Analyzing Business Data in SQL (postgreSQL)

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Delivr(Fictional company) - Food Delivery Startup

- Businesses track data on everything, from operations to marketing to HR.

- Calculate key metrics that businesses use to measure performance and produce report-ready results.

SQL Analysis

- Revenue, Cost, and Profit
- User-Centric Metrics
- Unit Economics and Distributions
- Executive Report

Database Tables

Tables:

Meals

meal_id	eatery	meal_price	meal_cost
0	'Leaning Tower of Pizza'	4	2
1	'Leaning Tower of Pizza'	3.5	1.25
2	'Leaning Tower of Pizza'	4.5	1.75
...	...	...	...

Orders

order_date	user_id	order_id	meal_id	order_quantity
2018-06-01	0	0	4	3
2018-06-01	0	0	14	2
2018-06-01	0	0	15	1
...	...	...	...	...

Stock

stocking_date	meal_id	stocked_quantity
2018-06-01	0	76
2018-06-01	1	42
2018-06-01	2	56
...	...	...

Revenue per week

Revenue per week for each week in June to check whether if there's any consistent growth in revenue

Here is the report obtained:

delivr_week	revenue
2018-05-28	680.75
2018-06-04	1435.5
2018-06-11	1547.25
2018-06-18	1685.5
2018-06-25	947.25

There seems to be no consistent weekly growth in revenue

Cost

Delivr's total cost since it began operating: 92,133.

```
select sum(meal_cost * stocked_quantity) from meals, stock where stock.meal_id =
meals.meal_id
```

Top 5 Meals by cost

meal_id	cost
5	12248
4	10211.5
6	8219.75
13	6648.75
14	6030

How much Delivr spent per month on average during its early months (before September 2018)?

delivr_month	cost
2018-06-01	2222.75
2018-07-01	3594.25
2018-08-01	5365.75
2018-09-01	8480
2018-10-01	12488.75
2018-11-01	21387
2018-12-01	38594.5

Early months average cost: 3727.58

KPI - Profit

A KPI is a metric with some value that a company use to measure its performance.

Profit per user - identify the "best" users, those who bring Delivr the most money.

Profit per meal - identifies the most profitable meals.

Profit per month - tracks profit over time, signaling whether or not Delivr is getting better at making money.

Revenue vs Profit

Analyzing the revenue and profit

meal_id	meal_price	order_quantity	revenue	cost	profit
21	8	100	800	500	300
22	5	80	400	80	320

Meal_id 22 brings more profit to the company and meal_id 21. Cost is very high for mea_id 21 hence not bringing much profit

Profit per eatery

eatery	profit
'Bean Me Up Scotty'	46854.5
'Burgatorio'	37534.5
'The Moon Wok'	36036.5
'Leaning Tower of Pizza'	30692.5
'Life of Pie'	16975.75

Beans-based are popular while pies are not. This will help Delivr which restaurants or cuisines to prioritize

Profits per month

delivr_month	profit
2018-06-01	4073.5
2018-07-01	6575.5
2018-08-01	9974.25
2018-09-01	15339.5
2018-10-01	23087.5
2018-11-01	38743
2018-12-01	70300.5

Growing by month which is definitely positive!

User-Centric KPIs

- calculate the registrations and active users KPIs

(using window functions in SQL to calculate the user growth and retention rates)

- Registrations
- Active Users
- Growth
- Retention

Benefits: Measure performance well for B2Cs

Registrations and Active Users

delivr_month	regs
2018-06-01	123
2018-07-01	140
2018-08-01	157

Daily active users - DAU

Monthly active users - MAU

Stickiness - DAU/MAU

Registrations and Active Users

A Delivr user's registration date is the date of that user's first order.

Monthly registrations

delivr_month	regs
2018-06-01	123
2018-07-01	140
2018-08-01	157
2018-09-01	176
2018-10-01	199
2018-11-01	231
2018-12-01	278

Monthly Active Users(MAU)

delivr_month	mau
2018-06-01	123
2018-07-01	226
2018-08-01	337
2018-09-01	489
2018-10-01	689
2018-11-01	944
2018-12-01	1267

Registrations running total

delivr_month	regs_rt
2018-06-01	123
2018-07-01	263
2018-08-01	420
2018-09-01	596
2018-10-01	795
2018-11-01	1026
2018-12-01	1304

MAU Monitor(previous month)

delivr_month	mau	last_mau
2018-06-01	123	0
2018-07-01	226	123
2018-08-01	337	226
2018-09-01	489	337
2018-10-01	689	489
2018-11-01	944	689
2018-12-01	1267	944

Month on Month(MoM) MAU Growth Rate

Growth rate = (current-previous)/previous

delivr_month	growth
2018-06-01	122.00
2018-07-01	0.84
2018-08-01	0.49
2018-09-01	0.45
2018-10-01	0.41
2018-11-01	0.37
2018-12-01	0.34

MoM order growth rate

delivr_month	growth
2018-06-01	281.00
2018-07-01	0.58
2018-08-01	0.51
2018-09-01	0.50
2018-10-01	0.54
2018-11-01	0.67
2018-12-01	0.86

There is a increase in the monthly order rate by users

MoM Retention Rate

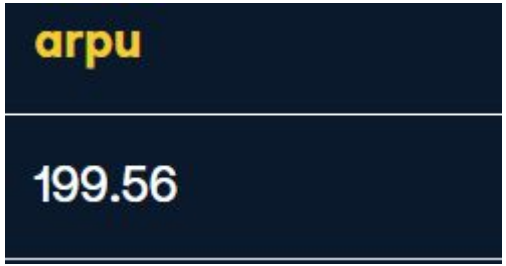
delivr_month	retention_rate
2018-06-01	0.70
2018-07-01	0.70
2018-08-01	0.76
2018-09-01	0.83
2018-10-01	0.90
2018-11-01	0.96
2018-12-01	0.00

Looks like Delivr has a loyal userbase

Unit Economics

- unit economics measures performance per unit (or user).
- calculate the average revenue per user, or ARPU.
- The formula for ARPU is the overall revenue divided by the count of users.

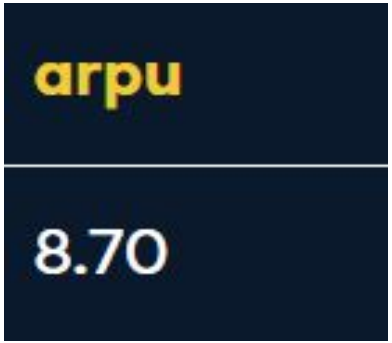
Average Revenue per User (ARPU)



~$200.00 is a very impressive indicator to generate revenue

ARPU by week allows you to track how well your company is scaling over time. There's a clear upwards trend in ARPU's value week over week.

Average orders per User



Almost 9 orders per user is a high number for only six months of operation!

Histogram of Revenue and Histogram of orders

- Is the distribution U-shaped or normal?
- categorize users by the revenue they generate.

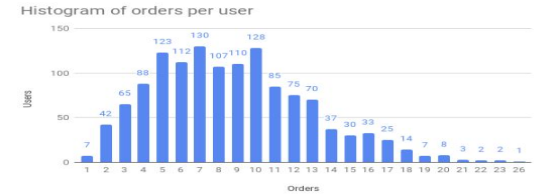
revenue_100	users
0	47
100	426
200	458
300	261
400	96
500	14
600	2

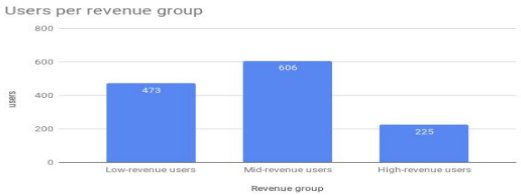
orders	users
1	7
2	42
3	65
4	88
5	123
6	112
7	130
8	107
9	110

Truncated data results….

Bucketing

Histograms versus bar graphs





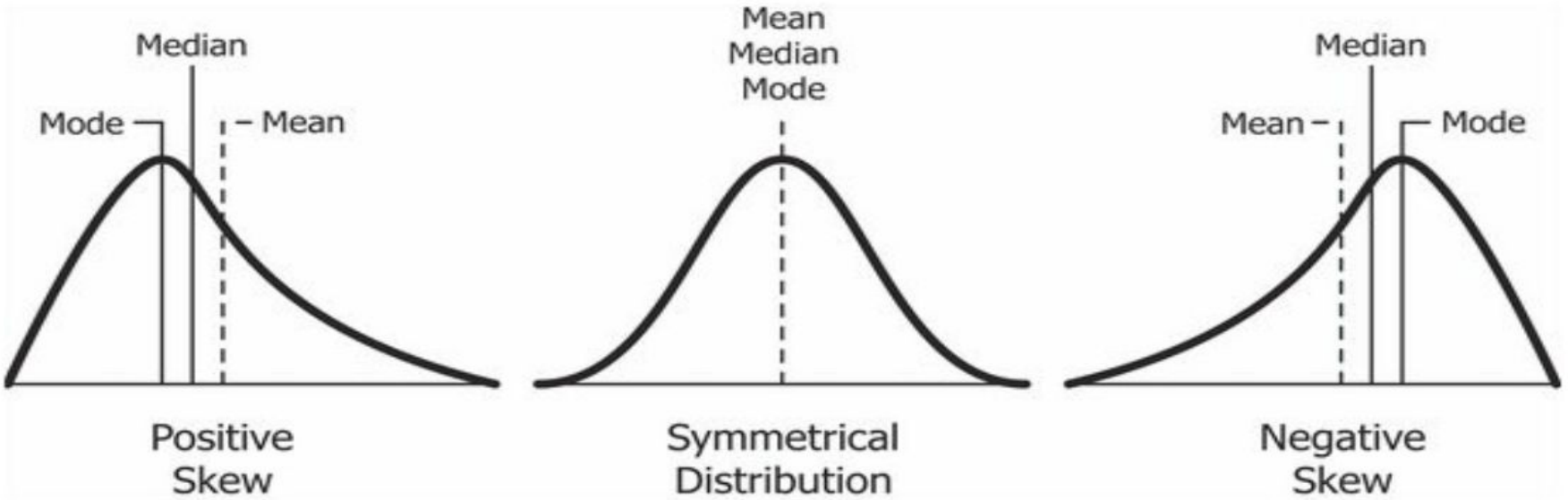
Bucketing users by revenue

revenue_group	users
High-revenue users	225
Low-revenue users	473
Mid-revenue users	606

Bucketing users by orders

order_group	users
High-orders users	125
Low-orders users	567
Mid-orders users	612

Skewed Data Means?



Analyse Revenue Quartiles

revenue_p25	revenue_p50	revenue_p75	avg_revenue
120.69	186.50	268.31	199.56

Data is slightly positively skewed

Keep the users within the IQR(Q3 - Q1). Rest were outliers

Executive Report

- Create a report on the Total cost by Eatery in the last two months

eatery	delivr_month	cost
'Bean Me Up Scotty'	2018-11-01	3102.25
'Bean Me Up Scotty'	2018-12-01	5810.5
'Burgatorio'	2018-11-01	7946.5
'Burgatorio'	2018-12-01	14197.75
'Leaning Tower of Pizza'	2018-11-01	3989.75
'Leaning Tower of Pizza'	2018-12-01	7256
'Life of Pie'	2018-11-01	523.5
'Life of Pie'	2018-12-01	946.5
'The Moon Wok'	2018-11-01	5825

eatery	2018-11-01	2018-12-01
'Bean Me Up Scotty'	3102.25	5810.5
'Burgatorio'	7946.5	14197.75
'Leaning Tower of Pizza'	3989.75	7256
'Life of Pie'	523.5	946.5
'The Moon Wok'	5825	10383.75

Used CROSSTAB to pivot it by month

Final Executive Report

Produce a final executive report about the rankings of eateries by the number of unique users who order from them by quarter.

eatery	delivr_quarter	users
'Life of Pie'	Q2 2018	66
'Leaning Tower of Pizza'	Q2 2018	75
'Burgatorio'	Q2 2018	83
'Bean Me Up Scotty'	Q2 2018	83
'The Moon Wok'	Q2 2018	100
'Life of Pie'	Q3 2018	366
'Leaning Tower of Pizza'	Q3 2018	475
'Burgatorio'	Q3 2018	488

eatery	delivr_quarter	users_rank
'The Moon Wok'	Q2 2018	1
'Burgatorio'	Q2 2018	2
'Bean Me Up Scotty'	Q2 2018	2
'Leaning Tower of Pizza'	Q2 2018	4
'Life of Pie'	Q2 2018	5
'The Moon Wok'	Q3 2018	1
'Burgatorio'	Q3 2018	2
'Bean Me Up Scotty'	Q3 2018	2
'Leaning Tower of Pizza'	Q3 2018	4

eatery	Q2 2018	Q3 2018	Q4 2018
'The Moon Wok'	1	1	1
'Burgatorio'	2	2	2
'Bean Me Up Scotty'	2	2	3
'Leaning Tower of Pizza'	4	4	4
'Life of Pie'	5	5	5

Top 5 Eateries.

Accomplishment

View Certificate

Thanks to Michel Semaan, the instructor for this course on DataCamp