Satisfeed Dashboard Final Report

Features – Implemented and Remaining

Implemented

- New dashboard tab
- Custom display with tabs
- Navigable map
- Legend items for markers
    - Single Marker
    - Marker Cluster
    - Selected Marker
    - Impact Zone
- Food Distribution
    - Food distribution heatmap displayed on map
    - Dynamically produces data based on selection of markers or Counties / ZIPs
- Counties and ZIP Codes
    - Filters map data by country and zip code
    - Searchable and clear buttons
- Schools
    - Georgia school markers to the map so users can see every school location.
    - Clustering so nearby schools group together when zoomed out.
    - Clickable school markers.
        - 3-mile impact radius when a school is selected.
        - School information displayed on data card
- Libraries
    - Library markers to the map so users can see every library location.
    - Clustering so nearby libraries group together when zoomed out.
    - Clickable library markers
        - 3-mile impact radius when a library is selected.
        - Library information displayed on data card

Remaining

- Multi-user implementation (User Specific Data)
    - Based on credentials show the satisfied dashboard vs - another food banks data dashboard
- Searchable schools / libraries (map markers) on map
- Save / highlight map markers

- Population per School (with date)
- Zip and County Population (with date)
- Using percentages of students with free and reduced lunch
    - Create a button that highlights schools that have a high ratio or include the number of students on free and reduced lunch.
    - Display the percentage/count of students receiving free / reduced lunch in the data card.
- Include Basic Public Health data per county / region / school
- Collect unemployment data from census / job bureau
    - Must track overtime and update regularly
    - Possibly trend against food pantry visits
- Implement data to be seen on timeline
    - Distribution data should include date added so users can filter the map and see growth in distribution geography

Known Issues

Missing Data from API on Libraries Map: At least 2 school locations in Gwinnett County were not found. New data should be pulled from the API.

During testing, it was discovered that a significant security issue persists, users can access several protected routes (such as /dashboard-insights and other pages built by previous teams) directly by typing the URL in the browser, **without logging in first**. In other words, route protection is not consistently enforced on the frontend or backend, which allows unauthenticated users to reach pages that were intended to require authentication.

Some ZIP codes that are linked to counties are not stored correctly. Meaning, when a user selects a ZIP code, there is a chance it does not display the selected ZIP on the map.

The reason for this issue is that ZIP codes are stored based on their most prominent county; however, ZIP codes sometimes overlap counties. Fixing this would require restructuring of how ZIP codes are stored or altering how the call is done upon selection by the user.

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satisfeed

"WORKING TO NOURISH GWINNETT"

Sam Keller Dylan Long Ewura Ama Awere

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Live Demo

Live Demo Link

Team Members and Client

Tim Turner – Founder and CEO of Satisfeed

VISION: Satisfying the needs of the hungry in and around Gwinnett County
MISSION: SATISFEED, feeding people and connecting communities

Sam Keller - Architecture/Program Lead, UI/UX Designer, Client Liaison
Dylan Long - Testing Lead, Project Manager
Ewura Ama Awere - Data Modeler, Documentation Lead

Abstract

As part of Dr. Anca Doloc-Mihu's Software Development II course, our team extended the functionality of the Satisfeed Dashboard--an interactive tool developed for the leadership of Satisfeed, a Gwinnett-based food bank nonprofit. Using existing Satisfeed guest data alongside school and library data from external sources, the team designed and implemented an enhanced dashboard that allows nonprofit leaders to visualize food distribution impact around schools and libraries, assisting them in the strategic planning of future initiatives to reach more children and families in need across Gwinnett and neighboring counties.

Software Testing

We used a mix of automated and manual testing to validate the dashboard-insights endpoint. Automated tests were used to verify core logic, map overlays, and end-to-end user flows, while manual exploratory and usability testing helped us catch UX issues and edge cases that are hard to encode in code-based tests.

Our main tools were:

- Vitest + React Testing Library for unit and component tests
- Playwright for end-to-end (E2E) and acceptance tests in the browser
- Manual exploratory testing across real browsers during development and at the CREATES demo

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Coverage

Our testing covered the core and most important user flows in the SatisfeedSchools dashboard. We focused on testing the map-based features because they represent the main functionality the client depends on.

What we covered with automated tests:

- Schools map
  - Schools appear as markers when the schools map loads.
  - Clicking a school opens the info panel/sidebar and shows the correct school details.
  - The "/dashboard-insights" page is reachable and renders correctly from the main app.
- Libraries map
  - Libraries are displayed as markers on the map (single points and clusters).
  - When a library is selected, the sidebar/stats area shows the correct location name and related data.
- County / ZIP selection
  - When a county or ZIP is selected, the map loads the corresponding boundary and moves (fits) to that area.
  - The selection boundary is drawn on the map so the user can clearly see the area being analyzed.
  - Statistics update based on the selected county/ZIP and the markers inside it.
- Legend and visualization
  - A legend is always visible on the insights map.
  - The legend shows shared items (Selected Area, Unique Households Served) and switches correctly between school-specific and library-specific entries.
  - Colors for markers and households are consistent and avoid confusing choices like bright yellow for distribution data.
- Map behavior and bounds
  - The map is constrained to the state of Georgia (users cannot pan way outside the intended area).
  - We tested clamping logic that keeps the map inside Georgia's bounds.
  - We verified that distribution overlays and residency markers use the expected colors and visual styles.
- Data and UI components
  - Filters for household distribution respect privacy radius and jitter settings.

  - The summary panel/data card component shows the correct counts and labels based on the current selection.
  - The searchable dropdown allows users to search for locations (e.g., schools) and select them from a list, which then updates the map.

What is not fully covered:

- Rare error states (e.g., Firestore or map API temporarily failing).
- Performance and load testing with very large datasets.
- Detailed automated testing for mobile layouts (we checked mobile behavior manually).

Overall, our coverage is strong around the features the client will use the most: viewing schools and libraries on the map, filtering by location, and understanding the legend and statistics.

Methods

We used a mix of unit tests, end-to-end (E2E) tests, and manual/usability testing.

1. Unit and component testing

We used a JavaScript testing framework with React Testing Library to test components and logic in isolation. In these tests we:

- Mocked the map library so we could verify that:
  - Sources and layers were added correctly.
  - Event handlers (click, hover) were registered on the right layers.
- Mocked the database (Firestore) so we could feed in known school/library data and confirm:
  - Markers and clusters were created from the data.
  - Selection callbacks passed the correct name and ID to the rest of the app.
- Tested React components such as:
  - Map overlays for schools, libraries, distribution, counties, and ZIPs.
  - The legend component for both school and library modes.
  - The data card/summary panel, ensuring it displays the right counts and labels.
  - The searchable dropdown component used to search and select locations.

These tests focus on logic and rendering: “given this input data and props, does the component render the right output and call the right callbacks?”

2. End-to-end (E2E) / acceptance testing

We used a browser-based test runner (Playwright) to simulate real user flows in the application:

- Navigating to the dashboard insights page.
- Switching between Schools and Libraries tabs.
- Clicking on school markers and checking that the sidebar shows the correct information.
- Clicking on library markers and verifying that the selected library’s name appears in the UI.
- Applying proximity filters and confirming that the visible results change accordingly.
- Filtering by county or ZIP, then verifying the map moves to the correct area and highlights the boundary.
- Ensuring the legend is visible and contains the correct labels.
- Confirming that markers and distribution visuals appear when data is available.

These tests verify that the full stack (UI + map + data) works together the way a real user would expect.

3. Manual exploratory and usability testing

In addition to automated tests, we:

- Manually explored the app in a real browser, trying different combinations of:
    - Counties, ZIPs, schools, and libraries.
    - Zoom levels and pan behaviors.
    - Filters and map modes.
- Demonstrated the app at the CREATES event and collected user feedback through a survey.
    - Watched how new users interacted with the dashboard.
    - Checked whether they could understand the legend, map interactions, and statistics without needing extra explanation.

This helped us catch small UX and labeling issues that automated tests do not easily detect.

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Results

Our testing produced the following results:

Automated test results

- The tests gave us confidence that:
    - Schools and libraries consistently show up as markers on the map.
    - Clicking a marker reliably updates the selected school/library and associated statistics.
    - County and ZIP filters correctly move and highlight the map area.
    - The legend appears in the correct place and shows the correct items for both schools and libraries.
    - The map remains constrained to Georgia and does not drift far outside the intended region.

Issues found and fixed through testing

- We discovered that the map library could cause errors in the test environment; we fixed this by mocking the map library in unit tests so that tests remain stable.
- We adjusted legend text and colors to make them clearer and avoid confusing visual choices.
- We verified that the selection information (name, ID, and counts) was being passed correctly from the map overlays to the sidebar/stats panel, and fixed cases where it did not update.
- We confirmed that the filters (proximity, county, ZIP) responded as expected and that household counts updated when the selection changed.
- We found a major bug that allows users to hit protected endpoints of the app.

Usability findings

- Test users were able to:
    - Understand the legend key and relate colors/shapes to data.
    - Select areas using counties, ZIP codes, and markers.
    - Connect what they saw on the map with the statistics and summaries shown on the side.
- Feedback from the CREATES demo helped validate that the dashboard is intuitive for first-time users and supports the client's goal of understanding where services are being provided.

Overall, the combination of automated tests and manual feedback gave us confidence that the core features of the dashboard-insights page are working correctly and are ready to be used by the client.

Documentation

Documents can be found here - https://github.com/GGC-SD/SatisfeedSchools/tree/main/docs-Fall2025

Installation

README.md on Github - https://github.com/GGC-SD/SatisfeedSchools/blob/main/README.md

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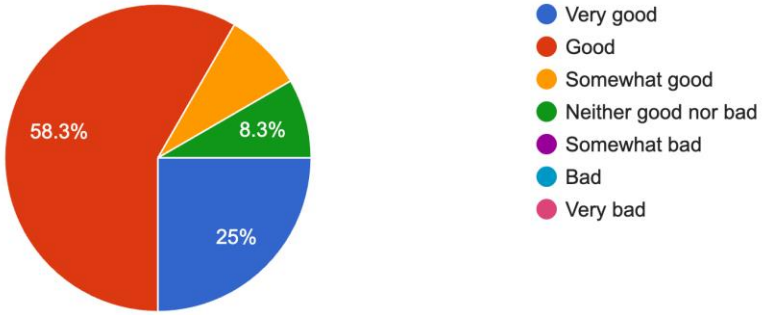
Usability Testing Results

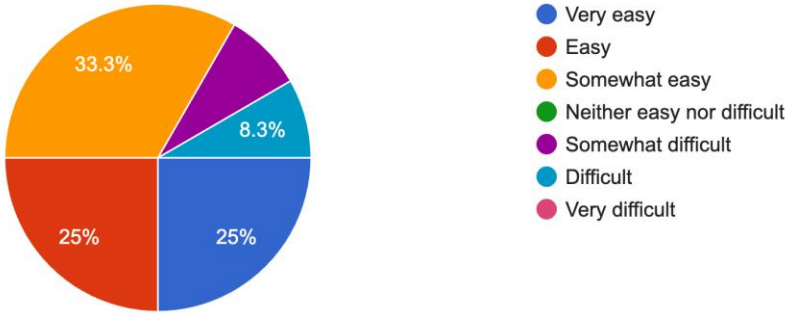
What are your initial thoughts about the appearance of the dashboard?

12 responses



Please rate your experience navigating the options on the dashboard

12 responses



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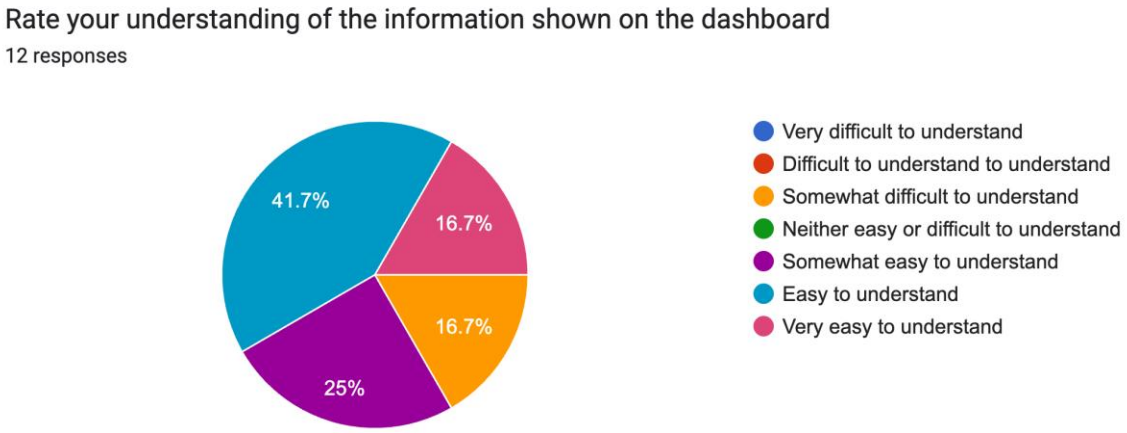

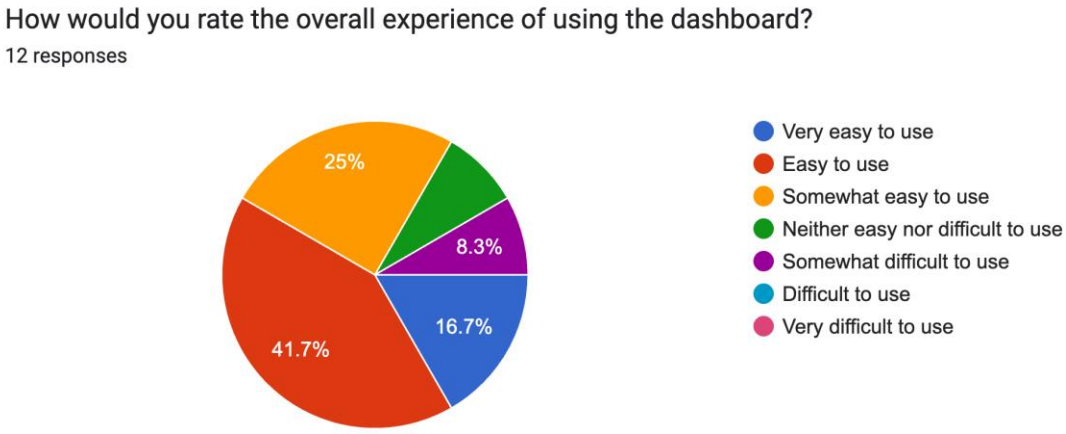

Usability Testing Summary

We conducted a usability test with **12 participants** to evaluate the dashboard's appearance, navigation, clarity of information, and overall user experience. Overall, the feedback showed that users were able to interact with the dashboard successfully, but there are several areas for improvement.

Key Findings

1. Dashboard Appearance

- Most users rated the appearance as Good (58.3%) or Very Good (25%).
- A few users suggested improving the color scheme and increasing the map size.

2. Navigation Ease

- 83.3% of users rated navigation as Very Easy, Easy, or Somewhat Easy.
- A small group had difficulty zooming or understanding how to use certain controls.

3. Understanding of Information

- Most users found the information **Easy** or **Somewhat Easy** to understand (about 66%).
- Some users felt the legend key did not help enough or wanted more explanation of elements.

4. Overall Experience

- The overall experience was rated mostly Easy or Somewhat Easy (over 80%).
- Only one user found the dashboard difficult to use.

Common Suggestions

- Add **toggles** to switch between schools and libraries.
- Improve or customize **colors**.
- Make the **map larger**.
- Improve the **legend key** for better clarity.
- Consider smoother **zooming controls**.

Conclusion

The usability testing showed that the dashboard is generally well-received and easy for users to navigate. However, improvements to color choices, map controls, and clarity in the legend would help make the experience even better. The feedback provides clear next steps for future iterations.

Software Usage License and Intellectual Property Terms

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Intellectual Property Contract

Date: November 13, 2025
Project: *Satisfeed* dashboard
Course: Software Development II – Georgia Gwinnett College

This Intellectual Property Contract is created solely for academic purposes as part of a course assignment. It is **NOT** a legally binding document, and all parties acknowledge it will be used only for educational evaluation.

1. Intellectual Property Terms

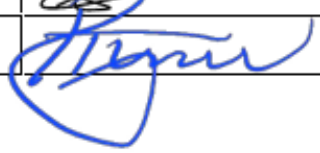
All intellectual property created during the development of Satisfeed is jointly owned by the team members and the client, with ownership distributed according to the percentage table below. Each stakeholder's percentage reflects their contribution to planning, design, programming, and decision-making within the project.

Usage Rights

- Client Rights:
  The client may use, display, and demonstrate the software for personal, commercial, and professional advancement of any kind.
- Team Member Rights:
  Each team member may use the software and related materials in personal portfolios, resumes, job applications, and interviews.

All participants agree that this educational project is provided without warranty. No party may hold another liable for errors, bugs, or misuse outside the intended academic context.

2. Ownership Distribution Table

Name	Percent	Signature
Product Owner: Anca Doloc-Mihu	20%	
Sam Keller	10 %	
Dylan Long	10 %	
Ewura Ama Awere	10 %	
Client: Tim Turner	50 %	

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Velocity Chart Report

In the first sprint, our team took the time to understand the existing dashboard and designed mockup UI's of how our addition would look. We created 8 components that comprised the page, sidebar, dashboard tabs, buttons, filters, map, and cards where data would be displayed. The creation of these components plus CSS was expected to take 14 total hours. By the end of the sprint, there was 1 hour less work logged than expected, due to an unfinished task that was backlogged and completed in the next sprint.

In the second sprint, the database and backend, we accomplished the majority of the backend functionality of the site. This included pulling the data for GA schools, populating the map with data from Satisfeed and interactable markers representing the schools, adding searchable filters that change the focus on the map, and passing the data of the selected map on to a data card that shows the most relevant fields of information. Creating the many interfaces and functions required to do this, as well as scripts to pull the data took about 60 hours of work—4 times the amount in the Interface sprint.

In the final sprint, our team focused on completing the Libraries tab.During this sprint, we loaded and configured the library dashboard map, researched and integrated a public dataset to populate our Firestore library database, and imported coordinates for all Gwinnett County libraries. We also implemented clustered and single markers on the map, made each marker clickable, and added the ability to display a 3-mile radius around the selected library along with related household data for the client. Overall, the work completed in this sprint went beyond our original commitment (20 committed vs. 26 completed), reflecting significant progress and effort as we delivered one of the largest features of the entire project.

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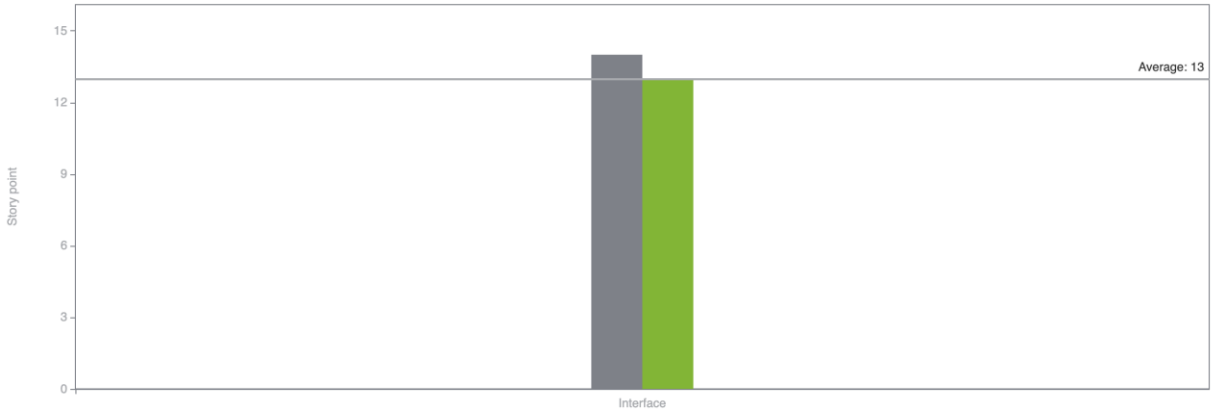
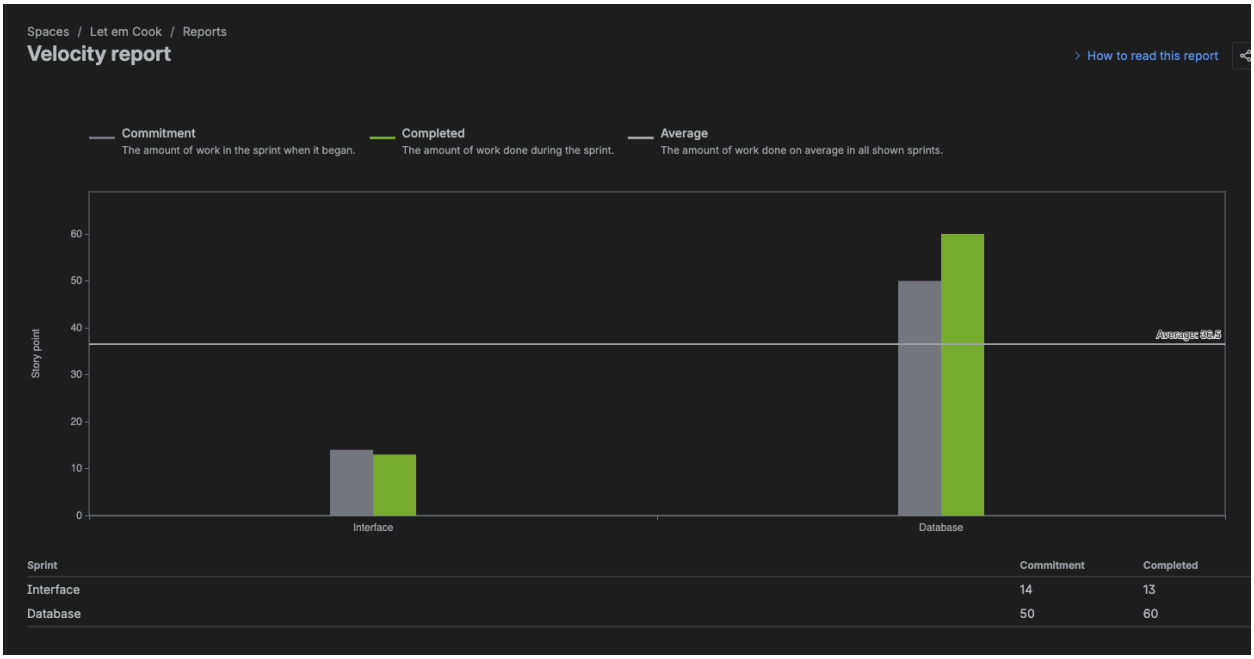
1st



2nd



Satisfeed Dashboard Final Report

3rd

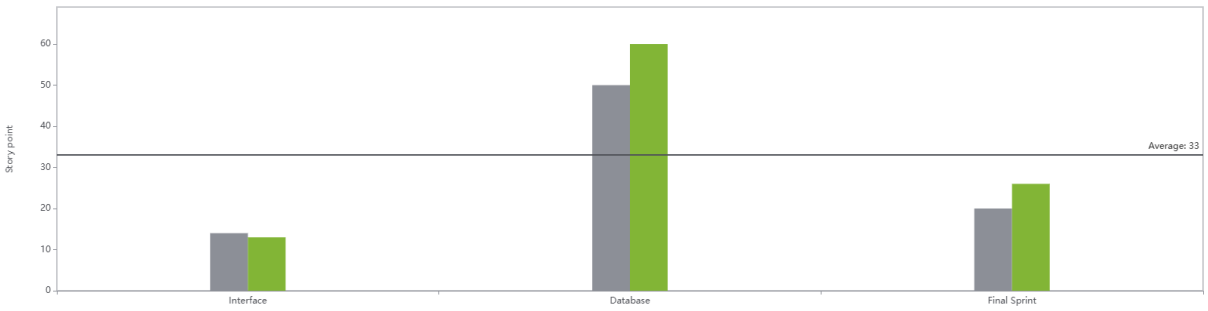
Velocity report

> How to read this report

Commitment
The amount of work in the sprint when it began.

Completed
The amount of work done during the sprint.

Average
The amount of work done on average in all shown sprints.



Sprint	Commitment	Completed
Interface	14	13
Database	50	60
Final Sprint	20	26

Sprint	Commitment	Completed
Interface	14	13
Database	50	60
Final Sprint	20	26

Sprint	Commitment	Completed
Interface	14	13
Database	50	60
Final Sprint	20	26