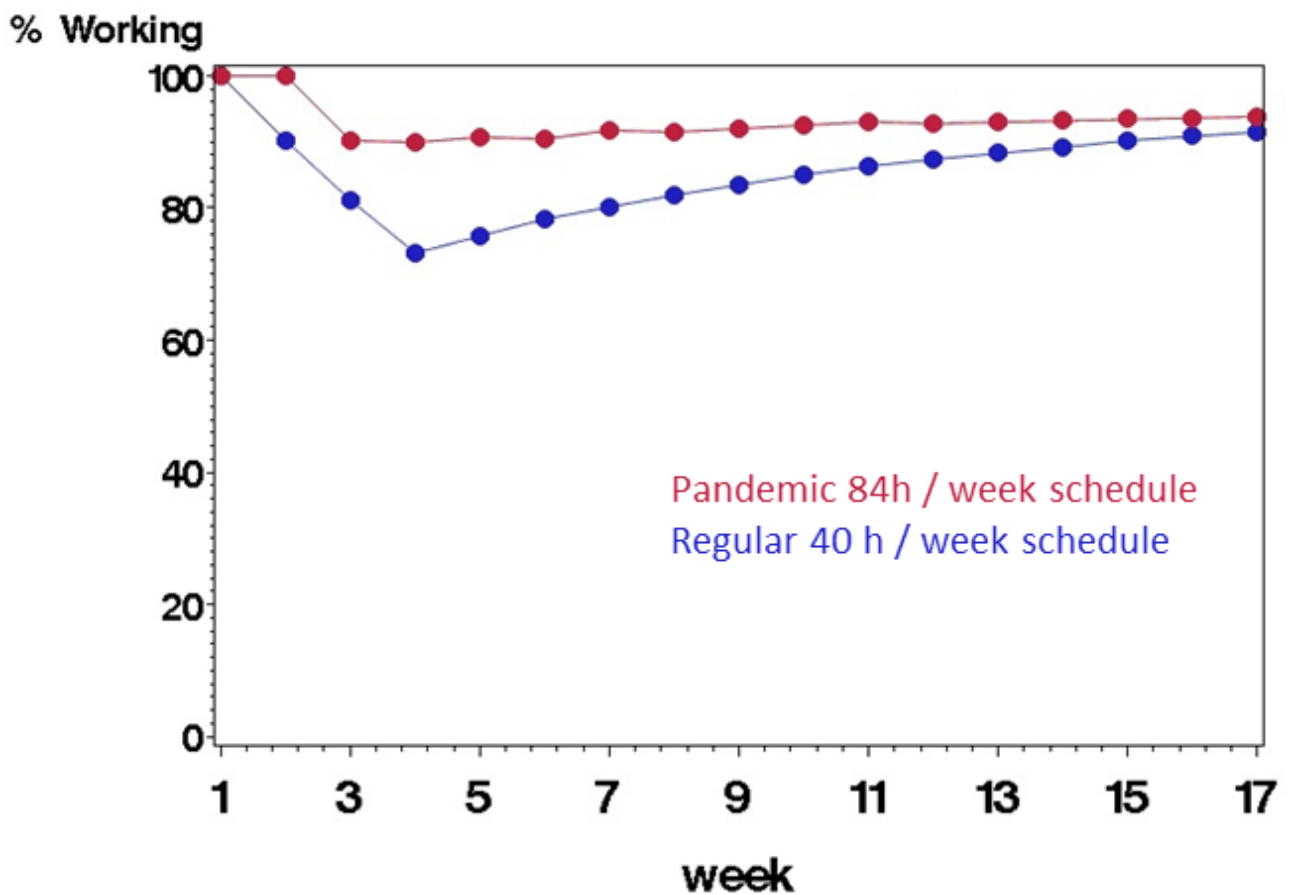
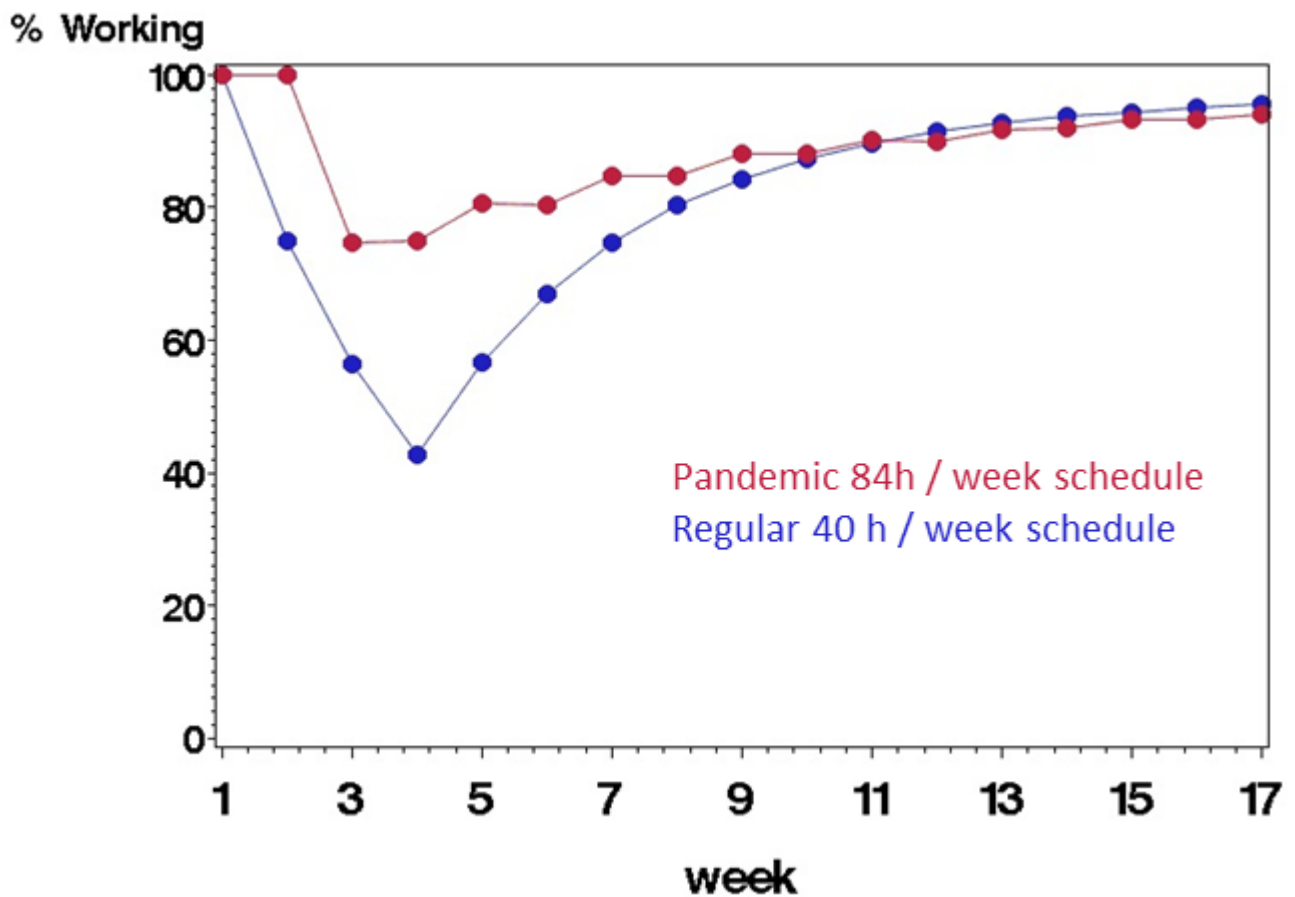


**COVID-19 ICU staffing: Supplemental material**

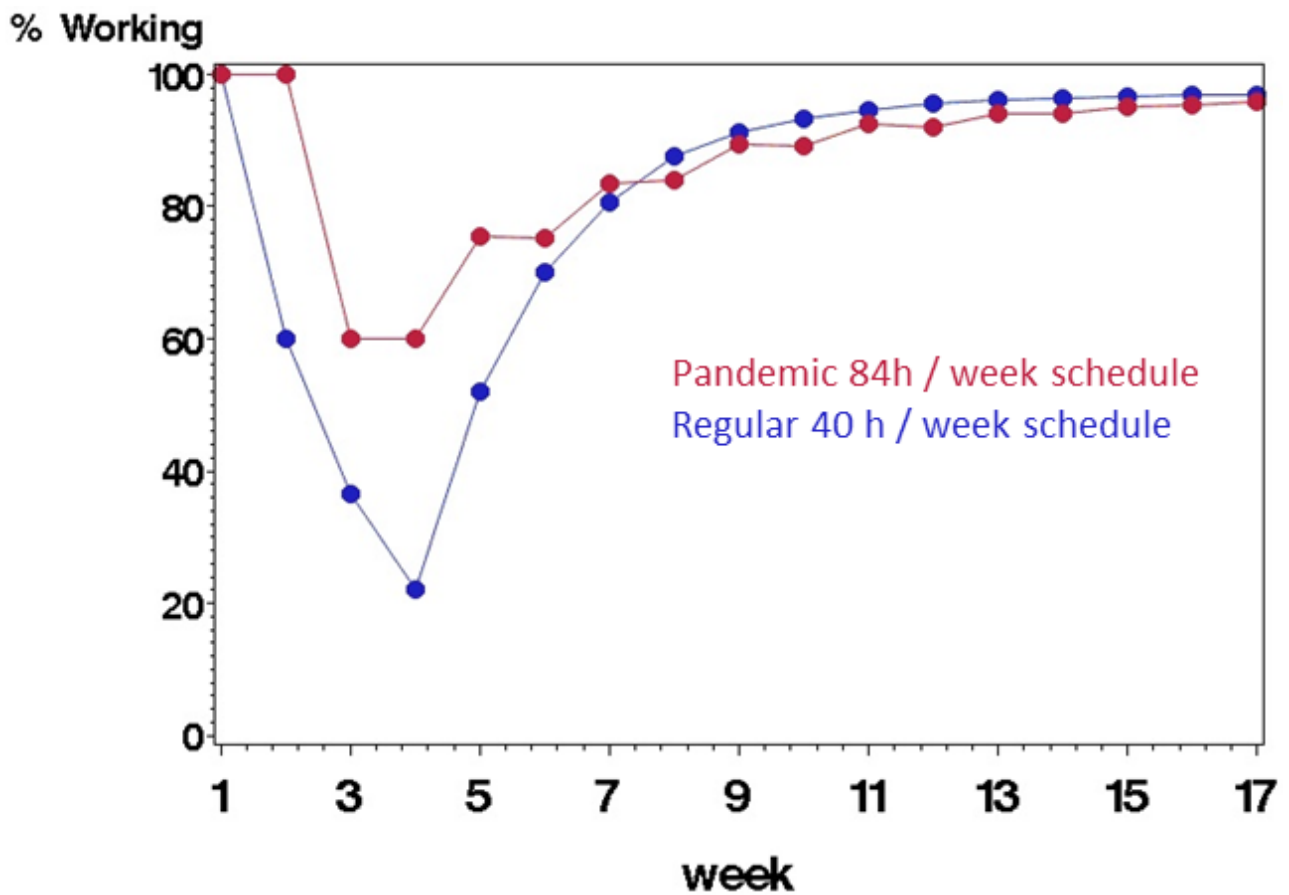
Supplemental Table 1. Quarantine Three Weeks: Labor Sparing Using Rotating Weeks (B) and Standard (A)									
Infection	0.10			0.25			0.40		
Mortality	0.03			0.03			0.03		
	% Working		Savings	% Working		Savings	% Working		Savings
Week	A	B		A	B		A	B	
1	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0
2	90.2	100.0	9.8	74.9	100.0	25.1	60.1	100.0	39.9
3	81.2	90.2	8.9	56.4	74.8	18.4	36.4	60.0	23.6
4	73.2	90.0	16.8	42.6	74.9	32.3	22.1	59.9	37.8
5	75.8	90.6	14.8	56.6	80.7	24.1	51.9	75.4	23.4
6	78.2	90.5	12.3	67.0	80.4	13.4	70.0	75.2	5.2
7	80.2	91.8	11.6	74.6	84.8	10.2	80.7	83.4	2.7
8	81.9	91.5	9.6	80.3	84.8	4.5	87.5	83.9	-3.6
9	83.5	91.9	8.4	84.2	88.2	4.0	91.1	89.3	-1.8
10	85.1	92.4	7.3	87.2	88.2	1.0	93.4	89.0	-4.4
11	86.3	92.9	6.5	89.6	90.1	0.5	94.6	92.4	-2.2
12	87.4	92.8	5.4	91.5	90.0	-1.5	95.5	92.1	-3.5
13	88.3	93.0	4.7	92.8	91.7	-1.1	96.1	93.9	-2.2
14	89.1	93.2	4.1	93.7	92.0	-1.7	96.4	94.1	-2.3
15	90.1	93.4	3.3	94.4	93.1	-1.3	96.6	95.2	-1.5
16	90.8	93.5	2.7	95.0	93.1	-1.8	96.8	95.3	-1.4
17	91.5	93.7	2.2	95.4	94.0	-1.4	96.9	95.9	-1.0
Mean (SD)	7.6 (4.6)			7.3 (11.2)			6.4 (14.9)		
	Supplemental Fig 1			Supplemental Fig 2			Supplemental Fig 3		
<b>Quarantine:</b> number of weeks a staff member stays off of work after being infected <b>Infection:</b> probability of an uninfected staff becoming infected in a given week at work <b>Mortality:</b> probability of an infected staff succumbing to the coronavirus <b>% working:</b> Percent of starting staff working for the given week <b>Savings:</b> Absolute difference between Scenario B (rotating weeks, 7-12 hour shifts) and A (Standard 8-hr shifts each wk)									



**Supplemental Figure 1.** Comparing Scenario B (rotating staff each week in a pandemic schedule with 84 h / week followed by 3 weeks of quarantine, displayed in red) to Scenario A (regular schedule with 40 h / week, displayed in blue) on percent of starting work force available to work each week. The average probability of being infected at work was 0.10 (each staff's probability was a random draw from the underlying probability), and probability of mortality given infection was 3%. Infected staff were quarantined for 3 weeks before returning to work.

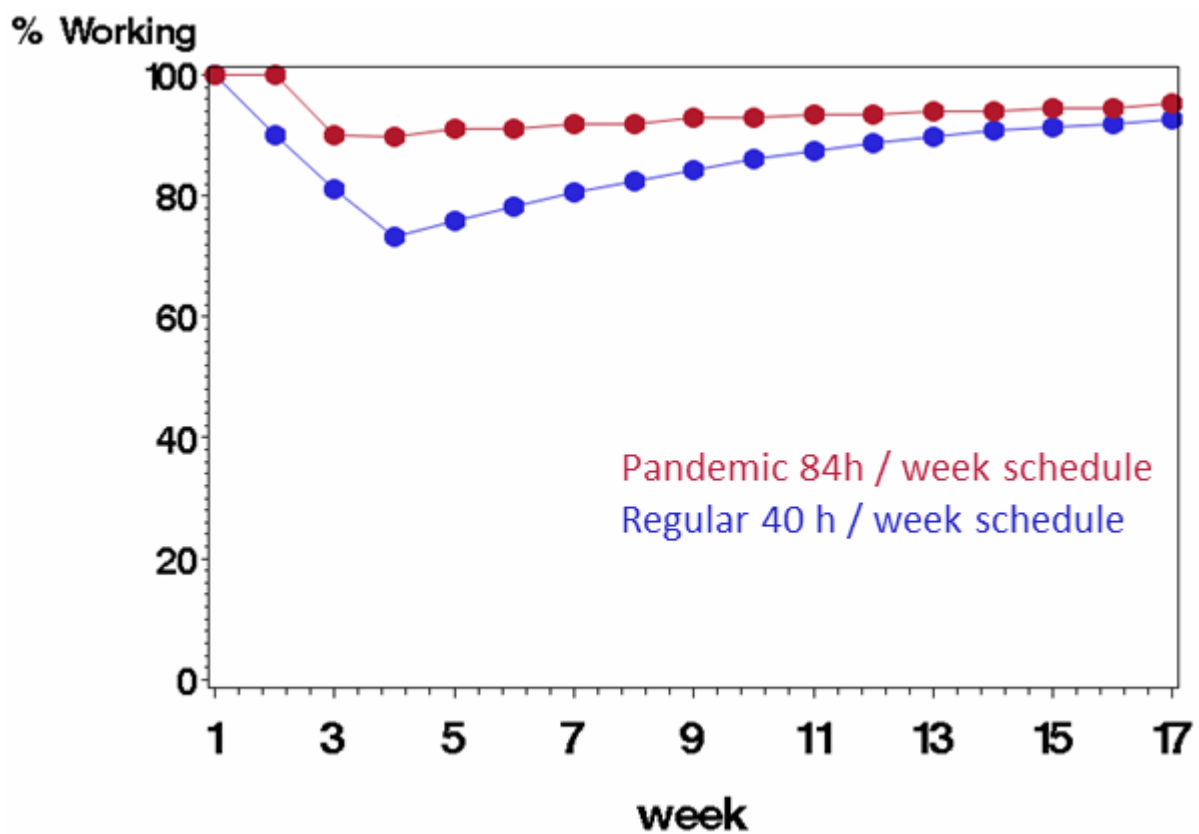


**Supplemental Figure 2.** Comparing Scenario B (rotating staff each week in a pandemic schedule with 84 h / week followed by 3 weeks of quarantine, displayed in red) to Scenario A (regular schedule with 40 h / week, displayed in blue) on percent of starting work force available to work each week. The average probability of being infected at work was 0.25 (each staff's probability was a random draw from the underlying probability), and probability of mortality given infection was 3%. Infected staff were quarantined for 3 weeks before returning to work.

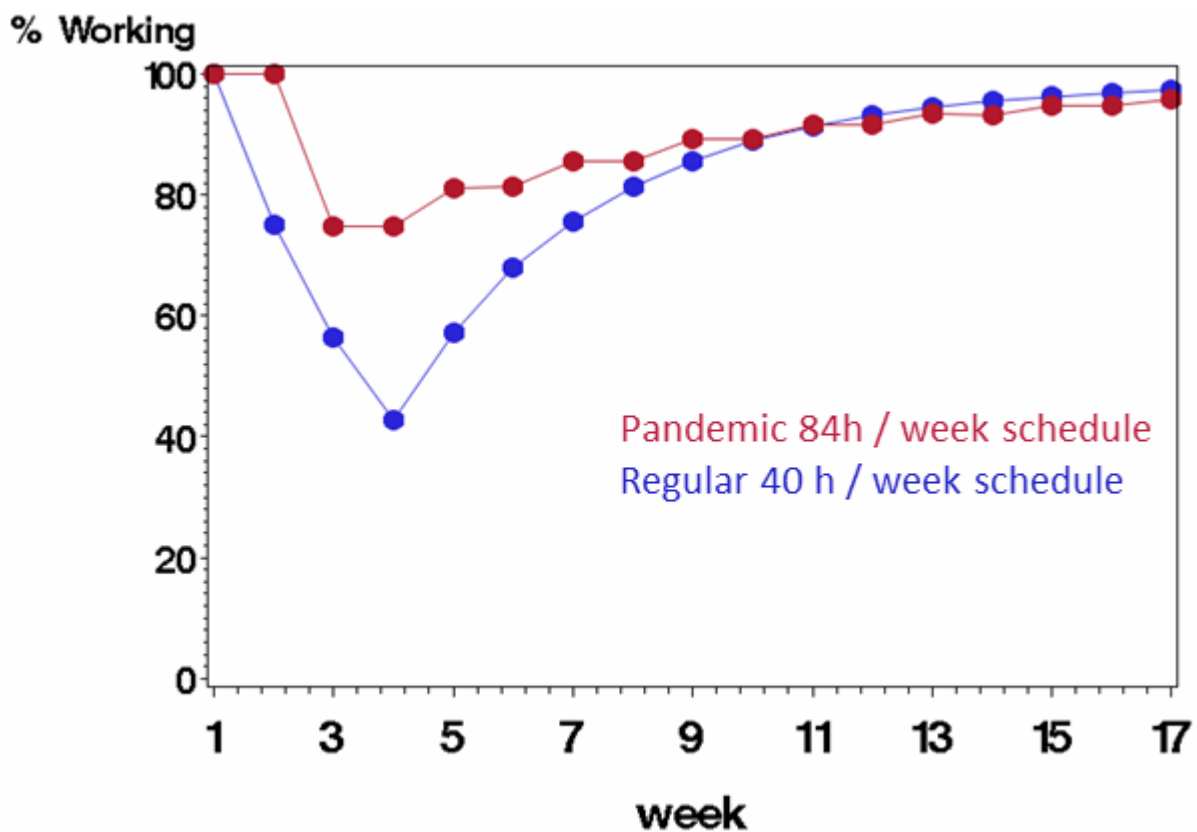


**Supplemental Figure 3.** Comparing Scenario B (rotating staff each week in a pandemic schedule with 84 h / week followed by 3 weeks of quarantine, displayed in red) to Scenario A (regular schedule with 40 h / week, displayed in blue) on percent of starting work force available to work each week. The average probability of being infected at work was 0.40 (each staff's probability was a random draw from the underlying probability), and probability of mortality given infection was 3%. Infected staff were quarantined for 3 weeks before returning to work.

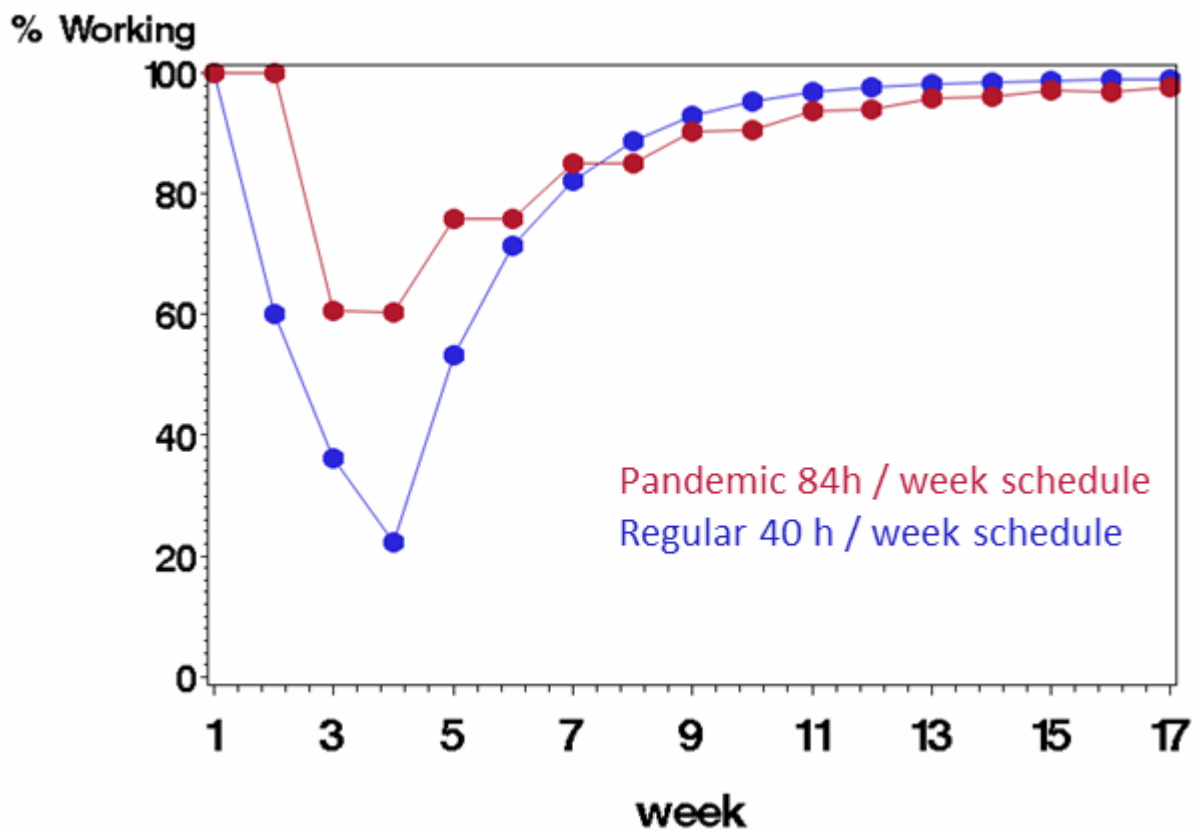
Supplemental Table 2. Quarantine Three Weeks: Labor Sparing Using Rotating Weeks (B) and Standard (A)									
Infection	0.10			0.25			0.40		
Mortality	0.03			0.03			0.03		
	% Working		Savings	% Working		Savings	% Working		Savings
Week	A	B		A	B		A	B	
1	100.0	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0
2	90.1	100.0	9.9	75.0	100.0	25.0	60.0	100.0	40.0
3	81.2	90.1	8.9	56.3	74.7	18.4	36.3	60.6	24.3
4	73.3	89.8	16.6	42.7	74.9	32.2	22.2	60.4	38.1
5	75.9	91.0	15.0	57.1	81.1	24.0	53.4	75.9	22.5
6	78.3	91.0	12.7	68.0	81.3	13.3	71.5	76.0	4.5
7	80.5	91.8	11.4	75.5	85.6	10.1	82.2	85.2	3.0
8	82.5	91.9	9.5	81.4	85.5	4.1	88.8	85.0	-3.8
9	84.2	92.9	8.7	85.7	89.3	3.6	92.9	90.3	-2.6
10	86.0	92.9	6.9	89.1	89.3	0.2	95.3	90.6	-4.7
11	87.3	93.4	6.1	91.3	91.6	0.3	96.7	93.7	-3.0
12	88.8	93.5	4.7	93.3	91.5	-1.8	97.6	93.9	-3.7
13	89.8	93.9	4.1	94.6	93.4	-1.2	98.1	95.9	-2.3
14	90.8	94.0	3.2	95.6	93.2	-2.3	98.4	96.1	-2.3
15	91.3	94.6	3.3	96.2	94.8	-1.5	98.7	97.1	-1.6
16	92.0	94.5	2.5	96.9	94.7	-2.2	98.9	96.9	-1.9
17	92.7	95.2	2.4	97.5	95.8	-1.7	98.9	97.6	-1.4
Mean (SD)	7.4 (4.8)			7.1 (11.3)			6.2 (15.0)		
	Supplemental Fig 4			Supplemental Fig 5			Supplemental Fig 6		
Quarantine: number of weeks a staff member stays off of work after being infected Infection: probability of an uninfected staff becoming infected in a given week at work Mortality: probability of an infected staff succumbing to the coronavirus % working: Percent of starting staff working for the given week Savings: Absolute difference between Scenario B (rotating weeks, 7-12 hour shifts) and A (Standard 8-hr shifts each wk)									



**Supplemental Figure 4.** Comparing Scenario B (rotating staff each week in a pandemic schedule with 84 h / week followed by 3 weeks of quarantine, displayed in red) to Scenario A (regular schedule with 40 h / week, displayed in blue) on percent of starting work force available to work each week. The average probability of being infected at work was 0.40 (each staff's probability was a random draw from the underlying probability), and probability of mortality given infection was 1%. Infected staff were quarantined for 3 weeks before returning to work.



**Supplemental Figure 5.** Comparing Scenario B (rotating staff each week in a pandemic schedule with 84 h / week followed by 3 weeks of quarantine, displayed in red) to Scenario A (regular schedule with 40 h / week, displayed in blue) on percent of starting work force available to work each week. The average probability of being infected at work was 0.40 (each staff's probability was a random draw from the underlying probability), and probability of mortality given infection was 1%. Infected staff were quarantined for 3 weeks before returning to work.



**Supplemental Figure 6.** Comparing Scenario B (rotating staff each week in a pandemic schedule with 84 h / week followed by 3 weeks of quarantine, displayed in red) to Scenario A (regular schedule with 40 h / week, displayed in blue) on percent of starting work force available to work each week. The average probability of being infected at work was 0.40 (each staff's probability was a random draw from the underlying probability), and probability of mortality given infection was 1%. Infected staff were quarantined for 3 weeks before returning to work.