

CASE STUDY: SPCP DETERMINING NEED



# Cleveland-Elyria, OH

# **SPCP Analysis**



# DATA ANALYSIS AS A CATALYST FOR FAIR LENDING

▲ Data analysis starts with finding the right data sets.

When it comes to SPCP analysis, the open data sets recommended by the CFPB are U.S. Census data and HMDA data.

- **U.S. Census data:** American Community Survey (1YR or 5YR) and Current Population Survey (including ASEC). Caution should be exercised as these data sets are based on survey data. At Polygon Research, we do the analysis at the PUMS level (micro data) in order to perform rigorous diagnostic analysis of demographic and housing trends at a local level.

- **HMDA data:** CFPB calls HMDA data the most comprehensive publicly available data about mortgage activity. The public disclosure is an important feature allowing all stakeholders to analyze the mortgage activity of lenders alone, in aggregate, or in peer groups, at a small geographic location level, like a census tract. We model decades of HMDA data (since 2000) to understand trends and to predict the future. For the SPCP analysis in this document, we use the four most current years of HMDA LAR data (2018-2021) in order to take advantage of the additional data points made publicly available since 2018. The analysis of these data points provides rich understanding of the loan features and is a possible input to an SPCP design.



### Confront bias in data analysis.

When it comes to data analysis, especially in the context of SPCP analysis, we have to recognize and overcome the cognitive biases we all have. For example, one of the most common cognitive bias is the **confirmation bias**, the "human tendency to search for, favor, and use information that confirms one's pre-existing views on a certain topic" ([Healy, 2016](#)).

To beat the cognitive bias in SPCP analysis, lenders must use their experts, together with data science partners like Polygon Research, to ask the right questions, to define the factors that will help answer the questions, and to interpret the results in meaningful and actionable ways.

### Avoid data fallacies.

Data fallacies are pitfalls that people encounter when they analyze their data for SPCP or even fair lending. Here are the two most common to watch out for:

- **Cherry picking**, this is ignoring inconvenient data, suppressed evidence, argument by half-truth, card stacking, etc. We go out of our way to bring the entire data at the lender's fingertips with interactive dashboards to combat cherry picking.
- **False causality**: Data analysis is not always "objective". Data must be understood in context. That is why we bring all relevant open data to the lenders, so that when they design SPCP, they can factor in all the factors that influence fair and responsible lending - from property location to loan features to lender underwriting practices.



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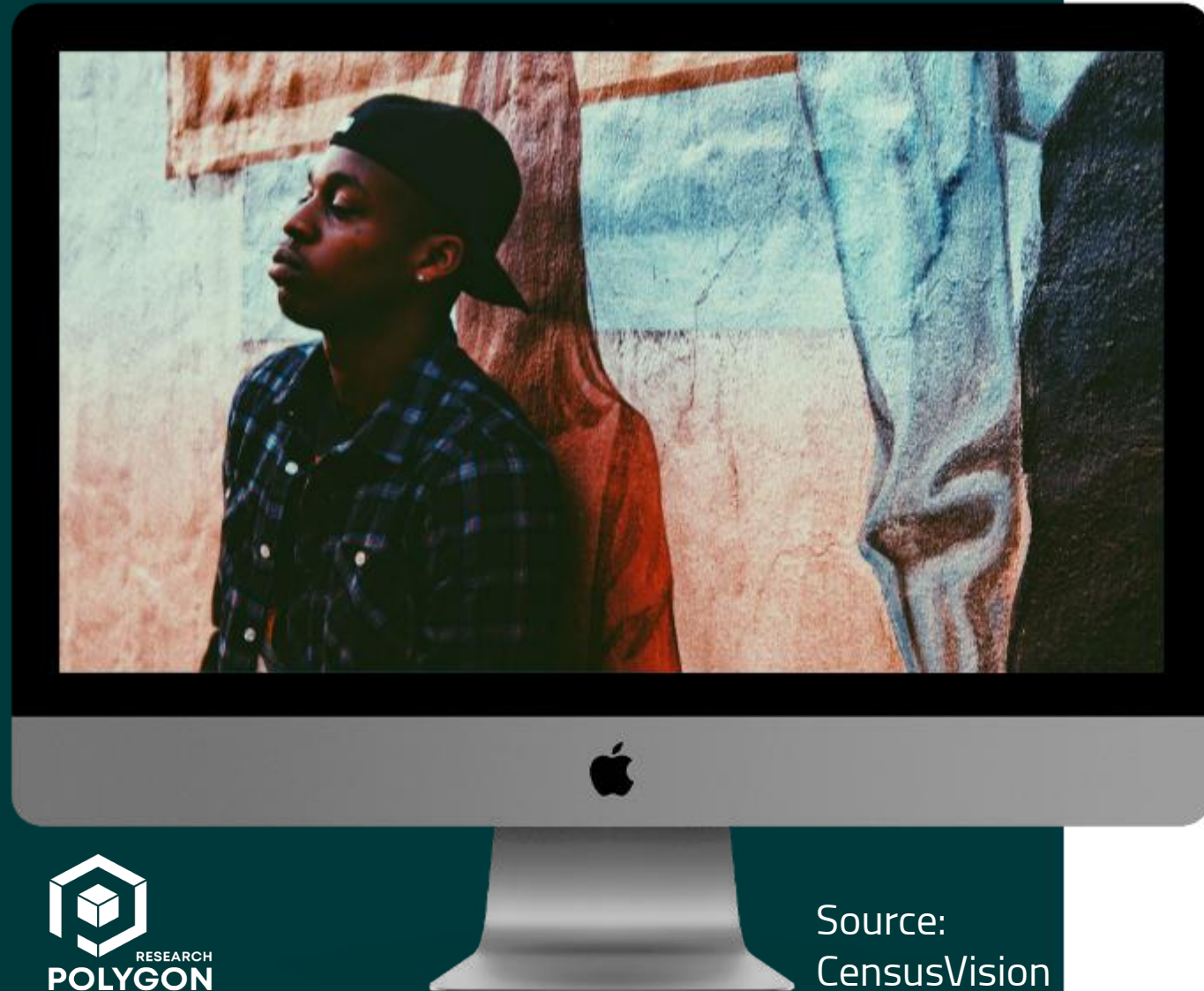
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# 1: POPULATION TRENDS



Ohio Households

Ohio Homeownership Gap

Cleveland-Elyria, OH MSA:

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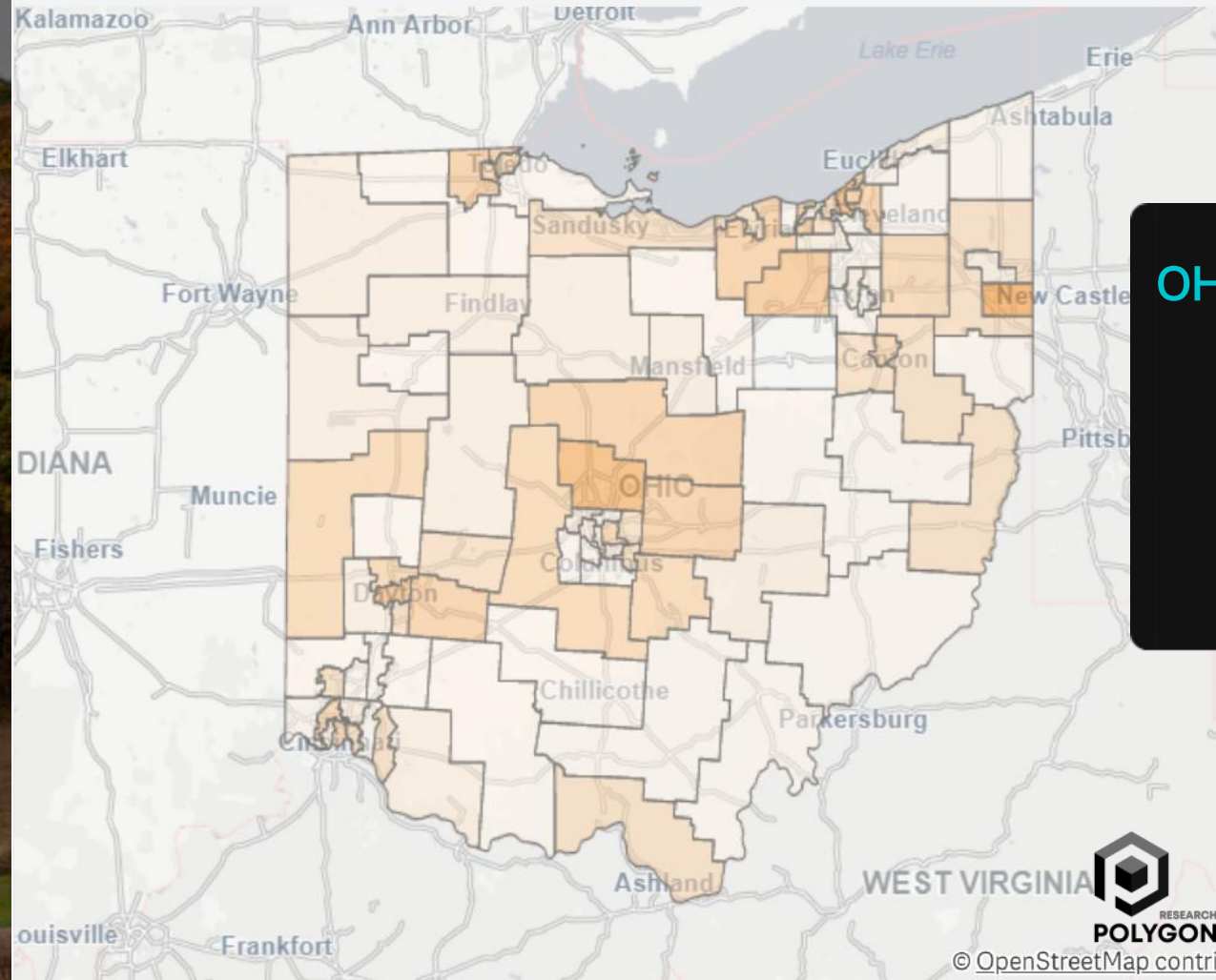


Source:  
CensusVision

# OHIO

DARKER COLORS INDICATE HIGHER HOUSEHOLD DENSITY

## Households 2019



Households (millions)

- 2015
- 2016
- 2017
- 2018
- 2019

## OHIO

Households grew 2.7% from 2015 to 2019. Black Households grew 1.9%. Hispanic Households grew 33.7% from 2015 to 2019.

# HOMEOWNERSHIP GAP

Ohio ranked #34 among the 50 U.S. States for Black or African American homeownership gap in a study performed by Homeownership Council of America and Polygon Research.

Below is a table from this analysis by race for Ohio State

	Households	Ownership Rate	State Avg	Delta from State Avg
AIAN	10,709	41.7%	66.0%	-24.3
Asian	94,817	56.3%	66.0%	-9.7
Black or African American	592,681	34.9%	66.0%	-31.1
NHOPI	1,244	59.8%	66.0%	-6.2
Other/2 or More Races	122,245	42.7%	66.0%	-23.3
White	3,908,637	71.7%	66.0%	5.7



# CLEVELAND-ELYRIA, OH MSA

## A SIMILAR HOMEOWNERSHIP GAP

	Households	Ownership Rate	State Avg	Delta from State Avg
+ AIAN	2,410	44.1%	64.1%	-20.0
+ Asian	19,113	53.7%	64.1%	-10.4
+ Black or African American	176,286	36.5%	64.1%	-27.6
+ NHOPI	447	29.5%	64.1%	-34.6
+ Other/2 or More Races	25,392	41.6%	64.1%	-22.6
+ White	648,980	72.9%	64.1%	8.8

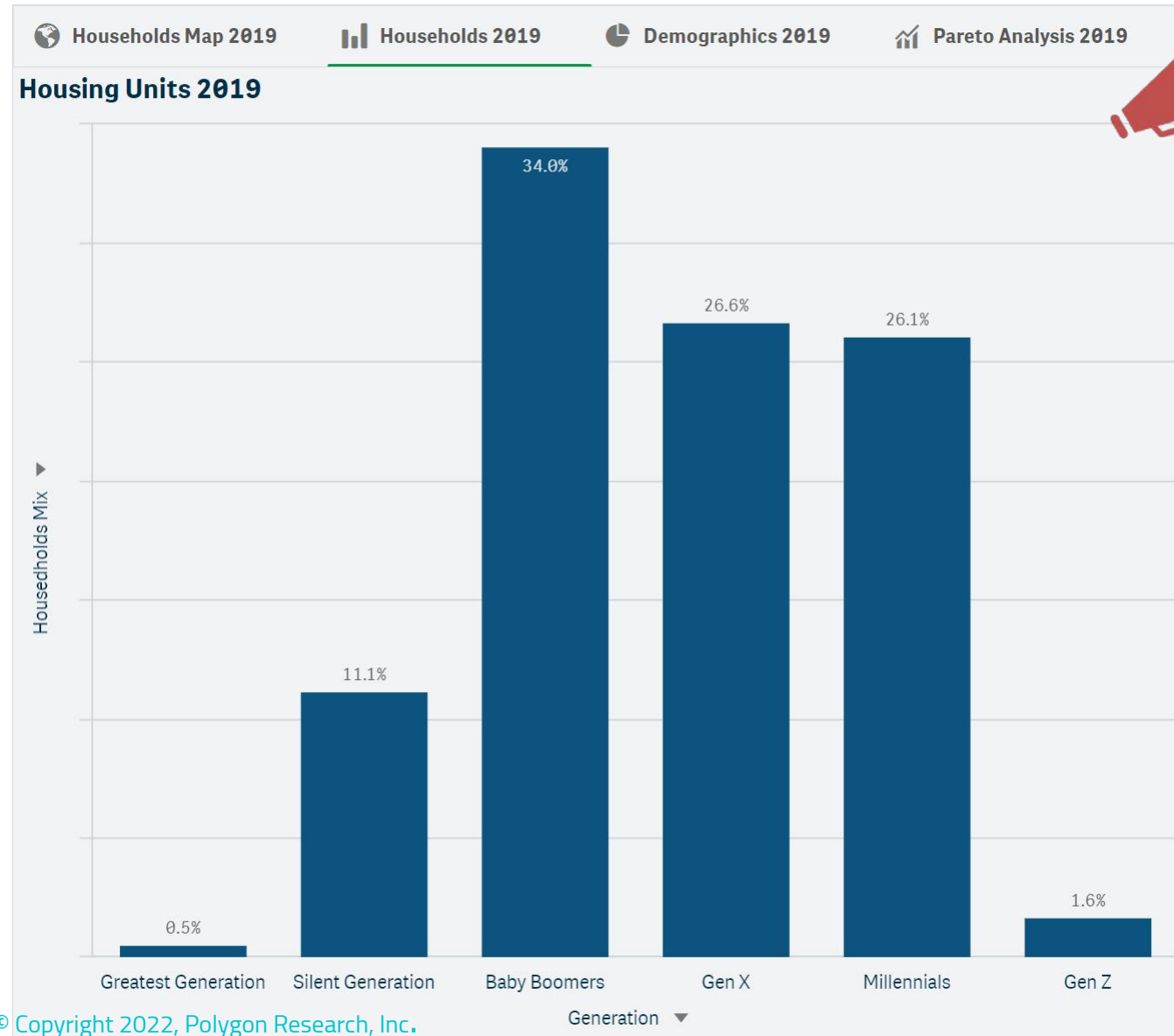


This type of analysis is important to determine if there is a problem in lender's market that could be addressed through designing SPCP that might improve access to finance for certain demographic groups.



# Distribution of Black Households by Generation

Cleveland-Elyria OH MSA (Black or African American Households)



This type of analysis provides insight into the demographics of the market you want to target with SPCP. For example, we have selected to analyze only the distribution of Black or African American Households in Cleveland by Generation (See below for definition of generation).

In this case, over 54% of the households are Gen X or younger (95,798 households). Combining this analysis with homeownership analysis shows that the homeownership rate of this cohort is 25.5% compared to the MSA average of 53.6% for these three generations. That is a similarly wide gap of 28.1 percentage points from the market average that we saw at the state and MSA level for all generations.

**A lender could use this insight to segment the market further and quantify a target opportunity. For example, a lender might decide to focus its marketing outreach to this market size:**

**•95,798 Black Gen X, Millennial, and Gen Z households.**

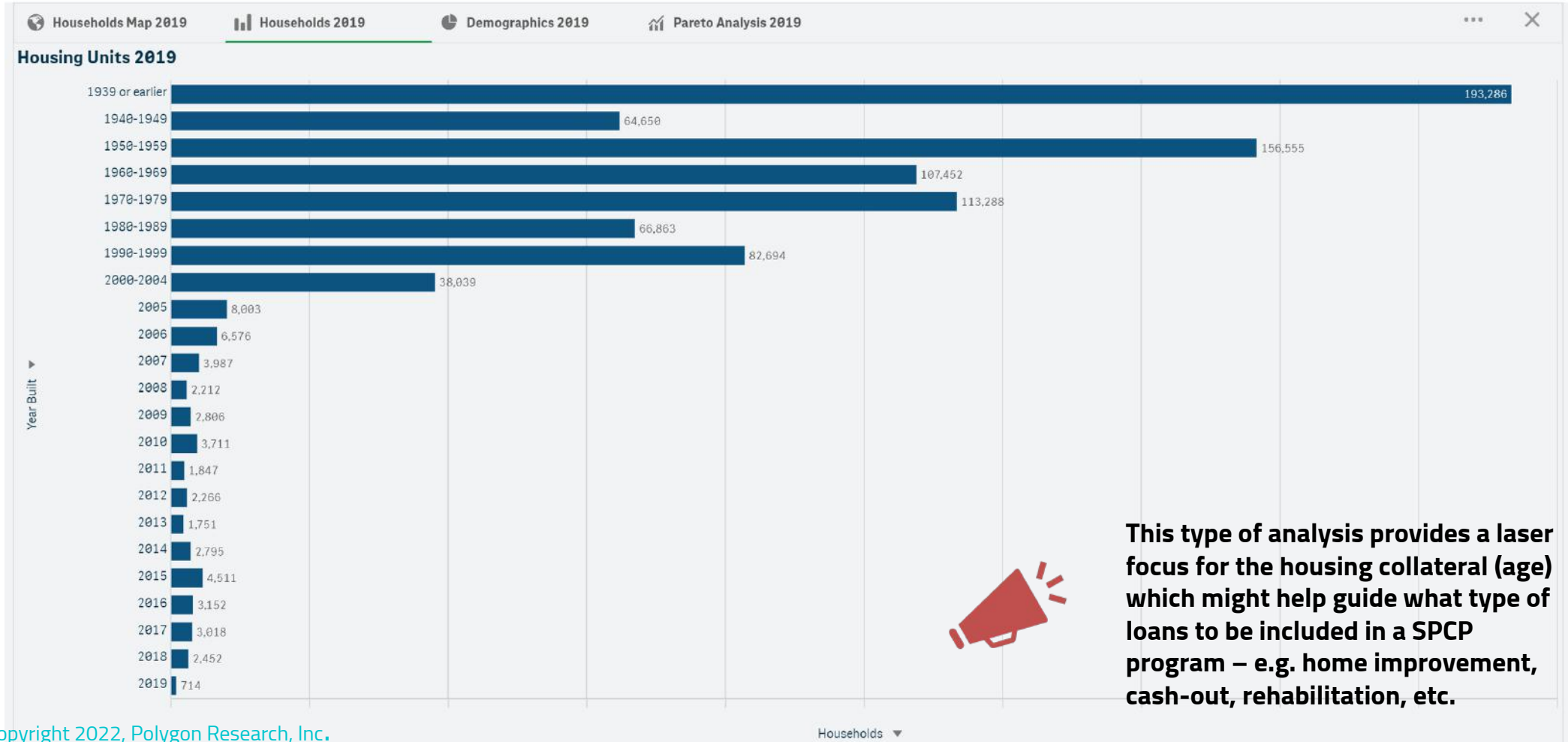
- Greatest Generation** birth year between 1901 and 1927
- Silent Generation** birth year between 1928 and 1945
- Baby Boomers** birth year between 1946 and 1964
- Gen X** birth year between 1965 and 1980
- Millennials** birth year between 1981 and 1996
- Gen Z** between 1997 and 2012

# Number of Occupied Housing Units by Age

Cleveland-Elyria OH MSA (All Households)

CensusVision Analyze Sheet Narrate Storytelling Households Overview Selections

## Households Overview



This type of analysis provides a laser focus for the housing collateral (age) which might help guide what type of loans to be included in a SPCP program – e.g. home improvement, cash-out, rehabilitation, etc.

# Number of Occupied Housing Units by Age

Cleveland-Elyria OH MSA (Black or African American Households)

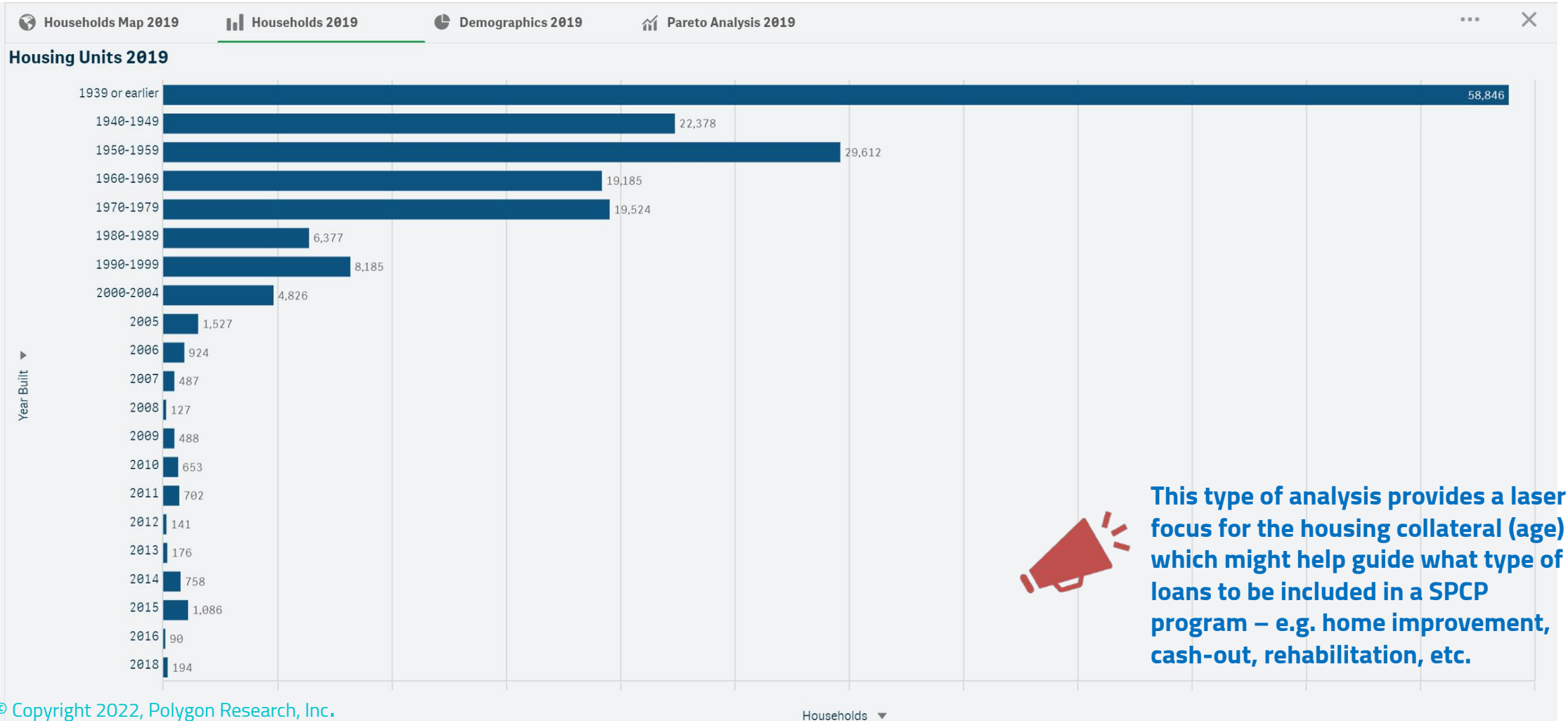
☰ CensusVision Analyze Sheet Narrate Storytelling

Households Overview

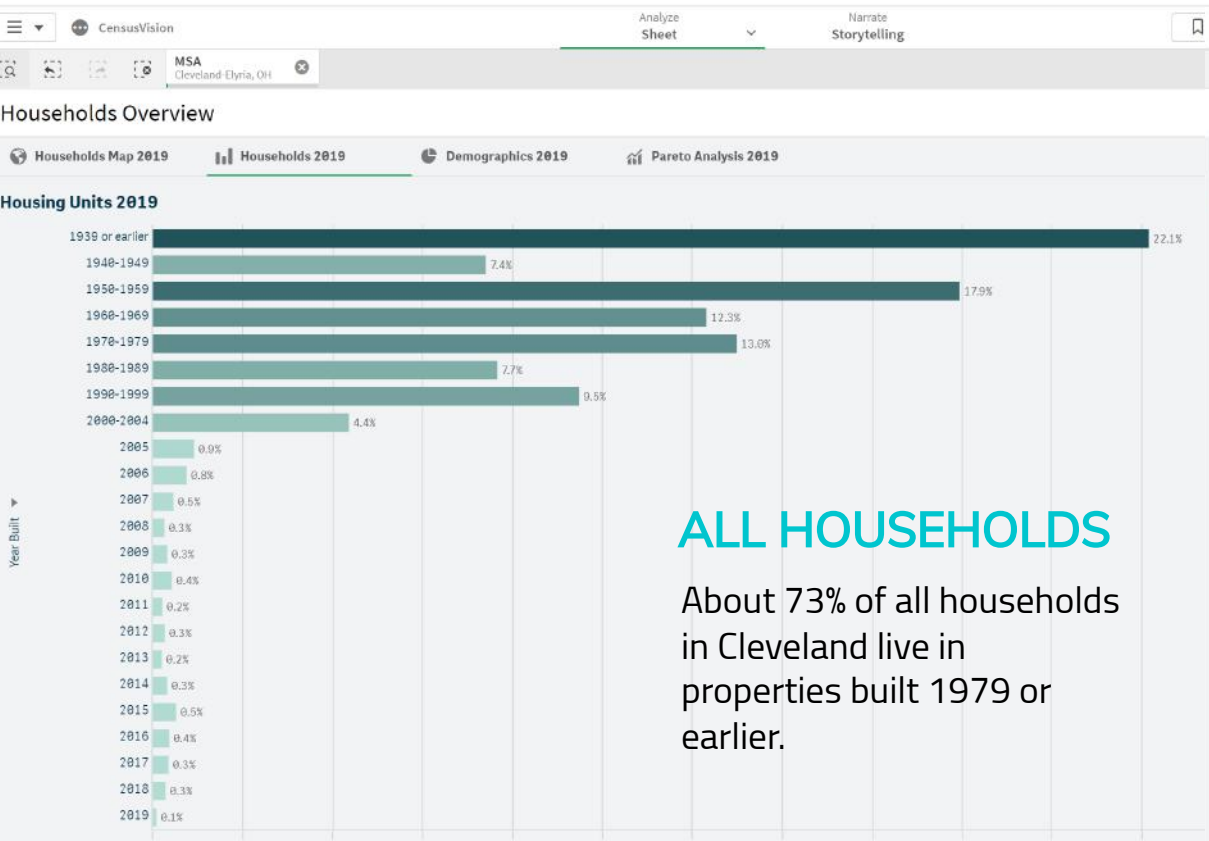
MSA Cleveland-Elyria, OH Race Black or African Amer...

Selections

## Households Overview

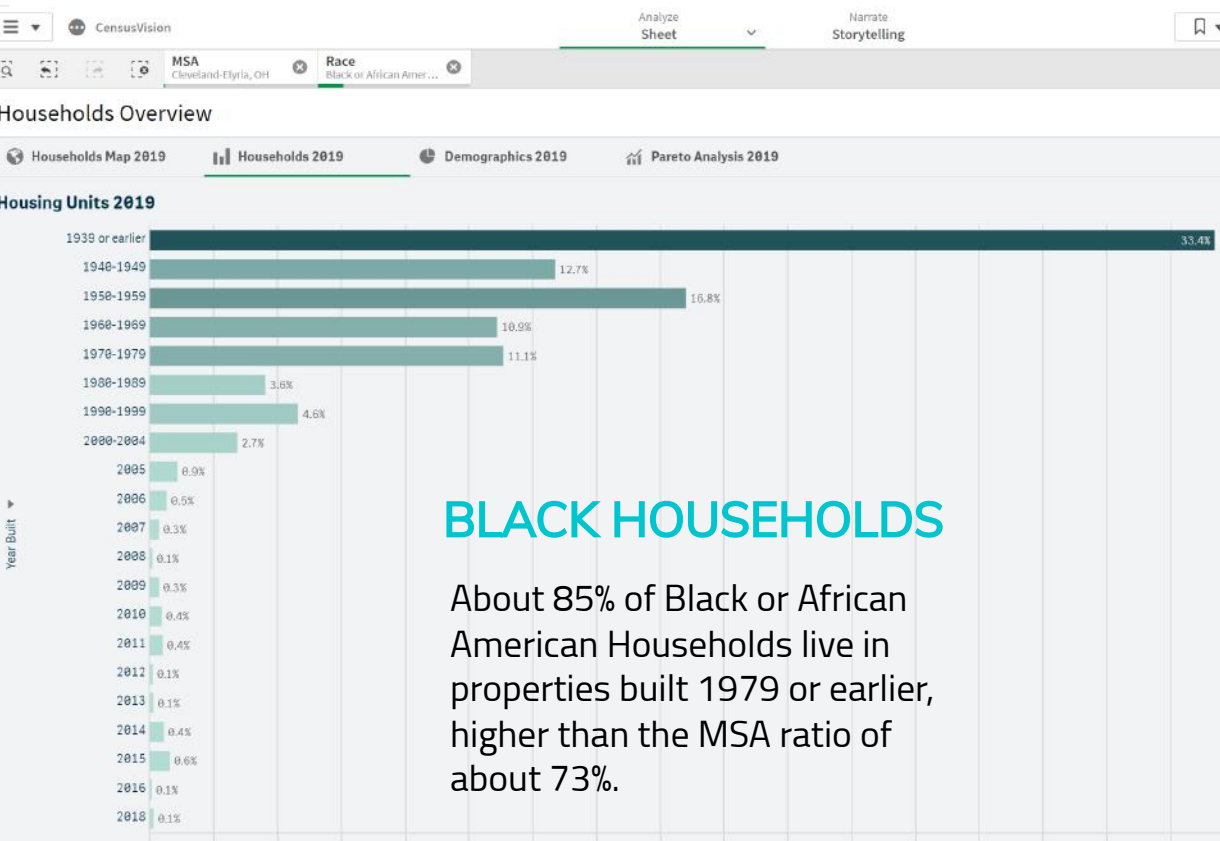


# Comparative Distribution Analysis of Percent Occupied Housing Units by Age – All vs Black Households in Cleveland-Elyria OH MSA



**ALL HOUSEHOLDS**

About 73% of all households in Cleveland live in properties built 1979 or earlier.



**BLACK HOUSEHOLDS**

About 85% of Black or African American Households live in properties built 1979 or earlier, higher than the MSA ratio of about 73%.

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This type of analysis provides an insight into the age of property (which eventually would be used as a collateral for mortgages, including SPCP loans). For example, in the above analysis, more Black households live in properties built before 1979 than the MSA average. Lenders can use this insight to try to offer more products like home improvement loans or cash-out refinance loans at better terms for Black or African American borrowers in order to help them with maintenance or fixing of older properties which should have positive longer-term impact on the value of these properties and communities.



# Cleveland-Elyria, OH MSA Black or African American Households Homeownership Rate by Units in Structure

With ACS PUMS data, easily accessible in CensusVision, we go in more details of Black homeownership by units in structure. For example, as shown in the table below, the average homeownership rate is 36.5% but this rate varies greatly among the housing options. About half of the Cleveland’s Black community lives in detached single-family homes and their homeownership rate is 65.8%. Other housing options in the 1-4 units housing segment are:

- Row houses – 21.4% Black homeownership rate
- Duplex – 18.4% Black homeownership rate
- 3-4 Units – 5.3% Black homeownership rate
- For more details – see the table below.



	Households	Ownership Rate
<b>Totals</b>	<b>176,286</b>	<b>36.5%</b>
⊕ 1-family house/attached	8,723	21.4%
⊕ 1-family house/detached	87,037	65.8%
⊕ 2-family building	18,935	18.4%
⊕ 3-4 family building	9,114	5.3%
⊕ 5-9 family building	10,824	1.3%
⊕ 10-19 family building	8,989	4.3%
⊕ 20-49 family building	5,672	0.0%
⊕ 50+ family building	26,014	1.1%
⊕ Mobile home or trailer	978	47.8%

This type of analysis provides an important insight into the construction of SPCP program – the property type as a collateral for mortgage products in the SPCP design.

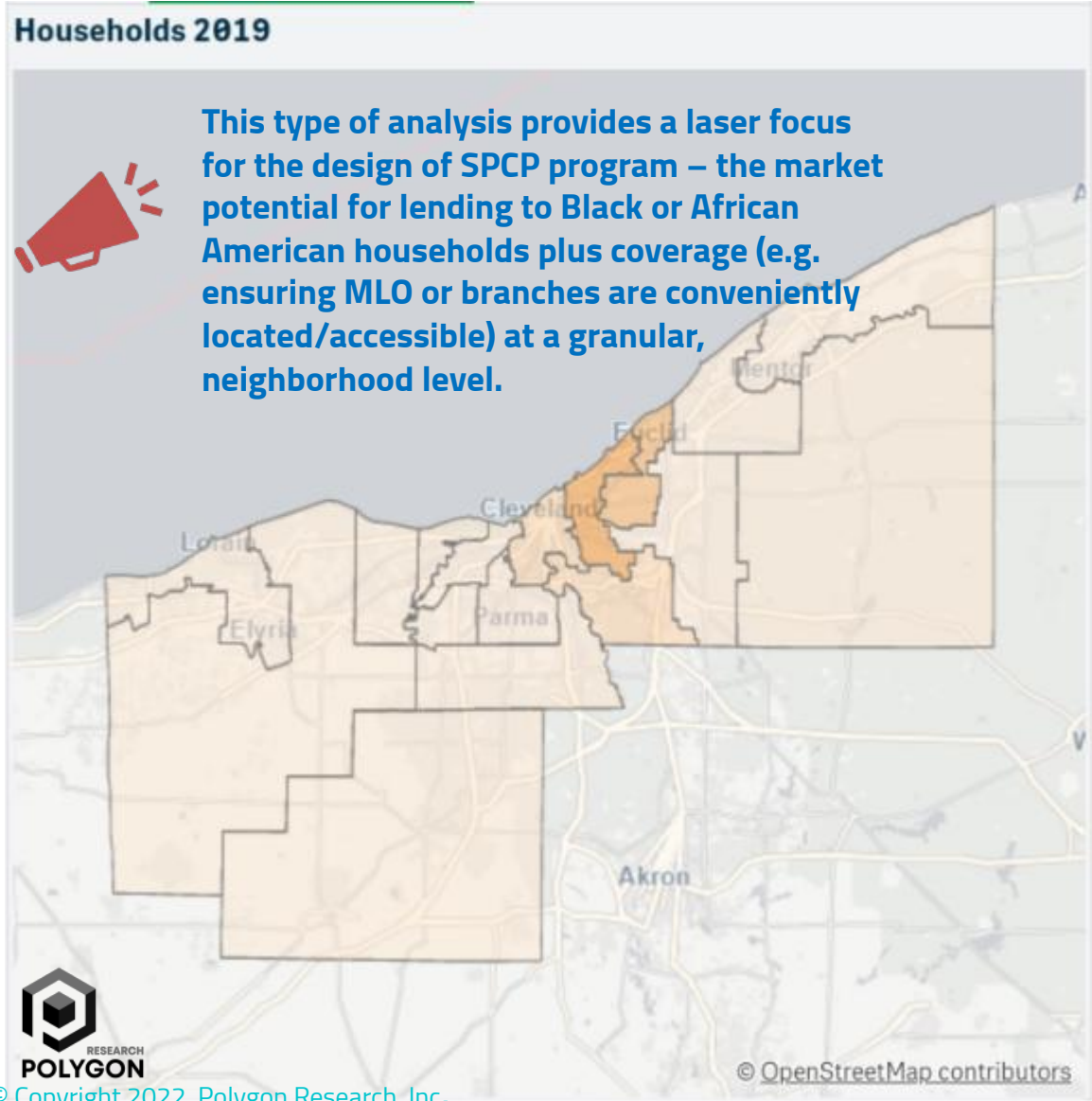


# Distribution of Black or African American Households by Neighborhood

## Households 2019



This type of analysis provides a laser focus for the design of SPCP program – the market potential for lending to Black or African American households plus coverage (e.g. ensuring MLO or branches are conveniently located/accessible) at a granular, neighborhood level.



Median Household Income 20...	Median Gross Rent 2019	Median Gross Mortgage 2019	Avg Age Householder 2019
\$32,900	\$750	\$1,080	52

	Households2019 176,286 <small>▲1.9% 2015 to 2019</small>
<b>Totals</b>	<b>176,286</b>
⊕ Cleveland City (East) & Bratenahl Village	59,592
⊕ Cuyahoga County (Northeast)--Euclid, Cleveland Heights & South Euclid Cities	31,249
⊕ Cuyahoga County (Southeast)--Bedford, Garfield Heights & Maple Heights Cities	26,572
⊕ Cleveland City (Central)	17,401
⊕ Cuyahoga County (East)--Lyndhurst, Mayfield Heights, Shaker Heights & Solon Cities	12,123
⊕ Lorain County (North)--Elyria & Lorain Cities	8,146
⊕ Cleveland City (West)	6,779
⊕ Cuyahoga County (West)--Berea, Brook Park, Lakewood & Rocky River Cities	2,833
⊕ Cuyahoga County (South Central)--Brooklyn, Parma, Parma Heights & Seven Hills Cities	2,502
⊕ Lake County (West)--Eastlake, Wickliffe, Willoughby & Willowick Cities	2,447
⊕ Lake County (East)--Mentor, Painesville Cities & Madison Village	2,408
⊕ Medina County	1,937
⊕ Lorain County (South)--Avon, Avon Lake & North Ridgeville Cities	1,517

# Measuring Affordability in Cleveland-Elyria, OH)

Taking ACS data, calculate the *rent ratio* and *mortgage ratio* for the area. The rent ratio represents the portion of the median household income paid for gross rent (including utilities). The mortgage ratio represents the portion of the median household income paid for gross mortgage (including taxes and insurance). Compare the two ratios.

For example, in Cleveland, Black or African American households are paying almost 30% of their household income toward rent, about 10 percentage points higher than their mortgage ratio, and 2.2 points higher than the average rent ratio level for the MSA. Black or African American households who have mortgages are paying 19.95% of their income toward gross mortgage payments, 1.3 points higher than the market average mortgage ratio.

The Black or African American Household income of both renters and owners is lower than the MSA median household income (see table below). A lender could use this information as part of its analysis toward SPCP Determining Need, working with investors and community groups to design PMBS products.

## Housing Affordability Analysis 2019

Rent and Mortgage Ratio are always the median value

Race	Households	Rent Ratio	Mortgage Ratio	Rent-Mortgage Ratio Delta	Median HH Income Renters (Cash)	Median HH Income Owners (Mortgage)	Median HH Income (Both)
<b>Totals</b>	<b>872,628</b>	<b>27.43%</b>	<b>18.67%</b>	<b>8.8%</b>	<b>\$34,000</b>	<b>\$85,300</b>	<b>\$56,500</b>
White	648,980	25.55%	18.44%	7.1% ▲	\$39,500	\$88,500	\$67,000
Black or African American	176,286	29.66%	19.95%	9.7% ▲	\$27,000	\$60,400	\$32,000
Other/2 or More Races	25,392	31.45%	23.04%	8.4% ▲	\$26,000	\$80,000	\$40,900
Asian	19,113	22.74%	15.81%	6.9% ▲	\$46,700	\$146,500	\$68,400
AIAN	2,410	28.80%	17.12%	11.7% ▲	\$9,300	\$96,500	\$16,400
NHOPI	447	64.91%	33.31%	31.6% ▲	\$17,100	\$52,700	\$17,100



**This type of analysis clarifies the issue around wealth generation through homeownership, and the importance of mortgage as a way to achieve this goal.**



# 2: Application Mix



- Application Mix by Demographic Segment
- Application Mix by Census Tract
- Application trends over multiple years for Black vs All Applicants
- Application trends over multiple years for Bank A (example)



Source:  
HMDAVision



# Why do we look for data insights from analyzing application mix?

In HMDAVision, lenders could explore 3 veins of analysis

## Application Mix

### Applicant Treatment

- A negative delta between demographic groups and neighborhoods might be an indicator that that demographic group or area is underserved.

## Applications Trends

### Lender Behavior

- Analysis of applications by demographic group over multiple years to understand lenders' behavior.
- For example, a lender with decreasing application volume (especially if market trend is going up) from one demographic group or an LMI neighborhood, might indicate that this lender is not investing in updating its marketing outreach or that its marketing outreach isn't effective.

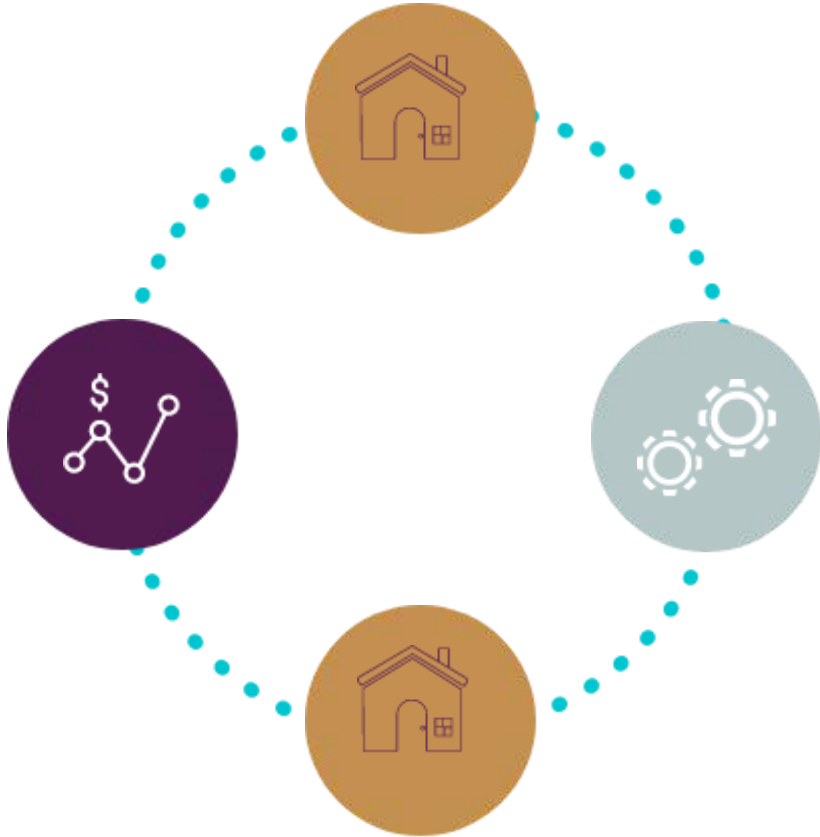
## Application Loan Type Patterns

### Borrower Choice

- Analysis of applications by loan type and loan features allows lenders to compare the choices that their borrowers are making to the choices that other borrowers are making at market level.
- Perhaps a lender is missing loan features that the target borrower demographic group needs.

# Carefully Choose Filters for HMDA Analysis

In HMDAVision, lenders control the filters - they can perform the analysis on all available data points, or focus on a mortgage market segment as described by the filters below, or use other available filters to develop their own specific market segment..



## UNITS

Select 1, 2, 3, 4 Units



## OCCUPANCY TYPE

Select Owner-Occupied



## LIEN STATUS

Select First Lien



## CLOSED END

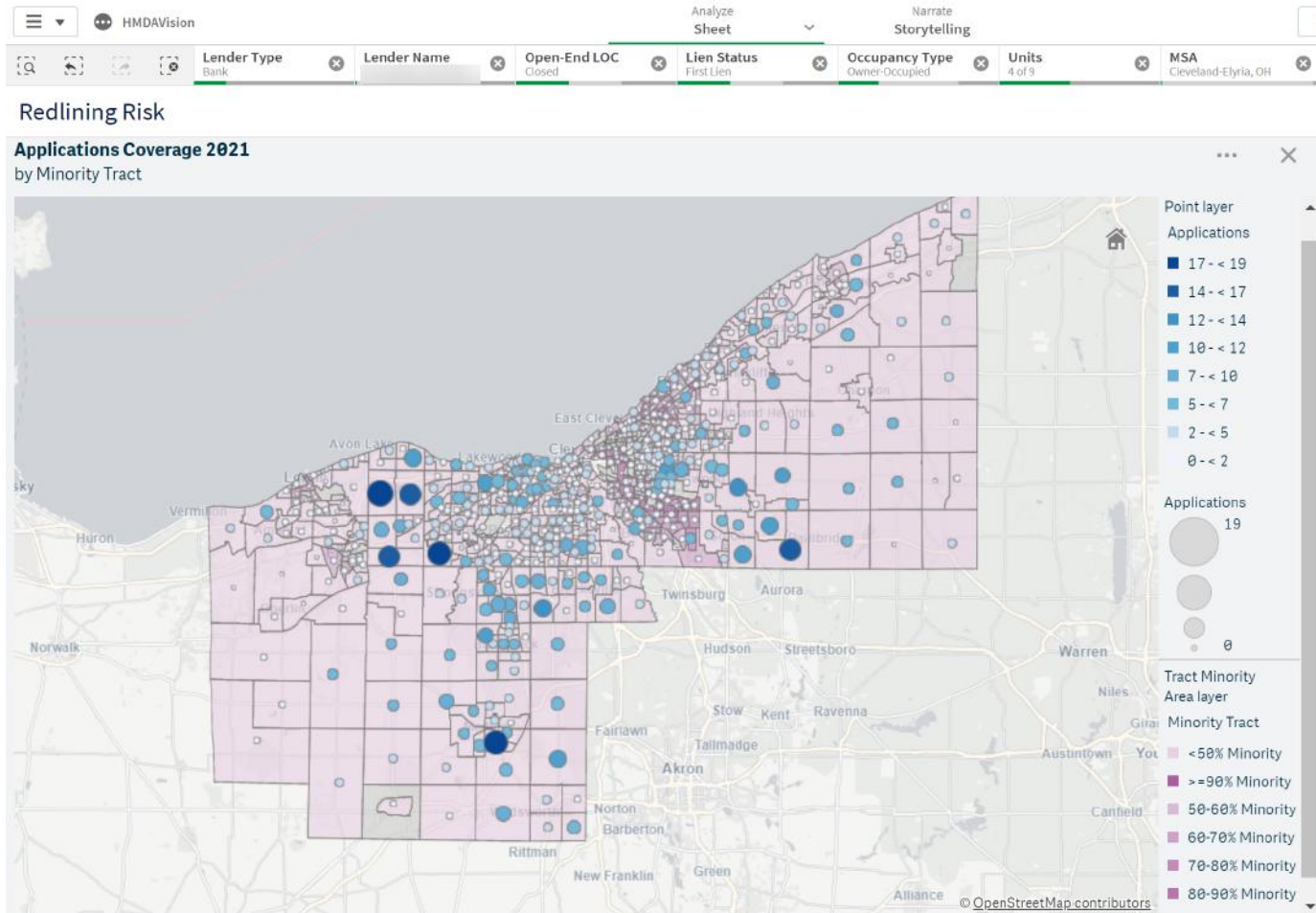
Select Closed-end



Using multiple years of HMDA LAR (loan-level) transaction data, lenders can perform analysis not only on their own marketing efforts to attract applications by target geographies or borrower segments, but also to understand the application patterns of the market and their peers at local and at national level. Because the available data is comprehensive, lenders can make their choices how to analyze and how to filter these big data sets.

# Cleveland-Elyria, OH MSA: Are we reaching to all census tracts equally – Minority Areas?

In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment. We chose an actual bank but for the purpose of the example, we withheld the name of the bank lender and call it “Bank A”.



**This type of analysis gives an opportunity for Bank Lender A to examine where the applications are coming from.**

In this case, the applications (designated as the blue bubbles on the map) are coming from non-minority tracts, and it seems that a small handful of them are coming from minority tracts.

This is something to note when constructing a SPCP – the lack of mortgage applications from minority tracts in this MSA. Can this issue be solved with better marketing outreach? By placing team members on the ground? By providing more engaging financial education?

Turn to the next page to see the details.

# Cleveland-Elyria, OH MSA: Are we reaching to all census tracts equally – Minority Areas?

The table compares the demographic mix of the tracts where applicants submitted applications to Bank A and the tract mix in this MSA.

Most of the applications, 1,290, of Bank A are coming from non-minority tracts. That is 85.71% of all applications taken by Bank A. For context, the non-minority tracts in this MSA represent 64.11%. The delta is positive 21.61 points indicating that most of the applications are coming from non-minority areas.

In contrast, there are 217 majority minority tracts (tracts with 50% or higher minority population mix), representing about 34% of overall tracts, but Bank A took only 213 applications from these minority areas, or about 14% of its applications.

The biggest delta (gap) is for 90% or more minority tracts.

☰ ⋮ HMDAVision Analyze Sheet Narrate Storytelling

🔍 📏 🗺️ 🔍 Lender Type Lender Name Open-End LOC Lien Status Occupancy Type Units MSA

Bank  Closed First Lien Owner-Occupied 4 of 9 Cleveland-Elyria, OH

## Redlining Risk

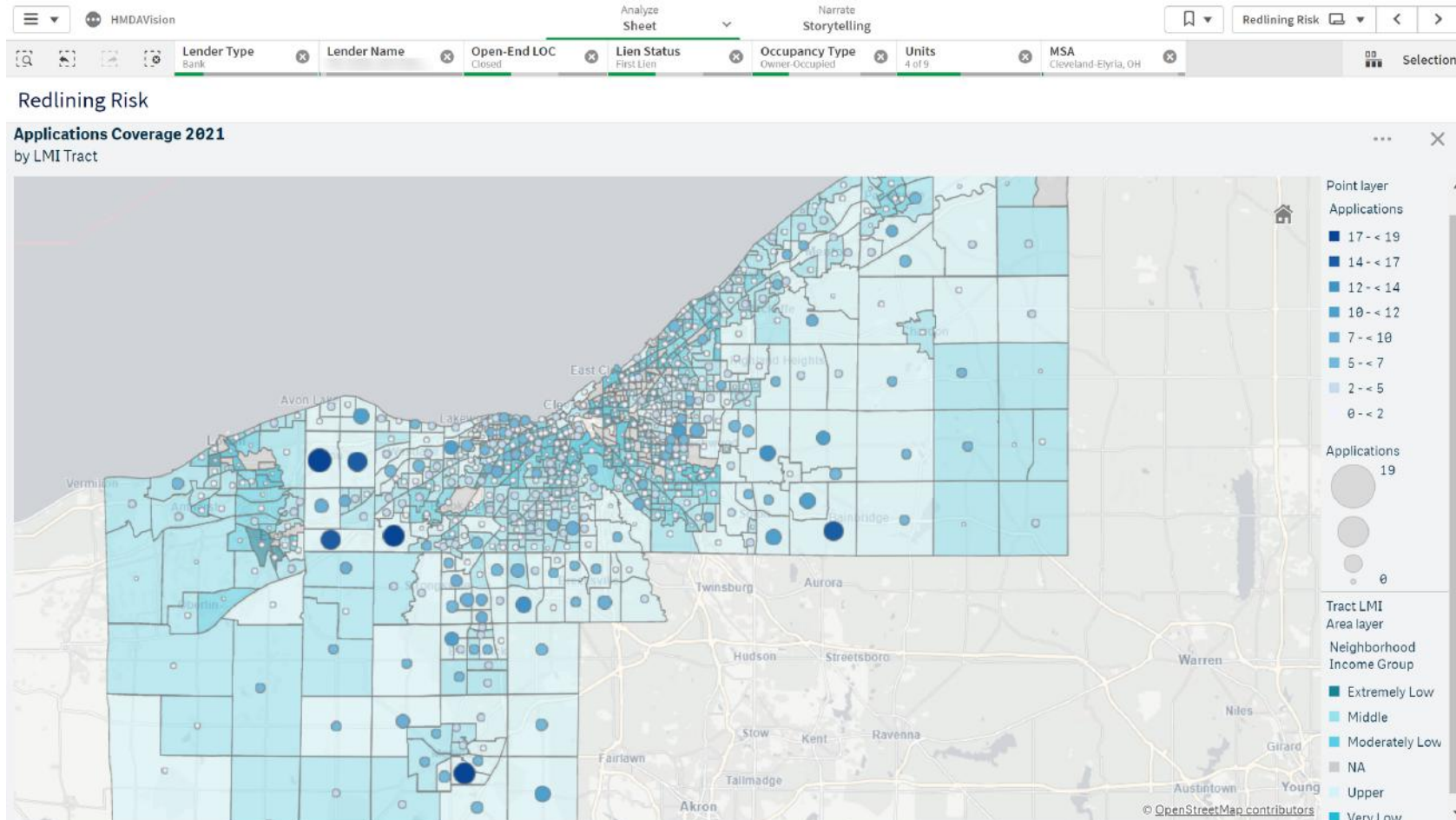
### Redlining Analysis by Applications 2021

Minority Tract	Q	Lenders	Market Share	Applications	Tracts	Applications Mix	Tract Mix	Tract Delta
<b>Totals</b>		-	<b>3.52%</b>	<b>1,505</b>	<b>636</b>	<b>100.00%</b>	<b>100.00%</b>	-
>=90% Minority		1	6.20%	47	85	3.12%	13.32%	-10.20 🚩
60-70% Minority		1	4.54%	52	45	3.46%	7.05%	-3.60 🚩
80-90% Minority		1	2.80%	13	23	0.86%	3.61%	-2.74 🚩
70-80% Minority		1	4.68%	31	29	2.06%	4.55%	-2.49 🚩
NA		1	6.45%	2	10	0.13%	1.88%	-1.75 🚩
50-60% Minority		1	5.69%	70	35	4.65%	5.49%	-0.83 🚩
<50% Minority		1	3.35%	1,290	409	85.71%	64.11%	21.61 🟢



# Cleveland-Elyria, OH MSA: Are we reaching to all census tracts equally – LMI?

In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment. We continue with the same Bank A, but now we are analyzing Bank A's application mix from LMI tracts.



This type of mapping applications by census tract (and LMI status of the tract) gives an opportunity for Bank Lender A to examine where the applications are coming from. This question can be answered not only for Minority areas but also for LMI areas with HMDAVision, as shown on this page.

In this case, we see that most of the applications (designated as the blue bubbles on the map with bubble size corresponding to number of applications) are coming from non-LMI tracts, and it seems that only a small number of them are coming from LMI tracts.

This is something to note when constructing a SPCP – the lack of mortgage applications from minority tracts in this MSA. Can this issue be solved with better marketing outreach? By placing team members on the ground? By providing more engaging financial education?

Turn to the next page to see the details.

# Cleveland-Elyria, OH MSA: Are we reaching to all census tracts equally – LMI?

HMDAVision

Analyze Sheet | Narrate Storytelling

Lender Name: Bank | Lender Type: Bank | Open-End LOC: Closed | Lien Status: First Lien | Occupancy Type: Owner-Occupied | Units: 4 of 9 | MSA: Cleveland-Elyria, OH

## Redlining Risk

**Redlining Analysis by Applications 2021**

Neighborhood Income Group	Lenders	Market Share	Applications	Tracts	Applications Mix	Tract Mix	Tract Delta
<b>Totals</b>	-	<b>3.52%</b>	<b>1,505</b>	<b>636</b>	<b>100.00%</b>	<b>100.00%</b>	-
Very Low	1	4.17%	54	103	3.59%	16.30%	-12.71 <span style="color: red;">▲</span>
Moderately Low	1	4.27%	185	127	12.29%	19.91%	-7.61 <span style="color: red;">▲</span>
NA	1	4.42%	5	17	0.33%	2.82%	-2.49 <span style="color: red;">▲</span>
Extremely Low	1	7.45%	14	17	0.93%	2.66%	-1.73 <span style="color: red;">▲</span>
Middle	1	3.20%	503	207	33.42%	32.45%	0.98 <span style="color: green;">●</span>
Upper	1	3.52%	744	165	49.44%	25.86%	23.57 <span style="color: green;">●</span>

The table compares the LMI mix of the tracts where applicants submitted applications to Bank A and the tract mix in this MSA. This type of analysis is important piece of the overall SPCP Determining Need Analysis because it shows gaps in serving LMI areas.

- Most of Bank A's applications, 744, followed are taken in Upper census tracts, followed by 503 applications taken in Middle census tracts. This is 49.44% and 32.42% respectively of all applications taken by Bank A. For context, Upper income tracts in this MSA represent 25.86% and the middle tracts represent 32.45%.
- In contrast, there are 247 LMI tracts (Extremely Low, Very Low, and Moderately Low), together representing about 39% of overall tracts, but Bank A took only 253 applications from LMI areas, or 16.81% of its applications in this MSA.
- The biggest delta (gap) is for Very Low Income tracts – 12.71. There are 103 Very Low Income Tracts but only 54 applications taken.



# Cleveland-Elyria, OH MSA: Are we reaching to all demographic groups equally?

In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment.

**This table provides an important insight for answering the question, is there a need to offer a SPCP?**

It summarizes at-a-glance the size of each of the demographic groups in this MSA (Number of People) together with analytics about how each segment is served:

Minority Detail	Lenders	Applications	People	Applications Mix	People Mix	Delta	Ratio of Applications to People
<b>Totals</b>	-	<b>106,497</b>	<b>2,054,488</b>	<b>100.00%</b>	<b>100.00%</b>	-	-
Hispanic Other/2 or More Races	59	183	35,666	0.17%	1.74%	-1.56	0.51%
Non-Hispanic Black	243	8,994	400,545	8.45%	19.50%	-11.05	2.25%
Non-Hispanic Other/2 or More Races	153	1,206	49,546	1.13%	2.41%	-1.28	2.43%
Hispanic Black	76	253	6,779	0.24%	0.33%	-0.09	3.73%
Hispanic American Indian	34	83	2,030	0.08%	0.10%	-0.02	4.09%
Non-Hispanic Asian	194	2,345	46,503	2.20%	2.26%	-0.06	5.04%
Non-Hispanic White	483	75,275	1,434,788	70.68%	69.84%	0.85	5.25%
Non-Hispanic American Indian	64	181	3,016	0.17%	0.15%	0.02	6.00%
Hispanic White	208	4,480	74,564	4.21%	3.63%	0.58	6.01%
Hispanic Pacific Islander	22	34	277	0.03%	0.01%	0.02	12.27%
Non-Hispanic Pacific Islander	43	70	367	0.07%	0.02%	0.05	19.07%
Hispanic Asian	37	83	407	0.08%	0.02%	0.06	20.39%
Info Not Provided/NA	307	13,310	0	12.50%	0.00%	-	-

1. Number of Lenders that serve that community.
2. Number of Applications taken in each community.
3. Application Mix (each group application mix)
4. People Mix (share of each community in the number of people in this MSA)
5. Delta is the simple difference between Applications and People. A negative delta is a signal for a gap.
6. Ratio of Applications to People is number of applications per number of people. The color of the ratio indicates whether it is above (green) or below (red) the market average ratio.

- The Non-Hispanic Black community had the biggest gap (negative delta).
- There are over 400k people in this community but the mortgage applications are just under 9k. Not only is the gap the most glaring but also the corresponding ratio that indicates that the coverage of mortgage applications to people is well below the market average at 2.25%.
- While there is no single mono-causal explanation, one thing is evident – the market players in this MSA could try harder to reach out to this community through a number of offers, education, etc. all of which could be a part of a SPCP.

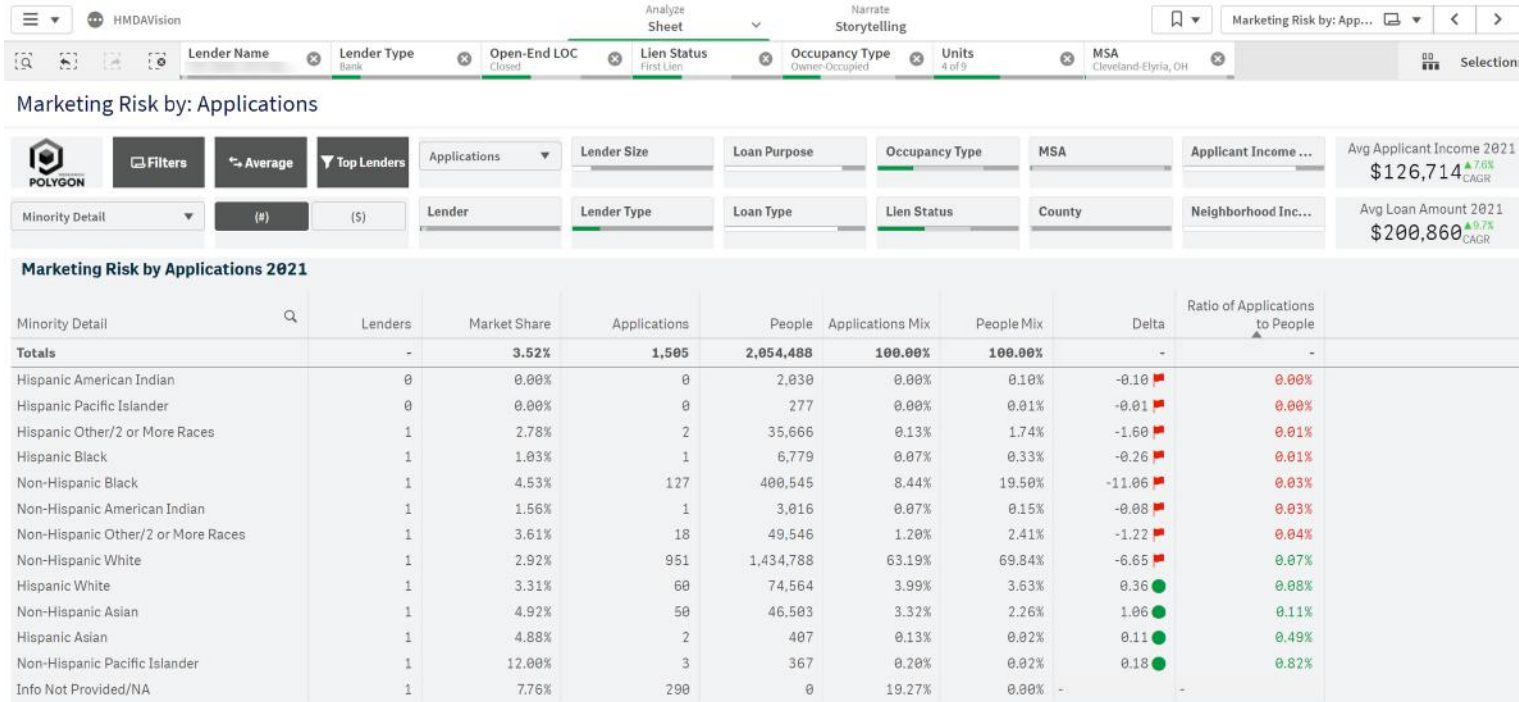
*The table above is done for the entire market, but using the filter for Lender, it can be scoped down immediately to analysis for an individual lender.*



# Cleveland-Elyria, OH MSA: Are we reaching to all demographic groups equally?

We contrast the MSA market-level analysis on the previous page to Bank A's specific lending outcomes.

We used the Lender filter to scope down the analysis to only Bank A's lending activity.



- Bank A, similarly to the rest of the market, is taking less applications from Non-Hispanic Black applicants as percent mix in its overall applications.
- Although Bank A is also taking less applications from Non-Hispanic White applicants compared to the people mix in this MSA, its *ratio of applications per number of people* is **above MSA average** for the Non-Hispanic White applicants and it is **lower than the MSA average** for Non-Hispanic Black applicants.



# Cleveland-Elyria, OH MSA – Mortgage Applications Trend by Black Or African American Applicants

In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment.

Applications 2021

9,247 ▲ 82.9%  
2018 to 2021

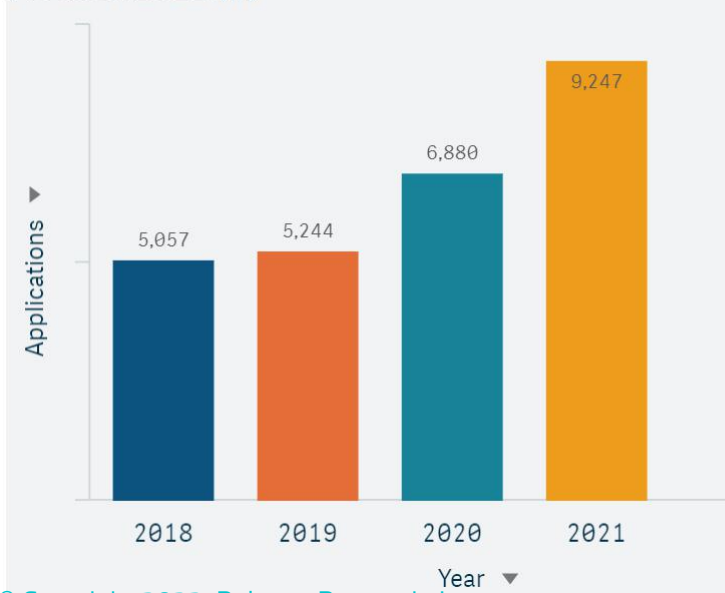
Active Lenders 2021

246

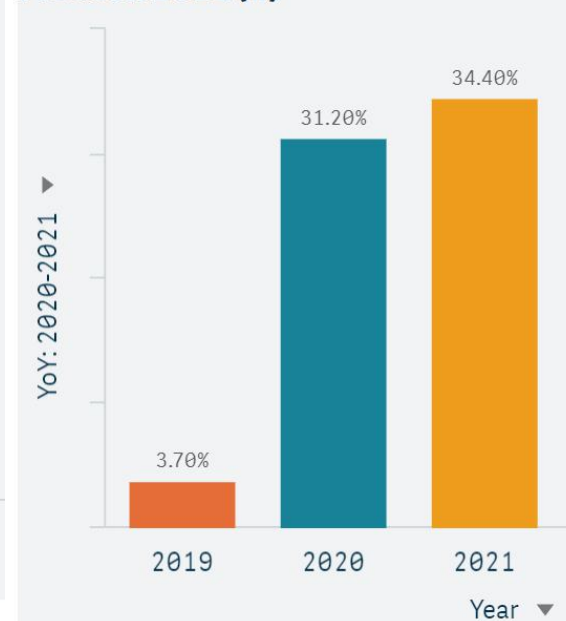
The charts below analyze mortgage applications by Black applicants in this MSA over 4 years. Here are a few KPIs to note:

1. The Total Number of Applications in 2021: 9,247
2. The percent change over the available period: 82.9%
3. The number of lenders serving this segment: 246
4. Year-over-year percent change: in 2021 the YoY was 34.4%

Product: 2021 (#)



Product: 2021 (#)



This type of analysis provides an important insight for answering the question, is there a need to offer a SPCP?

In order to answer this question, it is important to compare these 3 KPIs to:

1. The Lender's own KPIs
2. Other demographic segments or market averages to evaluate the relative strength of these KPIs against other benchmarks.

Turn to the next page to see the comparative analysis.

# Cleveland-Elyria, OH MSA – Mortgage Applications Trend Comparison

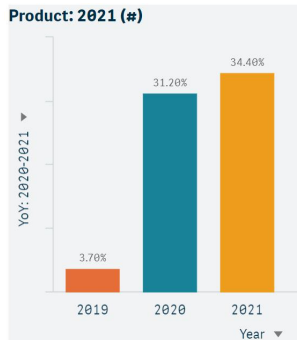
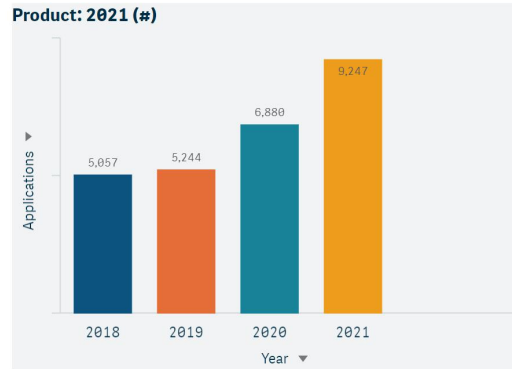
In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment. The overall application growth rate for applications received from Black Applicants is lower than the average market rate. The year-over-year growth comparison shows consistent increase.

## MSA MARKET – ALL LENDERS

### BLACK APPLICANTS

Applications 2021  
9,247 ▲82.9%  
2018 to 2021

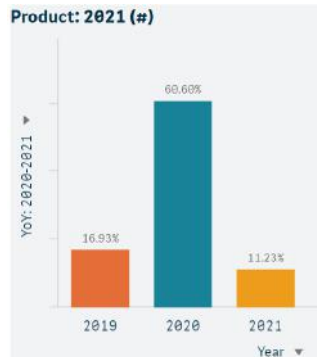
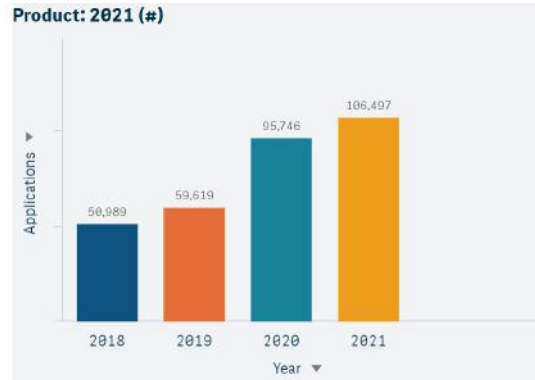
Active Lenders 2021  
246



### ALL APPLICANTS

Applications 2021  
106,497 ▲108.9%  
2018 to 2021

Active Lenders 2021  
529

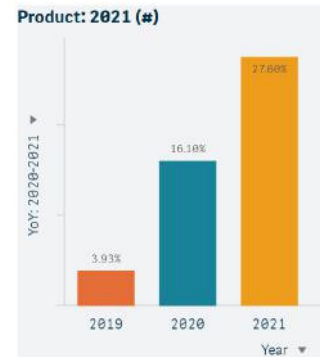
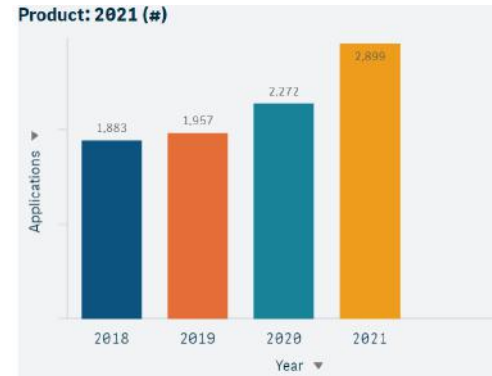


## MSA MARKET – BANK LENDERS

### BLACK APPLICANTS

Applications 2021  
2,899 ▲54.0%  
2018 to 2021

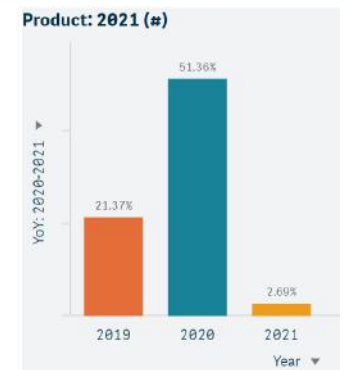
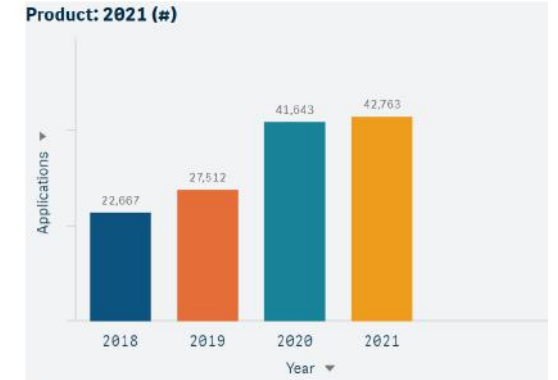
Active Lenders 2021  
64



### ALL APPLICANTS

Applications 2021  
42,763 ▲88.7%  
2018 to 2021

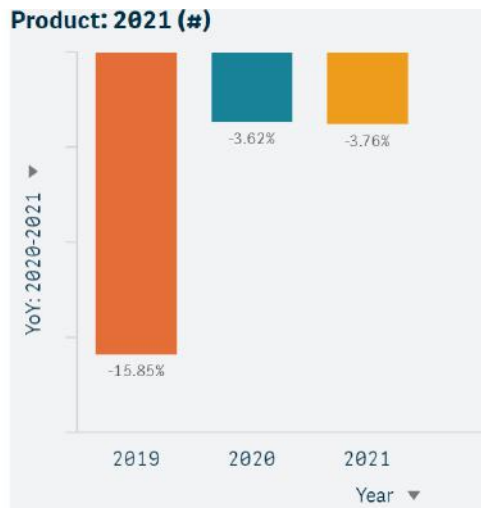
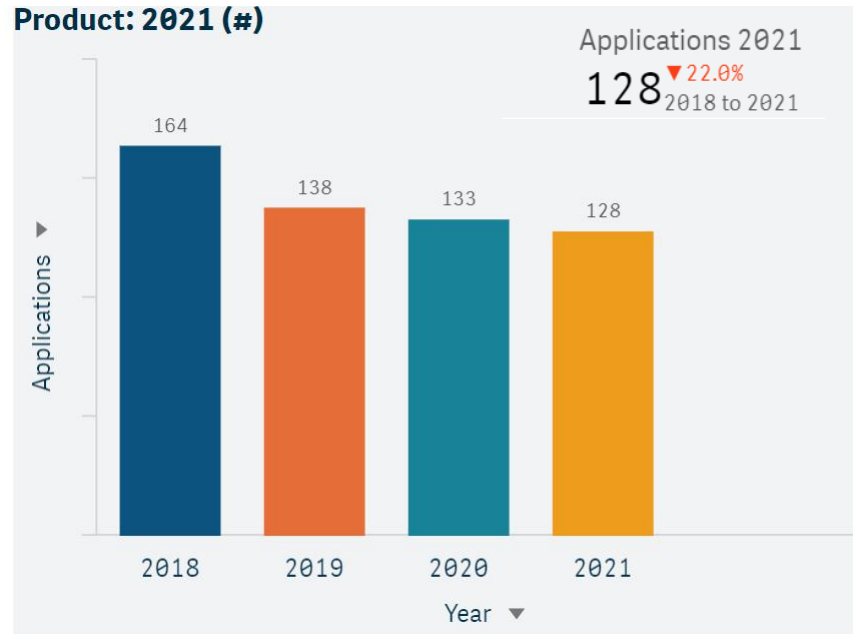
Active Lenders 2021  
176



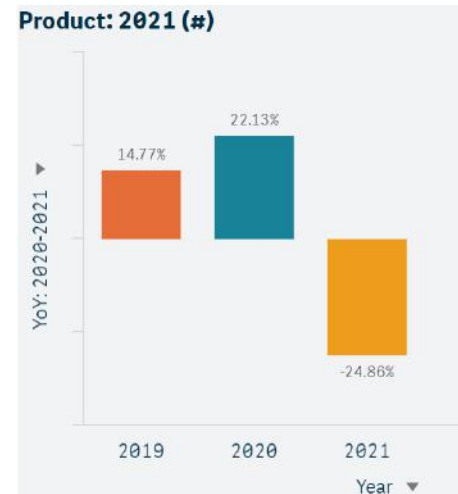
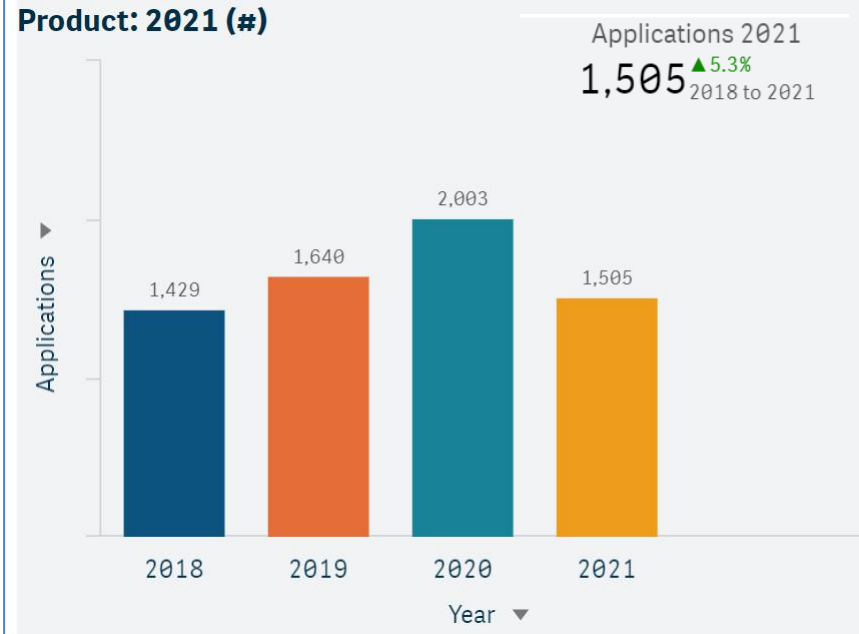
# Cleveland-Elyria, OH MSA – Mortgage Applications Trend Comparison

And here is the comparison to the individual lender we chose earlier, **“Bank A”**

## BLACK APPLICANTS – BANK A



## ALL APPLICANTS – BANK A



Comparing Bank A’s mortgage applications by Black applicants over a period of time (e.g. 4 years) to applications by all applicants with Bank A:

1. The Total Number of Applications in 2021 was 128 for Black and 1,505 for all applicants.
2. While Bank A’s overall mortgage applications taken by all applicants increased by 5.3%, they decreased by 22% for Black or African American applicants (see the KPIs in each bar chart to the left).
3. The year-over-year percent decrease was smaller than Bank A’s overall YoY change for all applicants, but this negative YoY change is part of a trend (see the YoY bar charts below, to the left).
4. When Bank A’s performance is viewed in comparison to its Bank peers in this MSA market, we see that Bank A exhibits a divergent trend in the Black customer segment.

**This shows how attractive were Bank A’s products, and/or how well these products were marketed to Black applicants, and the analysis is part of SPCP Determining Need.**

# 3: Loan Production Analysis



Loan Production Analysis - Fallout



Closing rate – Lender Behavior



Source:  
HMDAVision

# Why do we look for data insights from analyzing loan production cycle?

In HMDA Vision, lenders analyze their loan production cycle (application-fallout-closing-funding) by loan type, borrower demographic segment, loan features, etc. in order to understand whether there are any adjustments needed in credit policy, or operations procedures, marketing practices like buying sales leads, that might improve the loan production efficiency.

## Loan Production Analysis

### Fallout

- A data analysis of the entire loan production lifecycle – from applications to funding allows for identifying areas for improvement – for example, a high fallout rate might indicate ineffective lead acquisition strategy.

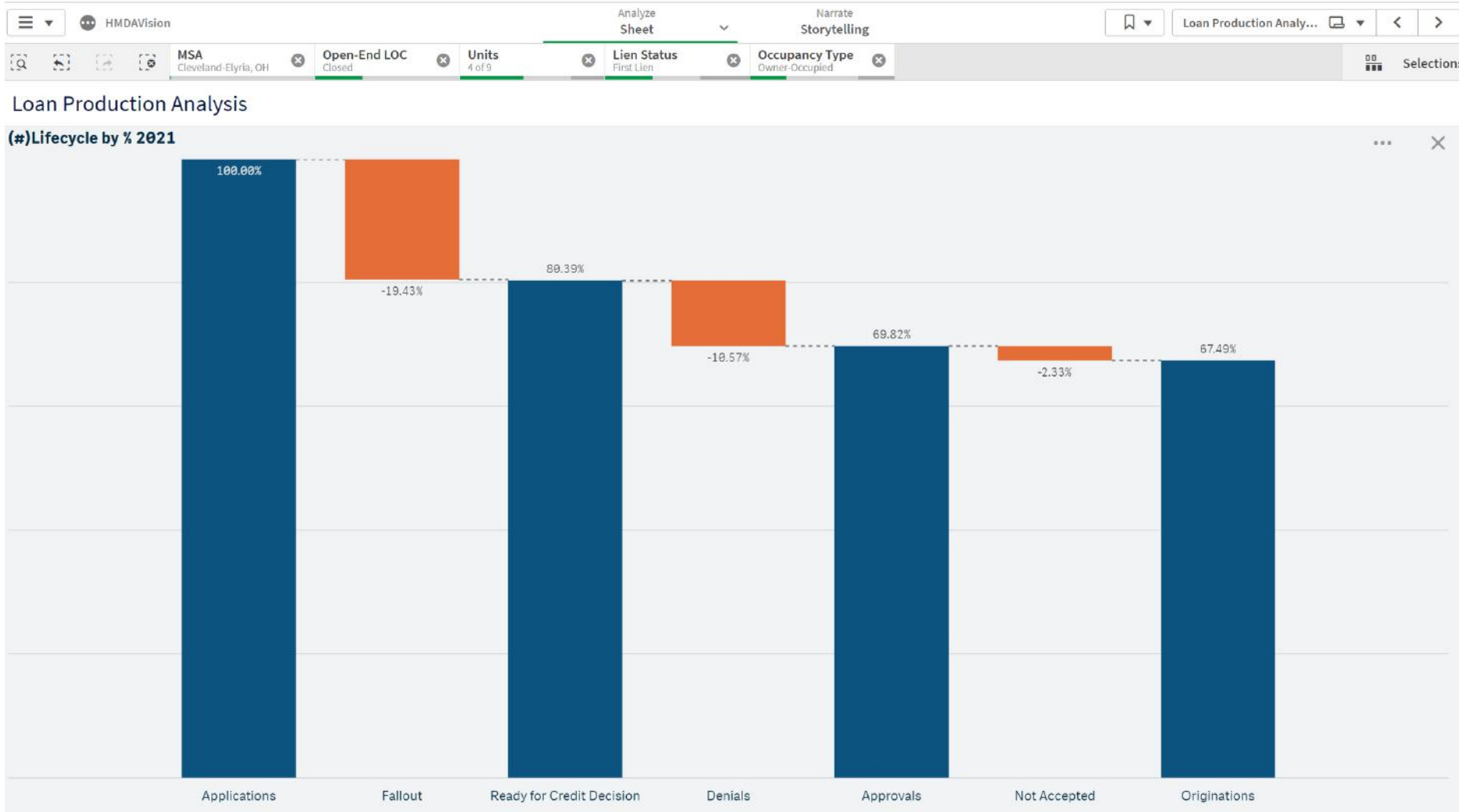
## Closing rate

### Lender Behavior

- This is an ideal analysis for SPCP especially if the analysis shows large disparities among the closing rates of applications submitted by different applicant demographic segments and/or geographies.

# Cleveland-Elyria, OH MSA – Loan Production Analysis

## ALL APPLICANTS – MARKET



### First, let's analyze the entire loan production cycle in this Market

1. Fallout represents applications that the applicant submitted but these were either withdrawn or the lender closed the applications for incompleteness.
2. In this market the fallout represents 19.43%, and the denials are 10.57% of all applications.
3. A very small percent, 2.33%, of approved applications are not accepted by the applicants. This could be due to unfavorable terms or perhaps the borrower was shopping around.
4. The closing rate (funding rate) is 67.49%.

**Second, perform similar analysis for a demographic group. See next page for Black or African American applicant analysis.**

# Cleveland-Elyria, OH MSA – Loan Production Analysis

## BLACK APPLICANTS – MARKET



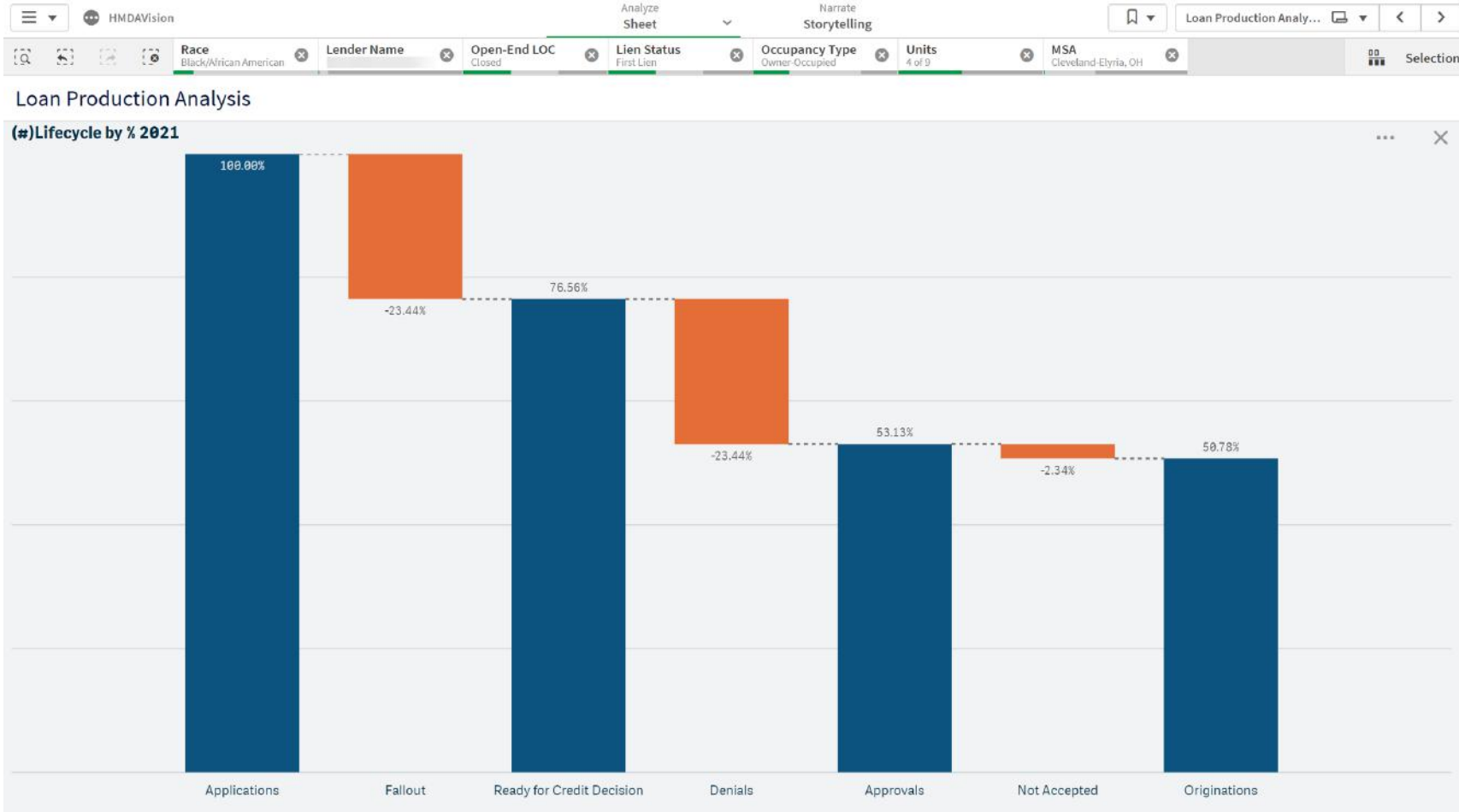
In HMDA Vision, we use the Race of Applicant filter to re-run this analysis with focus on applications taken from Black or African American applicants:

1. The fallout rate at 21.19% is higher than the fallout rate for the market (as shown on the previous page).
2. The denial rate of 19.01% is also higher than the denial rate for the market.
3. The closing rate is 56.26% about 11 percentage points lower than the market rate.

**This analysis could demonstrate SPCP need because Black or African American applicants' applications close at a lower rate.**

# Cleveland-Elyria, OH MSA – Loan Production Analysis

## BLACK APPLICANTS – BANK A



**Finally, an analysis should be performed to compare the Lender’s closing rate of applications taken from Black or African American applicants.**

The closing rate is 50.78% six percentage points lower than the market closing rate for applications of Black or African American applicants and 17 percentage points lower than the overall closing rate for all applicants.

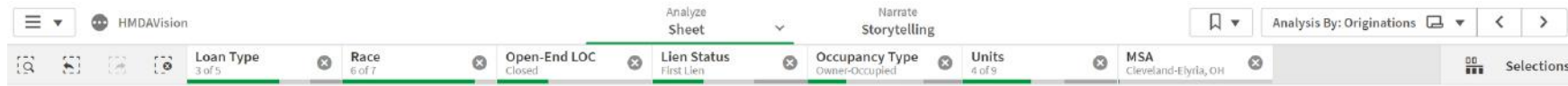
One conclusion from this analysis is that Bank A closes Black or African American applicants’ application close at a lower rate than the market and that could be an important piece of the SPCP Determining Need analysis.

One factor of closing rate outcome is the fallout rate. Examining the fallout rate would help with SPCP Determining Need analysis and also would give Bank A design ideas for SPCP program. For example, including better outreach and education programs about the mortgage process.



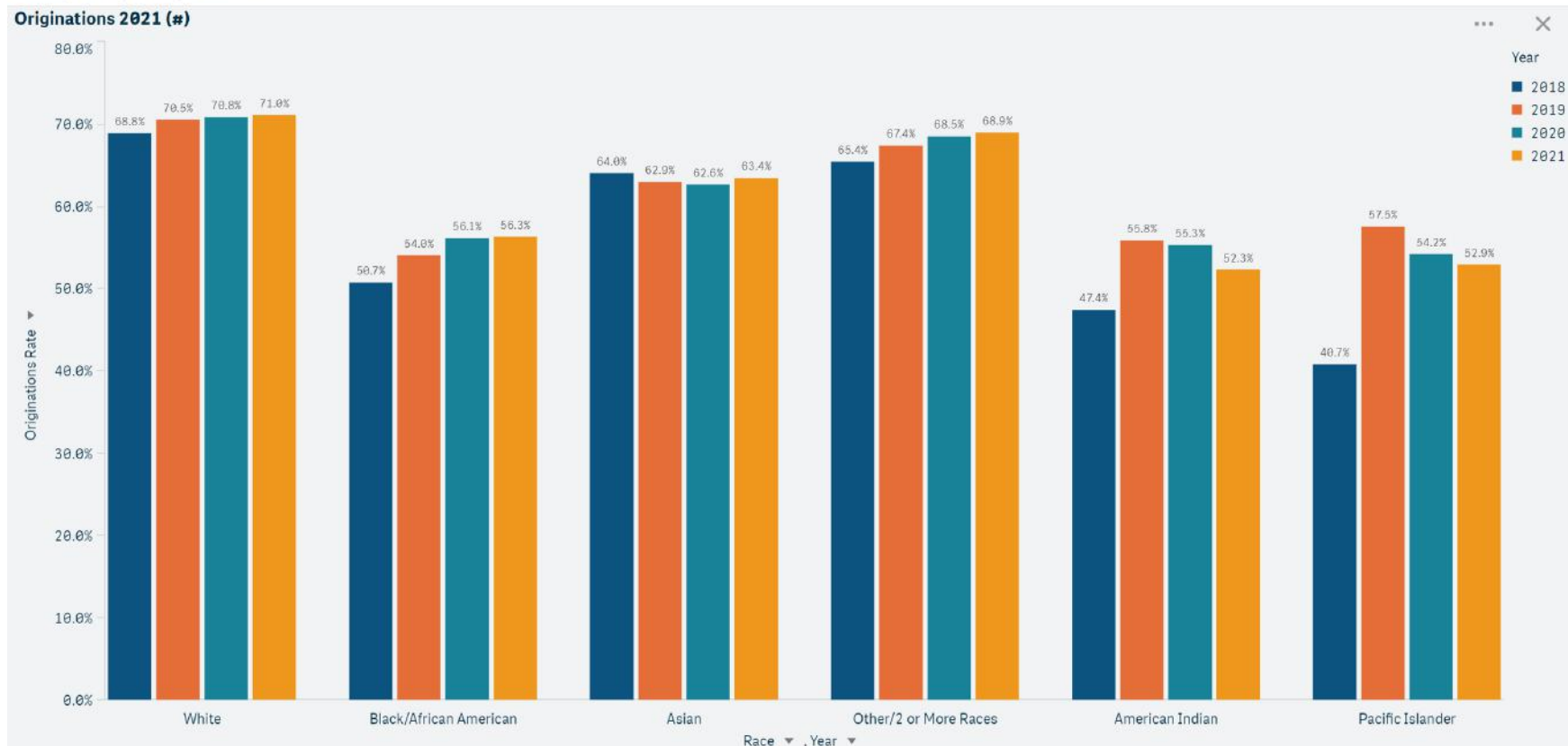
# Cleveland-Elyria, OH MSA – Closing Rate by Race and Year

In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment.



The closing rate (originations rate) was highest for White Applicants.

Analysis By: Originations



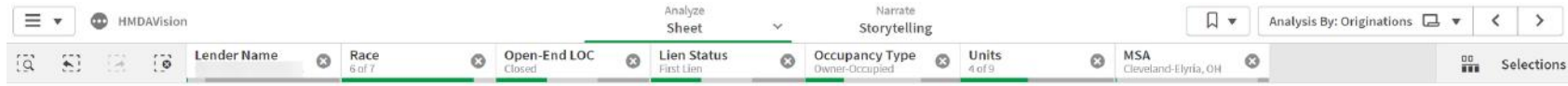
Black or African American Applicants had lower closing rates than White, Asian, and Other/2 or More races, but higher than American Indian and Pacific Islander Applicants.

This type of analysis provides an important insight for answering the question, is there a need to offer a SPCP?

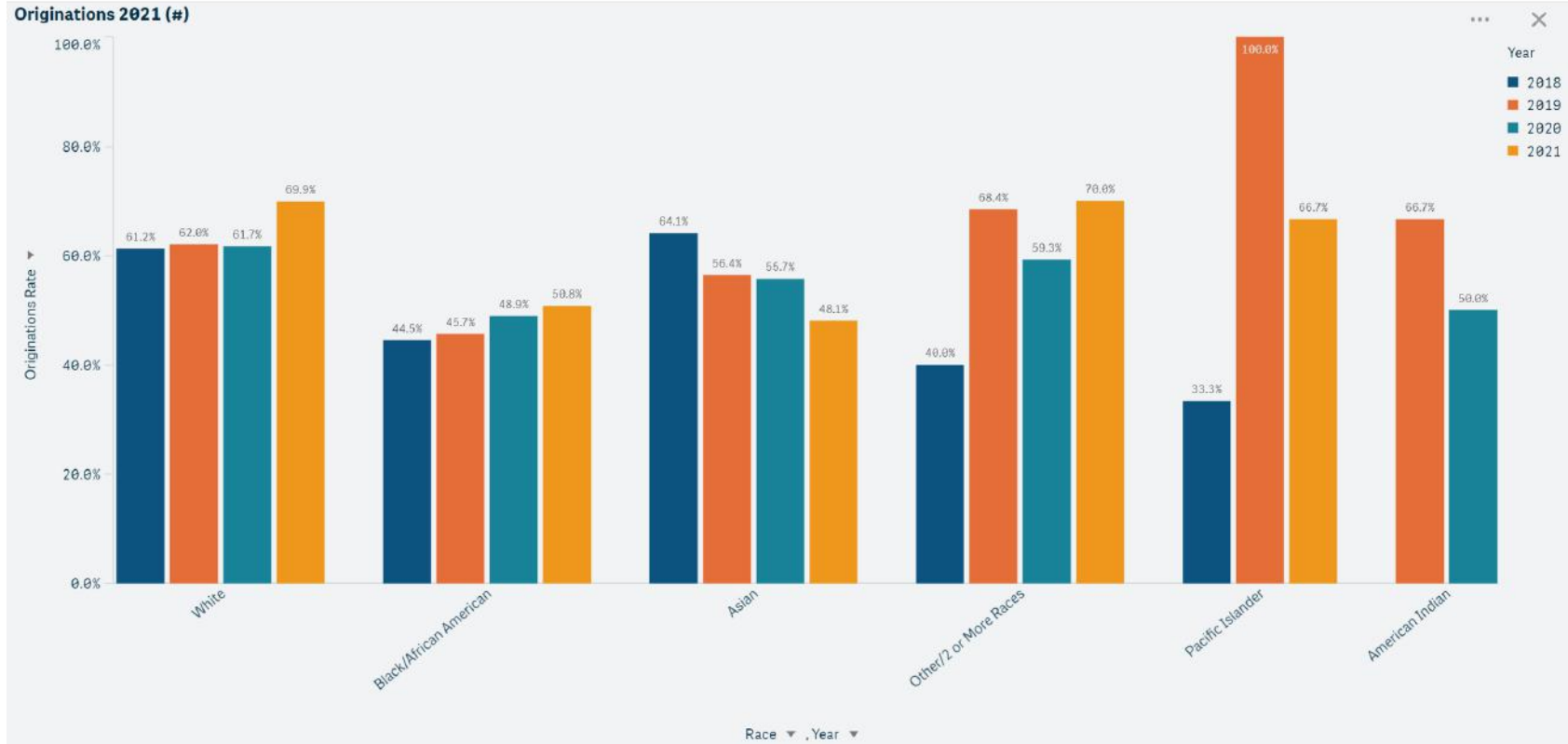
An area for further analysis is examining our lender, Bank A's closing rate (see next page).

# Cleveland-Elyria, OH MSA – Bank A’s Closing Rate by Race and Year

In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment.



Analysis By: Originations



**Bank A shows a much more conservative approach in its underwriting as its closing rates are lower than the market for all race categories.**

**If Bank A wants to design SPCP for Black or African American Applicants, this comparative analysis allows Bank A to evaluate the risk tolerance of its underwriting guidelines and their corresponding outcome by race, for example.**

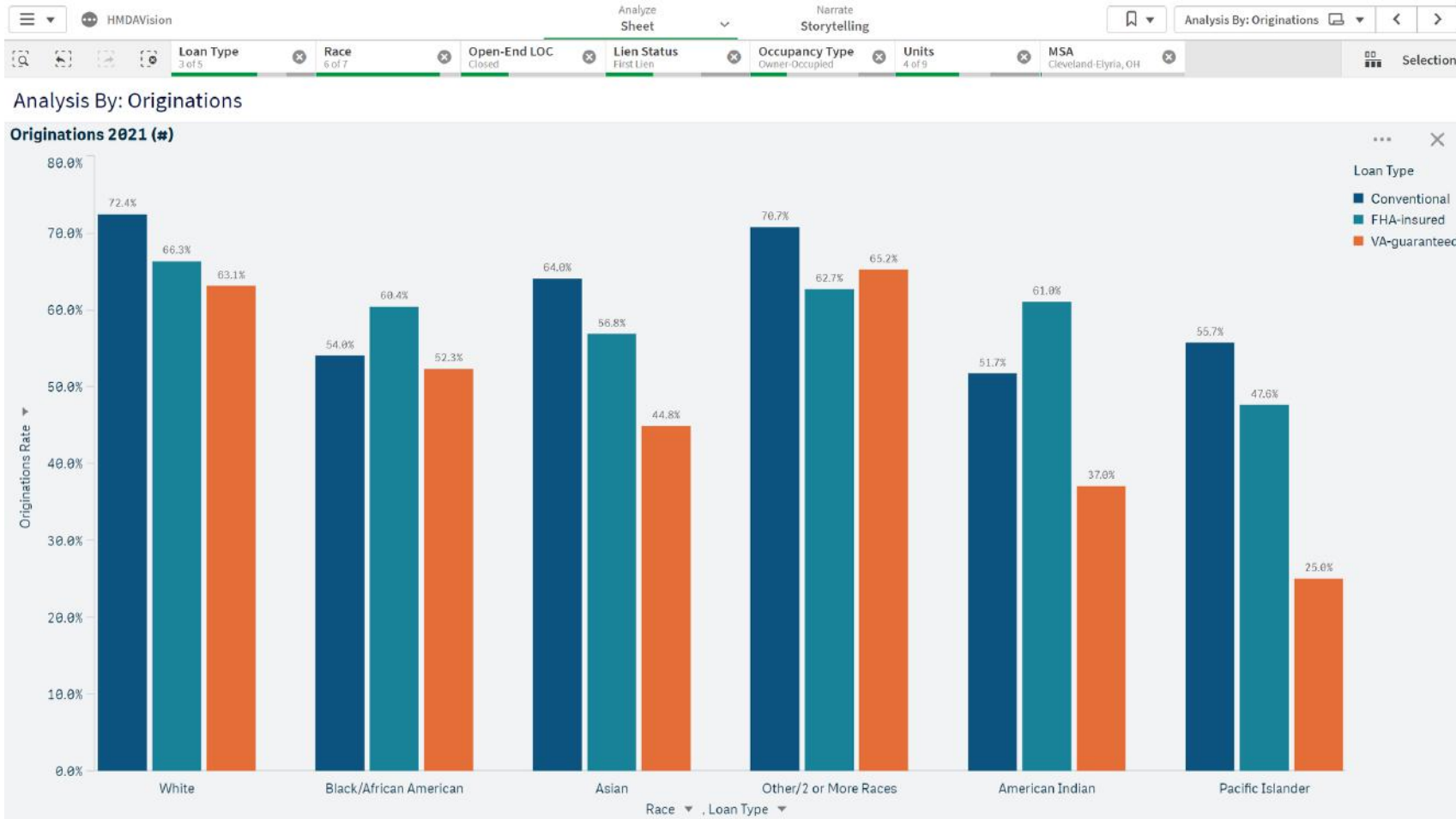
# Cleveland-Elyria, OH MSA – Closing Rate by Race and Loan Type

In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment.

This type of analysis provides an important insight for answering the question, is there a need to offer a SPCP?

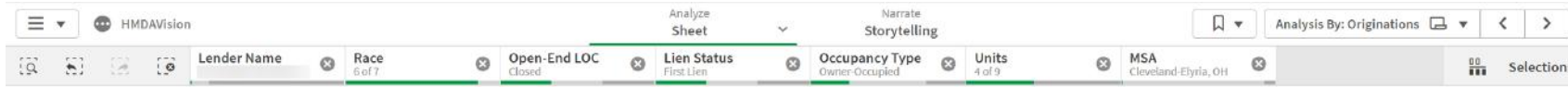
The issue at hand here is that while conventional loans carry the highest closing rates for White, Asian, and Other/2 or More Races Applicants, for Black or African American Borrowers and for American Indian, this is not the case. *The conventional loan type is the blue bar in the bar chart to the left.*

An SPCP design might include conventional loans with special pricing features to improve the closing rates for these demographic groups.

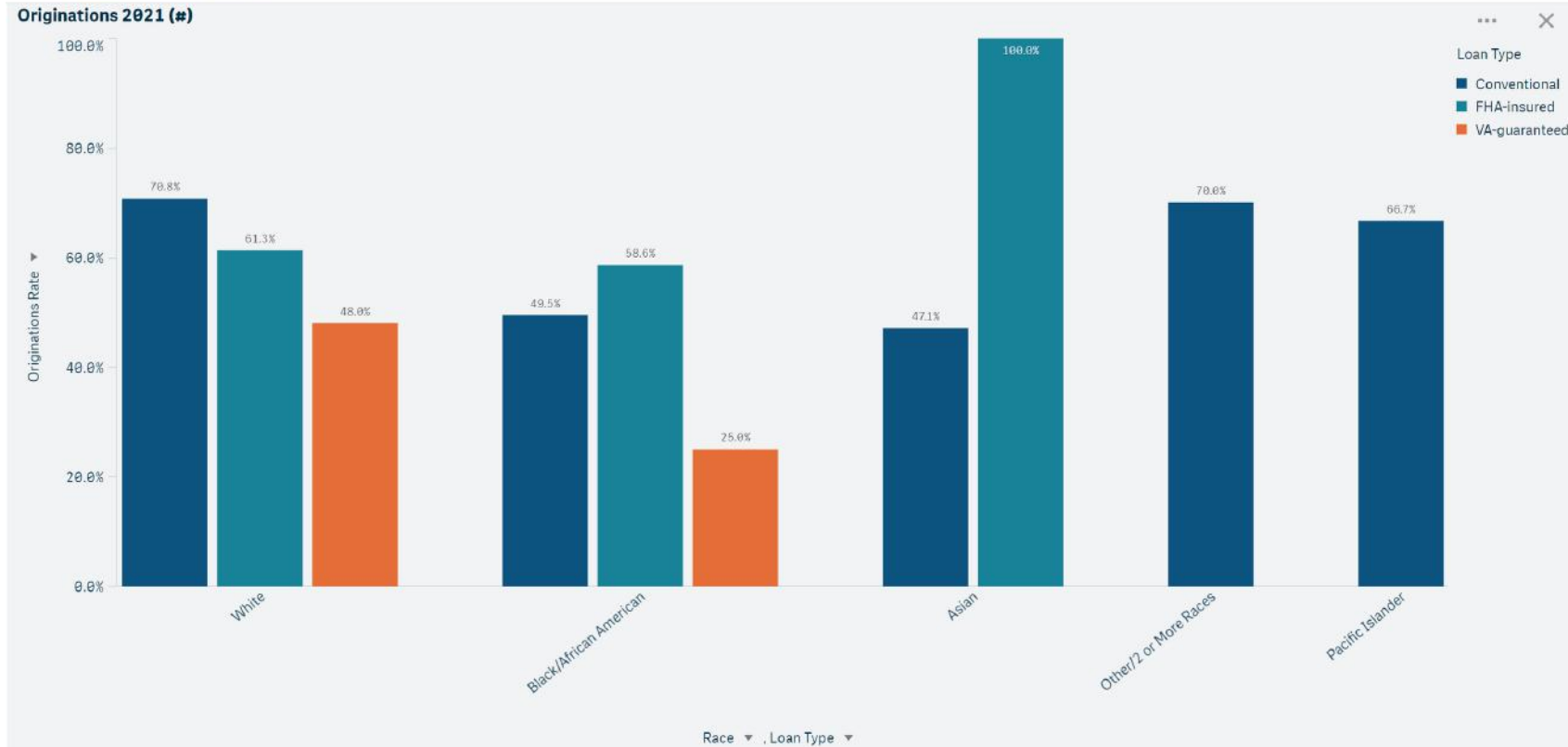


# Cleveland-Elyria, OH MSA – Bank A's Closing Rate by Race and Loan Type

In our analysis, we chose to focus on the owner-occupied, 1-4, first-lien, closed-end mortgage segment.



Analysis By: Originations



**Bank A main offering is Conventional mortgage loans.**

70.8% of Conventional mortgage applications of White Applicants were funded in 2021.

Only 49.5% of Conventional mortgage applications of Black Applicants were funded in 2021, which is lower than the market closing rate for conventional mortgage applications (54%, as shown on the previous page).

The loan product with the highest closing rate for applications by Black Applicants is FHA.

Bank A could use this analysis to design its SPCP in order to better meet the needs of Black or African American borrowers.



# 4: Underwriting Patterns



Denial Rates.



Denial Reasons.

# Why do we look for data insights from analyzing denial rates?

In HMDAVision, lenders control how to analyze denial rates. An analysis of the denied applications and denial rate is part of the SPCP determining need analysis because such analysis sheds a light on any large deltas between protected class and non-protected class, among various borrower segments and deltas with market averages. There are 3 metrics available in HMDAVision to analyze denials:

## Denials

### Denial Rate

- A data analysis of questions like: what percentage of the applications are denied by:
  - Race, Ethnicity, etc.
  - Loan type
  - Geography
- An insight into how tight the credit policy is, and if there are any large deltas in the outcomes for various dimensions.

## Denials

### Odds of Denial

- A data analysis that includes odds of denial provides an insight of the likelihood to be denied compared to the likelihood to be approved.

## Denials

### Odds Ratio

- A data analysis that gives an insight into the question of the likelihood of denial for protected class of applicants compared to non-protected class of applicants.
- Analysis of the odds ratio allows lenders to identify blind spots and react accordingly to remediate them.

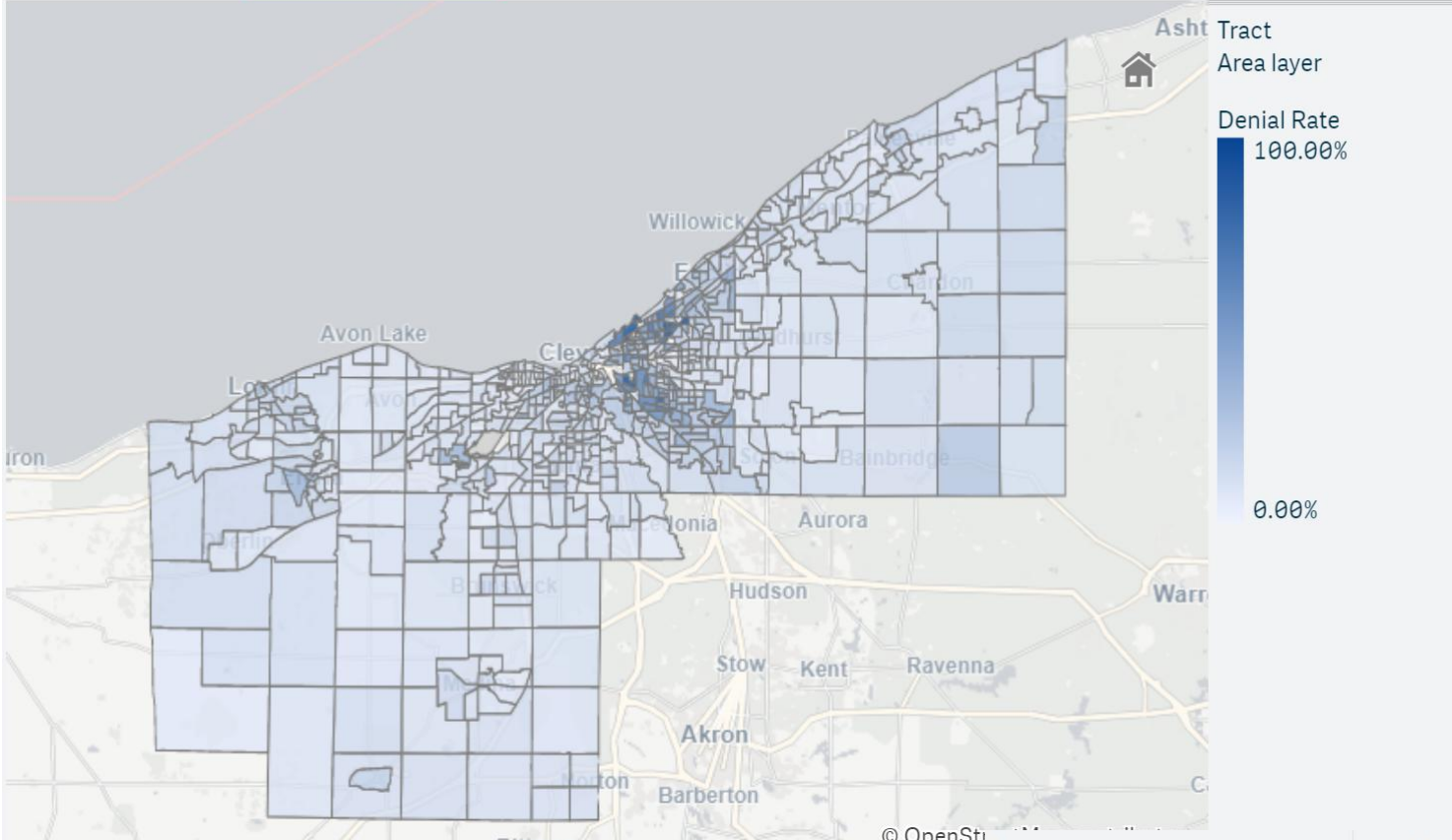
# Cleveland-Elyria, OH MSA – Denial Rate Analysis

## ALL APPLICANTS – MARKET

Denial Rate 2021  
13.15%

Odds of Denial 2021  
15.15%

Denials Ranki... Denials Map 2... Denial Reasons 2... Denials Credit Score 2... Denials Key Dimensions ...



### Odds Ratio for Denials:

Comparison of Odds of Denial of each row to that of the highlighted reference group. For example, an Odds Ratio of 1.5 for Minority Applicants conveys a 50% greater likelihood of denial on average for Minority applicants compared to Non-Minority applicants.

Race	Odds Ratio
American Indian	3.16
Black/African American	2.60
Pacific Islander	2.38
Info Not Provided/NA	1.82
Other/2 or More Races	1.15
Asian	1.11
White	1.00

**First, let's analyze the dynamics of denials at the market level.**

1. The denial rate is 13.15% for the market (i.e. 13% of **net** applications that go through underwriting get denied). And for Black or African American applications it is 24.25%.
2. The odds of denial is 15.15%, which measures the chance that an applicant would be denied rather than approved. The odds of denial for Black or African Applications is 32.01%.
3. And as the table below the map indicates, the odds ratio, indicates that in this market, Black or African American Applicants are 2.6x more likely to be denied a loan than White Applicants.

**Second, perform similar analysis for the Lender, Bank A. See next page this analysis.**

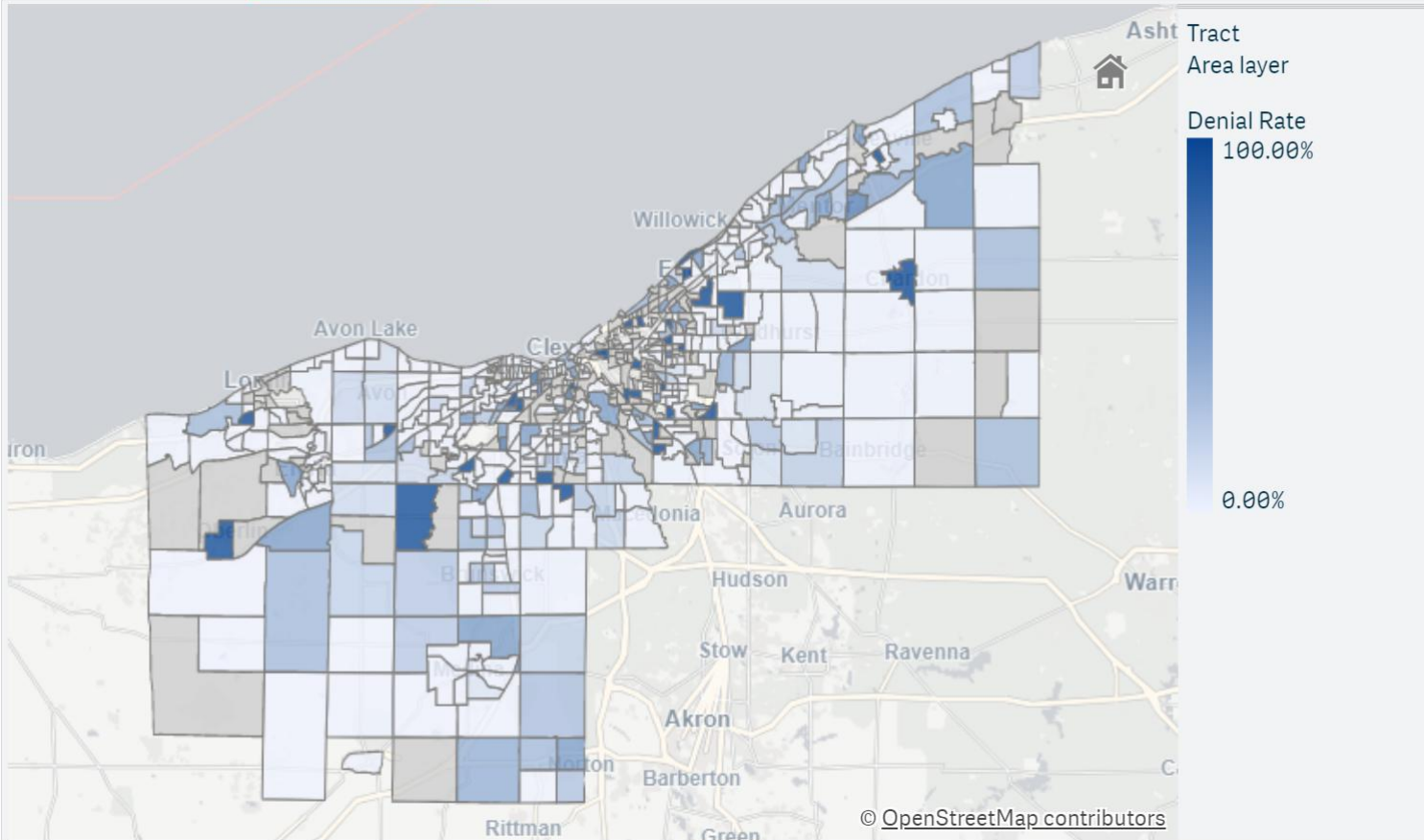
# Cleveland-Elyria, OH MSA – Denial Rate Analysis

## ALL APPLICANTS – BANK A

Denial Rate 2021  
15.62%

Odds of Denial 2021  
18.51%

Denials Ranki... Denials Map 2... Denial Reasons 2... Denials Credit Score 2... Denials Key Dimensions ...



**Bank A’s overall denial rate shows a more conservative approach to underwriting.**

1. The Denial rate is 15.62% and the odds of denial for all applications is 18.51%.
2. In HMDAVision, we select Race, Black or African American, to recalculate the above rates. The denial rate of applications submitted by Black or African American is 30.61%, almost double the market-wide denial rate. And the odds of denial is 44.12%.
3. The odds ratio in the table below the map, we see that the likelihood that a Black or African American’s application would be denied at Bank A is 3.18x greater than the likelihood that a White Applicant’s application would be denied.

**This analysis is important because it generates insights that can tie in the SPCP design of credit policy and applicant treatment. Even if Bank A rules out SPCP, this type of analysis and data insights could be used to address existing gaps and improve the access to finance of Black or African American applicants.**

### Odds Ratio for Denials:

Comparison of Odds of Denial of each row to that of the highlighted reference group. For example, an Odds Ratio of 1.5 for Minority Applicants conveys a 50% greater likelihood of denial on average for Minority applicants compared to Non-Minority applicants.

Race	Odds Ratio
Black/African American	3.18
Asian	2.40
Info Not Provided/NA	1.73
Other/2 or More Races	1.54
White	1.00



# Why do we look for data insights from analyzing denial reasons?

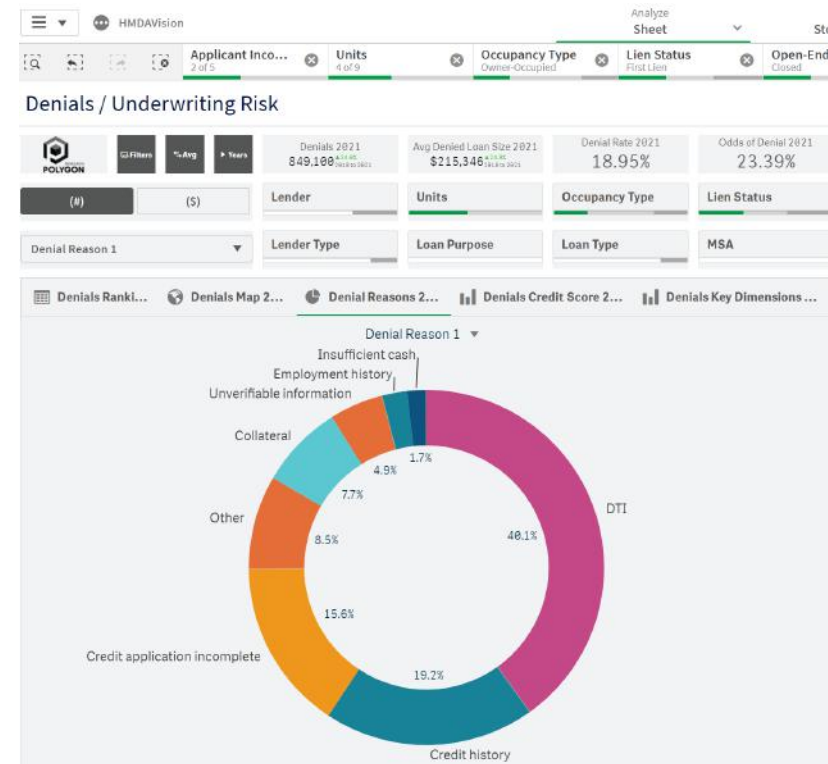
An analysis of denial reasons provides ability to partially answer the question what are the barriers to mortgage finance for certain demographic applicant segments. Insights from this analysis can help articulate the need to design SPCP. For example, on a national level about 1 in 5 applications submitted by LMI borrowers is denied for credit history\*. What can the lender do in this situation to help LMI applicants overcome this barrier?

## Denials

### Denial Reasons

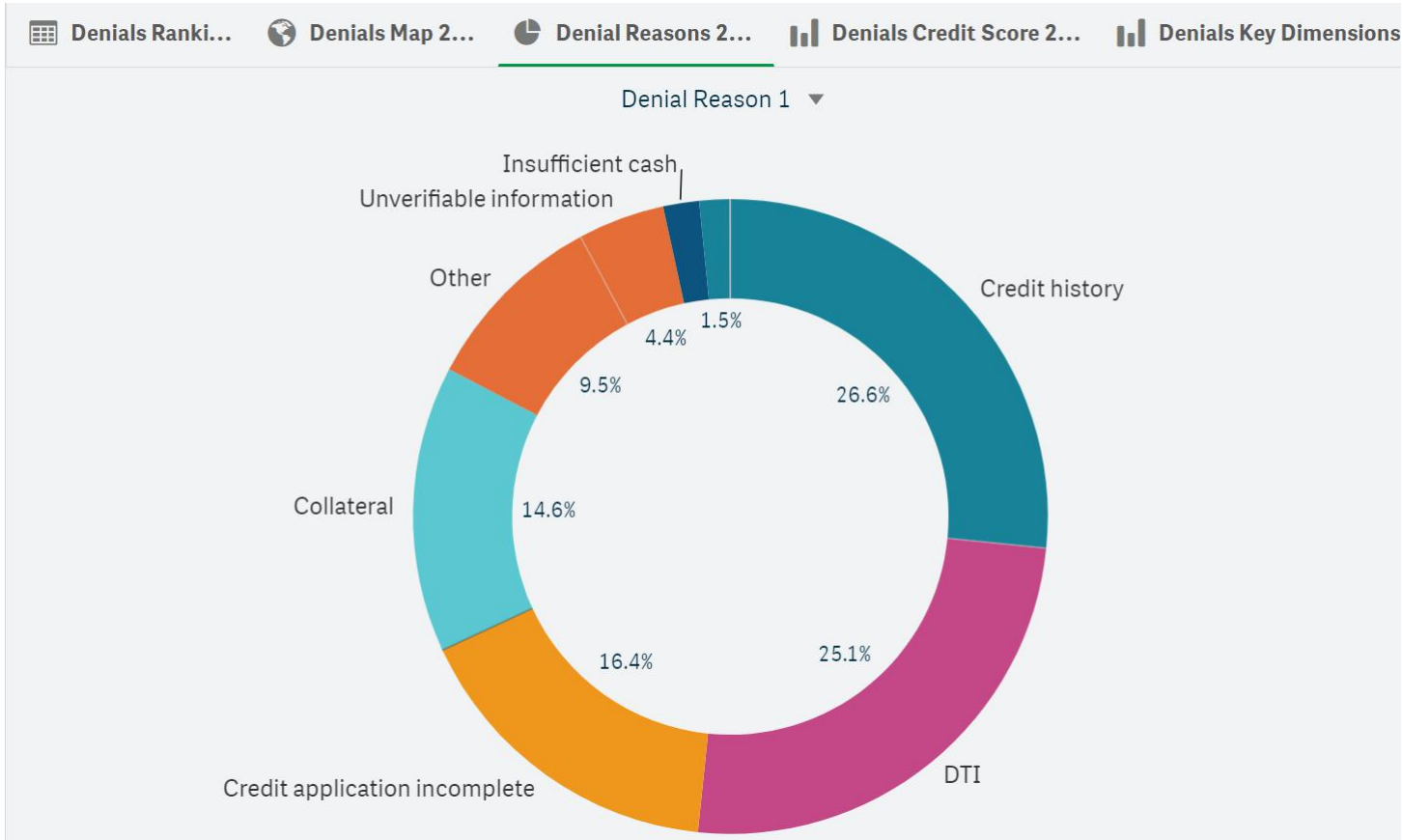
- DTI
- Credit History
- Credit application incomplete
- Collateral
- Unverifiable information
- Employment history
- Insufficient cash
- Other

## LMI Denials - 2021



# Cleveland-Elyria, OH MSA – Underwriting Analysis

## ALL APPLICANTS – MARKET



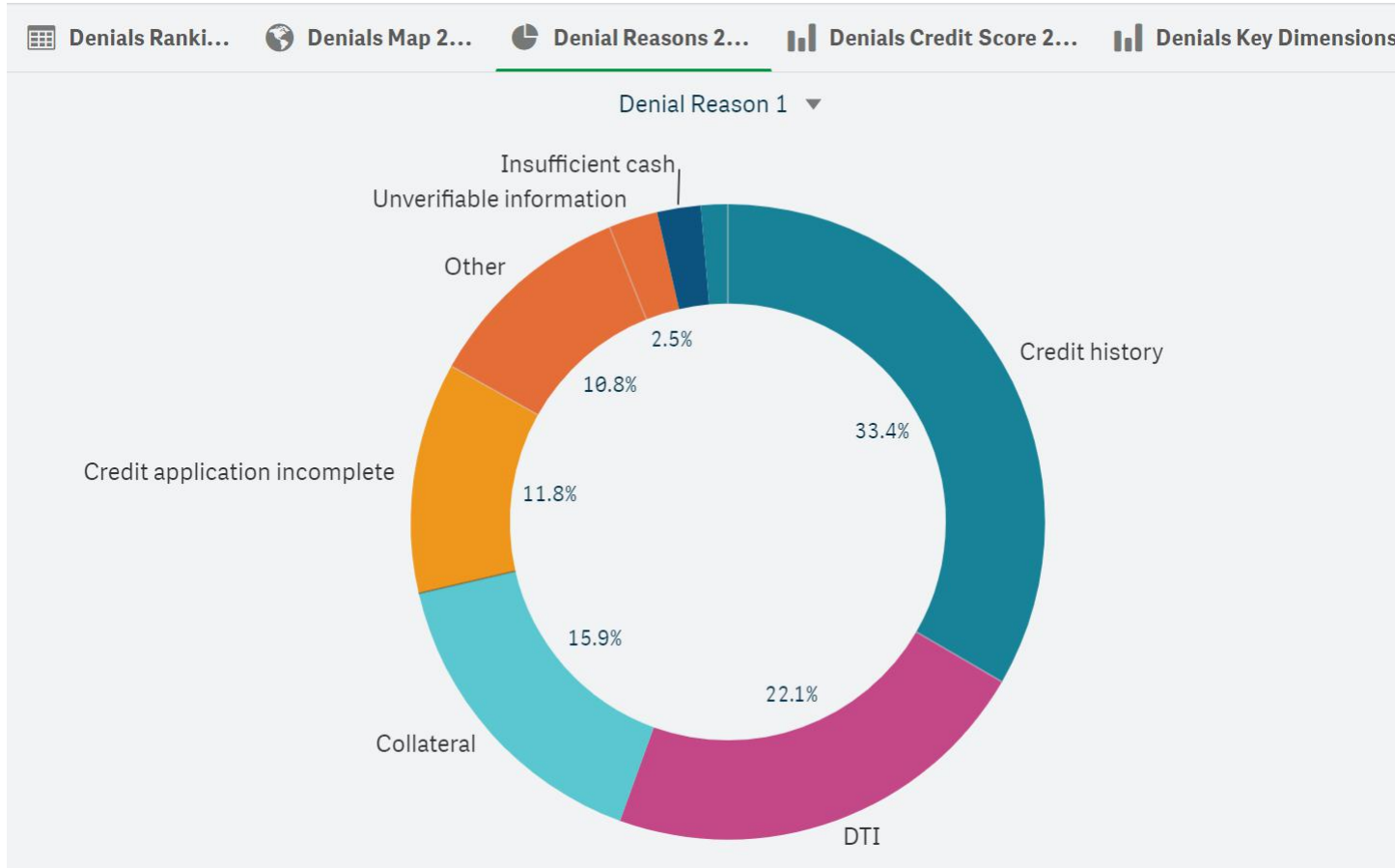
**In HMDAVision, we select Denial Reason 1 (i.e. the first reason used for denying an application). A further analysis is available for all reasons given, but we will stick with this level of analysis for this example.**

1. Most frequently, applications from all applicants, regardless of applicant demographics, are denied for issues with their Credit history – 26.6%
2. Next is DTI with 25.1%
3. Credit application incomplete is 16.4% of all applications
4. Issues with the collateral is the fourth most frequent reason. It is used to deny 14.6% of market-wide applications.

**Second, perform similar analysis for a demographic group. See next page for Black or African American applicant analysis.**

# Cleveland-Elyria, OH MSA – Underwriting Analysis

## BLACK APPLICANTS – MARKET



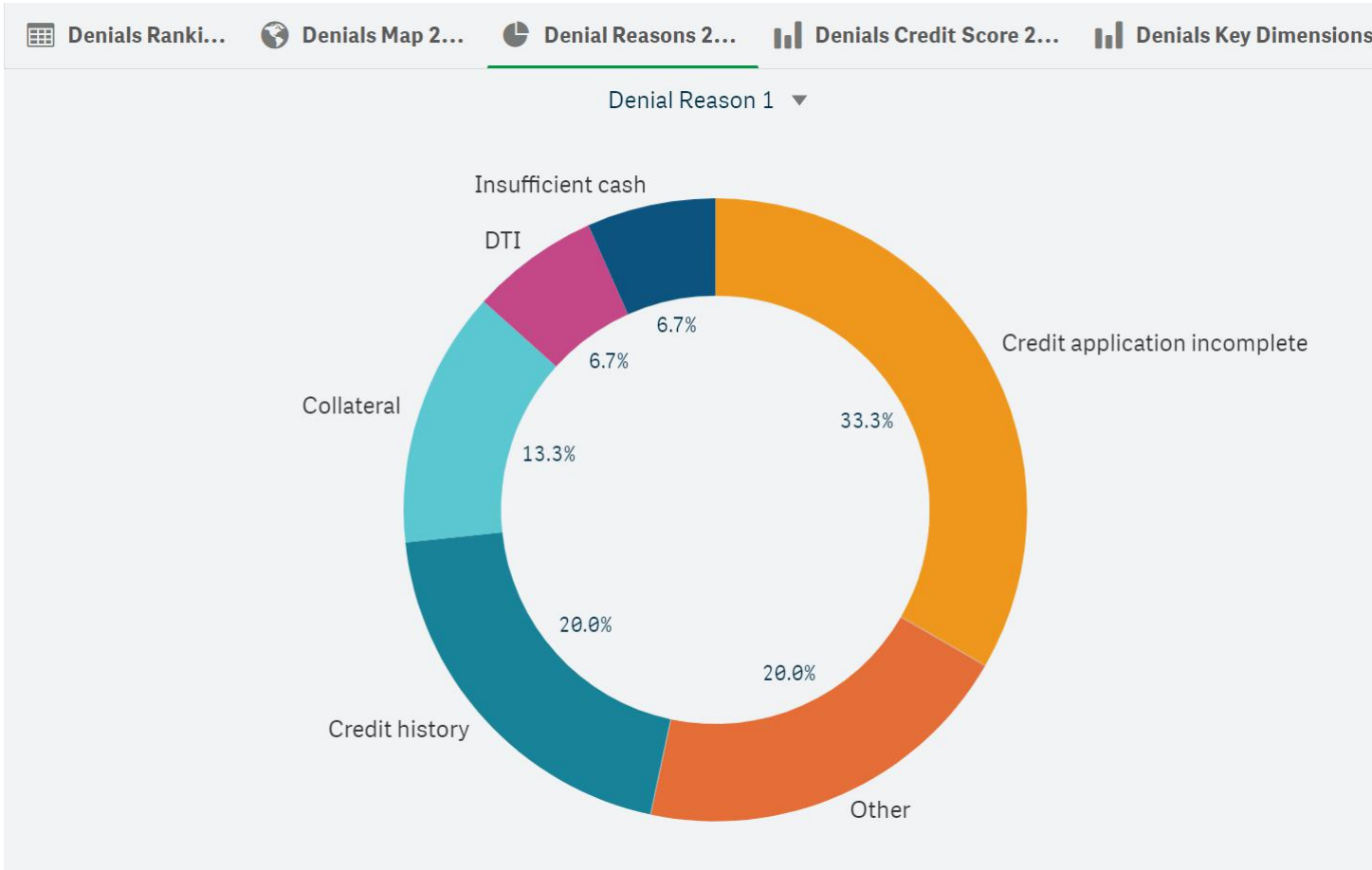
**In HMDA Vision, we select Denial Reason 1 (i.e. the first reason for denying an application). A further analysis is available for all reasons given, but we will stick with this level of analysis for this example.**

1. Most frequently, Black or African American applications are denied for issues with their Credit history – 33.4%
2. As a denial reason, Credit history, is a bigger factor for Black or African American applications than it is for the market – 26.6% as shown on the previous page.
3. DTI is the second most frequent reason for denying Black or African American applications in this market, followed by Collateral and Credit application incomplete.
4. Insufficient cash represents about 2.2% of all reasons used to deny Black or African American applications in this market.

**Second, perform similar analysis for Bank A - See next page for an example.**

# Cleveland-Elyria, OH MSA – Underwriting Analysis

## BLACK APPLICANTS – BANK A



**In HMDA Vision, we use the Lender Name filter to filter for our Bank A and analyze their Denial Reason 1 (i.e. the first reason for denying an application).**

1. Most frequently, Bank A denies Black or African American Applicants because their credit application was incomplete – 33.3%. (Note: Bank A uses this denial reason, Credit application incomplete, for its denials for all races).

2. Other and Credit history are the next large categories of denial reasons of applications submitted by Black or African American Applicants.

3. The denial reason, Insufficient cash, is 6.7% of all denial reasons, higher than the market's, which is 2.2% for Black or African American applications.

**Bank A could use these data insights in the design of SPCP applicant treatment and loan features – for example, a better support of Black or African American Borrowers during the application process to reduce the frequency of incomplete credit applications. In addition, Bank A could work with non-profits or other organizations on providing DPA to Black or African American applicants to reduce the frequency of “Insufficient cash” as a denial reason.**

# 5: Loan Features and Pricing



Loan Features



**Loan Pricing:**

- By Channel
- By Product
- By LMI Status
- By Race



Source:  
HMDAVision

# Why do we look for data insights from analyzing loan features and pricing?

First, because an analysis of existing pricing and features gives an insight whether the features and the pricing of loans might be deterring some borrowers from being approved for mortgage. Second, because knowing this analysis, would allow lenders to justify and design the special features of a SPCP with laser precision. Finally, it provides for a benchmark to track and measure the SPCP implementation and success. In HMDAVision, this analysis is made easy in several sheets (dashboards) – Pricing Table, Pricing Analysis, Pricing Pivot. Filter sheet

## Loan Features

### Available dimensions

- Loan Amount
- Loan type
- Loan purpose
- Amortization – Fixed or Adjustable
- Loan term
- Interest Only
- Balloon
- Negative Amortization

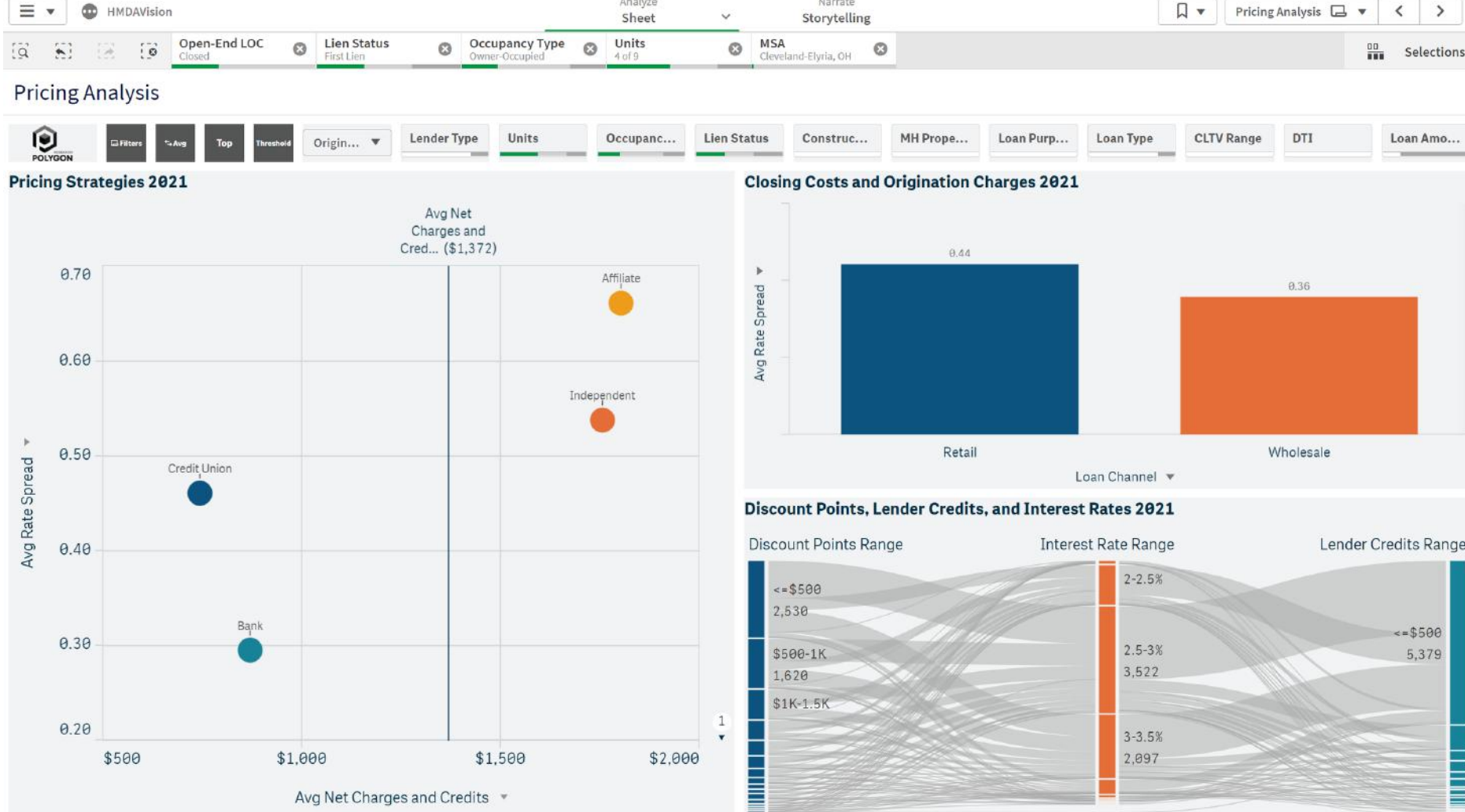
## Loan Pricing

### Available metrics

- CLTV
- DTI
- Interest Rate
- Rate spread
- Origination charges
- Discount points
- Net Charges and Credits

# Cleveland-Elyria, OH MSA – Lender Type Pricing and Channel

## ALL APPLICANTS – MARKET



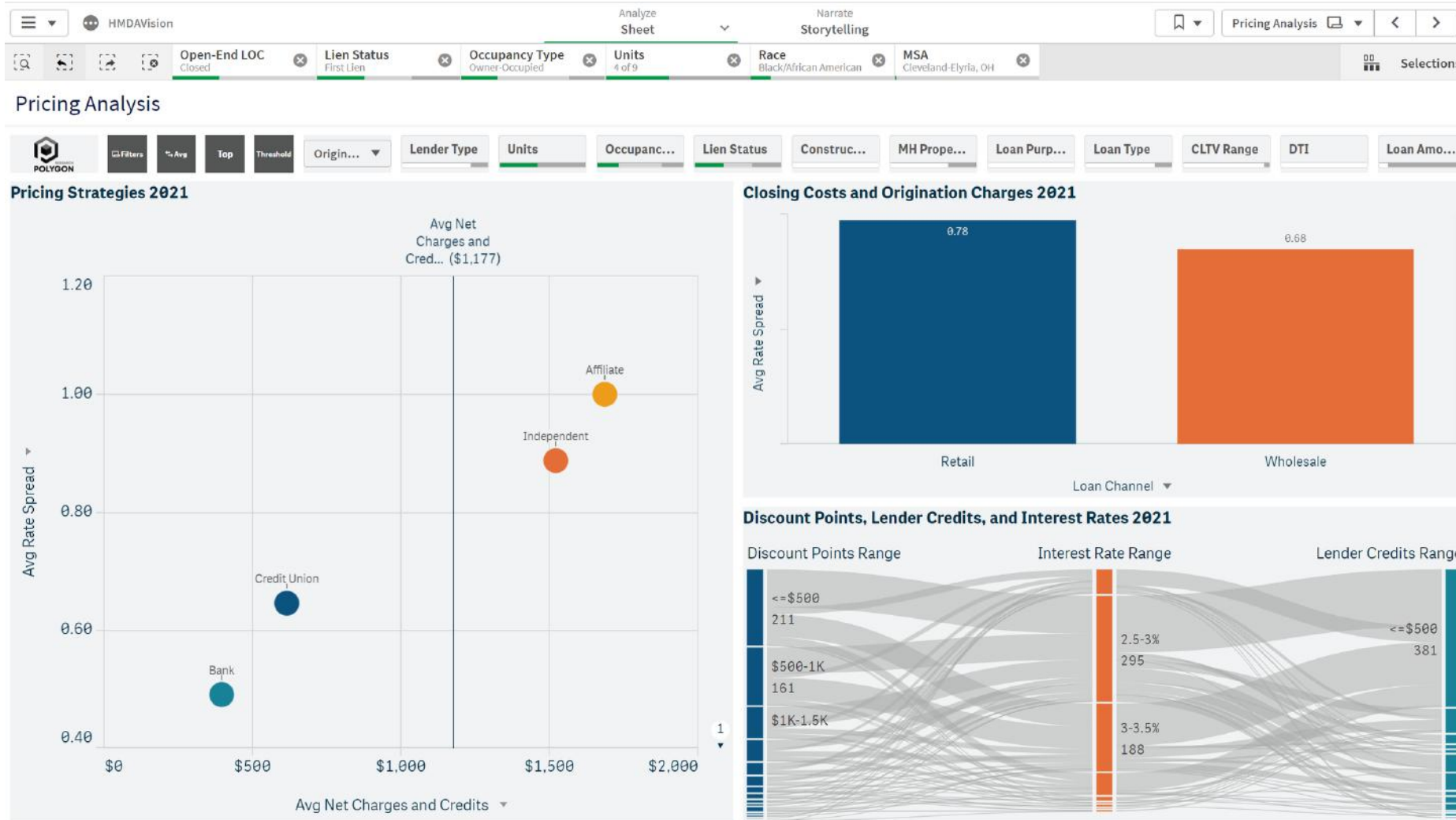
In HMDA Vision, lenders can analyze their pricing strategy in context with market and measure it by multiple dimensions such as Race, for example.

This is useful when designing SPCP because lenders could measure the outcomes of their decisions as compared to market and within different segments. The resulting insights could be used to design SPCP credit policies and to track impact.

In the scatter plot to the left, we see at-a-glance how different types of lenders in this market price their loans along two axis – Rate Spread and Net Charges and Credits. The latter is a metric created in HMDA Vision to take into consideration

# Cleveland-Elyria, OH MSA – Lender Type Pricing and Channel

## BLACK APPLICANTS – MARKET



In HMDA Vision, lenders can repeat the analysis from the previous page instantly by choosing a filter. In this case, we filtered the analysis for Race, Black or African American.

This is useful when designing SPCP because lenders could measure the outcomes of their decisions as compared to market and within the Black or African American borrower segment. The resulting insights could be used to design SPCP credit policies and to track impact.



# Cleveland-Elyria, OH MSA – Bank A Pricing By Race

## RATE SPREAD AND NET CHARGES AND CREDITS– BANK A



### Analyzing Bank A's pricing by Race:

Bank A charges low net charges and credits to its Black or African American borrowers, but at the same time, it also originates the most expensive loans in the long run, in terms of rate spread.

# Cleveland-Elyria, OH MSA – Bank A Pricing By Race

## INTEREST RATE AND DISCOUNT POINTS – BANK A

**Next, we can measure the interest rate and discount points of Bank A's loans by Race:**

Black or African American borrowers pay relatively low discount points in this MSA but they also receive the highest interest rate among Bank A's customers grouped by Race.

This is a great data insight that can be used toward SPCP Determining Need analysis.



# Cleveland-Elyria, OH MSA – Loan Pricing Analysis

## ALL BORROWERS – BANK A

☰ HMDAVision
 Analyze Sheet
Narrate Storytelling
🔖 Pricing Table
 🏠 Selection

🔍 🗺️ 📄 🗑️
Lender Name Open-End LOC Closed Lien Status First Lien Occupancy Type Owner-Occupied Units 4 of 9 MSA Cleveland-Elyria, OH

### Pricing Table

🏠 POLYGON RESEARCH
Filters
Average
Top Lenders
Lender
Units
Occupancy Type
Lien Status
Construction Met...
MH Property Type
Avg Closing Costs BPS 2021 218

Race
(#)
(\$)
Lender Type
Loan Purpose
Loan Type
Loan Amount Range
CLTV Range
DTI
Avg Orig Charges BPS 2021 93

### Comparative Pricing Analysis 2021

Race	Total Loan (#)	Avg Loan Size	Avg CLTV	Avg Net Charges and Credits	Avg Interest Rate	Avg Discount Points	Avg Lender Credits	Avg Orig Charges	Avg Closing Costs	Avg Rate Spread
<b>Totals</b>	<b>991</b>	<b>\$211,115</b>	<b>71.09%</b>	<b>\$854</b>	<b>2.82%</b>	<b>\$1,051</b>	<b>\$1,023</b>	<b>\$1,523</b>	<b>\$3,441</b>	<b>0.31</b>
White	689	\$200,733	70.41%	\$977	2.82%	\$1,012	\$892	\$1,523	\$3,335	0.32
Info Not Provided/NA	196	\$278,367	70.52%	\$1,053	2.77%	\$1,211	\$845	\$1,652	\$3,797	0.21
Black/African American	65	\$127,615	79.83%	-\$988	2.89%	\$683	\$2,408	\$1,067	\$3,635	0.55
Asian	25	\$199,000	72.05%	\$262	2.75%	\$1,289	\$1,478	\$1,504	\$3,157	0.19
Other/2 or More Races	14	\$193,571	69.44%	\$1,733	2.87%	\$2,172	\$321	\$1,939	\$3,343	0.34
Pacific Islander	2	\$185,000	77.30%	-\$82	2.75%	\$92	\$1,090	\$1,008	\$3,012	0.32

**The HMDAVision table above gives us an insight into Bank A's pricing of loans by Race of Applicant.**

1. Black or African American borrowers received the lowest loan amounts, but had the highest average lender credits, closing costs, and rate spread.
2. At a market level, Black or African American borrowers receive similar type of pricing except for Lender Credits. On a market level, Black or African American have loans with the second highest level of lender credits (following Asian borrowers).
3. Overall, Bank A was able to keep the overall pricing level (net charges and credits) for the origination of a loan at a very low level, below the market level for Black or African American Borrowers.

**For context and comparison - see next page with market pricing table.**

# Cleveland-Elyria, OH MSA – Loan Pricing Analysis

## ALL BORROWERS – MARKET

HMDAVision Analyze Sheet Narrate Storytelling

Open-End LOC Closed X Lien Status First Lien X Occupancy Type Owner-Occupied X Units 4 of 9 X MSA Cleveland-Elyria, OH X

### Pricing Table

POLYGON Filters Average Top Lenders

Race (#) (\$) Lender Units Occupancy Type Lien Status Construction Met... MH Property Type Avg Closing Costs BPS 2021 240

Lender Type Loan Purpose Loan Type Loan Amount Range CLTV Range DTI Avg Orig Charges BPS 2021 102

### Comparative Pricing Analysis 2021

Race	Total Loan (#)	Avg Loan Size	Avg CLTV	Avg Net Charges and Credits	Avg Interest Rate	Avg Discount Points	Avg Lender Credits	Avg Orig Charges	Avg Closing Costs	Avg Rate Spread
<b>Totals</b>	<b>71,875</b>	<b>\$199,213</b>	<b>74.99%</b>	<b>\$1,372</b>	<b>2.94%</b>	<b>\$1,623</b>	<b>\$874</b>	<b>\$1,694</b>	<b>\$4,009</b>	<b>0.44</b>
White	54,978	\$200,177	73.99%	\$1,361	2.94%	\$1,582	\$817	\$1,661	\$3,900	0.42
Info Not Provided/NA	9,005	\$204,259	75.13%	\$1,602	2.90%	\$1,862	\$934	\$1,926	\$4,316	0.42
Black/African American	5,202	\$152,630	85.16%	\$1,177	3.07%	\$1,464	\$1,131	\$1,621	\$4,619	0.77
Asian	1,539	\$274,422	74.91%	\$1,078	2.74%	\$1,806	\$1,439	\$1,717	\$3,859	0.19
Other/2 or More Races	958	\$235,386	77.51%	\$1,380	2.93%	\$1,961	\$962	\$1,768	\$4,399	0.38
American Indian	138	\$168,333	79.75%	\$1,130	2.99%	\$1,465	\$1,124	\$1,538	\$3,890	0.60
Pacific Islander	55	\$158,455	77.77%	\$1,011	3.04%	\$1,693	\$703	\$1,369	\$3,456	0.58

**By removing the Lender Filter, we can recalculate the table in HMDAVision instantly for the entire market by Race of Applicant.**

1. In the MSA market, Black or African American borrowers received the lowest loan amounts at the highest interest rates.
2. At a market level, Black or African American borrowers have loans with the highest closing costs.

This type of analysis is important part of SPCP Determining Need analysis because it provides the context in which lenders can evaluate their own pricing outcomes. This analysis can point to need to develop SPCP or even just to adjust existing affordable products, to train MLOs how to lend these loan products, and any other adjustments that the analysis might prompt lenders to do.



# Cleveland-Elyria, OH MSA – Loan Pricing Analysis

## BLACK BORROWERS – MARKET

☰ HMDAVision Analyze Sheet Narrate Storytelling 🔖 Pricing Table 🏠 ⏪ ⏩

🔍 🏠 📄 🔍
Open-End LOC Closed Lien Status First Lien Occupancy Type Owner-Occupied Units 4 of 9 Race Black/African American MSA Cleveland-Elyria, OH ☰ Selections

### Pricing Table

POLYGON RESEARCH Filters ← Average Top Lenders
Lender Units Occupancy Type Lien Status Construction Met... MH Property Type
Applicant Income Group (#) (\$) Lender Type Loan Purpose Loan Type Loan Amount Range CLTV Range DTI
Avg Closing Costs BPS 2021 345
Avg Orig Charges BPS 2021 123

### Comparative Pricing Analysis 2021

Applicant Income Group	Total Loan (#)	Avg Loan Size	Avg CLTV	Avg Net Charges and Credits	Avg Interest Rate	Avg Discount Points	Avg Lender Credits	Avg Orig Charges	Avg Closing Costs	Avg Rate Spread
<b>Totals</b>	<b>5,202</b>	<b>\$152,630</b>	<b>85.16%</b>	<b>\$1,177</b>	<b>3.07%</b>	<b>\$1,464</b>	<b>\$1,131</b>	<b>\$1,621</b>	<b>\$4,619</b>	<b>0.77</b>
Moderate	1,353	\$143,788	86.81%	\$1,282	3.09%	\$1,383	\$1,154	\$1,701	\$5,032	0.84
Middle	1,515	\$151,792	85.52%	\$1,376	3.11%	\$1,508	\$1,105	\$1,738	\$4,832	0.83
Upper	1,376	\$170,276	83.60%	\$1,358	3.07%	\$1,465	\$1,082	\$1,746	\$4,681	0.74
Low	431	\$135,974	82.63%	\$1,225	3.02%	\$1,522	\$1,131	\$1,653	\$4,496	0.72
NA	527	\$145,285	87.16%	-\$178	2.92%	\$1,522	\$1,197	\$694	\$2,847	0.55

The table above provides the market pricing of loans to Black or African American Borrowers by LMI status.



# Cleveland-Elyria, OH MSA – Loan Pricing Analysis

## BLACK BORROWERS – BANK A

☰ HMDAVision
 Analyze Sheet
Narrate Storytelling
🔖 Pricing Table
 ⏪ ⏩

🔍 🔄 📄 📄
Lender Name Open-End LOC Closed Lien Status First Lien Occupancy Type Owner-Occupied Units 4 of 9 Race Black/African American MSA Cleveland-Elyria, OH
☰ Selections

### Pricing Table

RESEARCH POLYGON
Filters
Average
Top Lenders
Lender
Units
Occupancy Type
Lien Status
Construction Met...
MH Property Type
Avg Closing Costs BPS 2021
362

Applicant Income Group
(#)
(\$)
Lender Type
Loan Purpose
Loan Type
Loan Amount Range
CLTV Range
DTI
Avg Orig Charges BPS 2021
113

### Comparative Pricing Analysis 2021

Applicant Income Group	Total Loan (#)	Avg Loan Size	Avg CLTV	Avg Net Charges and Credits	Avg Interest Rate	Avg Discount Points	Avg Lender Credits	Avg Orig Charges	Avg Closing Costs	Avg Rate Spread
<b>Totals</b>	<b>65</b>	<b>\$127,615</b>	<b>79.83%</b>	<b>-\$988</b>	<b>2.89%</b>	<b>\$683</b>	<b>\$2,408</b>	<b>\$1,067</b>	<b>\$3,635</b>	<b>0.55</b>
Low	2	\$130,000	87.45%	-\$1,816	3.00%	\$806	\$2,700	\$884	\$4,804	0.71
Moderate	22	\$132,727	80.77%	-\$1,287	2.98%	\$942	\$2,845	\$1,091	\$3,836	0.55
Upper	16	\$155,625	78.08%	-\$353	2.88%	\$801	\$1,878	\$1,290	\$3,686	0.51
Middle	22	\$108,636	79.22%	-\$870	2.89%	\$494	\$2,221	\$948	\$3,394	0.58
NA	3	\$78,333	81.70%	-\$2,490	2.33%	\$89	\$3,191	\$701	\$2,952	0.32

In HMDAVision, we can use the Race filter to select Black or African American, and the drop-down menu above the table to select “Applicant Income Group”, in order to instantly recalculate the table for Bank A’s pricing of loans to Black or African Borrowers by their LM Status. In this way, Bank A can get even deeper and more nuanced level of insight. Other choices in the drop down menu include Age, Ethnicity, Minority detail (intersection of the two minority fields, Race and Ethnicity), Neighborhood Income, among 14 options/dimensions.

1.Low income Black or African American borrowers received the highest average lender credits, discount points, closing costs, interest rate, and rate spread. Is there an initiative by working with community and non-profit organization, and the agencies, to reduce those costs?

For context and comparison - see next two pages with market pricing table, with Bank A’s pricing of Conventional loans, and with market pricing of Conventional loans by Race of Borrower.

# Cleveland-Elyria, OH MSA – Conventional Loan Pricing Analysis

## ALL BORROWERS – BANK A

HMDAVision Analyze Sheet Narrate Storytelling Pricing Table Selections

Loan Type: Conventional
Lender Name: [REDACTED]
Open-End LOC: Closed
Lien Status: First Lien
Occupancy Type: Owner-Occupied
Units: 4 of 9
MSA: Cleveland-Elyria, OH

### Pricing Table

POLYGON
Filters
Average
Top Lenders
Lender
Units
Occupancy Type
Lien Status
Construction Met...
MH Property Type
Avg Closing Costs BPS 2021: 210

Race
(#)
(\$)
Lender Type
Loan Purpose
Loan Type
Loan Amount Range
CLTV Range
DTI
Avg Orig Charges BPS 2021: 98

### Comparative Pricing Analysis 2021

Race	Total Loan (#)	Avg Loan Size	Avg CLTV	Avg Net Charges and Credits	Avg Interest Rate	Avg Discount Points	Avg Lender Credits	Avg Orig Charges	Avg Closing Costs	Avg Rate Spread
<b>Totals</b>	<b>928</b>	<b>\$214,159</b>	<b>69.75%</b>	<b>\$980</b>	<b>2.82%</b>	<b>\$1,068</b>	<b>\$987</b>	<b>\$1,609</b>	<b>\$3,347</b>	<b>0.29</b>
White	658	\$201,960	69.62%	\$1,055	2.83%	\$1,029	\$881	\$1,581	\$3,276	0.31
Info Not Provided/NA	183	\$283,579	68.93%	\$1,140	2.76%	\$1,214	\$855	\$1,738	\$3,633	0.19
Black/African American	47	\$126,489	73.78%	-\$513	2.93%	\$725	\$2,439	\$1,438	\$3,334	0.46
Asian	24	\$205,417	71.03%	\$285	2.74%	\$1,289	\$1,538	\$1,567	\$3,160	0.14
Other/2 or More Races	14	\$193,571	69.44%	\$1,733	2.87%	\$2,172	\$321	\$1,939	\$3,343	0.34
Pacific Islander	2	\$185,000	77.30%	-\$82	2.75%	\$92	\$1,090	\$1,008	\$3,012	0.32

The table above provides Bank A's pricing of Conventional loans in this market by Race of Borrower.

# Cleveland-Elyria, OH MSA – Conventional Loan Pricing Analysis

## ALL BORROWERS – MARKET

☰ HMDAVision Analyze Sheet Narrate Storytelling Pricing Table Selections

Loan Type Conventional Open-End LOC Closed Lien Status First Lien Occupancy Type Owner-Occupied Units 4 of 9 MSA Cleveland-Elyria, OH

### Pricing Table

POLYGON Filters Average Top Lenders

Lender Units Occupancy Type Lien Status Construction Met... MH Property Type Avg Closing Costs BPS 2021 207

Race (#) (\$) Lender Type Loan Purpose Loan Type Loan Amount Range CLTV Range DTI Avg Orig Charges BPS 2021 102

#### Comparative Pricing Analysis 2021

Race	Total Loan (#)	Avg Loan Size	Avg CLTV	Avg Net Charges and Credits	Avg Interest Rate	Avg Discount Points	Avg Lender Credits	Avg Orig Charges	Avg Closing Costs	Avg Rate Spread
<b>Totals</b>	<b>56,933</b>	<b>\$205,052</b>	<b>71.56%</b>	<b>\$1,455</b>	<b>2.94%</b>	<b>\$1,656</b>	<b>\$769</b>	<b>\$1,723</b>	<b>\$3,515</b>	<b>0.35</b>
White	45,356	\$204,061	71.12%	\$1,426	2.94%	\$1,598	\$721	\$1,677	\$3,462	0.35
Info Not Provided/NA	6,737	\$213,243	71.48%	\$1,775	2.90%	\$1,938	\$823	\$2,038	\$3,845	0.33
Black/African American	2,525	\$149,261	77.48%	\$1,340	3.07%	\$1,572	\$957	\$1,701	\$3,418	0.52
Asian	1,447	\$279,665	73.97%	\$1,093	2.72%	\$1,865	\$1,430	\$1,722	\$3,691	0.14
Other/2 or More Races	732	\$242,336	73.97%	\$1,425	2.93%	\$1,932	\$906	\$1,768	\$3,771	0.30
American Indian	92	\$176,413	74.72%	\$1,538	3.00%	\$1,475	\$721	\$1,702	\$3,410	0.46
Pacific Islander	44	\$160,227	74.82%	\$1,118	3.02%	\$1,650	\$631	\$1,404	\$2,913	0.41

The table above provides the market average pricing of Conventional loans in this market by Race of Borrower.





# Mortgage Affordability – Median Applicant Income and Median Origination Size

## ALL BORROWERS – MARKET



The scatter plot provides instant insight into the relationship between applicant income and loan size in this market by Race of Borrower.

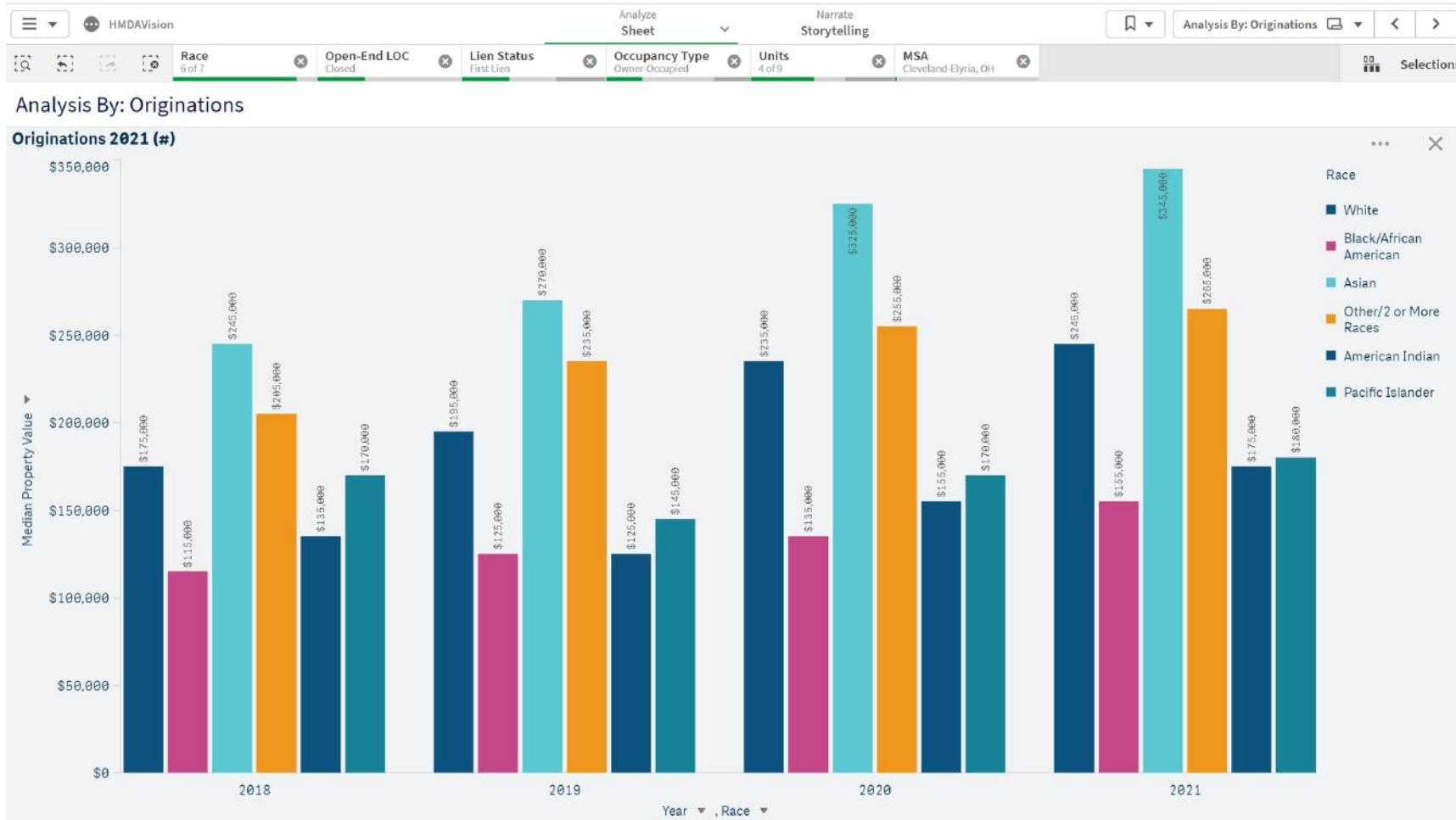
Black applicants had the smallest incomes and received the smallest loans.

This insight should go into SPCP determining need to highlight borrower needs.



# Cleveland-Elyria, OH MSA – Median Property Value

## ALL BORROWERS – MARKET



The bar chart provides an insight into the trends of the collateral (property) value in this market by Race of Borrower.

Over the last 4 years, Black borrowers had loans with the lowest property values in this market. For example, in 2018, the median property value was \$115k, and it grew to \$155k in 2021 but still was the lowest property value of collateral in this market.

# 6: Investors and Market Liquidity



Exploring Borrower Needs



Understanding Investor Appetite



# Cleveland-Elyria, OH MSA – ANALYZING MARKET LIQUIDITY

When a lender's business model is based on originating mortgages which will be sold to secondary market investors, a lender has to develop and incorporate a strategy of how to sell its SPCP loans to secondary market investors.

So, an important part of both the SPCP determining need and the SPCP design is achieving a balance between identifying borrower needs with secondary market investor appetite.

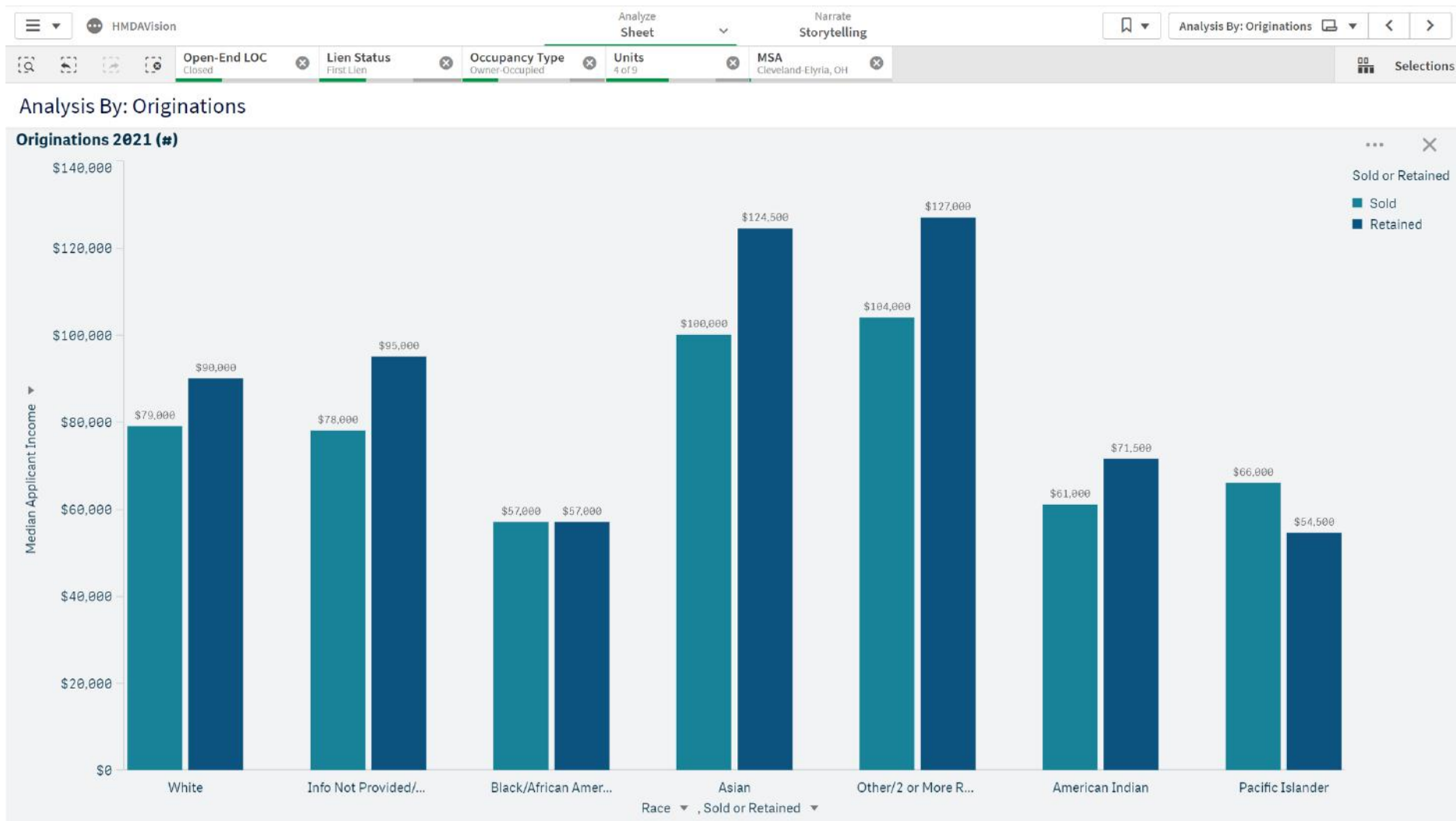
A data analysis of how the market has been enabling liquidity for loans originated to the target borrower demographic group, e.g. Black or African American Borrowers, serves an important purpose to:

- 1) Understand the investor appetite for loans by demographic and within the target loan product. Who has been buying loans and what kind of loans, with what features and pricing? For example – an analysis of investor appetite for loans with certain DTI, CLTV, Interest Rate, Loan term. Once lenders have clear understanding of investor appetite, they can work to develop or deepen their relationships with the Investors' Account Executives to ensure buy-in the SPCP loans they are planning to originate.
- 2) SPCP determining need analysis would show what a lender keeps on their books at year end and what they sell to the secondary market.

SPCP determining need analysis would demonstrate this delicate balance between borrower needs and investor appetite.

# Cleveland-Elyria, OH MSA – Sold or Retained Loan with Median Applicant Income by Race

## ALL BORROWERS – MARKET



This analysis demonstrates SPCP need by pointing out the difference between borrower income by race and whether the loan was sold or not at the end of the calendar year.

For example, loans to Black or African American borrowers had the same median income \$57,000 whether they were sold or retained. But that median income is the lowest among loans sold to secondary market investors.

It demonstrates the need to negotiate liquidity for loans with lower borrower income in a potential SPCP.

# Cleveland-Elyria, OH MSA – Median Applicant Income of Loans Sold to the Secondary Market

## ALL BORROWERS – MARKET



This Pareto chart shows that the sweet spot (36.6%) for investor appetite is loans with borrowers with income of \$50k to \$100k.

56% of all loans had applicant income of under \$100k, and 73% were under \$150k.

This is an important insight that most often the qualifying income acceptable for investor purchased loans for all borrowers in this market is under \$150k. This type of analysis could be used to evaluate the SPCP need for a specific demographic group.

See next page for an analysis of Black or African American borrower income.



# Cleveland-Elyria, OH MSA – Median Applicant Income

## BLACK BORROWERS – MARKET



**76% of loans purchased by investors were to Black or African American borrowers who had \$100k or less in annual income, and 85% with income of \$150k or less.**

Moreover, when lenders use Purchaser Type in HMDA Vision, they control this analysis by Purchaser Type. For example, lenders can select either Fannie Mae or Freddie Mac, or both, to see what the concentration of annual income was acceptable for these agencies. For example, 78% of the loans that Fannie Mae bought in 2021 to Black borrowers were loans with applicant income of \$100k or less, and 92% of Fannie Mae-bought loans had applicant income of under \$150k or less. Using the multiple years available, lenders also determine that this is a fairly stable relationship regardless of the annual state of the housing market.

Comparing the distribution of Black or African American borrower income to the market gives an insight into the need for SPCP that allows for lower income for agency and other loans.

# Cleveland-Elyria, OH MSA – CLTV

## ALL BORROWERS – MARKET



**This Pareto chart shows that the sweet spot (23.9% of loans) for investor appetite are loans with CLTV of 70-80%.**

Loans with CLTV of 90-100% CLTV are the second most commonly bought loans in this market (21.9% of loans).

This is an important data analysis to use as a context when evaluating the SPCP need for specific demographic group. For example, the distribution of the CLTV of loans to Black or African American Borrowers.

*See next page for an example.*



# Cleveland-Elyria, OH MSA – CLTV

## BLACK BORROWERS – MARKET



**In HMDA Vision we can add the Race filter to re-calculate this Pareto chart.**

It points that the sweet spot for CLTV on loans to Black borrowers is 90-100%, 51.1% of these loans.

35% of these loans had CLTV of less than 90%.

The distribution of CLTVs on loans to Black or African American borrowers skews to CLTVs of 90% or more.

**This is an important insight that allows lenders to offer affordable lending products or even determine need and design SPCP for this market.**

# Cleveland-Elyria, OH MSA – Understanding the Local Borrower

## ALL BORROWERS – MARKET



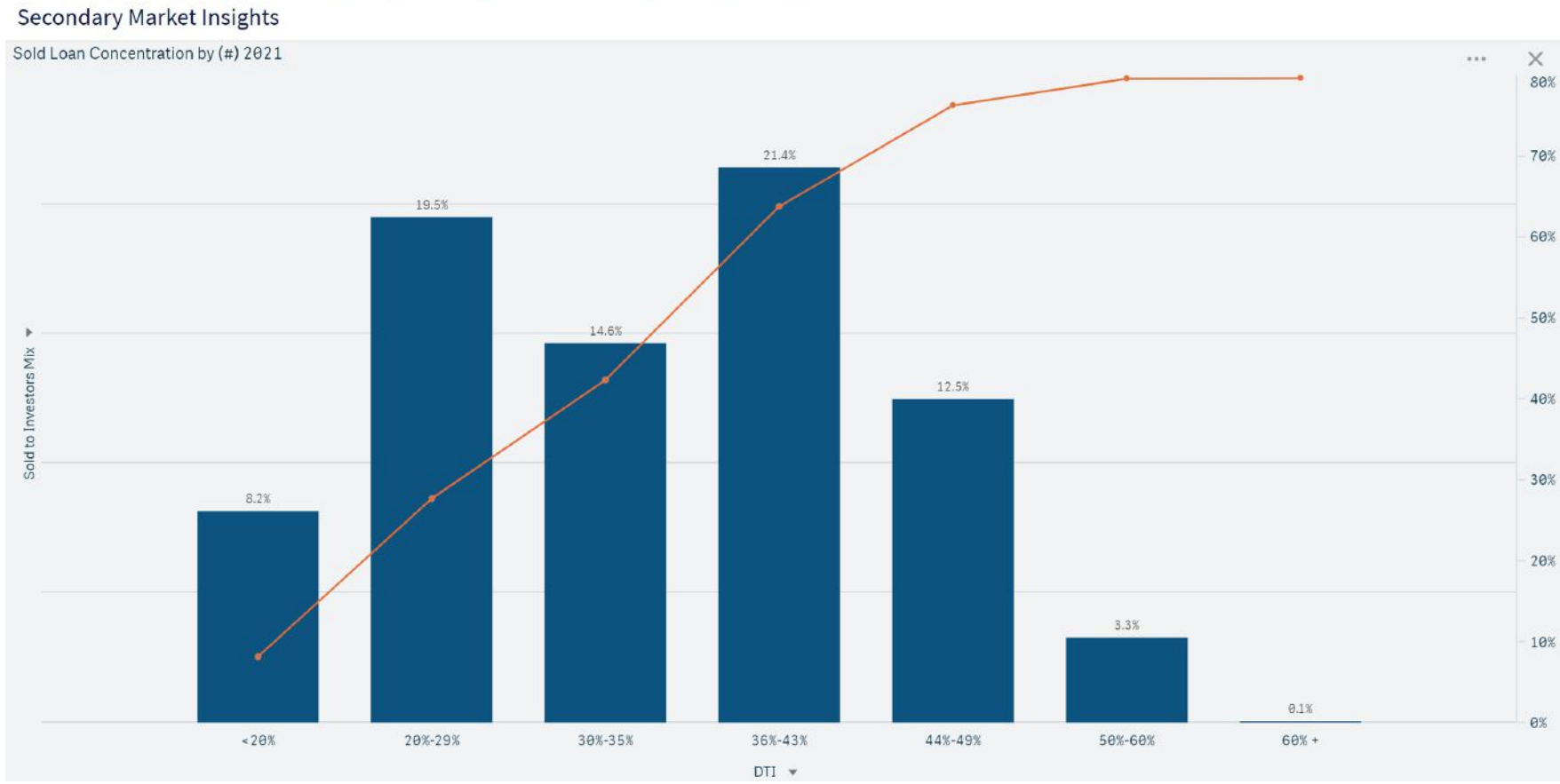
The chart above provides analysis of Median Applicant Income sliced by Race of Borrower and DTI.

# Cleveland-Elyria, OH MSA – DTI

## ALL BORROWERS – MARKET

Secondary Market Insights

Open-End LOC Closed | Lien Status First Lien | Occupancy Type Owner-Occupied | Units 4 of 9 | MSA Cleveland-Elyria, OH

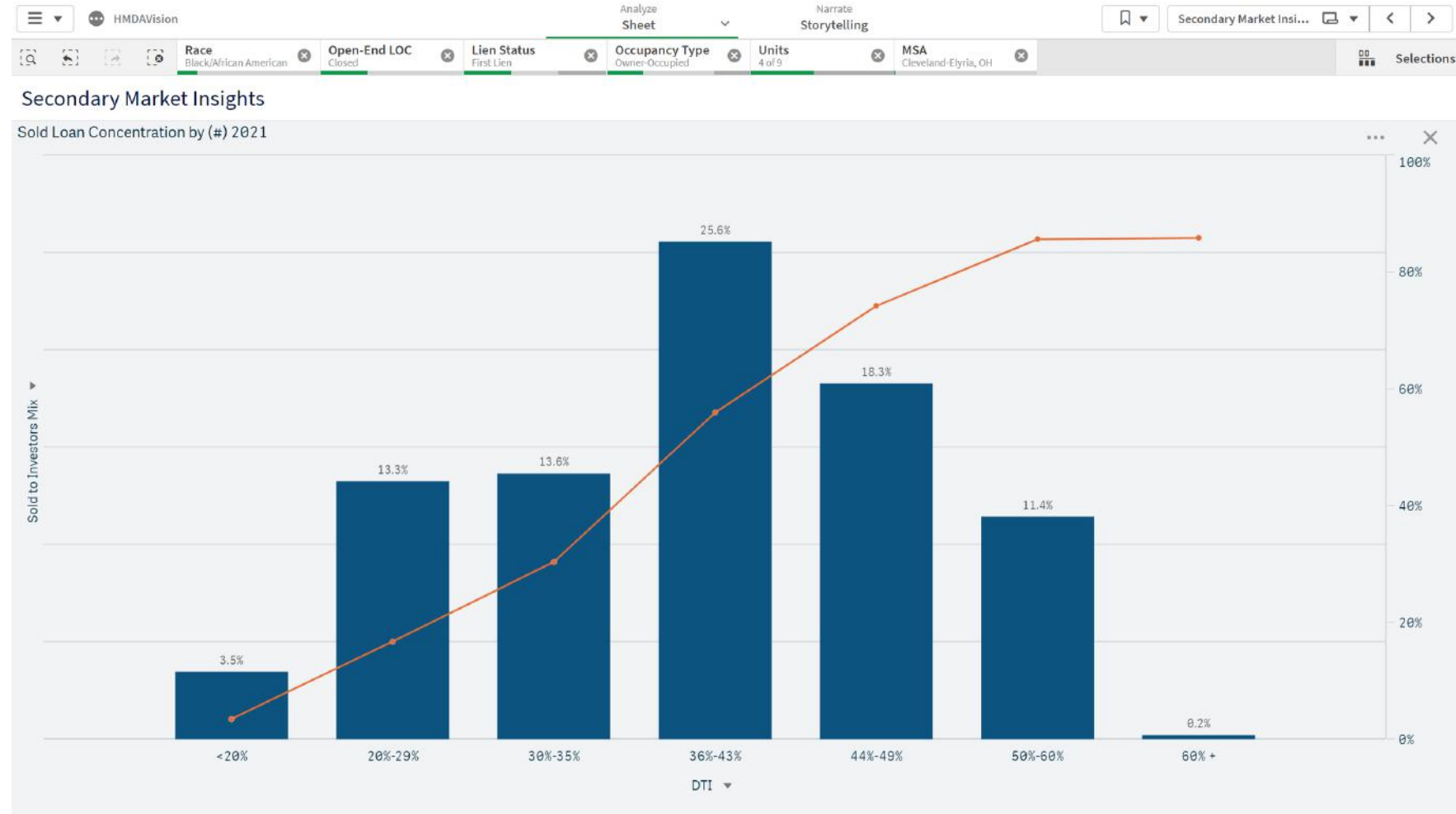


This Pareto chart shows that **64%** of the loans sold to the secondary market in this MSA are with DTIs of 43% or lower, which is similar to the national level with 61% of all loans originated with 43% or lower DTI.



# Cleveland-Elyria, OH MSA – DTI

## BLACK BORROWERS – MARKET



**Investors bought only 30% of loans to Black or African American borrowers with DTI of 35% or less.**

The sweet spot (25.6%) were loans with DTI in the 36-43% DTI Range.

A comparison to the overall market gives lenders an insight that loans to Black or African American borrowers in this market have higher DTIs.

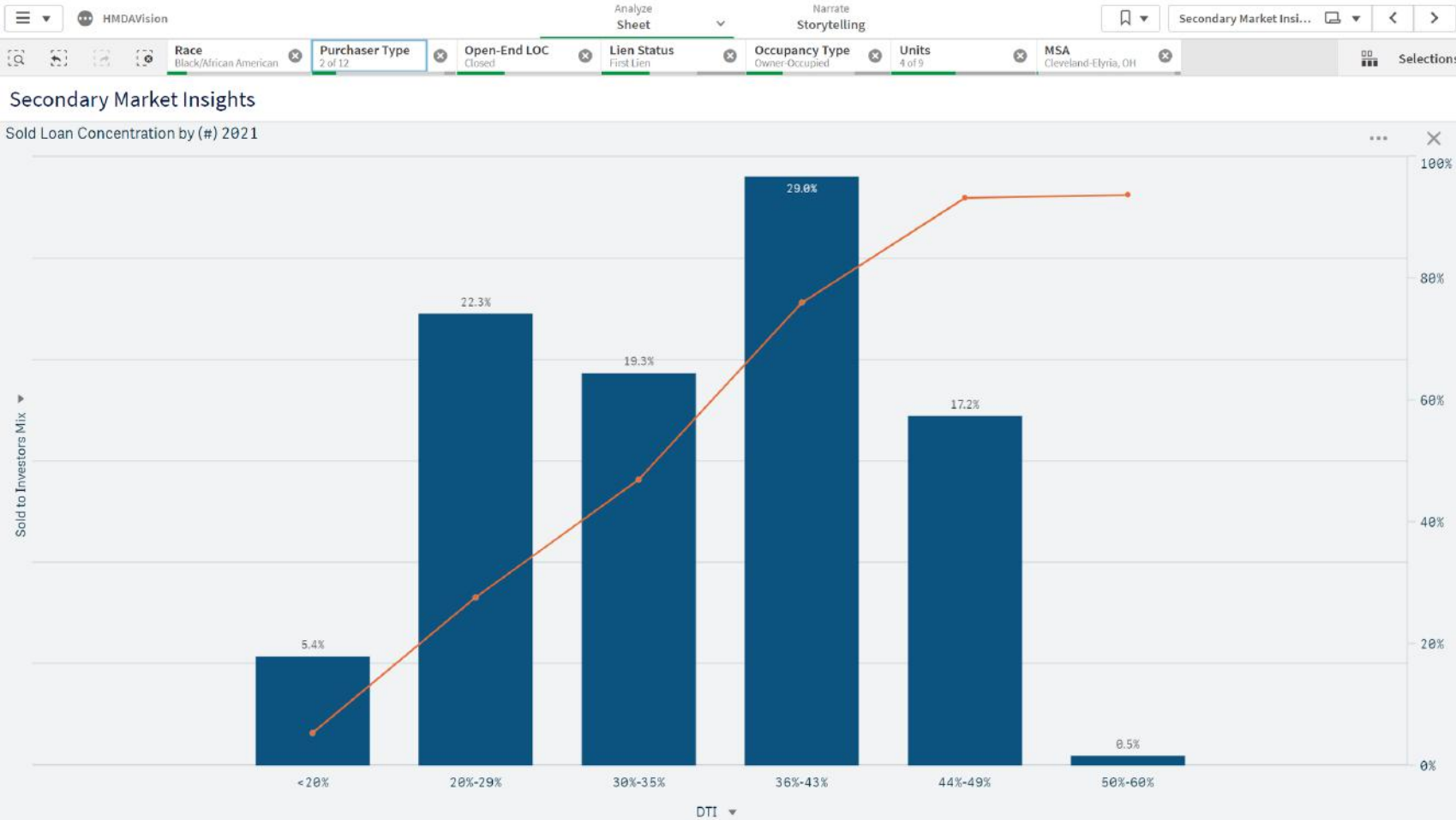
This is an important insight in the SPCP determining need analysis, as it relates directly to creating the delicate balance between borrower needs and investor appetite.

*See next page for analysis of GSE purchases of Black or African American loans in this market.*



# Cleveland-Elyria, OH MSA – DTI

## BLACK BORROWERS – GSE'S LOAN PURCHASES IN MSA MARKET



**While all investors bought 30% of loans to Black or African American borrowers with DTI of 35% or less, the GSEs bought more – 47% of Black borrower loans had DTI of 35% or less.**

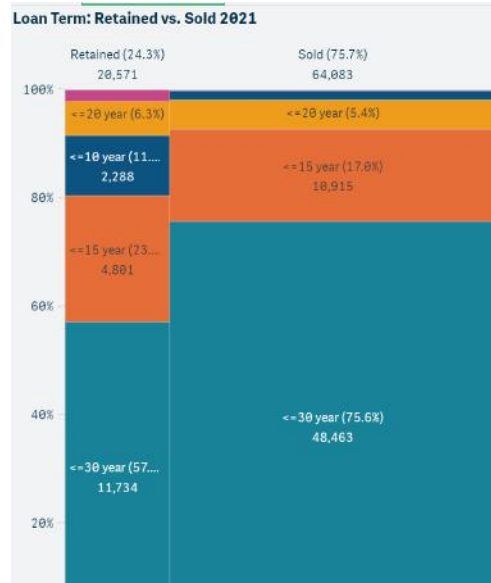
The sweet spot (29%) were loans with DTI in the 36-43% DTI Range.

17.2% were loans bought by the GSEs with DTI of 44%-49%, and just half a percent were loans with higher DTIs.

This is an important insight in the SPCP determining need analysis, as it helps drive important conversations with agency investors like the GSEs about SPCP design for liquidity.

# Cleveland-Elyria, OH MSA – MARKET LIQUIDITY

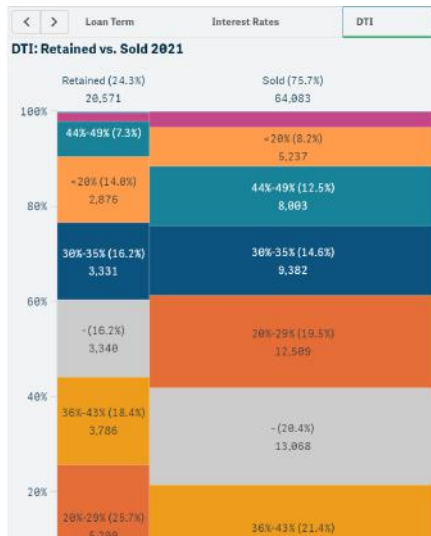
## ALL BORROWERS – MARKET



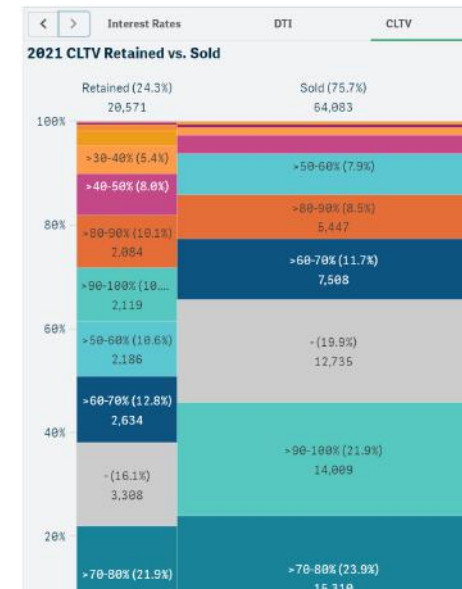
**LOAN TERM**



**INTEREST RATE**



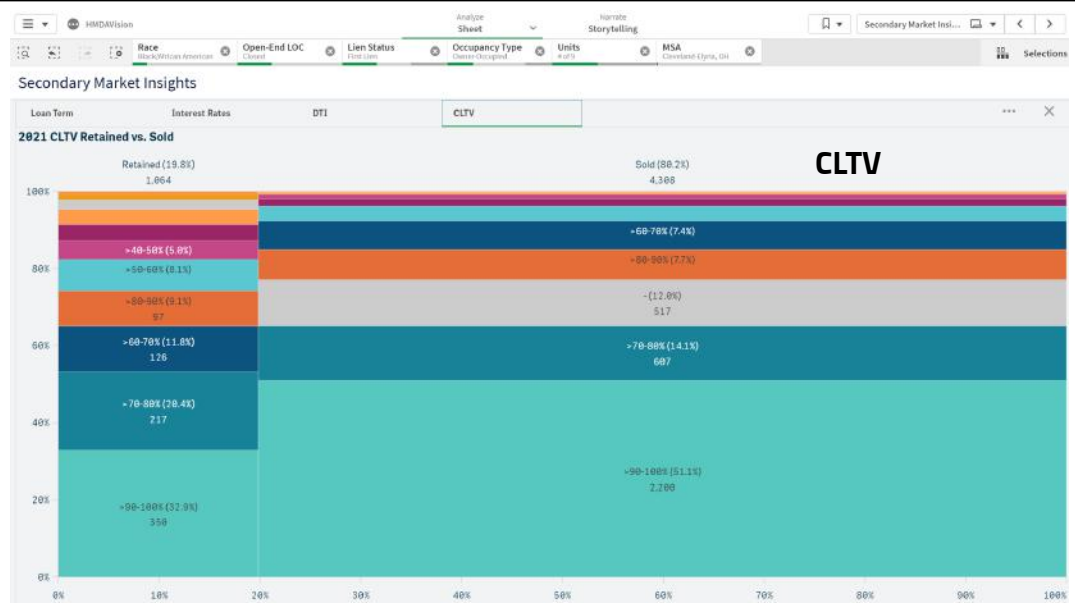
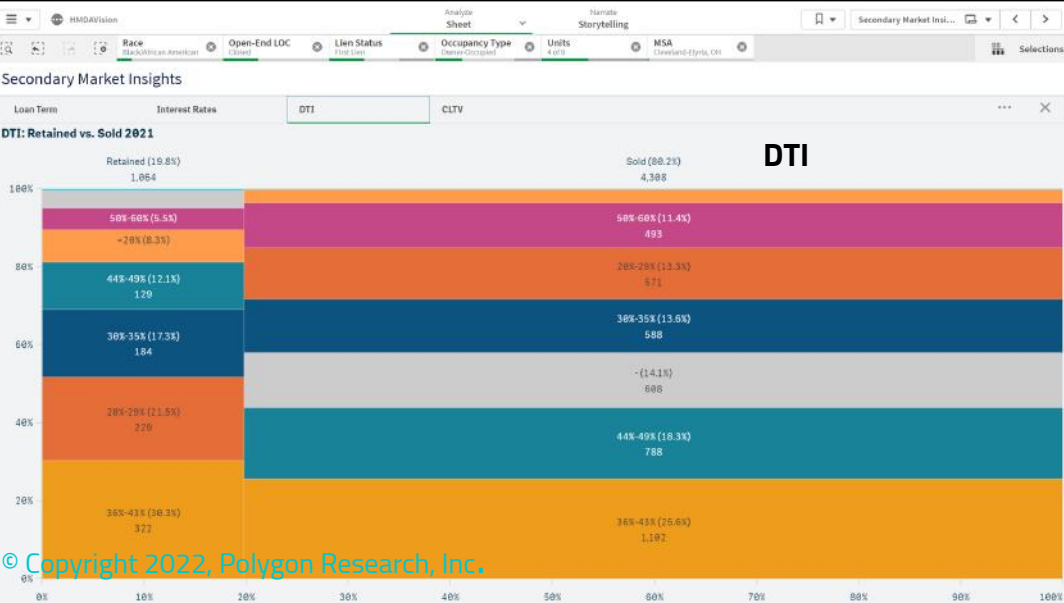
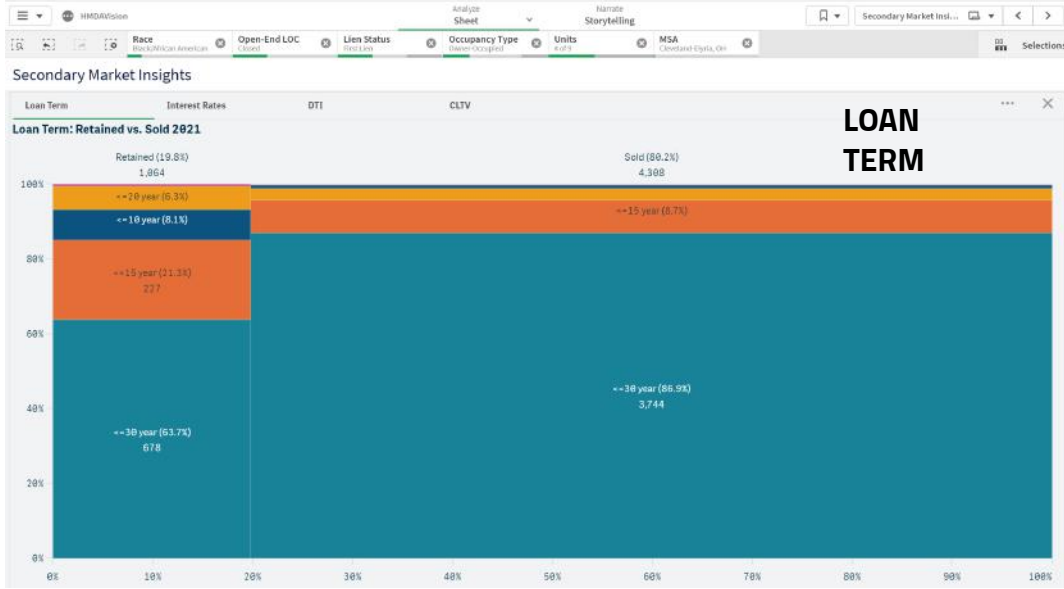
**DTI**



**CLTV**

# Cleveland-Elyria, OH MSA – MARKET LIQUIDITY

## BLACK BORROWERS – MARKET



# SUMMARY

**Performing SPCP Determining Need analysis is the very first step in SPCP implementation. Much of the design of SPCP would be tied into the data insights obtained during this initial step.**

The SPCP Determining Need analysis has to be thoughtful and rigorous. This can be achieved by working with the available HMDA data in its entirety, without limitation, so that decision makers can explore every aspect of the local lending dynamics, confronting cognitive biases and avoiding data fallacies. In addition, fluency with the U.S. census data (e.g. American Community Survey) to describe the changing demographics and homeownership trends is essential in putting the mortgage lending data into context when performing SPCP Determining Need analysis.

In Polygon Research's suite of apps there are multiple Key Performance Indicators (KPIs) and analytics to measure and evaluate a variety of marketing, underwriting, lending, product, and liquidity patterns, that describe and diagnose:

- Borrower Needs/Choice
- Lender Behavior/Choice
- Investor Appetite

We encourage lenders, regulators, non-profits, and consumer advocates to use the available powerful analytics in order to spend less time finding, cleaning, and organizing data, and more time thinking, identifying the patterns, and finding sustainable solutions.





# TAKE ACTION

## Establish SPCP Implementation Framework

ASSEMBLE MULTI-DISCIPLINARY TEAM AND ASK QUESTIONS

DATA EXPLORATION:

- **HMDA LAR**
- **CENSUS**
- INTERNAL

ANALYZE DATA AND INTERPRET RESULTS



### DISCOVERY

- Determining Need
- Market Insight / Strategy
- Documenting Analysis



### SPCP PLANNING

- Concept
- Written Plan
- Product Definition



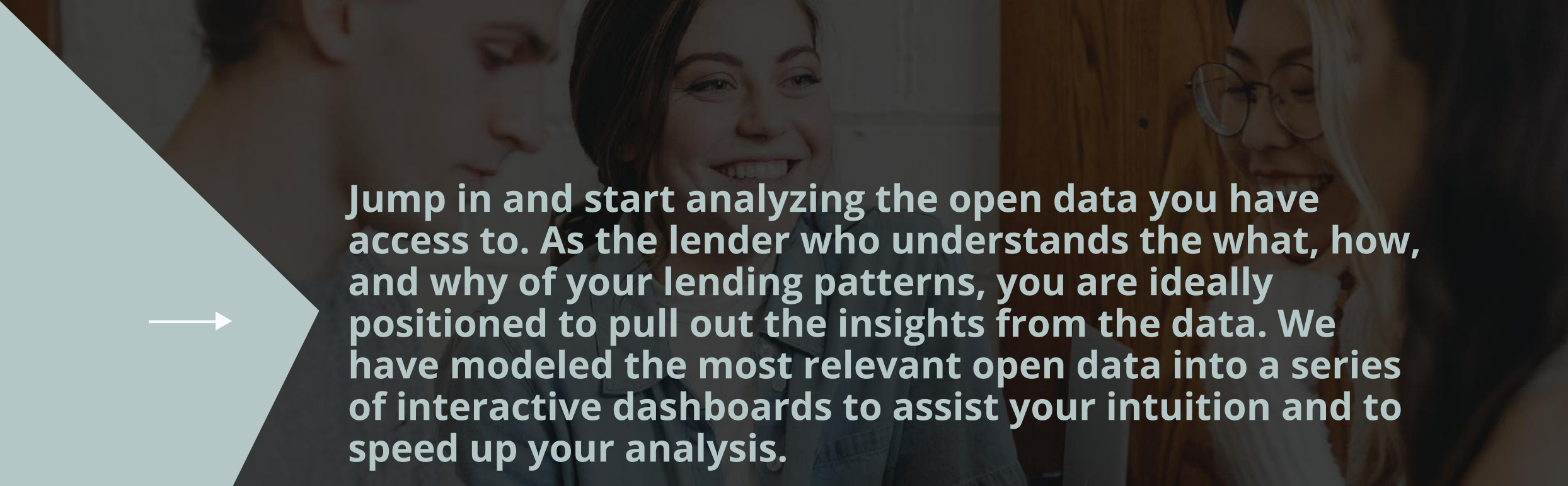
### POST-LAUNCH MANAGEMENT

- KPI Framework to measure and document outcomes
- Growth-Maturity
- End date



### SPCP INTRODUCTION

- SPCP Development
- Launch
- Training



**Jump in and start analyzing the open data you have access to. As the lender who understands the what, how, and why of your lending patterns, you are ideally positioned to pull out the insights from the data. We have modeled the most relevant open data into a series of interactive dashboards to assist your intuition and to speed up your analysis.**

**IF YOU'D LIKE HELP WITH YOUR SPCP  
DETERMINING NEEDS ANALYSIS:**

Polygon Research will perform custom analysis and will partner with your experts on every step of SPCP analysis and help you synthesize, document, and communicate the results.



## **AFFORDABLE LENDING ALTERNATIVES**

Fannie Mae HomeReady  
Freddie Mac HomePossible  
FHA Single-family Purchase Loan  
FHA 203k Rehabilitation Loan  
VA Home Purchase Loan Program  
USDA Single-family  
Other



# SPCP Analysis

THE BIG PICTURE

Performing SPCP analysis is not a guarantee that you will determine need for SPCP in your market. But there is value in the process as you will be able to evaluate and rethink how you are serving the credit needs of your communities and whether you are offering the full breadth of affordable lending products to facilitate homeownership growth.

## CASE STUDY: SPCP DETERMINING NEED



FOR MORE INFORMATION:

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# SPCP Determining Need Analysis