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Please cite as: Belman, D. R. & Kossek, E.E. 2006. Minority and majority truck owner-operators: entrepreneur or galvanized employees? In Human Resource Strategies for the High Growth Entrepreneurial Firm. (J. Tanks, & R. Henman, Eds.), Information Age Publishing, Inc. Greenwich, Connecticut, pp. 189-222.

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CHAPTER 9

MINORITY AND MAJORITY TRUCK OWNER-OPERATORS

Entrepreneur or Galvanized Employees¹

Dale Belman and Ellen Ernst Kossek

By examining a group of self-employed truck driver owner-operators, the authors examine the following question: Are owner-operators “entrepreneurs” and do they accrue personal benefits of entrepreneurship? Results indicate that even though they are not more economically successful than other truck drivers, owner-operators may choose their positions for superior working conditions, greater control over their lives, and to improve their longevity in their chosen profession. Thus, quality of life issues may play a role in decisions to become an entrepreneur. Individual entrepreneurial behavior must be understood as an interaction with the institutional context in which it is embedded.

INTRODUCTION

This chapter focuses on a modest corner of entrepreneurship in the context of self-employed truck driver owner-operators, which offers an inter-

esting opportunity for exploring HRM and labor issues in small, emerging or entrepreneurial ventures. Our chapter examines the profession of over-the-road truck drivers as a lens to raise and understand key issues for managing entrepreneurship and diversity in established businesses. We address two main research questions. The first is: “Are truck driver owner-operators ‘Entrepreneurs’ as typically conceived and according to these criteria, do they accrue any personal benefits of entrepreneurship compared to employee drivers?” The second is: “What is the effect of race on this situation?” These are important issues to address, as there are relatively low barriers to entry to the over-the-road operator market, which means this type of self-employed profession is one that is within reach of many individuals throughout the United States.

Minorities comprise a greater portion of the low income strata of the U.S. population so examining the intersection of ethnic background with entrepreneurship allows for examination of whether entrepreneurship is a strategy that benefits increased well-being and benefits to minority members of society. It is particularly important to understand linkages between race and the experiences of owner-operators, since minorities typically have less ready access to financial capital and education—predictors of successful entrepreneurship—than other ethnic groups. Fairlie (1999) reports that 11.6% of white men are self-employed compared to 3.8% of black men. Although minorities are less likely to be self-employed or have access to requisite resources, if they do get access to human & financial capital, their success rate is equal (Fairlie, 1999). In sum, this chapter will shed light on the consequences for employees of taking on greater risk while being employed for large organizations, and how these outcomes vary with race, a key issue as the workforce shifts toward greater diversity.

We begin this chapter with a brief discussion of the definition of entrepreneurship used in our analysis. We apply this definition to Owner-Operators in the development of our hypotheses and also look at relationship of entrepreneurial behavior with minority ethnic status, before moving to methodology, and discussing our findings.

MOVING AWAY FROM PERSON-CENTERED DEFINITIONS OF ENTREPRENEURS

The entrepreneurship field is entering into the mainstream of the U.S. business world (Kautz, 1999), as the number of self-employed individuals is increasing annually and employment relationships are shifting toward greater use of employer driven contingent and flexible arrangements. Venkataraman (1997) notes that most researchers to date have defined

entrepreneurship in terms of whom the entrepreneur is and what the individual does. An example of this approach to defining entrepreneurship is provided by Carton, Hofer, and Meeks (1998), who state an entrepreneur is someone who identifies the opportunity, gathers resources, creates, and is responsible for ensuring performance outcomes. However, in their review, Shane and Venkataraman (2000) point to the need for new scholarship to move away from focusing on person-centered definitions of entrepreneurship, which have the limitations of confounding individual characteristics with the quality of opportunities identified and available. They suggest entrepreneurship involves the intersection of BOTH enterprising individuals and the existence of financially attractive opportunities. We draw on their approach in this chapter's examination of truck owner-operators as a case of entrepreneurship in small business.

Entrepreneurship research entails scholarly inquiry into "how, by whom, and with what effects opportunities to create future goods and services, are discovered, evaluated, and exploited" (p. 218). To have entrepreneurship, Shane and Venkataraman, (2000) argue that you must have a number of existing conditions. These include the existence of entrepreneurial opportunities for new goods or services, raw materials or organizing mechanisms that can be sold at a higher rate than currently done, and variation in beliefs among individuals in the value of and incentives for exploiting these opportunities for profit. Such variation results in the discovery of these opportunities by some individuals and not others due to differences in one or more of the following: cognitive or personal properties, information, or access to capital. These approaches suggest that it is unlikely that entrepreneurship can be understood solely on the basis of stable individual characteristics independent of situations, but rather the tendency of some individuals to respond to situational cues or available opportunities over others (Shane & Venkataraman, 2000). Thus, the self-employed may or may not be entrepreneurial depending on whether opportunities for profit are being identified.

Entrepreneurialism, in theory suggests that owner-operators perceive greater market opportunities from taking on greater economic risks than other drivers, and they should receive higher return than employees in similar positions. Besides the greater opportunities for reward, they also may choose to do so more out of personal preference than economic necessity as evidence suggests that many factors ranging from gender, family characteristics, or personal proclivities are relevant (Dennis, 1996; Gatewood, Shaver, & Gartner, 1995; Honig, 1998; Mathews & Mosier, 1995).

Before proceeding, we also should note that there is variation internationally regarding whether owner-operator truckers are viewed as self-employed. Although this debate has not yet affected policy in the United

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States, the European Union is currently studying whether Owner-Operators should be classified as or whether they are, de facto, employees (Transport International, 2001). As employment relations moves toward greater subcontracting and more contingent employment, this issue of defining entrepreneurship and self-employment becomes increasingly important not only in the United States but abroad and in global enterprises.

TRUCK DRIVER OWNER-OPERATORS: SELF-EMPLOYMENT RISKS AND REWARDS

Truck driver owner-operators can be viewed as a Schumpeterian (1951) form of routine as opposed to New (N form) entrepreneurship (Leibenstein, 1968), as this form involves well-understood parameters for business. They are common form of a small-scale entrepreneur. Truck driver owner-operators are self-employed. Their capital is typically limited to a tractor (the cab or power unit of a tractor-trailer) typically valued at \$75,000 to \$100,000, not allowing for the debt incurred in its purchase. They are an extremely small business as 84% own only one truck. Truck driver owner-operators are typically paid for their work within one week of completing a haul. As there are low capitalization barriers to entry, it is easy for many individuals to enter this business.

There are approximately 360,000 owner-operators currently operating in the United States with notable stories of individual success among the self-employed. The second largest trucking company in the United States, J. B. Hunt, was begun by the owner-operator after whom the company is named. Given that entrepreneurship is defined as involving the intersection of BOTH enterprising individuals and the existence of financially attractive opportunities, we assume that owner-operators fit the criteria of an entrepreneur. It is useful here, to examine the pros and cons of being self-employed as distinct from being an employee driver.

The difference between employees and the self-employed is, at its core, a legal distinction. Prior to the beginning of social regulation of the employment relationship in the 1890s, the legal distinction in the relationship between employee and employer and that between contractor and self-employed worker was not great. The regulation of the employment relationship through social insurance programs, protective labor legislation and tax treatment of retirement and other insurance programs has, over the last century, defined the difference between self-employed workers and employees. The duties and obligations of the parties to the employment relationship are legally defined. Starting with federal law, where an employment relationship exists, employers are required to pay

their share and withhold the employee share of social security taxes pursuant to the Federal Income Contributions Act, as well as collect payroll taxes from employees. They are additionally liable for taxes under the Federal Unemployment Tax Act as well as state income, unemployment, and workers' compensation acts. The Fair Labor Standards Act establishes a minimum wage and overtime pay for employees, Title VII of the Civil Rights Act of 1964 prohibits discrimination against employees on the basis of color, religion, gender, national origin or race, while the Age Discrimination in Employment Act prohibits discrimination on the basis of age. The Employment Retirement Security Act establishes the rules of qualified benefit plans for employees. The Americans with Disability Act prohibits discrimination against employees based on disabilities. The Family Medical Leave Act requires employers provide qualified employees with up to twelve weeks of leave annually in certain life situations. The National Labor Relations Act provides for the right to organize and governs labor management relations, while the Davis-Bacon Act and the Service Contracts Act require that employees of government contractors be paid the wage rate prevailing in comparable private sector occupations. The employment relationship is also be subject to state and local laws.

In contrast, the relationship between a contractor and the self-employed worker is typically governed by business law and the self-employed are exempted from the protections afforded by the protective labor legislation noted in the preceding paragraph. For example, contractors are not required to withhold payroll or social security taxes from the payments to self-employed workers and the self-employed are not covered by the minimum wage or overtime of the Fair Labor Standards Act or, in most states, by Workers' Compensation Acts.²

Why then would workers choose to be self-employed? The positive reasons for self-employment align closely with those often cited as reasons for becoming an entrepreneur. The self-employed have more *control* over their work, making decisions about what to do and when and how to do it and their job demands, which is more frequently denied to most employees. In trucking, control over loads and hours of work are central to one's quality of life. For example, owner-operators have greater latitude than do employees over adhering to legal limits on maximum working hours. The self-employed are also typically expected to *earn more for their efforts* both because they accept more risk than employees and because there are stronger incentives to apply abilities and creativity to a task than exist for employees.³ There may also be cultural reasons for self-employment, being an entrepreneur may have positive value to the employee even absent economic rewards, as one's own boss and controlling one's own destiny is glorified in U.S. society. Although there is no large study of whether owner-operators tend to cluster in families or by other kinship

structure, we did find evidence collected by the first author suggesting that owner-operators often involve family members in their work. Twelve percent of drivers were taught to drive by a family member or neighbor (Belman, Monaco, & Brooks, 2005).

Yet there are also negative incentives to entrepreneurship and some tendency for employers to prefer to use self-employed workers rather than employees. First, there is typically a shift of risk from the firm to the self-employed worker. In the case of trucking, the firm no longer supplies capital, a tractor, to the employee. The self-employed worker provides their own capital and incurs expenses for that capital. In trucking, return on capital is at risk during slack seasons, when there is delay between loads and in back hauls. Negative incentives to entrepreneurship also result as self-employed workers are exempt from most protective labor legislation. Use of self-employed workers reduce firms' payments of these expenses. Firms may also reduce employment costs by avoiding payments into health care plans and retirement plans which they would make for employees. In a perfectly functioning market, firms would not benefit from these differences between employees and the self-employed as the self-employed would receive implicit compensating payments for added risk and exemption from protective labor legislation.⁴

HYPOTHESES

We now turn to our hypotheses. Recently, theory from human resource management and organizational behavior literatures has begun to have greater integration with the entrepreneurship literature (cf. Heneman, Wang, Tansky, & Wang, 2002; Heneman, Tansky, & Camp (2000). Building on this tradition, we draw from total compensation theory and diversity and discrimination theory in the development of our hypotheses. Total compensation theory holds that individuals are motivated to perform on the job by both extrinsic and intrinsic rewards (Milkovich & Newman, 2005). Extrinsic rewards relate to monetary economic rewards from employment. Intrinsic rewards are noneconomic and might include job autonomy, job control, and personal achievement (Stroh, Northcraft, & Neale, 2002). Given the assumption that being an owner operator has greater extrinsic reward opportunities than employee truckers, our first hypothesis is as follows:

Hypothesis 1: Owner-operators should, on average, be *better rewarded* than employees doing similar work.

Further, as total compensation theory suggests that being an owner operator is likely to be both extrinsically (i.e., greater opportunity to make more money) and intrinsically (i.e., more job control and autonomy) rewarding, we theorize Hypotheses 2a and 2b:

Hypothesis 2a: Owner-operators work effort (hours worked and miles driven) will be higher than employees.

Hypothesis 2b: Owner-operators should have more *control* over their work than employees.

We also examined linkages whether minorities are more likely to be owner-operators than employees. Becker's seminal work on discrimination suggested three sources of discrimination in the employment relationship: discrimination originating in the preferences of employers, of employees, and of customers (Becker, 1957). Becker has also suggested that the self-employed are less likely to be subject to discrimination. He surmised that although still subject to customer discrimination, they are not subject to discrimination by an employer or co-workers. Diversity research also suggests that minorities are more likely to be attracted to employment contexts that they perceive are likely to be more welcoming to minorities and people of color (Heneman, Waldeck, & Cushnie, 1996). This leads to our next hypothesis:

Hypothesis 3: Owner-operators should be more diverse than employees since this employment relationship will be more attractive to minorities as it will be less subject to employment discrimination.

Last, the theory of the learning curve in the training and performance literature suggests that as entrepreneurs, owner-operators should, over time, be able to accumulate more wealth than otherwise similar employees (Goldstein & Ford, 2002). This theory that suggests that more senior workers tend to perform better due to greater familiarity with job requirements, greater learning on how to do the job well, and the ability to build on the job resources they have accumulated due to greater experience. We will conduct multivariate analysis to examine:

Hypothesis 4: Older owner-operators should perform better than younger owner-operators as they have accumulated more physical and human capital.

THE DRIVER SURVEY: BACKGROUND AND METHODOLOGY

National data sets are not rich sources of information on truck drivers. The questions on compensation and hours of work do not conform well to employment systems used in the motor freight industry and there is little work related data beyond hours and earnings. We are fortunate to have data from a survey of over-the-road and local drivers in the motor freight industry conducted by the Sloan Foundation Trucking Industry Program (TIP) in cooperation with the Institute of Social Research at the University of Michigan. The analysis in this chapter compares the entrepreneurial characteristics and business performance drawing on interviews with more than one thousand truck drivers interviewed mostly face to face at truck stops in 1997-1999. The survey used a two-stage stratified sampling procedure in which interview sites, truck stops, were randomly selected within state and establishment size categories. Interviewers approached entrants to the selected truck stops using a random selection scheme. Sixty-three percent of eligible participants, 1,007 drivers, agreed to take the survey, which took forty minutes. Of these 27% were owner-operators and the remaining were employee drivers. Only truck drivers holding a class C Commercial Drivers License who were currently employed as drivers and were driving a truck at the time of the interview were eligible for the survey. Surveys were only conducted on weekdays with the exception of followup telephone interviews, which collected information on the last full day of work (potentially a weekend).

This survey collected unique, rich, and detailed information on the structure of owner-operators' business, on sources of capital and of work. In addition, it also solicited information on income, benefits, work history, education and job training, job characteristics, working and resting time, technology uses, future opportunities in the industry, service regulations, and decision-making, which allows meaningful comparison between owner-operators and employee drivers. A complete summary of the survey and description of the methodology can be found in Belman et al. (2005). Before making comparisons between drivers and owner-operators, it is useful to first briefly provide background on truck drivers in general.

THE TRUCKER DRIVER'S BUSINESS LIFE

Drivers are typical blue-collar workers. They are somewhat older than a national sample of blue-collar workers, a result of the twenty-one-year legal minimum age for obtaining a Commercial Drivers License. Consis-

tent with their greater age, drivers are somewhat more likely to be married and have children than other blue-collar males. Although women make up a smaller proportion of the driver workforce than they do of the blue-collar labor force, the racial and ethnic composition of the driver labor force is comparable to that of other blue-collar workers. The educational attainment of drivers is also similar to that of other blue-collar workers: 43.7% of drivers have a high school degree, 22.7% have some college courses, 4.8% have a college degree.

Judged by their annual income, motor freight drivers are solidly middle class. The median annual income of drivers in 1996 was \$35,000, slightly above the \$34,522 median family income for families with a wife who is not in the paid labor force (for more background, see Mishel, Bernstein, & Schmitt, 1998, Table 1.5). However, they seem less middle class when rates of pay, hours of work and working conditions are considered.

The median respondent drove approximately 110,000 miles per year. How long does it take to drive these miles? Drivers' hours are set by the Hours of Service Regulations administered by the U.S. Department of Transportation. Prior to the 2004 revisions, drivers were limited to fifteen hours of total working time prior to taking a mandatory eight-hour break. The fifteen hours could comprise up to ten hours of driving time with the balance accounted for by nondriving on duty time. Effective working time could be extended by inserting off duty breaks during working time as these did not count against the fifteen-hour limit. The Hours of Service Regulations also limited drivers to 60 hours of total work time in a seven-day period, and seventy hours of working time in an eight-day period. The TIP survey found that drivers worked an average of 11.4 hours with 8.5 hours of driving time and 2.0 hours on duty not driving in the day prior to the interview. Drivers also have long work weeks: 20% of drivers reported working six days in the last seven, and 19% reported working seven of the last seven days.

How many hours do drivers work in seven days? When asked about hours of work in the last week, the median driver reported working exactly 60 hours, but 25% reported working at least 75 hours and 10% reported working at least 90 hours. Using data on the last pay period, the median respondent worked 62 hours in seven days. The mean working time was 65.7 hours. In combination with data on time taken off work in the previous year, we calculate that the typical driver works 3000 hours per year, one and one half times the full time work year of 2080 hours established by the Fair Labor Standard Act.⁵

How much do drivers earn per hour? The answer is less straightforward than it would be for most employees as hourly pay is rare (10.0% of the sample). Pay by mileage (55.8% of the sample) or as a percentage of

revenue (29.9% of the sample) is more common. An hourly rate can be constructed as the ratio of reported annual income to estimated annual hours of work. (For more information on the methodology of hourly wage construction, see Belman et al., 2005.)

The mean rate for drivers was \$11.67. Union drivers earned the top rate of \$14.68 per hour, while nonunion drivers averaged \$10.75 and nonunion owner-operators earned \$12.03. Using these figures to recalculate annual earnings on a standard work year, drivers would be expected to earn \$23,340 annually, with union drivers earning \$29,360 and nonunion employees earning \$21,500. Benefit coverage is also limited. Only half of the drivers (46.6%) reported participation in a deferred compensation plan such as a 401(K). Conventional pension plans are rare outside of the organized sector; 77% of union members report having a conventional pension, but only 21.4% of nonunion employee drivers and 15.4% of owner-operators have pensions from any source including military pensions. Medical insurance is more common among employees; 100% of union members and 87.4% of nonunion employees reported some form of medical insurance, but only 66% of owner-operators carry such plans. Most medical plans are contributory. Only 27.4% are fully funded by the employer, and most of these are in the organized sector. Time off from work, much less paid time off, is rare. The median driver took five days of vacation, four days of holiday time, and no sick leave in 1996. Only the vacation days were compensated.

The dynamics of the occupation, in which drivers compensate for low rates by driving long hours and working as many days as possible, leads to habitual violation of the hours of service rules, lack of sleep and drowsiness while on duty, and job instability. Drivers' gaming of the hours of service rules is well established. The typical driver worked up to and often beyond the legal hours of work. Some drivers refer to their logs as "comic books," many carry multiple logbooks (DiSalvatore, 1988). Survey respondents often distinguished between their actual hours of work and the hours recorded in their logs, only 16.1% of drivers believed that logbooks accurately reflected drivers' hours of work. Fifty-six percent reported that they had worked more than they had logged in the last 30 days, and 55% reported that they had driven more than 10 hours without an eight-hour break in the last thirty days. Sixteen percent of drivers reported violating the ten-hour rule more than fifteen times over that period.

Long hours of work may affect drivers' quality of life and their performance on the job. Over-the-road drivers spend several days to several weeks away from home. The median driver had last been home for 24 hours four days prior to the interview, and the mean time since being home was 8.3 days. Seventy percent of drivers slept in a bunk in their truck on the previous night. Only 24% had slept at home. Problems of

dozing and lack of sleep while driving are relatively common; 35% of drivers reported dozing while driving at least once in the last thirty days, and 15% reported dozing at least three times over that period. Lack of sleep is most pronounced on the last day of work before returning home, when 15% of drivers reported not sleeping in the last 24 hours. Taken as a whole, these figures suggest that control over work is central to the quality of drivers' work experience.

BUSINESS CHARACTERISTICS OF OWNER-OPERATORS: DESCRIPTIVE STATISTICS

We turn next to the characteristics of owner-operators as business owners. In this section we consider the size and nature of owner-operators operations (i.e., number of trucks, whether they own or lease), their sources and form of financing, and their sources of shipments. In addition, we make some initial comparisons of owner-operators operations across racial groupings. In all, 274 of the 1,007 survey respondents, approximately one fourth (27%) were owner-operators.

Number of Trucks

Although owner-operators may own or lease multiple trucks, the typical driver own or lease only the tractor he or she is driving (Table 9.1). Eighty-four percent of drivers have a single truck, an additional 9.1% have two trucks and 3.8% have three trucks. Only 2.5% of the sample has four or more trucks. How does the number of trucks operated vary by race? Although the percentage of Black owner-operators with a single truck is substantially lower than that for the White respondents, 71.3 versus 85.9%; the difference is not statistically significant in a two tailed 5% test for a difference in means ($t = 1.52$). Pearson's Chi-square for independence of outcomes does not reject the hypothesis that the number of trucks operated does not vary by race. The lack of statistical significance may be a consequence of the relatively small number of non-White owner-operators. While there are 191 White owner-operators, there are only 24 Black owner-operators and 27 owner-operators of Asian, American-Indian or Other racial origin. Based on this data, we conclude that most owner-operators are running very small businesses, essentially employing only themselves. We also surmise that there is no immediate evidence of a difference in business size by race. It should be noted that there is a pre-sample selection process at work. Successful owner-operators who go on to create a large business, such as J. B. Hunt, are unlikely to spend much time in their truck or in truck stops. Their success takes them out of the

Table 9.1. Number of Trucks Owned or Leased

<i># Trucks</i>	<i># In Sample (weighted)</i>	<i>% of Sample</i>	<i>White</i>	<i>Black</i>	<i>Other</i>
1	230.34	84.38%	85.87%	71.33%	83.37%
2	24.92	9.13%	6.76%	22.93%	16.63%
3	10.40	3.81%	4.07%	5.75%	0.00%
4	.813	.30%	0.00%	0.00%	0.00%
5-8	5.88	2.17%	2.66%	0.00%	0.00%
75	.624	.23%	.28%	0.00%	0.00%

sample. One owner-operator in our sample reports owning 75 trucks, so perhaps the occasional successful owner-operator is taken with a desire to throw himself back behind the wheel. We also lose the failures, those who go out of business and either leave the industry or migrate back into being an employee driver.

Own or Lease

We next consider whether the owner-operator owns or leases their truck(s) (Table 9.2). The own-lease distinction is important as leasing provides a means of becoming an owner-operator for those without the capital to purchase a tractor. At the same time, it limits the opportunities for capital accumulation by the owner-operator and hence their ability to grow the business. The overwhelming majority of owner-operators with a single truck, 82.9%, own their tractor, only 17.1% lease. Leasing is more common among those with multiple trucks: 73.7% own all of their trucks, an additional 20.8% both own and lease, while 5.5% of those with multiple trucks lease all of their trucks. As numbers with multiple trucks are small, some caution about the own/lease pattern is needed. Pearson's chi-square test for the independence of outcomes indicates that the hypothesis that own/lease patterns do not vary by the number of trucks cannot be rejected in even a 10% test. However, this finding again possibly results from the small number of owner-operators with multiple trucks in the sample.

The pattern in truck ownership/leasing arrangements varies by racial group. Among those with one truck, 84% of White Owner-operators and 96.6% of Other owner-operators own their truck, but only 47% Black owner-operators own their trucks. The difference between White and Black proportions is statistically significant in a 1% two-tailed test for a difference in proportions ($t = 3.01$). This is consistent with Black owner-

Table 9.2. Own or Lease Truck

	<i>Single Truck</i>				<i>Two or More Trucks</i>			
	<i>Total</i>	<i>White</i>	<i>Black</i>	<i>Other</i>	<i>Total</i>	<i>White</i>	<i>Black</i>	<i>Other</i>
Own	82.89%	84.37%	47.07%	96.64%	73.73%	66.15%	91.55%	100%
Lease	17.11%	15.63%	52.93%	3.36%	5.50%	5.65%	8.45%	0.00%
Both	X	X	X	X	20.78%	28.20%	0.00%	0.00%
Total (weighted)	230.3	191.1	16.7	22.5	42.7	30.4	6.8	4.5

operators having more limited access to capital markets. We do not discuss the differences in racial patterns of ownership for the multiple truck sample as the number of individuals is too small to provide meaningful results.

Sources of Financing: General Background and Patterns by Race

Where do those who own their trucks obtain financing? The most common source is a bank, as 54.8% of respondents had bank financing (Table 9.3). The next most common was a truck dealer (21.4%), followed by self-financing (12.5%) and financing from the shipper, which the owner-operator works for (11.2%).

For financing, white owner-operators are most likely to use a bank (58.0%). However, black owner-operators are more likely to use a truck dealer (63.4%). Those in the Other category are equally likely to use a bank (40.1%) or the company for whom they work (37.8%). Again, the small number of observations on non-White owner-operators limits the predictive power of the sample. With the exception of the distribution of lease patterns by race, it is not possible to reject the hypothesis that sources of funding do not vary by race in a 5% Pearson chi-square test.

Table 9.3. Sources of Financing

	<i>% of Sources</i>			
	<i>Total</i>	<i>White</i>	<i>Black</i>	<i>Other</i>
Self	12.51%	12.07%	15.42%	14.27%
Bank	54.82%	58.00%	38.08%	40.10%
Dealer	21.44%	19.17%	63.39%	14.38%
Leasing Firm	11.19%	8.37%	0.00%	37.79%
Other	5.04%	5.04%	14.63%	0.00%

Table 9.4. How Do Owner-Operators Get Shipments?

	<i>Total</i>	<i>White</i>	<i>Black</i>	<i>Other</i>	<i>Weighted Number of Observations</i>
Permanent lease	62.6%	64.4%	57.6%	52.9%	171.7
Broker	14.9%	14.0%	25.2%	13.1%	40.8
Contract with shipper	15.2%	13.4%	15.8%	29.9%	41.6
Other	7.3%	8.3%	1.5%	4.0%	19.9
Total	100%	100%	100%	100%	
Weighted number of observations	274	223.4	23.5	28.0	

Sources of Shipments

Owner-operators obtain their shipments by three means: brokers, permanent leases and other means such as directly contracting with shippers (Table 9.4). Some owner-operators operate in spot markets through brokers. Shortly before becoming available to take a shipment they call a freight broker and the broker offers them one or more shipments. Others establish permanent leases with shippers. These leases, which vary considerably in complexity, commit the owner-operator to work for the company for a fixed period of time, usually a minimum of 30 days. During this period they will take the shipments the leaseholder offers and will not take shipments from other firms. Permanent leases restrict, at least temporarily, owner-operators range of decision-making. These leases are often held by firms which offer trucking services to shippers and many larger trucking companies “employ” a mixture of employee drivers and owner-operators under permanent lease. Permanent leases are the method of obtaining shipments, which most restricts the latitude of decision making of owner-operators and is least consistent with owner-operators as entrepreneurs. Owner-operators may also contract directly with a shipper, offering to carry the shippers loads with an agreed upon system of payment but not agreeing to limit their work to that shipper.

In our sample, 62.6% of owner-operators operate under permanent leases. Almost equal numbers, 14.9% and 15.2% operate through brokers and under a contract with one or more shippers. An additional 7% operate under some other relationship. There is little difference in the proportion of the driver workforce that permanently leased to a firm by race: 64.4% of the White owner-operators, 57.6% of Black owner-operators and 52.9% of Other owner-operators holding permanent leases; Pearson’s chi-square test for differences in the means of obtaining shipments by race cannot reject a null of no difference in even a 10% test.

Hypothesis 3 suggests that, as permanent leases are the most “employment like” arrangements through which owner-operators obtain shipments, minorities should be less likely use permanent leases as their means of obtaining shipments. This hypothesis is not supported by the small and statistically nonsignificant difference by race in the proportion of owner-operators under permanent leases. It may be that the factors driving differences in minority representation between employees and owner-operators do not apply within varying types of arrangements among owner-operators, but it may also be that the hypothesis does not characterize relationships in the trucking industry.

OWNER-OPERATORS AND EMPLOYEES: AN INITIAL COMPARISON

We turn next to the comparison between owner-operators and employees. We first compare their age and experience before investigating our four hypotheses that owner-operators should: be better rewarded (H1) than employee counterparts, have higher work effort and more control over their work than employees (H2a & b), be more racially diverse than employee drivers (H3), and, after accounting for physical and human capital, and perform better (H4).

The Distribution of Age and Occupational Experience

We would expect that Owner-Operators would be older and more experienced than employee drivers, because they either need to accumulate capital or convince a lender that they have sufficient knowledge of the job to make a success of their business. Lenders may also be concerned about maturity, stability and noncapital asset accumulation, all of which suggest older and more experienced drivers will have more ready access to capital. Finally, drivers themselves may be unwilling to become owner-operators until they understand the job and the industry. Running counter to these factors are the relatively brief time needed to obtain the skills required to be a successful driver. Formal training takes five weeks. It also takes only two to three months of on-the-job experience to provide the driver with sufficient knowledge to work alone.

Comparison of occupational experience finds that owner-operators are moderately older and have more experience with commercial driving than employee drivers (Table 9.5). The mean age of owner-operators is

Table 9.5. Driving Experience & Time As Owner-Operator

	<i>Owner-Operator</i>			<i>Employee</i>	
	<i>Years as Driver</i>	<i>Years as Owner-Operator</i>	<i>Age</i>	<i>Years as Driver</i>	<i>Age</i>
Mean	16.4	7.9	43.4	12.9	41.1
10%	4.0	1.0	30.0	2.0	27.0
25%	8.0	1.0	37.0	4.0	34.0
50%	15.0	4.0	42.0	10.0	41.0
75%	22.0	13.0	50.0	20.0	48.0
90%	30.0	20.0	58.0	28.0	54.0

43.4. They average 16.4 years of commercial driving experience and 7.9 years as an owner operator. In contrast, the average age of employee drivers is 41.1 and they have, on average, 12.9 years of commercial driving experience. Median experience is 15 years for owner-operators and 10 years for employee drivers. The difference in years of driving experience narrows to close to two years at the 75th and 90th percentiles and at the 10th but not the 25th percentile. Although the differences in age and experience are usually not great, the gap in experience at the median provides some evidence for our hypotheses.

Annual Earnings

Our first hypothesis is that owner-operators will be better off financially than employee counterparts. We examine this issue by comparing annual earnings (Table 9.6) and benefit coverage (Table 9.7) by employ-

Table 9.6. Annual Income

	<i>Employee</i>			<i>Owener-Operator</i>			
	<i>Average</i>	<i>Union</i>	<i>Nonunion</i>	<i>Nonunion</i>	<i>White</i>	<i>Black</i>	<i>Other</i>
Mean		\$42,842	\$35,294	\$37,133	\$37,366	\$31,968	\$40,104
10%	\$18,000	\$24,000	\$20,000	\$15,000	\$15,000	\$10,000	\$18,000
25%	\$27,000	\$35,000	\$27,000	\$25,000	\$26,000	\$25,000	\$25,000
50%	\$36,000	\$42,000	\$35,000	\$37,000	\$40,000	\$32,000	\$38,000
75%	\$45,000	\$52,000	\$42,000	\$50,000	\$50,000	\$35,000	\$60,000
90%	\$53,000	\$62,000	\$50,000	\$60,000	\$57,000	\$45,000	\$62,000
99%	\$78,000	\$78,000	\$70,000	\$76,000	\$76,000	\$67,000	\$85,000

Table 9.7. Benefit Coverage

	<i>Employee</i>		<i>Owner-Operator</i>
	<i>Union</i>	<i>Nonunion</i>	<i>Nonunion</i>
	<i>401(k)</i>		
All	54.11%	49.25%	15.01%
White	51.03%	54.67%	15.27%
Black	57.19%	56.51%	18.26%
Other	N/A	36.58%	11.51%
	<i>Pension</i>		
All	72.13%	19.87%	15.14%
White	72.51%	21.23%	19.67%
Black	71.74%	30.80%	15.76%
Other	N/A	7.58%	10.01%
	<i>IRA</i>		
All	27.76%	9.95%	29.59%
White	41.32%	14.55%	34.58%
Black	14.20%	1.87%	26.72%
Other	N/A	13.42%	27.46%
	<i>Health Insurance</i>		
All	100.00%	85.72%	70.84%
White	100.00%	87.25%	64.96%
Black	100.00%	95.03%	75.91%
Other	100.00%	74.89%	71.65%

ment status. Examination of annual earnings is complex because, with the exception of those who belong to the Teamster's union, owner-operators receive a single payment covering their labor and use of their truck. For example, the typical employee driver is paid 34 cents per mile for their work while the typical owner-operator will earn \$1.03 per mile for their work and use of their truck. We construct our comparison of earnings from two questions: owner-operators were asked about their earnings after truck expenses including interest in the last year, employee drivers were asked about their last years' earnings from driving. Although imperfect, these comparisons provide a first cut at comparability.

To facilitate comparison, we subdivide our employee sample into employees who are covered by collective bargaining (i.e., individuals who are union members or whose earnings are established by a collective agreement) and those who are not. We also limit our sample of owner-operators to those who are not members of a union by removing the eight

union owner-operators from the sample. These steps help avoid conflating the owner-operator comparison with the effects of collective bargaining.

Our estimates suggest that owner-operators annual earnings after truck expenses are modestly greater than those of nonunion employees, but substantially less than the earnings of employees who are union members. Mean and median earnings for nonunion owner-operators were \$37,133 and \$37,000 respectively, while those of nonunion employees were \$35,294 and \$35,000 respectively. The dispersion of owner-operators earnings was substantially larger than that of employees. Employee earnings were above those of owner-operators at the 25th and 10th percentile, but owner-operator earnings were \$8,000 to \$10,000 above those of employees at the 75% and 90th percentile. The earnings of union employees were above those of owner-operators throughout the earnings distribution, but owner-operators earnings approach those of union employees at the 75% percentile.

The distribution of earnings suggests that, although the typical owner-operator is only doing moderately better than the typical nonunion employee, there is a substantial tail in the earnings distribution, encompassing from 25 to 35% of owner-operators, who are earning substantially more than their employee counterparts.

Benefits

We next turn to whether owner-operators are better off, not only in terms of salary but also benefits (indirect compensation). Federal regulations have been structured to encourage firms to provide employees with retirement plans and health insurance coverage. For example, the deductibility of managerial retirement expenses is contingent on adequate coverage of the work force. It is typically less expensive for employees to obtain health care coverage through their employer than through private purchase.

The same incentives do not apply to owner-operators. Owner-operators are not included among employees for IRS calculations of retirement coverage. Similarly, firms seldom extend employee health plans to self-employed contractors. These factors will increase the cost of obtaining benefits for owner-operators and may act to reduce their participation in benefits.

We compare owner-operators and employees participation in health insurance, pension, and deferred compensation plans and IRAs. In this analysis, we consider whether they participate in some form of each type of plan without attention to its source (Table 9.7). For example, we treat

obtaining health insurance through an employers, through a spouse's employer or through direct purchase as having health insurance coverage. We also do not investigate the generosity or cost of the insurance.

Turning first to health insurance, 82.8% of the sample is covered by some form of health insurance. Not surprisingly, unionized employees have the highest coverage rate, 100%. Nonunion employees rank second with 86.7% reporting health insurance coverage. Owner-operators have the lowest coverage rate, 66.5% report having health insurance from some source. Although non-White employees and owner-operators in our sample, are more likely to be covered by health insurance than their White counterparts, the sample is not sufficiently large to be able to reject the null of no difference by race in even a 10% χ^2 test. The second category of benefit is deferred compensation plans such as 401(k) and Keogh plans. Approximately 56.6% of the sample reports having such plans. They are most common among nonunion employees, 53.0% of these employees report having such a plan. Union employees rank second with 51.2% reporting participation. Participation among nonunion owner-operators is substantially lower, at 15.1%. There is no evidence of differential participation by race within the owner-operator or nonunion employee category.

The third category is pension plan. This includes both defined benefit and defined contribution plans, although the latter are most common in trucking. Almost one quarter of the respondents to the survey report participating in a pension plan, most of these were union members. Divided by driver type, 72.7% of union employees reported participating in a pension plan, 20.8% of nonunion employees reported participating in such a plan, while 18.4% of nonunion owner-operators reported participating in a pension plan. Most of the nonunion employees who reported participation were employed by firms whose primary activity was not trucking (e.g., a supermarket which had its own trucks to move goods from warehouses to their stores); most of the owner-operators who reported participation were referencing a plan from a previous employer.

The final category of benefit plan is IRA, another type of tax deferred saving account. IRAs are not typically included in discussions of benefits as they are not sponsored by employers but established by individuals. The simplicity of IRAs may recommend them to owner-operators over other retirement savings plans; omitting IRAs would neglect a potentially important element in owner-operators retirement savings. Overall 20.4% of respondents reported having an IRA. One third of owner-operators, 33.2%, reported having an IRA. This was slightly below the rate reported by unionized employees (38.0%), but substantially above their prevalence among nonunion employees, 13.5%. Despite their imperfections, particularly the cap on annual on contributions, IRAs seem to be an important

component in owner-operator retirement savings that partially redresses their low rates of participation in other savings schemes.

Considering compensation and benefits as a whole, owner-operators earn somewhat more than nonunion employee drivers, but are less likely to have health insurance or participate in retirement savings programs. The lack of participation in retirement savings would be less of a concern if the owner-operators were building substantial capital value in their business. This however, is not the case as their major asset, the tractor, depreciates rapidly in use. Taken together, the compensation and benefit estimates suggest that the typical owner-operator is better off in terms of immediate compensation but, when benefits are considered, is unlikely to be better off and may be worse off than the typical employee driver. There is, however, a group of owner-operators who are doing better than their nonunion employee counterparts. Many of the owner-operators in the upper part of the owner-operator earnings distribution have both health insurance plans and one or more retirement plans. This group better conforms to our expectations about owner-operators as entrepreneurs than does the owner-operator labor force as a whole.

Work Effort and Control over Work

Hypothesis 2 suggested that drivers become owner-operators not to improve their financial position but rather to gain control over their work and work effort. One important element in work effort is working time. As discussed in *Truck Driver's Business Lives*, work time is regulated by the Hours of Service regulations of the Department of Transportation. Under these regulations, drivers are limited to 10 hours of driving and 5 hours of additional work before a mandatory eight-hour break. They are also limited to no more than 60 hours of work in seven days. Although, if enforced, these regulations would obviate most of the advantages owner-operators might have in controlling work time and effort, violations of the hours of service rules are ubiquitous. For example, driver survey data suggests that half of the drivers violated the 60-hour rule in the last seven days. Given the de facto weakness of regulation, owner-operators may be better able to control working time and effort. We investigate this by considering annual mileage (Table 9.8) and work time (Table 9.9).

Mileage is closely related to drivers work effort and pay. Most pay systems are directly or indirectly linked to mileage. While there is considerable work associated with nondriving time (loading and unloading and waiting time), the majority of work time is spent driving. Turning first to miles driven in the last week, nonunion employees reported the greatest weekly mileage, 2,251 miles per week. Nonunion owner-operators ranked

Table 9.8. Mileage

	<i>Type of Driver</i>		
	<i>Employee</i>		<i>Owner-Operator</i>
	<i>Union</i>	<i>Nonunion</i>	<i>Nonunion</i>
	<i>Last 7 Days</i>		
All	1,991.0	2,251.4	2,109.9
White	1,978.0	2,255.3	2,080.3
Black	2,096.1	2,062.6	2,284.8
Other	2,000.0	2,394.4	2,210.1

Table 9.9. Work Time

	<i>Employee</i>				<i>Owner-Operator</i>	
	<i>Union</i>		<i>Nonunion</i>		<i>Nonunion</i>	
	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
	<i>Hours Last 7 Days</i>					
All	57.5	54	61.1	58.7	52.5	48.3
White	64.7	60	64.6	60.0	56.9	57.0
Black	47.7	42	55.0	56.0	54.3	50.0
Other	60.0	60	63.6	60.0	46.2	38.0
	<i>Days Worked In Last 7</i>					
0	0.00%		0.94%		1.68%	
1	6.06%		0.48%		1.09%	
2	0.00%		2.29%		2.96%	
3	1.06%		4.84%		7.31%	
4	12.34%		10.09%		13.88%	
5	57.74%		39.98%		32.91%	
6	16.16%		23.27%		20.62%	
7	6.66%		18.10%		19.54%	

second, with 2,110 miles in the previous week while union employees reported 1,991 miles. Owner-operators drive about 6% fewer miles per week than do nonunion employee drivers. Calculated on a 50-week work year, owner-operators would drive about 7,000 fewer miles annually than nonunion employees.

Working Time: Hours and Days Worked in the Last Seven Days

Paralleling the mileage data, owner-operators work fewer hours than do employee drivers. Driver survey data suggests that nonunion employees worked an average of 63.6 hours in the previous week (with a median

of 60), union employees worked an average 62.8 hours (with a median of 60) while nonunion owner-operators reported working 55.7 hours (with a median of 55 hours) (Table 9.9). Owner-operators then work between 9 and 14% fewer hours than nonunion employee drivers.

There is however, no difference between owner-operators and non-union employee drivers in the number of days worked over the last seven days. Union status seems to be a more important predictor of the number of days worked than owner operator status. Almost 60% (59.8%) of non-union owner-operators reported working five or fewer days in the prior week, an additional 20% reported working six days, and 20% reported working seven days. This distribution is similar to that of nonunion employees of whom 58.6% reported working five days, 22% reported working six days, and 18% reported working seven days. Union employees had a more favorable distribution of working days with 76% reporting working five or fewer days, 18% reported working six days and 7% reported working seven days. Owner-operators have a higher probability of working one or two days in the previous week than do union or non-union employees. They are however no more likely than nonunion employees to take holiday, vacation or sick days.

Days Since Last Home

Another measure of the nature of work, quality of life, and control over work is how long it has been since a driver returned home. Drivers place considerable value on returning home regularly and perceived job quality is closely related to firm's commitment to returning drivers home on schedule. Other research from the driver survey suggests that driver retention rises by 1.5 months for each additional day home in a month (Belman & Monaco, 2004). Owner-operators do not however return home as regularly as employee drivers. Union drivers return home after three days on average, nonunion employees return home after 4.1 days on average, while nonunion owner-operators average five days before returning home.

The evidence on mileage and working time is then mixed. Owner-operators drive somewhat fewer miles and work 10% fewer hours than employees for a package of compensation that is similar, on average, to that of nonunion employee drivers. This contradicts our Hypothesis 2a, which argues owner-operators will work harder than employee drivers. An alternative view is that the self-employed may use their added control over their work to improve their working conditions. This would suggest that owner-operators may be taking the gains associated with self-employment in the form of better working conditions rather than as compensation. However, the similarity in the distribution of days of work per week between nonunion employee drivers and owner-operators, and owner-

operators longer absence from home is not consistent with this explanation. It is a conundrum why owner-operators would voluntarily forgo income by working less than 60 hours per week, but work as many days per week as nonunion employees while spending additional days away from home if they were spending the gains of self-employment in the form of improved working conditions.

Response to Job Pressures and Violations of Hours of Service

As we have suggested in Hypothesis 2b, the gain to being an owner-operator may be in added control over work rather than monetary compensation. We examine this further by considering how drivers respond to unrealistic schedules for shipments and how often drivers violate the hours of service regulation's ten-hour rule.

Drivers often complain about being given unrealistic schedules, schedules that provide too little time to pick up, move and deliver single or multiple loads. For example, a schedule might provide realistic times for the long distance part of the trip, but be unrealistic with regard to time involved in moving across a metropolitan area between dropping one load and picking up another. Or it might not allow sufficient time to enter a loading dock and load the trailer.

One measure of a driver's control over their work is how they respond to unrealistic schedules. The survey provided drivers with four possible responses to being offered an unrealistic schedule: refusing the load, renegotiating the time, taking the load but not changing their behavior, and driving faster. Drivers indicated any of the methods they used when given an unrealistic schedules (Table 9.10). The first response is to refuse the load. Owner-operators are more likely to indicate that they would refuse a load with an unrealistic schedule (19.5%) than either unionized employees (15.9%) or nonunion employees (11.3%). The null of no difference in response between types of drivers is rejected in a 1% chi-square test. This pattern is not unexpected as employees are potentially subject to discipline for refusing work, union drivers can be disciplined up to termination for refusing work. Although some owner-operators are in a similar position, those on permanent leases can be required to take loads. In contrast, those who obtain loads from brokers would find it relatively easy to refuse a particular undesirable load. The owner-operator would not have to tell the broker, they were refusing the load because of scheduling, as there are always good reasons not to take a particular load. Given the institutional position of owner-operators and employees, the difference in

Table 9.10. What do you do when offered an unreasonable schedule?

<i>% Answering</i>	<i>Employee</i>		<i>Owner-Operator</i>
	<i>Union</i>	<i>Nonunion</i>	<i>Nonunion</i>
Refuse load	15.9%	11.3%	19.4%
Renegotiate	48.6%	59.6%	59.5%
Drive faster	10.0%	15.4%	19.9%
Don't change anything	33.0%	35.5%	27.6%

the proportion who report refusing a load is moderate in magnitude. It is consistent with owner-operators having more control over their work.

Owner-operators and nonunion employees are equally likely to respond to an unrealistic schedule by renegotiation of that schedule, 59.5% of owner-operators and 59.6% of nonunion employees indicate they would renegotiate. Union drivers are less likely (48.7%) to renegotiate. This lower propensity to renegotiate reflects both the type of work union drivers engage in, largely fixed routes with known schedules, and a system in which the response to managerial action is to "obey and grieve." A null hypothesis of no difference in response by driver type cannot however be rejected in even a 10% chi-square test.

A third option for drivers is to take the load and drive according to their usual procedures. This response is more common between union and nonunion employees (35.6% and 33.0% respectively) than among nonunion owner-operators (27.7%) but the differences are not large. Again, the difference in response may reflect the different situation of employees and owner-operators. It is difficult to penalize an employee if they conform to firm and government policies, but easier to penalize a self-employed driver by giving them less work, and less desirable routes in the future. A null of no difference in response by type of driver cannot be rejected in even a 10% chi-square test.

A final option was to drive faster. Owner-operators are more likely to choose this approach (19.9%) than nonunion employees (15.4%) and union employees (10.0%). The null of no difference in response by type of driver can be rejected in a 10%, but not a 5% chi-square test. This pattern is consistent with the immediacy of risks of economic loss for the three types of drivers.

A second measure of response to unrealistic schedules is how often a driver violates the 10-hour rule. As discussed previously in this paper, the 10-hour rule is most honored in its breach. Drivers are, nevertheless, responsible for obeying the rule and are subject to fines when they are caught violating that rule. We use the number of violations of the

ten-hour rule as a measure of how drivers handle schedules which either begin as or evolve into requiring driving beyond 10 hours before a break.

Data from the driver survey suggest there is no difference in the number of violations in the last 30 days between owner-operators and non-union employee drivers. Both groups average 7.5 violations with a median of 3 violations. Union employees averaged 3.3 violations with a median of 1 violation. This suggests no great difference in driver behavior between owner-operators and nonunion employees with regard to working hours beyond those legally permitted.

We also provide some data on hours of service violations by race and type of driver. Although the samples of non-White drivers are not large, it is apparent that non-White drivers are less likely to violate the ten-hour rule. The difference by race may reflect non-White drivers being more subject to inspections and reviews or receiving higher penalties when found in violation than White drivers. The similarity of the response by race across types of drivers suggests that discrimination of this type, if it indeed exists, does not vary between owner-operators and employees, which brings us to Hypothesis 3.

Racial Diversity

We turn to the issue of differential racial diversity for employees and owner-operators. The Midwestern sample for the driver labor force was 82.8% White, 8.4% Black, 0.1% Asian, 3.7% Native American and 5.0% Other. We believe that the large number of drivers indicating that they were Native American is accurate. There is a significant Native American population in the Midwest, particularly in the northern tier of states from Michigan across to Minnesota and beyond.

Hypothesis 3 asked whether the division between owner-operators and employees differs along racial lines. Table 9.11 suggests not. Here we divided the labor force into three groupings: employees, owner-operators and both. The latter are members of the Teamster's union who are paid as employees, but receive separate payments for their truck. There is virtually no difference in the distribution of driver type across the races. Between 71% and 75% of drivers are employees, between 24% and 28% are owner-operators, and a small fraction fall into both categories. The small differences in the distribution of owner-operators by race do not support the hypothesis that self-employment is supportive of racial diversity among truck drivers.⁶

Table 9.11. Racial Composition of the Labor Force

	<i>Total</i>		<i>Owner-Operator</i>	<i>Both</i>	<i>Employee</i>
	<i>#</i>	<i>%</i>			
White	834	82.83%	24.48%	0.67%	74.85%
Black	84	8.39%	26.16%	0.00%	73.84%
Other	88	8.79%	28.28%	0.50%	71.21%

A MULTIVARIATE COMPARISON OF OWNER-OPERATORS AND EMPLOYEES PERFORMANCE

Although the proceeding comparison is suggestive of only modest differences between owner-operators and employees, the apparent similarity could be caused by conflation with other factors. For example, the higher annual earnings of owner-operators may be due to their greater age and occupational experience rather than representing a return to risk or to the superior human capital of the self-employed. We examine this (Hypothesis 4) by estimating regression models of annual earnings, annual mileage, hours worked in the last seven days and the number of violations of the ten-hour rule. The models draw on the work of Belman and Monaco (2001) and include controls for firm and industry characteristics, individual characteristics including human capital (age, experience, education), unionization, type of work (over-the-road vs. local driver), and use of technology. Descriptive statistics for the sample used to estimate these models are found in Table 9.12. We include a dummy variable to indicate whether an individual is an owner-operator, the base group is employee drivers. Only the first wave of the driver survey was used in this research and equations were estimated with 420 observations. We focus narrowly on the estimates of the effect of being an owner-operator on these various outcomes, but an extensive discussion of this model and the full set of estimates is provided in Belman and Monaco (2001). The hypothesis that the coefficients on the explanatory variables were uniformly zero could be rejected in better than a 1% F-test for each of the five models.

The evidence on the performance of owner-operators relative to employee drivers is mixed. The dependent variable for the annual earnings model is, for employee drivers, the log of annual earnings from driving in the previous year. For owner-operators it is the log of annual earnings after truck expenses but before taxes. Applying the Palmer-Lundquist correction, our sample estimate indicate that owner-operators earned 9.4% less than otherwise similar employee drivers in 1996, but this estimates is not close to significance in even a 10% two-tailed t-test.

Table 9.12. Descriptive Statistics on the UMTIP Driver Survey Sample Used for Estimation

Communications Technologies	fax	30.5%
	beeper	27.0%
	two way radio	6.8%
	cellular phone	29.8%
	e-mail	2.3%
	satellite based system	28.6%
Computing Technologies	laptop computer	4.3%
Routing Technologies	dispatcher	31.4%
	cb radio	63.9%
	on-board computer with maps	7.7%
	laptop with maps	3.6%
Collective Bargaining	union member	12.2%
Human Capital	age	42.4 years
	occupational experience	15.3 years
	less than high school education	20.1%
	high school diploma	47.0%
	vocational or technical degree	3.4%
	some college	21.1%
	associate of arts	4.3%
	college degree or higher	4.1%
Other Characteristics	local driver	12.1%
	owner operator	25.9%
	private carriage	18.3%
	paid by the hour	15.3%
	paid percent of revenue	34.2%

Annual earnings are affected by factors such as how many months one has driven, use of a measure which standardizes pay for effort may provide different estimates than annual earnings. Creating such a measure for truck drivers is more difficult than for most occupations as base pay can be calculated by mileage, as a percent of revenue or by the hour. Each of these systems is further complicated by the presence of bonuses and, for some owner-operators, penalties. Our approach to constructing a standardized metric of pay has been to divide the prior year's income from trucking by the prior year's mileage. In the case of owner-operators, we use income less truck expenses but before taxes as our measure of income. The resulting, measure, one we call the effective mileage rate, is the driver's payment in cents per mile. This measure is regressed on the

same explanatory variables as was annual income. Although the sample estimate for the owner-operator dummy suggests owner-operators earn 3.84 cents more per mile than otherwise similar employee drivers, the estimate is again, far from significant in even a one-tailed 10% t-test.

Although our estimates indicate that owner-operators are not paid and do not earn more than employee drivers, the regressions indicate that owner-operators are working less than employee drivers. The third equation regresses 1996 annual mileage on the set of explanatory variables, including age and occupational experience, used in the annual income and effective mileage rate models. Owner-operators are indicated to drive 12,288 fewer miles annually than employee drivers, the coefficient is significant in a 5% two-tailed test against a null of no difference between employees and owner-operators. The results for hours worked are, if anything, stronger than those for annual mileage. Owner-operators are estimated to work 12.5 fewer hours per week than otherwise similar employee drivers, the null of no difference between owner-operators and employee drivers is easily rejected in a 1% two-tailed test.

The last model takes the number of reported violations of the ten-hour rule as the dependent variable. The specification is similar to that of the other models, but adds controls for annual miles and income in the previous year. The estimated coefficient for owner-operators is very small, .007 and far from being statistically significant in any conventional test. There appears to be no difference in the behavior of owner-operators and employee drivers with regard to the 10-hour rule.

Taken together, these estimates suggest that once we control for human capital, as measured by age and experience, owner-operators differ from employee drivers in important ways. Although they are not paid more or earn more than employee drivers, they do not work as hard for their income as they drive fewer miles and work fewer hours. They are also no more likely to violate the ten-hour rule than are employee drivers. These results are consistent with the view that owner-operators take the gains from self-employment in better working conditions rather than as direct income. Although we cannot determine whether this gain comes from ownership of capital, the superior skills and knowledge of owner-operators or some combination of the two, owner-operators appear to have better working conditions than otherwise similar employee drivers, at least with regard to these two aspects of their work life.

CONCLUSIONS

In summary, the analysis in this chapter suggests that owner-operators are not more economically successful than employee drivers particularly

when benefits and other nonsalaried forms of compensation are considered. However, although they may be less economically successful, their working conditions are considerably superior to those of otherwise similar drivers. It may then be that owner-operators choose their positions for superior working conditions, the ability to have greater control over their working lives, and possibly to improve their longevity in their chosen profession.

While in general, our chapter suggests that the majority of owner-operators are not distinct from employee drivers in terms of garnering higher reward for taking on higher risk; there is, however, a substantial tail in the distribution of owner-operators, who appear to lead successful small businesses. These owner-operators not only have higher income than their nonunion employee driver counterparts, their benefit coverage is similar to or better than that of such employee drivers. Interviews with these drivers suggest that this group has found niches which demand skills not possessed by many drivers and they take advantage of these skills to earn both higher incomes and obtain better working conditions. For example, one driver in this group worked for a firm that specialized in oversized loads. The driver was expected, as part of his duties, to determine appropriate routes, obtain certificates from state police, make arrangements for escorts when needed, and take particular care to assure that these loads, which included objects such as the rollers for paper mills, arrived at their final destination unmarked. The reward for these activities was not just high pay and good benefits, but a short work day—oversized loads can only be moved during daylight hours—and considerable freedom with regard to scheduling.

Future research should examine the conditions that lead to extremely successful owner-operators and unsuccessful owner-operators. We know little about what factors predict these outliers. More important, entrepreneurial research might need to be revised to not only consider the ability to accrue wealth as the main outcome of interest, but also to have increased emphasis on other key outcomes such as the ability to control one's work effort, hours of work, and quality of life. With the shift in the U.S. and global workforce to more women with children working changing family structures of support at home and more men interested in family life, greater consideration needs to be given to these nonfinancial outcomes in conventional entrepreneurship theory. Our review of the entrepreneurship literature showed little or no discussion of quality of life issues. Future research should delve more in these issues.

In addition, more work is needed on linkages between diversity and employee and self-employed status. We were surprised to not find more minorities who were owner-operators. It could be that civil rights legislation has had a greater impact on the employment practices of large firms

than on structural changes affecting minorities' access to human and financial capital enabling them to become owner-operators. More research should be done on how to increase minority access to owner operator status and the barriers that exist. One limitation of this study is that it is only conducted on one industry. While on the one hand it is helpful to focus analysis on one industry in order to make sure industry differences are controlled for. On the other hand, it would be helpful to collect data such as those in this paper on earnings, benefits, control over work hours, work effort, diversity and employment status, use of technology, and quality of life for entrepreneurs across a variety of industries at one time.

Overall, the evidence presented in this chapter suggests that it is not so much opportunities for profit that drive the truckers' behavior toward self-ownership, as much as the result of institutional competitive forces pushing trucking firms to be more flexible and responsive. Owner-operators are truck drivers who are more likely to perceive this increased flexibility and responsiveness over company employed truckers. Thus, our chapter adds to the field by underscoring the value of Shane and Venkataraman's (2000) definition that shows us that individual entrepreneurial behavior must be understood as an interaction with the institutional context in which it is embedded. Our discussion of owner-operator truck drivers also has provided a useful means for understanding whether individuals employed by large organizations can be viewed as Entrepreneurs. We also have demonstrated the importance for future research on entrepreneurship to draw from human resource and organizational behavior research and theory on total compensation and job motivation and performance, diversity, and the learning curve. We also hope our chapter encourages entrepreneurial researchers to look creatively at many work fields in their studies in order to better generalize entrepreneurial theory to the wide spectrum of jobs and careers across the economic and class strata.

NOTES

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Ehrenberg,
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references,
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correct?

1. During the Civil War, Confederate prisoners were offered the opportunity to serve in the union army in the West fighting Indians as an alternative to prison camp. Those who accepted this choice referred to themselves as "galvanized Yankees." An earlier version of this paper was presented at the Entrepreneurship conference at Ohio State University in March 2003.
2. We draw heavily on Muhl (2002) for this discussion.
3. See Taylor (1996) and Bernhardt (1994).
4. See Smith and Ehrenberg (2000).

5. There are many possible definition of full time work. The overtime provisions of the Fair Labor Standards Act establishes a full time work week of 40 hours, or 2080 hours per year. If we consider those working 30 hours per week or more as full time employees, the average full time employee worked 39.88 hours per week, if we move the dividing line for full time employment up to 35 hours per week, the average full time employee worked 40.6 hours in 2000 (authors analysis of the Outgoing Rotation Files of the of the 2000 Current Population Survey).
6. We do not consider diversity by gender in this paper because women are such small proportion of truck drivers, about 2% nationwide, and of the sample, 1.8%, that it is difficult to develop meaningful analyses so small a proportion of this sample.

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