

IOWA ABD SALES OPERATIONS

Prepared by: CYAYA Consulting Co.

APPROACH

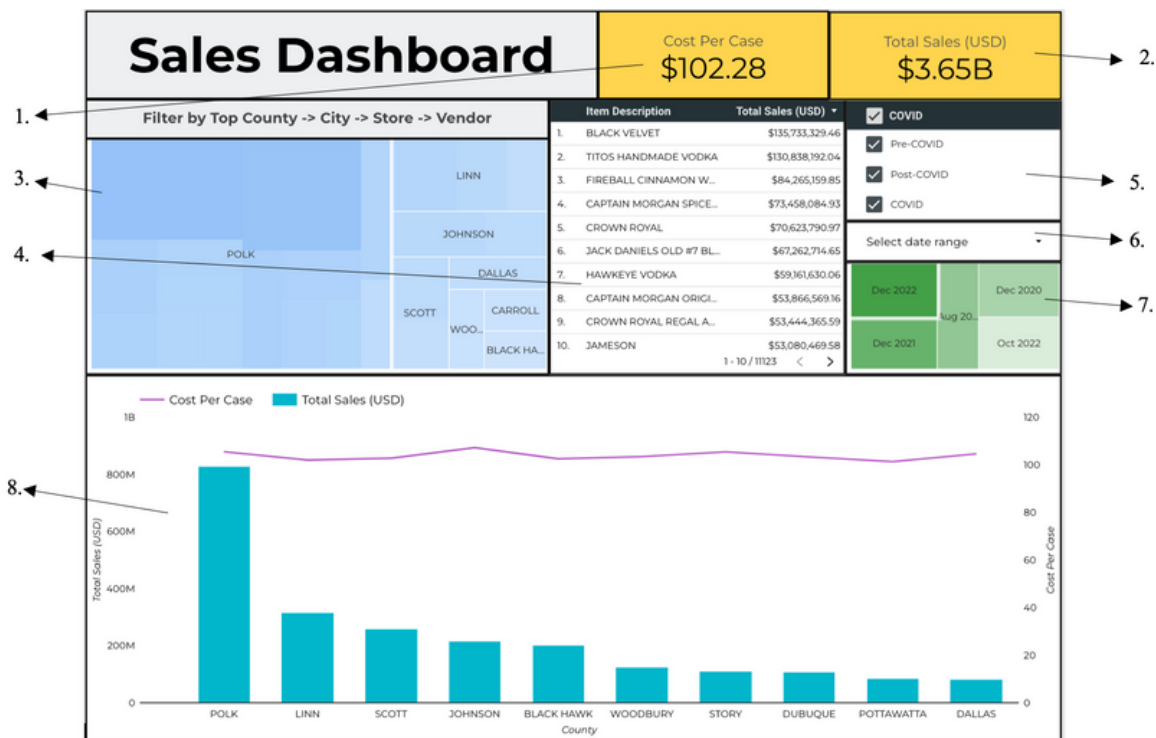
For the basis of this project, we are analyzing two main opportunities for our client Iowa ABD. First, revenue opportunities by county, retail chain, store locations and items. Secondly, customer experience through seasonal item demand and price change effects. Finally, we are integrating these opportunities to forecast sales and revenue.

DASHBOARD WALK THROUGH

In our first approach for revenue, we are using sales and location dashboards to drive insights. For customer experience, we are leveraging insights from the seasonality and price elasticity dashboards. Lastly, we are using forecasting for revenue and item quantity dashboards to recommend business development opportunities for Iowa ABD.

03

SALES DASHBOARD

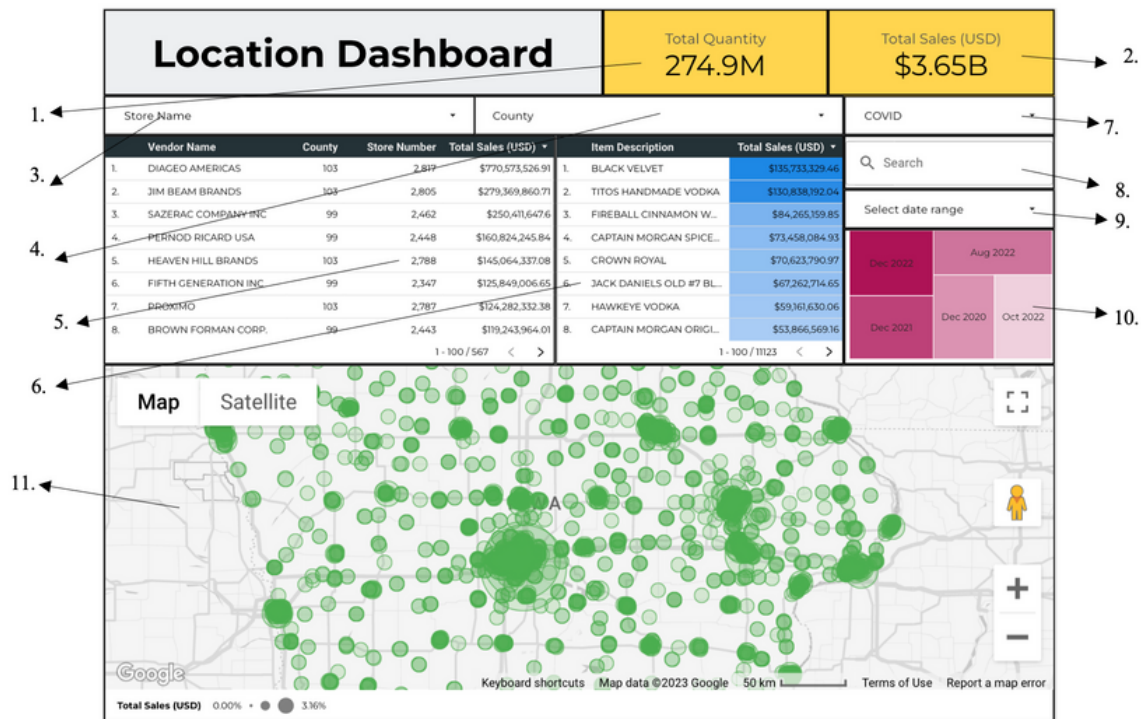


1. INDICATES THE COST PAID BY IOWA ABD FOR EACH CASE OF AN ALCOHOL ON AVERAGE. NUMBER OF BOTTLES TAKEN FROM THE 'PACK' COLUMN OF THE DATASET.
2. THE TOTAL REVENUE IOWA ABD HAS MADE.
3. FILTER TREE MAP. DRILL DOWN CAPABILITY FROM COUNTY -> CITY -> STORE -> VENDOR TO ENABLE GAINING REQUIRED INSIGHTS. ONLY THE TOP OPTIONS DISPLAYED.
4. ITEMS ORDERED IN DESCENDING TOTAL REVENUE TO ENABLE TOP ITEM FILTERING.
5. FILTER TO PRE-COVID, COVID, OR POST-COVID PERIOD. COVID FROM 3/2020 THROUGH 4/2022.
6. FILTER BY DATE RANGE.
7. FILTER BY TOP 5 MONTH/YEAR COMBOS FOR SALES.
8. BARS REPRESENT THE TOTAL SALES (USD) BASED ON THE LEFT Y-AXIS. LINE REPRESENTS THE COST PER CASE BASED ON THE RIGHT Y-AXIS. X-AXIS CAN DRILL DOWN TO COUNTY -> CITY -> STORE -> VENDOR.

NOTE: TOTAL QUANTITY (NUMBER OF BOTTLES SOLD) CAN ALSO BE VIEWED AS AN OPTIONAL METRIC IN OPTIONS 3, 4, 7, AND 8.

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LOCATION DASHBOARD

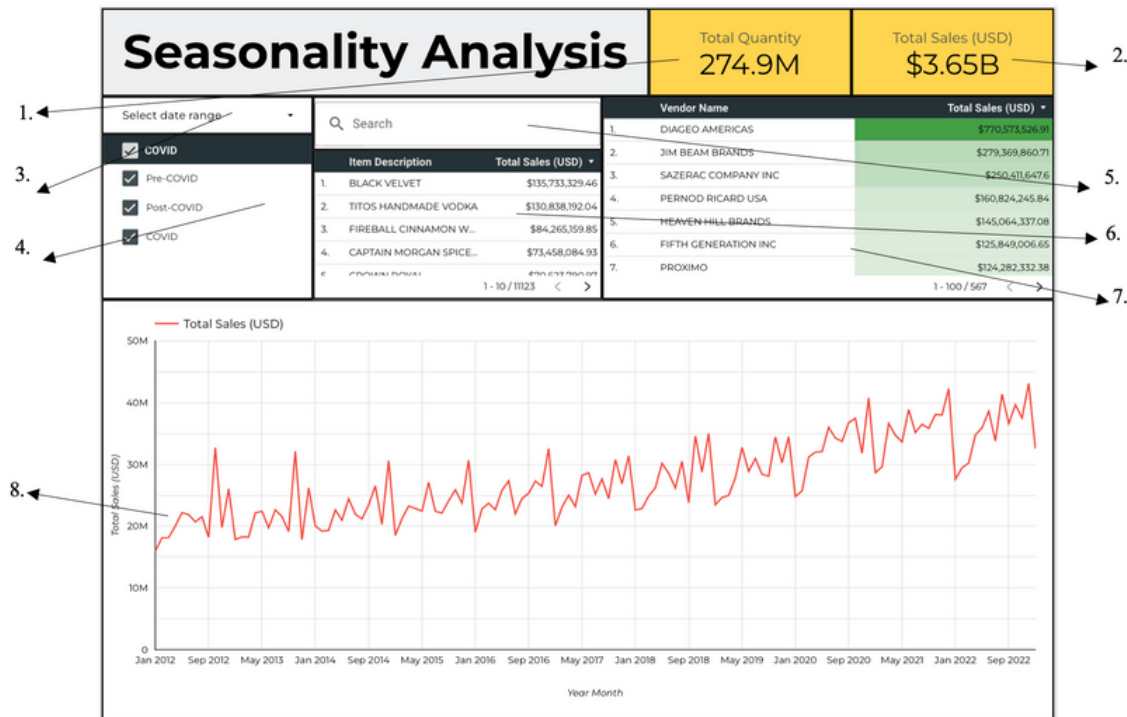


1. NUMBER OF BOTTLES SOLD.
2. THE TOTAL REVENUE IOWA ABD HAS MADE.
3. STORE DROPDOWN FILTERING (ALSO INDICATED % OF TOTAL REVENUE BY EACH STORE).
4. COUNTY DROPDOWN FILTERING (ALSO INDICATED % OF TOTAL REVENUE BY EACH COUNTY).
5. VENDOR NAME, NUMBER OF COUNTIES AND STORES THEY CATER, AND TOTAL REVENUE OUT OF THEM, SORTED BY REVENUE TO ENABLE FILTERING.
6. ITEMS ORDERED IN DESCENDING TOTAL REVENUE TO ENABLE TOP ITEM FILTERING.
7. FILTER TO PRE-COVID, COVID, OR POST-COVID PERIOD. COVID FROM 3/2020 THROUGH 4/2022.
8. SEARCH BY STORE NAME (FULL NAME NOT NEEDED).
9. FILTER BY DATE RANGE.
10. FILTER BY TOP 5 MONTH/YEAR COMBOS FOR SALES.
11. BUBBLE CHART USING GOOGLE MAPS REPRESENTING REVENUE CONCENTRATION FROM EACH STORE LOCATION IN IOWA.

NOTE: TOTAL QUANTITY (NUMBER OF BOTTLES SOLD) CAN ALSO BE VIEWED AS AN OPTIONAL METRIC IN OPTIONS 3, 5, 9, AND 10.

05

SEASONALITY DASHBOARD

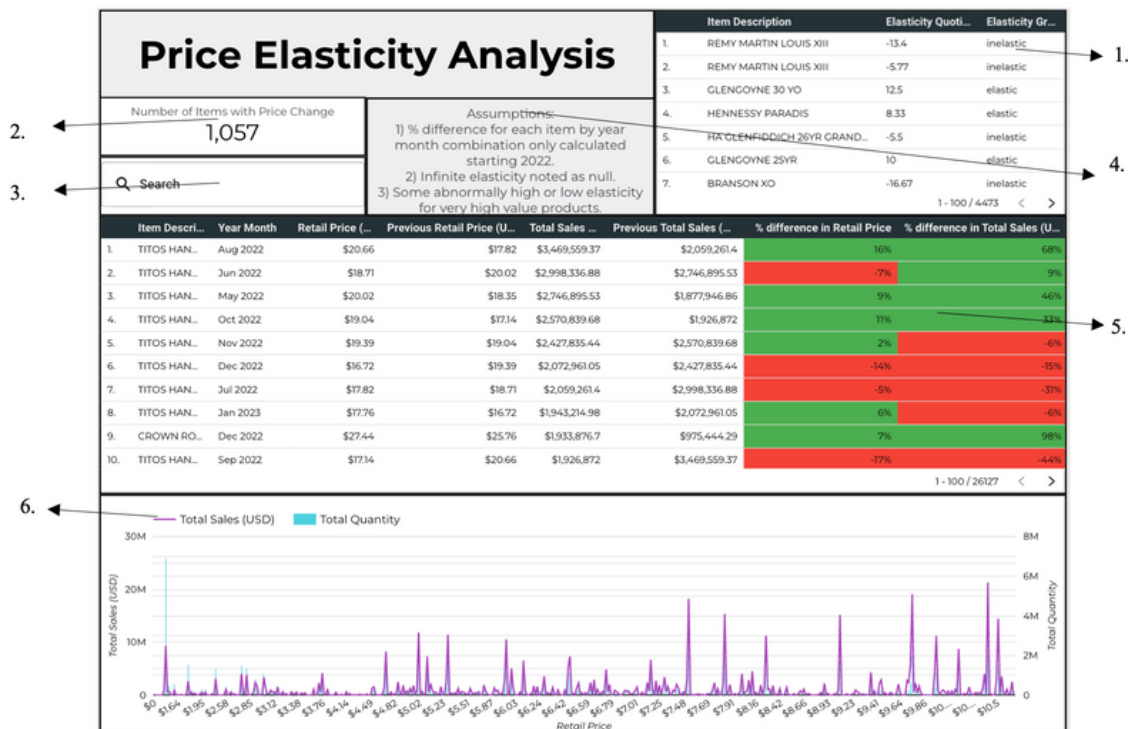


1. NUMBER OF BOTTLES SOLD.
2. THE TOTAL REVENUE IOWA ABD HAS MADE.
3. FILTER BY DATE RANGE.
4. FILTER TO PRE-COVID, COVID, OR POST-COVID PERIOD. COVID FROM 3/2020 THROUGH 4/2022.
5. SEARCH BY ITEM NAME (FULL NAME NOT NEEDED).
6. ITEMS ORDERED IN DESCENDING TOTAL REVENUE TO ENABLE TOP ITEM FILTERING.
7. VENDORS ORDERED IN DESCENDING TOTAL REVENUE TO ENABLE TOP VENDOR FILTERING.
8. TIME SERIES CHART OF TOTAL SALES FOR IOWA ABD TO SHOWCASE SEASONALITY.

NOTE: TOTAL QUANTITY (NUMBER OF BOTTLES SOLD) CAN ALSO BE VIEWED AS AN OPTIONAL METRIC IN OPTIONS 6, 7, AND 8.

06

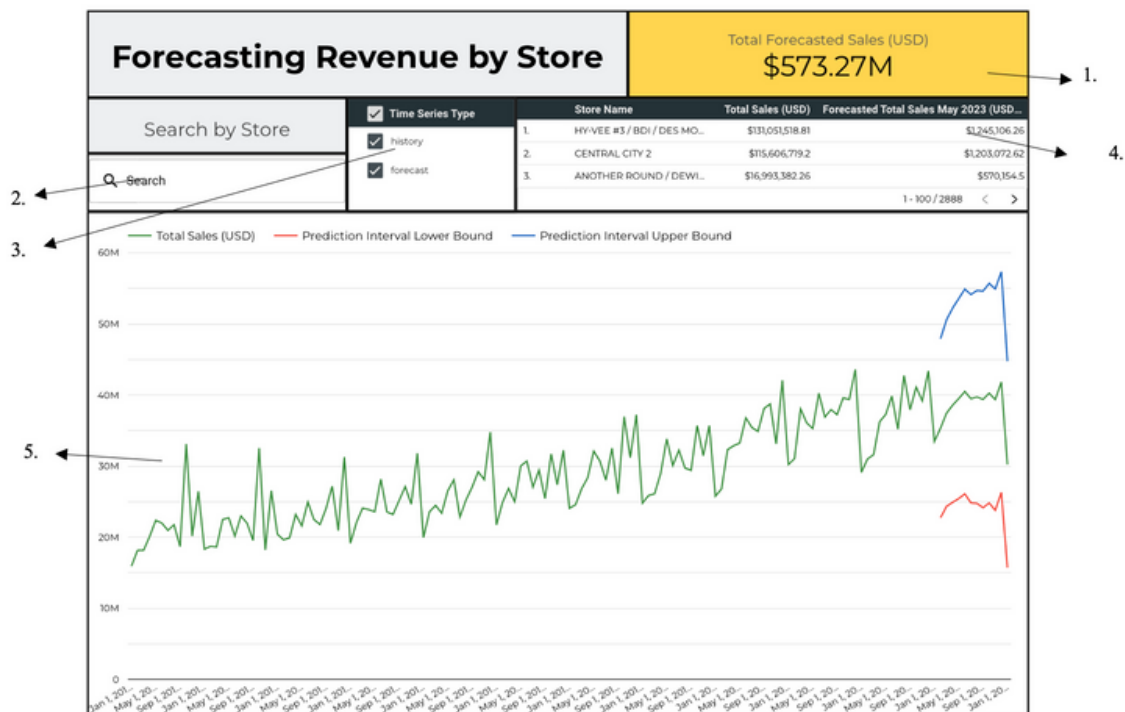
PRICE ELASTICITY DASHBOARD



1. ELASTICITY QUOTIENT OF ITEMS. ELASTIC QUOTIENT >1 LABELLED "ELASTIC", $=1$ LABELLED "UNITARY", $=0$ LABELLED "PERFECTLY ELASTIC", AND <1 LABELLED "INELASTIC".
2. NUMBER OF ITEMS THAT HAD A PRICE CHANGE STARTING JAN 2022.
3. SEARCH BY ITEM NAME (FULL NAME NOT NEEDED).
4. ASSUMPTIONS DEFINITION
5. ITEM PRICE CHANGE TABLE. SHOWCASES PREVIOUS PRICE, CURRENT PRICE, PREVIOUS REVENUE, CURRENT REVENUE, AND % CHANGES BETWEEN THEM. GREEN INDICATED PRICE OR REVENUE IS HIGHER AND LATER IS REPRESENTED BY RED.
6. CHANGE IN QUANTITY AND REVENUE BY PRICE CHANGE. HELPS TO IDENTIFY OPTIMAL PRICE FOR AN ITEM.

07

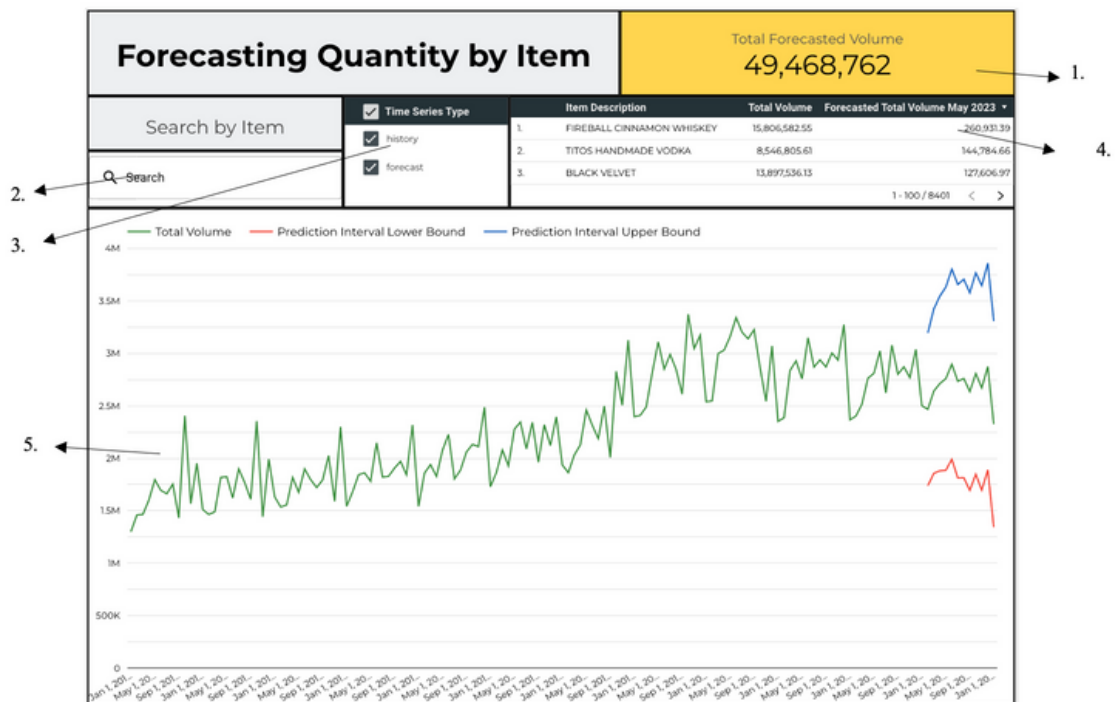
REVENUE FORECASTING DASHBOARD



1. FORECASTED REVENUE FOR MAY 2023.
2. SEARCH BY STORE NAME (FULL NAME NOT REQUIRED).
3. FILTER TO JUST LOOK AT HISTORICAL OR FORECAST VALUES.
4. STORES, THEIR TOTAL REVENUE, AND THEIR FORECASTED MAY 2023 REVENUE. SORTED BY MAY FORECAST.
5. SALES REVENUE LINE CHART WITH 90% CONFIDENCE INTERVAL FOR THE 4 MONTHS OF FORECAST.

08

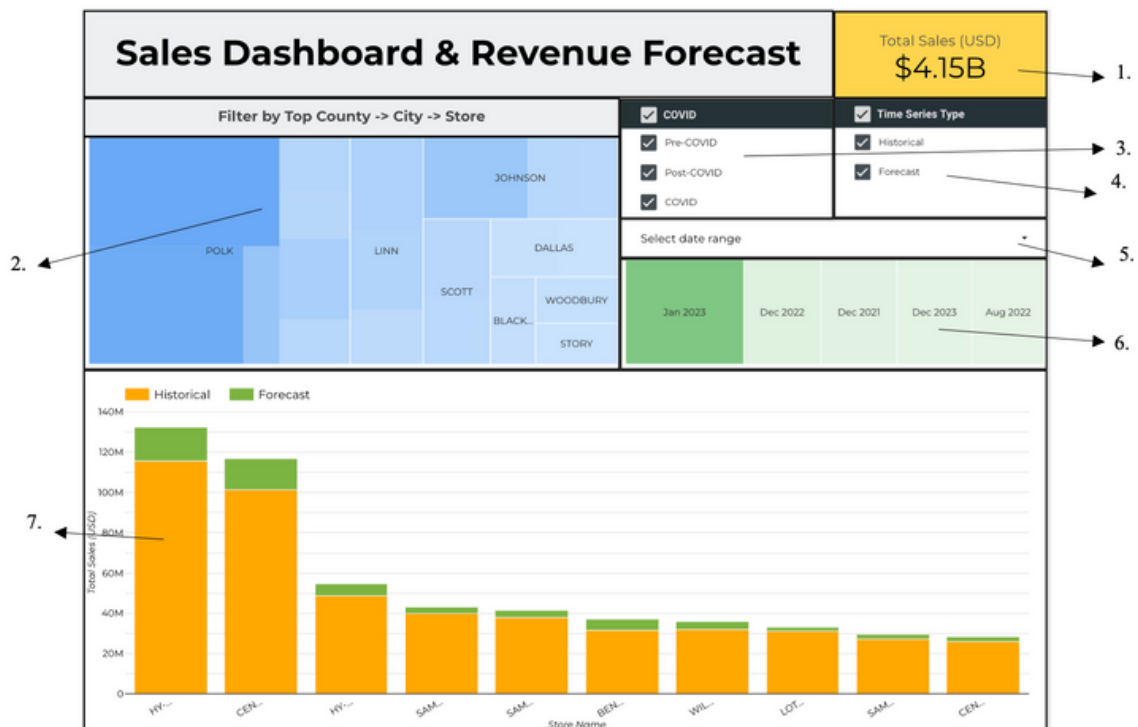
ITEM QUANTITY FORECASTING DASHBOARD



1. TOTAL FORECASTED QUANTITY FOR THE NEXT 12 MONTHS.
2. SEARCH BY ITEM NAME (FULL NAME NOT REQUIRED).
3. FILTER TO JUST LOOK AT HISTORICAL OR FORECAST VALUES.
4. ITEMS, THEIR TOTAL QUANTITY, AND THEIR FORECASTED MAY 2023 QUANTITY. SORTED BY MAY FORECAST.
5. QUANTITY LINE CHART WITH 90% CONFIDENCE INTERVAL FOR THE 12 MONTHS OF FORECAST.

NOTE: PLEASE REFER TO THE GITHUB LINK FOR MORE INFORMATION ABOUT ARIMA MODEL VALUES.

SALES + REVENUE FORECAST DASHBOARD



1. THE TOTAL REVENUE IOWA ABD HAS MADE.
2. FILTER TREE MAP. DRILL DOWN CAPABILITY FROM COUNTY -> CITY -> STORE -> VENDOR TO ENABLE GAINING REQUIRED INSIGHTS. ONLY THE TOP OPTIONS DISPLAYED.
3. FILTER TO PRE-COVID, COVID, OR POST-COVID PERIOD. COVID FROM 3/2020 THROUGH 4/2022.
4. FILTER TO JUST LOOK AT HISTORICAL OR FORECAST VALUES.
5. FILTER BY DATE RANGE.
6. FILTER BY TOP 5 MONTH/YEAR COMBOS FOR SALES.
7. STACKED BAR CHART REPRESENTING HISTORICAL SALES AND FORECASTED SALES. TOTAL SALES (USD) BASED ON THE LEFT SIDE Y-AXIS. X-AXIS CAN DRILL DOWN TO COUNTY -> CITY -> STORE.

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INSIGHTS

1. WHICH ITEM WAS THE OVERALL BEST-SELLING PRODUCT BY REVENUE IN ALL OF 2021? WHICH STORE, CITY AND COUNTY HAS THE HIGHEST SALES OVER THE PAST YEAR?

TITO'S HANDMADE VODKA (USD 25,482,864.10)

METHOD: USING SALES DASHBOARD. DATE FILTERED TO 1/1/2021 TO 12/31/2021.

COUNTY: POLK (USD 100,630,597.05), CITY: DES MOINES (USD 52,362,942.85), STORE: HY-VEE #3/BDI/DES MOINES (USD 14,186,028.75)

METHOD: USING SALES DASHBOARD. DATE FILTERED TO LAST YEAR (YEAR 2022) AND X AXIS DRILLED DOWN TO GET DIFFERENT COUNTIES, STORE, AND CITIES.

2. DOES THE SALES VOLUME DISPLAY ANY SEASONALITY? PROVIDE DATA POINTS TO SUPPORT YOUR ANALYSIS. WHICH ITEMS HAD PRICE CHANGES OVER THE PAST YEAR? WHAT WAS THE IMPACT OF PRICE CHANGES ON SALES?

THERE IS CYCLICAL SEASONALITY IN THE SALES VOLUME WITH PEAKS USUALLY IN OCTOBER AND/OR DECEMBER. 10% AVERAGE YEARLY CONTRIBUTION IS BY OCTOBER AND DECEMBER. TOP 2 VOLUME MONTH/YEARS FOR OUR DATA ARE: DECEMBER 2021 AND DECEMBER 2020.

METHOD: SEASONALITY SEEN IN SEASONALITY ANALYSIS DASHBOARD. TOP MONTHS RETRIEVED FROM SALES DASHBOARD WITH TOP 5-MONTH HEAT MAP.

1,057 (25.1%) ITEMS HAD A PRICE CHANGE IN THE LAST YEAR. THE IMPACT VARIES WITH ITEM. FOR SOME CHANGES, THE SALES INCREASED WHILE FOR OTHERS IT DECREASED.

METHOD: RETRIEVED FROM THE PRICE ELASTICITY ANALYSIS.

3. WHICH STORES SHOW THE HIGHEST SALES OVER THE PAST MONTH? DISPLAY LOCATIONS OF THE TOP PERFORMING STORES ON A GOOGLE MAP, ALONG WITH GRAPHICAL ELEMENTS PROVIDING INDICATION ON THEIR SALES REVENUE RELATIVE TO EACH OTHER.

HY-VEE #3/BDI/DES MOINES HAD THE HIGHEST REVENUE (USD 1,249,387.23) LAST MONTH AND REPRESENTS 3.84% OF THE TOTAL REVENUE THAT MONTH.

METHOD: USING LOCATION DASHBOARD. FILTER DATE TO LAST MONTH. STORE DROPDOWN FILTER AND THE MAP BUBBLES REPRESENT THE STORE AND % OF TOTAL REVENUE.

4. USING HISTORICAL SALES TRENDS AND ASSUMING NO SIGNIFICANT CHANGING FACTORS, FORECAST MONTHLY SALES VOLUME FOR EACH OF THE TOP 3 BEST PERFORMING ITEMS OVER THE NEXT 12 MONTHS.

THE VOLUME FOR THE TOP 3 ITEMS (FIREBALL CINNAMON WHISKEY, TITO'S HANDMADE VODKA, BLACK VELVET) FOR THE NEXT 12 MONTHS WILL BE 5,978,756 BOTTLES.

METHOD: USING FORECASTING QUANTITY BY ITEM. FILTER TO LOOK AT FORECASTS ONLY AND THEN FILTER TO TOP 3 ITEMS IN THE ITEM TABLE AFTER SORTING BASED ON TOTAL VOLUME.

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SCOPE

IF WE BUY A PACK WITH MORE THAN THE AVERAGE QUANTITY FOR AN ITEM, THE PRICE REDUCES DRASTICALLY

CODE: SELECT DISTINCT PACK AS 'QUANTITY_PER_PACK', STATE_BOTTLE_COST 'COST_PER_BOTTLE'
 FROM 'BIGQUERY-PUBLIC-DATA.IOWA_LIQUOR_SALES.SALES'
 WHERE ITEM_DESCRIPTION = "CROWN ROYAL"
 ORDER BY PACK DESC;

Row	Quantity_per_pa	Cost_per_bottle
1	44	5.0
2	44	4.72
3	24	8.0
4	24	8.49
5	12	14.75
6	12	15.0

OPPORTUNITY: ALTHOUGH THE PRICES DROP DRASTICALLY AS THE NUMBER OF BOTTLES PER PACK FOR CROWN ROYAL INCREASES, IT COULD BE DATA ENTRY DISCREPANCY. IF IT IS NOT AN ERROR, IOWA ABD SHOULD ONLY PURCHASE PACKS THAT HAVE THE HIGHEST NUMBER OF BOTTLES TO REDUCE THEIR COST PER PACK, WHILE CONTINUING TO SELL AT HIGHER RETAIL TO INCREASE REVENUE AND PROFIT MARGINS.

COUNTY DATA ENTRY ISSUE

CODE: SELECT DISTINCT COUNTY
 FROM 'BIGQUERY-PUBLIC-DATA.IOWA_LIQUOR_SALES.SALES'
 WHERE 'COUNTY' LIKE 'BUENA%'

Row	county
1	BUENA VIST
2	BUENA VISTA

OPPORTUNITY: RESTRICT THE OPTIONS THROUGH A DROP DOWN FOR DATA ENTRY ON COUNTY COLUMN TO REMOVE FUTURE DISCREPANCIES AND GET CLEANER DATA AUTOMATICALLY.

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SCOPE

SAME ITEM IS BOUGHT AND SOLD AT DIFFERENT PRICES ON THE SAME DAY TO THE SAME STORE

CODE: SELECT * FROM (
 SELECT DISTINCT ITEM_NUMBER,ITEM_DESCRIPTION,DATE,STATE_BOTTLE_COST,COUNTY,CITY,
 STORE_NAME, VENDOR_NAME, STATE_BOTTLE_RETAIL,BOTTLES_SOLD
 FROM `BIGQUERY-PUBLIC-DATA.IOWA_LIQUOR_SALES.SALES`
 WHERE ITEM_DESCRIPTION = "1800 SILVER"
 ORDER BY DATE ASC,6,7
) WHERE DATE = "2022-01-18" AND COUNTY = "BLACK HAWK" AND CITY = "WATERLOO"

Row	item_number	item_description	date	state_bottle_cost	county	city	store_name	vendor_name	state_bottle_retail
1	87509	1800 SILVER	2022-01-18	8.96	BLACK HAWK	WATERLOO	BROADWAY LIQUOR	PROXIMO	13.44
2	87510	1800 SILVER	2022-01-18	15.98	BLACK HAWK	WATERLOO	BROADWAY LIQUOR	PROXIMO	23.97
3	87509	1800 SILVER	2022-01-18	8.96	BLACK HAWK	WATERLOO	KWIK STOP 3 / WATERLOO	PROXIMO	13.44
4	87509	1800 SILVER	2022-01-18	8.96	BLACK HAWK	WATERLOO	NEW STAR LIQUOR / W 4TH S ...	PROXIMO	13.44

OPPORTUNITY: 1800 SILVER WAS BOUGHT AT \$15.98 PER BOTTLE AND \$8.96 PER BOTTLE ON THE SAME DAY BY THE SAME VENDOR. IOWA ABD SHOULD USE THIS INFORMATION TO BETTER NEGOTIATE PRICES FROM VENDORS AND ONLY BE WILLING TO PAY THE LOWEST PRICE FOR ALL ORDER AT \$8.96 PER BOTTLE. ON THE OTHER HAND, THESE BOTTLES WERE SOLD TO BROADWAY LIQUOR AT 2 DIFFERENT PRICES ON THE SAME DAY. IT LOOKS LIKE ABD TRIES TO MAINTAIN A CONSTANT 50% MARGIN AND THE RETAIL COST IS ALWAYS 50% OVER COST ON AVERAGE. BUT IF BROADWAY LIQUOR IS WILLING TO PAY A PRICE OF \$23.97 PER BOTTLE FOR EVEN 1 BOTTLE, THEN ALL BOTTLES SHOULD BE SOLD AT THE HIGHER PRICE TO INCREASE REVENUE AND PROFIT MARGIN.

ZIP CODE DATA ENTRY ISSUE

CODE: SELECT DISTINCT CITY, ZIP_CODE
 FROM `BIGQUERY-PUBLIC-DATA.IOWA_LIQUOR_SALES.SALES`
 WHERE `ZIP_CODE` LIKE '7%%%%'

Row	city	zip_code
1	DUNLAP	712-2

OPPORTUNITY: ENABLE RESTRICTION ON COLUMNS LIKE ZIP CODE TO ONLY BE NUMBERS THAT MATCH A 5 NUMBER FORMAT TO AVOID FUTURE DISCREPANCIES. HERE 712 REPRESENTS THE CITY'S PHONE NUMBER AREA CODE.

RISK FACTORS

POTENTIAL RISKS FOR IOWA ABD:

1. **Customer Preference:** ABD's revenue is driven by customer preference by store. A change in preference or a reduction in consumption can result in a decrease of sales and revenue.
2. **Inventory Management and warehousing:** One of the focuses for ABD is to meet their retailers demand. Change in inventory management and limitation of warehouse storage can directly impact ABD's ability to meet their sales target.
3. **Changes in prices from the vendors:** An increase in the cost of raw materials will directly impact the profits for Iowa ABD.
4. **Weather Conditions and holidays:** This leads to a change in consumption of alcohol. This shift in sales can impact the financial condition of operations.
5. **Change in government regulation or policies:** ABD's advantage of being the sole distributor of alcoholic beverages in Iowa state is impacted by future laws that regulates the distribution of liquor in the state.

MEET THE TEAM

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ABHIJIT AGRAWAL



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YASH SINGHAI