

Sexual Orientation Discrimination in Mortgage Lending: Evidence from a (Pilot) Field Experiment

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Why focus on sexual orientation discrimination in the mortgage market?

- Homeownership is a common method for wealth accumulation
 - However, not all individuals have equal access to homeownership
- Same-sex couples are less likely to own homes than different-sex married couples (Jepsen & Jepsen, 2009; Leppel, 2007)
- Mortgage approval rates are lower, and mortgage terms are worse, for relatively similar same- and different-sex couples. (Gao and Sun, 2019; Dillbary and Edwards 2019)
- There are currently no federal laws prohibiting against sexual orientation discrimination in the mortgage market

Previous Literature

Field experiments:

Tests for sexual orientation discrimination in the rental market:

- Friedman et al. (2013), Schwegman (2019), Levy et al. (2017), Ahmed & Hammarstedt (2009)

Tests for sexual orientation discrimination in the labor market:

- Weichselbaumer (2003), Drydakis (2009, 2011, 2014), Tilcsik (2011), Bailey (2013), Pedulla (2014), Weichselbaumer (2015), Mishel (2016)

Tests for racial discrimination in mortgage market:

- Hanson, Hawley, Martin, & Liu (2016)
- Emailed Mortgage Loan Originators (MLOs) to see how they react to identical mortgage applicants who have different names (white vs. African-American).
- This study forms the back-bone for our experiment.

Previous Literature

Observational studies:

First study to attempt to measure discrimination on the basis of sexual orientation in the mortgage market:

- Gao & Sun (2019)
- “The results reveal that, in contrast with otherwise comparable loan applicants, the average approval rate for potentially homosexual applicants is about 3% to 8% lower. Furthermore, conditional on being approved, their financing cost is about 0.02% to 0.2% higher. ...no evidence that homosexual status is associated with higher default risk.”

This project:

Research questions:

- Do mortgage loan originators (MLOs) discriminate against credit-worthy individuals based on their sexual orientation and/or their parental status?
- MLOs are a primary contact for borrowers during the search and application for a mortgage. They monitor the loan process from application to closing.
- Discrimination by an MLO could lead to reduced access, delays, lower loan amounts, or worse terms.
- If discrimination is detected, what is behind it or what affects it?
 - E.g., gender, homophobic attitudes, assumptions about credit-worthiness, assumptions about number of children, state credit discrimination laws, ...

Introduction to Pilot Methodology

- A pilot study is sort of a “trial” study – do a small amount of data collection to see how it goes, and then make adjustments.
- Sent emails to 110 Mortgage Loan Originators (MLOs)
 - Each MLO receives four emails over the course of four weeks, in random order:
 - Same-sex female married couple
 - Same-sex male married couple
 - Opposite-sex married couple, wife sends the email
 - Opposite-sex married couple, husband sends the email
- Test for differential treatment by MLOs by comparing:
 - Response rate
 - Delay of response (*don't have these results yet*)
 - Response quality (*don't have these results yet*)

Sexual Orientation Signal

- In introduction and body of email

- Introduction:

“Hello, my name is [*male/female name*]. My [*husband, male name/wife, female name*] and I are interested in taking out a mortgage with your bank.”

- Body:

“My [husband/wife] and I got your contact information online and we hope that you can answer some questions for us.”

- While it may be odd to reveal sexual orientation, there are large benefits to being married, and the marriage would be disclosed at some point anyways.

Parental Status Signals

- Randomly assign emails a “family structure”
 - No children (no mention of children in email)
 - Expecting first child (for all couples but same-gender male)
 - 1 child
 - 2 children
- Also allows us to control for statistical discrimination (may assume same-gender couple = fewer kids)
- Also allows us to test for if same-gender couples face a larger child penalty, given negative attitudes about same-gender parenting.

Credit score signal

- Randomly assign emails into credit score groups
 - Low credit score
 - High credit score
- In full experiment, this allows us to quantify discrimination as a credit score penalty
 - e.g., in Hanson et al. (2016), having an African-American name was equivalent to a 73-point lower credit score.

Occupation and tenure signals

- Randomly mention one of nine occupations for each applicant and applicant's spouse.
- Email originator also casually mentions how long they've been at that job (tenure).
- Both are relevant (and applicable) additional signals for credit worthiness.
- Occupations: average incomes range to \$20,000 to over \$200,000.

- | | |
|-----------------------|--------------------------|
| • Construction Worker | • Registered Nurse |
| • Childcare provider | • Human Resource Manager |
| • Retail Worker | • Psychiatrist |
| • High School Teacher | • Dermatologist |
| • Admin Assistant | |

Email construction template

Appendix 1a: Email Template

1) [EMAIL SUBJECT LINE]

2) [GREETING],

My name is [MALE NAME or FEMALE NAME] and my [HUSBAND, MALE NAME or WIFE, FEMALE NAME] and I are interested in 3) [PRODUCT]. We 4) [HOME SEARCH] 5) [X] bedrooms) *[if children, then: because we* 6a) [ARE EXPECTING] or 6b) [HAVE (X CHILDREN or KIDS)].

7) [SOURCE]

8) [CREDIT SCORE] [RANDOMLY ASSIGNED SCORE WITHIN HIGH OR LOW GROUP]. I have been 9a) [OCCUPATION] for 9b) [OCCUPATION TENURE] years and [spouse name] is a 9c) [SPOUSE OCCUPATION].

10) [PLEASANTRY]

11a and 11b) [QUESTION #1a or QUESTION #2a]

12a and 12b) [QUESTION #1b or QUESTION #2b]

13) [VALEDICTION],

[NAME]

Email components: Part 1

Appendix 1b. Email Components

1) EMAIL SUBJECT LINE

Requesting information about a mortgage
Mortgage loan questions
Questions regarding applying for a home loan
Inquiry about mortgage information

2) GREETING

Hello
Hi
Greetings

3) PRODUCT

A home loan
A mortgage loan
Getting a home loan
Applying for a home loan

4) HOME SEARCH

Are looking for a home of X bedrooms
Are in search of a house with X bedrooms
Would like to find a home with X bedrooms
Want a house with X bedrooms

5) BEDROOM NUMBER:

Dependent upon children
No children:
1 bedroom
2 bedrooms
Children/expecting a child:
2 bedrooms
3 bedrooms

6) STATUS OF CHILDREN

Expecting
Have

6a) *if* EXPECTING

We are expecting our first child
We are pregnant with our first baby
We are expecting a child
We are having our first baby soon

6b) *if* HAVE

1 child
1 kid
2 children
2 kids

7) SOURCE

My [husband/wife] found your information online and thought you could help us.
My [husband/wife] and I got your contact information online and we hope that you can answer some questions for us.
My [husband/wife] and I found you on the web and think you might be able to help.
My [husband/wife] got your information online and we think you

8) CREDIT SCORE

My credit score is
I know that my credit score is
I already know that my credit score is
I am aware that my credit score is

Email components: Part 2

9a) OCCUPATION

Nurse	Human resource manager
Retail worker	Healthcare administrator
Construction worker	Psychiatrist
Administrative assistant	Dermatologist
Childcare provider	Registered nurse
High school teacher	

9b) OCCUPATION TENURE

Less than a year
About a year
Almost 2 years
Almost 3 years

9c) SPOUSE OCCUPATION

See 9a

10) PLEASANTRY

We have a few questions for you.
We are emailing to ask a couple questions.
We are curious about a couple of things.
We were wondering about a few things.

11a) QUESTION #1a

What interest rate should we expect?
Can you provide us with information about current interest rates?
What do interests rates looks like currently?
What kind of interest rates should we anticipate?

11b) QUESTION #2a

What is an estimate of the expected fees?
What are the typical fees?
What fees should I expect?
Do you have an estimate of the fees I would pay?

12a) QUESTION #1b

What types of loans are available to us?
Can you provide us with information on the available loans?
What kinds of loans are offered?
Can you explain to us what types of loans are available?

12b) QUESTION #2b

What other information will you need from me?
Do you need any additional information?
What other sort of information do you need moving forward?
What more will you need from me?

13) VALEDICTION

Sincerely
Thank you
Best Regards
Thank you very much

Example



Jennifer Hall <aubreyjz123@gmail.com>

Yesterday, 10:51 AM

Balfe, Catherine A ✕



Reply all | ▾

Hi,

I am Jennifer and my wife and I are interested in a mortgage loan. Ideally, we are in search of a house with 1 bedroom.

My wife, Julie, got your contact information online and we hope that you can answer some questions for us.

I know that my credit score is 742. I currently work as a childcare provider and have been doing so for almost 2 years.

Julie works as a high school teacher.

We are emailing to ask a couple of questions.

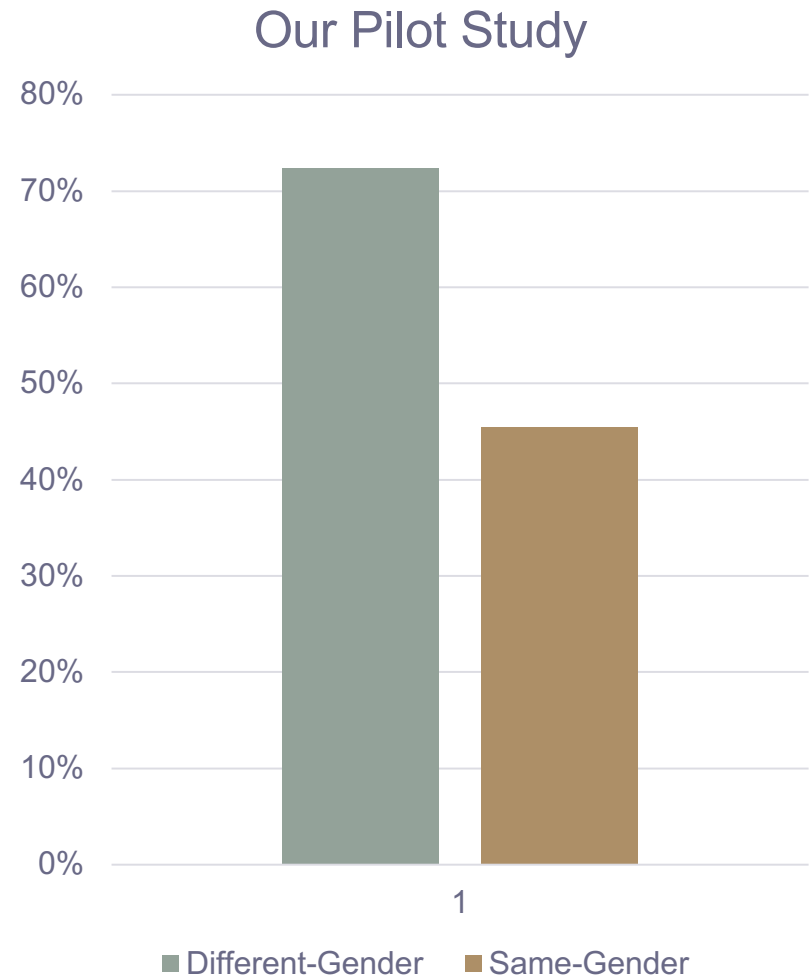
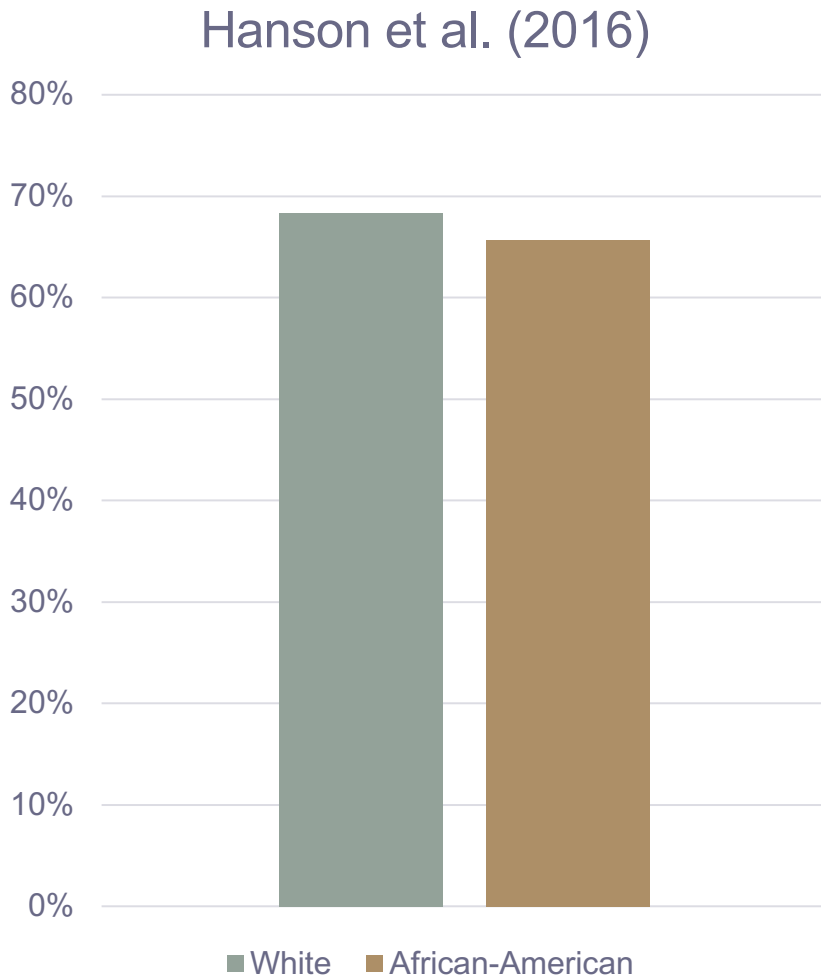
What are the typical fees?

Do you need any additional information?

Thank you,

Jennifer

Results from Pilot Study (vs. Hanson et al. 2016)



Regression Results

$$\begin{aligned}
 &Response_i \\
 &= \beta_0 + \beta_1 SameMale_i \\
 &+ \beta_2 SameFemale_i + \beta_3 DiffFemale_i \\
 &+ \beta_4 Expecting_i + \beta_5 OneChild_i \\
 &+ \beta_6 TwoChildren_i + \beta_7 HighCredit_i \\
 &+ \beta_8 \log(occupationalincome)_i \\
 &+ \beta_9 Tenure_i + RoundFES_i \beta_{10} \\
 &+ TemplateFES_i \beta_{11} + \varepsilon_i
 \end{aligned}$$

- Excluded category: Different-Gender Male Originator (response rate of 72.34%)
- Linear probability model
- Standard errors clustered on MLO
- Estimation is using our preferred sample, “Restricted Sample #2”

Same-Gender Male	-0.253**
	(0.103)
Same-Gender Female	-0.340***
	(0.120)
Different-Gender Female Originator	-0.018
	(0.126)
Expecting a Child	0.031
	(0.116)
Has One Child	-0.100
	(0.107)
Has Two Children	-0.216**
	(0.102)
High Credit Score (vs. low)	-0.013
	(0.103)
Log Occupational Income	-0.034
	(0.079)
Occupational Tenure (years)	0.038
	(0.049)
Callback Rate for Different-Gender,	72.34%

Next Steps

- Update and tweak methodology (your comments are very helpful at this stage).
- File pre-analysis plan in January 2022.
- Start collecting publicly-posted MLO information in December 2021.
- Start emailing MLOs in February 2022.

We will likely be hiring RAs in December, and then perhaps later in early 2022. The job ad will appear on Handshake, will be sent to econ majors, and distributed in other ways. If you are interested in a position and you haven't see any ad posted by the end of December then reach out to me.

Thank you!

Estimating Main Effects – *Interaction variables*

Interaction Variable	Hypothesis	Source
LGBTQ Inclusivity	Rates of S.O. discrimination will vary by region and will decrease as city policies become more inclusive of LGBTQ people	Municipal Equality Index (MEI) from the HRC
Gay and lesbian Population by ZIP Code	Rates of S.O. discrimination will decrease as gay and lesbian population increases, as found by Gao and Sun (<i>forthcoming</i>).	Williams Institute's county-level LGBT population estimates
MLO Gender	May discriminate less based on gender or family structure. S.O. discrimination unclear	We record MLO gender, if obvious to us through a photo and/or name during data collection
Type of Lending Institution	We may detect less discrimination from large banks (i.e. Capitol One, Chase) as they may have stricter anti-discrimination policies.	We record the type of lending institution during data collection. Options are: <ul style="list-style-type: none"> • Large corporate bank • Local bank • Mortgage loan originator firm (national) • Mortgage loan originator firm (local/state-wide)
State Policy Protections for LGBTQ Population	We may detect less discrimination in states with LGBTQ policy protections in the credit market.	15 states and D.C. protect against discrimination on the basis of sexual orientation in the credit market.

References

- Ahmed, A. M., & Hammarstedt, M. (2009). Detecting discrimination against homosexuals: Evidence from a field experiment on the Internet. *Economica*, 76(303), 588-597.
- Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *The American Economic Review*, 94(4), 991-1013.
- Friedman, S., Reynolds, A., Scovill, S., Brassier, F. R., Campbell, R., & Ballou, M. (2013). An estimate of housing discrimination against same-sex couples. Available at SSRN: <https://ssrn.com/abstract=2284243> or <http://dx.doi.org/10.2139/ssrn.2284243>
- Gao, L. & Sun, H. "The Rainbow of Credit: Same-Sex Mortgage Discrimination and Two-sided Spillover Effect", *accepted by the Proceedings of the National Academy of Sciences of USA, (PNAS)*.
- Hanson, A., Hawley, Z., Martin, H., & Liu, B. (2016). Discrimination in mortgage lending: Evidence from a correspondence experiment. *Journal of Urban Economics*, 92, 48-65.
- Jepsen, C., & Jepsen, L. K. (2009). Does home ownership vary by sexual orientation?. *Regional Science and Urban Economics*, 39(3), 307-315.
- Lautz, J., Dunn, M., Snowden, B., Riggs, A., Horowitz, B. (2017). *2017 Profile of Home Buyers and Sellers*. Retrieved from <https://www.nar.realtor/sites/default/files/documents/2017-profile-of-home-buyers-and-sellers-11-20-2017.pdf>
- Leppel, K. (2007). Married and unmarried, opposite and same-sex couples: a decomposition approach. *Journal of Housing Research*, 16(1), 61-81.

References

- Levy, D. K., Wissoker, D., Aranda, C. L., Howell, B., Pitingolo, R., Sewell, S., & Santos, R. (2017). A Paired-Testing Pilot Study of Housing Discrimination against Same-Sex Couples and Transgender Individuals. *The Urban Institute*.
- Neumark, D., Burn, I., & Button, P. (*forthcoming*). Age Discrimination and Hiring of Older Workers. *Journal of Political Economy*.
- Robinson, J. K. (2002). Race, gender, and familial status: discrimination in one US mortgage lending market. *Feminist Economics*, 8(2), 63-85.
- Schwegman, D. (2018). *Understanding Discrimination against Same-Sex Couples in the United States: Evidence from an Email Correspondence Audit* (No. 210). Center for Policy Research, Maxwell School, Syracuse University.
- Tilcsik, A. (2011). Pride and Prejudice: Employment Discrimination against Openly Gay Men in the United States 1. *American Journal of Sociology*, 117(2), 586-626.

Role of MLOs

- What are Mortgage Loan Originators (MLOs)?
 - Primary contact for borrowers during the search and application for a mortgage
 - Analyze and screen preliminary loan requests
 - Gather background financial information
 - Submit loan applications
 - Monitor loan process from application to closing
- An email response from an MLO can be the first step in the information gathering stage of receiving a loan

Example



Heather Evans <aubreyjz123@gmail.com>

Yesterday, 11:36 AM

Balfe, Catherine A ✕



Reply all | ▾

Hi,

My name is Heather and my husband, James, and I are interested in a mortgage loan. We are in search of a house with 2 bedrooms because we are expecting a child.

We got your contact information online and we hope that you can answer some questions for us.

I'm pretty sure my credit score is 750. I have been an administrative assistant for almost 2 years now, and James is a high school teacher.

We are emailing to ask a couple of questions.

Can you provide us with information on the available loans?

Do you need any additional information?

Thank you,

Heather

Example



James Evans <aubreyjz123@gmail.com>

Yesterday, 10:43 AM

Balfe, Catherine A ✕



Reply all | v

Hi,

My name is James. My husband, Kevin, and I are interested in a mortgage loan. We are in search of a house with 2 bedrooms, as we have 1 kid.

I got your contact information online and we hope that you can answer some questions for us.

I already know that my credit score is 742. I've been working as an administrative assistant for almost 2 years and my husband works as a high school teacher.

We are emailing to ask a couple of questions.

What are the typical fees?

Can you provide us with information on the available loans?

Thank you,

James and Kevin

Example



Steven Thompson <aubreyjz123@gmail.com>

Yesterday, 11:13 AM

Balfe, Catherine A ✉



Reply all | ▼

Greetings,

My name is Steven. My wife, Rebecca, and I are interested in applying for a home loan. We want a house with 2 bedrooms.

I got your information online and we think you will be able to answer our questions.

I already know that my credit score is 635. I've been working as a dermatologist for almost 3 years now and my wife works as a registered nurse.

We are wondering a few things.

Do you have an estimate of the fees I would pay?

Can you explain to us what types of loans are available?

Thank you very much,

Steven and Rebecca