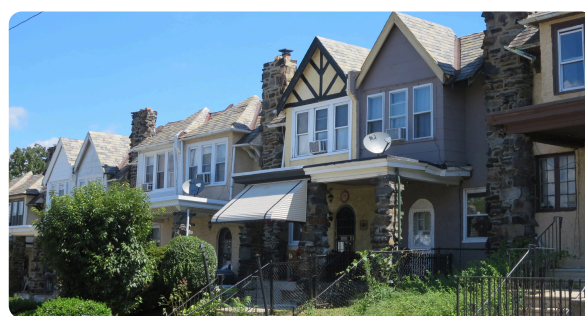# REINVESTMENT FUND

Examining Evidence of Racial Equality In Home Appraising and Valuation In the Philadelphia Metropolitan Area

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Examining Evidence of Racial Equality In Home Appraising and Valuation In the Philadelphia Metropolitan Area

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Abstract

This Brief examines racial equality in the appraisal and valuation homes receive as part of the process to obtain a mortgage to purchase a home or to refinance an existing mortgage. The first sections of the Brief utilize county-level summaries from the Federal Housing Finance Agency's (FHFA) Uniform Appraisal Dataset (UAD). These data offer a contemporary overview and trends in the volume, type, and average dollar value of completed appraisals for purchase and refinance mortgages. The next section also offers a county-level presentation of the degree to which appraisals for home purchases comport with sale prices. Bringing the analysis closer to neighborhood-level patterns, the next section focuses on Philadelphia, the central city of the region. FHFA UAD data are used to observe any patterns in the degree to which appraisals connected with GSE-related home purchase mortgages match sale prices. This effort has limits because, in recent years, the UAD has a substantial amount of data suppression at the census tract level making sub-city generalizations less secure than larger geographies. In fact, although 2023 UAD data are presented for purposes of completeness, the magnitude of data suppression necessitates that any patterns they represent be considered with a dose of skepticism. The final section of this Brief uses data reflective of applications for cash-out refinances that were denied with the stated denial reason being "collateral." Collateral, or the value (as established typically by an appraiser) of the home that is pledged to secure a mortgage, is one of multiple reasons a lender may have to deny a mortgage application.[1] Other reasons include credit history, debt-to-income ratio, employment history, mortgage insurance denied, and others. Cash-out refinances were selected for this analysis because: (a) many of the alleged cases of discrimination involved refinance transactions, and (b) cash-out refinances are less likely than non-cash-out refinances to involve valuation from an automated valuation model, or AVM.

The two analyses, using different data reflective of different kinds of transactions, point to a similar finding: ***if you are Black or Hispanic or live in a minority neighborhood, it is more likely that you will have an appraisal that is less than the market value of your home. And if you are a Black homeowner or live in a predominantly Black neighborhood in Philadelphia, you are more likely to have your application to refinance your mortgage denied because of your collateral.***

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[1] See: https://files.consumerfinance.gov/f/documents/cfpb_reportable-hmda-data_regulatory-and-reporting-overview-reference-chart-2019.pdf

Introduction

Property appraisals have long been key to accessing mortgage credit, either to purchase a home or to refinance an existing mortgage. The appraised value of a home stands as the assurance to a lender that the (collateral) property is of sufficient value to make the lender whole should the borrower fail to make their mortgage payments. While making estimations of value based on the race of the homeowner or the racial composition of the neighborhood within which the property is located has been unlawful under the 1968 federal Fair Housing Act since its inception, few cases were ever litigated.

One high profile case, brought by the US Department of Justice in 1976, alleged that The American Institute of Real Estate Appraisers, the Society of Real Estate Appraisers, the United States League of Savings Associations, and the Mortgage Bankers Association of America violated the nation's fair housing laws "…by promulgating standards which had caused appraisers and lenders to treat race and national origin as negative factors in determining the value of dwellings and in evaluating the soundness of home loans, and by failing to take adequate steps to correct the continuing effect of past discrimination and ensure non-discrimination by appraisers and lenders whose practices are subject to the influence or authority of the four organizations."[2] More recently, several cases alleging discrimination in appraising have been filed administratively with HUD and substantially equivalent agencies, and in private rights of action. As these cases make their way through the judicial and administrative processes, the public and industry will get much-needed clarity about what constitutes racial discrimination in appraising and who can be held responsible.

While the litigation history of appraisal bias is scant, an understanding of the importance of appraisal bias in furthering the racial wealth gap is not new. Former President Biden formed the Inter-Agency Property Appraisal and Valuation Equity (PAVE) Task Force in 2021 and charged it with "…addressing the persistent misvaluation and undervaluation of properties owned by families and communities of color."

In Philadelphia, heightened attention on the appraisal bias issue emerged in 2021 with the release of a report of the City's Appraisal Bias Task Force in 2022 – the result of more than a year of dialogue and research by a group of appraisers, housing and fair housing advocates, public interest attorneys, realtors and Realtists, among others. Philadelphia Mayor Cherelle L. Parker, who initiated the Task Force when she was a City Council member, adopted the report, and used it as the framework for a now permanent City department focused on implementation of the Task Force recommendations.

As highlighted in the work of PAVE, the Philadelphia Task Force, and others, the lack of public data on appraisals seriously impairs the ability of the various constituent groups to measure the extent of appraisal bias. Such groups include members of the appraisal industry itself, the general public, researchers, government officials, and the ecology of fair housing enforcement groups (i.e., fair housing organizations – sometimes referred to as private attorneys general, city/state/local agencies enforcing the Fair Housing Act and/or their own fair housing laws, the private bar, regulators). Unlike home mortgages for which there is an annually released database on all applications for mortgage credit because of the requirement of the federal Home Mortgage Disclosure Act (HMDA), there is no such reporting requirement for appraisers.

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[2] United States v. American Institute of Real Estate Appraisers 1:76-01448 | U.S. District Court for the Northern District of Illinois Filed Date: April 16, 1976 Closed Date: Dec. 21, 1978 (accessed at https://clearinghouse.net/case/10109/).

While there is no HMDA for appraisers, in 2022, the Federal Housing Finance Agency released data on appraisals associated with home mortgages purchased by the nation's Government Sponsored Enterprises (FNMA and FHLMC), or GSEs. These data, known as the Uniform Appraisal Dataset (UAD), have proven to be useful to a degree, but experience suggests that with lower mortgage lending activity in 2023 and 2024 – and in communities with more substantial FHA/VA activity – the data are so frequently suppressed that entire communities are not represented in the neighborhood level dataset.[3]

We note that with the change in presidential administrations, the PAVE Task Force was disbanded. A HUD press release in 2025 stated that PAVE "…exemplified government overreach by increasing bureaucracy using various tools aimed at addressing so-called systemic biases in the home appraisal process…Under President Trump's leadership, the Biden-era's obsession with DEI and overregulation is over. At HUD, we're restoring common sense and putting the American Dream of homeownership back within reach."[4]

This Brief is an update and extension of a Reinvestment Fund Brief released in 2023[5] that focused on the initial releases of data under the UAD. In this Brief, we update the county-level trends for the Philadelphia Metropolitan Area. We endeavored to update the census tract-level analysis presented in the 2023 Brief, but owing to data suppression, that analysis cannot be reliably completed, at least for appraisals completed in 2023. To overcome this limitation, we examine the HMDA dataset, focusing on applications for cash-out mortgage refinances in Philadelphia that were denied because of "collateral." These denied applications, we believe, represent the differential experience of people seeking credit related to the appraisal process. As explained later, it is not a perfect representation of potential appraisal bias. But these data do represent the only way to understand the degree to which appraisals frustrate people in their efforts to gain mortgage credit because of their race, or the racial composition of the area where their home is located.

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[3] The UAD does provide census tract aggregations/summaries of appraisals where the number of appraisals is greater than 10. FHFA releases an individual appraisal-level file, but that does not have sufficient geographic identification to know the neighborhood wherein the property is located. More aggregated versions of the UAD (e.g., county, state, metropolitan area) do not suffer from the same degree of data suppression, but they also do not allow an understanding of activity at the neighborhood level.
[4] https://www.hud.gov/news/hud-no-25-092
[5] https://www.reinvestment.com/wp-content/uploads/2023/01/Reinvestment-Fund-PHL-Appraisal_Summary_2021.pdf

Philadelphia Region Housing Market Trends

Philadelphia is the central city/county of the metropolitan area. For purposes of this report, we focus attention on the PA counties of the Philadelphia Metro Area only.[6] Philadelphia is home to the largest number and percent of the region's housing stock, both owners and renters. The suburban counties of Philadelphia tend to have substantially higher owner occupancy rates (70%+) compared to the city/county of Philadelphia (52%).

	Philadelphia	Bucks	Chester	Delaware	Montgomery	Suburban Counties	Region
Total Occupied Housing Units:	669,222	247,674	202,405	216,660	333,514	1,000,253	1,669,475
Renter occupied	319,081	54,452	50,711	65,772	94,268	265,203	584,284
Owner occupied	350,141	193,222	151,694	150,888	239,246	735,050	1,085,191
Percent owner occupied	52.3%	78.0%	74.9%	69.6%	71.7%	73.5%	65.0%
County's pct of region's owners	32%	18%	14%	14%	22%	68%	
County's pct of region's renters	55%	9%	9%	11%	16%	45%	
County's pct of region's total	40%	15%	12%	13%	20%	60%	

Table 1: Tenure Of Homes In the Philadelphia Region, 2019-2023[7]

While Philadelphia is the economic center of the region, home values are higher in the suburban counties, especially Chester County wherein the typical home is almost double the typical Philadelphia home. It is also the case that the suburban counties tend to have higher percentages of owner occupied homeowners with a mortgage than observed among Philadelphia owners.

	Philadelphia	Bucks	Chester	Delaware	Montgomery
Median Home Value	$ 232,400	$ 421,700	$ 461,800	$ 302,400	$ 409,900
Percent of Homes With A Mortgage	59.7%	65.5%	68.1%	64.0%	66.6%

Table 2: Median Home Value and Percent Of Homes With A Mortgage, 2019-2023[8]

The velocity of the home sale market, reflected here by the number of completed GSE-related appraisals, rose from 2017-2021 and then declined substantially in 2022 and again in 2023. The FHA pattern differs prior to the pandemic period but similarly shows substantial drop-off in 2022 and 2023.

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[6] There are various definitions of "regions." One commonly used region is the Philadelphia-Camden-Wilmington Metropolitan Area, which includes the following counties: in PA, Bucks, Chester, Delaware, Montgomery, and Philadelphia; in NJ, Burlington, Camden, Gloucester, and Salem Counties; in DE, New Castle County; and in MD, Cecil County.

[7] Data source: US Census American Community Survey, 5-Year, 2019-2023

[8] Ibid.

The drop in appraisal activity connected with home sales is manifestly influenced by the sharp run-up in the home mortgage interest rates beginning early in 2022 (see Figure 1).

Area	Loan Type	2017	2018	2019	2020	2021	2022	2023	Total
Philadelphia	GSE	8835	9556	10797	11647	13847	11090	8642	74414
Bucks	GSE	5602	5544	6073	6149	6597	5189	3952	39106
Chester	GSE	5531	5732	5912	6388	7168	5423	3897	40051
Delaware	GSE	4200	4451	4948	5597	6262	5240	4134	34832
Montgomery	GSE	7845	7887	8772	9340	10214	8064	5959	58081
Suburban Counties	GSE	23178	23614	25705	27474	30241	23916	17942	172070
Region	GSE	32013	33170	36502	39121	44088	35006	26584	246484
Philadelphia	FHA	3847	3324	3350	3825	3880	2813	2456	23495
Bucks	FHA	1456	1257	1254	1172	1000	630	533	7302
Chester	FHA	823	722	667	652	571	409	291	4135
Delaware	FHA	1774	1693	1702	1757	1796	1267	996	10985
Montgomery	FHA	1678	1415	1550	1381	1213	813	620	8670
Suburban Counties	FHA	5731	5087	5173	4962	4580	3119	2440	31092
Region	FHA	9578	8411	8523	8787	8460	5932	4896	54587

Table 3: Number Of Appraisals For Home Purchase Transactions, 2017-2023

The impact of rising interest rates is observed even more clearly in appraisal activity connected with refinances of existing mortgages. Appraisals connected with GSE-related mortgages dropped off a year sooner (2021) than those associated with FHA mortgages (2022); and the drop-off with GSE-related mortgages was more severe.
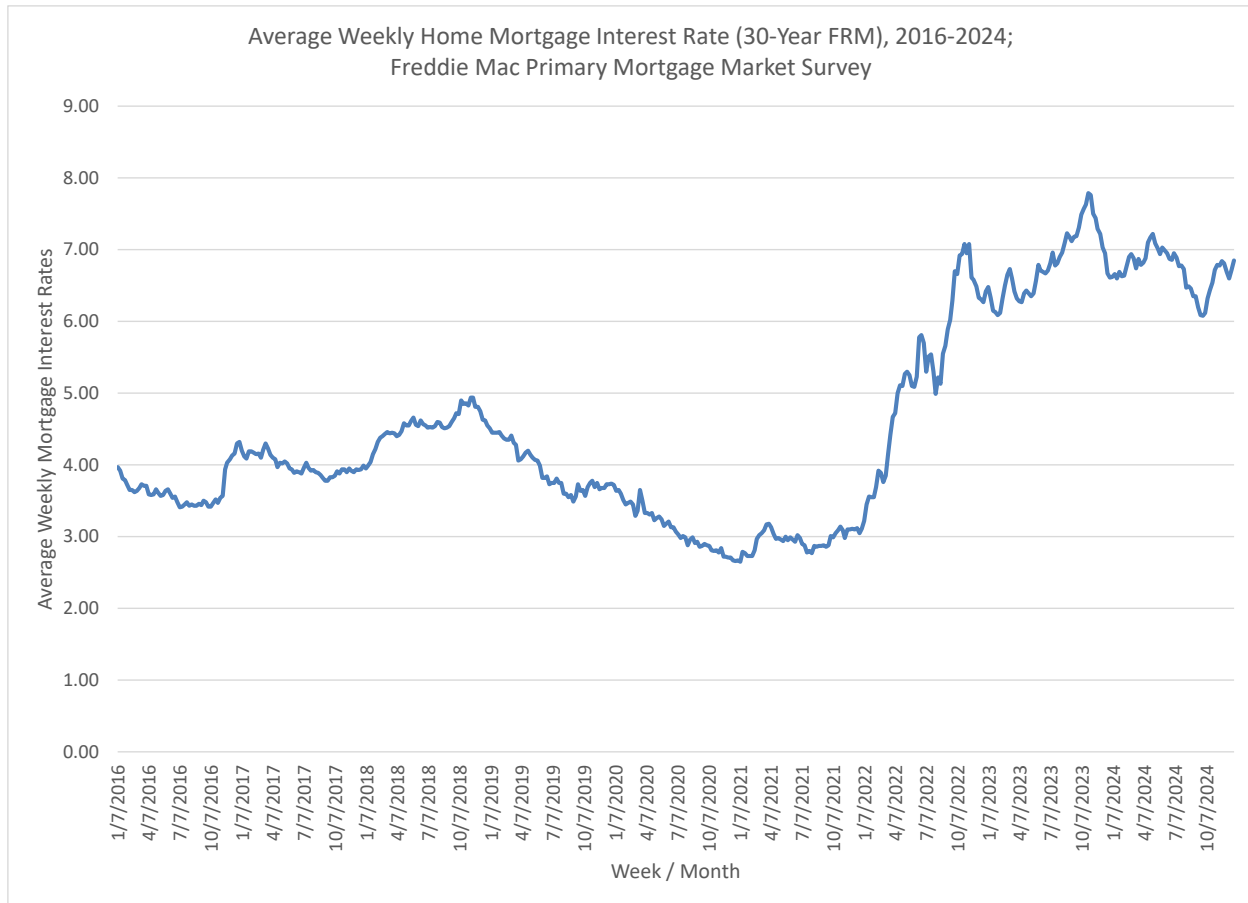
Average Weekly Home Mortgage Interest Rate (30-Year FRM), 2016-2024;
Freddie Mac Primary Mortgage Market Survey

Figure 1: Mortgage Interest Rates, 2016-2024

Area	Loan Type	2017	2018	2019	2020	2021	2022	2023	Total
Philadelphia	GSE	5,203	4,348	6,473	9,597	10,517	5,384	3,022	44,544
Bucks	GSE	3,659	2,799	4,913	8,606	7,706	2,702	1,189	31,574
Chester	GSE	3,222	2,509	4,538	7,632	6,514	2,160	1,073	27,648
Delaware	GSE	2,527	1,904	3,403	5,796	5,748	2,224	1,279	22,881
Montgomery	GSE	4,672	3,354	6,265	10,635	9,506	3,322	1,552	39,306
Suburban Counties	GSE	14,080	10,566	19,119	32,669	29,474	10,408	5,093	121,409
Region	GSE	19,283	14,914	25,592	42,266	39,991	15,792	8,115	165,953
Philadelphia	FHA	1,308	1,246	1,371	914	1,252	1,352	1,119	8,562
Bucks	FHA	564	471	641	487	647	551	373	3,734
Chester	FHA	374	322	411	287	352	306	253	2,305
Delaware	FHA	480	425	526	390	509	598	529	3,457
Montgomery	FHA	661	586	717	496	634	604	499	4,197
Suburban Counties	FHA	2,079	1,804	2,295	1,660	2,142	2,059	1,654	13,693
Region	FHA	3,387	3,050	3,666	2,574	3,394	3,411	2,773	22,255

Table 4: Number Of Appraisals For Mortgage Refinance Transactions, 2017-2023

In terms of home values as evidenced by median appraised values, the typical (median) value of homes associated with GSE-related mortgages trended up in all counties since immediately prior to the onset of the pandemic in 2020, but more substantially in Montgomery, Chester, and Bucks counties than in Philadelphia or Delaware county. Among FHA-insured mortgages we observe a somewhat similar pattern. However, the typical prices involved in FHA-related mortgage transactions were generally lower,

as expected given the nature of (and price cap on) the FHA mortgage product. Values of homes with FHA-insured mortgages, though, rose at a substantially higher rate than GSE-related mortgages. This, we believe, is reflective of the fact that homes in the lower price ranges rose substantially more than the higher-priced segment of the market, and thus FHA mortgages (owing to mortgage size limits) reflect that more substantial rise.

Area	Loan Type	2017	2018	2019	2020	2021	2022	2023	% Chg, 19-23
Philadelphia	GSE	$230,000	$235,000	$247,000	$270,000	$290,000	$295,000	$286,000	15.8%
Bucks	GSE	$345,000	$350,000	$360,000	$385,000	$420,000	$460,000	$475,000	31.9%
Chester	GSE	$385,000	$388,000	$395,000	$417,400	$460,000	$509,000	$527,000	33.4%
Delaware	GSE	$290,000	$280,000	$290,000	$287,000	$320,000	$335,000	$343,500	18.4%
Montgomery	GSE	$330,000	$332,000	$345,000	$366,000	$400,300	$439,000	$467,000	35.4%
Philadelphia	FHA	$156,000	$163,000	$173,000	$195,000	$205,000	$220,000	$220,000	27.2%
Bucks	FHA	$244,500	$245,000	$265,000	$280,000	$311,500	$345,000	$360,000	35.8%
Chester	FHA	$251,000	$257,300	$260,000	$284,500	$310,000	$340,000	$375,000	44.2%
Delaware	FHA	$155,000	$160,000	$167,500	$178,000	$195,000	$217,000	$230,000	37.3%
Montgomery	FHA	$235,000	$229,000	$250,000	$269,000	$280,000	$320,000	$350,000	40.0%

Table 5: Median Appraised Value For Home Purchase Transactions, 2017-2023

The typical value of homes appraised for mortgage refinances associated with GSE-related transactions declined between 2019 and 2023 in Philadelphia and Delaware counties. There was no such decline among FHA-related transactions, although Philadelphia and Delaware counties experienced among the lower percentage increases.

Area	Loan Type	2017	2018	2019	2020	2021	2022	2023	% Chg, 19-23
Philadelphia	GSE	$200,000	$200,000	$245,000	$290,000	$270,000	$241,000	$225,000	-8.16%
Bucks	GSE	$340,000	$355,000	$385,000	$410,000	$425,000	$430,000	$454,000	17.92%
Chester	GSE	$390,000	$385,000	$430,000	$455,000	$470,000	$475,000	$510,000	18.60%
Delaware	GSE	$305,000	$300,000	$345,000	$390,000	$365,000	$300,000	$286,500	-16.96%
Montgomery	GSE	$328,000	$335,000	$375,000	$400,000	$420,000	$415,000	$440,700	17.52%
Philadelphia	FHA	$155,000	$161,500	$185,000	$203,000	$212,900	$210,000	$218,000	17.84%
Bucks	FHA	$260,000	$265,000	$290,000	$305,000	$335,000	$375,000	$385,000	32.76%
Chester	FHA	$275,000	$286,000	$305,000	$325,000	$350,000	$390,000	$400,000	31.15%
Delaware	FHA	$191,300	$185,000	$215,000	$228,500	$248,000	$245,000	$240,000	11.63%
Montgomery	FHA	$260,000	$272,000	$283,000	$305,000	$330,000	$360,000	$376,000	32.86%

Table 6: Median Appraised Value For Mortgage Refinance Transactions, 2017-2023

Philadelphia Regional Trends In Appraisal Accuracy

The appraisal is said to be an *independently* arrived upon, impartial, expert opinion of the value of a property, at a given point in time. That expert opinion, as observed in Table 7, exactly equals the contract sale price of a home about one-third of the time across the Philadelphia region. While appraisers are aware of the contract sale price in an appraisal conducted for a home purchase mortgage, they are required to independently arrive at their opinion of value. Given the many factors considered in constructing an appraisal, it raises questions about that complete independence of the opinion when we observe that the appraised value and contract sale price exactly equal each other one-third of the time. In general, there are no substantial differences between the counties on this measure other than that Chester county tends to have the lowest percentages of appraisals exactly equal to sale prices among both GSE- and FHA-related transactions.

Area	Loan Type	2017	2018	2019	2020	2021	2022	2023	Trend
Philadelphia	GSE	32.4%	32.7%	30.5%	32.4%	32.9%	31.4%	33.0%	
Bucks	GSE	31.5%	31.7%	31.6%	34.1%	32.2%	28.8%	30.4%	
Chester	GSE	28.3%	27.5%	29.3%	29.2%	27.0%	26.5%	25.2%	
Delaware	GSE	30.2%	34.2%	32.4%	35.5%	34.7%	33.3%	33.3%	
Montgomery	GSE	30.3%	30.0%	30.1%	32.8%	32.3%	30.9%	30.5%	
Philadelphia	FHA	34.1%	33.9%	32.8%	34.3%	36.9%	32.7%	33.4%	
Bucks	FHA	33.4%	35.4%	38.2%	38.4%	37.3%	38.1%	34.9%	
Chester	FHA	30.4%	34.9%	33.7%	33.6%	30.6%	26.9%	27.8%	
Delaware	FHA	34.0%	35.2%	34.3%	36.1%	38.3%	34.3%	36.3%	
Montgomery	FHA	31.1%	30.1%	31.2%	34.9%	33.1%	33.5%	35.2%	

Table 7: Percent Of Appraisals For Home Purchase Mortgages Equal To the Sale Price, 2017-2023

Table 8 presents the percentage of appraisals that are above the sale price. In general, that is occurring in almost 6-in-10 transactions. We note that Philadelphia generally had lower percentages in the early years of the period covered by the data, but by 2022 and 2023, Philadelphia's percentage was higher than typical for the region.

Area	Loan Type	2017	2018	2019	2020	2021	2022	2023	Trend
Philadelphia	GSD	59.2%	58.6%	62.1%	60.2%	58.6%	61.1%	60.2%	
Bucks	GSD	61.5%	61.9%	62.5%	55.2%	52.2%	57.5%	58.6%	
Chester	GSD	65.0%	65.7%	65.5%	61.4%	59.4%	59.5%	63.4%	
Delaware	GSD	63.5%	59.2%	61.3%	56.3%	53.4%	56.6%	55.6%	
Montgomery	GSD	62.9%	63.7%	64.1%	57.9%	53.5%	56.5%	58.0%	
Philadelphia	FHA	56.8%	56.8%	58.4%	57.2%	53.1%	60.3%	59.2%	
Bucks	FHA	60.9%	59.4%	55.4%	53.0%	52.8%	55.6%	56.8%	
Chester	FHA	63.7%	57.5%	60.4%	57.4%	56.6%	62.8%	66.0%	
Delaware	FHA	60.8%	57.3%	58.4%	54.3%	48.6%	54.1%	53.8%	
Montgomery	FHA	62.7%	64.5%	63.0%	57.8%	56.1%	58.3%	56.9%	

Table 8: Percent Of Appraisals For Home Purchase Mortgages Above the Sale Price, 2017-2023

Table 9 presents data on the percentage of appraisals that are below the sale price. It appears that in all counties, there is a greater propensity for appraisals connected with GSE-related mortgages to be below the sale price when compared to FHA-related mortgages. The Philadelphia pattern, compared to its region, stands out. In the early part of the period, there was a greater propensity for appraisals in Philadelphia to come in below the sale price; that is true in both GSE- and FHA-related transactions. In 2020, the pattern shifted so that appraisals below the sale price was higher in the suburban counties

than in Philadelphia.[9] In fact, in 2023, the percentage of appraisals below the sale price was lowest in Philadelphia.

Area	Loan Type	2017	2018	2019	2020	2021	2022	2023	Trend
Philadelphia	GSE	8.4%	8.7%	7.4%	7.4%	8.5%	7.5%	6.7%	
Bucks	GSE	7.0%	6.4%	5.9%	10.7%	15.6%	13.7%	10.9%	
Chester	GSE	6.6%	6.7%	5.2%	9.4%	13.6%	14.0%	11.4%	
Delaware	GSE	6.3%	6.7%	6.3%	8.2%	11.9%	10.1%	11.1%	
Montgomery	GSE	6.8%	6.3%	5.8%	9.4%	14.2%	12.5%	11.5%	
Philadelphia	FHA	9.1%	9.3%	8.8%	8.5%	9.9%	7.0%	7.4%	
Bucks	FHA	5.6%	5.2%	6.4%	8.6%	9.9%	6.3%	8.3%	
Chester	FHA	6.0%	7.6%	5.8%	9.0%	12.8%	10.3%	6.2%	
Delaware	FHA	5.2%	7.5%	7.3%	9.6%	13.1%	11.6%	9.8%	
Montgomery	FHA	6.2%	5.4%	5.8%	7.3%	10.9%	8.2%	7.9%	

Table 9: Percent Of Appraisals For Home Purchase Mortgages Below the Sale Price, 2017-2023

City of Philadelphia Patterns of Appraisal Accuracy by Neighborhood Racial Composition

Our previous Brief described patterns of under-/over-appraising by neighborhood racial composition in Philadelphia through calendar year 2021. In that Brief, we concluded "*…undervaluation in home appraisals appears to be a more common challenge in communities of color and in lower priced neighborhoods.*" (p. 7). We noted in that Brief that owing to data challenges connected with data suppression (i.e., FHFA's decision to not report data for a census tract if there were not a sufficient number of cases to ensure the privacy/reliability of the data) that it was possible that the patterns observed were understated. Data suppression, especially in 2023, is even more severe. In fact, the number of appraisals for home purchases in Philadelphia in 2023 is the lowest of any year in the reporting period. The grey-shaded areas on Map 1 show that more census tracts in Philadelphia have UAD data suppressed than have data available. Accordingly, *while we report the 2023 data in the tables that follow, we do not have confidence that those data are representative of the entire city of Philadelphia – and in fact may differentially mis-state any observed patterns.*

Tables 10 through 12 present the relationship between the appraised value and the sale price in Philadelphia neighborhoods by year and racial/ethnic composition of the tract within which the home sale was located. These tables include only appraisals associated with GSE-related home purchase mortgages because HUD has not included its FHA-related appraisals in the UAD at the census tract level. Tracts are categorized as predominantly Black if 75% or more of the census tract population is Black, as predominantly White if 75% or more of the census tract population is White, and predominantly Hispanic if 30% or more of the tract population is Hispanic. Tracts labeled Mixed are those not otherwise categorized as defined above. Owing to the substantial amount of data suppression, 2023 data are presented in bold italics to remind the reader that most Philadelphia census tracts are not represented in the figures contained in these tables. Disparity ratios are also presented. These compare Predominantly White to Predominantly Black areas, and Predominantly White to Predominantly Hispanic areas. A value of 1.0 means that Predominantly White areas and their comparators have equal rates; a value less than

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[9] Perhaps coincidental, but it was in the period between 2020 and 2022 that the level of public attention on racial bias in home appraising was elevated, owing to activity both at the federal (as previously noted) and local (Philadelphia) levels, as well as filing of private lawsuits and journalistic exposés (see, for example, *Our America: Lowballed* which can be found at: https://ouramericaabc.com/lowballed).

1.0 means that Predominantly White areas have a lower rate; a value greater than 1.0 means that Predominantly White areas have a higher rate.

In Table 10 we examine the percentage of time an *appraisal is exactly equal to the sale price* by racial composition of the neighborhood. Throughout most of the period, except for 2017, White and Black areas had relatively comparable rates. However, the pattern when comparing White to Hispanic areas shows that except for 2020, White areas had substantially lower typical rates of appraisals equal to sale prices.

Table 11 presents the typical tract percentage of *appraisals above the sale price*. Throughout most of the period, with Disparity Ratios greater than 1.0, we observe Predominantly White areas were at an advantage compared to both Predominantly Black and Predominantly Hispanic areas. In other words, if you were seeking to buy a home in a Predominantly White area compared to a Predominantly Black or Hispanic area, your appraised value would more frequently be higher than the sale price.

Table 12 presents the typical tract percentage of *appraisals below the sale price*. In every year except for 2022, the Disparity Ratio shows a distinct and substantial advantage to Predominantly White areas compared to Predominantly Hispanic and Predominantly Black areas. For example, in most years, if you sought to purchase a home in a Predominantly White area you were substantially less likely to experience an appraisal below the sale price of the home you are purchasing.

Year	Tract Racial/Ethnic Make-Up				Disparity Ratio	
	Pred Black	Pred Hisp	Pred White	All Tracts	W:B	W:H
2017	36.2%	41.2%	30.2%	33.3%	0.83	0.73
2018	32.1%	33.6%	33.3%	32.4%	1.04	0.99
2019	27.8%	34.4%	27.7%	30.8%	1.00	0.81
2020	31.4%	28.9%	31.8%	32.3%	1.01	1.10
2021	32.8%	38.4%	32.2%	33.3%	0.98	0.84
2022	29.2%	35.7%	30.0%	30.3%	1.03	0.84
2023	*33.3%*	*37.9%*	*33.3%*	*33.3%*	*1.00*	*0.88*

Table 10: Percent Of Appraisals Equal To the Sale Price By Racial Composition Of the Subject Property Census Tract, 2017-2023

| Year	Tract Racial/Ethnic Make-Up				Disparity Ratio	
	Pred Black	Pred Hisp	Pred White	All Tracts	W:B	W:H
2017	53.6%	53.1%	62.3%	58.5%	1.16	1.17
2018	54.8%	51.9%	60.6%	58.8%	1.11	1.17
2019	61.5%	55.6%	62.6%	60.9%	1.02	1.13
2020	57.1%	62.1%	62.3%	60.0%	1.09	1.00
2021	58.5%	51.2%	60.3%	57.1%	1.03	1.18
2022	63.1%	56.7%	61.4%	61.4%	0.97	1.08
2023	*57.6%*	*55.1%*	*60.3%*	*60.0%*	*1.05*	*1.09*

Table 11: Percent Of Appraisals Above the Sale Price By Racial Composition Of the Subject Property Census Tract, 2017-2023

Year	Tract Racial/Ethnic Make-Up				Disparity Ratio	
	Pred Black	Pred Hisp	Pred White	All Tracts	W:B	W:H
2017	9.2%	10.5%	6.3%	7.1%	0.69	0.60
2018	8.9%	12.5%	5.0%	7.9%	0.56	0.40
2019	7.7%	9.6%	5.6%	6.4%	0.73	0.59
2020	9.1%	7.8%	5.4%	6.7%	0.60	0.70
2021	8.3%	10.0%	5.3%	8.3%	0.63	0.53
2022	6.2%	5.6%	7.4%	6.3%	1.19	1.32
2023	*6.7%*	*6.1%*	*6.3%*	*6.3%*	*0.94*	*1.03*

Table 12: Percent Of Appraisals Below the Sale Price By Racial Composition Of the Subject Property Census Tract, 2017-2023
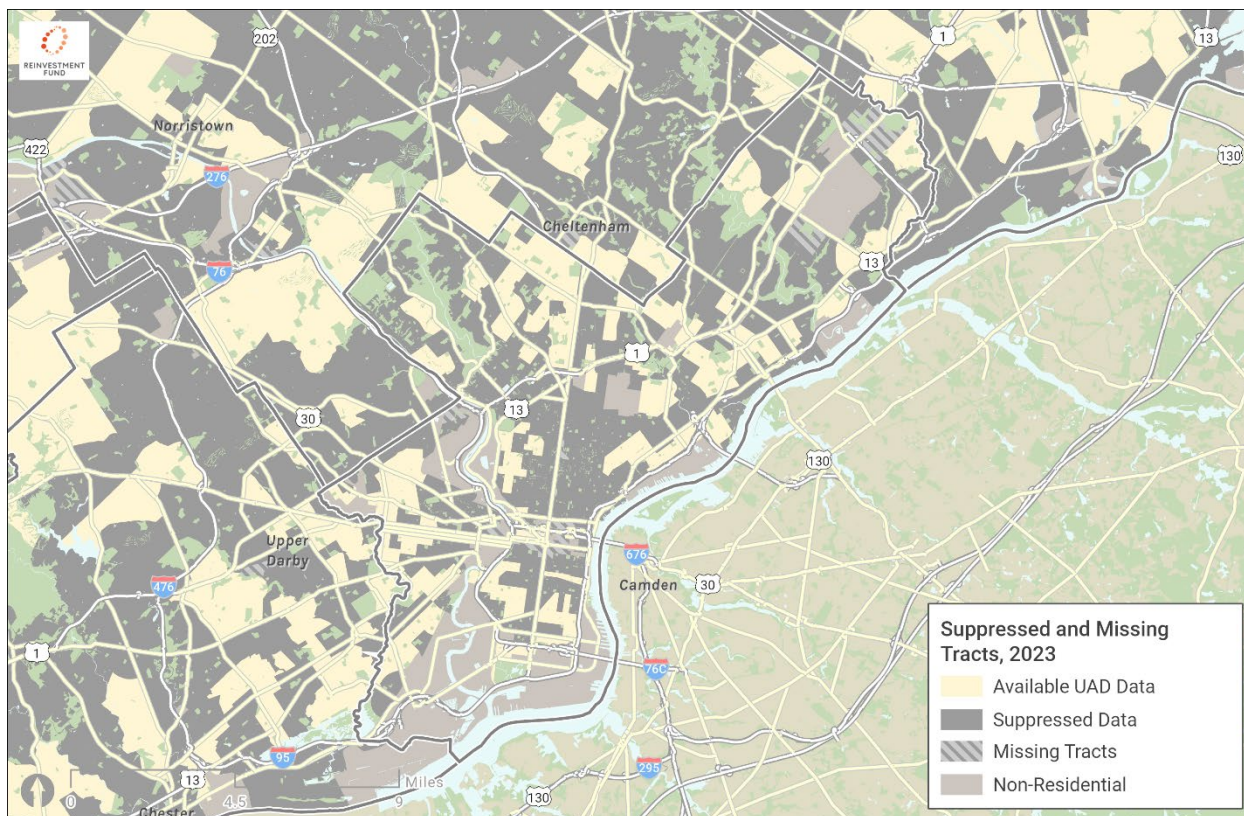
Map 1: Availability Of UAD Census Tract-Level Appraisal Data, Philadelphia, 2023

An Alternative To the UAD For Evaluating Appraisal Bias

As previously noted, the UAD for Philadelphia, especially in recent years, has so much data suppression and relatedly, missing Census tracts, that it is not sufficiently representative of the city to discern any reliable neighborhood-level appraisal bias patterns, should they exist.

Mortgage application data are reported annually and are compiled in the Home Mortgage Disclosure Act (HMDA) database. These data offer the opportunity to study reasons why loan applications are denied, including when an appraisal is implicated in a loan denial. As an alternative to the UAD, we examine mortgage applications that are denied where the lender declares "collateral" as the singular reason for the denial.[10] This denial category is chosen because *it is an appraisal that establishes the value of the collateral*.

This analysis uses applications in the 2021-2024 HMDA databases that were denied because of collateral, and where the lender categorized the type of application as one seeking a cash-out refinance. These applications were selected for two reasons. First, there have not been many examinations of appraisal bias focused on mortgage refinances. The most recent and notable studies of appraisal bias focus on home purchases and relied on the UAD. Yet, many of the cases reported in the popular press wherein Black homeowners alleged that they received higher appraised values after they "whitewashed" their

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[10] While it is not commonplace to examine mortgage data to indicate issues with appraisals – more typically researchers use the UAD or another proprietary database (see, for example, Ding, 2014 or Ambrose, et al., 2023) – it is not without precedent (see, for example, Jean and Bluestein, 2021).

homes, involved cash-out refinance transactions.[11] Second, we focus on cash-out refinances because in a streamlined refinance, an estimation of value could more likely be generated with an automated valuation model (or AVM) rather than with a full appraisal; but with a desire to pull cash out of the equity in one's home, a full appraisal is more likely.[12]

To be clear: this is a very different analysis than is traditionally done with the UAD. Those data foster an understanding of how the appraisal relates to the contract sale price in completed home sale transactions. Cash-out refinance mortgage application denials because of an issue with collateral give an understanding of how the value of the property plays into transactions that did not lead to an originated loan.

Before examining the results, it is important to clearly state the potential pitfalls of this approach. First, while a collateral denial likely is a result of an issue with the appraisal, it could also represent a denial due to a significant physical issue with the property (e.g., a structural problem with the home's foundation, which certainly impacts its value as security for the loan), not the appraisal/appraiser's opinion of value. Second and related, this is an indirect way to understand potential appraisal issues (as opposed to the UAD, which is more direct albeit limited to purchase mortgages). Third, although lenders have official guidance on coding reasons for denial in their HMDA submission,[13] it is always possible that they simply denote multiple reasons (e.g., credit and collateral) when it was a denial driven by one (e.g., credit). For this reason, though, we focus on those denials where collateral was listed as the only reason for the denial.

That said, this is not the first and only use of HMDA to understand appraisal issues, and absent more comprehensive data focused on appraisals, it may be the only way to understand if and how property valuation impacts home transactions at the neighborhood level, going forward.

Table 13 is offered to show the volume and share of all HMDA applications/actions for Philadelphia covering the period 2021 through 2024, combined.[14] Focusing on the cash-out refinances, over that period in Philadelphia, there were 30,867 applications made with 13,607 originations (44.1%). There were 7,572 denials (24.5% of all applications). Of the denials, only 15 had no reason offered by the lender. Of those with a reason, denials due only to collateral (920) represent 3% of all applications and 12.2% of all denials with a reason.

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[11] See, for example, the cases of Tate and Austin (https://www.npr.org/2023/03/09/1162103286/home-appraisal-racial-bias-black-homeowners-lawsuit) or Connolly and Mott (https://www.nytimes.com/2022/08/18/realestate/housing-discrimination-maryland.html)

[12] Pinto (2025) shows that in January 2025, 35.4% of FNMA and 37.5% of FHLMC no cash out refinances got appraisal waivers compared to 22.3% and 17.5%, respectively. Historic data from Pinto generally show that over time, although the levels have changed, especially since circa 2018, cash-out refinances are invariably less likely to get waivers than no cash out refinance transactions. See: https://www.aei.org/research-products/report/prevalence-of-gse-appraisal-waivers/

[13] See: https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.ffiec.gov/sites/default/files/data/hmda/2024Guide.pdf

[14] HMDA data for 2024 are the provisional release.

	Cash-Out Refinance			No Cash-Out Refinance		
	#	% of Apps	% of Denials	#	% of Apps	% of Denials
Applications	30,867	NA		31,303	NA	
Originations	13,607	44.1%		15,970	51.0%	
Apprv; Not Accepted	640	2.1%		914	2.9%	
Withdrawn	5,571	18.0%		5,107	16.3%	
Closed; Incomplete	3,477	11.3%		3,660	11.7%	
Denials (all)	7,572	24.5%		5,652	18.1%	
Denials (no reason)	15	0.05%	0.2%	27	0.09%	0.5%
Denials (w/reason)	7,557	24.5%	99.8%	5,625	18.0%	99.5%
Denials (w/collateral)	1,159	3.8%	15.3%	702	2.2%	12.4%
Denials (only collateral)	920	3.0%	12.2%	447	1.4%	7.9%

Table 13: Data Descriptive Of HMDA Refinance Applications In Philadelphia, 2021-2024

The likelihood that a loan denial results from collateral (and only collateral) in conventional transactions is 12.4% for Black not Hispanic applicants compared to 9.7% for White not Hispanic applicants – resulting in a White to Black Disparity Ratio of .78. Among applicants for government-insured loans (i.e., FHA, VA, FMHA), the percentages are 16.4% and 12.9%, respectively. The Disparity Ratio for these denied applicants is .79. In both instances, a denied Black applicant for a cash-out refinance loan was more likely to experience a denial due solely to collateral than a denied White applicant.

	Conventional		Gov't Insured	
	White NH	Black NH	White NH	Black NH
% Only Collateral	9.7%	12.4%	12.9%	16.4%

Table 14: Frequency Of Collateral Denials By Loan Type and Race Of Applicant

The difference by neighborhood racial composition is even more stark. Among applicants for cash-out refinances in Philadelphia areas that are home to 90% or more people of color, 11.7% of applicants for conventional loans had those loans denied because of collateral. Mixed neighborhoods, whether mixed but predominantly White or mixed but predominantly not White, had relatively similar percentages (under 10%). However, in predominantly White areas, 3.3% of denied applicants had their loans denied because of collateral. This is a White to Black neighborhood Disparity Ratio of .28. Among applicants for government-insured loans, 16% of those in 90% or more predominantly minority areas had their loans denied because of collateral; there were too few transactions in 90%+ White areas to report a percentage. However, in mixed but predominantly White areas, the percentage was 11.2%. Thus, the neighborhood Disparity Ratio stands at 0.7.

	Conventional				Gov't Insured			
	90%+ Min	Min-Mixed	Min-White	90%+ White	90%+ Min	Min-Mixed	Min-White	90%+ White
% Only Collateral	11.7%	9.9%	9.2%	3.3%	16.0%	14.9%	11.2%	NA

Table 15: Frequency Of Collateral Denials By Loan Type and Neighborhood Racial Composition

Denial rates due to collateral are related to the size of the refinance loan the applicant sought. Among applicants for lower value conventional loans (i.e., those under $175,000), 13.2% of the denied applications were due to collateral, which compared to 9.7% for the highest value ($315,000 and over) loans. This represents a Disparity Ratio of 1.36 (with smaller value loans disadvantaged compared to the

highest value loans). Among applicants for government-insured loans, 19.7% of lower value denials were due to collateral compared to 11% for the highest value loans. This is a Disparity Ratio of 1.79.

	Conventional			Gov't Insured		
	< $175k	$175k-$315k	> $315k	< $175k	$175k-$315k	> $315k
% Only Collateral	13.2%	9.9%	9.7%	19.7%	15.0%	11.0%

Table 16: Frequency Of Collateral Denials By Loan Type and Loan Amount

Combining the race of the applicant with the racial composition of the area within which the property is located, we observe that 12.8% of denied Black applicants in 90%+ minority areas have their loans denied because of collateral; that compares to 0% for White applicants in 90%+ White areas. Among applicants for government-insured loans that were denied, 16.8% of denied Black applicants in 90%+ minority areas had their loans denied because of collateral; there were too few denials of White applicants in 90%+ White areas to report a percentage.

	Conventional	Gov't Insured
% Only Collateral		
Black Applicant / Black Neighborhood	12.8%	16.8%
White Applicant / White Neighorhood	0.0%	NA

Table 17: Frequency Of Collateral Denials By Loan Type, Race and Neighborhood Racial Composition

Combining racial composition of the area within which the property is located with the value of the loans, we observe that 13.6% of denied applicants for conventional loans in Black neighborhoods were denied because of collateral in the lowest value areas; that percentage declines as loan amount increases. Among denied government-insured loans, 19.8% of those in 90%+ Black areas with the lowest values were denied because of collateral; the percentages were lower when higher value loans were sought. There were too few denied applications in White neighborhoods to reliably report these joint comparisons.

	Conventional	Gov't Insured
% Only Collateral		
Black Neb / Low Value	13.6%	19.8%
Black Neb / Med Value	11.1%	14.4%
Black Neb / Hi Value	4.8%	15.7%
White Neb / Low Value	NA	NA
White Neb / Med Value	NA	NA
White Neb / Hi Value	NA	NA

Table 18: Frequency Of Collateral Denials By Loan Type, Neighborhood Racial Composition and Home Value

Conclusion

Without better data, we are challenged to specifically pinpoint the degree to which appraisals thwart applicants' efforts to obtain mortgage credit – to buy homes, or as also presented here, to take advantage of declines in interest rates and/or access the equity in their homes for other of life's expenses (e.g., college for a child, medical bills).

We remind that the analysis of loan denial data is very different than the UAD, which only reports on successful applications for mortgage credit through the GSEs (or FHA, at the county level). ***UAD data speak to the appraisal experience of people seeking to purchase a home. HMDA data, as presented here, speak to the experience of people who already own their home but are seeking to refinance their existing mortgage and take cash-out of their equity experience issues with valuing their home (i.e., the loan's collateral).***

The analysis of UAD for the city of Philadelphia shows that if you seek to purchase a home in a Black neighborhood, there is a higher likelihood that the appraisal will be below the contract sale price than if you seek to purchase in a White neighborhood. Further, if you seek to purchase in a White neighborhood there is a greater likelihood that your appraisal will be higher than the sale price. Yes, appraised values are not the same as a contract sale price – but there is no a priori reason that variation between sale prices and appraised values should be anything other than randomly different (i.e., sometimes a bit higher than or lower than the contact sale price). In other words, there should not be a pattern related to racial composition of a neighborhood.

What the analysis of mortgage denials resulting from issues of collateral show for Philadelphians seeking to refinance their mortgages is that for those applicants who were denied credit, there are differences by the race of the homeowner, racial composition of the neighborhood, and size of the loan sought. The nature of the differences is such that those who are Black or live in a predominantly minority area and those who sought smaller loans are more frequently prevented by collateral issues. HMDA data, although imperfect for an examination of appraisal bias, do represent a reasonable indicator of an

appraisal issue, and the data show that there are disparities related to the race of homeowner, racial composition of neighborhood, and loan amount.

Putting the results of these two analyses together, ***whether you are trying to purchase a home or access the stored wealth in your home, you are disadvantaged in the valuing of the real estate if you are a person of color or if the home is located in a neighborhood with a substantial minority population.***

In the end, appraisal bias is real. We can argue about the degree to which racial bias is endemic to the process, but these data – and those of others who have studied the issue – suggest that it is likely that such bias does sometimes influence the process. And under those circumstances, data and the resulting transparency, is key to ensuring that governments, private attorneys general, regulators, academics – the public, writ large – hold appraisers to the same standards of equal treatment as are lending institutions and others in the real estate industry.

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