Data Analytics Case Study

Iowa Liquor Sales Data
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Preparation

Data Source : 'bigquery-public-data.iowa_liquor_sales.sales'

Data Cleaning and Analyzing	Data Visualization and Dashboard	Presentation

Defining the Problems

In 2021...

1.

Which category sells the most liquor ?

2.

How was the monthly sales and which day of week the most total sales ?

3.

How was our sales in Iowa's city ?

4.

Is liquor with Large Size has a better sales compared with Small Size ?

Cleaning the Data

Query

Query Result

```sql
SELECT
  date,
  store_name,
  city,
  REPLACE(zip_code,".0","") AS zip_code,
  store_location,
  ST_GEOGFROMTEXT(store_location) AS point_location,
  ST_X(ST_GEOGFROMTEXT(store_location)) AS longitude,
  ST_Y(ST_GEOGFROMTEXT(store_location)) AS latitude,
  ANY_VALUE(UPPER(county)) AS county,
  category_name,
  CASE WHEN bottle_volume_ml BETWEEN 0 AND 500 THEN 'Small Size'
       WHEN bottle_volume_ml BETWEEN 501 AND 1000 THEN 'Medium Size'
       WHEN bottle_volume_ml > 1001 THEN 'Large Size'
  END AS category_size_bottle,
  bottles_sold,
  sale_dollars,
  volume_sold_liters
FROM `bigquery-public-data.iowa_liquor_sales.sales`
WHERE date BETWEEN '2021-01-01' AND '2021-12-31'
AND city is not null
AND zip_code is not null
AND store_location is not null
AND county is not null
GROUP BY 1,2,3,4,5,10,11,12,13,14
```
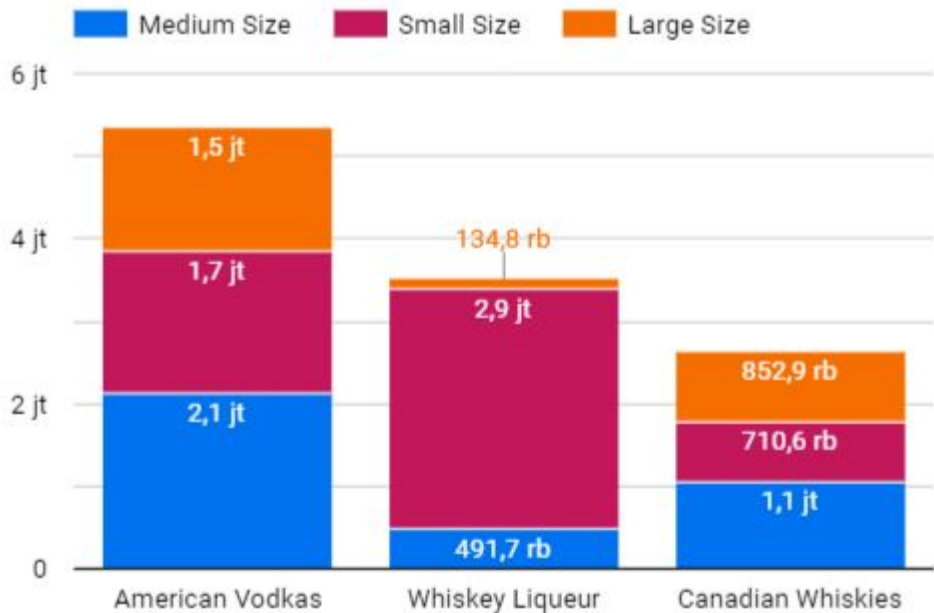
date	store_name	city	zip_code	store_location	point_location	longi
2021-04-05	Brooklyn Grocery	Brooklyn	52211	POINT (-92.444377 41.728699)	POINT(-92.444377 41.728699)	-92
2021-05-17	DeWitt Travel Mart	DeWitt	52742	POINT (-90.538952 41.821779)	POINT(-90.538952 41.821779)	-90
2021-06-08	Super Mart / Oelwein	Oelwein	50662	POINT (-91.913481 42.669128)	POINT(-91.913481 42.669128)	-91
2021-11-01	Fareway Stores #077 / Norwalk	Norwalk	50211	POINT (-93.675528 41.483259)	POINT(-93.675528 41.483259)	-93
2021-05-19	Wines and Spirits	Washington	52353	POINT (-91.692214 41.300399)	POINT(-91.692214 41.300399)	-91
2021-03-16	DeWitt Travel Mart	DeWitt	52742	POINT (-90.538952 41.821779)	POINT(-90.538952 41.821779)	-90
2021-09-11	Wal-Mart 2004 / Dubuque	Dubuque	52003	POINT (-90.736955 42.489041)	POINT(-90.736955 42.489041)	-90
2021-11-09	Fareway Stores #657 / Indianola	Indianola	50125	POINT (-93.579252 41.356616)	POINT(-93.579252 41.356616)	-93
2021-06-25	Wal-Mart 1621 / Centerville	Centerville	52544	POINT (-92.867849 40.70856)	POINT(-92.867849 40.70856)	-92
2021-11-05	Casey's General Store #1712 / …	Shenandoah	51601	POINT (-95.385108 40.76144)	POINT(-95.385108 40.76144)	-95

Visualization and Insight

The Most Category Sells

Legend: Medium Size, Small Size, Large Size

Category	Large Size	Small Size	Medium Size
American Vodkas	1,5 jt	1,7 jt	2,1 jt
Whiskey Liqueur	134,8 rb	2,9 jt	491,7 rb
Canadian Whiskies	852,9 rb	710,6 rb	1,1 jt

In total, American Vodkas is the most selling category. But for the Small Size bottle Whiskey Liqueur has the most bottles sold for it.
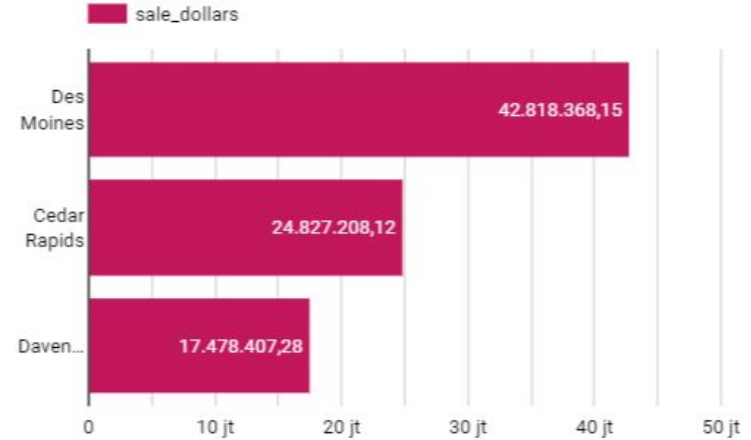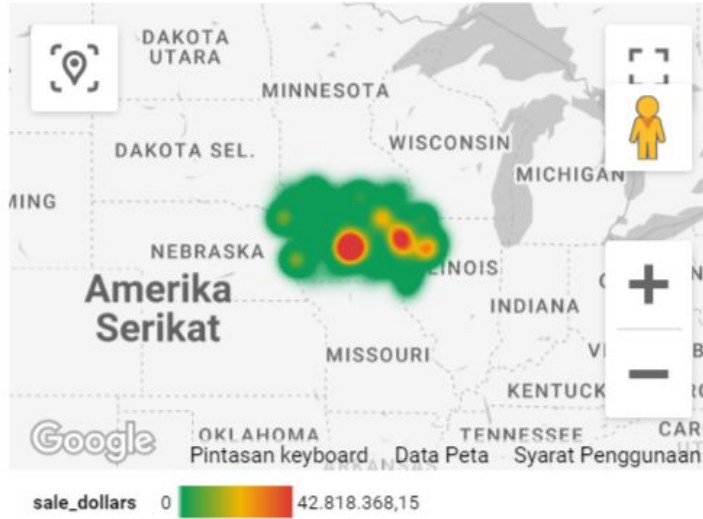
The Monthly Sales

Total Sales by Day of Week

Throughout Jan 2021 – Dec 2021, our sales is growing constantly. December was the highest total sales ($36.6M) and the lowest total sales on Januari ($25.1M).

Throughout 2021, the lowest total sales occured on weekend (Saturday and Sunday).
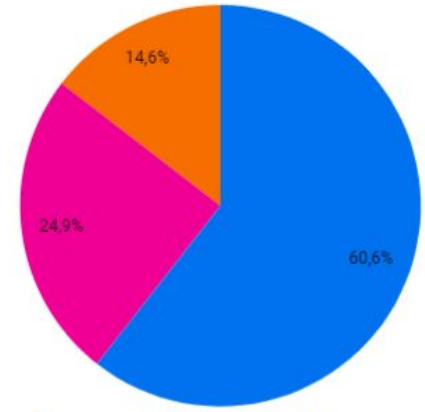
Top 3 Cities

The data 2021 shows that there are 3 cities with the strong sales, Des Moines is the city with the highest total sales which around $43M, followed by Cedar Rapids around $25M and Davenport around $17,5M.
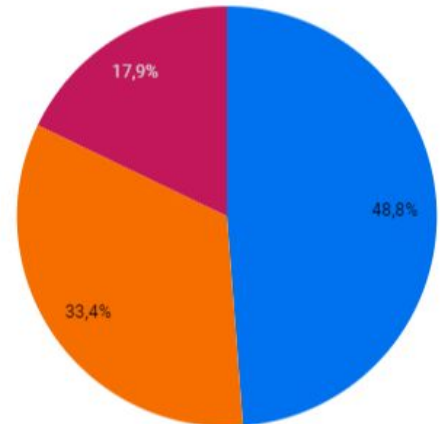
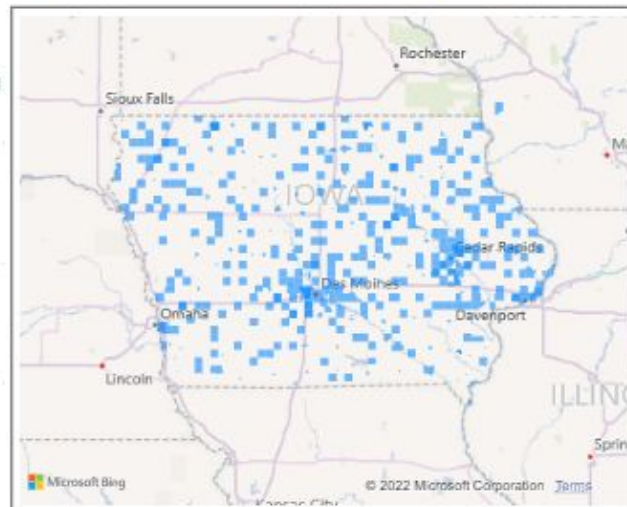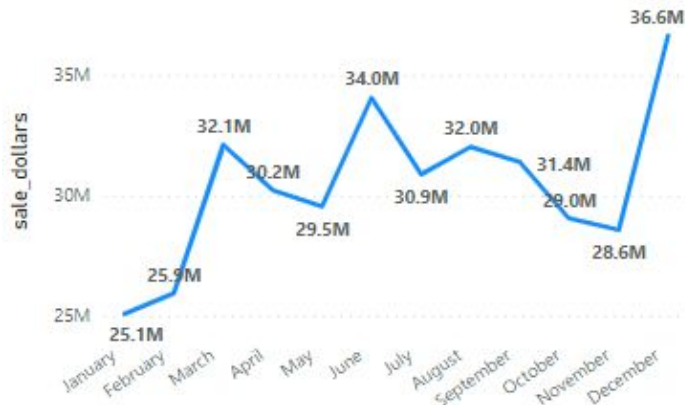# The Most Sells by Volume Size

In the total sales, the Large Size is better than the Small Size, which is 24.9% from the total or about $91M.
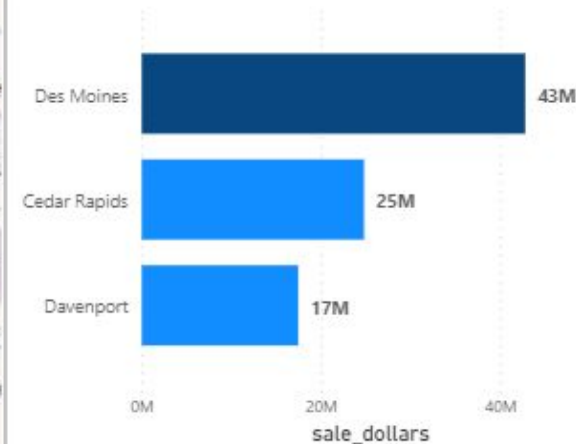
In the total bottle sold, the number of bottle sold with Small Size is better than the number of bottle sold with Large Size, which is 33.4% from the total or about 8.9M bottles.

sale_dollars
365,4 jt

- Medium Size
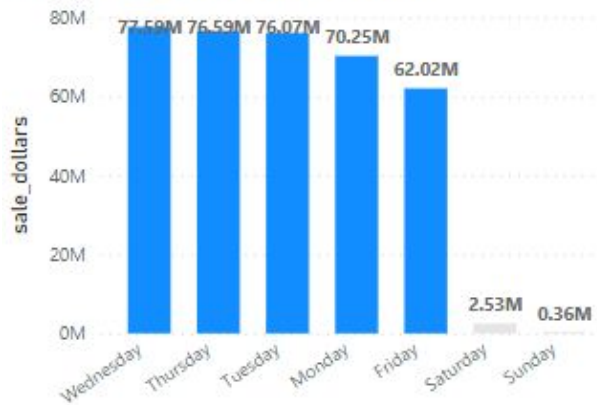- Large Size
- Small Size

bottles_sold
26,7 jt

- Medium Size
- Small Size
- Large Size

Iowa Liquor Sales Analysis in 2021

The Monthly Sales

Monthly values: January 25.1M, February 25.9M, March 32.1M, April 30.2M, May 29.5M, June 34.0M, July 30.9M, August 32.0M, September 29.0M, October 31.4M, November 28.6M, December 36.6M

Top 3 Cities by Total Sales

- Des Moines 43M
- Cedar Rapids 25M
- Davenport 17M

sale_dollars

Total Sales by Day of Week

- Wednesday 77.59M
- Thursday 76.59M
- Tuesday 76.07M
- Monday 70.25M
- Friday 62.02M
- Saturday 2.53M
- Sunday 0.36M

The Most Category Sells

	Large Size	Medium Size	Small Size
American Vodkas	1.5M	2.1M	1.7M
Whiskey Liqueur	0.1M	0.5M	2.9M
Canadian Whiskies	0.9M	1.1M	0.7M

The Most Sells by Volume Size

sale_dollars
365.4M

bottles_sold
26.7M

Legend: Medium Size, Large Size, Small Size

sale_dollars pie: 53.25M (14.57%), 90.81M (24.85%), 221.37M (60.58%)

bottles_sold pie: 5M (17.87%), 9M (33.35%), 13M (48.78%)

Conclusion and Recommendation

Based on the problems that arise and based on the results of the data that has been processed, we know that in 2021

1. Our sales is growing constantly with December is the highest total sales and January is the lowest. And the lowest total sales occured on weekend (Saturday and Sunday), this could be due to city/county restrictions placed on alcohol sales for weekend.
2. Des Moines is the city with the highest total sales followed by Cedar Rapids and Davenport.
3. American Vodkas is the most selling category.
4. The Large Size has a better total sales compared with Small Size, but the Small Size is the most in demand.

Then it can be recommended that to start selling liquor by Vendor X in Iowa it can be done by distribute products in cities that have a high interest in ordering liquor, and distribute the most ordered products.

Thank You

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