

Minimum Wage Workers in Minnesota, 2001

David Anderson

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Research & Statistics

443 Lafayette Road N.
St. Paul, MN 55155-4307
651-284-5025
dli.research@state.mn.us
www.doli.state.mn.us/research.html

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Executive Summary

For the purposes of this report and study only, *minimum wage workers are defined as workers who earn \$5.15 per hour or less at their main job*. The minimum wage for most workers in Minnesota is \$5.15 per hour.¹

Overview

- In 2001, there were 60,000 minimum wage workers in Minnesota, representing 2.5 percent of all wage and salary workers.
 - There were 34,000 minimum wage workers employed on an hourly basis and 26,000 employed on a non-hourly (or salaried) basis.
 - Hourly workers who earned wages at or below \$5.15 per hour represented 2.3 percent of all hourly paid workers in Minnesota, compared to 3.1 percent in the U.S as a whole.
 - Between 1996 and 2001, the number of minimum wage workers in Minnesota declined by 74 percent, from 233,000 to 60,000 workers.
 - Slightly more than half of all minimum wage workers appear to have earned less than \$4.25 per hour.
- About two-thirds of minimum wage workers (or 40,000) were women. Women age 25 years and over accounted for 32 percent of all minimum wage workers and men age 25 years and older for 21 percent.
 - Overall, 3.0 percent of black workers and 3.0 percent of Hispanic workers earned the minimum wage versus 2.5 percent of white workers.

Work Status, Poverty Status and Marital Status

- In 2001, 6.5 percent of part-time workers in Minnesota earned \$5.15 per hour or less, but only 1.5 percent of full-time workers did. There were 33,000 part-time minimum wage workers and 27,000 full-time ones.
- People with a high school diploma or less accounted for 36 percent of all workers in Minnesota, but they accounted for almost 55 percent of all minimum wage workers.
- Eighty-two percent of minimum wage workers (or approximately 49,000) were not married or were married, but had no spouse present.
- Workers who lived in households below the poverty threshold were almost four times as likely to be minimum wage workers as workers who lived in households above the poverty threshold. Almost 18 percent of minimum wage workers (10,000) lived in households below the poverty threshold.

Age, Gender and Race

- Nearly one-quarter of minimum wage workers (15,000) were 16- to 19-years old, and slightly more than half, 53 percent, were 25 years and older.

¹ Small employers, whose annual gross volume of sales made or business done is less than \$500,000, have a minimum wage of \$4.90 per hour. Workers under 20 can be paid a training wage of \$4.25 per hour in their first 90 consecutive days of employment. Except for a few exemptions listed in Minnesota Statutes § 177.23, all other employees must be paid at least \$5.15 per hour.

Location, Occupation and Industry

- Workers outside of the Twin Cities Metropolitan Statistical Area (MSA) were almost twice as likely to earn \$5.15 per hour or less as those within the MSA. Only 1.9 percent of workers in the Twin Cities MSA were minimum wage workers compared to 3.5 percent of those outside the MSA.
- Forty-five percent of minimum wage workers (27,000) were in service occupations. Another 29 percent (17,000) were in technical, sales and administrative support occupations, and 11,000 of these were in sales.
- Eighty-six percent of minimum wage

workers (51,000) were in service-producing industries. Only 13 percent (8,000) were in the goods-producing sector.

- Eating and drinking establishments employed nearly one-third of all minimum wage workers (19,000). Tips, which were not included in the present calculations, may supplement wages for some of these workers.
- Workers in goods-producing industries in greater Minnesota were six times more likely to be minimum wage workers than those in the Twin Cities MSA. Only 0.4 percent of workers in goods-producing industries in the Twin Cities MSA were minimum wage workers, compared to 2.6 percent in greater Minnesota.

Minimum Wage Workers in Minnesota, 2001

Overview

In 2001, there were an estimated 59,600 workers in Minnesota who were paid \$5.15 per hour or less at their main job. These workers represented 2.5 percent of all wage and salary workers. Wage and salary workers include hourly and non-hourly paid workers. Self-employed workers are not covered in this report.

For the purposes of this study and report only, “minimum wage workers” are defined as workers earning \$5.15 per hour or less at their main job. Self-employed workers and unpaid workers are not included in the term for these purposes. The minimum wage for small employers in Minnesota, those whose annual gross sales volume or business done is less than \$500,000, is \$4.90 per hour. Except in a few cases, the minimum wage for all other firms is \$5.15 per hour.²

Of the nearly 60,000 minimum wage workers in Minnesota, 34,000 were employed on an hourly basis and 26,000 were non-hourly (or salaried) workers. Nearly two-thirds of minimum wage workers in Minnesota were women (40,000). Forty-six percent were between the ages of 16 and 24 (28,000), while the people in that age group accounted for only 17 percent of Minnesota’s workers. Part-time workers were much more likely to earn \$5.15 per hour or less than full-time workers were—6.5 percent of part-time workers earned \$5.15 per hour or less, compared to 1.5 percent of full-time workers.

² Workers under 20 can be paid a training wage of \$4.25 per hour in their first 90 consecutive days of employment. Except for a few exemptions listed Minnesota Statutes § 177.23, all other employees must be paid at least \$5.15 per hour.

Changes in the Number of Minimum Wage Workers

Between 1996 and 2001, the number of hourly workers who earned \$5.15 or less declined from 233,400 to 59,600, a 74 percent decline. Adjusting for inflation, there were 117,000 hourly and non-hourly workers who earned \$4.56³ or less in 1996, so in real terms the number of people who earned a wage equivalent to \$5.15 or less declined by 49 percent. These declines are most likely explained by a tight labor market, a generally healthy economy, and a gradually rising price level.

The number of minimum wage workers employed on an hourly basis has also declined in recent years. There were 175,000 hourly workers in 1996 who earned a wage of \$5.15 or less, and in 2001, there were 34,000. In both 2000 and 1999, the number of hourly minimum wage workers was approximately 40,000.

The share of salaried minimum wage workers has risen since 1996, from 25 percent then to 44 percent in 2001. Women made up 58 percent of workers who earned \$5.15 or less in 1996 and 67 percent in 2001. Women made up 69 percent of workers who earned \$4.56 or less in 1996, however.

Most of the tables in this report are not directly comparable to tables in previous versions of this report. This is because the number of non-hourly minimum wage workers was estimated in different ways. Previous versions of this report may have underestimated the number of non-hourly minimum wage workers. In addition, the previous versions of this report based most estimates of the distribution of minimum wage

³ Using the U.S. Consumer Price Index for all urban consumers, \$4.56 had the same buying power in 1996 as \$5.15 did in 2001.

workers on national data.⁴

Minimum Wage Workers in the U.S. and Minnesota

Workers who earned wages at or below \$5.15 per hour in 2001 represented 3.1 percent of all hourly workers in the U.S. and 2.3 percent of hourly workers in Minnesota. The state's share of hourly minimum wage workers fell from 2.7 percent in 2000 and 2.8 percent in 1999. The U.S. share fell even faster during the past two years—from 3.7 percent in 2000 and 4.6 percent in 1999.

The Distribution of Wages At and Around \$5.15 per Hour

Of the 59,600 workers in Minnesota who earned \$5.15 per hour or less, approximately 10,800 earned exactly \$5.15 per hour, 17,000 earned at least \$4.90 and less than \$5.15, 1,600 earned more than \$4.25 and less than \$4.90, and 30,100 earned less than \$4.25. The number of workers who earned less than \$4.25 per hour seems high, particularly given the small number of exemptions to Minnesota's laws governing minimum wages. Wage numbers, however, are taken as reported in the Current Population Survey and a similarly high share of workers were reported to have earned less than \$4.25 per hour in the U.S. as a whole.⁵ Workers who appear to have earned less than \$4.25 per hour are discussed in more detail in Appendix C.

A significant number of workers in Minnesota earned wages that were only a little higher than

\$5.15 per hour. While only 2.5 percent of all workers earned \$5.15 per hour or less, 5.7 percent earned \$6 per hour or less, and 10.9 percent earned \$7 per hour or less.

Minimum Wage Workers by Worker and Job Characteristics

The number of minimum wage workers in Minnesota has been estimated for a number of demographic categories, such as gender, marital status and race. Numbers have also been estimated for workers in the Twin Cities Metropolitan Statistical Area, in greater Minnesota, and for major industry and occupational groupings. Detailed information is provided in the eleven figures on the following pages; the bullet points highlight key items of interest in each figure.

Data Sources

The estimates in this paper are based on Current Population Survey (CPS) data obtained from the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor. CPS data on the numbers of minimum wage workers is available for the U.S. and for Minnesota. When enough data was available, numbers of minimum wage workers were estimated from the Minnesota portion of the CPS. For some subgroups, not enough Minnesota data was available. In these cases, estimates were produced using a combination of Minnesota and U.S. data. Appendix A provides general information on data sources and estimation procedures. Appendix B contains details on how specific tables were constructed. Appendix C contains some information on workers who appear to have earned less than \$4.25 per hour. Appendix D contains information on the reliability of the estimates.

⁴ See the last section of Appendix A for more information on differences between this year's report and previous reports.

⁵ In addition to reporting errors, wages below \$4.25 per hour might be explained by (i) legal exemptions to the minimum wage laws; (ii) wages paid below legal levels; and (iii) the way wages are calculated for non-hourly workers. (Some workers do not report the number of hours they usually work and only report actual hours worked. If a worker's hours are high in a given week, the hourly rate will be low.)

Figure 1 Minimum Wage Workers by Age and Gender in Minnesota, 2001 [1]

Age and Gender	Total Workers (1,000s)	Number At or Below \$5.15/Hour (1,000s)	Percentage At or Below \$5.15/Hour	Group as a
				Percentage of All Workers At or Below \$5.15/Hour
Total, 16 years and over	2,343	60	2.5%	100.0%
16-24 years	394	28	7.0	46.3
16-19 years	164	15	9.2	25.4
20-24 years	230	12	5.4	21.0
25 years and over	1,949	32	1.6	53.7
Men, 16 years and over	1,164	20	1.7	32.8
16-24 years	204	7	3.3	11.4
16-19 years	81	4	5.1	6.9
20-24 years	122	3	2.2	4.5
25 years and over	960	13	1.3	21.4
Women, 16 years and over	1,179	40	3.4	67.2
16-24 years	190	21	10.9	34.9
16-19 years	82	11	13.3	18.5
20-24 years	108	10	9.1	16.5
25 years and over	988	19	1.9	32.2

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

- While people 16- to 24-years old made up only 17 percent of Minnesota's workers, they accounted for 46 percent of Minnesota's workers earning \$5.15 per hour or less. Overall, 7 percent of people 16- to 24-years old earned \$5.15 per hour or less, while less than two percent of those 25 and older earned \$5.15 or less.
- Minimum wage workers were more likely to be women. About two-thirds of minimum wage workers were women—3.4 percent of women earned \$5.15 per hour or less compared to 1.7 percent of men.
- Only slightly more than 1.5 percent of workers 25 years and older were minimum wage workers. Still, 54 percent of all minimum wage workers were 25 years and older because this group accounted for 83 percent of all workers.

Figure 2 Minimum Wage Workers by Race and Gender in Minnesota, 2001 [1]

Race and Gender	Total	Number	Percentage	Group as a
	Workers (1,000s)	At or Below \$5.15/Hour (1,000s)	At or Below \$5.15/Hour	Percentage of All Workers At or Below \$5.15/Hour
White	2,194	55	2.5%	93.0%
Men	1,083	19	1.7	31.7
Women	1,111	37	3.3	61.3
Black	67	2	3.0	3.4
Men	35	1	2.5	1.5
Women	32	1	3.4	1.8
Hispanic	50	2	3.0	2.6
Men	28	1	2.4	1.1
Women	22	1	3.9	1.5
Total [2]	2,311	59	2.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.
2. The total number of white, black and Hispanic workers does not equal the total number of workers because races other than white and black are not shown and because Hispanics are included in both white and black population groups.

- The distribution of minimum wage workers by race was 93 percent (55,000) white, 3 percent (2,000) black, and 3 percent (2,000) persons of Hispanic ethnicity. This is similar to the distribution of workers by race in the workforce, which was 94 percent white, 3 percent black, and 2 percent Hispanic.
- Black and Hispanic workers were somewhat more likely to earn \$5.15 per hour or less than white workers were. Overall, 3.0 percent of black workers and 3.0 percent of Hispanic workers earned the minimum wage versus 2.5 percent of white workers.
- The difference in the proportion of female to male minimum wage workers was greatest for white workers. There were nearly twice the number of white women as white men minimum wage workers. Among black and Hispanic workers, women were only about 25 percent more likely to be minimum wage workers.

Figure 3 Minimum Wage Workers by Work Status and Gender in Minnesota, 2001 [1]

Work Status and Gender	Total	Number	Percentage	Group as a
	Workers (1,000s)	At or Below \$5.15/Hour (1,000s)	At or Below \$5.15/Hour	Percentage of All Workers At or Below \$5.15/Hour
Full-time	1,841	27	1.5%	45.0%
Men	1,016	11	1.1	18.0
Women	825	16	2.0	27.0
Part-time	502	33	6.5	55.0
Men	148	9	6.0	14.8
Women	354	24	6.8	40.2
Total [2]	2,343	60	2.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

2. Full- and part-time status are defined by the number of hours usually worked.

- The distribution of minimum wage workers was slightly tilted towards part time workers. Fifty-five percent of minimum wage workers (33,000) were part-time and 45 percent (27,000) were full-time.
- Only 1.5 percent of full-time workers in Minnesota earned \$5.15 per hour or less versus 6.5 percent of part-time workers.
- The difference between proportion of men and women workers paid \$5.15 per hour or less was much larger for full-time workers than for part-time workers. Women were 14 percent more likely to be minimum wage workers than men were if they were employed part-time. When employed full-time, women were nearly twice as likely to be minimum wage workers as men.

Figure 4 Minimum Wage Workers by Education and Age in Minnesota, 2001 [1]

Education and Age	Total	Number	Percentage	Group as a
	Workers (1,000s)	At or Below \$5.15/Hour (1,000s)	At or Below \$5.15/Hour	Percentage of All Workers At or Below \$5.15/Hour
Less than high school	184	13	6.8%	21.0%
16-24 years	116	11	14.0	18.0
16-19 years	102	10	9.9	17.0
20-24 years	14	1	4.1	1.0
25 years and over	67	2	2.7	3.0
High school [2]	671	20	3.0	34.2
16-24 years	116	8	14.8	12.9
16-19 years	34	3	9.2	5.2
20-24 years	82	5	5.6	7.7
25 years and over	555	13	2.3	21.3
Some college	1,488	27	1.8	44.8
16-24 years	162	9	10.5	14.5
16-19 years	28	1	5.2	2.4
20-24 years	135	7	5.3	12.0
25 years and over	1,326	18	1.4	30.3
Total	2,343	60	2.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

2. Workers with high school graduate equivalency degrees (GEDs) are included in the high school category.

- People with a high school diploma or less accounted for 36 percent of all workers in Minnesota and almost 55 percent of all minimum wage workers. (People with a high school diploma or less tend to be younger than the population as a whole, and this accounts for part of reason they were more likely to be minimum wage workers.)
- Of workers 25 years and older, those with no college experience were almost twice as likely to be minimum wage workers. Only 1.4 percent of workers 25 years older with some college experience earned the minimum wage in Minnesota versus 2.3 percent of those without college experience.

Figure 5 Minimum Wage Workers by Marital Status, Gender, and Age in Minnesota, 2001
[1]

Marital Status, Gender, and Age	Total Workers (1,000s)	Number		Group as a
		At or Below \$5.15/Hour (1,000s)	Percentage At or Below \$5.15/Hour	Percentage of All Workers At or Below \$5.15/Hour
Married, spouse present	1,327	11	.8%	18.5%
Men	674	3	.4	4.5
16-24 years	13	0	1.0	.2
25-54 years	564	2	.3	2.9
55 years and over	97	1	.7	1.2
Women	653	9	1.3	14.5
16-24 years	21	1	2.5	.9
25-54 years	538	6	1.1	10.2
55 years and over	94	2	2.0	3.2
Other marital status	1,016	49	4.8	81.5
Men	490	16	3.2	26.4
16-24 years	190	11	5.6	17.9
25-54 years	274	5	1.7	7.8
55 years and over	26	0	1.8	.8
Women	525	33	6.2	55.1
16-24 years	169	19	10.9	31.1
25-54 years	290	11	3.8	18.5
55 years and over	66	3	5.0	5.5
Total	2,343	60	2.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

- Eighty-two percent (49,000) of minimum wage workers were not married or were married with no spouse present. Most of these (30,000 out of 49,000) were age 16 to 24 years.
- Workers between 25- and 54-years old and married with spouse present were only one-fourth as likely to be minimum wage workers as people in the same age group with another marital status. Minimum wage workers accounted for only 0.7 percent of those from age 25 to 54 classified as married with spouse present. For others who were 25- to 54-years old, 2.8 percent earned \$5.15 per hour or less.

Figure 6 Minimum Wage Workers by Poverty Status, Gender, and Age in Minnesota, 2001 [1]

Poverty Status, Gender, and Age	Total Workers (1,000s)	Number At or Below \$5.15/Hour (1,000s)	Percentage At or Below \$5.15/Hour	Group as a Percentage of All Workers At or Below \$5.15/Hour
Above poverty threshold	2,223	49	2.2%	82.5%
Men	1,111	17	1.5	27.8
16-24 years	175	6	3.4	10.1
25-54 years	822	6	.7	9.8
55 years and over	114	5	4.2	8.0
Women	1,112	33	2.9	54.7
16-24 years	167	16	9.7	27.2
25-54 years	796	11	1.4	18.5
55 years and over	149	5	3.6	9.0
At or below poverty threshold	120	10	8.7	17.5
Men	55	3	5.6	5.2
16-24 years	25	2	9.1	3.9
25-54 years	25	1	3.9	1.6
55 years and over	4	0	3.0	.2
Women	65	7	11.2	12.3
16-24 years	23	4	18.3	6.9
25-54 years	35	2	7.1	4.2
55 years and over	8	1	15.2	2.0
Total	2,343	60	2.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

- Workers who lived in households below the poverty threshold were almost four times as likely to be minimum wage workers as workers who lived in households above the poverty threshold. Only 2.2 percent of workers in households above the poverty threshold earned \$5.15 per hour or less, compared to 8.7 percent of those at or below the threshold.
- Women were almost twice as likely as males to be minimum wage workers, independent of household poverty status.

Figure 7 Minimum Wage Workers by Region and Age in Minnesota, 2001 [1]

Region and Age	Total	Number	Percentage	Group as a
	Workers (1,000s)	At or Below \$5.15/Hour (1,000s)	At or Below \$5.15/Hour	Percentage of All Workers At or Below \$5.15/Hour
In the Twin Cities MSA [2]	1,457	28	1.9%	47.4%
16-24 years	218	11	5.0	18.1
16-19 years	84	6	6.6	9.4
20-24 years	133	5	3.9	8.7
25 years and over	1,239	17	1.4	29.3
Outside the MSA	886	31	3.5	52.6
16-24 years	177	15	8.5	25.2
16-19 years	79	8	9.6	12.7
20-24 years	97	7	7.7	12.5
25 years and over	709	16	2.3	27.4
Total	2,343	60	2.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.
2. The Twin Cities Metropolitan Statistical Area (MSA) is comprised of thirteen counties, eleven of which are in Minnesota: Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright Counties. The Wisconsin portion of the MSA is not included in this table.

- Workers outside of the Twin Cities MSA were almost twice as likely to earn \$5.15 per hour or less. Only 1.9 percent of workers in the MSA were minimum wage workers compared to 3.5 percent of those outside the MSA.
- Minimum wage work was more common in greater Minnesota. The Twin Cities MSA employed about 62 percent of all workers in Minnesota, but only 47 percent of all minimum wage workers.

Figure 8 Minimum Wage Workers by Occupation in Minnesota, 2001 [1]

Occupation	Total Workers (1,000s)	Number At or Below \$5.15/Hour (1,000s)	Percentage At or Below \$5.15/Hour	Group as a
				Percentage of All Workers At or Below \$5.15/Hour
Managerial and professional	745	7	.9%	9.7%
Technical, sales and admin. support	727	17	2.4	28.9
Technicians	103	1	.7	1.2
Sales	259	11	4.4	19.0
Admin. support, including clerical	366	5	1.4	8.7
Service occupations	303	27	8.8	44.7
Private household	11	2	15.5	2.9
Protective service	27	0	1.3	.6
Other service	265	25	9.3	41.1
Precision production, craft, and repair	250	2	.8	3.4
Mechanics	86	0	.5	.8
Construction trades	89	1	.8	1.2
Other	76	1	1.0	1.3
Operators and laborers	290	5	1.9	9.2
Machine operators	129	1	1.0	2.1
Transportation	88	2	2.2	3.3
Handlers and helpers	73	2	3.1	3.8
Farming	27	1	4.6	2.1
Total	2,343	60	2.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

- Forty-five percent (27,000) of minimum wage workers were in service occupations. Another 29 percent (17,000) of minimum wage workers were in technical, sales and administrative support occupations, and 11,000 of these were in sales.
- Among the service occupations, workers who provided private household services were the most likely to be minimum wage workers and those who provided protective services were the least likely.
- Seventy-one percent (17,000) of the “Other service” occupations were in food service. Tips, which were not included in the present calculations, may supplement wages for some of these workers.

Figure 9 Minimum Wage Workers by Industry in Minnesota, 2001 [1]

Industry	Total Workers (1,000s)	Number At or Below \$5.15/Hour (1,000s)	Percentage At or Below \$5.15/Hour	Group as a
				Percentage of All Workers At or Below \$5.15/Hour
Private sector	2,263	59	2.6%	98.7%
Goods-producing industries	569	8	1.3	12.7
Agriculture	33	2	5.6	3.2
Mining	9	0	.1	.0
Construction	126	1	1.0	2.1
Manufacturing	401	4	1.1	7.5
Durable goods	251	1	.6	2.5
Non-durable goods	150	3	2.0	5.0
Service-producing occupations	1,694	51	3.0	86.0
Transportation and public utilities	149	1	.7	1.7
Wholesale trade	104	1	.9	1.5
Retail trade	377	26	6.8	43.2
Eating and drinking	106	19	18.3	32.5
Finance, insurance, real estate	174	1	.6	1.7
Services	890	23	2.5	38.0
Private households	12	2	18.4	3.8
Business and repair	155	2	1.5	3.9
Personal services	41	2	5.8	4.0
Entertainment and recreation	34	2	6.4	3.7
Professional services	644	13	2.1	22.5
Forestry and fishery	3	0	1.7	.1
Public sector	79	1	1.0	1.3
Total	2,343	60	2.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

- Eighty-six percent (51,000) of minimum wage workers were in service-producing industries and 13 percent (8,000) were in the goods-producing sector.
- Eating and drinking establishments employed nearly one-third of all minimum wage workers (19,000). Tips, which were not included in the present calculations, may supplement wages for some of these workers.
- People working at eating and drinking establishments and providing private household services were mostly likely to be minimum wage workers. In the goods producing sector, agricultural workers were the most likely to be minimum wage workers.

Figure 10 Minimum Wage Workers by Industry in Twin Cities MSA, 2001 [1]

Industry in the Twin Cities MSA [2]	Total Workers (1,000s)	Number		Group as a Percentage of All Workers At or Below \$5.15/Hour
		At or Below \$5.15/Hour (1,000s)	Percentage At or Below \$5.15/Hour	
Private sector	1,408	28	2.0%	98.3%
Goods-producing industries	331	1	.4	4.7
Agriculture	9	0	1.2	.4
Mining	1	0	.0	.0
Construction	68	0	.3	.8
Manufacturing	253	1	.4	3.5
Durable goods	150	0	.2	1.3
Non-durable goods	102	1	.6	2.2
Service-producing occupations	1,077	26	2.5	93.6
Transportation and public utilities	97	1	.6	2.1
Wholesale trade	65	0	.7	1.6
Retail trade	221	13	6.1	47.8
Eating and drinking	61	10	17.0	36.8
Finance, insurance, real estate Services	145	1	.4	2.2
Services	548	11	2.1	39.9
Private households	7	1	16.0	3.9
Business and repair	116	1	1.1	4.7
Personal services	23	1	5.1	4.2
Entertainment and recreation	20	1	5.4	3.8
Professional services	381	7	1.7	23.2
Forestry and fishery	2	0	3.8	.2
Public sector	49	0	1.0	1.7
Total	1,457	28	1.9	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

2. The Twin Cities Metropolitan Statistical Area (MSA) is comprised of thirteen counties, eleven of which are in Minnesota: Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright Counties. The Wisconsin portion of the MSA is not included in this table.

- Ninety-four percent of minimum wage workers in the Twin Cities MSA were in service-producing industries. Two industries, retail trade and professional services, accounted for 71 percent of all minimum wage workers in the MSA.
- People who worked in the MSA in service-producing occupations were six times more likely to be minimum wage workers than those who worked in goods-producing industries.

Figure 11 Minimum Wage Workers by Industry in Greater Minnesota, 2001 [1]

Industry in Greater Minnesota [2]	Total Workers (1,000s)	Number At or Below \$5.15/Hour (1,000s)	Percentage At or Below \$5.15/Hour	Group as a Percentage of All Workers At or Below \$5.15/Hour
Private sector	855	31	3.6%	98.9%
Goods-producing industries	238	6	2.6	19.9
Agriculture	24	3	14.4	11.0
Mining	8	0	.3	.1
Construction	58	1	1.2	2.2
Manufacturing	149	2	1.4	6.7
Durable goods	101	0	.4	1.4
Non-durable goods	48	2	3.4	5.3
Service-producing occupations	617	25	4.0	78.9
Transportation and public utilities	52	0	.8	1.3
Wholesale trade	39	0	1.2	1.5
Retail trade	156	12	7.8	38.8
Eating and drinking	45	9	19.1	27.1
Finance, insurance, real estate Services	29	0	1.2	1.1
Services	342	11	3.3	36.2
Private households	6	1	20.4	3.7
Business and repair	40	1	2.7	3.5
Personal services	18	1	6.3	3.6
Entertainment and recreation	15	1	8.2	3.8
Professional services	263	7	2.6	21.7
Forestry and fishery	2	0	.0	.0
Public sector	30	0	1.2	1.1
Total	886	31	3.5	100.0

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

2. For the purposes of this table, greater Minnesota is defined as all Minnesota counties except those in the Twin Cities MSA. Greater Minnesota includes every county except Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright counties.

- Three industries—agriculture, eating and drinking establishments, and professional services—accounted for 60 percent of minimum wage workers.
- Outside of the Twin Cities MSA, workers in service-producing industries were approximately 50 percent more likely to be minimum wage workers than those in goods-producing industries were.

Appendix A

Overview of Data Sources and Wage Computations

The U.S. Bureau of Labor Statistics (BLS) collects and disseminates information on the condition of workers in the nation. One major source of data for the BLS is a large survey, the Current Population Survey (CPS). The CPS is a monthly survey of approximately 60,000 households in the U.S.

The BLS uses the CPS to estimate many characteristics of workers in the U.S. An important step for the CPS in estimating these characteristics is to “weight” the CPS survey responses so that the survey is representative of the nation as a whole.⁵ The BLS uses CPS data and census data to construct these weights. The end result is a large database (referred to here as the CPS microdata) with the characteristics of all respondents and a weight attached to each respondent.

All of the information in this report pertaining to the number of minimum wage workers in 2001 was produced from the CPS microdata.⁶ Much of the information here comes directly from the CPS microdata on Minnesota workers. All of the information on the total number of workers in different groups in Minnesota comes from the Minnesota CPS microdata.

⁵ The survey is generally designed to be representative of the population as a whole, but to make estimates of certain population characteristics more accurate than they otherwise would be, some segments of the population are “over-sampled.” That is, a larger portion of people in certain groups are surveyed. Also, response rates to surveys sometimes vary in predictable ways, and hence differences in response rates can be adjusted for.

⁶ Previous versions of this report were also based on tabulations of CPS microdata, but only on tabulations constructed by the BLS. Because of this, previous versions of this report were based on a significantly smaller amount of data.

Much of the information on the numbers of minimum wage workers also comes from the Minnesota CPS microdata, but in some cases the Minnesota data was not deemed to be reliable enough on its own. The reason is that the sample of minimum wage workers in Minnesota is quite small—there were only 86 respondents to the CPS with wages at or below \$5.15 per hour in Minnesota.⁷ While the CPS microdata is carefully constructed, it is not reliable when the number of observations of people in a certain group is very small.

To deal with this problem, estimates of the proportion of all U.S. *hourly* workers who were minimum wage workers were used to help predict the numbers of Minnesota minimum wage workers in certain categories.⁸

In general, numbers of minimum wage workers were estimated in three steps.

The first step was to fix the number minimum wage workers in Minnesota for certain main groups by using the Minnesota CPS data. Usually between three and six numbers were fixed. For example, in Table 1 the numbers for men ages 16 to 24, men ages 25 and over, women ages 16 to 24, and women ages 25 and older were fixed.

The second step was to use national data to produce a preliminary estimate of the number of minimum wage workers in subgroups that were not fixed in the first step. This preliminary

⁷ Overall, there were 3,170 weighted observations of wages in Minnesota in the publicly available CPS microdata.

⁸ The number of hourly workers was used because the BLS produces some tabulations of some of these numbers for certain demographic categories.

estimate was produced by assuming that the share of all workers who were minimum wage workers in Minnesota in each subgroup was the same as it was for the U.S. as a whole for that subgroup. For example, in the U.S., 11.2 percent of women hourly workers age 16 to 19 were minimum wage workers. The CPS microdata said that there were 82,500 such workers in Minnesota, so it was estimated that there were 9,300 women age 16 to 19 in Minnesota who were paid the minimum wage.

The third step was to adjust the preliminary estimates from the second step so that they matched up with the numbers that were fixed in the first step. The numbers were adjusted by scaling them up or down by a constant factor. In the example of Table 1, the preliminary estimate was that there were 17,500 women age 16 to 24 who were minimum wage workers in Minnesota (9,300 age 16 to 19 and 8,200 age 20 to 24). Step one fixed this total at 20,800, however, so both step 2 estimates were scaled up by approximately 19 percent.

Notes on how calculations were performed for specific tables are contained in Appendix B.

Notes on CPS Wage Data

A single household is included in the CPS for eight months. Wage data is collected in months four and eight of the survey. Different types of CPS data are weighted in different ways. Wage data is weighted with “outgoing rotation weights.”

Wages for hourly workers were available directly from the CPS microdata. Wages for non-hourly workers were calculated by dividing weekly pay at the worker’s main job by the number of hours that were usually worked. In some cases, a worker’s usual hours were reported to vary. In these cases, wages were calculated as actual hours worked divided by weekly pay.⁹

⁹ In five cases in Minnesota, salaried workers did not report usual or actual hours. These cases were ignored and all other weights were increased by 0.12 percent to account for weight assigned to the lost observations.

Data on the share of U.S. hourly workers came from two sources. The first was tabulations produced by the BLS. For some characteristics, the BLS did not produce tabulations. In this case tabulations were produced by using U.S. data on the months from July to December 2001. The publicly available CPS microdata after June 2001 increased in sample size, so only those months for which the increased sample was available were used.¹⁰

Notes on Previous Versions of this Report

Numbers from previous versions of this report should not be compared directly to numbers. There are two factors that could cause significant changes in these numbers even if no underlying changes had occurred.

The first factor is that in this year’s report, estimates of the numbers of hourly and non-hourly minimum wage workers were made from the same source—Current Population Survey microdata. Estimates of the numbers of salaried workers in previous versions of this report were based on older tabulations from the Bureau of Labor Statistics (the BLS does not generally tabulate numbers of non-hourly minimum wage workers). In addition, the share of salaried workers who earn minimum wage appears to be rising. This means that the older data on which previous years’ estimates were based, probably underestimated the number of salaried minimum wage workers.

The second factor is that in previous years’ reports, most estimates of the numbers of minimum wage workers were based on the national distribution of minimum wage workers.¹¹ In general, this led to overestimates

¹⁰ The CPS actually increased its sample size during 2000. This increased sample is reflected in the BLS tabulations for 2001. The increased sample data is not publicly available for the months of January to June 2001, however. This means the BLS tabulations for 2001 cannot be exactly reproduced using the publicly available CPS microdata.

¹¹ This is because the CPS microdata was not used and the Bureau of Labor Statistics did not publish any

of the number of minimum wage workers for groups that are underrepresented in the Minnesota workforce (and underestimates for groups who were over represented).

tabulations of minimum wage workers in Minnesota by demographic characteristics.

Appendix B

Notes on Individual Figures

Except for Figure 3, all figures were constructed by using the three basic steps described in Appendix A. In Figures 2, 6, 10, and 11, preliminary adjustments were made before the step one numbers were determined. In Figures 10 and 11 national data was not used in step two, instead national urban data was used in Figure 10 and national rural data in Figure 11.

Unless otherwise noted, all data is from the Current Population Survey (CPS).

Figure 1. CPS data on minimum wage workers in Minnesota was used to fix the numbers for four groups of workers: men ages 16 to 24, men age 25 and over, women age 16 to 24, and women age 25 and over.

Figure 2. CPS data on minimum wage workers in Minnesota was used to fix the numbers of white men and white women. The number of black plus Hispanic minimum wage workers could not be fixed based on CPS data on Minnesota workers as the difference between the total number of minimum wage workers and the number of white minimum wage workers. This is because Hispanic people may be of any race and because the CPS does not record the origin of some survey respondents. Instead, the number of black and Hispanic minimum wage workers was estimated directly by multiplying the shares of each who are minimum wage workers nationally by the total number of each who work in Minnesota. No "step 3" adjustments were made when constructing this table.

Figure 3. This figure was computed directly from data on the number of minimum wage workers in Minnesota.

Full- and part-time status was defined by the reported number of hours usually worked.

Figure 4. Data on the number of minimum wage workers in Minnesota was used to fix the numbers for three groups of workers: workers with less than a high school degree, those with a high school degree or equivalent, and those with some college.

Workers with high school graduate equivalency degrees (GEDs) are included in the high school category.

Figure 5. Data on the number of minimum wage workers in Minnesota was used to fix the numbers for three groups of workers: the number of people who are married and have a spouse present, the number of men who have another marital status, and the number of women who have another marital status.

Figure 6. Poverty status could not be determined for a portion of workers because family income was not reported. It was assumed that workers whose poverty status could not be identified were distributed across categories in the same way as those for whom poverty status could be determined.

Data on the number of minimum wage workers in Minnesota was used to fix the numbers for seven groups of workers: men and women of all three age groups shown in the Figure who were not in poverty, and the total number of people who were in poverty. All of these raw numbers were increased by approximately 13 percent to account for people whose poverty status could not be determined.

Poverty status is defined for households, not for individual workers.

The poverty thresholds used were the "weighted" thresholds that correspond to number

of household members, and are independent of number and age of dependents.

Poverty thresholds for 2001 were calculated by adjusting year 2000 thresholds for inflation. The inflation factor used was for all urban consumers in the U.S.

Poverty status was calculated based on the reported household income band. When a household's poverty threshold fell within an income band, the household was assumed to be in poverty if the threshold was closer to the upper limit of the band than it was to the lower limit.

Figure 7. Data on the number of minimum wage workers in Minnesota was used to fix the numbers for four groups of workers: workers of ages 16 to 19, 20 to 24, and 25 and over in outstate Minnesota and workers in the Twin Cities Metropolitan Statistical Area (excluding the two Wisconsin counties in the MSA).

Figure 8. Data on the number of minimum wage workers in Minnesota was used to fix the numbers for two groups of workers: service workers and workers in other occupations.

Figure 9. The number of public sector minimum wage workers was fixed based on national data on the proportion of public sector workers earning the minimum wage and multiplying that proportion by the number of public sector workers in Minnesota.

Data on the number of minimum wage workers in Minnesota was used to fix the numbers for three groups of workers: workers in goods-producing industries, those in the service sector of the service-producing industries, and those in other sectors of the service-producing industries. All of these numbers were multiplied by a factor of 0.987 to account for the number of minimum wage workers estimated from national data to be in the public sector.

Figure 10. In the discussion that follows, the Twin Cities Metropolitan Statistical Area (MSA) does not include the two Wisconsin counties in the MSA.

The number of public sector minimum wage workers was fixed based on national data on the proportion of public sector workers in urban areas earning the minimum wage and multiplying that proportion by the number of public sector workers in the Twin Cities MSA.

Data on the number of minimum wage workers in Twin Cities MSA was used to fix the numbers for three groups of workers: workers in goods-producing industries, those in the service sector of the service-producing industries, and those in other sectors of the service-producing industries. All of these numbers were multiplied by a factor of 0.983 to account for the number of minimum wage workers estimated from the national data on urban areas to be in the public sector.

In the second step calculations, data on the portion of U.S. workers in various industries *in urban areas* who were minimum wage workers was used, instead of data on the fractions of all U.S. workers who were minimum wage workers.

Figure 11. The number of public sector minimum wage workers was fixed based on national data on the proportion of public sector workers in rural areas earning the minimum wage and multiplying that proportion by the number of public sector workers in greater Minnesota.

Data on the number of minimum wage workers in greater Minnesota was used to fix the numbers for three groups of workers: workers in goods-producing industries, those in the service sector of the service-producing industries, and those in other sectors of the service-producing industries. All of these numbers were multiplied by a factor of 0.988 to account for the number of minimum wage workers estimated from the national data on rural areas to be in the public sector.

In the second step calculations, data on the portion of U.S. workers in various industries *in rural areas* who were minimum wage workers was used, instead of data on the fractions of all U.S. workers who were minimum wage workers.

Appendix C

Workers Who Earned Less than \$4.25 per Hour

Approximately 60,000 workers in Minnesota earned \$5.15 per hour or less at their main job in 2001. Slightly more than half of these workers (30,100) appear to have earned less than \$4.25 per hour. This number seems high given the relatively few exemptions to Minnesota's laws governing minimum wages. Unlike some states, for example, Minnesota does not allow employees who receive tips to be paid less than the minimum wage.

Potential Explanations of Wages Below \$4.25 per Hour

There are a number of reasons why the data might show people earning wages below \$4.25 per hour. First, there are a few legal exemptions to the minimum wage laws in Minnesota that allow workers to be paid wages below \$5.15 per hour. Second, there may be problems with the survey data. Third, workers may be paid wages below legal levels.

There are only a few legal exemptions to Minnesota's minimum wage laws, so this explanation probably can account for only a small share of the 30,000 workers who earned less than \$4.25 per hour. Exemptions apply mainly to a few types of farm work, but farm laborers made up less than 10 percent of those earning less than \$4.25 per hour.

Problems with the survey data may be of two types. Respondents could have reported wages incorrectly or wage rates could have been calculated incorrectly. We cannot rule out reporting errors, they undoubtedly do occur, but overall respondents who reported wages below \$4.25 per hour had characteristics that were similar to other minimum wage workers. This information is discussed in the next sub-section of this appendix and it provides some evidence to support these people's responses.

Wage rates for salaried workers were calculated based on the number of hours usually worked and the amount of money the respondent was paid. Some salaried workers report that the number of hours they usually work varies. In these cases, wage rates are calculated based on the number of hours the person actually worked. If a person worked an unusually high number of hours, that person's wage rate will be unusually low.

Only a small share of the situations where workers earned less than \$4.25 per hour seem to be explained by people who worked unusually long hours in one particular week seem. In Minnesota, 9 percent of salaried workers earning less than \$4.25 per hour said their hours varied, compared to 4 percent of all salaried workers. Nationally, 20 percent of salaried workers earning less than \$4.25 per hour said their hours usually varied, and only 6 percent of all salaried workers said their hours usually varied. If the questions about hours usually worked were answered correctly, then approximately 5 or 10 percent of the workers who appear to have earned less than \$4.25 per hour in Minnesota, may have been people who worked unusually long hours in one week.

We can explain perhaps 10 or 20 percent of workers who appear to have earned less than \$4.25 per hour as either workers who may be exempt from minimum wage laws or people who worked unusually long hours in one particular week. The remainder must be explained by either problems with the survey or they must be workers who are paid below legal levels. While, the CPS survey is carefully conducted, small errors in the overall survey could lead to relatively large errors in estimates of the number of workers who earned less than \$4.25 per hour. This is because only 1.3 percent of all workers earned less than \$4.25 per hour.

Overall, it seems likely that a significant share of the 30,100 workers who, based on the CPS data, appear to have earned less than \$4.25 per hour in Minnesota in 2001 actually did earn less than \$4.25 per hour. Furthermore, many of these workers may have been paid wages that were below legal levels. In Minnesota, this problem seems to be concentrated among salaried workers, who make up 67 percent of all workers earning less than \$4.25 per hour.

Characteristics of Workers Who Earned Less Than \$4.25 per Hour

Demographically, the groups of Minnesota and US workers who earned less than \$4.25 per hour looked like other minimum wage workers. In Minnesota people who earned less than \$4.25 per hour were more likely than other workers to be salaried (67 percent), part-time (48 percent), young (28 percent were 21-years old or younger), and women (60 percent). The characteristics of U.S. workers earning less than \$4.25 per hour were similar.¹

Some patterns were observed in the national data, and seem consistent with the Minnesota data, but cannot be confirmed by the Minnesota data because so few cases were observed. Nationally, workers earning less than \$4.25 per hour were somewhat more likely than other workers to have more than one job (2.7 percent had more than one job, but only 1.7 percent of all workers had more than one job). Workers earning less than \$4.25 per hour were more likely than other workers to live in low-income households. Nine percent of all workers lived in households that had incomes of less than \$15,000 per year and 5.2 percent of workers in such households earned less than \$4.25 per hour. Only 1.4 percent of workers in households with incomes of \$15,000 per year or more earned less

than \$4.25 per hour.

One difference between Minnesota and the U.S. as a whole is that workers who earned less than \$4.25 per hour in Minnesota were less likely to be hourly workers. In Minnesota, 33 percent were hourly workers, while nationally 46 percent were. This difference appears to be explained by the fact that in Minnesota hourly workers who earn tips, such as waiters and waitresses, are not exempted from the minimum wage laws (and hence must be paid \$5.15 per hour in most cases, and \$4.90 or \$4.25 per hour in some cases). In Minnesota, there are relatively few hourly workers who earn tips that are paid less than \$4.25 per hour.

Approximately 70 percent of hourly workers in the U.S. who earned less than \$4.25 per hour appeared to be workers who earned tips. Almost 70 percent of the hourly workers who earned less than \$4.25 per hour were employed at eating and drinking establishments. The three largest occupational groups were waiters and waitresses (52 percent), waiters and waitresses' assistants (11.4 percent), and bartenders (3.2 percent). In Minnesota only 37 percent of the hourly workers who earned \$4.25 or less were employed at eating and drinking establishments.

In Minnesota, 67 percent of the workers who earned less than \$4.25 per hour were salaried workers. The greater proportion of salaried workers who earned such low wages could be partially explained by the fact that it is probably harder to regulate the wages of salaried workers than those of hourly workers.

Because data on Minnesota salaried workers who earned less than \$4.25 per hour was limited, data on U.S. workers was examined. Nationally, hourly workers who earned less than \$4.25 per hour were concentrated in just a few industries and occupations, but salaried workers were distributed across many industries and occupations. No more than 5 percent of these workers were concentrated in any one industry, and no more than 7 percent were in any one occupation. Figures C1 and C2 show the distribution of these workers across industries and occupations. The data on workers earning less than \$4.25 per hour in Minnesota generally

¹ Different states have different minimum wage laws, which complicates comparisons of low wage workers across states. Still, there is much more U.S. data on workers earning less than \$4.25 per hour than Minnesota data, and the U.S. data is helpful in confirming patterns seen in the Minnesota data and in identifying industries and occupations where workers are frequently paid less than \$4.25 per hour. The U.S. data discussed in this section is from the months from July to December 2001.

appears to be consistent with the figures, but there was not enough data on Minnesota workers to produce such a detailed breakdown of workers by industry and occupation.

Figure C1 Percent of Salaried Workers in the U.S. Who Earned Less than \$4.25 per Hour by Industry and Occupation

Number	Percent	Industry [2]
75,089	6.8%	Private households
63,851	5.8	Eating and drinking places
60,740	5.5	Elementary and secondary schools
59,464	5.4	Job training and vocational rehabilitation services
45,109	4.1	Religious organizations
42,056	3.8	Construction
40,491	3.7	Agricultural production, livestock
31,710	2.9	Real estate, including real estate-insurance offices
26,608	2.4	Insurance
22,476	2.0	Colleges and universities
22,135	2.0	Grocery stores
21,483	2.0	Miscellaneous entertainment and recreation services

Number	Percent	Occupation [2]
51,676	4.7%	Farm workers
50,104	4.5	Janitors and cleaners
41,308	3.8	Child care workers, private household
39,363	3.6	Managers and administrators not elsewhere classified
34,178	3.1	Secretaries
30,935	2.8	Private household cleaners and servants
30,551	2.8	Groundskeepers and gardeners, except farm
30,447	2.8	Laborers, except construction
29,813	2.7	Supervisors and proprietors, sales occupations
27,545	2.5	Nursing aides, orderlies, and attendants
26,666	2.4	Managers, food serving and lodging establishments

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.
2. Industries and occupations are only shown if the total number of workers in the category comprise at least 2 percent of all salaried workers earning less than \$4.25 per hour.

Figure C2 Percent of Salaried Workers in the U.S. Who Earned Less than \$4.25 per Hour within Individual Industrial and Occupational Groupings

Number	Percent	Industry [2]
59,464	53.2%	Job training and vocational rehabilitation services
40,491	22.9	Agricultural production, livestock
75,089	19.8	Private Households
11,321	18.7	Lodging places, except hotels and motels
19,581	13.8	Agricultural production, crops
13,165	11.5	Landscape and horticultural services

Number	Percent	Occupation [2]
15,909	86.7%	Miscellaneous hand working occupations
41,308	37.7	Child care workers, private household
15,108	37.6	Miscellaneous food preparation occupations
10,355	26.4	Bartenders
51,676	22.6	Farm workers
30,447	21.4	Laborers, except construction
30,551	18.6	Groundskeepers and gardeners, except farm
10,789	18.5	Health aides, except nursing
17,315	16.0	Bus drivers
30,935	13.5	Private household cleaners and servants
50,104	11.8	Janitors and cleaners
19,909	10.2	Cashiers
27,545	10.0	Nursing aides, orderlies, and attendants

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.
2. Industries and occupation are only shown if the total number of workers who earned less than \$4.25 was at least 10,000 and the share of workers earning less than \$4.25 was 10 percent or larger.

Appendix D

Notes on the Reliability of Estimates

These figures below provide some perspective on the confidence that we can put in the estimates of the share of all workers who are minimum wage workers.

The tables were constructed using the standard formula for estimating confidence intervals from a poll.¹³ Note that in the tables shown below, the numbers in bold were the ones that were estimated from the Minnesota data and the other numbers were estimated using a combination of U.S. and Minnesota data.

These numbers do not account for the weighting scheme that the BLS uses.¹⁴ That is, these numbers are calculated as if the BLS did no weighting. Still, these numbers should provide an approximation for the confidence interval (although probably a lower bound on the size of the actual confidence interval). The weighting system helps to make the CPS numbers more accurate with respect to certain demographic categories. The weighting system is not adjusted to account for the distribution of wages, however. This means that the weights help in predicting the number of total workers for many categories shown in the table.¹⁵ The weighting

scheme does not, however, help us to determine the distribution of wages within any category. Weighting will probably introduce additional errors into the estimates made within a category.¹⁶ Weighting could in some cases reduce errors within categories, however. The reason is that weights that correct for over- or under-sampling of certain groups of the population may also help correct for over- or under-sampling of people from certain parts of the wage distribution (because wages are correlated across some groups). Overall, the effects of weighting may not make too much difference to the confidence intervals shown below because the weights do not vary too much and are probably not significantly biased.¹⁷

Another factor that reduces the reliability of some estimates is that the CPS sample is constructed from households, not individuals. The fraction of people in Minnesota who have a characteristic cannot be estimated as accurately if the characteristic is always the same for everyone in the household (poverty status, for example, is defined for households, and not for individuals). Because data is available for fewer households than individuals, the information that is available on households is generally less reliable than the information on individuals. For the same reason, the information that is available on characteristics of people that are usually the same for everyone within a household (for example, poverty status or race) will be less reliable than information that varies across people within a household. Examples of the later group of characteristics are sex and age.

¹³ The formula is $z * (p * (1 - p) / n)^{0.5}$, where z is the cutoff for the normal distribution given the confidence level chosen. The variable p is the ratio of the number of observations in the subgroup to the total number of people surveyed, and n is the total number of people surveyed.

¹⁴ They also do not account for the fact that the CPS sample was not completely random. The discussion below assumes that the sample was random.

¹⁵ For example, the actual confidence interval on the number of 16 to 19 year-old working women in Minnesota is probably much tighter than the 0.5 percent that we would get by applying the “poll formula.” This because the microdata was weighted so that the CPS data better matches up with Census data.

¹⁶ Suppose all the weight was on just a few observations. In that case your sample would give you very little information on the distribution of minimum wage workers.

¹⁷ The BLS attempts to make sure the CPS data is biased as little as possible.

An additional thing to remember is that the tables account for only sampling errors. They do not account for such “non-sampling” errors as the possibility that the sample was not really random or that people lied on the survey. Non-sampling errors are important, of course, but the CPS is a very carefully run survey so non-sampling errors are probably smaller than they are in most other surveys. An additional complication is that we are looking at wage, which is a continuous variable. This could increase non-sampling errors if wages are not reported accurately because they are rounded or otherwise reported incorrectly.

Figure D1 Confidence Intervals for Figure 1 (If the Sample Was Random and the Data Was Not Weighted)

Age and Gender	Total Observations	Minimum Wage Workers	Un-weighted Percent	90% Margin	Lower Bound	Upper Bound
Total, 16 years and over	3,170	86	2.7%	.5%	2.2%	3.2%
16-24 years	485	41	8.5	2.1	6.4	10.5
16-19 years	213	19	8.9	3.2	5.7	12.1
20-24 years	272	22	8.1	2.7	5.4	10.8
25 years and over	2,685	45	1.7	.4	1.3	2.1
Men, 16 years and over	1,557	33	2.1	.6	1.5	2.7
16-24 years	247	14	5.7	2.4	3.2	8.1
16-19 years	106	10	9.4	4.7	4.8	14.1
20-24 years	141	4	2.8	2.3	.5	5.1
25 years and over	1,310	19	1.5	.5	.9	2.0
Women, 16 years and over	1,613	53	3.3	.7	2.6	4.0
16-24 years	238	27	11.3	3.4	8.0	14.7
16-19 years	107	9	8.4	4.4	4.0	12.8
20-24 years	131	18	13.7	4.9	8.8	18.7
25 years and over	1,375	26	1.9	.6	1.3	2.5

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

Figure D2 Confidence Intervals for Figure 4 (If the Sample Was Random and the Data Was Not Weighted)

Education and Age	Total Observations	Minimum Wage Workers	Un-weighted Percent	90% Margin	Lower Bound	Upper Bound
Less than high school	254	24	9.4%	3.0%	6.4%	12.5%
16-24 years	156	15	9.6	3.9	5.7	13.5
16-19 years	140	14	10.0	4.2	5.8	14.2
20-24 years	16	1	6.3	10.0	- 3.7	16.2
25 years and over	98	9	9.2	4.8	4.4	14.0
High school [2]	912	30	3.3	1.0	2.3	4.3
16-24 years	139	10	7.2	3.6	3.6	10.8
16-19 years	44	2	4.5	5.2	-.6	9.7
20-24 years	95	8	8.4	4.7	3.7	13.1
25 years and over	773	20	2.6	.9	1.6	3.5
Some college	2,004	32	1.6	.5	1.1	2.1
16-24 years	190	16	8.4	3.3	5.1	11.7
16-19 years	29	3	10.3	9.3	1.0	19.6
20-24 years	161	13	8.1	3.5	4.5	11.6
25 years and over	1,814	16	.9	.4	.5	1.2
Total	3,170	86	2.7	.5	2.2	3.2

1. Estimated by DLI, Research and Statistics, from data from the U.S. Bureau of Labor Statistics and the Current Population Survey. See Appendix A.

2. Workers with high school graduate equivalency degrees (GEDs) are included in the high school category.