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## Her Longer Road Home: Disparities in Mortgage Lending to Women in the Chicago Region



## Acknowledgments

The author would like to thank JPMorgan Chase for their generous support of this research report. The author also thanks Woodstock staff Beverly Berryhill, Patricia Woods-Hessing, Dory Rand, Courtney Eccles, Katie Buitrago, Michael Aumiller, Julianna Nunez, and Tracy Hoofe for their invaluable assistance in the production of this report.

## About the Author

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# Her Longer Road Home: Disparities in Mortgage Lending to Women in the Chicago Region

## Executive Summary

This study examines women's access to mortgages in the Chicago six county region to determine whether female mortgage applicants may be disadvantaged in securing financing to either purchase a home or refinance one already owned. This research examines additional factors, beyond the race or ethnicity of the applicant, which may be contributing to the disparities in origination rates. Using HMDA data for the period 2011 to 2013, the research explores three factors that may be correlated with disparities in origination rates for female applicants: 1) the income level of the borrower; 2) the type of loan applied for; and 3) the geographic location of the property within the Chicago region. In addition, we analyzed data from all lenders that reported receiving at least one percent of all applications for the study period to see if there were differences in origination rates among the institutions.

The study found that:

- Mortgage applications from most women and women with co-applicants are less likely to be originated than mortgage applications from men and men with co-applicants, even controlling for loan-to-income ratio.
- The disparities between the origination rates of men and women persist across both conventional and government-backed mortgages.
- Mortgage applications from low-income women were the only ones more likely to be originated than mortgage applications from men of similar income.
- Bank of America, PNC, US Bank, and Wells Fargo had above-average gender disparities across all categories for purchase loans, while Fifth Third Bank, Provident Funding Group, and US Bank had above-average gender disparities across all categories for refinance loans.
- Disparities between male and female origination rates were highest in Will County for both purchase and refinance mortgages, while disparities between male-headed and female-headed joint application origination rates were highest in Will County for purchase mortgages and in DuPage County for refinance mortgages.
- There were significant disparities in the reasons for denial between female applicants and male applicants.

Based on these findings, we recommend that:

- Mortgage lenders should examine their mortgage lending processes to detect and correct potentially discriminatory practices.
- Regulators should further investigate possible gender discrimination in mortgage lending practices, particularly for lenders with above-average disparities.
- The Consumer Financial Protection Bureau must expeditiously finalize enhancements to the Home Mortgage Disclosure Act.
- Policies to reduce the gender wage gap should be expanded and enforced.

## Introduction

Research has repeatedly demonstrated the income gap between working women and men. Women working full time earn about 77 cents for every dollar a man earns, a gap that has decreased only slightly over the past two decades (DeNavas-Walt, Proctor, and Smith 2012; JEC 2010)<sup>i</sup>. Some of the gap may be explained by factors that vary by gender, such as college major, chosen occupation, and taking leave for family reasons. For example, women are more likely than men to become public school teachers, an occupation that typically pays less than other careers that require a college degree. Research has shown, however, that the higher the percentage of women in an occupation, the lower the pay (Reskin and Bielby 2005)<sup>ii</sup>, and that women tend to be paid less than men even within the same occupation (Hegewisch and Matite 2013)<sup>iii</sup>. Even controlling for factors such as educational differences, occupation, and hours worked, a significant portion of the gap remains unexplained (Corbett and Hill 2012; Dey and Hill 2007)<sup>iv</sup>. The income gap for women is exacerbated by the variability of work schedules that make earnings fluctuate from week to week and the lack of benefits, such as paid sick leave or parental leave, that are common in industries and occupations in which women commonly work.

The income gap, however, is considerably smaller than the wealth gap between working age women and men. Wealth, the difference between assets and liabilities, is a key measure of financial security because it provides resources to meet unexpected expenses, cope with the loss of income, and supplement Social Security benefits. Invested wealth can provide additional income, further increasing a person's ability to accumulate additional wealth. Finally, wealth can be passed on across generations, conferring advantages to a person's heirs.

Women are disadvantaged in building wealth from the start because of the income gap. They have less income to meet current needs, leaving less of a surplus to invest. Chang (2011)<sup>v</sup> examined the wealth gap between women and men by analyzing data from the 2007 Survey of Consumer Finances. Her research showed that single women between the ages of 18 and 64 years old have median wealth that is 49 percent of the median for single men and 12 percent of the median for couples. The gap is even more pronounced for single women between the ages of 18 and 35 and for single women with children. The median wealth for young single women is zero, less than half have positive wealth, while young single men have median wealth of \$3,800. Single women with children have median net wealth of \$1,000, compared with \$35,300 for single men with children. The median wealth available to children in female-headed, single-parent households is less than three percent of the median wealth available to those in male-headed, single-parent households. Three times as many women are single adult heads of households with children as men, according to data from the 2010 Decennial Census.<sup>vi</sup>

For most Americans, the most common means of accumulating wealth is homeownership. Here, too, women are at a disadvantage. With less wealth or surplus income to invest, women are less able to accumulate the down payment for conventional loans. Women are also less likely to qualify for larger mortgages to buy more valuable properties because of their generally lower incomes. Fishbein and Woodall (2006)<sup>vii</sup> showed that women were more likely than men to have received subprime loans during the housing bubble, and the disparity was greater for women with higher incomes. Women with subprime loans faced an additional obstacle to wealth building because those subprime loans increased the cost of homeownership, reducing the wealth-building effects.

## Scope of the Research

This study examines women's access to mortgages in the Chicago six county region<sup>viii</sup> to determine whether female mortgage applicants may be disadvantaged in securing financing to either purchase a home or refinance one already owned. It builds on earlier research which revealed significant disparities in mortgage originations for female applicants, especially when they applied with a co-applicant.<sup>ix</sup> That earlier research, based on analysis of Home Mortgage Disclosure Act (HMDA) data for 2007 to 2010, showed that female applicants were 14 percent less likely to have purchase loans originated, and 25 percent less likely to have refinance loans originated, than male applicants between 2007 and 2010, controlling for the loan-to-income ratio (a measure of affordability of the loan). More surprisingly, female applicants with a co-applicant (female-headed applications) were 33 percent less likely to have purchase loans originated, and 50 percent less likely to have refinance loans originated, than male applicants with a co-applicant (male-headed applications), also controlling for the loan-to-income ratio.

That earlier study also examined the race or ethnicity of the applicant to determine whether those attributes had an impact on the level of disparities. The disparities in origination rates did vary somewhat among applicants of different races and for Latino/a applicants, but, regardless of the race or ethnicity of the applicant or purpose of the loan (purchase or refinance), female-headed applications were significantly less likely to result in loans being originated than male-headed applications.

This research examines additional factors, beyond the race or ethnicity of the applicant, which may be contributing to the disparities in origination rates. Using HMDA data for the period 2011 to 2013, the research explores three factors that may be correlated with disparities in origination rates for female applicants: 1) the income level of the borrower; 2) the type of loan applied for; and, 3) the geographic location of the property within the Chicago region. In addition, we analyzed data from all lenders that reported receiving at least one percent of all applications for the study period to see if there were differences in origination rates among the institutions.

## Methodology

Starting with loan-level HMDA data for the Chicago six county region for each of the years included in the study, we cleaned the data for analysis, as follows:

- deleted all applications for manufactured housing and multi-family buildings, leaving only applications for financing single-family (1-4 unit) structures;
- deleted applications for Farm Service Agency or Rural Housing Service loans, keeping applications for conventional, Federal Housing Administration insured (FHA), and Veterans Administration guaranteed (VA) loans;
- deleted applications for home improvement loans, keeping applications for purchase and refinance mortgages;
- deleted applications that did not result in either origination or denial of the application, such as applications that were withdrawn by the applicant<sup>x</sup>;
- deleted applications for which the applicant's income was below \$20,000, above \$999,000, or missing, keeping applications with incomes between \$20,000 and \$999,000;
- deleted applications for which the amount requested was below \$20,000, above \$800,000, or missing, keeping applications for loans between \$20,000 and \$800,000;

- deleted all applications for subordinate lien financing, keeping only applications for first lien mortgages; and
- deleted applications for which the applicant’s gender was not reported.

The data were then coded for the income level of the applicant (low—less than 80 percent of Area Median Income (AMI); moderate—between 80 and 120 percent of AMI; middle—between 120 and 200 percent of AMI; upper—more than 200 percent of AMI),<sup>xi</sup> and the type of loan (conventional or government-backed—guaranteed by either the Federal Housing Administration (FHA) or Veterans Administration (VA)). The data were linked with Chicago Community Area<sup>xii</sup> designations based on the census tract of the property for the geographic analysis and with the Top Holder<sup>xiii</sup> for each reporting institution for the lender performance analysis. Finally, the data were coded to distinguish between purchase and refinance applications. The final dataset contained 211,404 purchase mortgage applications and 562,669 refinance mortgage applications.

Earlier research showed that applications with a co-applicant were more likely than applications without a co-applicant to result in an origination and so, in addition to the analysis of the full dataset, we analyzed the data for applications with a co-applicant separately. The data were initially examined to calculate the percentage of applications submitted by women and men and the origination rates for those applications for each dataset. The loan level data were then analyzed using multinomial logistic regression to determine the impact of gender on the probability that an application would result in loan origination based on the income range of the applicant and, separately, based on the loan type, while controlling for the loan-to-income ratio for the application. The data were also analyzed to determine the differences in origination rates within each of the six counties in the region and in the 77 Community Areas within the City of Chicago and the five sub-county areas within Cook County outside of Chicago.

Finally, we examined all applications that were denied to determine whether the reasons for denial differed between applications submitted by women and applications submitted by men. The denial reasons were coded to show the most commonly stated reasons, including the application being incomplete, inadequate collateral, credit history, and debt-to-income ratio.

## Findings from the Data Analysis

The disparity in the origination rate for female applicants compared to male applicants in the current study period, 2011-2013, was smaller than the disparity in the earlier study period, 2007-2010, but it was still significantly larger for female-headed applications than for male-headed applications. The disparities are persistent except for low-income female applicants and in some Community Areas. The disparities in origination rates vary among financial institutions, with some showing considerably larger differences in the origination rates for female applicants and male applicants than other institutions.

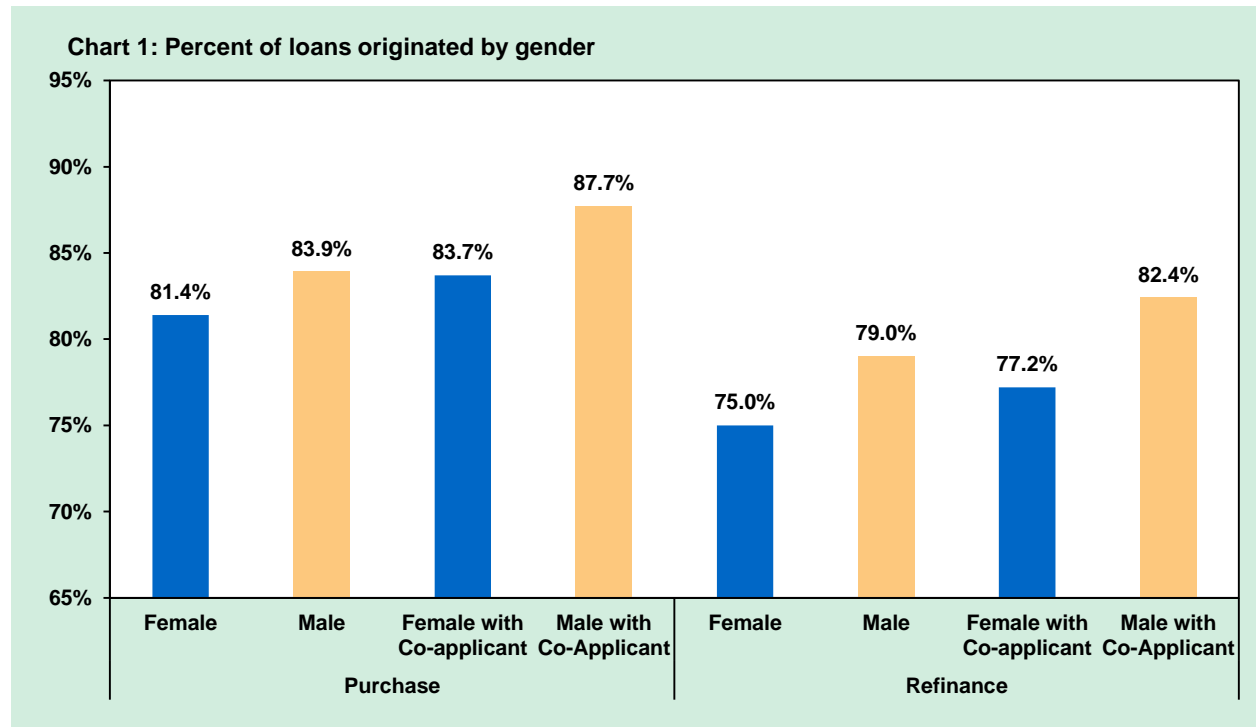
**Mortgage applications from most women and women with co-applicants are less likely to be originated than mortgage applications from men and men with co-applicants, even controlling for loan-to-income ratio.** Female applicants for purchase mortgages had loans originated for 81.4 percent of applications versus 83.9 percent for male applicants (Table 1 and Chart 1). For joint purchase mortgage applications, the differences were somewhat greater, with an origination rate of 83.7 percent for female-headed applications compared with 87.7 percent for male-headed applications. Controlling for the loan-to-income ratio, female applicants were about 14.5 percent less likely to have

purchase loans originated than male applicants, and a female-headed purchase applications were about 28.3 percent less likely to result in an origination than a male-headed purchase applications.

Overall, female applicants for refinance mortgages had loans originated for 75.0 percent of applications versus 79.0 percent for male applicants. For joint refinance mortgage applications, the differences were somewhat greater, with an origination rate of 77.2 percent for female-headed applications compared with 82.4 percent for male-headed applications. Controlling for the loan-to-income ratio, female applicants were about 17.4 percent less likely to have refinance loans originated than male applicants, and female-headed refinance applications were about 27.2 percent less likely to result in an origination than male-headed refinance applications.

**Table 1: Applications and Originations by Gender and Income Range**

	Purchase	Refinance
Percent of applications with female applicant	31.2	26.3
Percent of female applications originated	81.4	75.0
Percent of male applications originated	83.9	79.0
Percent of female-headed joint applications	18.8	13.4
Percent of female-headed applications originated	83.7	77.2
Percent of male-headed applications originated	87.7	82.4



*Income Ranges:* While research on the gender gap in earnings suggests that women may have generally lower incomes than men, aggregating the data by income range should reduce the disparity in outcomes because all applicants in those ranges fall within the same limits. The possibility that female applicants within the range may be earning less than male applicants for similar work does not affect the income of the applicant, which has to be within the specified range regardless of what the applicant does to earn it. There may be some residual differences because the distribution of female applicants will still be disproportionately skewed towards the lower end of the overall distribution, compared with the distribution of male applicants. Those differences may contribute to the pattern of lower percentages of female applicants for each progressively higher income range.

**Mortgage applications from low-income women were the only ones more likely to be originated than mortgage applications from men of similar income.** Analyzing the data by the income range of applicants revealed a difference in the origination rates for some female applicants. Unlike the pattern overall, with female applicants having lower origination rates than male applicants, low-income female applicants were more likely than low-income male applicants to have loans originated, both for purchase and refinance. Moderate-, middle-, and upper-income female applicants, however, were all less likely to have purchase or refinance loans originated than male applicants (Table 2 for purchase applications and Table 3 for refinance applications).

**Table 2: Purchase Applications and Originations by Gender and Income Range**

	Income Range			
	Low	Moderate	Middle	Upper
Percent of applications with female applicant	41.9	32.3	23.4	18.4
Percent of female applications originated	77.2	82.9	86.6	88.4
Percent of male applications originated	76.1	83.9	88.3	89.6
Percent of female-headed joint applications	23.7	21.3	17.7	15.9
Percent of female-headed applications originated	72.6	82.3	87.0	89.3
Percent of male-headed applications originated	77.9	85.9	90.0	90.8

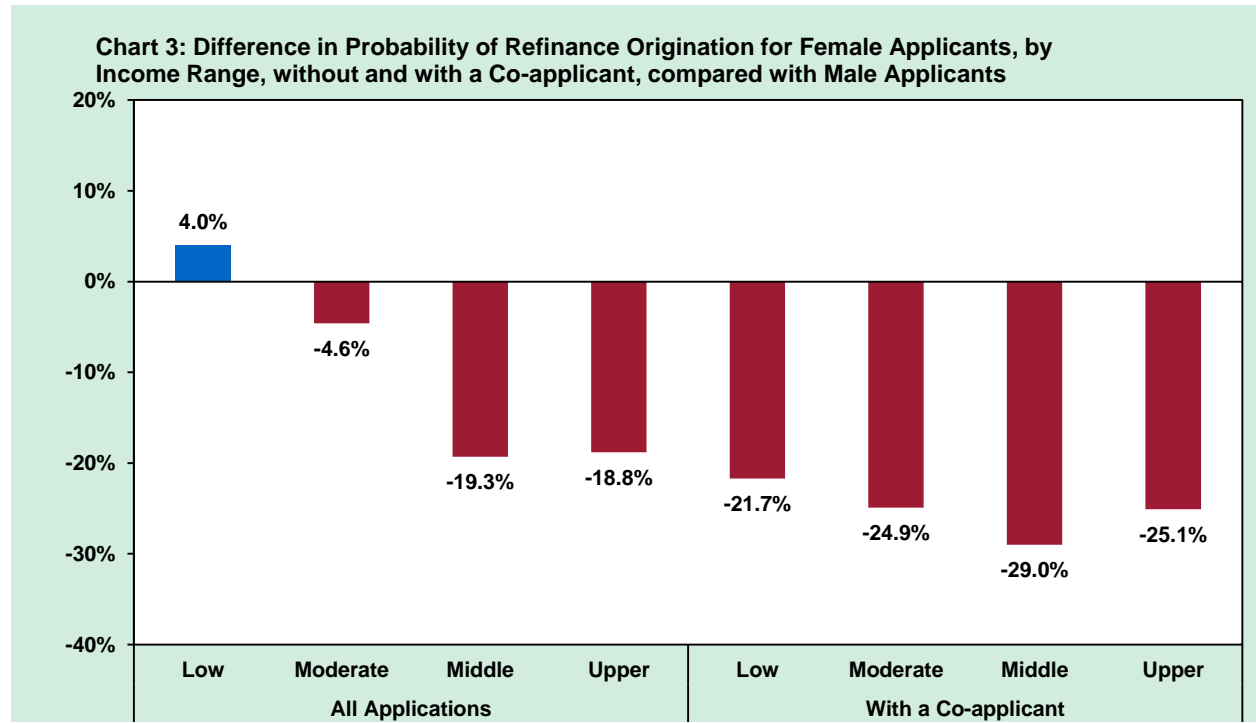
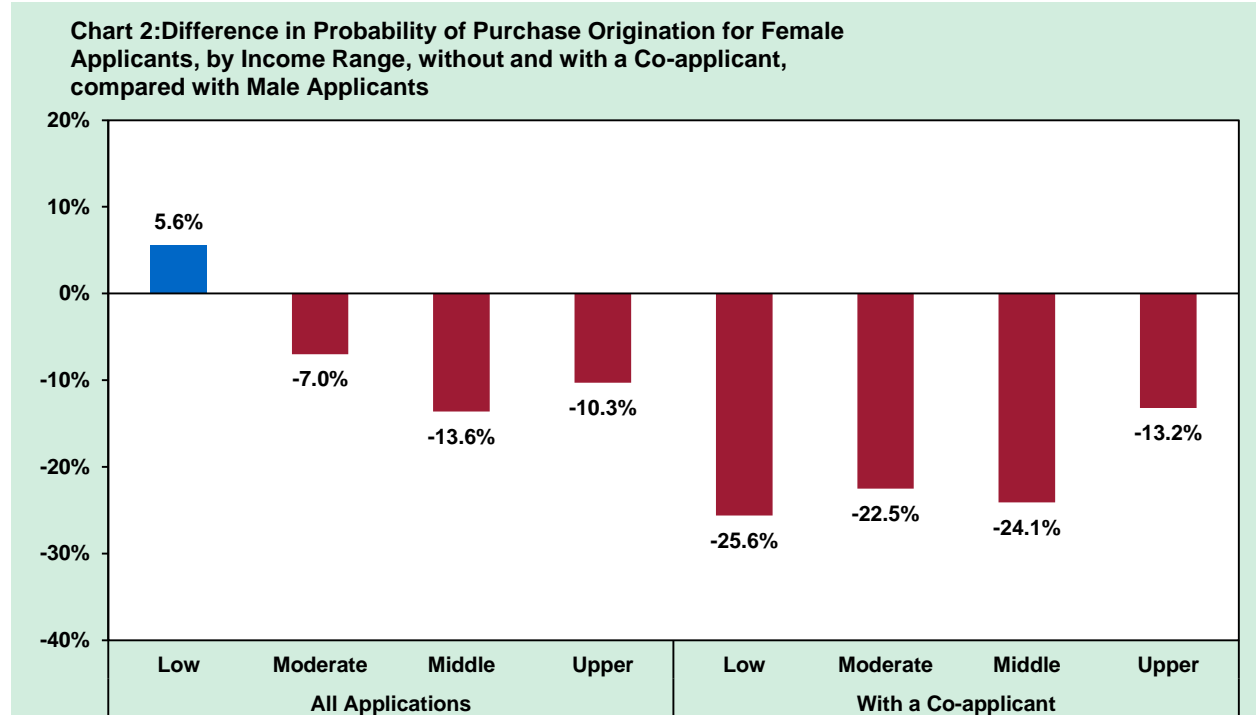
**Table 3: Refinance Applications and Originations by Gender and Income Range**

	Income Range			
	Low	Moderate	Middle	Upper
Percent of applications with female applicant	40.7	30.3	20.9	15.2
Percent of female applications originated	68.3	76.4	79.3	81.5
Percent of male applications originated	67.2	77.1	82.6	84.5
Percent of female-headed joint applications	16.1	14.4	13.1	12.0
Percent of female-headed applications originated	65.7	75.2	79.6	82.3
Percent of male-headed applications originated	71.0	80.1	84.4	86.0

The regression analysis shows the impact that gender has on the probability of origination, controlling for the loan-to-income ratio (Chart 2 for purchase applications and Chart 3 for refinance applications). As both charts show, low-income female applicants were 4.0 to 5.6 percent more likely to have loans



originated for purchase and refinance, respectively, than low-income male applicants. One possible contributing factor to that result may be the gender gap in earnings. Women in the low-income range may be more likely than men to have steady,



conventional work histories in relatively lower-paying jobs, such as teachers or office support staff, while low-income men may have less steady or conventional work histories. As a result, the low-income women would have had higher credit scores and, therefore, would have been more likely to have applications result in originations than low-income men.

*Loan Type:* Government-backed loans (FHA or VA) loans are designed to serve applicants who are less creditworthy than those receiving conventional loans. Underwriting criteria for government-backed loans, for example, allow for lower down payment requirements and lower credit scores than do the criteria for conventional loans. Applicants for those loans, therefore, are more likely to have lower incomes and higher loan-to-value ratios than applicants for conventional loans (Table 4), and, because women tend to have lower incomes than men, women are more likely than men to have applied for government-backed loans than for conventional loans. Also, because less-creditworthy borrowers tend to apply for government-backed loans, the origination rates tend to be lower for government-backed loan applicants than for conventional loan applicants.

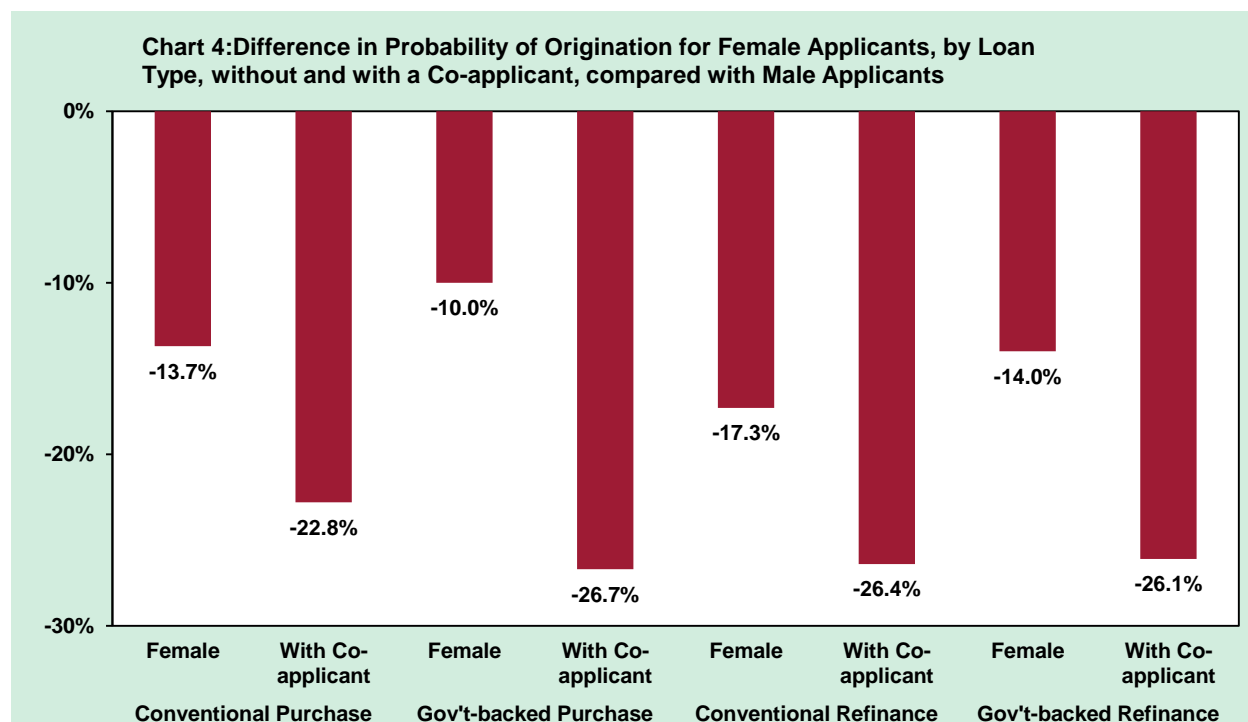
**Table 4: Average Income, Average Loan Amount, and Average Loan-to-income Ratio, by Loan Type**

Loan Type	Avg. Loan Amount	Avg. Applicant Income	Avg. LTI
Conventional Purchase	\$228,400	\$120,200	2.24
Government-backed Purchase	\$170,500	\$ 67,500	2.76
Conventional Refinance	\$220,400	\$123,300	2.21
Government-backed Refinance	\$200,800	\$ 86,400	2.62

**The disparities between the origination rates of men and women persist across both conventional and government-backed mortgages.** Analyzing the data by the type of loan applied for, conventional or government-backed (FHA or VA), revealed disparities similar to those in the overall analysis of originations. For conventional purchase loan applications, female applicants had an origination rate of 84.2 percent, compared with 86.2 percent for male applicants (Table 5). Female-headed joint conventional purchase applications had an origination rate of 86.5 percent, compared with an origination rate of 89.2 percent for male-headed applications. Controlling for the loan-to-income ratio, female applicants were 13.7<sup>xiv</sup> percent less likely to have a conventional purchase loan originated than male applicants, and female-headed conventional purchase applications were 22.8 percent less likely to result in an origination than male-headed applications (Chart 5).

**Table 5: Applications and Originations, by Loan Type**

	Conventional		Government-backed	
	Purchase	Refinance	Purchase	Refinance
Percent of applications with female applicant	28.8	26.2	36.2	29.6
Percent of female applications originated	84.2	75.7	76.5	62.6
Percent of male applications originated	86.2	79.7	78.5	66.4
Percent of female-headed joint applications	16.8	13.2	25.0	18.9
Percent of female-headed applications originated	86.5	78.0	78.0	64.1
Percent of male-headed applications originated	89.2	82.8	82.5	70.6



For government-backed purchase loans, female applicants had an origination rate of 76.5 percent, compared with 78.5 percent for male applicants. Female-headed joint government-backed purchase applications had an origination rate of 78.0 percent, compared with an origination rate of 82.5 percent for male-headed applications. Controlling for the loan-to-income ratio, female applicants were 10.0 percent less likely to have a government-backed purchase loan originated than male applicants, and female-headed government-backed purchase applications were 26.7 percent less likely to result in an origination than male-headed applications.

For conventional refinance applications, the origination rate was 75.7 percent for female applicants and 79.7 percent for male applicants. Female-headed joint conventional refinance applications had an origination rate of 78.0 percent, compared with an origination rate of 82.8 percent for male-headed joint conventional refinance applications. Controlling for the loan-to-income ratio, female applicants were 17.3 percent less likely to have a conventional refinance loan originated than male applicants, and female-headed conventional refinance applications were 26.4 percent less likely to result in an origination than male-headed applications, controlling for the loan-to-income ratio.

For government-backed refinance applications, the origination rate was 62.6 percent for female applicants and 66.4 percent for male applicants. Female-headed joint government-backed refinance applications had an origination rate of 64.1 percent, compared with an origination rate of 70.6 percent for male-headed joint government-backed refinance applications. Controlling for the loan-to-income ratio, female applicants were 14.0 percent less likely to have a government-backed refinance loan originated than male applicants, and female-headed government-backed refinance applications were 26.1 percent less likely to result in an origination than male-headed applications, controlling for the loan-to-income ratio.

**Bank of America, PNC, US Bank, and Wells Fargo had above-average gender disparities across all categories for purchase loans, while Fifth Third Bank, Provident Funding Group, and US Bank had above-average gender disparities across all categories for refinance loans.** To determine whether lending institutions had different levels of disparity in the origination rates for female and male applicants, we used data for the Top Holder<sup>xv</sup> category for all institutions that had at least a one percent share of applications. The Top Holder is the parent company of the lender that originated the loan. For example, Wells Fargo acquired Wachovia in 2008, and so a mortgage originated by Wachovia would be assigned to Wells Fargo as its Top Holder. We analyzed the data separately for purchase applications, shown in Table 6, and refinance applications, shown in Table 7. Five institutions had below average levels of disparities in all four groupings (female/female-headed; purchase/refinance), and only one institution had above average disparities in all four. The institutions with disparities between origination rates for female and male applicants and female-headed and male-headed applications that are above the average for all of the included lenders are highlighted.

**Table 6: Purchase Applications and Originations by Gender and Institution**

Top Holder	Pct. Female Applications	Female Origination Rate	Male Origination Rate	Difference	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate	Difference
1st Advantage Mortgage	29.1	94.6	95.6	1.0	17.9	97.7	96.4	-1.2
Bank of America	33.8	65.7	71.2	5.5	22.7	69.8	77.8	8.0
Bank of Montreal	30.7	72.8	72.9	0.1	15.9	75.2	80.6	5.4
Citigroup	34.3	81.9	83.1	1.3	24.0	85.0	88.1	3.0
Fifth Third	31.1	79.1	81.1	2.0	19.1	82.5	84.7	2.3
First Centennial Mortgage	32.1	94.3	95.7	1.4	17.7	97.7	97.2	-0.5
Guaranteed Rate	29.5	97.2	97.7	0.5	17.8	97.3	98.4	1.1
JPMorgan Chase & Co	31.2	67.7	70.5	2.8	21.0	71.8	74.9	3.1
Key Mortgage Services	35.9	95.5	96.0	0.5	21.9	97.3	98.0	0.7
Peri Mortgage	29.0	81.4	82.1	0.7	17.0	81.8	83.8	2.0
PHH Home Loans	33.2	86.3	89.2	2.8	20.7	88.7	91.5	2.7
PNC Financial Service Group	33.4	64.2	67.4	3.2	17.6	64.7	71.2	6.5
Prospect Mortgage	35.8	80.2	82.5	2.3	23.7	79.7	87.3	7.6
Tri-City Financial Group	29.2	89.4	90.9	1.5	16.7	90.3	93.9	3.7
US Bank	27.2	78.7	82.0	3.3	15.1	81.1	85.7	4.6
Wells Fargo	32.5	79.0	82.4	3.5	21.2	81.9	87.3	5.4
Wintrust	32.0	88.8	88.9	0.1	18.2	91.2	91.8	0.6
Average	31.5	81.1	83.4	2.3	19.3	83.6	87.2	3.6

**Table 7: Refinance Applications and Originations by Gender and Institution**

Top Holder	Pct. Female Applications	Female Origination Rate	Male Origination Rate	Difference	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate	Difference
1st Advantage Mortgage	22.6	97.2	97.7	0.5	11.1	97.4	98.3	0.9
Ally Financial	24.7	73.8	76.9	3.1	11.4	76.1	80.0	3.9
Bank of America	30.7	76.6	76.1	-0.4	18.3	78.4	78.6	0.2
Bank of Montreal	25.9	70.7	75.0	4.3	10.2	74.1	79.1	5.0
Chicago Mortgage Solutions	18.2	95.7	96.3	0.6	9.1	98.2	98.7	0.5
Citigroup	31.3	81.1	81.5	0.3	15.0	82.4	83.3	0.9
Fifth Third	26.6	62.6	69.8	7.2	13.7	66.0	74.4	8.4
Guaranteed Rate	23.0	96.1	96.9	0.7	11.5	96.7	97.8	1.1
JPMorgan Chase & Co	29.2	72.8	75.0	2.2	13.9	74.1	77.5	3.4
Nationstar Mortgage	33.1	65.2	65.5	0.2	19.3	67.0	69.8	2.8
Peri Mortgage	23.3	80.8	83.5	2.7	10.3	83.2	85.6	2.4
PNC Financial Service Group	27.5	66.7	68.3	1.5	14.3	65.8	71.8	6.1
Provident Funding Group	17.5	77.8	82.4	4.6	10.1	78.1	83.7	5.7
Quicken Loans	30.8	76.1	75.5	-0.6	21.4	78.3	79.2	0.9
US Bank	26.0	64.5	74.0	9.5	14.0	68.6	79.0	10.4
Wells Fargo	26.8	74.3	78.1	3.8	13.6	78.2	81.0	2.9
Wintrust	22.1	82.5	85.5	3.0	9.7	85.0	87.9	2.9
Average	26.3	75.0	79.0	4.1	13.4	77.2	82.4	5.1

**Geography:** We analyzed the data aggregated at the county level, as shown in Table 5 for purchase applications and Table 6 for refinance applications. We also aggregated the data by Community Area<sup>xvi</sup> for Cook County, as shown in Appendix A.

**Table 8: Purchase Applications and Originations by Gender and County**

County	Pct. Female Applications	Female Origination Rate	Male Origination Rate	Difference	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate	Difference
Cook	34.0	67.9	69.9	2.0	22.6	71.5	75.1	3.6
DuPage	26.6	73.1	75.3	2.3	28.5	72.7	78.4	5.7
Kane	28.6	71.0	73.9	2.9	26.2	72.8	77.6	4.8
Lake	28.5	71.5	73.1	1.6	30.2	73.0	76.5	3.5
McHenry	28.4	69.6	72.5	2.9	27.5	71.5	75.7	4.2
Will	27.9	69.4	73.4	4.0	24.7	70.3	77.2	6.8
Average	31.3	69.2	71.7	2.6	24.5	71.8	76.2	4.4

**Table 9: Refinance Applications and Originations by Gender and County**

County	Pct. Female Applications	Female Origination Rate	Male Origination Rate	Difference	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate	Difference
Cook	30.1	61.2	64.7	3.4	25.3	64.4	69.4	5.0
DuPage	23.0	65.6	70.3	4.8	31.3	66.3	73.9	7.5
Kane	22.5	62.9	66.6	3.7	32.4	64.7	70.4	5.8
Lake	23.1	64.4	69.1	4.6	34.4	67.4	72.4	5.0
McHenry	22.4	61.5	65.9	4.4	33.9	63.2	69.3	6.1
Will	21.4	62.6	67.7	5.1	32.6	64.6	71.3	6.7
Average	26.6	62.3	66.5	4.3	28.2	65.0	70.8	5.8

Disparities between male and female origination rates were highest in Will County for both purchase and refinance mortgages, while disparities between male-headed and female-headed joint application origination rates were highest in Will County for purchase mortgages and in DuPage County for refinance mortgages. The analysis shows that the disparity in loan origination rates for female applicants was lowest in Cook County, which may reflect the fact that Cook County is home to a higher percentage of lower-income households than the collar counties. As noted earlier in the analysis of data aggregated by income, low-income female applicants had a higher origination rate than low-income male applicants. Will County, by comparison, had disparities that were consistently higher than the regional average.

There were significant disparities in the reasons for denial between female applicants and male applicants. In addition to analysis of origination rates, we examined the reasons provided for each application that was denied to see if there were different patterns for female and male applicants. Female applicants for either a purchase or refinance mortgage were more likely to be denied because of their credit histories or debt-to-income ratio than male applicants, as shown in Table 10. Male applicants, by comparison, were more likely to be denied because of the collateral or because the credit application was incomplete.

**Table 10: Reasons for Denial by Gender**

<b>Purchase Application</b>	<b>Application Incomplete</b>	<b>Collateral</b>	<b>Credit History</b>	<b>Debt-to-Income Ratio</b>	<b>Other<sup>1</sup></b>	<b>Reason not Specified</b>
Female application	16.5	19.8	12.9	20.3	16.1	14.4
Male application	18.3	20.0	11.5	19.9	16.8	13.4
Female-headed application	19.0	17.6	12.9	22.2	15.6	12.6
Male-headed application	21.3	20.5	9.7	19.5	16.2	12.8
<b>Refinance Application</b>						
Female application	18.0	26.3	11.3	16.7	15.9	11.8
Male application	18.2	28.5	9.8	15.7	15.8	11.9
Female-headed application	16.9	26.9	12.7	15.7	16.2	11.6
Male-headed application	19.1	29.0	9.6	15.7	15.3	11.4

1. “Other” includes employment history, insufficient cash (down payment, closing costs), unverifiable information, mortgage insurance denied, and other.

## Summary of Findings

The disparities in origination rates for female mortgage applicants, whether applying alone or with a co-applicant, appear to be somewhat smaller for this study period, 2011-2013, than they were for the study period for the earlier report, 2007-2010. The disparity, however, was still significant overall and was greater for female-headed joint applications than for solo female applications in general.

The most striking exception to the pattern was for low-income female applicants. Controlling for the loan-to-income ratio, low-income female applicants were more likely to have loans originated than low-income male applicants, whether for purchase or refinance. At the same time, low-income female-headed joint applications were less likely to result in an origination than male-headed joint applications. That means that low-income female applicants without a co-applicant were even more likely to have loans originated than low-income male applicants without a co-applicant. Analyzing data for low-income applicants without a co-applicant shows that female applicants were nearly 12 percent more likely to have purchase loans originated than male applicants, and more than 20 percent more likely to have refinance loans originated than male applicants, controlling for the loan-to-income ratio for both analyses.

One possible explanation for this finding is that low-income women may have more conventional credit and employment histories than low-income men, which could result in higher credit scores for the women. Studies have shown that women tend to work in lower-paying jobs and earn less than men. A low-income woman, therefore, might be fully employed in a low-paying job, with a steady income that could be budgeted consistently. A low-income man, by contrast, may be more likely to have gaps in his employment history, work part-time, or have other factors which could make his income fluctuate, complicating budgeting for predictable expenses and bringing down his credit score.

Other than for low-income applicants, the findings were relatively consistent, except at the Community Area level. The analysis based on the type of loan, conventional versus government-backed, showed some differences in the origination rates, although the difference may be attributable to the underwriting

standards that would tend to cause applicants with lower credit scores and less money available for a down payment to apply for government-backed loans. For example, the origination rate was higher for applications for conventional purchase and refinance loans for both female and male applicants than for applications for government-backed loans. At the county level, the disparities persisted, with some variation that may reflect the income levels of applicants within those counties.

The data for lending institutions also reveal some interesting differences among the top lenders. Bank of America had the largest disparities between female and male applicants for purchase loans, but virtually no disparity for refinance loans. Fifth Third had a below average disparity for purchase loans but the second highest disparity for refinance loans. US Bank had higher than average disparities for both purchase and refinance loans, while Wintrust had lower than average disparities for both types of loans. Some of the differences may reflect different client bases among institutions, or different service areas, but the differences may also reflect internal lending criteria or policies that have a disparate impact on applicants correlated with their gender.

At the Community Area level in Chicago, several neighborhoods diverged from the prevailing pattern of disparities. In Garfield Ridge, for example, female applicants were more likely to have loans originated, alone or with a co-applicant, for purchase or refinance than male applicants. Other Community Areas, such as Logan Square and Near West Side, the disparity appeared in only one category, such as female-headed joint refinance applications. All of those Community Areas had significant numbers of applications and so the results may not be an anomaly from a small number of observations in the data.

## Discussion and Policy Recommendations

The disparity between loan origination rates for female and male applicants, especially the larger disparity between female and male applicants with a co-applicant, persists across all applicant income and loan types with the exception of low-income female applicants without a co-applicant. In addition, low- and moderate-income female applicants, those with incomes of approximately \$20,000 to \$90,000, had a higher origination rate without a co-applicant than they did with a co-applicant.

These findings indicate a pattern that could be consistent across all income levels and which may explain some of the disparity in origination rates for female-headed applications when compared with male-headed applications. Applicants without a co-applicant have that level of income on their own, while those who have a co-applicant may need to have an additional person's income included in the calculations to reach the same level. The difference is between an applicant earning \$75,000 with a co-applicant earning \$15,000, and an applicant earning \$48,000 with a co-applicant earning \$42,000. While the archetypical single-earner household with a high-earning male and low- or non-earning female is less common in this country than it once was, it is still more prevalent than a high-earning female with a low- or non-earning male. At any income level, therefore, it is more likely that a female-headed joint application will depend on the income of the co-applicant than a male-headed joint application, and so it may also be more affected by the credit score of the co-applicant.

A related issue is that the credit score used in underwriting may be a combination of the separate credit scores of the individuals on the application. Financial institutions may treat credit scores on joint applications in different ways, but the underlying scores are usually those of the individuals, not a joint score for the two applicants combined. This may be even more of a factor for joint applicants who are not married because they may be less inclined to have joint credit than married couples. In addition, a high-earning applicant who is part of a joint application may be able to do more to protect the credit score of



the lower-income co-applicant than a more moderate-income applicant can do for a similarly moderate-income co-applicant. The difference in the origination rates may reflect those underlying differences in the household income structures for applications for which the woman is the lead applicant.

With these issues in mind, we recommend that:

**Mortgage lenders should examine their mortgage lending processes to detect and correct potentially discriminatory practices.** The first step for lenders, especially those with relatively higher levels of disparities, is to determine the extent to which those disparities may be attributable to systematic differences between female-headed and male-headed applications within their application pools. The HMDA data, upon which this analysis is based, do not contain the credit scores for the applicant and co-applicant, value of the property, or the total debt service-to-income ratio, all key elements of sound underwriting. Nor do the data show the formula used to compute the aggregate credit score upon which the lender determines whether to approve a joint loan application. Those are, however, data to which lenders have access.

By examining the characteristics of its application pool, lenders can determine whether female-headed applications are, in fact, more likely to have more nearly equal incomes for the applicant and co-applicant than male-headed applications. If a lender finds such systematic differences, it may then want to examine the credit scores it calculates in the underwriting process for joint applicants with more equal incomes versus those with less equal incomes to determine whether the calculated score is a reliable indicator of loan performance. The question is whether applications based on a high-earner/low-earner income profile perform significantly better than those based on a moderate-earner/moderate-earner profile.

The economic characteristics of younger households do not match those of earlier generations. More households now have two-earners, and despite the persistent wage gap, the woman's contribution to household income is greater than it was years ago. In an environment of relatively tight credit, lenders may want to find better ways to meet the mortgage needs of couples with more nearly equal incomes, such as creating better formulas for estimating the creditworthiness of joint applicants that are good predictors of loan performance over time.

**Regulators should further investigate possible gender discrimination in mortgage lending practices, particularly for lenders with above-average disparities.** The Department of Housing and Urban Development has recently reaffirmed the use of disparate impact analysis for purposes of the Fair Housing Act and the Equal Credit Opportunity Act. The findings of this analysis clearly show that female applicants for mortgages, both purchase and refinance, are significantly less likely to have loans originated than are male applicants, controlling for the loan-to-income ratio. Even when the analysis is limited to applications with either a female applicant and male co-applicant or male applicant with a female co-applicant, reducing the probability that the applicant is a single parent, the disparity remains. Moreover, the analysis shows that the disparity exists among all racial categories and for Latino applicants. Such a consistent set of findings showing a significant disparity in women's access to mortgage credit is troubling and warrants further investigation.

**The Consumer Financial Protection Bureau must expeditiously finalize enhancements to the Home Mortgage Disclosure Act.** The findings also suggest the need for the reporting of additional data points within the HMDA dataset to include fields for the basic underwriting criteria, such as credit score, debt-to-income ratio, and appraised value of the property. The additional data would allow regulators, advocates, and the public to analyze lending patterns and determine possible causes of observed disparities in loan origination and denial rates. The Consumer Financial Protection Bureau (CFPB) has authority under the Dodd-Frank Wall Street Reform and Consumer Protection Act to require

additional data fields for HMDA reporting, and it is in the process of drafting the new requirements. Some data, such as the applicant's credit score, may need to be aggregated into ranges to protect the applicant's privacy, but even the aggregated data would allow for more precise analysis. Until the CFPB finalizes the new data reporting requirements, regulatory agencies could use their authority to examine more complete data to determine the factors that are contributing to the disparities in lending to women.

**Policies to reduce the gender wage gap should be expanded and enforced.** Beyond policies that focus on better understanding of the causes of the disparities in origination rates and finding ways to reduce those disparities, other policies to address the income gap for women could also help by boosting women's incomes to levels sufficient to qualify for a mortgage without a co-applicant. Enforcement of anti-discrimination rules, such as the Equal Pay Act, is one option. Another is to encourage women to pursue careers in higher-paying occupations, such as engineering and technology that are higher-paying and have traditionally been male-dominated. For women in traditionally lower-paying industries, policies to make those jobs more stable and family-friendly, such as more consistent work schedules and paid parental and sick leave, could reduce income fluctuations that make budgeting difficult for lower-income households. Although those policies are aimed at increasing women's income, not wealth or homeownership, closing the income gap can be the first step in closing the wealth gap.

## Appendix A

Community Area	Purchase Applications	Purchase Joint Applications	Percent Female Applications	Female Origination Rate	Male Origination Rate	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate
Albany Park	895	344	36.31%	68.92%	67.02%	30.46%	67.68%	72.65%
Archer Heights	316	95	34.49%	65.14%	65.70%	23.85%	69.23%	63.77%
Armour Square	181	105	34.81%	71.43%	66.10%	50.79%	75.00%	75.34%
Ashburn	1208	198	45.45%	67.40%	67.07%	10.56%	70.69%	71.43%
Auburn Gresham	601	51	55.91%	52.38%	54.72%	7.44%	80.00%	65.38%
Austin	1135	193	52.60%	51.76%	55.20%	11.89%	52.11%	63.93%
Avalon Park	167	19	52.69%	57.95%	54.43%	5.68%	80.00%	50.00%
Avondale	965	309	30.57%	63.73%	62.24%	26.10%	66.23%	70.26%
Belmont Cragin	1639	452	35.14%	61.28%	61.43%	23.44%	63.70%	62.46%
Beverly	587	228	37.65%	71.49%	78.14%	19.00%	78.57%	82.80%
Bridgeport	672	350	34.52%	66.81%	66.14%	44.40%	67.96%	72.47%
Brighton Park	469	159	34.33%	61.49%	60.39%	34.78%	69.64%	58.25%
Burnside	27	4	48.15%	46.15%	57.14%	15.38%	50.00%	100.00%
Calumet Heights	221	29	62.44%	63.04%	55.42%	7.97%	63.64%	50.00%
Chatham	457	38	57.77%	52.27%	58.03%	4.92%	69.23%	56.00%
Chicago Lawn	643	101	39.81%	63.28%	58.91%	12.89%	81.82%	57.35%
Clearing	785	208	36.18%	67.96%	71.26%	16.20%	65.22%	69.14%
Douglas	205	42	56.59%	41.38%	48.31%	18.10%	52.38%	61.90%
Dunning	1491	471	34.94%	69.10%	69.07%	21.50%	69.64%	72.70%
East Garfield	246	34	48.78%	46.67%	52.38%	8.33%	50.00%	50.00%
East Side	244	45	38.11%	68.82%	65.56%	7.53%	42.86%	63.16%
Edgewater	1597	580	32.69%	70.88%	70.14%	29.12%	71.71%	76.17%
Edison Park	397	184	27.46%	75.23%	84.72%	25.69%	78.57%	84.62%
Englewood	361	18	31.30%	38.94%	29.84%	1.77%	50.00%	31.25%
Forest Glen	714	393	26.47%	71.96%	77.33%	35.98%	70.59%	82.46%
Fuller Park	21	1	28.57%	66.67%	20.00%	0.00%	0.00%	100.00%
Gage Park	384	77	32.03%	60.98%	57.09%	13.82%	70.59%	58.33%
Garfield Ridge	987	304	33.43%	73.94%	73.06%	21.82%	86.11%	75.86%

Community Area	Purchase Applications	Purchase Joint Applications	Percent Female Applications	Female Origination Rate	Male Origination Rate	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate
Grand Boulevard	562	71	53.38%	45.67%	38.93%	7.33%	59.09%	53.06%
Greater Grand Crossing	372	34	40.59%	52.98%	48.42%	5.96%	77.78%	56.00%
Hegewisch	155	39	39.35%	62.30%	65.96%	18.03%	54.55%	64.29%
Hermosa	373	92	28.42%	53.77%	55.81%	19.81%	52.38%	69.01%
Humboldt Park	659	158	40.06%	56.82%	52.66%	20.45%	57.41%	56.73%
Hyde Park	436	226	43.35%	63.49%	67.21%	36.51%	73.91%	66.88%
Irving Park	1459	601	32.21%	69.79%	68.15%	28.51%	74.63%	71.09%
Jefferson Park	841	347	34.01%	70.28%	70.45%	27.62%	67.09%	75.75%
Kenwood	370	114	53.51%	57.58%	59.88%	13.13%	76.92%	65.91%
Lakeview	5055	2124	28.49%	77.64%	78.31%	29.17%	76.43%	79.64%
Lincoln Park	3120	1394	27.82%	79.61%	77.26%	28.11%	78.69%	77.74%
Lincoln Square	1276	591	39.11%	74.15%	77.99%	29.46%	70.75%	81.31%
Logan Square	2350	937	30.68%	73.93%	75.20%	27.88%	71.64%	78.13%
Loop	1915	764	27.83%	72.23%	70.41%	25.33%	78.52%	71.70%
Lower West Side	314	85	34.08%	53.27%	52.17%	19.63%	52.38%	56.25%
McKinley Park	279	134	38.71%	64.81%	67.25%	36.11%	76.92%	77.89%
Montclare	357	95	41.74%	68.46%	65.38%	21.48%	75.00%	74.60%
Morgan Park	350	88	44.57%	62.18%	69.07%	10.90%	82.35%	80.28%
Mount Greenwood	528	201	25.00%	77.27%	80.56%	26.52%	82.86%	83.73%
Near North Side	5038	1720	30.49%	76.76%	73.30%	18.49%	75.70%	74.37%
Near South Side	2019	755	34.47%	72.84%	70.14%	22.70%	74.68%	71.52%
Near West Side	2908	963	32.32%	74.15%	73.78%	22.23%	75.60%	74.67%
New City	426	78	30.28%	44.19%	44.44%	12.40%	43.75%	64.52%
North Center	1724	909	26.91%	80.82%	79.44%	31.25%	76.55%	81.41%
North Lawndale	242	29	42.15%	42.16%	45.71%	3.92%	50.00%	44.00%
North Park	367	162	30.52%	59.82%	70.59%	26.79%	73.33%	74.24%
Norwood Park	1282	567	29.80%	76.70%	74.44%	31.68%	83.47%	76.01%
Oakland	181	23	54.70%	55.56%	52.44%	6.06%	66.67%	70.59%
O'Hare	263	62	35.36%	67.74%	68.24%	12.90%	50.00%	72.00%
Portage Park	1632	642	34.13%	68.40%	67.81%	30.34%	70.41%	69.34%
Pullman	93	10	61.29%	57.89%	61.11%	7.02%	75.00%	66.67%
Riverdale	3	0	66.67%	0.00%	0.00%	0.00%	0.00%	0.00%

Community Area	Purchase Applications	Purchase Joint Applications	Percent Female Applications	Female Origination Rate	Male Origination Rate	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate
Rogers Park	921	261	38.22%	66.48%	68.01%	21.31%	73.33%	73.12%
Roseland	377	30	57.82%	55.05%	48.43%	4.13%	44.44%	57.14%
South Chicago	228	32	49.12%	52.68%	49.14%	10.71%	16.67%	50.00%
South Deering	75	7	49.33%	51.35%	57.89%	5.41%	0.00%	20.00%
South Lawndale	310	61	20.65%	48.44%	45.53%	12.50%	62.50%	37.74%
South Shore	460	57	54.78%	49.60%	49.04%	8.73%	54.55%	54.29%
Uptown	1760	578	31.70%	79.57%	74.04%	25.99%	85.52%	76.91%
Washington Park	100	12	49.00%	30.61%	33.33%	12.24%	33.33%	33.33%
Washington Heights	454	49	61.67%	58.57%	56.32%	4.64%	46.15%	61.11%
West Elsdon	438	134	33.79%	62.84%	64.48%	27.03%	67.50%	62.77%
West Englewood	345	11	30.72%	33.02%	32.22%	0.94%	0.00%	30.00%
West Garfield	149	11	47.65%	29.58%	35.90%	7.04%	40.00%	50.00%
West Lawn	955	207	33.93%	63.27%	64.18%	20.06%	67.69%	66.90%
West Pullman	258	17	63.95%	52.73%	43.01%	3.64%	50.00%	27.27%
West Ridge	1334	476	33.13%	62.44%	67.15%	24.43%	62.96%	78.80%
West Town	4151	1593	30.02%	77.21%	75.80%	27.21%	77.58%	78.71%
Woodlawn	359	42	47.35%	45.88%	42.33%	8.82%	60.00%	66.67%
Chicago	67238	22625	34.58%	67.68%	69.40%	21.80%	72.49%	74.49%
North Cook	14682	7422	29.43%	72.55%	73.63%	31.10%	74.85%	77.57%
Northwest Cook	21905	9182	30.25%	72.56%	72.92%	26.32%	72.19%	76.47%
South Cook	8099	1469	48.96%	55.74%	57.81%	10.57%	56.32%	61.81%
Southwest Cook	13115	4468	33.21%	70.16%	70.68%	21.24%	69.08%	75.25%
West Cook	16674	6192	33.78%	66.79%	68.43%	24.20%	69.85%	74.92%

Community Area	Refinance Applications	Refinance Joint Applications	Percent Female Applications	Female Origination Rate	Male Origination Rate	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate
Albany Park	2375	1165	32.76%	59.64%	63.06%	32.78%	60.39%	68.02%
Archer Heights	442	174	27.15%	50.83%	57.45%	25.83%	48.39%	65.03%
Armour Square	518	256	35.71%	57.30%	63.06%	32.97%	57.38%	65.64%
Ashburn	2181	744	39.75%	57.67%	53.27%	18.57%	55.28%	59.86%
Auburn Gresham	1077	240	50.97%	40.80%	40.72%	12.02%	39.39%	41.95%
Austin	2565	898	44.48%	42.94%	44.45%	21.21%	43.39%	53.20%
Avalon Park	456	85	60.31%	44.36%	37.02%	11.64%	31.25%	37.74%
Avondale	1913	857	29.48%	56.38%	54.93%	35.64%	53.23%	58.54%
Belmont Cragin	2105	981	30.50%	53.12%	52.02%	30.53%	56.63%	53.25%
Beverly	2264	1279	30.26%	63.36%	70.23%	25.11%	66.86%	74.80%
Bridgeport	1815	955	29.75%	63.33%	59.37%	36.48%	62.44%	61.74%
Brighton Park	1010	415	25.05%	57.71%	46.76%	32.41%	59.76%	54.05%
Burnside	78	10	58.97%	39.13%	37.50%	4.35%	50.00%	37.50%
Calumet Heights	616	142	53.57%	45.76%	42.31%	11.52%	57.89%	53.85%
Chatham	831	186	49.46%	44.53%	44.52%	10.22%	33.33%	54.86%
Chicago Lawn	1117	330	34.11%	43.83%	44.70%	14.44%	50.91%	46.55%
Clearing	1500	661	26.33%	64.05%	61.45%	29.37%	61.21%	67.16%
Douglas	586	162	53.58%	48.41%	53.31%	18.15%	45.61%	55.24%
Dunning	2904	1390	31.71%	62.00%	62.88%	29.75%	60.95%	64.07%
East Garfield	477	127	42.14%	38.81%	42.75%	14.93%	26.67%	45.36%
East Side	863	366	25.72%	48.65%	44.46%	26.13%	48.28%	47.08%
Edgewater	4435	1604	35.49%	63.34%	65.57%	23.70%	75.87%	69.78%
Edison Park	1517	907	24.13%	71.86%	70.98%	32.24%	74.58%	72.88%
Englewood	335	58	42.39%	29.58%	32.64%	8.45%	50.00%	32.61%
Forest Glen	2580	1622	25.04%	69.81%	70.94%	36.69%	67.93%	73.86%
Fuller Park	31	4	29.03%	66.67%	50.00%	11.11%	100.00%	66.67%
Gage Park	665	252	21.20%	48.23%	47.33%	22.70%	34.38%	49.55%
Garfield Ridge	2237	1131	23.29%	62.76%	61.31%	28.41%	72.30%	65.11%
Grand Boulevard	687	142	53.86%	50.00%	45.74%	12.70%	44.68%	50.53%
Greater Grand Crossing	607	114	52.06%	45.57%	37.11%	9.18%	41.38%	43.53%
Hegewisch	452	171	28.10%	55.91%	54.15%	26.77%	55.88%	59.12%
Hermosa	606	302	28.05%	51.18%	48.39%	35.88%	59.02%	49.79%
Humboldt Park	1125	411	37.60%	47.52%	43.73%	25.06%	50.94%	47.21%

Community Area	Refinance Applications	Refinance Joint Applications	Percent Female Applications	Female Origination Rate	Male Origination Rate	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate
Hyde Park	1324	632	40.03%	61.13%	66.50%	22.64%	63.33%	73.24%
Irving Park	3837	1830	33.15%	59.98%	60.51%	30.03%	62.83%	63.40%
Jefferson Park	2106	1065	26.78%	61.17%	65.63%	31.38%	63.84%	69.59%
Kenwood	891	333	45.12%	57.21%	56.85%	14.43%	67.24%	61.09%
Lakeview	11859	4541	30.23%	67.87%	69.91%	19.14%	69.39%	72.87%
Lincoln Park	8248	3344	31.86%	70.32%	71.51%	19.52%	71.15%	75.80%
Lincoln Square	3310	1672	34.29%	68.55%	69.56%	30.31%	71.51%	71.99%
Logan Square	5603	2418	29.07%	66.85%	65.48%	29.77%	70.93%	68.18%
Loop	4922	2002	31.45%	61.05%	60.11%	19.64%	60.86%	64.08%
Lower West Side	696	293	30.89%	40.93%	43.24%	32.09%	39.13%	46.88%
McKinley Park	653	314	32.92%	53.49%	62.10%	34.88%	54.67%	65.27%
Montclare	573	277	32.98%	64.02%	60.42%	31.75%	65.00%	62.67%
Morgan Park	1485	591	35.56%	54.17%	64.16%	18.56%	52.04%	68.76%
Mount Greenwood	1994	1009	21.72%	66.05%	71.43%	27.48%	65.55%	76.40%
Near North Side	13131	4391	35.91%	66.49%	65.28%	14.57%	67.39%	67.93%
Near South Side	4497	1818	32.44%	61.07%	62.80%	21.18%	63.11%	64.08%
Near West Side	6904	2520	31.47%	66.45%	64.21%	20.66%	62.58%	67.41%
New City	852	333	30.52%	45.77%	50.51%	31.15%	48.15%	57.54%
North Center	4676	2518	26.37%	73.32%	75.60%	31.06%	77.81%	78.55%
North Lawndale	501	114	46.31%	35.78%	39.41%	15.09%	25.71%	39.24%
North Park	1233	704	29.85%	59.78%	65.32%	36.41%	55.97%	68.07%
Norwood Park	3871	2212	25.57%	70.30%	70.39%	31.31%	70.97%	73.76%
Oakland	175	53	54.29%	47.37%	53.75%	18.95%	38.89%	71.43%
O'Hare	617	244	29.82%	59.78%	61.43%	17.39%	43.75%	62.26%
Portage Park	3539	1844	31.53%	61.56%	62.98%	34.14%	64.04%	66.51%
Pullman	222	40	54.50%	37.19%	42.57%	9.09%	81.82%	55.17%
Riverdale	16	2	56.25%	33.33%	42.86%	0.00%	0.00%	0.00%
Rogers Park	2663	972	37.14%	64.00%	58.00%	22.24%	69.09%	65.56%
Roseland	1197	240	54.97%	41.64%	35.62%	12.01%	39.24%	39.13%
South Chicago	537	123	42.64%	41.05%	34.42%	9.61%	45.45%	41.58%
South Deering	401	89	45.89%	42.93%	37.33%	12.50%	39.13%	39.39%
South Lawndale	833	345	20.17%	50.00%	41.20%	32.74%	45.45%	45.17%
South Shore	959	223	52.76%	44.66%	39.29%	14.23%	51.39%	48.34%
Uptown	4807	1516	35.14%	64.36%	63.57%	18.83%	68.87%	68.95%

Community Area	Refinance Applications	Refinance Joint Applications	Percent Female Applications	Female Origination Rate	Male Origination Rate	Pct. Female-headed Applications	Female-headed Origination Rate	Male-headed Origination Rate
Washington Park	157	28	64.97%	41.18%	40.00%	9.80%	30.00%	44.44%
Washington Heights	916	198	54.26%	41.45%	39.14%	8.65%	37.21%	43.23%
West Elsdon	644	270	25.31%	54.60%	54.89%	30.67%	48.00%	59.55%
West Englewood	419	85	44.15%	41.62%	41.88%	10.81%	30.00%	44.62%
West Garfield	241	62	36.10%	28.74%	31.17%	14.94%	38.46%	40.82%
West Lawn	1101	457	27.88%	57.98%	54.91%	29.32%	58.89%	60.22%
West Pullman	724	158	53.73%	40.87%	40.00%	13.88%	42.59%	45.19%
West Ridge	3940	2000	30.96%	57.62%	61.54%	28.52%	60.63%	67.07%
West Town	8673	3344	28.43%	67.68%	67.38%	25.02%	69.04%	70.74%
Woodlawn	638	149	47.18%	45.18%	40.95%	14.95%	46.67%	54.81%
Chicago	159555	65514	32.96%	60.59%	62.52%	22.75%	63.08%	67.06%
North Cook	46716	28885	25.34%	67.43%	71.17%	32.24%	71.28%	74.38%
Northwest Cook	63005	36107	26.09%	65.88%	68.26%	28.69%	67.91%	71.74%
South Cook	16655	5993	40.01%	46.92%	49.57%	17.09%	48.55%	55.71%
Southwest Cook	36707	19611	27.21%	60.22%	64.28%	25.74%	61.92%	68.63%
West Cook	37884	20528	29.06%	60.23%	64.54%	29.51%	63.74%	69.76%



## Endnotes

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- <sup>i</sup> DeNavas-Walt, Carmen, Bernadette D. Proctor, and Jessica C. Smith. 2012. U. S. Census Bureau, *Current Population Reports. Income, Poverty, and Health Insurance Coverage in the United States: 2011*. Washington, DC: U. S. Government Printing Office.
- U. S. Congress Joint Economic Committee. 2010. *Invest in Women, Invest in America: A Comprehensive Review of Women in the U. S. Economy*. Washington, DC, December 2010. (JEC 2010)
- <sup>ii</sup> Reskin, Barbara F., and Denise D. Bielby. 2005. A Sociological Perspective on Gender and Career Outcomes, *Journal of Economic Perspectives*, 19(1): 71-86.
- <sup>iii</sup> Hegewisch, Ariane, and Maxwell Matite. 2013. Institute for Women’s Policy Research Fact Sheet: The Gender Wage Gap by Occupation. Downloaded from <http://www.iwpr.org/publications/pubs/the-gender-wage-gap-2012>, on May 15, 2013.
- <sup>iv</sup> Corbett, Christianne, and Catherine Hill. 2012. *Graduating to a Pay Gap: The Earnings of Women and Men One Year after College Graduation*. Washington, DC: AAUW.
- Dey, Judy Goldberg, and Catherine Hill. 2007. *Behind the Pay Gap*. Washington, DC: AAUW Educational Foundation.
- <sup>v</sup> Chang, Mariko Lin. 2011. *Shortchanged: Why Women Have Less Wealth and What Can Be Done about It*. New York, NY: Oxford University Press.
- <sup>vi</sup> 2010 Decennial Census, Table P38.
- <sup>vii</sup> Fishbein, Allen J., and Patrick Woodall, 2006. Women are Prime Targets for Subprime Lending: Women are Disproportionately Represented in High-Cost Mortgage Market. Consumer Federation of America. Downloaded from [www.consumerfed.org](http://www.consumerfed.org) on February 20, 2012.
- <sup>viii</sup> The Chicago six county region consists of Cook, DuPage, Kane, Lake, McHenry, and Will counties.
- <sup>ix</sup> Cowan, Spencer M., 2011. *Unequal Opportunity: Disparate Mortgage Origination Patterns for Women in the Chicago Area*, Chicago, IL: Woodstock Institute.
- <sup>x</sup> Some applications were approved for origination, and then the applicant decided not to go forward and take the loan. This may occur when an applicant submits applications to more than one financial institution, for example, and multiple institutions approve the application. It may also occur if the applicant backs out of the deal to purchase the property after the loan has been approved, or if the loan is approved with conditions which the applicant cannot meet or refuses to accept. Approval without acceptance happens in between 3.9 and 4.6 percent of applications, with female applicants about one half of a percent more likely to decline the loan. The impact on the analysis is not significant.
- <sup>xi</sup> The income limits for each range changed from year-to-year, and the limits were different for Lake County than for the other five counties in the region. The limits, in thousands, were:

	2011		2012		2013	
	5 Counties	Lake	5 Counties	Lake	5 Counties	Lake
Low	20 - 60	20 - 72	20 - 61	20 - 73	20 - 58	20 - 69
Moderate	61 - 91	73 - 108	62 - 92	74 - 109	59 - 88	70 - 103
Middle	92 - 152	109 - 180	93 - 154	110 - 183	89 - 146	104 - 172
Upper	153+	181+	155+	183+	147+	173+

<sup>xii</sup> Chicago has established boundaries for 77 Community Areas within the city. Those Community Areas are a commonly used geography for neighborhood-level analysis. In addition to the Community Areas within the city limits, Cook County outside of the city is divided into 5 sub areas (North, Northwest, West, Southwest, and South Cook County). The five counties outside of Cook County are the remaining geographies used in this analysis.

<sup>xiii</sup> The Top Holder designated for each respondent is based on the Reporter Panel from the Federal Financial Institutions Examination Council.

<sup>xiv</sup> The data analysis controlling for loan-to-income ratio was performed using multinomial logistic regression, which calculates impact of a variable (gender of applicant) on the probability of a dichotomous outcome (whether the loan was originated or not).

<sup>xv</sup> The HMDA data are reported by Respondent identification, and we linked each responded with its Top Holder through the Reporter Panel for the year.

<sup>xvi</sup> Community Areas are the most commonly used neighborhood-level aggregations used in Chicago and Cook County for data analysis.