Assignment - Senior Strategy Analyst
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Bolt

Introduction

Background

Bolt business is acquiring new companies in different regions, through different channels and segments. (Given Acquisition Table)

Acquired business generate revenue by paying for the orders that they complete. (Rides, Food Deliveries or Scooters.) Given Order Table.

Objective

Next we look at how can we:

- ❏ Optimize Acquisition Channels.
- ❏ Enhance Regional Strategy.
- ❏ Prioritize segments that generate most revenue.
- ❏ Find Anomalies to see any significant drop in Revenue. (Qtr on Qtr)

Calculations & Visualizations
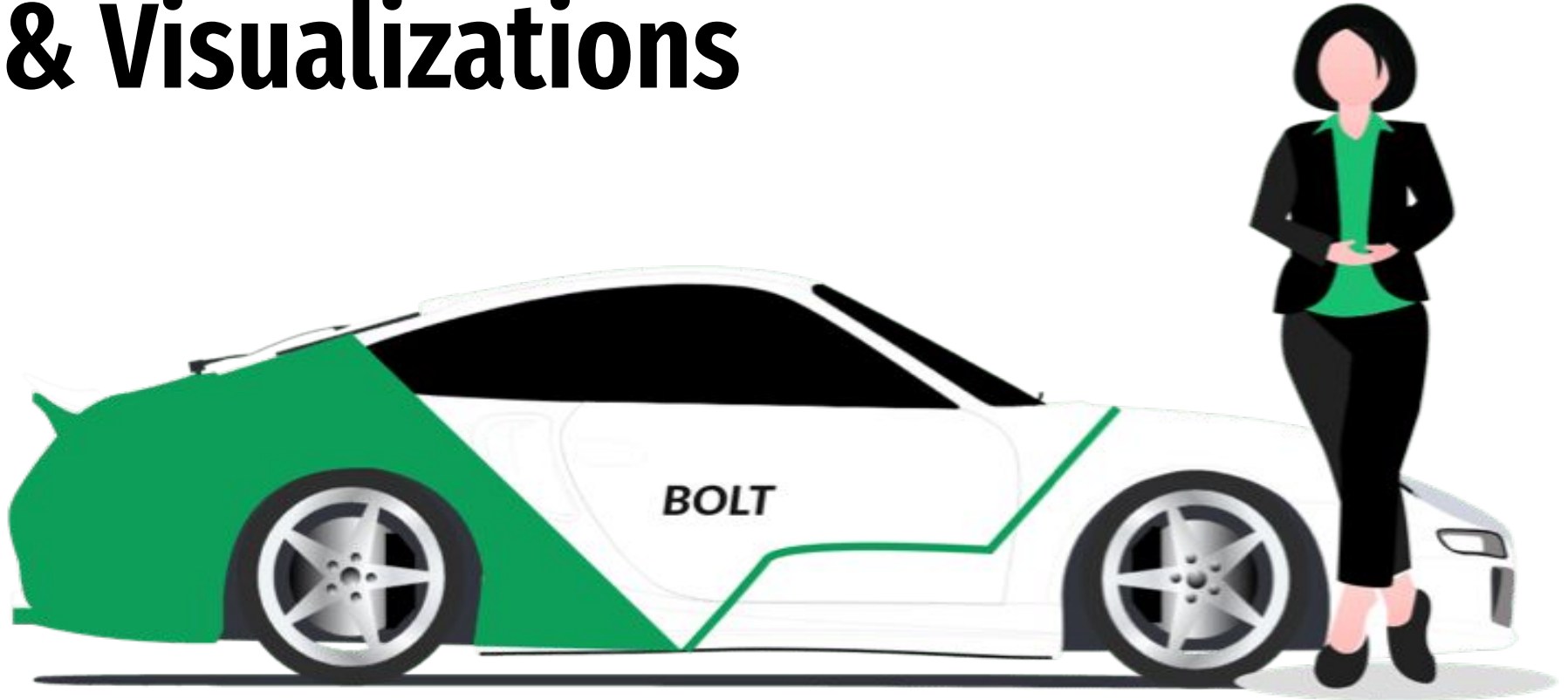
Summary (Overview)

147 pp YoY growth (2023 vs 2022)

Avg QoQ Revenue growth : **42 pp.**

3.8% new businesses Acquired in 2023 as compared to 2022.

Recommendation: Can increase spend depending on Budget and Cost.

Revenue Increase is in pp is in sync with Increase in Number of Orders and No. Of Active Companies across 2022 and 2023.

FYR Link to Gsheet: Data

Revenue YoY Metric

Year	Revenue	Orders	Active Companies
2022	2.6 Mn	0.49 Mn	18k
2023	6.6 Mn (+ 146 pp)	1.2 Mn (+147 %)	42k (128 %)
2024 (Qtr 1)*	1.2 Mn	0.23 Mn	8.4k

Forecasted 2024　　　Same as 2023

* Data only up till March 2024.

2024 Qtr 1 Revenue is 2% higher as compared to 2023 Qtr 1 Revenue figures. Not including 2024 as part of YoY comparision.

| Split	YoY Increase (Revenue)						
Segment	T0	T1	T2	T3	T4		
	31%	132%	190%	176%	79%		
Channel	Marketing	Organic	Outreach				
	117%	87%	177%				
Region	Aquilonia	Lumina	Novaria	Seraphica	Solsticea	Valoria	Veridia
	56%	258%	262%	871%	86%	112%	151%

Companies Acquired via Outreach Channel have the highest share in revenue (63%) followed by Marketing and Organic.

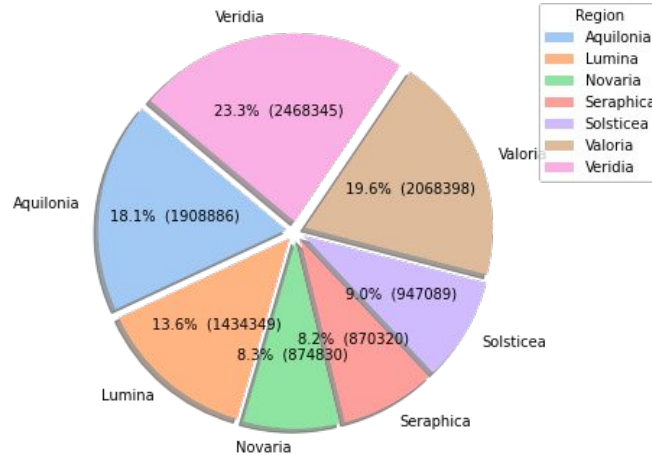T3 (44%) and T2 (23%) businesses combined have 67% revenue share.

Veridia has the highest share in Revenue (23 pp) whereas from the last slide Seraphica saw the highest growth in YoY Revenue.

Since Seraphica still has only 8.2% share in Revenue. There can be upside to capture market based on number of businesses in the region.
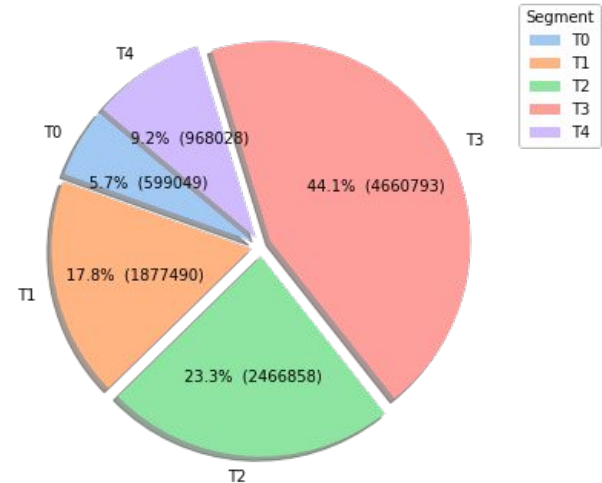

Revenue by Acquisition Channel
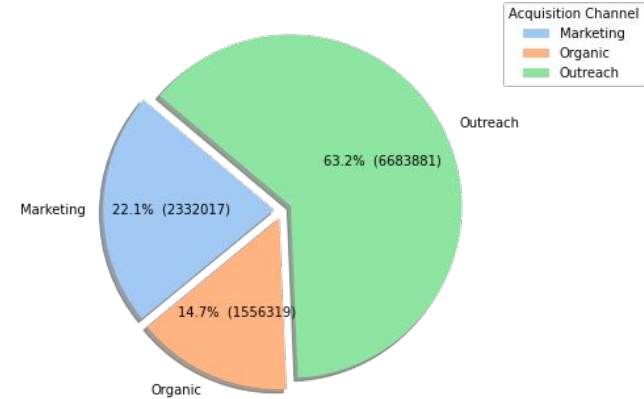
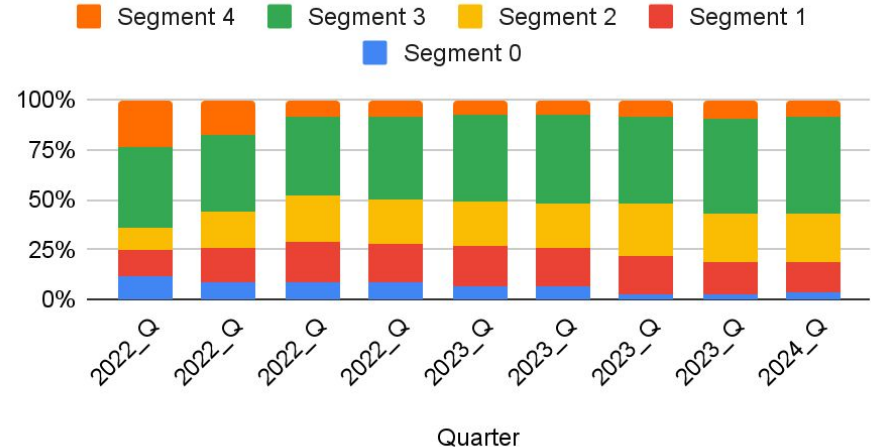Revenue by Region

Revenue by Segment

TRENDS: Segment

- Bolt business experienced 147 pp Increase in Revenue in 2023 driven by T2 (189 pp) , T3 (175 pp), T1 (132 pp) segments.
- T3 grew 175 pp YoY and in terms of Vol it commands 44 pp of Revenue share. This is followed by T2.
- T4 and T0   saw decline in revenue share as can be observed in second Chart (Bottom Blue and Red Bar). Vol wise as well both segments have remained flat.
- 57pp of acquired businesses belonged to T4 segment. here followed by T3. Revenue per company for the T4 segment is the lowest at 43. Therefore we should focus more on T3 and T2 segment which showed more growth and at the same time look at any problems T4 businesses might be facing in terms of Revenue making.

Revenue in k (Qtrly) Segment Wise
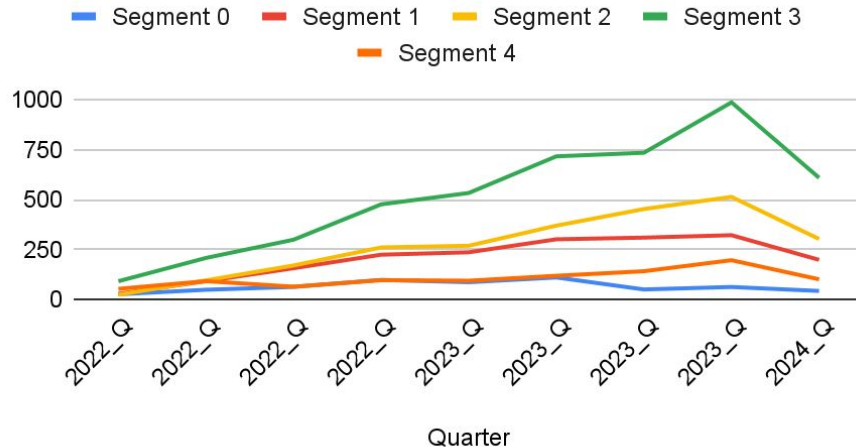
Revenue (Qtrly) Segment Wise

TRENDS: Region

From the Chart below, **Seraphica** Revenue Share has been increasing QoQ (Green). The Region also has the highest Revenue per Company (218) and high value orders (11).

Overall every Region saw increase in revenue with occasional drops in Quarter. (QoQ Region Wise: Anomalies)

Revenue Share increase: Regions [Seraphica, Lumina, Novaria]
Revenue Share Drop: Regions [Aquinolia, Solsticea, Valoria]

Revenue (Qtrly) per Region

SUM of Revenue/Quarter

Revenue in k (Qtrly) per Region

SUM of Revenue/Quarter
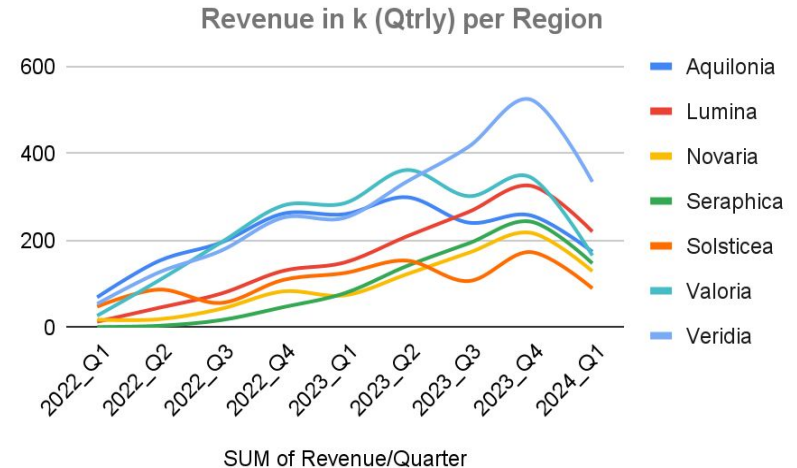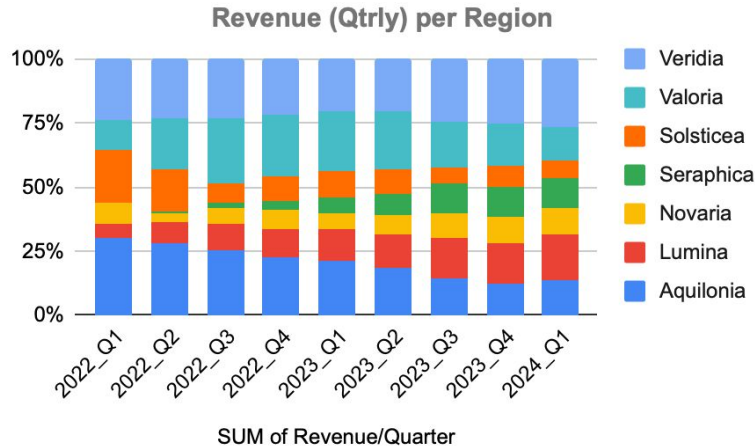
TRENDS: Region

From the Chart below, Seraphica Share has been increasing QoQ. The Region also has the highest Revenue per Company (218) and high value orders (11).

Overall focus should be on acquiring business with **high Order per Company**, **$ per Order**, **$ per Company**. Also to consider if any company is significantly higher in any one of factors. For e.g Aquilonia has lowest $ per order by highest Order per company.
Seraphica performs good in all three areas with 11 $ per order, 217 $ per company and 20 order per company. But we only Acquired 7% in the region. Therefore Bolt can acquire more in this region. Other Region is **Novaria,** with similar profile as Aquilonia but only 5% companies were acquired here. Though this is dependent on the market cap and how many business are present in the city, also the acquisition cost.

Region	Revenue	Orders	Companies	$ Per Order	$ per Company	Order per Company	Acquired Companies	% Acquired Company
Aquilonia	1908886	579209	10369	3	184	56	1710	15%
Lumina	1434349	166649	11188	9	128	15	1852	17%
Novaria	874830	226391	4509	4	194	50	603	5%
Seraphica	**870320**	**81388**	**4000**	**11**	**218**	**20**	**759**	**7%**
Solsticea	947090	60598	8065	16	117	8	1676	15%
Valoria	2068398	518778	13368	4	155	39	1633	15%
Veridia	2468345	313941	18011	8	137	17	2911	26%
Grand Total	10572218	1946954	69510	5	152	28	11144	100%

TRENDS: Region (Aquilonia Specifically)

Aquilonia has the lowest revenue per order. But the market share in Revenue is 18%. Revenue per company was second highest 184 due to Vol of Orders. 15% of all companies acquired were from this city. Data.

So what can we do here: (**Recommendations**)

Focus on T0 and T1 segment in region with higher $ per company as compared to baseline 184 in the region.

Explore Adjusting Pricing to increase $ per order. If Possible

| Segment	Total $	Total Orders	Companies	$ per order	$ per company
T0	394073	94659	45	4	8757
T1	454402	161429	622	3	731
T2	559093	170102	1924	3	291
T3	432775	144750	5823	3	74
T4	68543	8269	1955	8	35
Grand Total	1908886	579209	10369	3	184

TRENDS: Channel

Assuming Outreach and Marketing incur significant cost for Bolt Business in terms of salaries for sales teams, expenses related to attending events, and costs for tools or software used in outreach activities. For Marketing, it can be advertising expenses, content creation, digital marketing campaigns, and analytics tools. Organic however is linked to Brand Value and Online Presence. (SEO etc)
Revenue from the Businesses acquired by Outreach has growth significantly and has 63% revenue Share. Recommend : Continue investing in Outreach efforts.
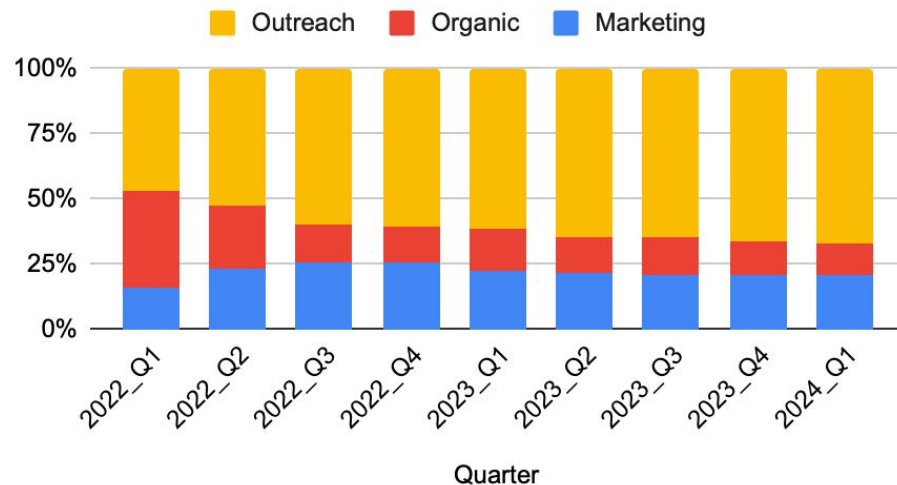
Whereas Revenue from Marketing has seen minor increase. Recommend: Optimise marketing Campaigns or adjust messaging.

Revenue from Organic channel has more or less stayed stagnant. **Organic actually saw 20 pp drop in revenue in 2022 Q3. <u>Data</u>. On Deep dive this drop was mainly observed in Segment T4. (-46%). T3 saw 3 pp reduction. But T1 and T2 up by 375 pp and 96 pp respectively. T4 Revenue Overall went down by 24 pp during the Qtr. Solsticea only region which saw the drop in that quarter. Therefore could be region specific issue or T4 SEO optimisation.**
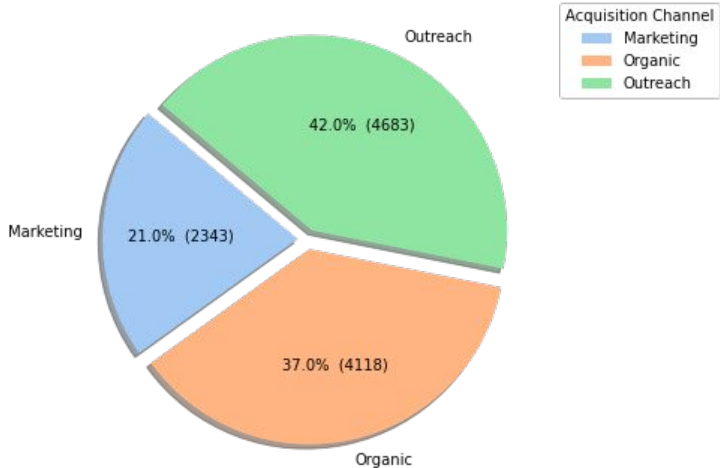
Revenue in k (Qtrly) : Acquisition Channel Wise
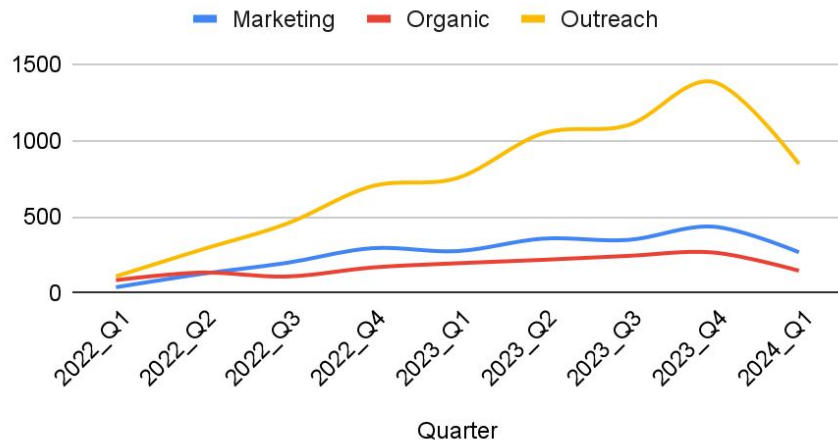
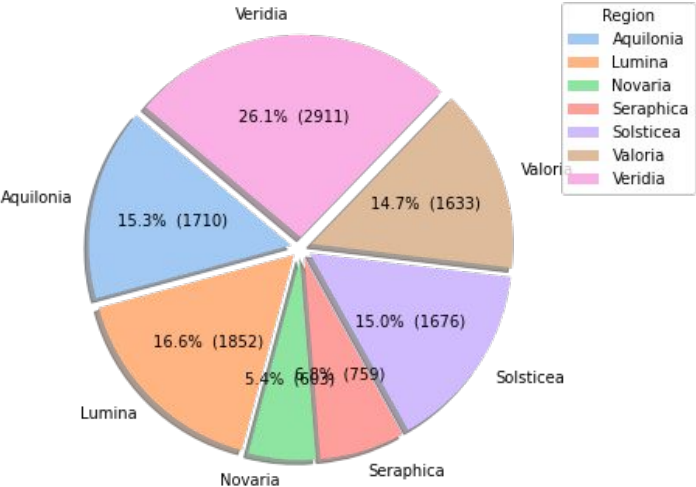### Revenue (Qtrly) : Acquisition Channel Wise

Number of New Companies by Acquisition Channel

Acquisition Channel
Marketing
Organic
Outreach

Outreach 42.0% (4683)
Marketing 21.0% (2343)
Organic 37.0% (4118)

Tier Segment	# New Companies	%
T0	6	0.05%
T1	117	1.05%
T2	470	4.22%
T3	4192	37.62%
T4	6359	57.06%

Number of New Companies by Region

Region
Aquilonia
Lumina
Novaria
Seraphica
Solsticea
Valoria
Veridia

Veridia 26.1% (2911)
Aquilonia 15.3% (1710)
Valoria 14.7% (1633)
Lumina 16.6% (1852)
Novaria 5.4% (603)
Seraphica 6.8% (759)
Solsticea 15.0% (1676)

Segment	Revenue Per Order	Revenue per Company
T0	4	6176
T1	4	1070
T2	5	397
T3	6	120
T4	11	43
Grand Total	5	152

Recommendations

Segments	**Segment Focus**: Concentrate efforts on Segments T1, T2, and T3, with particular attention to T0 and T1 in Aquilonia. **Pricing Adjustments**: Reevaluate and adjust pricing strategies in regions where revenue per company is notably low.
Regions	**Acquisition Strategy**: Prioritize acquiring businesses that exhibit high performance in metrics such as Orders per Company, Revenue per Order, and Revenue per Company. Pay special attention to regions like **Seraphica** and **Novaria**, which show significant performance in specific factors, such as Aquilonia's high Orders per Company but low Revenue per Order.
Channels	**Outreach Investment**: Maintain and potentially increase investment in Outreach efforts, which have proven effective and provide significant revenue impact. **Marketing Optimization**: Enhance marketing campaigns and refine messaging to boost performance and align with business goals. **Organic Channel Investment**: Given that the Organic channel incurs lower costs, focus on improving content quality and SEO to strengthen brand value. **Deep Dive Analysis**: Conduct a thorough analysis to determine if the decline in Organic revenue is related to regional issues (e.g., Solsticea) or specific SEO challenges in Segment T4.
Anomalies	**Revenue Monitoring**: Regularly track and analyze anomalies in Month-over-Month (MoM) and Quarter-over-Quarter (QoQ) revenue across segments, regions, and channels to address any fluctuations and optimize strategies accordingly.
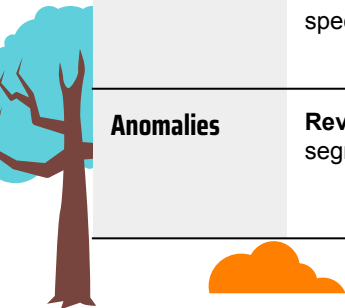
Anomalies: Region

Period	Quarterly Increase							
	Aquilonia	Lumina	Novaria	Seraphica	Solsticea	Valoria	Veridia	Grand Total
2022_Q1								
2022_Q2	120.86%	244.47%	5.50%	335.00%	82.44%	303.73%	134.02%	136.27%
2022_Q3	27.44%	71.99%	127.91%	352.87%	-35.33%	80.41%	39.19%	40.07%
2022_Q4	34.19%	67.36%	94.16%	177.65%	93.67%	43.51%	43.16%	52.98%
2023_Q1	-0.43%	15.02%	-10.84%	69.66%	14.80%	2.00%	-0.08%	5.44%
2023_Q2	14.98%	40.08%	65.67%	79.21%	22.75%	26.70%	32.90%	32.43%
2023_Q3	-19.52%	26.87%	40.32%	37.03%	-30.59%	-16.64%	23.97%	4.46%
2023_Q4	6.93%	22.74%	26.97%	25.99%	62.54%	14.46%	26.21%	23.17%
2024_Q1	-32.49%	-32.40%	-40.69%	-39.45%	-48.22%	-52.17%	-36.12%	-39.62%

Anomalies: Segment

Period	Quartely Increase					
	T0	T1	T2	T3	T4	Grand Total
2022_Q1						
2022_Q2	82.98%	214.65%	283.77%	125.58%	70.39%	136.27%
2022_Q3	28.56%	69.59%	76.98%	43.64%	-29.82%	40.07%
2022_Q4	54.29%	42.89%	52.54%	58.87%	50.13%	52.98%
2023_Q1	-11.46%	5.32%	3.22%	11.91%	-2.72%	5.44%
2023_Q2	26.90%	27.38%	37.24%	34.33%	25.85%	32.43%
2023_Q3	-53.79%	2.78%	22.41%	2.50%	19.09%	4.46%
2023_Q4	24.05%	3.88%	13.42%	34.29%	38.54%	23.17%
2024_Q1	-31.10%	-38.18%	-40.93%	-38.21%	-48.32%	-39.62%

Anomalies: Channel

Period	Quartely Increase			
	Marketing	Organic	Outreach	Grand Total
2022_Q1				
2022_Q2	234.78%	59.72%	161.50%	136.27%
2022_Q3	58.48%	-19.51%	60.01%	40.07%
2022_Q4	48.92%	54.96%	54.28%	52.98%
2023_Q1	-6.48%	16.92%	7.71%	5.44%
2023_Q2	29.77%	11.48%	38.80%	32.43%
2023_Q3	-2.27%	11.98%	5.19%	4.46%
2023_Q4	24.96%	9.08%	25.71%	23.17%
2024_Q1	-38.66%	-45.02%	-38.88%	-39.62%

Revenue by Acquisition Channel

Revenue by Region

Revenue by Segment
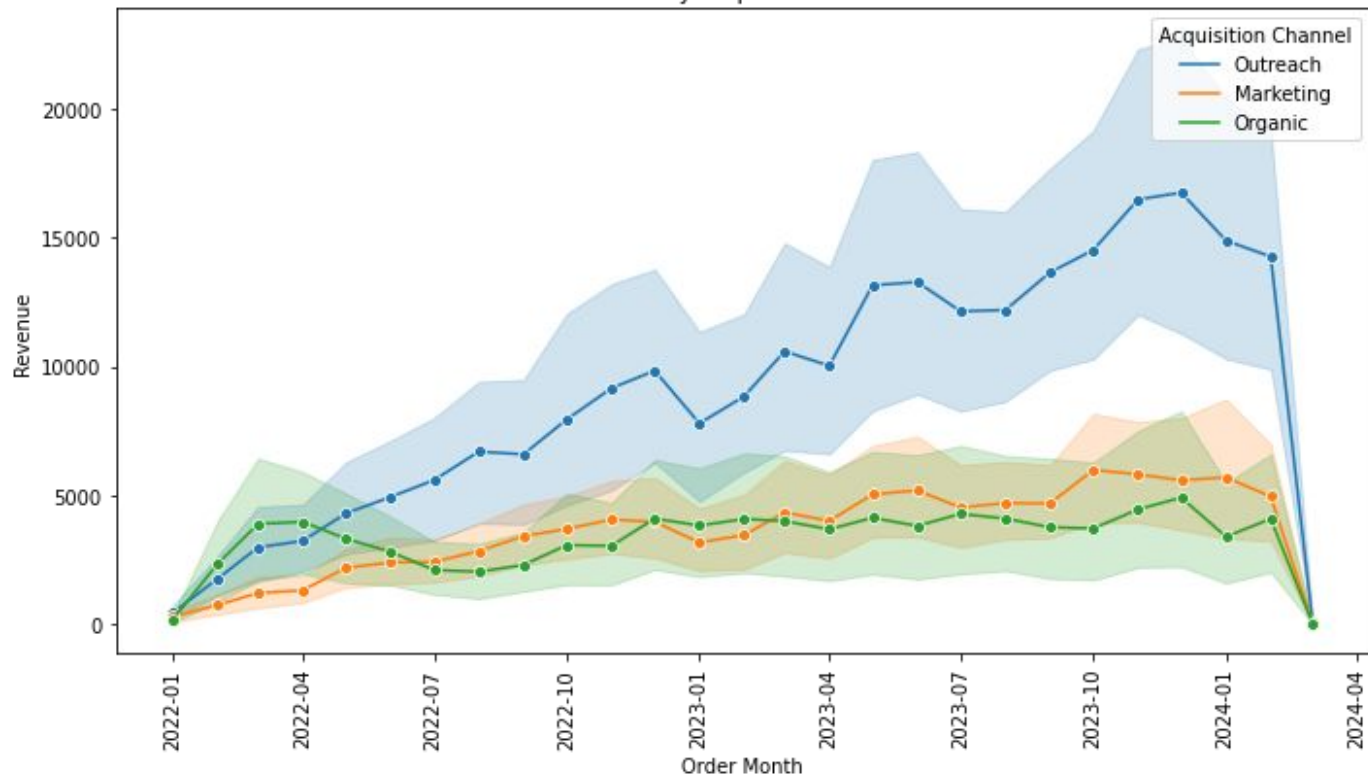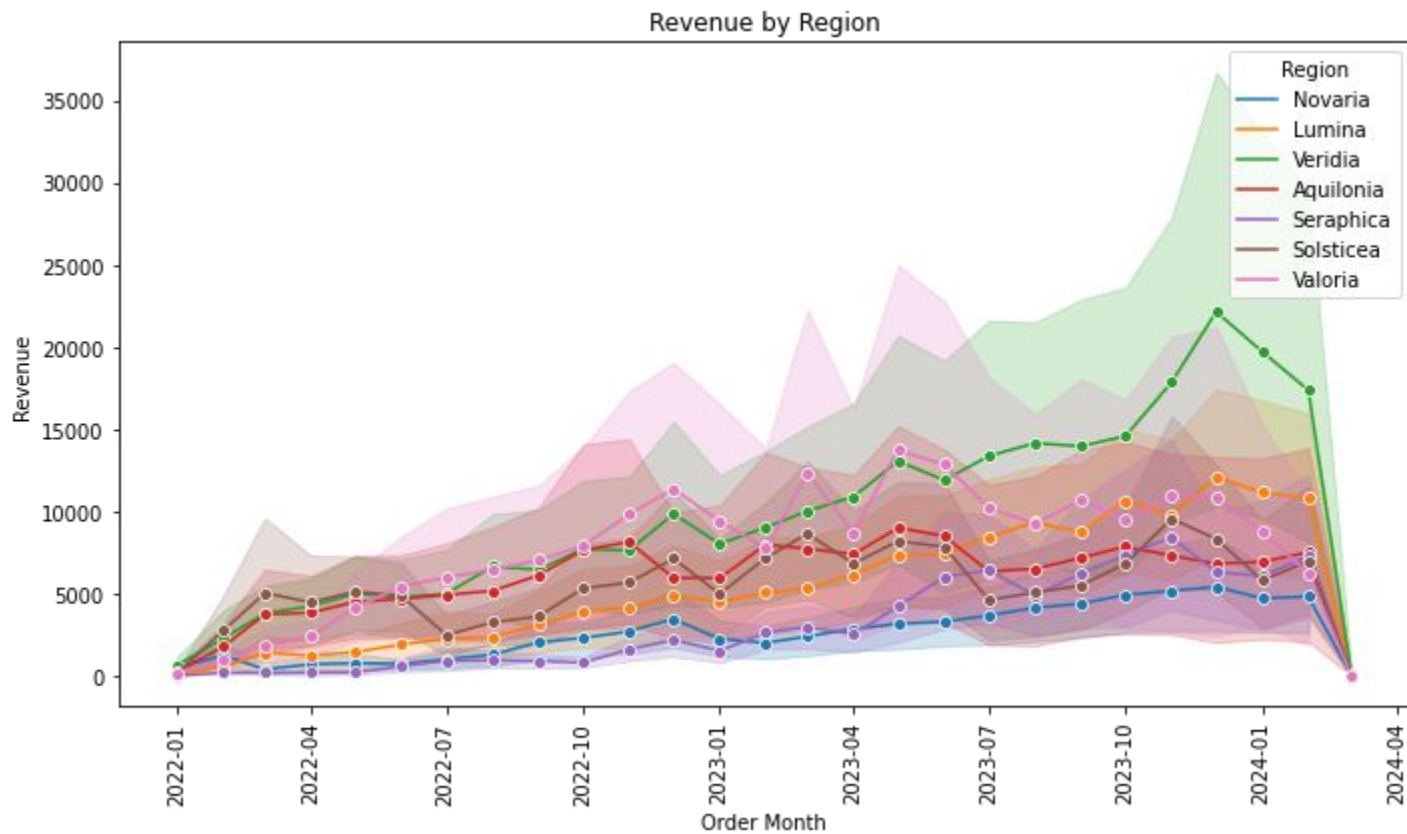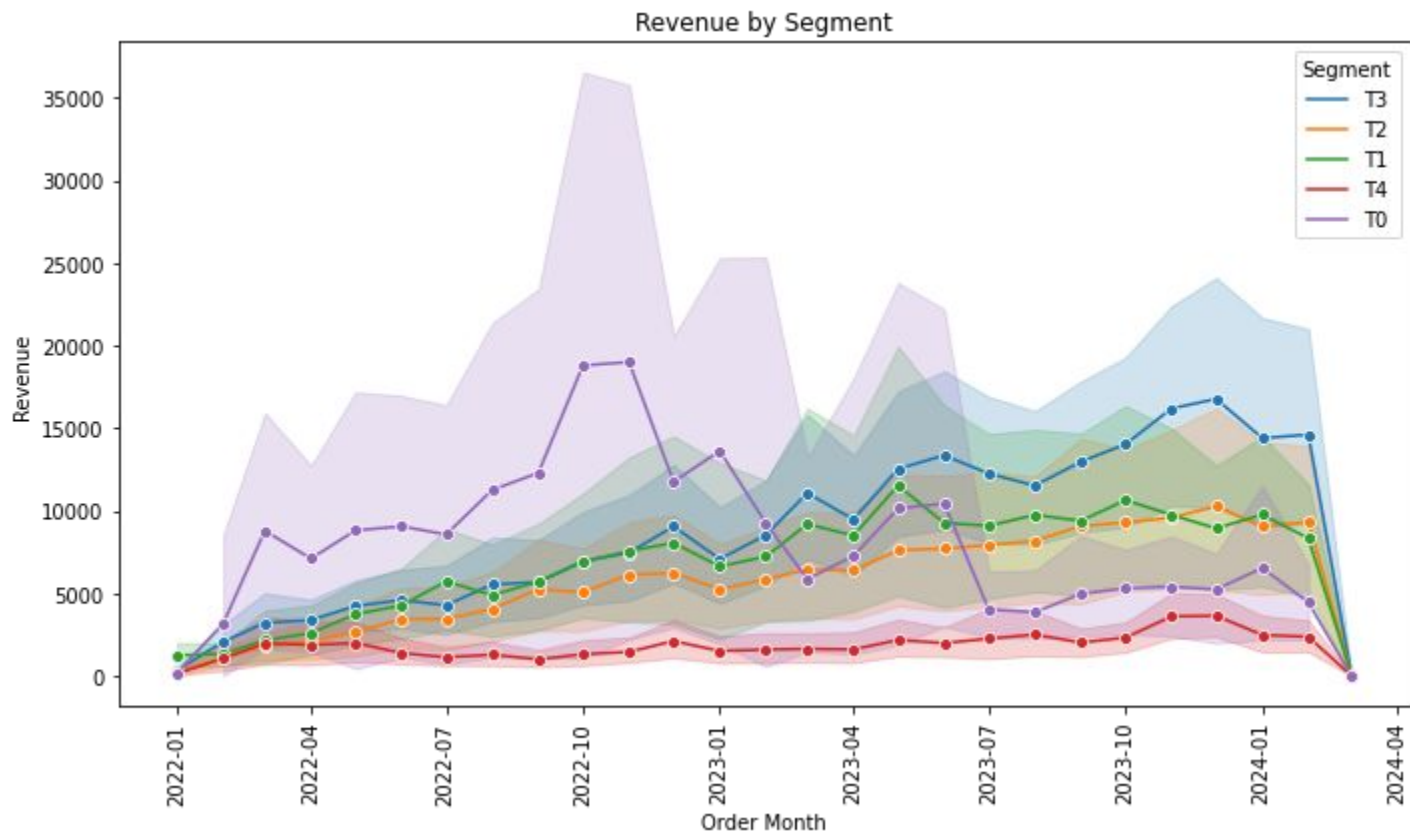
Part 2 (ETL Process)

Rikba
5 min 👤 4

Bolt

Explanation and Assumption

Aggregate Orders Table at right level.

Left join Countries with Users

(since Same Company users can be in different Countries)

Assuming No Ride Sharing

Just to Answer (3) How many companies signed up we are left joining aggregate table with companies. *

Here assumed that some companies can have zero orders but since the question asks how many companies signed up. In order to compute this we have taken company as left table.
We dont need orders try table as completed orders are required to answer the queries.
We also grouped by admin_id in our agg table and later joined it with company table . Any change in names of companies will be accounted for.

ETL Pipeline (SQL Query)

```sql
with companies as (
select cast(created_at as date) as company_created_at,
admin_id, name
from company
)
, orders_agg as (
Select
month(cast(created_at as date)) as month_of_order,
week(cast(created_at as date)) as week_of_order,
cast(created_at as date) as date_of_order,
com.admin_id as company_admin_id
o.user_id,
c.name as country_name,
c.region as region,
sum(o.Revenue) as Revenue,
count(o.order_id) as orders
From orders o
left join company com on com.admin_id = o.admin_id
left join users u on o.user_id = u.user_id
left join countries c on c.code = u.country_code
group by 1,2,3,4,5,6,7
)
select
month_of_order,
week_of_order,
c.admin_id,
c.name as company_name,,
user_id,
country_name,
region,
Revenue,
orders,
date_of_order
from companies c
left join orders_agg oa on oa.company_admin_id = c.admin_id
WITH ( format = 'PARQUET', partitioned_by =
ARRAY['date_of_order'] );
```

Queries

1. Daily/ Weekly/ Monthly Dynamic of Revenue, Orders per country, region.

Sol:
For E.g. Monthly Level Query will be as follows:
select month_of_order, country_name, region,
sum(Revenue) as Revenue, sum(orders) as orders
from Unified_table
group by 1,2,3

3. How many companies signed up ?

Sol:
select distinct admin_id from Unified_table

Please note this will give all company ids which have ride or not from its users.

In order to find only those with some rides we can filter for orders not null.

2. Top 10 companies based on no. of Orders last week.

Sol:

select company_name, sum(orders)
from Unified_table
where date_of_order between current_date( ) - interval '7' day
and current_date( )
group by 1
order by 2 desc
limit 10

2. Monthly Active Users.

Sol:
Since our table is at User level we just need to check if user did any ride and group by month

Select year(date_of_order), month_of_order, count(distinct user_id) as monthly_active
from Unified_Table
group by 1,2

Part 3

(Data Discovery & Feature Design)

Introduction

Background

Bolt's Delivery vertical is a three-sided marketplace that connects customers, restaurants and couriers. Couriers travel to restaurants to pick up orders prepared by the restaurant. After the restaurant finishes preparation and the courier picks up the order, the courier travels to the customer to deliver the order.

GOAL: Eliminate wasted time for the courier and have orders delivered to customers faster and on time, while the food is warm.
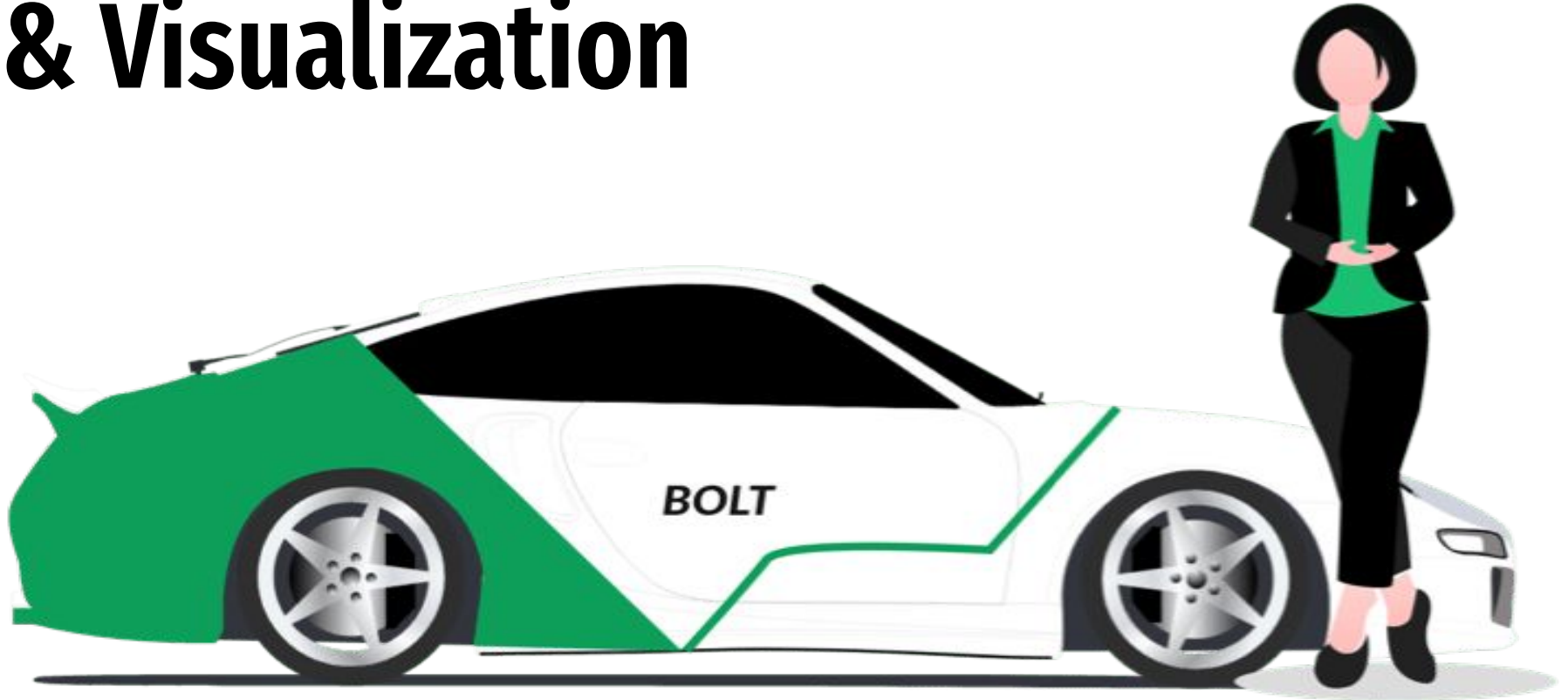
Faster food Delivery leads to better user satisfaction and food gets delivered warm.

Methodology

Next we look at how can we:

- ❏ Compute the time spent by Bolt Courier at Different stages.
- ❏ Identify the largest time spent.
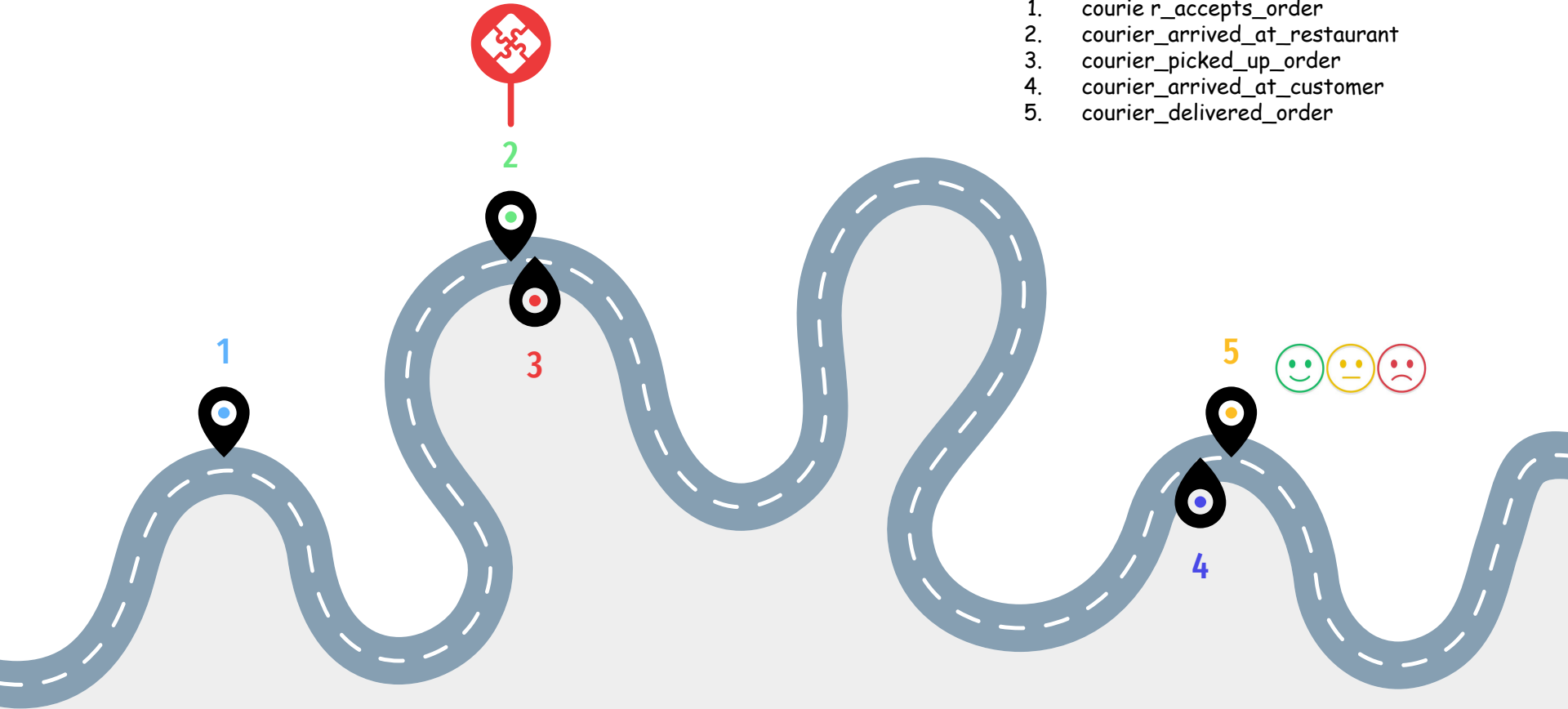- ❏ Propose feature and its validation metrics to solve the problem.
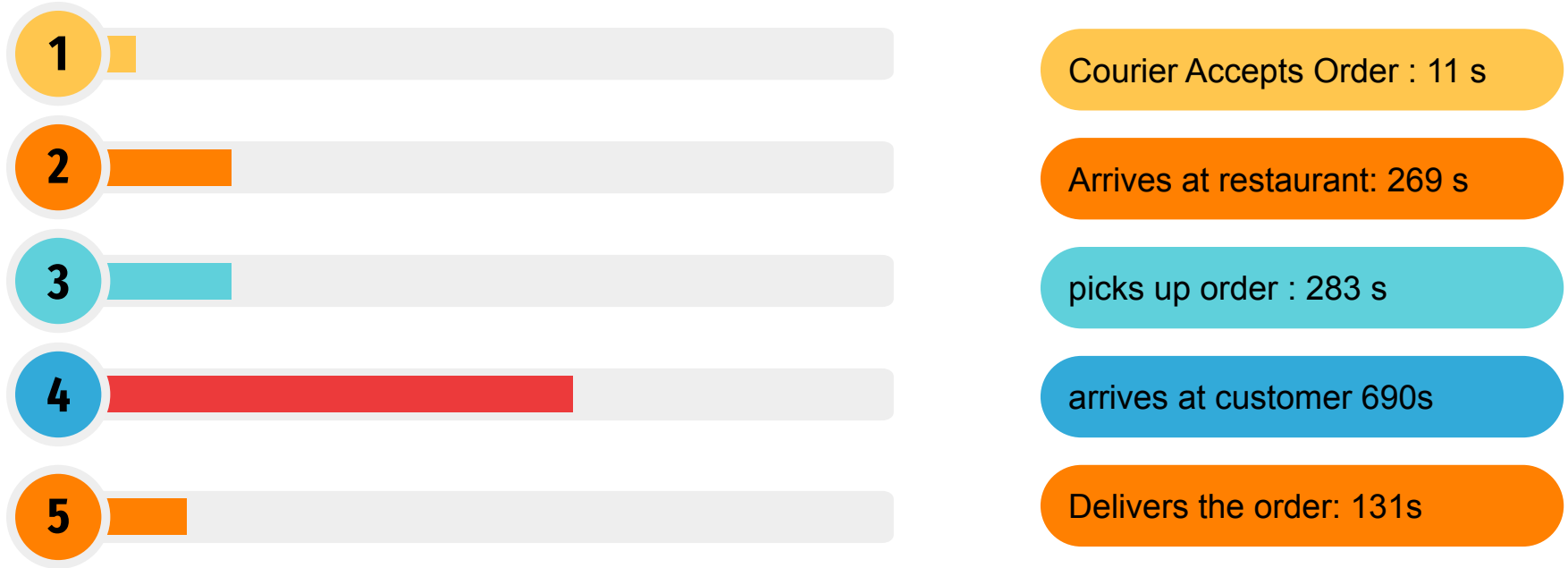
Calculations
& Visualization

Courier Journey

2

1

3

5

4

Mean Time Taken (in Sec)

1 Courier Accepts Order : 11 s

2 Arrives at restaurant: 269 s

3 picks up order : 283 s

4 arrives at customer 690s

5 Delivers the order: 131s

Link to the Data

Key Finding

1505
Restaurant ids

3039
Courier

64k
Number of Orders

1
City : Bucharest

400
Mean distance to Restaurant

2400
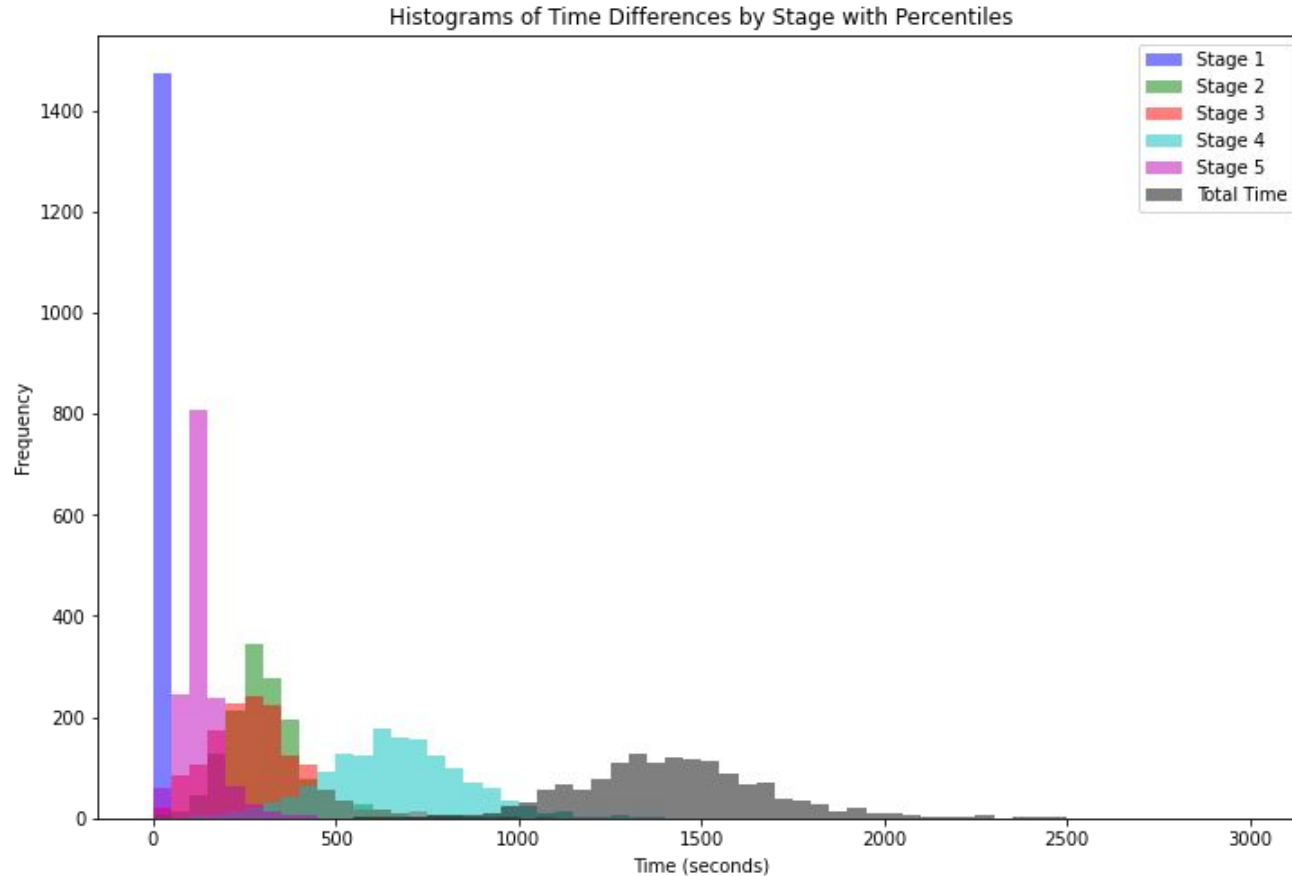Mean Distance to Customer

5.6 kmph
Speed to arrive at Restaurant

12.6 kmph
Speed to reach Customer

Distribution (Mean time taken at Restaurant Level)

Histograms of Time Differences by Stage with Percentiles

Feature 1 : Pickup Optimization

Pain Points	- Based on the data, the reported meal prepared finish time was found to be **45 minutes** before the Courier arrival time. - But Courier is still waiting 283 s ~ 5 mins to pickup the order. This can be due to many reasons: like unable to find Parking, Restaurant packaging issue, Meal not yet prepared etc. **Further splitting down this time is Recommended to see where is the largest scope lies.**
Objective	- Optimize the pickup time by sending more accurate estimated order ready time to the Courier in the app. Because although meal is getting prepared early but issue can be that order is getting dispatched much later from the restaurant. - Based on historical data on average meal prep times for each restaurant. We can build a scaling model for each restaurant based on which we can notify the Courier on when the order will be ready. So that once they reach the location they don't have to wait for the order dispatch.
Experimentation & Metrics	Split the Couriers into 2 segments: **Control**: Couriers get the estimated time on the app based on when the restaurant finishes meal prep. **Treatment**: Courier get the estimated time scaled by a factor depending on which restaurant order is made from. *Note: In order to compute the scale factor we might need to analyze the historical data. [Segmentation]*
Metrics	- P0: Courier Wait time at Restaurant. - P1: Total Order Delivery Time Combining all the stages. Can Add more depending on business needs.

Feature 1 : Dynamic Notification

Data Points	- Based on the finding Courier generally **drive slow (50% speed)** when picking up the orders as compared to when delivering the order. This might be due to: 1. General Behaviour 2. Or the way incentive structure is designed at Bolt which only incentivizes based on time taken to deliver post pickup. Or just
Objective	Notify Couriers nudging them to pick up faster and this encourage couriers to maintain a consistent speed for both pickup and delivery, thereby reducing overall delivery time.
Experimentation & Metrics	Split the Couriers into 2 segments: **Control**: Couriers don't get the notification on the app once they accept the order. **Treatment**: Courier get the notification on the app once they accept the order. Monitor WoW for both the groups
Metrics	P0: Avg Pickup Time
Remarks	**General Reminder** **Message**: "Quick reminder: Fast pickups mean happier customers and bigger bonuses! Keep up the great work!" **Incentive Highlight** **Message**: "Earn extra bonuses for quick pickups! Your average pickup time is improving. Let's keep it up!"

Question Time!

Part 1

Part 2

Part 3