# Crave Executive Dashboard

**By Kriti Srivastava**

# Board Members requirements for dashboard

- The board has requested that IT provide a means to have reporting of the net revenue against the annual goals by region for the entire organization. The CEO (Tomas) would like the ability to select a region and see a ranking of the properties by net revenue for the year.
- Chief Financial Officer has requested a way to see the trend over time of the key financial measures (gross revenue, expenses, net revenue). She would like to see this over a two-year period by quarter. Note: Cost of Goods and Wages are components of Expense.
- The VP of Sales would like to be able to see current year gross revenue by quarter compared to prior year gross revenue by quarter. The Chief Marketing Officer would like to see the net revenue vs. goals for the customer categories.
- Chief Operations Officer would like to understand the overall costs of goods by region this year to try to see how the costs are distributed across the different geographies.

# Crave
## Executive dashboard

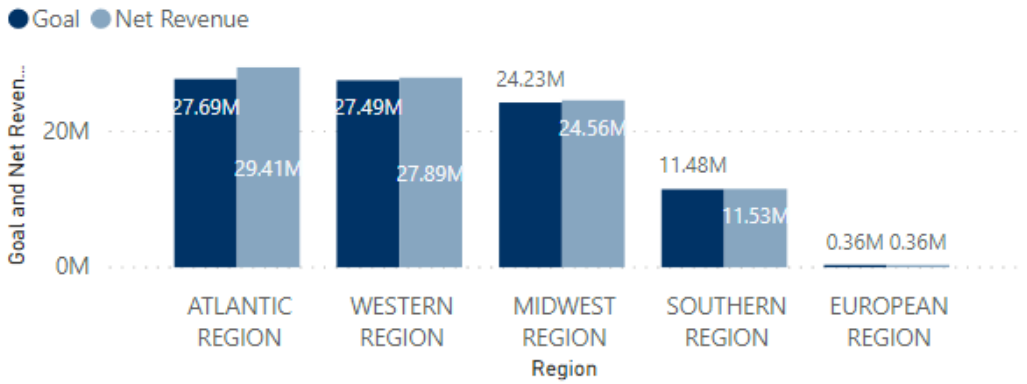
**2019**

**Region**
- ☐ ATLANTIC REGION
- ☐ EUROPEAN REGION
- ☐ MIDWEST REGION
- ☐ SOUTHERN REGION
- ☐ WESTERN REGION

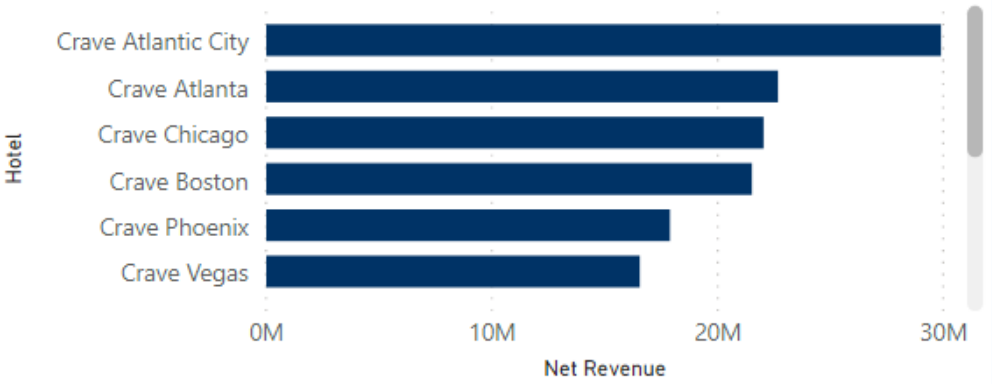
**Customer Ca...**
- ☐ Corporate
- ☐ Repeat Customers
- ☐ Special Events
- ☐ Walk In Customers

**Product**
- ☐ Casino Gaming
- ☐ Guest Room
- ☐ Restaurants
- ☐ Salon Services
- ☐ SPA Services

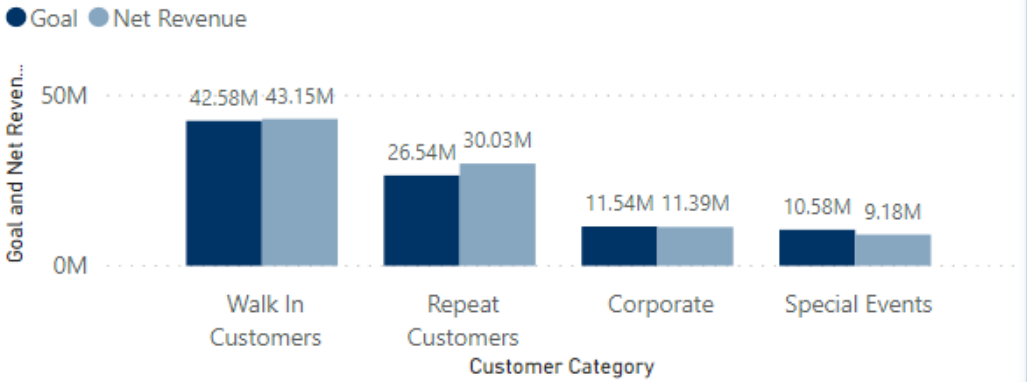
## Goal vs Net Revenue over Region



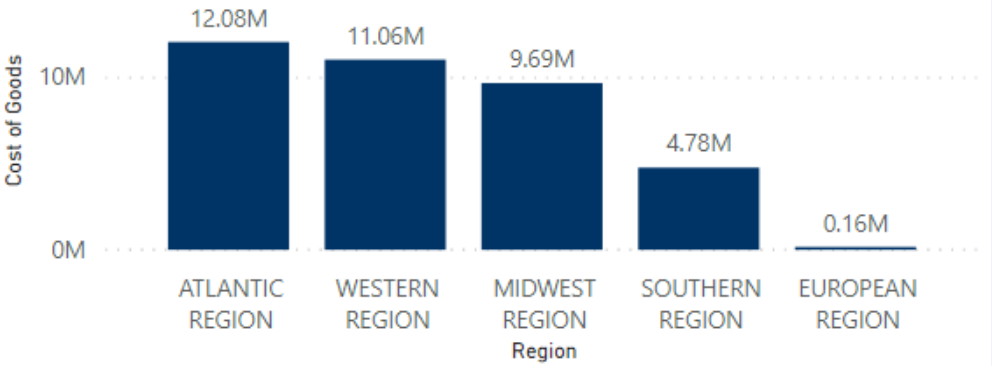

## Hotel Ranks by Net Revenue



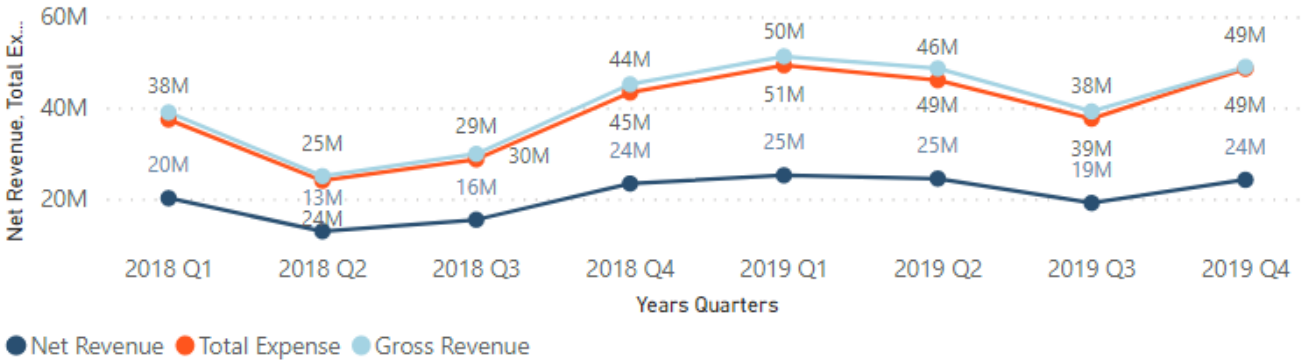

## Goal vs Net Revenue over Customer Category




## Cost of Goods by Region




## Net Revenue, Expense and Gross Revenue by Year and Quarter




## Gross Revenue

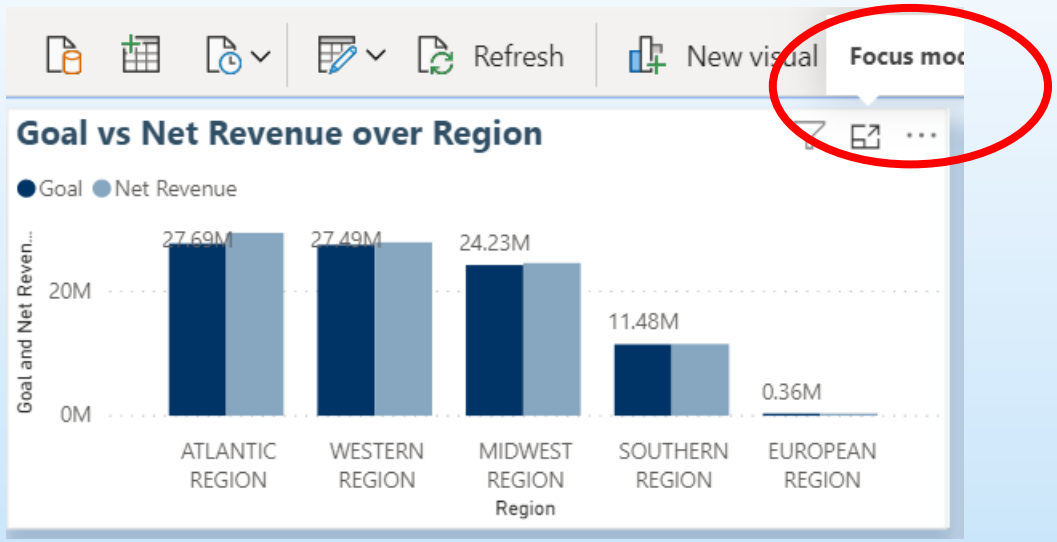
| Quarter | 2018 | 2019 |
|---|---|---|
| Q1 | 39,175,909.12 | 51,475,650.70 |
| Q2 | 25,213,812.97 | 48,808,768.10 |
| Q3 | 30,078,611.89 | 39,396,609.33 |
| Q4 | 45,345,446.39 | 49,162,426.84 |
| **Total** | **139,813,780.37** | **188,843,454.97** |

# Dashboard Details

- Power BI is used to build this dashboard prototype.
- The dashboard title “Crave Executive Dashboard” is on the top left corner.
- Below the title, there is the year for which the dashboard represents the data.
- The three filters, as decided in the mockup are:
  - Region
  - Customer Category
  - Product
- The dashboard has five charts as:
  - Goal vs. Net Revenue over Region
  - Cost of Goods by Region
  - Net Revenue, Expense and Gross Revenue by Year and Quarter
  - Goal vs. Net Revenue over Customer Category
  - Hotel Ranks by Net Revenue

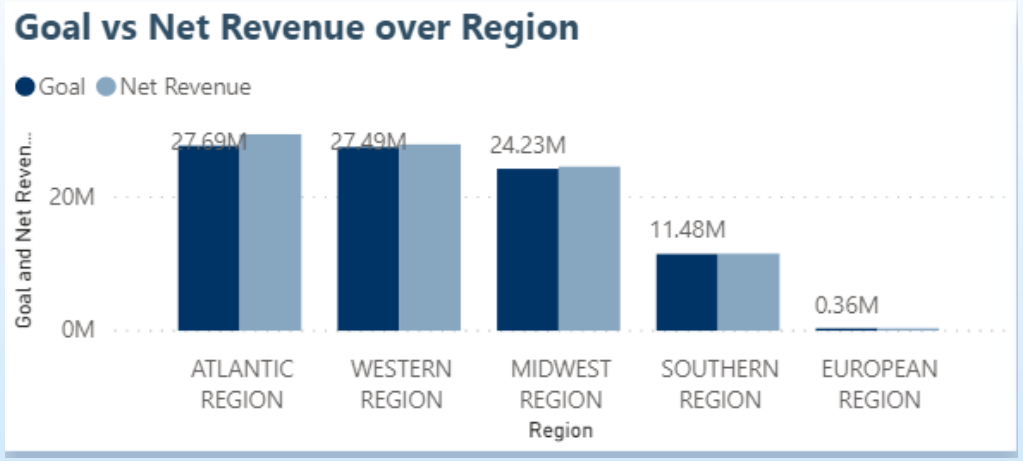
# Details (Cont..)

- The dashboard has one table to show the Gross Revenue measures for current
- All the charts can be viewed separately by selecting “Focus mode” on the top right corners.
- Return to the dashboard by clicking “Back to report”.

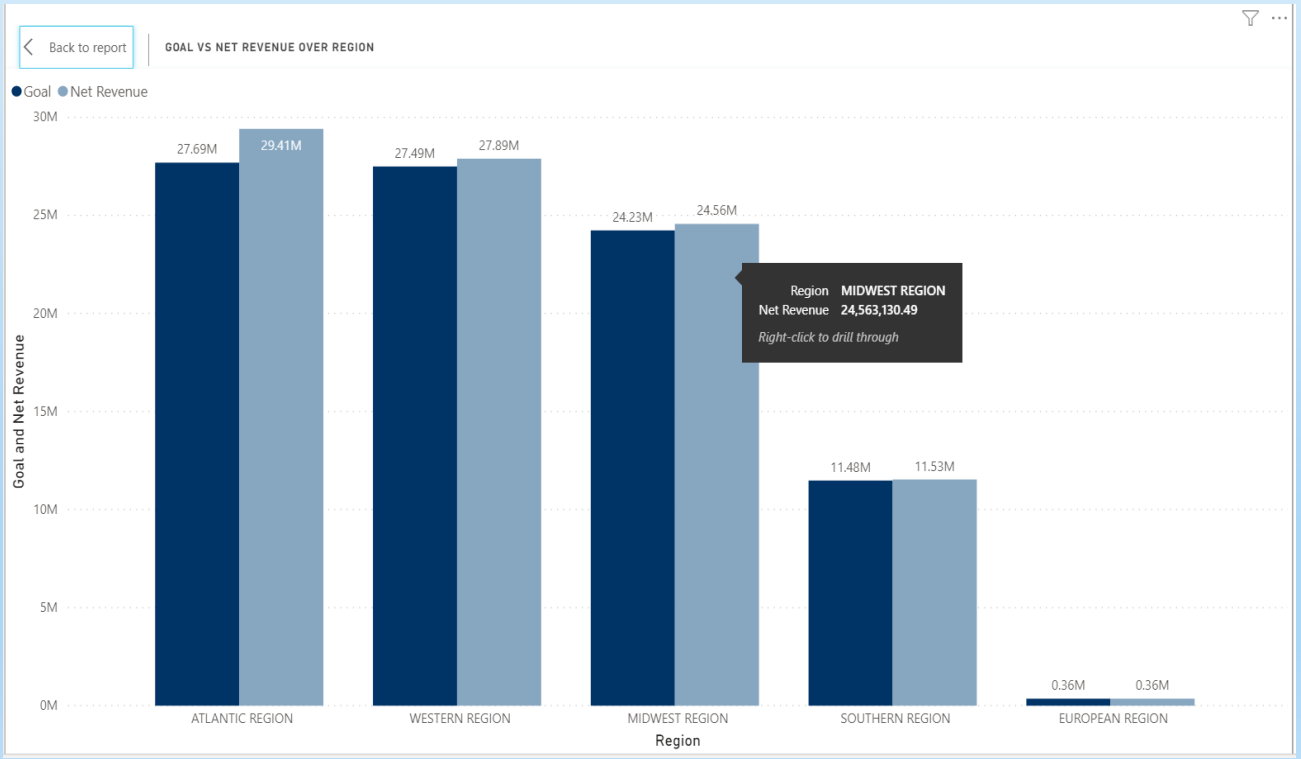


# Goal vs Net Revenue over Region

- The “Goal vs. Net Revenue over Region” is a vertical bar graph with Goal and Net Revenue on the y-axis and Region on the x-axis.
- This chart is created to address the board request to show the net revenue and the Goal by Region for the entire organization.  The graph has two legends one for Goal and another for net revenue achieved.
- I choose a vertical bar graph because, here I am trying to show the information of two numerical measures, “net revenue” and “goals” over a categorical data “Region.
- The bar graph is best to display the categories, and with the help of bars, it is easier to perceive which Region achieved more revenue.
- Having bars for “Goal” and “Net Revenue” side by side helps to see if the Region meet the Goal and how much is the difference between “Goal” and “Net Revenue”.



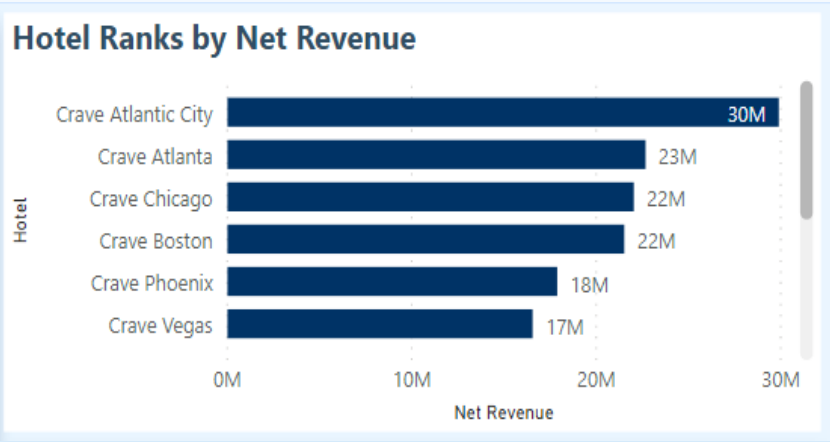

On Dashboard



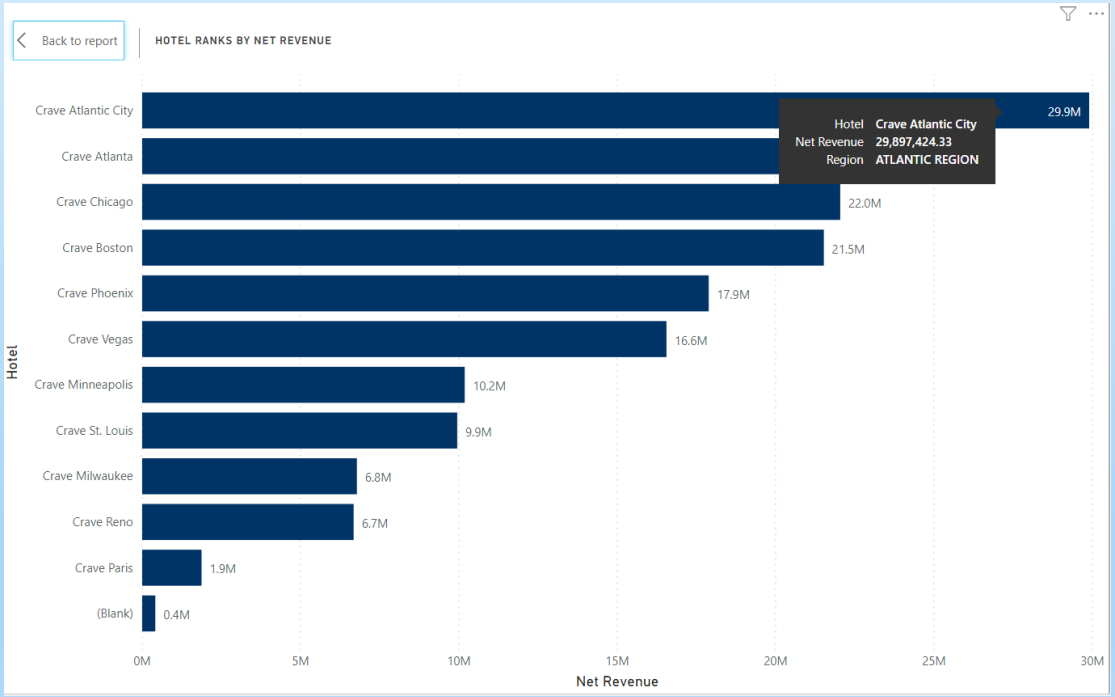

Focus Mode

# Hotel Ranks by Net Revenue

- This chart is to address the CEO (Tomas) request to show the ranking of the properties within the selected Region by net revenue for the year.
- The horizontal bar chart is to represent the ranking of the properties (Hotels) associated with the selected Region sorted by their Net Revenue of the year in descending order.
- Hotel with the maximum net revenue appears on top, and the hotel with the least net income appears at the bottom.
- On “mouser over” the bar, appears a tooltip with the details related to the hotel associated with it.



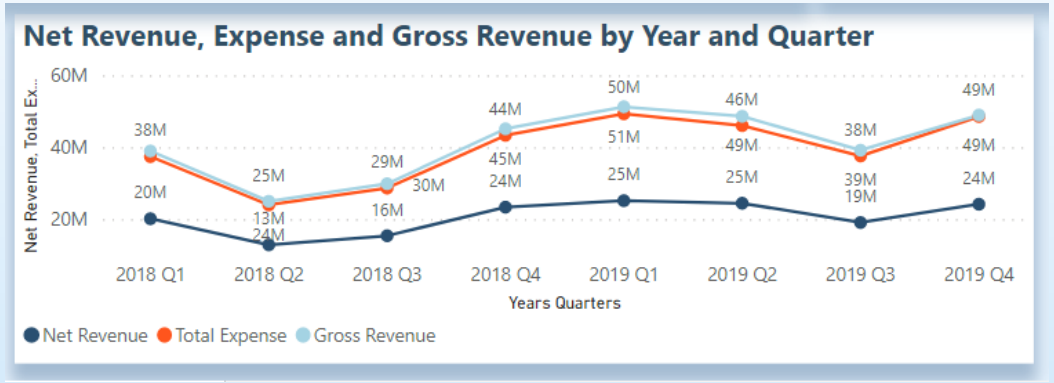

On Dashboard



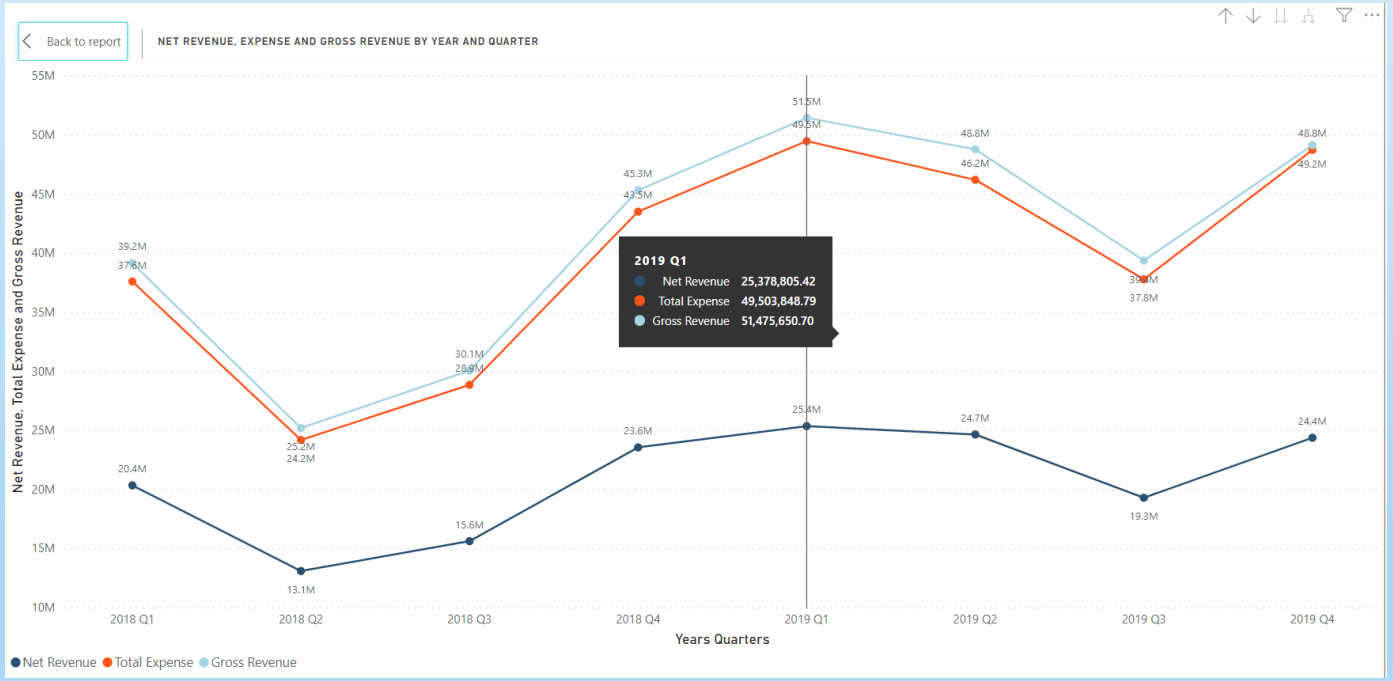

Focus Mode

# Net Revenue, Expense and Gross Revenue by Year and Quarter

- This is the line chart that is created to accommodate the Chief Financial Officer request to see the trend of gross revenue, expenses, net revenue over a two-year period by quarters.
- Expense in this chart is the sum of the following measures:
  - Expense
  - Cost of Goods
  - Wages
- The line chart is well suited to show the trend over time because the connection of points has a visual metaphor to represents continuous change over time.
- On the tooltip appears when “Mouse over” on any points.
- The tooltip shows a year, quarter, gross revenue, total expense, and net revenue.



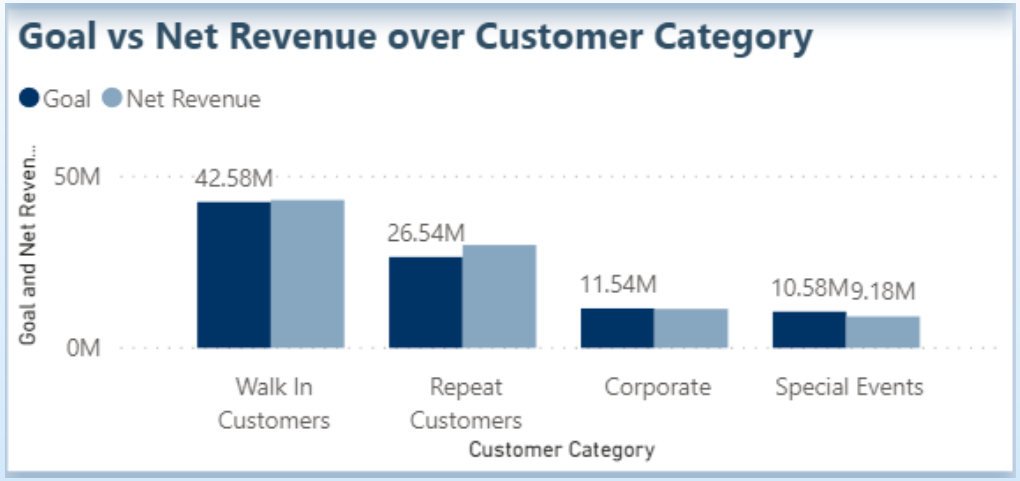

On Dashboard



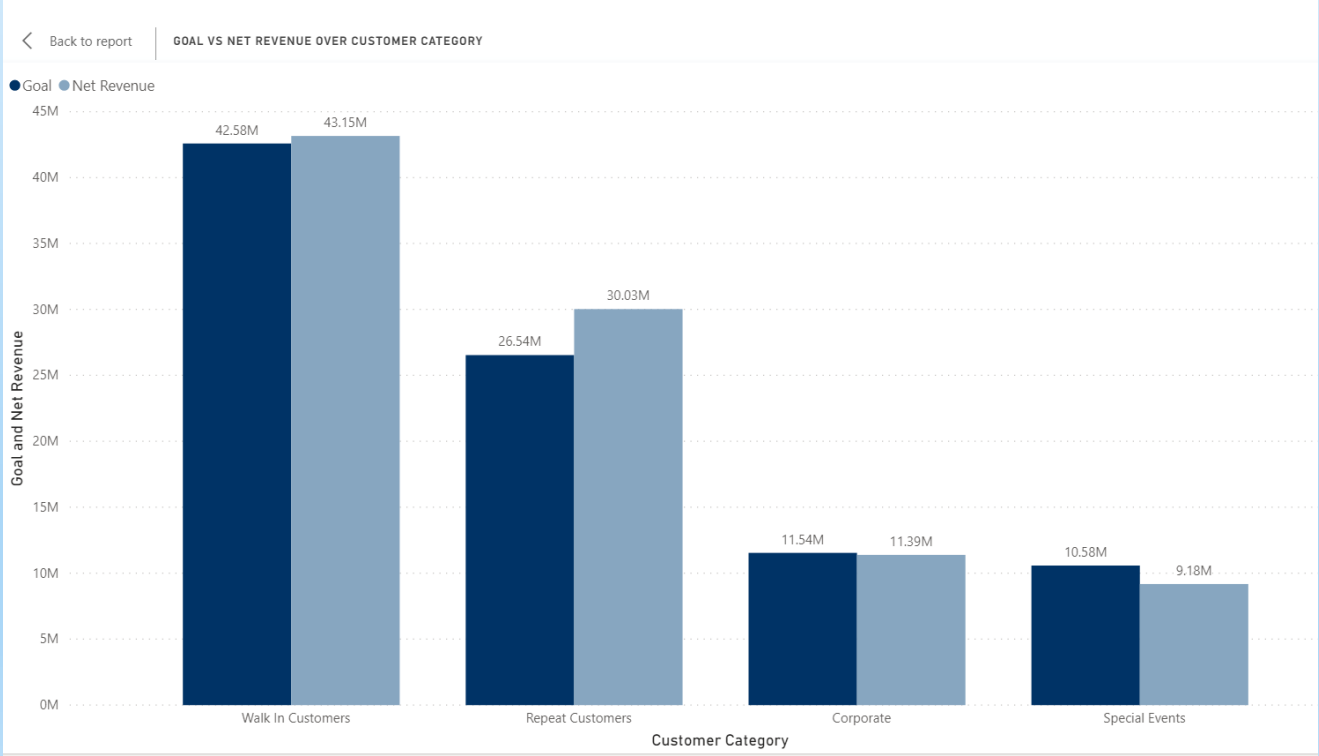

Focus Mode

# Goal vs Net Revenue over Customer Category

- The “Goal vs. Net Revenue over Customer Category” is a vertical bar graph with Goal and Net Revenue on the y-axis and Customer Category on the x-axis.
- This chart is created to address the Chief Marketing Officer’s request to see the net revenue vs. goals for the customer categories.
- The graph has two legends one for Goal and another for net revenue achieved.
- Similar to “Goal vs. Net Revenue over Region” graph, I choose a vertical bar graph because with bar chart can show the information of two numerical measures “net revenue” and “goals” over a categorical data “Customer Category”.
- The bar graph is best to display the categories, and with the help of bars, it is easier to perceive which region achieved more net revenue.
- Having bars for “Goal” and “Net Revenue” side by side helps to see if the Goal is met by the customer category and how much is the difference between “Goal” and “Net Revenue” .



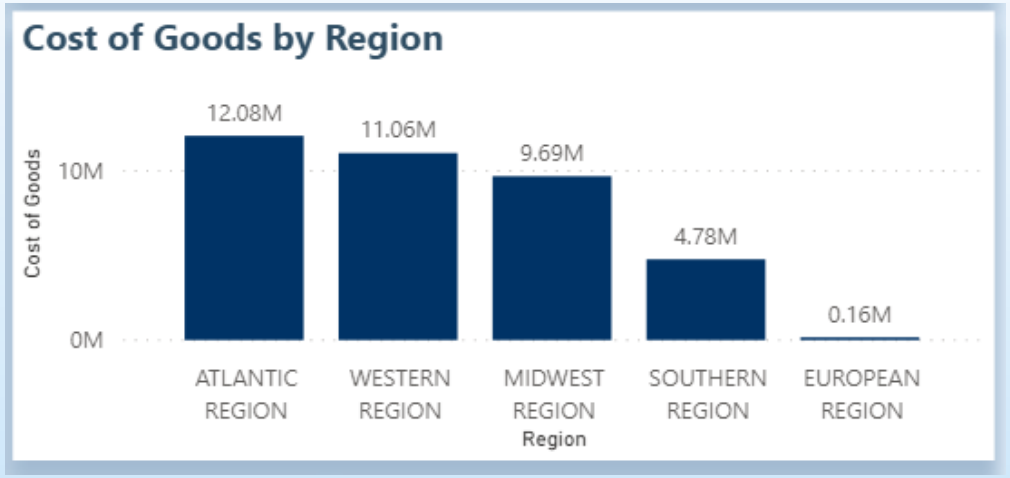

On Dashboard



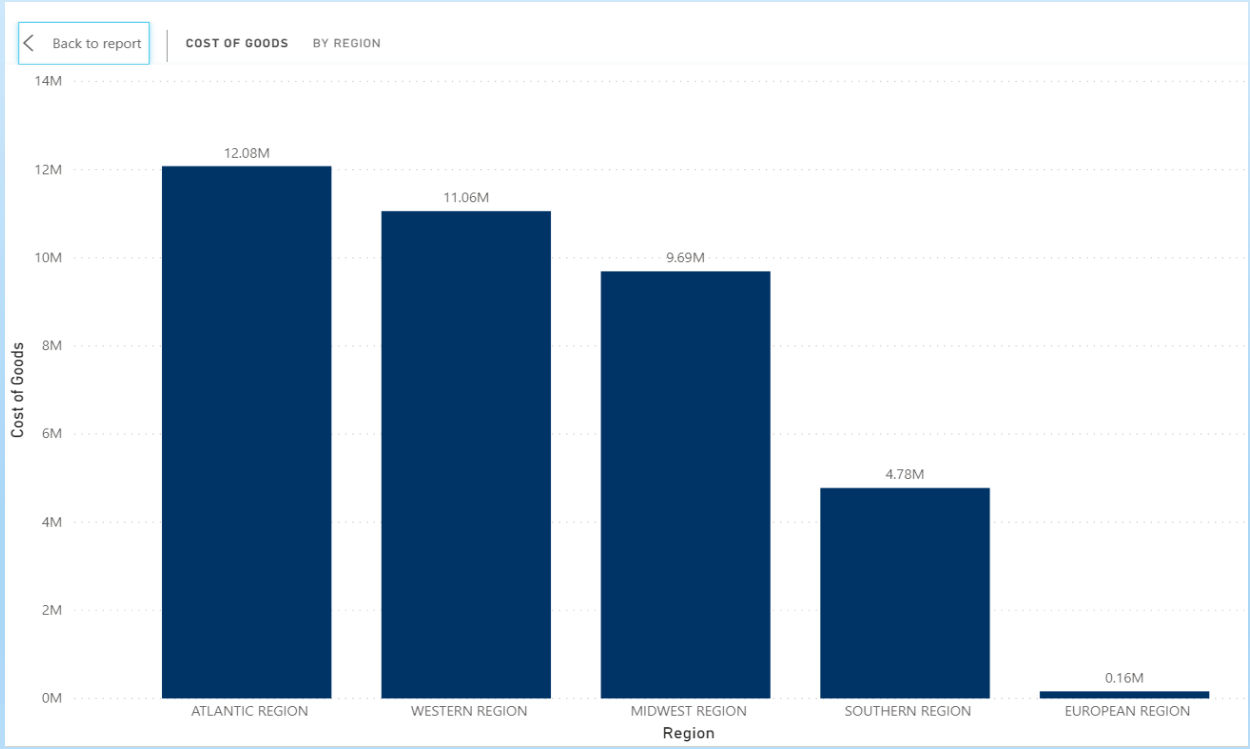

Focus Mode

# Cost of Goods by Region

- The “Cost of Goods by Region” is a vertical bar graph with Cost of Goods on the y-axis and Region on the x-axis.
- This chart is created to address the Chief Operations Officer request to shows the cost of goods by region in a year.
- Similar to other bar graphs, this chart also shows the information of a numerical measures “Cost of Goals” over a categorical data “Region” as it is best to display the categories and the length of bars helps to perceive the cost of goals for different regions.




On Dashboard




Focus Mode

# Tables

- The Gross Revenue table is to address the VP of Sales request to see current year gross revenue and prior year gross revenue by quarter for comparison.
- Assuming  VP of Sales also wants to see the Net Revenue and Total Expense similar to Gross Revenue.

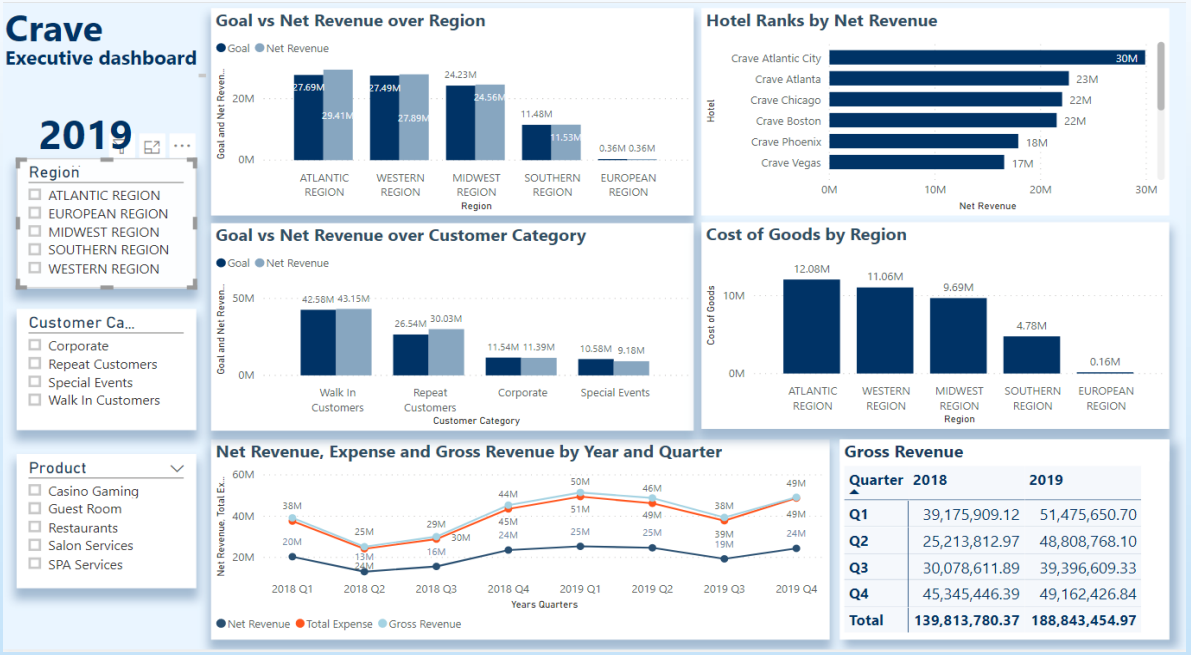
**Gross Revenue**

| Quarter | 2018 | 2019 |
|---|---|---|
| Q1 | 39,175,909.12 | 51,475,650.70 |
| Q2 | 25,213,812.97 | 48,808,768.10 |
| Q3 | 30,078,611.89 | 39,396,609.33 |
| Q4 | 45,345,446.39 | 49,162,426.84 |
| **Total** | **139,813,780.37** | **188,843,454.97** |

# Filters

- Users can use Region, Customer Category, and Product filter to t get the information of the selected options.
- All the three filters allows user to multi select.
- All the reports will get updated as per the selected filters.
- Example:
  - On selecting “MIDWEST REGION” in “Region” filter,  all the charts and tale changes to show data related to only Midwest region.
  - Hotel Ranks by Revenue shows the ranking of the hotels for the selected region.
  - This was also one of the requirements of the CEO.

**Without any filter**




**Applying Filter Region = MILDWEST REGION**

# Observations

- Crave generates most of its net revenue from “Walk in Customers” and then “ Repeat Customers”. They generate least net revenue from the Special Events.
  Crave Atlanta is the second most net revenue generating hotel with 23M of net revenue in 2019. (Fig:2).
  But when we select the “ Repeat Customers” we can see that “Crave Atlanta” has no repeat customers. (Fig:1)
  This raises the concern that why this property doesn’t have repeating customers, identify the cause, and what steps should be taken to increase repeated customers .

- When we filter Restaurants in Product. We can observe in the revenue trend chart that there is significant decline in the revenue generated from Restaurants from 2nd quarter of 2019 to the 4th quarter of 2019.This should raise the red flag which needs investigation for this decline. (Fig:3)

- When select SPA Services in Product filter, we can see that this service is not available in the Western region and Midwest region. This shows the prospect regions where the company can introduced this product. (Fig:4)

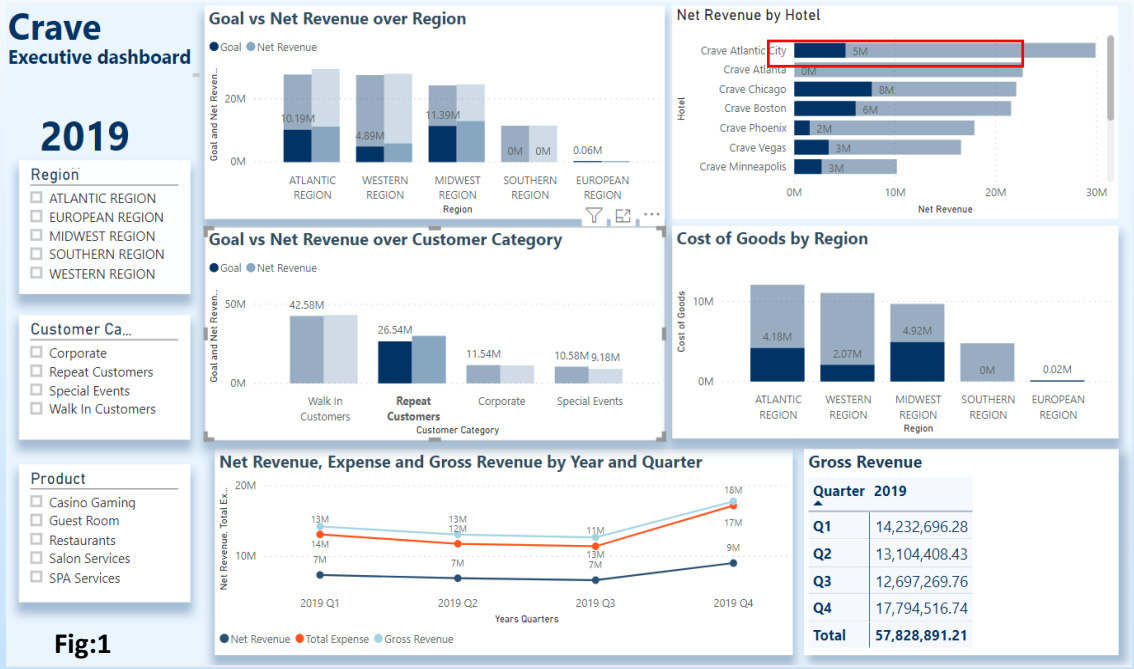



Fig:1

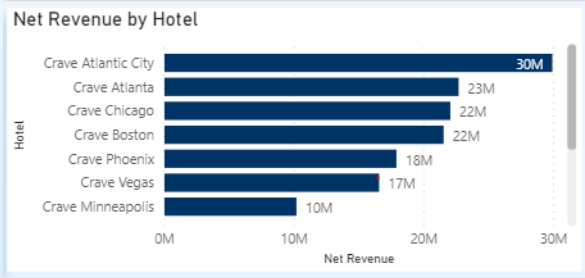



Fig:2

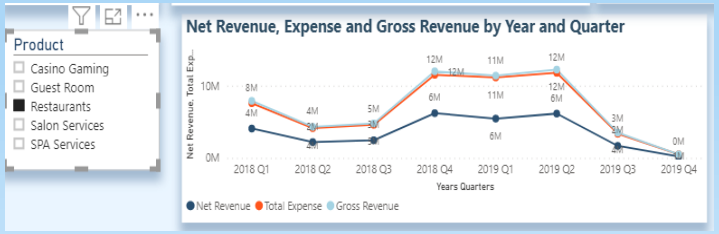
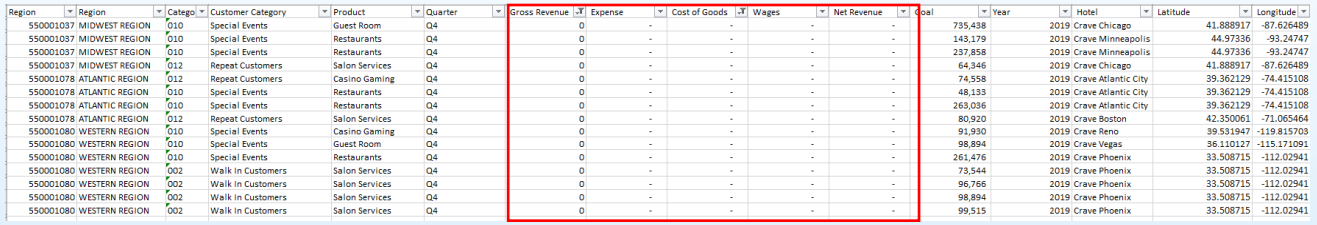



Fig:3

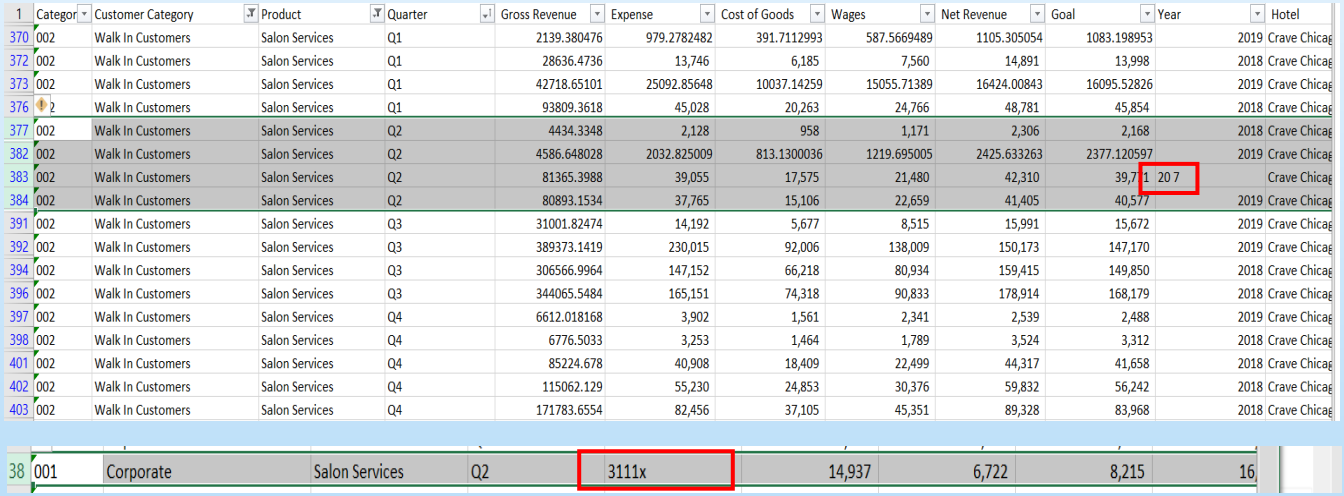
Fig:4

# Data Source Errors/Issues

- The data source had 1,168 rows and 17 columns however only 16 columns were with data and the last column had nulls in all the rows.
- Although there was only one error issue while loading data  however there were few others issues which arrived during exploratory data analysis.
- The issues are as follows that required follow-up from data, requirements perspective:
  - The error occurred while load the data was due the presence of blank space in the 383rd row and year column.
  - Confirming that Expense revenue trend should include cost of goods and wages.
  - Quarter columns had two entries as Q5 and Qtr1.
  - Row 38th  had “3111x” under Gross revenue.
  - The hotel name, latitude and longitude is missing for one of the row related to Atlantic Region
  - Some of the columns like “Gross Revenue” as data in parenthesis(). Are these data values negative?
  - Some missing values were found in few columns like Expense, Cost of Goods, Wages, and Net Revenue.



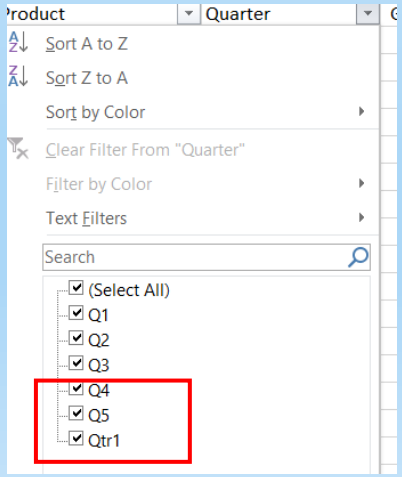
| Region | Region | Catego | Customer Category | Product | Quarter | Gross Revenue | Expense | Cost of Goods | Wages | Net Revenue | Goal | Year | Hotel | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 550001037 | MIDWEST REGION | 010 | Special Events | Guest Room | Q4 | 0 | - | - | - | - | 735,438 | 2019 | Crave Chicago | 41.888917 | -87.626489 |
| 550001037 | MIDWEST REGION | 010 | Special Events | Restaurants | Q4 | 0 | - | - | - | - | 143,179 | 2019 | Crave Minneapolis | 44.97336 | -93.24747 |
| 550001037 | MIDWEST REGION | 010 | Special Events | Restaurants | Q4 | 0 | - | - | - | - | 237,858 | 2019 | Crave Minneapolis | 44.97336 | -93.24747 |
| 550001037 | MIDWEST REGION | 012 | Repeat Customers | Salon Services | Q4 | 0 | - | - | - | - | 64,346 | 2019 | Crave Chicago | 41.888917 | -87.626489 |
| 550001078 | ATLANTIC REGION | 012 | Repeat Customers | Casino Gaming | Q4 | 0 | - | - | - | - | 74,558 | 2019 | Crave Atlantic City | 39.362129 | -74.415108 |
| 550001078 | ATLANTIC REGION | 010 | Special Events | Restaurants | Q4 | 0 | - | - | - | - | 48,133 | 2019 | Crave Atlantic City | 39.362129 | -74.415108 |
| 550001078 | ATLANTIC REGION | 010 | Special Events | Restaurants | Q4 | 0 | - | - | - | - | 263,036 | 2019 | Crave Atlantic City | 39.362129 | -74.415108 |
| 550001078 | ATLANTIC REGION | 012 | Repeat Customers | Salon Services | Q4 | 0 | - | - | - | - | 80,920 | 2019 | Crave Boston | 42.350061 | -71.065464 |
| 550001080 | WESTERN REGION | 010 | Special Events | Casino Gaming | Q4 | 0 | - | - | - | - | 91,930 | 2019 | Crave Reno | 39.531947 | -119.815703 |
| 550001080 | WESTERN REGION | 010 | Special Events | Guest Room | Q4 | 0 | - | - | - | - | 98,894 | 2019 | Crave Vegas | 36.110127 | -115.171091 |
| 550001080 | WESTERN REGION | 010 | Special Events | Restaurants | Q4 | 0 | - | - | - | - | 261,476 | 2019 | Crave Phoenix | 33.508715 | -112.02941 |
| 550001080 | WESTERN REGION | 002 | Walk In Customers | Salon Services | Q4 | 0 | - | - | - | - | 73,544 | 2019 | Crave Phoenix | 33.508715 | -112.02941 |
| 550001080 | WESTERN REGION | 002 | Walk In Customers | Salon Services | Q4 | 0 | - | - | - | - | 96,766 | 2019 | Crave Phoenix | 33.508715 | -112.02941 |
| 550001080 | WESTERN REGION | 002 | Walk In Customers | Salon Services | Q4 | 0 | - | - | - | - | 98,894 | 2019 | Crave Phoenix | 33.508715 | -112.02941 |
| 550001080 | WESTERN REGION | 002 | Walk In Customers | Salon Services | Q4 | 0 | - | - | - | - | 99,515 | 2019 | Crave Phoenix | 33.508715 | -112.02941 |

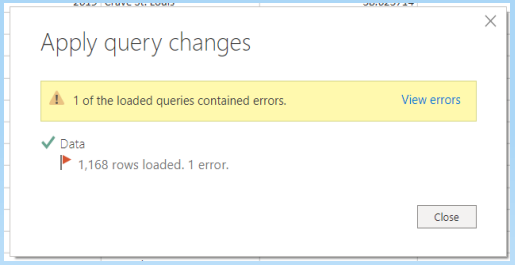


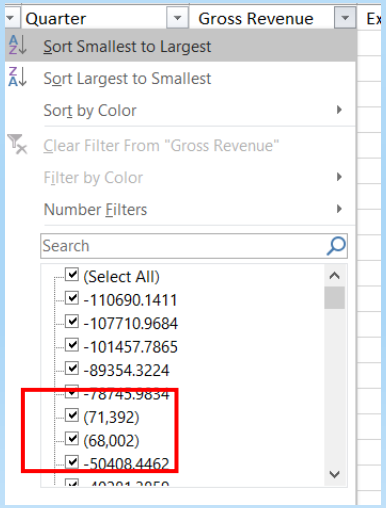
| 1 | Categor | Customer Category | Product | Quarter | Gross Revenue | Expense | Cost of Goods | Wages | Net Revenue | Goal | Year | Hotel |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 370 | 002 | Walk In Customers | Salon Services | Q1 | 2139.380476 | 979.2782482 | 391.7112993 | 587.5669489 | 1105.305054 | 1083.198953 | 2019 | Crave Chicag |
| 372 | 002 | Walk In Customers | Salon Services | Q1 | 28636.4736 | 13,746 | 6,185 | 7,560 | 14,891 | 13,998 | 2018 | Crave Chicag |
| 373 | 002 | Walk In Customers | Salon Services | Q1 | 42718.65101 | 25092.85648 | 10037.14259 | 15055.71389 | 16424.00843 | 16095.52826 | 2019 | Crave Chicag |
| 376 | 2 | Walk In Customers | Salon Services | Q1 | 93809.3618 | 45,028 | 20,263 | 24,766 | 48,781 | 45,854 | 2018 | Crave Chicag |
| 377 | 002 | Walk In Customers | Salon Services | Q2 | 4434.3348 | 2,128 | 958 | 1,171 | 2,306 | 2,168 | 2018 | Crave Chicag |
| 382 | 002 | Walk In Customers | Salon Services | Q2 | 4586.648028 | 2032.825009 | 813.1300036 | 1219.695005 | 2425.633263 | 2377.120597 | 2019 | Crave Chicag |
| 383 | 002 | Walk In Customers | Salon Services | Q2 | 81365.3988 | 39,055 | 17,575 | 21,480 | 42,310 | 39,7 1 | 20 7 | Crave Chicag |
| 384 | 002 | Walk In Customers | Salon Services | Q2 | 80893.1534 | 37,765 | 15,106 | 22,659 | 41,405 | 40,577 | 2019 | Crave Chicag |
| 391 | 002 | Walk In Customers | Salon Services | Q3 | 31001.82474 | 14,192 | 5,677 | 8,515 | 15,991 | 15,672 | 2019 | Crave Chicag |
| 392 | 002 | Walk In Customers | Salon Services | Q3 | 389373.1419 | 230,015 | 92,006 | 138,009 | 150,173 | 147,170 | 2019 | Crave Chicag |
| 394 | 002 | Walk In Customers | Salon Services | Q3 | 306566.9964 | 147,152 | 66,218 | 80,934 | 159,415 | 149,850 | 2018 | Crave Chicag |
| 396 | 002 | Walk In Customers | Salon Services | Q3 | 344065.5484 | 165,151 | 74,318 | 90,833 | 178,914 | 168,179 | 2018 | Crave Chicag |
| 397 | 002 | Walk In Customers | Salon Services | Q4 | 6612.018168 | 3,902 | 1,561 | 2,341 | 2,539 | 2,488 | 2019 | Crave Chicag |
| 398 | 002 | Walk In Customers | Salon Services | Q4 | 6776.5033 | 3,253 | 1,464 | 1,789 | 3,524 | 3,312 | 2018 | Crave Chicag |
| 401 | 002 | Walk In Customers | Salon Services | Q4 | 85224.678 | 40,908 | 18,409 | 22,499 | 44,317 | 41,658 | 2018 | Crave Chicag |
| 402 | 002 | Walk In Customers | Salon Services | Q4 | 115062.129 | 55,230 | 24,853 | 30,376 | 59,832 | 56,242 | 2018 | Crave Chicag |
| 403 | 002 | Walk In Customers | Salon Services | Q4 | 171783.6554 | 82,456 | 37,105 | 45,351 | 89,328 | 83,968 | 2018 | Crave Chicag |



| 38 | 001 | Corporate | Salon Services | Q2 | 3111x | 14,937 | 6,722 | 8,215 | 16 |
|---|---|---|---|---|---|---|---|---|---|



# Assumptions and Risks

- During the time of mock up, users realized product filter will be useful in the dashboard and agreed to add therefore, Product filter were added to the dashboard.
- Assuming following decisions were make on following up with the users :
  - The missing hotel name which is displayed as “blank” in the hotel ranking chart should be kept as it is now and can be fixed in the data source later.
  - “Expense” measure in the data source do not include “Cost of Goods” and “Wages” therefore, the sum “Expense”, “Cost of Goods”, and “Wages” needs to be used to show the expense trend by quarter for two years.
  - The typing error in the row 383 “year” column should be replaced by 2018.
  - The typing error “Qtr1” in Quarter column should be replaced by Q1.
  - The typing error “Q5” in Quarter column should be replaced by Q4.
  - Row 38$^{th}$ had “3111x” under Gross revenue what should be replaced to “31110”.
  - Consider data values in parenthesis as positive.
- Although ignoring the missing values in the data source has the risk of misleading information, however, the user decided to ignore the missing value for now while first prototype of the dashboard is getting build. Meanwhile, data team will work to generate the new and clean data source.

# Thank you