

The Incidence of Gentrification: Evidence From Chicago

Peter Christensen

Andrew Greenlee

Geoffrey Hewings

Yizhou Zhang



Introduction

- The gentrification-displacement literature has focused on studying the mobility rate in gentrifying neighborhoods, but has glossed over **where** migrants are moving to.
- Ding et al. 2016 provided the first empirical evidence of **downward mobility** and showed that gentrification induce migrants to move to worse neighborhoods. But their data prevented differentiation between owners and renters.
- However, theories suggest that owners and renters should have **different incidence** of downward mobility. With more vulnerable housing, renter migrants are expected to experience greater downward movement. This paper aims to find empirical evidence for the owner-renter incidence difference.



Literature Review

- **Gentrification-Displacement:** gentrification processes can appreciate housing prices of low-income neighborhoods **without producing displacement**. Neighborhood demographic change was fueled by higher socio-economic status of in-migrants (Freeman, 2009; McKinnish et al., 2010; Ding et al., 2016; Ellen and O'Regan, 2011; Martin and Beck, 2016; Vigdor, 2010)
- However, the literature mainly studies if mobility rate/probability is higher in gentrifying neighborhoods. The question of **where movers go** receives less attention



Downward Mobility

- Newman and Wyly (2006) argue that gentrification prices out less advantaged residents from areas that they could have afforded originally, limiting affordable housing opportunities and leading lower-income movers to **search for housing in more disadvantaged neighborhoods**.
- Ding et al. 2016 found evidence that while mobility rate is not higher in gentrifying neighborhoods, movers from gentrifying tracts did exhibit greater downward mobility and moved to worse-off neighborhoods with lower family income. They also found that mobility patterns may vary by a neighborhood's **pace or stage** of gentrification



Owner/Renter Incidence of Gentrification

- **Two-fold** mechanisms impacting **home owners'** response to gentrification:
 - Driving factor: higher housing prices in disadvantaged neighborhoods are **translated into greater property taxes** for the low income owners
 - Retaining factor: **Higher transactions costs** and **less eviction pressure**. Appreciation of housing prices could be perceived by as an **improvement of their neighborhoods' characteristics**, an asset of a greater value that could be sold later
- However, renters are much more impacted by the driving factors than by the retaining factors. Expected Incidence:

Mobility Rate	Gentrified	Non-gentrified
Owner	>	>
Renter	>	>



- By far, the literature has mainly compared the mobility rate of renters in gentrifying neighborhoods versus that of renters from non-gentrifying neighborhoods
 - Some previous papers did not find evidence of greater **exit rates** from gentrifying neighborhoods for **renters** compared with similar residents in neighborhoods that did not gentrify. (Ellen and O'Regan 2011, Freeman 2005)
 - Others found renters have greater displacement susceptibility to gentrification in terms of **mobility rate** (Martin and Beck, 2016)
- However, need direct differentiation between owners and renters



Filling a Literature Gap

- this paper aims to provide empirical evidence of owner/renter gentrification incidence **in terms of downward mobility**. By doing so, we provide:
 - clearer picture of owner-renter incidence of gentrification, which now the literature lacks. The findings will also justify targeted housing policies addressing the different experiences of owners and renters from gentrifying neighborhoods.
 - A call-out to the gentrification-displacement literature that although mobility rate is an important object of study, the downward movement of those that actually moved may be where gentrification plays a more significant role.



- **Testable hypotheses:**

- Do renters and owners exhibit different downward mobility?
- How does the incidence develop through different stages of gentrification?

- **Expected results:**

Downward Mobility	Gentrified	Non-gentrified
Owner		> Least downward mobility
Renter	^ Greatest Downward Mobility	> ^



Data: *Info USA*

- Data of Ding et al. 2016 did not have direct indicator of household income nor owner/renter status, not informative of owner/renter incidence
- *Info USA*, used for this study, contains household longitudinal information of location, household income, age of household head, **owner/renter status**, household size, and marital status
- Info USA can be augmented with American Community Survey (ACS) to derive neighborhoods characteristics related to gentrification including median household income, median house value, median gross rent and average educational attainment.



Data: Measuring Gentrification

- Comparison is meaningful only between **gentrifiable** and **gentrifying** neighborhoods. However, no consensual definition of either.
- **Gentrifiable** neighborhoods have lower socio-economic status :
 - Lower median housing price and median family income (e.g., Freeman 2005)
 - Older stock of housing (Martin and , 2016; Atuesta and Hewings,2018; Freeman,2005)
- **Gentrifying** neighborhoods are *gentrifiable* at the beginning of period but also experience:
 - Increase in median household income (e.g., McKinnish *et al.* 2010; Ellen and O'Regan, 2011)
 - Increase in share of college-educated residents (e.g., Freeman 2005; Ding et al. 2016)
 - Housing Price/Rent appreciation (e.g., Ding et al. 2016; Baum-Snow 2009)



Definition: Gentrification

For this study, a tract's gentrification intensity is measured by taking the average of its 2010-2015 percentage changes in: **1.** median housing price **2.** median gross rent

Categories		# of tracts	Explanation
Gentrifiable	Nongentrifying	948	Had a median income less than the Chicago median in 2010
Gentrifying		539	Gentrifiable but also experienced above city-median increases between 2010-2015 in: 1. the share of college-educated residents 2. median housing value <i>or</i> median gross rent
	Weak gentrification	178	gentrifying but in the bottom quartile of gentrifying tracts for the increases in housing prices and rent between 2010-2015
	Mediate gentrification	181	gentrifying but in the 2 nd and 3 rd quartile of gentrifying tracts for the increases in housing prices and rent between 2010-2015
	Strong gentrification	180	gentrifying but in the top quartile of gentrifying tracts for the increases in housing prices and rent between 2010-2015



Summary statistics: Neighborhood Comparison

Initial Neighborhood Characteristics in 2010	Nongentrified	Gentrifying	Nongentrifiable
Count	992	495	1489
Median household Income	\$44086	\$45026	\$65838
% of college educated	10%	10%	24%
Median housing value	\$117300	\$105400	\$291400
Median gross rent	\$702	\$649	\$958
Changes in Neighborhood Characteristics 2010-2015			
Median % change in household income	+2%	+8%	+3%
Median % change in median housing value	-8%	+2%	-17%
Median % change in median gross rent	+7%	+11%	+9%
Median change in % college-educated	0%	+3%	+2%



Summary statistics: Households' Characteristics by Origin Tract's Gentrification Status

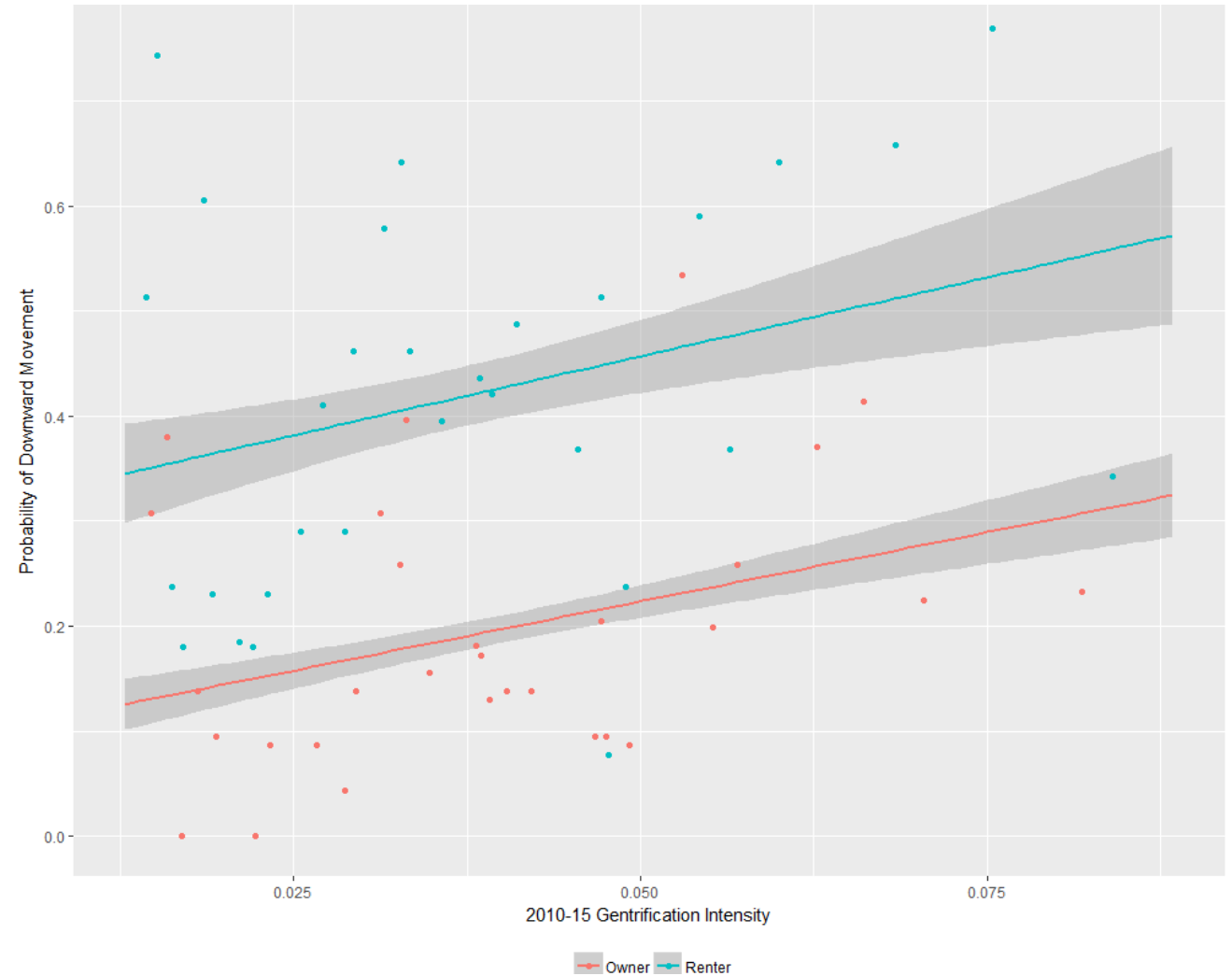
A "mover" household is defined as one who lives in a census tract different from where it lived one year ago

	Nongentrifying	Gentrifying	Nongentrifiable
Average Household Income	\$69667	\$70809	\$112411
Average length of stay at previous residence (years)	8.69	8.37	8.45
Age of Household head			
<25	4%	4%	4%
25-34	24%	24%	21%
35-44	26%	28%	27%
45-54	22%	20%	22%
55-64	13%	13%	14%
>65	11%	11%	12%
% of renter	24%	25%	17%
Household size	2.22	2.18	2.25
% that move to a lower-income tract	22%	25%	42%
Median % difference in destination-origin household income	+34%	+30%	+7%
% that move to a lower housing value tract	21%	26%	51%
Median % difference in destination-origin housing value	+30%	+28%	-1%
Household-years (sample size)	23,089	4,754	150,117



Graph: Downward Probability by Gentrification Stage

- **Y-axis:** Probability of downward movement
- **X-axis:** gentrification intensity in the origin neighborhood
- Both owner and renters are more likely to move to worse-off neighborhoods as gentrification intensifies in the origin increases (positive slope)
- At a given gentrification intensity, renters have higher probability to move to a worse-off neighborhood than owners (gap between two lines)



Empirical Specification

- For a given household that moved in year t :

$$\mathbf{1}(Down) = gent + \mathbf{1}(Renter) + gent * \mathbf{1}(Renter) + X_t$$

- $\mathbf{1}(Down)$: a binary variable of whether the household moved to a tract with lower median family income than its origin tract
- $gent$ is continuous variable that is generated by taking the average of a tract's 2010-2015 percentages changes in median housing price and median gross rent. e.g. a tract experienced 30% increase in housing price and 10% increase in rent, then its gentrification intensity is 20%.
- $\mathbf{1}(Renter)$ is an indicator variable of owner/renter status.
- Covariates X_t include household size, marital status, age of household head, household income, year fixed effect, length of stay in the previous residence.



Empirical Results

- Owners are consistently less likely to experience downward movement - The main hypothesis confirmed
- Movers from intensely gentrifying neighborhoods experience greater downward movement. Therefore, stage of gentrification matters (Ding et al. 2016; Newman and Wyly 2006)
- The owner-renter incidence does not widen/narrow as gentrification intensity changes. (insignificant interaction terms)

	<i>Dependent variable:</i>		
	Dummy:Downward		
	(1)	(2)	(3)
Gentrifying (Dummy)	0.024* (0.013)		
Gentrification Intensity(Continuous)		0.025** (0.012)	
Low Gentrification			-0.064*** (0.022)
Med Gentrification			0.038** (0.017)
High Gentrification			0.100*** (0.025)
Owner Dummy	-0.142*** (0.007)	-0.142*** (0.007)	-0.142*** (0.007)
Owner*Gentrifying(Dummy)	0.007 (0.015)		
Owner*Gentrification Intensity		0.008 (0.014)	
Owner*Low Gentrification			0.048* (0.026)
Owner*Med Gentrification			-0.026 (0.020)
Owner*High Gentrification			0.014 (0.028)
Observations	27,834	27,834	27,834
Adjusted R ²	0.108	0.108	0.110
Residual Std. Error	0.394	0.394	0.394
<i>Note:</i>	* p<0.1; ** p<0.05; *** p<0.01		



Robustness Check

- Alternative Gentrification Measures:
 - Column (1) uses the 2010-2015 change in a tract's share of college educated
 - Column (2) uses the 2010-2015 change in a tract's median family income
- Whatever metrics used, we have:
 - 1. positive correlation between downward movement and gentrification intensity
 - 2. stable owner-renter incidence gap (insignificant interaction terms)

	<i>Dependent variable:</i>	
	Dummy: Downward	
	(1)	(2)
Low Gentrification	-0.048** (0.022)	-0.003 (0.023)
Med Gentrification	0.012 (0.018)	0.010 (0.017)
High Gentrification	0.141*** (0.024)	0.089*** (0.025)
Owner Dummy	-0.141*** (0.007)	-0.142*** (0.007)
Owner*Low Gentrification	0.018 (0.026)	0.024 (0.027)
Owner*Med Gentrification	-0.004 (0.020)	0.028 (0.019)
Owner*High Gentrification	-0.016 (0.028)	-0.065** (0.029)
Observations	27,834	27,834
Adjusted R ²	0.111	0.108
Residual Std. Error	0.393	0.394
<i>Note:</i> * p<0.1; ** p<0.05; *** p<0.01		



Conclusion

- 1. Owners are consistently less likely to experience downward movement.
- 2. Downward movement is greatly impacted by the stage/intensity of gentrification. The stronger the gentrification, the greater the downward mobility in a tract.
- 3. Owner/renter incidence of downward movement do not vary by gentrification level. That is to say, the owner-renter gap is stable across gentrification levels.
- 4. The results call for targeted housing policies addressing different experiences of owners and renters in gentrifying neighborhoods. Meanwhile, it is also a call-out to the gentrification-displacement literature that although mobility rate is an important object of study, the downward movement of those that actually moved may be where gentrification plays a more significant role.

