns to educational investments. The incorporation rate is the lowest overall and nearly half of what it is for other nonprofessionals.

#### *Construction Industry – Labor*

Home to carpenters, construction laborers, and a variety of installers (drywall, carpet, etc.), this is the largest of the nonprofessional occupation groups in the taxonomy, consisting of over 600,000 self-employed individuals across the country. Like the other



nonprofessional taxonomy groups, and unlike all of the professional taxonomy groups, the concentration of Hispanic workers is in the double digits. The concentration of foreign born workers is the second lowest of the nonprofessional groups but higher than each of the professional groups. Education levels in this group are the lowest overall. Only two-thirds work 50-52 weeks out of the year, but average hours worked per week matches that of professional categories. A quarter of these businesses are incorporated—not particularly high for the nonprofessional self-employed and nearly half the rate of the professional groups. Their earnings rate improves with age and business incorporation.

The job satisfaction analysis combines the remaining three taxonomy groups into ‘precision production, craft, and repair occupations and operators, fabricators, and laborers.’ The satisfaction gap between the self-employed and non-self-employed is the highest of the four groups created for this analysis, but church attendance differences are not statistically significant. The regression model has the best fit for this group, but still does not explain much of the variation in satisfaction. The self-employed are almost twice as likely to report being very satisfied with their work. Only individuals in this group and the professional group see satisfaction gains with self-employment. Those who are sure about the security of their job (or their self-employment) are more satisfied. More education has a negative effect on satisfaction in these nonprofessional occupations and income for the first time has a positive effect. The higher incomes overall of the professionals probably erases this effect in the first models.

### *Installation, Maintenance and Repair Occupations*

This is the smallest category in the taxonomy and is half the size of the next-smallest. They are mostly automotive service technicians and body repairers, but are also

computer and office machine repairers and other maintenance workers. Their earnings rates improve with high school graduation and some college, but not much beyond that. Business incorporation is the strongest effect within their model, and the predicted earnings rate gain that results from it is the highest across all of the nonprofessional models.

### *Production, Transportation, and Material Moving Occupations*

Truck drivers make up the largest share of this taxonomy group (about 115,000 out of 290,000 self-employed workers). They are followed by taxi drivers and production supervisors. This taxonomy group is the second smallest and has the highest rate of incorporation among the nonprofessional groups. They are the most likely to have made over 50 thousand dollars in the past year and the least likely to be in poverty of the nonprofessionals. Their average hours worked per week is the highest overall. This group has the worst-performing earnings model: traditional predictors of earnings explain just three percent of the variation in this group. Of the significant predictors, female and business incorporation have the strongest effects.

### *Self-Employment and the Independent Middle Class*

The final analysis compares the self-employed in each taxonomy group to their wage and salary earning peers. In the model that includes the total civilian nonfarm labor force age 24-65, the self-employed earn more than their counterparts when their business is incorporated and less when it is not. Among the groups in the taxonomy, the unincorporated self-employed always do worse than their peers. However, the self-employed tend to do better when incorporated in five out of nine taxonomy groups. In

two of the nonprofessional categories it makes no difference and in two others the self-employed actually do worse. One of these is a professional group and the other is a nonprofessional group.

The analysis in this chapter also looks at how higher than average poverty rates affect the earnings of self- and non-self-employed workers. One aim of the chapter is to identify members of the independent middle class—those who are able to control their surplus value (by purchasing their own labor through self-employment) and weather economic conditions that originate outside their locality (global economic forces). The unincorporated self-employed tend to do worse than their peers with one exception: truck drivers and production workers (production, transportation, and material moving occupations). The unincorporated self-employed in groups that include retail occupations and those in service occupations such as hairdressers and barbers do worse than their peers, and this trend intensifies in areas with higher than average poverty rates. Though many of these workers may have more autonomy in their work lives than their peers, they do not appear to be particularly independent.

Many of the incorporated self-employed tend to do better than their peers in terms of earnings rates. This relationship is more pronounced in the professional occupation groups. Individuals in the taxonomy group with physicians and dentists and the group with retail sales and real estate brokers do the best compared to their peers. Workers in their own automotive service and body repair businesses do worse than their peers, even when their business is incorporated. In higher poverty areas, many of the incorporated self-employed do better than their peers and none do worse.

The job satisfaction analysis might also inform a discussion of the independent middle class. Just under two-thirds of the self-employed are more satisfied with their work than their peers, but they are not all in professional occupations. 42 percent are in a broad management category and 22 percent are in a broad labor category. When these results are coupled with the results from the analyses using the taxonomy, two groups stand out as candidates for the independent middle class.

Among the professional occupations, the taxonomy group with physicians, dentists, ‘miscellaneous’ managers and executives has the highest average job satisfaction (which also increases with church attendance), the largest wage gap between them and their peers, and performs better than their peers when in higher poverty areas. Among the nonprofessionals, the taxonomy group with truck drivers and production workers also has higher job satisfaction than their peers (though unaffected by church attendance) and higher earnings rates in areas with higher than average poverty. The two groups are of interest not because they are somehow representative of professional/nonprofessional status differences, but because together they seem to represent a different kind of self-employment. These are the only two groups of self-employed individuals with a combination of higher satisfaction and higher earnings than their peers.

### *Business Incorporation*

Chapter three uncovers a strong relationship between business incorporation and individual earnings for the self-employed across a broad range of occupational groups, both professional and nonprofessional. Chapter five shows that incorporation status conditions how well the self-employed do in areas with higher than average poverty—the incorporated tend to do better than their wage and salary earning counterparts while the

unincorporated tend to do worse. This begs the question: why do some self-employed incorporate while others do not?

One possibility is the influence of family background on the entrance into self-employment. Both greater family wealth and having a self-employed parent increase the likelihood that one will become self-employed (Dunn and Holtz-Eakin 2000; Hout and Rosen 2000). Parents may transmit special knowledge to their children that not only makes them more likely to become self-employed but makes them more likely to incorporate their business once they do. This avenue of research deserves further study.

### *Measurement*

The taxonomy appears to be useful for uncovering variation that is smoothed over when the self-employed are aggregated into professional and nonprofessional groups. Both earnings and satisfaction vary within those designations. However, the nine categories are themselves somewhat cumbersome. Artists and musicians are coupled with physicians and dentists, a result of the way ‘managerial’ occupations are classified by the Census Bureau. Surely this is not a resource that should be used by most researchers and policymakers, but it is a step in the right direction.

The American Community Survey can accommodate the need for more, narrower groups in order to fine tune these analyses. The two groups identified above warrant more attention. Additional measures that are necessary for a fuller understanding include employment status and length of self-employment. A more complete picture of the self-employed requires knowing the interplay between the earnings and satisfaction outcomes and these two characteristics. Including variables for state and local business regulations, including the procedures for incorporation, also seems likely to contribute to the

understanding of the self-employed's earnings outcomes. Other, longitudinal data resources would also have been enormously helpful.

The combined public use microdata area geographies are also imperfect. The way the data are collected and organized prevent the use of more traditional geographic units, like counties. The combined areas are an attempt to weaken the influence of the sometimes bizarre orientation of the ACS public use microdata areas. In some places this effort might not have improved measurement at all. The state of Nevada, for example, is almost entirely covered by just one area.

### *Theoretical Contribution*

Some of this research deals with theoretical issues pertaining to the study of the petty bourgeoisie and the independent middle class. This research finds that not only are the earnings profiles of the self-employed quite different from those of their employed peers (they are harder to predict in a model), but more importantly, some of the self-employed (mostly those who have incorporated their business) are able to control their economic fate better than their wage and salary peers. Many of those who do better than their peers do so even in higher poverty environments that depress the earnings of everyone else around them. Given these findings, I conclude that 1) the self-employed are by no means a homogenous group of individuals who are engaged in similar kinds of work, 2) the success of those who best their peers is usually not the result of human capital differences, and 3) the best explanation for these differences must therefore lie in the social networks built by these individuals to improve their businesses over time.

### *Future Research*

The results from this study can inform future modeling of community-level outcomes. The concentration of members of certain taxonomy groups might influence community characteristics that have been of interest to researchers in the Civic Community perspective.

## NOTES

<sup>1</sup> U.S. Census Bureau, Statistical Abstract of the United States: 2010 (129th Edition) Washington, DC, 2009; <<http://www.census.gov/statab/www/>>.

<sup>2</sup> OECD Factbook 2009. Does not include owners of incorporated businesses.

<sup>3</sup> County Business Patterns 2006

<sup>4</sup> Of course, not all self-employment is taken on by choice. Some workers have no choice in their self-employment decision, and still others are working in occupations that are dominated by self-employment.

<sup>5</sup> The Current Population Survey began asking the unincorporated self-employed if they had any paid employees, and how many, in 1995.

<sup>6</sup> The Survey of Business Owners is conducted every five years as part of the Economic Census. Estimates are based on a sample of over 2.3 million businesses.

<sup>7</sup> Receipts include gross receipts, sales, commissions, and income from trades and businesses, as reported on annual business income tax returns.

<sup>8</sup> In Chapter 2: Sociological categories of economic action, section 16.

<sup>9</sup> In Chapter 4: Status groups and classes, sections 2-4.

<sup>10</sup> In Chapter 20: Historical material on merchant's capital, pg 452-453.

<sup>11</sup> In Chapter 5: Economy in the use of constant capital, pg 176.

<sup>12</sup> In Chapter 10: The equalization of the general rate of profit through competition, pg 277.

<sup>13</sup> 2008 ACS Subject Definitions, US Census Bureau. All other income includes unemployment compensation, Department of Veterans Affairs (VA) payments, alimony and child support, contributions received periodically from people not living in the household, military family allotments, and other kinds of periodic income other than earnings.

<sup>14</sup> Business entity registration procedures vary by state. For more information see [www.business.gov](http://www.business.gov).



<sup>15</sup> The boundaries of these regions are each within a single state, but other meaningful geographic areas such as municipalities and counties are sometimes combined or split apart. Each state was given the task of drawing their own PUMAs with the guideline that each has a minimum population threshold of 100,000 persons (for the purpose of confidentiality).

<sup>16</sup> Model fits improve when weeks and hours worked are entered as independent variables (not shown), but these effects dominate the models. Model fits for the paid employee population (not shown) range from 24 to 8 percent.

<sup>17</sup> Some of the variation in earnings may be attributed to differences in incorporation rates: Of all the self-employed who have incorporated their businesses, only 29 percent are female.

<sup>18</sup> N.e.c. - Not elsewhere classified.

<sup>19</sup> The probability that the null hypothesis is true (t-value  $\geq 1.96$ ) is .0503.

<sup>20</sup> Responses (1-4) include 'Very likely,' 'Fairly likely,' 'Not too likely,' and 'Not at all likely.'

<sup>21</sup> Responses (1-3) include 'Very easy,' 'Somewhat easy,' and 'Not easy at all.'

<sup>22</sup> Self-Employed: Estimate = 0.4531 (the odds ratio 1.57 is calculated:  $\exp(0.4531)$ ) Standard Error = 0.1631 Wald Chi-Square = 7.7170 Pr>Chisq = 0.0055. Church Attendance: Estimate = 0.0616 Standard Error = 0.0207 Wald Chi-Square = 8.8848 Pr>Chisq = 0.0029.

All other coefficients are nearly the same with no change in significance or direction.

<sup>23</sup> The intercepts are different because mean perceived job loss likelihood is different (3.72 and 3.58).

<sup>24</sup> Part-time is defined as working between 1 and 35 hours per week.

<sup>25</sup> Texas counties include Cameron and Hidalgo and are in separate cpumas. New Mexico counties include Catron, Grant, Hidalgo, Luna, Sierra, Socorro, and Torrance and are in the same cpuma.

<sup>26</sup> Oklahoma counties: Creek, Hughes, Okfuskee, Osage, Pawnee, Payne, Rogers, Seminole, Tulsa, and Wagoner. Florida counties: Duval and Nassau.

<sup>27</sup> Florida counties: DeSoto, Glades, Hardee, Hendry, and Highlands.

<sup>28</sup> Florida counties: Dixie, Gilchrist, Hamilton, Lafayette, Levy, and Suwannee. North Carolina counties: Duplin and Sampson.

<sup>29</sup> Mississippi counties: Carroll, Humphreys, Leflore, Sunflower, and Tallahatchie; Bolivar and Washington. Texas counties: Cameron and Hidalgo. Kentucky counties: Bell, Harlan, Knox, and Whitley.

<sup>30</sup> Wyoming counties: Big Horn, Campbell, Converse, Crook, Goshen, Hot Springs, Johnson, Niobrara, Platte, Sheridan, Washakie, and Weston. South Dakota counties: Beadle, Brown, Campbell, Day, Edmunds, Faulk, Hand, Jerauld, McPherson, Marshall, Roberts, Spink, and Walworth. Colorado counties: Eagle, Grand, Gunnison, Hinsdale, Lake, Mineral, Ouray, Pitkin, and Summit.

<sup>31</sup> California counties: Plumas, Sierra, and Nevada. Montana counties: Flathead, Lake, Lincoln, and Sanders. Massachusetts counties: Barnstable, Dukes, and Nantucket. Colorado counties: Chaffee, Custer, Fremont, Park, and Teller; Archuleta, Delta, Dolores, La Plata, Montezuma, Montrose, San Juan, and San Miguel.

<sup>32</sup> West Virginia counties: Brooke, Hancock, Marshall, Ohio, and Wetzel; McDowell, Mercer, and Wyoming. Indiana counties: Clay, Vermillion, and Vigo; Howard and Tipton; Clark and Scott. Louisiana parishes: St. Charles, St. James, and St. John the Baptist.

<sup>33</sup> Oklahoma counties: Alfalfa, Beaver, Blaine, Cimarron, Dewey, Ellis, Grant, Harper, Kingfisher, Major, Texas, Woods, and Woodward.

<sup>34</sup> The dataset contains both first and second level measures. The second level measures were constructed from individual observations in the American Community Survey data.

<sup>35</sup> Correlation coefficients between poverty rates and total, incorporated, and unincorporated self-employment rates are -.091, -.367, and .109.

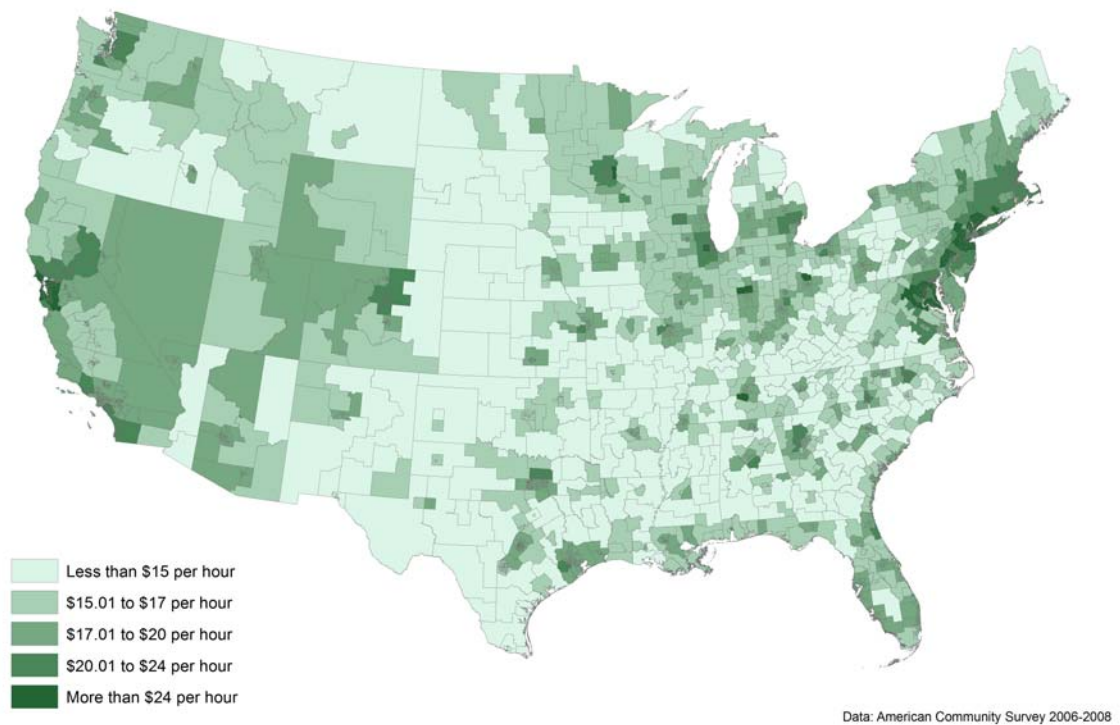
<sup>36</sup> Mean poverty for the 933 cpumas is almost 17 percent. The maximum is 42 percent.

## APPENDICES

## APPENDIX A

### Maps of CPUMA Characteristics

The following maps correspond to Table 5.1 and to the discussion of CPUMA descriptive statistics in chapter five. Characteristics mapped below include earnings, population size, age of housing stock, rentalship, mobility, education, poverty, unemployment, self-employment, nativity, race, and ethnicity.



*Figure A.1. CPUMA Mean Earnings Rate for Nonfarm Civilian Labor Force Age 25-64*

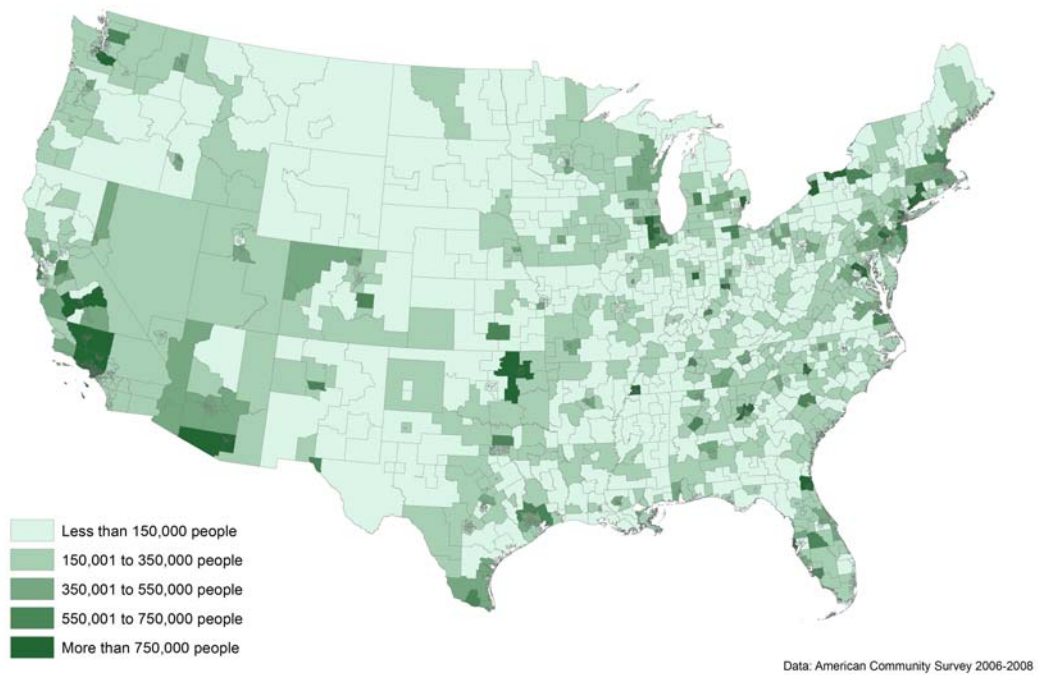


Figure A.2. CPUMA Total Population

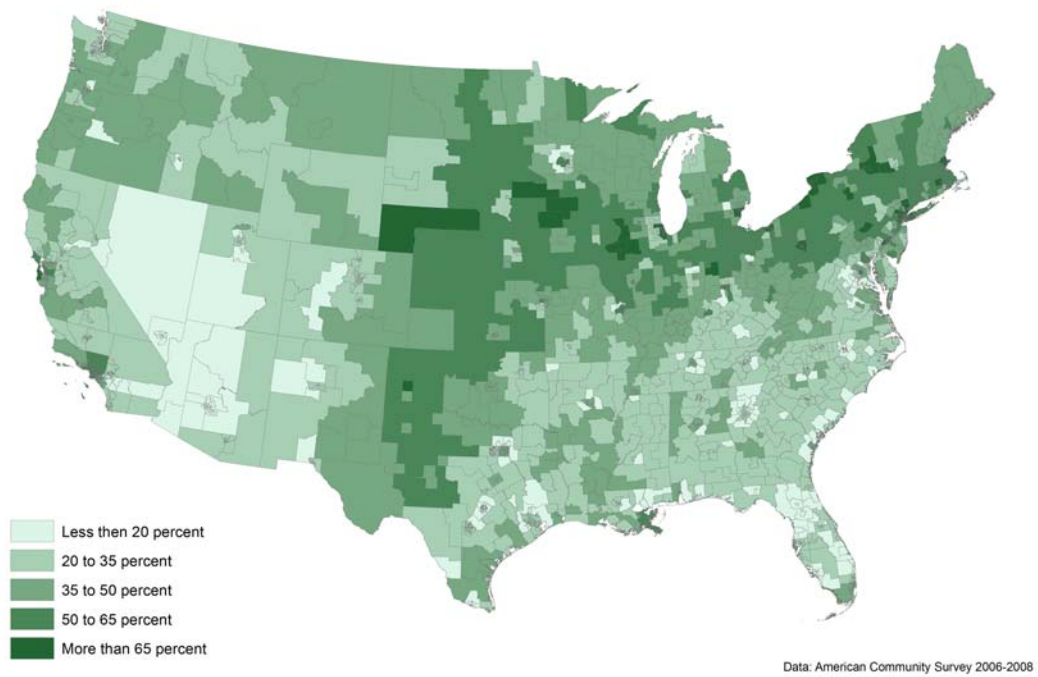


Figure A.3. CPUMA Percent of All Persons Living in Houses Built Before 1970

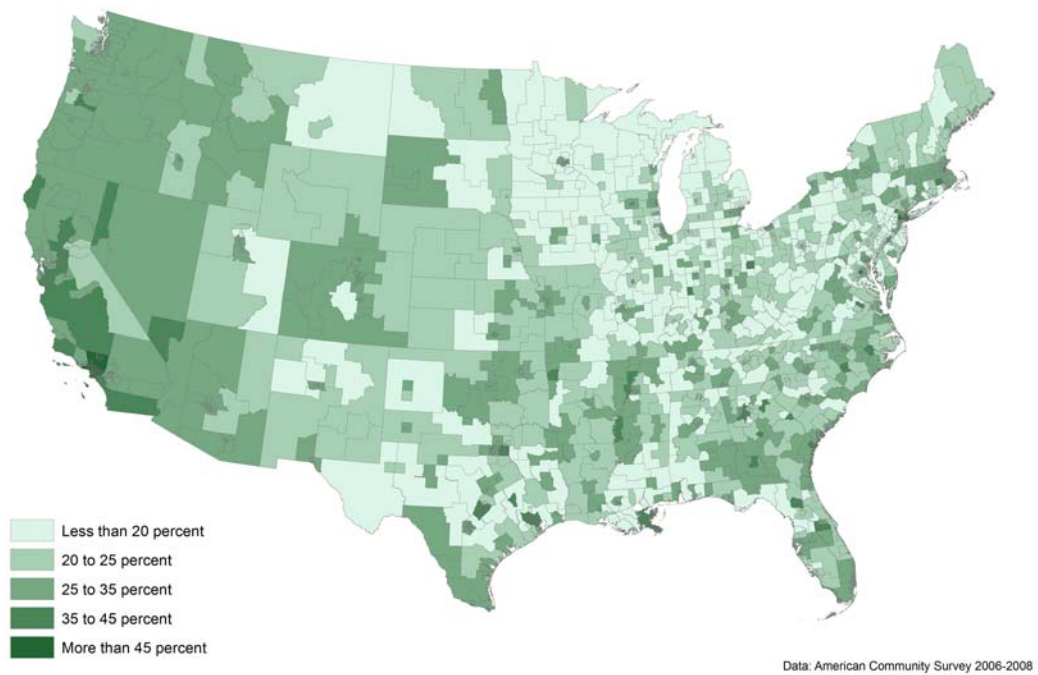


Figure A.4. CPUMA Percent Rental Households, All Persons

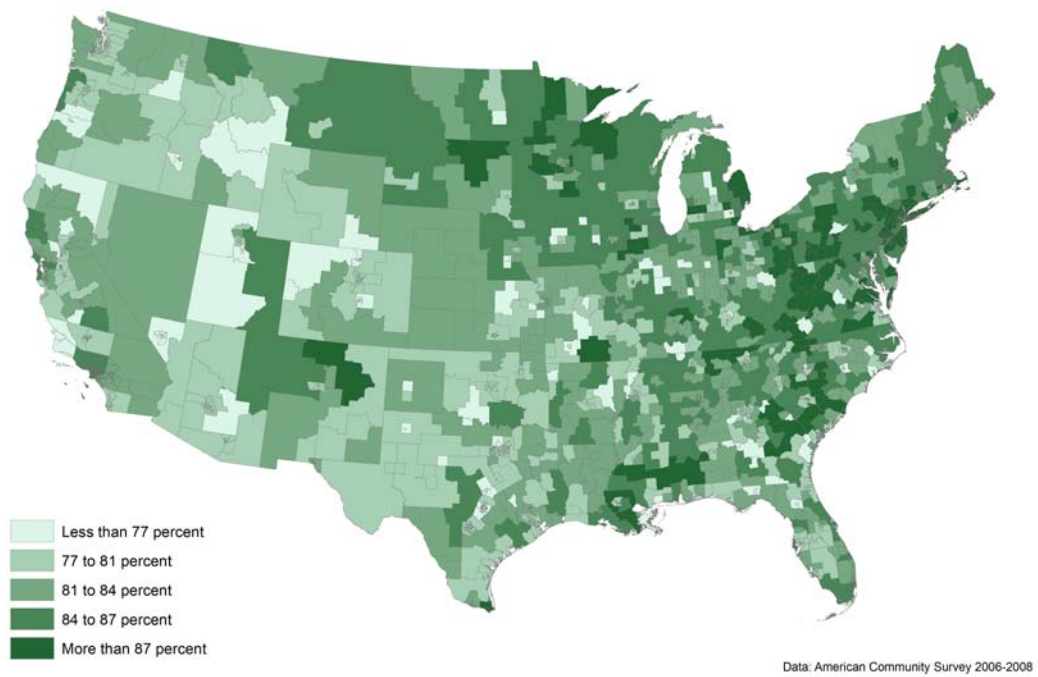
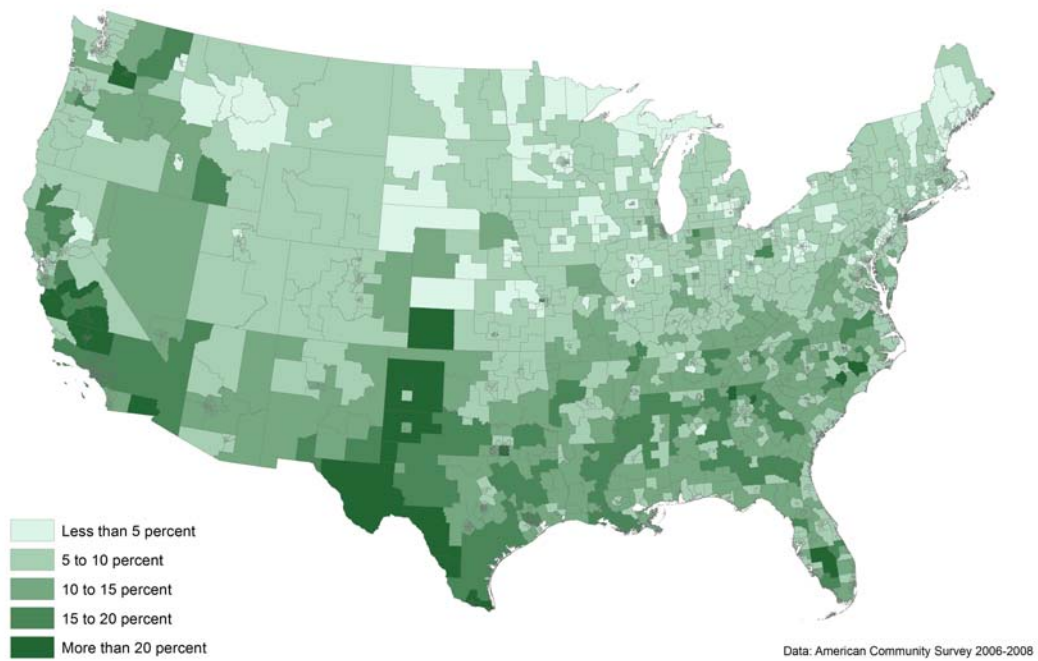
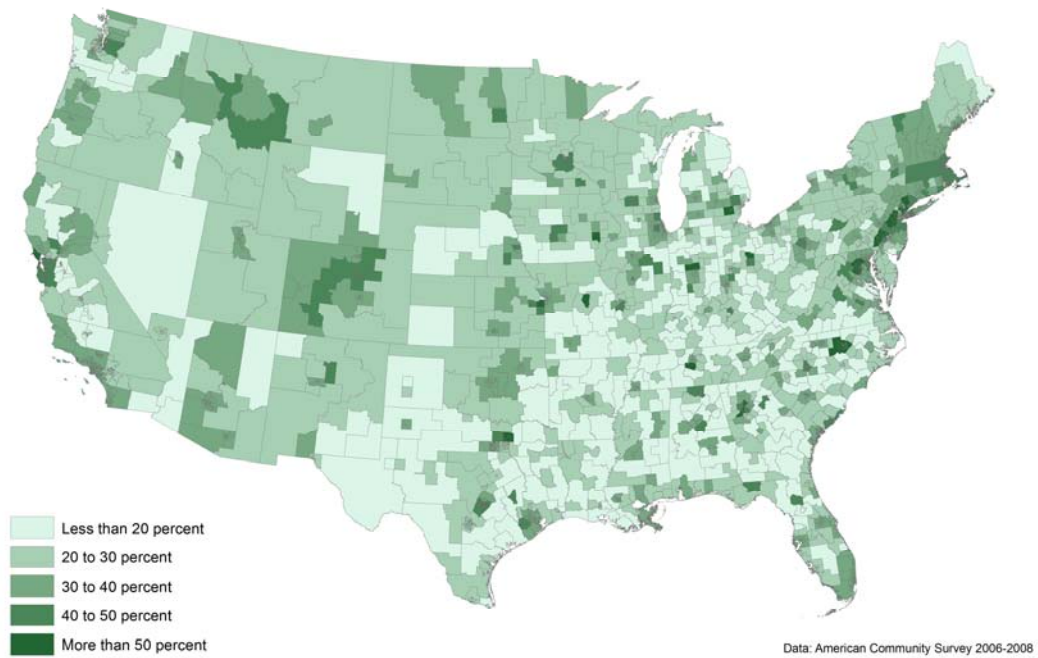


Figure A.5. CPUMA Percent Living in Same House as Last Year, All Persons





*Figure A.6. CPUMA Percent of Nonfarm Civilian Labor Force Age 25-64 with Less than a High School Education*



*Figure A.7. CPUMA Percent of Nonfarm Civilian Labor Force Age 25-64 with a Bachelor's or Post-Graduate Degree*

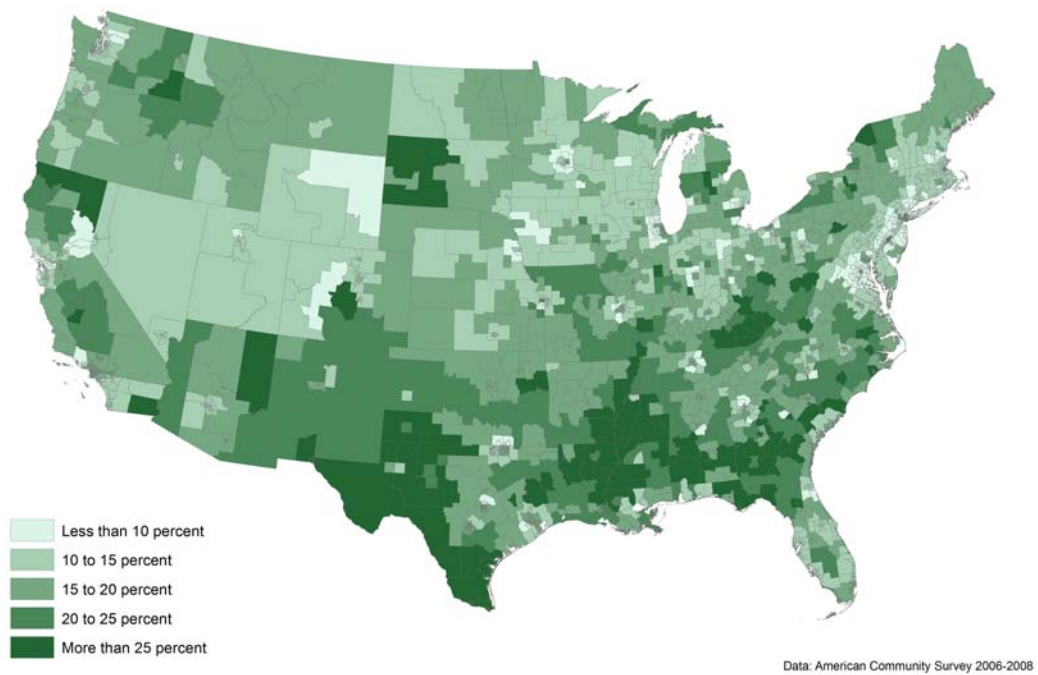


Figure A.8. CPUMA Percent of All Persons Living in Poverty

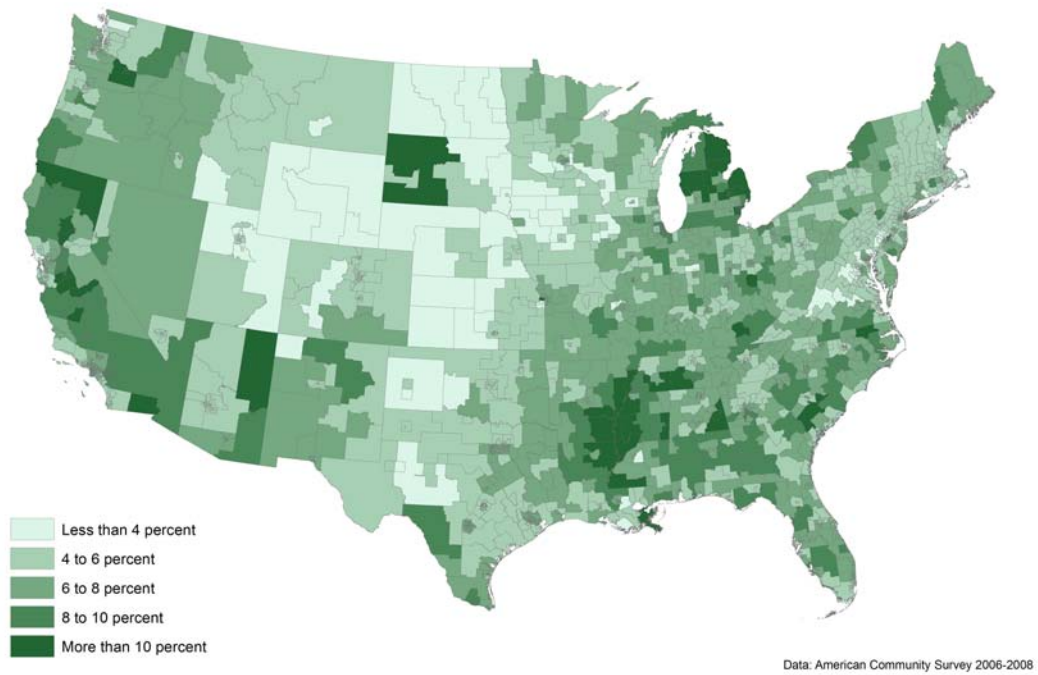


Figure A.9. CPUMA Percent Unemployment as share of Civilian Labor Force Age 16+



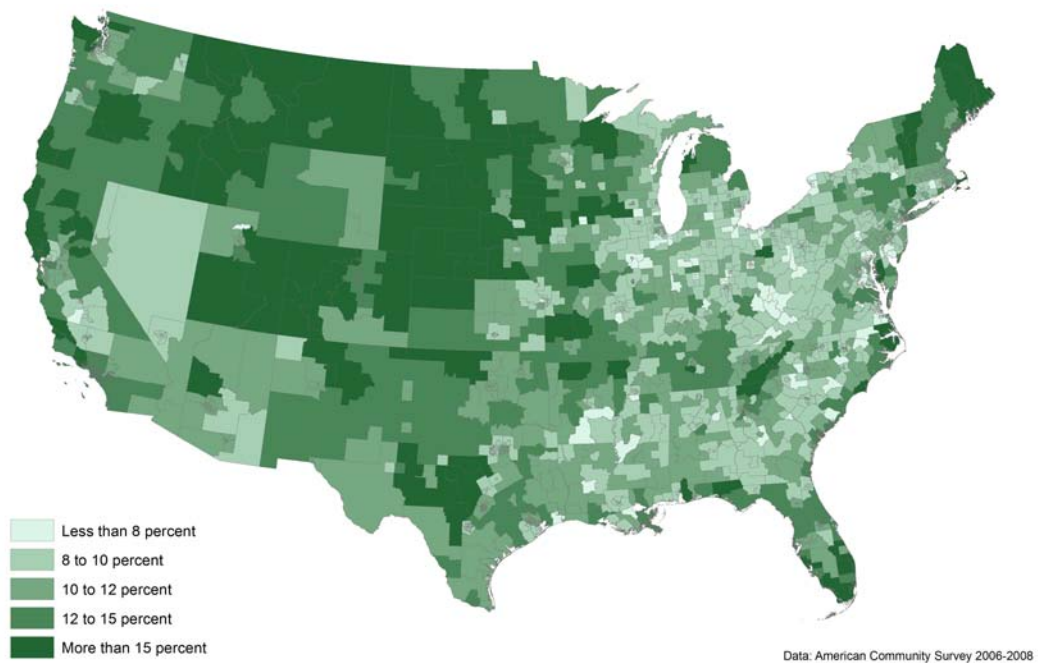


Figure A.10. CPUMA Percent Self-Employment as Share of Nonfarm Civilian Labor Force Age 25-64

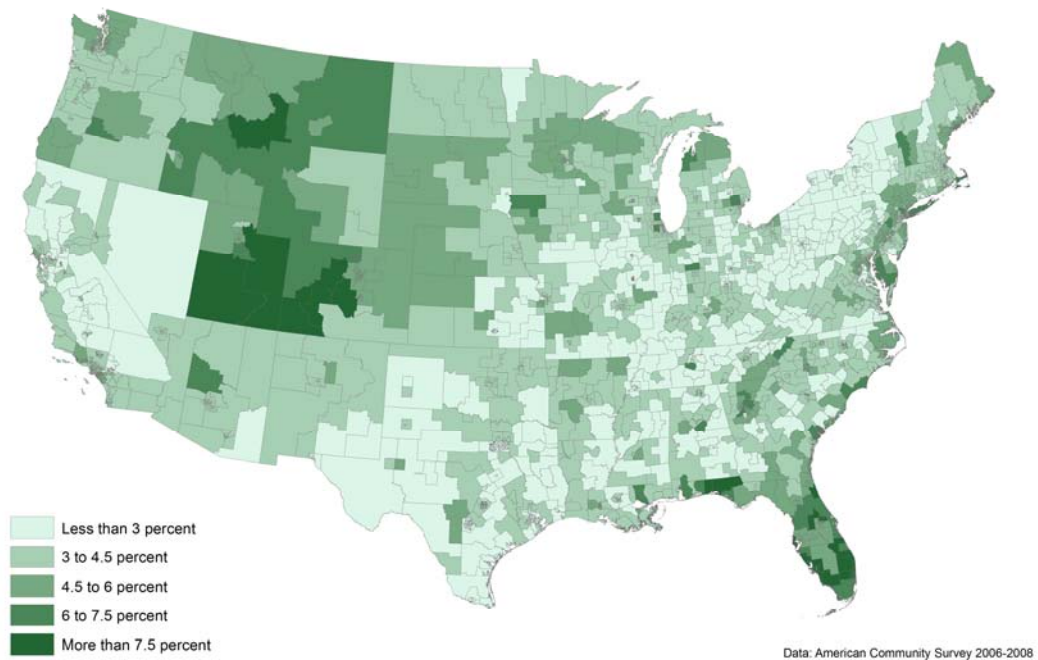


Figure A.11. CPUMA Incorporated Self-Employment as Share of Nonfarm Civilian Labor Force Age 25-64

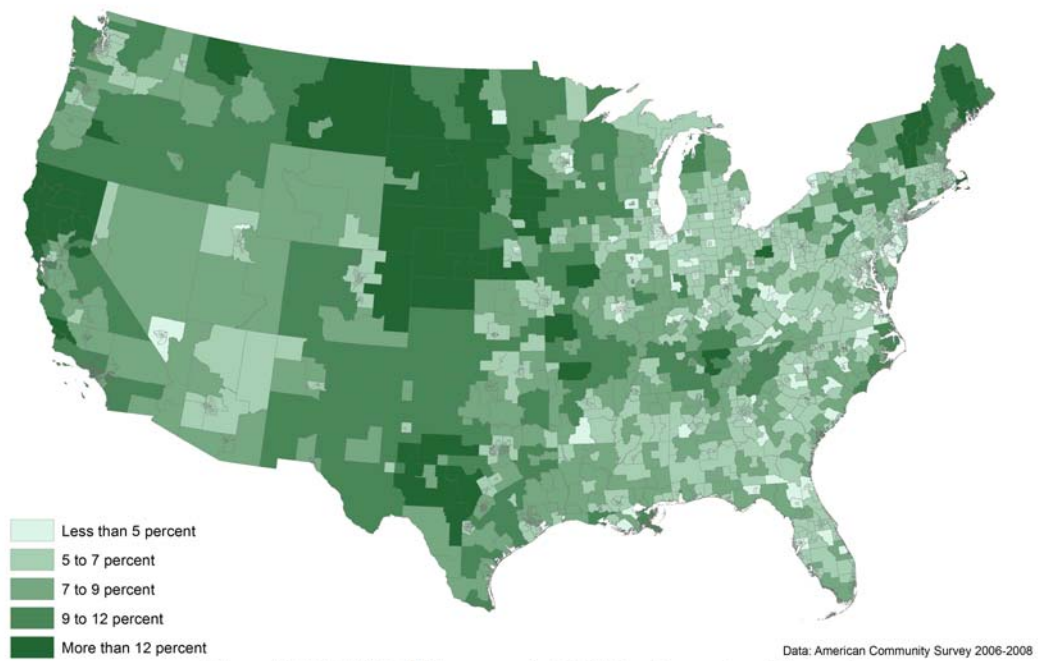


Figure A.12. CPUMA Unincorporated Self-Employment as Share of Total Nonfarm Civilian Labor Force Age 24-65

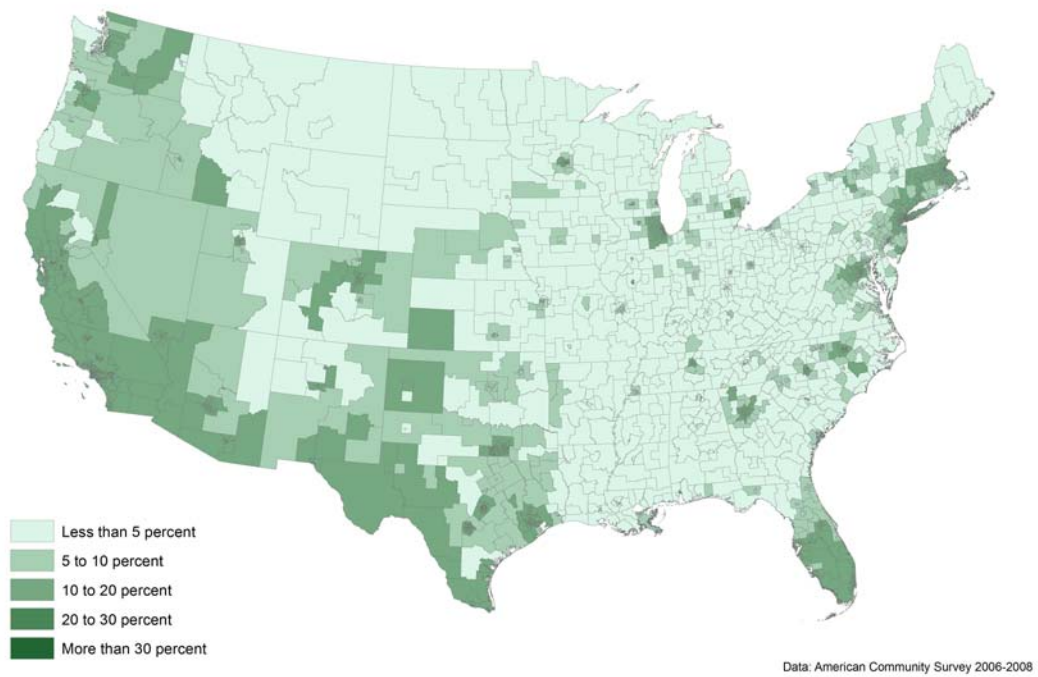


Figure A.13. CPUMA Percent Foreign Born, All Persons

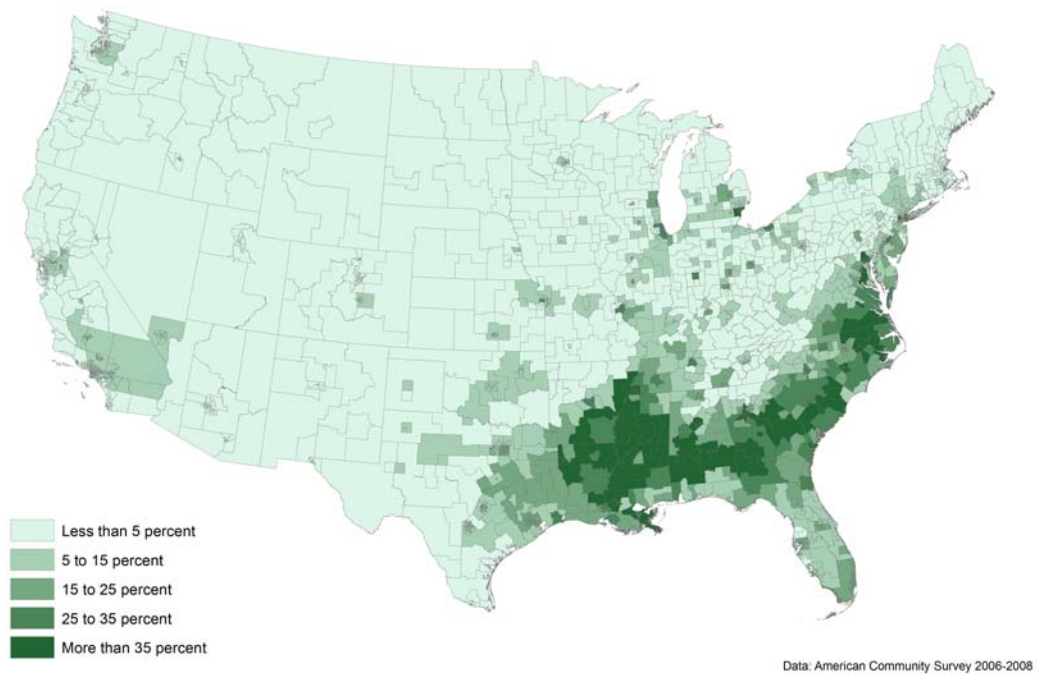


Figure A.14. CPUMA Percent Black, All Persons

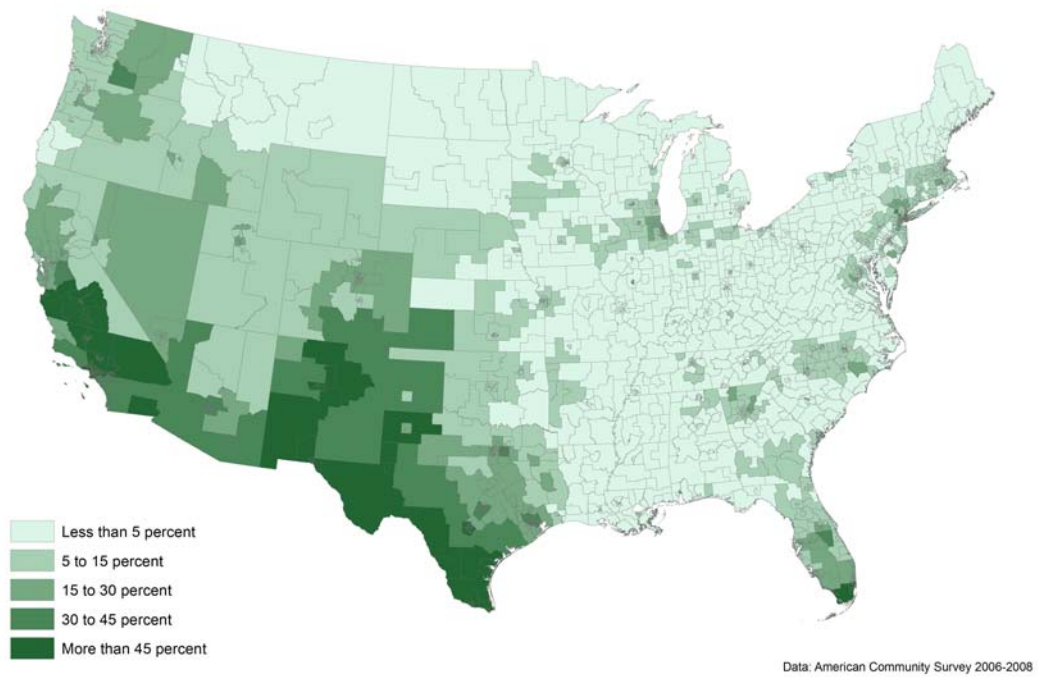


Figure A.15. CPUMA Percent Hispanic, All Persons

## APPENDIX B

### Taxonomy of Self-Employed Workers

The taxonomy developed in chapter three uses the standard census industry and occupation codes found in many datasets, including the American Community Survey. The table below shows the 2007 NAICS industry codes and 2008 PUMS occupation codes (based on 2002 Census and 2000 SOC codes) used to form each category.

*Table B.1. Taxonomy of Self-Employed Workers*

Taxonomy Category	Industry Codes	Occupation Codes
Other Management Occupations	1070 - 7190; 7860 - 9290	0010 - 3540
Professional Services - Management	7270 - 7790	0010 - 3540
Construction - Management and Other	0770	0010 - 6130
Other Sales and Office Occupations	1070 - 7190; 7860 - 9290	4700 - 5930
Professional Services - Other Occupations	7270 - 7790	3600 - 9750
Other Service Occupations	1070 - 7190; 7860 - 9290	3600 - 4650
Construction - Labor Occupations	0770	6000 - 9750
Installation, Maintenance and Repair Occupations	1070 - 7190; 7860 - 9290	6200 - 7620
Production, Transportation, and Material Moving Occupations	1070 - 7190; 7860 - 9290	7700 - 9750

## APPENDIX C

### Combined Public Use Microdata Areas

In some cases, Public Use Microdata Areas (PUMAs) are aggregated up to the county level or beyond. As an example, the table below shows the state, PUMA, and combined PUMA codes for the state of Texas. A map of the Census PUMA boundaries in Texas can be viewed at:

[http://www2.census.gov/geo/maps/puma/puma2k/tx\\_puma5.pdf](http://www2.census.gov/geo/maps/puma/puma2k/tx_puma5.pdf).

*Table C.1. Converting State and PUMA Codes to Combined PUMA Codes for the State of Texas*

State	PUMA	Combined PUMA	State	PUMA	Combined PUMA	State	PUMA	Combined PUMA
48	00100	4800100	48	02509	48025xx	48	04620	48x4601
48	00200	4800200	48	02510	48025xx	48	04621	48x4601
48	00300	4800300	48	02511	48025xx	48	04622	48x4601
48	00400	4800400	48	02600	4802600	48	04623	48x4601
48	00501	48x0501	48	02700	4802700	48	04624	48x4601
48	00502	48x0501	48	02800	4802800	48	04625	48x4601
48	00600	4800600	48	02900	4802900	48	04701	48x4701
48	00700	4800700	48	03000	4803000	48	04702	48x4701
48	00800	4800800	48	03100	4803100	48	04801	48x4801
48	00900	4800900	48	03200	4803200	48	04802	48x4801
48	01000	4801000	48	03300	4803300	48	04901	48x4901
48	01100	4801100	48	03400	4803400	48	04902	48x4901
48	01200	4801200	48	03501	48x3501	48	05000	4805000
48	01300	4801300	48	03502	48x3501	48	05100	4805100
48	01400	4801400	48	03503	48x3501	48	05201	48x5201
48	01500	4801500	48	03504	48x3501	48	05202	48x5201
48	01600	4801600	48	03505	48x3501	48	05301	48053xx
48	01700	4801700	48	03600	4803600	48	05302	48053xx
48	01800	4801800	48	03701	48037xx	48	05303	48053xx
48	01900	4801900	48	03702	48037xx	48	05304	48053xx
48	02000	4802000	48	03703	48037xx	48	05401	48053xx
48	02101	48x2101	48	03801	48x3801	48	05402	48053xx
48	02102	48x2101	48	03802	48x3801	48	05500	4805500
48	02103	48x2101	48	03900	4803900	48	05601	48x5601
48	02104	48x2101	48	04000	4804000	48	05602	48x5601
48	02201	48x2201	48	04100	4804100	48	05603	48x5601

Table C.1. cont. Converting State and PUMA Codes to Combined PUMA Codes for the State of Texas

State	PUMA	Combined PUMA	State	PUMA	Combined PUMA	State	PUMA	Combined PUMA
48	02202	48x2201	48	04200	4804200	48	05604	48x5601
48	02301	48x2301	48	04300	48x4300	48	05605	48x5601
48	02302	48x2301	48	04400	48x4300	48	05606	48x5601
48	02303	48x2301	48	04501	48045xx	48	05607	48x5601
48	02304	48x2301	48	04502	48045xx	48	05608	48x5601
48	02305	48x2301	48	04503	48045xx	48	05609	48x5601
48	02306	48x2301	48	04601	48x4601	48	05610	48x5601
48	02307	48x2301	48	04602	48x4601	48	05611	48x5601
48	02308	48x2301	48	04603	48x4601	48	05700	4805700
48	02309	48x2301	48	04604	48x4601	48	05800	4805800
48	02310	48x2301	48	04605	48x4601	48	05900	4805900
48	02311	48x2301	48	04606	48x4601	48	06000	4806000
48	02312	48x2301	48	04607	48x4601	48	06100	4806100
48	02313	48x2301	48	04608	48x4601	48	06200	4806200
48	02314	48x2301	48	04609	48x4601	48	06301	48063xx
48	02315	48x2301	48	04610	48x4601	48	06302	48063xx
48	02400	4802400	48	04611	48x4601	48	06400	48063xx
48	02501	48025xx	48	04612	48x4601	48	06500	48063xx
48	02502	48025xx	48	04613	48x4601	48	06600	48x6600
48	02503	48025xx	48	04614	48x4601	48	06701	48x6600
48	02504	48025xx	48	04615	48x4601	48	06702	48x6600
48	02505	48025xx	48	04616	48x4601	48	06703	48x6600
48	02506	48025xx	48	04617	48x4601	48	06704	48x6600
48	02507	48025xx	48	04618	48x4601	48	06800	48x6800
48	02508	48025xx	48	04619	48x4601	48	06900	48x6800

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