

# AdventureWorks Power BI Project: Cohort & Performance Dashboard

## Company Overview

Adventure Works is a large, multinational manufacturing company producing and distributing bicycles, parts, and accessories for commercial markets across North America, Europe, and Asia. With 500 employees and several dedicated regional sales teams, Adventure Works leverages data to optimize its sales and marketing strategies throughout its diverse market base.

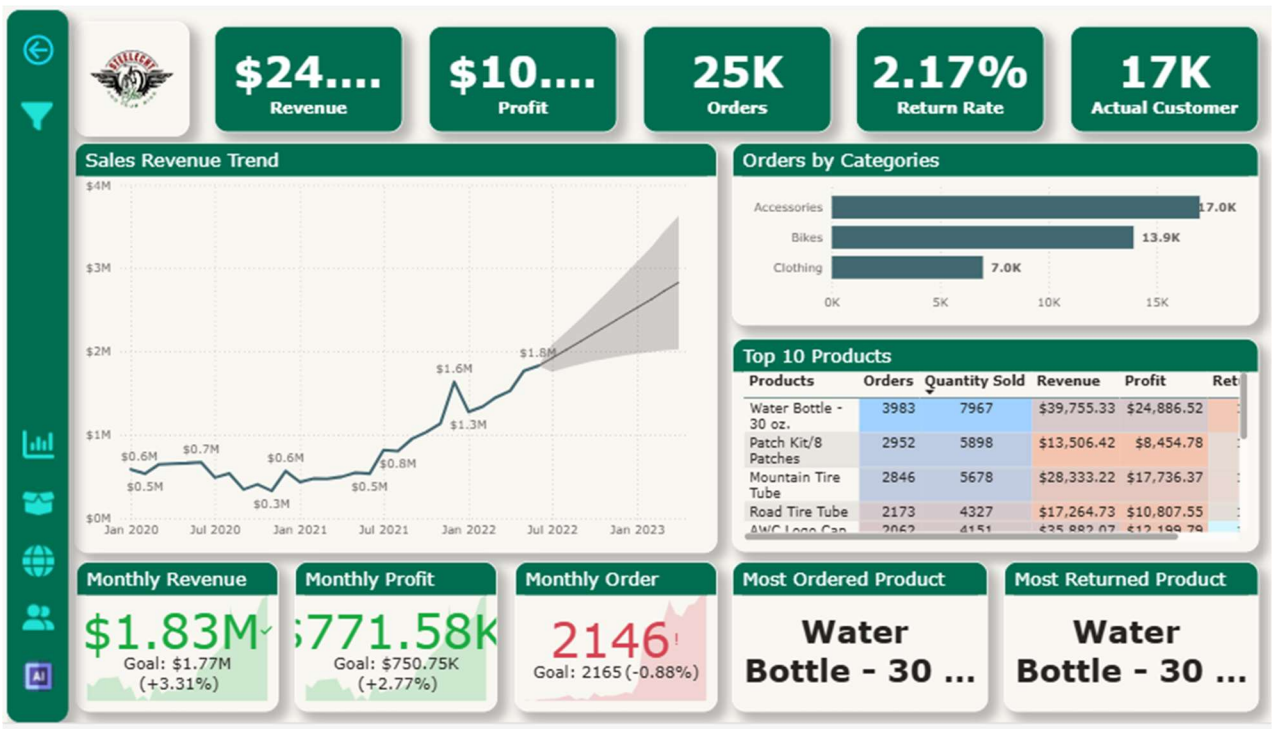
## Project Overview

This Power BI dashboard provides an end-to-end tabular model to analyze AdventureWorks' multi-year Internet sales data using the AdventureWorksDW database. Designed for sales and marketing users, the dashboard enables deep insights into company revenue, profit, orders, return rates, customer and product performance, and territory growth drivers.

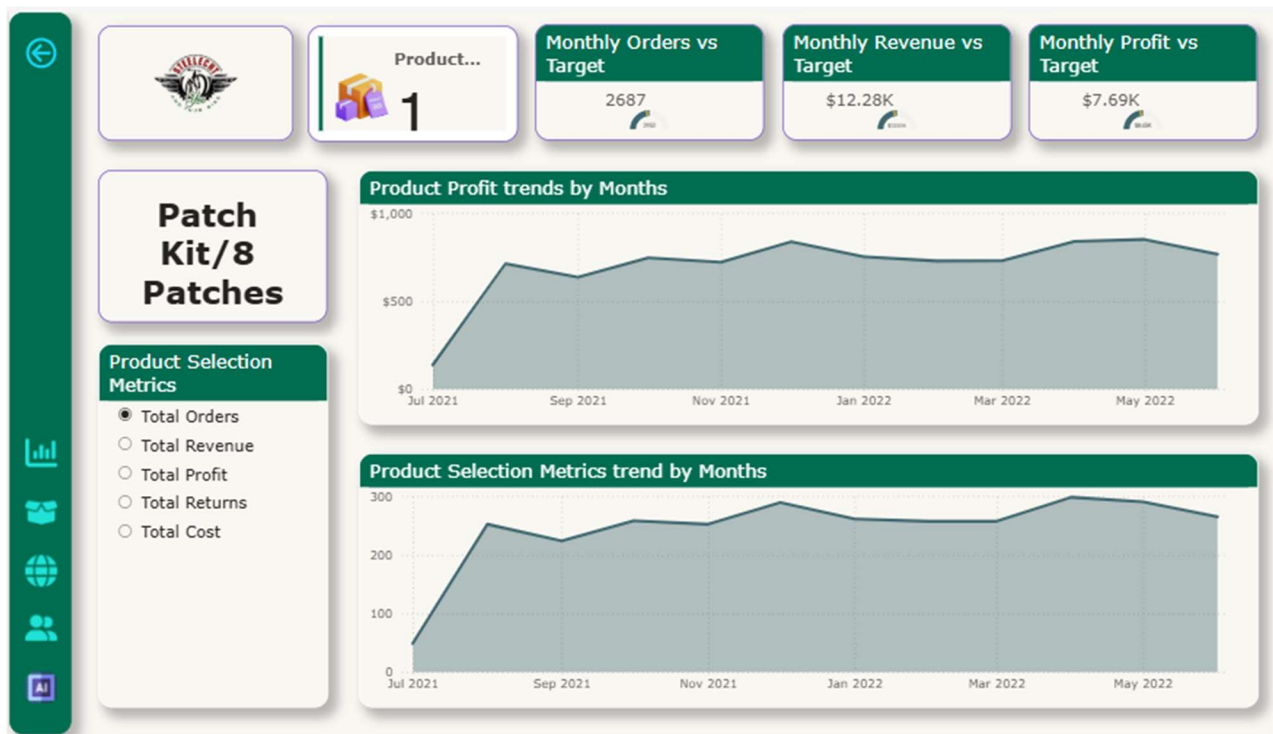
## Features

- **Executive KPIs:** Track headline performance—total revenue, profit, orders, return rate, and active customers.
- **Sales & Profit Trends:** Analyze monthly, quarterly, and yearly sales and goal achievement.
- **Product Performance:** Discover top categories and SKUs by orders, revenue, profit, and return frequency.
- **Customer Segmentation:** Monitor cohort churn/retention, average customer revenue, top spenders, and key influencers.
- **Global Reach:** Territory-based mapping for orders and sales across continents.
- **AI-Driven Analysis:** Utilize key influencer visualizations to identify what drives sales and retention.

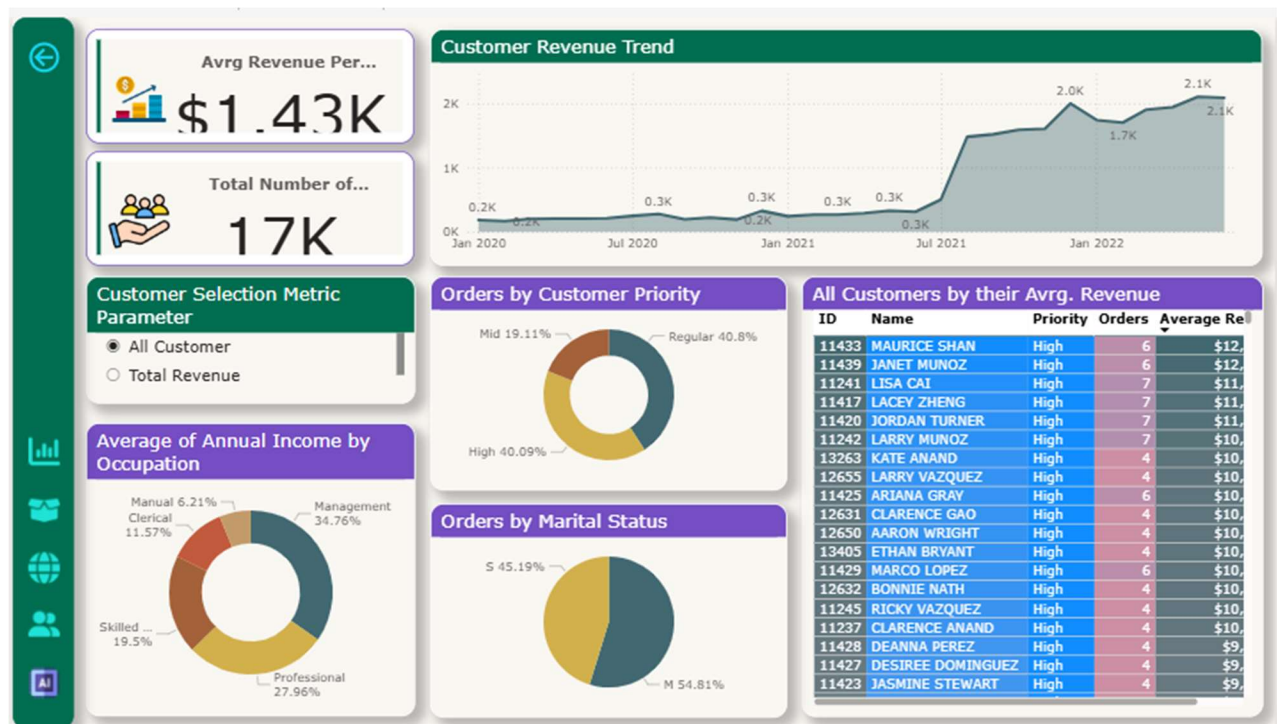
Dashboard Snapshots



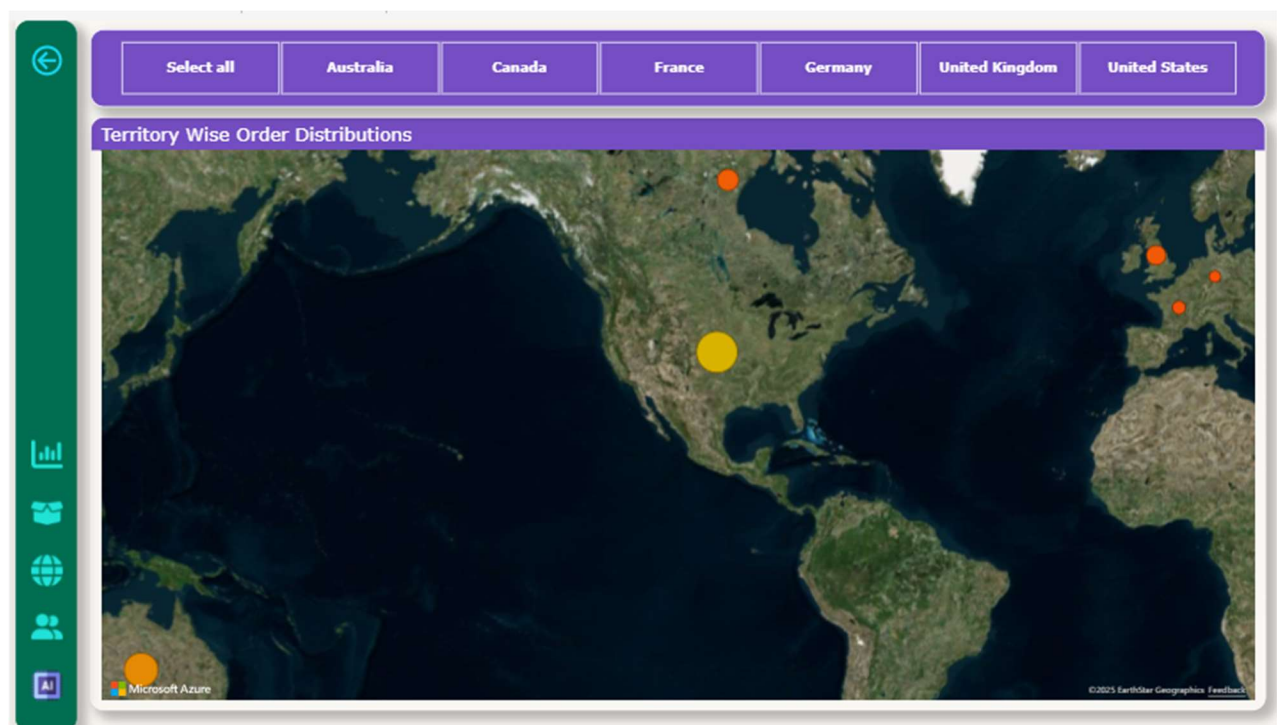
Core business KPIs and performance overview.



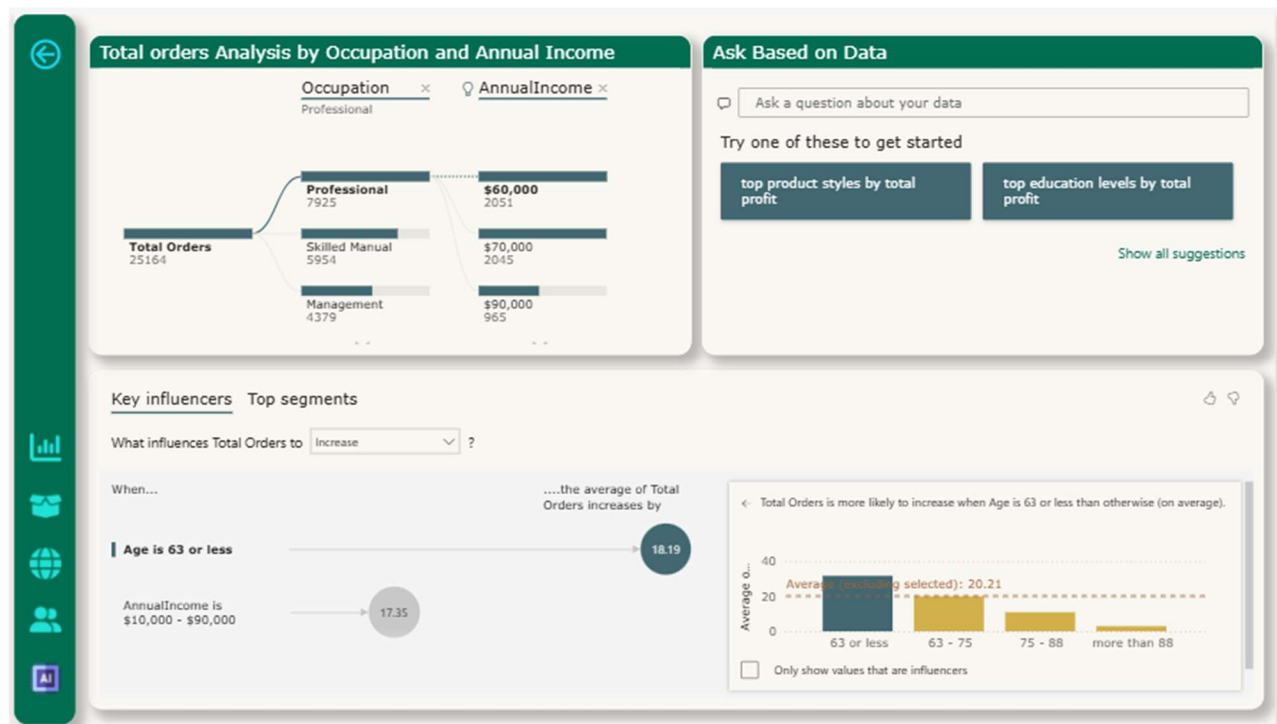
Category, SKU, and return analytics.



Churn, cohort, and customer segmentation analytics.



Worldwide territory distribution for sales and orders.



*Key influencer visual to reveal sales and churn drivers.*

## Sample Insights

- **Revenue & Orders:** \$24.91M revenue, \$10.46M profit, and 25K orders over the last three years.
- **Returns & Products:** 2.17% return rate; accessories are the most popular category. Water Bottle 30oz is both the most ordered and most returned product.
- **Customer Health:** 17,000 active customers with \$1.43K average revenue per customer; 78% churn rate spotlights opportunity for retention focus.
- **Territorial Analysis:** US and UK dominate market revenue, but mapping shows underleveraged regions in Asia and Australia.
- **AI-driven Insights:** Age under 63 and annual income between \$10K-\$90K are critical for high order frequency.

## How to Use

1. Open the dashboard for interactive filtering by time, product, customer segment, priority, territory, and cohort.
2. Refer to sample visuals and KPIs in presentations for strategic, sales, or operational planning.
3. Leverage AI visuals to identify key performance and retention levers at a glance.

## About

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## Technical Implementation

### Data Source:

- AdventureWorksDW Internet sales, customer, product, territory, and order tables (CSV/SQL extracts).

### Company Data Model:

- Tabular model aggregated across sales, product, customer, and geography for fast multi-dimensional slicing.

### Data Storage:

- Local CSV/Excel and SQL Server DW import into Power BI Desktop.

**Update Cadence:**

- Demonstration batch; in production supports monthly or real-time refreshes.

**ETL Process:**

- Efficient Power Query (M) for joins, deduplication, type enforcement, time/calendar alignment, enrichment, and feature-engineering (return rates, customer cohort tagging, etc).

**Connection Mode:**

- Import mode for robust speed and advanced DAX calculations.

**Modeling Challenges:**

- Managed many-to-many product-customer relationships, clean date logic, and complex territory mapping.

**DAX & Analytics:**

- Extensive CALCULATE, SUMX, VAR, FILTER, RANKX, and AI “Key Influencers” for business drivers and tenure/churn analytics.

**KPIs:**

- Revenue, profit, orders, return %, average revenue per customer, churn rate, region/category share, cohort size, top/bottom SKUs.

**Best Practices:**

- Star schema modeling, clear naming, colorblind-friendly visuals, slicers/bookmarks, tooltips, and segment-level drill-through.

**Performance & Validation:**

- Reduced columns/rows for speed, data cross-checked with SQL and pivoted summaries.

**End Users:**

- Sales executives, marketing strategy, business analysts, and management.

**Collaboration:**

- Designed for Power BI Service sharing; PDF/visual exports for leadership and field team presentations.