

	71	Arts, Entertainment, and Recreation
	81 (except for 812111, 812112, 812113, 812310, 812320)	Other Services
	92	Public Administration
LODES⁴⁷		
Retail	44-45	Retail Trade
	72	Accommodation and Food Services
Non-retail	11	Agriculture, Forestry, Fishing and Hunting
	21	Mining, Quarrying, and Oil and Gas Extraction
	22	Utilities
	23	Construction
	31-34	Manufacturing
	42	Wholesale Trade
	48-49	Transportation and Warehousing
	51	Information
	52	Finance and Insurance
	53	Real Estate and Rental and Leasing
	54	Professional, Scientific, and Technical Services
	55	Management of Companies and Enterprises
	56	Administrative and Support and Waste Management and Remediation
	61	Educational Services
	62	Health Care and Social Assistance
	71	Arts, Entertainment, and Recreation
	81	Other Services

⁴⁷ LODES has 2-digit NAICS rather than 6-digit NAICS

Table 4: Hazard Model Regression Result, Retail Establishments, Heterogeneity Analysis

	(1) <10 employee		(2) ≥10 employee		(3) Standalone		(4) Chain	
	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio
<i>PostSandy</i>	-37.84 (1.993e+06)	0	-37.30 (4.967e+06)	0	-39.28 (0)	0	-37.54 (8.025e+06)	0
<i>High</i>	-0.107 (0.261)	0.899	-0.0241 (0.385)	0.976	-0.0796 (0.215)	0.923	-0.184 (1.165)	0.832
<i>Low</i>	-0.0924 (0.257)	0.912	0.00389 (0.392)	1.004	-0.0700 (0.211)	0.932	-0.113 (1.304)	0.893
<i>High*PostSandy</i>	0.973** (0.382)	2.646**	0.0143 (0.712)	1.014	0.769** (0.328)	2.157**	0.583 (1.559)	1.791
<i>Low*PostSandy</i>	0.941** (0.375)	2.562**	-0.193 (0.713)	0.825	0.723** (0.323)	2.061**	0.747 (1.656)	2.112
<i>Chain</i>	-0.361** (0.167)	0.697**	-0.143 (0.197)	0.867				
<i>Employee</i>			-0.00327 (0.00216)	0.997	-0.00130 (0.00110)	0.999	-0.000427 (0.00298)	1.000
<i>Cluster</i>	-0.00142 (0.00280)	0.999	-0.00291 (0.00492)	0.997	-0.00200 (0.00238)	0.998	-0.0197 (0.0138)	0.980
Observations	2,758	2,758	816	816	3,225	3,225	349	349

Note: Cluster is calculated as the # of retail/non-retail establishments by block. Regressions are stratified by ZIP code and three-digit NAICS code.

Table 5: Regression Results, Jobs

VARIABLES	<u># of jobs</u>			<u>ln(# of jobs)</u>		
	(1) Total	(2) Retail	(3) Non-retail	(4) Total	(5) Retail	(6) Non-retail
<i>High*PostSandy</i>	47.86 (42.54)	-9.790*** (3.730)	57.65 (42.47)	-0.0320 (0.0907)	-0.142* (0.0829)	0.0269 (0.0989)
<i>Low*PostSandy</i>	50.32 (42.66)	-5.931 (3.809)	56.25 (42.27)	0.0359 (0.0888)	-0.129 (0.0800)	0.122 (0.0959)
Constant	2,776 (9,370)	451.7 (753.3)	2,325 (9,149)	3.003*** (0.0291)	2.198*** (0.0373)	2.866*** (0.0311)
block fixed effects	Y	Y	Y	Y	Y	Y
SBA-year dummies	Y	Y	Y	Y	Y	Y
Observations	9,995	9,995	9,995	9,995	4,842	9,396
R-squared	0.039	0.085	0.035	0.046	0.080	0.042
Number of blocks	1,679	1,679	1,679	1,679	1,000	1,622

standard errors are clustered by block

*** p<0.01, ** p<0.05, * p<0.1

Table 6: Regression Results, Spillover Effects

	(1) Hazard- Retail		(2) Hazard- Non-retail		(3) Jobs- Retail	(4) Jobs- Non-retail
	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio		
<i>PostSandy</i>	-38.86 (2.095e+06)	0	-37.23 (0)	0		
<i>High</i>	-0.0492 (0.197)	0.952	-0.0552 (0.0792)	0.946		
<i>Moderate</i>	-0.0339 (0.195)	0.967	-0.0674 (0.0788)	0.935		
<i>Spillover</i>	0.109 (0.243)	1.115	-0.101 (0.0935)	0.904		
<i>High*PostSandy</i>	0.770*** (0.298)	2.159***	0.115 (0.130)	1.122	-9.678** (3.758)	55.72 (42.61)
<i>Moderate*PostSandy</i>	0.751** (0.298)	2.119**	-0.0741 (0.130)	0.929	-5.336 (4.168)	47.71 (42.98)
<i>Spillover*PostSandy</i>	0.383 (0.369)	1.467	0.116 (0.155)	1.122	-6.734 (4.227)	66.23 (51.00)
Constant					166.2 (743.0)	3,431 (6,347)
Observations	3,574	3,574	15,484	15,484	9,995	9,995
R-squared					0.085	0.035
Number of blocks					1,679	1,679

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Column (1) and (2) are stratified by ZIP code and three-digit NAICS code, chain, employee, and cluster are controlled. In Column (3) and (4), block fixed effects and SBA-year dummies are controlled, standard errors are clustered by block.

Table 7: Regression Results, Sales Revenues

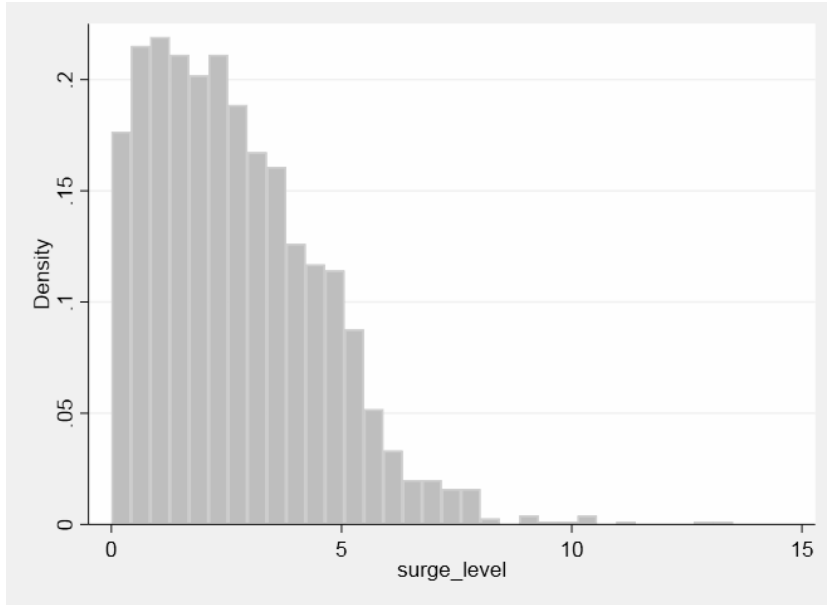
ln(average sales)	(1) Total	(2) Total	(3) Retail	(4) Retail	(5) Non-retail	(6) Non-retail
<i>High*PostSandy</i>	-0.0436 (0.0334)	0.114 (0.114)	-0.0946*** (0.0345)	0.0122 (0.0838)	0.156** (0.0781)	-0.167 (0.243)
<i>Low*PostSandy</i>	0.0235 (0.0256)	0.162 (0.115)	0.0379 (0.0374)	0.187* (0.0959)	0.0250 (0.0447)	-0.399 (0.245)
Constant	11.10*** (0.0157)	11.13*** (0.0370)	11.25*** (0.0210)	11.28*** (0.0726)	10.89*** (0.0297)	10.84*** (0.123)
evacuation zone A only	N	Y	N	Y	N	Y
ZIP-zone dummies	Y	Y	Y	Y	Y	Y
borough-quarter-year	Y	Y	Y	Y	Y	Y
Observations	10,644	1,965	8,610	1,154	8,574	1,150
R-squared	0.961	0.885	0.968	0.901	0.896	0.837

Standard errors are clustered by Zip-zone in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: OLS regressions are weighted by the number of filers by industry and ZIP-zone.

Appendix A: Surge level (in feet) distribution



Notes: the X-axis represents water levels in feet.

	Percentiles
1%	0.056109
5%	0.279842
10%	0.526056
25%	1.222088
50%	2.431354
75%	3.863869
90%	5.178217
95%	5.94011
99%	7.688412

Appendix B: Retail Sub-sector Classification

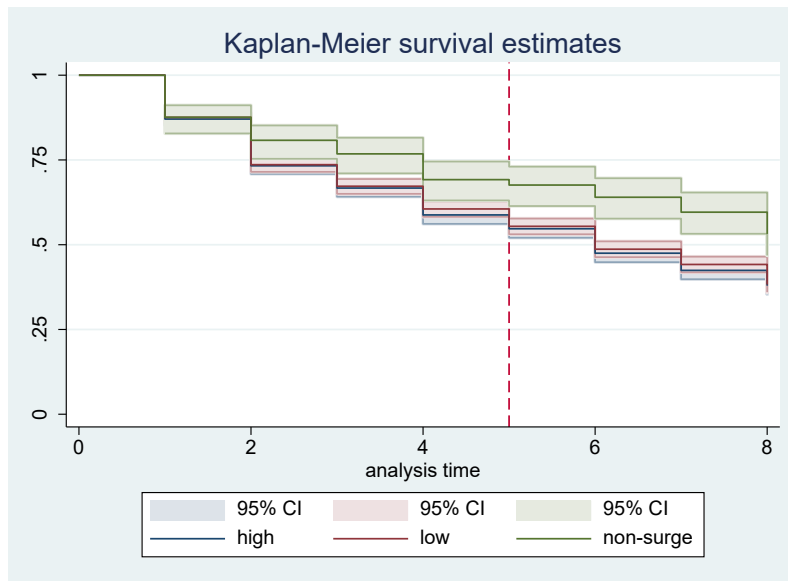
Category	NAICS	Description
Neighborhood-based Retail	311811	Retail Bakery
	444130	Hardware stores
	445110	Grocery stores
	445120	Convenience food stores
	445210	Meat markets
	445220	Seafood markets
	445230	Fruit markets
	445291	Baked goods stores, retailing only (except immediate consumption)
	445292	Candy stores, packaged, retailing only
	446110	Pharmacies
	446130	Optical goods stores (except offices of optometrists)
	446191	Nutrition (i.e., food supplement) stores
	446199	All Other Health and Personal Care Stores
	451120	Hobby, toy, and game stores
	451211	Book stores
	451212	Newsstands (i.e., permanent)
	453110	Flower shops, fresh
	453910	Pet shops
	453991	Tobacco stores
	812111	Barber Shops
	812112	Beauty Salons
	812113	Nail Salons
	812310	Coin-Operated Laundries and Drycleaners
	812320	Dry cleaning and Laundry Services (except Coin-Operated)
Accommodation	721	Accommodation

Restaurant	722	Food Services and Drinking Places
Other Retail	441110	New car dealers
	441120	Used car dealers
	441210	Recreational vehicle (RV) dealers
	441221	Bike and motorcycle dealers
	441229	Utility trailer dealers
	441310	Auto supply stores
	441320	Automotive tire dealers
	442110	Furniture stores (e.g., household, office, outdoor)
	442210	Floor covering stores (except wood or ceramic tile only)
	442291	Window treatment stores
	442299	All Other Home Furnishing Stores
	443111	Appliance stores, household-type
	443112	Electric Stores
	443120	Computer equipment stores
	443130	Camera shops, photographic
	444110	Home improvement centers
	444120	Paint stores
	444190	Other building material
	444210	Garden power equipment stores
	444220	Farm supply stores (feed)
	445299	All Other Specialty Food Stores
	445310	Liquor stores, package
	447110	Gasoline stations with Convenience Stores
	447190	Other Gasoline Stations
	448110	Clothing stores, men's and boys'
	448120	Clothing stores, women's and girls'
	448130	Apparel stores, children's and infants' clothing
	448140	Clothing stores, family

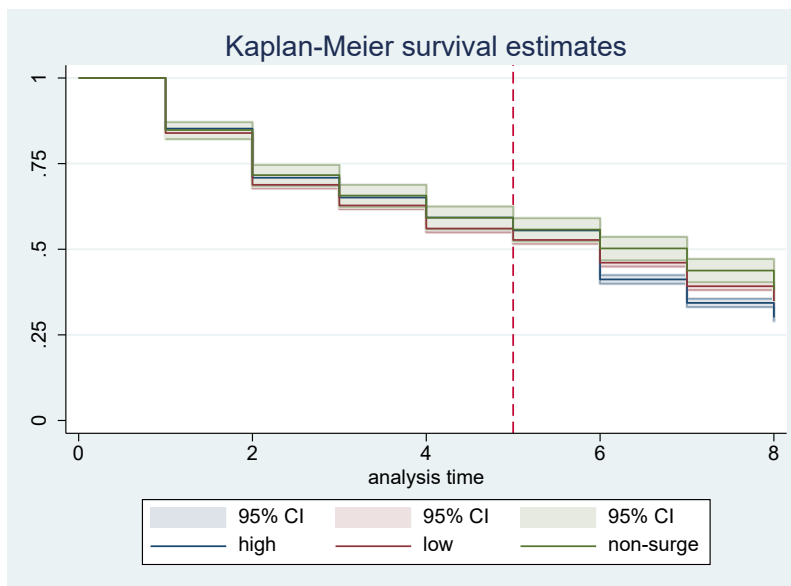
	448150	Clothing accessories stores
	448190	Other Clothing stores, like bridal and school uniform
	448210	Shoe (except bowling, golf, spiked) stores
	448310	Jewelry stores, precious
	448320	Luggage and leather stores
	451110	Athletic equipment and supply stores (including uniforms)
	451130	Needlecraft sewing supply stores
	451140	Music stores (i.e., instrument)
	451220	Music stores (e.g., cassette, compact disc, record, tape)
	452111	Department stores
	452910	Superstores (i.e., food and general merchandise)
	452990	All Other general merchandise stores
	453210	Office supply stores
	453220	Gift shops
	453310	Antique dealers (except motor vehicles)
	453920	Art dealers
	453930	Manufactured (mobile) home parts and accessory dealers
	453998	All other miscellaneous store retailers

Appendix C: Retail vs. Non-Retail Establishment counts, Before and After Sandy

Retail



Non-retail



Note: Kaplan-Meier survival estimates are not controlled by any establishment characteristic or stratified by any group.

Appendix D: Establishments openings by block

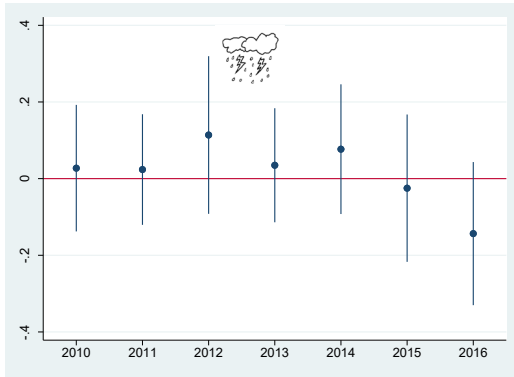
	(1)	(2)	(3)
# of openings by block	Total	Retail	Non-retail
<i>High*PostSandy</i>	-0.191 (0.220)	-0.0554 (0.0492)	-0.136 (0.201)
<i>Low*PostSandy</i>	-0.0588 (0.190)	0.0311 (0.0414)	-0.0900 (0.169)
Constant	2.050*** (0.0893)	0.297*** (0.0179)	1.753*** (0.0825)
Block fixed effects	Y	Y	Y
SBA-year dummies	Y	Y	Y
Observations	9,832	9,832	9,832
R-squared	0.136	0.071	0.136
Number of blocks	1,229	1,229	1,229

Clustered errors in parentheses

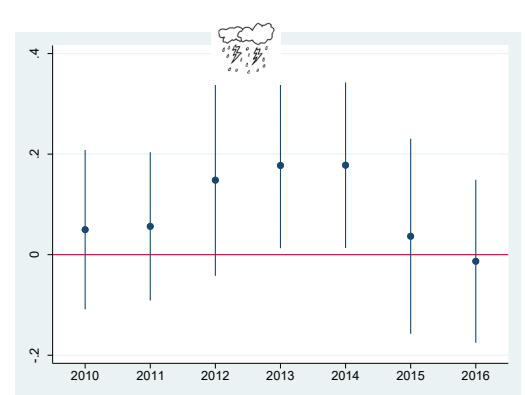
*** p<0.01, ** p<0.05, * p<0.1

Note: block fixed effects and SBA-year dummies are controlled, standard errors are clustered by block.

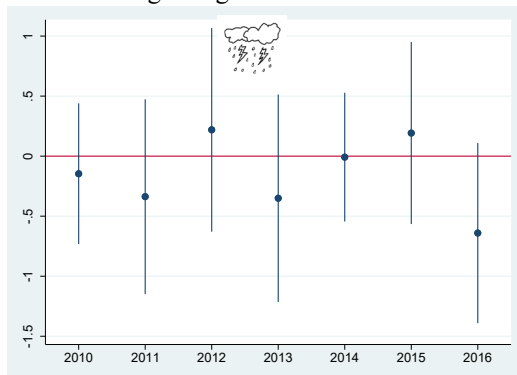
Retail: high-surge areas



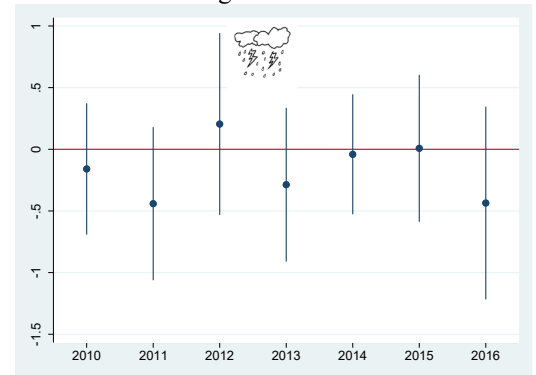
Retail: low-surge areas



Non-retail: high-surge areas



Non-retail: low-surge areas



Appendix E1: Regression Results, Continuous Surge Level

	(1)		(2)		(3)	(4)	(5)	(6)
	Hazard - Retail		Hazard - Non-retail		Jobs - Retail	Jobs – Non-retail	Sales – Retail	Sales - Non-retail
	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio				
<i>Surge Level</i>	-0.0156	0.985	0.000986	1.001				
	(0.0231)		(0.0106)					
<i>Surge Level*PostSandy</i>	0.0926**	1.097**	0.00628	1.006	-1.02***	4.323	-0.00784	0.0167
	(0.0371)		(0.0174)		(0.359)	(3.595)	(0.00988)	(0.0145)
Constant					20.30***	149.0**	11.27***	10.87***
					(3.891)	(60.69)	(0.0179)	(0.0277)
Observations	3,574	3,574	15,484	15,484	9,995	9,995	8,581	8,545
R-squared					0.084	0.035	0.968	0.897

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Column (1) and (2) are stratified by ZIP code and three-digit NAICS code, *PostSandy*, chain, employee, and cluster are controlled. In Column (3) and (4), block fixed effects and SBA-year dummies are controlled, standard errors are clustered by block. ZIP-zone fixed effects, and borough*quarter-year dummies are controlled in Column (5) and (6).

Appendix E2: Key Coefficients using Different Threshold, Evacuation Zone Sample

Threshold	Coefficients	(1)		(2)		(3)		(4)		(5)		(6)	
		Hazard - Retail Coefficient		Hazard - Non-retail Coefficient		Jobs - Retail Hazard Ratio		Jobs - Non-retail		Sales - Retail		Sales - Non-retail	
2 feet	<i>High*PostSandy</i>	0.700** (0.292)	2.014** (0.127)	0.0209 (0.132)	1.021 (3.766)	-8.787** (43.03)	56.58 (0.0313)	-0.0190 (0.0444)	0.0601 (0.102)				
	<i>Low*PostSandy</i>	0.691** (0.300)	1.995** (0.132)	0.0660 (0.132)	1.068 (3.955)	-5.952 (42.75)	57.15 (0.0995)	0.000543 (0.0995)	0.0762 (0.102)				
3 feet	<i>High*PostSandy</i>	0.728** (0.297)	2.071** (0.130)	0.129 (0.130)	1.138 (3.73)	-9.79*** (42.47)	57.65 (0.0345)	-0.095*** (0.0345)	0.156** (0.0781)				
	<i>Low*PostSandy</i>	0.674** (0.292)	1.961** (0.128)	-0.0293 (0.128)	0.971 (3.809)	-5.931 (42.27)	56.25 (0.0374)	0.0379 (0.0374)	0.0250 (0.0447)				
4 feet	<i>High*PostSandy</i>	0.877*** (0.306)	2.403*** (0.136)	0.106 (0.136)	1.112 (3.805)	-11.3*** (40.07)	73.27* (0.0436)	-0.0944** (0.0436)	0.0384 (0.140)				
	<i>Low*PostSandy</i>	0.627** (0.290)	1.872** (0.126)	0.0163 (0.126)	1.016 (3.718)	-5.931 (42.61)	50.65 (0.0343)	-0.00823 (0.0343)	0.0651 (0.0432)				

Note: Column (1) and (2) are stratified by ZIP code and three-digit NAICS code, *PostSandy*, *High*, *Low*, chain, employee, and cluster are controlled. In Column (3) and (4), block fixed effects and SBA-year dummies are controlled, standard errors are clustered by block. ZIP-zone fixed effects, and borough*quarter-year dummies are controlled in Column (5) and (6).

Appendix F1: Regression Results, Excluding Transit-Interrupted Areas

	(1)		(2)		(3)	(4)	(5)	(6)
	Hazard - Retail		Hazard - Non-retail		Jobs - Retail	Jobs - Non-retail	Sales - Retails	Sales - Non-retails
	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio				
<i>High*PostSandy</i>	0.721**	2.056**	0.132	1.141	-10.02***	57.92	-0.095**	0.183**
	(0.297)		(0.13)		(3.788)	(42.88)	(0.0369)	(0.0781)
<i>Low*PostSandy</i>	0.678**	1.971**	-0.0314	0.969	-5.895	56.78	0.0395	0.0252
	(0.292)		(0.128)		(3.856)	(42.76)	(0.0380)	(0.0452)
Constant					20.78***	158.0***	11.24***	10.89***
					(3.751)	(57.27)	(0.0212)	(0.0299)
Observations	3,508		15,176		9,296	9,296	8,458	8,422
R-squared					0.086	0.035	0.969	0.897

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Column (1) and (2) are stratified by ZIP code and three-digit NAICS code, *PostSandy*, *High*, *Low*, chain, employee, and cluster are controlled. In Column (3) and (4), block fixed effects and SBA-year dummies are controlled, standard errors are clustered by block. ZIP-zone fixed effects, and borough*quarter-year dummies are controlled in Column (5) and (6).

Appendix F2: Hazard Model Regression Results, Close only

	(1)		(2)		(3)	
	All		Retail		Non-retail	
	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio	Coefficient	Hazard Ratio
<i>PostSandy</i>	-34.92 (194,090)	0	-37.93 (2.215e+06)	0	-37.22 (0)	0
<i>High</i>	-0.0411 (0.0750)	0.960	0.0353 (0.200)	1.036	-0.0496 (0.0810)	0.952
<i>Low</i>	-0.0380 (0.0778)	0.963	0.0542 (0.205)	1.056	-0.0454 (0.0843)	0.956
<i>High*PostSandy</i>	0.138 (0.121)	1.148	0.687** (0.306)	1.989**	-0.00408 (0.132)	0.996
<i>Low*PostSandy</i>	0.188 (0.126)	1.207	0.680** (0.313)	1.974**	0.0446 (0.138)	1.046
<i>Chain</i>	-0.110** (0.0504)	0.896**	-0.129 (0.113)	0.879	-0.105* (0.0568)	0.900*
<i>Employee</i>	-0.000217 (0.000186)	1.000	-0.00128 (0.000956)	0.999	-0.000142 (0.000187)	1.000
<i>Cluster</i>	-0.000412 (0.00116)	1.000	-0.00256 (0.00254)	0.997	4.98e-05 (0.000107)	1.000
Observations	18,314	18,314	3,427	3,427	14,887	14,887

Standard error in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Cluster is calculated as the # of retails/non-retails by block. Regressions are stratified by ZIP code and three-digit NAICS code.