

## **A Appendix**

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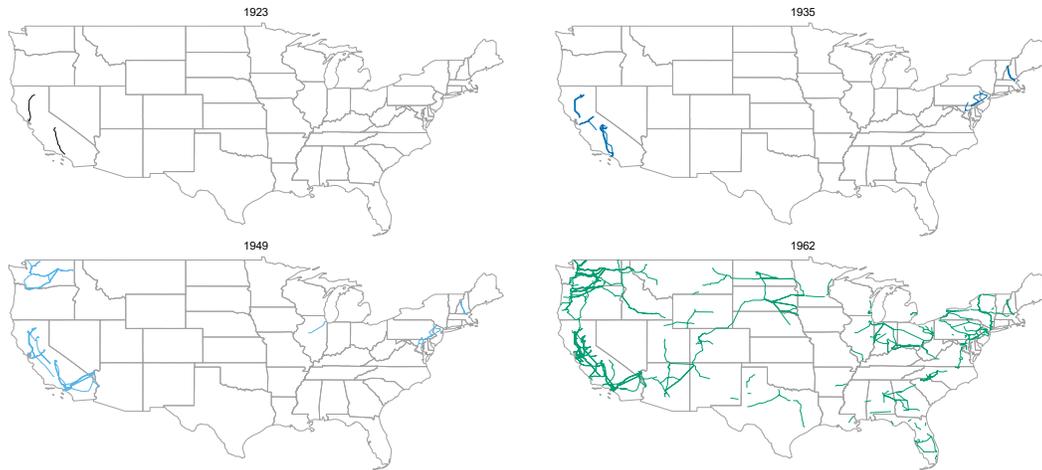
Table A.3 Summary Statistics of First Sitings and Siting Determinants: 1960's – 1980's

Table A.4 Summary Statistics of First Sitings and Siting Determinants: 1990's – 2010's

Table A.5 Siting Determinants by Cohort: 1900's – 1950's

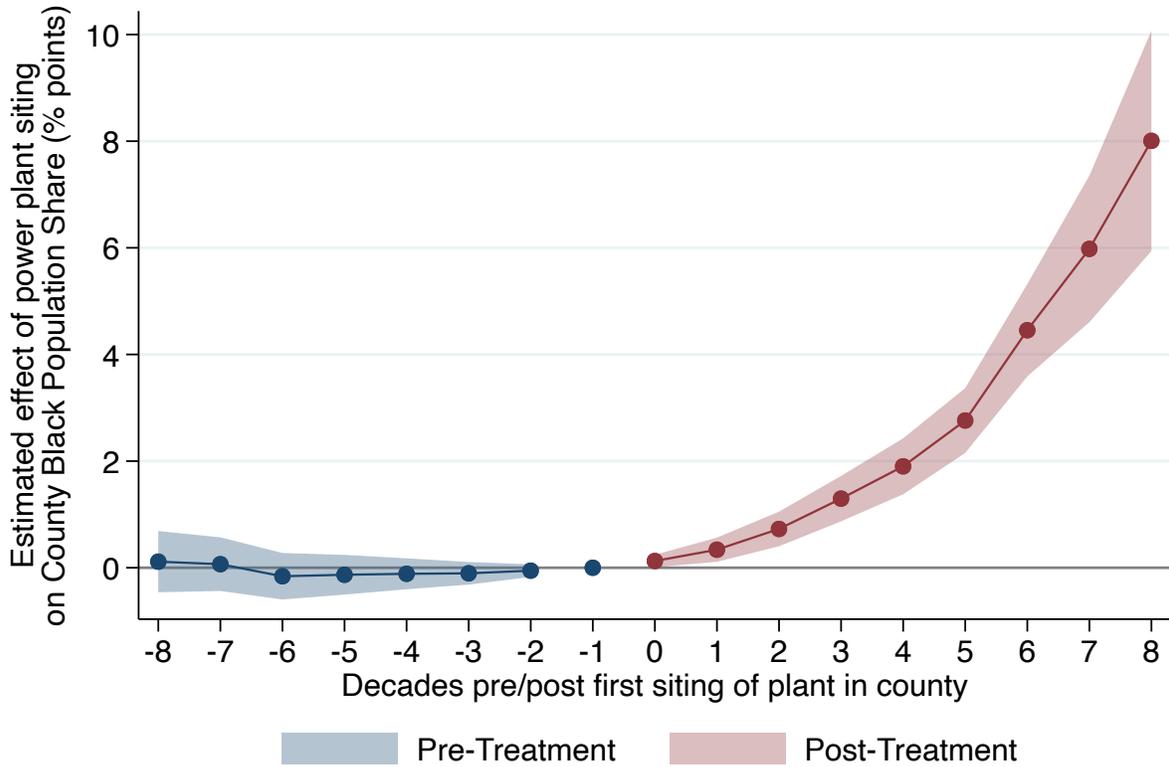
Table A.6 Siting Determinants by Cohort: 1960's – 2020's

Figure A.1: Transmission Lines



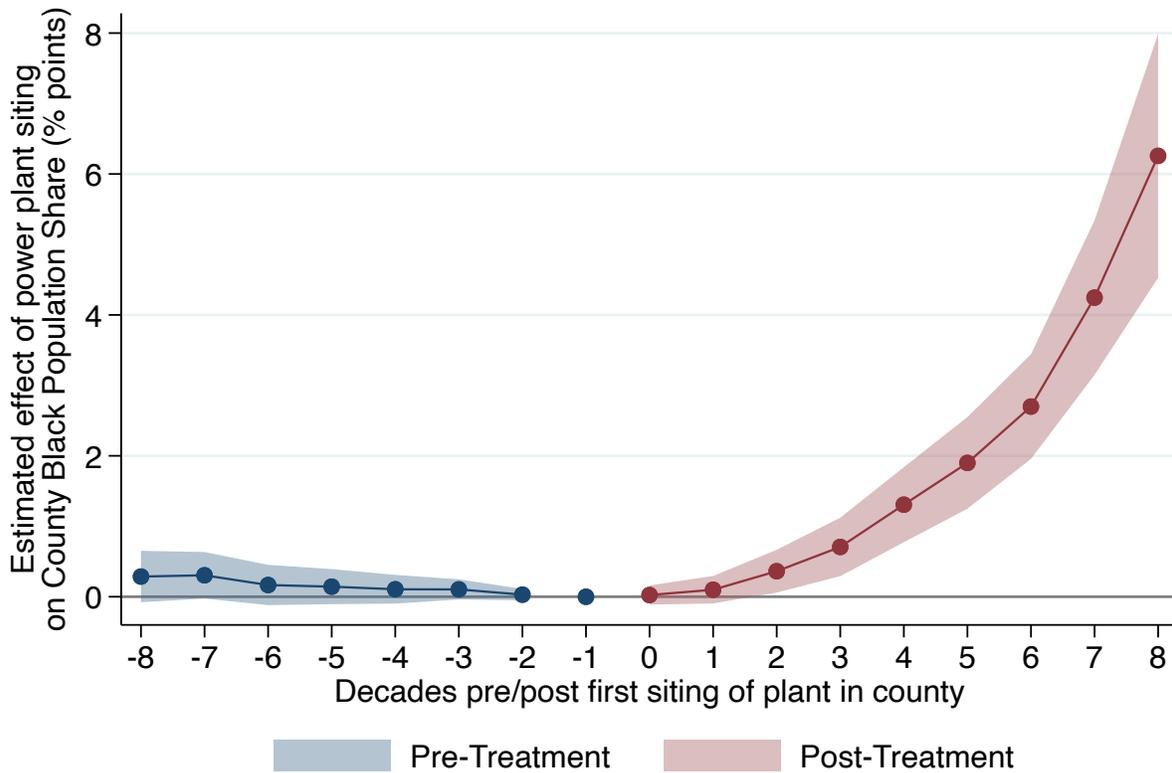
**Notes:** This figure shows transmission lines with the highest voltage level: above 150kV in 1923, 220kV in 1935, 220kV in 1949, and above 188kV in 1965.

Figure A.2: Impacts of First Power Plant Siting on Black Population Share:  
Including Not Yet Treated Counties as Controls



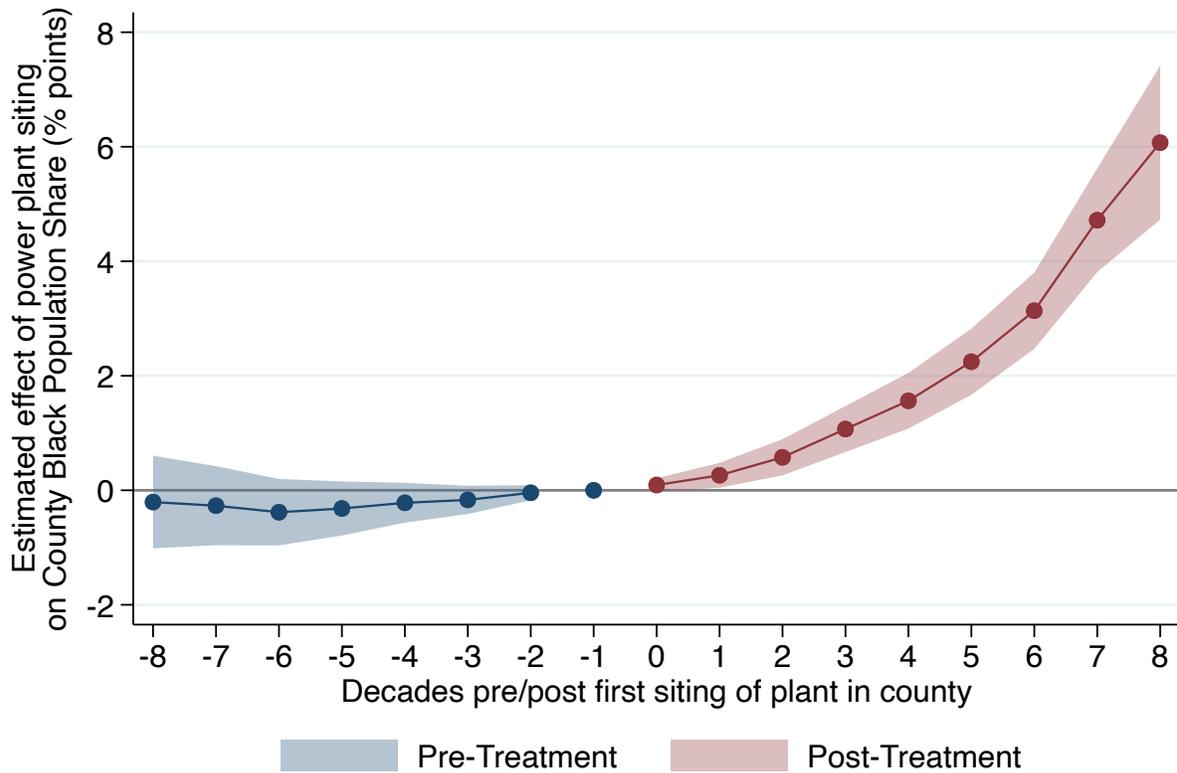
**Notes:** This figure plots event study estimates and 95% confidence intervals of the impacts of the first fossil-fuel plant being built in a county on Black population share. We estimate these event studies using the methodology from Callaway and Sant’Anna (2021), considering both not-yet-treated and never-treated counties as controls. All reported effects are relative to the decade prior to the first plant being built in the county. 95% confidence intervals are based on standard errors that are clustered by county. As a point of reference, the population-weighted average Black population share across counties that ever received a fossil-fuel power plant during our sample period ranges from roughly 8%-13% across sample years.

Figure A.3: Impacts of First Power Plant Siting on Black Population Share:  
Including Census Region by Year Fixed Effects



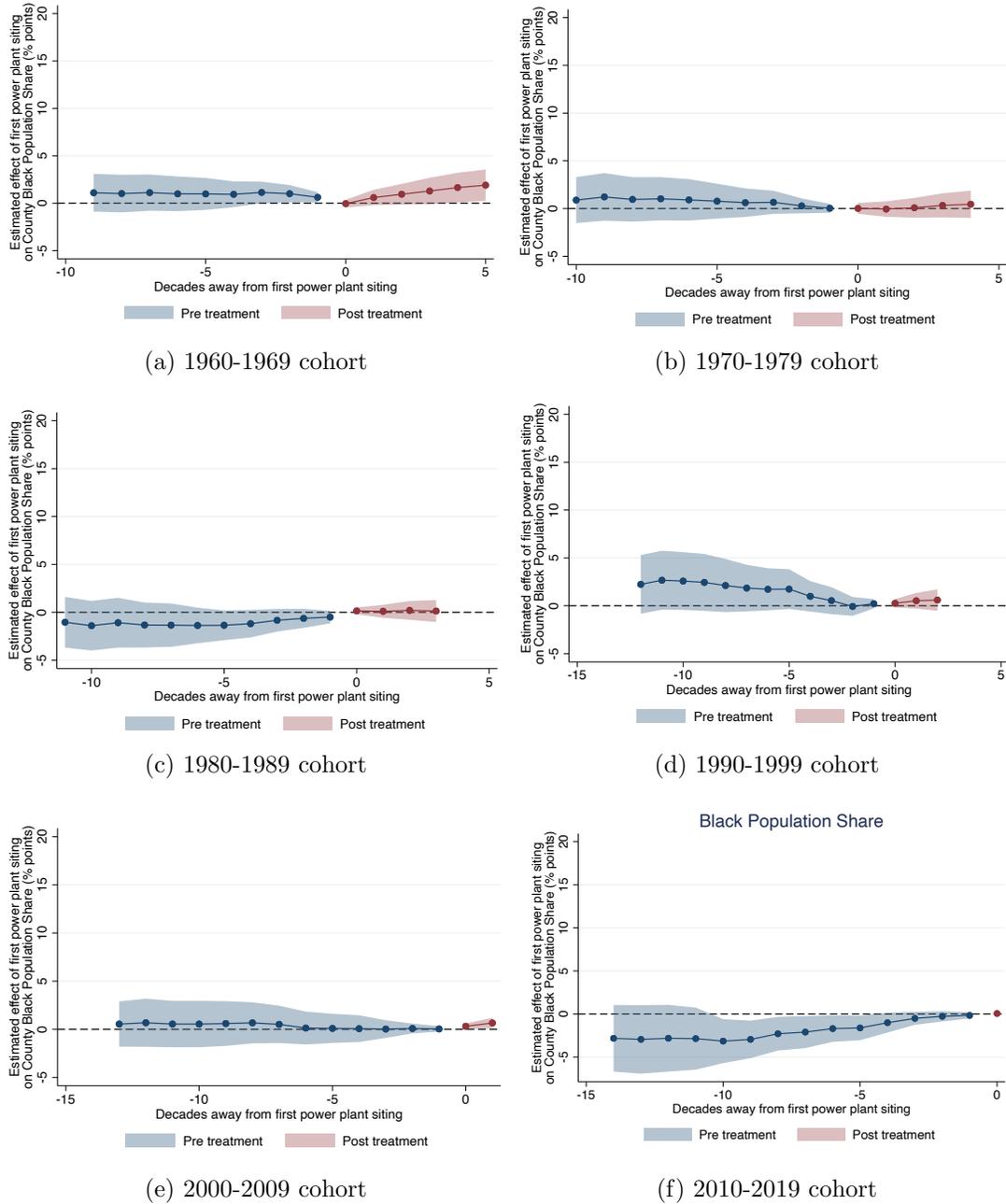
**Notes:** This figure plots event study estimates and 95% confidence intervals of the impacts of the first fossil-fuel plant being built in a county on Black population share. We estimate these event studies using the methodology from Callaway and Sant’Anna (2021), considering only never-treated counties as controls. All reported effects are relative to the decade prior to the first plant being built in the county. 95% confidence intervals are based on standard errors that are clustered by county. As a point of reference, the population-weighted average Black population share across counties that ever received a fossil-fuel power plant during our sample period ranges from roughly 8%-13% across sample years.

Figure A.4: Impacts of First Power Plant Siting on Black Population Share:  
Unbalanced Panel



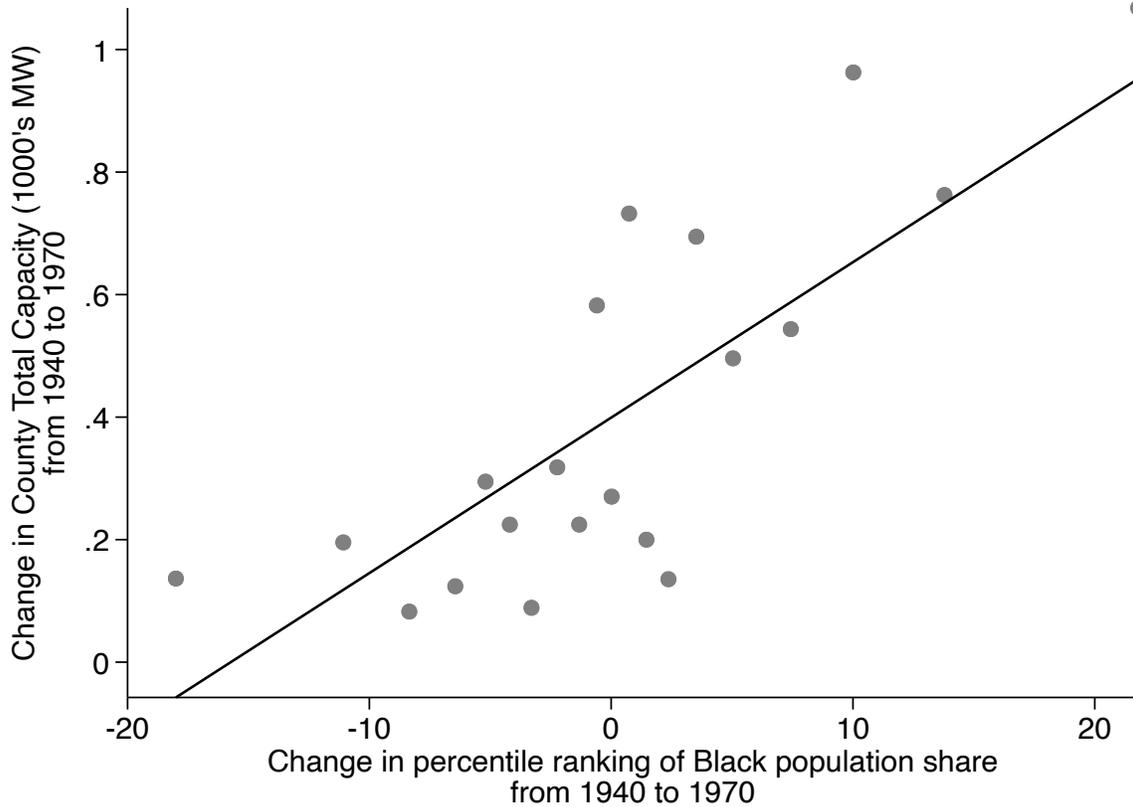
**Notes:** This figure plots event study estimates and 95% confidence intervals of the impacts of the first fossil-fuel plant being built in a county on Black population share. We estimate these event studies using the methodology from Callaway and Sant'Anna (2021), considering only never-treated counties as controls. All reported effects are relative to the decade prior to the first plant being built in the county. 95% confidence intervals are based on standard errors that are clustered by county. As a point of reference, the population-weighted average Black population share across counties that ever received a fossil-fuel power plant during our sample period ranges from roughly 8%-13% across sample years.

Figure A.5: Cohort-Specific Effects of First Power Plant Siting on Black Population Share (1960-2020)



**Notes:** This figure plots event study estimates and 95% confidence intervals of the impacts of the first fossil-fuel plant being built in a county on Black population share. We estimate these event studies using the methodology from Callaway and Sant'Anna (2021), considering only never-treated as controls. All reported effects are relative to the decade prior to the first plant being built in the county. Each panel documents the event study estimates and 95% confidence intervals for a given cohort (e.g., panel (a) reports the estimated effects for counties first hosting a plant between 1960-1969). 95% confidence intervals are based on standard errors that are clustered by county. As a point of reference, the population-weighted average Black population share across counties that ever received a fossil-fuel power plant during our sample period ranges from roughly 8%-13% across sample years.

Figure A.6: Changes in Power Plant Capacity and Black Population Share (Expansions Only)



**Notes:** This figure presents binned scatterplots of county-level changes in fossil-fuel power plant generating capacity on changes in the percentile ranking of counties by share of Black population. We focus only on counties that had fossil-fuel capacity in 1940, and experienced capacity expansion between 1940-1970. Very few counties had active power plants before 1910. Thus, we focus only on 1940-1970, corresponding to the second wave of the Great Migration. Panel A considers all fossil-fuel generating capacity, while Panel B includes only coal-fired capacity.

Figure A.7: Average PM<sub>2.5</sub> Concentration Level in 1980 by Cohort of First Siting



**Notes:** This figure presents the average PM<sub>2.5</sub> concentration level in 1980 across counties that experienced first fossil-fuel plant siting in the listed decade.

Table A.1: Summary Statistics of First Siting and Siting Determinants: 1900's – 1920's

	Treated Counties		Control Counties		Difference	
	Mean	Std. Dev.	Mean	Std. Dev.	Difference	Std. Error
<i>Panel A. 1900's</i>						
County Black Population Share (%)	8.872	14.115	13.725	21.565	-4.853	4.02
County Population (1,000's)	251.945	450.454	13.662	11.795	238.283	11.157
County Employment in Manufacturing (%)	9.201	10.407	1.894	3.406	7.307	0.681
Railroads (mileage, 100's)	1.439	1.36	0.558	0.442	0.881	0.088
Coal Producing County	0.138	0.351	0.074	0.262	0.064	0.049
Low-voltage Transmission in County	0.034	0.186	0.005	0.074	0.029	0.014
Distance to High-voltage Transmission (100 miles)	17.373	6.435	15.04	5.574	2.333	1.047
Number of observations		29		1639		
<i>Panel B. 1910's</i>						
County Black Population Share (%)	5.848	11.869	13.209	21.248	-7.361	3.147
County Population (1,000's)	137.541	161.786	15.672	13.656	121.869	4.438
County Employment in Manufacturing (%)	9.39	6.358	2.143	3.353	7.247	0.518
Railroads (mileage, 100's)	1.529	0.731	0.558	0.442	0.971	0.068
Coal Producing County	0.239	0.431	0.085	0.28	0.154	0.043
Low-voltage Transmission in County	0.043	0.206	0.005	0.074	0.038	0.012
Distance to High-voltage Transmission (100 miles)	18.493	4.875	15.04	5.574	3.453	0.831
Number of observations		46		1639		
<i>Panel C. 1920's</i>						
County Black Population Share (%)	9.768	15.147	12.334	20.194	-2.566	2.21
County Population (1,000's)	110.774	175.434	16.614	15.753	94.16	4.633
County Employment in Manufacturing (%)	7.392	6.337	2.623	4.067	4.769	0.465
Railroads (mileage, 100's)	1.349	0.882	0.558	0.442	0.791	0.052
Coal Producing County	0.174	0.382	0.075	0.264	0.099	0.03
Low-voltage Transmission in County	0.035	0.185	0.005	0.074	0.03	0.009
Distance to High-voltage Transmission (100 miles)	16.463	5.67	15.04	5.574	1.423	0.617
Number of observations		86		1639		

**Notes:** This table presents, for each decade between the 1900's through the 1920's, the mean and standard deviation of the siting determinants. Determinants are lagged by one decade; e.g., for the 1920's, determinants reflect the 1910 values. Values are reported separately for treated counties – those that received their first power plant siting in the decade, and control counties – those that never received a power plant siting. Finally, the difference in means and the standard error of the difference are reported in the final two columns.

Table A.2: Summary Statistics of First Siting and Siting Determinants: 1930's – 1950's

	Treated Counties		Control Counties		Difference	
	Mean	Std. Dev.	Mean	Std. Dev.	Difference	Std. Error
<i>Panel D. 1930's</i>						
County Black Population Share (%)	4.838	11.815	11.726	19.19	-6.888	1.87
County Population (1,000's)	68.182	139.096	17.465	18.653	50.717	3.864
County Employment in Manufacturing (%)	4.986	6.275	2.257	3.504	2.729	0.371
Railroads (mileage, 100's)	1.172	0.908	0.558	0.442	0.614	0.048
Coal Producing County	0.12	0.327	0.087	0.281	0.033	0.028
Low-voltage Transmission in County	0.028	0.165	0.005	0.074	0.023	0.008
Distance to High-voltage Transmission (100 miles)	15.344	5.37	15.04	5.574	0.304	0.553
Number of observations		108		1639		
<i>Panel E. 1940's</i>						
County Black Population Share (%)	6.756	14.546	11.283	18.777	-4.527	1.366
County Population (1,000's)	43.871	54.09	18.446	20.119	25.425	1.942
County Employment in Manufacturing (%)	3.335	3.751	2.032	3.23	1.303	0.245
Railroads (mileage, 100's)	0.974	0.569	0.558	0.442	0.416	0.034
Coal Producing County	0.108	0.312	0.104	0.305	0.004	0.023
Low-voltage Transmission in County	0.108	0.312	0.033	0.179	0.075	0.015
Distance to High-voltage Transmission (100 miles)	6.935	3.319	6.58	3.207	0.355	0.24
Number of observations		203		1639		
<i>Panel F. 1950's</i>						
County Black Population Share (%)	8.245	13.925	10.674	17.959	-2.429	1.166
County Population (1,000's)	46.977	69.705	19.202	24.396	27.775	2.29
County Employment in Manufacturing (%)	4.641	5.015	3.172	4.071	1.469	0.281
Railroads (mileage, 100's)	0.912	0.689	0.558	0.442	0.354	0.032
Coal Producing County	0.158	0.365	0.109	0.311	0.049	0.021
Low-voltage Transmission in County	0.1	0.301	0.048	0.214	0.052	0.015
Distance to High-voltage Transmission (100 miles)	3.928	2.333	3.96	2.258	-0.032	0.151
Number of observations		260		1639		

**Notes:** This table presents, for each decade between the 1930's through the 1950's, the mean and standard deviation of the siting determinants. Determinants are lagged by one decade; e.g., for the 1920's, determinants reflect the 1910 values. Values are reported separately for treated counties – those that received their first power plant siting in the decade, and control counties – those that never received a power plant siting. Finally, the difference in means and the standard error of the difference are reported in the final two columns.

Table A.3: Summary Statistics of First Siting and Siting Determinants: 1960's – 1980's

	Treated Counties		Control Counties		Difference	
	Mean	Std. Dev.	Mean	Std. Dev.	Difference	Std. Error
<i>Panel G. 1960's</i>						
County Black Population Share (%)	10.45	17.357	10.445	17.462	0.005	1.475
County Population (1,000's)	51.423	88.767	20.427	30.259	30.996	3.282
County Employment in Manufacturing (%)	4.821	4.532	3.841	4.151	0.98	0.354
Railroads (mileage, 100's)	0.909	0.675	0.558	0.442	0.351	0.039
Coal Producing County	0.137	0.345	0.087	0.282	0.05	0.024
Low-voltage Transmission in County	0.085	0.28	0.048	0.214	0.037	0.019
Distance to High-voltage Transmission (100 miles)	3.363	2.366	3.96	2.258	-0.597	0.192
Number of observations		153		1639		
<i>Panel H. 1970's</i>						
County Black Population Share (%)	9.771	14.764	9.727	16.047	0.044	1.51
County Population (1,000's)	73.012	178.436	22.255	37.145	50.757	5.549
County Employment in Manufacturing (%)	5.981	3.135	5.962	3.245	0.019	0.306
Railroads (mileage, 100's)	0.843	0.622	0.558	0.442	0.285	0.043
Coal Producing County	0.067	0.25	0.07	0.254	-0.003	0.024
Low-voltage Transmission in County	0.517	0.502	0.333	0.471	0.184	0.045
Distance to High-voltage Transmission (100 miles)	0.534	0.563	0.654	0.549	-0.12	0.052
Number of observations		120		1639		
<i>Panel I. 1980's</i>						
County Black Population Share (%)	11.203	16.297	8.826	15.3	2.377	1.645
County Population (1,000's)	116.332	197.138	26.207	43.304	90.125	6.624
County Employment in Manufacturing (%)	8.564	4.576	8.018	5.278	0.546	0.562
Railroads (mileage, 100's)	0.883	0.485	0.558	0.442	0.325	0.048
Coal Producing County	0.12	0.326	0.075	0.264	0.045	0.029
Low-voltage Transmission in County	0.63	0.485	0.333	0.471	0.297	0.051
Distance to High-voltage Transmission (100 miles)	0.478	0.48	0.654	0.549	-0.176	0.058
Number of observations		92		1639		

**Notes:** This table presents, for each decade between the 1960's through the 1980's, the mean and standard deviation of the siting determinants. Determinants are lagged by one decade; e.g., for the 1920's, determinants reflect the 1910 values. Values are reported separately for treated counties – those that received their first power plant siting in the decade, and control counties – those that never received a power plant siting. Finally, the difference in means and the standard error of the difference are reported in the final two columns.

Table A.4: Summary Statistics of First Siting and Siting Determinants: 1990's – 2010's

	Treated Counties		Control Counties		Difference	
	Mean	Std. Dev.	Mean	Std. Dev.	Difference	Std. Error
<i>Panel J. 1990's</i>						
County Black Population Share (%)	12.897	15.902	8.692	15.155	4.205	1.588
County Population (1,000's)	80.295	100.44	28.357	50.097	51.938	5.656
County Employment in Manufacturing (%)	9.872	4.587	7.937	5.155	1.935	0.536
Railroads (mileage, 100's)	0.966	0.663	0.558	0.442	0.408	0.048
Coal Producing County	0.062	0.242	0.074	0.263	-0.012	0.027
Low-voltage Transmission in County	0.536	0.501	0.333	0.471	0.203	0.049
Distance to High-voltage Transmission (100 miles)	0.408	0.455	0.654	0.549	-0.246	0.057
Number of observations		97		1639		
<i>Panel K. 2000's</i>						
County Black Population Share (%)	9.075	13.585	8.737	15.185	0.338	1.378
County Population (1,000's)	63.285	75.116	32.741	59.566	30.544	5.562
County Employment in Manufacturing (%)	8.384	4.509	6.95	4.429	1.434	0.406
Railroads (mileage, 100's)	0.811	0.47	0.558	0.442	0.253	0.041
Coal Producing County	0.085	0.28	0.063	0.244	0.022	0.023
Low-voltage Transmission in County	0.488	0.502	0.333	0.471	0.155	0.043
Distance to High-voltage Transmission (100 miles)	0.522	0.492	0.654	0.549	-0.132	0.05
Number of observations		129		1639		
<i>Panel L. 2010's</i>						
County Black Population Share (%)	7.7	13.407	8.708	15.078	-1.008	2.248
County Population (1,000's)	110.15	177.618	36.176	67.708	73.974	10.889
County Employment in Manufacturing (%)	1.389	2.487	0.45	1.572	0.939	0.24
Railroads (mileage, 100's)	0.904	0.643	0.558	0.442	0.346	0.067
Coal Producing County	0.087	0.285	0.059	0.235	0.028	0.035
Low-voltage Transmission in County	0.478	0.505	0.333	0.471	0.145	0.071
Distance to High-voltage Transmission (100 miles)	0.423	0.366	0.654	0.549	-0.231	0.081
Number of observations		46		1639		

**Notes:** This table presents, for each decade between the 1990's through the 2010's, the mean and standard deviation of the siting determinants. Determinants are lagged by one decade; e.g., for the 1920's, determinants reflect the 1910 values. Values are reported separately for treated counties – those that received their first power plant siting in the decade, and control counties – those that never received a power plant siting. Finally, the difference in means and the standard error of the difference are reported in the final two columns.

Table A.5: Siting Determinants by Cohort: 1900's – 1950's

	(1)	(2)	(3)	(4)	(5)	(6)
	1900's	1910's	1920's	1930's	1940's	1950's
County Black Population (%)	-0.003 (0.012)	-0.020 (0.023)	-0.024 (0.027)	-0.031 (0.054)	0.052 (0.053)	0.014 (0.050)
County Population (millions)	0.455** (0.152)	0.389*** (0.090)	0.762** (0.249)	0.523* (0.207)	1.469** (0.472)	1.695*** (0.469)
County Employment in Manufacturing (%)	0.072 (0.056)	0.190** (0.072)	0.186* (0.093)	0.437** (0.133)	0.473* (0.219)	0.314 (0.211)
Railroads (mileage, 100s)	0.013** (0.004)	0.024*** (0.006)	0.051*** (0.012)	0.054*** (0.011)	0.062*** (0.017)	0.082*** (0.018)
Coal Producing County	0.004 (0.008)	0.011 (0.008)	0.014 (0.013)	-0.011 (0.019)	-0.030 (0.026)	0.050* (0.024)
Low-voltage Transmission in County	-0.026 (0.014)	0.018 (0.013)	0.005 (0.035)	0.024 (0.041)	0.050 (0.032)	0.022 (0.032)
Distance to High-voltage Transmission (100 miles)	-0.000 (0.001)	-0.000 (0.001)	-0.001 (0.002)	-0.004 (0.002)	0.008** (0.003)	0.020*** (0.004)
Number of observations	1,668	1,685	1,725	1,747	1,842	1,899
Census Region FE	YES	YES	YES	YES	YES	YES

**Notes:** This table presents, for each decade between the 1900's and 1950's, the estimated impact of Black population share and other potential siting determinants in the prior decade on the probability that the county receives its first fossil-fuel power plant in the current decade. Only never-treated counties and counties treated in the current decade are included in the estimating sample. Effects are estimated via separate binomial logit regressions for each decade, with average marginal effects reported. Each binomial logit regression includes census-region fixed effects.

Table A.6: Siting Determinants by Cohort: 1960's – 2010's

	(1)	(2)	(3)	(4)	(5)	(6)
	1960's	1970's	1980's	1990's	2000's	2010's
County Black Population (%)	0.101*	0.031	0.110**	0.069*	0.014	-0.002
	(0.043)	(0.044)	(0.035)	(0.034)	(0.046)	(0.036)
County Population (millions)	0.550***	0.343***	0.278***	0.188**	0.167**	0.086**
	(0.148)	(0.093)	(0.053)	(0.065)	(0.064)	(0.033)
County Employment in Manufacturing (%)	-0.038	-0.191	0.101	0.283**	0.513***	-0.042
	(0.181)	(0.184)	(0.103)	(0.108)	(0.142)	(0.208)
Railroads (mileage, 100s)	0.060***	0.041***	0.018	0.056***	0.055***	0.018*
	(0.013)	(0.012)	(0.010)	(0.011)	(0.013)	(0.008)
Coal Producing County	0.035	-0.005	0.035*	-0.014	0.018	0.005
	(0.022)	(0.025)	(0.017)	(0.021)	(0.023)	(0.014)
Low-voltage Transmission in County	-0.015	0.022	0.032**	0.022	0.026	0.000
	(0.029)	(0.014)	(0.012)	(0.012)	(0.014)	(0.009)
Distance to High-voltage Transmission (100 miles)	0.000	-0.016	-0.001	-0.038*	-0.020	-0.017*
	(0.004)	(0.013)	(0.011)	(0.016)	(0.013)	(0.008)
Number of observations	1,792	1,759	1,731	1,736	1,768	1,685
Census Region FE	YES	YES	YES	YES	YES	YES

**Notes:** This table presents, for each decade between the 1960's and 2010's, the estimated impact of Black population share and other potential siting determinants in the prior decade on the probability that the county receives its first fossil-fuel power plant in the current decade. Only never-treated counties and counties treated in the current decade are included in the estimating sample. Effects are estimated via separate binomial logit regressions for each decade, with average marginal effects reported. Each binomial logit regression includes census-region fixed effects.

## B Further details on Callaway-Sant’Anna methodology

In Callaway and Sant’Anna (2021), the cohort-time average treatment effect on the treated ( $ATT(c, t)$ ) is a key component of their methodology:  $ATT(c, t) = E[Y_{i,t}(c) - Y_{i,t}(\infty) | C_i = c]$ , which represents the average treatment effect at time  $t$  for the cohort first treated in decade  $c$ .  $ATT(1950, 1990)$ , for instance, would measure the average treatment effect in 1990 for counties that first received a fossil-fuel power plant as of 1950. For clarity, we use a county-decade panel covering the years 1870-2020. A county is defined as treated in every decade following the first decade in which it receives a fossil-fuel power plant. For example, if a county receives its first fossil-fuel power plant in 1945, it is considered first treated in 1950 and remains treated in all subsequent decades. Our primary dependent variable is Black population share.

Under staggered versions of the parallel trends and no anticipation assumptions,  $ATT(c, t)$  can be identified by comparing the expected change in outcomes for cohort  $c$  between periods  $c - 1$  and  $t$  to that of a comparison group  $C_{comp}$  that has never been treated. Formally, for all  $c' \in C_{comp}$ :

$$ATT(c, t) = E[Y_{i,t} - Y_{i,c-1} | C_i = c] - E[Y_{i,t} - Y_{i,c-1} | C_i \in C_{comp}]. \quad (3)$$

The corresponding estimator replaces expectations with their sample analogs:

$$\widehat{ATT}(c, t) = \frac{1}{N_c} \sum_{i:C_i=c} [Y_{i,t} - Y_{i,c-1}] - \frac{1}{N_{C_{comp}}} \sum_{i:C_i \in C_{comp}} [Y_{i,t} - Y_{i,c-1}], \quad (4)$$

where the comparison group in our case includes only never-treated units ( $C_{comp} = \{\infty\}$ ).

When there are many treatment cohorts and periods, reporting all  $\widehat{ATT}(c, t)$  estimates may be cumbersome, and individual estimates may be imprecise. However, the method naturally extends to estimating weighted averages of  $ATT(c, t)$ , which help summarize treatment effects over time. One such parameter of interest, which we adopt, is an “event-study” measure that represents the weighted average treatment effect  $m$  decades from first siting across different cohorts:

$$ATT_m = \sum_c w_c ATT(c, c + m), \quad (5)$$

where the weights  $w_c$  are assigned to ensure equal weighting across cohorts or to reflect their relative frequencies in the treated population.

The key distinction between the methodology specified in Callaway and Sant’Anna (2021)

and traditional “two-way fixed effects” estimates of the difference-in-differences effect is that the latter includes comparisons in which counties that are already treated are utilized as “controls” (i.e. the role played by never-treated counties in Equation 2). The event study estimates from the methodology specified in Callaway and Sant’Anna (2021) do not include such comparisons.