# Vehicle Sales Analysis

**Project Overview**

This Power BI dashboard provides comprehensive analytics for vehicle sales data across multiple geographic regions and product categories. The dashboard delivers insights into sales performance, quantity distributions, order statuses, and pricing correlations for a global vehicle dealership operation spanning from 2012 to 2017.

**Dashboard Architecture**

**Page 1: Sales Performance Overview**

**Key Performance Indicators:**

* **Total Sales**: $8.07M across the analysis period
* **Total Quantity Ordered**: 96K units
* **Time Period**: January 1, 2012 to August 8, 2017

**Interactive Controls:**

* Date range slider for temporal filtering
* Order status multi-select filter with options:
  + Cancelled
  + Disputed
  + In Process
  + On Hold
  + Resolved
  + Shipped
* "Clear all slicers" functionality for quick filter reset

**Sales Geographic Analysis:**

* **Sales by Country**: Bar chart visualization showing country-wise performance
* **Top Performing Markets**:
  + USA: Leading market with approximately $2.8M
  + Spain: Second largest with ~$1.2M
  + France: Third with ~$1.1M
  + Australia: Strong performance with ~$0.8M
  + Additional markets across Europe, Asia, and other regions

**Product Performance Analysis:**

* **Sales by Product-line**: Horizontal bar chart showing revenue distribution
  + Classic Cars: Dominant category (~$3.5M)
  + Vintage Cars: Second largest (~$1.8M)
  + Trucks and Buses: ~$1.1M
  + Motorcycles: ~$1.0M
  + Planes: ~$1.0M
  + Ships: ~$0.7M
  + Trains: Minimal contribution
* **Quantity Ordered by Product-line**: Donut chart visualization
  + Classic Cars: 33K units (largest volume)
  + Vintage Cars: 20K units
  + Motorcycles: 11K units
  + Planes: 11K units
  + Trucks and Buses: 11K units
  + Ships: 8K units
  + Trains: 3K units

**Pricing Analysis:**

* **Correlation between Quantity & Price**: Scatter plot revealing pricing strategies
* Price points ranging from $0 to $6K
* Quantity orders spanning 0 to 2000+ units
* Clear clustering patterns indicating different product tiers and market segments

**Page 2: Detailed Geographic and Operational Analysis**

**State-Level Performance:**

* **Sales by State**: Detailed breakdown of US state performance
* **Top US States**:
  + New York (NY): Highest performing state (~$4.7M)
  + California (CA): Strong second position (~$1.0M)
  + Massachusetts (MA): Significant contributor (~$0.7M)
  + Connecticut (CT), Pennsylvania (PA): Notable performers

**Comprehensive Data Table:**

* **Multi-dimensional analysis** with columns:
  + Country, State, City breakdown
  + Order Status tracking
  + Total Quantity Ordered per location
  + Sum of Sales per location

**Key Geographic Insights:**

* **International Presence**: Operations across multiple countries including:
  + Denmark (Aarhus): 882 units, $77,478.79
  + USA (Multiple states): Dominant market presence
  + Spain (Barcelona): 882 units, $73,927.00
  + Italy (Bergamo): 1,650 units, $1,271,143.64
  + Norway (Bergen): 973 units, $86,339.11
  + Sweden (Boras): Multiple locations with strong performance
* **Order Status Distribution**: Real-time tracking of order fulfillment
  + Majority of orders showing "Shipped" status
  + Some "In Process", "On Hold", and "Cancelled" orders for operational monitoring

**Performance Metrics:**

* **Total Summary**: 96,428 total units ordered, $8,069,704.78 total sales value
* **Geographic Diversity**: Sales spanning North America, Europe, Australia, and Asia

**Technical Implementation Features**

**Data Visualization Techniques**

* **Interactive Filtering**: Cross-filtering across all visualizations
* **Multi-chart Types**: Bar charts, donut charts, scatter plots, and data tables
* **Geographic Mapping**: Country and state-level analysis
* **Time Intelligence**: Date range filtering capabilities
* **Conditional Formatting**: Status-based color coding

**Dashboard Design Elements**

* **Consistent Color Scheme**: Professional blue-gray theme
* **Clear Navigation**: Multi-page structure with intuitive flow
* **Responsive Layout**: Optimized visualization placement
* **KPI Cards**: Prominent display of key metrics
* **Interactive Elements**: Slicers, filters, and drill-through capabilities

**Business Intelligence Insights**

**Market Performance**

* **Geographic Concentration**: USA dominates with 60%+ of total sales
* **Product Portfolio**: Classic Cars represent the core business with 43% of revenue
* **International Expansion**: Strong presence in European markets (Spain, France, Italy)

**Operational Efficiency**

* **Order Fulfillment**: High percentage of shipped orders indicating efficient operations
* **Product Diversification**: Balanced portfolio across 7 product categories
* **Price-Volume Relationship**: Clear correlation between quantity and pricing strategies

**Growth Opportunities**

* **Emerging Markets**: Potential in Asian and other international markets
* **Product Development**: Opportunity to expand lower-performing categories
* **Regional Expansion**: State-level analysis reveals untapped US markets

**Technical Specifications**

* **Dashboard Pages**: 2 comprehensive analytical views
* **Data Range**: 5+ years of historical data (2012-2017)
* **Geographic Coverage**: Multi-country, multi-state analysis
* **Product Categories**: 7 distinct vehicle product lines
* **Order Tracking**: Complete order lifecycle monitoring
* **Visualization Types**: 8+ different chart and table formats

**Project Value**

This dashboard demonstrates advanced Power BI capabilities including:

* **Complex Data Modeling**: Multi-dimensional analysis across geography, products, and time
* **Interactive Design**: User-friendly filtering and navigation
* **Business Intelligence**: Actionable insights for sales and operations teams
* **Scalable Architecture**: Framework suitable for real-time data updates
* **Professional Presentation**: Executive-ready reporting and visualization standards

The solution provides stakeholders with comprehensive visibility into sales performance, enabling data-driven decisions for inventory management, market expansion, and strategic planning across global operations.