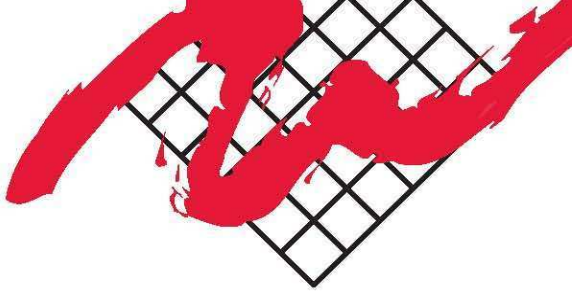
INSTITUTE FOR WOMEN'S POLICY RESEARCH



Briefing Paper

IWPR No. B264 February 2010

Sick at Work: Infected Employees in the Workplace During the H1N1 Pandemic

Robert Drago, Ph.D., Pennsylvania State University, and Kevin Miller, Ph.D.

Executive Summary

- On the basis of data from the Centers for Disease Control and Prevention (CDC) and the Bureau of Labor Statistics (BLS), almost 26 million employed Americans age 18 and older may have been infected with H1N1 during the months of September through November 2009, the peak months of the pandemic to date. Almost 18 million employees took at least part of a week off in response, meaning about 8 million employees took no time away from work while infected.

- Work attendance by infected employees is a public health issue due to contagion: employees who attended work while infected with H1N1 are estimated to have caused the infection of as many as 7 million co-workers.

- The United States is one of the few developed nations without universal paid sick days. The vast majority of public sector employees receive paid sick days, but two of five private sector employees have no access to paid sick days, leaving the nation ill-prepared for the H1N1 "swine flu" pandemic or for future outbreaks of contagious diseases.

- The data suggest that more than 90 percent of public sector employees, but only 66 percent of private sector employees, took time away from work when infected with H1N1 despite admonitions to remain home if ill, implying that many more private sector employees felt that it was necessary to attend work while ill.

- Absence due to illness during the H1N1 pandemic reached its peak in October. Absences fell in November, but the drop in absence rates between October and November was twice as steep in the public sector as it was in the private sector, suggesting that contagion was less common in the public sector. Presenteeism—attending work while ill—among private sector employees without paid sick days may have extended the duration of the outbreak in that sector.

- Though data are lacking regarding absences from school or child care, it is likely that similar patterns of absence could be found among children and students according to whether their parents have access to paid sick days to care for family members.

Introduction

During the recent flu pandemic, workers were urged to stay home when ill. Many employees in the U.S., however, either cannot take leave when they or a child are sick or do not receive pay for doing so, forcing them to choose between their paycheck and the health of their children, customers, coworkers, and selves. 2009 Bureau of Labor Statistics survey data reveal that two of five private sector workers lack paid sick days coverage, though 89 percent of state and local government employees and virtually all federal workers receive paid sick days.

This paper uses data from the U.S. Centers for Disease Control and Prevention (CDC) and the U.S. Bureau of Labor Statistics (BLS) to estimate the number of infected workers during the H1N1 pandemic's fall 2009 peak, looking separately at the public and private sector workforces. Findings suggest that workers in the public sector, where paid sick leave coverage is usually provided, were more likely to stay home when ill with H1N1 compared with workers in the private sector, where paid sick leave is less common. The analysis also suggests that flu pandemics may be resolved more quickly when access to paid sick leave reaches the near-universal rates seen in the public sector. Addressing the gap in paid sick days coverage among private sector workers could result in a reduction in the number of Americans affected by seasonal and pandemic disease outbreaks.

Methodology

The number of H1N1 infected employees at work during the pandemic is estimated using weekly data from the CDC on the spread of the virus among adults and data gathered monthly by the BLS in reference to absence from employment during a particular week. Weekly data are appropriate for analyzing the pandemic because fever from the infection typically lasts 2-4 days, and the CDC recommends that individuals remain at home for 24 hours after the fever subsides, yielding an average time when individuals should not be at work (or school or child care centers, as well) of 3-5 days (CDC 2009a). At present, estimates are available for matched weeks including September 6, October 11, and November 8, all in 2009. Infection rates rose steadily during the month of October, peaking in the last week of that month, before a steady decline to levels around one-quarter as large by the end of November.

The method utilized to estimate the number of employees at work during a particular week while infected with the H1N1 virus relies upon a comparison of weekly CDC data on the spread of the virus and monthly data on missing work due to illness taken from the Current Population Survey. The estimates for particular weeks can be projected to figures for the relevant month. Comparisons are made between absence rates in the public sector, where paid sick days are a near-universal benefit provided by employers, and the private sector, where two out of five workers have no access to paid sick days (BLS 2009).

Estimating Weekly Adult H1N1 Cases

The CDC began tracking the H1N1 flu after two initial cases were identified in California on April 15 and 17 of 2009 (CDC 2009b). An estimate of the number of U.S. infections from April

to the end of July placed the total at around 3 million individuals for the four month period (Reed et al 2009). This figure represents a relatively low rate of infection compared to more recent figures (see below). However, a consistent estimation method was not developed until later (in part because hospital and laboratory reporting methods changed during the early stages of the pandemic), so the current data series begins with the week of August 30, 2009.

The latest CDC estimation method involves a linear projection of H1N1 cases from recorded H1N1 hospitalizations (CDC 2009c). From weeks 35 to 41 (August 30 thru October 17), the CDC estimates that 13,352,469 Americans, aged 18 years and older, contracted H1N1 influenza. In its regular reports, the CDC provides a breakdown of hospitalizations by week, with figures for the weeks beginning August 30 and ending October 17 as shown in the first two columns of Table 1.[1] Consistent with the CDC approach, the 13,352,469 cases are linearly allocated by week according to the number of hospitalizations during that week. Application of this method yields extrapolated weekly adult H1N1 cases as shown in the third column of Table 1.

Table 1. Estimated Number of Adults Infected with H1N1 During the Pandemic, By Week

Week	*Hospitalizations*	*Extrapolated H1N1 Cases*
35 (8/30-9/5)	413	548,168
36 (9/6-9/12)	532	706,115
37 (9/13-9/19)	813	1,079,081
38 (9/20-9/26)	952	1,263,573
39 (9/27-10/3)	1,599	2,122,326
40 (10/4-10/10)	2,231	2,961,168
41 (10/11-10/17)	3,520	4,672,036

Source: 2009 CDC data.

Comparing the hospitalization and case estimates reveals that hospitalizations are multiplied by 1327.283 to generate figures for adult cases.[2] Applying that same multiplier yields adult case estimates for more recent weeks as shown in Table 2. Because hospitalizations rose fairly dramatically, followed by a steady decline from week 44 to week 48, the total number of infected adults for the period ranging from August 30 through December 5 is estimated to be 44,450,708.

Table 2. Estimated Number of Adults Infected with H1N1 During the Pandemic, Recent Weeks

Week	*Hospitalizations*	*Extrapolated H1N1 Cases*
42 (10/18-10/24)	4,346	5,768,372
43 (10/25-10/31)	4,692	6,227,612
44 (11/1-11/7)	4,551	6,040,465
45 (11/8-11/14)	3,288	4,364,107
46 (11/15-11/21)	3,120	4,141,123
47 (11/22-11/28)	2,217	2,942,586
48 (11/29-12/5)	1,216	1,613,976
Total, weeks 35 to 48	**33,490**	**44,450,708**

Source: 2009 CDC data.

Estimating Absence from Work Due to Illness Using Current Population Survey Data

The Current Population Survey (CPS), administered by the Bureau of Labor Statistics, references employment during the week including the 12th of each month, except in December when it covers the week including the 5th. So the September CPS reference week is week 36 in the CDC data, the October CPS reference week is week 41, and November CPS figures are for week 45.

Estimates of absence from work due to illness draw on several CPS items. First, respondents who were away from work during the entire reference week are asked why, and one response category is for "Own illness/injury/medical problems." Second, individuals who report usually working full-time, but working part-time during the reference week are asked why, and one response category is for "Own illness/injury/medical appointments."[3] These responses are independent, and are summed to represent absence due to illness. However, a third type of illness related data is needed to capture respondents who either scale back full-time hours without a reduction to part-time (e.g. usually work 60 hours, but only worked 40), or scale back part-time work (e.g., usually work 30 hours, but only worked 15). These respondents are not asked why their work hours were curtailed, so the proportion of full-time employees who scaled back to part-time for the week while reporting illness as the reason (as opposed to other reasons for absence) is applied to this group, using data from the same month to estimate the proportion. The logic for using this proportion, rather than figures for employees who were not ever at work during the reference week, is that the two groups both engaged in partial (rather than complete) reductions in the working week, so their reasons for absence should be similar. The reason for applying the proportion from the same month is that the proportion varies over time, and in part picks up (and should pick up) responses to the pandemic. Indeed, out of the group who usually work full-time but reported part-time during the reference week, only 3.5 percent reported doing so due to illness in September 2009, a figure that rose to 14.5 percent in October of that year, before declining to 12.0 percent in November.[4]

Results of estimates from the CPS for absence due to illness for the three relevant months are presented in Table 3. The absence proportion indeed seems to show a response to the pandemic, rising by over one full percentage point between September and October of 2009 before declining by approximately 0.3 percent in November. The absolute number of employees estimated to be absent due to illness rose by over 1.7 million between September and October of 2009 before declining by around 500,000 in November (CDC 2009d).

Table 3: Absence Due to Illness, All Employees, During H1N1 Pandemic Peak

Month	*Total Employment*	*Proportion Absent due to Illness*	*Number Absent due to Illness*
September	137,623,161	1.87%	2,576,030
October	137,588,327	3.17%	4,359,005
November	137,783,713	2.82%	3,885,570

Source: 2009 CPS data.

As a further check on the absence data, the sample of employees is broken down between the private sector (including non-profits) and public sector (including federal, state, and local governments). Private sector employment makes up about three-quarters of total employment in the U.S. and public sector employment just under 15 percent, while the self-employed, who are not further examined here, make up just over 10 percent of U.S. employment.

Rates of absence due to illness for the subsamples are presented in Table 4. The pandemic appears to have affected employees in both sectors, increasing their absence rates between September and October of 2009. However, the data also suggest that private sector employees may feel particularly pressured by their employers (and high rates of unemployment) to attend work, regardless of illness. The public sector rate rose by 84 percent (1.9 percentage points) between September and October of 2009 to a rate of 4.2 percent, while the private sector rate rose by 66 percent (1.2 percentage points) in October to a rate of 3.0 percent. Given that most public sector employees have job-protected paid sick days (Lovell 2004), it makes sense that they would be more likely than workers in the private sector to stay at home when infected with H1N1.

Table 4: Rates of Absence Due to Illness, by Employment Sector, During H1N1 Pandemic Peak

Month	*Private Sector*	*Public Sector*
September	1.83%	2.27%
October	3.04%	4.17%
November	2.77%	3.26%

Source: CPS data 2009.

Although data on both private and public sector employees show absence rates declining in November from their peak in October, this decline is less steep for employees in the private sector. The absence rate in the private sector in November decreased by only 8.9 percent (0.3 percentage points) of the October rate, while in the public sector the relative drop in absence between October and November was more than twice as steep, at 21.8 percent (0.9 percentage points). The absence rate remains higher among workers in the public sector, consistent with greater access to paid sick days, but the discrepancy in the drop-off may indicate that infections in the private sector continued at a higher rate than in the public sector as a result of presenteeism connected to lower rates of access to paid sick days.

The case for the contribution of paid sick days to hastening the decline of absences during flu season is bolstered in the historical data in Appendix Table 2. The relative drop in absence rates by April of each year (two months after the peaks in February of 2008 and 2009, four months after the December 2007 peak) is greater among public sector employees in each flu season:

- From February to April of 2009, the private sector rate declined by 27 percent (3.89 to 2.84 percent), while the public sector rate declined by 29 percent (4.71 to 3.35 percent).

- At the end of the most severe flu season in recent years, between February and April of 2008, the private sector rate dropped by only 28 percent (4.72 to 3.4 percent), while the public sector rate dropped by 38 percent (5.88 to 3.67 percent).
- From the December 2007 peak to April of 2008, the private sector rate declined by only 15 percent (3.71 to 3.17 percent), while the public sector rate declined by 27 percent (5.29 to 3.86 percent).

Linking the Pandemic and Absence Due to Illness

The H1N1 figures provided in Table 1 are for all adults, so need to be adjusted by the employment-population ratio in order to estimate the number of H1N1 infected employees during the CPS reference weeks.[5] The September 2009 CPS data show a non-seasonally adjusted employment-population ratio among adults aged 18 years and over of 60.52 percent, with an October figure of 60.44 percent, and a November figure of 60.48 percent.[6]

The CPS is only administered to the civilian, non-institutional population, while the pandemic can affect anyone, so the employment-population ratios need to be adjusted downward to account for adults who are either military personnel or institutionalized. Relevant adjustments result in a September 2009 figure of 59.13 percent, an October figure of 59.08, and a November figure of 59.12.[7]

Applying these figures to the estimated number of adult cases of H1N1 in weeks 36, 41 and 45 (from Table 1), yields an estimated 418,566 employees infected during the September reference week for the CPS, 2,761,613 employees infected during the reference week for October, and 2,580,060 infected employees for the relevant week in November. For those same weeks, the CPS data yield estimates of 137,623,161, 137,588,327, and 137,783,713 employed adults, respectively. Therefore, an estimated 0.304 percent of employees were afflicted with H1N1 during the relevant September week, 2.007 percent were so afflicted during the reference week for the October CPS, with 1.873 percent for the November CPS.

Does absence due to illness in the CPS reflect the expansion and decline of the pandemic between September and November? A direct approach to answering this question involves regressing the proportion of employees absent due to illness against a constant term and the proportion of employees infected with H1N1 during the reference weeks for September, October and November. Doing so yields an infection coefficient of .694, implying that just under 70 percent of infected employees were absent from work while infected (see Table 6). The t-statistic for the infection coefficient is over 5.2, and while that is insignificant, the adjusted R-squared figure for the regression is .929, suggesting a high degree of explanatory power for this simple model.

To obtain estimates for the entire three month period, it is assumed that the employment-population ratio is stable across weeks for each month, and that the proportion of infected employees attending work is constant as well at 69.6 percent. Because weeks 35, 39 and 48 spans portions of two months, weeks 35 and 48 are weighted downward to reflect the number of days in the relevant month (5 in September and 2 in November). For week 39, spanning

September and October, the figure is weighted by the relevant employment-population ratios, with 4/7 allotted to September and 3/7 to October.

Applying the adjusted employment-population ratio to figures provided in Tables 1 and 2 results in the estimated weekly numbers of infected employees shown in Table 5. These numbers are split between employees estimated to have been absent, and those who were not absent while infected and contagious. The totals, found at the bottom of the table, suggest that almost 26 million employees were infected with H1N1 during the months of September, October and November; almost 18 million stayed away from work in response, but almost 8 million employees were at work while infected.

Table 5: Estimated Employee H1N1 Infections, Absence and Attendance at Work, September-November 2009

Week	Infected Employees	Infected and Attended Work	Infected and Absent
35 (partial Sept)	231,523	70,383	161,140
36	417,526	126,928	290,598
37	638,061	193,970	444,090
38	747,151	227,134	520,017
39	1,253,870	381,177	872,694
40	1,749,458	531,835	1,217,623
41	2,760,239	839,113	1,921,126
42	3,407,954	1,036,018	2,371,936
43	3,679,273	1,118,499	2,560,774
44	3,571,123	1,085,621	2,485,502
45	2,580,060	784,338	1,795,722
46	2,448,232	744,263	1,703,969
47	1,739,657	528,856	1,210,801
48 (partial Nov)	272,624	82,878	189,746
Totals	**25,496,749**	**7,751,012**	**17,745,738**

Source: Author calculations, 2009 CDC and BLS data.

Part of the problem with attending work while ill with H1N1 is that contagious employees will infect other employees. Lovell estimates from seasonal flu data that each infected employee attending work while ill will infect an additional 0.9 coworkers (2005). Given this assumption, the 7.8 million employees estimated to have attended work in September through November while infected in turn infected an additional 7 million employees.

Note that these figures may be over-stated, since a study found that 7 percent of hospitalized patients reported respiratory symptoms but not a fever due to H1N1 (CDC 2009e). However, a check for this phenomenon is available in the data, since we can compare results across the private and public sectors, while assuming that the vast majority of public sector employees who know they are infected will stay at home. Regressing the proportion of absent employees for the three reference weeks for all employees and within each sector against the proportion of all employees infected yields results as shown in Table 6.

Although some of the results do not achieve significance, which is not surprising given only three months worth of data, they are sensible. Over 90 percent of infected employees in the public sector, but only 66 percent of private sector employees are estimated to have stayed at home while infected with H1N1. The public sector results suggest that the vast majority of employees infected with H1N1 would have stayed at home if that were a viable option. Absent paid sick days legislation in the U.S., many private sector employees faced little choice and attended work while sick, thereby infecting others.

By implication, the vast majority of employees who attended work while infected with H1N1 – over 6 million – were employed in the private sector of the economy. Of the almost 4 million public sector employees who contracted the disease, less than 400,000 attended work while ill.[8]

Table 6. Linear Regression Results for the Proportion of Employees Absent within Employment Sectors by the Proportion Infected

	All Employees	Private Sector	Public Sector
Constant (t-stat)	0.017 (7.82)*	0.016 (10.88)*	0.020 (2.98)
Proportion infected coefficient (t-stat)	0.694 (5.24)	0.662 (7.08)*	0.912 (2.21)
Adjusted R-squared	.929	.959	.657

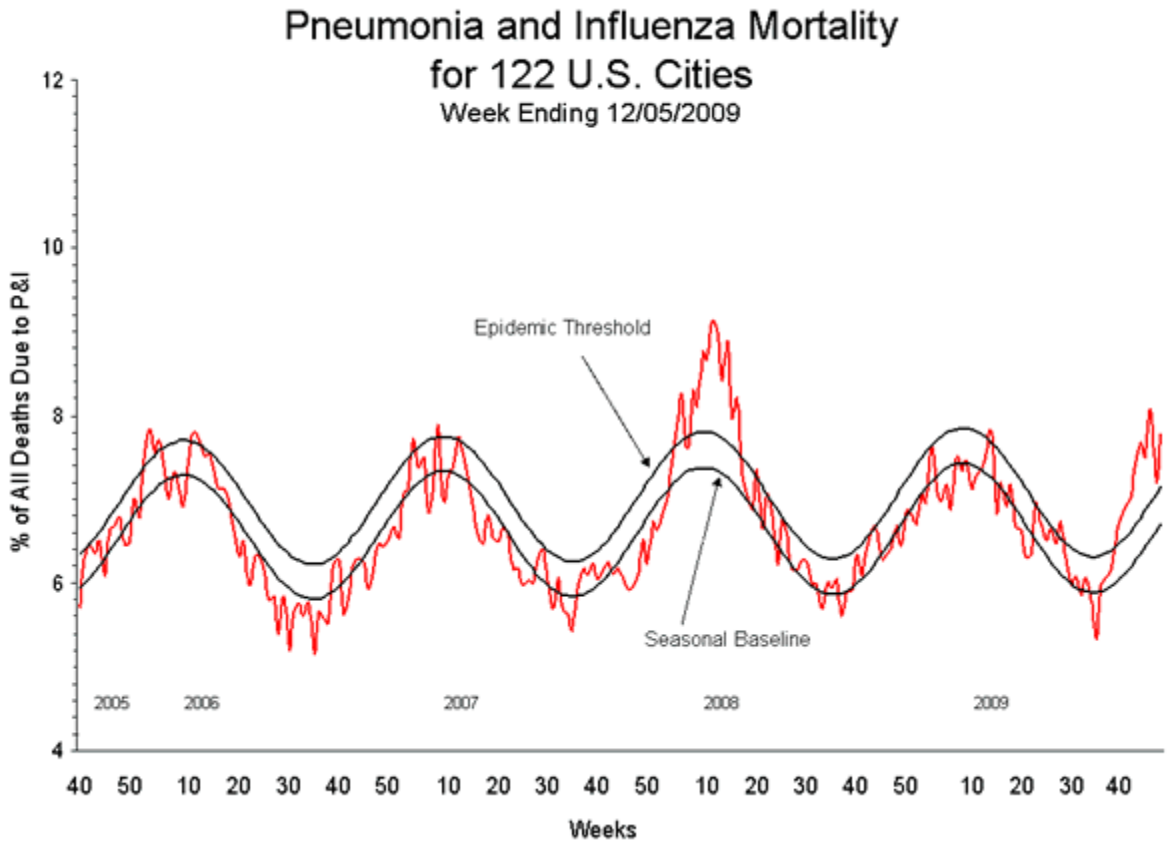
*Significant at $p < .10$.

Absence Due to Illness in Prior Flu Seasons

As a check on the quality of the data, 37 previous months of CPS data were analyzed, both in terms of overall rates of absence due to illness, and by employment sector. The overall rate is provided in Appendix Table 1. In general, the quality of the data appears quite high. Each of the three flu seasons (2006-2007, 2007-2008, and 2008-2009) is reflected in the absence rate rising above 3 percent as peak flu season arrives in December or January, and gradually declining after a peak in December of 2006, February of 2008, and February of 2009. CDC data related to these flu seasons (Figure 1) shows these same seasons, but also a severe spike during the 2007-2008 season. That spike is reflected in the CPS data, which yields a maximum of almost 5 percent in February of 2008.

Absence rates by employment sectors are provided in Appendix Table 2. Rates for the private sector and public sector reflect the last three flu seasons. Further, the spike during the 2007-2008 season is reflected in the sectoral rates, each of which hits a maximum in February of 2008. Also note that in each of the 37 months, the rate of public sector absence is above the rate for the private sector. Given that public sector employees more often have paid sick days coverage, this finding makes sense. It also suggests a low level of statistical noise in these data; otherwise, the private sector rate would rise above the public sector rate for some months.

Figure 1.



Source: CDC "FluView, 2009-2010 Influenza Season Week 48 ending December 5, 2009," available at www.cdc.gov/flu/weekly

Appendix Table 1. Historical Absence Due to Illness, All Employees

Year-Month	*Total Employment*	*Proportion Absent due to Illness*	*Number Absent due to Illness*
2009-Aug	138,192,786	0.023562	3,256,140
2009-Jul	139,104,931	0.022749	3,164,470
2009-Jun	138,951,506	0.026549	3,689,010
2009-May	138,443,943	0.027982	3,873,938
2009-Apr	139,020,574	0.029054	4,039,159
2009-Mar	138,068,244	0.033704	4,653,494
2009-Feb	138,251,569	0.040373	5,581,658
2009-Jan	138,926,511	0.034685	4,818,708
2008-Dec	141,688,445	0.035787	5,070,576
2008-Nov	143,186,184	0.029136	4,171,873
2008-Oct	143,732,828	0.027045	3,887,283
2008-Sep	143,530,207	0.02984	4,282,970
2008-Aug	144,020,235	0.025585	3,684,787
2008-Jul	144,871,000	0.022947	3,324,297
2008-Jun	144,984,476	0.025127	3,643,025
2008-May	144,267,166	0.029875	4,310,025
2008-Apr	144,226,123	0.034596	4,989,575
2008-Mar	143,351,301	0.038428	5,508,718
2008-Feb	142,731,254	0.048895	6,978,873
2008-Jan	142,712,496	0.039292	5,607,431
2007-Dec	144,582,432	0.037924	5,483,144
2007-Nov	145,657,191	0.033508	4,880,608
2007-Oct	144,961,359	0.028726	4,164,204
2007-Sep	144,753,835	0.03016	4,365,805
2007-Aug	144,305,403	0.024725	3,567,879
2007-Jul	144,824,918	0.023993	3,474,741
2007-Jun	144,772,504	0.026371	3,817,796
2007-May	143,996,254	0.031004	4,464,417
2007-Apr	143,379,506	0.032565	4,669,154
2007-Mar	143,417,730	0.03811	5,465,578
2007-Feb	142,259,026	0.037177	5,288,721
2007-Jan	142,026,655	0.038504	5,468,637
2006-Dec	143,634,259	0.039247	5,637,156
2006-Nov	143,828,315	0.02898	4,168,130
2006-Oct	144,049,082	0.029215	4,208,394
2006-Sep	142,883,650	0.030939	4,420,663
2006-Aug	142,997,169	0.024738	3,537,407

Source: CPS

Appendix Table 2. Historical Rates of Absence Due to Illness, By Employment Sector

Year-Month	*Private Sector*	*Public Sector*
2009-Aug	0.022805	0.028292
2009-Jul	0.021954	0.025463
2009-Jun	0.025916	0.030441
2009-May	0.026433	0.037621
2009-Apr	0.028448	0.033515
2009-Mar	0.031668	0.041351
2009-Feb	0.038913	0.047085
2009-Jan	0.033648	0.038927
2008-Dec	0.034609	0.041227
2008-Nov	0.028508	0.035537
2008-Oct	0.026602	0.0322
2008-Sep	0.02945	0.032337
2008-Aug	0.025264	0.027354
2008-Jul	0.022043	0.026633
2008-Jun	0.025163	0.027558
2008-May	0.029355	0.035142
2008-Apr	0.03395	0.036674
2008-Mar	0.037157	0.045483
2008-Feb	0.047181	0.058802
2008-Jan	0.037914	0.042876
2007-Dec	0.035987	0.047231
2007-Nov	0.032059	0.041412
2007-Oct	0.02807	0.032508
2007-Sep	0.028862	0.035956
2007-Aug	0.024929	0.025383
2007-Jul	0.023918	0.025227
2007-Jun	0.025901	0.028725
2007-May	0.030459	0.033496
2007-Apr	0.031675	0.038636
2007-Mar	0.037089	0.046156
2007-Feb	0.036034	0.047058
2007-Jan	0.036949	0.047573
2006-Dec	0.037069	0.052907
2006-Nov	0.027578	0.036466
2006-Oct	0.028202	0.035459
2006-Sep	0.029861	0.036066
2006-Aug	0.024815	0.027461

Source: CPS

References

Bureau of Labor Statistics. 2009. “Employee Benefits in the United States, March 2009.” <http://www.bls.gov/news.release/ebs2.nr0.htm> (July 28, 2009)

Centers for Disease Control and Prevention. 2009a. “CDC Recommendations for the Amount of Time Persons with Influenza-Like Illness Should be Away from Others.” <http://www.cdc.gov/h1n1flu/guidance/exclusion.htm> (October 23, 2009).

Centers for Disease Control and Prevention. 2009b. “Hospitalized Patients with Novel Influenza A (H1N1) Virus Infection – California, April-May, 2009.” *MMWR Weekly* 58 (May) **<**http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5819a6.htm>.

Centers for Disease Control and Prevention. 2009c. “2009 H1N1-Related Deaths, Hospitalizations and Cases: Details of Extrapolations and Ranges: United States, Emerging Infections Program (EIP) Data,” <http://www.cdc.gov/h1n1flu/pdf/details_eip_methods_plus_schematic.pdf> (November 12, 2009).

Centers for Disease Control and Prevention. 2009d. “Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, October 1, 2006 – December 5, 2009.” <http://www.cdc.gov/flu/weekly/> (December 5, 2009).

Centers for Disease Control and Prevention. 2009e. “2009 H1N1 Early Outbreak and Disease Characteristics.” <http://www.cdc.gov/H1N1FLU/surveillanceqa.htm> (October 27, 2009).

Lovell, Vicky. 2004. *No Time to be Sick: Why Everyone Suffers When Workers Don’t Have Paid Sick Leave* (IWPR Publication #B242). Washington, DC: Institute for Women’s Policy Research. <http://www.iwpr.org/pdf/B242.pdf>

Lovell, Vicky. 2005. *Valuing Good Health: An Estimate of Costs and Savings for the Healthy Families Act* (IWPR Publication #B248). Washington, DC: Institute for Women’s Policy Research. <http://www.iwpr.org/pdf/B248.pdf>

Reed, Carrie et al, 2009. “Estimates of the Prevalence of Pandemic (H1N1) 2009, United States, April-July 2009.” *Emerging Infectious Diseases* (December).

Notes

[1] Rough figures can be ascertained from "Weekly Laboratory-Confirmed Influenza-Associated Hospitalizations and Deaths, National Summary, August 30 – October 31, 2009," in the CDC's "Fluview: Influenza Season Week 43 ending October 31, 2009," available at http://www.cdc.gov/flu/weekly/weeklyarchives2009-2010/weekly43.htm Precise hospitalization figures provided in correspondence to Robert Drago from Miranda Katsoyannis, CDC, November 24, 2009, and December 12, 2009.

[2] Note that the CDC assumes, as is implicitly assumed here, that the total number of hospitalizations can be employed to estimate age-specific cases. See CDC, "2009 H1N1-Related Deaths."

[3] Descriptions are as found in the U.S. Census Bureau DataFerrett for the CPS basic administration variables PEABSRSN and PEHRRSN3, respectively. Available at http://dataferrett.census.gov

[4] The sample is restricted to civilian employees (including governmental and the self-employed) and, for comparability with the CDC data, respondents less than 18 years of age are excluded. All CPS figures reported here are weighted by the appropriate monthly variable from the BLS (PWSSWGT).

[5] This correction assumes that rates of infection are identical across the employed and non-employed populations. It seems likely that, if anything, rates of infection are higher among employees because they often are present in workplaces where contagion is likely to occur, whether in offices or factories, stores, schools, hospitals, or nursing homes and child care centers. If that argument is correct, then the estimates of employee infections presented here are understated.

[6] The pandemic figures are not seasonally adjusted, by definition, so for comparability the employment-population ratio should not be seasonally adjusted. Note that the estimated employment-population ratios are higher (by around 1.5 points) then published BLS figures for the same months. This difference is due to the published figures including individuals aged 16 and 17 years, who are rarely employed. See BLS, "The Employment Situation," November 2009, Table A-1. Available at: http://www.bls.gov/news.release/empsit.t01.htm

[7]According to the American Community Survey, 2006-2008 data, the institutional population accounts for 1.8 percent of all individuals 18 years and over, while military personnel account for 0.5 percent of the adult population. Multiplying the CPS population estimates by 1.023 yields corrected employment-population ratios as shown in the text. Figures calculated from U.S. Census Bureau, Table S2601A. Characteristics of the Group Quarters Population, Data Set: 2006-2008 American Community Survey 3-Year Estimates, "American Factfinder," available at http://factfinder.census.gov

[8] Just over 18 percent of all employees are estimated to have contracted H1N1 at some point during the three month period. Applying this figure to employment averages for each of the sectors yields infection numbers of 18.7 million for the private sector and 3.9 million for the public sector. Multiplying these figures by the inverse of the coefficients in Table 6 yields the figures mentioned in the text.

Funding for this research and IWPR's continuing work on paid sick leave has been provided by the Ford Foundation, the Annie E. Casey Foundation, and the Public Welfare Foundation. The authors wish to thank Jeffrey Hayes, Vicky Lovell, Jay Stewart, and Jane Waldfogel for feedback on earlier drafts of this study.
