**Aggregation Questions**

1. What are the top 5 cities with the highest number of customer support contacts for each contact type?

Explanation: The purpose of this question is to identify those cities have more problems in their service than others and in next step we can focus more on these cities and using root cause strategies to decrease contacts with call center.

Aggregate Query:

db.Ticket.aggregate([

{

$group: {

\_id: {

contact\_type: "$contact\_type",

city: "$pickup\_location.city"

},

total\_contacts: { $sum: 1 }

}

},

{

$sort: {

"\_id.contact\_type": 1,

total\_contacts: -1

}

},

{

$group: {

\_id: "$\_id.contact\_type",

top\_cities: {

$push: {

city: "$\_id.city",

total\_contacts: "$total\_contacts"

}

}

}

},

{

$project: {

top\_cities: { $slice: ["$top\_cities", 5] }

}

}

]);

Outcome:

A screenshot of a table

Description automatically generated

A close up of a grey surface

Description automatically generated

1. How many tickets were submitted for Luxury and Premium rides, and how does that compare to tickets for Shared and Standard rides?

Explanation: The purpose of this question is to determine whether passenger contact is related to ride type and passenger expectation or not? According to result we can’t conclude that those people who pay more have higher expectations because standard and shared rides have higher contacts that luxury and premium ones respectively.

Query:

db.Ticket.aggregate([

{

$group: {

\_id: "$ride\_type", // Group by ride type

total\_tickets: { $sum: 1 } // Count the number of tickets for each ride type

}

},

{

$sort: { total\_tickets: -1 } // Sort by total tickets in descending order

}

]);

A table with numbers and text

Description automatically generated

A screenshot of a computer

Description automatically generated

1. What is the average customer satisfaction rate (for rides, drivers, and agents) and the total ride cost in each month of 2024 from highest revenue to lowest revenue monthly?

Explanation: we want to identify which months we have lower income, driver rate score, agent CSAT, and also ride satisfaction rate in 2024.

Query:

db.Ticket.aggregate([

{

$match: {

"pickup\_date.year": 2024 // Filter documents for the year 2024

}

},

{

$group: {

\_id: "$pickup\_date.month\_name", // Group by month name

average\_ride\_satisfaction: { $avg: "$customer\_ride\_rate" },

average\_driver\_satisfaction: { $avg: "$customers\_driver\_rate" },

average\_agent\_satisfaction: { $avg: "$customer\_agent\_rate" },

total\_ride\_cost: { $sum: "$ride\_cost" }

}

},

{

$sort: { total\_ride\_cost: -1 } // Sort by total ride cost in descending order

},

{

$project: {

\_id: 0,

month: "$\_id",

average\_ride\_satisfaction: 1,

average\_driver\_satisfaction: 1,

average\_agent\_satisfaction: 1,

total\_ride\_cost: 1

}

}

]);

A table with numbers and a number of people

Description automatically generated with medium confidence

A grey rectangular object with white border

Description automatically generated

1. How many tickets are associated with each agent expertise level (Beginner, Intermediate, Advanced, Expert) grouped by ticket status, and what is the average customer\_agent\_rate for each expertise level?

Explanation: the purpose of this question is to determine whether there is a relationship between level of expertise for each agent and their ability to manage their contacts or not?

Query:

db.Ticket.aggregate([

{

$group: {

\_id: {

expertise\_level: "$agent.experience\_level", // Group by agent expertise level

ticket\_status: "$status" // Also group by ticket status

},

ticket\_count: { $sum: 1 }, // Count the number of tickets

average\_customer\_agent\_rate: { $avg: "$customer\_agent\_rate" } // Calculate the average customer\_agent\_rate

}

},

{

$group: {

\_id: "$\_id.expertise\_level", // Regroup by expertise level

statuses: {

$push: {

status: "$\_id.ticket\_status",

ticket\_count: "$ticket\_count"

}

},

overall\_average\_customer\_agent\_rate: { $avg: "$average\_customer\_agent\_rate" }

}

},

{

$project: {

\_id: 0,

expertise\_level: "$\_id", // Rename `\_id` to `expertise\_level`

statuses: 1,

overall\_average\_customer\_agent\_rate: 1

}

}

]);

A screenshot of a computer

Description automatically generated

A screenshot of a computer program

Description automatically generated

1. What is the total number of tickets, average ride duration, and average ride cost grouped by vehicle type and vehicle class?

Explanation: we aim to identify the relations between contacts with customer support service and the type and class of vehicles.

Query:

db.Ticket.aggregate([

{

$group: {

\_id: {

vehicle\_type: "$vehicle.vehicle\_type",

vehicle\_class: "$vehicle.vehicle\_class"

},

total\_tickets: { $sum: 1 }, // Count the number of tickets

average\_ride\_duration: { $avg: "$ride\_duration" },

average\_ride\_cost: { $avg: "$ride\_cost" }

}

},

{

$sort: { total\_tickets: -1 } // Sort by total tickets in descending order

},

{

$project: {

\_id: 0,

vehicle\_type: "$\_id.vehicle\_type",

vehicle\_class: "$\_id.vehicle\_class",

total\_tickets: 1,

average\_ride\_duration: 1,

average\_ride\_cost: 1

}

}

]);

A screenshot of a computer

Description automatically generated

A table with numbers and text

Description automatically generated