

Project Requirements Document: RideWise: Cyclistic Insights Dashboard

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Client/Sponsor: Cyclistic

Purpose:

The **RideWise** project is happening to help Cyclistic understand customer behavior, optimize bike station placements, and improve product decisions based on real usage data. Investing in this project will enable the company to grow its customer base, make data-driven decisions, and enhance operational efficiency by identifying demand hotspots, addressing station congestion, and adapting to seasonal trends. By leveraging these insights, Cyclistic can increase customer satisfaction and drive future expansion, ultimately boosting revenue and competitiveness in the market.

Key dependencies:

Major Elements of the RideWise Project:

1. Project Team:

- Khalid Adan Mohamed: BI Professional leading the project.
- Adhira Patel: API Strategist.
- Megan Pirato: Data Warehousing Specialist.
- Rick Andersson: Manager, Data Governance.
- Tessa Blackwell: Data Analyst.
- Brianne Sand: Director, IT.
- Shareefah Hakimi: Project Manager.

2. Primary Contacts:

- Adhira Patel (API Strategist).
- Megan Pirato (Data Warehousing Specialist).

- Rick Andersson (Manager, Data Governance).
- Tessa Blackwell (Data Analyst).

3. Expected Deliverables:

- User-friendly dashboard: Accessible with large print and text-to-speech options.
- Data visualizations: Maps/tables showing trip start/end locations, popular destinations, and congestion trends.
- Customer segmentation: Insights into usage differences between subscribers and one-time customers.
- Time-based analysis: Usage patterns by time of day, season, and weather conditions.
- Growth metrics: Year-over-year trip growth trends.
- Congestion insights: Net trips per station to manage bike availability.

Stakeholder requirements

User-friendly dashboard: Accessible with large print and text-to-speech options.

- Priority: R (Required)

Data visualization: Maps/tables showing start and end station locations, popular destinations, and congestion insights.

- Priority: R (Required)

Customer segmentation: Differentiate between subscribers and non-subscribers in usage patterns.

- Priority: R (Required)

Time-based analysis: Display trends by time of day, season, and weather conditions.

- Priority: R (Required)

Growth metrics: Show year-over-year trip growth.

- Priority: R (Required)

Accurate data: Ensure proper data anonymization and privacy compliance.

- Priority: R (Required)

Weather impact analysis: Insights into how weather affects usage (e.g., rain's impact on bike demand).

- Priority: D (Desired)

Congestion insights: Analyze net bike inflows and outflows at each station.

- Priority: D (Desired)

Bike model usage data: Understand how different models are being used.

- Priority: N (Nice to have)

Success criteria:

1. Specific:

- Create a user-friendly dashboard that provides key insights into customer behavior, station demand, bike usage, and weather impact.
- Differentiate between subscriber and non-subscriber usage patterns and track year-over-year growth.

2. Measurable:

- The dashboard must visualize data for 100% of bike stations and all trips for at least one full year.
- Ensure accessibility features like large print and text-to-speech for all users.

3. Achievable:

- Ensure the dashboard is delivered within the 6-week timeline, with feedback from peers by Week 4 and final delivery by Week 6.

- Gather and clean data with no more than 5% margin of error in anonymized data and location tracking.
4. Relevant:
- The dashboard will help Cyclistic grow its customer base by informing decisions on station placements, customer marketing strategies, and resource allocation based on data insights.
5. Time-bound:
- The dashboard must be fully functional and deployed to the team by the end of the 6th week.
 - Gather at least 2 peer reviews by the end of Week 4 to ensure design and data integrity.

Success Measurement:

- Data accuracy: Data anonymization and accuracy will be verified by Jamal Harris with no more than a 5% margin of error.
- User engagement: 100% of stakeholders (Sara, Ernest, Jamal, Nina) must confirm the dashboard meets their requirements and is accessible.
- Decision-making impact: The dashboard should enable at least 2 new station location decisions and one product development change within 3 months after deployment.
- Customer growth: Cyclistic should see a 5% increase in trips across stations within 6 months, attributed to insights provided by the dashboard.

User journeys:

Current User Experience:

- Limited visibility: Stakeholders rely on raw data or simple reports, making it hard to analyze customer behavior, demand, and station usage effectively.
- Manual effort: Current tools might require a lot of manual work to analyze and segment data (e.g., manually filtering for subscribers vs. non-subscribers).

- Accessibility challenges: No existing dashboard has accessibility features like large print or text-to-speech for those with visual impairments.
- Static insights: No real-time visualization of bike usage or station congestion trends, making it difficult for stakeholders to respond to changes quickly (e.g., sudden demand at specific stations).

Ideal Future Experience:

- Interactive dashboard: Stakeholders can easily navigate an intuitive dashboard, accessing data visualizations that show customer behavior, station demand, and trends in real time.
- Automated insights: Customer segmentation, such as differentiating subscribers from one-time users, is automated and visually represented, saving time and improving decision-making.
- Accessible design: The dashboard includes large print and text-to-speech functionality, ensuring all stakeholders, including those with visual impairments, can use it effectively.
- Real-time data: Stakeholders have access to real-time usage data, showing bike availability and congestion trends, allowing for quick responses (e.g., relocating bikes or adjusting marketing efforts based on station demand).

Assumptions:

- Data availability: It is assumed that the NYC Citi Bike trip data and Census Bureau US Boundaries data will be readily accessible and up-to-date for analysis throughout the project.
- Stakeholder engagement: All stakeholders, including Sara, Ernest, Jamal, and Nina, will provide timely feedback during the dashboard development process.
- Data accuracy: It is assumed that the provided datasets (bike trips, weather data, etc.) are accurate, clean, and properly anonymized to avoid bias or privacy issues.
- Technical infrastructure: The current IT infrastructure and tools (e.g., databases, Tableau, SQL) are capable of handling large datasets and supporting real-time dashboard updates without significant delays.

- Data interpretation: It is assumed that weather impact on bike usage will be generalized, meaning any precipitation on a given day will be treated as impactful, even if it occurred during off-peak hours.
- User requirements: The accessibility features (large print and text-to-speech) will meet the needs of all users requiring accommodations, as no additional accessibility features have been specified.
- Team capacity: The project team has sufficient resources and time to complete the project within the 6-week timeframe without major delays or staffing issues.
- No unforeseen disruptions: It is assumed that no major external factors (like technical outages, new regulations, or market shifts) will significantly alter the project's scope or timeline.

Compliance and privacy:

Data Privacy:

- Ensure that all customer data used in the project is fully anonymized, removing any personally identifiable information (PII) like names, addresses, phone numbers, or emails.
- Follow data protection regulations such as the GDPR (General Data Protection Regulation) or CCPA (California Consumer Privacy Act), depending on where Cyclistic operates and collects data, to avoid legal liabilities.

Data Security:

- Implement strong data encryption and security measures during data transmission and storage to prevent unauthorized access or breaches.
- Limit access to sensitive datasets to approved team members only, ensuring access controls are in place.

Compliance with City Regulations:

- Adhere to any local regulations or agreements made with the city of New York regarding data sharing, especially when using public transportation data like Citi Bike trip data.

Accessibility Compliance:

- Ensure the dashboard meets ADA (Americans with Disabilities Act) and WCAG (Web Content Accessibility Guidelines) standards for accessibility, as requested by stakeholders. This includes features like large print and text-to-speech for visually impaired users.

Fair Data Use:

- Avoid using data that could lead to discriminatory practices or biased decisions, such as geographic bias when making decisions on station placements. Ensure that the insights generated promote fair and equitable access to services.

Data Retention and Disposal:

- Follow appropriate data retention policies, ensuring that data is only kept for as long as necessary and properly disposed of after its use to avoid legal risks.

Accessibility:

Use Large, Clear Fonts:

- Ensure text is easily readable with large font sizes and clear, legible fonts for users with visual impairments.

Color Contrast:

- Provide sufficient contrast between text and background colors to enhance readability, especially for color-blind users. Use high-contrast themes.

Text-to-Speech Support:

- Include text-to-speech features for users with visual impairments to have content read aloud.

Keyboard Navigation:

- Ensure that the reports are fully navigable via keyboard (without requiring a mouse), to assist users with mobility impairments.

Alternative Text for Visuals:

- Include alt text for all charts, graphs, and images so that users with screen readers can understand the content.

Avoid Relying on Color Alone:

- Do not use color as the only way to convey information (e.g., red for "bad" and green for "good"). Use labels or patterns alongside colors for clarity.

Clear and Simple Layout:

- Keep the layout clean and uncluttered, with well-structured headings and logical flow, making navigation easier for all users, including those with cognitive disabilities.

Accessible File Formats:

- Provide reports in multiple formats (e.g., HTML, PDF, Excel) that are accessible to screen readers and other assistive technologies.

Descriptive Labels and Titles:

- Ensure that all data visualizations, tables, and charts have descriptive labels and titles to clearly explain their purpose and content.

Interactive Accessibility:

- If the dashboard includes interactive elements, ensure that all interactive controls (buttons, filters, etc.) are accessible via assistive technologies and properly labeled for screen readers.

Roll-out plan:

Scope:

- Data Analysis: Analyze Cyclistic's bike trip data, including start/end times, locations, and user types (subscribers vs. non-subscribers).
- Visualizations: Create data visualizations that include maps/tables of station usage, customer segmentation, congestion insights, and growth trends.
- Accessibility Features: Ensure the dashboard is user-friendly with large fonts, high-contrast colors, and text-to-speech capabilities.
- Weather Impact: Analyze how weather affects bike usage, factoring in rain and other conditions.
- Growth and Congestion Analysis: Show year-over-year growth trends and insights into station congestion (inflow/outflow of bikes).

Priorities:

1. High Priority:

- Develop a user-friendly dashboard with essential visualizations (e.g., start/end locations, customer segmentation, congestion insights).
- Ensure accessibility by including large print, text-to-speech, and color contrast.
- Provide real-time customer behavior insights (trends by day, time, season).
- Anonymize data to ensure privacy and regulatory compliance.

2. Medium Priority:

- Analyze weather impact on bike usage.
- Include detailed insights into bike model usage.
- Optimize the dashboard for mobile devices, ensuring it's accessible on multiple

platforms.

3. Low Priority:

- Additional features like predictive analytics for future station demand or bike availability.
- Integration with external third-party tools (if applicable).

Timeline:

- Week 1:
 - Dataset assigned and initial project planning.
 - Validate fields, including station data and bike IDs.
- Weeks 2–3:
 - Develop SQL queries and ETL processes to clean, process, and aggregate the data.
 - Begin dashboard design and visualizations.
- Week 4:
 - Finalize SQL development.
 - Create the first draft of the dashboard with all key visualizations.
 - Peer review of dashboard functionality and design.
- Weeks 5–6:
 - Complete dashboard development, focusing on accessibility features and user interface refinements.
 - Perform testing and validation of the dashboard (real-time updates, data accuracy, and usability).
 - Final stakeholder review and sign-off.

