

State Agency Amazon Spending

A Washington State Case



Ask 3 - Data Analysis

1. What are the top 10 categories of products purchased by state agencies? This analysis will help us understand the types of products that are most popular among state agencies.

2. What are the average monthly spending trends for different product categories? This will help us identify seasonal patterns and trends in spending.

3. How do agency spending patterns compare to other government entities? This will help us benchmark our spending against others.

4. What are the top 10 highest-spending agencies? This will help us identify the largest spenders within the state.

Conclusion

1. From our analyses, we can conclude that Amazon can tailor marketing efforts to coincide with high-expenditure months and incentivizing purchases during traditionally low-spending periods with discounts.

2. By identifying trends in recurring and bulk orders from top-spending agencies, Amazon can better manage inventory and predict demand.

3. Understanding customer attrition enables Amazon to develop re-engagement strategies for agencies that have ceased orders.

4. Analyzing the performance and offerings of competitor sellers allows Amazon to devise specific promotions and discounts, undercutting competitors in key product categories thereby increasing its market share.

CONTENTS

Summary and Explanations
Ask 1 - Data Description
Ask 2 - Data Wrangling
Ask 3 - Data Analysis
Conclusion

PROJECT SUMMARY

1. Overview of the project and its objectives.
2. Data sources used and their characteristics.
3. Key findings and insights derived from the analysis.
4. Recommendations for future work.

Three Main Areas Of Interest

1. Agency spending patterns and trends.
2. Product categories and their popularity.
3. Comparison with other government entities.

Ask 1 - Data Description

1. What are the main data sources used for this analysis?
2. What are the key variables and metrics being tracked?
3. How is the data being used to inform decision-making?

Ask 2 - Data Wrangling

1. What are the main challenges in wrangling the data?
2. What tools and techniques were used to clean and prepare the data?
3. How was the data integrated from multiple sources?

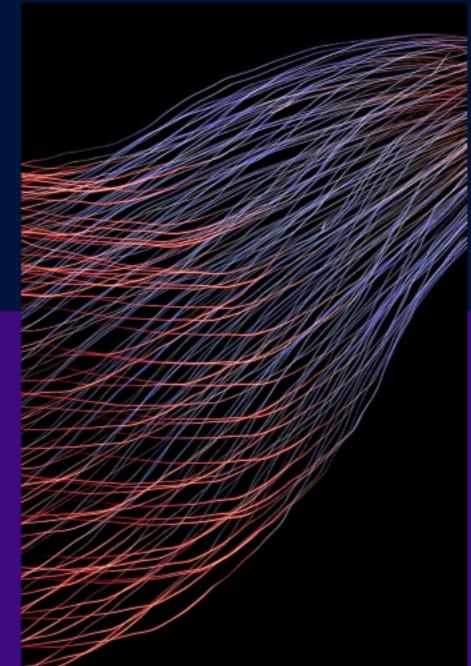
Ask 3 - Data Analysis

1. What are the main findings from the data analysis?
2. How do the findings compare to previous research or benchmarks?
3. What are the implications for policy and practice?

Q&A
Thank you!

CONTENTS

- Summary and Expectations
- Ask 1: Identify and Describe the Dataset
- Ask 2: Data Wrangling
- Ask 3: Data Analysis
- Conclusion



PROJECT SUMMARY



Dimensional Database Utilization:

Organized, analyzed, and visualized Washington State agencies' purchase records on Amazon using dimensional databases.



Data Wrangling:

Undertook data cleaning, filtering, and modeling to ensure accuracy and applicability of the data.



Historical Data Analysis for Amazon's Market Edge:

Conducted in-depth analysis of historical data to enhance Amazon's competitiveness.



Presentation of Key Findings:

Delivered strategic insights for refine Amazon's business strategies



Three Main Areas Of Interest



Time Series Trends:

We charted and interpreted the historical purchasing trends of Washington Agencies with Amazon, revealing the evolution of their procurement behaviors over the years.



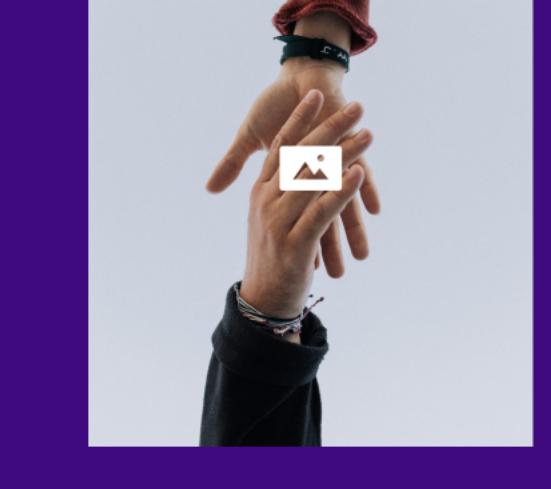
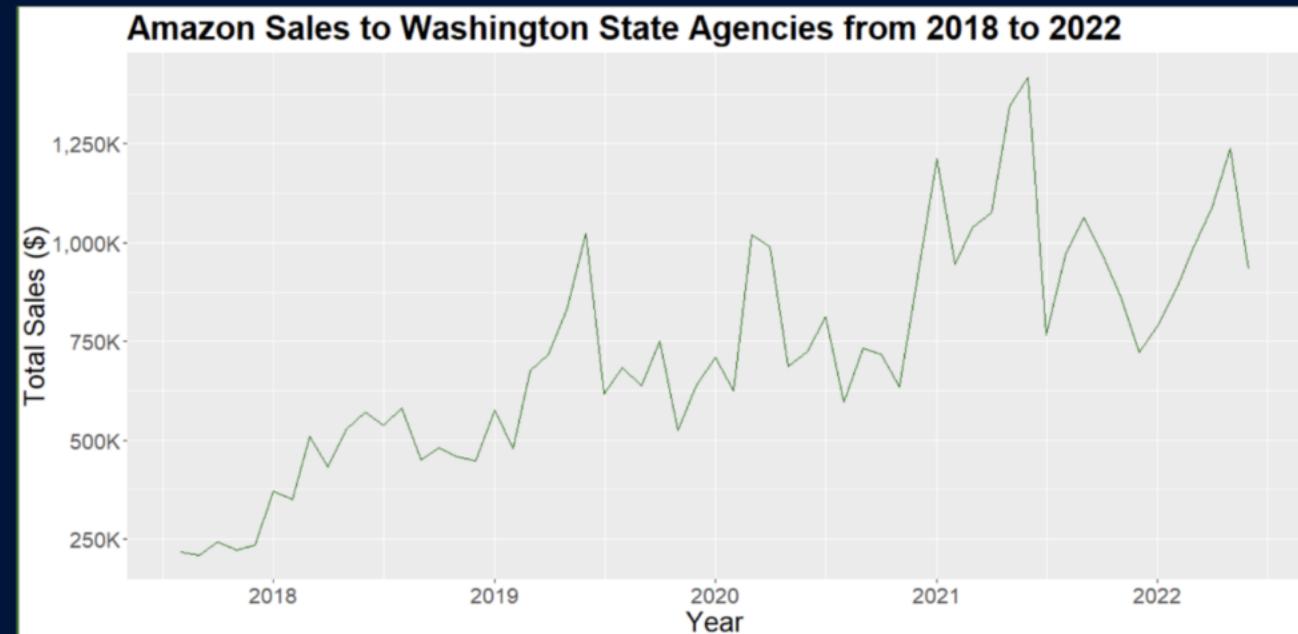
Order Patterns:

We examined the characteristics of recurring and bulk orders, as well as customer loyalty and turnover, especially among the agencies that accounted for the most significant expenditure on Amazon.



Competitive Analysis:

We conducted a thorough analysis of the competitors selling on Amazon.com, detailing their product offerings, sales volumes, and the categories in which they were most competitive with Amazon.





01

ASK 1: DATA DESCRIPTION

1. State Agency Amazon Spend 2017-2022
2. Last updated on December 2, 2022
3. 486,000 records and 27 variables
4. Department of Enterprise Services

Why this dataset?

1. It encompasses a collection of over 486,000 rows of transactional data.
2. It contains numerical fields tailored for the fact table and four distinct sets of categorical data optimized for the dimensional table which makes it suitable for analytical analyses.

Business Questions

- 1. What are the notable time series trends that characterize purchases from Amazon by Washington Agencies over the years?**

- 2. What trends emerge in recurring orders, bulk orders, and customer attrition among the individual Washington Agencies that spend the most on Amazon purchases?**

- 3. Who are the primary competitor sellers to Amazon's own products on Amazon.com, and what are their sales offerings, magnitudes of sales, and competitive product categories?**





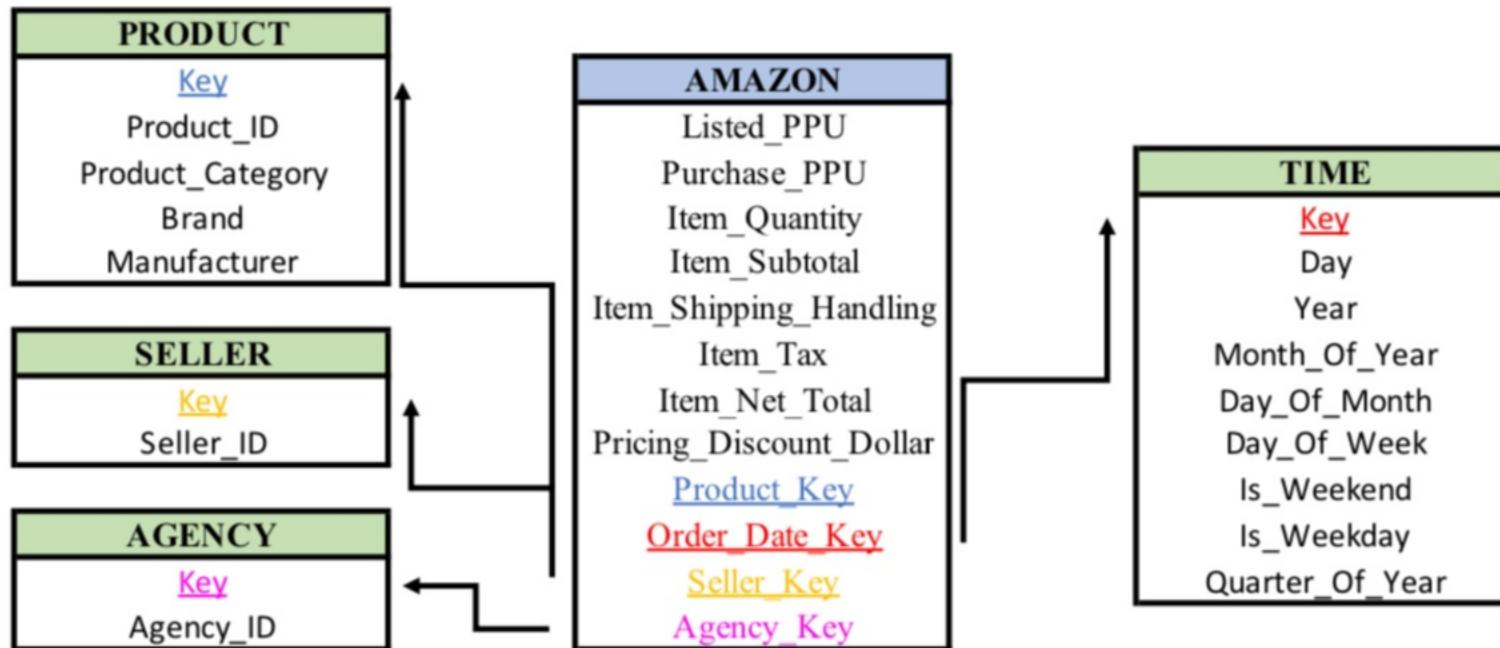
02

ASK 2: DATA WRANGLING

Data Cleaning

- **Missing Values**
 - Dropped Payment Amount and Brand Code
 - Filled numerical N/As with 0s
- **Irrelevance**
 - Dropped Shipment and Payment Date, Item Model and Part #, Product Condition, Discount Program, Item Promotion, UNSPSC
- **Duplicates**
 - Dropped Product Title column-same as Product Category
 - Dropped Pricing Discount %
 - Standardized Amazon Seller name
- **Adding useful information**
 - Pricing After Discount = Item Net Total - Pricing Discount \$

AMAZON SCHEMA



Ask 3 - Data Analysis

1. What are the notable time series trends that characterize purchases from Amazon by Washington Agencies over the years?

a. In which months do Washington Agencies exhibit higher spending patterns on Amazon purchases?

b. During these high spend months, which Washington Agencies tend to spend the most on ordering from Amazon?

c. How do the Net Purchase Totals from all Washington Agencies fluctuate yearly, and what factors contribute to these trends?

Business Value

a. Optimizing Advertising Strategies

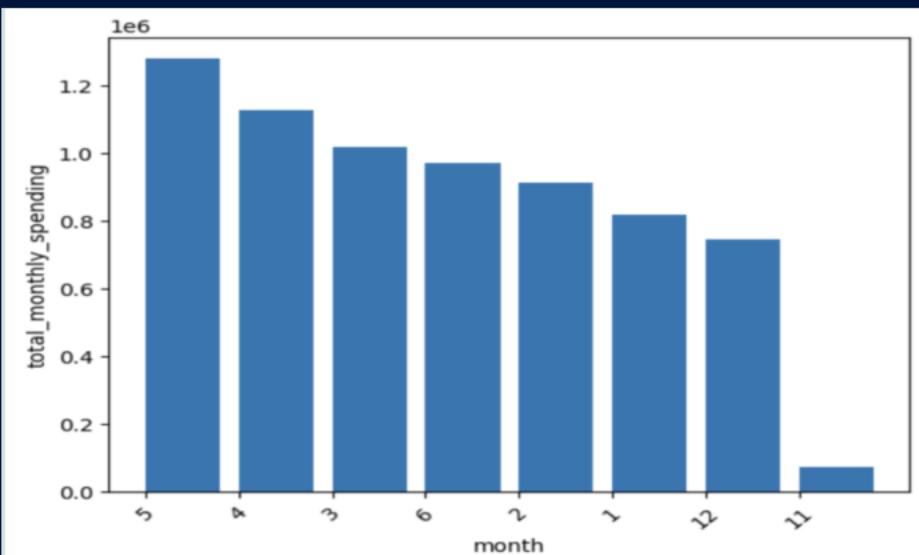
b. Stimulating Higher Spending

c. Efficient Marketing Alignment



03

1. Peak expenditure was in May, totaling just over 1.27 million dollars. This peak is consistent with elevated sales in April and March.
2. Highest spending agencies during the high spend months The top spending agency was the Social and Health Services Department.
3. Fluctuation of net purchases: In 2022, there were more total net purchases compared to 2021 where net purchases were depressed , possibly influenced by the disruptive effects of COVID-19.



agency_id	total_spend_for_month
SOCIAL AND HEALTH SERVICES DEPARTMENT OF (DSHS)	293475.51
CHILDREN YOUTH AND FAMILIES DEPT OF	229636.88
CORRECTIONS DEPARTMENT OF	221836.55
FISH AND WILDLIFE DEPARTMENT OF	68954.19
LABOR AND INDUSTRIES WASHINGTON STATE	50612.71

year	total_net_purchase
2022.0	6119081.33
2021.0	820266.27



Ask 3 - Data Analysis

2. What trends emerge in recurring orders, bulk orders, and customer attrition among the individual Washington Agencies that spend the most on Amazon purchases?
 - a. Which Washington Agencies have recorded the highest order volumes on Amazon during the Fiscal Year?
 - b. Among Washington Agencies, which ones are placing Bulk Orders (orders with item quantities exceeding 100) on Amazon?
 - c. Which Washington Agencies previously ordered from Amazon but have stopped?

Business Value

1. Streamlining Inventory and Predicting Bulk Orders
2. Promotions for Bulk Orders
3. Re-engaging Attrited Agencies

1. The Department of Social and Health Services emerges as the top buyer among Washington Agencies based on order volume through Amazon.

a. Understanding the purchasing trends of individual departments is critical in tailoring promotional efforts by Amazon

2. Agencies like the Department of Corrections regularly placing bulk orders should be targeted for Quantity Pricing discounts to incentivize their ongoing bulk purchases.

a. Additionally, proposing a subscription model for these high-volume orders could be advantageous

order_count	agency_id
13417	SOCIAL AND HEALTH SERVICES DEPARTMENT OF (DSHS)
12485	CHILDREN YOUTH AND FAMILIES DEPT OF
6642	CORRECTIONS DEPARTMENT OF
3840	FISH AND WILDLIFE DEPARTMENT OF
3281	PUBLIC INSTRUCTION SUPERINTENDENT OF

agency_id	bulk_order_count
CORRECTIONS DEPARTMENT OF	11
ATTORNEY GENERAL OFFICE OF THE	2
ENTERPRISE SERVICES DEPARTMENT OF	1
LABOR AND INDUSTRIES WASHINGTON STATE	1
NATURAL RESOURCES DEPARTMENT OF	1

Ask 3 - Data Analysis

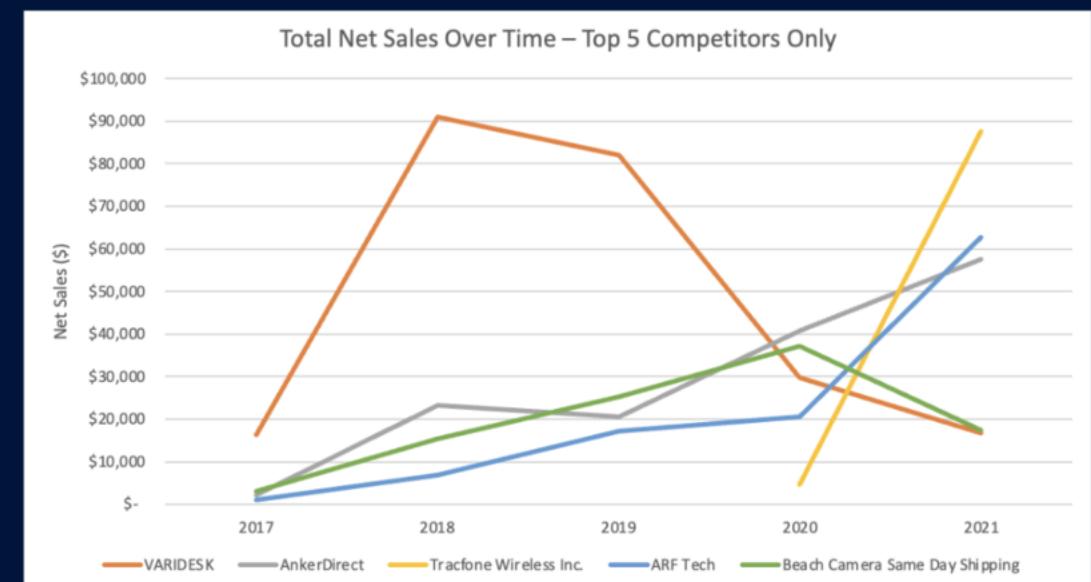
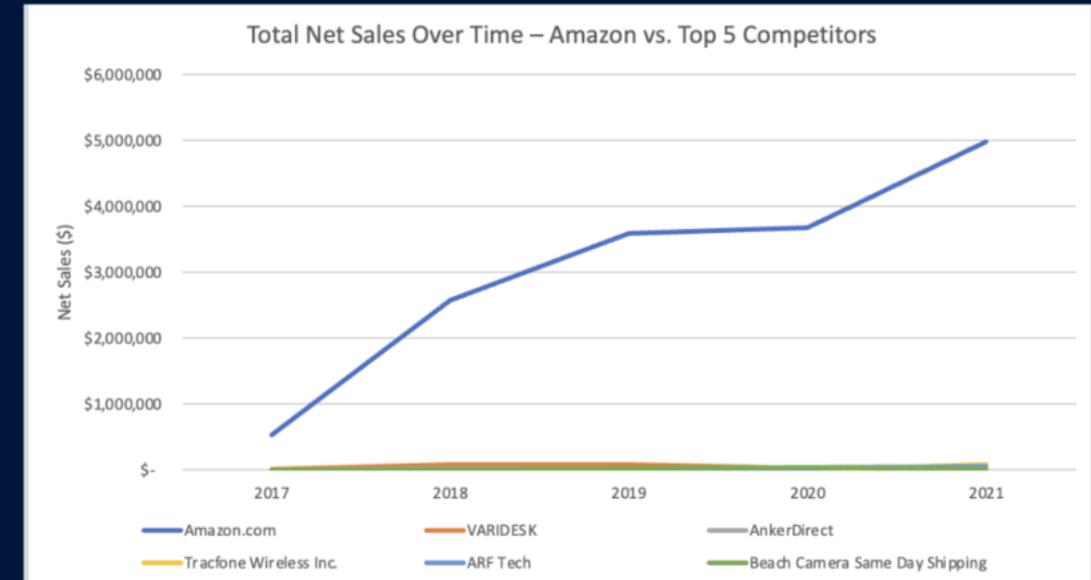
3. Who are the primary competitor sellers to Amazon's own products on Amazon.com, and what are their sales offerings, magnitudes of sales, and competitive product categories?

- a. Identify the top 5 competitor sellers that Agencies are sourcing from on Amazon.com and quantify their net totals. How have they changed over the past few years?
- b. Among the top 5 competitor sellers on Amazon.com, what product categories do they predominantly sell? Are they offering discounts that are giving them an advantage in this process?
- c. What are the agencies that the top 5 competitor sellers have the most business with? That all competitors in the data have the most business with?

Business Value

- 1. Competitor Threat Assessment
- 2. Targeted Promotions and Discounts
- 3. Market Share Expansion

- 1. According to the data, Amazon is the leading seller to Washington Agencies. And the other five sellers (VARIDESK, AnkerDirect, Tracfone Wireless Inc., ARF Tech) are the threats to Amazon's market share and profit.**
- 2. Agency's purchases from Amazon as a seller have significantly increased since 2021 on much larger scale compared to its competitors.**





Conclusion

1. From our analyses we can conclude that Amazon can tailor marketing efforts to coincide with high-expenditure months and incentivizing purchases during traditionally low-spending periods with discounts.
2. By identifying trends in recurring and bulk orders from top-spending agencies, Amazon can better manage inventory and predict demand.
3. Understanding customer attrition enables Amazon to develop re-engagement strategies for agencies that have ceased orders.
4. Analyzing the performance and offerings of competitor sellers allows Amazon to devise specific promotions and discounts, undercutting competitors in key product categories thereby increasing its market share.

Q&A

Thank you!

State Agency Amazon Spending

A Washington State Case



Ask 3 - Data Analysis

1. What are the top 10 categories of products purchased by state agencies? This analysis will help us understand the types of products that are most popular among state agencies.

2. What are the average monthly spending trends for different product categories? This will help us identify seasonal patterns and trends in spending.

3. How do agency spending patterns compare to other government entities? This will help us benchmark our spending against others.

4. What are the top 10 highest-spending agencies? This will help us identify the largest spenders and target them for specific engagement.

Conclusion

1. From our analyses, we can conclude that Amazon can tailor marketing efforts to coincide with high-expenditure months and incentivizing purchases during traditionally low-spending periods with discounts.

2. By identifying trends in recurring and bulk orders from top-spending agencies, Amazon can better manage inventory and predict demand.

3. Understanding customer attrition enables Amazon to develop re-engagement strategies for agencies that have ceased orders.

4. Analyzing the performance and offerings of competitor sellers allows Amazon to devise specific promotions and discounts, undercutting competitors in key product categories thereby increasing its market share.

CONTENTS

Summary and Explanations
Ask 1 - Data Description
Ask 2 - Data Wrangling
Ask 3 - Data Analysis
Conclusion

PROJECT SUMMARY

1. Overview of the project and its objectives.
2. Data sources used and their characteristics.
3. Key findings and insights derived from the analysis.
4. Recommendations for future work.

Three Main Areas Of Interest

1. Agency spending patterns and trends.
2. Product categories and their popularity.
3. Comparison with other government entities.

Ask 1 - Data Description

1. What are the main data sources used for this analysis?
2. What are the key variables and metrics being tracked?
3. How is the data being used to inform decision-making?

Ask 2 - Data Wrangling

1. What are the main challenges in wrangling the data?
2. What tools and techniques were used to clean and prepare the data?
3. How was the data integrated from multiple sources?

Ask 3 - Data Analysis

1. What are the main findings from the data analysis?
2. How do the findings compare to previous research or reports?
3. What are the implications of the findings for state agencies?

Q&A
Thank you!