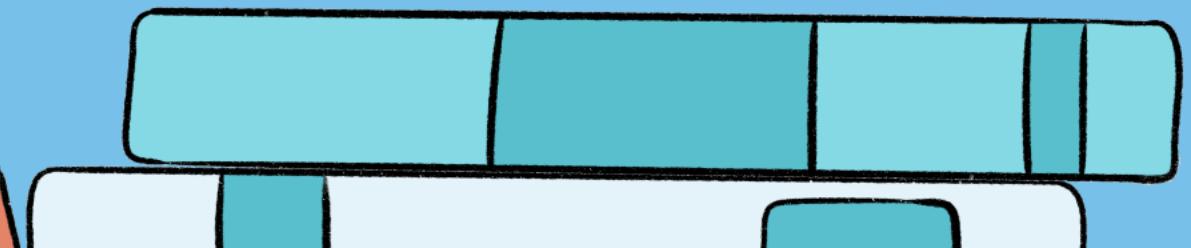
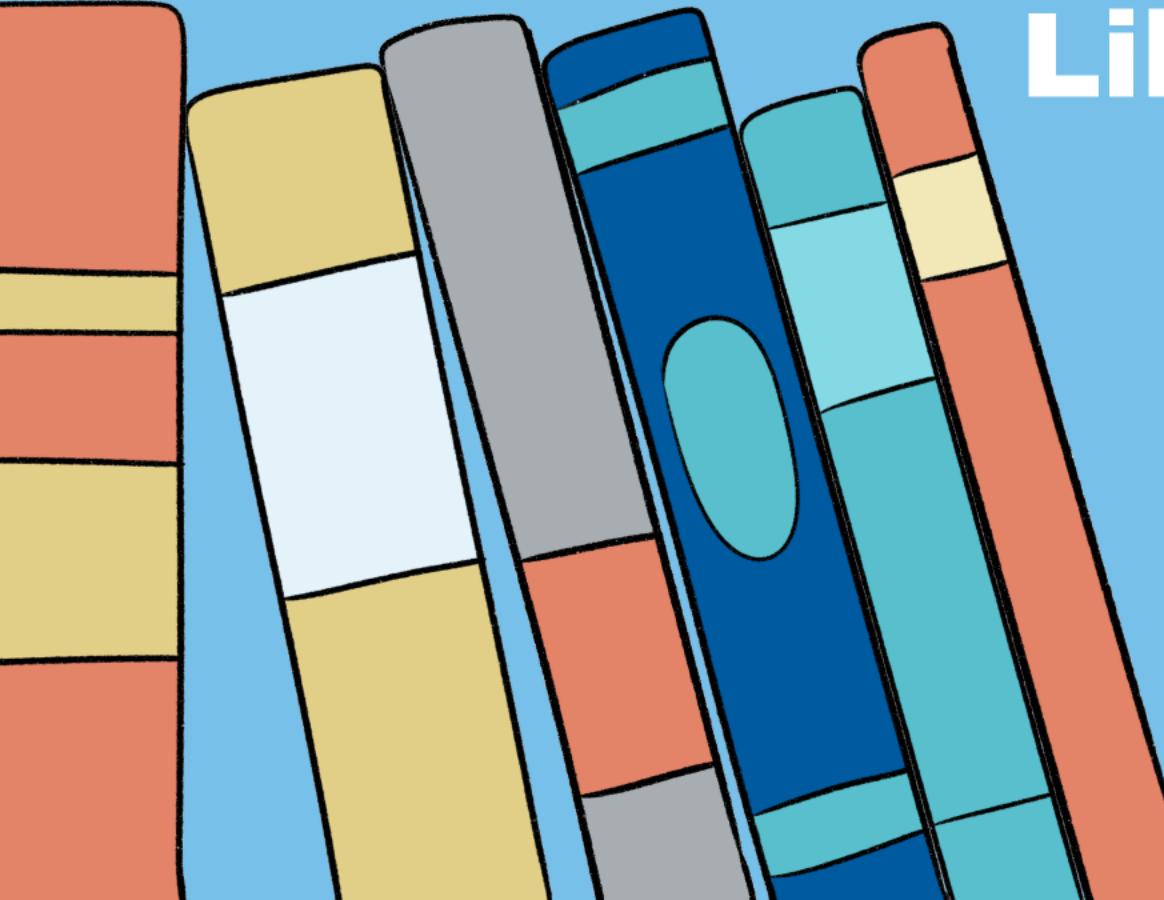




Business Intelligence & Analytics for George C. Gordon Library @ **WPI**

"Leveraging Data for Enhanced Library Operations and User Experience"



Gordon Library: A Brief History



1865

John Boynton establishes an operational fund for library collections and apparatus purchases.



1889

First library space created in Boynton Hall, housing over 15,000 donated volumes.



2017

Library celebrates 50 years of service with yearlong events series.

About & Mission



“ VISION

The library envisions itself as a cornerstone of academic excellence, fostering inclusivity, accessibility, and intellectual growth.

“ MISSION

The library empowers the WPI community by providing exceptional resources, services, and spaces that enhance learning, teaching, and research.

Guided by values of respect, community, inclusion, innovation, and achievement, the library aims to support academic success, promote collaboration, preserve WPI's legacy, and advance scholarship.

LIBRARY STRUCTURE

Overview of the distinct areas within the library and their functions.



ADMINISTRATION
Oversees library operations
and ensures efficient
and effective management
with institutional
legitimacy.



**ACCESS SERVICES &
OUTREACH**
Provides services to
support the mission
of the library.



**SCHOLARLY
COMMUNICATION**
Promotes scholarly
communication through
various channels.



**ARCHIVES
AND SPECIAL
COLLECTIONS**
Preserves historical
and unique materials.



**RESEARCH &
INSTRUCTION**
Supports research
and teaching activities.

Gordon Library Today

Services

1

Study Spaces

2

Special Collections

3

Tech Suites

4

Research Support

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Overview of the distinct areas within the library and their functions.



ADMINISTRATION

Oversees library operations and strategic goals, ensuring efficient management and alignment with institutional objectives.



ACCESS SERVICES & OUTREACH

Manages borrowing processes, customer service efforts, and community engagement initiatives to enhance library usage.



SCHOLARLY COMMUNICATION

Focuses on promoting digital resources and facilitating open access initiatives to support academic research.



ARCHIVES AND SPECIAL COLLECTIONS

Maintains university archives and rare book collections, preserving historical documents for future generations.



RESEARCH & INSTRUCTION

Provides instructional services alongside research assistance, helping users navigate resources effectively.



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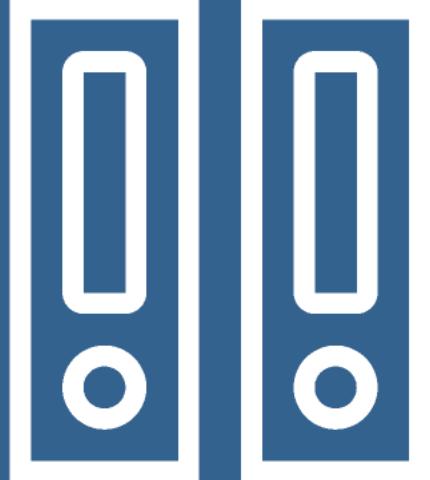
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Framework



Current BI Framework

Identifying the barriers that hinder efficient business operations and decision-making.



EXCEL DEPENDENCE

There is a high reliance on Microsoft Excel for basic reporting tasks, which can limit efficiency and capabilities.



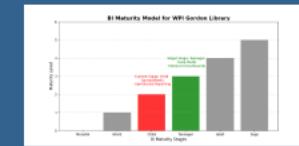
LIMITED TOOL INTEGRATION

Integration among specialized tools like Access, Alma, and Springshare is insufficient, leading to fragmented data management.



RESOURCE OPTIMIZATION

Resources and space are not being utilized optimally, impacting overall productivity and efficiency.



BI MATURITY

Business Intelligence systems are still developing, resulting in constrained operational and decision-making effectiveness.

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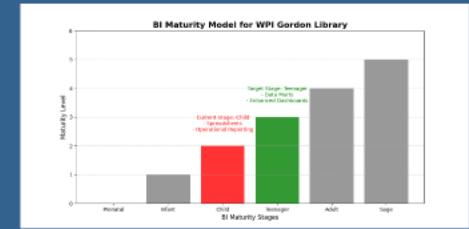
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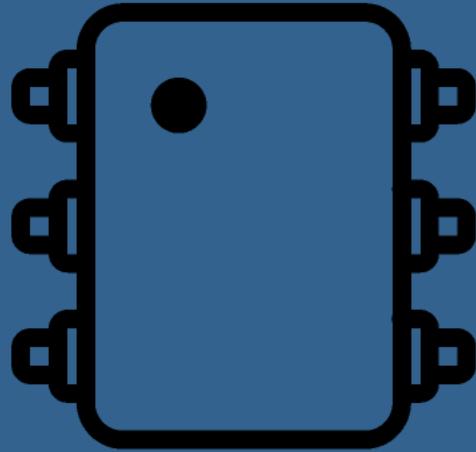
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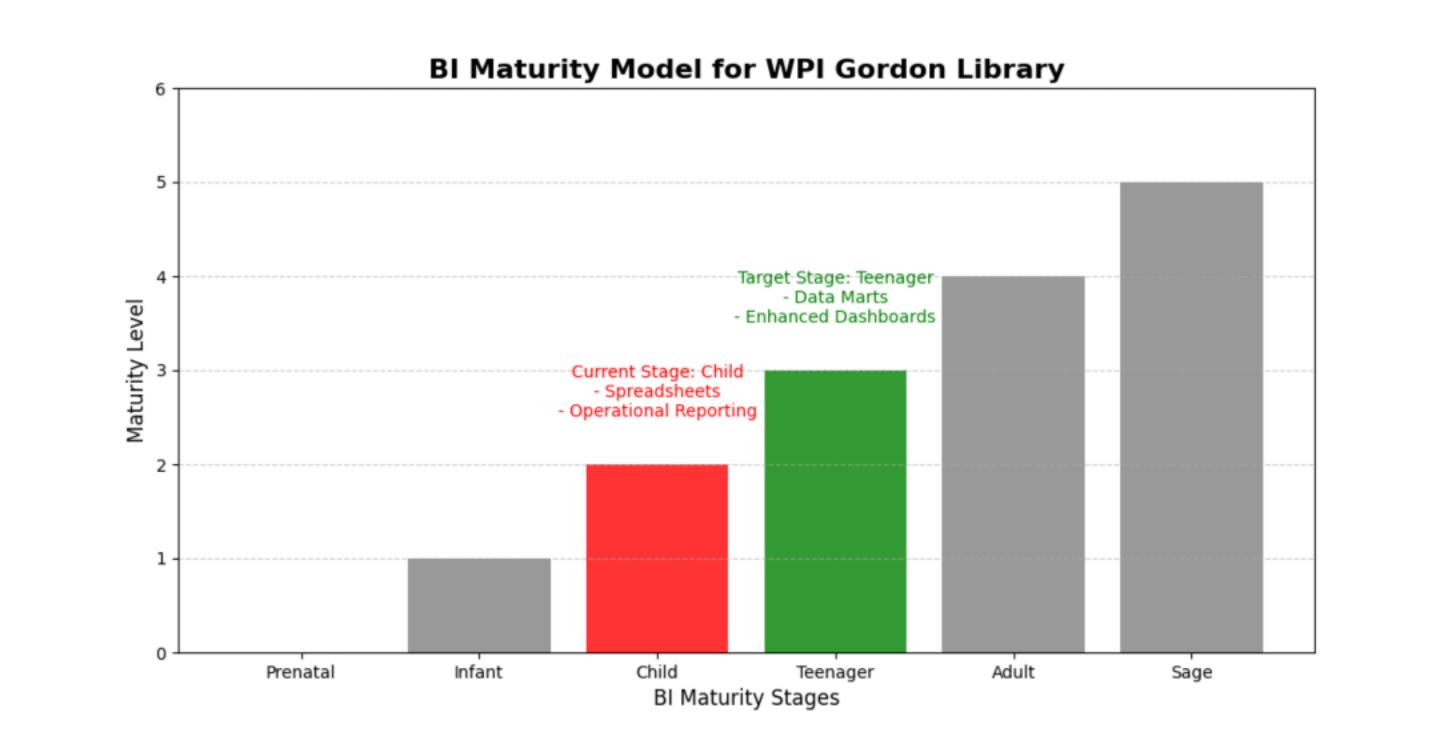
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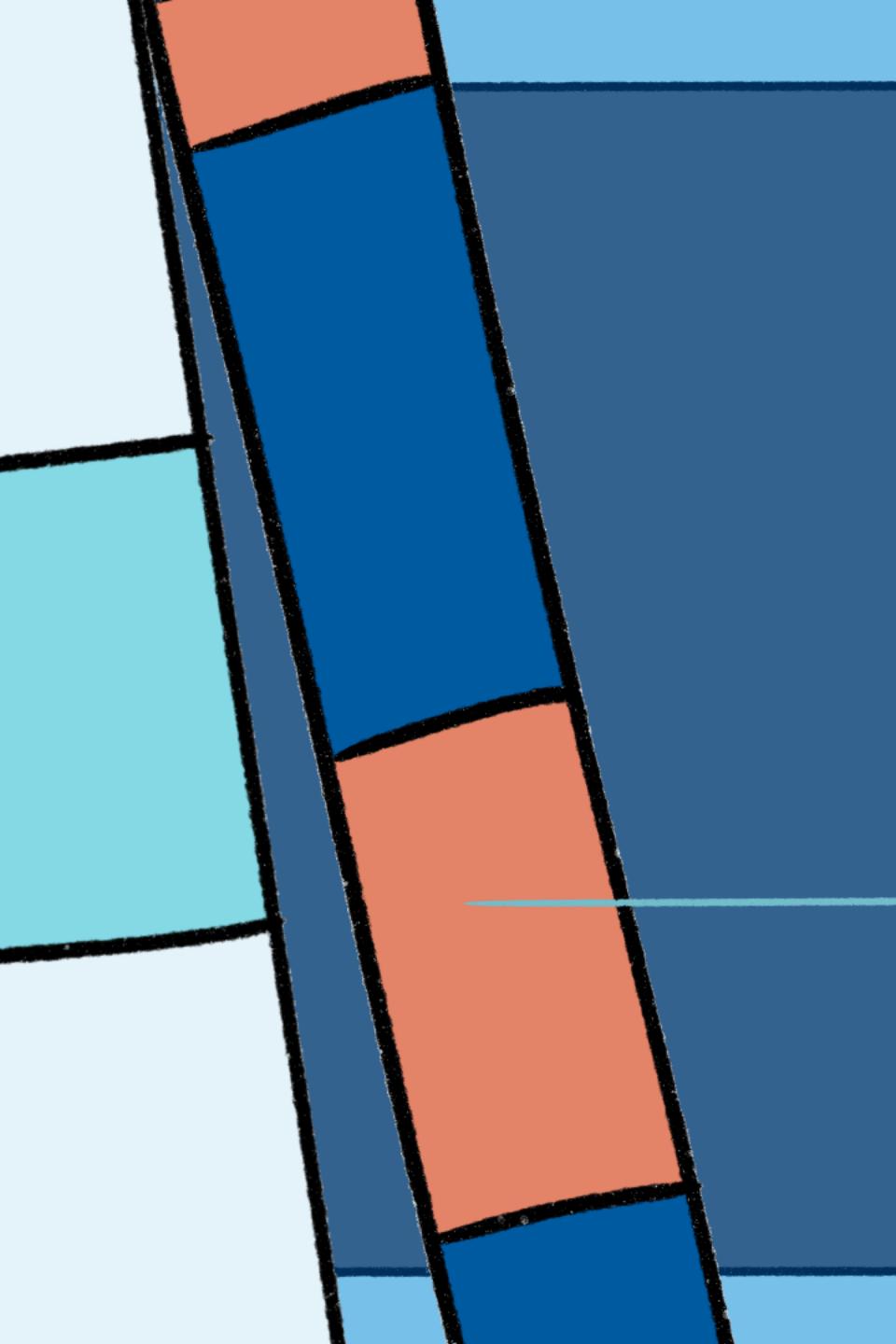
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Case Studies

[Case Study 1: University of Texas Library](#)

[Case Study 2: Harvard University Library](#)

Case Study 1: University of Texas Library

Identified uneven distribution of library resources leading to overcrowded and underused areas.

Deployed a BI system combined with foot tracking technology to monitor library usage patterns.

Developed intuitive dashboards for administrators to visualize space utilization and make informed adjustments.



TEXAS

Case Study 2: Harvard University Library

Current systems failed to monitor resource allocation effectively, leading to unused resources despite high demand.

By implementing analytics, we can track borrowing patterns and space utilization, gaining insights into user behavior.

This data-driven approach enables better resource allocation and service customization, ultimately improving user engagement and library efficiency.



HARVARD
UNIVERSITY

Proposed BI Solution Overview

Transforming Operations with BI Dashboards

?

1

The BI solution will utilize interactive dashboards that offer actionable insights into the key library operations.

?

2

Dashboards will monitor visitor patterns, track resource usage, and manage costs effectively.

?

3

It centralizes data from different systems, such as foot traffic sensors, booking logs, and borrowing records, to create a centralized platform for decision-making.

Focus Areas: Visitor Trends, Resource Allocation, and Cost Management

?

1

Visitor Trends: Analyze foot traffic data to identify peak times, optimize staffing, and manage study space availability.

?

2

Resource Allocation: Identify the underutilized spaces or materials and reallocate resources according to user demand.

?

3

Cost Management: Oversee the operational expenditures and budget cycles, and therefore, the library will identify where it can spend more on student resources.

Expected Benefits of BI Implementation

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1

Improved use of resources: Optimize space and material allocation to ensure those in greater demand are available when needed.

?

2

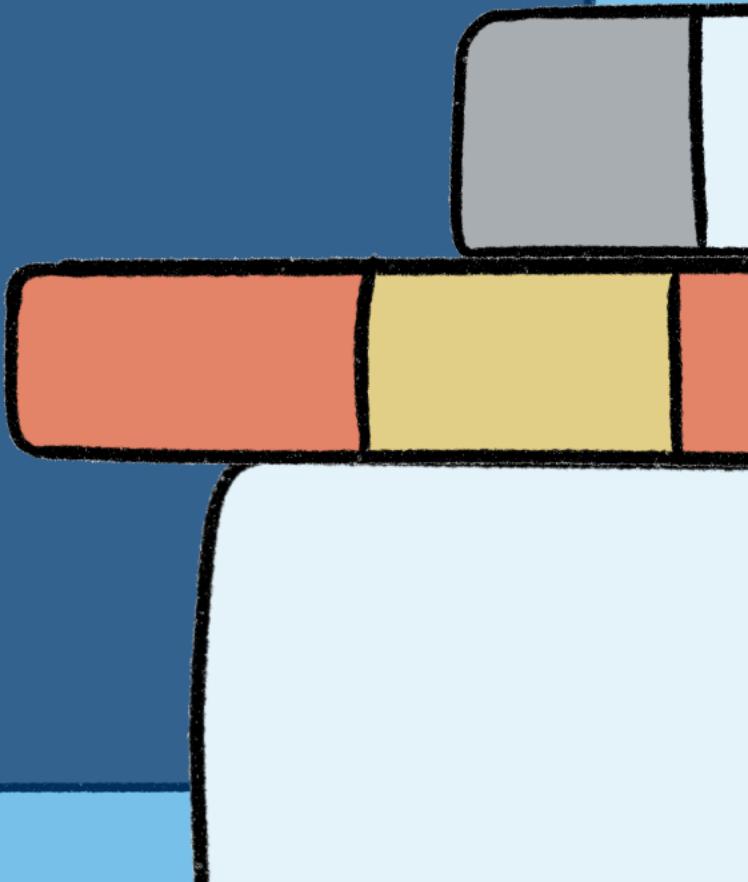
Enhanced User Satisfaction: Tailor services based on usage data, improving the overall library experience for students and staff.

?

3

Operational Efficiency: Makes workflow streamlined, unnecessary cost is avoided, and data-driven decisions are made in step with the library's mission.

Dashboards



Dashboard 1: Occupancy

Purpose:

- Monitor and optimize library space utilization.

Users:

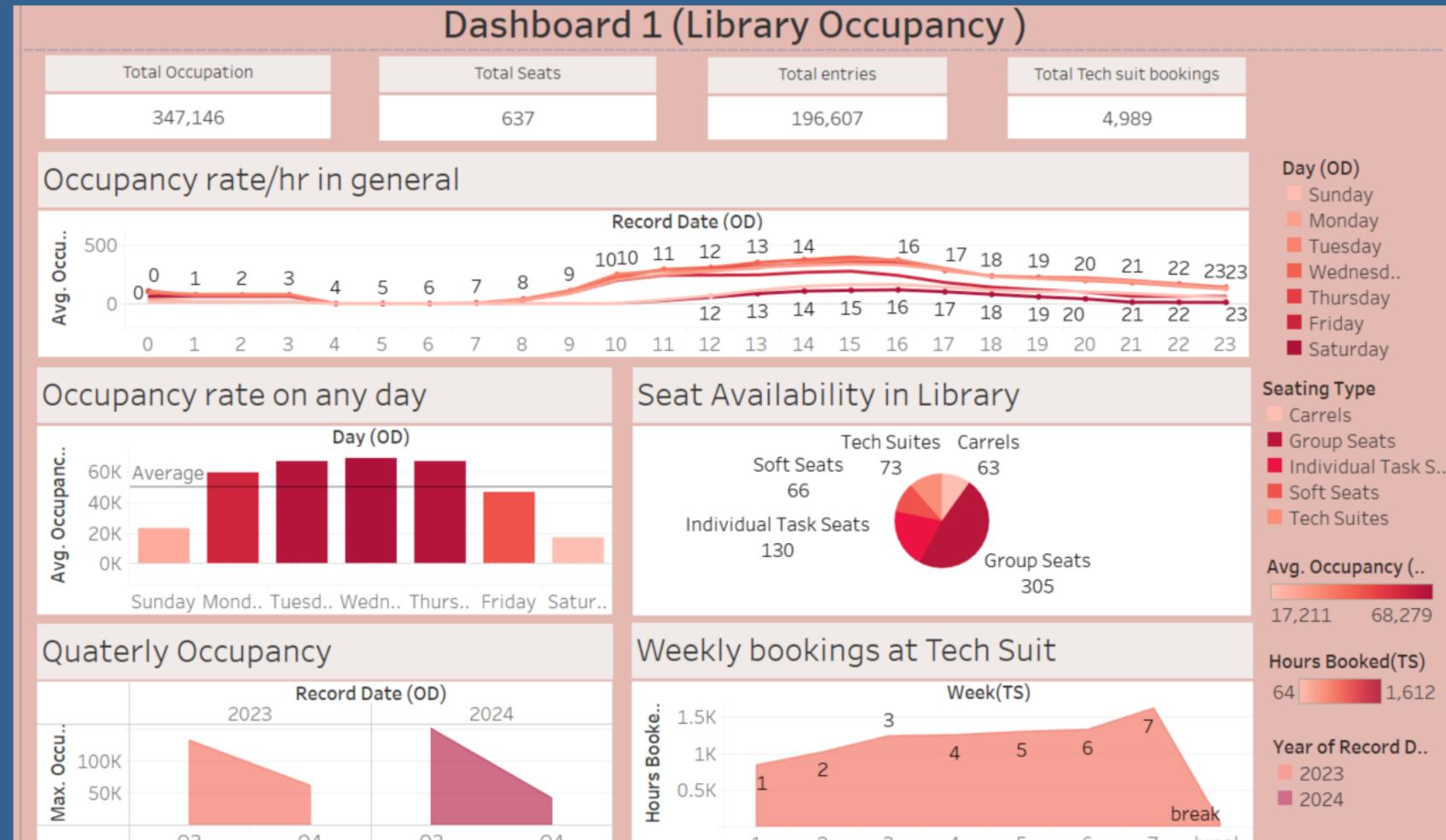
- Library administrators and facilities managers.

Key Features:

- Visitor traffic trends from door sensors.
- Tech suite booking rates and availability.
- Space utilization of study areas and computer stations.

Impact:

- Identify underutilized areas for reallocation.
- Schedule maintenance or staffing based on peak times.



Dashboard 2: Student Employment

Purpose:

- Analyze and manage library expenses and student employment data.

Users:

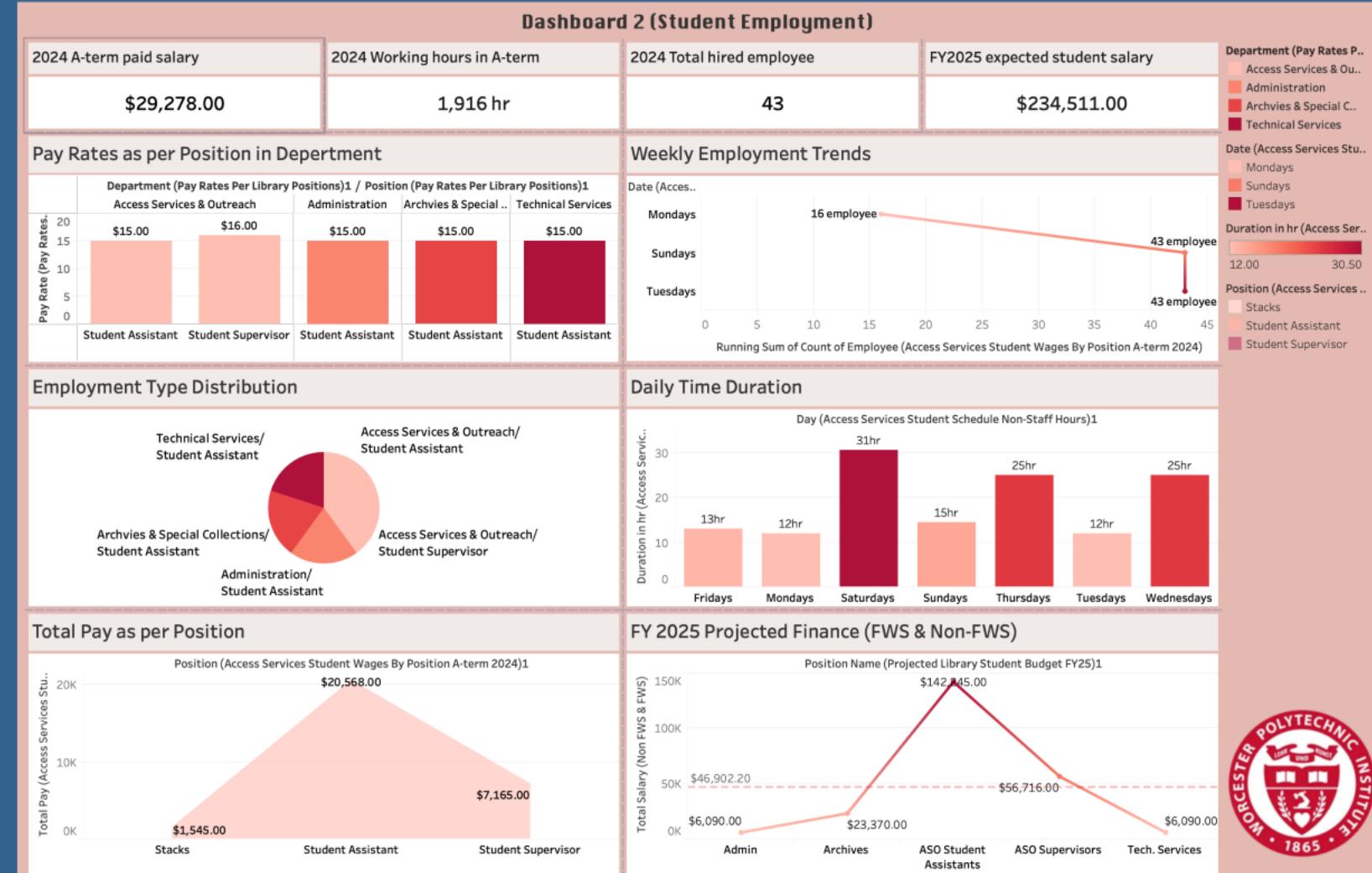
- Budget managers and HR staff.

Key Features:

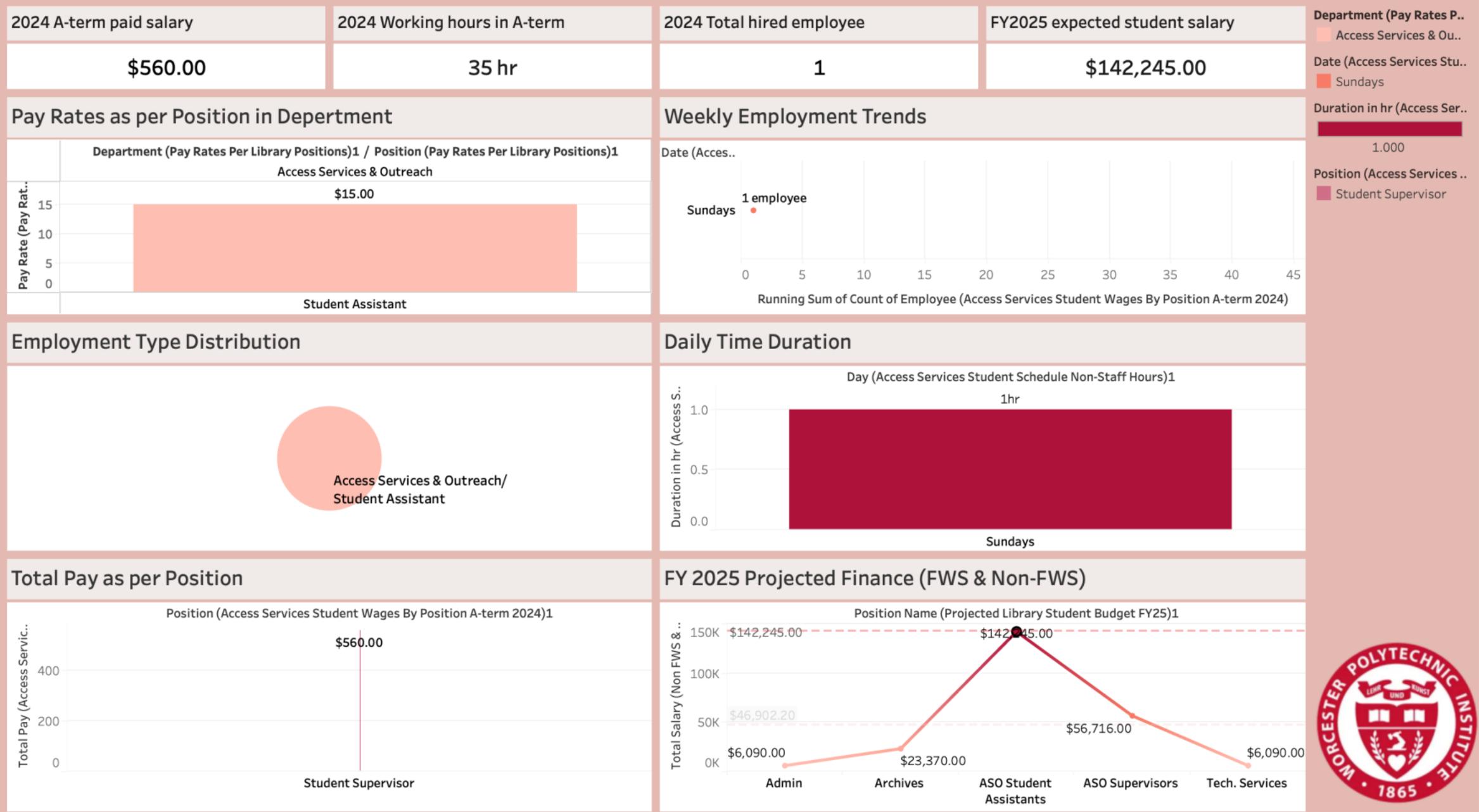
- Tracking software expenses and collection costs.
- Visualization of operational costs and student pay rates.
- Integration with budget cycle planning.

Impact:

- Reduce unnecessary expenses.
- Align budgeting with library priorities.



Dashboard 2 (Student Employment)



Conjoint Analysis

OPTIMIZE STUDY SPACES

Improving study environments through strategic adjustments leads to better outcomes.



REDUCE CARRELS

Fewer carrels could lead to enhanced student engagement and effectiveness in study sessions, maximizing the available space and resources.



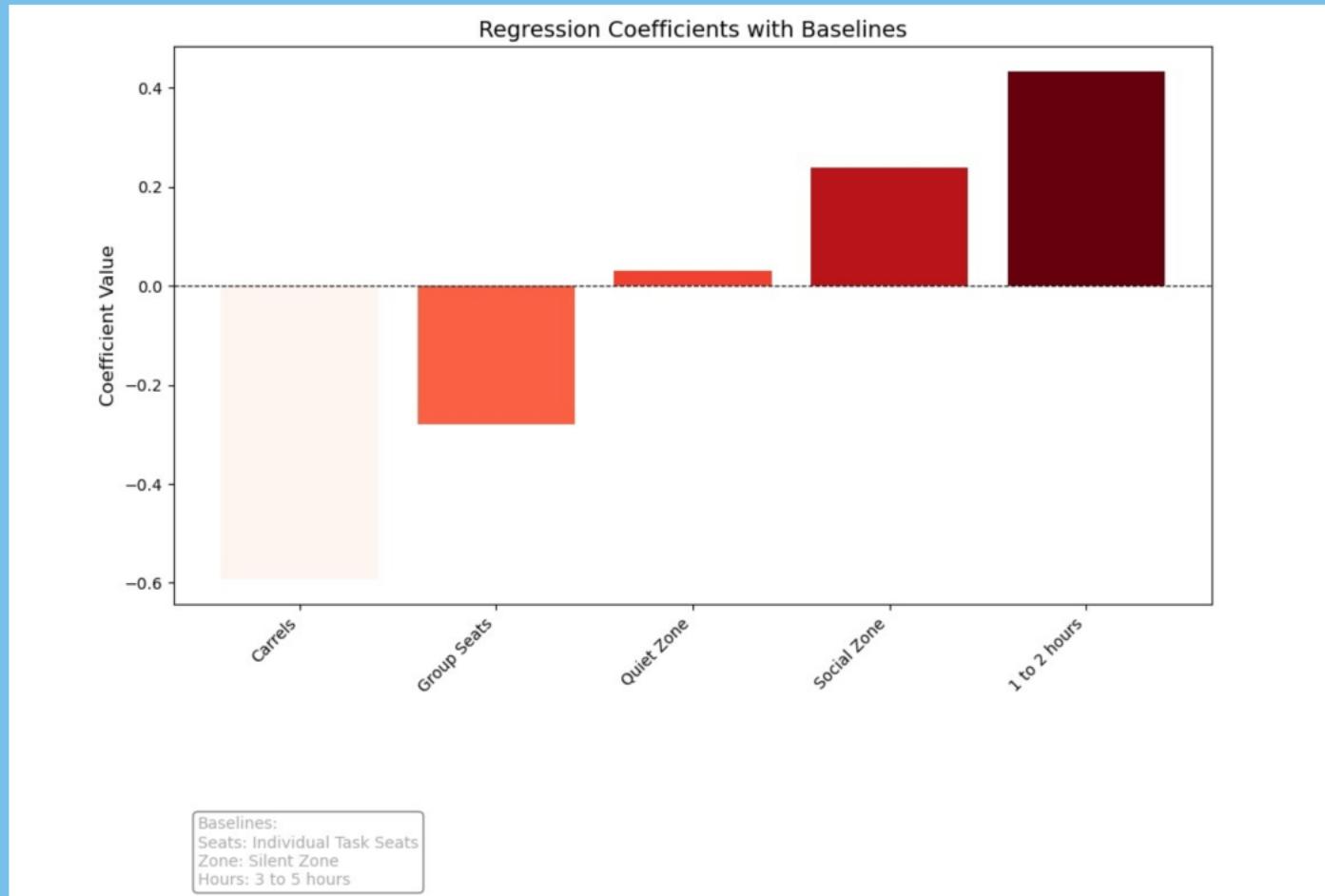
ENCOURAGE LONGER DURATION

Promoting study sessions that last between 1 to 2 hours helps in achieving deeper focus and better results for students.



REEVALUATE SEATING AREAS

Investigating the significance of group seats, individual task seats, and quiet zones could identify opportunities for further enhancements in study environments.



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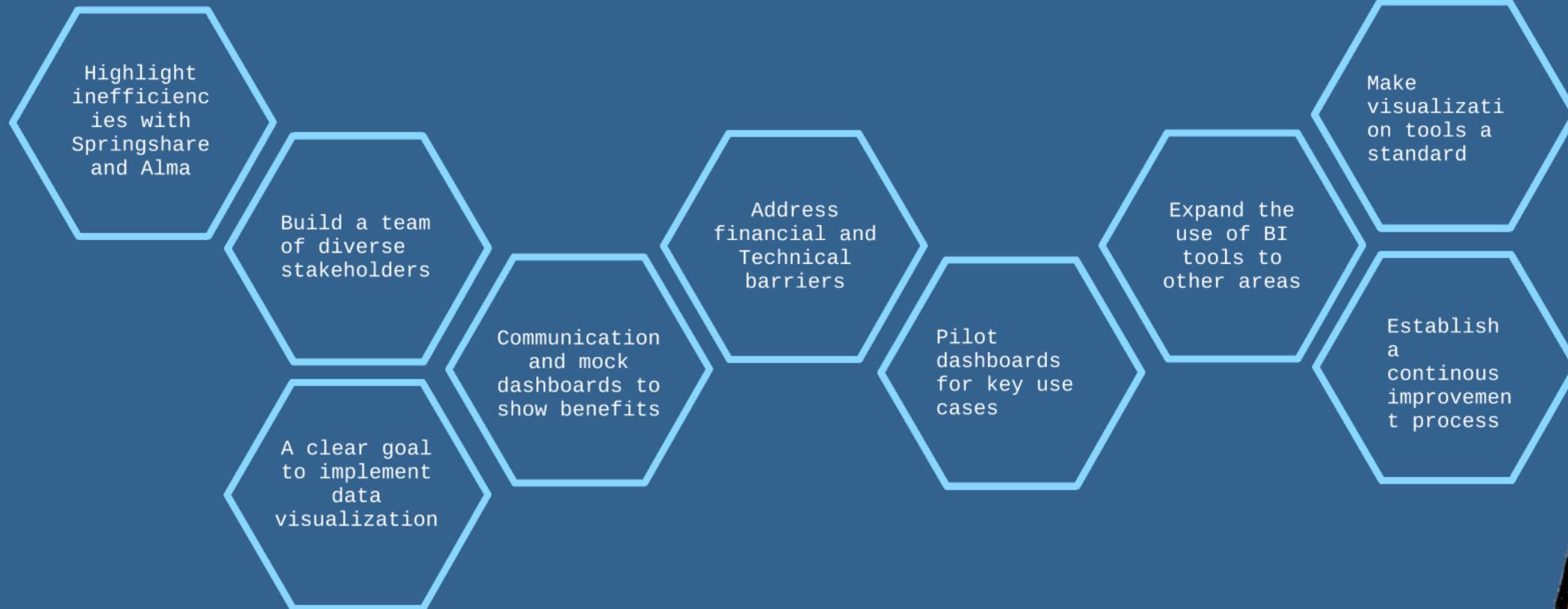


REEVALUATE SEATING AREAS

Investigating the significance of group seats, quiet zones, and social zones could identify opportunities for further enhancements in study environments.

BI Implementation

Kotter's 8 step challenge



Technical Challenges in BI for the Library Project:

Data Completeness: Missing data due to issues like data migration.

Solution: Implement data cleansing and work closely with IT to ensure accurate data mapping.

Data Accuracy: Inaccurate or outdated data from library systems (e.g., Springshare, Alma).

Solution: Use automated validation tools and data profiling to ensure accuracy.

Data Consistency: Inconsistent formats across different systems.

Solution: Standardize data formats during the ETL process and synchronize data from multiple sources.

Data Timeliness: Outdated data affecting real-time insights, e.g., tech suite bookings.

Solution: Implement real-time data processing and regular data refresh schedules

Ethical Challenges in BI for the Library Project:

Privacy Concerns: Sensitive student activity data might infringe on privacy.

Solution: Ensure compliance with privacy regulations (e.g., FERPA, GDPR), anonymize data, and inform users about data collection purposes.

Bias in Data: Potential biases in data collection (e.g., overrepresentation of certain library areas).

Solution: Ensure diverse data collection and monitor outputs for fairness in analysis.

Misuse of Analytics: Data could be misused for unintended purposes, like making funding cuts.

Solution: Establish clear data use guidelines and restrict access to certain types of data.

Unintended Consequences of Real-Time Analytics: Over-monitoring might lead to student discomfort.

Solution: Implement opt-in or opt-out options for tracking, and ensure transparency and responsible data usage.

Benefits, Challenges, Future Opportunities & AI usage



Benefits

EFFICIENCY ENHANCEMENTS

Improving operations and user experience through data insights and resource alignment.



RESOURCE ALLOCATION

Utilizing data-driven methods to optimize how resources are allocated and staffing is planned, ensuring that every effort contributes to operational effectiveness.



REAL-TIME INSIGHTS

Implementing systems that provide real-time information to drive efficiency, allowing for quick adjustments and improvements in workflows.



USER EXPERIENCE

Enhancing the availability of study spaces by aligning resources more closely with user requirements, leading to increased satisfaction.



COST REDUCTIONS

Streamlining budgets by identifying areas for savings and optimizing expenditures without compromising service quality.

Challenges

Potential Issues:

- Data quality and completeness.
- Staff hesitation to adopt BI tools.
- Privacy concerns around user data.

Mitigation Strategies:

- Conduct thorough data cleaning.
- Provide training to ensure user comfort.
- Adhere to data privacy regulations.

Future Opportunities

Opportunities:

- Expand dashboards to include predictive analytics (e.g., future visitor trends).
- Automate alerts for high-demand resources or underutilized areas.
- Integrate with other campus systems for broader insights.

Benefits:

- Position WPI Library as a leader in data-driven resource management.

DASHBOARD BENEFITS

Dashboards enhance library operations and user experience through data visualization.



OPERATIONAL EFFICIENCY

Dashboards visualize real-time data to identify inefficiencies in resource allocation and budgeting, allowing libraries to reallocate underutilized assets and optimize spending on critical resources.



USER SATISFACTION

By analyzing visitor trends and user behavior, libraries can tailor services to enhance the user experience, such as optimizing study spaces and managing high-demand resources efficiently.



DATA-DRIVEN CULTURE

Implementing BI tools fosters a culture of continuous improvement, enabling libraries to utilize predictive analytics and machine learning for forecasting future needs.



TECHNOLOGICAL ADVANCEMENT

Staying ahead of technological changes empowers libraries to reinforce their role as a vital resource for communities, enhancing their long-term reputation and value.

AI usage

PRESENTATION TOOLS

Utilizing various tools for enhancing both the content and presentation design.



CHATGPT

Used as a content-writing assistant to help structure the presentation and develop clear, concise explanations for both technical and non-technical audiences.



GRAMMARLY

Applied for proofreading purposes to ensure grammatical accuracy and a consistent, professional tone throughout the presentation.



PREZI

Leveraged for creative design ideas and inspiration to create visually engaging slides that effectively convey key concepts.



grammarly



Prezi



THANK YOU!



WPI