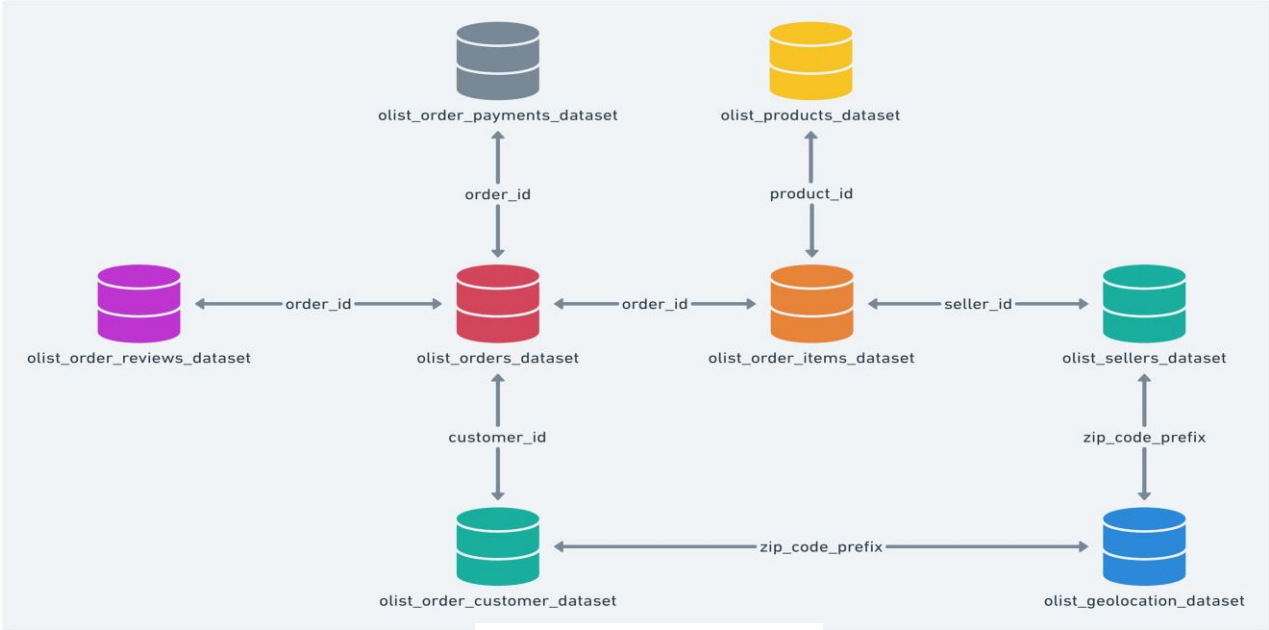
Brazilian E-commerce Business Case Study

Brazilian E-commerce Target CASE STUDY

Brazilian ecommerce public dataset of orders made at Olist Store. The dataset has information of 100k orders from 2016 to 2018 made at multiple marketplaces in Brazil. Its features allows viewing an order from multiple dimensions: from order status, price, payment and freight performance to customer location, product attributes and finally reviews written by customers. We also released a geolocation dataset that relates Brazilian zip codes to lat/lng coordinates



Data Schema

DATASET LINK:
https://www.kaggle.com/datasets/olistbr/brazilian-ecommerce

Prepared by
Rishab

By Rishab

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Exploratory Data Analysis

Customer Data

```
1  SELECT * FROM `target.customers` limit 10;
```

Press Alt+F1 for Ac

Query results

SAVE RESULTS | EXPLORE DA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	customer_id	customer_unique_id	customer_zip_code_pre	customer_city	customer_state
1	0735e7e4298a2ebbb4664934...	fcb003b1bdc0df64b4d065d9b...	59650	acu	RN
2	903b3d86e3990db01619a4eb...	46824822b15da44e983b021d...	59650	acu	RN
3	38c97666e962d4fea7fd6a83e...	b6108acc674ae5c99e29adc10...	59650	acu	RN
4	77c2f46cf580f4874c9a5751c2...	402cce5c0509000eed9e77fec...	63430	ico	CE
5	4d3ef4cfffb8ad4767c199c36a...	6ba00666ab7eada5ceec279b2...	63430	ico	CE
6	3000841b86e1fbe9493b52324...	796a0b1a21f597704057184a1...	63430	ico	CE
7	3c325415ccc7e622c66dec4bc...	05d1d2d9f0161c5f397ce7fc77...	63430	ico	CE
8	04f3a7b250e3be964f01bf22bc...	c34585a0276ecc5e4fb03de75...	63430	ico	CE
9	894202b8ef01f4719a4691e79...	01a4fe5fc00bbdb0b0a4af5a53...	63430	ico	CE
10	9d715b9fb75a9d081c14126c0...	8f399f3b7ace8e6245422c9e1f...	63430	ico	CE

Untitled 3 | customers

customers

QUERY | SHARE | COPY | SNAPSH

SCHEMA | DETAILS | PREVIEW | LINEAGE

Filter Enter property name or value

Field name	Type	Mode	Collation	De
customer_id	STRING	NULLABLE		
customer_unique_id	STRING	NULLABLE		
customer_zip_code_prefix	INTEGER	NULLABLE		
customer_city	STRING	NULLABLE		
customer_state	STRING	NULLABLE		

EDIT SCHEMA | VIEW ROW ACCESS POLICIES

Sellers Data

```
SELECT * FROM `target.sellers` limit 10;
```

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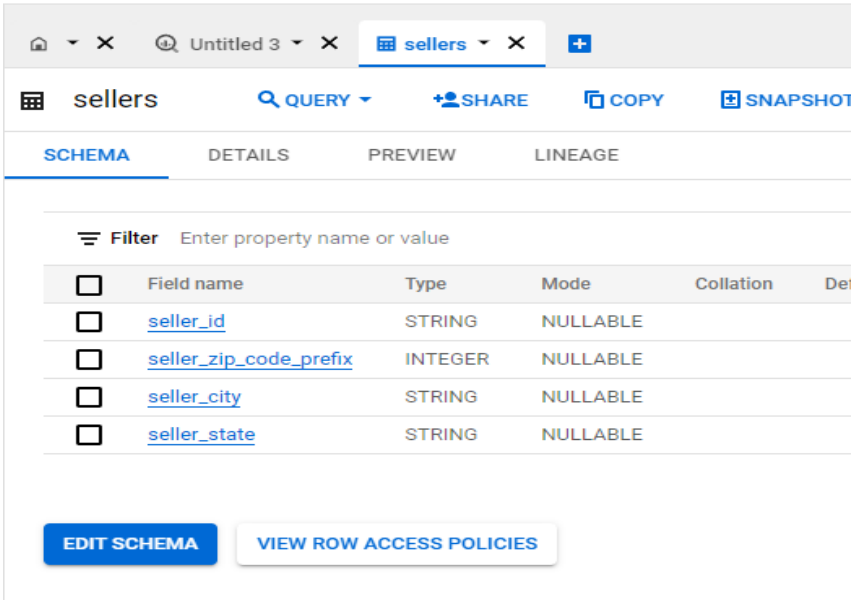
Row	seller_id	seller_zip_code_	seller_city	seller_state
1	4be2e7f96b4fd749d52dff41f8...	69900	rio branco	AC
2	327b89b872c14d1c0be7235ef...	69005	manaus	AM
3	4221a7df464f1fe2955934e30f...	48602	bahia	BA
4	651530bf5c607240ccdd89a30...	44600	ipira	BA
5	2b402d5dc42554061f8ea98d1...	44900	irece	BA
6	d03698c2efd04a549382afa66...	45658	ilheus	BA
7	c72de06d72748d1a0dfb2125b...	46430	guanambi	BA
8	fc59392d66ef99377e50356ee...	40243	salvador	BA
9	b00af24704019bd2e1b335e70...	40130	salvador	BA
10	eb4a59a06b3948e851a7d7a83...	41820	salvador	BA



Order_items data

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```
SELECT * from `target.order_items` limit 10;
```

Press Alt+F1 for Accessibility

ery results

SAVE RESULTS ▾ EXPLORE DATA ▾

INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH | PREVIEW

order_id	order_item_id	product_id	seller_id	shipping_limit_date	price	freight_value
f9ccaff7267fd0cf076e7...	1	44d53f1240d633...	b64d51f0435e88...	2018-08-14 14:04:44...	3.0	15.23
c79bdf061e222886092...	1	5304ff3fa35856...	cf6f6bc4df3999...	2017-05-12 19:05:20...	3.5	8.72
37193e64eb9a46b7f31...	1	98224bfc1eaadb...	ce616e1913288...	2018-06-28 01:30:49...	3.5	7.39
95d6357ffe41aa6d299...	1	98224bfc1eaadb...	ce616e1913288...	2018-06-12 19:15:14...	3.5	18.23
95d6357ffe41aa6d299...	2	98224bfc1eaadb...	ce616e1913288...	2018-06-12 19:15:14...	3.5	18.23
95d6357ffe41aa6d299...	3	98224bfc1eaadb...	ce616e1913288...	2018-06-12 19:15:14...	3.5	18.23
95d6357ffe41aa6d299...	4	98224bfc1eaadb...	ce616e1913288...	2018-06-12 19:15:14...	3.5	18.23
95d6357ffe41aa6d299...	5	98224bfc1eaadb...	ce616e1913288...	2018-06-12 19:15:14...	3.5	18.23
dde867f83e689b01677...	1	914323edd5019...	2c9e548be1852...	2017-10-20 14:50:12...	4.5	11.85

order_items QUERY ▾ SHARE COPY SN.

SCHEMA | DETAILS | PREVIEW | LINEAGE

Filter Enter property name or value

Field name	Type	Mode	Collation
order_id	STRING	NULLABLE	
order_item_id	INTEGER	NULLABLE	
product_id	STRING	NULLABLE	
seller_id	STRING	NULLABLE	
shipping_limit_date	TIMESTAMP	NULLABLE	
price	FLOAT	NULLABLE	

EDIT SCHEMA VIEW ROW ACCESS POLICIES

Geolocations data

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```
SELECT * FROM `target.geolocation` LIMIT 10;
```

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ery results

SAVE RESULTS | EXPLORE DATA

INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

geolocation_zip	geolocation_lat	geolocation_lng	geolocation_city	geolocation_state
49030	-10.970164794304576	-37.061643830745815	aracaju	SE
49048	-10.940183531738979	-37.070850242714528	aracaju	SE
49050	-10.927157352800547	-37.063078689600516	aracaju	SE
49015	-10.923370500160772	-37.045169150380509	aracaju	SE
49045	-10.930406582318476	-37.067178493623359	aracaju	SE
49052	-10.922973517889163	-37.057752502914184	aracaju	SE
49044	-10.992080999999946	-37.103470999999956	aracaju	SE
49048	-10.940235501586523	-37.071043333891133	aracaju	SE

Untitled 3 | geolocation

geolocation | QUERY | SHARE | COPY

SCHEMA | DETAILS | PREVIEW | LINEAGE

Filter Enter property name or value

Field name	Type	Mode	Col
geolocation_zip_code_prefix	INTEGER	NULLABLE	
geolocation_lat	FLOAT	NULLABLE	
geolocation_lng	FLOAT	NULLABLE	
geolocation_city	STRING	NULLABLE	
geolocation_state	STRING	NULLABLE	

Payments data

```
SELECT * FROM `target.payments` limit 10;
```

Press Alt+F1 for Accessibility

ery results

SAVE RESULTS | EXPLORE DATA

INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

order_id	payment_sequential	payment_type	payment_installments	payment_value
1a57108394169c0b47d8f876a...	2	credit_card	0	129.94
744bade1fcf9ff3f31d860ace07...	2	credit_card	0	58.69
8bcbe01d44d147f901cd31926...	4	voucher	1	0.0
fa65dad1b0e818e3ccc5cb0e3...	14	voucher	1	0.0
6ccb433e00daae1283ccc9561...	4	voucher	1	0.0
4637ca194b6387e2d538dc89...	1	not_defined	1	0.0
00b1cb0320190ca0daa2c88b3...	1	not_defined	1	0.0
45ed6e85398a87c253db47c2d...	3	voucher	1	0.0
fa65dad1b0e818e3ccc5cb0e3...	13	voucher	1	0.0

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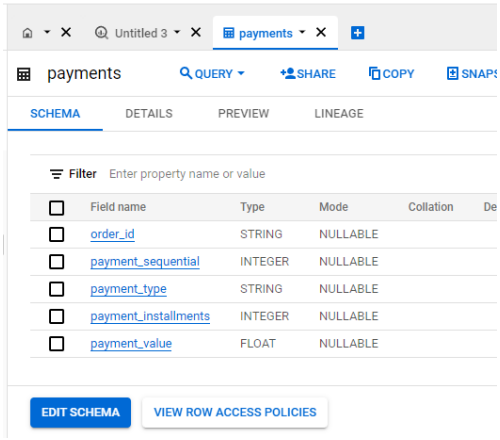


Orders data

```
SELECT * FROM `target.orders` LIMIT 10;
```

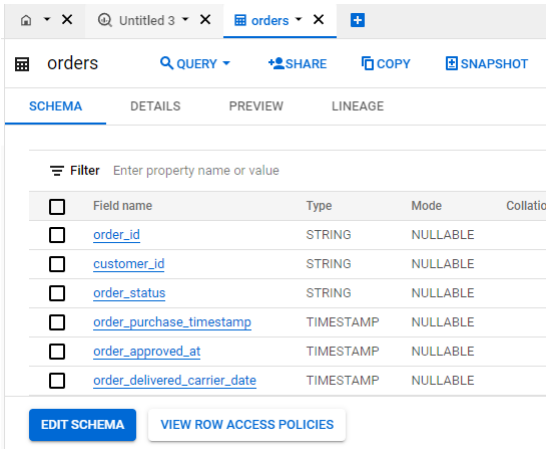
Press Alt+F1 for Accessibility Optic

ery results

SAVE RESULTS | EXPLORE DATA

INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

order_id	customer_id	order_status	order_purchase_timestamp	order_approved_at	order_delivered_carrier_date	order_delivered_customer_date	order_estimated_delivery_date
35de405...	4ee64f4bfc...	created	2017-12-05 01:07:58 UTC	null	null	null	2018-01-08 00:00:00 UTC
b535990...	438449d4af...	created	2017-12-05 01:07:52 UTC	null	null	null	2018-01-11 00:00:00 UTC
dba5062...	964a6df3d9...	created	2018-02-09 17:21:04 UTC	null	null	null	2018-03-07 00:00:00 UTC
90ab3e7...	7d61b9f4f2...	created	2017-11-06 13:12:34 UTC	null	null	null	2017-12-01 00:00:00 UTC
fa65dad...	9af2372a1e...	shipped	2017-04-20 12:45:34 UTC	2017-04-22 09:10:13 UTC	2017-04-24 11:31:17 UTC	null	2017-05-18 00:00:00 UTC
1df2775...	1240c2e65c...	shipped	2017-07-13 11:03:05 UTC	2017-07-13 11:10:22 UTC	2017-07-18 18:17:30 UTC	null	2017-08-14 00:00:00 UTC
6190a94...	5fc4c97dcb...	shipped	2017-07-11 13:36:30 UTC	2017-07-11 13:45:15 UTC	2017-07-13 17:55:46 UTC	null	2017-08-14 00:00:00 UTC
58ce513...	530d41b47...	shipped	2017-07-29 18:05:07 UTC	2017-07-29 18:15:17 UTC	2017-07-31 16:41:59 UTC	null	2017-08-14 00:00:00 UTC
088683f...	58d89fd1f8...	shipped	2017-07-13 10:02:47 UTC	2017-07-14 02:25:54 UTC	2017-07-20 20:02:58 UTC	null	2017-08-14 00:00:00 UTC



Reviews data

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```
SELECT * FROM `target.order_reviews` limit 10;
```

Press Alt+F1 for Accessi

ıery results

SAVE RESULTS | EXPLORE DATA

B INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

	review_id	order_id	review_score	review_comment_title	review_creation_date	review_answer_timestamp
4	c950324a42c5796d06f569f77...	b159d0ce7cd881052da94fa16...	1	null	0001-04-17 00:00:00 U...	0001-04-17 10:24:00 UTC
5	76823ada94c8861ecebcfbc7c...	2a3007ed051b02a0e0dd0709c...	1	null	0001-04-17 00:00:00 U...	0002-04-17 13:58:00 UTC
6	fe270df00abcb5c39fc7385143...	a39d3db795a5cf4c8b6c9dd05...	1	null	0001-04-17 00:00:00 U...	0003-04-17 12:49:00 UTC
7	1b71e0b29ec2faa0a029ded43...	0e530f6be154c9d7e7b12f341...	1	null	0001-04-17 00:00:00 U...	0010-04-17 12:45:00 UTC
8	efe4020a945ee6fece58606694...	264c045399fb02e9f309f715c2...	1	null	0001-04-17 00:00:00 U...	0002-04-17 01:16:00 UTC
9	23ee6bc2492808dca0e807e13...	2ba1366baecad3c3536f27546...	1	null	0001-04-17 00:00:00 U...	0001-04-17 14:34:00 UTC
0	63c6cec8cb9a2d0990b339998...	aaae80f5b6239bd9e1b22e9aa...	1	null	0001-04-17 00:00:00 U...	0004-04-17 12:07:00 UTC

Untitled 3 | order_reviews

order_reviews — QUERY | SHARE | COPY | SNAPSHOT

SCHEMA | DETAILS | PREVIEW | LINEAGE

Filter Enter property name or value

Field name	Type	Mode	Collation	Defaul
review_id	STRING	NULLABLE		
order_id	STRING	NULLABLE		
review_score	INTEGER	NULLABLE		
review_comment_title	STRING	NULLABLE		
review_creation_date	TIMESTAMP	NULLABLE		
review_answer_timestamp	TIMESTAMP	NULLABLE		

EDIT SCHEMA | VIEW ROW ACCESS POLICIES

Products data

```
SELECT * FROM `target.products` limit 10;
```

Press Alt+F1 for Accessibility O

ery results

SAVE RESULTS | EXPLORE DATA

INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

	product_id	product_category	product_name_l	product_descrip	product_photos	product_weight	product_length	product_height	product_width_c
	5eb564652db742ff8f28759cd8...	null	null	null	null	null	null	null	null
	09ff539a621711667c43eba6a...	babies	60	865	3	null	null	null	null
	2f763ba79d9cd987b2034aac7...	electronics	45	1198	2	595	8	6	6
	a69f15dfb803d485e8933e80b...	Watches present	53	506	6	150	11	16	6
	e1cfc87f543782b8a78b59fc85...	Garden tools	39	524	4	369	26	7	7
	106392145fca363410d287a81...	bed table bath	58	309	1	2083	12	2	7
	7e33f4a1c59f89da30a335b2d...	electronics	51	381	3	1075	22	5	7

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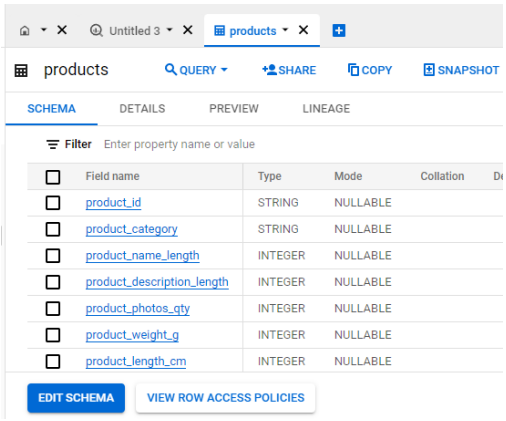
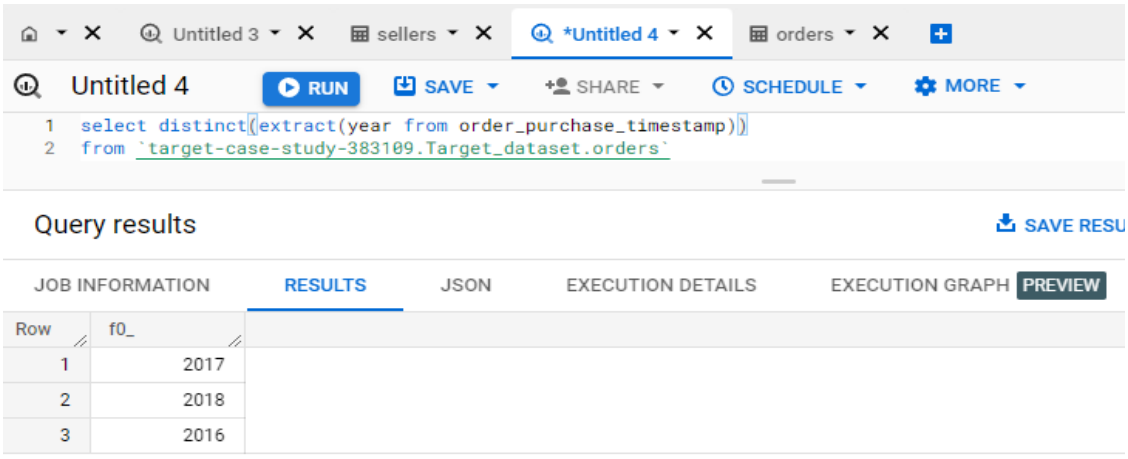


Time period for which the data is given?

To determine the time period let's take help of one of the tables I have chosen the orders table as the order date will give us a better idea as to what period are we looking for.



From the output above we can see that this dataset time period is from 2016 till 2018

Let us also see the cities and states to which customers belong who had placed order below query gives the output of all the customers and to which state and city they belong.

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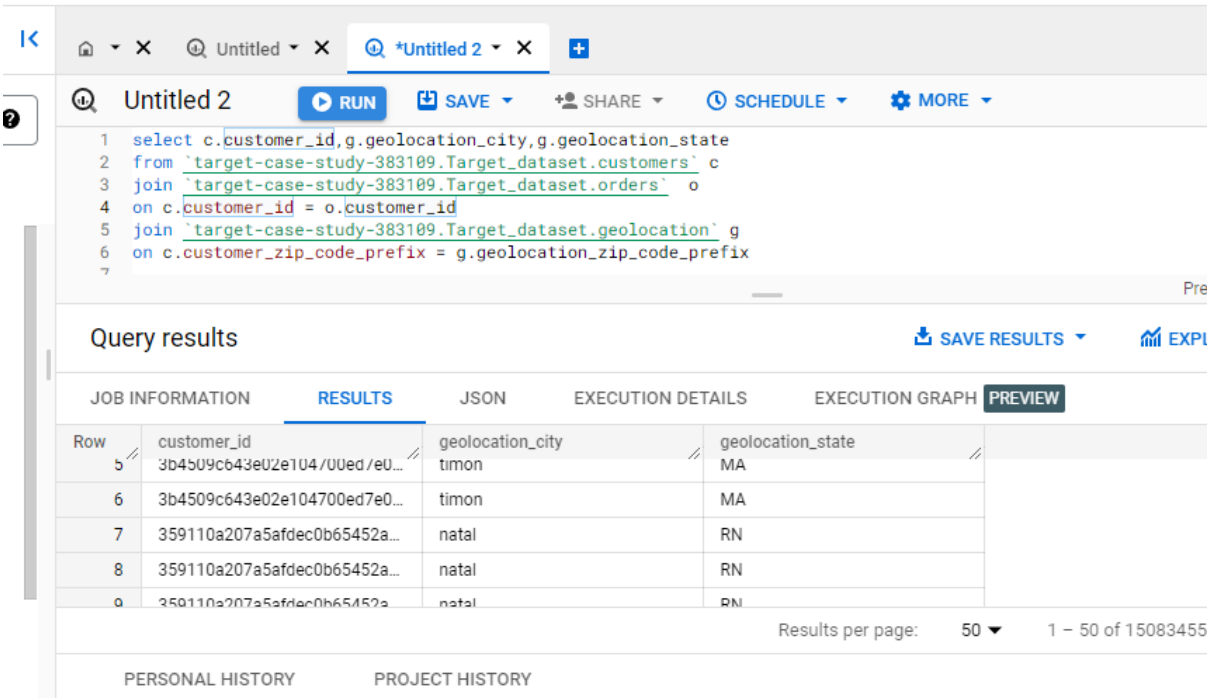

Growing trend on e-commerce in Brazil?

```
select o.order_year,o.month_of_year,count(order_id) as count_of_orders
from(
select *, extract(month FROM order_purchase_timestamp AT TIME ZONE "UTC") as month_of_year,
extract(year FROM order_purchase_timestamp AT TIME ZONE "UTC") as order_year
from `target-case-study-383109.Target_dataset.orders`) o
group by 1,2
order by 1,2
```

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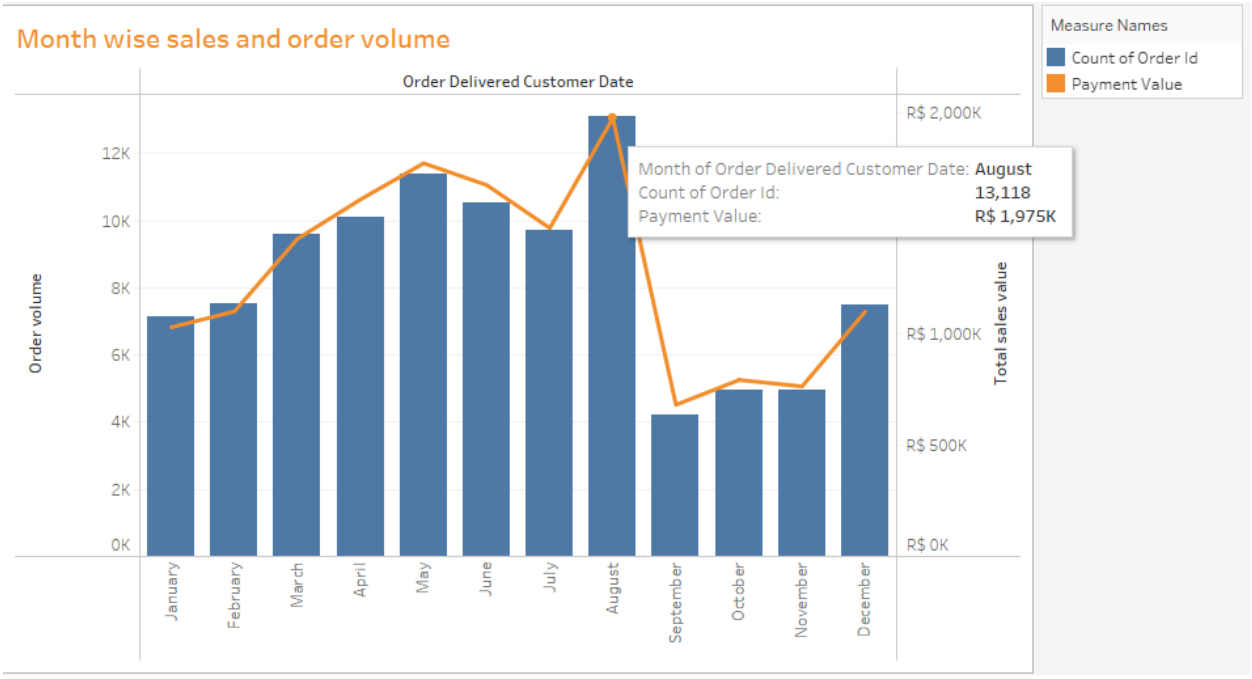
Brazilian E-commerce Business Case Study

Query results

SAVE RESULTS

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	order_year	month_of_year	count_of_orders
1	2016	9	4
2	2016	10	324
3	2016	12	1
4	2017	1	800
5	2017	2	1780
6	2017	3	2682
7	2017	4	2404



quarter 1 & quarter 2 has increasing trend in sales and order volume.

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What time do Brazilian customers tend to buy (Dawn, Morning, Afternoon or Night)?

```
8
9  SELECT o.time_category, count(order_id) as Count_of_orders
10 FROM(
11 select *,
12  CASE
13     WHEN EXTRACT(HOUR FROM order_purchase_timestamp AT TIME ZONE "UTC") BETWEEN 0 AND 5 THEN "Dawn"
14     WHEN EXTRACT(HOUR FROM order_purchase_timestamp AT TIME ZONE "UTC") BETWEEN 6 AND 11 THEN "Morning"
15     WHEN EXTRACT(HOUR FROM order_purchase_timestamp AT TIME ZONE "UTC") BETWEEN 12 AND 17 THEN "Afternoon"
16     ELSE "Night"
17   END AS time_category
18  from `target-case-study-383109.Target_dataset.orders`) o
19  group by o.time_category;
20
```

Query results

SAVE RESULTS | EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	time_category	Count_of_orders
1	Morning	22240
2	Dawn	4740
3	Afternoon	38361
4	Night	34100

People in Brazil likely do more shopping in after noon (12 to 18 PM) and unlikely in dawn (0 to 6 AM)

Afternoon – 38361 Dawn -4740

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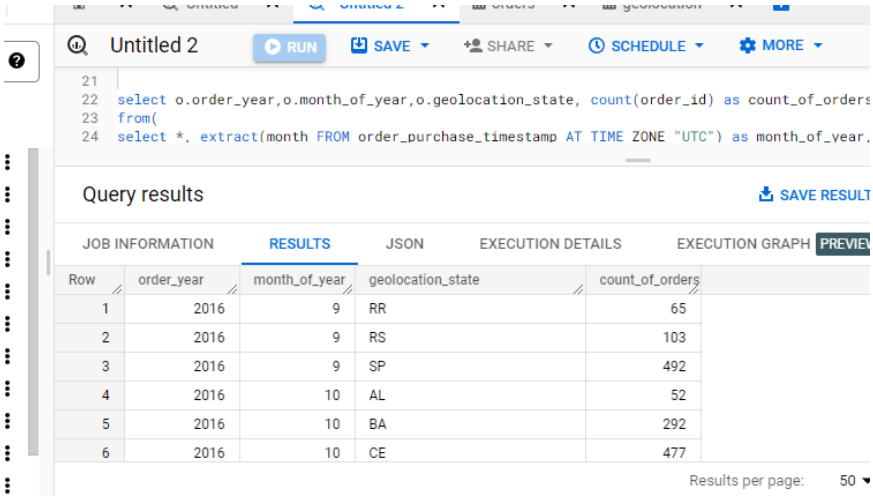
Month on Month orders by states

```sql
select o.order_year,o.month_of_year,o.geolocation_state, count(order_id) as count_of_orders
from(
select *, extract(month FROM order_purchase_timestamp AT TIME ZONE "UTC") as month_of_year,
extract(year FROM order_purchase_timestamp AT TIME ZONE "UTC") as order_year
from `target-case-study-383109.Target_dataset.orders` k
join `target-case-study-383109.Target_dataset.customers` c
on k.customer_id = c.customer_id
join `target-case-study-383109.Target_dataset.geolocation` g
on c.customer_zip_code_prefix = g.geolocation_zip_code_prefix) o
group by 1,2,3
order by 1,2,3
```



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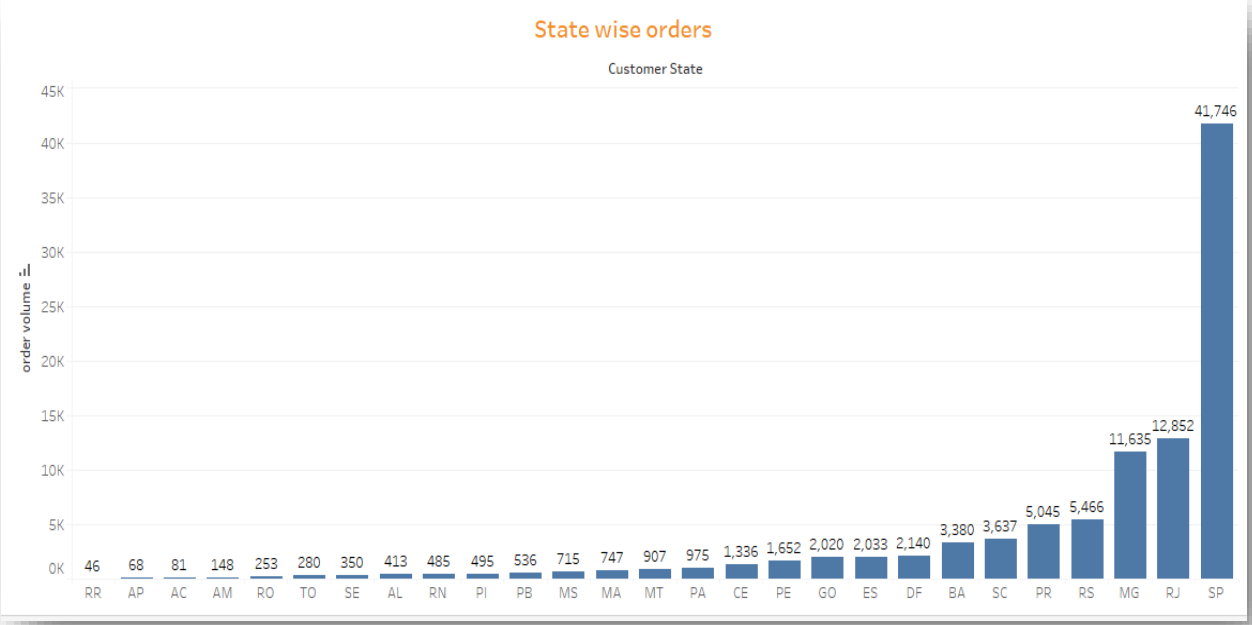

- Highest orders -SP, Lowest orders -RR
- Maximum orders in month of August and minimum order of sales in the month of September

Distribution of customers across the states in Brazil

```
select customer_state, count(customer_unique_id) as customer_count
from `target-case-study-383109.Target_dataset.customers`
group by customer_state
order by customer_count desc
```

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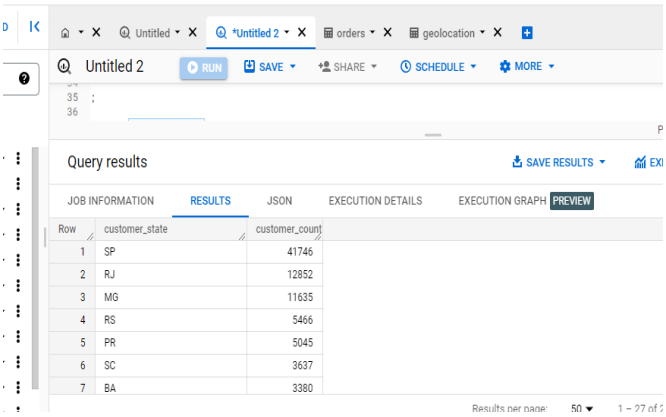
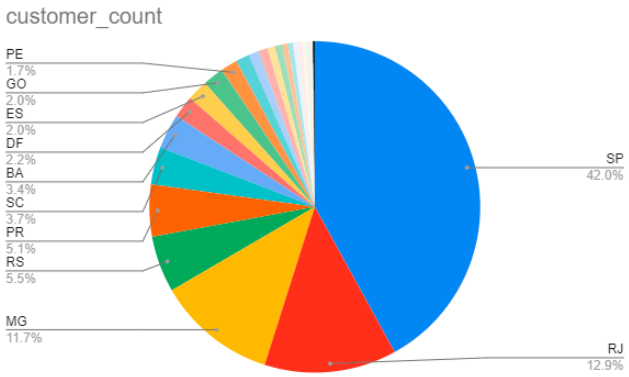
Brazilian E-commerce Business Case Study



Row	customer_state	customer_count
1	SP	41746
2	RJ	12852
3	MG	11635
4	RS	5466
5	PR	5045
6	SC	3637
7	BA	3380

Results per page: 50 1 – 27 of 2



Impact on Economy: Analyze the money movement by e-commerce by looking at order prices, freight and others.

- **Get % increase in cost of orders from 2017 to 2018**

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```
select
year_of_purchase,total_sales,
round((total_sales-LAG(total_sales) over(order by year_of_purchase))/(LAG(total_sales) over(order by year_of_purchase))* 100,2)
as Percent_change
from(
select extract(year FROM o.order_purchase_timestamp) as year_of_purchase, sum(p.payment_value) as total_sales
from `target-case-study-383109.Target_dataset.payments` p  left join `target-case-study-383109.Target_dataset.orders` o
on o.order_id = p.order_id
where extract(year FROM o.order_purchase_timestamp) in (2017,2018)
group by 1)
order by year_of_purchase
```

Row	year_of_purchas	total_sales	Percent_change
1	2017	7249746.72...	*null*
2	2018	8699763.04...	20.0

- **Month _wise analysis:**

```
select k.month_of_purchase_2017 as month_of_purchase , ((total_sales_2018-total_sales_2017)/total_sales_2017)* 100 as
percentage_difference_month
from (
select extract(month FROM o.order_purchase_timestamp) as month_of_purchase_2017, sum(p.payment_value) as total_sales_2017
from `target-case-study-383109.Target_dataset.payments` p  left join `target-case-study-383109.Target_dataset.orders` o
on o.order_id = p.order_id
where extract(year FROM o.order_purchase_timestamp) = 2017
group by 1) k
JOIN
(
select extract(month FROM o.order_purchase_timestamp) as month_of_purchase_2018, sum(p.payment_value) as total_sales_2018
from `target-case-study-383109.Target_dataset.payments` p  left join `target-case-study-383109.Target_dataset.orders` o
on o.order_id = p.order_id
where extract(year FROM o.order_purchase_timestamp) = 2018
group by 1) m
on k.month_of_purchase_2017 = m.month_of_purchase_2018
where k.month_of_purchase_2017 between 1 and 8
order by k.month_of_purchase_2017
```

Row	month_of_purch	percentage_diff
1	1	705.126695...
2	2	239.991814...
3	3	157.778606...
4	4	177.840770...
5	5	94.6273437...
6	6	100.259691...
7	7	80.0424546...

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Brazilian E-commerce Business Case Study

Mean & Sum of price and freight value by customer state

```
select
c.customer_state,
round(sum(o.price),2) total_cost_to_state,
round(sum(o.freight_value),2) total_freight_value_to_state,
round(avg(o.price),2) average_cost_to_state,
round(avg(o.freight_value),2) average_freight_value_to_state
from `target-case-study-383109.Target_dataset.orders` od inner join `target-case-study-383109.Target_dataset.order_items` o
on
od.order_id = o.order_id
inner join `target-case-study-383109.Target_dataset.customers` c
on od.customer_id = c.customer_id
group by c.customer_state
order by average_cost_to_state desc , average_freight_value_to_state desc
```

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	customer_state	total_cost_to_st	total_freight_val	average_cost_to	average_freight_
1	PB	115268.08	25719.73	191.48	42.72
2	AL	80314.81	15914.59	180.89	35.84
3	AC	15982.95	3686.75	173.73	40.07
4	RO	46140.64	11417.38	165.97	41.07
5	PA	178947.81	38699.3	165.69	35.83

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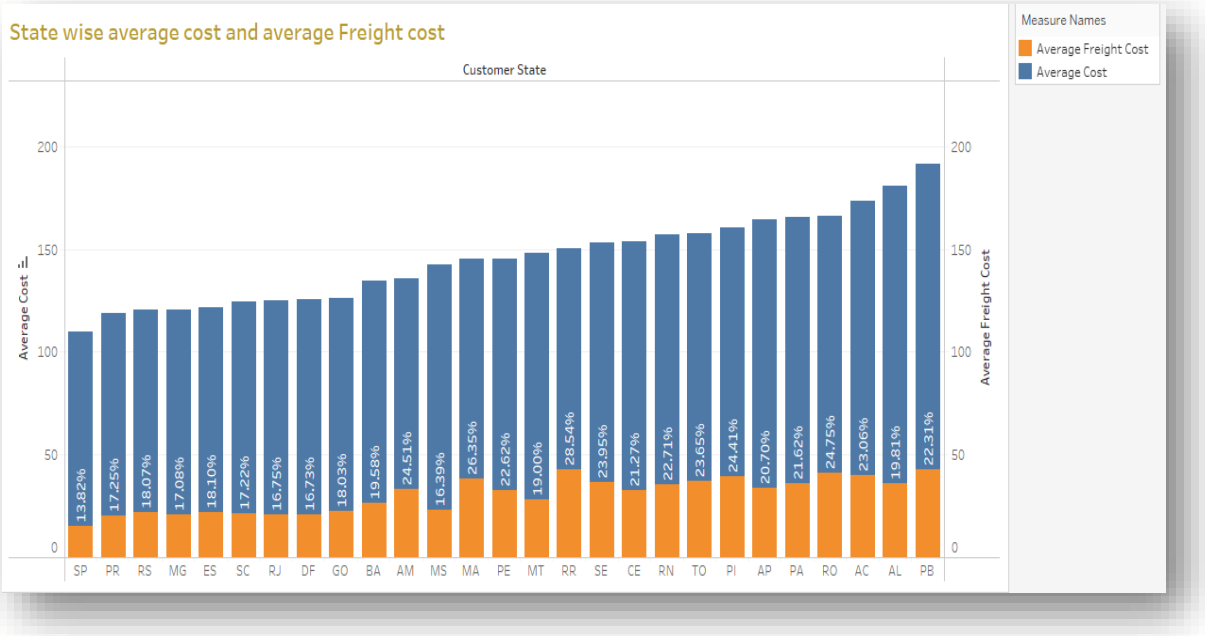

The customer state PB has the average cost while state SP has the lowest average freight cost.

Case Study

Analysis on sales, freight and delivery time

- **Days between purchasing, delivering and estimated delivery**

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Brazilian E-commerce Business Case Study

```sql
SELECT
order_id,
DATE_DIFF(order_delivered_customer_date, order_purchase_timestamp,DAY) as no_days_delivery,
DATE_DIFF(order_estimated_delivery_date,order_purchase_timestamp,DAY) as no_days_estimated,
DATE_DIFF(order_estimated_delivery_date,order_delivered_carrier_date,DAY) as no_days_delivered_estimated
FROM `target.orders`
where order_delivered_customer_date is not null
order by no_days_delivery, no_days_estimated;
```

Row	order_id	no_days_delivery	no_days_estimated	no_days_delivered_estimated
1	d5fbeedc85190ba88580d6f82...	0	8	8
2	79e324907160caea526fd8b94...	0	9	9
3	e65f1eeee1f52024ad1dcd034...	0	10	10
4	1d893dd7ca5f77ebf5f59f0d20...	0	10	10
5	b70a8d75313560b4acf607739...	0	10	10
6	d3ca7b82c922817b06e5ca211...	0	12	12
7	f3c6775ba3d2d9fe2826f93b71...	0	12	12
8	21a8ffca665bc7a1087d31751...	0	12	12
9	f349cdb62f69c3fae5c4d7d3f3...	0	13	13
10	38c1e3d4ed6a13cd0cf612d4c...	0	17	16
11	434cecee7d1a65fc65358a632...	0	20	20
12	bb5a519e352b45b714192a02f...	0	26	26
13	8339b608be0d84fca9d8da68b...	0	28	27

Row	order_id	no_days_delivery	no_days_estimated	no_days_delivered_estimated
96451	3c98e4bedff26f850c4f9989b1...	146	26	18
96452	cce224811ba8fea016c049693...	148	21	19
96453	6e6527028de694ccade37f5a1...	165	22	19
96454	031e7d4e559a1bf08e71a419a...	166	42	41
96455	a452fba32eab28a4a62af18ee...	167	29	28
96456	525e11b26fdb7f41471d28989...	167	33	32
96457	4fbc8d6f2f4db3e789d5a876fa...	168	33	27
96458	df6d8b7768a047c2981bae0a2...	168	35	34
96459	2fa29503f2ebd9f53deba18716...	172	39	36
96460	ed8e9faf1b75f43ee027103957...	173	19	14
96461	3566eabb132f8d64741ae7b92...	174	36	35
96462	d24e8541128cea179a11a6517...	175	13	9
96463	2ba1366baecad3c3536f27546...	181	28	26

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State, take mean of Freight_value, Time_to_delivery, Diff_estimated_delivery

```
SELECT
C.customer_state,
ROUND(AVG(OI.freight_value),2) avg_freight_state,
ROUND(AVG(DATE_DIFF(O.order_delivered_customer_date, O.order_purchase_timestamp,DAY)),2) as no_days_delivery,
ROUND(AVG(DATE_DIFF(O.order_estimated_delivery_date,O.order_delivered_carrier_date,DAY)),2) as diff_estimated_delivery
FROM `target.orders` O INNER JOIN `target.customers` C
ON
O.customer_id = C.customer_id
INNER JOIN `target.order_items` OI
ON
O.order_id=OI.order_id
group by C.customer_state
```

Row	customer_state	avg_freight_state	no_days_delivery	diff_estimated_delivery
1	SP	15.15	8.26	15.68
2	PR	20.53	11.48	21.06
3	MG	20.63	11.52	21.0
4	RJ	20.96	14.69	22.72
5	DF	21.04	12.5	20.88
6	SC	21.47	14.52	22.1
7	RS	21.74	14.71	24.98
8	ES	22.06	15.19	21.8
9	GO	22.77	14.95	23.53

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Brazilian E-commerce Business Case Study

- **Top 5 states with highest/lowest average freight value**

Row	customer_state	avg_freight_state	no_days_delivery	diff_estimated_delivery
1	SP	15.15	8.26	15.68
2	PR	20.53	11.48	21.06
3	MG	20.63	11.52	21.0
4	RJ	20.96	14.69	22.72
5	DF	21.04	12.5	20.88

Row	customer_state	avg_freight_state	no_days_delivery	diff_estimated_delivery
1	RR	42.98	27.83	40.75
2	PB	42.72	20.12	28.92
3	RO	41.07	19.28	35.86
4	AC	40.07	20.33	37.3
5	PI	39.15	18.93	26.67

- **Top 5 states with highest/lowest average time to delivery**

Row	customer_state	avg_freight_state	no_days_delivery	diff_estimated_delivery
1	SP	15.15	8.26	15.68
2	PR	20.53	11.48	21.06
3	MG	20.63	11.52	21.0
4	DF	21.04	12.5	20.88
5	SC	21.47	14.52	22.1

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Brazilian E-commerce Business Case Study

Row	customer_state	avg_freight_state	no_days_delivery	diff_estimated_delivery
1	RR	42.98	27.83	40.75
2	AP	34.01	27.75	42.0
3	AM	33.21	25.96	42.29
4	AL	35.84	23.99	28.49
5	PA	35.83	23.3	33.53

- **Top 5 states where delivery is really fast/ not so fast compared to estimated date**

Row	customer_state	avg_freight_state	no_days_delivery	diff_estimated_delivery
1	SP	15.15	8.26	15.68
2	DF	21.04	12.5	20.88
3	MG	20.63	11.52	21.0
4	PR	20.53	11.48	21.06
5	ES	22.06	15.19	21.8

Row	customer_state	avg_freight_state	no_days_delivery	diff_estimated_delivery
1	AM	33.21	25.96	42.29
2	AP	34.01	27.75	42.0
3	RR	42.98	27.83	40.75
4	AC	40.07	20.33	37.3
5	RO	41.07	19.28	35.86

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Brazilian E-commerce Business Case Study

Case Study

Payment type analysis

- **Month over Month count of orders for different payment types**

```
SELECT
payment_type,month,count(order_id) order_count
From(
SELECT
P.payment_type,
EXTRACT(MONTH FROM O.order_purchase_timestamp) month,
P.order_id
FROM `target.payments` P INNER JOIN `target.orders` O
ON
P.order_id=O.order_id)
GROUP BY payment_type, month
ORDER BY payment_type, month
```

Row	payment_type	month	order_count
1	UPI	1	1715
2	UPI	2	1723
3	UPI	3	1942
4	UPI	4	1783
5	UPI	5	2035
6	UPI	6	1807
7	UPI	7	2074
8	UPI	8	2077
9	UPI	9	903
10	UPI	10	1056

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39	voucher	1	477
40	voucher	2	424
41	voucher	3	591
42	voucher	4	572
43	voucher	5	613
44	voucher	6	563
45	voucher	7	645
46	voucher	8	589
47	voucher	9	302
48	voucher	10	318
49	voucher	11	387
50	voucher	12	294

- **Orders count based on the no. of payment installments**

```
SELECT
payment_installments,
count(order_id) order_volume
FROM `target.payments`
GROUP BY payment_installments
```

Brazilian E-commerce Business Case Study

Row	payment_installments	order_volume
1	0	2
2	1	52546
3	2	12413
4	3	10461
5	4	7098
6	5	5239
7	6	3920
8	7	1626
9	8	4268
10	9	644
11	10	5328
12	11	23
13	12	133

Row	payment_installments	order_volume
12	11	23
13	12	133
14	13	16
15	14	15
16	15	74
17	16	5
18	17	8
19	18	27
20	20	17
21	21	3
22	22	1
23	23	1
24	24	18

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Brazilian E-commerce Business Case Study

Detailed Observations:

- **The order volume is in increasing trend in Quarter Q1 (Jan to Mar) and Quarter Q4 (Oct to Dec)**
- **The number of orders ordered in August are 13,118 which is 13.18% of entire orders.**
- **Order volume increased by 17% and sales value increased by 20 % from the year 2017 to 2018**
- **Brazilians do more shopping in after noon and unlikely in dawn.**
- **State SP has highest orders 41,746 which is 41.98% of total orders in Brazil**
- **State RR has lowest orders among all countries in Brazil**
- **State PB has average cost per order while state SP has lowest average cost per order.**
- **State MA has highest average freight cost per order and SP has lowest average freight cost per order.**
- **Average Estimated delivery given 20 days more than actual delivery time.**
- **Freight cost is highest for state RR (43) and lowest for state SP (16)**
- **Fast delivery in state SP (8 days) and slowest delivery in RR (28 days)**
- **Brazilians purchased more orders with 1 installments approximately 52k**
- **More orders purchased through credit card almost 80% of total orders**

Recommendation:

1. **Improve Delivery Speed: The company should focus on reducing the delivery time for all orders, especially those taking more than 5 days. They can consider using faster delivery methods like express shipping, improving their logistics and supply chain, and using technology to optimize their delivery routes.**
2. **Conduct Detailed Research: The company should conduct detailed research to find out the reasons behind the low sales in states like RR, AP, and AC. This can help them understand the local market and tailor their products and marketing strategies to better meet the needs of customers in those regions.**
3. **Open New Stores: Based on the high volume of orders placed in states like SP, the company should consider opening new stores in these areas. This can help**

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them improve their delivery times, reduce shipping costs, and increase customer satisfaction.

4. Offer Benefits to Credit Card Customers: To encourage more customers to use credit cards for payments, the company should offer benefits such as low interest rates, no-cost EMI options, and cashback rewards.
5. Improve Estimated Delivery Time: The company should ensure that the estimated delivery time mentioned on their website and other channels is as accurate as possible, so that customers have realistic expectations about when they will receive their orders.
6. Plan for High-Demand Periods: The company should prepare for high-demand periods like August by hiring more staff, extending store operating times, and ensuring that their logistics and