Data-Driven Evaluation of Toronto Apartment Buildings

Prepared By:
GROUP 1

Transforming Data into Insights: Elevating Apartment Living Standards

Overview

Introduction

We analyze Toronto's apartment buildings using the Apartment Building Evaluation dataset to visualize building conditions and resident experiences.

Why It Matters

Maintaining high apartment standards is vital for safe, comfortable housing. This project identifies buildings needing repairs, informs policy decisions, and empowers tenants with essential information.

Target Audience

Our insights will benefit policymakers, property managers, and residents, facilitating informed decisions to enhance housing quality across Toronto.

Evaluate Building Conditions

Assess apartment buildings across Toronto, focusing on maintenance issues and resident satisfaction.

Identify Patterns and Trends

Analyze data to uncover trends in building quality and resident experiences across different neighborhoods.

Provide Actionable Insights

Deliver information that guides city planners, property managers, and residents in improving housing quality.

Create Interactive Visualizations

Develop a Tableau dashboard to present findings and facilitate easy access to data insights.

Background

Toronto's Housing Challenges

- Severe housing crisis with demand outpacing supply
- Shelter system overwhelmed, leading to increased homelessness
- Rising costs pushing many residents to financial strain
- Over 40% of Torontonians report income insufficient for basic needs
- Long waitlists for social housing and affordable units

Apartment Building Standards Program

- Established in 2017 to ensure compliance with building maintenance standards
- Applies to buildings with 3+ storeys or 10+ units
- Aims to improve safety, maintenance, and resident satisfaction
- Provides data crucial for evaluating housing quality across the city

Data Source

The Apartment Building Evaluation dataset, sourced from the Open Toronto official website, provides comprehensive information on apartment buildings across Toronto, including details on building conditions, maintenance issues, and resident satisfaction.

01 Dataset Overview

- Source: Open Toronto official website
- Comprehensive Apartment Building Evaluation dataset
- Covers apartment buildings across Toronto

02 Dataset Characteristics

- Includes historical data up to 2023
- Contains detailed information on building conditions
- Tracks maintenance, safety, and resident satisfaction metrics

03 Data Update Frequency

- Updated daily
- Ensures real-time and current information
- Provides most recent insights into apartment building standards

Methodology

Initiation

Project Charter
Project Initiation

Planning

Scope & Budget
WBS
Gantt Chart
Communication Plan
Risk Management

Executing

Team Management
Resource Allocation
Task Execution
Quality Assurance
Stakeholder Engagement

Monitoring

Performance Tracking
Progress Reporting
Change Management
Risk Monitoring
Issue Resolution

Closing

Deliverable Handover
Project Documentation
Team Release
Lessons Learned
Stakeholder Sign-off

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Task Execution
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Stakeholder Engagement

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Progress Reporting
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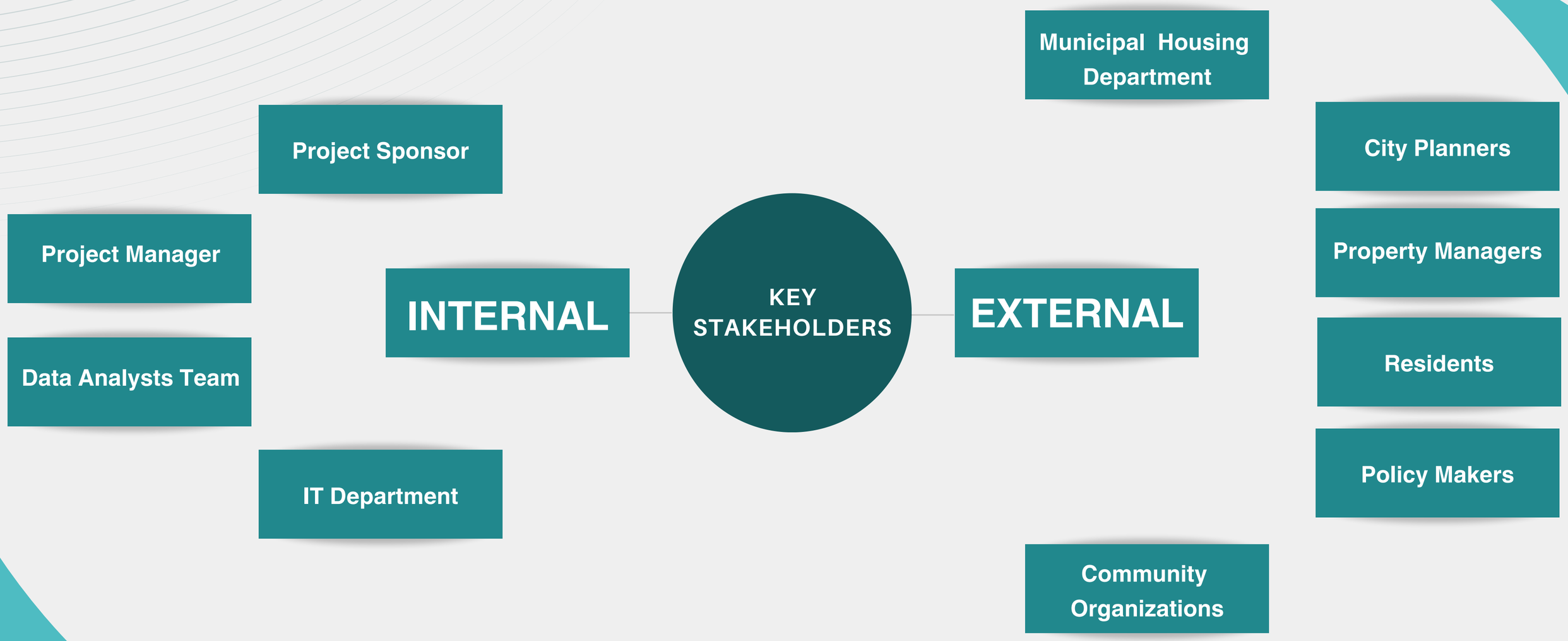
Initiation

Project Charter

- Defined project purpose and objectives
- Outlined project scope and boundaries
- Established initial project goals
- Identified key performance indicators (KPIs)
- Secured initial project funding and resources

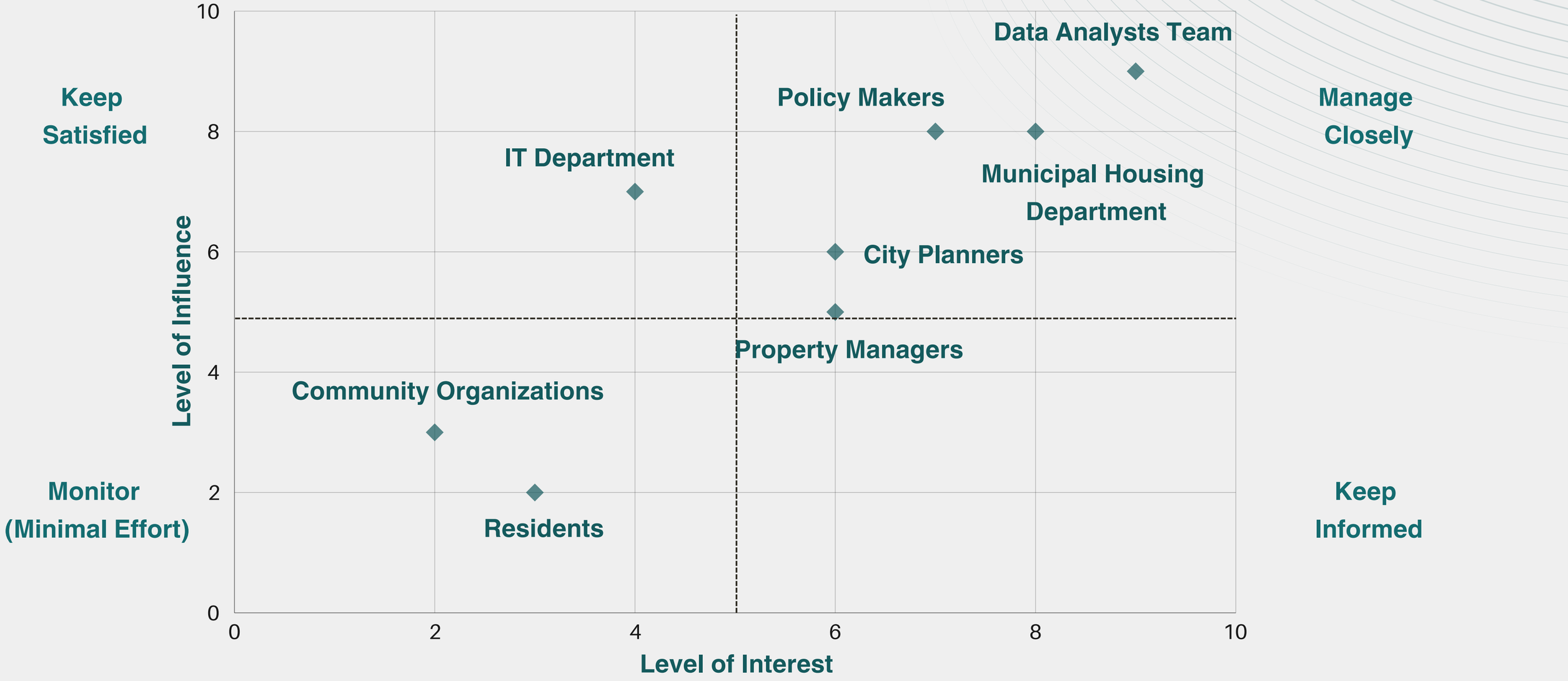
Key Stakeholders



Stakeholder Interest - Influence Grid

Pratik Bedi (Project Sponsor)

Jibin K Sebastian (Project Manager)



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Project Charter
Project Initiation

Planning

Scope & Budget
WBS
Gantt Chart
Communication Plan
Risk Management

Executing

Team Management
Resource Allocation
Task Execution
Quality Assurance
Stakeholder Engagement

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Performance Tracking
Progress Reporting
Change Management
Risk Monitoring
Issue Resolution

Closing

Deliverable Handover
Project Documentation
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Quality Management

Cost Management

Resource Management

Schedule Management

Planning

Communications Management

Scope Management

Risk Management

Scope Management

Definition	Boundaries	Key Deliverables
• Analyze Toronto apartment buildings using Evaluation dataset • Develop interactive visualizations of building conditions • Identify trends in maintenance and resident satisfaction • Provide actionable insights for stakeholders	• Limited to residential apartment buildings in Toronto • Focused on data from 2023 onwards • Excludes commercial properties and single-family homes	• Comprehensive data analysis report • Interactive Tableau dashboard • Stakeholder presentation of findings

WBS

Data Driven Evaluation of Toronto Apartment Buildings

Project Initiation	Data Acquisition and Preparation	Data Analysis	Dashboard Development	Testing and Quality Assurance	Documentation	Deployment	Project Closure
Define project scope and objectives	Identify data sources	Exploratory data analysis	Design dashboard layout	Develop test cases	Create user manual	Set up hosting environment	Conduct project review
Identify stakeholders	Access to Apartment Building Dataset	Statistical analysis	Create data visualizations	Perform functional testing	Develop technical documentation	Deploy dashboard	Gather feedback from stakeholders
Develop project charter	Data cleaning and validation	Geospatial analysis	Implement interactive features	User acceptance testing	Prepare data dictionary	Configure user access and security	Document lessons learned
Kick-off meeting	Data integration	Trend analysis	Develop filtering capabilities	Performance testing	Document analysis methodology	Perform final checks	Prepare final project report
	Create derived variables	Correlation analysis	Integrate geospatial mapping	Bug fixing and refinement			

Schedule Management

Project Initialization

Define goals and scope
Sept 17, 2024

Data Collection & EDA

Gather relevant datasets and identify patterns and insights
Oct 25, 2024

Dashboard Development

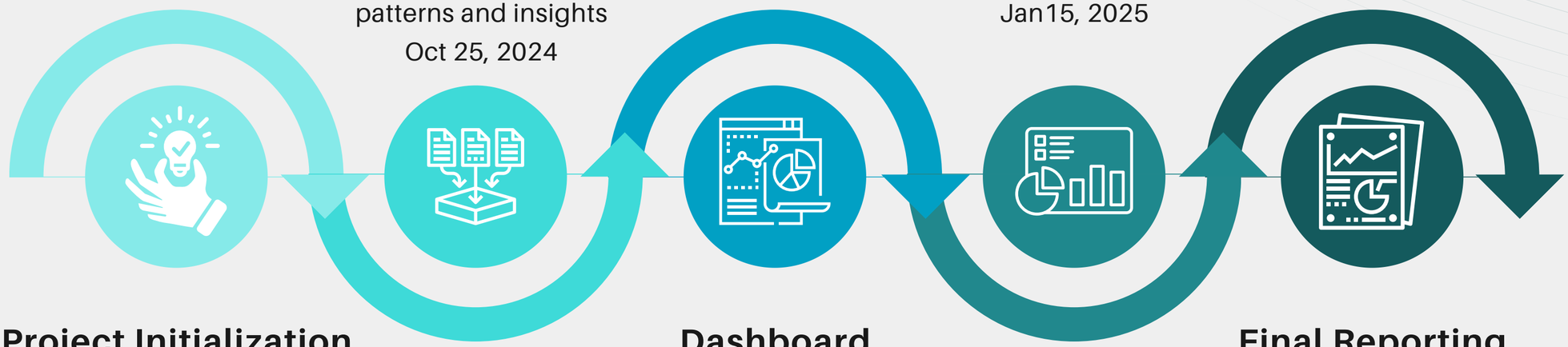
Create interactive visualizations and reports
Nov 30, 2024

Testing and Refinement

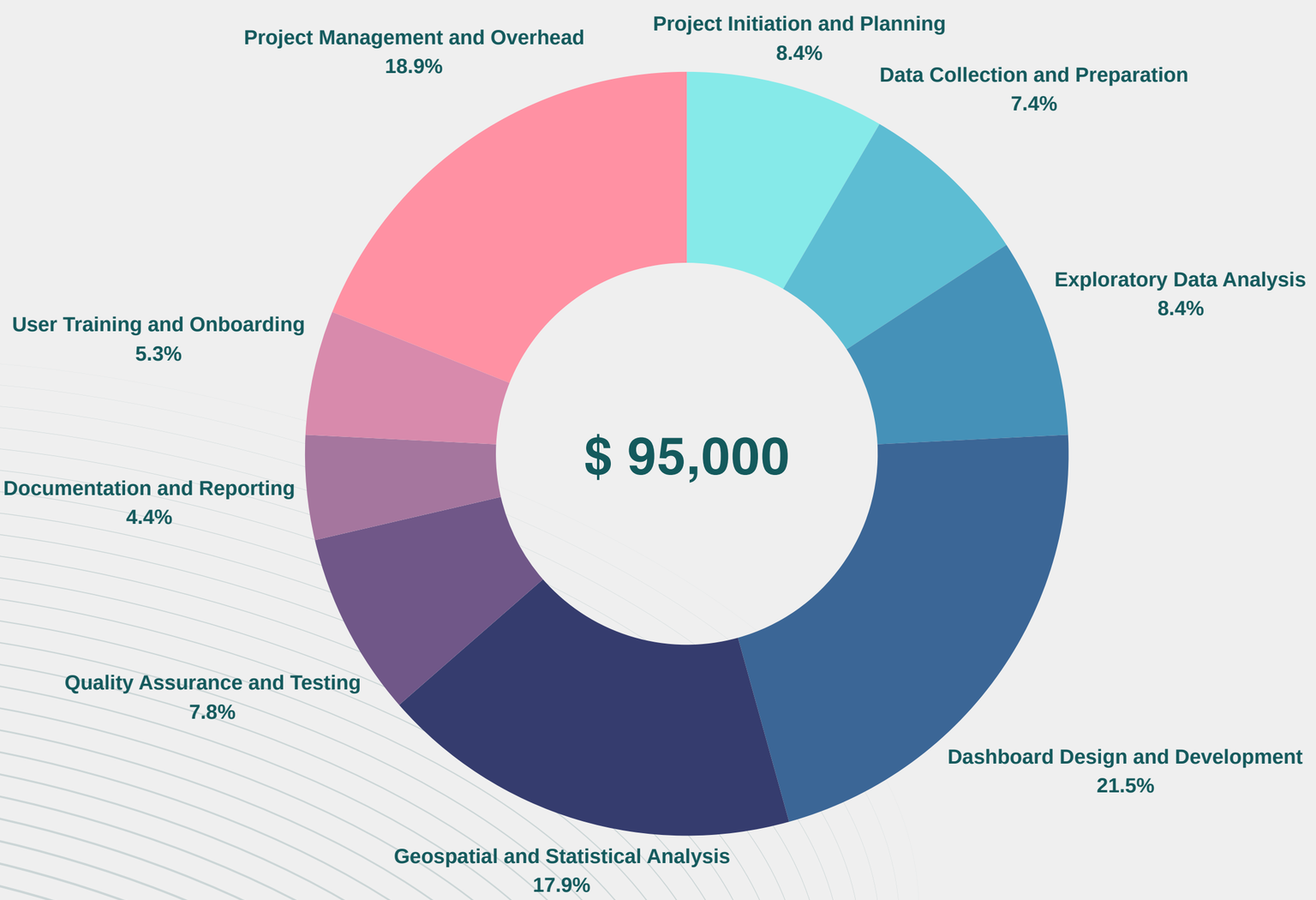
Validate functionality and user experience
Jan15, 2025

Final Reporting

Present findings and insights
Feb 28, 2025

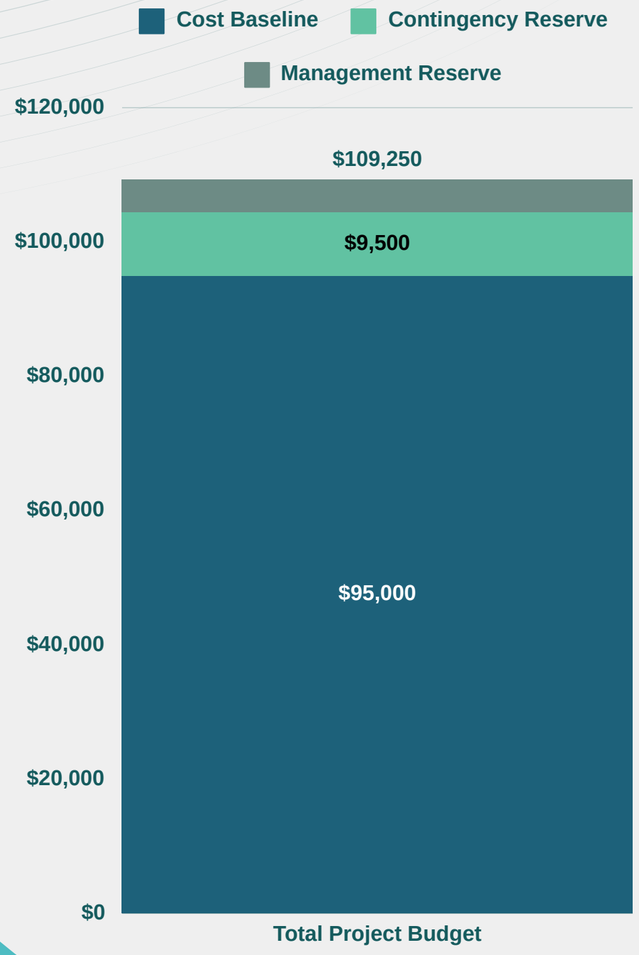


Cost Management



Project Initiation and Planning	$8,000
Data Collection and Preparation	$7,000
Exploratory Data Analysis	$8,000
Dashboard Design and Development	$20,400
Geospatial and Statistical Analysis	$17,000
Quality Assurance and Testing	$7,400
Documentation and Reporting	$4,200
User Training and Onboarding	$5,000
Project Management and Overhead	$18,000

Budget Overview and Quarterly Allocation



Quality Management

Quality Standards Processes

- Data Accuracy
- Dashboard Performance
- User Experience
- Analytical Precision

Quality Assurance & Control

- Automated Data Validation
- Code Review
- Testing
- Documentation
- Continuous Improvement

Resource Management

RESOURCE	WEEK 1-2	WEEK 3-4	WEEK 5-6	WEEK 7-8	WEEK 9-10	WEEK 11-12
Jibin Sebastian (Project Manager)	Project Planning	Stakeholder Management	Progress Monitoring	Risk Management	Quality Assurance	Final Review
Jibin George (Lead Analyst)	Requirements Gathering	Data Analysis Plan	Statistical Model Design	Model Development	Model Testing	Refinement
Vishal (Business Analyst)	Business Requirements	Data Requirements	User Story Creation	Dashboard Requirements	User Acceptance Testing	Documentation
Kailas (Technical Consultant)	Technical Architecture	Data Integration	ETL Process	Data Validation	Performance Optimization	Technical Documentation
Yashas (Tableau Specialist)	Dashboard Planning	Data Connection	Dashboard Prototyping	Visualization Development	Dashboard Testing	Dashboard Refinement

RACI Matrix

TASK	JIBIN SEBASTIAN	JIBIN GEORGE	KAILAS KRISHNAN	VISHAL RAMESH	YASHAS MS
Project Initiation and Planning	A	I	I	R	C
Data Collection and Preparation	C	I	A/R	I	I
Exploratory Data Analysis	C	R	A	I	I
Analysis Code Development	A	R	C	I	I
Geospatial Analysis	C	A/R	C	I	I
Dashboard Design	C	A/R	C	I	R
Documentation and Reporting	C	I	I	A/R	C
Stakeholder Communication	A	I	I	C	R
Quality Assurance and Testing	A	R	C	I	I
Lessons Learned	C	A/R	C	C	C
Project Closure	A	C	C	C	C

R : Responsible

A : Accountable

C : Consult

I : Inform

Communications Management

Communication Plan

- **Regular updates**: Weekly team meetings, monthly stakeholder updates
- **Channels**: Emails, project management software, dedicated engagement platform
- **Tailored messaging** for different stakeholder groups
- **Feedback mechanisms**: Surveys, focus groups, online forms

Stakeholder Engagement Strategies

- Early and continuous engagement
- Prioritize stakeholders
- Active listening and feedback incorporation
- Relationship building
- Continuous Improvement

Risk Management

Stage 1

Identify Risk

Stage 2

Plan Risk Responses

Stage 4

Monitor Risks Process

Stage 3

Implement Risk Responses

Risk Management 

Risk Identification Process

- Create systematic approach
- Gather information from various sources
- Apply identification techniques:
  - Brainstorming
  - SWOT analysis
  - Root cause analysis
- Document risks in risk register
- Assess process effectiveness

Risk Mitigation Strategies

- Risk Avoidance
- Risk Transfer
- Risk Reduction
  - Implement preventive measures
  - Develop contingency plans
- Risk Acceptance
  - Monitor low-impact risks

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Quality Assurance
Stakeholder Engagement

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Execution

Initiation of the Project	Setting Direction	Monitoring Progress	Stakeholder Engagement
Mobilize the team and allocate resources as per the project plan.	Implement the project plan while ensuring alignment with strategic goals.	Regularly check project status against the plan, making adjustments as necessary.	Maintain clear communication and involvement of stakeholders throughout the execution phase.

Managing Project Work

Implementing Project Plan

- Follow the Work Breakdown Structure (WBS)
- Assign tasks based on team members' skills and availability
- Use project management software for task tracking

Managing Project Activities

- Daily stand-up meetings to discuss progress and obstacles
- Weekly progress reviews against project timeline
- Adjust resource allocation as needed

Key Tools

- Gantt charts for timeline visualization
- Kanban boards for task management
- Time tracking software for resource management

Adaptive Management

- Regular risk assessments
- Implement change control processes
- Continuous improvement based on lessons learned

Managing Quality

Quality Standards

- Adhere to data accuracy benchmarks (99.9%)
- Ensure dashboard performance meets load time criteria (<3 seconds)
- Comply with accessibility standards (WCAG 2.1 AA)

Quality Assurance Processes

- Regular code reviews and peer evaluations
- Automated testing for data processing and visualizations
- User acceptance testing for dashboard functionality

Quality Control Measures

- Implement checkpoints at key project milestones
- Conduct data audits to verify accuracy and completeness
- Perform usability testing with target user groups

Continuous Improvement

- Gather and analyze user feedback
- Implement iterative improvements based on insights
- Document best practices and lessons learned

Managing Communication

Progress Reporting

- Bi-weekly status reports to key stakeholders
- Monthly executive summaries to leadership
- Quarterly comprehensive project reviews

Feedback Mechanisms

- Regular surveys to assess communication effectiveness
- Open forums for Q&A sessions
- Dedicated feedback channels for continuous improvement

Communication Channels

- Weekly email updates to all stakeholders
- Monthly virtual town halls for broader updates
- Dedicated project portal for real-time status updates

Communication Tools

- Project management software for internal team updates
- Video conferencing for virtual meetings
- Interactive dashboards for real-time project metrics

Stakeholder Engagement

Engagement Strategies

- Tailored engagement plans for different stakeholder groups
- Regular check-ins with key influencers and decision-makers
- Involvement in key project milestones and decision points

Addressing Concerns

- Proactive identification of potential issues
- Open door policy for stakeholder concerns
- Timely response and resolution tracking

Collaborative Activities

- Workshops for requirements gathering and validation
- Focus groups for user experience feedback
- Beta testing programs for early adopters

Measuring Engagement

- Track stakeholder participation rates
- Monitor feedback sentiment and trends
- Assess impact of stakeholder input on project outcomes

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Task Execution
Quality Assassurance
Stakeholder Engagement

Monitoring

Performance Tracking
Progress Reporting
Change Management
Risk Monitoring
Issue Resolution

Closing

Deliverable Handover
Project Documentation
Team Release
Lessons Learned
Stakeholder Sign-off

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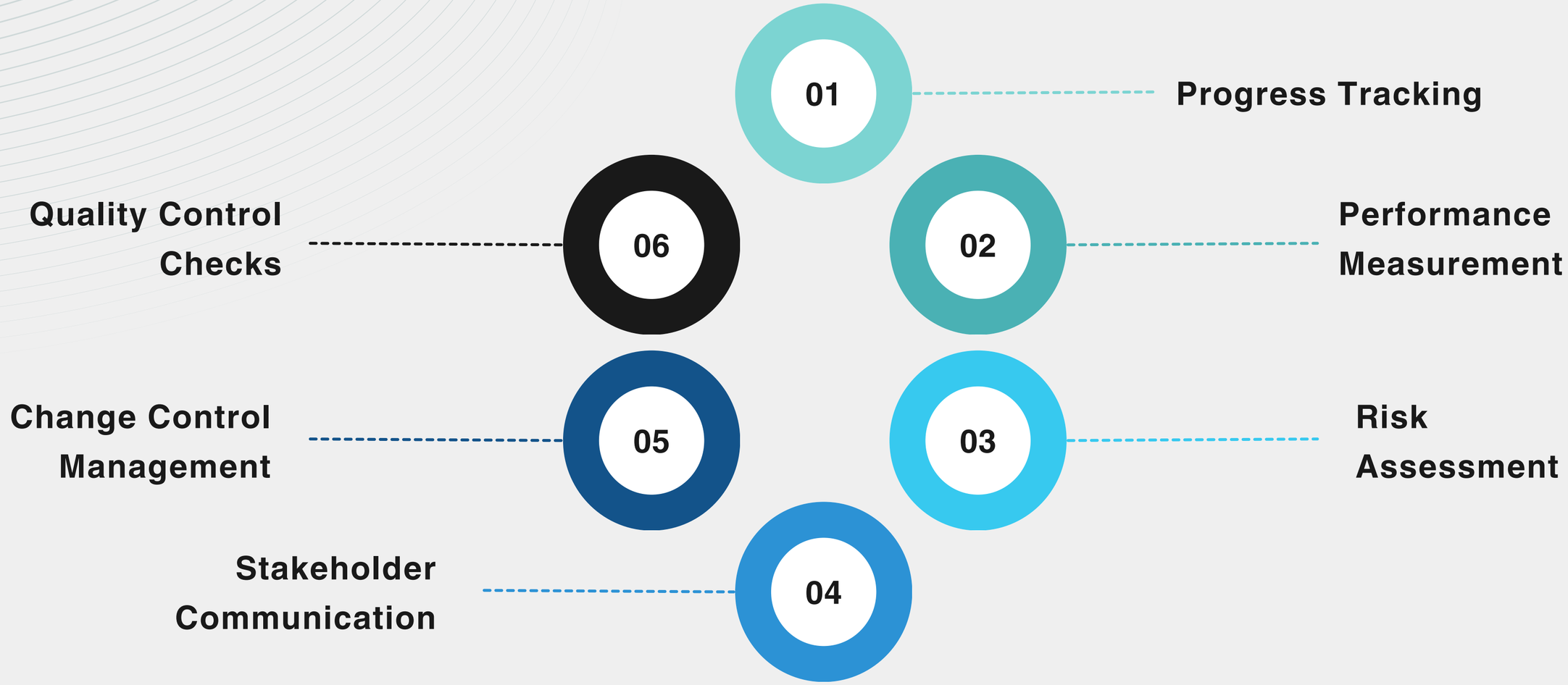

01
Progress Tracking
02
Performance Measurement
03
Risk Assessment
04
Stakeholder Communication
05
Change Control Management
06
Quality Control Checks

Performance Metrics

Planned Value (PV) & Actual Cost (AC)

$ 65,550 & $ 60,400

We're at the end of Q2 (50% of project duration):
PV = 60% of budget (Q1 + Q2) = $65,550
The actual cost at this point is $60,400

Cost Variance (CV)

- $ 312.50

CV = EV - AC
CV = $60,087.50 - $60,400 = -$312.50

Earned Value (EV)

$ 60,087.50

Almost 55% of work is completed:
EV = 55% of $109,250 = $60,087.50

Schedule Performance Index (SPI)

0.92

SPI = EV / PV
SPI = $60,087.50 / $65,550 = 0.92
SPI < 1 indicate that the project is slightly behind schedule

Schedule Variance (SV)

- $ 5,462.50

SV = EV - PV
SV = $60,087.50 - $65,550 = -$5,462.50

Cost Performance Index (CPI)

0.99

CPI = EV / AC
CPI = $60,087.50 / $60,400 = 0.99
CPI < 1indicate that the project is slightly over budget

Change Management

Develop and implement a statistical model to determine the key factors influencing building evaluation scores in the Toronto Apartment Building Evaluation dataset. This model will analyze various building characteristics and their correlation with evaluation scores. (Proposed by Jibin George, Lead Analyst)

Scope

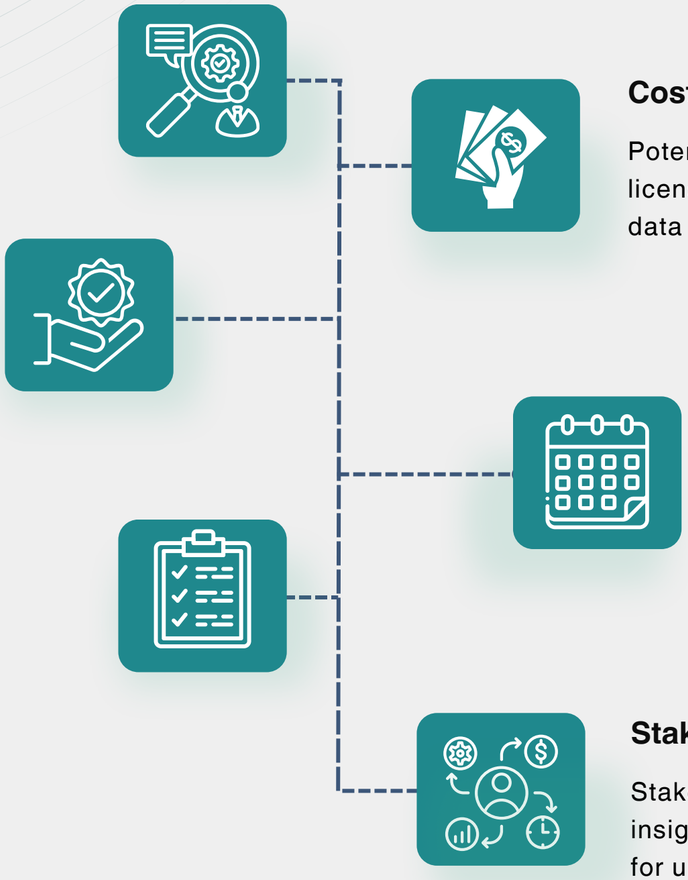
The project scope will expand to include advanced statistical analysis and modeling, requiring additional time and resources

Quality

This change will significantly enhance the quality and depth of insights provided by the project

Requirements

Additional data processing and statistical analysis tools may be required. Team members might need training in advanced statistical methods



Cost

Potential costs for additional software licenses or cloud computing resources for data processing and analysis

Schedule

Estimated 2-3 weeks additional time required for model development, testing, and integration into the dashboard

Stakeholder Impact

Stakeholders will gain more valuable insights, enabling better decision-making for urban planning and building management

Quality Management

Regular Code Reviews

- Peer evaluations of analysis scripts
- Adherence to coding standards

Data Validation Checks

- Automated checks for data accuracy
- Consistency verification across datasets

Automated Testing

- Unit tests for key functions
- Integration tests for dashboard components

User Acceptance Testing

- Stakeholder involvement in testing
- Usability assessments with target users

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Project Charter
Project Initiation

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Scope & Budget
WBS
Gantt Chart
Communication Plan
Risk Management

Executing

Team Management
Resource Allocation
Task Execution
Quality Assassurance
Stakeholder Engagement

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Performance Tracking
Progress Reporting
Change Management
Risk Monitoring
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Deliverable Handover
Project Documentation
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Project Closure

Project Closure Activities

- Final Deliverable Submission
- Stakeholder Acceptance
- Financial Closure
- Documentation and Archiving
- Lessons Learned

Importance of Proper Project Closure

- Knowledge Capture
- Organizational Learning
- Stakeholder Satisfaction
- Resource Optimization
- Continuous Improvement

Lessons Learned

01

Requirements Definition and Management

What Worked Well
Comprehensive stakeholder engagement led to clear requirements

What Can Be Improved
More frequent requirement reviews could have caught changing needs earlier

02

Scope Definition and Management

What Worked Well
Clear project objectives helped maintain focus

What Can Be Improved
More detailed scope breakdown could have improved task allocation and estimation

03

Schedule Development and Control

What Worked Well
Agile sprints allowed for flexible development

What Can Be Improved
Better estimation of data cleaning time required

04

Cost Estimating and Control

What Worked Well
Budget allocation for Tableau licenses was accurate

What Can Be Improved
Better estimation of data cleaning time required

Lessons Learned

05

Quality Planning and Control

What Worked Well
Regular data quality checks ensured accuracy

What Can Be Improved
Need for more automated testing of dashboard functionality

06

Human Resource Availability, Team Development, and Performance

What Worked Well
Cross-functional team collaboration was effective

What Can Be Improved
More training on geospatial data handling would have been beneficial

07

Communication Management

What Worked Well
Weekly status updates kept stakeholders informed

What Can Be Improved
Improve communication with external data providers

08

Stakeholder Management

What Worked Well
Early involvement of end-users in design process

What Can Be Improved
More frequent demos to city officials could have improved buy-in

Lessons Learned

09

Reporting

What Worked Well
Automated report generation saved time

What Can Be Improved
Standardize report formats across different user groups

10

Risk Management

What Worked Well
Regular risk assessments helped mitigate issues

What Can Be Improved
Develop more detailed contingency plans for data inconsistencies

11

Procurement Planning and Management

What Worked Well
Successful negotiation of Tableau enterprise license

What Can Be Improved
Earlier engagement with IT for server provisioning

12

Process Improvement Information

What Worked Well
Iterative dashboard development improved efficiency

What Can Be Improved
Standardize data cleaning processes for future updates

Conclusion

Our project on apartment building standards has successfully concluded, delivering valuable insights and establishing a robust framework for future initiatives. Key outcomes include:

Data-Driven Standards

- Comprehensive analysis of apartment building conditions
- Identified critical areas for improvement in building design

Performance Metrics

- Utilized Earned Value Management techniques
- Monitored project progress using SPI and CPI

Our approach is built on a foundation of innovation, collaboration, and unwavering commitment to excellence. This project has not only achieved its objectives but also:

- Enhanced apartment building standards
- Provided a model for future data-driven projects
- Contributed to organizational learning and best practices

Moving forward, we will leverage these insights to drive further success and innovation in urban development and project management.

References

- https://open.toronto.ca/dataset/apartment-building-evaluation/
- https://open.toronto.ca/dataset/upcoming-and-recently-completed-affordable-housing-units/
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- https://www.toronto.ca/community-people/housing-shelter/rental-housing-tenant-information/rental-housing-standards/apartment-building-standards/rentsafeto-for-building-owners/

Thank You

We look forward to the journey ahead, where we can turn our shared vision into reality.