Dining Hall Activity Meter

University of New Hampshire

To better convenience the student.

01 Introduction

Not knowing when the dining hall is busy is a problem. It wastes time, causes stress, and leaves students frustrated. Our system solves this by tracking and reporting on dining hall activity levels. With our application, users can see how busy each dining hall is and plan their day better. This solution improves the dining experience and helps staff manage operations more efficiently.

02 Objective

We aim to give students and staff an easy way to check dining hall activity. By knowing when dining halls are crowded, students and staff can avoid long waits, and kitchen staff can adjust food production. Understanding usage trends will help the dining halls produce just the right amount of food.

03 Methodology

Data on dining hall entries is collected every 15 minutes and used to generate status reports. Since these reports only show entries (not exits), we surveyed students and conducted field research on how long students stay in the dining halls. This research helped us estimate the actual occupancy and better understand visitor behavior.

04 Analysis

We analyzed the data to find peak dining times throughout the week. Our analysis shows clear trends in when dining halls are busiest. By comparing the entry data with survey responses, we can make a better estimation as to how long visitors stay and what the actual occupancy looks like throughout the day.

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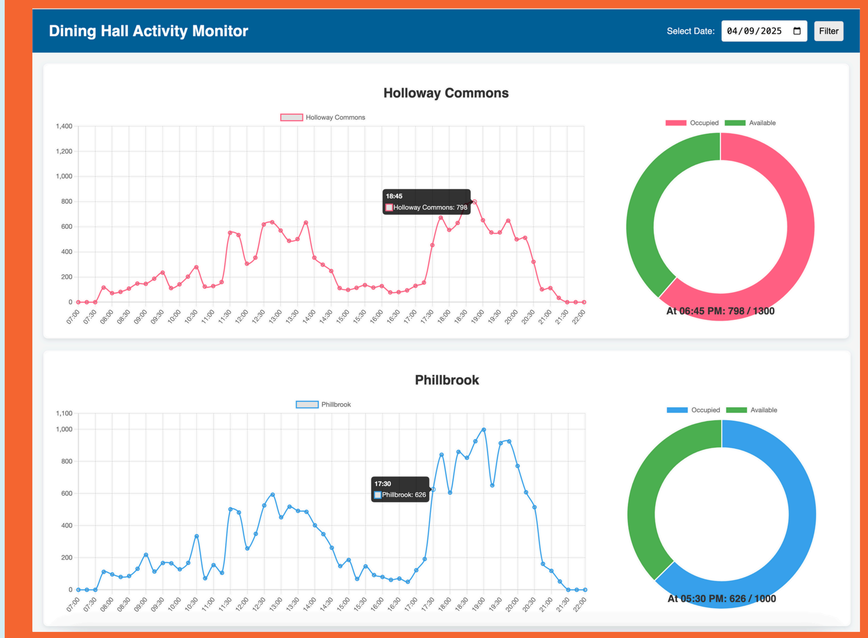
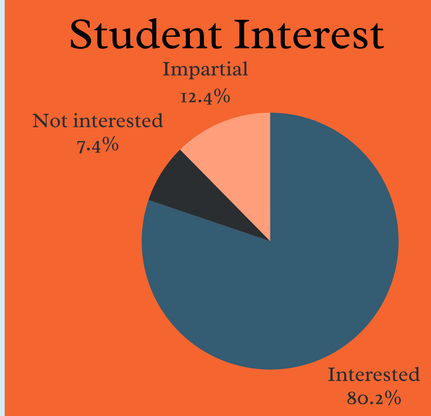
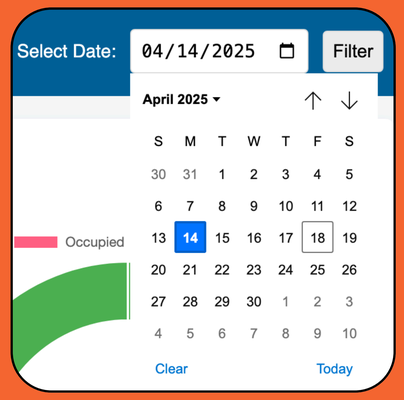
05 System Overview

Every 15 minutes, the dining halls curate automatic reports that are sent to an email associated with Microsoft Teams. Microsoft Teams then forwards this data to our backend. The backend filters through PDF, EML, and CSV files, keeping only the CSV files. The CSV files are then parsed to determine the number of entries, as well as the time and date associated with the entry. Using our utility functions, each 15-minute entry is stamped with a randomized "boot-time" drawn from meal-specific ranges, then saved as a DiningHallEntry record in the database. On the web request side, the dashboard view pulls those entries—optionally filtered by day—and computes, for every 15-minute interval between opening and closing, the total occupancy (new arrivals plus those still queued but excluding anyone whose boot-time has passed), capping values at each hall's capacity. It packages that time series plus the current real-time occupancy into the template context. In the browser, Chart.js renders two synchronized line charts (showing cumulative occupancy over time) alongside matching donut charts that fill to reflect "Occupied vs. Available." JavaScript hooks tie them together: hovering over a line-chart point recalculates and redraws the donut for that instant ("Very Crowded!" if full), while mouse-out resets it to the present-day occupancy.







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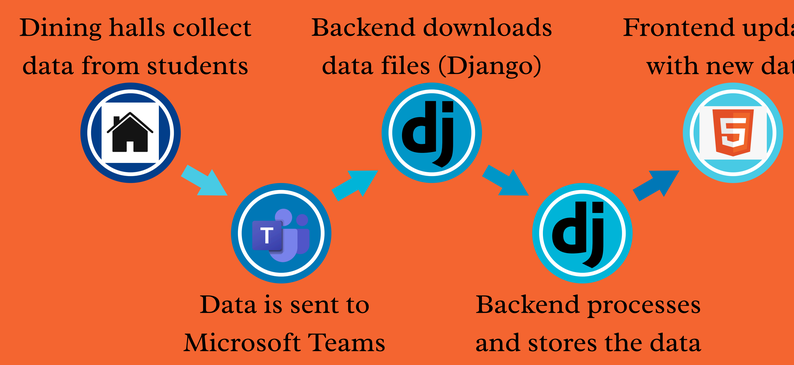

06 Results/Findings

Our system provides real-time updates on dining hall activity, helping users avoid long lines. A survey showed 80% of students want almost real-time status updates. We aim to enhance the dining experience by incorporating user feedback and are exploring push notifications for less crowded dining halls. Our focus is on creating a user-friendly and reliable system that is essential to campus life.

07 Conclusion/Future

With the implementation of this website, dining hall visitors now have an easy way to check current crowd levels. Navigate to the dining hall website, click on the "Activity Monitor" link, and you will be brought to the app. From here, you can see the current activity level of both dining halls, as well as the crowd earlier in the day. Additionally, you can view historical data by utilizing the calendar feature. Select any day in the past six months and see the activity throughout the entirety of that day. This application helps students avoid long waits and helps kitchen staff plan food production for busy times. Making eating at the dining halls more efficient and convenient for everybody. In the future, we look to enhance our website to run on a server, giving real-time updates and improving the accuracy of the timing. We also look to expand to other parts of the university, such as the Hamel Rec Center.

08 Acknowledgments

We express our heartfelt gratitude to UNH Dining for their essential support in this project, which was vital for its success. We hope this website enhances their operations and aligns with their goals, just as their assistance has helped us. Special thanks also to our instructors, Kyle Ouellette and Dean Sullivan, for their guidance.