Business Analyst Homework

Bolt

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Homework

In Customer Support world, the number of support request (or "tickets") received is crucial information as it is an image of the volume of work needed to solve them, and therefore of the number of agents needed. Another measure of importance is TPR, or "Tickets Per Ride".

In order to complete this task, we provide you with two .csv files:
- one containing information about tickets of a specific market during a certain period of time,
-the second with information about orders for the same market during the same period.

The task is formed of two parts:
1. Forecast the daily number of agents that will be needed to work on that market to cover the expected volume of tickets for a minimum of 31 days.
2. First, provide a formal definition for "TPR". Then analyse market health, provide insights and conclusions. Explain these insights and conclusions both as you would present to another technical analyst, and to a stakeholder not familiar with the technicalities.

Emphasis should be set on explaining and discussing in detail the processes followed, method used and assumptions made in completing the task. You should also point out any limitations and edge cases, as well as state what additional information (if any) you think were missing from the original problem statement and that would have allowed you to provide more accurate results.

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Some important indicators

Number of tickets

126,431.

- 44,588 in November 2019.
- 43,248 in December 2019.
- 38,595 in January 2020.

(From tickets.csv)

Number of rides

6,560,243.

- 2,277,898 in November 2019.
- 2,422,448 in December 2019.
- 1,859,897 in January 2020.

(From orders.csv)

Average Resolution Time

(hours)

34.38

(Page 12)

Average Response Time

(hours)

13.39

(Page 11)

Agents required

182

(Page 10)

Tickets per Ride

0.018

(Page 14)

Average number of tickets created per day

1,395.10

(Page 13)

Average number of tickets closed per day

1,255.26

(Page 13)

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Some considerations

Analysis

The analysis presented in this document represents the tickets and rides made between 01/12/19 and 12/31/19.

Communication

It is taken into account that the only way for the user to communicate with Bolt is through the app.

Resolution Time

The total_resolution_time field in the tickets.csv table is expressed in hours (see explanation on page 6).

Tickets per month

The number of tickets that an agent can attend per month will be 238 (1).

(1) Retrieved from https://d16cvnquvjw7pr.cloudfront.net/resources/whitepapers/Zendesk_WP_benchmark.pdf Page 6

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Some considerations

Power BI

The Power BI tool has been used to manage the information provided (2).

Shifts

The number of hours per day that each agent would work would be 8, in three shifts:

- 0 to 8.

- 8 to 16.

- 16 to 24

Fields created

In order to get the most out of the Power BI tool, the following fields were created for information management. Such fields are related to the "tickets" table.

R **resolution_time**

Field created to verify if the total_resolution_time field from the file "tickets.csv" was expressed in hours or minutes. This field comes out of the difference between the moment the ticket is created (tickets [ticket_created_at]) and the moment it is resolved (tickets [ticket_first_responded_at]). The value is expressed in hours.

resolution_time = DATEDIFF(tickets[ticket_first_responded_at],tickets[ticket_last_solved_at],HOUR)

R **response_time**

Field very necessary to calculate the average response time. It comes out of the difference between the time the ticket is created (tickets [ticket_created_at]) and the employee's first response (tickets [ticket_first_responded_at]). The value is expressed in hours.

response_time = DATEDIFF(tickets[ticket_created_at],tickets[ticket_first_responded_at],HOUR)

M **month_created**

Field indicating in which month each ticket was created. It has been very useful to be able to filter the different graphs shown in the power BI file.

month_created = tickets[ticket_created_at].[Month]

D **day_created**

Field indicating on which day each ticket was created.

day_created = tickets[ticket_created_at].[Day]

H **hour_created**

Field indicating on which hour each ticket was created. It has been a very useful field when it comes to detecting ranges where there are more tickets created. It has served as a base to create the different shifts.

hour_created = HOUR(tickets[ticket_created_at])

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Fields created

In order to get the most out of the Power BI tool, the following fields were created for information management. Such fields are related to the "tickets" table.

S **shift**

Field identifying in which shift each ticket was made. By knowing what time the ticket was created (field "hour_created"), I can determine which shift it corresponds to. This information is useful to know to which shift to assign more agents.

Shift = IF(tickets[hour_created] < 8,"0 - 8",IF(tickets[hour_created] < 16,"8 - 16","16 - 24"))

M **month_solved**

Field indicating in which month each ticket was resolved.

month_solved = tickets[ticket_last_solved_at].[Month]

D **day_solved**

Field indicating in which day each ticket was resolved.

day_solved = tickets[ticket_last_solved_at].[Day]

R **response_time_bands**

Field indicating if the agent's first contact with a ticket was within 24 hours of creating the ticket, one week or if it has been more than 7 days.

response_time_bands = IF(tickets[response_time] < 1,"Less than 24hs",IF(tickets[response_time] < 168,"Between 1 - 7 days","More than a week"))

R **resolution_time_bands**

Field indicating if a ticket was resolved in 24 hours, in a week or if it took more than 7 days.

resolution_time_bands = IF(tickets[total_resolution_time] < 1,"Less than 24hs",IF(tickets[total_resolution_time] < 168,"Between 1 - 7 days","More than a week"))

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Fields created

In order to get the most out of the Power BI tool, the following fields were created for information management. Such fields are related to the "orders" table.

M

month_ride

Field indicating in which month each order was made. It has been very useful to filter the different graphs that are shown in the power BI file.

month_ride = 'orders (1)'[created].[Month]

H

hour_ride

Field indicating at what time each order was made. It has been a very useful field when it comes to detecting ranges where there are more rides. It has served as a base to create the different shifts.
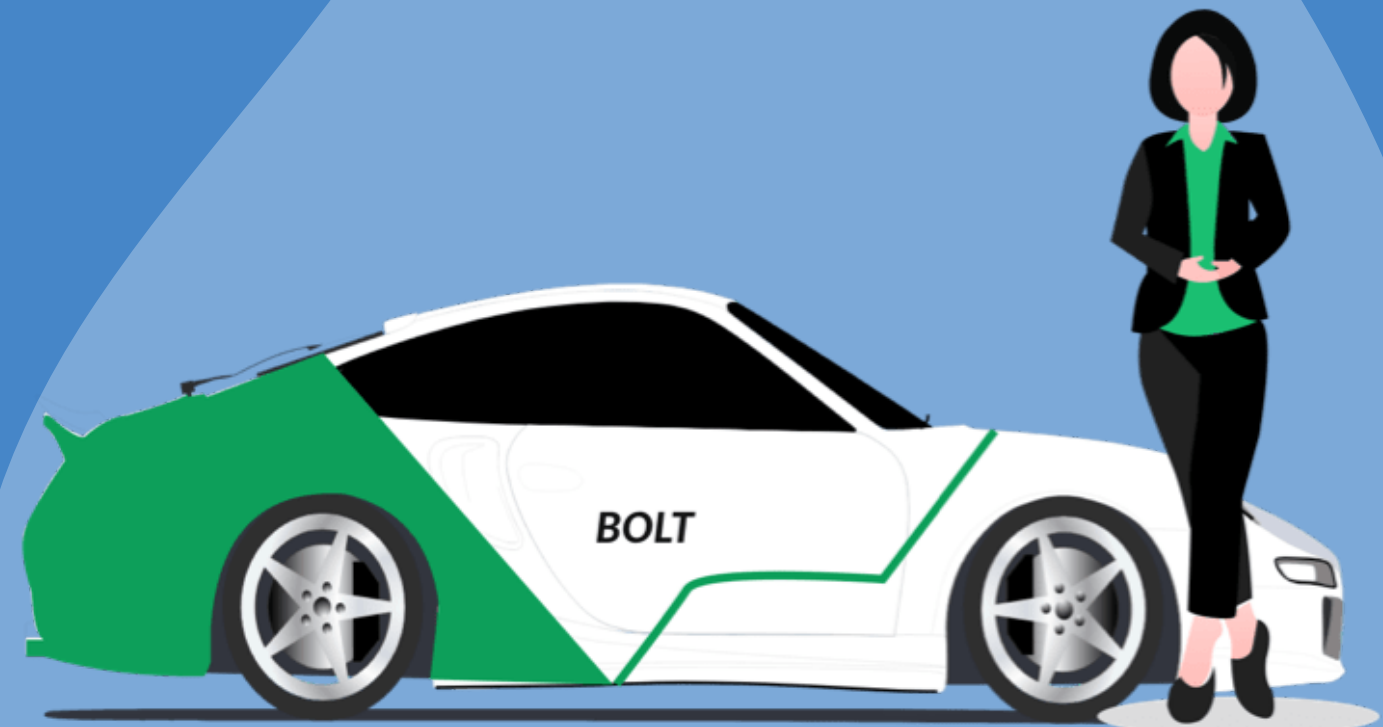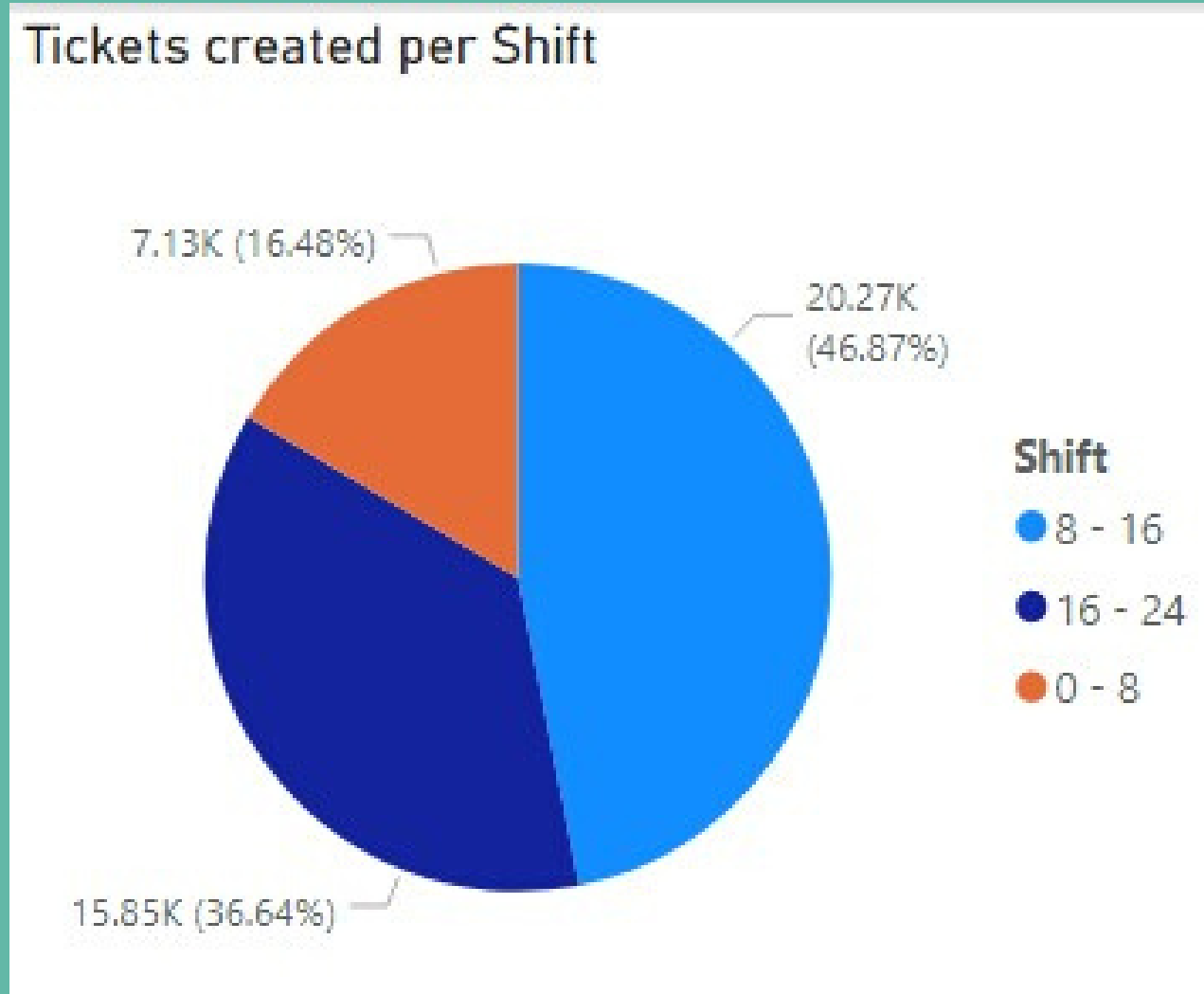
hour_ride = HOUR('orders (1)'[created])

S

shift

Field identifying in which shift each order was made.

Shift = IF('orders (1)'[hour_ride] < 8,"0 - 8",IF('orders (1)'[hour_ride] < 16,"8 - 16","16 - 24"))

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Bolt - KPIs

Agents required

Tickets created per Shift

7.13K (16.48%)

20.27K (46.87%)

Shift
- 8 - 16
- 16 - 24
- 0 - 8

15.85K (36.64%)

To obtain the required number of agents, the number of tickets created in December (43,248) must be divided by the number of tickets an agent can solve per month (238).

Agents in total: 182.

To distribute the 182 agents in the 3 shifts, the number of tickets generated in each of them must be taken into account. To obtain this information, it is crucial to use the graph "Tickets created per Shift".

In the graph we can see that 46.87% of the tickets generated in the month of December were between 8 and 16 hours. If we use the same percentage to obtain the number of agents to assign to that shift, the result will be 86.
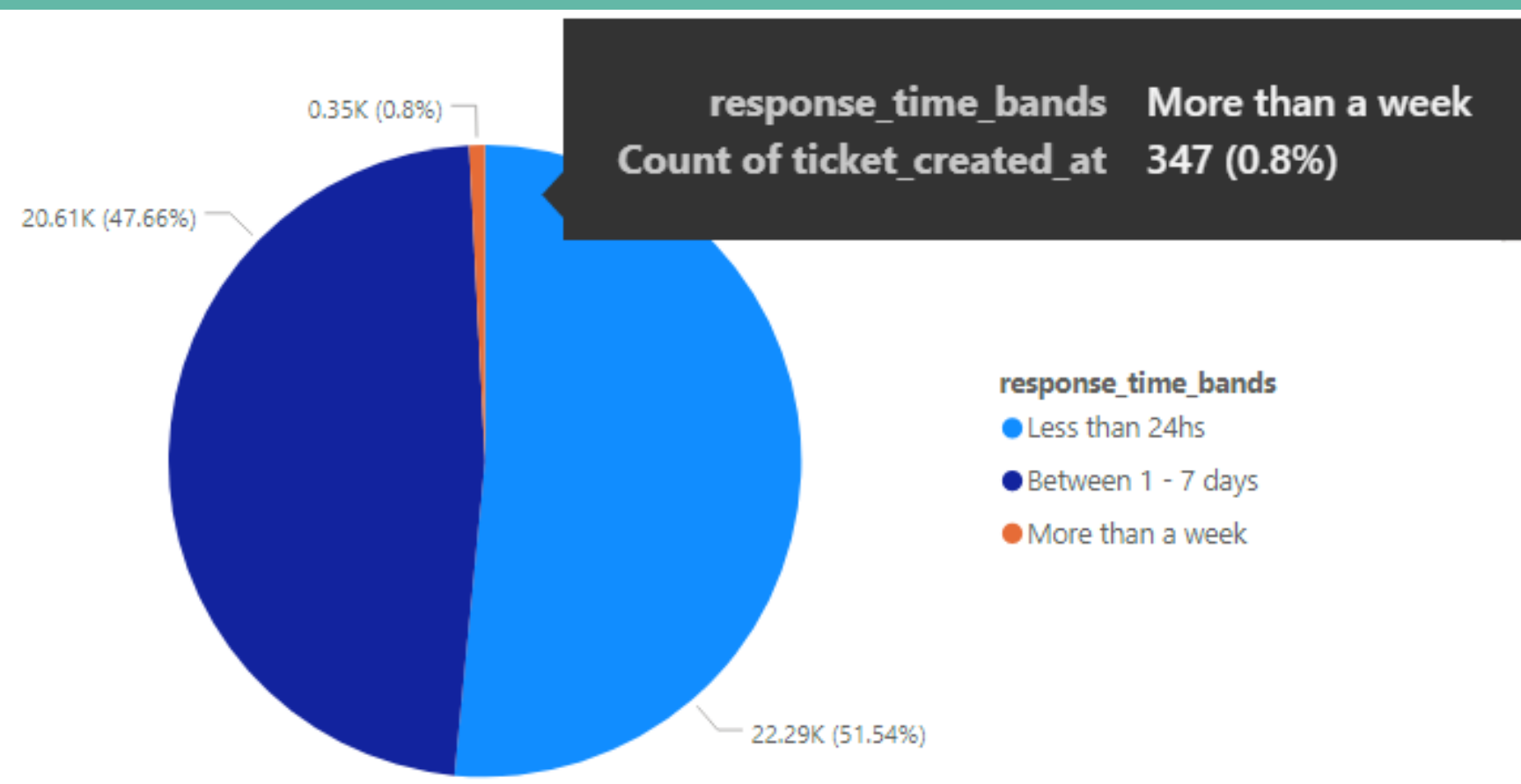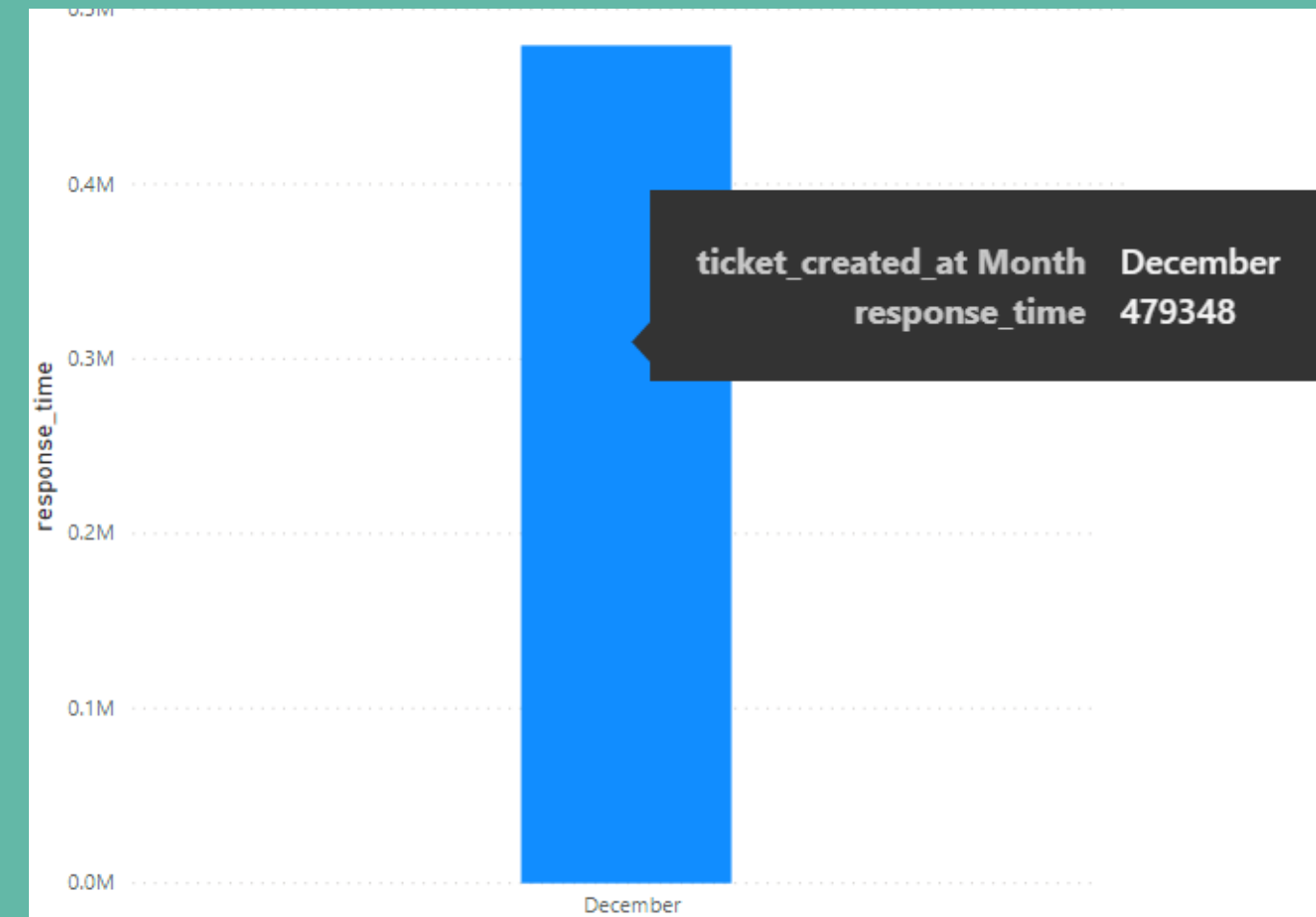
Following the same logic, 67 agents could be assigned to the shift from 16 to 24 hours and the remaining 29 would be in charge of the night shift (0 -8).

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Response time

We call response time the time between ticket creation date and the first technician response.

Take the total response time (479,348) of the December tickets and divide it by the result of the number of tickets created in the same month (43,248) minus the 7,441 records that had no data in the response_time field, (35,807).

This gives an average response time of 13.39 Hrs (479,348) / (35,807).

ticket_created_at Month — December
response_time — 479348

response_time_bands — More than a week
Count of ticket_created_at — 347 (0.8%)

0.35K (0.8%)

20.61K (47.66%)

response_time_bands
- Less than 24hs
- Between 1 - 7 days
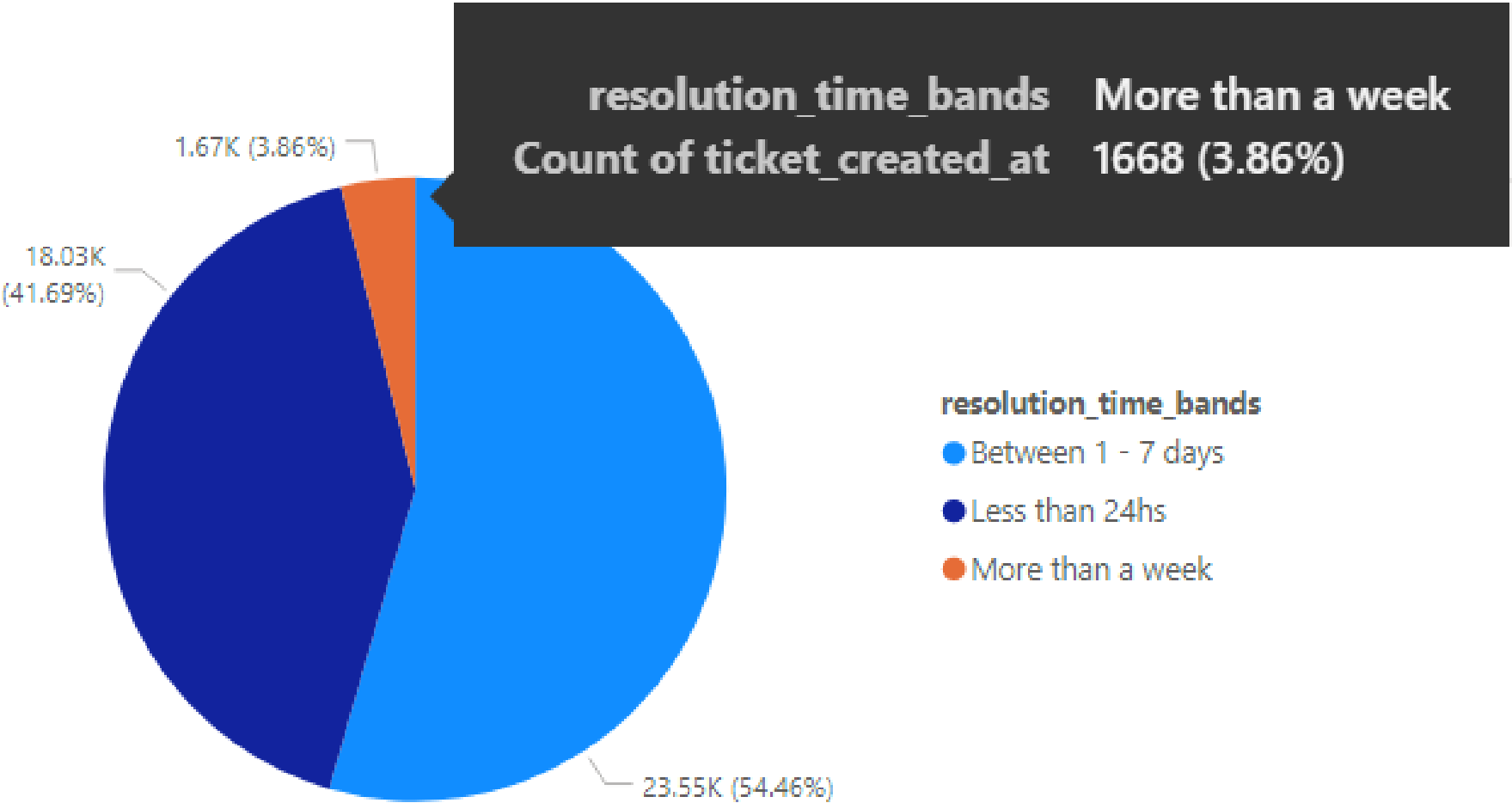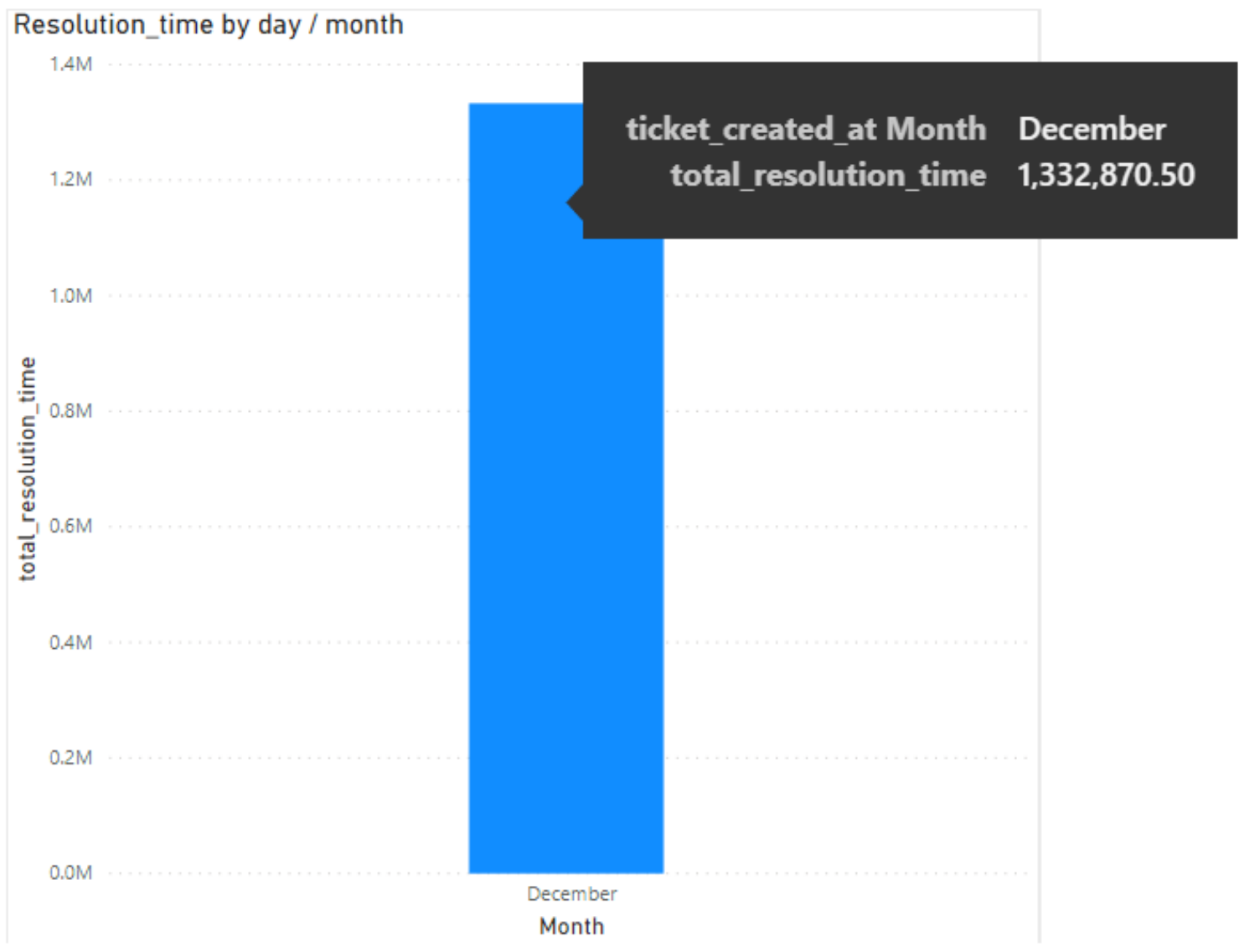- More than a week

22.29K (51.54%)

If we exclude the 347 tickets whose response_time has been greater than one week (a total of 101,135 hours), then the average response time would be 10.66 hours (479,348 - 101,135) / (35,807 - 347).

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Resolution time

We call resolution time the time between ticket creation and closure dates.

Take the total resolution time (1,332,870.5) for December tickets and divide it by the result of the number of tickets created in the same month (43,248) minus the 4,481 records that had no data in the total_resolution_time field, (38,767).

This gives an average resolution time of 34.38 Hrs. (1,332,870.5) / (38,767).

Resolution_time by day / month

ticket_created_at Month   December
total_resolution_time   1,332,870.50

total_resolution_time

1.4M
1.2M
1.0M
0.8M
0.6M
0.4M
0.2M
0.0M

December
Month

resolution_time_bands   **More than a week**
Count of ticket_created_at   **1668 (3.86%)**

1.67K (3.86%)

18.03K (41.69%)

resolution_time_bands
- Between 1 - 7 days
- Less than 24hs
- More than a week

23.55K (54.46%)

If we exclude the 1,668 tickets whose resolution_time has been greater than one week (a total of 540,479.33 hours), then the average resolution time would be 21.36 hours (1,332,870.5 - 540,479.33) / (38,767 - 1,668).

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Tickets

43,248 — Tickets created in December

38,913 — Tickets resolved in December

1,395.10 — Average number of tickets created per day

1,255.26 — Average number of tickets resolved per day

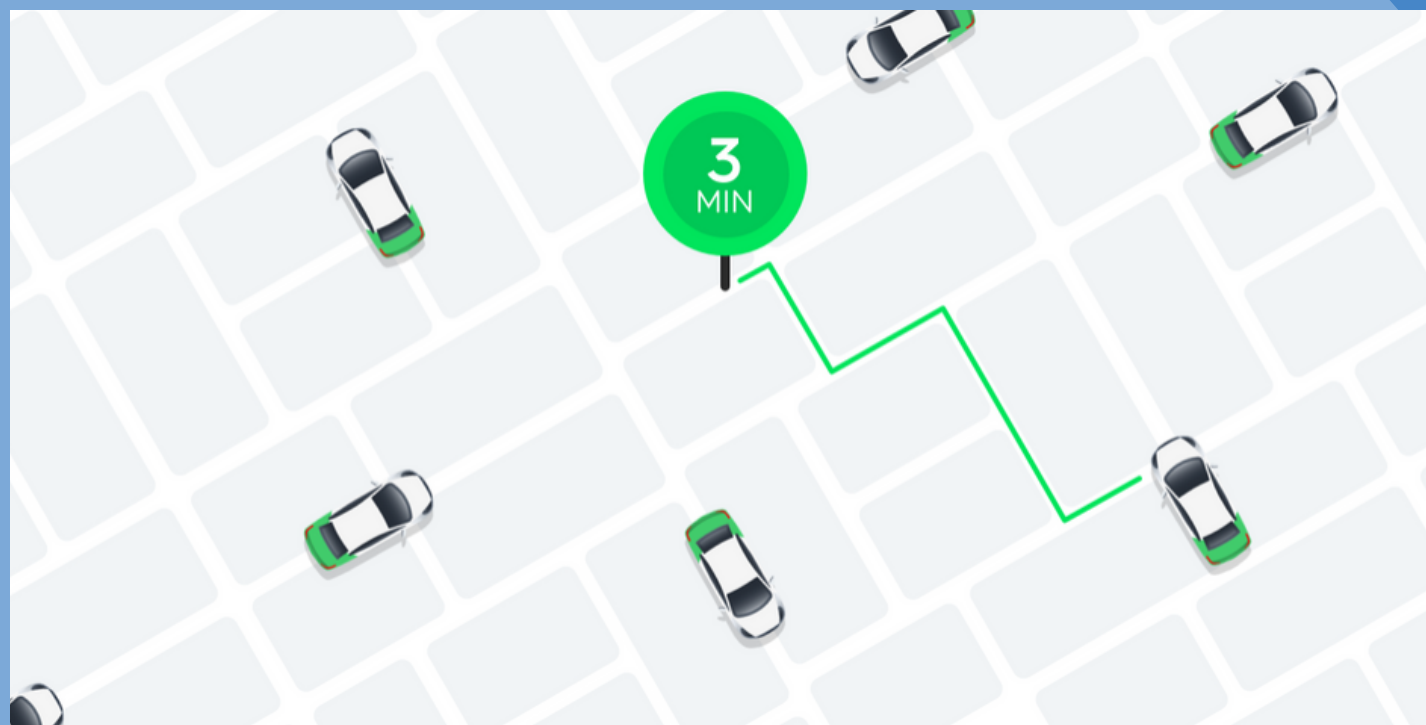**11** — Day with the highest number of tickets created (1,822)

20 — Day with the highest number of tickets resolved (1,567)

26 — Day with the lowest number of tickets created (830)

25 — Day with the lowest number of tickets resolved (894)
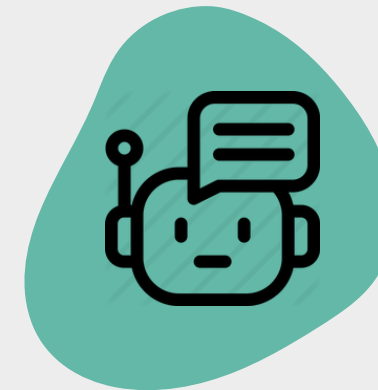
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Tickets per Ride

Tickets per ride is an indicator of the state of the customer experience. The less often customers have to contact help desk, the easier and better a time they're having doing business with the company.

In order to calculate this metric, we have to divide the number of support requests (43,248) by the number of orders (2,422,448) in a given timeframe (December).
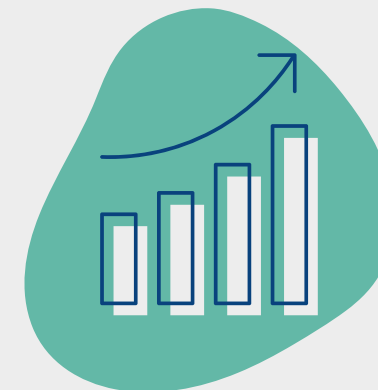
In the case of December, this number would be 0.018.

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Strategies to improve the the market's health

Chatbot

While it is true that between 2017 to 2019, the Bolt's team reduced incoming support volume (tickets per ride) by 70 percent (3), a support chatbot would reduce resolution times providing automatic answers and guidance for the common ticket.

Process

Increase productivity by defining clear team work processes and utilizing tools that speed up those processes. With a proper method and structure the team will be able to handle any case which comes in.

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(3) Retrieved from https://www.zendesk.com/customer/bolt/

Thank you

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