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Does having a baby affect tenants' renting opportunities?

Experimental evidence from NYC

by

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Abstract

Access to reliable and stable housing is critical for the general population in urban areas and large cities. This paper tests for differential treatment in the rental housing market using an experiment conducted via e-mail for rental units advertised on-line. There are two emails with the same content, except for one shows the family status as childless and the other shows the family status as having an 18-month-old child. These emails were then sent to the landlords with an equal distribution. Apart from family status, there is no mention of socioeconomic status or any other identifying factors of the tenant. This study was conducted in the borough of Queens, New York. The findings of the study indicated a ten percentage point increase in responses when there were no children in the correspondence for both one bedroom and two bedroom apartments.

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1. Introduction

In 1968, the fair housing act was passed, that prohibits discrimination based on religion, sex, national origin or race in the rental, sale or financing of any housing. In 1988, the act was amended to include disability and family status (which would include women who were pregnant and children under 18 years of age). ("Fair Housing Act," Encyclopedia Britannica Online). Housing seclusion by ethnicity and race is a well-known characteristic that is abundant in cities across North America (Ross and Turner 2005, Fischer and Massey 2004). There has been prior research that suggests that discrimination in the housing market plays a big role in that process (Dion 2001; Yinger 1995).

At the time those studies were conducted the housing market was not as “connected” as it is today, meaning that finding a house back then was a bit different, because there were newspapers, real estate offices and telephone discussions. This leads to the question whether housing discrimination changed now that the market has moved online? Today there are many online tools available to find housing including dozens of mobile apps, countless websites and agents. Discrimination might not be as prevalent as it was a few years ago when the housing market was mostly offline. It might have been more difficult to hide discrimination back then when finding real estate usually included a direct contact. These days (2020), it is easy for someone to look at a person's name, socioeconomic or family status just through correspondence. If the landlord discriminates, it might be harder to detect.

It is much easier to “passively discriminate” when dealing with electronic communications and the online housing market. For example, based on a name or the mention of family status the landlord may choose to not reply to respondents of the advertisement or reply

selectively only to the tenants that seem favorable to them. Even if the landlord replies, they might say that the space is no longer available. This type of discrimination, however, is hard to quantify, because we can't just assume that a non-response or no availability means that there is discrimination taking place. As the online marketplace is a recent advancement, not a lot of studies have taken place in comparison to traditional publication and phone housing market studies. More research needs to be conducted about discrimination in the housing market.

As with previous research, correspondence studies are a logical way to conduct such studies. One of the more recent studies is a study by Ahmed and Hammarstedt (2008) in which they conducted a study involving names of different geographic origin and the role they play in response rate to housing requests in Sweden. They used a matched pair study with Middle Eastern names and Swedish names for housing requests and what they found was that the Middle Eastern names were receiving fifty percent fewer responses than the Swedish names. The current correspondence audit study tries to investigate possible housing discrimination in the online marketplace. By using electronic communication, it limits the research to the online domain only, making it for a more controlled research than it would be if phone calls and other traditional ways of interaction were used.

2. Literature Review

In the past thirty years, there have been numerous works in the field of economics, political science, psychology and sociology that used various experiments that provide evidence that discrimination does indeed exist. In this paper (*"Summary of Field Experiments on Discrimination")*, Duflo and Bertrand (2016) go into detail about the methodology of correspondence studies. In the case of studies about the housing market, researchers most often

send identical applications for housing to landlords differentiated only by the variable which is being examined (race, gender, etc.).

They note that the identifier most often manipulated in these studies are the applicants' names, which allow for the study of differences in gender, race, or ethnicity. The authors also highlight the strengths of the correspondence method[1] versus the audit method[2], including a better ability to control variables across groups and a lower marginal cost.

While the overwhelming number of studies come from the labor market, Duflo and Bertrand (2016) include a subsection related to housing. They point to studies of discrimination against Arabic names in Sweden (Duflo, Bertrand 2016); blacks and other minorities in the US (Duflo, Bertrand 2016); and immigrants in Italy and Spain (Duflo, Bertrand 2016). While nothing is present regarding family status, the authors note that altering the copy of the application to include what might be considered positive or negative information is a popular technique in these correspondence audit studies. Finally, the authors note the lack of differentiation between "taste-based" and statistical discrimination.

In a study by Bunel, Gorohouna, L'Horty, Petit, and Ris (2019) in the New Caledonian capital of Greater Noumea, the researchers used four different applicants, two of which were of local Kanak descent and two of European descent. The applicants applied for over three hundred housing positions. The authors found that housing providers strongly discriminated against the Kanak applicants, playing a key role in the segregation of neighborhoods.

[1] Correspondence studies compare call-back rates for fictitious applications instead of real-life auditors.

[2] Audit studies compare call-back rates on a given ad or listing for pairs of applicants.

In the study, four men sent out short emails in response to real estate advertisements on a local New Caledonian housing website. The ethnicity of the men was conveyed in this correspondence by their first and last names, which were easily identified as Kanak or European. A sentence meant to signal financial stability was added to some emails in order to separate out discrimination driven by preference from discrimination driven by information. The advertisements tested were mapped by neighborhood and eventually broken down into three groups based on the ratio of Kanaks to Europeans in each neighborhood.

The results were unambiguous. In the words of the authors, "We found that Kanak applicants are doubly penalized, first as a result of their less favorable, real or assumed, professional and financial situations, and, secondly, because of the ethnic preferences of the housing lessors. The latter are more marked when providers are individuals as opposed to real estate agencies." Discrimination based on social grounds was most pronounced in majority Kanak neighborhoods, while economic discrimination was mitigated by the financial stability indicator. The stability indicator was less helpful in majority-European neighborhoods. It was the conclusion of the authors that, "discrimination regarding access to housing plays an active role in residential segregation in the Nouméa metropolitan area."

In the paper by Edelman, Luca and Svirsky (2017), the authors conduct an experiment with Airbnb which is an online platform for short-term rentals. As of 2020 Airbnb offers over 7 million accommodations (listings). (In 2015) Airbnb was offering 2 million accommodations.

The way Airbnb works is that anyone who has a room, house or space to rent can list it on the Airbnb website. The hosts who have a listing usually include a photo and reviews about the space that they are renting out. A prospective guest can see the reviews and then inquire

about the rental by setting up a profile and clicking on the "Contact" button to make an initial contact with the host. In the article, the authors measure discrimination by first collecting information on all the listings that were available by the website in Dallas, Baltimore, Los Angeles, St. Louis, and Washington, DC. Their objective was to collect data from 20 metro areas.

The authors used a mix of Artificial Intelligence and Mechanical Turk workers to collect data on the hosts, including their profile picture. This was then analyzed in order to identify their race, gender and age. Mechanical Turk is a marketplace that crowdsources and is provided by Amazon. Basically, it is used for research by employing real humans to analyze different types of data objectively. In addition to collecting the initial data on the hosts (profile picture, name), the authors collected information from the listings including price, number of rooms, fees and different policies.

The authors used four groups to test for discrimination. The groups were given names signaling African American males or females and Caucasian males or females based on the frequency of names, derived from birth certificates of babies born in Massachusetts. To validate that the names that they created contained the signal intended, they conducted a survey that asked participants to put the names into the appropriate categories that they thought matched the name. Once the authors had the names, they went on to create twenty Airbnb accounts for the prospective tenants which were all indistinguishable from each other except for the name. No profile pictures were included with these guest accounts. The guest accounts of the prospective tenants were being used for correspondence with prospective hosts. Their findings were that discrimination takes place against African Americans, with African American names having a 16% less acceptance rate than their Caucasian name counterparts.

3. Methods / Data / Experimental Design

Measuring housing discrimination in general has been done by researchers mainly with two methods, those two methods are audits and complaints (Ross and Turner 2005, Fischer and Massey 2004). With regards to complaints[3], they are not always the best way to measure discrimination, because that kind of information is based on perception of discrimination by someone and not the actual measure of it. A correspondence audit-based study (Neumark 2012), on the other hand, can yield results that are more objective and measurable. Regarding the typical audit study methodology, two individuals are matched for all related characteristics, except for the characteristic that is supposed to lead to discrimination, e.g. family status, race or gender. Then those "auditors" submit job, housing, mortgage or other applications or begin bargaining for a specific good or service. The results that they receive and the handling from these actions are recorded, observed and examined to determine if there are any sort of patterns in differential treatment on grounds of the trait having studied (Fix and Struyk 1993). Discrimination is said to have taken place when the subjects being evaluated that have a given characteristic are treated differently than the people that do not have that characteristic (Yinger 1998).

The current research is an internet-based correspondence audit study to evaluate whether landlords or their agents act differently when prospective tenants self-identify as parents. It is theoretically unclear whether landlords will prefer to rent to parents because they are viewed as more responsible or prefer to rent to the childless because they may be assumed to cause less damage and disturbance. The aggregate distribution of preferences was tested by sending identical messages except for mention of family status of preliminary inquiry to a random sample

[3] Complaints mainly to the department of housing and urban development or the responsible authorities.

of rental offers listed on Craig's List. Queens, NY, was chosen as the focus of the research because of its diverse population.

Founded in 1995, Craigslist is a website that had started off as a school project for its creator Craig Newmark to send listings about local events to his friends via an email distribution list which he had compiled. The year after its founding, it had moved to a static website that then featured classified advertisements in different categories. Over the years it has grown in popularity with a presence in over 70 countries (wikipedia, 2020). Currently many people use Craigslist to find apartments and housing, in addition to the other online platforms that exist, like Zillow, Streeteasy and Trulia.

The other online platforms make it easier to find and apply for housing, however they are not like Craigslist which shows the user a listing and presents contact information. The other online platforms like Zillow, Streeteasy and Trulia store the user's information and that information is used automatically when the user expresses interest in a rental by clicking on a button.

These platforms also contain price history and some even offer loans for housing. The reason Craigslist was chosen for the research is because people of all ages and all backgrounds still use it and correspondence is mainly done through email, delivering a more personal experience. If I had used an online platform specifically for housing, (for instance Zillow), everything is done through the app and through a prefilled-out form, rather than by personal contact. The data that would be returned from these platforms would have more errors and be less representative of the actual housing situation because it would be easier for the receiving end to screen requests and just ignore them.

For this research, two hundred applications were sent among which half of the subjects received each version of the letter. For each rental listing, the emails are identical - the only difference is the information revealing the applicant's family status (defined as "Email Version A" or "Email Version B").

The email template is as follows:

"Dear Sir/ Madam,

My husband, and I are interested in the apartment you have for rent.

***VERSION A**: "We have one 18-month old child."*

***VERSION B:** "We are childless"*

Is the apartment still available? We are interested in moving next month. We have a good rental history and credit record. We can provide references if requested.

Regards, Christina

Those who respond to the email, receive a response: *"Thank you for your interest, but we have already found a place to live."*

Vacancies posted in which individuals were looking for roommates, units in the same house as the landlord, or providers of short-term rentals (e.g. hostels, Airbnb, etc.) were excluded from the study. Repeated listings were removed by manually scanning each listing and selecting only the listings that are unique. This eliminated postings made for the same rental property, that had different contact information and those with the same contact information, but slightly different descriptions.

Applications from the childless couple and from the couple with an 18-month-old child were sent in random order. The elapsed times between the listing and the response were also randomized, varying between 1 to 4 days. The data was gathered manually, collecting each property owner's, contact emails, as well as all the self-provided structural characteristics of the unit (e.g. size, how many bedrooms, etc.), the rent, and the location.

4. Results

As we can see in Table 1, when there is mention of an 18-month-old child in the correspondence, the response rate for both one bedroom and two-bedroom apartments was 52% and 48% not responding. When there clearly were no children in the correspondence for both one bedroom and two-bedroom apartments the response rate was 62%, a 10 percentage point increase in responses, which is a significant increase. It is important to note here that the response rates were the same for both one and two-bedroom apartments in both scenarios.

As can be seen in Table 2, other findings from the data collected were as follows: approximately, 57% of the landlords/agents in the sample of 200 observations responded. In half of the emails, it was mentioned that we had an 18-month-old child and in the other half that we were childless. The average monthly rent for Queens, NY was $2058. Additionally, 80% of the landlords/agents are okay with pets and 76% of the landlords/agents are okay with smoking.

In Table 3 and 4, the findings from the data collected were similar for both groups (treatment and control). For the treatment group, in the correspondence the prospective tenant mentions that they have an 18-month old child. For the control group the prospective tenants mention that they are childless. The average monthly rent for Queens was $2052.78 for the treatment group and 2063.08 for the control group. For the treatment groups 81% of the

landlords/agents are okay with pets and 77% are ok with smoking. For the control group 79% of the landlords/agents are okay with pets and 75% are ok with smoking.

Coefficients and marginal effects from the logit regressions of response on the experimental treatment and other characteristics are presented in Tables 5 and 6. When the correspondence mentions that the correspondent had an 18-month-old child, a response was 10 percentage points less likely and had a z-statistic equal to 1.49. The higher the rent price, the more likely it is that we will get a response from the inquiry with a z-statistic equal to 1.98. If the listing / landlords are okay with pets, it is more likely to get a response, about 6 percentage points more with z-statistic equal to 0.66. If smoking in the apartment is okay, it is more likely to get a response by 1 percentage point with a z-statistic equal to 0.15.

This data shows that there might be some type of correlation with landlords that allow pets and smoking in the unit with the willingness / urgency to rent the unit. Allowing smoking and pets can also be correlated with a more tolerant landlord which is less discriminatory.

Table 7 and 8, while interpreting the coefficients and marginal effects from the logit regressions, present the following results. When the correspondence mentions the prospective tenant having an 18-month-old child and the rent for the listing was less or equal to $1972.5, it was less likely to get a response by 10.9 percentage points with a z-statistic equal to 1.12. If the rent was more than $1972.5(median rent), it was less likely to get a response by 8.9 percentage points with a z-statistic equal to 0.92. Comparing the two (low rent, high rent) it is significant to note that there is a 2 percentage points increase in responses from the higher rent apartments.

If the listing / landlords are okay with pets, responses are more likely, when the rent was less or equal to $1972.5, the likelihood the responses went up by 3 percentage points with a

z-statistic equal to 0.22. When the rent was more than $1972.5, the likelihood of the responses went up by 7.8 percentage points with a z-statistic equal to 0.59. If smoking in the apartment is okay, for lower rent prices it is less likely to get a response by 1.7 percentage points with a z-statistic equal to 0.13. For higher rents, it is more likely to get a response by 5.5 percentage points with a z-statistic equal to 0.45.

In Table 9, I have calculated power in several reasonable scenarios, and these are my findings based on the variables applied. If the alpha level (the probability of rejecting the null hypothesis[4] when it is true) equals 0.05 and has a power (the probability of rejecting the null hypothesis when it is false) of 0.8, which means that in order to reject the null hypothesis 80% of the time, sample size should have been 768 observations. If the resources had been available to collect 768 observations, collecting such a large sample it is likely that the results would have been statistically significant. If we wanted to test at 90% significance level (which an alpha 0.10), we would find significance 80% of the time with a sampled 606 observations.

5. Conclusion

Discrimination can be a powerful and unnecessary deterrent for finding housing in society today, causing inconvenience to people who are searching for housing. It is just one more hurdle that people must overcome when they are searching for housing. Discrimination in the offline housing market has existed for years and there are many studies (including those mentioned above) that conclude its existence and the difficulty that it causes in finding housing

[4] This hypothesis predicts that what we are testing for will not influence the variable of interest.

for some groups of people. In the online housing marketplace, it seems as if this trend has migrated over.

Cyberpsychology can explain a great deal as to why certain behaviors take place when it comes to online listings for housing. Online it is easier for people to choose their words and escape certain groups of people and situations (Walther 2007, Joinson 2002). With online correspondence a landlord may not respond to a request because there might be fewer repercussions than as if it was “offline” which would usually be in the presence of other people. The landlord might make the people searching for housing feel uncomfortable making discrimination more obvious.

In general, when dealing with power and statistical studies the norm is to apply an alpha level of 0.05 with a power of 0.8, which is generally considered the standard. In my case, I do not want to reject the null 80% of the time which would give me a power of 0.8. I would like to go lower, let's say a power of 0.7, the number of samples that I would need, drops more down to 462 which is closer to my 200, but not there yet.

Even though my sample is underpowered, and I did not have the resources to collect 768 samples (which was found by using the general alpha of 0.05 and power of 0.8). I tried different combinations (Table 9) and it turns out that if I had an alpha of 0.1 and a power of 0.42, then I would reach my sample size of two hundred (204 to be exact). Given my sample size, I did not detect significance because the power was low. The current study, although underpowered provides evidence that revealing having a small child may reduce the availability of apartments to perspective renters. My study can contribute to nondiscriminatory practices by exhibiting the overall behavior patterns of landlords in these situations. These results might guide authorities who are drafting policies for nondiscriminatory practices in the housing market.

Appendix

Table 1 - Results

	Child		No Child	
	One Bedroom	Two Bedrooms	One Bedroom	Two Bedrooms
Response	52%	52%	62%	62%
No Response	48%	48%	38%	38%
	100%	100%	100%	100%

Table 2 - Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
response	200	0.57	0.496318	0	1
has child	200	0.5	0.501255	0	1
rent ($)	200	2057.93	603.804	1000	6600
pets	200	0.8	0.401004	0	1
smoking	200	0.76	0.428155	0	1

Table 3 - Summary Statistics with child

Variable	Obs	Mean	Std. Dev.	Min	Max
response	100	0.52	0.502117	0	1
rent($)	100	2052.78	562.2206	1100	4850
pets	100	0.81	0.394277	0	1
smoking	100	0.77	0.422953	0	1

Table 4 - Summary Statistics when childless

Variable	Obs	Mean	Std. Dev.	Min	Max
response	100	0.62	0.487832	0	1
rent($)	100	2063.08	645.5197	1000	6600
pets	100	0.79	0.40936	0	1
smoking	100	0.75	0.435194	0	1

Table 5- Coefficients (full sample)

	response (1)	response (2)	response (3)	response (4)	response (5)
has child	-0.410	-0.415	-0.421	-0.421	-0.424
	(1.43)	(1.43)	(1.45)	(1.45)	(1.46)
rent		0.001	0.001	0.001	0.001
		(1.75)	(1.73)	(1.73)	(1.91)
pets			0.226	0.190	0.262
			(0.63)	(0.49)	(0.66)
smoking				0.086	0.054
				(0.23)	(0.15)
bedrooms					-0.330
					(1.00)
_cons	0.490	-0.540	-0.712	-0.743	-0.581
	(2.38)*	(0.88)	(1.05)	(1.08)	(0.80)
N	200	200	200	200	200

z statistics in parentheses

* $p<0.05$; ** $p<0.01$

Table 6 – Marginal Effects (full sample)

	response (1)	response (2)	response (3)	response (4)	response (5)
has child	-0.099	-0.099	-0.100	-0.100	-0.100
	(1.45)	(1.46)	(1.48)	(1.48)	(1.49)
rent		0.000	0.000	0.000	0.000
		(1.79)	(1.78)	(1.77)	(1.98)*
pets			0.054	0.045	0.062
			(0.63)	(0.49)	(0.66)
smoking				0.020	0.013
				(0.23)	(0.15)
bedrooms					-0.078
					(1.01)
N (sample sz)	200	200	200	200	200

z statistics in parentheses

* $p<0.05$; ** $p<0.01$

Table 7- Coefficients (by rent level)

	response if rent<=1972.5	response if rent>1972.5
has child	-0.447	-0.371
	(1.09)	(0.91)
pets	0.124	0.326
	(0.22)	(0.58)
smoking	-0.068	0.229
	(0.13)	(0.45)
bedrooms	-0.003	-0.161
	(0.01)	(0.33)
_cons	0.438	0.351
	(0.57)	(0.37)
N	100	100

z statistics in parentheses

* $p<0.05$; ** $p<0.01$

Table 8- Marginal Effects (by rent level)

	response if rent<=1972.5	response if rent>1972.5
has child	-0.109	-0.089
	(1.12)	(0.92)
pets	0.030	0.078
	(0.22)	(0.59)
smoking	-0.017	0.055
	(0.13)	(0.45)
bedrooms	-0.001	-0.038
	(0.01)	(0.33)

z statistics in parentheses

* $p<0.05$; ** $p<0.01$

Table 9 - Power Calculation

no child (pvalue)	has child (pvalue)	alpha	power	N (sample size)
0.62	0.52	0.05	0.8	768
0.62	0.52	0.1	0.8	606
0.62	0.52	0.1	0.7	462
0.62	0.52	0.1	0.5	266
0.62	0.52	0.1	0.42	204
0.62	0.42	0.05	0.8	194
0.62	0.47	0.05	0.8	344
0.62	0.47	0.1	0.8	272

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