



UNDP



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# The Business of Being Formal

Advancing Financial Inclusion  
for Colombian Microbusinesses



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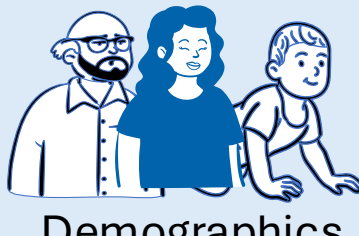
## Project Overview

**5.2 million** microbusinesses  
**99%** have fewer than 10 people  
**55%** are poor or vulnerable  
**87%** operate entirely informally

- 1) Understand regional trends and the **underlying causes of microbusiness informality** and financial exclusion
- 2) Develop **quantifiable indices** and policy recommendations that can help boost financial inclusion for poor and vulnerable microbusinesses



**GEIH** (Gran Encuesta Integrada de Hogares)



Demographics



Household Labor & Connectivity

General Household Population Survey



**EMICRON**

(Microbusiness Survey)



Real Estate



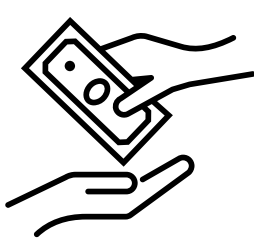
Employees



Finances

Sub-module Focused on Micro-Businesses

## Microbusiness Landscape



Businesses Applying for Loans

**18%**

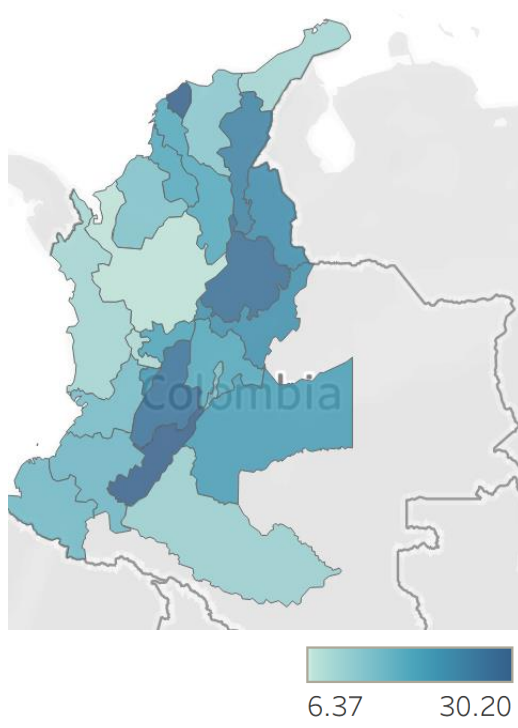
applied for a loan in the last year

**43%**

did not apply due to fear of debt

**94%**

of loan applications are approved



Businesses Saving Money

**19%**

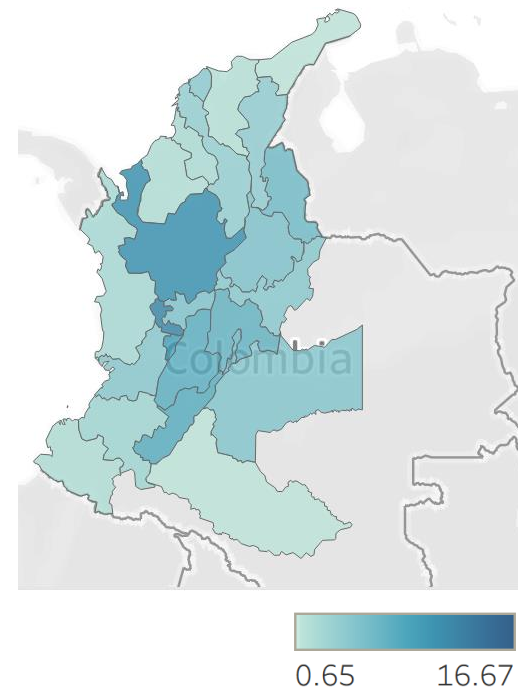
saved money in the last year

**24%**

of savers do so in financial institutions

**67%**

of savers do so at home

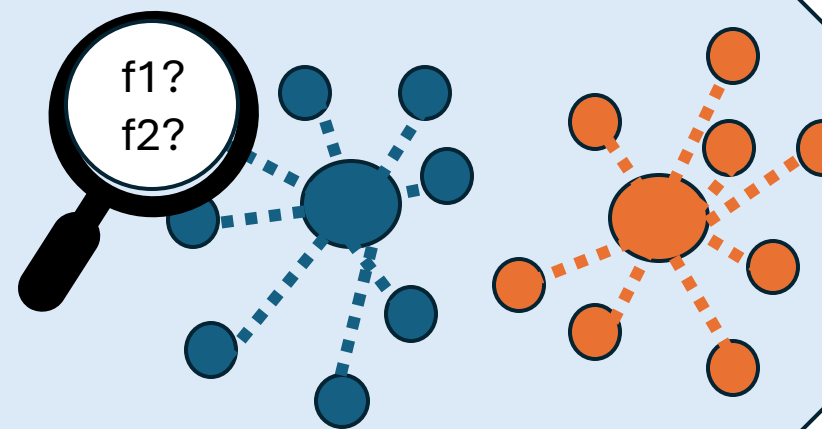


## Methodology

**Clustering**

KMeans Clustering

Identify Differentiating Features



**Modeling**

Structural Equation Modeling (SEM) to understand correlation between different latent structures

Assessment: Comparative Fit Index (CFI)

Random Forest (RF) to identify what features can be predictive of productive loan

Assessment: Out-of-Bag (OOB) Error Rate

Multiple Correspondence Analysis to Construct Latent Structure (e.g., Digital Maturity)

**MCA**

## Results

### 4 Indices

- Registered with the Chamber of Commerce?  
- Has a single tax registry?  
- Paid Occupational Risk Insurance?  
- Paid compensation fund or SENA/ICBF (social and labor welfare)?  
- Paid for health or pension in last month?

- Saves money in a financial institution?  
- Accepts online payments?  
- Accepts credit cards as payment?  
- Applied for a credit or loan in the last year?

- Has an email?  
- Uses a cellphone?  
- Uses a laptop or tablet?  
- Has internet service?

- Has a trade name?  
- Has workers who receive payments?  
- Has a website?  
- Does accounting / daily bookkeeping?

FORMALITY



FINANCIAL FORMALITY



DIGITAL READINESS



BUSINESS SOPHISTICATION



SEM for index interrelationship

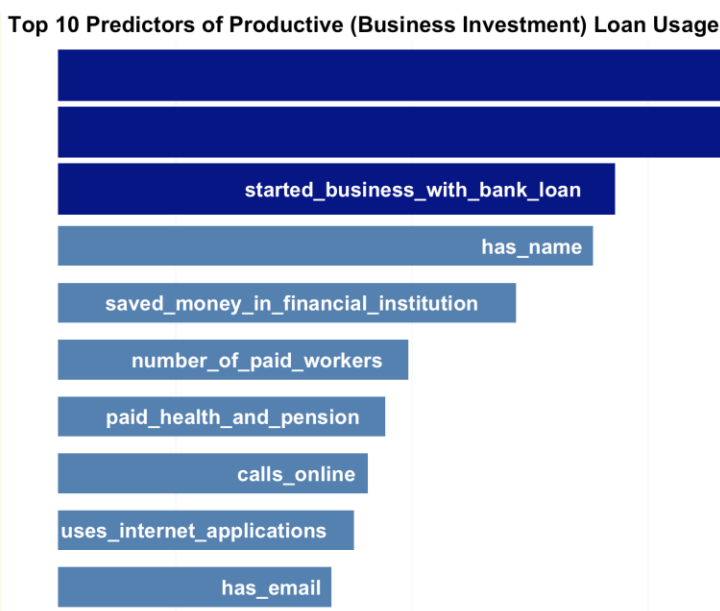
Index 1	Index 2	Std Estimate
Formality	Business Sophistication	0.906
Digital Readiness	Business Sophistication	0.721
Financial Formality	Digital Readiness	0.646
Financial Formality	Business Sophistication	0.379

0.952

Scaled Comparative Fit Index

RF for predicting loan utilization

23.73% Out-of-Bag Error Rate



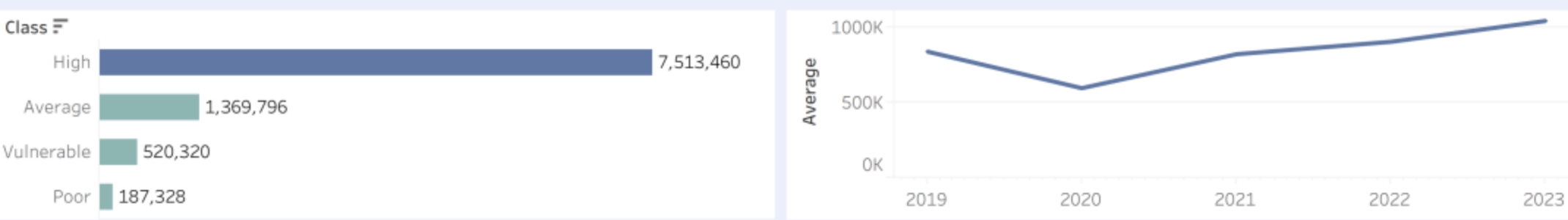
## Dashboard

### Colombia Microbusiness Credit Scoring Index

Select the feature you'd like to assess and apply filters as needed

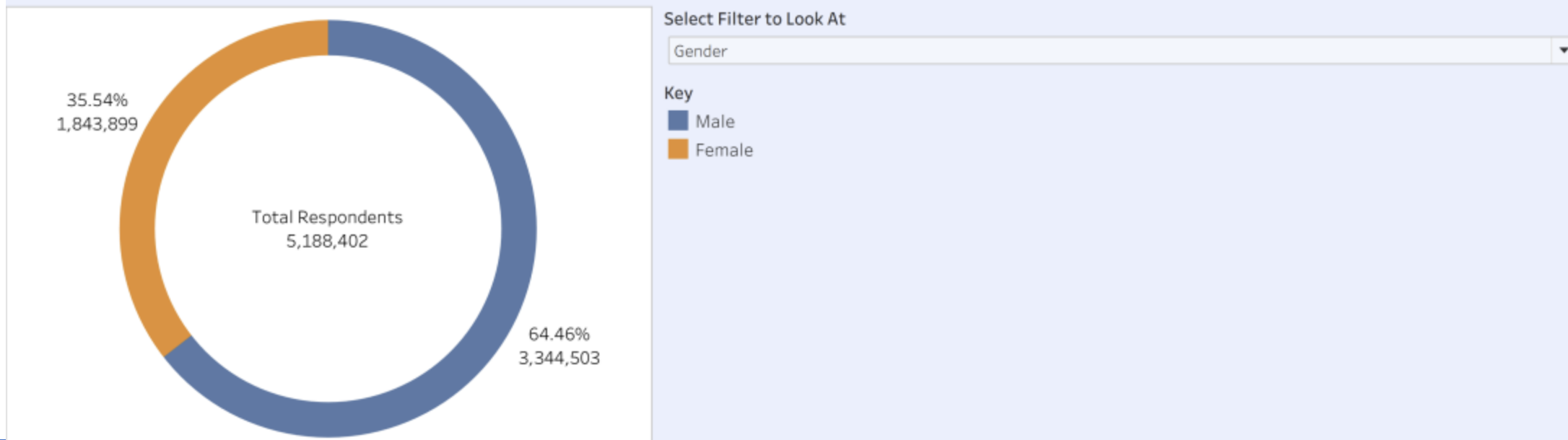
Select Feature: Net Profit, Age: 2, Business applied for credit or loan last year? (Multiple values), Business has website? (Multiple values), Survey Year: 2023, Gender: (Multiple values), Did business get requested credit or loan? (Multiple values), Business has email? (Multiple values), Education Level: (Multiple values), Business has single tax registry (RUT)? (Multiple values), Business has name? (Multiple values), Why not applied for credit or loan? (Multiple values), Got / renewed chamber of commerce registration this year? (Multiple values), Business has internet service? (Multiple values), What did business use loan for? (Multiple values), Business is registered with chamber of commerce? (Multiple values), Business uses cell phone? (Multiple values), Who did business apply for the loan from? (Multiple values), Did business save money in previous year? (Multiple values), Urban or Rural: (Multiple values)

Average 1,041,810 Total Respondents 5,188,402



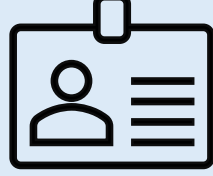
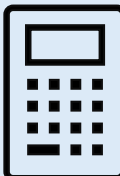
Formality 0.51 / 5 Financial Formality 0.50 / 4 Digital Readiness 1.32 / 4 Business Sophistication 1.14 / 4

Optional: Use the chart below to explore the different filters and more



## Policy Recommendations

Promote Formality via Business Sophistication (to lower barriers to formality)



Encourage Digital Transformation (to gain access to formal financial services)



Boost Loan Uptake and Number of Savings Accounts (to help close the gap in formality)



Survey Business Progress, Not Only Status (to move the analysis from correlation to causation)



Adoption in Other Countries (to build similar models worldwide)

