

Admin Dashboard Analytics: Data Calculation Documentation

This document outlines the data calculations used in the admin dashboard analytics routes. These routes provide insights into various aspects of the system, including dashboard summaries, branch performance, service analytics, staff performance, vehicle analytics, complaint analytics, and revenue analytics.

1. Dashboard Summary Stats

- **Total Vehicles:**
 - Calculated by counting all documents in the **Vehicle** collection.
- **Active Vehicles:**
 - Calculated by counting documents in the **Vehicle** collection with **status** field equal to 'active'.
- **Total Services:**
 - Calculated by counting all documents in the **Service** collection.
- **Pending Services:**
 - Calculated by counting documents in the **Service** collection with **status** field equal to 'pending'.
- **In Progress Services:**
 - Calculated by counting documents in the **Service** collection with **status** field equal to 'in_progress'.
- **Completed Services:**
 - Calculated by counting documents in the **Service** collection with **status** field equal to 'completed'.
- **Total Complaints:**
 - Calculated by counting all documents in the **Complaint** collection.
- **Open Complaints:**
 - Calculated by counting documents in the **Complaint** collection with **status** field either 'open' or 'in_progress'.
- **Total Staff:**
 - Calculated by counting documents in the **User** collection with **role** field either 'staff' or 'manager'.
- **Total Branches:**
 - Calculated by counting all documents in the **Branch** collection.
- **Active Branches:**
 - Calculated by counting documents in the **Branch** collection with **status** field equal to 'active'.
- **Service Completion Rate:**
 - Calculated as $(\text{completedServices} / \text{totalServices}) * 100$.
- **Complaint Resolution Rate:**

- Calculated as $(\text{resolvedComplaints} / \text{totalComplaints}) * 100$, where `resolvedComplaints` are those with a status of 'resolved' or 'closed'.
- **Total Revenue:**
 - Calculated by summing the `totalCost` field of all services with `status` 'completed'.
- **Recent Services:**
 - The 5 most recently created services, sorted by `createdAt` date.
- **Recent Complaints:**
 - The 5 most recently created complaints, sorted by `createdAt` date.

2. Branch Performance Metrics

- For each branch:
 - **Vehicle, Service, Complaint, and Staff Counts:** Similar to dashboard summary, but filtered by the branch ID.
 - **Service Completion Rate:** Calculated as $(\text{completedServices} / \text{totalServices}) * 100$ for the branch.
 - **Complaint Resolution Rate:** Calculated as $(\text{resolvedComplaints} / \text{totalComplaints}) * 100$ for the branch.
 - **Average Service Time:**
 - Calculated by averaging the difference between `completionDate` and `startDate` for completed services at the branch.
 - **Total Revenue:** Sum of `totalCost` for completed services at the branch.
 - **Average Service Cost:** Calculated as $\text{totalRevenue} / \text{completedServices}$ for the branch.
 - **Top Services:** Top 5 service types by count for the branch, including revenue.

3. Service Analytics

- **Service Type Analytics:**
 - Aggregates data on service types within a specified date range.
 - Calculates `count`, `revenue`, `partsCost`, `averageLaborHours`, `completedCount`, `averageCompletionTime`, and `completionRate` for each service type.
- **Category Distribution:**
 - Groups services by category and calculates `count`, `revenue`, and `partsCost` for each category.
- **Time to Completion Analysis:**
 - Calculates average, min, and max service times, as well as the percentage of services completed on time.
- **Parts Usage Analysis:**

- Analyzes parts usage, including `totalUsage`, `totalCost`, and `averageCostPerUnit`.
- **Revenue Trend:**
 - Calculates total revenue per day within the specified date range.

4. Staff Performance Analytics

- For each staff member:
 - **Service Items:** Counts total and completed service items. Calculates completion rate.
 - **Labor Hours:** Sum of labor hours for completed service items.
 - **Credit Points:** Total credit points earned.
 - **Revenue:** Calculated by dividing the labor cost of each service item by the number of technicians.
 - **Productivity:** Calculated as revenue per labor hour.
 - **Service Time Metrics:** Calculates average, min, and max completion times.
 - **Service Types:** Breakdown of services by type, including count, revenue, and credit points.
 - **Customer Satisfaction:** Average rating and count from complaint resolutions.
 - **Complaints:** Counts complaints related to the staff member.
- **Staff Specializations:**
 - Aggregates staff capabilities by service category and branch.
 - Calculates average skill level for each category.
- **Top Performers:**
 - Identifies top staff members by revenue, completion rate, and credit points earned.

5. Vehicle Analytics

- **Common Makes and Models:**
 - Groups vehicles by make and model and counts occurrences.
- **Service Frequency:**
 - Calculates the number of services per vehicle and the average service interval.
- **Vehicle Type Distribution:**
 - Counts the occurrences of each vehicle type.

6. Complaint Analytics

- **Category Breakdown:**
 - Counts complaints by category.
- **Status Overview:**
 - Counts complaints by status.
- **Average Resolution Time:**
 - Calculates average, min, and max resolution times for resolved complaints.
- **Customer Satisfaction:**

- Calculates average satisfaction rating from complaint resolutions.

7. Revenue Analytics

- **Total Revenue:**
 - Sums the total cost of all completed services within a date range.
- **Revenue by Branch:**
 - Calculates total revenue for each branch.
- **Revenue by Service Type:**
 - Calculates total revenue for each service type.
- **Payment Method Distribution:**
 - Calculates the total amount and count for each payment method.
- **Outstanding Payments:**
 - Calculates the total outstanding amount and count of services with incomplete payments.