DISCUSSION PAPER SERIES

Five Decades of Union Wages, Nonunion Wages, and Union Wage Gaps at unionstats.com

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ABSTRACT

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Union, nonunion, and overall wages, plus regression-based union wage gap estimates, are provided annually, beginning in 1973 using the Current Population Surveys (CPS). The estimates are presented economy-wide by demographics and sectors (private/public, industries). Union wage gaps are higher in the private than in the public sector, higher for men than women, roughly similar for black and white men, and much higher for black than for white women. We estimate mean weekly earnings above CPS topcodes by gender and year, assuming a Pareto distribution in the right tail of the distribution. The database is online and will be updated annually.

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There is a rich body of work in labor economics estimating wage differences between union and nonunion workers in the U.S. The literature on union wage differentials is based heavily on the work of H. Gregg Lewis (1963, 1986), who provided terminology distinguishing union "gap" and "gain" differentials. Gap estimates measure wage differences for "similar" union and nonunion workers and jobs. These wage gap measures are typically obtained from semilog wage equation estimates based on human capital theory (Mincer 1974). Such equations have been widely used and found to be empirically robust (Heckman and Polachek 1974).

In contrast to union wage gaps, wage gains reflect the impact of an economy's union density level (i.e., percent union) on wage levels for both union and nonunion workers. Empirical studies on wage gains typically find that wages increase both for union and nonunion workers with respect to union densities in workers' industries (e.g., Freeman and Medoff 1981) and labor markets proxied by metro areas (e.g., Holzer 1982). Lewis (1986) was skeptical of such studies, concerned that union density measures may be correlated with wage determinants independent of union effects.

Our primary focus is the estimation of union wage gaps in the U.S. among worker types and job sectors over time. Recent studies have provided union wage gap estimates from early time periods. Callaway and Collins (2018) provide union gap estimates from several large U.S. cities around 1950, a period at which unionization was at its peak.[1] The union wage gap estimates found by Callaway and Collins are somewhat lower than those seen subsequently in the CPS, which began in 1973. As compared to the Callaway and Collins 1950 data, our CPS estimates reflect a more educated and more representative U.S. labor force. Not coincidentally, the authors note that the 1950s was a period with perhaps the lowest-ever inequality in the U.S. More recently, Farber et al. (2021) have accessed an unusually large microdata set of adults (N ≈ 980,000) from Gallup that includes union membership and income measures for surveys over the period 1936-1986. Consistent with contemporary estimates of union wage gaps from the CPS, Farber et al. find union-nonunion family income gaps in the Gallup data ranging between 10 and 20 percent.

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[1] Troy and Sheflin (1985) provide estimates of union density in the private sector from 1929 through 1983, finding peak union density of 35.7 percent in 1953.

Our paper describes an online database, "Union-Nonunion Wages and Gaps at Unionstats.com," which we have created and will maintain. It provides annual estimates of union wages, nonunion wages, and regression-based union wage gaps, derived from the Current Population Surveys (CPS), a joint project of the Bureau of Labor Statistics (BLS) and the Census Bureau. The estimates begin in 1973 and continue through 2020. All measures and estimates will be updated annually.

Overview of the *Unionstats.com* Website

Before we describe our union wage gap estimates, we summarize content at the *Unionstats.com* website, introduced in the *ILR Review* (Hirsch and Macpherson, 2003) and posted online continuously since 2003. *Unionstats.com* has constructed historical estimates compiled from the CPS, beginning in 1973, measuring union membership and coverage nationally for all wage & salary workers, the overall private sector, construction, manufacturing, and the public sector. Beginning in 1983, changes in the CPS made it feasible for *Unionstats.com* to provide public-sector union member estimates separately for non-postal federal, postal, state, and local workers. Also beginning in 1983, *Unionstats,com* provides annual measures, of union membership and density for states (and D.C.), with separate estimates for all wage and salary, private, public, construction, and manufacturing workers.[2] The *Unionstats.com* site is updated each year, typically in February or early March.

Our CPS measures compiled for U.S. states are likewise provided for metropolitan statistical areas (MSAs) areas identified in the CPS (i.e., MSAs with populations roughly of at least 100,000). The MSAs included in the CPS change every ten years following updated population tallies from the most recent decennial Census. Given the small annual sample sizes for small and medium-size MSAs, the metro area union estimates are rather noisy.[3]

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[2] Prior to 1983, the CPS asked the union questions to all wage and salary workers in the May CPS surveys from 1973 through 1981 (union questions were not asked during 1982). Beginning in 1973, we provide annual "historical" tables reporting nationwide union membership and density measures for major sectors of the U.S. labor market (there were no union data for 1982). Beginning in 1983 and continuing through today, the union membership and coverage questions were asked of all CPS wage and salary workers in the outgoing rotation groups 4 and 8 for all 12 months of each year, thus increasing sample sizes and making it possible to provide union member estimates at the state level.

[3] Small sample sizes are not the sole problem for MSA union estimates. The Census Bureau structures their sampling locations to be representative at the state and national levels; they do not provide fully representative samples at the MSA level or at other locations below the state level. Metro area delineations can change over time.

Unionstats.com also provides annual measures of union membership and density, beginning in 1983, for approximately 260 detailed industries and 500 detailed occupations. The Census codes and definitions for detailed industries and occupations change roughly every ten years. Each decade, a few industries and occupations are dropped or collapsed into other categories. Likewise, a few new industries and occupations are added each decade. Census documentation for detailed industries and occupations is provided at *Unionstats.com*.

Measurement Issues of Earnings in the CPS: Topcodes, Nonresponse, and Census Imputations

Before presenting union wage gap estimates, we describe three measurement issues addressed at *Unionstats.com*: (1) topcoded measures of weekly earnings, which have changed over time;[4] (2) estimation of mean earnings for those above the topcodes, estimated by year, separately for men and women, based on the assumption that the right tail of the earnings distributions follows a Pareto distribution. These estimated Pareto topcodes are provided in Table 1.

The third measurement issue (3) is earnings nonresponse, which has increased over time. Nonresponse creates a substantial bias (attenuation toward zero) of union wage gap estimates (Hirsch and Schumacher 2004). The bias occurs due to the Census Bureau's use of imputed earnings ("allocations" in Census jargon) for individuals who do not report earnings. Nonrespondents are assigned the earnings of respondents "similar" to those not reporting earnings. Union status is not a criterion included in matching earnings from a respondent to a "similar" nonrespondent. There were no earnings imputations before 1979. Beginning in 1979, all wage measures and estimated union wage gaps provided at *Unionstats.com* exclude imputed earnings. This avoids the assigning of nonunion donor earnings to a nonrespondent union worker, which substantively understates both mean union wages and estimates of union wage gaps.[5]

Moreover, neighborhoods sampled by Census within MSAs vary over time, particularly so following updated population information from the decennial Censuses.
[4] CPS top-codes for weekly earnings are $999 in 1973-88; $1,923 in 1989-97, and $2,885 since 1998.
[5] The last year of CPS union wage gaps provided by Lewis (1986) was for 1979, which unknowingly included imputed earnings and led to a substantial understatement of actual union wage gaps. The previous 1973-78 CPS earnings files had not included earnings nonrespondents (i.e., their earnings were not imputed). The inclusion of earnings nonrespondents with imputed earnings, beginning in 1979, led to a sharp decrease in estimated union wage gaps, as shown and explained subsequently by Hirsch and Schumacher (2004). Lewis was rightly skeptical of the

Regression-Based Union Wage Gaps

Union wage gap estimates from the CPS are designated as *Diff* and presented in Table 2, measured by the regression coefficient on the union membership variable (1 if member and 0 otherwise) from a semi-logarithmic wage equation, with controls included for worker/job characteristics. *Diff* represents the estimated log wage differential between union and nonunion workers after accounting for other measurable earnings determinants. Included in the wage equations for all wage and salary workers are the control variables: years of schooling, potential years of experience (proxied by age minus years schooling minus 6) and its square (both interacted with gender), and categorical variables for marital status, race and ethnicity, gender, part-time, large metropolitan area, public sector, region, broad industry, and broad occupation. Controls are omitted, as appropriate, for estimates within sectors or by demographic group (i.e., by class, gender, race, or industry sector). *Diff* represents the approximate proportional differential and can be converted to a percentage differential by 100[exp(*Diff*)-1]. For example, if *Diff* = .100, this translates into a union-nonunion percentage wage differential of 10.5 percent; *Diff* = .250 represents 28.4 percent.

We expect OLS estimates of mean union wage gaps not to be severely biased due to selection. Unionized employers typically provide their workers with a wage premium and compress pay across the ability distribution (Freeman 1980). Given that there is a wage premium and pay compression, it follows that union employers can attract and retain reliable and productive workers in low-skill jobs (the left tail of the distribution). Pay compression in the right tail of the wage distribution can make it difficult for union establishments to attract workers with extremely high skills.

We are confident that union wage gap estimates are not severely biased. Our confidence is reinforced in part by a recent study estimating union wage gaps among displaced workers. Kulkarni and Hirsch (forthcoming) analyze estimates of union gaps based on arguably exogenous job changes following plant closings and other forms of job displacement. These displacements occurred over the years 1991-1993 through 2015-2017 (the biennial Displaced Worker Surveys [DWS] for 1994 through 2018). The DWS estimates of union wage gains and

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1979 union gap estimate and hence downplayed it. Richard Freeman (1986) was also skeptical, given that union wage contracts during this period did not include wage concessions that would have decreased the "true" 1979 union wage gap.

losses are roughly 15 percent across these years, with somewhat larger wage losses for displaced workers moving from union to nonunion than the wage gains among those moving from nonunion to union (Kulkarni and Hirsch, forthcoming, Table 2). In addition, union wage gaps based on changes from union to nonunion (U-N) averaged larger losses than were the gains from nonunion to union (N-U). Over the entire period, the average union wage gap estimate was 14 percent (Kulkarni and Hirsch, forthcoming, Table 5). Union gap estimates from the DWS declined gradually over the period 1991-93 to 2015-17, similar to the pattern seen in our CPS estimates. The similarity in union gap estimates at Unionstats.com based on the monthly CPS earnings files, as compared to the biennial DWS, is highly reinsuring given that the DWS estimates are based on exogenous job changes due to plant closings and other job displacements.

Union Gap Estimates Over Five Decades: 1973-2020

Table 2 provides economy-wide annual measures of union wages, nonunion wages, union-nonunion wage ratios (Wu/Wn), and regression-based union wage gap estimates for the years 1973 through 2020, based on the samples of all wage and salary workers economy-wide. The wage gap estimates are provided annually by sector (all wage and salary, private, public, and broad industries), and by demographics (gender, race, ethnicity). The wage gap estimates for 1973-1981 are based on May-only CPS files, with sample sizes that are relatively small, about 38,00 to 48,000 for the 1973-1980 surveys and 12,584 for 1981, which included only a quarter sample (i.e., the outgoing rotation groups). There was no such earnings supplement in May 1982. Beginning in 1983, the CPS made available monthly CPS files, that included the outgoing rotation group (ORG) files. Sample sizes for the annual (January-December) CPS-ORG files were about 150,000 (excluding those with imputed earnings) from 1983 through about 1993.

There were numerous changes in the CPS in 1994, most of which had a minimal impact on our union wage gap estimates. The 1994 and 1995 CPS sample sizes are about 170,000 each, but these include those with imputed earnings because Census failed to identify non-respondents (discussion is below). Hence, we estimate union wage gaps using the full samples in 1994 and 1995 but adjust upward these wage gap estimates based on estimates in the years 1996 and 1997 with and without imputed earners. Issues concerning earnings nonresponse and imputed (allocated) earnings are discussed briefly in the next section.

For this brief paper, we provide the union wage gap table for all wage and salary workers, for the years 1973-2020, shown as Table 2. Similarly structured tables will be provided online at Unionstats.com. The additional tables will focus on specific sectors – private/public, by broad industry, and demographic groups. Table 3 provides the list of tables at the Unionstats.com website, each shown both in html and Excel.

We briefly summarize union wage gap estimates (*Diff*) provided in Table 1. Details on the data sources and regression specification are provided in the table notes. We observe an inverted U-shape for union wage gap estimates over time, the gap estimates increasing gradually through much of the 1970s and 1980s, holding roughly constant through the 1990s. Union wage gaps economy-wide averaged roughly 20 percent in much of the 1970s, 1980s, and 1990s, but the wage gaps gradually declined in the first two decades of the 21st century, coinciding with declining levels of union density.

Roughly one-in-six wage and salary workers are public sector workers (federal, state, or local). That said, roughly half of all union members are currently public sector workers. Beginning in 2009, just over half of all union members were public rather than private-sector workers, reflecting the impact of the Great Recession on private sector employment. A public sector majority of union members ended after 2012 as economy-wide employment growth improved. After 2013, private-sector union members recorded a small majority of all union members. In 2020, however, there were slightly more public-sector than private-sector members. The shift back to a slight majority of public members in 2020 was due to the sharp decline in private sector employment following the Covid-19 pandemic. In contrast, the decline in public sector employment was minimal. We expect to see union membership regain its narrow majority of private-sector workers once employment returns to previous levels, but it had not yet occurred as of the first week of March 2021 (i.e., the most recent publicly available CPS file as we write).

Economy-wide union wage gaps are systematically higher in the private sector than in the public sector (roughly double). Note that collective bargaining law (the NLRA) is federal for private-sector workers, the principal exception being right-to-work laws, which are determined at the state level.[6] For the most part, public-sector collective bargaining for state and local workers is governed by state law. There are separate laws for postal workers (who are highly unionized)

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[6] As of 2021, 27 states have right-to-work laws, primarily in the South, Midwest, and interior West.

and for non-postal federal workers (who have union membership well below that seen for state-level workers countrywide).

Also provided in our wage tables are the ratios of raw mean hourly earnings of union workers relative to nonunion workers (i.e., W_u/W_n). The lowest ratio during our 20th century years (1973-1999) occurred in 1973, a ratio of 1.22, implying a 22 percent raw wage advantage for union to nonunion workers. During the late 1970s through much of the 1980s and 1990s, the wage ratios were roughly 1.3 (a 30 percent wage advantage for union members). We did not see a ratio as low as 1.22 until the twenty-first century (year 2000). By 2020, the wage ratio had fallen to its lowest level on record since 1973, 1.11, implying a raw wage advantage of only 11 percent. This low level is not driven by changes in composition. The year 2020 had the lowest raw union-nonunion wage ratio since (at least) 1973 for private, public, and all wage and salary workers. As we will see subsequently, annual regression-based union wage gaps (i.e., with controls) are also at their lowest in 2020 over a near-50-year period. Regression-based union wage gaps in 2020 were at the lowest levels since 1973 in the Construction, Trade, Services, and Transportation, Communication & Utilities industries. Manufacturing had its lowest union wage gap in 2019 (0.126 log points), with the 2020 wage gap just slightly higher (0.133 log points).

Allocated (Imputed) Earnings and Match Bias

The Census Bureau imputes weekly earnings for those who refuse or are unable to report earnings. Prior to 1979, non-respondents did not have earnings imputed, so there were no earnings provided for non-respondents in the 1973-78 earnings files. Between 1979 and 1993, about 15 percent of workers did not report earnings and had their earnings imputed. Imputation rates increased sharply following CPS revisions in 1994, but they were not identified (designated) until 1996. Earnings nonresponse and Census imputations have continued to increase over time. Census uses a "cell hot deck" imputation procedure, which matches non-respondents with the earnings of a "donor" who has similar characteristics such as gender and ranges of schooling, occupation, age, and hours worked. Union status, industry, location (state or metro area), as well as many other job and worker attributes, are not used as imputation match criteria. The imputation method and specific match attributes (gender, education ranges, age ranges, etc.) are shown in Bollinger and Hirsch (2006, Table 1).

Currently, roughly a third of the individuals who are included in the CPS and asked the question on usual weekly earnings (i.e., the quarter sample who are in the outgoing rotation groups 4 and 8) either refuse to provide earnings information or state that they cannot do so. Imputed earnings are a good predictor of actual earnings for the overall labor force, but a poor predictor for workers who are grouped by non-match characteristics such as union status and industry. Because most union workers who do not report earnings are matched to (i.e., assigned) the earnings of nonunion workers, and some nonunion workers the earnings of union members, earnings imputation causes a substantial downward bias in union earnings and a small upward bias in nonunion earnings. Estimated union-nonunion wage gaps (*Diff*) and wage ratios (W_u/W_n) are severely biased downward using the full sample of workers (bias is about 25% of the true value). In 1994 and most of 1995, imputed earners cannot be identified in the CPS. In all our wage tables, we adjust earnings in 1994 and 1995 to account for the bias from imputation, based on the bias found during 1996-97. For details on "match bias" due to earnings imputation, see Hirsch and Schumacher (2004) and Bollinger and Hirsch (2006).[7] [8]

Topcodes and Pareto Estimates of Mean Earnings above the Cap

We address the problem of top codes by estimating mean earnings above the cap, which then enables us to calculate more accurate measures of mean weekly and hourly earnings. Topcodes for weekly earnings were $999 during 1973-1988; $1,923 during 1989-1997; and $2,885 since 1998. We estimate the mean of the open-ended category of weekly earnings by assuming that its upper tail follows a Pareto distribution. Letting Y represent earnings, with A and α being constants, the Pareto law states that the number of people with incomes greater than or equal to Y is given by $AY^{-\alpha}$. The Pareto distribution implies that the mean income for those in the range Y and above (i.e., at or above the earnings cap) is equal to $[\alpha/(\alpha-1)]Y$. Hence an estimated α of 2 implies that mean earnings above the cap is 2.0 times the cap amount (e.g., $5,770 for a $2,885 cap). Parameters of the Pareto distribution are estimated separately by

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[7] Bollinger et al. (2019) examine internal data from the Census Bureau linking CPS wage and salary workers in the March supplement (ASEC) with matched IRS tax data. The authors conclude there is "trouble in the tails." Nonresponse for annual earnings in the CPS is most likely among those with very low and extremely high IRS earnings. Union members are rarely in the far left or right tails of the earnings distribution.

[8] Working in the opposite direction of "match bias" is the misreporting (misclassification) of union membership status, which tends to understate union wage gap estimates (Farber and Western 2002). The degree of union status misreporting in the CPS is unknown.

gender and year, based on workers above the median. To calculate earnings figures for 1986-88, we take advantage of the information the CPS provided in an "unedited" earnings field with reported earnings above the top code of $999 up to a value of $1,923 (the cap that begins in 1989).

In Table 1, we provide the nominal dollar earnings assigned to women and men at the cap for the years 1973-2020. The table also provides the annual consumer price index (CPI-U) for 1973-2020, which enables users to convert nominal current dollar earnings (1973-2020) into 2020 (or other year) constant dollars. Weekly earnings in the public use CPS-ORG files are "top coded" or "capped" at a maximum value, $999 per week for the years 1973 through 1988, $1,923 for 1989 through 1997 (about $100,000 in annual earnings), and $2,885 beginning in 1998 ($150,000 annually). Our tables on historic earnings include a measure, *%Top*, which reports the percentage of workers with earnings at the cap. Topcoding is a particular concern prior to 1989 (the year 1988 has the most earners at the cap) and for high paid occupations. Absent an adjustment for earners at the cap, calculated mean earnings would understate the true mean. One way to avoid this problem is to present median rather than mean earnings, as is done by BLS. While this avoids the problem of an earning cap, median earnings can diverge considerably from mean earnings, being considerably lower in the typical case where the earnings distribution is skewed to the right.

Final Comment

Since 2003, Unionstats,com has provided on-going current and historical measures of union membership and coverage in the U.S., compiled from microdata from the Current Population Surveys (CPS) beginning in 1973. As described in this paper, union wage gaps from the CPS have been estimated annually, beginning in 1973 and currently available through 2020 at Unionstats.com. The estimates are provided economy-wide by demographics and sectors (private/public and broad industries). Our union wage gap and top-code estimates are provided at Unionstats.com and are updated annually.

References

Bollinger, Christopher R. and Barry T. Hirsch. 2006. Match Bias from Earnings Imputation in the Current Population Survey: The Case of Imperfect Matching. *Journal of Labor Economics*, Vol. 24, No. 3, July, 483-519.

Bollinger, Christopher R., Barry T. Hirsch, Charles M. Hokayem, and James P. Ziliak. 2019. Trouble in the Tails? What We Know about Earning Nonresponse Thirty Years after Lillard, Smith, and Welch. *Journal of Political Economy*, Vol. 127, No. 5, October, 2143-2185.

Callaway, Brantley and William J. Collins. 2018. Unions, Workers, and Wages at the Peak of the American Labor Movement. *Explorations in Economic History* 68: 95-118.

Farber, Henry S., Daniel Herbst, Ilyana Kuziemko, and Suresh Naidu. 2021. Unions and Inequality Over the Twentieth Century: New Evidence from Survey Data. *Quarterly Journal of Economics*, published online, April 2021, at https://doi.org/10.1093/qje/qjab012,

Farber, Henry S and Bruce Western. 2002. Accounting for the Decline of Unions in the Private Sector, 1973-1988. In James T. Bennett and Bruce E. Kaufman, eds. *The Future of Private Sector Unionism in the United States*. Armonk, NY: M.E. Sharpe, 28-58.

Freeman, Richard B. 1980. Unionism and the Dispersion of Wages. *Industrial and Labor Relations Review* 34(1), 3-23.

_____.1986. In Search of Union Wage Concessions in Standard Data Sets. *Industrial Relations* 25 (Spring): 131–45.

Freeman, Richard B. and James L. Medoff. 1981. The Impact of the Percent Organized on Union and Nonunion Wages. *Review of Economics and Statistics* 63(4): 561-72.

Heckman, James and Solomon Polachek. 1974. Empirical Evidence on the Functional Form of the Earnings-Schooling Relationship. *Journal of the American Statistical Association*, June 1974, 69 (346): 350-54

Hirsch, Barry T. and David A. Macpherson. 2003. Union Membership and Coverage Database from the Current Population Survey: Note. *Industrial and Labor Relations Review* 56(2): 349-54 (updated annually at Unionstats.com).

Hirsch, Barry T. and David A. Macpherson. 2019. *Union Membership and Earnings Data Book: 2019 Edition*. Arlington VA: Bloomberg Law (published annually from 1993 through 2019).

Hirsch, Barry T. and Edward J. Schumacher. 2004. Match Bias in Wage Gap Estimates Due to Earnings Imputation. *Journal of Labor Economics*, Vol. 22, No. 3 (July), pp. 689-722.

Holzer, Harry J. 1982. Unions and the Labor Market Status of White and Minority Youth. *Industrial and Labor Relations Review* 35(3) April, 392-405.

Kulkarni, Abhir and Barry T. Hirsch. Forthcoming. Revisiting Union Wage and Job Loss Effects Using the Displaced Worker Surveys. *ILR Review*, https://doi.org/10.1177/0019793920912728

Jarrell, Stephen B. and T.D. Stanley. 1990. A Meta-Analysis of the Union-Nonunion Wage Gap. *Industrial and Labor Relations Review* 44(1): 54-67.

Lewis, H. Gregg. 1963. *Unionism and Relative Wages in the United States: An Empirical Inquiry*. Chicago: University of Chicago Press, 1963.

_____. 1986. *Union Relative Wage Effects: A Survey*. Chicago: University of Chicago Press.

Mincer, Jacob. 1974. *Schooling, Experience, and Earnings*. New York: NBER.

Troy, Leo and Neil Sheflin. 1985. *U.S. Union Sourcebook: Membership, Finances, Structure, Directory*. West Orange, N.J: Industrial Relations Data Information Services.

**Table 1: Annual CPI and Assigned Pareto Distribution Nominal Mean
Weekly Earnings Above the Cap, by Gender and Year**

Year	CPI-U	Female	Male	Year	CPI-U	Female	Male
1973	47.2	$1,379	$1,404	1997	160.5	$3,020	$3,249
1974	51.9	1,347	1,415	1998	163.0	4,462	4,772
1975	56.2	1,368	1,447	1999	166.6	4,455	4,827
1976	59.4	1,367	1,434	2000	172.2	4,521	4,902
1977	63.2	1,368	1,446	2001	177.1	4,569	4,992
1978	67.5	1,378	1,444	2002	179.9	4,577	5,033
1979	74.0	1,359	1,427	2003	184.0	4,580	5,065
1980	82.3	1,350	1,434	2004	188.9	4,614	5,166
1981	90.1	1,357	1,466	2005	195.3	4,669	5,211
1982	95.6	1,376	1,501	2006	201.6	4,764	5,267
1983	99.6	1,395	1,545	2007	207.342	4,780	5,259
1984	103.9	1,432	1,591	2008	215.303	4,834	5,409
1985	107.6	1,448	1,610	2009	214.537	4,902	5,501
1986	109.6	1,452	1,645	2010	218.056	4,959	5,642
1987	113.6	1,483	1,691	2011	224.939	5,000	5,682
1988	118.3	1,506	1,766	2012	229.594	5,115	5,742
1989	124.0	2,738	2,993	2013	232.957	5,183	5,897
1990	130.7	2,785	3,050	2014	236.736	5,211	5,940
1991	136.2	2,816	3,104	2015	237.017	5,429	6,104
1992	140.3	2,867	3,109	2016	240.007	5,381	6,235
1993	144.5	2,876	3,145	2017	245.120	5,451	6,148
1994	148.2	2,951	3,197	2018	251.107	5,551	6,264
1995	152.4	2,953	3,221	2019	255.657	5,560	6,349
1996	156.9	2,963	3,223	2020	258.811	5,593	6,540

CPI-U is the annual Consumer Price Index–All Urban Consumers (Current Series, not seasonally adjusted), with 1982-84=100. Beginning in 2007, BLS reported CPI values with 3 decimal places. The assigned means above the earnings cap are in current year dollars and based on the assumption that earnings above the median follow a Pareto distribution. Parameters of the Pareto distribution are estimated from the CPS, separately by gender and year (see text). Individuals with imputed earnings are excluded from calculations. Weekly earnings are top coded at $999 during 1973-88, at $1,923 during 1989-97, and at $2,885 beginning in 1998.

Table 2: Union Wages, Nonunion Wages, and Regression-Based Union Wage Gaps, All Wage & Salary Workers, 1973-2020

Year	Sample	W	At Cap	W_u	W_n	W_u/W_n	Gap	Year	Sample	W	At Cap	W_u	W_n	W_u/W_n	Gap

All Wage and Salary Workers:

Year	Sample	W	At Cap	W_u	W_n	W_u/W_n	Gap	Year	Sample	W	At Cap	W_u	W_n	W_u/W_n	Gap
1973	40,081	4.06	0.1	24.96	20.52	1.22	0.164	1997	120,073	13.59	1.7	26.29	20.42	1.29	0.191
1974	38,242	4.36	0.1	24.74	19.93	1.24	0.168	1998	119,405	14.10	0.6	26.53	20.94	1.27	0.190
1975	38,076	4.72	0.2	24.61	20.05	1.23	0.177	1999	114,899	14.88	0.7	27.16	21.65	1.25	0.184
1976	38,136	5.02	0.2	25.10	20.09	1.25	0.187	2000	112,600	15.56	0.9	26.83	22.03	1.22	0.172
1977	46,911	5.31	0.3	25.75	19.61	1.31	0.204	2001	117,990	16.42	1.0	27.29	22.64	1.21	0.170
1978	44,849	5.63	0.3	25.41	19.59	1.30	0.193	2002	127,699	16.93	1.1	27.80	22.97	1.21	0.163
1979	40,137	6.16	0.5	24.87	19.55	1.27	0.164	2003	122,520	17.36	1.2	28.01	23.02	1.22	0.169
1980	48,298	6.68	0.6	24.20	19.15	1.26	0.166	2004	121,096	17.81	1.3	28.29	22.99	1.23	0.160
1981	12,584	6.99	0.8	23.91	18.24	1.31	0.169	2005	123,218	18.35	1.5	27.90	22.96	1.22	0.160
1982	--	--	--	--	--	--	--	2006	122,705	18.97	1.6	27.88	23.01	1.21	0.157
1983	149,792	8.08	1.7	24.99	19.23	1.30	0.196	2007	123,048	19.54	1.8	27.90	23.05	1.21	0.158
1984	151,034	8.48	2.2	25.12	19.42	1.29	0.203	2008	121,601	20.45	2.1	27.78	23.27	1.19	0.153
1985	154,410	8.92	2.6	25.42	19.81	1.28	0.198	2009	118,577	20.79	2.2	28.47	23.72	1.20	0.144
1986	159,875	9.13	3.1	25.75	19.89	1.29	0.195	2010	112,416	20.97	2.4	28.68	23.50	1.22	0.149
1987	155,935	9.46	3.6	25.72	19.90	1.29	0.195	2011	109,734	21.32	2.5	28.27	23.17	1.22	0.150
1988	148,040	9.87	4.4	25.86	19.95	1.30	0.190	2012	111,043	21.80	2.7	28.12	23.26	1.21	0.151
1989	150,001	10.43	0.5	26.07	20.13	1.30	0.193	2013	107,591	22.20	3.0	28.14	23.37	1.20	0.150
1990	156,838	10.97	0.7	25.91	20.16	1.29	0.190	2014	106,178	22.69	3.1	28.08	23.53	1.19	0.150
1991	151,769	11.39	0.8	25.59	20.13	1.27	0.182	2015	101,734	23.51	3.6	28.85	24.38	1.18	0.138
1992	149,446	11.74	0.9	25.66	20.13	1.27	0.183	2016	103,194	24.30	3.9	29.25	24.93	1.17	0.145
1993	145,431	12.10	1.0	25.82	20.12	1.28	0.195	2017	101,982	25.04	4.1	29.60	25.14	1.18	0.143
1994	169,884[*]	12.51	1.2	25.64	20.38	1.26	0.206	2018	98,929	26.03	4.7	29.58	25.58	1.16	0.142
1995	169,415[*]	12.78	1.3	25.42	20.29	1.25	0.198	2019	95.229	27.05	5.1	30.65	26.61	1.15	0.127
1996	117,965	13.10	1.4	25.97	20.12	1.29	0.193	2020	85,517	29.11	6.0	31.92	28.74	1.11	0.112

Data sources: For the years 1973-81 the May Current Population Survey (CPS). For the years 1983-2018 the CPS Outgoing Rotation Group (ORG) Earnings Files. There were no union questions in the 1982 CPS. Sample includes wage and salary workers, ages 16 and over, with non-missing earnings and hours worked information (for this reason, sample sizes here are lower than in Tables 1-3). Variable definitions are: Sample=CPS sample size, W=mean hourly earnings in 2018 dollars (see p. 5 of text), W_u=mean wage among union members, W_n=mean wage among nonunion workers, W_u/W_n=the ratio of mean union to nonunion wages, %Top=percent of workers with weekly earnings at the top code of $999 through 1988, $1,923 in 1989-97, and $2,885 beginning in 1998, with individuals assigned mean earnings above the cap based on annual estimates of the gender-specific Pareto distribution (see p. 6), and the Gap is the logarithmic union-nonunion wage differential (approximately a proportional difference), following adjustment for worker and labor market characteristics (see p. 6). Workers who do not report earnings but instead have them imputed (i.e., assigned) by the Census are removed from the estimation samples in all years, except 1994 and 1995 when imputed earners cannot be identified. Inclusion of imputed earners, as in published BLS reports and in earlier editions of the *Data Book*, causes union wages to be understated, nonunion wages overstated, and union-nonunion wage differences understated. The "*" for 1994-95 designates the sample sizes including imputed earners; estimates in those years have been adjusted to remove the bias from imputation (see text).

Table 3

U.S. Historical Tables: Union Wages, Nonunion Wages, and Union Wage Gaps, 1973-2020

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All Wage & Salary	html	Excel
Private Sector	html	Excel
Public Sector	html	Excel
Male	html	Excel
Female	html	Excel
White Male	html	Excel
White Female	html	Excel
Black Male	html	Excel
Black Female	html	Excel
Hispanic Male	html	Excel
Hispanic Female	html	Excel
Construction	html	Excel
Manufacturing	html	Excel
Wholesale/Retail	html	Excel
Trans/Comm/Utility	html	Excel
FIRE	html	Excel
Services	html	Excel
Public Administration	html	Excel

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NOTE: All Wage & Salary Workers are shown in Table 2. All 18 U.S. Historical Tables listed above are freely accessed at http://unionstats.com. Click roman numeral II on the left-side menu.