Automotive Analytics: From Service Bay to Highway Safety

A Data Warehouse Project for Actionable Insights

By: Bakir Subic
Course: CS 360 Business Intelligence
Date: June 8, 2025

The Business Problem & Project Purpose

Gaining a competitive edge for "AutoCare Pro"

The Scenario: *"AutoCare Pro" is a modern automotive service center that wants to make data-driven decisions. They currently have two separate streams of valuable information but no way to connect them.*

Project Purpose: *To bridge the gap between internal service data and external accident data. By building a unified data warehouse, we aim to uncover hidden patterns and answer critical business questions that neither data source can answer alone.*

Data Source 1: Internal Operations

What it tracks:

- *Who are our Customers?*
- *What Cars do they drive?*
- *What services do they receive?*
- *Which parts are used?*

Limitation:

This provides a view inside the garage only. It answers "what we did" but not "why it matters" in a broader context.

Data Source 2: External Reality

What it tracks:

Where, when, and under what conditions do vehicle accidents happen?

Limitation:

This data is disconnected from our specific customers and services.

Key Business Questions & Strategic Goals

From Raw Data to Smarter Business Decisions

This project will enable Car Services to answer strategic questions, such as:

- Marketing & Customer Outreach:
  - Can we identify customers living in accident-prone areas and offer them targeted safety inspections (e.g., brake checks, tire rotations)?
  - Do certain car models that we service frequently appear in accident data, creating an opportunity for proactive maintenance reminders?
- Operational Efficiency & Inventory:
  - Is there a correlation between certain types of services (e.g., brake repairs) and the make/model of vehicles involved in accidents?
  - Can we predict demand for specific parts based on seasonal accident trends (e.g., more accidents in winter might increase demand for collision-related parts)?
- Customer Safety & Value Proposition:
  - Can we provide customers with data-backed safety advice based on accident trends related to their vehicle type or local weather patterns?
  - How can we use this integrated data to position our Car Service not just as a repair shop, but as a proactive partner in vehicle safety?