

Overview of DCI

- The cycle of poverty becomes inevitable when change is not being brought.
- Dream Center Indianapolis helps individuals break poverty cycles.
- Its programs support self-sufficiency, especially for single mothers.

Motivation

- DCI data is scattered and hard to analyze.
- This project organizes and visualizes data to evaluate program effectiveness and impact.

Methodologies

We organized DCI's participant data and built a website to centralize and visualize the information. Graphs and data analysis were used to identify trends and correlations in program outcomes.

- Supabase** — backend database for participant data
- GitHub** — version control and collaboration
- Custom Keyword Lexicon** — sentiment scoring for weekly case notes
- Python** — data analysis and visualization
- React / Streamlit** — interactive web dashboard

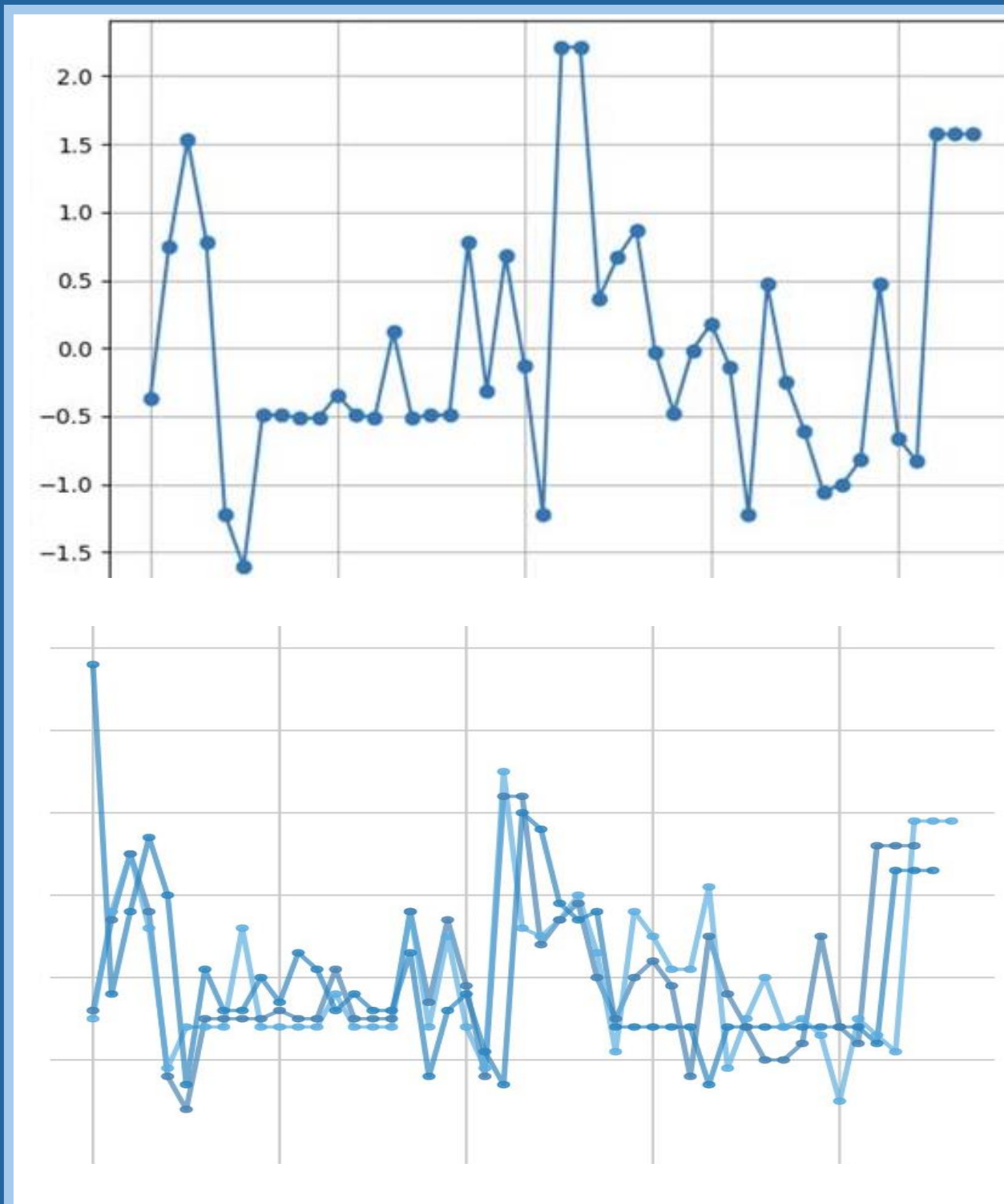
Impact

- Improved data accessibility
- Simplified insights for staff
- Combined qualitative + quantitative data
- Enabled better decision-making
- Supports scaling programs to help more clients

Sentiment Analysis

- Analyzes weekly notes to track positive/negative trends.
- Helps quickly identify patterns in client progress.
- Helps make weekly check-ins with mothers more personalized and efficient.

All notes describing one of the members week **To** Easy to read graph for spotting trends & patterns.



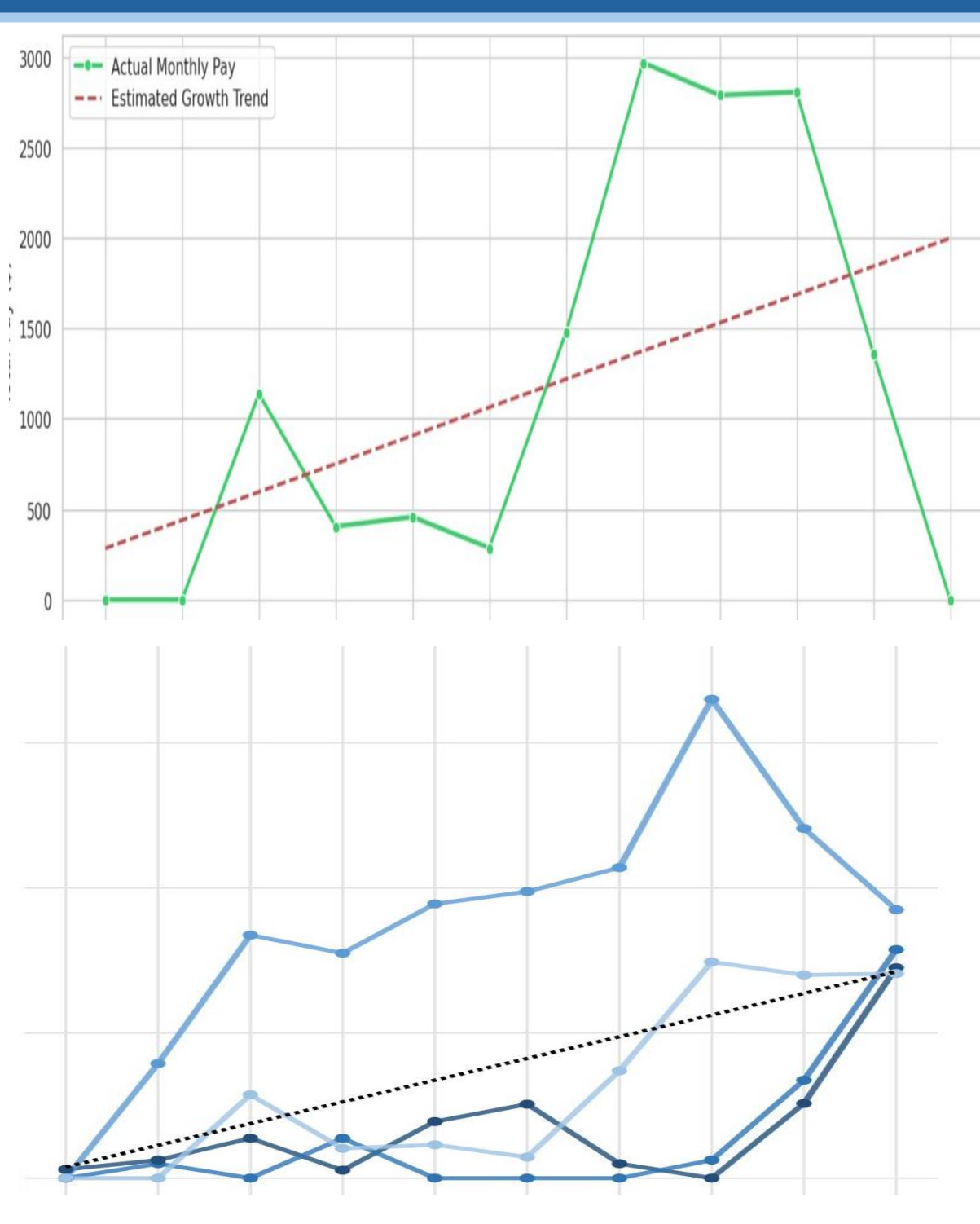
X = Weeks | Y = Sentiment Score

Fig 1: Weekly sentiment trends show changes in client progress

Pay-stub Analysis

- Uses monthly income data to track financial growth.
- Shows DCI's impact on client earnings over time
- The highest climb was of a **161% increase** in income.

Pay-stub sent in forms (A lot, unorganized) **To** A graph that helps show the common positive slope

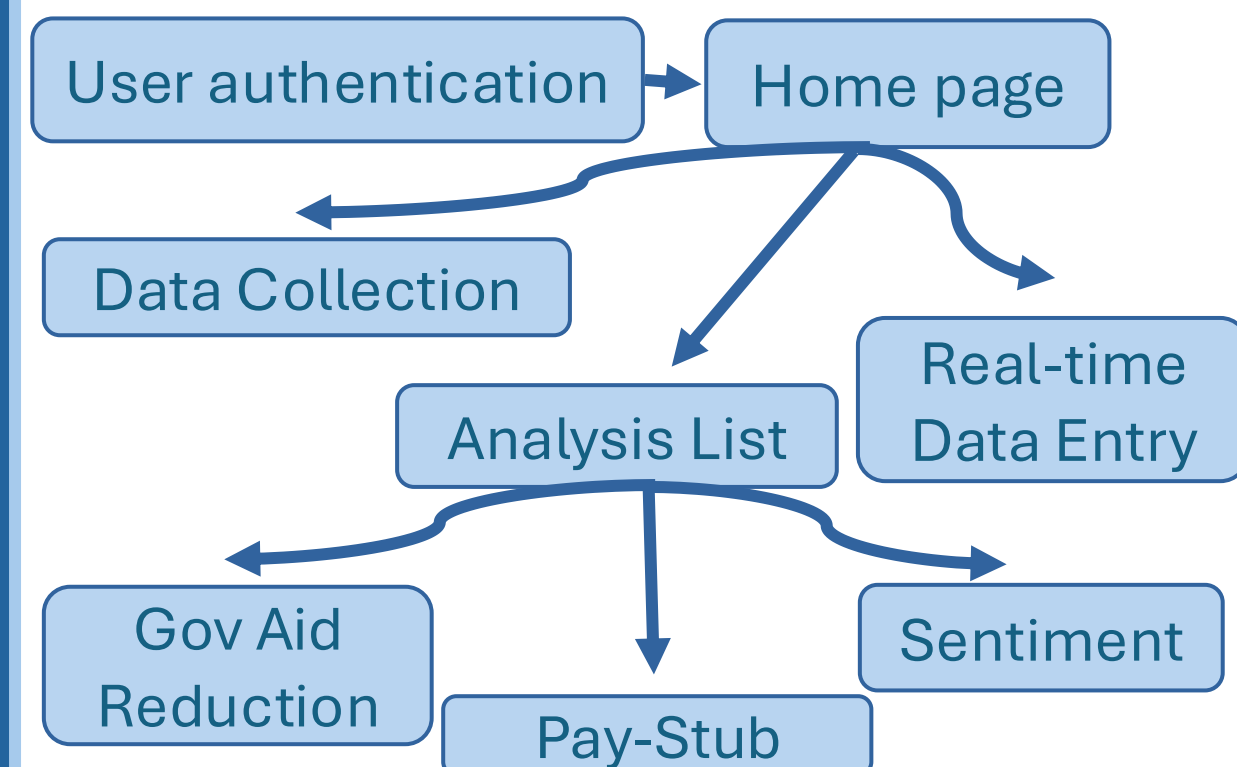


X = Months | Y = Pay

Fig 2: Weekly pay-stub trends show changes in client progress

Webpage User Flow

- Multi-factor authentication ensures secure access
- Data is encrypted and safely stored
- Role-based access controls user permissions



Neighbourhood Influence

- Clients of the cohort come from areas of high crime, which influence their progress throughout the program.
- The illustration shows that despite the adversities the mothers face, DCI's program helps them go from "At-Risk" to "Self-Sufficient".

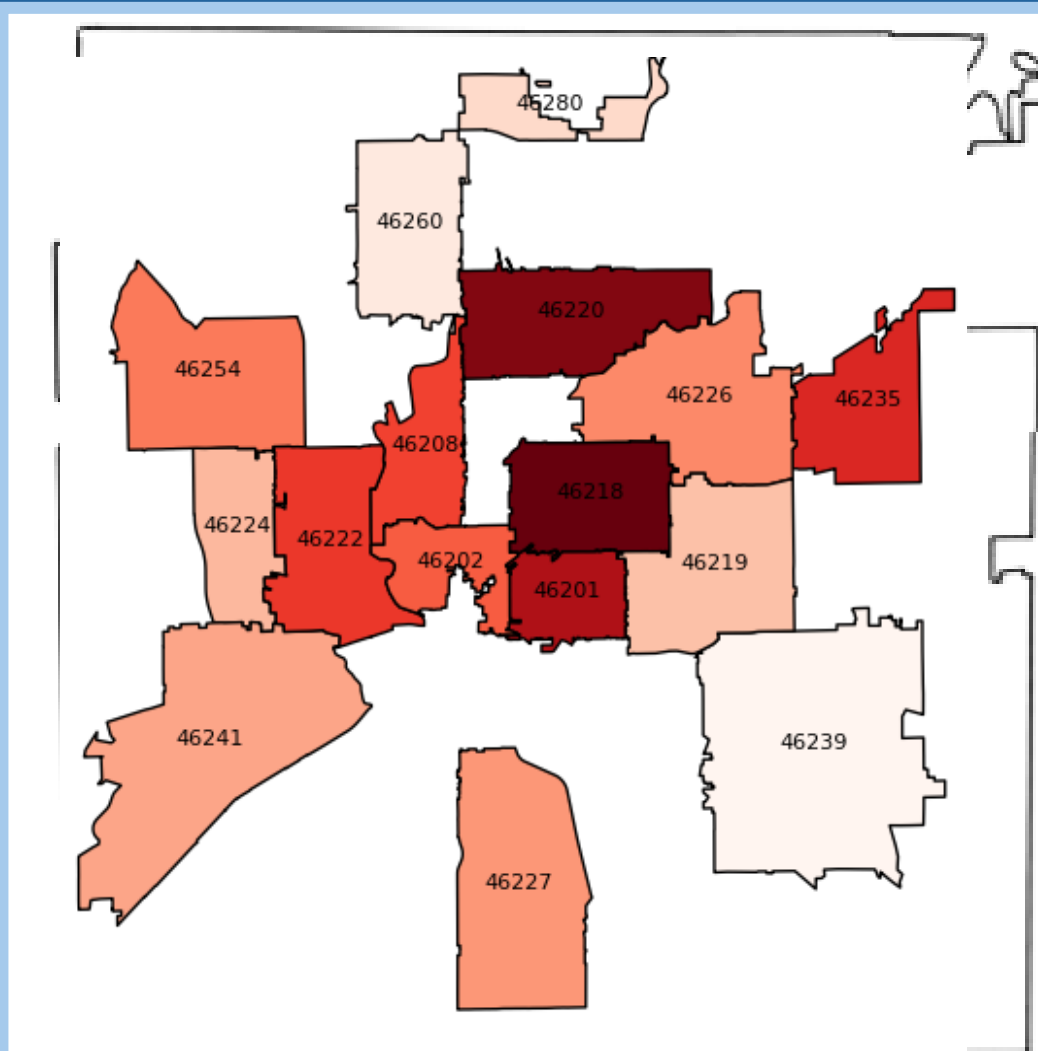
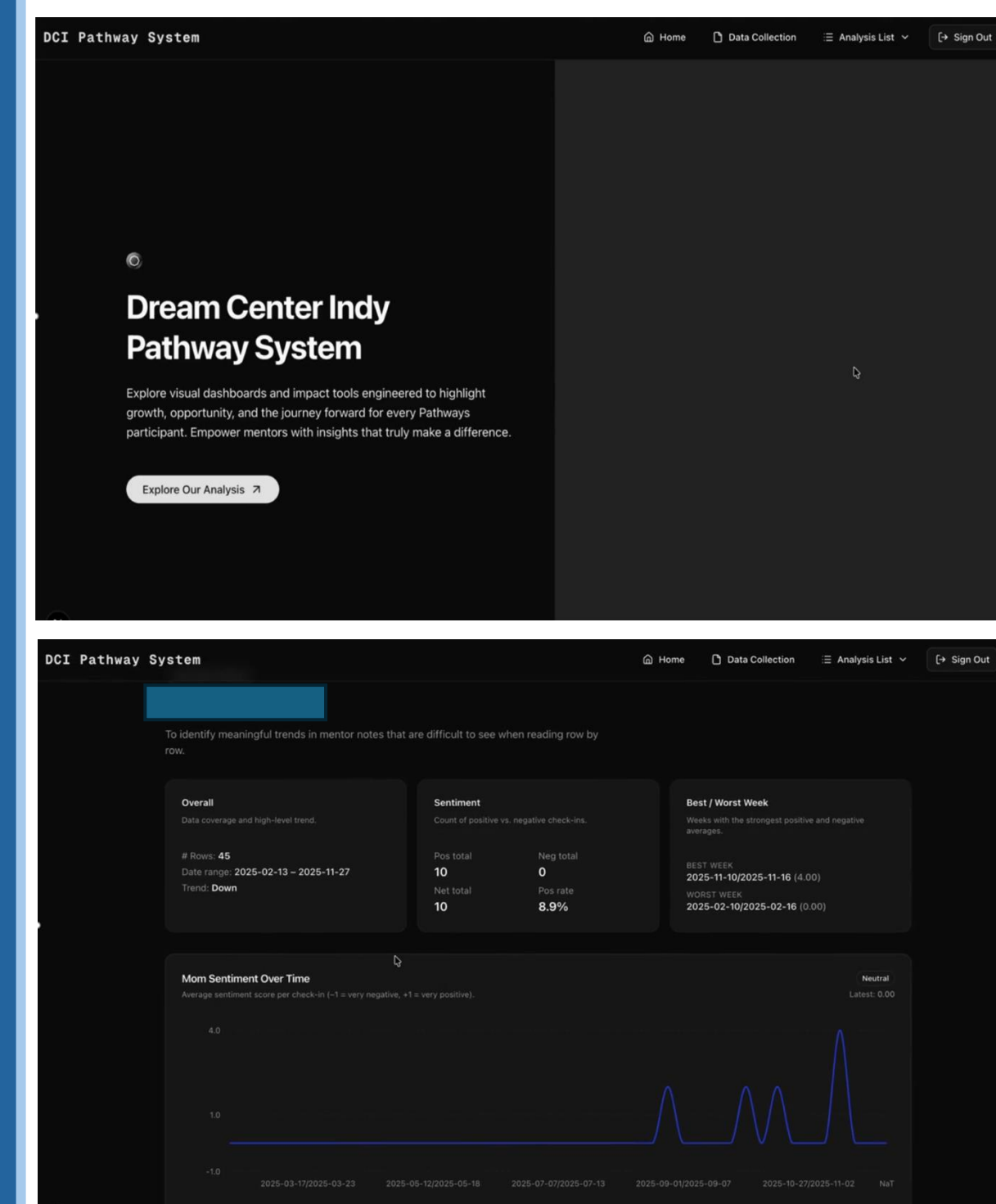


Fig 3 : Darker areas show higher crime rate across zip codes.

Website Preview



Evaluation

- Mothers in Cohort 2 showed measurable improvements in both sentiment and income over time.

Future Scope

- Integrate more DCI data
- Build predictive models
- Add economic indicators (jobs, housing)
- Improve dashboard features
- Enable real time data entry
- Transfer webpage to private host

Conclusion

- Gained insights into domain knowledge, formulation science, and patent structures.
- Learned the importance of understanding SME requirements to meet stakeholder needs.
- Developed skills in strategic planning, implementation, and tool selection.
- Researched and evaluated tools for effective patent analysis.

Acknowledgements

Thank you to our mentors: Michael Woods, Cindy Tarbutton, Sara Scott, and Gabe Espinoza

Contributing authors:
Juan Garcia, Sang Zuala, Krish Kowli, Tharun Kumar Senthilkumar, Imran Chaudhary