Supplementary Material (Appendix) for Online Publication: "Land-Use Regulations, Property Values, and Rents: Decomposing the Effects of the California Coastal Act"

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Sample Construction

Data were selected from all sales of properties multifamily commercial buildings in CoStar, between 1989 and 2014 (roughly 1,000 sales per year) within approximately 10 miles of the coast in the five Southern California counties: Los Angeles, Orange, San Diego, Santa Barbara, Ventura. Data are trimmed to exclude non-arm's-length sales and portfolio sales. Observations are excluded if they violate quality criteria: (i) if buildings have less the 500 total square feet, (ii) if the sales price is more than $20,000 per square foot, (iii) if there are more than 20 acres of attached land, (iv) if there are zero acres of land, (v) if the sale price is 0, or (vi) if the lot area and building area imply a building height of more than fifteen stories and we were unable to verify that height.

Delineating the Restricted Sample

The restricted sample is constructed by geographically delimiting the observations included in the full sample. The authors manually inspected the boundary to locate sections of the boundary that appeared to have reasonable support on both sides of the regulation. That is, we selected locations that had similar numbers of observations on either side of the boundary that were relatively close to each other. There is some degree of arbitrariness in this selection, as sections were selected based only on visible appearance. In the restricted sample, the nearest control unit to a treated unit within 1,000 feet of the CZB is on average 1,058 feet. This relatively small geographic distance suggests that this method worked reasonably well.

The total effect is approximately equal to the sum of the local and external effects

We show that to a first-order approximation, there is a linear relationship between the three effects derived in Section 3. The amenity, neighbor effect, and management costs at x' are given by $A(x', s)$, $N(x', s)$, and $C(x', s)$. Take a first-order Taylor series expansion of Equation (1) at these values to obtain:

$$\begin{aligned} P(x,t) \approx P(x',t) + \int_t^\infty \{ & R_A(A(x',s), N(x',s))(A(x,s) - A(x',s)) \\ & + R_N(A(x',s), N(x',s))(N(x,s) - N(x',s)) \\ & - (C(x,s) - C(x',s))\} e^{-r(s-t)} ds \end{aligned}$$

where the subscripts on R denote partial derivatives. Evaluate this expression at x'' and subtract the result from $P(x', t)$ to obtain an approximation of the total effect:

$$\begin{aligned} \textit{Total effect} \approx \int_t^\infty \{ & R_A(A(x',s), N(x',s))(A(x',s) - A(x'',s)) \\ & + R_N(A(x',s), N(x',s))(N(x',s) - N(x'',s)) \\ & - (C(x',s) - C(x'',s))\} e^{-r(s-t)} ds \end{aligned}$$

For the local effect, $R_A(\cdot) = 0$, and so the price difference is given by:

$$\begin{aligned} \textit{Local effect} \approx \int_t^\infty \{ & R_N(A(x',s), N(x',s))(N(x',s) - N(x'',s)) \\ & - (C(x',s) - C(x'',s))\} e^{-r(s-t)} ds \end{aligned}$$

Finally, for the external effect, $R_N(\cdot) = 0$ and $C(x', s) - C(x'', s) = 0$:

$$\textit{External effect} \approx \int_t^\infty \{R_A(A(x',s), N(x',s))(A(x',s) - A(x'',s))\} e^{-r(s-t)} ds$$

It follows from these results that to a first-order approximation, the total effect is equal to the sum of the local and external effects.

Alternative Specifications of the control polynomial for the combined estimator

The other alternative specifications for $f(\text{loc}_i, \cdot)$ are given by:

$$\begin{aligned}
\text{Interacted:} \quad & \zeta_0 Lat_i + \zeta_1 Lon_i + \zeta_2 Lat_i T_i + \zeta_3 Lon_i T_i + \zeta_4 Lat_i B_i + \\
& \zeta_5 Lon_i B_i + \zeta_6 Lat_i T_i B_i + \zeta_7 Lon_i T_i B_i \\
\text{Quadratic:} \quad & \zeta_0 Lat_i + \zeta_1 Lat_i^2 + \zeta_2 Lon_i + \zeta_3 Lon_i^2 + \zeta_4 Lat_i T_i + \\
& \zeta_5 Lat_i^2 T_i + \zeta_6 Lon_i T_i + \zeta_7 Lon_i^2 T_i \\
\text{Cubic:} \quad & \zeta_0 Lat_i + \zeta_1 Lat_i^2 + \zeta_2 Lat_i^3 + \zeta_3 Lon_i + \zeta_4 Lon_i^2 + \zeta_5 Lon_i^3 + \\
& \zeta_6 Lat_i T_i + \zeta_7 Lat_i^2 T_i + \zeta_8 Lat_i^3 T_i + \\
& \zeta_9 Lon_i T_i + \zeta_{10} Lon_i^2 T_i + \zeta_{11} Lon_i^3 T_i
\end{aligned}$$

Specification used to produce Figure A4 (empirical version of Figure 2)

To produce a visual version of our results that corresponds to Figure 2, we run the following specification:

$$\begin{aligned}
\ln(P_{it}) = & \beta_{\text{med. inland}} C_i + \beta_0 B_i + \beta_1 T_i + \beta_2 B_i T_i + \beta_{\text{far seaward}} F_i T_i + \\
& B_i f(T_i, loc_i) + \sum_{m=1}^{M} 1_{i \in m} \phi_m + \sum_{z=1}^{Z} 1_{i \in z} \xi_z + x_i' \gamma + \delta_t + \varepsilon_{it} \qquad \text{(A1)}
\end{aligned}$$

on data that is (i) less than 500 feet or (ii) between 1,000 and 4,000 feet from the CZB. The only difference from Equation 12 are the inclusion of (i) the indicator F_i equal to one if a parcel is more than 2,000 feet from the CZB, and (ii) the indicator C_i equal to one if a parcel is in between 1,000 and ,2000 feet from the CZB. The above specification reports all coefficients relative to the group 2,000 to 4,000 feet inland from the CZB. To facilitate display, effects are placed on the locations in the table below:

Distance from CZB (ft)	Displayed point	T_i	F_i	B_i	Coefficients
$[-4000, -2000)$	-3,000 ft.	1	1	0	-
$[-2000, -1000]$	-1,500 ft.	1	0	0	$\beta_{\text{med. inland}}$
$[-500, 0]$	-50 ft.	1	0	1	β_0
$(0, 500]$	50 ft.	0	0	1	$\beta_0 + \beta_1 + \beta_2$
$[1000, 2000]$	1,500 ft.	0	0	0	β_1
$(2000, 4000]$	3,000 ft.	0	1	0	$\beta_1 + \beta_{\text{far seaward}}$

Results from this regression are displayed in Figure A4 and Table A19.

Guide to Appendix Figures

A1. Detail of multifamily housing units transacted in our sample in the vicinity of Santa Monica, CA

A2. Average price of units across each of the distance groups from the CZB through time

A3. Estimates of the local effect of regulation limited to the sample of parcels that did not switch regulatory status between the initial 1972 regulation and the current boundary

A4. Graphic displaying estimates from a modified version of the combined estimator that corresponds to column (1) of Table 7, except that includes properties up to 4,000 feet from the CZB and allows different external effects for properties 1-2,000 feet from the CZB and properties 2-4,000 feet from the CZB (See Appendix Table A18)

Guide to Appendix Tables

A1. Summary statistics on sample within 4,000 feet of CZB, similar to Table 1

A2. Individual covariate smoothness tests, full sample, some components included in Table 2

A3. Predicted running variable results, some components included in Table 2

A4. Local effect of coastal regulation on sales price, some components included in Table 3

A5. Local effect of coastal regulation on rental income, some components included in Table 4

A6. Local effect of coastal regulation on operating costs and capitalization rate

A7. RDD falsification tests

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A9. Total effect of regulation on prices and rents, some components included in Table 6

A10. Total effect on prices, by distance bin

A11. Combined estimator, full sample, simple linear bins, some components included in Table 7

A12. Combined estimator, prices, alternative specifications

A13. Combined estimator, rents, alternative specifications

A14. Combined estimator, restricted sample, simple linear bins

A15. Combined estimator, full sample built before 1976, simple linear bins

A16. Covariate balance for properties shifting regulatory status

A17. Local effect of coastal regulation on assessed values

A18. Combined estimator extended for visualization (Appendix Figure A4), simple linear bins

Figure A1: Detail of sample in vicinity of Santa Monica

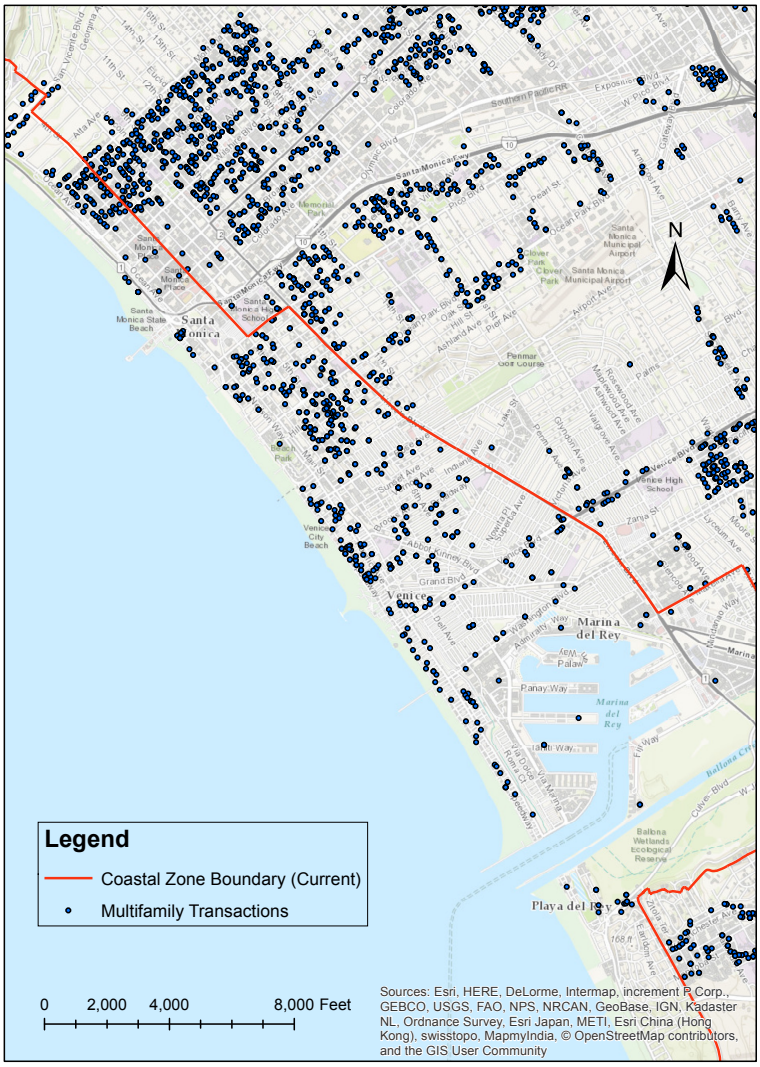
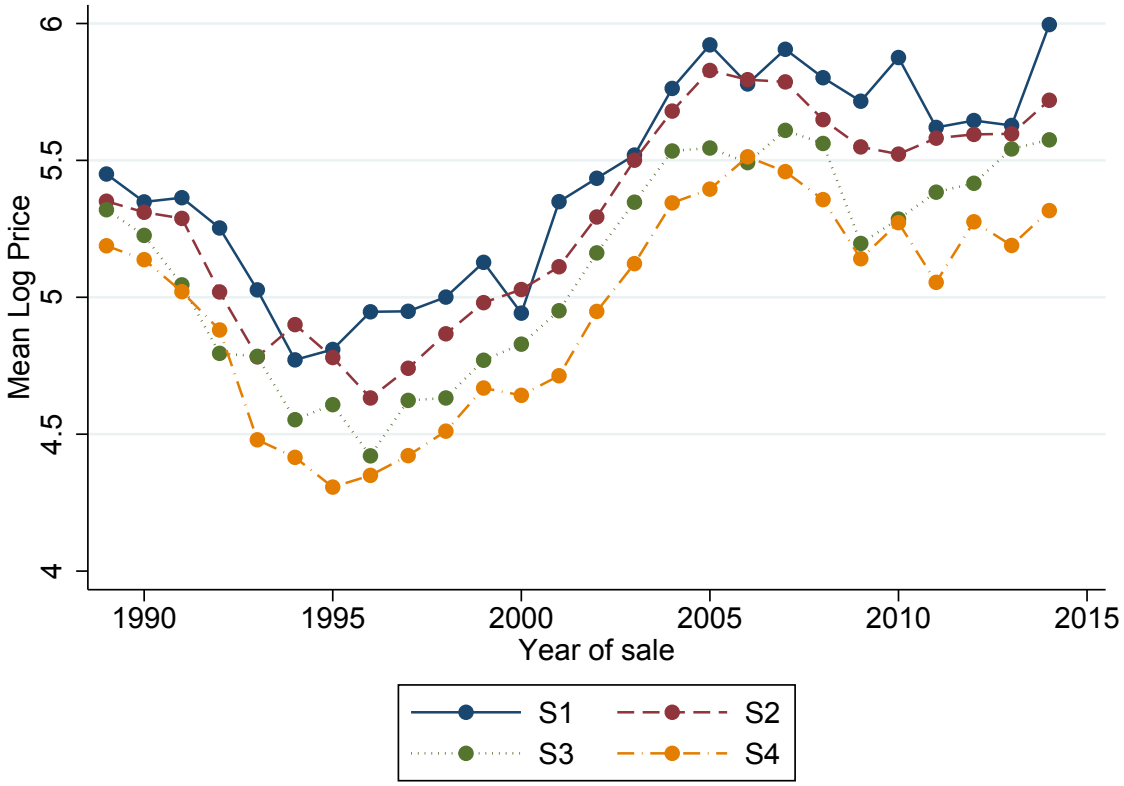


Figure A2: Average price in each area (S1, S2, S3, and S4) by year



S1, S2, S3, and S4 are as defined in Figures 2 and 3 and in the main text, where S1 and S4 consist of all properties at least 2,000 feet away from the CZB but less than 4,000 feet from the CZB, and S2 and S3 consist of all properties within 1,000 feet of the CZB.

Figure A3: Local effect of regulation on properties that did not change regulatory status

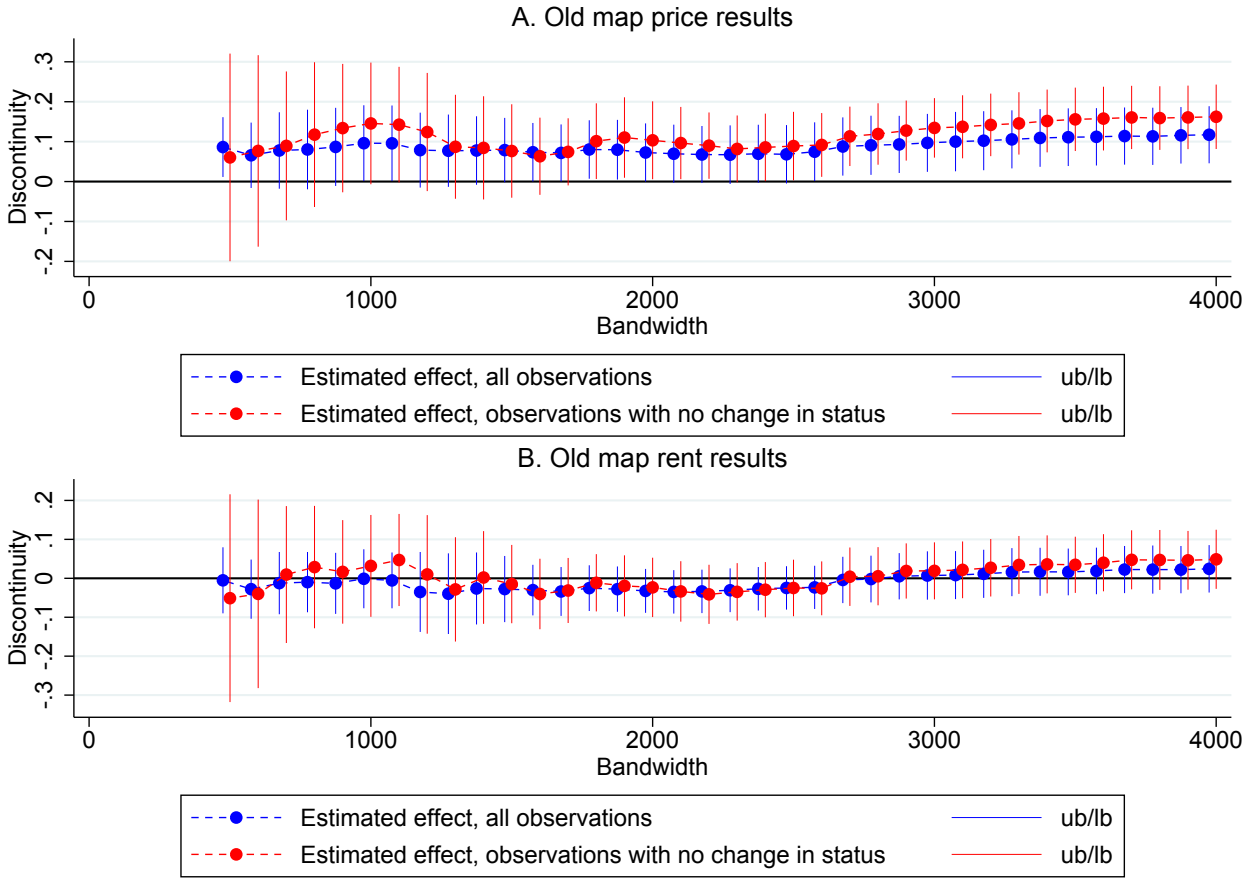


Figure A4: Extended combined effects estimates, plotted over distance from CZB

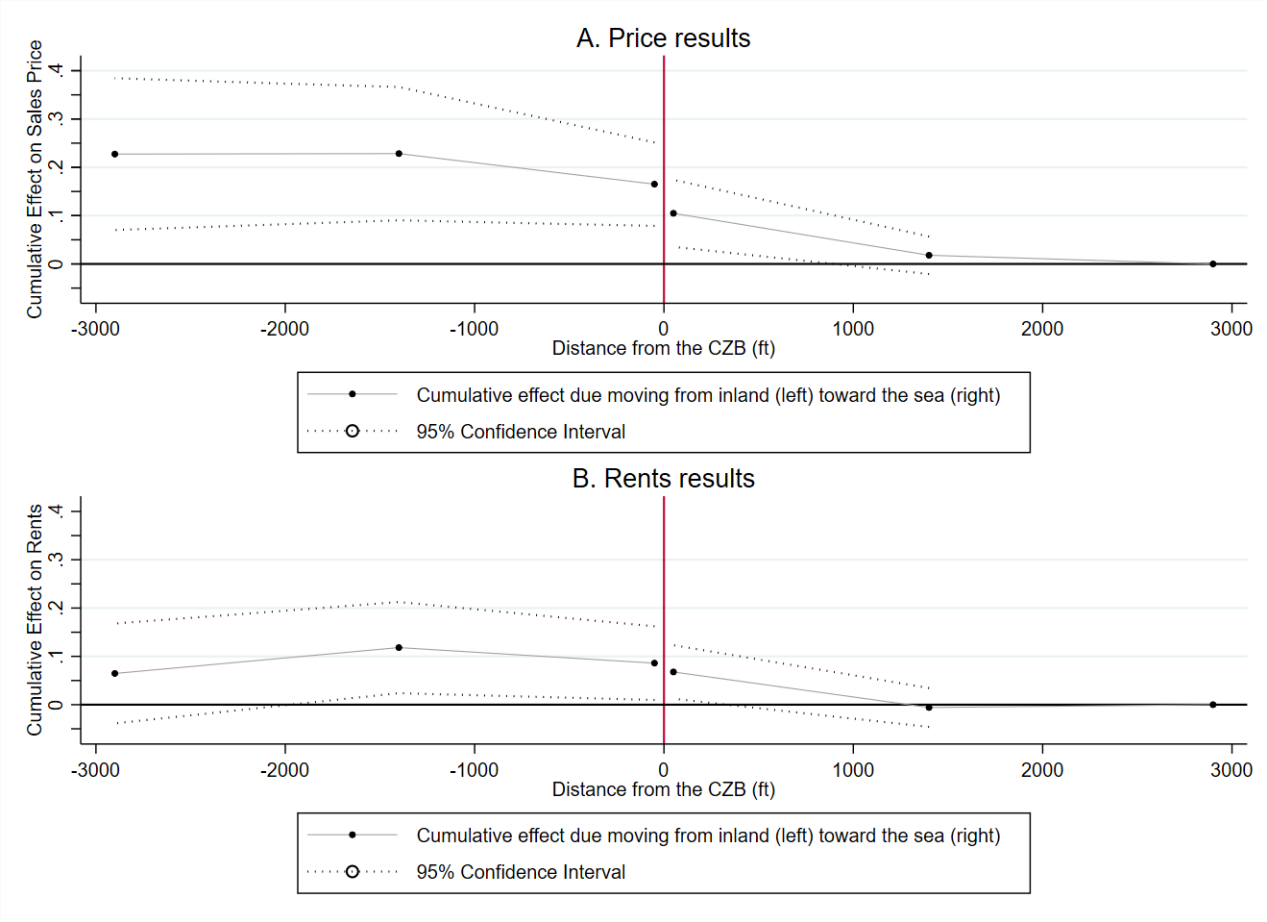


Table A1: Summary statistics on sample within 4,000 feet of CZB

	Regulated		Unregulated	
	Mean	St. Dev.	Mean	St. Dev.
Price per sqft	249.5	[146.5]	171.6	[100.1]
Distance to coast	2,810	[2,926]	7,648	[5,341]
Building sqft	11,345	[18,493]	11,064	[16,721]
Number of units	14.23	[21.13]	13.83	[19.40]
Lot size (sqft)	14,938	[42,692]	15,092	[29,538]
Age at time of sale	59.2	[20.4]	57.2	[22.4]
Elevation	20.89	[16.26]	25.64	[16.42]
Slope	1.80	[1.75]	1.34	[1.47]
% Class A/B	0.119	[0.324]	0.096	[0.295]
N	998		1,502	

Summary statistics and standard deviations (in brackets) for regulated and unregulated properties within 4,000 feet of the CZB.

Table A2: Individual covariate smoothness tests, full sample

	(1)	(2)	(3)	(4)	(5)
Property characteristics					
ln(Building size)	0.230**	0.207**	0.169*	0.067	0.070
	(0.072)	(0.070)	(0.074)	(0.078)	(0.072)
ln(Lot size)	0.130+	0.115+	0.126+	0.012	0.023
	(0.066)	(0.061)	(0.067)	(0.073)	(0.073)
Age	-2.27	1.34	1.81	4.05+	4.58+
	(2.35)	(2.01)	(1.77)	(2.13)	(2.46)
Num. of units	1.81	4.41*	4.00*	2.26	2.49
	(1.34)	(2.13)	(1.96)	(2.00)	(1.82)
Topographic characteristics					
Elevation	0.47	-0.58	-2.78**	-5.69**	-6.61**
	(0.82)	(0.82)	(0.99)	(1.35)	(1.62)
Slope	0.416+	0.337+	0.289+	0.217	0.241
	(0.235)	(0.182)	(0.150)	(0.172)	(0.178)
N	625	1,255	2,496	4,530	7,790
Bandwidth	250 ft.	500 ft.	1,000 ft.	2,000 ft.	4,000 ft.

Each column in each panel is from a separate regression, for thirty total. Estimated coefficients are for the variable T_i denoting treatment from the spatial RDD presented in the text with the characteristic listed as the dependent variable. The sample includes all properties. All models include zip code fixed effects, year of sale fixed effects, and 1,000-foot wide bins in distance to the coast. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A3: Predicted running variable results

	(1)	(2)	(3)	(4)	(5)
Panel A: Predicted latitude, binned coastal distance					
Regulated	-0.0001	0.0002	0.0005	0.0005	0.0005
	(0.0014)	(0.0009)	(0.0009)	(0.0008)	(0.0007)
Panel B: Predicted longitude, binned coastal distance					
Regulated	-0.0009	-0.0011	-0.0013	-0.0016	-0.0009
	(0.0014)	(0.0009)	(0.0010)	(0.0010)	(0.0011)
Panel C: Predicted latitude, log coastal distance					
Regulated	-0.0004	-0.0003	0.0000	0.0002	0.0004
	(0.0014)	(0.0008)	(0.0009)	(0.0006)	(0.0006)
Panel D: Predicted longitude, log coastal distance					
Regulated	-0.0013	-0.0018	-0.0018	-0.0022^{+}	-0.0013
	(0.0014)	(0.0011)	(0.0012)	(0.0013)	(0.0012)
N	631	1,259	2,500	4,539	7,799
Bandwidth	250 ft.	500 ft.	1,000 ft.	2,000 ft.	4,000 ft.

Each column in each panel is from a separate regression, for twenty total. Sample indicated by bandwidth, outcome variables (latitude or longitude) predicted on all properties within 4,000 feet of CZB as described in the text, using covariates (log building size, log lot size, elevation, slope, age, and indicators for distance to the coast in 1,000 foot wide bins or log distance to coast), year of sale fixed effects, and zip code fixed effects. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A4: Local effect of coastal regulation on sales price

	(1)	(2)	(3)	(4)	(5)
Panel A: Full sample, all covariates					
Local effect	0.031	0.062**	0.076**	0.076**	0.090**
	(0.031)	(0.022)	(0.026)	(0.027)	(0.027)
Panel B: Restricted sample, all covariates					
Local effect	0.049	0.073**	0.078**	0.074**	0.084**
	(0.031)	(0.022)	(0.025)	(0.027)	(0.030)
Panel C: Full sample, no covariates					
Local effect	0.004	0.018	0.036	0.040	0.049
	(0.036)	(0.024)	(0.029)	(0.029)	(0.030)
Panel D: Full sample, only ln(building size)					
Local effect	0.042	0.055*	0.069**	0.052*	0.063*
	(0.034)	(0.023)	(0.023)	(0.025)	(0.025)
Panel E: Full sample, all covariates, using ln(coastal distance)					
Local effect	0.029	0.050*	0.063*	0.052*	0.088**
	(0.034)	(0.025)	(0.028)	(0.026)	(0.026)
Panel F: Full sample, all covariates, 500 ft. wide bins					
Local effect	0.017	0.045	0.062*	0.058*	0.077**
	(0.040)	(0.027)	(0.027)	(0.027)	(0.026)
Panel G: Full sample, all covariates, quadratic RDD polynomial					
Local effect	0.139*	0.053	0.077*	0.053	0.042
	(0.064)	(0.034)	(0.034)	(0.038)	(0.037)
Panel H: Only parcels with rental data, all covariates					
Local effect	0.007	0.051*	0.068*	0.060*	0.080**
	(0.032)	(0.021)	(0.026)	(0.025)	(0.024)
N in panel:					
A, C, D, E, F, G	625	1,255	2,496	4,530	7,790
B	524	1,057	2,028	3,598	6,103
H	413	803	1,650	2,991	5,088
Bandwidth	250 ft.	500 ft.	1,000 ft.	2,000 ft.	4,000 ft.

Each column in each panel is from a separate regression, for forty total. Dependent variable is log sale price per square foot. Sample includes all properties within the indicated bandwidth, except for Panels B and H. Most specifications include covariates (log building size, log lot size, elevation, slope, and a quadratic in age); all specification include year of sale fixed effects, zip code fixed effects, either binned or log coastal distance, and a linear RDD polynomial in latitude and longitude (except for Panel G which includes a quadratic RDD polynomial). Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A5: Local effect of coastal regulation on rental income

	(1)	(2)	(3)	(4)	(5)
Panel A: Full sample, all covariates					
Local effect	-0.046	0.009	0.020	0.022	0.040^{+}
	(0.030)	(0.022)	(0.020)	(0.020)	(0.023)
Panel B: Restricted sample, all covariates					
Local effect	-0.022	0.028	0.015	0.008	0.028
	(0.028)	(0.022)	(0.022)	(0.020)	(0.023)
Panel C: Full sample, no covariates					
Local effect	-0.061*	-0.031^{+}	-0.004	0.005	0.018
	(0.025)	(0.018)	(0.019)	(0.019)	(0.021)
Panel D: Full sample, only ln(building size)					
Local effect	-0.042^{+}	-0.010	0.009	0.009	0.024
	(0.022)	(0.016)	(0.016)	(0.015)	(0.017)
Panel E: Full sample, using ln(coastal distance)					
Local effect	-0.065^{+}	-0.002	0.014	0.002	0.037
	(0.033)	(0.027)	(0.023)	(0.027)	(0.025)
Panel F: Full sample, all covariates, 500 ft. wide bins					
Local effect	-0.059	-0.006	0.005	0.014	0.044
	(0.049)	(0.035)	(0.025)	(0.023)	(0.027)
Panel G: Full sample, all covariates, quadratic RDD polynomial					
Local effect	0.116	0.082*	0.093*	0.045	0.049
	(0.074)	(0.038)	(0.037)	(0.036)	(0.034)
Panel H: Net income, full sample, all covariates					
Local effect	-0.041	0.013	0.028	0.031	0.051*
	(0.034)	(0.028)	(0.024)	(0.022)	(0.025)
N in panel:					
A, C, D, E, F, G	413	803	1,650	2,991	5,088
B	338	674	1,321	2,340	3,903
H	417	821	1,680	3,036	5,169
Bandwidth	250 ft.	500 ft.	1,000 ft.	2,000 ft.	4,000 ft.

Each column in each panel is from a separate regression, for forty total. Dependent variable is log gross rental income per square foot. Sample includes all properties within the indicated bandwidth, except for Panels B and H. Most specifications include covariates (log building size, log lot size, elevation, slope, and a quadratic in age); all specification include year of sale fixed effects, zip code fixed effects, either binned or log coastal distance, and a linear RDD polynomial in latitude and longitude (except for Panel G which includes a quadratic RDD polynomial). Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A6: Local effect of coastal regulation on operating costs and capitalization rate

	(1)	(2)	(3)	(4)	(5)
Panel A: Effect on log operating costs					
Local effect	-0.035	0.048	0.042	0.035	0.049
	(0.056)	(0.050)	(0.033)	(0.029)	(0.033)
Panel B: Effect on capitalization ratio					
Local effect	-0.22	-0.24^{+}	-0.28**	-0.20^{+}	-0.20*
	(0.19)	(0.14)	(0.10)	(0.10)	(0.10)
N in Panel A	411	801	1,639	2,964	5,048
N in Panel B	444	882	1,792	3,253	5,493
Bandwidth	250 ft.	500 ft.	1,000 ft.	2,000 ft.	4,000 ft.

Dependent variables: log operating cost is log(gross income per square foot − net income per square foot), capitalization rate is 100 × (Net Income/Price). Covariates included are log building size, log lot size, elevation, slope, and a quadratic in age); all specification include year of sale fixed effects, zip code fixed effects, 1,000 ft. coastal distance bins, and a linear RDD polynomial in latitude and longitude. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A7: RDD falsification tests

	(1)	(2)	(3)	(4)	(5)
Panel A: Falsification test, boundary 2,557 ft from coast					
Local effect	0.007	0.010	0.008	0.022	0.050^{+}
	(0.071)	(0.043)	(0.043)	(0.024)	(0.027)
Panel B: Falsification test, boundary 4,581 feet from coast					
Local effect	0.039	0.013	0.093	-0.026	-0.057*
	(0.089)	(0.071)	(0.079)	(0.037)	(0.028)
Panel C: Falsification test, boundary 8,363 feet from coast					
Local effect	0.209	0.196^{+}	0.000	-0.014	-0.063*
	(0.195)	(0.109)	(0.068)	(0.049)	(0.027)
N	625	1,256	2,496	4,531	7,790
Bandwidth	250 ft.	500 ft.	1000 ft.	2000 ft.	4000 ft.

Each column in each panel is a separate regression, for fifteen total, using a false boundary at the indicated distance from the coast. Dependent variable is log sale price per square foot. Sample includes all properties within the indicated bandwidth. Specifications include covariates (log building size, log lot size, elevation, slope, and a quadratic in age), year of sale fixed effects, zip code fixed effects, log coastal distance, and a linear RDD polynomial in latitude and longitude. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A8: Covariate balance checks for spatial DID

	(1)	(2)
Property characteristics		
ln(Building size)	0.056	0.071
	(0.095)	(0.137)
ln(Lot size)	0.086	0.0151
	(0.103)	(0.136)
Age	2.63	3.32
	(3.10)	(4.64)
Num. of units	3.81^{+}	5.30
	(2.19)	(3.52)
Topographic characteristics		
Elevation	-11.44^{**}	-18.05^{**}
	(2.52)	(2.84)
Slope	0.085	0.389
	(0.252)	(0.451)
Coastal Distance	-42.0^{**}	-76.8^{**}
	(15.5)	(20.1)
N	7,423	6,339
Excluded bandwidth	<500 ft.	<1,000 ft.

Each column in each row is a separate regression, for fourteen total. The dependent variable is the indicated characteristic. Sample includes all observations that are (i) within 500 and 10,000 feet of the coast and (ii) outside of the stated excluded bandwidth. Bins are 500 feet in width, and all specifications also include year of sale fixed effects and zip code fixed effects. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A9: Total effect of regulation on prices and rents

Panel A: Sample with 500 foot excluded bandwidth

	(1) Price	(2) Price	(3) Price	(4) Price	(5) Price	(6) Price
Total effect	0.064	0.076*	0.087*	0.073*	0.084*	0.085*
	(0.039)	(0.037)	(0.035)	(0.036)	(0.035)	(0.039)
N	7,423	7,423	7,423	5,991	7,423	4,769
	(7) Rent	(8) Rent	(9) Rent	(10) Rent	(11) Rent	(12) Gross Rent
Total effect	0.031	0.033	0.024	0.026	0.022	0.042
	(0.041)	(0.039)	(0.34)	(0.37)	(0.035)	(0.033)
N	4,769	4,769	4,769	3,801	4,769	4,844

Panel B: Sample with 1,000 foot excluded bandwidth

	(1) Price	(2) Price	(3) Price	(4) Price	(5) Price	(6) Price
Total effect	0.083	0.100	0.134*	0.082	0.129*	0.136*
	(0.066)	(0.062)	(0.062)	(0.056)	(0.062)	(0.067)
N	6,339	6,339	6,339	5,124	6,339	4,031
	(7) Rent	(8) Rent	(9) Rent	(10) Rent	(11) Rent	(12) Gross Rent
Total effect	0.050	0.054	0.069+	0.065+	0.065	0.081*
	(0.063)	(0.062)	(0.038)	(0.035)	(0.039)	(0.037)
N	4,031	4,031	4,031	3,228	4,031	4,096
Covariates	-	Size	All	All	All	All
Sample	Full	Full	Full	Restricted	Full	Rental Data
Coastal Amenity	Bins	Bins	Bins	Bins	Distance	Bins

Each column in each panel is a separate regression for twenty-four total. The dependent variables is either log price or log rental income per square foot or log of gross rental income. Sample includes all observations that are (i) within 500 and 10,000 feet of the coast and (ii) outside of the stated excluded bandwidth. Bins are 500 feet in width, and all specifications also include year of sale fixed effects and zip code fixed effects. Some specifications include covariates (log building size, log lot size, elevation, slope, and a quadratic in age). Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A10: Total effect on prices, by distance bin

	(1)	(2)
Total effect×[2k-3k]ft.	0.049	0.082
	(0.039)	(0.062)
Total effect×[3k-4k]ft.	0.128**	0.152**
	(0.038)	(0.056)
Total effect×[4k-5k]ft.	0.189*	0.241**
	(0.072)	(0.081)
Total effect×[5k-6k]ft.	0.090	0.116
	(0.060)	(0.070)
Total effect×[6k-7k]ft.	0.154**	0.226**
	(0.047)	(0.059)
Total effect×[7k-8k]ft.	0.099	0.135
	(0.080)	(0.119)
Total effect×[8k-9k]ft.	0.006	-0.014
	(0.048)	(0.095)
Total effect×[9k-10k]ft.	0.234**	-
	(0.031)	
N	6,826	5,888
Excluded bandwidth	<500 ft.	<1000 ft.

Each column is a separate regression, for two total. Dependent variable is log price per square foot. Sample includes all observations that are (i) within 1,000 and 10,000 feet of the coast and (ii) outside of the stated excluded bandwidth. Bins are 1,000 feet in width, and all specifications also include year of sale fixed effects, zip code fixed effects and covariates (log building size, log lot size, elevation, slope, and a quadratic in age). Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A11: Combined estimator, full sample, simple linear bins

	(1)	(2)	(3)	(4)	(5)
Panel A: Log price per square foot					
Local effect ($\beta_1 + \beta_2$)	0.057^{+}	0.039	0.054*	0.060*	0.075**
	(0.030)	(0.032)	(0.024)	(0.024)	(0.025)
Partial external effect (β_0)	0.056*	0.077**	0.068**	0.091**	0.070*
	(0.028)	(0.025)	(0.025)	(0.027)	(0.029)
External effect ($-\beta_2$)	0.014	0.081*	0.125**	0.152**	0.174**
	(0.040)	(0.031)	(0.043)	(0.052)	(0.058)
N	1867	7161	3288	6550	5753
Panel B: Log rental income per square foot					
Local effect ($\beta_1 + \beta_2$)	-0.038	-0.041	0.008	0.014	0.019
	(0.025)	(0.027)	(0.021)	(0.022)	(0.019)
Partial external effect (β_0)	0.068*	0.089**	0.066*	0.093**	0.064^{+}
	(0.032)	(0.021)	(0.027)	(0.024)	(0.033)
External effect ($-\beta_2$)	0.049	0.087**	0.087^{+}	0.103*	0.064
	(0.033)	(0.032)	(0.047)	(0.046)	(0.058)
N	1257	4695	2145	4244	3748
Bandwidth					
Interior	0-250 ft.	0-250 ft.	0-500 ft.	0-500 ft.	0-1k ft.
Exterior	500-1k ft.	1k-4k ft.	1k-2k ft.	1k-4k ft.	2k-4k ft.

Each column in each panel is a separate regression (for ten total) and reports three effect estimates. Sample includes all data within either the internal or external bandwidths in absolute distance from the CZB. Outcome is indicated in panel titles, and regressions include covariates (log building size, log lot size, elevation, slope, and a quadratic in age), indicators for distance to the coast in 1,000 foot wide bins, year of sale fixed effects, and zip code fixed effects. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A12: Combined estimator, prices, alternative specifications

	(1)	(2)	(3)	(4)	(5)
Panel A: Interacted linear					
Local effect ($\beta_1 + \beta_2$)	0.054^{+}	0.040	0.052^{*}	0.059^{*}	0.075^{**}
	(0.031)	(0.033)	(0.024)	(0.024)	(0.025)
Partial external effect (β_0)	0.056^{*}	0.071^{**}	0.063^{*}	0.090^{**}	0.070^{*}
	(0.028)	(0.024)	(0.026)	(0.025)	(0.027)
External effect ($-\beta_2$)	0.023	0.074^{*}	0.123^{**}	0.158^{**}	0.191^{**}
	(0.040)	(0.033)	(0.044)	(0.053)	(0.056)
Panel B: Quadratic					
Local effect ($\beta_1 + \beta_2$)	0.049^{+}	0.026	0.028	0.026	0.063^{+}
	(0.040)	(0.047)	(0.034)	(0.035)	(0.033)
Partial external effect (β_0)	0.022	0.061	0.105^{**}	0.091^{**}	0.066
	(0.069)	(0.041)	(0.030)	(0.027)	(0.041)
External effect ($-\beta_2$)	0.019	0.094^{*}	0.156^{**}	0.187^{**}	0.191^{**}
	(0.044)	(0.046)	(0.046)	(0.054)	(0.066)
Panel C: Cubic					
Local effect ($\beta_1 + \beta_2$)	-0.005	0.048	0.048	0.039	0.079^{+}
	(0.153)	(0.142)	(0.050)	(0.050)	(0.043)
Partial external effect (β_0)	0.026	0.011	0.137^{**}	0.103^{**}	0.111^{+}
	(0.078)	(0.055)	(0.042)	(0.037)	(0.065)
External effect ($-\beta_2$)	0.074	0.069	0.154^{**}	0.186^{**}	0.232^{**}
	(0.146)	(0.138)	(0.057)	(0.060)	(0.086)
Bandwidth					
Interior	0-250 ft.	0-250 ft.	0-500 ft.	0-500 ft.	0-1k ft.
Exterior	500-1k ft.	1k-4k ft.	1k-2k ft.	1k-4k ft.	2k-4k ft.
N	1867	7161	3288	6550	5753

Each column in each panel is a separate regression (for fifteen total) and reports three effect estimates. Sample includes all data within either the internal or external bandwidths in absolute distance from the CZB. Outcome is log price per square foot, and regressions include covariates (log building size, log lot size, elevation, slope, and a quadratic in age), indicators for distance to the coast in 1,000 foot wide bins, year of sale fixed effects, and zip code fixed effects. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A13: Combined estimator, rents, alternative specifications

	(1)	(2)	(3)	(4)	(5)
	Panel A: Simple linear				
Local effect ($\beta_1 + \beta_2$)	-0.037	-0.037	0.012	0.022	0.029
	(0.026)	(0.028)	(0.021)	(0.022)	(0.020)
Partial external effect (β_0)	0.064*	0.090**	0.067*	0.083**	0.043
	(0.031)	(0.021)	(0.030)	(0.026)	(0.032)
External effect ($-\beta_2$)	0.040	0.098**	0.099*	0.126**	0.118+
	(0.035)	(0.030)	(0.048)	(0.045)	(0.068)
	Panel B: Quadratic				
Local effect ($\beta_1 + \beta_2$)	0.020	-0.016	0.024	0.024	0.046
	(0.061)	(0.056)	(0.040)	(0.041)	(0.035)
Partial external effect (β_0)	-0.023	0.042	0.086*	0.088**	0.075*
	(0.057)	(0.038)	(0.041)	(0.031)	(0.035)
External effect ($-\beta_2$)	-0.015	0.061	0.074	0.094	0.058
	(0.047)	(0.047)	(0.051)	(0.057)	(0.062)
	Panel C: Cubic				
Local effect ($\beta_1 + \beta_2$)	-0.111	-0.155	0.020	0.020	0.007
	(0.093)	(0.097)	(0.052)	(0.050)	(0.053)
Partial external effect (β_0)	-0.135	0.001	0.075	0.061	0.079
	(0.083)	(0.058)	(0.067)	(0.050)	(0.049)
External effect ($-\beta_2$)	0.105	0.192+	0.100	0.110	0.125
	(0.091)	(0.111)	(0.071)	(0.071)	(0.081)
Bandwidth					
Interior	0-250 ft.	0-250 ft.	0-500 ft.	0-500 ft.	0-1k ft.
Exterior	500-1k ft.	1k-4k ft.	1k-2k ft.	1k-4k ft.	2k-4k ft.
N	1257	4695	2145	4244	3748

Each column in each panel is a separate regression (for fifteen total) and reports three effect estimates. Sample includes all data within either the internal or external bandwidths in absolute distance from the CZB. Outcome is log gross rental income per square foot, and regressions include covariates (log building size, log lot size, elevation, slope, and a quadratic in age), indicators for distance to the coast in 1,000 foot wide bins, year of sale fixed effects, and zip code fixed effects. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A14: Combined estimator, restricted sample, simple linear bins

	(1)	(2)	(3)	(4)	(5)
Panel A: Log price per square foot					
Local effect ($\beta_1 + \beta_2$)	0.062*	0.040	0.058*	0.057*	0.070*
	(0.028)	(0.033)	(0.025)	(0.026)	(0.028)
Partial external effect (β_0)	0.068+	0.079*	0.051+	0.087**	0.087*
	(0.037)	(0.030)	(0.029)	(0.030)	(0.033)
External effect ($-\beta_2$)	0.024	0.069*	0.097*	0.134*	0.195**
	(0.047)	(0.031)	(0.042)	(0.194)	(0.066)
N	1,497	5,572	2,627	5,132	4,531
Panel B: Log rental income per square foot					
Local effect ($\beta_1 + \beta_2$)	-0.032	-0.060+	0.009	0.012	0.019
	(0.027)	(0.032)	(0.022)	(0.023)	(0.021)
Partial external effect (β_0)	0.046	0.110**	0.042	0.088**	0.056
	(0.036)	(0.028)	(0.031)	(0.029)	(0.041)
External effect ($-\beta_2$)	0.017	0.111**	0.052	0.103*	0.102
	(0.032)	(0.035)	(0.043)	(0.047)	(0.062)
N	986	3,568	1,692	3,256	2,886
Bandwidth					
Interior	0-250 ft.	0-250 ft.	0-500 ft.	0-500 ft.	0-1k ft.
Exterior	500-1k ft.	1k-4k ft.	1k-2k ft.	1k-4k ft.	2k-4k ft.

Each column in each panel is a separate regression (for ten total) and reports three effect estimates. Sample includes all data within either the internal or external bandwidths in absolute distance from the CZB in the restricted sample. Outcome is indicated in panel titles, and regressions include covariates (log building size, log lot size, elevation, slope, and a quadratic in age), indicators for distance to the coast in 1,000 foot wide bins, year of sale fixed effects, and zip code fixed effects. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A15: Combined estimator, full sample built before 1976, simple linear bins

	(1)	(2)	(3)	(4)	(5)
Panel A: Log price per square foot					
Local effect ($\beta_1 + \beta_2$)	0.049*	0.028	0.046*	0.049*	0.080**
	(0.022)	(0.026)	(0.019)	(0.020)	(0.020)
Partial external effect (β_0)	0.075**	0.085**	0.072**	0.094**	0.048
	(0.025)	(0.022)	(0.025)	(0.029)	(0.031)
External effect ($-\beta_2$)	0.040	0.094*	0.138**	0.162**	0.155*
	(0.040)	(0.037)	(0.045)	(0.057)	(0.062)
N	1,573	5,825	2,727	5,301	4,674
Panel B: Log gross rental income per square foot					
Local effect ($\beta_1 + \beta_2$)	-0.042	-0.048	0.007	0.021	0.025
	(0.029)	(0.030)	(0.023)	(0.025)	(0.023)
Partial external effect (β_0)	0.080*	0.085**	0.049	0.073*	0.017
	(0.033)	(0.028)	(0.036)	(0.034)	(0.036)
External effect ($-\beta_2$)	0.062+	0.099**	0.080	0.110*	0.077
	(0.035)	(0.036)	(0.051)	(0.052)	(0.059)
N	1,038	3,774	1,771	3,410	3,007
Bandwidth					
Interior	0-250 ft.	0-250 ft.	0-500 ft.	0-500 ft.	0-1k ft.
Exterior	500-1k ft.	1k-4k ft.	1k-2k ft.	1k-4k ft.	2k-4k ft.

Each column in each panel is a separate regression (for ten total) and reports three effect estimates. Sample includes all data within either the internal or external bandwidths in absolute distance from the CZB in the subset of the full sample built before 1976. Outcome is indicated in panel titles, and regressions include covariates (log building size, log lot size, elevation, slope, and a quadratic in age), indicators for distance to the coast in 1,000 foot wide bins, year of sale fixed effects, and zip code fixed effects. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A16: Covariate balance for properties shifting regulatory status

	500 ft. window			2000 ft. window		
	(1)	(2)	(3)	(4)	(5)	(6)
	Became treated	Left treatment	p-value (1)-(2)	Became treated	Left treatment	p-value (4)-(5)
ln(Building size)	8.906	8.860	[0.870]	8.841	8.959	[0.492]
	(0.273)	(0.081)		(0.165)	(0.056)	
ln(Lot size)	9.231	9.191	[0.901]	9.206	9.151	[0.793]
	(0.308)	(0.117)		(0.191)	(0.091)	
Age	49.667	55.404	[0.286]	50.891	58.910	[0.189]
	(2.389)	(4.849)		(2.632)	(5.472)	
Elevation	104.844	84.208	[0.311]	106.752	73.122	[0.102]
	(18.793)	(10.304)		(19.210)	(7.851)	
Slope	2.598	2.745	[0.770]	2.742	2.374	[0.565]
	(0.277)	(0.435)		(0.424)	(0.479)	
Distance to coast	5796.3	3898.2	[0.110]	5247.640	5272.129	[0.986]
	(934.264)	(734.410)		(778.019)	(1170.019)	
N	111	505		248	1368	

Lists mean values and standard deviations of characteristics for properties that switched regulatory status between the 1972 and 1976/7 regimes and tests for differences in means. Standard errors used in test statistic columns (3) and (6) are clustered by zip code in parentheses. Brackets indicate p-values, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A17: Local effect of coastal regulation on assessed values

Bandwidth	(1) 250 ft.	(2) 500 ft.	(3) 1000 ft.	(4) 2000 ft.	(5) 4000 ft.
Panel A: Land values with all controls					
Local effect	0.061	0.142*	0.106+	0.061	0.094
	(0.082)	(0.060)	(0.056)	(0.061)	(0.059)
Panel B: Land values with land controls only					
Local effect	0.078	0.174*	0.129*	0.107	0.131*
	(0.078)	(0.067)	(0.061)	(0.067)	(0.064)
Panel C: Building values with all controls					
Local effect	0.072	0.103+	0.048	0.045	0.081+
	(0.099)	(0.060)	(0.049)	(0.042)	(0.041)
Panel D: Building values with improvement controls only					
Local effect	0.051	0.096	0.039	0.037	0.063
	(0.102)	(0.060)	(0.046)	(0.043)	(0.042)
# of trans. panel:					
A, B	419	855	1,688	3,089	5,291
C, D	419	855	1,687	3,085	5,282

Each column in each panel is from a separate regression, for twenty total. Dependent variable is either log assessed land or building value per square foot. Sample includes all properties within the indicated bandwidth. Specifications include covariates as indicated (all controls means log building size, log lot size, elevation, slope, and a quadratic in age); all specification include year of sale fixed effects, zip code fixed effects, either binned or log coastal distance, and a linear RDD polynomial in latitude and longitude. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

Table A18: Combined estimator extended for visualization, full sample, simple linear bins

	(1) ln(Price)	(2) ln(Rent)
$\beta_{\text{med. inland}}$	0.018	-0.006
	(0.020)	(0.020)
β_0	0.105**	0.068*
	(0.035)	(0.028)
$\beta_0 + \beta_1 + \beta_2$	0.165**	0.086*
	(0.043)	(0.038)
β_1	0.228**	0.118*
	(0.069)	(0.047)
$\beta_1 + \beta_{\text{far seaward}}$	0.227**	0.065
	(0.079)	(0.052)
N	6,550	4,244
Local Effect $(\beta_1 + \beta_2)$	0.060*	0.018
	(0.024)	(0.022)

Estimates from Equation A1. Sample includes all data either (i) less than 500 feet from the CZB or (ii) between 1,000 and 4,000 feet from the CZB. Outcome is indicated in panel titles, and regressions include covariates (log building size, log lot size, elevation, slope, and a quadratic in age), indicators for distance to the coast in 1,000 foot wide bins, year of sale fixed effects, and zip code fixed effects, as well as distance gradients interacted with treatment. Standard errors clustered by zip code in parentheses, $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.