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Balancing college and kids: estimating time allocation differences for college students with and without children

Student-parents (i.e., students with dependent children) are an increasingly large share of the college population, but little is known about how they balance the demands of college with those of parenthood and household responsibilities. In this article, we use data from the American Time Use Survey to explore the time-allocation decisions of student-parents, and compare them with those of their more traditional college peers, student-nonparents. We begin with exploratory descriptive statistics, which show that student-parents spend significantly less time in educational activities, but more time in paid work, than their student-nonparent peers. Our regression analysis shows that being a student-parent reduces the likelihood of paid work by 5 percentage points and is associated with 24 fewer minutes of homework and 15 fewer minutes of sleep per day, relative to student-nonparents.

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The share of college students who have dependent children at home, which we refer to as "student-parents," is large, yet there is a scarcity of literature studying this group of nontraditional students. With more than 25 percent of undergraduates raising children while attending school,[1] understanding the challenges faced by these students is important for researchers, policymakers, and colleges; the latter of which may need to adapt course schedules, childcare offerings, and the traditional educational model.

The research in this area[2] has been minimal and largely qualitative, and only one study has examined schools or students in the United States.[3] This literature finds that student-parents are more likely to be women, older than traditional college students, studying part-time in an undergraduate program,[4] and concerned with financial hardships,[5] with their largest concern being the balance between the demands of school and those of their household.[6] The Institute for Women's Policy Research has published several descriptive studies about student-

parents,[7] including a 2014 study showing that undergraduate student-parents are more likely to be single women and minorities.[8]

In this article, we examine how student-parents allocate their time during the school year to human-capital-building activities, including schoolwork (class and homework), extracurriculars, and paid work. Certainly, childcare responsibilities require parents to take time away from these activities; tradeoffs that traditional college students, which we refer to as "student-nonparents," do not face. We use time-diary data from the 2003 through 2015 American Time Use Survey (ATUS) to analyze how college students spend their time on a given day. We begin our analysis with descriptive statistics, showing the time allocated to human-capital-building activities for student-nonparents and student-parents, as well as the time allocated to childcare activities for student-parents. We then estimate the effect of being a student-parent on the time allocated to four human-capital-building activities: class time, homework time, extracurricular time, and paid work time.

Data

Data description and sample selection

We use data from the ATUS from 2003 to 2015.[9] The key feature of this dataset is a 24-hour time diary for all respondents, who are chosen from a sample of households rotating out of the Current Population Survey (CPS). Participants in the ATUS provide detailed time-diary information, beginning at 4 a.m. on their diary day and ending at 4 a.m. the following morning. This detailed information includes their primary activities, location, other people who were present, and, in some cases, their secondary activities (e.g., eating and drinking, childcare). The diary data are also linked with CPS data, so additional demographic and household information is available for respondents.

Our sample includes all college students, both full-time and part-time, who were interviewed from September to May (excluding summer months June, July, and August). We excluded those who were interviewed on a holiday and those with "low quality" time diaries.[10] Our sample includes 7,161 college students. It is important to note that students are typically only interviewed if they are living in the household, so the sample primarily captures independent adults enrolled in school and college students living at home with their parents.[11]

Time-use variables

We are primarily interested in human-capital-building activities, so we limit most of our analyses to the following time-use variables: class time, homework time, paid work time, and extracurricular time.[12] Since we are interested in student-parents, we also study time spent in primary caregiving activities for dependent children.[13] In addition, we also include sleep time in some of our analyses, since increased time devoted to sleep could increase productivity during human-capital-building activities.[14]

Presence of children and control variables

Our key variable of interest is whether an individual is a student-parent, meaning that they have dependent children in the household while they are enrolled in school. We measure this in the most basic way: the presence of own child under 18 in the household.

In all of our regressions, we include a comprehensive set of controls for individual, household, and location characteristics that could influence how an individual spends their time. At the individual level, we include controls for age, race, gender, marital status, a full-time school enrollment indicator, and highest level of education completed. At the household level, we include family income and number of adults in the household. In addition, we include state-fixed effects, year-fixed effects, an indicator for urban status, and an indicator for weekend time diaries.

Descriptive statistics

In table 1, we show the summary statistics from our sample of college students. We also divide the sample into two groups: student-parents (the focus of this study) and student-nonparents. Comparing time use across these two groups, unsurprisingly, we find that student-parents spend, on average, significantly more time caring for children than their student-nonparent peers (1.5 hours versus 2 minutes per day), while spending less time in school-related activities. Student-parents spend approximately 21 minutes less per day in class, 34 minutes less on homework, and 7 minutes less in extracurriculars, relative to their peers. However, student-parents spend more time on paid work than their peers, by approximately 40 minutes per day. We also find that student-parents sleep less than student-nonparents, by approximately 42 minutes (also unsurprising, as anyone with children can attest).

Table 1. Summary statistics for college students in the sample

Variables	Full sample		Student-parents		Student-nonparents		Mean difference by parental status (2) - (3)
	Mean (1)	Standard deviation	Mean (2)	Standard deviation	Mean (3)	Standard deviation	
Time-use variables (in minutes)							
Childcare time	21.77	64.79	89.91	107.47	1.59	15.39	88.32**
Class time	67.20	125.12	50.76	110.96	72.07	128.63	-21.31**
Homework time	88.61	143.57	62.47	118.09	96.35	149.43	-33.88**
Work time	168.92	231.21	201.20	248.62	159.36	224.93	41.84*
Extracurricular time	11.54	40.87	6.15	29.31	13.14	43.59	-6.99**
Sleep time	520.77	138.30	489.42	126.70	530.06	140.23	-40.64**
Other variables							
Age (in years)	26.21	7.96	33.10	7.65	24.17	6.83	8.93**
Female	0.56	—	0.72	—	0.52	—	0.20**
Black	0.13	—	0.19	—	0.11	—	0.08**
Non-White, non-Black	0.09	—	0.07	—	0.10	—	-0.03**
Marital status							
Married, spouse absent	0.01	—	0.01	—	0.01	—	0.00
Widowed	0.00	—	0.01	—	0.00	—	0.01**
Divorced	0.04	—	0.09	—	0.02	—	0.07**
Separated	0.02	—	0.03	—	0.01	—	0.02**
Never married	0.70	—	0.20	—	0.85	—	-0.65**
Education level							

See footnotes at end of table.

Table 1. Summary statistics for college students in the sample

Variables	Full sample		Student-parents		Student-nonparents		Mean difference by parental status (2) - (3)
	Mean (1)	Standard deviation	Mean (2)	Standard deviation	Mean (3)	Standard deviation	
High school diploma	0.17	—	0.17	—	0.17	—	0.00
Some college	0.46	—	0.33	—	0.50	—	-0.17**
Associate's degree	0.09	—	0.15	—	0.07	—	0.08**
Bachelor's degree	0.18	—	0.22	—	0.16	—	0.06**
Master's degree or higher	0.06	—	0.10	—	0.04	—	0.06**
Full-time enrollment	0.67	—	0.48	—	0.73	—	-0.25**
Child under 18 in household	0.23	—	—	—	—	—	—
1 child under 18	0.10	—	0.43	—	—	—	—
2 children under 18	0.08	—	0.36	—	—	—	—
3 children under 18	0.05	—	0.14	—	—	—	—
4 or more children under 18	0.02	—	0.06	—	—	—	—
Number of adults in household	2.66	1.12	2.14	0.82	—	—	—
Household income							
$15,000 to $29,999	0.14	—	0.15	—	0.13	—	0.02
$30,000 to $49,999	0.15	—	0.20	—	0.16	—	0.04**
$50,000 to $74,999	0.16	—	0.18	—	0.16	—	0.02**
$75,000 or more	0.33	—	0.27	—	0.35	—	-0.08**
Income missing or unknown	0.06	—	0.07	—	0.06	—	0.01
Urban status	0.88	—	0.84	—	0.89	—	-0.05**
Urban status missing or unknown	0.01	—	0.01	—	0.00	—	0.01**
Weekday	0.72	—	0.73	—	0.71	—	0.02*
Total number of observations	7,161	—	2,822	—	4,339	—	—

Notes: Summary statistics are weighted using panel weights.

* Significant at 10 percent.

** Significant at 1 percent.

Source: American Time Use Survey, 2003–15.

Several of these patterns may be explained by differences in demographic characteristics between the two groups. Student-parents, on average, are older, more likely to be married, more likely to be women, more likely to have a

postsecondary degree (associate's or higher), and more likely to be part-time students. Based on these demographic differences, the average student-parent may be one who is returning to school while working, perhaps to complete a degree for career purposes, while the average student-nonparent is a more traditional college student (typically 18–22 years old, working part-time [if at all], and single with no childcare responsibilities).

To further explore time use for student-parents and compare them with their peers, we separate the sample by student-parents and student-nonparents, as well as by weekday and weekend. Then, we calculate the descriptive statistics to find the share of each group engaged in each activity, and the time allocated to each activity. This analysis is shown in table 2.

Table 2. Descriptive statistics for time-use variables

Time-use variables	Weekday				Weekend			
	Student-parents		Student-nonparents		Student-parents		Student-nonparents	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Class time indicator	0.30	—	0.44	—	0.03	—	0.03	—
Class time (in minutes) if class indicator > 0	223.29	121.40	222.60	131.18	262.57	182.98	229.13	174.38
Homework indicator	0.39	—	0.50	—	0.31	—	0.37	—
Homework time (in minutes) if homework indicator > 0	160.36	134.89	202.58	155.53	210.34	149.57	229.50	163.63
Work indicator	0.55	—	0.45	—	0.21	—	0.26	—
Work time (in minutes) if indicator > 0	456.19	159.49	413.55	168.34	303.34	225.95	353.38	185.68
Extracurricular indicator	0.07	—	0.13	—	0.07	—	0.12	—
Extracurricular time (in minutes) if extracurricular indicator > 0	89.31	65.10	90.64	64.07	102.11	82.61	130.28	93.93
Childcare indicator	0.81	—	0.03	—	0.70	—	0.03	—
Childcare time (in minutes) if childcare indicator > 0	112.98	104.80	43.72	58.69	122.64	120.94	80.63	98.99

Notes: Number of observations is 3,613 for weekdays and 3,548 for weekends. Calculations were performed using sample weights.

Source: American Time Use Survey, 2003–15.

Beginning with time spent in class, we find that very few students take weekend classes. However, on weekdays, only 30 percent of student-parents had class on their diary day, while 44 percent of student-nonparents had class. Of those who had class, the time spent in class is nearly identical across groups.

There are noticeable differences across groups for homework time. On both weekdays and weekends, both groups had a substantial share engaged in homework. On weekdays, nearly 40 percent of student-parents did homework, while 50 percent of student-nonparents did homework. A smaller share of both groups spent time doing homework on weekends—31 percent of student-parents and 37 percent of student-nonparents. Of those who did

homework during the weekend, the amount of time spent is very similar for both groups; however, on weekdays, student-parents did 42 fewer minutes of homework per day than student-nonparents.

We see the opposite patterns for paid work. For those working on their diary day, there is a 10-percentage-point higher share of student-parents than student-nonparents working on weekdays, and student-parents work 43 more minutes per day more than student-nonparents. This suggests that student-parents may substitute time away from homework in order to engage in paid work on weekdays, a hypothesis that will be tested in our regression analysis. For extracurriculars, the share of student-nonparents engaged in extracurriculars is nearly twice as large as the share of student-parents for both weekdays and weekends. And while the time engaged in extracurriculars is similar for both groups on weekdays (for those who participated in extracurriculars), student-nonparents spend about half an hour more on extracurriculars on weekends.

Lastly, as expected, a significant share of student-parents spend time on childcare, while essentially none of the student-nonparents engage in childcare. For student-parents who engaged in some childcare, the average time spent on childcare ranged from 112 to 122 minutes per day.

The descriptive statistics in table 2 indicate that student-parents are possibly taking fewer classes (which is consistent with the smaller share of full-time students documented earlier), but that of those taking classes, the time spent per day is very similar across groups. However, with all other school-related activities, student-parents are less likely to engage in the activities (particularly on weekdays), and when engaged, they spend less time on the activity. The exception in this pattern is for paid work, in which, on weekdays, student-parents are more likely to work and spend more time on work than student-nonparents; the reverse is true of weekends. Overall, these patterns suggest that caring for dependent children is associated with less engagement in human-capital-building activities.

Regression analysis

To test whether there are significant differences in time allocation for student-parents, all else being equal, we estimate several versions of the basic regression:

$$TU_{ij} = \alpha_j + \beta_{j1}SP_i + \beta_{j2}X_i + \varepsilon_{ij},$$

where TU_{ij} is the time use for individual i in activity j; SP_i is a dummy variable equal to 1 if the individual is a student-parent; X_i is a vector of student, household, and location characteristics; and ε_{ij} is a set of unobserved factors that affect the time spent on each activity for each student. Our coefficient of interest is β_{j1}, which represents the differences in time allocated to activity j when students have childcare responsibilities.

We first estimate the equation above using indicators for whether the student engaged in each of four activities on their diary day: class, homework, paid work, and extracurriculars. Each of these four regressions is estimated using a probit model. The results are shown in table 3. Then, we estimate the time allocated to each of the above activities, along with time allocated to sleep, using ordinary least squares (“OLS”) estimation. Each of the models includes weekday, urban status, state, and year fixed effects. These results are shown in table 4.

The probit results in table 3 show the marginal effect of each independent variable on the likelihood of engaging in each of the human-capital-building activities. The variable of interest, presence of a child in the home, is only statistically significant for work time, indicating that student-parents have a 5-percentage-point lower likelihood of

working than student-nonparents. However, the point estimates are all of the same sign and similar in magnitude. Very few of the included controls affect the likelihood of going to class, other than education level and income. Women and minority (non-White, non-Black) students are 5 and 7 percentage points more likely to do homework than their peers, though both are less likely to work or engage in extracurriculars.

Table 3. Probit results

Variable	Class time	Homework time	Work time	Extracurricular time
Children under 18	-0.03	-0.03	-0.05**	-0.01
	(0.020)	(0.022)	(0.022)	(0.012)
Age	-0.00	0.00	0.00***	-0.00
	(0.001)	(0.001)	(0.001)	(0.001)
Female	-0.01	0.05***	-0.04**	-0.06***
	(0.016)	(0.017)	(0.018)	(0.011)
Black	0.03	-0.04	0.02	-0.04***
	(0.024)	(0.024)	(0.024)	(0.012)
Non-White, non-Black	0.04	0.07**	-0.11***	-0.02
	(0.030)	(0.031)	(0.029)	(0.015)
Married, spouse absent	0.01	0.01	0.09	-0.05
	(0.069)	(0.072)	(0.074)	(0.035)
Widowed	0.12	0.09	-0.14	0.06
	(0.149)	(0.110)	(0.104)	(0.089)
Divorced	0.02	0.06	0.04	0.00
	(0.037)	(0.036)	(0.038)	(0.024)
Separated	-0.06	-0.06	0.08	-0.02
	(0.047)	(0.058)	(0.059)	(0.033)
Never married	0.02	0.03	0.02	0.04***
	(0.025)	(0.026)	(0.026)	(0.013)
High school diploma	-0.04	-0.04	0.19***	0.01
	(0.037)	(0.043)	(0.048)	(0.029)
Some college	-0.02	0.00	0.21***	0.02
	(0.037)	(0.041)	(0.043)	(0.026)
Associate's degree	-0.08**	0.03	0.27***	0.01
	(0.035)	(0.048)	(0.049)	(0.032)
Bachelor's degree	-0.06*	0.01	0.34***	0.03
	(0.037)	(0.045)	(0.044)	(0.032)
Master's degree or higher	-0.12***	0.01	0.39***	0.05
	(0.034)	(0.052)	(0.043)	(0.042)
Full-time enrollment	0.12***	0.18***	-0.18***	0.00
	(0.016)	(0.018)	(0.019)	(0.011)
$15,000 to $29,999 household income	-0.00	-0.04	0.07**	-0.04***
	(0.027)	(0.030)	(0.032)	(0.015)
$30,000 to $49,999 household income	-0.07***	-0.06**	0.11***	-0.02
	(0.024)	(0.029)	(0.032)	(0.017)
$50,000 to $74,999 household income	-0.10***	-0.12***	0.09***	0.02
	(0.024)	(0.030)	(0.033)	(0.021)
$75,000 or more household income	-0.10***	-0.09***	0.06*	-0.00
	(0.025)	(0.030)	(0.032)	(0.018)
Missing or unknown household income	-0.06*	-0.04	0.06	-0.01
	(0.033)	(0.041)	(0.044)	(0.022)
Number of adults in household	0.03***	0.02*	-0.01	0.00
	(0.009)	(0.010)	(0.010)	(0.006)

See footnotes at end of table.

Notes: Standard errors are shown in parentheses. Number of observations is 7,161. Calculations were performed using sample weights. All regressions include weekday, urban status, state, and year fixed effects.

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Source: American Time Use Survey, 2003–15.

To test whether education level or full-time enrollment status was absorbing the variation in the previous specifications, such that few of the remaining controls were statistically significant, we re-estimated the results excluding each of these variables. We found that the results remained statistically identical to our initial results. However, the coefficient for the children-at-home indicator became statistically significant in the homework equation. These results suggest that the decision to engage in each of the four human-capital-building activities that we study is largely undetermined by the observable characteristics of the student, particularly parental status.

To test whether there were significant differences in time allocated to each activity for student-parents and student-nonparents, we estimate the OLS regressions and present the results in table 4. We find that being a student-parent reduces time spent on homework and sleep by 24 minutes and 15 minutes per day, respectively, but does not have a statistically significant relationship with the other three time use variables. We find that other covariates seem to matter more for predicting time use, but there is no consistent pattern observed in these results. For instance, women spend 25 fewer minutes at work and 9 fewer minutes in extracurriculars, but 11 more minutes sleeping, than men. As another example, Black students spend 17 fewer minutes on homework than White students, while non-White, non-Black students spend 33 more minutes on homework than Whites. The most consistent result for all regressions is that of the full-time college indicator. Full-time college enrollment is associated with a higher likelihood of attending class and doing homework on the diary day, more time spent in class and on homework, and less time spent in paid work (all relative to part-time students), which seems logical.

Table 4. Ordinary least squares results

Variable	Class time	Homework time	Work time	Extracurricular time	Sleep time
Children under 18	-1.51	-23.91***	-14.79	-1.25	-15.31***
	(4.994)	(5.364)	(10.356)	(1.216)	(5.140)
Age	0.01	0.85**	2.82***	-0.03	-2.51***
	(0.343)	(0.351)	(0.637)	(0.084)	(0.320)
Female	-2.49	4.67	-24.80***	-9.25***	11.06**
	(4.560)	(4.920)	(7.289)	(1.500)	(4.507)
Black	6.34	-17.39***	11.48	-1.63	3.43
	(6.248)	(5.954)	(9.616)	(1.935)	(7.234)
Non-White, non-Black	2.84	33.00***	-38.72***	-1.60	10.32
	(7.905)	(10.444)	(11.745)	(2.437)	(7.924)
Married, spouse absent	13.23	18.87**	13.67**	-4.50*	-29.73*
	(19.141)	(21.731)	(28.370)	(2.301)	(16.552)
Widowed	50.17	-11.33	-96.07**	9.40	30.15
	(34.507)	(24.632)	(42.318)	(8.889)	(32.409)
Divorced	-5.39	6.63	12.27	1.72	-2.05
	(7.361)	(8.989)	(16.608)	(2.179)	(9.078)

See footnotes at end of table.

Table 4. Ordinary least squares results

Variable	Class time	Homework time	Work time	Extracurricular time	Sleep time
Separated	-12.61	-28.86**	23.32	-1.57	-2.58
	(10.619)	(11.554)	(20.789)	(3.237)	(14.185)
Never married	9.06	1.75	12.16	2.28	0.12
	(6.260)	(6.783)	(12.044)	(1.485)	(5.926)
High school diploma	-14.25	-2.52	59.85***	0.03	-19.28
	(12.128)	(9.087)	(15.798)	(4.149)	(11.776)
Some college	-14.86	19.47**	56.08***	-0.38	-25.05**
	(11.564)	(9.011)	(14.133)	(3.943)	(10.800)
Associate's degree	-25.60*	26.40**	105.27***	-4.26	-44.34***
	(13.060)	(11.100)	(19.403)	(3.984)	(12.253)
Bachelor's degree	-18.06	35.25***	116.57***	-1.37	-54.82***
	(12.588)	(11.427)	(16.861)	(3.982)	(11.482)
Master's degree or higher	-36.70***	32.22	128.06***	0.11	-37.02***
	(12.848)	(12.365)	(20.299)	(4.312)	(13.097)
Full-time enrollment	40.08***	55.44***	-86.01***	2.02	-5.05
	(4.054)	(4.568)	(8.539)	(1.255)	(4.605)
$15,000 to $29,999 household income	-10.97	-12.29	32.32***	-6.28***	-3.05
	(7.873)	(9.337)	(12.041)	(2.246)	(9.043)
$30,000 to $49,999 household income	-17.58**	-24.24***	53.07***	-2.66	-6.00
	(8.166)	(8.813)	(11.891)	(2.629)	(9.140)
$50,000 to $74,999 household income	-27.61***	-33.99***	59.08***	1.86	-9.86
	(8.142)	(8.987)	(12.776)	(3.004)	(9.501)
$75,000 or more household income	-24.56***	-31.44***	41.05***	-1.10	-2.38
	(8.342)	(9.270)	(11.583)	(2.851)	(9.095)
Missing or unknown household income	-11.84	1.56	37.24**	-0.15	-23.28**
	(10.904)	(16.483)	(17.042)	(3.623)	(11.376)
Number of adults in household	3.71	4.58*	-4.05	1.39	-2.21
	(2.556)	(2.633)	(4.059)	(0.903)	(2.517)

Notes: Standard errors are shown in parentheses. Number of observations is 7,161. Calculations were performed using sample weights. All regressions include weekday, urban status, state, and year fixed effects.

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Source: American Time Use Survey, 2003–15.

Conclusion

Because student-parents are a large and growing portion of the college population, it is important to understand their time demands in order to create programs and policies to accommodate them. This article is the first to use a large-scale dataset, the American Time Use Survey, to study the demographic characteristics of student-parents and to analyze how student-parents allocate their time to various productive activities throughout their day.

Similar to previous qualitative studies, we find that student-parents are more likely to be women, non-White, non-Black, and older than traditional college students. By analyzing time diary data, we find that student-parents are spending less time in school-related activities (classes, homework, and extracurriculars), but more time on paid work, than student-nonparents. Our regression results showed that, although being a student-parent is not strongly

correlated with most of the time use categories of interest, it is negatively correlated with time spent on homework and sleep time.

While this descriptive study provides an important contribution to the scant and largely qualitative literature on student-parents, we remain interested in identifying causal effects so that our results can be used to advise universities and policymakers when making programming decisions. Therefore, in future research, we plan to use propensity score matching methods to identify causal effects of being a student-parent on each of the time use variables of interest.

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Laura M. Crispin and Dimitrios Nikolaou, "Balancing college and kids: estimating time allocation differences for college students with and without children," *Monthly Labor Review,* U.S. Bureau of Labor Statistics, February 2019, https://doi.org/10.21916/mlr.2019.3.

NOTES

1 Barbara Gault, Lindsey Reichlin Cruse, Elizabeth Reynolds, and Meghan Froehner, “4.8 million college students are raising children,” Fact Sheet #C424 (Institute for Women’s Policy Research, November 2014), p. 1, https://iwpr.org/publications/4-8-million-college-students-are-raising-children/.

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7 To access these studies, see the Institute for Women’s Policy Research, https://iwpr.org/issue/special-websites/student-parent-success-initiative/.

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10 Low quality time diaries are those in which the respondent provided incorrect information, could not remember activities, or deliberately reported long durations. These are identified in the dataset using the variable “DATAQUAL.”

11 “Noninstitutional group quarters” are included in the Current Population Survey (CPS), but because turnover in college housing may be frequent, it may be difficult to identify these students in each round of the survey. For more information on the CPS sample design, see https://cps.ipums.org/cps/samples.shtml.

12 American Time Use Survey (ATUS) codes for class time, homework time, and work time are BLS_EDUC_CLASS, BLS_EDUC_HWORK, and BLS_WORK_WORKING, respectively. Class time includes taking class for degree, certification, or licensure (060101); taking class for personal interest (060102); waiting associated with taking classes (060103); security procedures related to taking classes (060104); and taking class, n.e.c (060199). Homework time includes research/homework for class for degree, certification, or licensure (060301); research/homework for class for personal interest (060302); waiting associated with administrative activities (education) (060303); and research/homework, n.e.c. (060399). Work time includes working (050100); work-related activities (050200); other income-generating activities (050300); job search and interviewing (050400); and work and work-related activities, n.e.c. (059999). Extracurricular participation time includes extracurricular club activities (060201); extracurricular music and performance activities (060202); extracurricular student government activities (060203); education-related extracurricular activities, n.e.c. (060289); playing baseball (130102); playing basketball (130103); bowling (130107); dancing (130109); fencing (130111); playing football (130113); golfing (130114); doing gymnastics (130115); playing hockey (130117); participating in martial arts (130119); playing racquet sports (130120); playing rugby (130123); running (130124); playing soccer (130126); playing softball (130127); playing volleyball (130130); participating in water sports (130132); weightlifting or strength training (130133); wrestling (130135); playing sports, n.e.c. (130199); performing (150401); participating in performance and cultural activities, n.e.c. (150499); and attending meetings, conferences, and training (150501).

13 Time allocated to childcare is measured using the ATUS code BLS_CAREHH_KID. It includes physical care for household children (030101); reading to/with children (030102); playing with household children, not sports (030103); arts and crafts with household children (030104); playing sports with household children (030105); talking with/listening to household children (030186); organization and planning for household children (030108); looking after household children (as a primary activity) (030109); attending household children’s activities (030110); waiting for/with household children (030111); picking up/dropping off household children (030112); and caring for and helping household children, n.e.c. (030199).

14 Time allocated to sleep is measured using the ATUS code BLS_PCARE_SLEEP. It includes sleeping (010101); sleeplessness (010102); and sleeping, n.e.c. (010199).

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Collecting union status for the Census of Fatal Occupational Injuries: a Massachusetts case study

The U.S. Bureau of Labor Statistics Census of Fatal Occupational Injuries (CFOI) collects information on union status for workers fatally injured on the job. Understanding how unions and collective bargaining agreements may affect workplace safety is an important area of research for policymakers, public health officials, employers, workers, and unions. This article provides background on the CFOI program and describes how the program collected union information from 2011 to 2013. It further describes the methods used as part of a special effort in Massachusetts to determine what union information was available in administrative documents. In addition, the article describes methods that may enable other CFOI state agents to generate more robust data and presents Massachusetts data by union and nonunion status for 2011–13.

Understanding how unions and collective bargaining agreements may affect workplace safety is an important area of research for policymakers, public health officials, employers, workers, and unions. Starting with 2011 data, the U.S. Department of Labor's Bureau of Labor Statistics (BLS) began the optional collection of the union status of workers fatally injured on the job. Implementing this data element in the national Census of Fatal Occupational Injuries (CFOI) is an important step in creating a data source to learn how union membership can affect the safety and health of workers. This article reports on how the CFOI collected this variable, for the entire United States, for 2011 through 2013 data. It also presents findings from a Massachusetts study designed to determine if union status was available in the documents typically collected to substantiate work-related deaths in Massachusetts. If union

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status was not available, the study also determined what additional resources could be used to collect this variable.

When the National Academy of Sciences assessed the National Institute for Occupational Safety and Health (NIOSH) Construction Safety and Health Research Program from 2005 to 2008, one noted limitation was the absence of a union status variable in the primary occupational safety and health statistical datasets: the BLS CFOI and Survey of Occupational Injuries and Illnesses (SOII).[1] Limited research is available on the direct impact of unionization on workplace health and safety across industries in the United States. Thus, including this information in these national systems could be very useful. Specific research into construction sector unionization in the United States has shown higher rates of workplace hazard identification and training provided to union workers, with presumed improved health and safety outcomes.[2] Knowing more about the union status of workers fatally injured at work can help data users measure the effect of unionization on workplace health and safety. Research on union status of workers might identify priorities and partners for intervention and prevention of future injuries and deaths of union and nonunion workers alike.

We need to consider many facets when defining union status. A single establishment can include a mix of union and nonunion workers, and the job function of each worker may be what dictates their union eligibility. A union establishment may also include workers who choose not to join the union but are covered by the same policies as the union members. In addition, one must recognize that the meaning of union membership or affiliation varies across industries. In general, unions strive to protect workers who speak up about health and safety concerns. However, the implications for workplace policies and practices related to health and safety may vary widely. For example, in construction, union affiliation can indicate more structured and consistent training programs, whereas in other industries, this may not be the case.[3]

Overview of CFOI data collection

CFOI is a federal–state cooperative program that uses multiple sources of data to identify and describe fatal work injuries. The CFOI program uses multiple source documents to code and corroborate information for over 35 data elements for each workplace fatality. Over 20,000 individual source documents, comprising over 30 different document types, are used to code CFOI cases in given years. Death certificates, news media reports, medical examiner reports, and police reports are a few examples.[4] Multiple source documents are used because each source document has specific information on the case, but none has all the data elements needed. For example, 95 percent of cases each year have a death certificate associated with them, the most of any source document. Death certificates contain excellent information on the decedent's demographic characteristics, such as age, race, and gender, but may not have detailed information about the fatal incident itself. Occupational Safety and Health Administration (OSHA) reports, in contrast, may have less specific demographic data but contain very detailed information on the incident, such as location, time of day, work task, equipment used, and a description of how the

fatality occurred. By piecing together information from multiple source documents, the CFOI program captures the most detailed and accurate information available and ensures high-quality data are available to data users.

CFOI collects information on a standard set of data elements and on a number of optional exploratory variables. Optional fields are those for which the data to complete the variable may be available in some states but not in others, depending on the source documents to which the states have access. BLS does not publish data from optional fields because the data do not reflect a true census and cannot be standardized across the nation. BLS tracks the usage of these optional variables over time as a useful exploratory analysis to determine if they could become viable variables for the nation in the future.

Starting with reference year 2011, the union status variable was implemented as an optional exploratory field in the CFOI program. Instructions in this first year of data collection read as follows: “Use this field to indicate the union status of the decedent.” Because this was a new and optional variable, a more formal definition was not developed. Rather, the definition was left open to interpretation because the intent was to explore the viability of collecting information on this data element. When several states demonstrated that they could collect at least some information on union status, BLS provided guidance that was more detailed. In 2012, revised guidance was issued, further defining the variable to include union workers, workers covered by collective bargaining, or any workers who may be covered by such an agreement but choose not to be full members of the union. This change was intended to help states more easily identify union affiliation in the cases in which union affiliation of the victim is unknown but information about the presence of a union at the worksite is available. Further instruction to the CFOI agents included marking cases that had no union status information as either “no” or “unknown.”

In 2013, according to the BLS Current Population Survey (CPS), an estimated 14.5 million wage and salary workers belonged to unions, accounting for 11 percent of employed wage and salary workers.[5] The CPS data are consistent with the CFOI guidance provided for reference year 2011 regarding union status. In 2012, CFOI expanded the new guidance to add employees whose workplace was covered by collective bargaining or, in CPS terms, represented by a union. In 2013, 16 million (12 percent) wage and salary workers fell into either category. Thus, the change in definition resulted in an estimated 1-percent difference in the total wage and salary workforce that met the revised CFOI union status definition, according to CPS. We do not consider this percent change a substantial difference.[6]

In the national CFOI data for 2011–13, the union status variable for most (81 percent, or 8,819 of 10,848) wage and salary worker cases was left blank. Only 740 (7 percent) of the 10,848 fatalities among wage and salary workers had union status marked “yes” or “no,” and 1,289 (12 percent) cases were marked “unknown.” Looking at the 3 years, we found that the cases marked “yes” or “no” for union status were 5 percent, 8 percent, and 8 percent of the total file for 2011, 2012, and 2013, respectively. Per the guidance laid out, BLS can only be sure that the “yes” answers (212 of the 740 cases marked “yes” or “no”) were substantiated by documents. As required by BLS guidance, CFOI programs reported documentation only for the “yes” answers. However, the BLS CFOI program assumed that if union status was known to be “no,” versus truly “unknown,” coders would select “no” and “unknown” accordingly.

Identifying union status in CFOI data varied by state, in part, because of differential access to the source documents needed to determine the status. Thus, looking at union status by state can clarify which states may be collecting union status information at a higher rate than the nation as a whole. During 2011 to 2013, 17 states and the District of Columbia filled out union status for at least 25 percent of their cases. This completion rate calculation

includes filling in “yes,” “no,” or “unknown.” Of these states, only eight states filled out union status more than half the time. Six states marked a definitive “yes” or “no” for at least 25 percent of cases, and only Massachusetts marked over half of its cases with a definitive “yes” or “no.” Thus, Massachusetts was the state with the most complete data on union status reported to CFOI.

Massachusetts: a case study

The Massachusetts Department of Public Health (MDPH) conducts the CFOI in Massachusetts. MDPH also tracks workplace deaths and conducts indepth investigations of certain deaths through its Massachusetts Fatality Assessment and Control Evaluation (MA FACE) project.[7] MA CFOI and FACE collaborated in conducting a Massachusetts case study to determine if union information was in the documents typically collected to substantiate a work-related death in Massachusetts and, if not, what additional resources could be used to collect this variable. Determining the union status of workers fatally injured on the job in Massachusetts from 2011 to 2013 was an involved process. During this period, Massachusetts had 169 fatal work injuries. When originally collected for the CFOI data, 54 percent of these cases had union status filled out. To inform other CFOI agents, this study aimed to further research the union status of all 169 cases. The processes and sources used in determining union status for the 2011–13 CFOI cases and the set of resources available in Massachusetts are presented in the sections that follow.

For this study, union status was determined by whether or not the victim was a member of a union, in accordance with the initial guidance for reference year 2011 from BLS. When the definition changed to include workers who were also covered by collective bargaining but were not members of a union, we made sure to record any information that described this scenario. Similarly, any evidence that other workforces at the establishment or site met the updated union status definition was recorded in the case file.

Documenting union status was extensive for each of the 169 Massachusetts worker deaths from 2011 to 2013. In some cases, union status was determined only after intensive followup or once sources that would not have otherwise been accessed were checked. Some of this work was done after the formal close of each data year, resulting in additional data on union status not included in the data formally entered in the CFOI data system. All followup was conducted according to CFOI data collection privacy and confidentiality standards and established procedures for surveillance of workplace fatalities as conducted by MDPH.

The Massachusetts workforce: where are the unions?

To get a better sense of where union workers are employed in Massachusetts, we used the CPS to characterize the percentage of unionization (union density) by industry and occupation. We were particularly interested in learning more about the presence of unions in those industries in which fatalities often occur such as construction; the public sector; and agriculture, forestry, fishing, and hunting.

Table 1 presents the percentages of union affiliation in Massachusetts by industry sector and occupation group for 2011–13, stratified by public and private sectors. Of the public and private sector workforces, 59 percent and 6 percent, respectively, were unionized, with an overall statewide average of 13 percent. In the public sector, industries with the highest union density were

- transportation and utilities (72 percent),

- educational and health services (67 percent),
- manufacturing (64 percent),
- construction (53 percent), and
- public administration (50 percent).

In the private sector, they were

- transportation and utilities (25 percent);
- mining, quarrying, and oil and gas extraction (17 percent);
- information (16 percent);
- construction (11 percent); and
- educational and health services (11 percent).

Table 1. Union representation by major industry and occupation, Massachusetts, 2011–13, annual average

Characteristic	Public sector workforce	Percent union	Private sector workforce	Percent union
Total	400,638	59	2,845,082	6
Industry sector				
Agriculture, forestry, fishing, and hunting	0	0	10,023	0
Mining, quarrying, and oil and gas extraction	0	0	2,667	17
Construction	5,036	53	196,256	11
Manufacturing	1,150	64	269,758	5
Wholesale and retail trade	609	0	397,183	4
Transportation and utilities	28,163	72	77,596	25
Information	3,071	42	70,663	16
Financial activities	7,109	22	222,138	1
Professional and business services	5,042	22	459,178	1
Educational and health services	202,923	67	712,373	11
Leisure and hospitality	7,278	34	263,490	2
Other services	386	0	163,755	4
Public administration	139,870	50	0	0
Occupation group				
Management, business, and financial occupations	42,139	36	519,756	2
Professional and related occupations	190,005	68	747,922	8
Service occupations	77,098	57	477,840	5
Sales and related occupations	3,256	31	318,348	2
Office and administrative support occupations	66,578	52	317,342	6
Farming, fishing, and forestry occupations	0	0	6,177	0
Construction and extraction occupations	5,387	59	149,125	15

See footnotes at end of table.

Table 1. Union representation by major industry and occupation, Massachusetts, 2011–13, annual average

Characteristic	Public sector workforce	Percent union	Private sector workforce	Percent union
Installation, maintenance, and repair occupations	4,754	54	65,139	16
Production occupations	2,981	31	127,403	10
Transportation and material moving occupations	8,439	46	116,030	12
Statewide total	3,245,720		13	

Notes: Survey question: “On this job, are you a member of a labor union or of an employee association similar to a union?” Workforce totals include the active labor force and self-employed and volunteer workers. Union members: Data refer to members of a labor union or an employee association similar to a union.

Sources: U.S. Census Bureau; DataFerrett; and U.S. Bureau of Labor Statistics, Current Population Survey (January 2011 to December 2013).

Of public sector workers, unionization was highest among municipal workers (66 percent), followed by state and federal workers at 54 percent and 38 percent, respectively. Although union density was lower in the private sector, elevated union density was found in some private occupation groups (data not shown). These groups include healthcare practitioner and technical occupations (16 percent, a subgroup of professional and related occupations) and protective service occupations (13 percent, a subgroup of service occupations).

An additional element that can be gleaned from the CPS is the prevalence of workers who fall under collective bargaining but are not union members.[8] Statewide, an estimated 1 percent of all workers for 2011–13 were working in this situation, similar to nationwide findings. In both the private and public sectors, the highest numbers of these workers were in educational and health services industries, sectors which have higher union density.

The CPS provides important contextual information about the probability of union membership by industry and occupation in the state. However, the CPS data alone cannot be used to confirm the union status *of individuals*. Other sources need to be used to document union status.

Standard source documents and beyond

For the 169 occupational fatal injury cases between 2011 and 2013 in Massachusetts, we documented the sources we used to determine union status. We developed a process of looking at source documents and gathering more documents until we had a source that explicitly indicated whether the victim was in a union. The process is summarized here and depicted in a flowchart, figure A-1, in the appendix.

We determined the union status of some workers solely on the basis of their employee status (self-employed, owner, or volunteer), occupation, or industry.[9] For example, self-employed workers and owners and operators of incorporated businesses are nonunion, and no commercial fishing unions exist in Massachusetts. In several instances, MDPH staff had local knowledge about union status of specific employers or workforces. We were able to identify confirmatory union information in standard source documents for a very small number of cases (affirmative information in the obituary or police report). Affirmative information was also found on the employer’s website for a small number of cases.

Apart from an overt claim of union membership or a union logo on the employer’s main page, job postings on the employer websites were checked for details on union membership, dues, pay rates, or a collective bargaining

agreement. When these sources did not provide enough evidence, the next step was to search information available from the health and safety enforcement agencies.

Massachusetts is a federal OSHA state and does not have a state plan to enforce OSHA regulations in the public sector.[10] The Massachusetts Department of Labor Standards (DLS) in the state Executive Office of Labor and Workforce Development investigates workplace deaths in the public sector.

Although the employers in most work-related fatality cases in Massachusetts fall under OSHA jurisdiction, OSHA did not investigate several of the 169 fatalities because of the type of event or other factors, such as delay in identifying the death. For incidents in which OSHA opens an investigation, the public inspection data posted on its website lists union status. We accessed these data using the public search tool and the establishment name or activity number found in the OSHA 170 report.[11]

MDPH works closely with the OSHA Region I office, which manages OSHA activity in New England and the three area offices in Massachusetts. OSHA provides MDPH records of all death investigations conducted in Massachusetts. For 2011–13, OSHA provided MDPH with information on 47 of the 169 study victims. Seven of the inspection summaries indicated the fatal victim was union. By reviewing additional source documents, we were able to confirm that the OSHA union data for Massachusetts fatalities were accurate.[12]

For state and local public sector deaths, we found information about union status of the victims in other sources and we did not need to contact DLS separately. For example, after completing joint investigations, the MA FACE project and DLS confirmed three fatally injured municipal workers as being union members.

OSHA may investigate work-related fatalities of federal workers. In some cases, OSHA will not investigate and the federal agency employing the victim will investigate and generate a detailed incident report. Another exception for OSHA is private sector mining cases, which the Mine Safety and Health Administration (MSHA) has jurisdiction over. The MSHA fatality reporting forms include a field for union.[13]

In other cases, however, neither OSHA nor DLS will investigate the death.[14] In these instances, in which no OSHA Integrated Management Information System history of the establishment was available, MDPH sought insight from health and safety partners in the state.[15] Foremost on this list of partners were the Coalition for Occupational Safety and Health (COSH) groups and, specifically, the training and outreach coordinator from the larger COSH in Massachusetts, known as MassCOSH.[16]

In addition, we contacted larger labor organizations with broad membership if we suspected that the victim was affiliated with these organizations. When the victim worked in an occupation or industry that was known as having some level of unionization and a specific union was known to cover the geographic area, we contacted that union. The union locals who were contacted were responsive to requests for confirmation.

When the previous steps did not provide enough information, the employer was contacted. This approach follows the CFOI model of looking at public and administrative source documents before contacting the employer. We contacted management or human resources at the site or corporate level, depending on the size of the company. In the case of town government employers, we contacted the town manager or human resource department of the municipality.

Results

We determined the union status of 97 percent of the 169 cases of workers fatally injured in Massachusetts during 2011 to 2013. This percentage represents a substantial increase over the 54 percent collected formally for CFOI. Of the 169 cases, 29 (17 percent) were confirmed union. These included 17 public sector workers, 59 percent of all identified union deaths. Of the 12 private sector workers who were union members, the largest portion worked in construction (4 workers or 33 percent of union cases). Of the 135 cases (80 percent) determined to be nonunion, no evidence was found that these workers had opted out of a union or were otherwise covered by collective bargaining.

The union status for five (3 percent) of the cases could not be determined. Either the company name of these cases was not known or the employer did not know if the workers were union members.

Table 2 shows the number and percentage of cases identified as either union or nonunion by each source type. The table includes the data that were entered into the official CFOI dataset and what additional union information was generated by this study. The top section of the table lists standard sources that BLS agents would typically consult when investigating other required variables during CFOI collection. These sources are readily available in Massachusetts and many other states. Data of the official CFOI research file include completed union information for 91 of the 169 cases (54 percent). Of the 73 cases for which additional union information was obtained during the study, the largest share was first substantiated by OSHA inspection data (24 cases in total). We substantiated an additional 16 cases with the use of the victims' employee status (self-employed, owner, or volunteer).

Table 2. Select types of data sources used to confirm union status for workers fatally injured on the job in Massachusetts, 2011–13 (N = 169)

Sources	Number union (CFOI)	Number union (study addition)	Number nonunion (CFOI)	Number nonunion (study)	Study additions	Percent confirmed by source (study)
Standard sources						
Known based on industry, employer, or employee status [1]	4	6	45	65	22	42
Obituary	4	4	—	—	—	2
Employer's website	3	4	—	—	—	2
OSHA inspection data	—	6	9	39	36	27
Total confirmed by standard sources [2]	13	18	56	103	52	72
Additional sources						
Indepth web search	4	4	8	16	8	12
FACE	—	3	4	8	6	7
MassCOSH	5	8	—	6	7	8
Employer or HR division	—	—	—	7	5	5
Total confirmed by additional sources [2]	8	11	14	32	21	25
Total confirmed [3]	21	29	70	135	73	97

[1] Known union status is based on Current Population Survey union density or local knowledge of employers in Massachusetts.

[2] Some cases are confirmed by more than one source. Sums may exceed subtotals and grand total because of the removal of these secondary sources.

See footnotes at end of table.

(3) The original data collected for the Census of Fatal Occupational Injuries (CFOI) included 78 cases with an unknown union status. After the study was completed, union status was unknown for only five cases.

Source: U.S. Department of Labor, U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

We found that about one-fifth of cases on the basis of their employee status were nonunion. After we researched the industry union density using the CPS and we confirmed through followup that some industries in Massachusetts have no unions, we were immediately able to identify some additional cases as nonunion. Together, these deaths made up 42 percent of cases covered in this study.

Although the OSHA inspection data are not routinely collected for required variables, these data are easy to access and are therefore included in this set. The OSHA inspection data were an important source of information on union status, providing information on 27 percent of the 169 cases. Altogether, union status was determined for 72 percent of the 169 cases with the use of these standard sources.

For 28 percent of cases (48 cases), conclusive union status information was not available from standard sources. An indepth web search was conducted for most of these 48 cases and resulted in confirming union status for 20 additional cases, 12 percent of all cases.[17] Two nonstandard sources available in Massachusetts, MA FACE and MassCOSH, helped confirm 14 percent of cases. Comparable sources are not universally present in every state.[18]

Table 3 presents union status by select demographic, case, and employment, both as formally entered in the CFOI during the collection cycle and after additional research was conducted for this study. The findings of this Massachusetts case study show that more data are needed to explore the implications of union status on workplace health and safety. Given variability in the impact of union status across industries, within-industry comparisons will likely be most informative. Compiling additional Massachusetts data from future years or aggregating data across states that are able to fill in the variable could provide a dataset that enables a more thorough analysis.

Table 3. Fatal occupational injuries by union status of worker, by select characteristics, Massachusetts, 2011–13 (N = 169)

Characteristic	Total fatal injuries	Study data (5 unknown)				CFOI research dataset (78 unknown or blank)					
		Number union	Percent	Number nonunion	Percent	Number union	Percent	Number nonunion	Percent	Number unknown or blank	Percent
Total (1)	169	29	17	135	80	21	12	70	41	78	46
Employee status											
Wage and salary workers (2)	138	29	21	104	75	21	15	49	36	68	51
Self-employed (3)	31	—	—	31	100	—	—	21	65	10	23
Gender											
Women	14	3	21	9	64	—	—	5	36	7	50
Men	155	26	17	126	81	19	12	65	42	71	46
Age (years)											
20 to 24	5	—	—	4	80	—	—	—	—	—	—

See footnotes at end of table.

Table 3. Fatal occupational injuries by union status of worker, by select characteristics, Massachusetts, 2011–13 (N = 169)

Characteristic	Total fatal injuries	Study data (5 unknown)				CFOI research dataset (78 unknown or blank)					
		Number union	Percent	Number nonunion	Percent	Number union	Percent	Number nonunion	Percent	Number unknown or blank	Percent
25 to 34	28	5	18	22	79	4	14	9	32	15	54
35 to 44	26	6	23	20	77	5	19	8	31	13	50
45 to 54	47	6	13	38	81	5	11	25	53	17	36
55 to 64	43	8	19	35	81	4	9	15	35	24	56
65 and over	18	3	17	14	78	—	—	9	50	7	39
Race or ethnic origin (4)											
White (non-Hispanic)	125	26	21	96	77	20	16	54	43	51	41
Black or African American (non-Hispanic)	14	—	—	12	86	—	—	4	29	10	71
Hispanic or Latino	17	3	18	14	82	—	—	4	24	12	71
Asian (non-Hispanic)	10	—	—	10	100	—	—	5	50	5	50
Event or exposure 2011 (5)											
Violence and other injuries by persons or animals	51	8	16	43	84	6	12	25	49	20	39
Transportation incidents	46	11	24	33	72	9	20	16	35	21	46
Fire or explosion	4	—	—	3	75	—	—	—	—	3	75
Fall, slip, trip	41	5	12	34	83	4	10	15	37	22	54
Exposure to harmful substances or environments	10	—	—	9	90	—	—	6	60	3	30
Contact with objects and equipment	16	3	19	13	81	—	—	7	44	8	50
Primary source 2011 (6)											
Chemicals and chemical products	4	—	—	4	100	—	—	3	75	—	—
Containers, furniture, and fixtures	3	—	—	3	100	—	—	—	—	—	—
Machinery	7	—	—	5	71	—	—	—	—	4	57
Parts and materials	4	—	—	4	100	—	—	—	—	4	100
Persons, plants, animals, and minerals	55	8	15	47	85	6	11	28	51	21	38
Structures and surfaces	22	4	18	17	77	—	—	8	36	12	55
Tools, instruments, and equipment	18	—	—	16	89	—	—	8	44	8	44
Vehicle	52	12	23	38	73	9	17	19	37	24	46
Secondary source 2011 (7)											
Chemicals and chemical products	6	—	—	6	100	—	—	5	83	—	—
Parts and materials	28	—	—	26	93	—	—	16	57	11	39

See footnotes at end of table.

Table 3. Fatal occupational injuries by union status of worker, by select characteristics, Massachusetts, 2011–13 (N = 169)

Characteristic	Total fatal injuries	Study data (5 unknown)				CFOI research dataset (78 unknown or blank)					
		Number union	Percent	Number nonunion	Percent	Number union	Percent	Number nonunion	Percent	Number unknown or blank	Percent
Persons, plants, animals, and minerals	9	—	—	9	100	—	—	4	44	5	56
Structures and surfaces	7	—	—	4	57	—	—	4	57	—	—
Tools, instruments, and equipment	22	5	23	17	77	5	23	8	36	9	41
Vehicle	13	5	38	8	62	3	23	3	23	7	54
Nature 2011 (5)											
Traumatic injuries and disorders	169	29	17	135	80	21	12	70	41	78	46
Open wounds	17	4	24	13	76	4	24	5	29	8	47
Gunshot wounds	12	4	33	8	67	4	33	5	42	3	25
Intracranial injuries	27	7	26	19	70	4	15	9	33	14	52
Multiple traumatic injuries and disorders	45	10	22	33	73	8	18	14	31	23	51
Other traumatic injuries and disorders	71	5	7	66	93	—	—	40	56	29	41
Asphyxiations, strangulations, suffocations	30	4	13	26	87	—	—	16	53	12	40
Drownings	14	—	—	14	100	—	—	8	57	6	43
Electrocutions, electric shocks	4	—	—	4	100	—	—	—	—	—	—
Internal injuries to organs and blood vessels of the trunk	12	—	—	11	92	—	—	6	50	6	50
Poisoning, toxic, noxious, or allergenic effect	10	—	—	10	100	—	—	8	80	—	—
Part of body 2011 (5)											
Head	38	10	26	27	71	7	18	12	32	19	50
Neck, except internal location of diseases or disorders	36	4	11	30	83	3	8	17	47	16	44
Trunk	16	—	—	14	88	—	—	8	50	7	44
Body systems	31	—	—	29	94	—	—	19	61	11	35
Multiple body parts	45	10	22	33	73	8	18	14	31	23	51
Occupation (SOC) (8)											
Management, business, and financial occupations	14	—	—	14	100	—	—	9	64	5	36
Professional and related occupations	14	—	—	12	86	—	—	5	36	8	57
Service occupations	27	11	41	16	59	7	26	10	37	10	37

See footnotes at end of table.

Table 3. Fatal occupational injuries by union status of worker, by select characteristics, Massachusetts, 2011–13 (N = 169)

Characteristic	Total fatal injuries	Study data (5 unknown)				CFOI research dataset (78 unknown or blank)					
		Number union	Percent	Number nonunion	Percent	Number union	Percent	Number nonunion	Percent	Number unknown or blank	Percent
Protective service occupations	12	10	83	—	—	7	58	—	—	3	25
Building and grounds cleaning and maintenance occupations	13	—	—	12	92	—	—	8	62	5	38
Sales and related occupations	6	—	—	6	100	—	—	—	—	—	—
Office and administrative support occupations	3	—	—	—	—	—	—	—	—	—	—
Farming, fishing, and forestry occupations	12	—	—	12	100	—	—	9	75	3	25
Fishing and hunting workers	11	—	—	11	100	—	—	8	73	3	27
Construction and extraction occupations	39	4	10	34	87	4	10	17	44	18	46
Installation, maintenance, and repair occupations	11	4	36	7	64	3	27	—	—	7	64
Production occupations	5	—	—	4	80	—	—	3	60	—	—
Transportation and material moving occupations	34	5	15	27	79	4	12	10	29	20	59
Motor vehicle operators	19	—	—	15	79	—	—	5	26	12	63
Industry (NAICS) (9)											
Private industry (NAICS) (10)	147	12	8	130	88	11	7	67	46	69	47
Agriculture, forestry, fishing and hunting	16	—	—	16	100	0	0	13	81	3	19
Construction	41	4	10	36	88	4	10	18	44	19	46
Construction of buildings	8	—	—	8	100	0	0	3	38	5	63
Heavy and civil engineering construction	5	—	—	4	80	—	—	—	—	—	—
Specialty trade contractors	28	3	11	24	86	3	11	13	46	12	43
Manufacturing	9	—	—	7	78	—	—	5	56	3	33
Wholesale trade	6	3	50	—	—	3	50	—	—	—	—
Retail trade	8	—	—	8	100	—	—	6	75	—	—
Transportation and warehousing	20	—	—	17	85	—	—	7	35	12	60

See footnotes at end of table.

Table 3. Fatal occupational injuries by union status of worker, by select characteristics, Massachusetts, 2011–13 (N = 169)

Characteristic	Total fatal injuries	Study data (5 unknown)				CFOI research dataset (78 unknown or blank)					
		Number union	Percent	Number nonunion	Percent	Number union	Percent	Number nonunion	Percent	Number unknown or blank	Percent
Truck transportation	9	—	—	7	78	—	—	3	33	6	67
Transit and ground passenger transportation	4	—	—	4	100	—	—	—	—	3	75
Information	4	—	—	4	100	—	—	—	—	3	75
Real estate and rental and leasing	6	—	—	6	100	—	—	—	—	4	67
Administrative and support and waste management and remediation services	13	—	—	13	100	—	—	7	54	6	46
Educational and health services	6	—	—	5	83	—	—	—	—	3	50
Educational services	4	—	—	3	75	—	—	—	—	—	—
Leisure and hospitality	8	—	—	8	100	—	—	—	—	7	88
Arts, entertainment, and recreation	4	—	—	4	100	—	—	—	—	4	100
Accommodation and food services	4	—	—	4	100	—	—	—	—	3	75
Other services, except public administration	7	—	—	6	86	—	—	—	—	4	57
Government (NAICS) (11)	22	17	77	5	23	10	45	3	14	9	41
Federal government (10)	4	—	—	—	—	—	—	—	—	—	—
Local government (10)	16	13	81	3	19	8	50	—	—	6	38

(1) The Census of Fatal Occupational Injuries (CFOI) has published data on fatal occupational injuries for the United States since 1992. During this time, the classification systems and definitions of many data elements have changed. See the CFOI definitions page at https://www.bls.gov/iif/oshcfdef.htm for a more detailed description of data elements and their definitions.

(2) May include volunteers and workers receiving other types of compensation.

(3) Includes self-employed workers, owners of unincorporated businesses and farms, and paid and unpaid family workers, and may include some owners of incorporated businesses or members of partnerships.

(4) Persons identified as Hispanic or Latino may be of any race. The race categories shown exclude data for Hispanics and Latinos.

(5) Based on the U.S. Bureau of Labor Statistics (BLS) Occupational Injury and Illness Classification System (OIICS) 2.01 implemented for 2011 data forward.

(6) Based on the BLS OIICS 2.01 implemented for 2011 data forward. The primary source of a fatal occupational injury is the object, substance, person, bodily motion, or exposure that most directly led to, produced, or inflicted the injury or illness.

(7) Based on the BLS OIICS 2.01 implemented for 2011 data forward. The secondary source of a fatal occupational injury is the object, substance, person, or exposure, other than the source, if any, that most actively generated the source or contributed to the injury or illness.

(8) Occupation data are based on the Standard Occupational Classification system (SOC), 2010.

(9) Industry data are based on the North American Industry Classification System (NAICS), 2007.

(10) Includes all fatal occupational injuries meeting this ownership criterion across all specified years, regardless of industry classification system.

(11) Includes fatal injuries to workers employed by governmental organizations, regardless of industry. Includes all fatal occupational injuries meeting this ownership criterion across all specified years, regardless of industry classification system.

See footnotes at end of table.

Notes: Totals for major categories may include subcategories not shown separately. Dashes indicate no data reported or data that do not meet publication criteria. CFOI fatal injury counts exclude illness-related deaths unless precipitated by an injury event.
Source: U.S. Department of Labor, U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries.

Conclusion

The Massachusetts study found that, for most of the 169 cases, union status could be determined with the use of information about either employee status or unionization available in standard sources used by CFOI, including the OSHA inspection data. However, collecting this information for the remainder of the cases was complex and involved additional effort and information sources that may not be available in all states. Going forward, Massachusetts CFOI program anticipates completing the review of both standard and additional data sources by the close of each year and achieving a higher completion rate for the union status variable. In the 4 years after this study was completed (2014–2017), Massachusetts coded union status in an average of 92 percent of its cases. The extent to which this outcome is possible in other states will depend on the industrial makeup of the workforce and availability of additional data sources. The application of a similar approach in other states could increase standardized data collection across the nation. For instance, all states could look at CPS data or consistently input available union data found in OSHA records. Further defining CFOI coding rules for union status to better distinguish between “no” and “unknown” would also be important for comparing the data across states.

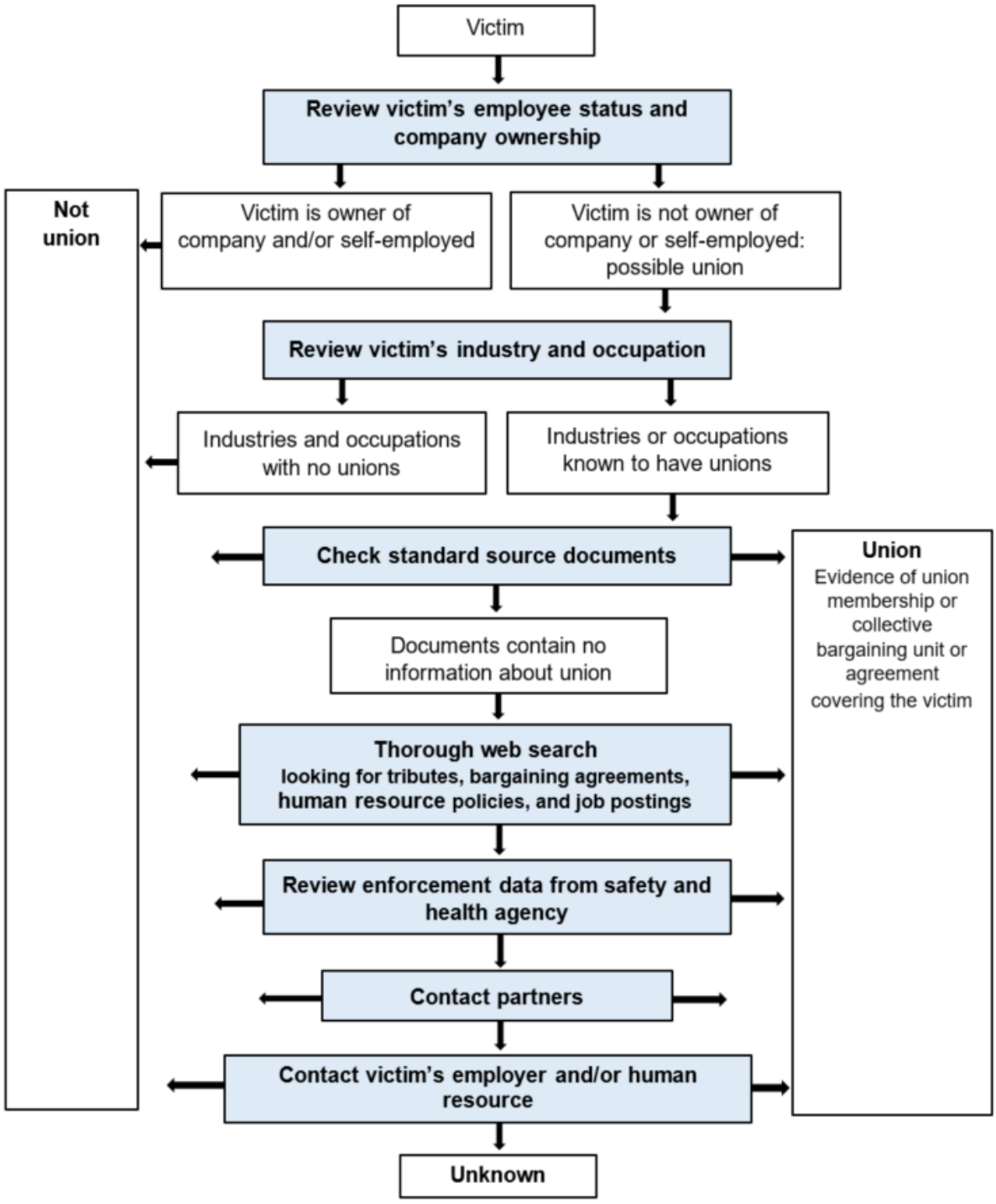
Based on CPS data at both the national and Massachusetts levels, the change in the CFOI union definition in 2012 to include both union members and individuals covered by collective bargaining resulted in a 1-percent difference in the estimated total wage and salary workforce. This difference is not substantial. However, the difference might vary by state.

Because unionization can be viewed differently across industries, we need to consider what aspects of unionization could affect worker safety. For example, the union status variable in the CFOI does not capture information about the presence of the multiple components of a health and safety management system in the workplace.[19] Special studies would be necessary to collect information about the status of health and safety management programs, the influence of unionization on these programs, and the impact on fatality risks. A better understanding of these factors might help researchers identify additional indicators of union presence.

The CFOI program recognizes that union status may affect worker safety. However, without standardized access to information across the nation, union status will likely remain a state-specific endeavor and research topic.

Appendix

Figure A-1. Process for determining union status for workers fatally injured (victim) at work in Massachusetts, 2011–13



Source: Massachusetts Department of Public Health.

James Laing, Jill Janocha Redmond, Michael Fiore, and Letitia Davis, "Collecting union status for the Census of Fatal Occupational Injuries: a Massachusetts case study," *Monthly Labor Review,* U.S. Bureau of Labor Statistics, February 2019, https://doi.org/10.21916/mlr.2019.4.

NOTES

1 Centers for Disease Control and Prevention, NIOSH Research Programs, "National Academies evaluation of NIOSH programs, https://web.archive.org/web/20150427054728/http:/www.cdc.gov/niosh/nas/.

2 See Marion Gillen, Davis Baltz, Margy Gassel, Luz Kirsch, and Diane Vaccaroe, "Perceived safety climate, job demands, and coworker support among union and nonunion injured construction workers," *Journal of Safety Research*, vol. 33, no. 1, Spring 2002, pp. 33–51; David Weil, "Building safety: the role of construction unions in the enforcement of OSHA," *Journal of Labor Research*, vol. 13, no. 1, March 1992, pp. 121–132; and Benjamin C. Amick III, Sheilah Hogg-Johnson, Desiree Latour-Villamil, and Ron Saunders, "Protecting construction worker health and safety in Ontario, Canada: identifying a union safety effect," *Journal of Occupational and Environmental Medicine*, vol. 57, no. 12, December 2015, pp. 1,337–1,342.

3 Xuanwen Wang, Rebecca Katz, and Xiuwen Sue Dong, "Union effects on safety management and safety culture in the construction industry," *CPWR Quarterly Data Report*, 2018, https://www.cpwr.com/sites/default/files/publications/Quarter1-QDR-2018.pdf; Gillen et al., "Perceived safety climate, job demands, and coworker support among union and nonunion injured construction workers"; Weil, "Building safety: the role of construction unions in the enforcement of OSHA"; and Amick III et al., Protecting construction worker health and safety in Ontario, Canada: identifying a union safety effect."

4 For more on the data sources used, see the CFOI *Handbook of methods*, "Census of fatal occupational injuries: data sources," U.S. Bureau of Labor Statistics, November 2017, https://www.bls.gov/opub/hom/cfoi/data.htm.

5 See the CPS release, "UNION MEMBERS—2013," USDL-14-0095 (U.S. Bureau of Labor Statistics, January 24, 2014), https://www.bls.gov/news.release/archives/union2_01242014.pdf.

6 Ibid.

7 Massachusetts was one of nine states funded by the NIOSH to run a FACE program during the period of this study. Two other states, New Jersey and New York, also had their CFOI and FACE programs housed together in the occupational health section of their state health departments during this time.

8 This information is collected in the CPS in a followup question to those who respond that they are not a member of a union or similar affiliation. The survey question is, "On this job are you covered by a union or employee association contract?"

9 For example, self-employed workers and owners and/or operators of incorporated businesses are nonunion. Massachusetts has no commercial fishing unions.

10 New legislation effective March 2015 extended OSHA protections to some state executive office workforces. Additional legislation signed in March 2018 extended coverage to all state, county, and municipal workplaces.

11 For additional information, see U.S. Department of Labor, OSHA, "Establishment search" and "Inspection information," https://www.osha.gov/pls/imis/establishment.html and https://www.osha.gov/pls/imis/InspectionNr.html, respectively. During routine contact with the OSHA Region I office, additional guidance was received on how to interpret this variable. The union–nonunion value applies to the specific inspection. For a fatality investigation, the value would reflect the union status of the victim and can be trusted as accurate. However, in cases in which more than one employer is operating at a site, such as a case in which a general contractor is responsible for overall site safety and is investigated after the death of a subcontractor, this field may not be specific to the victim.

12 In cases in which contradictory information was found in different source documents, contacting the OSHA area office for clarification was necessary.

13 For the 2011–13 cases, union information was available from other sources for the federal cases, so we did not directly contact federal agencies. In addition, this period had no mine-related fatalities.

14 Neither OSHA nor DLS will investigate the death if the U.S. Coast Guard or another agency such as the National Transportation Safety Board has jurisdiction. In addition, these agencies (OSHA and DLS) typically do not investigate certain types of events such as motor vehicle crashes, homicides, and suicides. Recently, OSHA has investigated some workplace homicides in Massachusetts. For more information go to https://www.osha.gov/SLTC/workplaceviolence/.

15 MDPH was careful to share only publicly available data when communicating with stakeholders. Massachusetts death certificates are public documents.

16 For more information regarding COSH groups, see National Council for Occupational Safety and Health, "Local COSH groups," http://www.coshnetwork.org/COSHGroupsList. MassCOSH knowledge of industries and independent tracking of fatal injuries and illnesses in the state helped us identify details that we would not have been able to identify otherwise.

17 All states could conduct an indepth web search to collect other variables. However, because additional time is needed to search specifically for union information, the indepth search is categorized as an additional source. Although the extra web-research step was not overly burdensome, it may not be feasible for a state with a larger number of deaths.

18 Note that directly contacting the employer as a first step may be the most efficient way to collect this variable, although the CFOI model suggests exhausting available public and administrative data sources before contacting the employer.

19 The major elements of an effective health and safety management program are management leadership, worker participation, hazard identification and assessment, hazard prevention and control, education and training, and program evaluation and improvement. See OSHA Recommended Practices for Safety and Health Programs, Core elements, https://www.osha.gov/shpguidelines.

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Should the Phillips curve consider new variables in this economy?

Richard Hernandez

Economists have been studying why inflation did not fall further during the Great Recession, and why it has not risen more quickly during the recovery, as was true of past recessions. One tool economists use to predict inflation during recessions is the Phillips curve. The Phillips curve explains the inverse relationship between inflation and unemployment. As an economy recovers after a recession, the unemployment rate tends to fall (signaling a stronger economy) and the inflation rate tends to rise (because of rising wages). In "Inflation and the gig economy: have the rise of online retailing and self-employment disrupted the Phillips curve?" (Federal Bank of Dallas, Working Paper 1814, November 2018), author John V. Duca studies how self-employment (or gig employment) and online shopping may have affected inflation and unemployment rates in the current economy.

To test the effects of self-employment and online shopping, the author added self-employment and online sales to the Phillips curve's model to examine how each has impacted the curve, both independently and together. Data for these variables come from the U.S. Census Bureau and individual income tax returns. Models predicted that the rise of online shopping has flattened the Phillips curve. As the curve flattens, unemployment rate changes are slower to react to inflation changes. This is can be attributed to brick-and-mortar retailers facing increased competition from online retailers which kept prices from rising too quickly.

The author goes on to examine how the rise of self-employment created shifts in the workforce contributing to the flattening of the Phillips curve. To capture this variable, the author used IRS reports showing the share of individuals who paid the self-employment tax. As more and more of the workforce joins the gig-economy, it reduces the bargaining power of labor. This decreases the natural rate of unemployment and wages, further complicating how a central bank's policies may affect the economy. The author confirmed this by comparing a baseline model of the natural rate of unemployment with a hybrid model that accounted for both online sales and self-employment. For the third quarter of 2018, his hybrid model had the natural rate of unemployment at around 4.09 percent, compared with the baseline of 5.87 percent.

The author concluded that policymakers should consider using models that include more variables to explain inflation in the current economy, rather than simply relying on the benchmark, non-gig economic model. This would capture changes the labor market is experiencing because of the increasing importance of self-employment and online shopping. Both may become even more important in the coming years, because of technological improvements in the areas of artificial intelligence and robotics.

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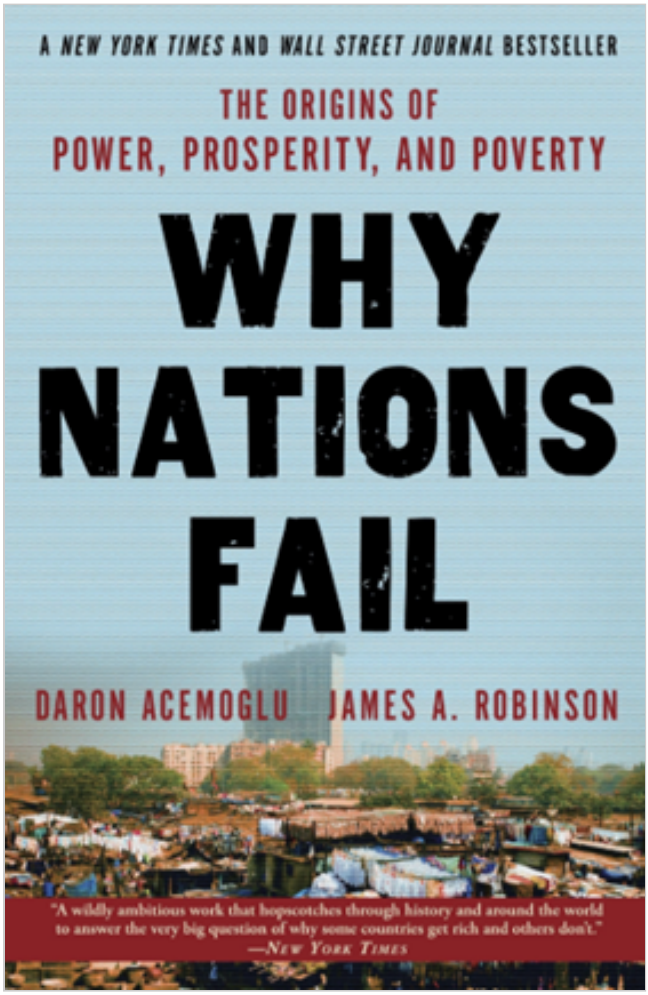
State institutions and economic prosperity

Why Nations Fail: The Origins of Power, Prosperity, and Poverty. By Daron Acemoglu and James A. Robinson. New York: Crown Publishing Group, 2012, 529 pp., $17.10 paperback.

Globalization has put the issue of global inequality front and center in international policy debates. Why do some countries grow rich while others seem to be perpetually poor? Why do some countries experience economic growth by adopting new technologies while others lag in innovation-driven growth? Why do citizens of rich countries overconsume while citizens of poor countries struggle to meet daily subsistence needs? These are the questions that economists Daron Acemoglu (Massachusetts Institute of Technology) and James A. Robinson (University of Chicago) seek to answer over the course of 529 pages.

In the beginning of the book, the authors argue that a country's institutions determine whether it is rich, whether it adopts new technologies and grows, and whether its citizens struggle to meet basic needs. Acemoglu and Robinson claim that a country can have either inclusive or extractive political and economic institutions. Countries with inclusive institutions spread power over a broad swath of society, allowing various groups to be represented and to participate in political decisionmaking, thereby shaping the economic institutions of their countries. Inclusive economic institutions are characterized by a rule of law that enforces contracts and protects private property rights. This protection incentivizes productivity. Inclusive institutions also promote competition and let individuals choose their occupations, thereby making the most efficient use of talent and skill. To achieve inclusive institutions, a country must have stability, a strong central government, and pluralistic institutions, in which all are represented.



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On the contrary, the goal of achieving institutional inclusivity is undermined by extractive institutions. These institutions are characterized by a small elite (not pluralistic) having all the power and making decisions that benefit and enrich it without concern for the greater population. The government can be led by one absolute ruler, a royal family, or a political party, such as the Communist Party. The economic system is exploited by those in power and exists solely to enrich them. Property rights and rule of law are tenuous or nonexistent, and the government either expropriates land and resources or levies high taxes on all production. Either way, the government does not incentivize production or economic growth, and this traps a country far behind those with more inclusive institutions. Some countries with extractive institutions, such as communist China, have a strong central government, but others, including many sub-Saharan African countries, have constant domestic instability that makes them incapable of building a strong centralized state, further quashing the possibility of economic growth.

Acemoglu and Robinson argue that their theory of institutionally driven economic development is necessary because existing theories—such as those relating world inequality to geography or culture—are not adequate to explain the current state of global inequality. The authors reject theories that try to explain world inequality through a geographic or cultural lens by comparing the cities of Nogales, Arizona, and Nogales, Mexico. These cities share a border but are subject to two different sets of institutions. The U.S. city of Nogales is prosperous and advanced, while the Mexican city of Nogales is poor and underdeveloped. The authors also examine the case of North Korea and South Korea, looking at the great progress the South has made under inclusive institutions, and the terrible state in which North Korean citizens find themselves as a result of the highly extractive institutions.

Acemoglu and Robinson go back to colonization and trace the development of a country's institutions to the present day. It is interesting to compare the nascent institutional development that took place in Latin America under Spanish colonization with that which occurred in the United States under British rule. The Spanish invaded a country, kidnapped its leader, expropriated its resources, and forced its indigenous people to work for them. This formed the basis for the institutions that many Latin American countries have today. The authors argue that this legacy of exploitation and extraction has turned into a negative feedback loop, or what they call a *vicious circle*, keeping these countries poor today. The English, on the other hand, were unable to exploit the local indigenous population and the colonists who first lived in the original British colonies of America. They had to incentivize the colonists to work and be productive. This was the beginning of a *virtuous circle*, whereby a positive feedback loop created the inclusive, pluralistic political and economic institutions that still define the United States. (An important caveat to this claim lies ahead.)

In the middle part of the book, Acemoglu and Robinson detail their theory of inclusive and extractive institutions. They define key concepts and illustrate them with historical examples from different periods and different countries (both rich countries with inclusive institutions and poor countries with extractive institutions). The concepts of *institutional drift* and *critical junctures* become very important in this section. The former, as defined in the book, is the idea that every country experiences conflicts over money and politics. The way these conflicts are resolved can cause small institutional differences among countries. Then, at a watershed moment, referred to here as a critical juncture, these small differences can cause countries to choose different paths of development and establish sharply different institutions. Acemoglu and Robinson extensively discuss key critical junctures, such as the Black Death (the bubonic plague), the opening up of Atlantic trade, and the Industrial Revolution. For example, England during the Tudor period became more centralized and freer. Both the aristocracy and the Catholic Church were stripped of their power, and the English Parliament became decoupled from the monarchy. Therefore, when the English challenged Spain's dominance of the Atlantic in 1588, defeating the Spanish Armada, businesspeople and

merchants were able to take advantage of Atlantic trade and become rich. These same people were now in a position to demand participation in government and the decisionmaking process. This led to the Glorious Revolution in 1688, which would eventually cement the pluralistic, inclusive institutions that England has today. The authors also contend that the Industrial Revolution began in England because the country was first to develop inclusive institutions.

Another interesting topic explored by the authors centers on the growth-suppressing effects of extractive institutions. Acemoglu and Robinson maintain that there needs to be some level of economic growth for wealth to be created and extracted. Many different extractive political and economic regimes are explored, including the Ottoman Empire, the Soviet Union, and present-day China. The authors explain that empires and countries such as these, while having extractive institutions, are strong and centralized. This centralization can lead to economic growth, as it did in the Soviet Union when labor and capital were moved from agriculture to industry. However, such growth is not sustainable. Ultimately, centralization, along with extractive institutions, prevents the process of *creative destruction* that political economist Joseph Schumpeter saw as a driver of innovation and growth. This is because those in charge see creative destruction as a threat—one that spreads political and economic resources to groups other than the ruling government and lessens the resources available for extraction. An example given in the book is the Ottoman Empire's ban of the printing press. The empire feared the spread of ideas that might cause political instability. Another example is Austria-Hungary and Russia's opposition to railroads in the 19th century, as the governments of both countries did not want political instability that might come from a more mobile populace. The problem illuminated by these cases is that, without creative destruction, the economic growth of countries with extractive institutions eventually stalls and then declines.

The authors' discussion of China is especially interesting. China is debt ridden and has seen its growth slow down in recent years. However, the authors believe, as I do, that the country is not done with its impressive economic expansion. They state that, at some point in the future, China's extractive political institutions will interfere with and halt its economic growth. They claim that, although China has made toward more inclusive economic institutions, its growth will not continue in the long run without other major institutional changes. However, I wish the authors had speculated and forecasted a bit more about how long the Chinese economy will continue to grow and how strong it will become.

Another aspect of the book that I thought could have been developed in greater detail has to do with the claim that U.S. institutions are inclusive and pluralistic. A caveat is due with respect to slavery, Jim Crow, and the exclusion of Black America. The inclusive institutions were initially only for Whites. The authors discuss how a resilient Black population fought for its civil rights and the ensuing efforts to better integrate Blacks into politics and the economy. However, this discussion ends with the Civil Rights Movement. The book makes it seem as if, after the fight for civil rights, all institutions were more inclusive. I would have liked to see the authors discuss ways to address the discrimination and exclusion that still persist in some U.S. institutions.

The last part of the book drives the theory home, integrating all of the pieces and concepts laid out in previous chapters. Once again, the theory is used against a historical backdrop in order to describe how countries arrived at their current state of economic and political development. Acemoglu and Robinson claim that most of the cross-country differences that we see today are differences in the ability of states to take advantage of the Industrial Revolution. Those with inclusive institutions incentivized their people to innovate and produce, becoming rich in the process, whereas those fearing creative destruction and suppressing innovation became poor and are still

suffering today. The authors contend that their theory is especially useful for identifying weaknesses in policy solutions to economic development and poverty problems. They advocate for policy analysis through the framework of a country's institutions.

I enjoyed this book very much. It is well written and easy to follow, because it sticks with one theory throughout. This theory is backed up by easy-to-understand examples. The reader will walk away with an appreciation of the complex web of historical experiences that have taken place to create the institutions that define a country today. The book is a great read, and it's on the cheaper side.

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February 2019

The kids are alright: millennials and the economy

Graham Boone

Millennials, the generation of Americans born between 1981 and 1997, have become a convenient scapegoat for a host of modern societal ills. They have been blamed for everything from Tide Pod consumption and increased social isolation to the decline of religion and attacks on free speech. Some analysts have gone as far as to blame them for a host of modern economic woes, including declining vehicle ownership, the weak housing market, and poor grocery store sales. But are the economic choices and preferences of millennials really so different from those of earlier generations? More specifically, are millennials hurting the economy, or is the economy hurting them? Christopher Kurz, Geng Li, and Daniel J. Vine examine these issues in a November 2018 report from the Federal Reserve, "Are millennials different?" Ultimately, the authors find millennials' choices have been influenced by important economic changes.

The authors compare millennials' income, debt, and net worth with that of similar-age cohorts of previous generations. For income, the authors compared the inflation-adjusted earnings of full-time working millennials in 2014 with that of baby boomers (born from 1946 to 1964) working in 1978 and Generation Xers (born from 1965 to 1980) working in 1998. They found that—after controlling for age, work status, and other demographic variables—Generation X and baby boomer families had higher household incomes, by 11 percent and 14 percent, respectively. The differences are even more pronounced when female and male heads of household are looked at separately. Among female heads of household—again, controlling for age, work status, and other demographic variables—Generation X and baby boomer workers had 12 and 24 percent higher earnings, respectively. Among males, Generation Xers earned 18 percent more and baby boomers earned 27 percent more.

After finding that millennial workers earned less than previous generations, the authors examined debt and net worth. Upon their review of a relatively new dataset that only includes data for millennials and Generation Xers, they found that, overall, millennials in 2017 had less total debt than Generation Xers in 2004, $44,000 compared with $49,000 (figures adjusted for inflation and expressed in 2016 dollars). But a higher proportion of Generation X debt was in mortgages, while a higher proportion of millennial debt was in student loans. Only 20 percent of Generation Xers had student loan debt, while a third of millennials held such debt. Further, the average millennial borrower carried a much higher student-debt balance, $18,000, as compared with $13,000 for Generation Xers. This student loan disparity led to lower credit supply, making it more difficult for millennials to purchase homes. Accordingly, while millennials held less debt overall than Generation Xers, they had a lower average net worth, nearly 40 percent lower. This was mostly because more Generation X debt was tied to an asset, specifically a mortgage for a home.

Ultimately, the authors conclude that millennials' worse-off financial status is less about moral failing and more about the fact that, as compared with earlier generations, millennials have more student debt, lower earnings, and fewer assets. Further, they found that "millennials do not appear to have preferences for consumption that differ

significantly from those of earlier generations.” In other words, if millennials are buying fewer cars, fewer homes, and less groceries, these differences are not a matter of choice so much as a matter of economic necessity. Saddled with increased levels of student debt and a tightened credit market in the wake of the Great Recession, millennials have less buying power than their cohorts of previous generations. In other words, millennials aren’t hurting the economy, the economy has been hurting them.