

# BAHAREH ZAHIRODINI

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## Education

### Bentley University, Waltham, MA

*Master of Science in Business Analytics, Data Science* | GPA: 3.94

May 2024

*Selected coursework: Machine Learning, Data Mining, Time Series Analysis, Statistical Modeling, Quantitative Analysis, Design of Experiments*

### Shahid Beheshti University, Tehran, Iran

*Bachelor of Science in Accounting* | GPA: 3.60

June 2013

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## Research Experience

### Research Assistant — Mathematical Sciences and Finance Department

*Bentley University, Waltham, MA*

May 2023 – Present

- Conducted Bayesian network analysis on a survey dataset with over 6,000 participants, exploring consumer preferences and corporate social responsibility (CSR) trends across demographic and socioeconomic groups.
  - Applied e-value on cosine similarity to identify patterns of agreement and disagreement within societal subgroups, detecting echo chamber effects.
  - Developed the Partial Credit Model (Rasch model family) to estimate respondents' attitudes, question agreeability, and detect psychological thresholds of responses within groups in survey data.
  - Performed clustering and outlier detection on sentiment score curves derived from student essays, contributing to research on community-based learning experiences.
  - Independently designed Python scripts to automate investment research and time series analysis on commodity indices, enhancing efficiency and reproducibility.
  - Created interactive dashboards using Tableau and R Shiny to visualize research findings and communicate actionable insights to stakeholders.
  - Delivered tutorials on data collection, statistical analysis, and financial modeling using tools like Bloomberg, FactSet, and Federal Reserve databases.
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## Publications

- **Bayesian Analysis of America's Business Attitudes** — Accepted, *Chance* (ASA)  
Investigated business sentiment patterns and the influence of socioeconomic status and political affiliations on decision-making.
- **Are all bets off when it comes to agreement gambles?** — Under review, *Significance* (RSS)  
Employed probabilistic models to analyze decision-making under uncertainty.
- **Does age correlate with one's ungauged opinion on modern business practices? A scrutiny through Rasch models** — Under review, *Significance* (RSS)  
Application of Rasch model to uncover generational divides in business expectations.
- **Shape of emotions from a community-based learning experience at the US-Mexico border: functional alignment, summaries, and structural breaks** — Under review, *Chance* (ASA)  
Applied sentiment analysis and clustering to essays, uncovering emotional patterns and shifts.

## Innovative Visualizations

- "The Stuff We Cannot Sweep Under a Torn Carpet" — *Nightingale*, Data Visualization Society
- "Pyramids of Priorities and a Poisoned Omen" — *Nightingale*, Data Visualization Society

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## Technical Skills

- **Programming:** Python, R, SQL, Excel (Macros, VBA)
- **Data Visualization:** Tableau, Power BI, R Shiny
- **Analytics:** Bayesian Networks, Social Network Analysis, Time Series Analysis, Regression Analysis, NLP, Sentiment Analysis, Data Mining, Outlier Detection
- **Tools:** Alteryx, Snowflake, Microsoft Office

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## Academic Projects

- **International Students' Academic Success in U.S. Colleges**  
Applied Principal Component Analysis (PCA) and decision trees to predict graduation rates and identify dropout risk factors from survey data.
- **SAT Scores and Racial Composition Analysis**  
Conducted regression analysis on Massachusetts school data to examine demographic influences on SAT performance.
- **Exploring Consumer Preferences (Bentley-Gallup Force for Good Survey)**  
Performed hypothesis testing on randomized survey responses to assess the impact of question framing.
- **2nd Place Winner, Annual NABA x Bentley Business Bowl**  
Collaborated on a case study addressing Responsible AI and corporate governance in credit lending, focusing on algorithmic transparency.