Was gentrification a factor in designation of Opportunity Zones: A study of 100 most populous cities with DC as a case study

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Opportunity Zones: The early evidence

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February 24, 2021

We thank Gauri S. Gautam for excellent research assistance. The views expressed herein are those of the authors and do not necessarily reflect the views of their respective affiliations.

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Gentrification and Opportunity Zones

Motivation

- Opportunity Zones can potentially cause or speed up gentrification in many urban areas of the U.S.
- Due to broad and flexible rules, about 57 percent of census tracts meet the set eligibility criteria.
 - 42,078 of the 73,070 census tracts in the US were eligible for OZ status, of which 8,687 received the OZ designation.
- Lower income census tracts in the earlier stages of gentrification could possibly meet the criteria and receive OZ designation, either by chance or through lobbying.
- Gentrifying census tracts are expected to receive more private investments than those located in non-gentrifying tracts.
 - Gentrification been associated with higher returns for investments in businesses and real estate.

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Gentrification and Opportunity Zones

Data and Methods

- Data
 - American Community Survey (ACS) 5-year estimates (2010-2016)
 - DC Government's individual income tax and real property tax administrative records (2011, 2012, 2013, 2014, 2015)
 - Residential and Business vacancy data from the US Postal Service
 - > Data on Opportunity Zones from the IRS and the Urban Institute
- The gentrification measure is calculated as the change from time t to t+1 in the number of individuals aged 25 or older with a bachelors degree or higher living in census tract j in city c, divided by the total population aged 25 or older living in tract j and city c in year t:

$$gent_{jc} = \frac{bachelors25_{jc,t+1} - bachelors25_{jc,t}}{total25_{jc,t}}$$
(1)

- Explore the role of gentrification in the selection of OZ census tracts.
- Explore the statistical relationship between gentrification and business and residential vacancy rate in the OZ designated census tracts.
- Analyze the relationship between gentrification and migration patterns of 116 DC census tracts that met OZ eligibility criteria.

CBSA Gentrification by Opportunity Zone Status

Table 1: CBSA Gentrification by Opportunity Zone Status (%)

Opportunity Zone Status	Mean	Frequency	Percent
Eligible, Non-Designated	1.91	15,794	81.05
	(10.14)		
Designated Opportunity Zone	1.49	3,693	18.95
	(4.31)		
Total	1.83	19,487	100

Source: Author's calculation from ACS and IRS data

CBSA Opportunity Zone Status by Gentrification Category new

Table 2: CBSA Opportunity Zone Status by Gentrification Category (%)

	Opportunity Zone Status				
Gentrification	Eligible,	Designated			
Category	Non-Designated	OZ	Total		
Non-Gentrified	42.86	48.01	43.84		
Below Average	27.92	25.94	27.54		
Above Average	29.22	26.05	28.62		
Total	100.00	100.00	100.00		

Source: Author's calculation from ACS and IRS data

DC Opportunity Zone Status by Gentrification Category

Table 3: DC Opportunity Zone Status by Gentrification Category (%)

	IS		
Gentrification	Eligible,	Designated	
Category	Non-Designated	OZ	Total
Non-Gentrified	31.87	35.00	32.54
Below Average	22.25	38.00	25.65
Above Average	45.88	27.00	41.81
Total	100.00	100.00	100.00

Source: Author's calculation from ACS and IRS data

Model Specification

Our primary regression specification is a fixed effects OLS model

For 100 most populous CBSAs

$$\Delta Y_i = \beta_0 + \beta_1 gent + \mu + \epsilon \tag{2}$$

• For DC census tracts

$$Z_i = \beta_0 + \beta_1 gent + \beta X + \gamma + \epsilon \tag{3}$$

- ΔY Rate of Change in either the residential vacancy rate or the business vacancy rate in census tract i.
- μ CBSA fixed effects
- Zi Number of permits for the years 2011 through 2015
- γ Year fixed effects
- gent Education-based measure of gentrification from equation (1)
 - X Vector of socioeconomic factors for which we control

CBSA Regression Results for Residential Vacancy Rate

Table 4: CBSA Regression Results For Residential Vacancy Rate

	(1)	(2)	(3)	(4)
VARIABLES	ΟZ	Non-OZ	Eligible	Non-Eligible
Gentrification	-0.0480***	0.00617***	-0.0123***	0.0177***
	(0.0153)	(0.00233)	(0.00462)	(0.00212)
Constant	-0.0113	-0.00674***	-0.00565	-0.00836***
	(0.00969)	(0.00214)	(0.00368)	(0.00205)
Observations	2,935	25,127	15,074	12,988
R-squared	0.147	0.082	0.118	0.066
CBSA FE	YES	YES	YES	YES

t statistics in parentheses

*
$$p < 0.05$$
, ** $p < 0.01$, *** $p < 0.001$

CBSA Regression Results for Business Vacancy Rate

Table 5: CBSA Regression Results for Business Vacancy Rate

	(1)	(2)	(3)	(4)
VARIABLES	OZ	Non-OZ	Eligible	Non-Eligible
Gentrification	-0.0772***	-0.000195	-0.0140*	5.27e-05
	(0.0265)	(0.00150)	(0.00790)	(0.00148)
Constant	0.0522***	0.00506	0.0299***	-0.00975
	(0.0168)	(0.00537)	(0.00748)	(0.00691)
Observations	2,932	25,094	15,061	12,965
R-squared	0.095	0.049	0.066	0.047
CBSA FE	YES	YES	YES	YES

t statistics in parentheses

*
$$p < 0.05$$
, ** $p < 0.01$, *** $p < 0.001$

Figure 1: Gentrification Scale and Designated Opportunity Zones in DC



Figure 2: KDE for Movers with income 25th percentile or below, 2011-2012



Figure 3: KDE for Movers with income 75th percentile or above, 2011-2012



Figure 4: KDE for Movers with income 25th percentile or below, 2014-2015



Figure 5: KDE for Movers with income 75th percentile or above, 2014-2015



DC Regression Results for Construction Permits

Table 6: DC Regression Results for Construction Permits

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Permits	Permits	Permits	Permits	Permits	Permits	Permits	Permits
Net migration rate per 100								0.308*
Assessment							-6.34e-06	-6.42e-06
Income						-0.000270 (0.000278)	-0.000257 (0.000297)	-0.000317 (0.000297)
Unemployment rate					0.216	0.175	0.253	0.265
Poverty rate				0.0820 (0.215)	(0.410) 0.0742 (0.215)	(0.413) 0.0694 (0.216)	(0.423) 0.0947 (0.232)	(0.422) 0.0719 (0.231)
Hispanic			33.09 (45.86)	31.05 (46.23)	30.80 (46.28)	35.78 (46.57)	23.14 (48.78)	23.11 (48.59)
Black			-18.92	-21.04	-23.82	-19.84	-21.94	-19.41
Gentrification measure	-8.022 (17.37)	-7.432 (17.28)	-9.549 (17.36)	-8.787 (17.50)	-9.292 (17.54)	-8.154 (17.58)	-6.132 (20.71)	-2.227 (20.73)
Ave vacancy rate b	()	-0.634**	-0.655**	-0.657**	-0.656**	-0.664**	-0.671**	-0.649**
Ave vacancy rate r		-0.328	-0.361	-0.382	-0.388	-0.349	-0.326	-0.286
Constant	56.40*** (1.645)	(0.739) 63.41*** (4.344)	(0.700) 74.87*** (27.86)	(0.703) 74.51*** (27.91)	(0.703) 74.79*** (27.95)	(0.705) 81.29*** (28.74)	(0.022) 85.93*** (30.99)	(0.019) 86.71*** (30.87)
Observations	464	464	464	464	464	464	447	447
R-squared	0.123	0.138	0.142	0.143	0.143	0.146	0.151	0.160
Number of census tracts FE	116 YES	116 YES	116 YES	116 YES	116 YES	116 YES	112 YES	112 YES

t statistics in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

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Conclusion

- In the selection of opportunity zones, it does not appear that gentrification played a role.
- In our analysis of 100 CBSAs, higher rates of gentrification are associated with increased business activity as residential and business vacancy rates decrease.
- For DC, we find that there is a spillover effect between gentrification and the selection of OZ census tract.
 - Most of the OZ designated census tracts are next to gentrifying tracts.
 - New investments in the census tracts, measured by the number of permits is primarily driven by business vacancies.
- Over the years, more lower income populations were displaced and more higher income populations moved in.
- From our result, we predict that census tracts with positive net migration and lower business vacancy rates are likely to receive increased investments.

Thank you. Questions ?

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Summary Statistics for census tracts in 100 CBSAs

Table 7: Summary Statistics for census tracts in 100 CBSAs

	Ν	Mean	St. Dev.	Min	Max
Median Household Income (2010), \$	34,910	61,725.28	30,625.22	5,000.00	249,194.00
Median Home Value (2010), \$	33,886	293,191.80	193,850.20	11,000.00	1,000,000.00
Median Gross Rent (2010), \$	32,959	995.10	336.45	116.00	2,000.00
Poulation whose Poverty Status is Determined (2010)	35,333	4,151.13	1,937.59	0	25,000
Population below 100% of the Poverty Level (2010), %	34,989	14.26	13.12	0.00	100.00
Population at 100%-149% of the Poverty Level (2010), %	34,989	8.70	6.78	0.00	100.00
Population at or above 150% of the Poverty Level (2010), %	34,989	77.04	17.56	0.00	100.00
Opportunity Zone Rate	35,333	0.10	0.30	0	1
Gentrification Rate	35,210	0.02	0.23	-1.84	39.90
Residential Vacancy Rate (2010)	26,542	0.04	0.05	0.00	1.00
Business Vacancy Rate (2010)	26,519	0.10	0.08	0.00	0.80

Source: American Community Survey ACS 2010 5-year average

Table 8: Summary Statistics of Census Tracts in DC

	Ν	Mean	St. Dev.	Min	Max
Median Household Income (2010), \$	175	63,425.41	35,154.07	15,119.00	213,889.00
Median Home Value (2010), \$	167	433,329.90	182,856.50	143,400.00	924,000.00
Median Gross Rent (2010), \$	178	769.24	515.56	0	3,204
Population below 100% of the Poverty Level (2010), %	176	19.41	13.99	1.30	91.20
Population at 100%-149% of the Poverty Level (2010), %	176	7.63	5.36	0.00	23.90
Population at or above 150% of the Poverty Level (2010), %	176	72.96	16.67	8.80	98.30
Opportunity Zone Rate	178	0.14	0.35	0	1
Gentrification Rate	178	0.04	0.09	-0.06	1.14
Residential Vacancy Rate (2010)	162	0.04	0.03	0.00	0.17
Business Vacancy Rate (2010)	162	0.08	0.06	0.00	0.29
· ·					

Source: American Community Survey ACS 2010 5-year average

Figure 6: KDE for Movers with income 25th percentile or below, 2012-2013



Figure 7: KDE for Movers with income 25th percentile or below, 2013-2014



Figure 8: KDE for Movers with income 75th percentile or above, 2012-2013



Figure 9: KDE for Movers with income 75th percentile or above, 2013-2014



Figure 10: KDE for Movers with income above median, 2011-2012



Figure 11: KDE for Movers with income above median, 2012-2013



Figure 12: KDE for Movers with income above median, 2013-2014



Figure 13: KDE for Movers with income above median, 2013-2014



Figure 14: KDE for Movers with income below median, 2011-2012



Figure 15: KDE for Movers with income below median, 2012-2013



Figure 16: KDE for Movers with income below median, 2013-2014



Figure 17: KDE for Movers with income below median, 2014-2015



Figure 18: Gentrification Scale and Designated Opportunity Zones in DC (2011-2012)



Figure 19: Gentrification Scale and Designated Opportunity Zones in DC (2012-2013)



Figure 20: Gentrification Scale and Designated Opportunity Zones in DC (2013-2014)



Figure 21: Gentrification Scale and Designated Opportunity Zones in DC (2014-2015)

