



28 DE ENERO DE 2022

IOWA LIQUOR SALES
INTRODUCCIÓN A BASES DE DATOS

ISAI GUTIÉRREZ GUTIÉRREZ



Índice

1. Definición del Proyecto	3
1.1. Fuentes de BD	3
1.2. Problema a resolver	3
2. Definición de la Base de Datos	3
2.1. Tablas	3
3. Glosario de campos	4
4. Creación de Base de datos y tablas	4
4.1. MySQL	5
4.1.1. Category	5
4.1.2. County	5
4.1.3. Items	6
4.1.4. Store	6
4.1.5. Vendors	7
4.1.6. Sales	7
4.2. MongoDB	8
4.2.1. Category	8
4.2.2. County	8
4.2.3. Items	9
4.2.4. Store	9
4.2.5. Vendors	10
4.2.6. Sales	10
5. Consultas MySQL	11
5.1. ¿Qué productos generan mayor volumen de ventas?	11
5.2. ¿Cuáles son los 5 productos con menor volumen de venta?	11
5.3. ¿Cuáles son las 10 ciudades donde se consume mayor volumen de alcohol? ...	12
5.4. ¿En qué ciudad se consume el mayor volumen de ventas?	12
5.5. ¿En qué ciudad no conviene tener un punto de venta de acuerdo al monto de venta?	13
5.6. ¿Cuáles las categorías que más venden?	13
5.7. ¿Cuál es la categoría que más vende por ciudad?	14
5.8. ¿En qué fecha se incrementa el volumen de ventas?	14
5.9. ¿Qué producto se vende más por cantidad?	15

5.10.	¿Qué producto se vende menos por cantidad?.....	15
5.11.	¿En qué sucursal se muestra mayor volumen de ventas?	16
5.12.	¿En qué mes hay mayor menor consumo de alcohol?	16
5.13.	Cuantos paquetes se consumen por tiendas en cada mes.....	17
5.14.	Cuantos paquetes de los 3 productos más vendidos se consumen por condado en un mes	18
5.15.	Determina la utilidad de cada producto.....	19
5.16.	Determina los 10 productos que generan mayor volumen ganancias de utilidad y de esos 10 obtén la ganancia total de utilidad por ciudad.....	20
5.17.	Obtener el promedio del precio de todos los productos.....	21
5.18.	¿Cuántos productos se venden por arriba de la media?	21
5.19.	¿Cuántos productos se venden por abajo de la media?	21
5.20.	Vista de la utilidad de cada producto.....	22
6.	Consultas MongoDB.....	22
6.1.	¿Qué productos generan mayor volumen de ventas? Muestra los últimos 5.....	22
6.2.	¿Cuáles son los 5 productos con menor volumen de venta?	23
6.3.	¿En qué tiendas se consume el mayor volumen de ventas?	24
6.4.	¿Cuál es la categoría que mas vende ?	25
6.5.	¿Cuál es el producto que se vende mas?	26
6.6.	¿En qué ciudad se consume el mayor volumen de ventas?	27
6.7.	¿Cuál es el producto que se vende menos?.....	28
6.8.	Determina la utilidad de cada producto	29
6.9.	¿En qué año se incrementa el volumen de ventas?	31
6.10.	¿Cuáles son las 10 tiendas donde se consume mayor volumen de alcohol? ..	31
6.11.	¿En qué sucursal se muestra mayor volumen de ventas?	32
6.12.	¿En qué mes hay menor consumo de alcohol?	33
6.13.	Determina los 10 productos que generan mayor volumen ganancias de utilidad	35
6.14.	¿En qué mes hay mayor consumo de alcohol?.....	37
6.15.	Obtener el promedio del precio de todos los productos.....	38
6.16.	Vista de ventas con tiendas	39
7.	Conclusiones.....	39

1. Definición del Proyecto

1.1. Fuentes de BD

La fuente de datos que se utilizaron fue de la página de Kaggle (<https://www.kaggle.com/residentmario/iowa-liquor-sales>)

1.2. Problema a resolver

Determinar en que parte del estado de iowa es mejor tener un punto de venta, a partir de los datos obtenidos.

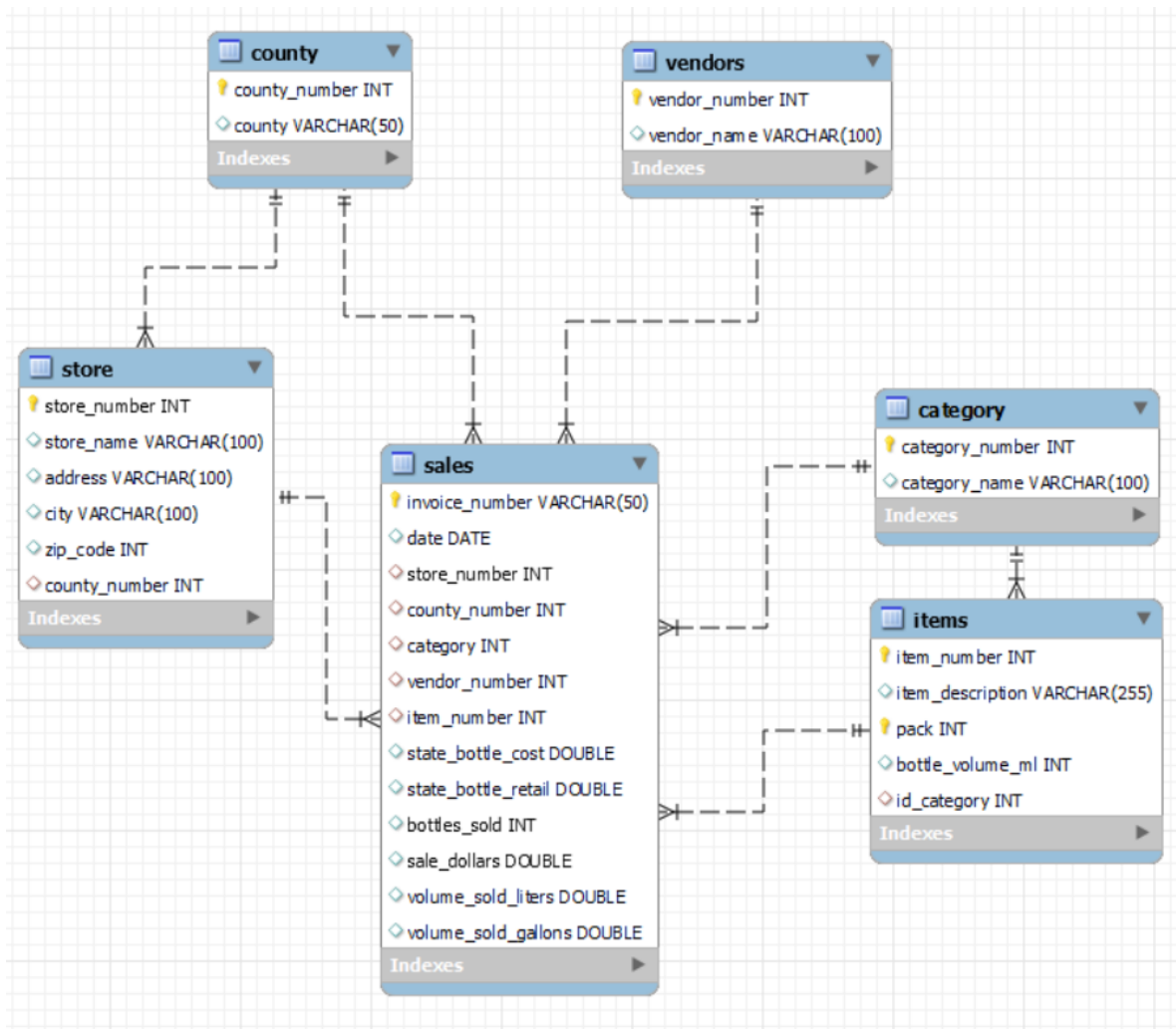
2. Definición de la Base de Datos

2.1. Tablas

Los datos están divididos por varias tablas las cuales son:

1. **Store:** Tiendas de los licores
2. **Vendors:** Vendedores de las tiendas
3. **County:** El condado donde esta cada tienda
4. **Category:** Categoría de cada producto.
5. **Items:** Productos que se venden en cada tienda
6. **Sales:** Registros de ventas de los distintos tipos de alcohol, volumen (lt, galones) en las diferentes tiendas con su precio de venta y el monto total.

2.2. Diagrama Entidad Relación



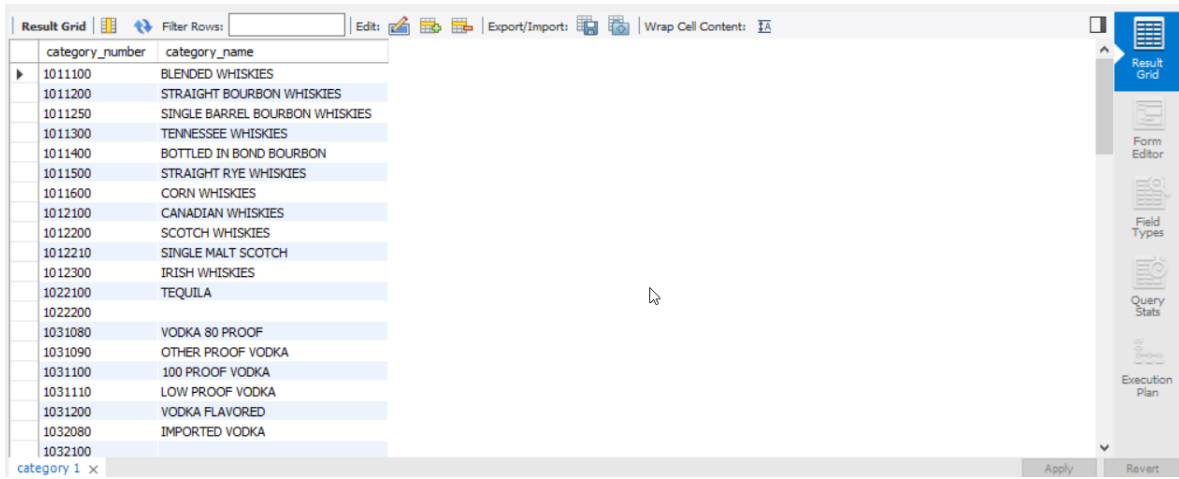
3. Glosario de campos

- **state_bottle_cost**: Costo del producto
- **state_bottle_retail**: Precio de venta del producto
- **bottles_sold**: Botellas vendidas
- **sale_dollars**: Monto total de venta
- **volume_sold_liters**: Volumen de litros vendidos
- **volume_sold_gallons**: Volumen de galones vendidos

4. Creación de Base de datos y tablas

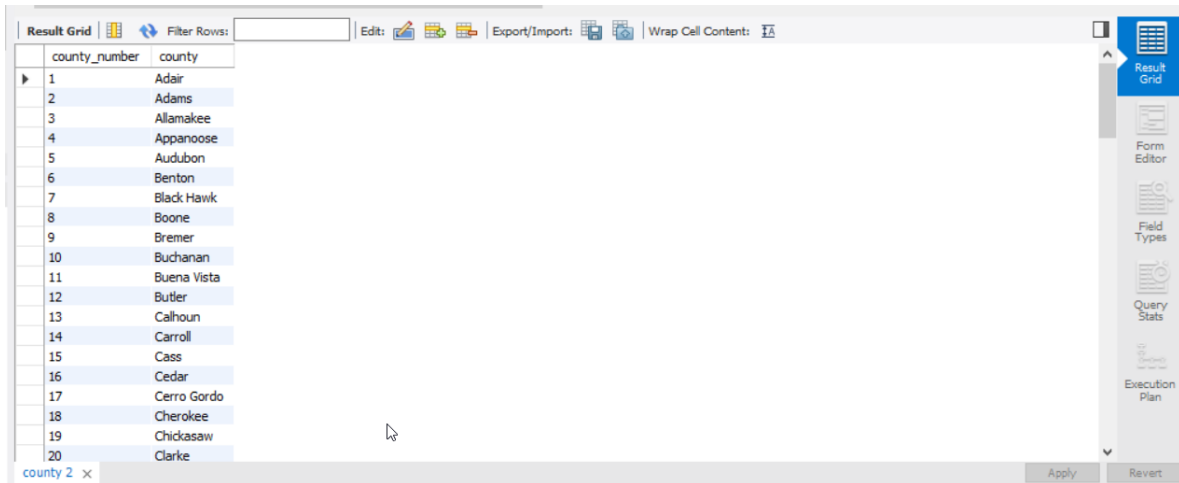
4.1. MySQL

4.1.1. Category



category_number	category_name
1011100	BLENDED WHISKIES
1011200	STRAIGHT BOURBON WHISKIES
1011250	SINGLE BARREL BOURBON WHISKIES
1011300	TENNESSEE WHISKIES
1011400	BOTTLED IN BOND BOURBON
1011500	STRAIGHT RYE WHISKIES
1011600	CORN WHISKIES
1012100	CANADIAN WHISKIES
1012200	SCOTCH WHISKIES
1012210	SINGLE MALT SCOTCH
1012300	IRISH WHISKIES
1022100	TEQUILA
1022200	
1031080	VODKA 80 PROOF
1031090	OTHER PROOF VODKA
1031100	100 PROOF VODKA
1031110	LOW PROOF VODKA
1031200	VODKA FLAVORED
1032080	IMPORTED VODKA
1032100	

4.1.2. County



county_number	county
1	Adair
2	Adams
3	Allamakee
4	Appanoose
5	Audubon
6	Benton
7	Black Hawk
8	Boone
9	Bremer
10	Buchanan
11	Buena Vista
12	Butler
13	Calhoun
14	Carroll
15	Cass
16	Cedar
17	Cerro Gordo
18	Cherokee
19	Chickasaw
20	Clarke

4.1.3. Items

Result Grid	Filter Rows:	Edit:	Export/Import:	Wrap Cell Content:	Fetch rows:	Result Grid
item_number	item_description	pack	bottle_volume_ml	id_category		
353	Cointreau w/ Lime Squeezer	6	750	1701100		
361	Bailey's Original Irish Cream w/4 Shot Glasses	6	750	1701100		
363	Bird Dog Bourbon w/4-50mls	6	950	1701100		
365	Bird Dog Peach w/4-50mls	6	950	1701100		
366	Bird Dog Peach w/ BBQ Sauce	6	750	1701100		
401	Basil Hayden w/ Shaker	6	750	1701100		
402	Disaronno Amaretto Cavalli w/2 Glasses	6	750	1701100		
403	Jim Beam w/ Barbecue Sauce	6	750	1701100		
407	Jim Beam w/3-50mls	6	900	1701100		
409	Jim Beam Black w/4-50mls	6	950	1701100		
411	Jim Beam Black w/Grill Mitt	6	750	1701100		
413	Jim Beam White Triage	6	750	1701100		
424	Jim Beam White w/3-50mls	6	750	1701100		
428	Jim Beam Black w/2 Glasses	6	750	1701100		
433	Jim Beam White w/Sports Glasses	6	750	1701100		
434	Jim Beam White w/2 Glasses	6	750	1701100		
447	Knob Creek w/Glasses	6	750	1701100		
454	Knob Creek w/2 Whiskey Stones	6	750	1701100		
456	Knob Creek w/2-50mls	6	850	1701100		
457	Maker's Mark Co-Pack	6	750	1701100		

items 3 x Apply Revert

4.1.4. Store

Result Grid	Filter Rows:	Edit:	Export/Import:	Wrap Cell Content:	Fetch rows:	Result Grid
store_number	store_name	address	city	zip_code	county_number	
2106	Hillstreet News and Tobacco	2217 COLLEGE	CEDAR FALLS	50613	7	
2113	Jamboree Foods	1119 MARKET ST. BOX 71	GOWRIE	50543	94	
2130	Sycamore Convenience	617 SYCAMORE	WATERLOO	50703	7	
2132	Spirits and Such	100 E ELM	WEST UNION	52175	33	
2152	Dugans Supermarket	202 4TH NORTH	ROCKWELL	50469	17	
2161	Huber's Store Inc.	FIRST & MAIN	FT. ATKINSON	52144	96	
2178	Double "D" Liquor Store"	618 ROSSVILLE ROAD	WAUKON	52172	3	
2190	Central City Liquor, Inc.	1460 2ND AVE	DES MOINES	50314	77	
2191	Keokuk Spirits	1013 MAIN	KEOKUK	52632	56	
2200	Sac Liquor Store	619 E MAIN ST	SAC CITY	50583	81	
2205	Ding's Honk And Holler	900 E WASHINGTON	CLARINDA	51632	73	
2228	Rodgers Spirits and More	53 GREEN ST	WINTERSET	50273	61	
2233	Forbes Liquor Locker / remi	2508 ENTERPRISE AVE	SPIRIT LAKE	51360	30	
2238	Adventureland Inn	3200 Adventureland Dr	ALTOONA	50009	77	
2248	Ingersoll Liquor and Beverage	3500 INGERSOLL AVE	DES MOINES	50312	77	
2260	Spirits And Ale, Inc.	509 FIRST AVE	PERRY	50220	25	
2285	John's Grocery	401 EAST MARKET ST	IOWA CITY	52240	52	
2290	Al's Liquors Unlimited	215 WEST MILWAUKEE	STORM LAKE	50588	11	
2327	West Side Spirits	801 HULL ST	CORNING	50841	2	
2353	Cresco Liquor Store	708 2ND AVE SE	CRESO	52136	45	

store 4 x Apply Revert

4.1.5 Vendors

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

vendor_number	vendor_name
10	A Hardy / U.S.A., Ltd.
33	Bmc Imports
35	Bacardi U.S.A., Inc.
55	Sazerac North America
61	Biagio Cru And Estate Wines, LLC
65	Jim Beam Brands
79	Breckenridge Distillery
80	Boston Beer Company
85	Brown-Forman Corporation
86	Broadbent Distillery
89	Temperance Distilling Company
90	Carriage House Imports, Ltd.
91	Castle Brands
100	Aiko Importers Inc
101	Artisan Grain Distillery
104	ASDSpirits, LLC
107	Blaum Bros. Distilling Co.
109	Casa 1921 LLC
110	3 Badge Mixology
111	Better Brands Bev Co

vendors 5 x

Apply

Revert

Result Grid

Form Editor

Field Types

Query Stats

Execution Plan

4.1.6 Sales

Result Grid		Filter Rows:	Edit:	Export/Import:	Wrap Cell Content:	Fetch rows:				
invoice_number	date	store_number	county_number	category	vendor_number	item_number	state_bottle_cost	state_bottle_retail	bottles_sold	
378900005	17/10/2012	3789	62	1011500	255	27102	18.08	27.13	30	8
378900006	17/10/2012	3789	62	1011100	260	25606	6.53	9.79	12	1
378900013	17/10/2012	3789	62	1031080	434	36306	3.25	4.88	12	5
378900020	17/10/2012	3789	62	1062310	260	43285	8.25	12.49	12	1
378900029	17/10/2012	3789	62	1071100	395	58873	8.2	12.3	6	7
378900031	17/10/2012	3789	62	1081400	65	86112	2.21	3.32	12	3
381800016	29/02/2012	3818	63	1011200	65	27544	9.97	14.95	1	1
381800025	29/02/2012	3818	63	1012100	65	10628	14.75	22.62	1	2
381800027	29/02/2012	3818	63	1012100	260	10836	16.47	24.7	2	4
381800028	29/02/2012	3818	63	1012200	35	4867	15.86	24.29	2	4
381800029	29/02/2012	3818	63	1022100	240	88116	15.68	23.53	1	2
381800054	29/02/2012	3818	63	1042100	260	28867	14.99	22.48	2	4
381800060	29/02/2012	3818	63	1062200	35	43128	14.67	22	1	2
381800062	29/02/2012	3818	63	1062200	434	45246	3.85	5.77	4	2
381800070	29/02/2012	3818	63	1062310	260	16.99	25.48	2	5	5
381800074	29/02/2012	3818	63	1062300	370	42717	9.77	14.66	1	1
381800077	29/02/2012	3818	63	1081010	434	76487	4.04	6.06	1	6
381800097	29/02/2012	3818	63	1081900	322	75208	4.67	7	1	7
381800112	29/02/2012	3818	63	1012200	55	8824	3	4.5	1	4

sales 6

ApplyRevert

Result Grid

Form Editor

Field Types

Query Stats

Execution Plan

4.2. MongoDB

4.2.1. Category

liquor.category

DOCUMENTS77

STORAGE SIZE20.5KB

AVG. SIZE79B

INDEXES1

TOTAL SIZE20.5KB

AVG. SIZE20.5KB

Documents

Aggregations

Schema

Explain Plan

Indexes

Validation

1

FILTER

{ field: 'value' }

»

OPTIONS

FIND

RESET

↺

↻

+

ADD DATA

▼

+

VIEW

≡

{ }

⌘

Displaying documents 1 - 20 of 77

◀

▶

↻

REFRESH

_id: ObjectId("61f0db434464562a9ca7bd6")

Category_Number: 1011100

Category_Name: "BLENDED WHISKIES"

_id: ObjectId("61f0db434464562a9ca7bd7")

Category_Number: 1011200

Category_Name: "STRAIGHT BOURBON WHISKIES"

_id: ObjectId("61f0db434464562a9ca7bd8")

Category_Number: 1011250

Category_Name: "SINGLE BARREL BOURBON WHISKIES"

_id: ObjectId("61f0db434464562a9ca7bd9")

Category_Number: 1011300

Category_Name: "TENNESSEE WHISKIES"

_id: ObjectId("61f0db434464562a9ca7bda")

Category_Number: 1011400

Category_Name: "BOTTLED IN BOND BOURBON"

_id: ObjectId("61f0db434464562a9ca7bdb")

Category_Number: 1011500

4.2.2. County

liquor.county

DOCUMENTS99

STORAGE SIZE20.5KB

AVG. SIZE60B

INDEXES1

TOTAL SIZE20.5KB

AVG. SIZE20.5KB

Documents

Aggregations

Schema

Explain Plan

Indexes

Validation

1

FILTER

{ field: "value" }

►

OPTIONS

FIND

RESET

↺

↻

ADD DATA

▼

+

VIEW

≡

{ }

⌵

Displaying documents 1 - 20 of 99

◀

▶

↺

REFRESH

_id: ObjectId("61f0dbaa34464562a9ca7b71")

county_number: 1

county: "Adair"

_id: ObjectId("61f0dbaa34464562a9ca7b72")

county_number: 2

county: "Adams"

_id: ObjectId("61f0dbaa34464562a9ca7b73")

county_number: 3

county: "Allamakee"

_id: ObjectId("61f0dbaa34464562a9ca7b74")

county_number: 4

county: "Appanoose"

_id: ObjectId("61f0dbaa34464562a9ca7b75")

county_number: 5

county: "Audubon"

_id: ObjectId("61f0dbaa34464562a9ca7b76")

county_number: 6

4.2.3. Items

liquor.items DOCUMENTS 4.0k STORAGE SIZE 167.9KB AVG. SIZE 133B INDEXES 1 TOTAL SIZE 69.6KB AVG. SIZE 69.6KB

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } **OPTIONS** **FIND** **RESET** **REFRESH**

ADD DATA **VIEW** **{}** **≡**

Displaying documents 1 - 20 of 4022

```
{
  "_id": "ObjectId('61f0dae9759516d84cf0c21d')",
  "item_number": 173,
  "item_description": "Laphroaig w/ Whiskey Stones",
  "pack": 12,
  "bottle_volume_ml": 750,
  "id_category": 1701100
}
```

```
{
  "_id": "ObjectId('61f0dae9759516d84cf0c21e')",
  "item_number": 220,
  "item_description": "Calumet Farm Bourbon VAP",
  "pack": 6,
  "bottle_volume_ml": 750,
  "id_category": 1701100
}
```

```
{
  "_id": "ObjectId('61f0dae9759516d84cf0c21f')",
  "item_number": 237,
  "item_description": "Knob Creek w/ Crystal Decanter",
  "pack": 3,
  "bottle_volume_ml": 1750,
  "id_category": NaN
}
```

```
{
  "_id": "ObjectId('61f0dae9759516d84cf0c220')",
  "item_number": 238,
  "item_description": "Forbidden Secret Coffee Pack",
  "pack": 6,
  "bottle_volume_ml": 1500
}
```

4.2.4. Store

liquor.stores DOCUMENTS 1.6k STORAGE SIZE 118.8KB AVG. SIZE 164B INDEXES 1 TOTAL SIZE 32.8KB AVG. SIZE 32.8KB

Documents Aggregations Schema Explain Plan Indexes Validation

FILTER { field: 'value' } **OPTIONS** **FIND** **RESET** **REFRESH**

ADD DATA **VIEW** **{}** **≡**

Displaying documents 1 - 20 of 1573

```
{
  "_id": "ObjectId('61f0f0580650cfca44539c72')",
  "store_number": 2106,
  "store_name": "Hillstreet News and Tobacco",
  "address": "2217 COLLEGE",
  "city": "CEDAR FALLS",
  "zip_code": 50613,
  "county_number": 7
}
```

```
{
  "_id": "ObjectId('61f0f0580650cfca44539c73')",
  "store_number": 2113,
  "store_name": "Jamboree Foods",
  "address": "1119 MARKET ST. BOX 71",
  "city": "GARNER",
  "zip_code": 50543,
  "county_number": 94
}
```

```
{
  "_id": "ObjectId('61f0f0580650cfca44539c74')",
  "store_number": 2130,
  "store_name": "Sycamore Convenience",
  "address": "617 SYCAMORE",
  "city": "WATERLOO",
  "zip_code": 50703,
  "county_number": 7
}
```

```
{
  "_id": "ObjectId('61f0f0580650cfca44539c75')",
  "store_number": 2132
}
```

4.2.5. Vendors

liquor.vendors		DOCUMENTS 154	STORAGE SIZE 24.6KB	AVG. SIZE 81B	INDEXES 1	TOTAL SIZE 20.5KB	AVG. SIZE 20.5KB
Documents	Aggregations	Schema	Explain Plan	Indexes	Validation		
FILTER { field: 'value' }		OPTIONS	FIND	RESET	↺	...	
ADD DATA		VIEW	⌵	⌶	⌷	⌸	Displaying documents 1 - 20 of 154
_id: ObjectId("61f0db34464562a9ca824c") Vendor_Number: 10 Vendor_Name: "A Hardy / U.S.A., Ltd."							
_id: ObjectId("61f0db34464562a9ca824d") Vendor_Number: 33 Vendor_Name: "Bmc Imports"							
_id: ObjectId("61f0db34464562a9ca824e") Vendor_Number: 35 Vendor_Name: "Bacardi U.S.A., Inc."							
_id: ObjectId("61f0db34464562a9ca824f") Vendor_Number: 55 Vendor_Name: "Sazerac North America"							
_id: ObjectId("61f0db34464562a9ca8250") Vendor_Number: 61 Vendor_Name: "Biagio Cru And Estate Mines, LLC"							
_id: ObjectId("61f0db34464562a9ca8251") Vendor_Number: 65							

4.2.6. Sales

liquor.sales		DOCUMENTS 809.2k	STORAGE SIZE 64.4MB	AVG. SIZE 312B	INDEXES 1	TOTAL SIZE 9.0MB	AVG. SIZE 9.0MB
Documents	Aggregations	Schema	Explain Plan	Indexes	Validation		
FILTER { field: 'value' }		OPTIONS	FIND	RESET	↺	...	
ADD DATA		VIEW	⌵	⌶	⌷	⌸	Displaying documents 1 - 20 of 809194
_id: ObjectId("61f0ead08650cfca4473d38") invoice_number: "S29198800001" date: 2015-11-20T00:00:00.000+00:00 store_number: 2191 county_number: 56 category: hah vendor_number: 255 item_number: 297 state_bottle_cost: 18.09 state_bottle_retail: 27.14 bottles_sold: 6 sale_dollars: 162.84 volume_sold_liters: 4.5 volume_sold_gallons: 1.19							
_id: ObjectId("61f0ead08650cfca4473d39") invoice_number: "S29195400002" date: 2015-11-21T00:00:00.000+00:00 store_number: 2285 county_number: 73 category: hah vendor_number: 255 item_number: 297 state_bottle_cost: 18.09 state_bottle_retail: 27.14 bottles_sold: 12 sale_dollars: 325.68 volume_sold_liters: 9 volume_sold_gallons: 2.38							

5. Consultas MySQL

5.1. ¿Qué productos generan mayor volumen de ventas?

item_description	total_venta
Black Velvet	3007047.6000002814
Captain Morgan Spiced Rum	2090584.4400000286
Jack Daniels Old #7 Black Lbl	1881649.7999999684
Crown Royal Canadian Whisky	1668949.9399999706
Hawkeye Vodka	1375411.4800002086
Templeton Rye	1164917.4100000176
Captain Morgan Spiced Rum	1115488.899999979
Crown Royal	1089471.0900000245
Jagermeister Liqueur	962325.1499999848
Patron Tequila Silver	961572.0700000001
Fireball Cinnamon Whiskey	961565.8299999975
Jack Daniels Old #7 Black Lbl	956228.2899999529
Captain Morgan Original Spiced	931482.9299999877
Grey Goose Vodka	833838.2100000037
Absolut Swedish Vodka 80 Prf	795146.5099999997
Jack Daniels Old #7 Black Lbl	760140.8600000003
Rumchata	702843.75
Fireball Cinnamon Whiskey	650405.0000000000

```
select i.item_description, sum(sale_dollars) as total_venta
      from items i join sales s on i.item_number = s.item_number
      group by (item_description)
      order by total_venta desc;
```

5.2. ¿Cuáles son los 5 productos con menor volumen de venta?

item_description	total_venta
Jim Beam	3.16
Revel Stoke Mini	7.34
Dekuyper Sour Apple Pucker Mini	7.84
Bacardi Limon Mini	8.7
Dekuyper Peach Pucker Schnapps	9.45

```
select i.item_description, sum(sale_dollars) as total_venta
      from items i join sales s on i.item_number = s.item_number
      group by (item_description)
      order by total_venta asc
      limit 5;
```

5.3. ¿Cuáles son las 10 ciudades donde se consume mayor volumen de alcohol?

	city	volumen_alcohol_lt
►	DES MOINES	639801.5799999847
	CEDAR RAPIDS	496526.459999999
	DAVENPORT	338996.8499999964
	WATERLOO	281449.5799999991
	SIOUX CITY	228627.76000000018
	COUNCIL BLUFFS	222495.83999999985
	IOWA CITY	217721.24000000017
	MARSHALLTOWN	210511.1900000002
	DUBUQUE	188367.3000000003
	AMES	175355.68000000028

```
select s.city, sum(sl.volume_sold_liters) as volumen_alcohol_lt
      from store s join sales sl on s.store_number = sl.store_number
      group by (city)
      order by volumen_alcohol_lt desc
      limit 10;
```

5.4. ¿En qué ciudad se consume el mayor volumen de ventas?

	city	total_venta
►	DES MOINES	9546831.990000058
	CEDAR RAPIDS	6984099.809999984
	DAVENPORT	4797870.3399999848
	WATERLOO	3916866.8200000618
	MARSHALLTOWN	3257107.0199999535
	SIOUX CITY	3248173.6399999876
	IOWA CITY	3212263.879999964
	COUNCIL BLUFFS	3103056.189999977
	WEST DES MOI...	2542278.7099999427
	DUBUQUE	2536896.3099999456
	AMES	2344218.4799999814
	WINDSOR HEIG...	2182522.8699999815
	CEDAR FALLS	1674015.6999999566
	FORT DODGE	1648648.7899999719
	CLINTON	1409984.4799999762
	ANKENY	1396832.3999999699
	MASON CITY	1365321.1499999776
	MOUNT AYR	1232928.5900000015

```
select s.city, sum(sl.sale_dollars) as total_venta
      from store s join sales sl on s.store_number = sl.store_number
      group by (city)
      order by total_venta desc;
```

5.5. ¿En qué ciudad no conviene tener un punto de venta de acuerdo al monto de venta?

	city	total_venta
►	MADRID	57.55
	WALFORD	289.74
	MINDEN	310.76
	LATIMER	331.29999999999995
	ROBINS	402.23
	KELLOGG	849.9599999999999
	CHESTER	981.7199999999999
	SUTHERLAND	1720.56
	COLO	1860.8400000000001
	PAULLINA	2212.09

```
select s.city, sum(sl.sale_dollars) as total_venta
      from store s join sales sl on s.store_number = sl.store_number
group by (city)
order by total_venta asc
limit 1;
```

5.6. ¿Cuáles las categorías que más venden?

	category_name	venta_total
►	CANADIAN WHISKIES	12237969.519998929
	VODKA 80 PROOF	11447494.149999954
	SPICED RUM	7927984.289999834
	IMPORTED VODKA	6074627.459999578
	TEQUILA	5561662.299999762

```
select c.category_name, sum(s.sale_dollars) as venta_total
      from category c join sales s on c.category_number = s.category
group by s.category
order by venta_total desc
limit 1;
```

5.7. ¿Cuál es la categoría que más vende por ciudad?

	city	category_name	venta_total
►	DES MOINES	VODKA 80 PROOF	1039945.9000000256
	DES MOINES	CANADIAN WHISKIES	859333.7999999992
	CEDAR RAPIDS	VODKA 80 PROOF	846252.7200000114
	DES MOINES	TEQUILA	732305.3599999992
	CEDAR RAPIDS	CANADIAN WHISKIES	629860.7200000024
	DES MOINES	IMPORTED VODKA	580266.3600000013
	CEDAR RAPIDS	SPICED RUM	577405.4399999978
	DES MOINES	WHISKEY LIQUEUR	564998.3200000002
	DAVENPORT	VODKA 80 PROOF	520116.4499999963
	DES MOINES	SPICED RUM	497672.8599999967
	WATERLOO	CANADIAN WHISKIES	497563.33000000316
	DAVENPORT	CANADIAN WHISKIES	490248.59000000614
	CEDAR RAPIDS	IMPORTED VODKA	461013.9800000003
	DES MOINES	MISC. IMPORTED CO...	460698.3199999979
	DES MOINES	STRAIGHT BOURBON...	456359.8600000007
	SIOUX CITY	CANADIAN WHISKIES	434307.0600000043

```
select st.city, c.category_name, sum(s.sale_dollars) as venta_total
      from category c join sales s on c.category_number = s.category
join store st on st.store_number = s.store_number
group by st.city, s.category
order by venta_total desc
limit 20;
```

5.8. ¿En qué fecha se incrementa el volumen de ventas?

anio	total_venta
2012	25113574.030000456
2013	25265952.66000171
2014	26333377.400003143
2015	25096768.090001255

```
select YEAR(date) as anio, SUM(sale_dollars) as total_venta
      from sales
group by anio;
```

5.9. ¿Qué producto se vende más por cantidad?

item_description	total_productos_vendidos
Black Velvet	198588
Hawkeye Vodka	128117
Captain Morgan Spiced Rum	120667
Mccormick Vodka Pet	95648
Jack Daniels Old #7 Black Lbl	71960
Captain Morgan Original Spiced	71269
Barton Vodka	68983
Mccormick Vodka	63394
Crown Royal Canadian Whisky	61294
Black Velvet	60893

```
select i.item_description, sum(pack) as total_productos_vendidos
      from items i join sales s on i.item_number = s.item_number
group by item_description
order by total_productos_vendidos desc;
```

5.10. ¿Qué producto se vende menos por cantidad?

item_description	total_productos_vendidos
Beefeater "24"" Gin"	1
Dekuyper Peach Pucker Schnapps	1
Dekuyper Sour Apple Pucker Mini	1
Bacardi Limon Mini	1
Cyclone Vodka	1
Thatcher's Apple Spice Ginger	1
Godiva Chocolate Raspberry Vodka	1
4 Orange Vodka	1
Grappa Moscato	1
Dry Fly Vodka	1

```
select i.item_description, sum(bottles_sold) as total_productos_vendidos
      from items i join sales s on i.item_number = s.item_number
group by i.item_number
order by total_productos_vendidos asc
limit 10;
```


5.11. ¿En qué sucursal se muestra mayor volumen de ventas?

store_name	no_ventas
Hy-Vee #3 / BDI / Des Moines	7217
Central City Liquor, Inc.	6443
Hy-Vee Wine and Spirits / Iowa City	5921
Casey's General Store #3228 / Marsha	5494
Hy-Vee #3 Food and Drugstore	5147
Hy-vee #2 / Ames	4638
Hy-Vee Food Store #1 / Mason City	4482
Hy-Vee Food and Drug / Clinton	4217
Hy-Vee Food Store / Johnston	4099
Hy-Vee Wine and Spirits / Bettendorf	4051
Hy-Vee Wine and Spirits #2	3986
Hy-Vee #4 / WDM	3963
Hy-Vee #7 / Cedar Rapids	3960
Hy-Vee #1044 / Burlington	3850
Hy-Vee Food Store #3 / Cedar Rapids	3842

```
select s.store_name, count(sl.invoice_number) as no_ventas
      from store s join sales sl on s.store_number = sl.store_number
    group by s.store_number
    order by no_ventas desc;
```

5.12. ¿En qué mes hay mayor menor consumo de alcohol?

mes	consumo_alcohol
October	807107.2599999845
June	645964.1099999895
May	639929.6899999902
July	634134.2099999873
April	630048.8099999885
August	614703.37999999
September	604818.83999999
March	561405.56999999
November	542359.5899999894
February	538760.4999999912
December	534484.6399999899
January	519381.44999998924

```
select monthname(date) as mes, sum(volume_sold_liters) as consumo_alcohol
      from sales
    group by mes
    order by consumo_alcohol desc;
```

5.13. Cuantos paquetes se consumen por tiendas en cada mes

store_name	mes	no_paquetes
218 Fuel Express & Chubby's Liquor	October	132
218 Fuel Express & Chubby's Liquor	April	57
218 Fuel Express & Chubby's Liquor	September	55
218 Fuel Express & Chubby's Liquor	November	52
218 Fuel Express & Chubby's Liquor	July	51
218 Fuel Express & Chubby's Liquor	May	49
218 Fuel Express & Chubby's Liquor	January	43
218 Fuel Express & Chubby's Liquor	February	41
218 Fuel Express & Chubby's Liquor	December	34
218 Fuel Express & Chubby's Liquor	August	29
218 Fuel Express & Chubby's Liquor	March	22
218 Fuel Express & Chubby's Liquor	June	16
3rd St Convenience	October	120
3rd St Convenience	December	119
3rd St Convenience	April	96
3rd St Convenience	June	90
3rd St Convenience	August	86
3rd St Convenience	January	62
3rd St Convenience	March	56
3rd St Convenience	February	25
3rd St Convenience	September	24
3rd St Convenience	July	21
3rd St Convenience	May	18
3rd St Convenience	November	18
7 Rayos Liquor Store	July	415
7 Rayos Liquor Store	May	381
7 Rayos Liquor Store	November	356
7 Rayos Liquor Store	September	329
7 Rayos Liquor Store	August	304
7 Rayos Liquor Store	October	236
7 Rayos Liquor Store	June	235
7 Rayos Liquor Store	March	217
7 Rayos Liquor Store	January	174
7 Rayos Liquor Store	February	158
7 Rayos Liquor Store	December	134
7 Rayos Liquor Store	April	126
A J'S LIQUOR II	September	162
A J'S LIQUOR II	October	153
A J'S LIQUOR II	May	129
A J'S LIQUOR II	July	129
A J'S LIQUOR II	June	99

```

select s.store_name, monthname(sl.date) as mes, sum(sl.bottles_sold) as
no_paquetes
      from store s join sales sl on s.store_number = sl.store_number
      group by s.store_number, mes
      order by s.store_name, no_paquetes desc;

```

5.14. Cuantos paquetes de los 3 productos más vendidos se consumen por condado en un mes

county	mes	item_description	no_paquetes
Adair	September	Black Velvet	99
Adair	March	Black Velvet	96
Adair	August	Black Velvet	84
Adair	April	Black Velvet	84
Adair	November	Black Velvet	81
Adair	December	Black Velvet	66
Adair	May	Black Velvet	62
Adair	October	Black Velvet	53
Adair	February	Black Velvet	45
Adair	June	Black Velvet	36
Adair	July	Black Velvet	18
Adair	January	Black Velvet	6
Adams	March	Black Velvet	24
Adams	September	Black Velvet	18
Adams	June	Black Velvet	12
Adams	October	Black Velvet	12
Adams	December	Black Velvet	9
Adams	July	Black Velvet	9
Adams	April	Black Velvet	6
Adams	November	Black Velvet	6
Adams	May	Jack Daniels Old #7 Black Lbl	12
Adams	August	Jack Daniels Old #7 Black Lbl	12
Allamakee	July	Black Velvet	239
Allamakee	August	Black Velvet	228
Allamakee	May	Black Velvet	219
Allamakee	March	Black Velvet	163
Allamakee	December	Black Velvet	144
Allamakee	October	Black Velvet	129
Allamakee	February	Black Velvet	125
Allamakee	September	Black Velvet	93
Allamakee	November	Black Velvet	93
Allamakee	April	Black Velvet	62
Allamakee	June	Black Velvet	41
Allamakee	January	Black Velvet	35
Appanoose	October	Black Velvet	666
Appanoose	June	Black Velvet	174
Appanoose	April	Black Velvet	108
Appanoose	August	Black Velvet	102
Appanoose	July	Black Velvet	84

```

select c.county, monthname(s.date) as mes, i.item_description
, sum(s.bottles_sold) as no_paquetes
  from county c join sales s on c.county_number = s.county_number
    join items i on i.item_number = s.item_number
    where i.item_number in (select number_item FROM
      (select i.item_number as number_item, sum(sale_dollars) as
total_venta

```

```

    from items i join sales s on i.item_number = s.item_number
    group by (i.item_number)
    order by total_venta desc
    limit 3) no_product_sale
)
group by c.county, mes
order by county, i.item_description, no_paquetes desc;

```

5.15. Determina la utilidad de cada producto

item_description	utilidad
Laphroaig w/ Whiskey Stones	9.790000000000003
Calumet Farm Bourbon VAP	12.520000000000003
Knob Creek w/ Crystal Decanter	17.790000000000006
Forbidden Secret Coffee Pack	5.810000000000005
Disaronno Amaretto Cavalli Mignon 3-50ml Pack	3.1999999999999993
Rumchata "GoChatas"	49.5
Templeton Rye w/Flask	9.05
Crown Royal Tailgate Pack w/2 Reusable Glasses	7.5
Crystal Head w/Shaker	13.070000000000004
Wyborowa Vodka w/2 Shot Glasses	3.75
Itty Bitty Jugs Sample Pack	1.5
Bailey's Original Irish Cream Multi Pack	3.33
Remy V w/Glass	10.420000000000002
Jack Daniels TN Honey & Jack Daniels TN Fire 750mls w/...	7.539999999999999
Fire 42 w/2 Cocktail Glasses	7.040000000000000

```

select i.item_description, (state_bottle_retail-state_bottle_cost) as utilidad
    from items i join sales s on i.item_number = s.item_number
    group by item_number;

```

5.16. Determina los 10 productos que generan mayor volumen ganancias de utilidad y de esos 10 obtén la ganancia total de utilidad por ciudad

city	item_description	suma_venta_utilidad
ACKLEY	Black Velvet	31.340000000000003
ACKLEY	Templeton Rye	18.1
ACKLEY	Hawkeye Vodka	17.93
ACKLEY	Jack Daniels Old #7 Black Lbl	13.770000000000003
ACKLEY	Captain Morgan Spiced Rum	8.870000000000001
ADAIR	Templeton Rye	45.25
ADAIR	Black Velvet	36.55
ADAIR	Hawkeye Vodka	21.52
ADAIR	Captain Morgan Spiced Rum	17.87
ADAIR	Jack Daniels Old #7 Black Lbl	7.010000000000002
ADEL	Black Velvet	88.79
ADEL	Templeton Rye	50.5
ADEL	Hawkeye Vodka	21.459999999999997
ADEL	Jack Daniels Old #7 Black Lbl	14.280000000000003
ADEL	Crown Royal Canadian Whisky	8.73
AFTON	Black Velvet	10.440000000000001
AFTON	Captain Morgan Spiced Rum	8.870000000000001
AKRON	Crown Royal Canadian Whisky	8.889999999999997
AKRON	Black Velvet	5.220000000000001
ALBIA	Patron Tequila Silver	121.05000000000001
ALBIA	Fireball Cinnamon Whiskey Mini Dispenser	104.02
ALBIA	Hawkeye Vodka	103.89000000000006
ALBIA	Black Velvet	83.55000000000001
ALBIA	Templeton Rye	63.349999999999994
ALBIA	Crown Royal Canadian Whisky	47.220000000000006
ALBIA	Jack Daniels Old #7 Black Lbl	43.039999999999999
ALBIA	Captain Morgan Spiced Rum	35.349999999999994
ALBIA	Jack Daniels Old #7 Black Lbl	34.86
ALDEN	Crown Royal Canadian Whisky	125.44000000000003
ALDEN	Black Velvet	125.33000000000001
ALDEN	Jack Daniels Old #7 Black Lbl	42.029999999999999

```

select st.city, i.item_description, sum(state_bottle_retail-state_bottle_cost) as
suma_venta_utilidad
    from items i join sales s on i.item_number = s.item_number
    join store st on st.store_number = s.store_number
    where i.item_number in (select number_item FROM
        (select i.item_number as number_item,
sum(state_bottle_retail-state_bottle_cost) as total_utilidad
        from items i join sales s on i.item_number = s.item_number
        group by (number_item)
        order by total_utilidad desc
        limit 10) no_product_sale
    )
group by st.city, i.item_number
order by st.city, suma_venta_utilidad desc;

```

5.17. Obtener el promedio del precio de todos los productos

promedio_precio
14.25030252329164

```
select avg(state_bottle_retail) as promedio_precio from sales;
```

5.18. ¿Cuántos productos se venden por arriba de la media?

product_tot_arriba_media
2875321

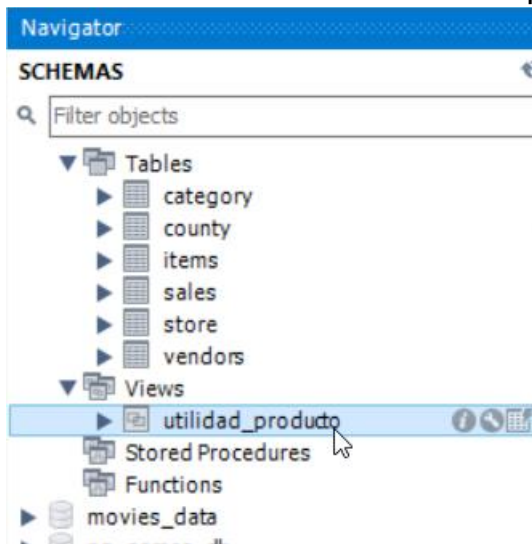
```
select sum(i.pack) as product_tot_arriba_media
      from items i join sales s on i.item_number = s.item_number
     where s.state_bottle_retail > (select avg(state_bottle_retail) as
promedio_precio from sales);
```

5.19. ¿Cuántos productos se venden por abajo de la media?

product_tot_abajo_media
6942091

```
select sum(i.pack) as product_tot_abajo_media
      from items i join sales s on i.item_number = s.item_number
     where s.state_bottle_retail < (select avg(state_bottle_retail) as
promedio_precio from sales);
```

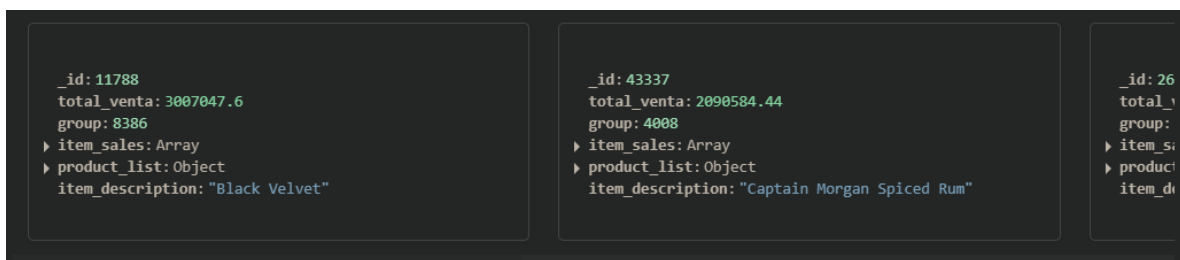
5.20. Vista de la utilidad de cada producto



```
create view utilidad_producto as select i.item_description, (state_bottle_retail-
state_bottle_cost) as utilidad
  from items i join sales s on i.item_number = s.item_number
 group by i.item_number;
```

6. Consultas MongoDB

6.1. ¿Qué productos generan mayor volumen de ventas? Muestra los últimos 5



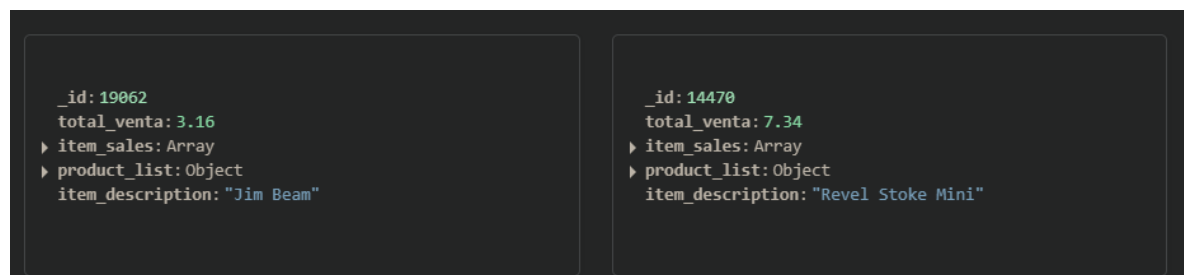
```
{
  $group: {
    _id: '$item_number',
    total_venta: {
      $sum: '$sale_dollars'
    },
  },
  group: {
    $sum: 1
  }
}
```

```

    }
  }, {
    $sort: {
      total_venta: -1
    }
  }, {
    $lookup: {
      from: 'items',
      localField: '_id',
      foreignField: 'item_number',
      as: 'item_sales'
    }
  }, {
    $addFields: {
      product_list: {
        $arrayElemAt: [
          '$item_sales',
          0
        ]
      }
    }
  }, {
    $addFields: {
      item_description: '$product_list.item_description'
    }
  }, {
    $limit: 5
  }
}]

```

6.2. ¿Cuáles son los 5 productos con menor volumen de venta?



```

[{$group: {
  _id: '$item_number',
  total_venta: {
    $sum: '$sale_dollars'
  }
}

```



```

}}, {$sort: {
  total_venta: 1
}}, {$lookup: {
  from: 'items',
  localField: '_id',
  foreignField: 'item_number',
  as: 'item_sales'
}}, {$addFields: {
  product_list: {
    $arrayElemAt: [
      '$item_sales',
      0
    ]
  }
}}, {$addFields: {
  item_description: '$product_list.item_description'
}}, {$limit: 5}]

```

6.3. ¿En qué tiendas se consume el mayor volumen de ventas?

```

_id: 2633
total_venta_tienda: 3391117.6
▶ stores_list: Array
▶ store_info: Object
  store_name: "Hy-Vee #3 / BDI / Des Moines"

```

```

_id: 4829
total_venta_tienda: 2261008.61
▶ stores_list: Array
▶ store_info: Object
  store_name: "Casey's General Store #3228 / Marsha"

```

```

[{$group: {
  _id: '$store_number',
  total_venta_tienda: {
    $sum: '$sale_dollars'
  }
}}, {$sort: {

```

```

total_venta_tienda: -1
}}, {$lookup: {
  from: 'stores',
  localField: '_id',
  foreignField: 'store_number',
  as: 'stores_list'
}}, {$addFields: {
  store_info: {
    $arrayElemAt: [
      '$stores_list',
      0
    ]
  }
}}, {$addFields: {
  store_name: '$store_info.store_name'
}}]

```

6.4. ¿Cuál es la categoría que mas vende ?

```

_id: 1012100
total_categoria: 12237969.52
▶ category_list: Array
▶ category_info: Object
  category_name: "CANADIAN WHISKIES"

```

```

_id: 1062310
total_categoria: 7927984.29
▶ category_list: Array
▶ category_info: Object
  category_name: "SPICED RUM"

```

```

[{$group: {
  _id: '$category',
  total_categoria: {
    $sum: '$sale_dollars'
  }
}}, {$sort: {
  total_categoria: -1
}}, {$lookup: {

```

```

from: 'category',
localField: '_id',
foreignField: 'Category_Number',
as: 'category_list'
}}, {$addFields: {
  category_info: {
    $arrayElemAt: [
      '$category_list',
      0
    ]
  }
}}, {$addFields: {
  category_name: '$category_info.Category_Name'
}}}]

```

6.5. ¿Cuál es el producto que se vende mas?

```

_id: 11788
cantidad_producto_vend: 198588
▶ items_list: Array
▶ item_info: Object
  item_name: "Black Velvet"

```

```

_id: 36308
cantidad_producto_vend: 128117
▶ items_list: Array
▶ item_info: Object
  item_name: "Hawkeye Vodka"

```

```

[{$group: {
  _id: '$item_number',
  cantidad_producto_vend: {
    $sum: '$bottles_sold'
  }
}}, {$sort: {
  cantidad_producto_vend: -1
}}, {$lookup: {
  from: 'items',
  localField: '_id',

```

```

foreignField: 'item_number',
as: 'items_list'
}}, {$addField: {
  item_info: {
    $arrayElemAt: [
      '$items_list',
      0
    ]
  }
}}, {$addField: {
  item_name: '$item_info.item_description'
}}}]

```

6.6. ¿En qué ciudad se consume el mayor volumen de ventas?



```

[{$lookup: {
  from: 'stores',
  localField: 'store_number',
  foreignField: 'store_number',
  as: 'store_list'
}}, {$addField: {
  store_info: {
    $arrayElemAt: [
      '$store_list',
      0
    ]
  }
}}]

```

```

]
}
}}, {$addField: {
  city: '$store_info.city'
}}, {$group: {
  _id: '$city',
  total_ventas_city: {
    $sum: '$sale_dollars'
  }
}}]

```

6.7. ¿Cuál es el producto que se vende menos?

```

_id: 900482
cantidad_producto_vend: 1
▶ items_list: Array
▶ item_info: Object
  item_name: "5 year Irish Single Grain"

```

```

_id: 82601
cantidad_producto_vend: 1
▶ items_list: Array
▶ item_info: Object
  item_name: "Dekuyper Sour Apple Pucker Mini"

```

```

[{$group: {
  _id: '$item_number',
  cantidad_producto_vend: {
    $sum: '$bottles_sold'
  }
}}, {$sort: {
  cantidad_producto_vend: 1
}}, {$lookup: {
  from: 'items',
  localField: '_id',
  foreignField: 'item_number',
  as: 'items_list'
}}]

```

```

}}, {$addField: {
  item_info: {
    $arrayElemAt: [
      '$items_list',
      0
    ]
  }
}}, {$addField: {
  item_name: '$item_info.item_description'
}}]

```

6.8. Determina la utilidad de cada producto

```

utilidad_producto: 9.790000000000003
item_name: "Laphroaig w/ Whiskey Stones"
item_number: 173
year: 2015

```

```

utilidad_producto: 12.520000000000003
item_name: "Calumet Farm Bourbon VAP"
item_number: 220
year: 2015

```

```

[{$addField: {
  utilidad_producto: {
    $subtract: [
      '$state_bottle_retail',
      '$state_bottle_cost'
    ]
  }
}}, {$group: {
  _id: {
    item_number: '$item_number',
    year: {
      $year: '$date'
    }
  }
}}]

```

```

    }
  },
  utilidad_producto: {
    $addToSet: '$utilidad_producto'
  }
}}, {$unwind: {
  path: '$utilidad_producto'
}}, {$lookup: {
  from: 'items',
  localField: '_id.item_number',
  foreignField: 'item_number',
  as: 'item_list'
}}, {$addFields: {
  item_info: {
    $arrayElemAt: [
      '$item_list',
      0
    ]
  }
}}, {$addFields: {
  item_name: '$item_info.item_description'
}}, {$addFields: {
  item_number: '$_id.item_number',
  year: '$_id.year'
}}, {$project: {
  _id: 0,
  item_name: 1,
  utilidad_producto: 1,
  item_number: 1,
  year: 1

```

```
}}, {$sort: {
  item_number: 1
}}]
```

6.9. ¿En qué año se incrementa el volumen de ventas?

<pre>_id: 2013 venta_anio: 25265952.66</pre>	<pre>_id: 2015 venta_anio: 25096768.09</pre>
--	--

```
[{$group: {
  _id: {
    $year: '$date'
  },
  venta_anio: {
    $sum: '$sale_dollars'
  }
}}]
```

6.10. ¿Cuáles son las 10 tiendas donde se consume mayor volumen de alcohol?

<pre>_id: 2633 total_alcohol_vol_lt_tienda: 204925.7 ▶ stores_list: Array ▶ store_info: Object store_name: "Hy-Vee #3 / BDI / Des Moines"</pre>	<pre>_id: 4829 total_alcohol_vol_lt_tienda: 134474.19 ▶ stores_list: Array ▶ store_info: Object store_name: "Casey's General Store #3228 / Marsha"</pre>
---	--

```
[{$group: {
  _id: '$store_number',
  total_alcohol_vol_lt_tienda: {
```



```

    $sum: '$volume_sold_liters'
  }
}}, {$sort: {
  total_alcohol_vol_lt_tienda: -1
}}, {$lookup: {
  from: 'stores',
  localField: '_id',
  foreignField: 'store_number',
  as: 'stores_list'
}}, {$addFields: {
  store_info: {
    $arrayElemAt: [
      '$stores_list',
      0
    ]
  }
}}, {$addFields: {
  store_name: '$store_info.store_name'
}}, {$limit: 10}]

```

6.11. ¿En qué sucursal se muestra mayor volumen de ventas?

```

_id: 2633
ventas_tot_sucursal: 3391117.6
▶ stores_list: Array
▶ store_info: Object
  store_name: "Hy-Vee #3 / BDI / Des Moines"

```

```

_id: 4829
ventas_tot_sucursal: 2261008.61
▶ stores_list: Array
▶ store_info: Object
  store_name: "Casey's General Store #3228 / Marsha"

```

```

[{$group: {
  _id: '$store_number',
  ventas_tot_sucursal: {

```

```

    $sum: '$sale_dollars'
  }
}}, {$sort: {
  ventas_tot_sucursal: -1
}}, {$lookup: {
  from: 'stores',
  localField: '_id',
  foreignField: 'store_number',
  as: 'stores_list'
}}, {$addFields: {
  store_info: {
    $arrayElemAt: [
      '$stores_list',
      0
    ]
  }
}}, {$addFields: {
  store_name: '$store_info.store_name'
}}}

```

6.12. ¿En qué mes hay menor consumo de alcohol?

```

_id: 1
consumo_alcohol_lt: 519381.45
month_name: "Enero"

```

```

_id: 12
consumo_alcohol_lt: 534484.64
month_name: "Diciembre"

```

```

[{$group: {
  _id: {
    $month: '$date'
  }
}}

```

```

    },
    consumo_alcohol_lt: {
      $sum: '$volume_sold_liters'
    }
  }}, {$addField: {
    month_name: {
      $switch: {
        branches: [
          { case: { $eq: [ "$_id" ,1] }, then: "Enero" },
          { case: { $eq: [ "$_id" ,2] }, then: "Febrero" },
          { case: { $eq: [ "$_id" ,3] }, then: "Marzo" },
          { case: { $eq: [ "$_id" ,4] }, then: "Abril" },
          { case: { $eq: [ "$_id" ,5] }, then: "Mayo" },
          { case: { $eq: [ "$_id" ,6] }, then: "Junio" },
          { case: { $eq: [ "$_id" ,7] }, then: "Julio" },
          { case: { $eq: [ "$_id" ,8] }, then: "Agosto" },
          { case: { $eq: [ "$_id" ,9] }, then: "Septiembre" },
          { case: { $eq: [ "$_id" ,10] }, then: "Octubre" },
          { case: { $eq: [ "$_id" ,11] }, then: "Noviembre" },
          { case: { $eq: [ "$_id" ,12] }, then: "Diciembre" }

        ],
        default:"Did not match"
      }
    }
  }}, {$sort: {
    consumo_alcohol_lt: 1
  }}}

```

6.13. Determina los 10 productos que generan mayor volumen ganancias de utilidad

```
utilidad_producto: 5.879999999999999
item_name: "Captain Morgan Spiced Rum"
item_number: 43337
year: 2015
venta_total: 66183.02
```

```
utilidad_producto: 8.71
item_name: "Jack Daniels Old #7 Black Lbl"
item_number: 26827
year: 2014
venta_total: 53846.29
```

```
[{$addField: {
  utilidad_producto: {
    $subtract: [
      '$state_bottle_retail',
      '$state_bottle_cost'
    ]
  }
}}, {$group: {
  _id: {
    item_number: '$item_number',
    year: {
      $year: '$date'
    }
  },
  utilidad_producto: {
    $addToSet: '$utilidad_producto'
  },
  sale_dollars: {
    $addToSet: '$sale_dollars'
  }
}}, {$unwind: {
  path: '$utilidad_producto'
}}, {$lookup: {
  from: 'items',
```

```

    localField: '_id.item_number',
    foreignField: 'item_number',
    as: 'item_list'
  }}, {$addFields: {
    item_info: {
      $arrayElemAt: [
        '$item_list',
        0
      ]
    }
  }}, {$addFields: {
    item_name: '$item_info.item_description'
  }}, {$addFields: {
    item_number: '$_id.item_number',
    year: '$_id.year'
  }}, {$addFields: {
    venta_total: {
      $sum: '$sale_dollars'
    }
  }}, {$project: {
    _id: 0,
    item_name: 1,
    utilidad_producto: 1,
    item_number: 1,
    year: 1,
    venta_total: 1
  }}, {$sort: {
    venta_total: -1
  }}, {$limit: 10}]

```

6.14. ¿En qué mes hay mayor consumo de alcohol?

```
_id: 10  
consumo_alcohol_lt: 807107.26  
month_name: "Octubre"
```

```
_id: 6  
consumo_alcohol_lt: 645964.11  
month_name: "Junio"
```

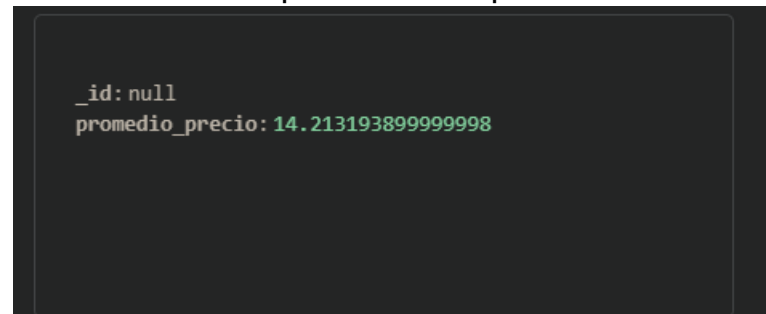
```
[{$group: {  
  _id: {  
    $month: '$date'  
  },  
  consumo_alcohol_lt: {  
    $sum: '$volume_sold_liters'  
  }  
}}, {$addFields: {  
  month_name: {  
    $switch: {  
      branches: [  
        { case: { $eq: [ "$_id" ,1] }, then: "Enero" },  
        { case: { $eq: [ "$_id" ,2] }, then: "Febrero" },  
        { case: { $eq: [ "$_id" ,3] }, then: "Marzo" },  
        { case: { $eq: [ "$_id" ,4] }, then: "Abril" },  
        { case: { $eq: [ "$_id" ,5] }, then: "Mayo" },  
        { case: { $eq: [ "$_id" ,6] }, then: "Junio" },  
        { case: { $eq: [ "$_id" ,7] }, then: "Julio" },  
        { case: { $eq: [ "$_id" ,8] }, then: "Agosto" },  
        { case: { $eq: [ "$_id" ,9] }, then: "Septiembre" },  
        { case: { $eq: [ "$_id" ,10] }, then: "Octubre" },  
        { case: { $eq: [ "$_id" ,11] }, then: "Noviembre" },  
        { case: { $eq: [ "$_id" ,12] }, then: "Diciembre" }  
      ],  
    }  
  }  
}]
```

```

        default:"Did not match"
    }
}
}}, {$sort: {
    consumo_alcohol_lt: -1
}}]

```

6.15. Obtener el promedio del precio de todos los productos

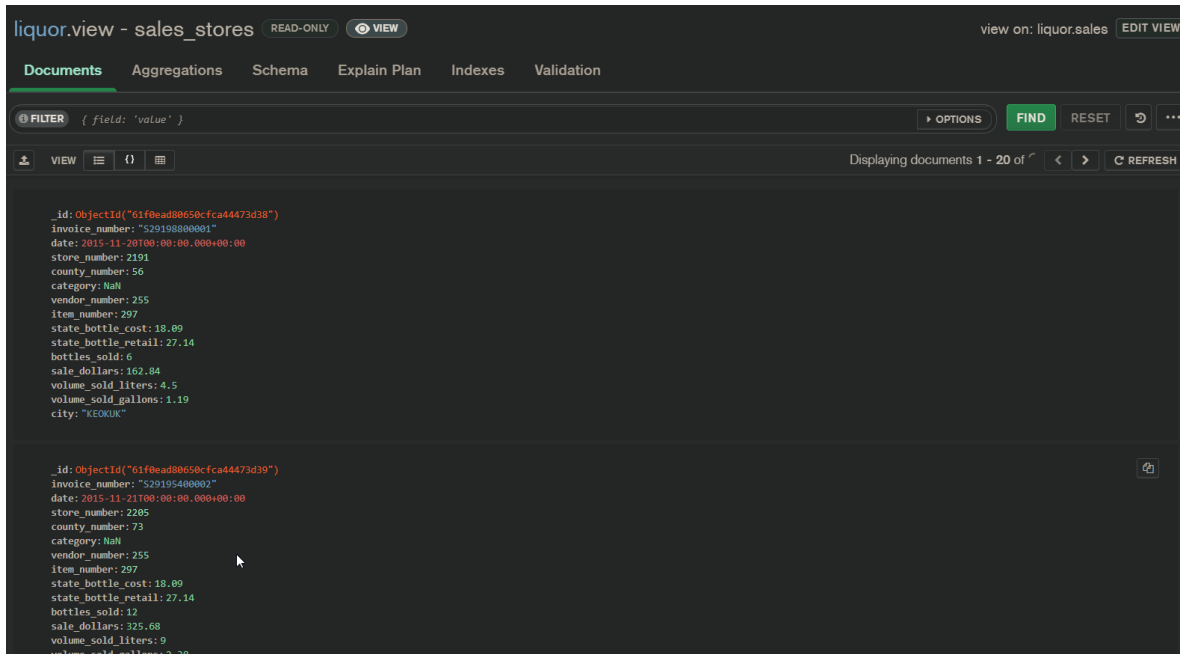


```

[{$group: {
  _id: null,
  promedio_precio: {
    $avg: '$state_bottle_retail'
  }
}}]

```

6.16. Vista de ventas con tiendas



7. Conclusiones

Para realizar un estudio de mercado con estos datos es necesario aun profundizar más sobre los mismos, pero da una vista sobre qué productos nos interesan y en qué ciudad sería conveniente tener un punto de venta, además de saber en qué fechas es posible que se solicite más un producto y así mismo saber en qué mes se consume más alcohol.

MongoDB y MySQL son herramientas muy potentes sin embargo cada una tiene sus cualidades para trabajar dependiendo el tipo de proyecto que se requiera.