APPENDIX - HOW TEAMS SUBSTITUTE WORKERS: EVIDENCE FROM THE HEALTHCARE SECTOR

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1 Appendix

1.1 Tables

Table A1: Effects of health shocks on services delivered excluding post COVID periods

	Doctors		**Nurses**	
	Log Hosp	Log Amb	Log Hosp	Log Amb
D_{it}^{0}	-0.127	-0.137*	-0.131**	-0.003
	(0.08)	(0.08)	(0.06)	(0.06)
D_{it}^{post}	-0.031	-0.020	-0.044	0.040
	(0.07)	(0.04)	(0.03)	(0.07)
N	6340	6340	13868	13868

Notes: This table presents estimates from equation 1.1 post COVID periods. D_{it}^{0} shows the effect of health shocks on team size while D_{it}^{post} shows the same effect during the six months following the health shock. Standard errors clustered at the department level are in parentheses. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.
Data: Records on services delivered.

1.2 Figures

Figure A1: Effect of health shocks on time worked of young workers by team structure

Notes: The Figure presents the coefficient estimations of γ_t from equation 1 for young workers in large and small teams. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as having a co-worker affected by a health shock at $t = 0$. I use individual and month fixed effects. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital.

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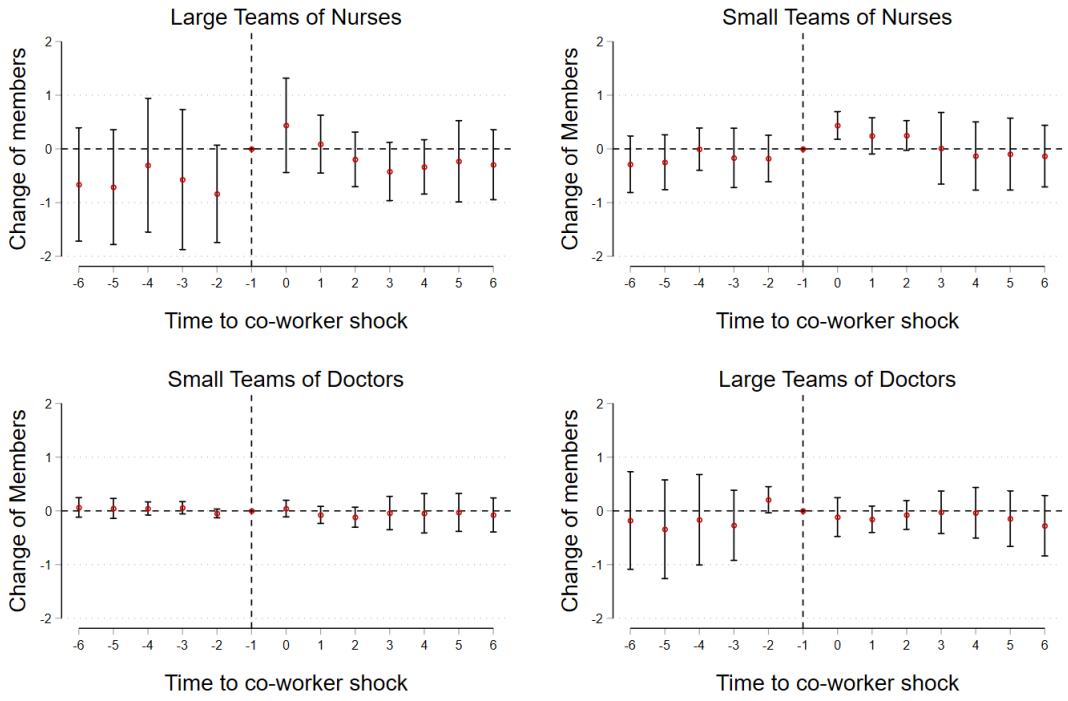
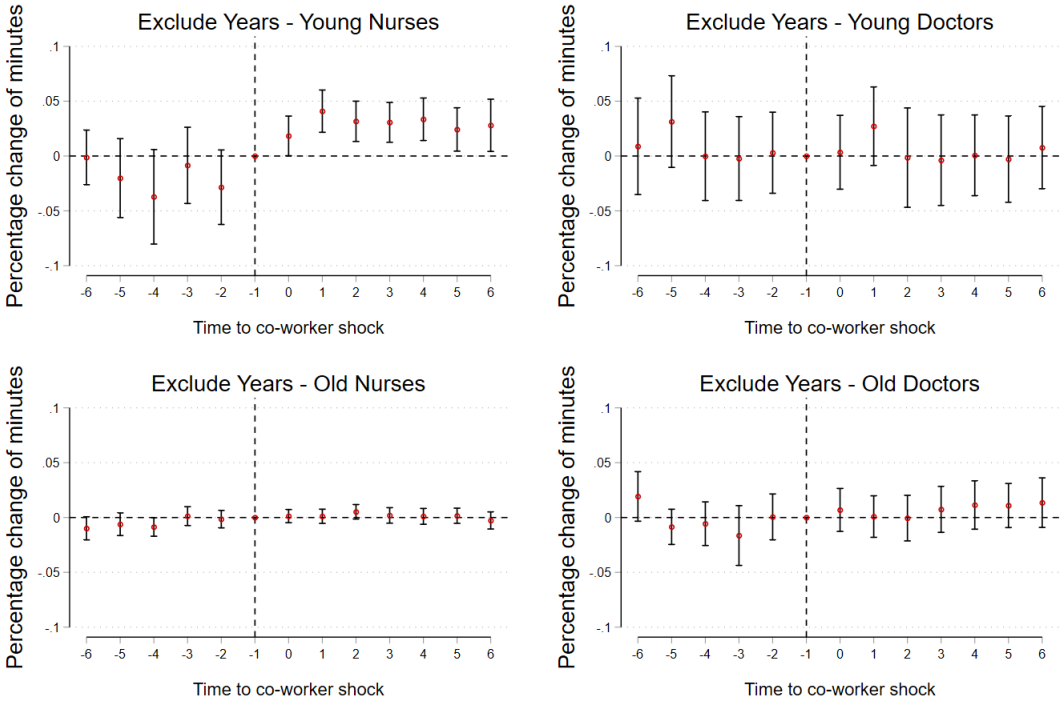
Figure A2: Effect of health shocks on team size by team structure



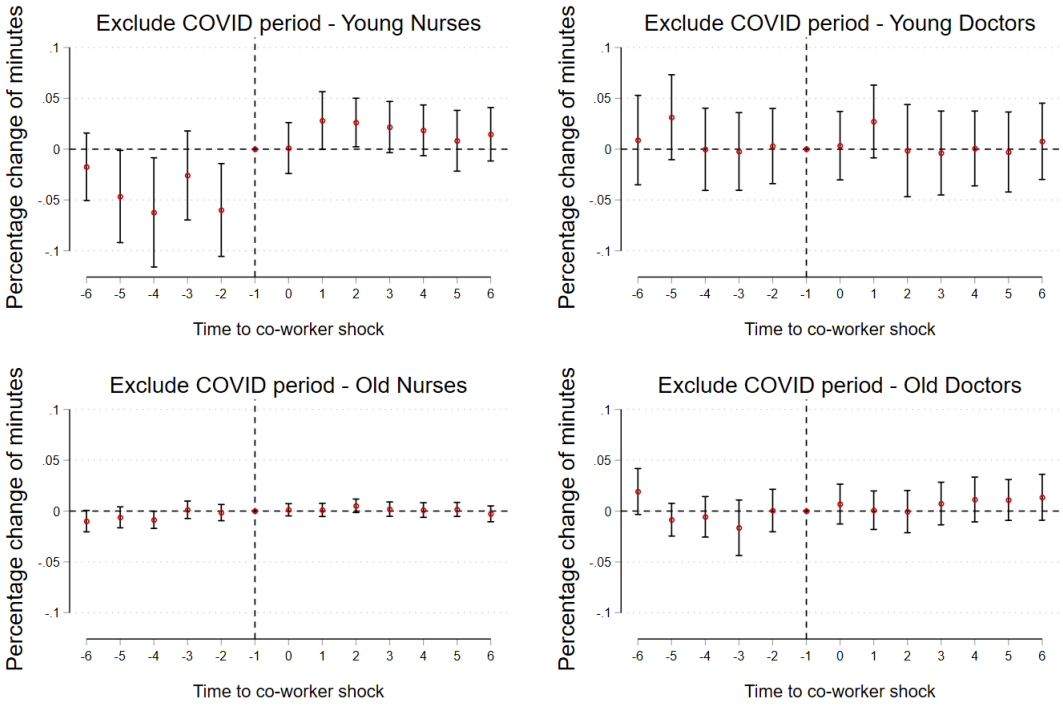
Notes: The Figure presents the coefficient estimations of γ_t from equation 1 for large and small teams. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the team level. Baseline used is one-period before treatment. Treatment is defined as having a team member affected by a health shock at $t = 0$. I use team and month fixed effects. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital aggregated at the team level.

Figure A3: Effect of health shocks on time worked excluding 2016 and 2017



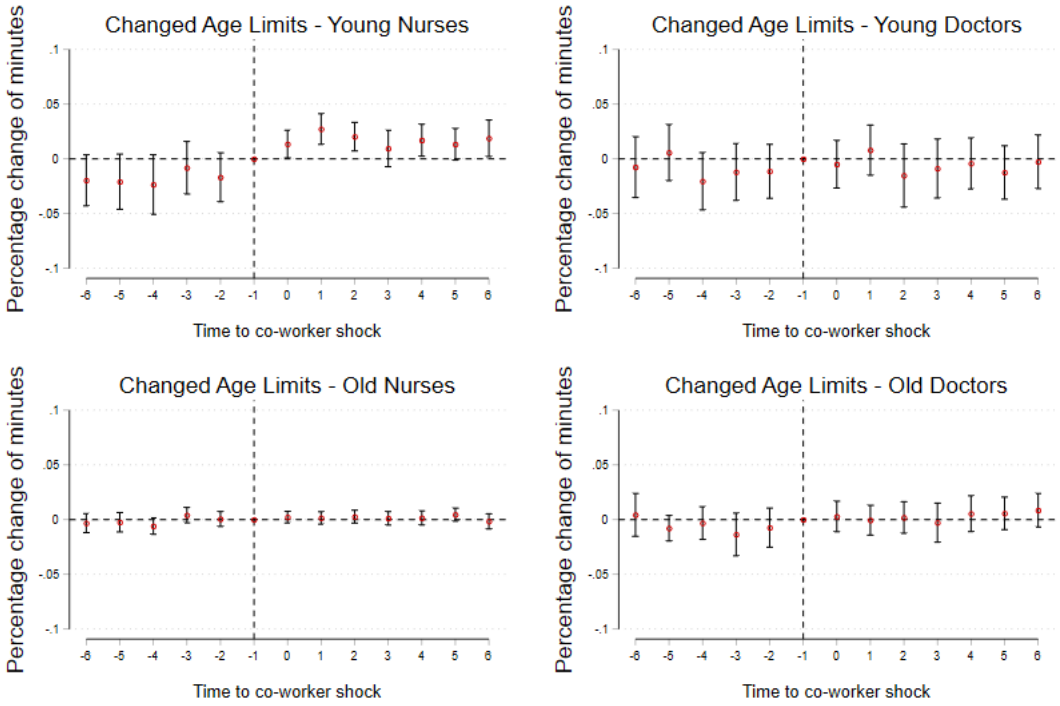
Notes: The Figure presents the coefficient estimations of γ_t from equation 1 excluding the years 2016 and 2017. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as having a co-worker affected by a health shock at $t = 0$. I use individual and month fixed effects. In this regression I exclude year 2016 and 2017 to account for unobserved absences happening in 2015 not recorded in my data and to provide suggestive evidence on the presence of heterogeneous treatment effects when I exclude part of the dataset. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital.

Figure A4: Effect of health shocks on time worked of young workers excluding post COVID periods



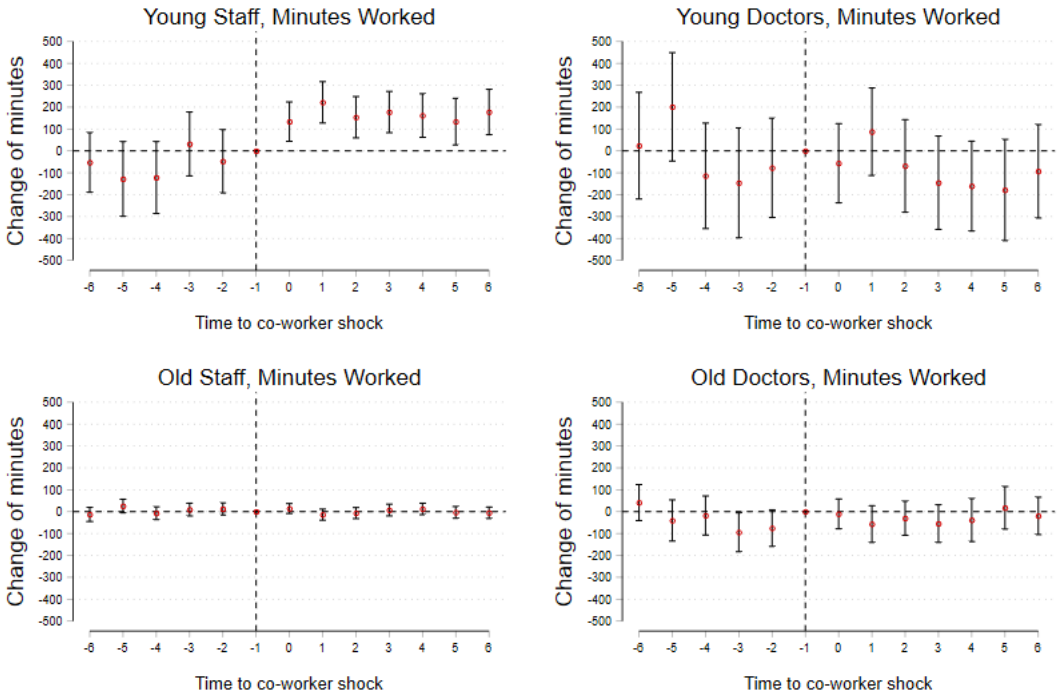
Notes: The Figure presents the coefficient estimations of γ_t from equation 1 excluding post COVID years. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as having a co-worker affected by a health shock at $t = 0$. I use individual and month fixed effects. In this regression I exclude post COVID periods to account for potential changes during this period. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital.

Figure A5: Effect of health shocks on time worked with age threshold changed



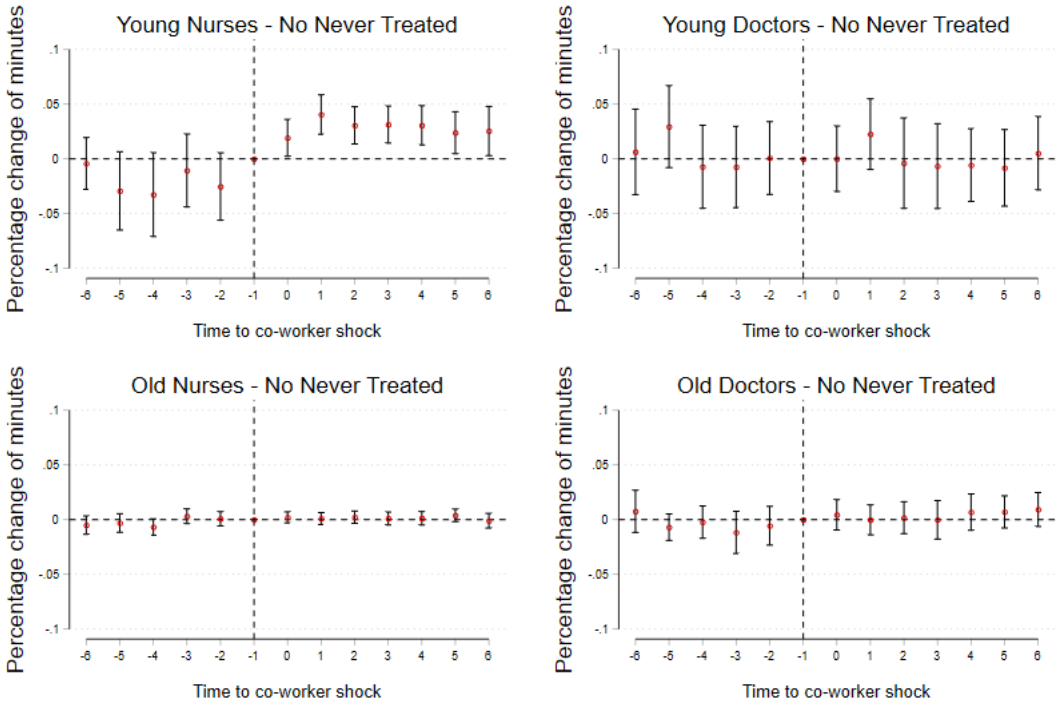
Notes: The Figure presents the coefficient estimations of γ_t from equation 1 changing the definition of young and old workers by two years. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as having a co-worker affected by a health shock at $t = 0$. I use individual and month fixed effects. In this regression, I change the threshold for old workers increasing it by 2 years to check sensibility of this arbitrary cutoff. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital.

Figure A6: Effect of health shocks on time worked in levels



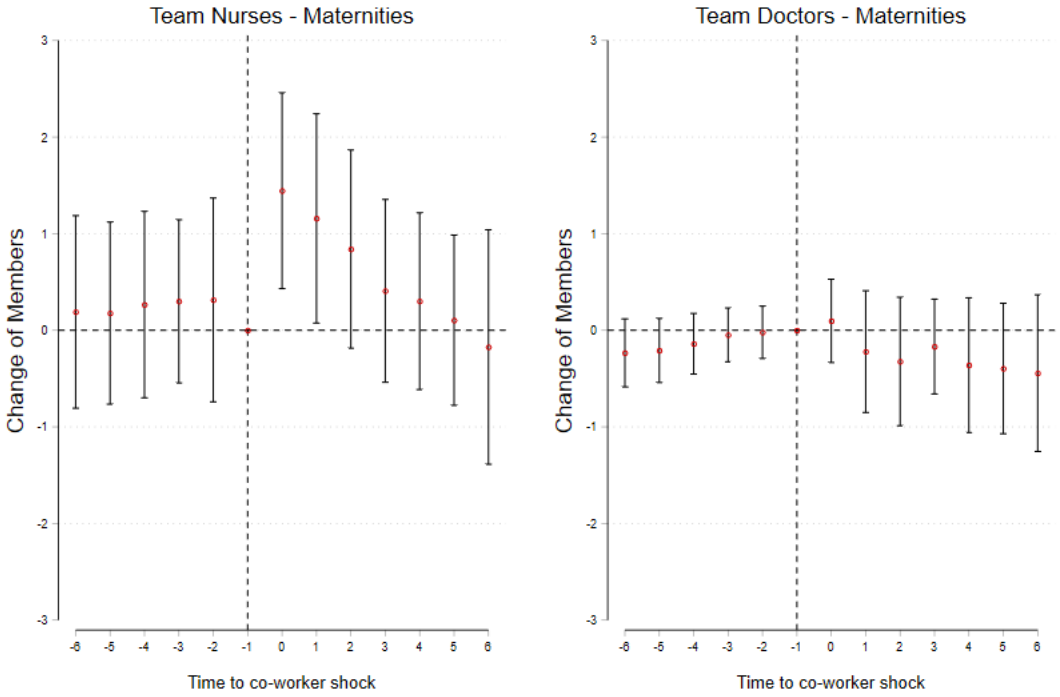
Notes: The Figure presents the coefficient estimations of γ_t from equation 1 using time worked in levels instead of logs. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as having a co-worker affected by a health shock at $t = 0$. I use individual and month fixed effects. In this regression use the outcome variable in levels instead of the logarithmic form. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital.

Figure A7: Effect of health shocks on time worked excluding never treated



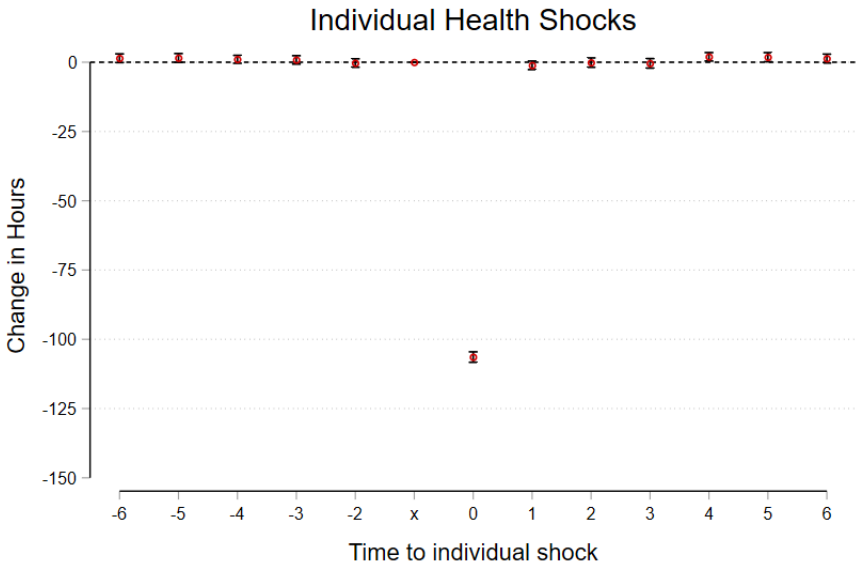
Notes: The Figure presents the coefficient estimations of γ_t from equation 1 excluding units never affected by a co-worker health shock. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as having a co-worker affected by a health shock at $t = 0$. I use individual and month fixed effects. In this regression I include the individuals never treated by co-worker health shocks using a plain even study design instead of the staggered design used in the main specification. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital.

Figure A8: Effect of maternity leaves on team size



Notes: The Figure presents the coefficient estimations of γ_t from equation 1 using maternity leaves as the "event" instead of health shocks. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the team level. Baseline used is one-period before treatment. Treatment is defined as having a team member affected by a health shock at $t = 0$. I use team and month fixed effects. In this regression I study the effect of expected absences, maternity leaves, on team composition. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital aggregated at the team level.

Figure A9: Effect of individual health shocks on time worked

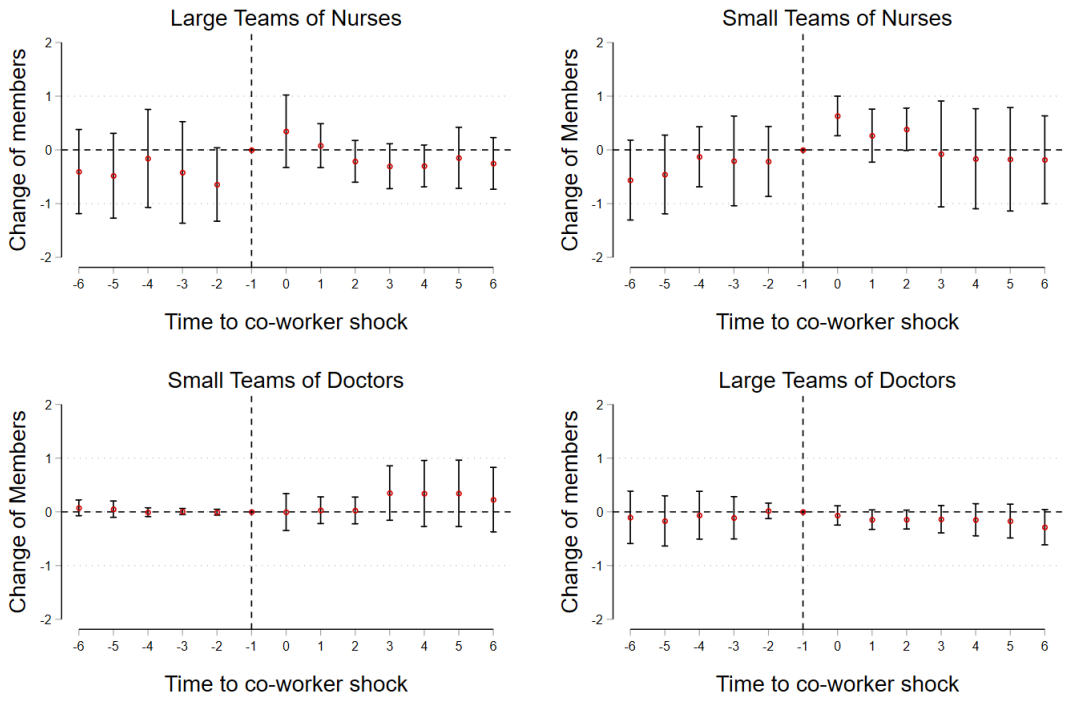


Notes: The Figure presents the coefficient estimations of γ_t from equation 1 to study individuals directly affected by health shocks. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as being affected by a health shock at $t = 0$. I use individual and month fixed effects. I define the control group as all individual never affected by health shocks directly and I define the treatment group otherwise. Time to event is in month.
Data: Individual level records from the personnel dataset of the hospital aggregated at the team level.

Figure A10: Effect of health shocks on time worked with changed size thresholds

Notes: The Figure presents the coefficient estimations of γ_t from equation 1 decreasing by five the threshold to define large and small teams. I show the 95% confidence intervals. In this regression, I estimate the effect of health shocks on hours worked. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as having a co-worker affected by a health shock at $t = 0$. I use individual and month fixed effects. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital.

Figure A11: Effect of health shocks on team size with changed size thresholds

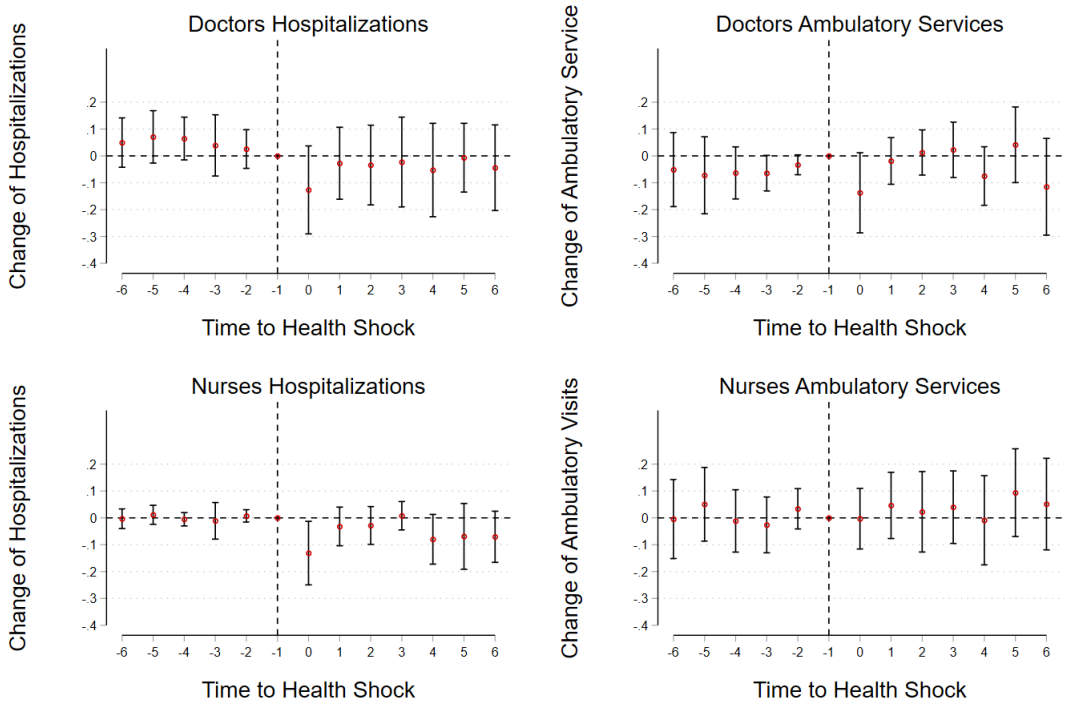


Notes: The Figure presents the coefficient estimations of γ_t from equation 1 decreasing by five the threshold to define large and small teams. I show the 95% confidence intervals. In this regression, I estimate the effect of health shocks on team size. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the team level. Baseline used is one-period before treatment. Treatment is defined as having a team member affected by a health shock at $t = 0$. I use team and month fixed effects. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital aggregated at the team level.

Figure A12: Effect of health shocks on time worked without temporary workers

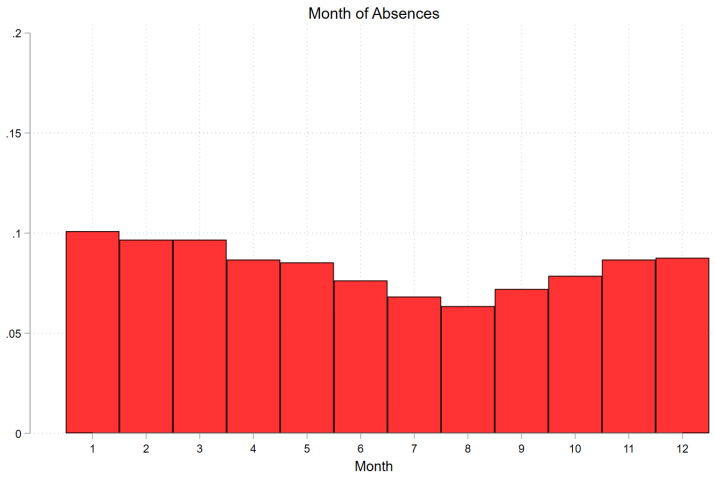
Notes: The Figure presents the coefficient estimations of γ_t from equation 1 excluding temporary workers. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the team level. Baseline used is one-period before treatment. Treatment is defined as having a team member affected by a health shock at $t = 0$. I use team and month fixed effects. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital aggregated at the team level.

Figure A13: Effect of health shocks on services delivered excluding post COVID periods



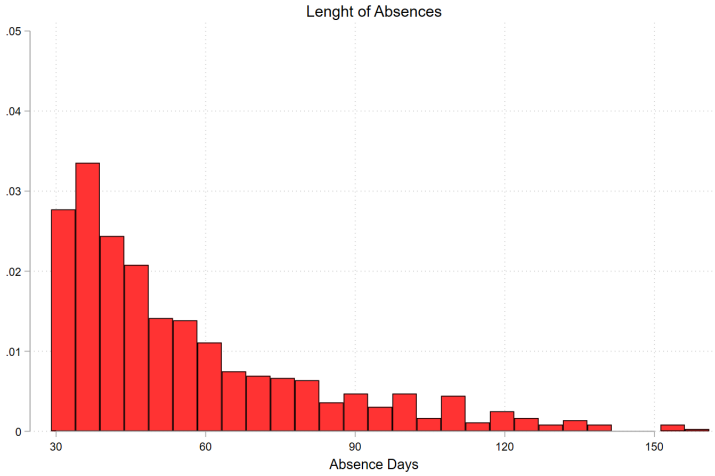
Notes: The Figure presents the coefficient estimations of γ_t from equation 1 excluding post COVID years. I show the 95% confidence intervals. The method used to estimate the event study model is an Ordinary Least Squares (OLS). Standard errors are clustered at the individual level. Baseline used is one-period before treatment. Treatment is defined as having a co-worker affected by a health shock at $t = 0$. I use individual and month fixed effects. In this regression I exclude post COVID periods to account for potential changes during this period. Time to event is in month, last lag and first lead include months six month before or after the health shock.
Data: Individual level records from the personnel dataset of the hospital.

Figure A14: Distribution of Absences by Month



Notes: The Figure presents the distribution of absences by month. **Data**: Personnel records on sick leaves.

Figure A15: Distribution of Days of Absence



Notes: This figure presents the distribution of days of absences for individual affected by my definition of health shocks. **Data**: Personnel records on sick leaves.