BDM 2203 - Big Data Visualization for Business Communications

Iowa Packaged Liquor Market Analysis

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Submitted to:

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Project Description

- Case Background
- Project Breakdown

Executive Summary

- Market Overview
- Breakdown by:
 - Category
 - Vendor
 - Product
 - County

Case Background

- Client is looking to enter the Packaged Liquor business in the *B2B segment in Iowa state in the USA and wants our help in understanding the demand side of the market as the state maintains a monopoly in terms of packaged liquor supply
- Dataset containing details of the packaged liquor sales transaction is available to the public which allows for cross validation of the data sourced from Kaggle
- Deliverables to the client:
 - o PowerBI Dashboard and Point-In-Time (PiT) Report detailing:
 - Market Overview : Sales by Year, Quarter, Month
 - Sales Breakdown by:
 - Category
 - Vendor
 - Product
 - County

* Business to Business

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Project Breakdown

Step 1: Purpose Identification

Step 2: Data Acquisition

Step 3: Data Exploration Step 4: Analysis

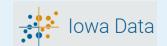
is Step 5: Reporting

Identifying Business problem

Activities Conducted

- Breaking down
 Business Problem
 into **Key Questions** to be answered.
- Sourcing relevant Data to address the identified business problem
- Cross validating data sources
- Data Sources used:

kaggle

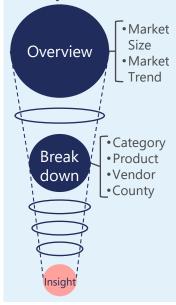


- Initial *EDA
- Data Cleaning
- Measure Creation
- Data Relation Modelling
- Tools used:





 Demand Side Analysis



- Data Story Telling
- Finalizing PowerBl dashboard design
- PowerPoint presentation preparation
- Tools used:



Week 1 Week 2 Week 3 Week 4 Week 5

Step 1

Step 2

Step 3

Step 4

Step 5

* EDA : Exploratory Data Analysis

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Executive Summary (1/2)

- Between 2018 and 2022, Packaged Liquor Sales in Iowa peaked during 2021 reaching \$996M
 - Sales Forecasted to reach \$1.06B by the end of 2023
 - Consistent trend of Liquor demand being the highest in the 4th quarter among all quarters from 2018 - 2022
- Categories American Vodka, Canadian Whiskey, Imported Brandies & Straight Bourbon Whiskey had the highest sales consecutively from 2018 – 2022
- Diageo Americas, Sazerac Company Inc, Pernod Ricard USA & Jim Beam Brands have been the top vendors in the Packaged Liquor Sales in Iowa consecutively from 2018 - 2022 with their cumulative sales until 2022 amounting to \$2.19B
- Sales of Crown Royal (highest selling in 2018 and 2019) impacted by supply management issues leading to drop in sales in 2020 **gradually recovering** having the **second highest sales** in 2022
 - Crown Royal & Crown Royal Regal are the highest selling product that fall under the highest selling category and offered by the vendor with the highest cumulative sales until 2022
 - Liquor cases containing 12 bottles sold the highest compared to cases containing 6, 24 or 44 bottles

Executive Summary (2/2)

- In the Top 5 Categories, **24.33%** of total sales were made in the **top 5 counties**. **American Vodka** accounts for **6.53%** of total sales per category, with a significant portion coming from **Polk county**, totaling approximately **\$142 million**.
- In the Top 5 Vendors, **27.15%** of total sales were made in the **top 5 counties**. **Diageo Americas** accounts for **9.65%** of total sales per vendor, with a significant portion coming from **Polk county**, totaling approximately **\$224 million**.
- In the Top 5 Products, **9.08%** of total sales were made in the **top 5 counties**. **Hennessy VS and Titos Handmade Vodka** together account for **4.48%** of total sales per product, with a significant portion coming from **Polk county**, totaling approximately **\$91 million**.

Project Description

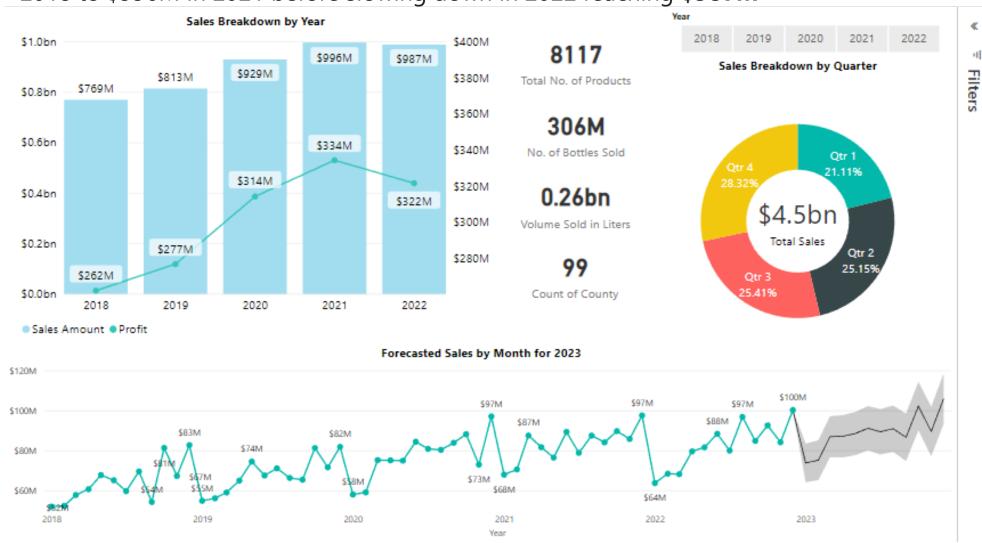
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Data Analysis & Visualization : Market Overview

Packaged Liquor Sales in Iowa grew exponentially with a *CAGR of **9.22%** from \$769M in 2018 to \$996M in 2021 before slowing down in 2022 reaching **\$987M**



* CAGR: Compounded Annual Growth Rate

Project Description

- Case Background
- Project Breakdown

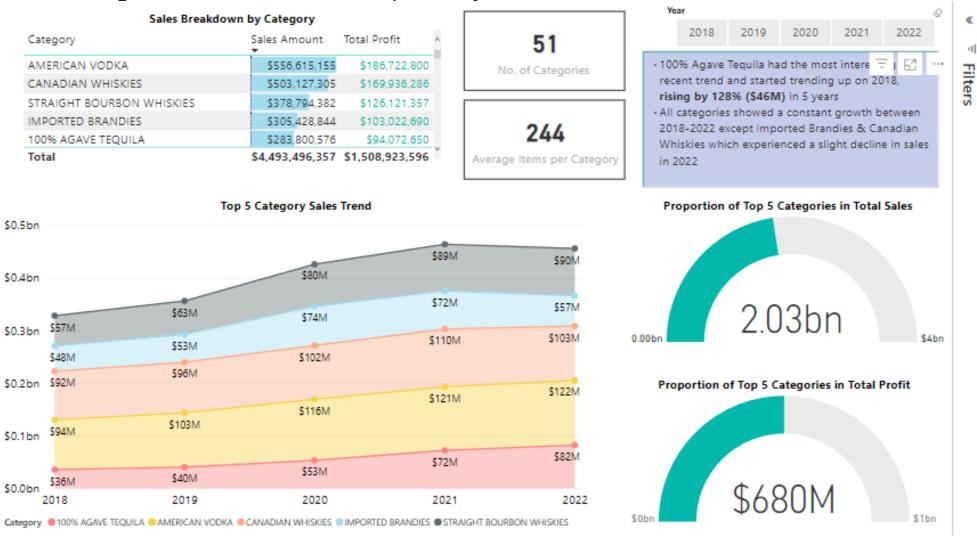
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Data Analysis & Visualization : Breakdown by Category

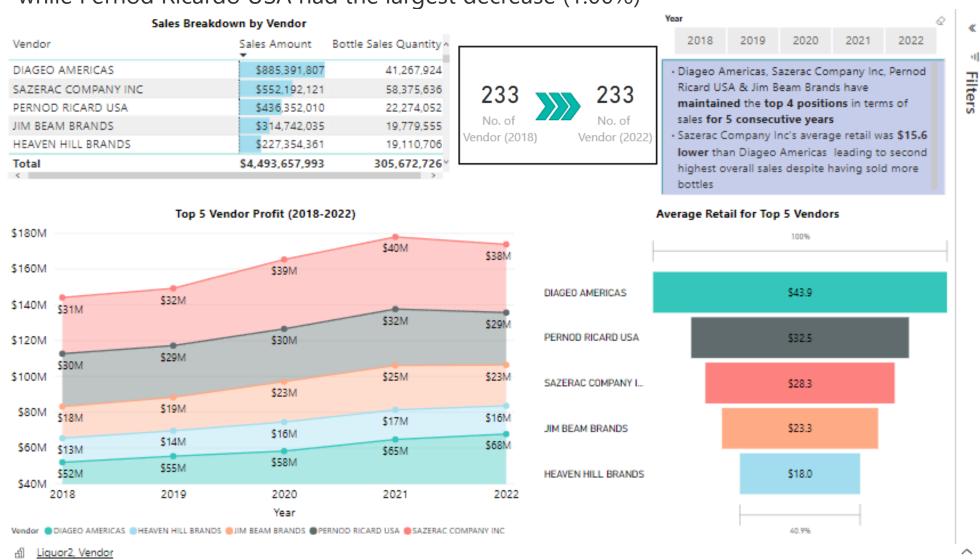
Liquor2, Category Analysis

Sales from the top 5 categories accounted for **more than 40%** of the Total Sales & Profit amounting to **\$2.03B & \$680M** respectively



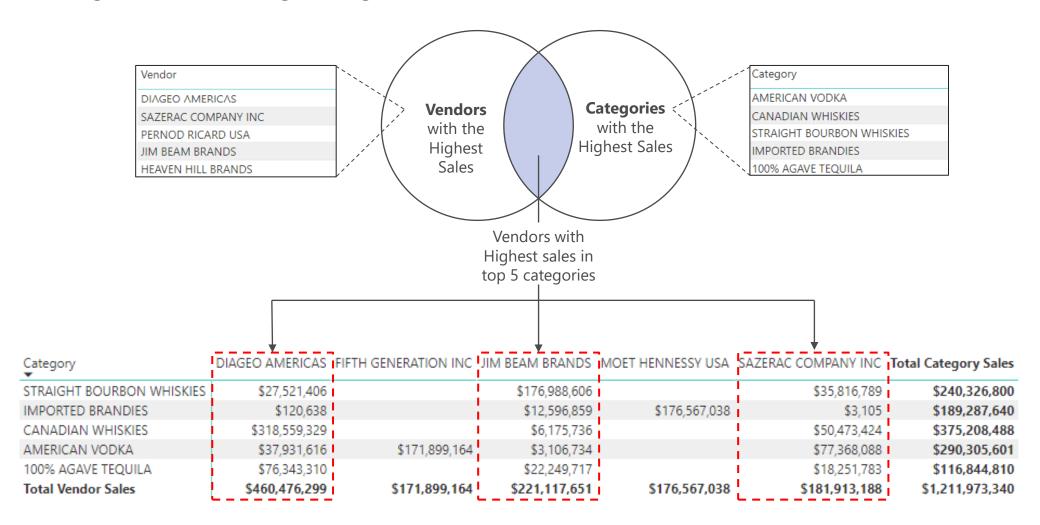
Data Analysis & Visualization : Breakdown by Vendor (1/2)

Between 2018 and 2022, Diageo Americas had the **largest increase in Profit (30.57%)** while Pernod Ricardo USA had the largest decrease (1.00%)



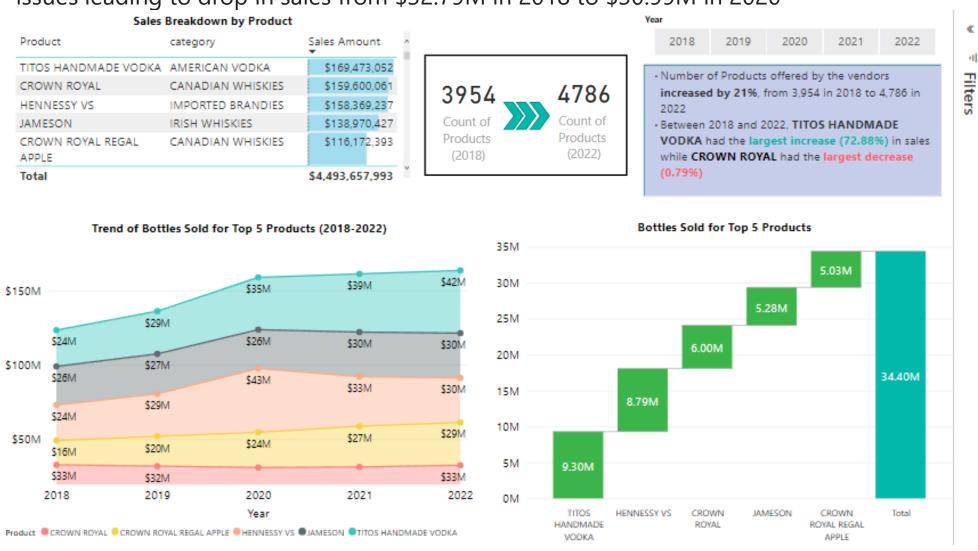
Data Analysis & Visualization : Breakdown by Vendor (2/2)

Diageo Americas , Jim Beam Brands & Sazerac Company Inc. offer products in all Top 5 Categories contributing the highest to Overall Sales



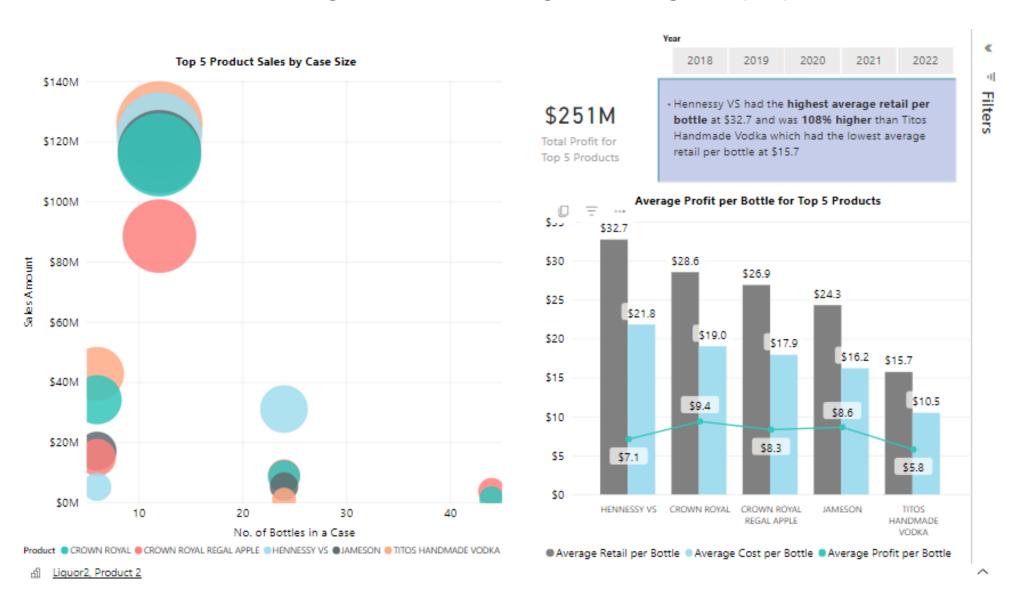
Data Analysis & Visualization : Breakdown by Product (1/3)

Sales of Crown Royal (highest selling in 2018 and 2019) impacted by supply management issues leading to drop in sales from \$32.79M in 2018 to \$30.99M in 2020



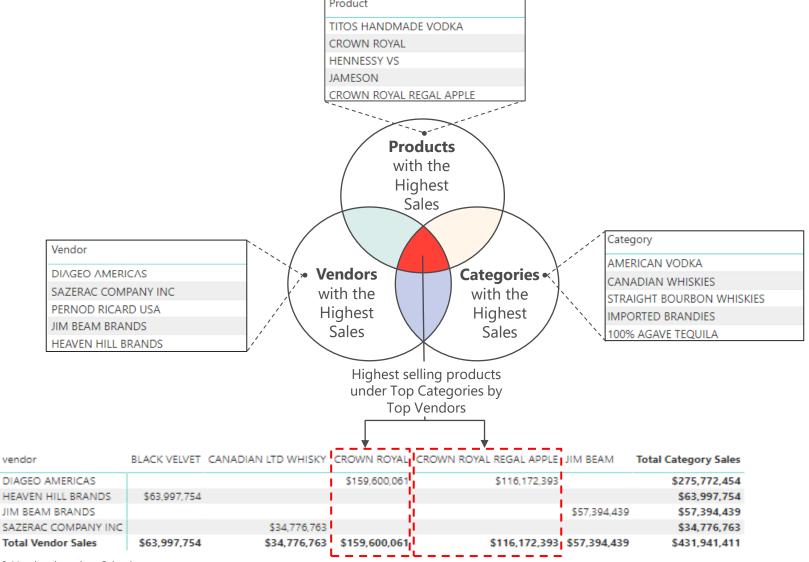
Data Analysis & Visualization : Breakdown by Product (2/3)

Demand for cases containing 12 bottles is the highest among all Top 5 products



Data Analysis & Visualization : Breakdown by Product (3/3)

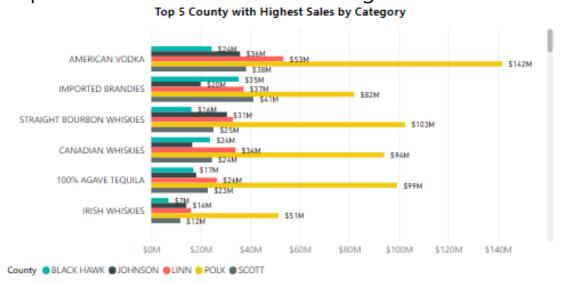
Crown Royal & Crown Royal Regal Apple having a cumulative sale of **\$275M** offered by Diageo Americas & falling under Canadian Whiskey category is common among all three variables



^{*} Top Categories & Vendors based on Sales Amount

Data Analysis & Visualization : Breakdown by County (1/4)

American Vodka was **sold the most** in Polk, Linn & Scott county with **\$233M sales** while Imported Brandies was sold the highest in Polk & Scott County with **\$123M sales**



Statistics on County with Highest Sales by Category

BLACK HAWK - KOUNSON

Category	BLACK HAWK	JOHNSON	LINN	POLK	SCOTT	lotal
AMERICAN VODKA						
Sales Per Categoy	\$24,383,026	\$35,844,884	\$53,340,407	\$141,752,319	\$38,301,278	\$293,621,914
Sales %	0.54%	0.80%	1.19%	3.15%	0.85%	6.53%
IMPORTED BRANDIES						
Sales Per Categoy	\$35,289,613	\$19,923,337	\$37,258,543	\$81,915,734	\$41,227,679	\$215,614,905
Sales %	0.79%	0.44%	0.83%	1.82%	0.92%	4.80%
STRAIGHT BOURBON WHISKIES						
Sales Per Categoy	\$16,226,612	\$30,586,803	\$32,924,424	\$102,504,347	\$25,129,616	\$207,371,801
Sales %	0.36%	0.68%	0.73%	2.28%	0.56%	4.61%
CANADIAN WHISKIES						
Sales Per Categoy	\$23,709,664	\$16,529,511	\$33,997,926	\$94,044,814	\$24,472,102	\$192,754,017
Sales %	0.53%	0.37%	0.76%	2.09%	0.54%	4.29%
Sales Per Categoy	\$116,607,894	\$121,040,803	\$183,987,587	\$519,515,050	\$151,941,089	\$1,093,092,423
Sales %	2.59%	2.69%	4.09%	11.56%	3.38%	24.33%

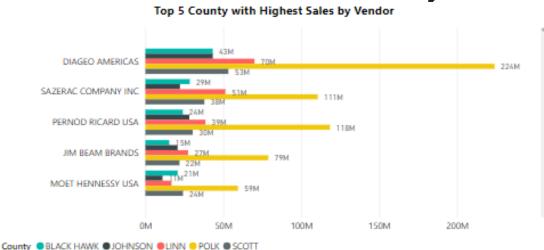
刮 Liquor2, County Category

Filters

²⁰¹⁸ 2021 2019 2022 · 24.33% of the Total Sales for the Top 5 Cate were sold in the Top 5 Counties · American Vodka contributes to the 6.53% of the Total Sales per Category with more than half of it coming from a single country Polk amounting to ~142M Top 5 County with Highest Sales WISCONSIN BLACK HAWK SCOTT Indianapolis. KANSAS MISSOURI JOHNSON ALABAMA GEORGIA © 2023 Microsoft Corporation Terms

Data Analysis & Visualization : Breakdown by County (2/4)

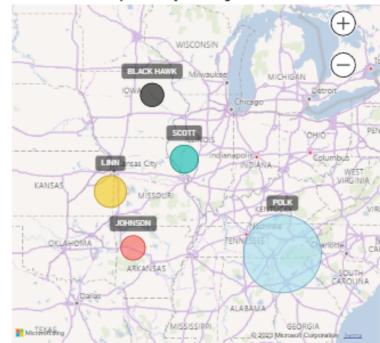
Diageo Americas has been the highest performing vendor, accounting for an impressive **9.65%** of our total sales with **Polk county** contributing to **4.99%** amounting to **\$224M**



Statistics	on	County	with	Highest	Sales	by Vendor
Statistics	~	country	****	- inglicat	Juics	oy venuor

Vendor	BLACK HAWK	JOHNSON	LINN	POLK	SCOTT	Total
DIAGEO AMERICAS						
Sales Per Vendor	\$43,241,494	\$43,251,820	\$70,003,463	\$224,074,744	\$53,243,394	\$433,814,915
Sales %	0.96%	0.96%	1.56%	4.99%	1.18%	9.65%
SAZERAC COMPANY INC						
Sales Per Vendor	\$28,511,114	\$22,204,942	\$51,322,752	\$110,610,178	\$37,835,751	\$250,484,737
Sales %	0.63%	0.49%	1.14%	2.46%	0.84%	5.57%
PERNOD RICARD USA						
Sales Per Vendor	\$24,030,811	\$28,181,405	\$38,537,509	\$118,461,581	\$30,367,318	\$239,578,625
Sales %	0.53%	0.63%	0.86%	2.64%	0.68%	5.33%
JIM BEAM BRANDS						
Sales Per Vendor	\$15,296,356	\$20,689,161	\$27,426,060	\$78,880,622	\$21,886,504	\$164,178,703
Sales %	0.34%	0.46%	0.61%	1.76%	0.49%	3.65%
MOET HENNESSY USA						
Sales Per Vendor	\$20,725,985	\$10,974,336	\$16,761,042	\$59,370,721	\$24,134,253	\$131,966,337
Sales %	0.46%	0.24%	0.37%	1.32%	0.54%	2.94%
Sales Per Vendor	\$131,805,760	\$125,301,664	\$204,050,825	\$591,397,847	\$167,467,220	\$1,220,023,316
Sales %	2.93%	2.79%	4.54%	13.16%	3.73%	27.15%



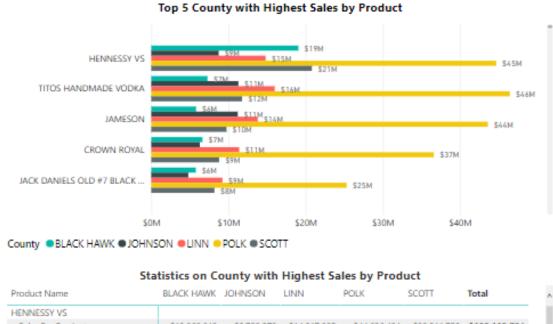


刮 <u>Liquor2, Country Vendor</u>

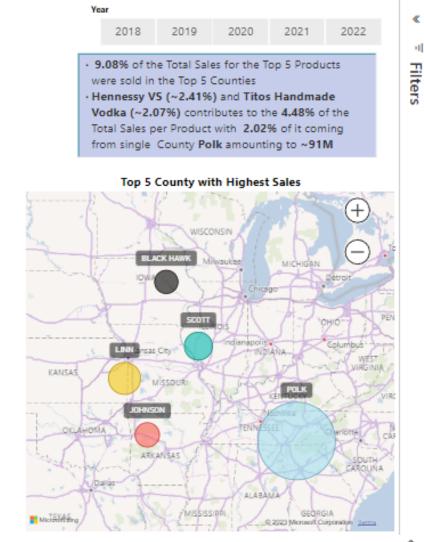
Filters

Data Analysis & Visualization : Breakdown by County (3/4)

Top 5 highest selling products, approximately **\$197M**, originated from **Polk County**, underscoring the importance of this county in our sales success.



Product Name	BLACK HAWK	JOHNSON	LINN	POLK	20011	lotal
HENNESSY VS						
Sales Per Product	\$19,060,643	\$8,729,970	\$14,817,005	\$44,696,424	\$20,811,752	\$108,115,794
Sales %	0.42%	0.19%	0.33%	0.99%	0.46%	2.41%
TITOS HANDMADE VODKA						
Sales Per Product	\$7,282,233	\$11,289,259	\$15,994,380	\$46,467,767	\$11,770,286	\$92,803,926
Sales %	0.16%	0.25%	0.36%	1.03%	0.26%	2.07%
JAMESON						
Sales Per Product	\$5,799,574	\$11,207,911	\$13,795,358	\$43,613,972	\$9,750,878	\$84,167,694
Sales %	0.13%	0.25%	0.31%	0.97%	0.22%	1.87%
CROWN ROYAL						
Sales Per Product	\$6,632,891	\$6,293,148	\$11,386,765	\$36,609,329	\$8,794,317	\$69,716,450
Sales %	0.15%	0.14%	0.25%	0.81%	0.20%	1.55%
JACK DANIELS OLD #7 BLACK LABEL						
Sales Per Product	\$5,775,714	\$4,795,704	\$9,222,315	\$25,320,069	\$8,184,757	\$53,298,559
Sales % Sales Per Product	0.13% \$44,551,056	0.11% \$42,315,992	0.21% \$65,215,824	0.56% \$196,707,561	0.18% \$59,311,991	1.19% \$408,102,423
Sales %	0.99%	0.94%	1.45%	4.38%	1.32%	9.08%



直 Liquor2, Country Product

Data Analysis & Visualization : Breakdown by County (4/4)

Top 5 counties account for highest total sales of **24.33%** per category and **27.15%** per vendor. Recommendation to prioritize building stronger relationships with vendors in these counties for continued business growth.

