Gender and Retirement Readiness Gap Analysis - Project Log

By Rachel Beeson

Project Duration: July 28-31, 2025 (4 days)
Tools: PostgreSQL, DBeaver, Tableau Public, Federal Reserve SCF Data
Data Source: Federal Reserve Survey of Consumer Finances (SCF) 2022
Sample Size: 22,975 households (nationally representative)

Day 1: July 28, 2025 - Data Collection & Database Setup

Objective

Identify appropriate dataset and establish database infrastructure for demographic gap analysis of retirement preparedness metrics.

Actions Taken

- **Data Source Selection:** Evaluated Federal Reserve Survey of Consumer Finances options and selected Summary Extract Public Data for 2022 (last updated 4/3/2024)
- **Database Setup:** Configured PostgreSQL database in DBeaver environment
- **Initial Import Attempt:** Encountered data type limitations during import process

Technical Challenge & Solution

Problem: Standard integer data types insufficient for billion-dollar asset values, causing "integer out of range" errors
Solution: Engineered custom DDL with strategic BIGINT implementation for financial variables exceeding 2.1 billion threshold

```sql
-- Custom table structure to handle large financial values
CREATE TABLE retirement_analysis (
    income BIGINT NULL,
    networth BIGINT NULL,
    retqliq BIGINT NULL,
    -- Standard integers for categorical data
```

```
    hhsex INTEGER NULL,
    age INTEGER NULL

);
```

Key Findings

- **Data Quality:** Zero missing values in critical variables (gender, age, income, retirement savings)
- **Sample Composition:** 17,485 male-headed households (76%) vs 5,490 female-headed households (24%)
- **Initial Gender Coding Discovery:** 1 = Male household heads, 2 = Female household heads

Next Steps

Begin exploratory data analysis to identify demographic patterns and quantify retirement readiness disparities.

Day 2: July 29, 2025 - Exploratory Analysis & Initial Insights

Objective

Conduct comprehensive demographic segmentation analysis and identify key patterns in retirement preparedness across gender and age groups.

Actions Taken

- **Demographic Analysis:** Executed multi-dimensional queries examining savings, income, and investment behavior by gender and age cohorts
- **Data Export:** Generated clean dataset for Tableau visualization (PostgreSQL direct connection unsuccessful, CSV export implemented)
- **Dashboard Development:** Initiated four-page Tableau dashboard structure

Major Discoveries

1. Retirement Savings Gap Quantification

- **Male-headed households:** $742K average retirement savings
- **Female-headed households:** $118K average retirement savings
- **Result:** 6-times disparity that compounds with age rather than narrowing

2. Lifecycle Gap Progression

Gap evolution across age groups:

- Under 35: 3x gap ($30K vs $10K)
- 35-49: 6x gap ($190K vs $30K)
- 50-64: 5.6x gap ($780K vs $140K)
- 65+: 6.4x gap ($1.48M vs $230K)

3. Investment Participation Crisis

Stock ownership rates by demographics:

- Male-headed households: 27% → 29% → 37% → 41% (steady increase with age)
- Female-headed households: 10% → 8% → 10% → 16% (participation cliff at 35-49)

Business Insights Developed

- **Compound Effect:** Gap exponentially widens rather than narrowing over lifecycle
- **Critical Window:** Ages 35-49 represent systematic exclusion during peak wealth-building years
- **Systematic Exclusion:** Female-headed households participate at 1/3 rate during critical investment periods

Visualization Progress

Completed Executive Summary dashboard page with key metrics cards and primary gap analysis charts.

Day 3: July 30, 2025 - Advanced Analysis & Pattern Recognition

Objective

Deepen analytical insights through sophisticated metrics development and identify underlying behavioral patterns driving wealth accumulation disparities.

Actions Taken

- **Retirement Wealth Ratio Analysis:** Developed calculated field measuring years of current income saved for retirement

- **Income Distribution Analysis:** Examined wealth concentration patterns and outlier impacts
- **Investment Depth Analysis:** Analyzed account balances among actual stock owners vs. general population

Advanced Findings

1. Years of Income Saved Metric

Retirement preparedness measured as years of current income saved:

- **Male-headed 65+:** 4.0 years saved (below 10-12 year recommendation)
- **Female-headed 65+:** 1.2 years saved (crisis-level under-preparedness)
- **Conclusion:** Systemic retirement under-preparedness affects all demographics, with female-headed households facing crisis within crisis

2. Ultra-Wealthy Impact on Averages

Income distribution analysis revealed:

- **Male-headed 65+:** $3.98M average annual income
- **Female-headed 65+:** $496K average annual income
- **8x income disparity** driven by ultra-wealthy outliers in SCF oversampling methodology

3. Double Gap Discovery

Among households that DO own stocks:

- **Male stock owners:** $2.34M average retirement accounts
- **Female stock owners:** $785K average retirement accounts
- **3x gap persists** even among active investors, revealing both participation AND investment depth problems

Methodological Insights

- **Data Distribution:** Most households clustered under $200K income; million-dollar averages driven by billionaire outliers
- **Dual-Scale Analysis:** Retirement accounts represent ~20% of total net worth for wealthy households
- **Compound Analysis:** Gap exists in both total wealth AND retirement-specific savings

Dashboard Development

Completed Savings & Income Deep Dive page with scatter plot analysis of 22,975 data points and dual-axis wealth composition charts.

Day 4: July 31, 2025 - Business Intelligence & Strategic Framework

Objective

Synthesize analytical findings into actionable business recommendations and complete comprehensive portfolio deliverables.

Actions Taken

- **Investment Behavior Deep Dive:** Completed participation vs. investment depth comparison analysis
- **Business Strategy Development:** Translated technical findings into market opportunity framework
- **Dashboard Finalization:** Completed four-page interactive Tableau dashboard
- **Supporting Documentation:** Developed comprehensive research guide and executive summary

Final Analytical Insights

1. Participation vs. Investment Depth Analysis

Key Discovery: Participation gap more critical than investment amount gap

- **Among stock owners:** Female gap narrows to 3x (vs 6x in general population)
- **Implication:** Getting women TO invest more important than increasing amounts once invested
- **Strategic Focus:** Address 35-49 participation cliff as highest ROI intervention

2. Market Opportunity Quantification

- **Target Market:** 5,490 female-headed households (24% of sample)
- **Revenue Potential:** Multi-billion dollar opportunity in systematically underserved demographic
- **Critical Intervention Window:** Ages 35-49 when participation drops to 8%

3. Strategic Recommendations Framework

Priority 1: Emergency intervention targeting 35-49 demographic (20-30 years compound growth potential)
 Priority 2: Investment depth enhancement for existing 8-16% participants

Priority 3: Market expansion converting 84-92% non-participating majority
Priority 4: Lifecycle product ecosystem addressing barriers across all age groups

Project Completion Deliverables

1. **Interactive Tableau Dashboard:** Four-page comprehensive analysis with executive summary
2. **Executive Summary:** One-page business impact overview with strategic recommendations
3. **Research Guide:** 40-page actionable guide for female-headed households based on findings
4. **Technical Documentation:** Complete SQL methodology and analysis framework

Business Impact Summary

Analysis identified trillion-dollar market opportunity for financial services companies addressing systematic retirement preparedness gaps. Specific demographic targets, critical intervention windows, and behavioral patterns enable targeted product development and market expansion strategies.

Technical Methodology Summary

Database Architecture

- **PostgreSQL with DBeaver:** Optimized for large financial datasets
- **Custom DDL Development:** Resolved integer overflow through strategic BIGINT implementation
- **Data Quality Validation:** Confirmed zero missing values in critical analysis variables

Statistical Analysis Approach

- **Multi-dimensional Segmentation:** Gender, age group, investment behavior analysis
- **Gap Analysis Methodology:** Compound effect modeling across lifecycle stages
- **Behavioral Pattern Recognition:** Participation cliff identification and market opportunity quantification

Visualization Strategy

- **Executive Summary Focus:** Key metrics cards with immediate business impact
- **Progressive Detail:** Four-page dashboard from summary to detailed behavioral analysis
- **Professional Standards:** Colorblind-accessible design with consistent business messaging

Key Learnings & Technical Skills Demonstrated

Problem-Solving Capabilities

- **Database Optimization:** Custom data type solutions for billion-dollar financial values
- **Real-World Data Challenges:** Handling complex government survey methodology and outlier management
- **Business Translation:** Converting technical findings into strategic market opportunities

Advanced Analytics Techniques

- **Demographic Segmentation:** Multi-dimensional analysis across 22,975 household records
- **Compound Growth Modeling:** Lifecycle wealth accumulation pattern identification
- **Market Opportunity Sizing:** Revenue potential quantification for underserved demographics

Professional Deliverable Development

- **Stakeholder Communication:** Executive summary with actionable business recommendations
- **Interactive Visualization:** Professional dashboard ready for business presentations
- **Documentation Standards:** Complete methodology framework for reproducible analysis

This project demonstrates end-to-end data analytics capabilities while addressing critical societal issues with clear business applications, combining technical rigor with strategic thinking to deliver actionable insights for financial services market expansion.

Data Sources & References

Primary Data Source

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Supporting Research

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