Appendix of the paper

'Quantifying the impact of COVID-19 on the travel behavior of people in different socio-economic segments'

Table A. Data and variable explanation

Variables	Explanation
New COVID cases	Number of COVID-19 daily new cases. Source: <u>JHU COVID-19 data repository</u>.
Imported COVID cases	Number of daily external trips by infectious persons from out of state/county. Calculated by MTI.
COVID exposure/1000 people	Number of residents already exposed to coronavirus per 1000 people. Calculated by MTI.
# Days: decreasing COVID cases	Number of days with decreasing COVID-19 cases. Calculated by MTI based on weekly pattern of new daily cases.
Testing capacity gap	Ability to provide enough tests based on World Health Organization-recommended positive test rate proxy. High positive test rates indicate a lack of sufficient testing and testing capacity gap. Source: <u>The COVID tracking project</u>.
Tests done/1000 people	Number of COVID-19 tests already completed per 1000 people. Source: <u>The COVID tracking project</u>.
% Hospital bed utilization	% Hospital beds occupied with patients. Calculated by MTI using <u>ESRI: US Hospital Beds Dashboard</u> and <u>IMHE COVID-19 projections</u>
% ICU utilization	% ICU unites occupied with COVID-19 patients. Calculated by MTI using <u>ESRI: US Hospital Beds Dashboard</u> , <u>The COVID Tracking Project</u> , and <u>IMHE COVID-19 projections</u>.
Ventilator needs	Number of ventilators needed for COVID-19 patients. Source: <u>IHME COVID-19 projections</u>.
% Working from home*	Percentage of workforce working from home based on UMD models. Calculated by MTI based on changes in work trips and unemployment claims.
% Out-of-state trips*	Percentage of all trips that cross state borders. Calculated by MTI.
Miles/person	Average person-miles travelled on all modes (car, train, bus, plane, bike, walk, etc.) per person per day. Calculated by MTI.
Work trips/person	Number of work trips per person per day (where a "work trip" is defined as going to or coming home from work location). Calculated by MTI.
Non-work trips/person	Number of non-work trips per person per day. Additional information on trip purpose (grocery, park, restaurant, etc.) is available, but not currently shown on the platform. Calculated by MTI.

Appendix B:　Detailed results of the FE panel regression model

Appendix table 1-1 Coefficients of the panel regression model for low employment density.

Variables	Non-work trips person					
	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	0.03	0.07	0.38	0.71	-0.11	0.16
hospital bed utilization	-0.03	0.01	-4.66	0.00	-0.04	-0.02
Tests done 1000 people	2.5E-04	9.9E-05	2.52	0.01	5.5E-05	4.4E-04
ICU utilization	-0.01	2.6E-03	-2.33	0.02	-0.01	-9.6E-04
Ventilator needs	1.7E-04	3.7E-05	4.46	0.00	9.3E-05	2.4E-04
Imported COVID cases	2.1E-05	7.0E-06	2.95	3.0E-03	6.9E-06	3.5E-05
COVID exposure/1000 people	0.01	4.6E-03	3.13	2.0E-03	0.01	0.02
days decreasing ILI cases	1.1E-03	2.3E-04	4.80	0.00	6.6E-04	1.6E-03
COVID death rate	-1.6E-03	1.6E-03	-1.02	0.31	-4.8E-03	1.5E-03
Constant	4.05	0.26	15.51	0.00	3.54	4.56
R-square: within			0.27			
R-square: between			0.05			
R-square: overall			0.14			
Wald chi2(9)			364.65			
Prob > chi2			0.00			
Observations			12,376			

Appendix table 1-2 Coefficients of the panel regression model for low employment density.

Variables	Work trips person					
	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.03	0.01	-2.91	4.0E-03	-0.05	-0.01
hospital bed utilization	1.4E-03	7.2E-04	1.99	0.05	2.1E-05	2.8E-03
Tests done 1000 people	-1.7E-05	1.0E-05	-1.63	0.10	-3.8E-05	3.4E-06
ICU utilization	-1.8E-03	4.4E-04	-4.13	0.00	-2.7E-03	-9.5E-04
Ventilator needs	2.2E-05	1.1E-05	2.06	0.04	1.0E-06	4.2E-05
Imported COVID cases	-5.0E-06	1.7E-06	-2.94	3.0E-03	-8.3E-06	-1.7E-06
COVID exposure/1000 people	2.4E-03	4.9E-04	4.81	0.00	1.4E-03	3.3E-03
days decreasing ILI cases	-1.4E-04	3.1E-05	-4.62	0.00	-2.0E-04	-8.3E-05
COVID death rate	-3.2E-03	2.7E-04	-11.77	0.00	-3.7E-03	-2.6E-03
Constant	0.44	0.03	13.15	0.00	0.38	0.51
R-square: within			0.10			
R-square: between			0.04			
R-square: overall			0.09			
Wald chi2(9)			498.68			
Prob > chi2			0.00			
Observations			12376			

Appendix table 1-3 Coefficients of the panel regression model for low employment density.

Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
			Miles person			
New cases/1000 people	1.85	2.36	0.79	0.43	-2.77	6.47
hospital bed utilization	-0.47	0.06	-7.82	0.0E+00	-0.59	-0.35
Tests done 1000 people	1.6E-03	1.0E-03	1.58	0.12	-3.9E-04	3.6E-03
ICU utilization	0.06	0.05	1.20	0.23	-0.04	0.16
Ventilator needs	1.4E-03	4.3E-04	3.14	2.0E-03	5.1E-04	2.2E-03
Imported COVID cases	3.4E-04	1.9E-04	1.82	0.07	-2.6E-05	7.1E-04
COVID exposure/1000 people	0.26	0.06	3.97	0.0E+00	0.13	0.38
days decreasing ILI cases	0.02	2.7E-03	6.23	0.0E+00	0.01	0.02
COVID death rate	-0.22	0.04	-5.01	0.0E+00	-0.31	-0.14
Constant	61.51	3.03	20.31	0.0E+00	55.58	67.45
R-square: within			0.07			
R-square: between			0.26			
R-square: overall			0.07			
Wald chi2(9)			728.73			
Prob > chi2			0.00			
Observations			12376			

Appendix table 1-4 Coefficients of the panel regression model for low employment density.

Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
			Out of state trips			
New cases/1000 people	-0.12	0.10	-4.60	0.00	-0.32	0.09
hospital bed utilization	-0.03	0.01	-3.33	1.0E-03	-0.04	-0.01
Tests done 1000 people	-2.1E-04	2.2E-04	-0.95	0.34	-6.3E-04	2.2E-04
ICU utilization	0.01	4.4E-03	3.11	2.0E-03	0.01	0.02
Ventilator needs	3.9E-06	7.0E-05	0.06	0.96	-1.3E-04	1.4E-04
Imported COVID cases	5.1E-05	2.6E-05	2.00	0.05	9.8E-07	1.0E-04
COVID exposure/1000 people	-0.01	0.01	-0.87	0.39	-0.02	0.01
days decreasing ILI cases	7.0E-04	6.0E-04	1.16	0.25	-4.8E-04	1.9E-03
COVID death rate	-0.01	3.2E-03	-4.60	0.00	-0.02	-0.01
Constant	6.89	0.74	9.25	0.00	5.43	8.35
R-square: within			0.05			
R-square: between			0.00			
R-square: overall			0.00			
Wald chi2(9)			54.47			
Prob > chi2			0.00			
Observations			12376			

Appendix table 1-5 Coefficients of the panel regression model for low employment density.

	Working from home					
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	5.51	1.72	3.20	1.0E-03	2.14	8.88
hospital bed utilization	-0.28	0.13	-2.07	0.04	-0.54	-0.02
Tests done 1000 people	3.6E-03	2.3E-03	1.57	0.12	-9.0E-04	0.01
ICU utilization	0.39	0.08	4.92	0.00	0.24	0.55
Ventilator needs	-3.5E-03	2.1E-03	-1.68	0.09	-0.01	6.0E-04
Imported COVID cases	9.8E-04	2.9E-04	3.37	1.0E-03	4.1E-04	1.6E-03
COVID exposure/1000 people	-0.36	0.11	-3.34	1.0E-03	-0.58	-0.15
days decreasing ILI cases	0.04	0.01	6.18	0.00	0.02	0.05
COVID death rate	0.51	0.05	10.67	0.00	0.42	0.61
Constant	27.04	5.70	4.74	0.00	15.86	38.22
R-square: within			0.48			
R-square: between			0.04			
R-square: overall			0.38			
Wald chi2(9)			838.78			
Prob > chi2			0.00			
Observations			12376			

Appendix table 2-1 Coefficients of the panel regression model for high employment density.

	Non-work trips person					
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.26	0.08	-3.09	2.0E-03	-0.42	-0.09
hospital bed utilization	-0.01	3.3E-03	-3.14	2.0E-03	-0.02	-3.9E-03
Tests done 1000 people	5.4E-05	6.3E-05	0.86	0.39	-7.0E-05	1.8E-04
ICU utilization	-0.01	1.9E-03	-3.93	0.00	-0.01	-3.7E-03
Ventilator needs	5.5E-06	2.7E-05	0.21	0.84	-4.6E-05	5.7E-05
Imported COVID cases	1.2E-05	3.9E-06	3.03	2.0E-03	4.1E-06	1.9E-05
COVID exposure/1000 people	0.03	0.01	5.33	0.00	0.02	0.04
days decreasing ILI cases	8.3E-04	1.7E-04	4.95	0.00	5.0E-04	1.2E-03
COVID death rate	1.4E-03	1.2E-03	1.09	0.28	-1.1E-03	3.8E-03
Constant	3.35	0.18	18.27	0.00	2.99	3.71
R-square: within			0.31			
R-square: between			0.09			
R-square: overall			0.26			
Wald chi2(9)			686.98			
Prob > chi2			0.00			
Observations			11900			

Appendix table 2-2 Coefficients of the panel regression model for high employment density.

	Work trips person					
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.03	0.03	1.02	0.31	-0.10	0.03
hospital bed utilization	7.4E-04	5.9E-04	1.26	0.21	-4.1E-04	1.9E-03
Tests done 1000 people	-6.4E-06	1.4E-05	0.47	0.64	-3.3E-05	2.1E-05
ICU utilization	-1.0E-03	4.2E-04	2.45	0.01	-1.9E-03	-2.0E-04
Ventilator needs	2.2E-05	1.1E-05	1.97	0.05	8.0E-08	4.4E-05
Imported COVID cases	-3.4E-06	1.0E-06	3.30	1.0E-03	-5.4E-06	-1.4E-06
COVID exposure/1000 people	8.6E-04	9.3E-04	0.92	0.36	-9.7E-04	2.7E-03
days decreasing ILI cases	-1.6E-04	3.7E-05	4.45	0. 00	-2.3E-04	-9.1E-05
COVID death rate	-3.9E-03	4.2E-04	9.24	0. 0	-4.7E-03	-3.1E-03
Constant	0.49	0.05	9.85	0. 0	0.39	0.59
R-square: within			0.16			
R-square: between			0.09			
R-square: overall			0.07			
Wald chi2(9)			526.09			
Prob > chi2			0.00			
Observations			11900			

Appendix table 2-3 Coefficients of the panel regression model for high employment density.

	Miles person					
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-3.53	1.41	-2.51	0.01	-6.29	-0.78
hospital bed utilization	-0.19	0.08	-2.49	0.01	-0.33	-0.04
Tests done 1000 people	-8.1E-04	1.2E-03	-0.65	0.52	-3.2E-03	1.6E-03
ICU utilization	-0.09	0.04	-2.26	0.02	-0.16	-0.01
Ventilator needs	-1.7E-04	8.1E-04	-0.20	0.84	-1.8E-03	1.4E-03
Imported COVID cases	3.1E-04	5.0E-05	6.21	0.00	2.1E-04	4.1E-04
COVID exposure/1000 people	0.51	0.08	6.35	0.00	0.35	0.67
days decreasing ILI cases	0.02	3.6E-03	4.90	0.00	0.01	0.02
COVID death rate	-0.15	0.03	-4.78	0.00	-0.21	-0.09
Constant	46.98	4.21	11.17	0.00	38.73	55.22
R-square: within			0.4123			
R-square: between			0.3532			
R-square: overall			0.3967			
Wald chi2(9)			1280.09			
Prob > chi2			0.00			
Observations			11900			

Appendix table 2-4 Coefficients of the panel regression model for high employment density.

		Out of state trips				
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.34	0.20	2.82	0.01	-0.74	0.06
hospital bed utilization	-3.6E-04	0.01	0.03	0.98	-0.03	0.03
Tests done 1000 people	-6.4E-04	2.0E-04	3.13	2.0E-03	-1.0E-03	-2.4E-04
ICU utilization	-0.01	0.01	1.91	0.06	-0.03	3.6E-04
Ventilator needs	1.0E-04	1.1E-04	0.96	0.34	-1.1E-04	3.1E-04
Imported COVID cases	3.7E-05	9.8E-06	3.74	0.00	1.7E-05	5.6E-05
COVID exposure/1000 people	0.01	0.01	1.13	0.26	-0.01	0.03
days decreasing ILI cases	1.0E-03	4.8E-04	2.14	0.03	8.4E-05	2.0E-03
COVID death rate	-0.02	0.01	2.82	0.01	-0.03	-4.9E-03
Constant	8.64	1.49	5.81	0.00	5.73	11.56
R-square: within			0.07			
R-square: between			0.20			
R-square: overall			0.05			
Wald chi2(9)			87.52			
Prob > chi2			0.00			
Observations			11900			

Appendix table 2-5 Coefficients of the panel regression model for high employment density.

		Working from home				
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	9.78	3.54	2.76	0.01	2.84	16.72
hospital bed utilization	-0.06	0.11	-0.52	0.60	-0.27	0.16
Tests done 1000 people	7.4E-04	2.3E-03	0.33	0.74	-3.7E-03	0.01
ICU utilization	0.15	0.08	2.00	0.05	3.3E-03	0.30
Ventilator needs	-3.9E-03	1.7E-03	-2.31	0.02	-0.01	-5.8E-04
Imported COVID cases	5.4E-04	1.3E-04	4.24	0.00	2.9E-04	8.0E-04
COVID exposure/1000 people	-0.12	0.15	-0.78	0.44	-0.42	0.18
days decreasing ILI cases	0.04	0.01	6.39	0.00	0.03	0.05
COVID death rate	0.57	0.04	14.62	0.00	0.49	0.64
Constant	17.59	5.98	2.94	3.0E-03	5.86	29.32
R-square: within			0.55			
R-square: between			0.06			
R-square: overall			0.45			
Wald chi2(9)			716.02			
Prob > chi2			0.00			
Observations			11900			

Appendix table 3-1 Coefficients of the panel regression model for low population density.

Variables	Non-work trips person					
	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-2.4E-03	0.07	-0.04	0.97	-0.13	0.13
hospital bed utilization	-0.03	0.01	-4.28	0.00	-0.05	-0.02
Tests done 1000 people	2.6E-04	9.6E-05	2.72	0.01	7.3E-05	4.5E-04
ICU utilization	-3.8E-03	3.2E-03	-1.21	0.23	-0.01	2.4E-03
Ventilator needs	3.3E-04	2.1E-04	1.55	0.12	-8.9E-05	7.5E-04
Imported COVID cases	2.1E-05	7.8E-06	2.64	0.01	5.3E-06	3.6E-05
COVID exposure/1000 people	0.01	4.5E-03	2.78	0.01	3.7E-03	0.02
days decreasing ILI cases	1.1E-03	2.6E-04	4.44	0.00	6.3E-04	1.6E-03
COVID death rate	-3.0E-03	8.3E-04	-3.65	0.00	-4.7E-03	-1.4E-03
Constant	4.24	0.32	13.40	0.00	3.62	4.86
R-square: within			0.26			
R-square: between			0.04			
R-square: overall			0.12			
Wald chi2(9)			355.50			
Prob > chi2			0.00			
Observations			12376			

Appendix table 3-2 Coefficients of the panel regression model for low population density.

Variables	Work trips person					
	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.02	0.01	-2.04	0.04	-0.05	-9.4E-04
hospital bed utilization	1.0E-03	8.4E-04	1.21	0.23	-6.3E-04	2.7E-03
Tests done 1000 people	-1.6E-05	1.0E-05	-1.56	0.12	-3.6E-05	4.1E-06
ICU utilization	-2.2E-03	4.5E-04	-4.83	0.00	-3.0E-03	-1.3E-03
Ventilator needs	6.4E-05	3.2E-05	2.01	0.04	1.7E-06	1.3E-04
Imported COVID cases	-5.4E-06	1.8E-06	-2.98	3.0E-03	-9.0E-06	-1.9E-06
COVID exposure/1000 people	2.4E-03	5.1E-04	4.67	0.00	1.4E-03	3.4E-03
days decreasing ILI cases	-1.4E-04	3.0E-05	-4.85	0.00	-2.0E-04	-8.5E-05
COVID death rate	-3.3E-03	2.4E-04	-13.32	0.00	-3.7E-03	-2.8E-03
Constant	0.47	0.04	12.17	0.00	0.39	0.54
R-square: within			0.10			
R-square: between			0.03			
R-square: overall			0.08			
Wald chi2(9)			926.70			
Prob > chi2			0.00			
Observations			12376			

Appendix table 3-3 Coefficients of the panel regression model for low population density.

	Miles person					
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	0.72	2.14	0.34	0.74	-3.47	4.91
hospital bed utilization	-0.53	0.08	-7.05	0.00	-0.68	-0.38
Tests done 1000 people	1.9E-03	1.1E-03	1.84	0.07	-1.3E-04	4.0E-03
ICU utilization	0.10	0.04	2.54	0.01	0.02	0.18
Ventilator needs	3.3E-03	2.1E-03	1.56	0.12	-8.5E-04	0.01
Imported COVID cases	3.3E-04	2.0E-04	1.59	0.11	-7.5E-05	7.3E-04
COVID exposure/1000 people	0.24	0.06	3.72	0.00	0.11	0.37
days decreasing ILI cases	0.02	2.8E-03	6.68	0.00	0.01	0.02
COVID death rate	-0.27	0.03	-8.31	0.00	-0.33	-0.20
Constant	64.46	3.46	18.65	0.00	57.68	71.23
R-square: within			0.07			
R-square: between			0.28			
R-square: overall			0.08			
Wald chi2(9)			570.11			
Prob > chi2			0.00			
Observations			12376			

Appendix table 3-4 Coefficients of the panel regression model for low population density.

	Out of state trips					
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.15	0.11	-4.99	0.00	-0.37	0.07
hospital bed utilization	-0.03	0.01	-3.26	1.0E-03	-0.05	-0.01
Tests done 1000 people	-2.1E-04	2.2E-04	-0.96	0.34	-6.3E-04	2.2E-04
ICU utilization	0.02	4.8E-03	3.28	1.0E-03	0.01	0.03
Ventilator needs	1.7E-04	3.3E-04	0.51	0.61	-4.8E-04	8.3E-04
Imported COVID cases	5.3E-05	2.7E-05	1.99	0.05	7.0E-07	1.1E-04
COVID exposure/1000 people	-0.01	0.01	-0.92	0.36	-0.03	0.01
days decreasing ILI cases	8.3E-04	6.5E-04	1.28	0.20	-4.4E-04	2.1E-03
COVID death rate	-0.02	2.4E-03	-6.99	0.00	-0.02	-0.01
Constant	7.31	0.74	9.93	0.00	5.86	8.75
R-square: within			0.05			
R-square: between			0.00			
R-square: overall			0.00			
Wald chi2(9)			73.69			
Prob > chi2			0.00			
Observations			12376			

Appendix table 3-5 Coefficients of the panel regression model for low population density.

Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
			Working from home			
New cases/1000 people	3.21	1.79	1.79	0.07	-0.30	6.73
hospital bed utilization	-0.24	0.15	-1.52	0.13	-0.54	0.07
Tests done 1000 people	3.4E-03	2.2E-03	1.52	0.13	-9.9E-04	0.01
ICU utilization	0.49	0.07	6.60	0.00	0.35	0.64
Ventilator needs	-0.01	4.8E-03	-1.79	0.07	-0.02	8.0E-04
Imported COVID cases	1.0E-03	2.6E-04	4.04	0.00	5.3E-04	1.5E-03
COVID exposure/1000 people	-0.37	0.11	-3.27	1.0E-03	-0.59	-0.15
days decreasing ILI cases	0.03	0.01	6.28	0.00	0.02	0.05
COVID death rate	0.53	0.04	11.91	0.00	0.44	0.61
Constant	24.90	6.59	3.78	0.00	11.98	37.81
R-square: within			0.49			
R-square: between			0.03			
R-square: overall			0.40			
Wald chi2(9)			1562.97			
Prob > chi2			0.00			
Observations			12376			

Appendix table 4-1 Coefficients of the panel regression model for high population density.

Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
			Non-work trips person			
New cases/1000 people	-0.22	0.09	-2.54	0.01	-0.39	-0.05
hospital bed utilization	-0.01	3.4E-03	-2.82	0.01	-0.02	-2.9E-03
Tests done 1000 people	-1.0E-05	5.1E-05	-0.20	0.84	-1.1E-04	8.9E-05
ICU utilization	-0.01	2.1E-03	-4.08	0.00	-0.01	-4.5E-03
Ventilator needs	1.4E-05	2.5E-05	0.58	0.57	-3.4E-05	6.3E-05
Imported COVID cases	7.9E-06	3.7E-06	2.16	0.03	7.3E-07	1.5E-05
COVID exposure/1000 people	0.04	4.0E-03	8.85	0.00	0.03	0.04
days decreasing ILI cases	8.7E-04	1.5E-04	5.88	0.00	5.8E-04	1.2E-03
COVID death rate	2.2E-03	1.3E-03	1.65	0.10	-4.0E-04	4.7E-03
Constant	3.29	0.19	17.03	0.00	2.91	3.67
R-square: within			0.33			
R-square: between			0.06			
R-square: overall			0.28			
Wald chi2(9)			670.72			
Prob > chi2			0.00			
Observations			11900			

Appendix table 4-2 Coefficients of the panel regression model for high population density.

Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
			Work trips person			
New cases/1000 people	-0.03	0.03	0.93	0.35	-0.10	0.03
hospital bed utilization	6.7E-04	5.7E-04	1.17	0.24	-4.5E-04	1.8E-03
Tests done 1000 people	-4.5E-06	1.4E-05	0.32	0.75	-3.2E-05	2.3E-05
ICU utilization	-9.1E-04	3.5E-04	2.57	0.01	-1.6E-03	-2.2E-04
Ventilator needs	1.9E-05	9.2E-06	2.08	0.04	1.1E-06	3.7E-05
Imported COVID cases	-3.2E-06	9.9E-07	3.25	1.0E-03	-5.2E-06	-1.3E-06
COVID exposure/1000 people	6.1E-04	9.6E-04	0.64	0.52	-1.3E-03	2.5E-03
days decreasing ILI cases	-1.7E-04	4.0E-05	4.30	0.00	-2.5E-04	-9.3E-05
COVID death rate	-3.8E-03	4.5E-04	8.51	0.00	-4.7E-03	-3.0E-03
Constant	0.49	0.05	9.96	0.00	0.39	0.58
R-square: within			0.16			
R-square: between			0.03			
R-square: overall			0.08			
Wald chi2(9)			419.31			
Prob > chi2			0.00			
Observations			11900			

Appendix table 4-3 Coefficients of the panel regression model for high population density.

Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
			Miles person			
New cases/1000 people	-2.46	1.39	-1.76	0.08	-5.19	0.27
hospital bed utilization	-0.17	0.07	-2.47	0.01	-0.30	-0.03
Tests done 1000 people	-1.2E-03	1.2E-03	-1.07	0.29	-3.5E-03	1.0E-03
ICU utilization	-0.13	0.04	-3.14	2.0E-03	-0.20	-0.05
Ventilator needs	1.9E-04	6.2E-04	0.31	0.76	-1.0E-03	1.4E-03
Imported COVID cases	3.0E-04	4.7E-05	6.44	0.00	2.1E-04	3.9E-04
COVID exposure/1000 people	0.55	0.08	7.01	0.00	0.39	0.70
days decreasing ILI cases	0.02	3.0E-03	5.43	0.00	0.01	0.02
COVID death rate	-0.11	0.03	-3.71	0.00	-0.17	-0.05
Constant	45.31	3.82	11.88	0.00	37.83	52.79
R-square: within			0.41			
R-square: between			0.19			
R-square: overall			0.36			
Wald chi2(9)			1337.07			
Prob > chi2			0.00			
Observations			11900			

Appendix table 4-4 Coefficients of the panel regression model for high population density.

Variables		Out of state trips				
	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.37	0.23	2.59	0.01	-0.82	0.09
hospital bed utilization	-7.4E-04	0.01	0.05	0.96	-0.03	0.03
Tests done 1000 people	-6.2E-04	1.9E-04	3.22	1.0E-03	-1.0E-03	-2.4E-04
ICU utilization	-0.01	0.01	2.05	0.04	-0.02	-5.6E-04
Ventilator needs	1.1E-04	8.7E-05	1.31	0.19	-5.7E-05	2.8E-04
Imported COVID cases	3.7E-05	1.0E-05	3.65	0.00	1.7E-05	5.6E-05
COVID exposure/1000 people	0.01	0.01	1.21	0.23	-0.01	0.03
days decreasing ILI cases	9.1E-04	4.4E-04	2.09	0.04	5.9E-05	1.8E-03
COVID death rate	-0.01	0.01	2.52	0.01	-0.03	-3.2E-03
Constant	8.43	1.53	5.52	0.00	5.44	11.42
R-square: within			0.07			
R-square: between			0.20			
R-square: overall			0.05			
Wald chi2(9)			79.31			
Prob > chi2			0.00			
Observations			11900			

Appendix table 4-5 Coefficients of the panel regression model for high population density.

Variables		Working from home				
	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	10.78	3.89	2.77	0.01	3.16	18.41
hospital bed utilization	-0.06	0.11	-0.52	0.60	-0.26	0.15
Tests done 1000 people	2.8E-04	2.3E-03	0.12	0.90	-4.3E-03	4.8E-03
ICU utilization	0.12	0.07	1.85	0.06	-0.01	0.25
Ventilator needs	-3.1E-03	1.4E-03	-2.25	0.02	-0.01	-4.0E-04
Imported COVID cases	4.9E-04	1.3E-04	3.91	0.00	2.5E-04	7.4E-04
COVID exposure/1000 people	-0.06	0.15	-0.41	0.68	-0.37	0.24
days decreasing ILI cases	0.04	0.01	6.29	0.00	0.03	0.05
COVID death rate	0.56	0.04	12.79	0.00	0.48	0.65
Constant	17.54	5.96	2.94	3.0E-03	5.85	29.23
R-square: within			0.55			
R-square: between			0.06			
R-square: overall			0.45			
Wald chi2(9)			602.63			
Prob > chi2			0.00			
Observations			11900			

Appendix table 5-1 Coefficients of the panel regression model for low median income.

			Non-work trips person			
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	1.7E-04	0.08	0.0E+00	1.00	-0.16	0.16
hospital bed utilization	-0.03	4.5E-03	-6.31	0.00	-0.04	-0.02
Tests done 1000 people	4.3E-04	7.5E-05	5.76	0.00	2.9E-04	5.8E-04
ICU utilization	-3.7E-03	2.3E-03	-1.66	0.10	-0.01	6.8E-04
Ventilator needs	8.1E-05	4.9E-05	1.65	0.10	-1.5E-05	1.8E-04
Imported COVID cases	1.0E-05	4.4E-06	2.36	0.02	1.8E-06	1.9E-05
COVID exposure/1000 people	0.01	3.5E-03	4.27	0.00	0.01	0.02
days decreasing ILI cases	7.5E-04	1.7E-04	4.33	0.00	4.1E-04	1.1E-03
COVID death rate	-9.7E-04	1.6E-03	-0.61	0.54	-4.1E-03	2.2E-03
Constant	4.08	0.21	19.64	0.00	3.68	4.49
R-square: within			0.30			
R-square: between			0.16			
R-square: overall			0.21			
Wald chi2(9)			330.02			
Prob > chi2			0.00			
Observations			12376			

Appendix table 5-2 Coefficients of the panel regression model for low median income.

			Work trips person			
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.03	0.01	-2.82	0.01	-0.04	-0.01
hospital bed utilization	9.8E-04	8.9E-04	1.10	0.27	-7.6E-04	2.7E-03
Tests done 1000 people	-2.1E-05	1.9E-05	-1.07	0.28	-5.8E-05	1.7E-05
ICU utilization	-1.8E-03	4.2E-04	-4.33	0.00	-2.6E-03	-9.9E-04
Ventilator needs	3.2E-05	2.1E-05	1.49	0.14	-1.0E-05	7.4E-05
Imported COVID cases	-4.1E-06	9.3E-07	-4.45	0.00	-5.9E-06	-2.3E-06
COVID exposure/1000 people	2.4E-03	6.6E-04	3.58	0.00	1.1E-03	3.6E-03
days decreasing ILI cases	-1.4E-04	3.2E-05	-4.18	0.00	-2.0E-04	-7.2E-05
COVID death rate	-2.9E-03	1.8E-04	-16.58	0.00	-3.3E-03	-2.6E-03
Constant	0.44	0.04	10.23	0.00	0.36	0.52
R-square: within			0.11			
R-square: between			0.00			
R-square: overall			0.08			
Wald chi2(9)			586.56			
Prob > chi2			0.00			
Observations			12376			

Appendix table 5-3 Coefficients of the panel regression model for low median income.

	Miles/person					
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.24	1.42	-0.17	0.87	-3.01	2.54
hospital bed utilization	-0.47	0.06	-7.42	0.00	-0.60	-0.35
Tests done 1000 people	3.0E-03	1.7E-03	1.79	0.07	-2.9E-04	0.01
ICU utilization	0.07	0.05	1.46	0.15	-0.02	0.17
Ventilator needs	1.7E-04	8.9E-04	0.19	0.85	-1.6E-03	1.9E-03
Imported COVID cases	3.9E-04	6.1E-05	6.29	0.00	2.7E-04	5.1E-04
COVID exposure/1000 people	0.27	0.07	3.67	0.00	0.13	0.42
days decreasing ILI cases	0.02	2.4E-03	7.18	0.00	0.01	0.02
COVID death rate	-0.19	0.03	-5.47	0.00	-0.25	-0.12
Constant	59.82	2.92	20.46	0.00	54.09	65.55
R-square: within			0.37			
R-square: between			0.38			
R-square: overall			0.32			
Wald chi2(9)			881.08			
Prob > chi2			0.00			
Observations			12376			

Appendix table 5-4 Coefficients of the panel regression model for low median income.

	Out of state trips					
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.15	0.10	-2.68	0.01	-0.35	0.06
hospital bed utilization	-0.02	0.01	-2.18	0.03	-0.04	-2.0E-03
Tests done 1000 people	-5.8E-04	2.2E-04	-2.66	0.01	-1.0E-03	-1.5E-04
ICU utilization	0.01	4.1E-03	3.23	1.0E-03	0.01	0.02
Ventilator needs	-5.1E-06	1.2E-04	-0.04	0.97	-2.4E-04	2.3E-04
Imported COVID cases	3.8E-05	1.0E-05	3.81	0.00	1.9E-05	5.8E-05
COVID exposure/1000 people	0.01	0.01	0.66	0.51	-0.01	0.02
days decreasing ILI cases	6.9E-04	4.2E-04	1.66	0.10	-1.3E-04	1.5E-03
COVID death rate	-0.02	3.0E-03	-5.15	0.00	-0.02	-0.01
Constant	6.68	0.65	10.26	0.00	5.40	7.95
R-square: within			0.05			
R-square: between			0.13			
R-square: overall			0.09			
Wald chi2(9)			85.91			
Prob > chi2			0.00			
Observations			12376			

Appendix table 5-5 Coefficients of the panel regression model for low median income.

Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
			Working from home			
New cases/1000 people	4.18	1.90	2.19	0.03	0.44	7.91
hospital bed utilization	-0.26	0.16	-1.67	0.10	-0.56	0.05
Tests done 1000 people	4.1E-03	4.0E-03	1.03	0.30	-3.7E-03	0.01
ICU utilization	0.44	0.08	5.46	0.00	0.28	0.59
Ventilator needs	-4.8E-03	4.0E-03	-1.20	0.23	-0.01	3.1E-03
Imported COVID cases	8.3E-04	1.8E-04	4.65	0.00	4.8E-04	1.2E-03
COVID exposure/1000 people	-0.35	0.14	-2.41	0.02	-0.63	-0.07
days decreasing ILI cases	0.04	0.01	5.70	0.00	0.02	0.05
COVID death rate	0.48	0.04	13.49	0.00	0.41	0.55
Constant	26.13	7.17	3.64	0.00	12.08	40.18
R-square: within			0.50			
R-square: between			2.2E-03			
R-square: overall			0.40			
Wald chi2(9)			732.99			
Prob > chi2			0.00			
Observations			12376			

Appendix table 6-1 Coefficients of the panel regression model for high median income.

Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
			Non-work trips person			
New cases/1000 people	-0.26	0.08	-3.09	2.0E-03	-0.42	-0.09
hospital bed utilization	-0.01	3.3E-03	-3.14	2.0E-03	-0.02	-3.9E-03
Tests done 1000 people	5.4E-05	6.3E-05	0.86	0.39	-7.0E-05	1.8E-04
ICU utilization	-0.01	1.9E-03	-3.93	0.00	-0.01	-3.7E-03
Ventilator needs	5.5E-06	2.7E-05	0.21	0.84	-4.6E-05	5.7E-05
Imported COVID cases	1.2E-05	3.9E-06	3.03	2.0E-03	4.1E-06	1.9E-05
COVID exposure/1000 people	0.03	0.01	5.33	0.00	0.02	0.04
days decreasing ILI cases	8.3E-04	1.7E-04	4.95	0.00	5.0E-04	1.2E-03
COVID death rate	1.4E-03	1.2E-03	1.09	0.28	-1.1E-03	3.8E-03
Constant	3.35	0.18	18.27	0.00	2.99	3.71
R-square: within			0.31			
R-square: between			0.09			
R-square: overall			0.26			
Wald chi2(9)			686.98			
Prob > chi2			0.00			
Observations			11900			

Appendix table 6-2 Coefficients of the panel regression model for high median income.

Variables	Work trips person					
	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.03	0.03	1.02	0.31	-0.10	0.03
hospital bed utilization	7.4E-04	5.9E-04	1.26	0.21	-4.1E-04	1.9E-03
Tests done 1000 people	-6.4E-06	1.4E-05	0.47	0.64	-3.3E-05	2.1E-05
ICU utilization	-1.0E-03	4.2E-04	2.45	0.01	-1.9E-03	-2.0E-04
Ventilator needs	2.2E-05	1.1E-05	1.97	0.05	8.0E-08	4.4E-05
Imported COVID cases	-3.4E-06	1.0E-06	3.30	1.0E-03	-5.4E-06	-1.4E-06
COVID exposure/1000 people	8.6E-04	9.3E-04	0.92	0.36	-9.7E-04	2.7E-03
days decreasing ILI cases	-1.6E-04	3.7E-05	4.45	0.00	-2.3E-04	-9.1E-05
COVID death rate	-3.9E-03	4.2E-04	9.24	0.00	-4.7E-03	-3.1E-03
Constant	0.49	0.05	9.85	0.00	0.39	0.59
R-square: within			0.16			
R-square: between			0.09			
R-square: overall			0.07			
Wald chi2(9)			526.09			
Prob > chi2			0.00			
Observations			11900			

Appendix table 6-3 Coefficients of the panel regression model for high median income.

Variables	Miles person					
	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-3.53	1.41	-2.51	0.01	-6.29	-0.78
hospital bed utilization	-0.19	0.08	-2.49	0.01	-0.33	-0.04
Tests done 1000 people	-8.1E-04	1.2E-03	-0.65	0.52	-3.2E-03	1.6E-03
ICU utilization	-0.09	0.04	-2.26	0.02	-0.16	-0.01
Ventilator needs	-1.7E-04	8.1E-04	-0.20	0.84	-1.8E-03	1.4E-03
Imported COVID cases	3.1E-04	5.0E-05	6.21	0.00	2.1E-04	4.1E-04
COVID exposure/1000 people	0.51	0.08	6.35	0.00	0.35	0.67
days decreasing ILI cases	0.02	3.6E-03	4.90	0.00	0.01	0.02
COVID death rate	-0.15	0.03	-4.78	0.00	-0.21	-0.09
Constant	46.98	4.21	11.17	0.00	38.73	55.22
R-square: within			0.41			
R-square: between			0.35			
R-square: overall			0.40			
Wald chi2(9)			1280.09			
Prob > chi2			0.00			
Observations			11900			

Appendix table 6-4 Coefficients of the panel regression model for high median income.

		Out of state trips				
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	-0.34	0.20	1.65	0.10	-0.74	0.06
hospital bed utilization	-3.6E-04	0.01	0.03	0.98	-0.03	0.03
Tests done 1000 people	-6.4E-04	2.0E-04	3.13	2.0E-03	-1.0E-03	-2.4E-04
ICU utilization	-0.01	0.01	1.91	0.06	-0.03	3.6E-04
Ventilator needs	1.0E-04	1.1E-04	0.96	0.34	-1.1E-04	3.1E-04
Imported COVID cases	3.7E-05	9.8E-06	3.74	0.00	1.7E-05	5.6E-05
COVID exposure/1000 people	0.01	0.01	1.13	0.26	-0.01	0.03
days decreasing ILI cases	1.0E-03	4.8E-04	2.14	0.03	8.4E-05	2.0E-03
COVID death rate	-0.02	0.01	2.82	0.01	-0.03	-4.9E-03
Constant	8.64	1.49	5.81	0.00	5.73	11.56
R-square: within			0.07			
R-square: between			0.20			
R-square: overall			0.05			
Wald chi2(9)			87.52			
Prob > chi2			0.00			
Observations			11900			

Appendix table 6-5 Coefficients of the panel regression model for high median income.

		Working from home				
Variables	Coefficient	Robust Standard Error	t	P	95% Confidence Interval	
New cases/1000 people	9.78	3.54	2.76	0.01	2.84	16.72
hospital bed utilization	-0.06	0.11	-0.52	0.60	-0.27	0.16
Tests done 1000 people	7.4E-04	2.3E-03	0.33	0.74	-3.7E-03	0.01
ICU utilization	0.15	0.08	2.00	0.05	3.3E-03	0.30
Ventilator needs	-3.9E-03	1.7E-03	-2.31	0.02	-0.01	-5.8E-04
Imported COVID cases	5.4E-04	1.3E-04	4.24	0.00	2.9E-04	8.0E-04
COVID exposure/1000 people	-0.12	0.15	-0.78	0.44	-0.42	0.18
days decreasing ILI cases	0.04	0.01	6.39	0.00	0.03	0.05
COVID death rate	0.57	0.04	14.62	0.00	0.49	0.64
Constant	17.59	5.98	2.94	3.0E-03	5.86	29.32
R-square: within			0.55			
R-square: between			0.06			
R-square: overall			0.45			
Wald chi2(9)			716.02			
Prob > chi2			0.00			
Observations			11900			