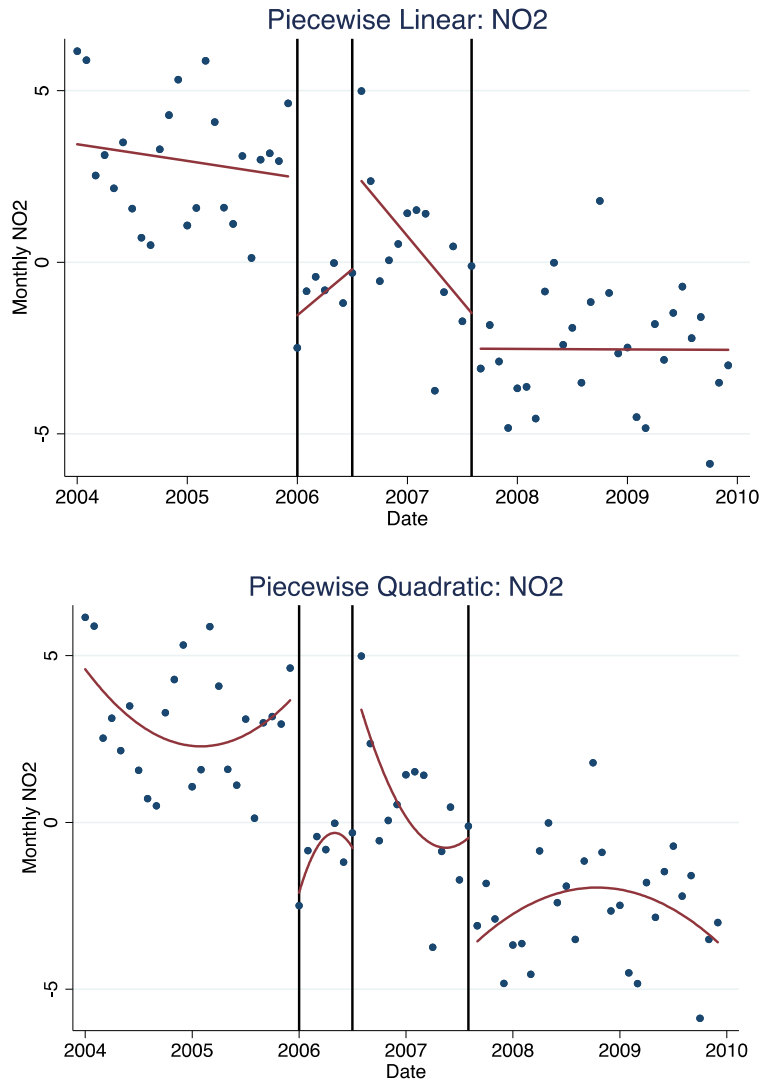Appendix Figure 1: Scatterplot of differences in measured NO2 inside the CPZ and in other central cities by implementation period, with piecewise linear and quadratic regression overlays within each period

Notes: These figures plot the differences in the unadjusted monthly mean NO2 levels inside versus outside the CPZ. The vertical lines indicate the beginning of the trial period, the end of the trial period, and the beginning of the permanent CPZ implementation. Red lines represent linear and quadratic regression overlays within each time period.

Appendix Figure 2: Scatterplot of differences in measured PM10 inside the CPZ and in other central cities by implementation period, dropping an outlying observation in the preperiod
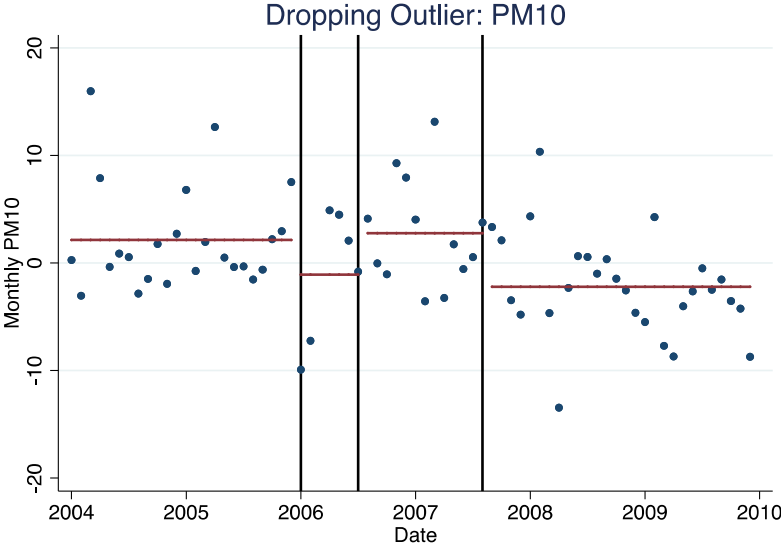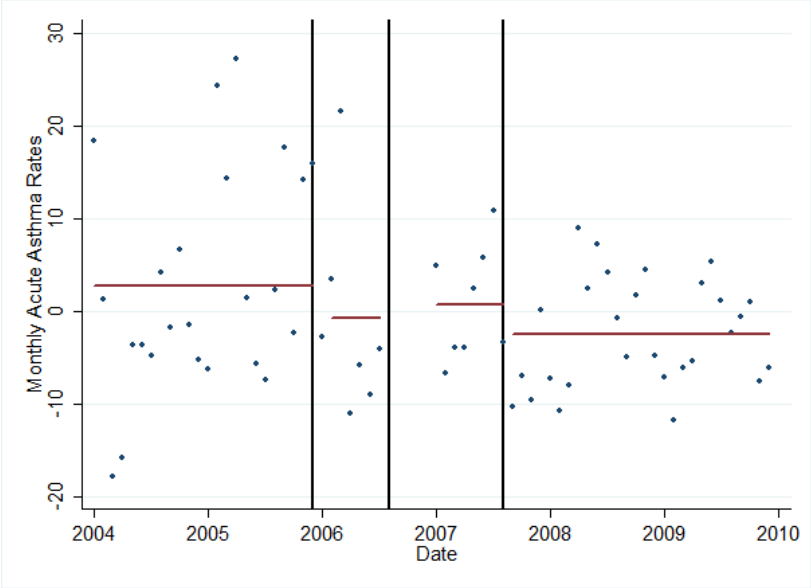

Notes: This figure plots the differences in the unadjusted monthly mean PM10 levels inside versus outside the CPZ. The vertical lines indicate the beginning of the trial period, the end of the trial period, and the beginning of the permanent CPZ implementation. Red horizontal lines represent the mean value within each period.

Appendix Figure 3: Asthma differences inside CPZ versus other central cities for children younger than six-months old only. First six months of the in-between period are omitted

Notes: This figure plots the differences in the unadjusted monthly mean asthma rates inside versus outside the CPZ for children younger than six-months old only. The vertical lines indicate the beginning of the trial period, the end of the trial period, and the beginning of the permanent CPZ implementation. Red horizontal lines represent the mean value within each period.

Appendix Tables

Appendix Table 1: Effects of Congestion Pricing on Ambient Air Pollution – Continuously Operating Monitors Only

	(1)	(2)	(3)	(4)
	PM10	PM10	NO2	NO2
CPZ*Trial	-2.721	-3.434	-2.292	-3.149
	(1.03)	(1.29)	(1.394)	(1.458)
	{0.017}	{0.016}	{0.05}	{0.0438}
	[0.004]	[0.79]	[0.004]	[0.007]
	0.566	0.562	0.378	0.294
CPZ*in between	1.486	-2.426	-1.034	-2.203
	(0.598)	(0.665)	(1.141)	(0.942)
	{0.023}	{0.002}	{0.376}	{0.030}
	[0.758]	[0.08]	[0.427]	[0.007]
	0.400	0.356	0.470	0.299
CPZ*Perm	-2.741	-2.772	-3.235	-3.942
	(0.719)	(0.749)	(1.719)	(1.902)
	{0.003}	{0.002}	{0.075}	{0.052}
	[0.805]	[0.834]	[0.69]	[.007]
	0.430	0.503	0.500	0.451
Month * year FE	*	*	*	*
Municipal FE	*	*	*	*
Region * month FE		*		*
Weather controls		*		*
Municipality*weather		*		*
Observations	903	903	1,000	1,000
Adjusted R-squared	0.70	0.86	0.85	0.89
Mean of Dep Var	19.19	19.19	18.54	18.54
Clusters	20	20	20	20

Notes: Each column presents estimates from a separate regression, relating the variable indicated in the column heading to indicator variables describing the phases of the CPZ implementation and whether the monitor is in the CPZ region. Monitor-level data are aggregated at the municipality-month level. Weather controls include: total rainfall in the month, minimum and maximum temperatures, and mean wind speed during the month. Analytic weights are based on the number of observations per municipality and are applied to all regressions. For each regression coefficient, we present the coefficient estimate, the standard error (in parentheses) and three sets of *p*-values. Analytical *p*-values appear in curvy brackets. They are clustered at the municipality level. Permutation-based *p*-values appear in square brackets and are estimated using 500 permutations of treatment assignment across municipalities and time (in six-month cells). To estimate the wild bootstrap *p*-values we used Rademacher weights and 999 replications. Bootstrap clustering is by municipality.

Appendix Table 2: Demographic Controls as the Dependent Variables.

Dependent Variable:	(1) Log N children	(2) Social Assistance	(3) College	(4) Log income
CPZ*Trial	0.030	-0.005	-0.004	0.016
	(0.003)	(0.001)	(0.001)	(0.006)
	{0.000}	{0.000}	{0.000}	{0.006}
	[0.000]	[0.000]	[0.000]	[0.000]
CPZ*in between	0.051	-0.008	-0.002	0.009
	(0.004)	(0.001)	(0.001)	(0.006)
	{0.000}	{0.000}	{0.050}	{0.116}
	[0.000]	[0.000]	[0.006]	[0.000]
CPZ*Permanent	0.123	-0.011	0.001	0.006
	(0.006)	(0.001)	(0.002)	(0.006)
	{0.000}	{0.000}	{0.453}	{0.315}
	[0.000]	[0.000]	[0.640]	[0.000]
Observations	7,416	7,416	7,416	7,416
R-squared	0.981	0.999	0.996	0.997
Mean of Dep Var	7.275	0.038	0.41	7.236
Clusters	103	103	103	103
Month * year FE	*	*	*	*
Municipal FE	*	*	*	*
Region * month FE	*	*	*	*
Weather controls	*	*	*	*
Municipality*weather	*	*	*	*
Calendar month*weather	*	*	*	*

Notes: Columns (1)–(4) present regression results from four separate models, one per column, where the dependent variable is labeled in the column heading. Weather controls include: total rainfall in the month, minimum and maximum temperatures, and mean wind speed during the month. Analytical *p*-values in curvy brackets under the SEs for all estimates. Standard errors under the coefficient are clustered at the municipality level. Permutation-based two-tailed *p*-values appear in square brackets under the analytical *p*-value estimates. Permutation-based *p*-values are estimated using 500 permutations of treatment assignment across municipalities and time (in six-month cells). All regressions use the number of children younger than five years in the municipality as analytic weights.

Appendix Table 3: Demographic Determinants of Asthma.

	(1)
	Asthma rate
Social assistance	47.951
	(91.294)
Ln(Income)	23.089
	(14.63)
College	-47.948
	(47.562)
Observations	7,368
R-squared	0.544
Mean of Dep Var	19.34
Clusters	103
Month * year FE	*
Municipal FE	*
Region * month FE	*
Weather controls	*
Municipality*weather	*
Calendar month*weather	*

Notes: This table presents results relating the asthma rate to observable predictors of asthma using observations outside the CPZ region. We use this predictive model to predict asthma rates as a function of demographics. Weather controls include: total rainfall in the month, minimum and maximum temperatures, and mean wind speed during the month. For each regression coefficient, we present the coefficient estimate and the standard error. Standard errors are clustered at the municipality level.

Appendix Table 4: Asthma Rates in Children Older Than Five

	(1) Ages 6–18
CPZ*Trial	-0.054
	(0.970)
	{0.960}
	[0.010]
CPZ*in between	-0.284
	(1.471)
	{0.850}
	[0.59]0
CPZ*Perm	-1.448
	(2.393)
	{0.550}
	[0.01]
Month * year FE	*
Municipal FE	*
Region * month FE	*
Weather controls	*
Municipality*weather	*
Calendar month*weather	*
Observations	7,416
R-squared	0.496
Mean of Dep Var	3.336
Clusters	103

Notes: The model corresponds to Model 2 in Table 3. Demographic controls are included in all specifications and include: the log of mean income, the proportion of mothers on social support, and the proportion of mothers with a college education. Month-by-year fixed effects and municipality fixed effects are included in all specifications. Weather controls include: total rainfall in the month, minimum and maximum temperatures, mean wind speed during the month. Standard errors are reported in parentheses under the estimate, clustered on the municipality level. Analytical weights based on the number of children of the associated age group residing in the municipality during the months applied.

Appendix Table 5: Asthma Rates in Children Younger Than Five Years Old, Sensitive to Excluding Weather Interactions

	(1) Full Controls	(2) Weather Only Controls
CPZ*Trial	-2.125	-2.920
	(1.173)	(1.163)
CPZ*in between	-5.680	-6.289
	(1.176)	(1.104)
CPZ*Perm	-9.597	-9.292
	(1.935)	(1.883)
Month * year FE	*	*
Municipal FE	*	*
Region * month FE	*	
Weather controls	*	*
Municipality*weather	*	
Calendar month*weather	*	
Observations	7,416	7,416
R-squared	0.567	0.455
Mean of Dep Var	19.06	19.06
Clusters	103	103

Notes: Each column presents results from a separate regression. Demographic controls are included in all specifications and include: the log of mean income, the proportion of mothers on social support, and the proportion of mothers with a college education. Weather controls include: total rainfall in the month, minimum and maximum temperatures, and mean wind speed during the month. The SEs are clustered at the municipality level. All regressions use the number of children younger than age five in the municipality as weights.