SUPPLEMENT TO "THE UNEQUAL EFFECTS OF POLLUTION ON LABOR SUPPLY"

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APPENDIX A: SUPPLEMENTAL APPENDIX TABLES

TABLE A.I

NONLINEAR EFFECT OF PM 2.5 ON LABOR SUPPLY.

	Daily Hours Worked			
	(1)	(2)	(3)	(4)
Hours Above WHO	0.001	−0.003	−0.020	−0.160
PM 2.5 Threshold	(0.001)	(0.001)	(0.002)	(0.010)
WHO Threshold	AQG	IT3	IT2	IT1
N	2,227,363	2,227,363	2,227,363	2,227,363
R2	0.284	0.284	0.284	0.285

Note: Standard errors clustered by locality in parenthesis. Results of estimating (2) for the number of hours above the WHO air quality threshold for PM 2.5. A separate regression is run for each threshold.

TABLE A.II

THE EFFECT OF PM 2.5 ON WORKED DAY.

	Day Worked						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Hours Above PM2.5	−0.019	−0.019	−0.020	−0.020	−0.020	−0.024	−0.037
IT1 Threshold	(0.001)	(0.001)	(0.001)	(0.001)	(0.008)	(0.002)	(0.001)
Method	Baseline	Occupation Controls	HH FE	Individual FE	IV	Weekdays	Peak Season
N	2,227,363	2,227,363	2,227,355	2,227,328	2,220,112	1,589,914	156,076
R2	0.331	0.337	0.383	0.426	0.326	0.039	0.328

Note: Standard errors clustered by locality in parenthesis. Column (1) shows the baseline specification, equation ((2)). Column (2) includes type of job and position, formality status, and sector of employment as additional controls. Column (3) adds household fixed effects. Column (4) adds individual fixed effects. Column (5) is the IV specification, which instruments for PM 2.5 with wind speed. Column (6) shows the baseline specification in the sample of weekdays, Monday to Friday. Column (7) shows the baseline specification in the first 4 weeks of the year,which is the peak pollution season.

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TABLE A.III

INCOME DISTRIBUTION.

Decile	Average income	Ratio to Decile 1
1	1093	1.00
2	2248	2.06
3	2912	2.66
4	3462	3.17
5	3992	3.65
6	4570	4.18
7	5326	4.87
8	6284	5.75
9	8303	7.60
10	18,377	16.81

Note: In 2011, the average exchange rate was around 12.50 Mexican Pesos per US Dollar. In the same year, the monthly minimum wage was around 1500 Mexican Pesos.

TABLE A.IV

THE UNEQUAL RESPONSE TO POLLUTION BY INCOME LEVEL: QUINTILES AND MINIMUM WAGE.

	Top and Bottom Quintiles		≤ 1 & > 5 MW	
	(1)	(2)	(3)	(4)
Hours Above PM2.5	−0.314	−0.206	−0.324	−0.220
IT1 Threshold	(0.014)	(0.022)	(0.019)	(0.021)
Low Income ×	0.094	0.076	0.133	0.097
Hours Above IT1	(0.018)	(0.020)	(0.022)	(0.022)
Specification	Peak Season	Weekdays	Peak Season	Weekdays
N	43,738	442,949	28,138	308,006
R2	0.307	0.215	0.372	0.310

Note: Standard errors clustered at the locality level.

TABLE A.V

ROBUSTNESS OF HETEROGENEOUS DYNAMIC EFFECTS.

	(1)	(2)	(3)	(4)
Same Day Hours Above	−0.106	−0.159	−0.094	−0.163
PM2.5 IT1 Threshold	(0.010)	(0.014)	(0.014)	(0.014)
1-Day Lag Hours Above	0.018	0.027	0.019	0.034
PM2.5 IT1 Threshold	(0.007)	(0.008)	(0.010)	(0.009)
2-Day Lag Hours Above	0.016	0.027	0.006	0.030
PM2.5 IT1 Threshold	(0.008)	(0.009)	(0.010)	(0.011)
3-Day Lag Hours Above	0.015	0.031	0.024	0.026
PM2.5 IT1 Threshold	(0.008)	(0.007)	(0.010)	(0.008)
4-Day Lag Hours Above	0.010	0.036	0.022	0.036
PM2.5 IT1 Threshold	(0.009)	(0.007)	(0.010)	(0.009)
5-Day Lag Hours Above	0.015	0.004	0.003	0.008
PM2.5 IT1 Threshold	(0.008)	(0.007)	(0.011)	(0.009)
Sum of Lags	−0.032	−0.035	−0.021	−0.029
Standard Error of Lags	0.029	0.030	0.040	0.034
Sample	Bottom Quintile	Top Quintile	≤ 1 MW	<5 MW
N	324,195	293,669	210,756	219,269
R2	0.127	0.419	0.111	0.471

Note: Standard errors clustered at the locality level.

TABLE A.VI

ALTERNATIVE PLACES OF WORK.

	Place of Work		
	(1) Work from Home	(2) Changing Workplace	(3) Fixed Workplace
Hours Above PM2.5	−0.192	−0.192	−0.170
IT1 Threshold	(0.062)	(0.032)	(0.016)
Characteristic ×	0.131	0.145	0.075
Hours Above IT1	(0.070)	(0.036)	(0.027)
Characteristic	Bottom Decile	Bottom Decile	Bottom Decile
N	21,818	79,610	188,455
R2	0.350	0.258	0.467

Note: Standard errors clustered at the locality level.

TABLE A.VII

EFFECT OF PM 2.5 ON LABOR SUPPLY BY AGE GROUP.

	Daily Hours Worked by Age Group				
	(1) Up to 24	(2) 25–34	(3) 35–44	(4) 45–54	(5) 55+
Hours Above PM2.5	−0.149	−0.168	−0.162	−0.156	−0.158
IT1 Threshold	(0.011)	(0.011)	(0.013)	(0.015)	(0.012)
N	337,347	563,032	566,201	446,227	314,556
R2	0.212	0.322	0.322	0.315	0.258

Note: Standard errors clustered by locality in parenthesis. Results of estimating (2) for the number of hours above the WHO IT1 air quality threshold for PM 2.5.

TABLE A.VIII

ROBUSTNESS CHECKS.

	Hours Above PM2.5 IT1 Threshold	Daily Hours Worked						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean Wind Speed	−0.108							
	(0.011)							
Hours Above PM2.5 IT1 Threshold		−0.227	−0.455	−0.098	−0.159			0.001
		(0.063)	(0.112)	(0.055)	(0.011)			(0.004)
Lead Hours Above PM2.5 IT1 Threshold					−0.008			
					(0.005)			
Hours Above PM10 IT1 Threshold						−0.082	−0.089	
						(0.009)	(0.010)	
Method	First Stage	IV—Indiv. FE	IV	IV	Lead	PM10	PM10—Indiv. FE	Usual Hours
Sample	Full	Full	Weekdays	Peak Season	Full	Full	Full	Weekdays
N	2,220,112	2,220,076	1,584,712	155,948	2,226,027	2,342,968	2,342,937	152,137
R2	0.199	0.324	0.054	0.258	0.285	0.283	0.475	0.042

Note: Robust standard errors in parenthesis. Column (1) shows the first stage for column (5) in Table III. Columns (2)–(4) use two-stage least squares to instrument PM 2.5 with wind speed. The F-statistic for the specification in column (2) is 1401, for the specification in column (3) is 2487, and in column (4) the F-statistic is 1595. Column (5) adds the 1-day lead of the number of hours above the IT1 threshold to the baseline specification. Columns (6) and (7) use PM 10 in the baseline specification. In column (8), the dependent variable is reported usual daily hours worked and the sample is restricted to weekdays.

APPENDIX B: SUPPLEMENTAL APPENDIX FIGURES

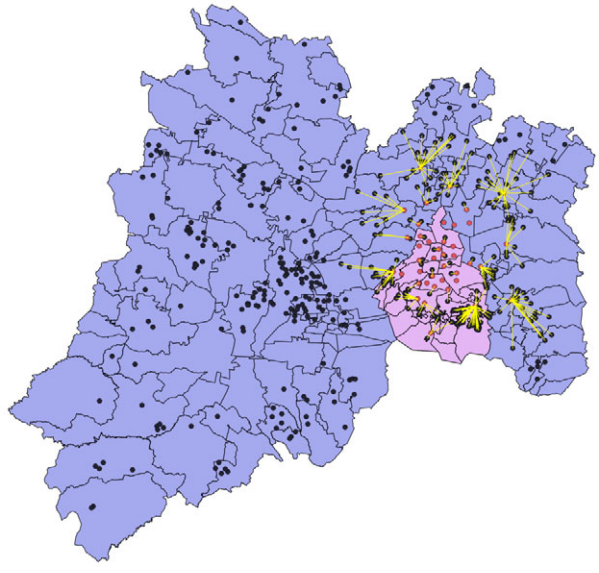

FIGURE B.1.—Monitoring Stations and Sample Localities. Note: Map of Ciudad (pink) and Estado (purple) de Mexico regions. The red dots are air pollution monitoring stations and yellow lines link them to the centroid of the localities that are within 20 km and included in the ENOE sample.

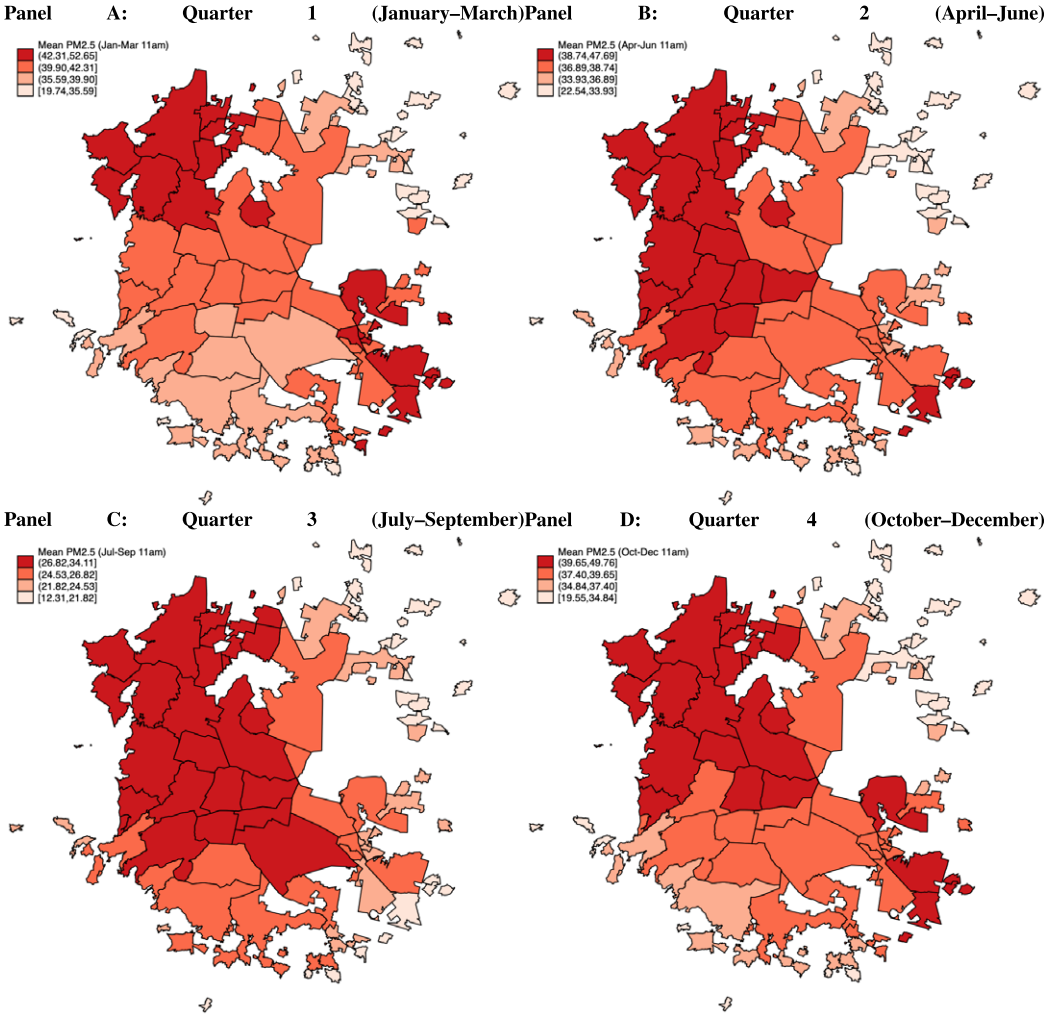

FIGURE B.2.—Quarterly Distribution of PM 2.5 for 2004–2016—Most Populated Localities. Note: Average pollution at 11 am for all days and months in each quarter for years 2004–2016.

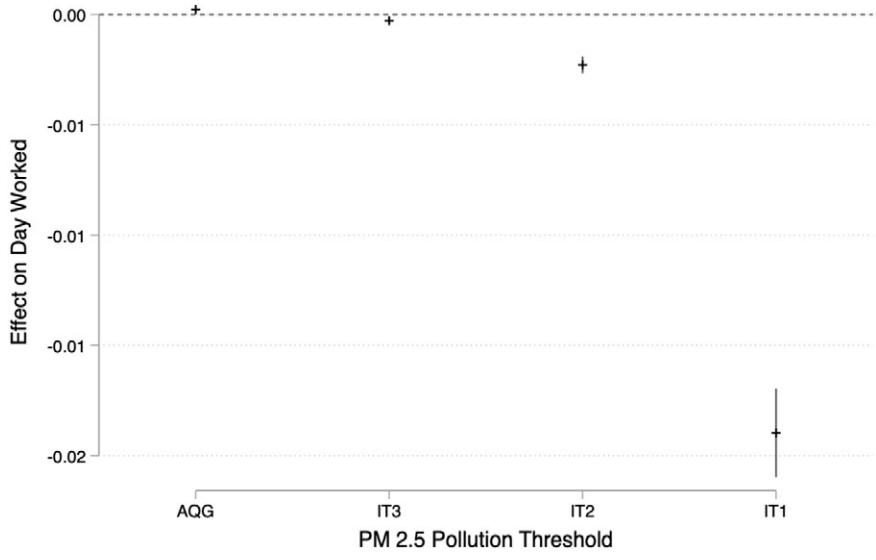

FIGURE B.3.—Daily Number of Hours Above WHO Thresholds and Worked Day. Note: Coefficients and 90% confidence intervals are plotted from equation (2) for the number of hours above the WHO air quality threshold for PM 2.5. A separate regression is run for each threshold.

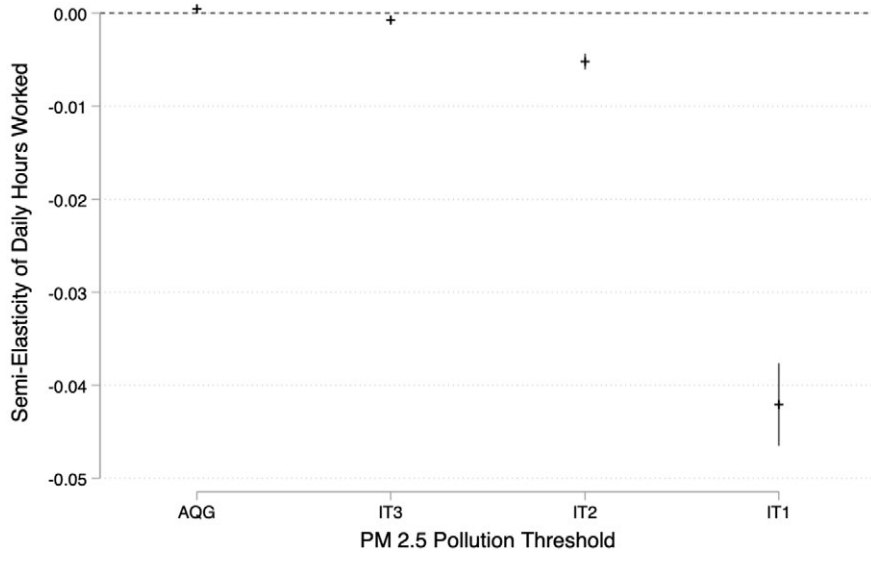

FIGURE B.4.—Semielasticity of Daily Hours Worked to the Number of Hours Above WHO Thresholds. for PM 2.5 Note: Coefficients and 90% confidence intervals are plotted from equation (2) for the number of hours above the WHO air quality threshold for PM 2.5. The outcome variable is the natural logarithm of 1 + daily hours worked. A separate regression is run for each threshold.

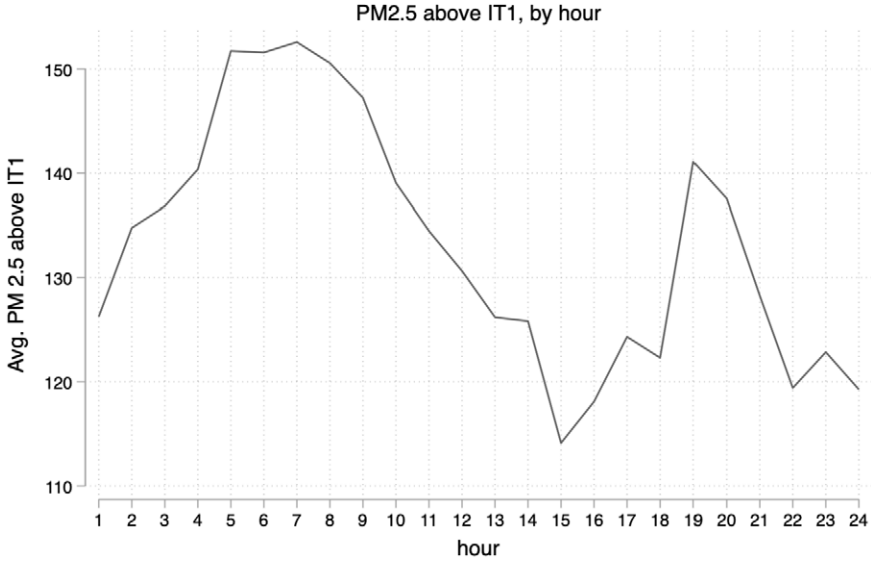

FIGURE B.5.—Hourly Realizations of PM 2.5 Above IT1. Note: Average (across days and localities) PM 2.5 level for observations above the WHO IT1 threshold by hour of the day.

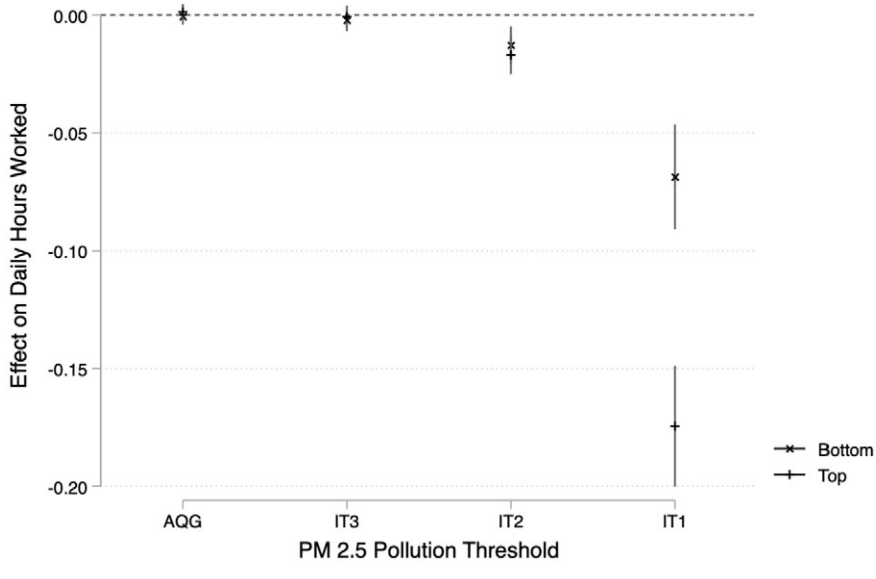

FIGURE B.6.—Daily Number of Hours Above WHO Thresholds and Daily Hours Worked For Top and Bottom Income Deciles. Note: Coefficients and 90% confidence intervals are plotted from equation (2) for the number of hours above the WHO air quality threshold for PM 2.5. A separate regression is run for each threshold and income level.

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