

Do some workers have minimum wage careers?

Most workers who begin their careers in minimum-wage jobs eventually gain more experience and move on to higher paying jobs; however, some workers spend substantial portions of their early careers consistently working in minimum wage jobs

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Most minimum wage research has focused on teens and young adults because those groups are most likely to work at minimum wage jobs.¹ This emphasis on young workers is appropriate to the extent that the effects of minimum wages, whatever they may be, are transitory because young workers soon age and move into higher wage jobs. Yet, there is evidence that some older workers who have finished school and have worked in the job market for some time are still earning minimum wages.² This article explores whether some workers spend a significant portion of their post-teen, post-school years in—or earn a significant portion of their earnings from—minimum wage jobs. In other words, do some workers have “minimum wage careers”?

There is already a short literature on the amount of time workers spend in minimum wage jobs. For example, a study by Ralph E. Smith and Bruce Vavrichek examined the 1-year earnings mobility of workers that initially worked at minimum wage jobs.³ They found that 63 percent of the minimum-wage workers in their sample were employed at higher-than-minimum wage jobs 1 year later. Also, Bradley R. Schiller found that “only 15 percent of the 1980 entrants still had any (minimum wage) experience after three years, “which suggests that long-term minimum wage employment is rare.⁴ More than three-quarters of Schiller’s sample were still attending school while working at their first job, however, and rela-

tively few of the sample workers had embarked on their post-school career.⁵

This article, by contrast, focuses on workers who have finished high school or college, and so presumably embarked on their careers. Using the National Longitudinal Study of Youth 1979 (NLSY79), we follow a large sample of workers after they “permanently” leave school. We find that upon leaving school, the vast majority of workers quickly move into wage ranges well above the minimum wage. Thus, minimum wages have virtually no effect on the careers of most workers. However, we identify a nontrivial fraction of workers that spend substantial portions of their post-school career on minimum or near-minimum wage jobs. For example, we estimate that more than 8 percent of workers spend at least 50 percent of their first 10 post-school years working in jobs paying less than the minimum wage plus \$1.00. We find that workers with such minimum wage careers are largely drawn from demographic groups with generally low wages: women, minorities, and the less-educated. Thus, while relatively few in number, there is an identifiable subpopulation of workers whose lifetime income and employment is likely to be associated with minimum wages. For individuals in this group, minimum wages do not have merely transitory effects.

This article places our NLSY79 results in context by examining the incidence of minimum and near-minimum wage jobs among workers in the

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Current Population Survey (CPS). The CPS is beneficial to this study because it provides useful point-in-career or point-in-time estimates of minimum wage jobholders. The large sample size and broad age coverage of the CPS offer useful background information, but its cross-sectional nature lead us to expend most of our efforts on the NLSY79. This article also exploits the longitudinal structure of the NLSY79 to calculate the proportion of workers' early careers spent on minimum wage jobs. It further examines the relative incidence of such minimum wage jobholding across various demographic groups.

Overview from the cps

Our analysis is centered on the NLSY79 because we need panel data to accurately gauge the presence or absence of minimum wage careers. Before doing so, however, we think it would be useful to take a broader look at the incidence of minimum wage jobs over the life cycle. The outgoing rotation groups from the Current Population Survey provide estimates of hourly wage rates for a very large sample of workers over all age groups.⁶ For 1993 and 1994, we extracted information on all workers between the ages of 16 and 65 who we estimated were making at least \$1 per hour. We then characterized each worker as having a minimum wage job depending upon whether they were within \$.25, \$.50, \$1.00, or \$2.00 of the prevailing minimum wage (that is, the higher of the Federal or the relevant State minimum wage). The top panel of chart 1 graphs the fraction of the employed in each age group characterized as having a minimum wage job under these four criteria.

The top panel of chart 1 indicates that the incidence of minimum wage jobs is very high among teenagers. In 1993 and 1994, roughly 40 percent of 16-year-olds were employed at jobs paying less than the minimum wage plus \$.25, and virtually all 16-year-olds reported working at jobs paying less than the minimum wage plus \$2.00. In addition, the chart indicates that the incidence of minimum-wage jobholding drops off quickly as workers age. For example, the fraction of 25-year-olds with minimum wage jobs is estimated to be only 5.5 percent for the minimum plus \$.25 cutoff, and 14.6 percent for the minimum plus \$1.00 cutoff. The chart therefore supports the view that teenagers tend to work at minimum wage jobs, but they move out of minimum wage jobs as they acquire more schooling and experience.

Despite the movement of most young workers into higher paying jobs, chart 1 indicates that aging cohorts leave some workers behind in minimum wage jobs. In particular, chart 1 shows that while the fraction of workers in minimum wage jobs goes down significantly as cohorts age, it never gets to zero. For example, even among workers in their mid-40's, which are the peak earning years for most workers, approximately 2.5 percent are in jobs paying less than the minimum plus \$.25, and approximately 8 percent are in jobs paying less

than the minimum plus \$1.00. What we cannot tell from these cross-sectional data is whether there was a small minority who persistently work at minimum wage jobs or a larger number of persons with a fleeting minimum wage experience. Panel data on workers' careers are needed to address this question.

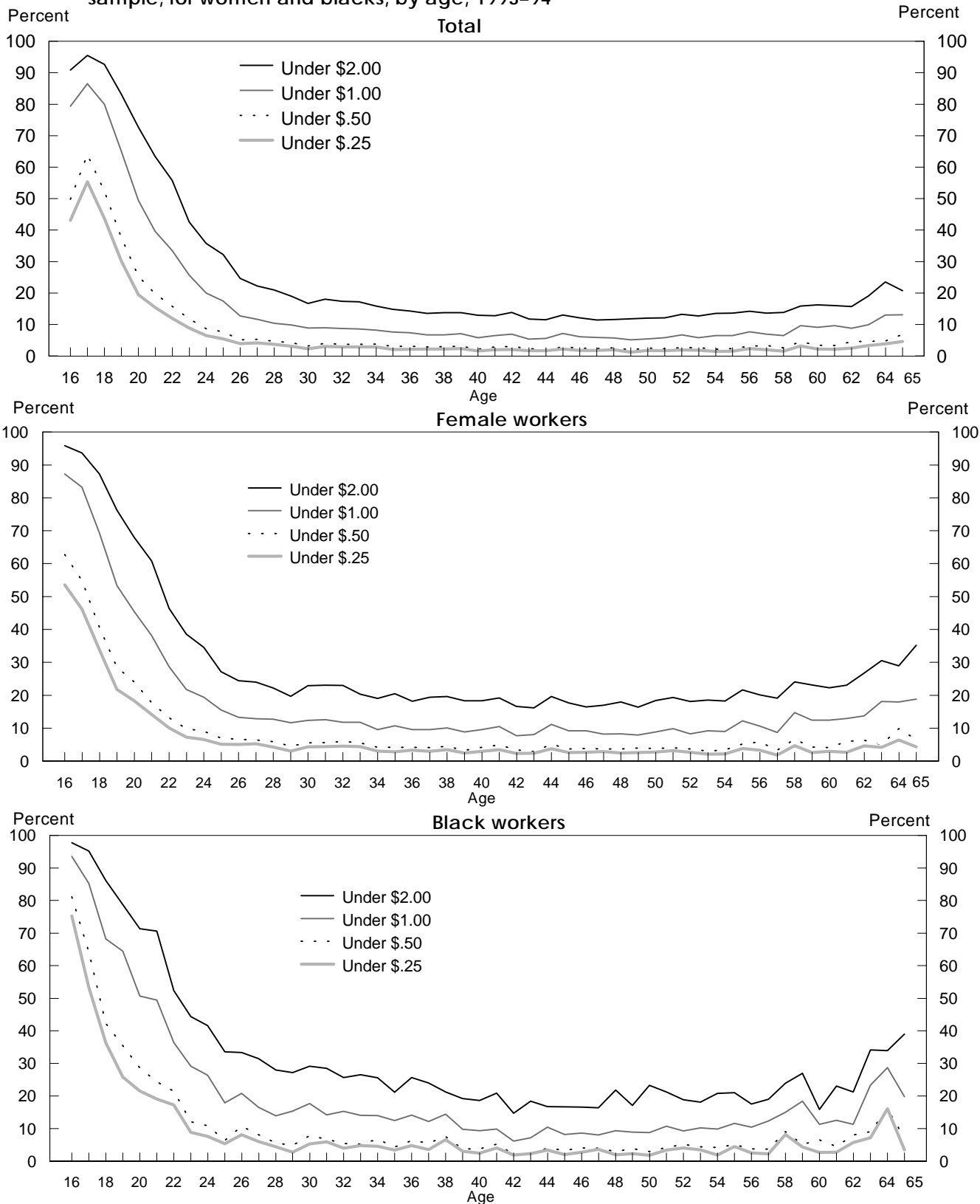
The middle and bottom panels of chart 1 present figures analogous to the top panel, with the exception that the middle panel is based on a sample of women and the bottom panel is based on a sample of blacks. The figures for these two groups are very similar to the aggregate patterns revealed in the top panel. Teenagers are extremely likely to work at minimum or near-minimum wage jobs, but older workers in both groups generally work at higher paying jobs. Comparisons across the panels in the chart show, however, that the incidence of minimum wage jobholding is higher for women and blacks than it is for the population at large. This is not surprising, given that these groups are generally overrepresented in the low-wage labor market. Nevertheless, the chart suggests that some groups may be more likely than others to have truly extended periods of minimum wage employment. Our analysis of the panel data in the NLSY79 will take up this issue in some detail.

Longitudinal analysis of the NLSY79

The National Longitudinal Survey of Youth began in 1979 with 12,686 men and women between the ages of 14 and 22.⁷ All members of the sample were born in the years 1957–64, and were living in the United States when they were selected. (Note that persons who immigrated to the United States after 1978 were excluded from the sample.) We restrict our attention to the portion of each respondent's worklife that occurs after they first leave school for a period that will last at least 2 years. Although a few workers may go back to school at some later date, this restriction focuses attention on the portion of individuals' worklife that might be appropriately termed "career" work. In contrast, work before this point is generally stopgap work between periods of schooling, or a source of income in the midst of schooling. There are some NLSY79 respondents for whom we were unable to accurately characterize the first year of career work, largely because of missing data, and we excluded such workers from our analysis. This and other exclusion restrictions naturally raise issues of selectivity. We have no completely satisfactory answer to the question of how sample selection affects our results, but we consider this issue more fully in the appendix at the end of this article.

Our goal is to calculate the fraction of a worker's career that is spent on minimum wage jobs. This goal requires that we accurately characterize a worker's minimum wage status over each year within a career. There are four reasons this may be impossible for some workers in some years. First, there may be no valid wage because the worker went back to

Chart 1. Percentage of workers with hourly wages close to the minimum wage, total sample, for women and blacks, by age, 1993-94



school (after at least a 2-year hiatus), because the worker neither worked nor went to school, or because the information was missing from the interview. Second, we may not know the prevailing minimum wage due to missing information on the worker's state of residence. Third, some workers leave the sample, although MaCurdy, Mroz, and Gritz suggest that this imparts little biases to most measures of labor market activity.⁸

And fourth, the fact that the last year of the NLSY79 we use, 1994, leads to somewhat nonrandom selection when we examine behavior farther out into workers' careers.⁹ Recall that the NLSY79 began with persons between the ages of 14 and 22 in 1979. For those who end their education with high school, we almost always have at least 10 years of post-school observations. For persons finishing a college degree at the age of 22, however, we will have 10 years of post-school data for the older NLSY79 respondents, but not for the younger respondents. This reasoning suggests that as we look further out into respondents' careers, the sample becomes increasingly selective with respect to schooling. For example, the sample of workers for whom we have 10 years of post-school data has slightly lower initial schooling than the corresponding sample for whom we have 5 years of post-school data. This selectivity is less acute for the earlier birth cohorts within the NLSY79, because we have many years of post-school data for almost everyone in these cohorts, whereas the selectivity on education is more severe for the later cohorts within the NLSY79. This fact leads us, in some instances, to focus on the earlier birth cohorts to minimize this selectivity.

Table 1 displays some basic attributes of our NLSY79 sample.¹⁰ The table presents summary statistics by "years into career," which is defined as the number of years elapsed since the worker first left school for a period of at least 2 years. The sample is restricted to those workers for whom we could

determine their minimum wage status. Looking at the top row of the table first, note that the number of observations included in the sample decreases from 4,322 in the first year of the career down to 3,494 in the tenth year of the career. Again, this occurs because of survey attrition; the younger and more highly educated have not had as many post-school years in the workforce by 1994, and because some persons leave the workforce. This latter phenomenon is partly driven by women who leave the workforce to raise children, as can be seen by the gradually decreasing share of women in the sample as we look further out into people's careers. For example, women account for 48.5 percent of our sample at 1 year into career, but 46.3 percent at 10 years into a career.

For each year into the career of our sample, table 2 reports the fraction of the sample for which the wage is within \$.25, \$.50, \$1.00, \$1.50, or \$2.00 of the prevailing minimum wage. We have several reasons for defining "minimum wage jobs" in these alternative fashions. The lowest threshold, the minimum wage plus \$.25, is our preferred method for characterizing workers currently on a minimum wage job. Given the possibility of misreporting and division bias (hourly wages are sometimes calculated by dividing earnings by reported hours), it seems reasonable to allow for some measurement error in characterizing jobs as minimum wage or not minimum wage. Our interest in the higher thresholds (minimum plus \$.50, minimum plus \$1.00, and so forth) are motivated in part by measurement error, but also because workers below these higher bands may be affected by the minimum wage in other ways. For example, Jean B. Grossman and David Card and Alan Krueger study the possibility of ripple effects, that is, the minimum wage may result in wage increases for workers slightly above the minimum.¹¹ As another example, future increases in the minimum wage are likely to be in this range, so it is useful to consider the broader class of workers that might be affected by higher minimum wages that are

Table 1. Sample means of youth in the workforce by years into career

Variable	Years into career ¹					
	1	2	4	6	8	10
Number of observations	4,322	4,066	3,689	3,608	3,552	3,494
Education at this point of career	12.8	12.8	12.9	12.9	13.0	13.0
Age at this point of career	20.1	21.1	23.1	25.1	27.1	29.1
Year of first job	1981.5	1981.5	1981.5	1981.5	1981.5	1981.5
Female = 1 (in percent)	48.5	48.9	47.9	46.6	46.5	46.3
Black = 1 (in percent)	12.3	11.9	11.5	11.7	12.0	11.9
Urban = 1 (in percent)	79.4	79.0	80.0	78.9	79.1	78.8
Father's education as of 1979 (years)	11.8	11.9	11.9	11.9	11.9	11.8
Mother's education as of 1979 (years)	11.6	11.6	11.7	11.6	11.6	11.6

¹ "Years into career" begin immediately after schooling was completed.

SOURCE: All numbers derived from authors' calculations, using the National Longitudinal Survey of Youth 1979.

NOTE: Sample for each year restricted to those people for whom we could determine whether or not they were working at a minimum wage job.

Table 2. Share of population in minimum or near-minimum wage jobs by years into career

[In percent]

Years into career ¹	Above prevailing minimum wage by no more than—				
	\$.25	\$.50	\$1.00	\$1.50	\$2.00
1	30.5	38.7	54.5	64.3	72.6
2	23.4	30.2	42.4	52.4	62.0
3	16.7	21.8	31.9	42.0	50.8
4	13.5	17.2	25.6	33.9	42.9
5	10.5	14.0	21.0	28.0	37.0
6	9.2	12.0	17.9	24.2	32.4
7	8.6	10.4	15.8	20.6	27.5
8	7.7	9.5	14.4	18.2	25.2
9	7.3	8.8	12.7	17.1	22.5
10	7.3	8.6	12.2	15.1	20.3

¹ "Years into career" begin immediately after schooling was completed.

SOURCE: Authors' calculations from the National Longitudinal Survey of Youth 1979.

Table 3. Transition rates into and out of minimum wage jobs, by years into career

[In percent]

Transition	Year(<i>t</i> -1) → year(<i>t</i>)								
	1→2	2→3	3→4	4→5	5→6	6→7	7→8	8→9	9→10
Worker holds nonminimum wage job in first year									
1. Probability of minimum wage job in second year	10.5	8.4	6.7	5.3	4.7	4.6	4.3	3.8	3.7
2. Probability of nonminimum wage job in second year	89.5	91.6	93.3	94.7	95.3	95.4	95.7	96.2	97.3
Worker holds minimum wage job in first year									
3. Probability of minimum wage job in second year	53.6	44.9	42.9	38.4	37.2	44.7	33.7	44.6	46.1
4. Probability of nonminimum wage job in second year	46.4	55.1	57.1	61.6	62.8	55.3	56.3	55.4	53.9

NOTE: A job in year *t* minimum wage jobs if a person is on a job paying less than the minimum wage plus \$.25 in year *t*, where years are indexed by their position within a person's career.

SOURCE: Authors' calculations from the National Longitudinal Survey of Youth 1979.

within the range of future policy options.

Table 2 indicates that a substantial fraction of workers start their careers on jobs that pay near-minimum wages. For example, roughly 30 percent of workers in our sample held initial jobs within \$.25 of the minimum wage, and more than 50 percent of the sample held jobs within \$1.00 of the prevailing minimum. Thus, for most workers, their initial jobs pay a wage that might be affected by significant changes in the minimum wage. As workers age, however, they gradually move out of jobs within range of the minimum wage. For example, by the eighth year of their career, less than 8 percent of our sample worked in jobs paying less than the minimum plus \$.25, and roughly 14 percent worked in jobs paying less than the minimum plus \$1.00. Thus, inexperienced workers disproportionately have minimum wage jobs, however defined.

Table 3 illustrates the evolution of minimum wage exposure from a different angle. If we divide workers into two groups based on whether or not their wages are above the

minimum wage plus \$.25, then there are four possible transitions that can be made across any pair of years. Rows 1 and 2 of table 3 report the probabilities of being in (row 1) or out of (row 2) a minimum wage job in year *t*, conditional on having held a job that paid *more* than the minimum wage plus \$.25 in year *t*-1. Rows 3 and 4 report the same probabilities conditional on having held a job that paid *less* than the minimum wage plus \$.25 in year *t*-1. The columns of table 3 examine these transitions across adjacent pairs of years that move farther out into workers' careers as the table moves from left to right. An example of how to interpret the table is that the 10.5 entry under row 1 and the 1→2 column indicates that 10.5 percent of the people with nonminimum wage jobs in the first year of their career went on to hold a minimum wage job in their next year of work.

Row 1 of table 3 indicates that transitions from nonminimum to minimum wage jobs are rare, particularly as workers get further out into their careers. Row 2 shows that the analogous transitions from nonminimum to nonminimum wage sta-

tus are correspondingly high, as of course they must be, because the sum of rows 1 and 2 must be 100 for any column. Thus, once workers find a job above the minimum wage, they rarely go back to lower paying minimum wage work. Rows 3 and 4 report the analogous probabilities for transitions out of minimum wage work. These rows show that the odds of a minimum wage worker finding a nonminimum wage job in the following year are in the 40-percent- to-50-percent range throughout the first 10 years of workers' careers.¹² Thus, workers are much more likely to escape from minimum wage employment than they are likely to fall back into such low wage jobs after an initial period at higher paying jobs. Plugging these transition rates into standard stock-flow identities yields the prediction that minimum wage work becomes increasingly less likely as cohorts age, which is of course what the previous results showed.

These patterns are broadly consistent with the patterns of the incidence of minimum wage jobs by age from the CPS out-

going rotation groups. Note that transitions in the two samples are not directly comparable, as the synthetic panel of the CPS outgoing rotation groups acquires schooling and experience over time, whereas the true panel of the NLSY79 acquires only experience (since they have left school permanently in most cases).¹³ Nevertheless, in both samples there is a dramatic transition out of minimum or near-minimum wage jobs as cohorts age. However, is it also true that a significant minority of workers remain in such jobs as they age and gain experience? With the results presented so far, it is not possible to ascertain whether such minimum wage workers represent a stable minority of workers, or whether instead the identity of minimum wage workers changes from year to year. Obviously, the existence of minimum wage careers hinges on the answer to this question.

Table 4 presents information on the fraction of workers' careers spent on minimum wage jobs. The top section of table 4 reports the fraction of the workers first *y* career years spent in

Table 4. Proportion of career spent in minimum or near-minimum wage jobs, by mean, wage-weighted, and real wage-weighted percentages, and by years into career

[In percent]					
Years into career ¹	Mean share of years spent above prevailing minimum wage by no more than—				
	\$25	\$50	\$100	\$150	\$200
1	30.5	38.7	54.5	64.3	72.6
2	26.6	34.0	48.0	57.9	67.0
3	22.2	29.0	41.8	51.8	60.9
4	19.1	25.0	36.7	46.4	55.5
5	16.5	21.7	32.4	41.6	50.5
6	14.6	19.3	29.0	37.5	46.6
7	13.3	17.5	26.4	34.3	42.9
8	12.0	15.8	24.0	31.3	39.7
9	10.9	14.3	21.9	28.7	36.7
10	10.1	13.3	20.4	16.9	34.6
Wage-weighted proportion of career spent above prevailing minimum wage by no more than—					
	\$25	\$50	\$100	\$150	\$200
1	30.5	38.7	54.5	64.3	72.6
2	24.3	31.5	45.2	55.1	64.6
3	18.7	25.0	37.3	47.3	56.6
4	15.1	20.3	31.2	40.7	49.8
5	12.4	16.8	26.4	35.1	44.0
6	10.5	14.3	22.7	30.6	39.2
7	9.1	12.5	20.0	27.0	35.2
8	7.8	10.7	17.3	23.7	31.5
9	6.7	9.2	15.2	20.9	28.0
10	6.1	8.3	13.7	18.9	25.7
Real wage-weighted proportion of career spent above prevailing minimum wage by no more than—					
	\$25	\$50	\$100	\$150	\$200
1	30.5	38.7	54.5	64.3	72.6
2	24.4	31.6	45.4	55.3	64.7
3	18.9	25.3	37.7	47.7	57.0
4	15.4	20.7	31.8	41.3	50.5
5	12.8	17.3	27.1	35.9	44.8
6	10.9	14.9	23.6	31.6	40.2
7	9.6	13.1	21.0	28.2	36.4
8	8.4	11.4	18.4	25.0	32.8
9	7.3	10.0	16.3	22.3	29.6
10	6.6	9.1	14.9	20.5	27.4

¹ "Years into career" begin immediately after schooling was completed.

SOURCE: Authors' calculations from the National Longitudinal Survey of Youth 1979.

Table 5. Fraction of population spending a percentage of their career in jobs within an amount of the minimum wage

[In percent]

Years into career ¹	Above prevailing minimum wage by \$.50			Above prevailing minimum wage by \$1.00			Above prevailing minimum wage by \$1.50		
	25 percent of career	50 percent of career	75 percent of career	25 percent of career	50 percent of career	75 percent of career	25 percent of career	50 percent of career	75 percent of career
Total sample									
1	38.5	38.5	38.5	54.1	54.1	54.1	63.8	63.8	63.8
2	42.6	42.6	21.2	56.3	56.3	33.8	64.9	64.9	43.7
3	42.5	22.9	10.0	54.8	35.1	18.9	62.0	45.4	27.6
4	40.5	22.8	12.3	51.5	34.3	21.0	58.0	43.5	29.8
5	22.0	12.7	6.1	33.3	21.4	12.4	41.7	29.8	19.3
6	21.1	12.4	3.0	31.5	20.8	7.6	39.6	28.6	12.4
7	20.6	7.0	1.8	30.6	13.3	4.7	38.0	19.7	8.2
8	19.6	7.0	2.1	28.9	13.0	5.1	35.8	19.2	8.5
9	12.1	3.7	1.0	19.6	8.0	3.0	25.8	13.4	5.3
10	11.8	3.8	0.7	18.8	8.3	1.9	24.9	13.2	3.6
Blacks									
1	45.9	45.9	45.9	62.0	62.0	62.0	71.3	71.3	71.3
2	49.1	49.1	28.2	62.7	62.7	41.5	69.4	69.4	52.0
3	45.0	26.8	13.0	56.1	38.5	22.3	61.2	47.9	30.3
4	41.7	25.4	15.8	51.7	37.0	23.6	55.7	44.8	32.5
5	24.5	16.4	8.7	35.4	24.4	15.6	42.2	31.8	23.2
6	24.6	16.6	4.6	34.3	25.0	11.1	40.9	31.3	17.3
7	23.4	10.8	2.6	32.3	17.2	7.5	38.7	24.0	12.3
8	22.7	10.6	3.4	31.3	17.1	8.4	37.2	23.1	13.0
9	14.4	5.7	1.7	21.2	11.3	4.5	27.0	16.2	8.4
10	13.6	5.9	.8	20.1	11.1	2.9	25.4	16.2	6.1
Women									
1	46.5	46.5	46.5	61.9	61.9	61.9	70.6	70.6	70.6
2	50.7	50.7	28.7	63.7	63.7	42.9	71.2	71.2	52.6
3	49.2	29.7	14.7	60.5	43.1	25.6	66.2	52.3	35.5
4	46.6	28.2	16.9	56.2	40.9	27.2	61.2	48.7	36.8
5	27.0	16.6	8.5	38.7	26.8	16.0	46.1	35.4	24.3
6	24.7	15.2	4.6	35.2	24.9	10.2	42.1	32.6	15.2
7	23.9	9.1	2.9	34.1	16.1	6.7	40.1	23.6	10.6
8	22.3	8.8	3.2	31.5	15.3	7.1	37.3	22.7	10.7
9	13.9	5.3	1.5	22.4	9.9	4.2	28.3	15.6	7.1
10	13.4	5.6	1.1	21.1	10.4	2.7	26.8	15.1	4.7

¹ "Years into career" begin immediately after schooling was completed.

SOURCE: Authors' calculations from the National Longitudinal Survey of Youth 1979.

jobs paying less than the minimum wage plus \$.x. Thus, as an example, the entry in the table where $x = .25$ and "Years into career" equals 6 indicates that the average worker spent 14.6 percent of his or her first 6 career years in jobs that paid less than the prevailing minimum plus \$.25. The results indicate that, depending on how we define "near-minimum," a substantial fraction of these cohorts' first 10 years were spent in minimum, or near-minimum wage jobs. For example, the mean worker in this sample spent 29 percent of their first 6 years on jobs paying less than the minimum wage plus \$1.00, and 35 percent of their first 10 years on jobs paying less than the minimum wage plus \$2.00. Thus, the top panel of table 4 indicates that a substantial portion of most workers' early careers is spent on minimum or near-minimum wage jobs.

The top section of table 4 may overstate the importance of minimum wage jobs by weighting all years equally. If workers can shift resources over the life-cycle, or if intergenerational

transfers ease the burden of low income in one's early years, then the salience of minimum wage jobholding would be better measured by weighting years by the wage received. That is, one may be interested in the proportion of a person's career income received in minimum wage jobs. To follow this line of reasoning, the next two sections of table 4 repeat the analysis of the top section with the exception that the fraction of years in minimum wage jobs are weighted by the nominal wage (middle section) or the real wage (bottom section).¹⁴ The table indicates that weighting by either nominal or real wages significantly reduces the importance of minimum wage jobs in the first 10 years of a career. However, there is still a nontrivial fraction of years spent on minimum wage jobs under either metric. For example, the middle section indicates that, when years are weighted by nominal wages, at the mean, workers spends roughly 20 percent of their first 10 career years in jobs paying less than the minimum wage plus \$1.50. As a second

example, the bottom section of table 4 indicates that when years are weighted by real wages, workers at the mean spend 10 percent of their first 9 years in jobs paying less than the minimum wage plus \$.50.

The data in table 4 indicate that the NLSY79 cohort continued to hold minimum wage jobs as they gained experience, albeit with decreasing frequency. It still remains to be seen whether there is any variation across respondents in the fraction of time spent on minimum wage jobs. Table 5 begins to address this question. In particular, table 5 reports the fraction of the population for whom over Z percent of the first y years of their career are spent working on jobs paying less than the minimum wage plus $\$.x$. As an example, the entry where the row for "Years into career" is 5 and the column under "Above prevailing minimum wage by \$.50" and "75 percent of career" indicates that 6.1 percent of the sample spent more than 75 percent of their first 5 career years in jobs that paid less than the prevailing minimum plus \$.50. As a second example, 25.8 percent of the sample spent at least 25 percent of their first 9 years on jobs that paid less than the minimum plus \$1.50.

Table 5 exploits the panel nature of the data to show the extent to which some workers are continually employed in minimum or near-minimum wage jobs. The figures indicate that few workers consistently hold minimum or near-minimum wage jobs. It could hardly be otherwise, given the low incidence of minimum wage jobholding seen in the cross-sectional comparisons of the previous table. There is, however, a non-negligible subset of the population that continues to work at near-minimum wages throughout much of their early career. For example, table 5 indicates that almost 4 percent of the population spends at least 50 percent of their first 9 post-school years working at jobs paying less than the minimum

plus \$.50. As another example, table 5 indicates that roughly 5 percent of the population spends more than 75 percent of their first 8 post-school years working at jobs paying less than the minimum plus \$1.00. For these workers, it is clear that minimum wage policy has potentially long-ranging effects.

It is important to keep the results from earlier tables in mind when interpreting table 5. In particular, although some workers 9 or 10 years into their careers have spent a significant cumulative time on minimum wage jobs, the figures in the top section of table 5 overstate the numbers of workers that are in minimum wage jobs this far out in their careers. That overstatement occurs because most workers accumulate minimum wage job experience most quickly in the first few years of their career. Nevertheless, there are significant fractions of workers in minimum wage jobs after several years of post-school experience have been accumulated. For example, table 2 showed that roughly 8 percent of the population held a job paying less than the minimum plus \$.50 at 10 years into their career. Thus, the proportion of workers with "minimum wage careers" will not necessarily go to zero as cohorts age. Some workers remain at minimum wage jobs far into their careers.

Which groups are particularly likely to have such minimum wage careers? It is natural to look at groups with generally low wages, because they are likely overrepresented in the minimum wage population. The middle section in table 5 shows that, like the broader population, few blacks are consistently employed at minimum wage jobs for the duration of their early careers. For example, 11.3 percent of the black population spent at least 50 percent of their first 9 post-school years in jobs paying less than the minimum plus \$1.00. As another example, roughly 3.4 percent of the black population spent more than 75 percent of their first 8 post-school years in jobs paying less than the minimum plus \$.50. Thus, extended

Table 6. Model of minimum wage careers

Independent variable	Dependent variable=fraction of first selected number of years spent in jobs paying less than the prevailing minimum wage jobs \$1.00		
	5 years	8 years	10 years
Intercept	1.676 (.071)	1.339 (.067)	1.150 (.056)
Age as of this year	-.037 (.004)	-.027 (.003)	.022 (.003)
Number of children	-.028 (.004)	-.026 (.007)	-.020 (.006)
Female .....	.109 (.013)	.067 (.013)	.062 (.014)
Female, number of children .....	.070 (.020)	-.049 (.014)	.034 (.011)
Black .....	.073 (.024)	-.061 (.021)	.053 (.020)
Black, female	-.035 (.037)	-.015 (.033)	-.031 (.032)
Education	-.029 (.005)	-.024 (.004)	-.017 (.004)
Urban	-.049 (.017)	-.039 (.014)	-.039 (.012)
Father's education	-.005 (.002)	-.003 (.002)	-.002 (.002)
Mother's education	-.002 (.003)	-.003 (.067)	-.004 (.002)
Number of observations	2,494	2,132	1,942
R-square .....	.259	.244	.211

NOTE: Standard errors properly account for the complex survey design of the data.

SOURCE: Authors' calculations based on data from the National Longitudinal Survey of Youth 1979.

Table 7. Model predictions for percentage of first few years in minimum wage jobs for selected years of education

Years and characteristic	Years of education				
	8	10	12	14	16
First 5 years					
Black—rural—woman	63.0	57.2	51.3	45.5	39.6
White—rural—woman	59.2	53.4	47.5	41.7	35.9
Black—rural—man	52.0	46.2	40.3	34.5	28.7
Black—urban—man	47.1	41.3	35.4	29.6	23.8
White—rural—man	44.7	38.8	33.0	27.1	21.3
White—urban—man	39.7	33.9	28.1	22.2	16.4
First 8 years					
Black—rural—woman	50.2	45.4	40.7	35.9	31.1
White—rural—woman	45.6	40.8	36.1	31.3	26.5
Black—rural—man	40.7	36.0	31.2	26.5	21.7
Black—urban—man	36.8	32.0	27.3	22.5	17.8
White—rural—man	34.7	29.9	25.1	20.4	15.6
White—urban—man	30.7	25.9	21.2	16.4	11.7
First 10 years					
Black—rural—woman	40.4	36.9	33.5	30.0	26.6
White—rural—woman	38.2	34.7	31.2	27.8	24.3
Black—rural—man	33.8	30.4	26.9	23.5	20.0
Black—urban—man	30.0	26.5	23.1	19.6	16.2
White—rural—man	28.5	25.1	21.6	18.1	14.7
White—urban—man	24.7	21.2	17.7	14.3	10.8

NOTE: All predictions based on linear regressions reported in table 6.

SOURCE: Authors' calculations based on data from the National Longitudinal Survey of Youth 1979.

exposure to minimum wage jobs is the exception rather than the norm for black workers.

As with the broader population, however, there is a subset of black workers with extended stays in minimum wage jobs. Further, the proportion of black workers in such jobs is substantially higher than that for nonblacks. For example, roughly 13 percent of the black population spent more than 75 percent of their first 8 post-school years on jobs paying less than the minimum plus \$1.50, whereas the corresponding figure for the full sample was only 8.5 percent. Thus, blacks are overrepresented in the minimum and near-minimum wage population.

The bottom section of table 5 examines similar shares for women. On this dimension, the labor market experience for women as a group is very similar to that for blacks. True “minimum wage careers” are quite rare among women, as most women spend only a small fraction of their careers on minimum or near-minimum wage jobs. However, women are substantially more likely than men to have extended stays in minimum or near-minimum wage jobs. For example, approximately 4.2 percent of women spend more than 75 percent of their first

9 post-school years working in jobs paying less than the minimum plus \$1.00. Again, this is not surprising, given that women are generally overrepresented in the low-wage population.

To conduct a more systematic analysis of the determinants of minimum wage careers, we estimated linear regression models in which the dependent variable was the fraction of time spent on jobs paying less than the minimum wage plus \$1.00. The right-hand side variables in this analysis not only included race and sex, but also years of schooling, age, number of children, whether or not the person lived in an urban area, and measures of the father’s and mother’s education. Table 6 reports the results of this analysis for 5, 8, and 10 years into a career.¹⁵ The results are broadly consistent with expectations based on general analyses of the wage distribution. For example, being highly educated and living in an urban area are both strongly correlated with *not* having a minimum wage career. In addition, consistent with the preceding tables, blacks and women are more likely than white males to spend significant portions of their career in minimum wage jobs. Fi-

nally, the presence of children is positively correlated with minimum wage job-holding for women, but negatively correlated for men. These relationships are all consistent with previously established patterns of wage variation.

Table 7 presents fitted values for hypothetical workers based on the models of table 6. Predictions are presented for three panels of 5, 8, and 10 years into careers. The rows within each panel vary by race, sex, and urban/rural designation, and each row presents estimates for five different levels of education. All other variables are set to sample means. An example of how to read the table is that the top left entry indicates that the model predicts that a black, rural woman with 8 years of schooling is predicted to have spent 63 percent of her first 5 career years in jobs that paid less than the minimum wage plus \$1.00. The models obviously predict that the incidence of minimum wage careers varies dramatically across demographic groups. Rural high-school dropouts, particularly women and blacks, are likely to spend substantial fractions of their careers in minimum wage jobs.

Notes

¹ Most research in this area has addressed the effects of the minimum wage on employment. Research on other effects of the minimum wage include work on schooling decisions. See Ronald Ehrenberg and Alan Marcus, "Minimum Wages and Teenagers Enrollment-Employment Outcomes: A Multinomial Logit Model," *Journal of Human Resources*, vol. 17, 1982; Janet Currie and Bruce Fallick, "Minimum Wage Legislation and the Educational Outcomes of Youths: A Re-examination," manuscript (Los Angeles, CA, UCLA, June 1991); David Neumark and William Wascher, "Minimum Wage Effects on Employment and School Enrollment: Evidence from Policy Variation in Schooling Quality and Compulsory Schooling Laws," Federal Reserve Board, Working Paper no. 133, June 1993. For the effects of minimum wage on on-the-job training, see Masanori Hashimoto "Minimum Wage Effects on Training on the Job," *American Economic Review*, vol. 72, no. 5, December 1982, pp. 1070-87. Regarding crime, see George A. Chressanthos and Paul W. Grimes, "Criminal Behavior and Youth in the Labour Market: The Case of the Pernicious Minimum Wage," *Applied Economics*, vol. 22, 1990, pp.1495-1508.

Studies on the major intended benefit, changing the distribution of income in favor of low-income households include: Jere Behrman, Robin Sickles, and Paul Taubman, "The Impact of Minimum Wages on the Distribution of Earnings for Major Race-Sex Groups: A Dynamic Analysis," *American Economic Review*, September 1983; Richard V. Burkhauser and T. Aldrich Finegan, "The Minimum Wage and the Poor: The End of a Relationship," *Journal of Policy Analysis and Management*, Winter 1989, pp. 53-71; William R. Johnson and Edgar K. Browning, "The Distributional and Efficiency Effects of Increasing the Minimum Wage: A Simulation," *American Economic Review*, March 1983; Linda R. Martin and Demetrios Giannaros, "Would a higher minimum wage help poor families headed by women?" *Monthly Labor Review*, August 1990, pp. 33-7; Ralph E. Smith and Bruce Vavrichek, "The minimum wage: its relation to incomes and poverty," *Monthly Labor Review*, June 1987, pp. 24-30; and Gary W. Loveman and Chris Tilly, "Good Jobs or Bad Jobs? Evaluating the American Job Creation Experience," *International Labour Review*, vol. 127, no. 5, 1988, pp. 593-611.

² See David Card and Alan Krueger, *Myth and Measurement: the New Economics of the Minimum Wage* (Princeton, NJ, Princeton University Press, 1995). Card and Krueger estimate that more than half the workers affected by the April 1990 minimum wage increase were over the age

of 24. This and other facts suggest that some workers might be affected by the minimum wage well into their careers.

THIS ARTICLE SHOWS that many workers begin their post-school careers in jobs paying the minimum or something close to it, but that the vast majority of workers move on to higher paying jobs as they accumulate experience. However, there is a nontrivial fraction of workers who spend substantial portions of their early careers consistently working in minimum wage jobs. We only examine respondents' first 10 post-school years, so it is possible that further wage growth will take all workers out of minimum wage work as they acquire experience. The fact that wages grow much more quickly in the initial stages of work careers, however, suggests that some workers will continue to be left behind in minimum wage careers. Less educated persons, blacks, women with young children, and workers who reside outside of urban areas are much more likely to have such minimum wage careers. In short, there are particular groups whose lifetime incomes may be affected by a minimum wage. Further research is necessary, however, to see whether these results hold farther out into people's careers and in other time periods. □

of 24. This and other facts suggest that some workers might be affected by the minimum wage well into their careers.

³ Ralph E. Smith and Bruce Vavrichek, "The Wage Mobility of Minimum Wage Workers," *Industrial and Labor Relations Review*, October 1992, pp. 82-88.

⁴ Bradley R. Schiller, "Moving Up: The Training and Wage Gains of Minimum-Wage Entrants," *Social Science Quarterly*, September 1994, pp. 622-36.

⁵ Recognizing the apparent differences between this group and the members of the sample who were no longer in school in 1980, parts of Schiller's analysis treats the two groups separately. See Schiller, "Moving Up: The Training and Wage Gains."

⁶ The term "outgoing rotation group" from the Current Population Survey (CPS) refers to the way earnings data are collected from households in the survey. Participating households are in the CPS sample for 4 months, leave the sample for 8 months, then return to the sample for the same 4 months of the following year. Earnings data are collected from households that are in their fourth or eighth month in the sample, that is, the outgoing groups. In contrast, the NLSY79 is relatively small and focussed on younger workers. The oldest NLSY79 respondent was 36 in 1994, the last year of data examined in our study.

⁷ The NLSY79 has five distinct panels: 1) a nationally representative "cross-sectional" sample and four oversampled groups: 2) blacks, 3) Hispanics, 4) economically disadvantaged whites, and 5) members of the military. Following the suggestion of Thomas MaCurdy, Thomas Mroz, and R. Mark Gritz, we exclude the poor whites and the military samples from our analysis. Using the combination of the black, Hispanic, and cross-sectional samples implies that blacks, Hispanics, and other groups are included in the sample with differing probabilities. In such circumstances, survey weights are required to make statements about the aggregate U.S. population. The original NLSY79 weights are inappropriate, however, as they are based on the inclusion of subsamples of the military and poor whites. For this reason, we use the 1979 weights developed by MaCurdy, Mroz, and Gritz, which are designed to make the restricted sample we use nationally representative.

The military sample is omitted because its respondents were generally not followed after 1984, and the economically disadvantaged non-

Hispanic whites were dropped after 1990 because of concerns regarding its sample frame. See Thomas MaCurdy, Thomas Mroz, and R. Mark Gritz, "An Evaluation of the National Longitudinal Survey of Youth," *Journal of Human Resources*, Spring 1998, pp. 345–436.

⁸ MaCurdy and others, "An Evaluation of the National Longitudinal Survey of Youth," *Journal of Human Resources*.

⁹ The NLSY did not interview respondents in 1995, as part of the survey's move to a biennial survey schedule. Surveys were administered again in 1996, but the 2-year gap led the 1996 data to be of limited use in the analysis. The basic problem is that the wage for 1995 must be calculated from the 1996 survey, which is a fairly lengthy recall period that may result in inaccurate wage measurements.

¹⁰ All statistics are calculated using NLSY 1979 sample weights.

¹¹ The basic idea behind such ripple effects is that raising the price of minimum wage labor may increase demand for close substitutes, and that near-minimum wage labor is likely to be the closest substitute. See Jean B. Grossman, "The Impact of the Minimum Wage on Other Wages," *Journal of Human Resources*, vol. 18, 1983, pp. 359–78; and Card and Krueger, *Myth and Measurement*.

¹² See Ralph E. Smith and Bruce Vavrichek, "The Wage Mobility of Minimum Wage Workers," *Industrial & Labor Relations Review*, October 1992, pp. 82–88. The figures in table 3 are similar to the transition rates that Smith and Vavrichek estimated using the Survey of Income and Program Participation (SIPP).

¹³ For any worker, we define the "first career year" to be the first year of the first 2-year period in which they do not go to school. Some workers eventually do go back and obtain further education such as GED's or graduate degrees. Thus, the NLSY panel does acquire some education as they move further out into their career. The acquisition of graduate degrees is probably unimportant from our perspective, because people acquiring such degrees were probably not employed in minimum wage work prior to their return to school. In contrast, the GED may be an important element of workers' escape from minimum wage work.

¹⁴ Price deflators are based on the Consumer Price Index for All Urban Consumers series.

¹⁵ We obtained similar results when we estimated analogous models using a logit specification. In addition, standard errors in table 6 take account of stratification and clustering in the design of the survey.

Appendix: The effects of sample selection and weights on the results

Would our results differ in a fully representative sample? To answer this, we need to address two related factors: sample selection and weighting. We interpret our results as if they accurately portray patterns of minimum wage jobholding in the U.S. population. However, there are two reasons why some original NLSY79 respondents are omitted from the samples on which our estimates are based. The first reason is attrition, that is, the fact that some respondents drop out of the survey. MaCurdy, Mroz, and Gritz provide a set of updated weights that are designed to make latter rounds of the NLSY79 nationally representative.¹ These updated weights are simply the product of the initial MaCurdy, Mroz and Gritz weights with the standard attrition adjustments embodied in the standard NLSY weights. We experimented with these latter year weights, and they made very little difference in our results. This finding is consistent with the MaCurdy, Mroz, and Gritz finding that those who leave the sample were not drawn from any one part of the wage or employment distribution. Thus, we do not believe that attrition is a major source of bias in our results.

The second reason why respondents are omitted from our sample is that we cannot accurately characterize their minimum wage experience over their careers. This occurs sometimes because we cannot reliably date the start of respondents' post-school career, but more often, it occurs because respondents did not report a valid wage in 1 or more years, typically because they did not work at all. This implies that our results should be viewed as statements about the incidence of minimum wage careers among the restricted population of workers with stable employment histories. It seems reasonable to

suppose that nonworkers, were they to take jobs, would probably have lower wages than those who do work, and thus, that they would have more exposure to minimum wage jobs. This in turn implies that our results might understate the incidence of minimum wage opportunities among the broader population of workers and nonworkers. It is also easy to imagine that this type of selection would lead the regressions of table 6 to understate the correlation of some characteristics—race for example—with minimum wage opportunities.

We explored this idea by estimating maximum likelihood versions of Heckman's well-known selection equation.² The results vary somewhat depending upon which of the nonsample respondents (those respondents who did not meet all our selection criteria) we include in the first stage probit equation. In all cases we've examined, however, the wage equation of the two-equation Heckman model yields parameter estimates similar to those reported in table 6. One problem with this exercise is that we can identify no reasonable *a priori* exclusion restrictions for the wage equation, so that the selection effect is identified solely on the basis of functional form. Thus, we view this exercise as only a partial answer to whether our results would differ in a fully representative sample.

¹ Thomas MaCurdy, Thomas Mroz, and R. Mark Gritz, "An Evaluation of the National Longitudinal Survey of Youth," *Journal of Human Resources*, Spring 1998, pp. 345–436.

² J.J. Heckman, "Sample Selection Bias as a Specification Error," *Econometrica*, 47, 1979, pp. 153–161.