Power BI

for

Data Science and Machine Learning

Rui Quintino, DevScope

(Watch this session recording at https://youtu.be/gm5nohV30fE)

AI & Analytics Advisor

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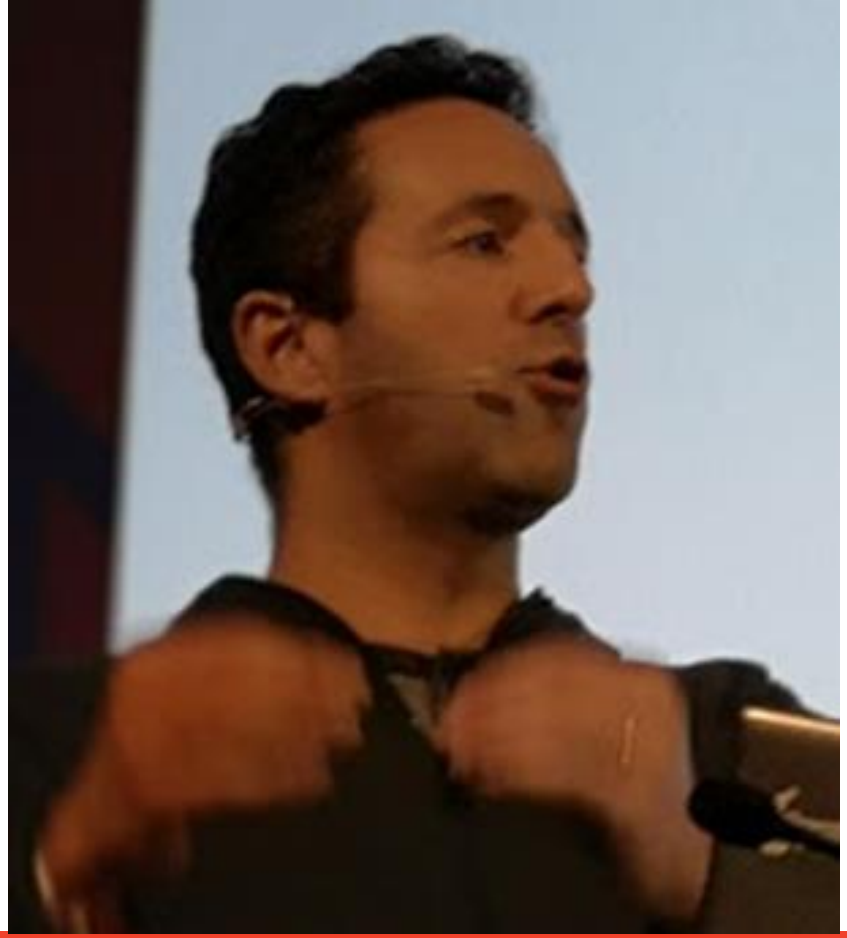
Linkedin.com/ in/rquintino

Twitter @rquintino

Medium /devscope-ai

Github /DevScope/ai-lab



What's Power BI anyway?

(Very Successful & Powerful ☺)

Low/no-code platform
for
Data & Business Understanding

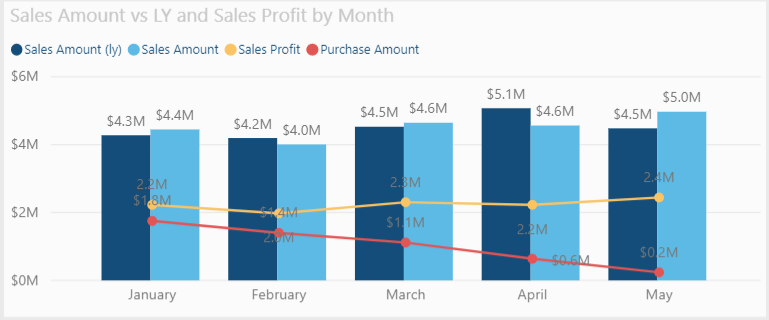
Sales Overview

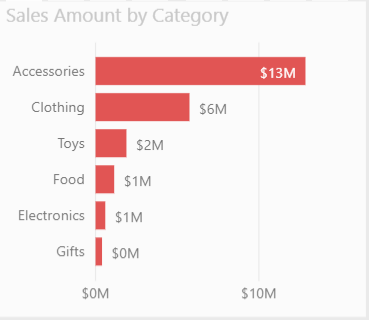
$22.63M
Sales Amount

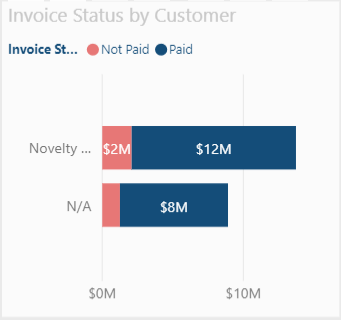
-9.40%
% Sales Amount vs Target

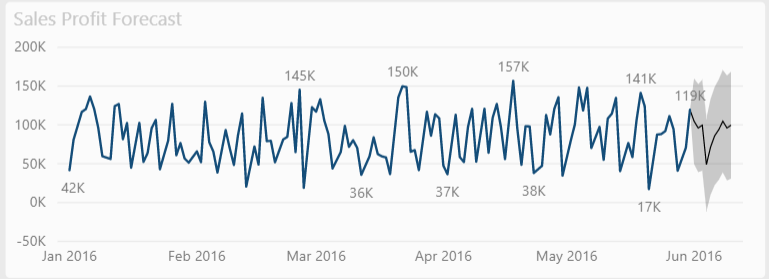
-0.20%
% Sales Amount vs ly

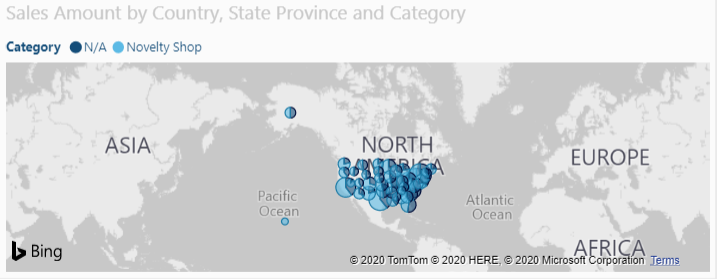
Date
1/1/2016
12/31/2016









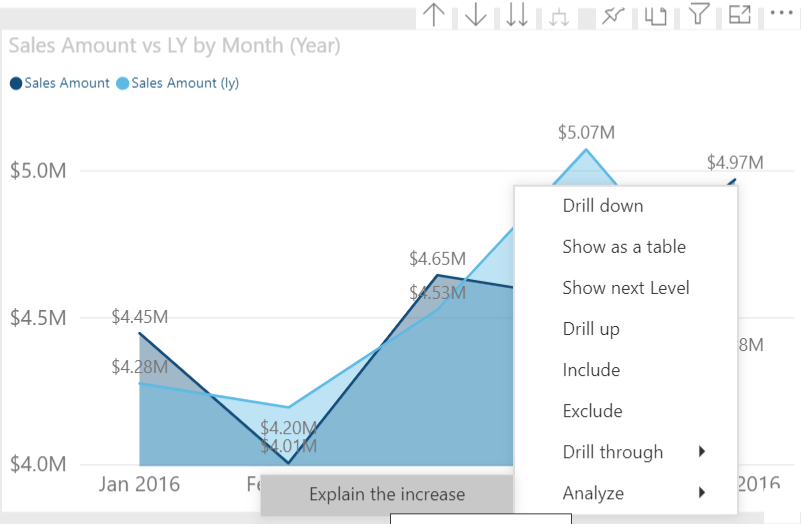


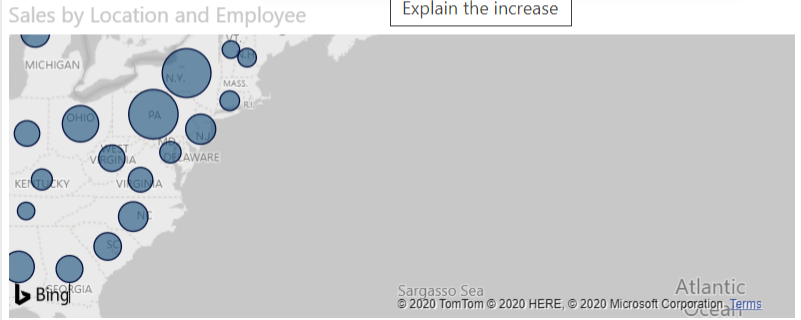
Filters

Company Performance

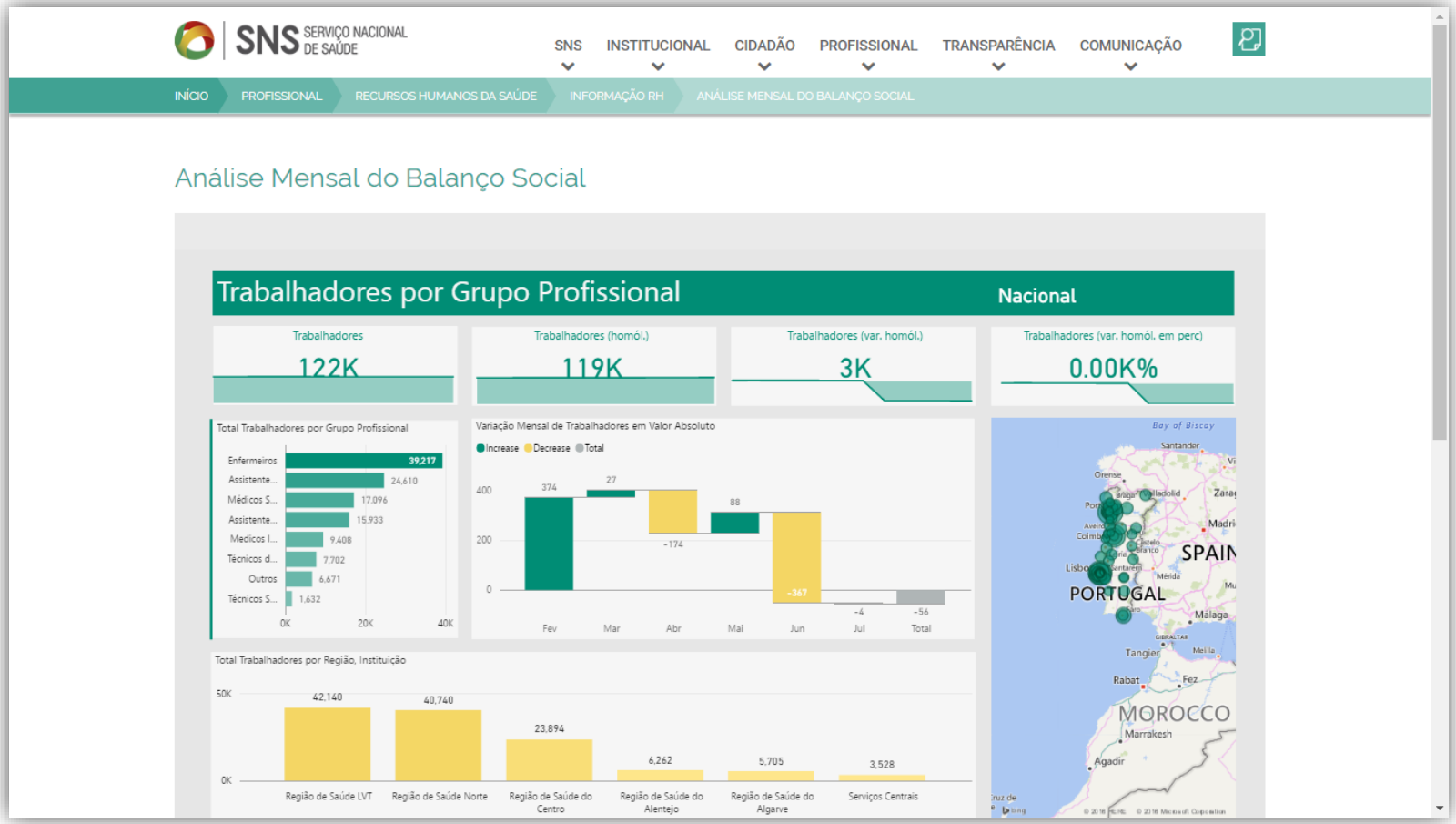
$22.63M	$24.98M	-9.40%
Sales Amount	Sales Amount Target	% Sales Amount vs Target

Employee	Sales Amount	Sales Amount (ly)	Sales Amount Ta...
Taj Shand	$2,524,552.05	$2,216,002.85	$2,831,042.36
Archer Lamble	$2,483,411.25	$2,373,918.35	$2,739,089.99
Jack Potter	$2,253,652.85	$2,284,103.75	$2,467,971.50
Hudson Hollinworth	$2,250,639.10	$2,462,247.15	$2,914,838.62
Sophia Hinton	$2,224,984.85	$2,165,496.80	$2,530,900.73
Hudson Onslow	$2,221,902.50	$2,337,401.65	$2,692,515.72
Kayla Woodcock	$2,216,630.70	$2,146,645.45	$1,913,799.66
Amy Trefl	$2,198,267.95	$2,288,968.70	$1,940,271.90
Anthony Grosse	$2,147,955.05	$2,172,490.50	$2,562,287.81
Lily Code	$2,111,179.25	$2,231,870.25	$2,387,802.73
Total	**$22,633,175.55**	**$22,679,145.45**	**$24,980,521.02**



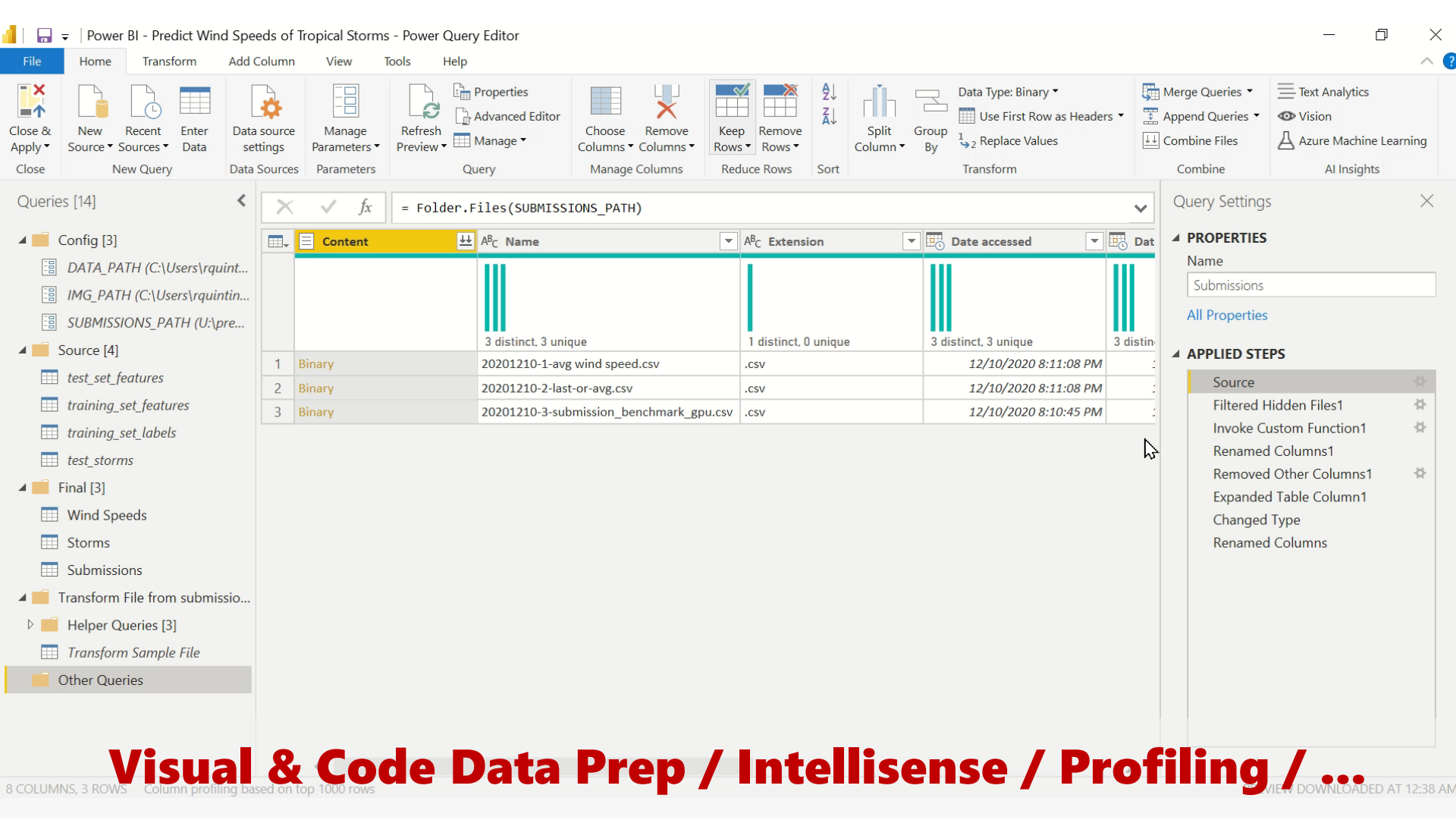


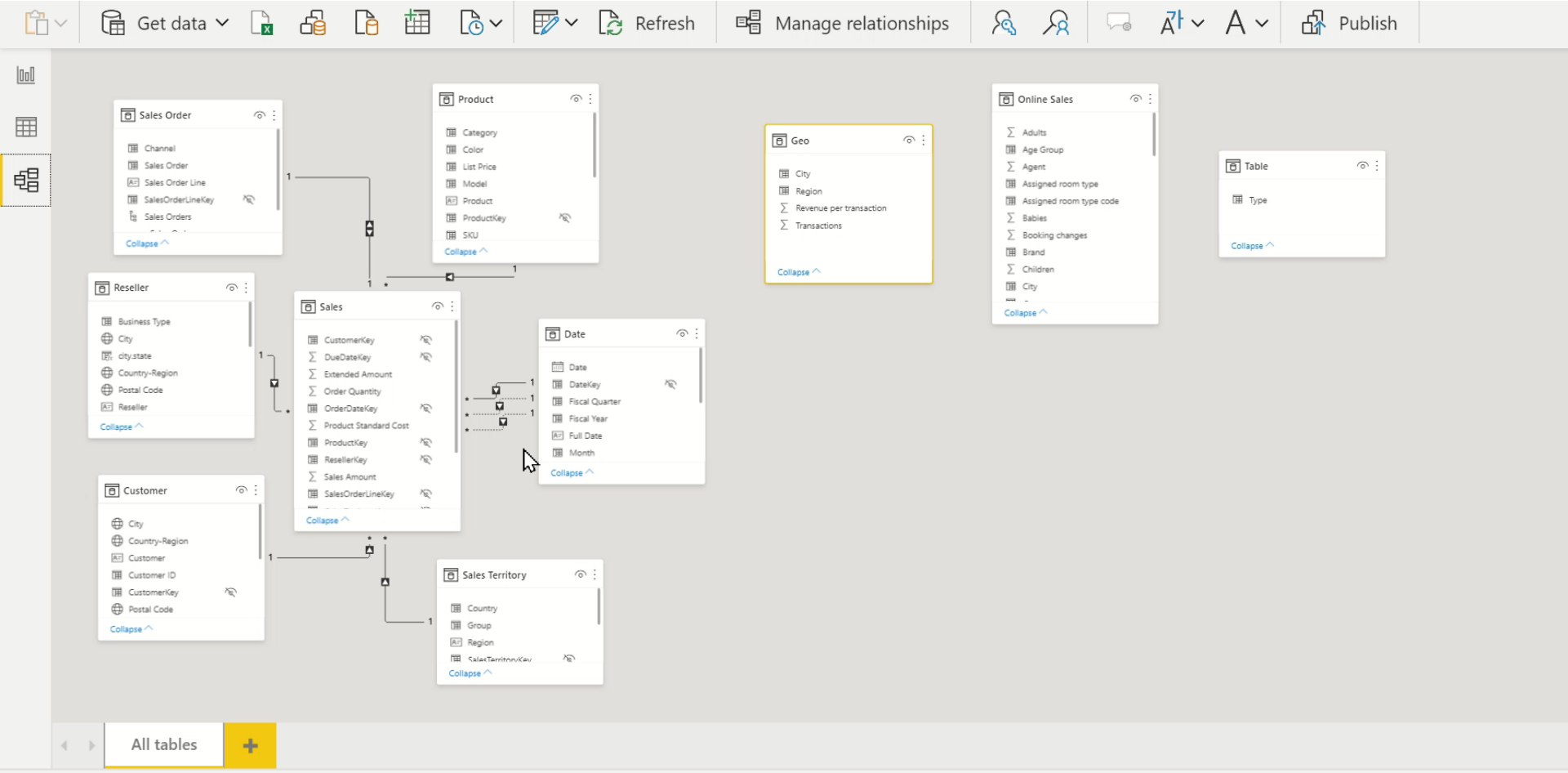
Filters



https://www.sns.gov.pt/profissional/recursos-humanos-da-saude/informacao-rh/analise-mensal-do-balanco-social/

Why so Powerful?


Power BI - Predict Wind Speeds of Tropical Storms - Power Query Editor
File
Home
Transform
Add Column
View
Tools
Help
Close & Apply
New Source
Recent Sources
Enter Data
Data source settings
Manage Parameters
Refresh Preview
Properties
Advanced Editor
Manage
Choose Columns
Remove Columns
Keep Rows
Remove Rows
Split Column
Group By
Data Type: Binary
Use First Row as Headers
Replace Values
Merge Queries
Append Queries
Combine Files
Text Analytics
Vision
Azure Machine Learning
Close
New Query
Data Sources
Parameters
Query
Manage Columns
Reduce Rows
Sort
Transform
Combine
AI Insights
Queries [14]
Config [3]
DATA_PATH (C:\Users\rquint...
IMG_PATH (C:\Users\rquintin...
SUBMISSIONS_PATH (U:\pre...
Source [4]
test_set_features
training_set_features
training_set_labels
test_storms
Final [3]
Wind Speeds
Storms
Submissions
Transform File from submissio...
Helper Queries [3]
Transform Sample File
Other Queries
= Folder.Files(SUBMISSIONS_PATH)
Content
Name
Extension
Date accessed
Dat
3 distinct, 3 unique
1 distinct, 0 unique
3 distinct, 3 unique
3 distin
1 Binary 20201210-1-avg wind speed.csv .csv 12/10/2020 8:11:08 PM
2 Binary 20201210-2-last-or-avg.csv .csv 12/10/2020 8:11:08 PM
3 Binary 20201210-3-submission_benchmark_gpu.csv .csv 12/10/2020 8:10:45 PM
Query Settings
PROPERTIES
Name
Submissions
All Properties
APPLIED STEPS
Source
Filtered Hidden Files1
Invoke Custom Function1
Renamed Columns1
Removed Other Columns1
Expanded Table Column1
Changed Type
Renamed Columns
Visual & Code Data Prep / Intellisense / Profiling / ...
8 COLUMNS, 3 ROWS
Column profiling based on top 1000 rows
PREVIEW DOWNLOADED AT 12:38 AM



Fast (column store) Semantic Models

2020SU11 Blog Demo - November - Power BI Desktop

Sign in

File Home Insert Modeling View Help External Tools Table tools Measure tools

Name Cancellations | Online Sales | Format Whole number | $ % , .00 0 | Uncategorized

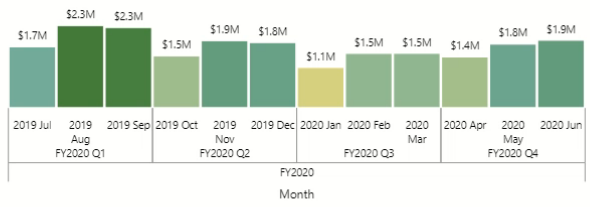
```
1 Cancellations = CALCULATE(COU('Online Sales'),'Online Sales'[Status]="Cancelled")
```

US Germany

United States Sales Summary

$20.93M	$7.00M	62K
Sales Amount	COGS	Order Quantity

Sales Amount by Year, Quarter and Month



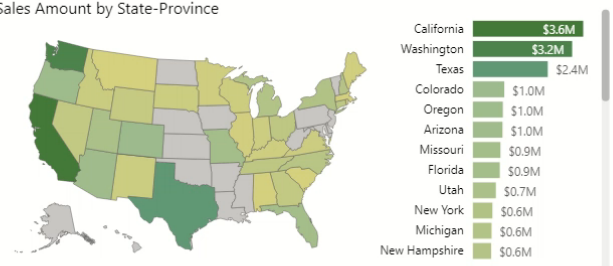
Reseller Search

Select row below to enable drill-through

All

Reseller	City	State-Province	Sales Amount
Westside Plaza	Sand City	California	$534,956.28
Field Trip Store	Loveland	Colorado	$427,305.59
Brakes and Gears	Tooele	Utah	$397,237.24
Thorough Parts and Repair Services	Lacey	Washington	$386,958.19
Rally Master Company Inc	Chandler	Arizona	$355,141.98
Outdoor Equipment Store	Nashua	New Hampshire	$314,662.56
Eastside Department Store	Union City	California	$296,328.92
Totes & Baskets Company	San Antonio	Texas	$289,777.50
Permanent Finish Products	Reno	Nevada	$288,088.47
Extraordinary Bike Works	Mesquite	Texas	$281,844.75
Safe Cycles Shop	Bellevue	Washington	$277,795.47
Great Bikes	Casper	Wyoming	$277,495.37
Excellent Riding Supplies	Memphis	Tennessee	$276,729.43
Area Bike Accessories	Modesto	California	$275,643.81
Total			**$20,927,177.22**

Sales Amount by State-Province



Last updated: 9/30/20 10:17 AM

Filters

Visualizations

Values

Add data fields here

Drill through

Cross-report Off

Keep all filters On

Add drill-through fields here

Fields

Search

Customer
Date
Geo
Online Sales
- Adults
- Age Group
- Agent
- Assigned ro...
- Assigned ro...
- Babies
- Booking ch...
- Brand
- Cancellations
- Children
- City
- Company
- Country
- Customer

Introduction | Sales Summary | Reseller Drill through | Visual Zoom Slider | Anomaly Detection | Page 1

Page 2 of 6

Powerful Analytical Engine for Metric Modelling

US Germany

United States Sales Summary

$20.93M	$7.00M	62K
Sales Amount	COGS	Order Quantity

Reseller Search

Select row below to enable drill-through

All

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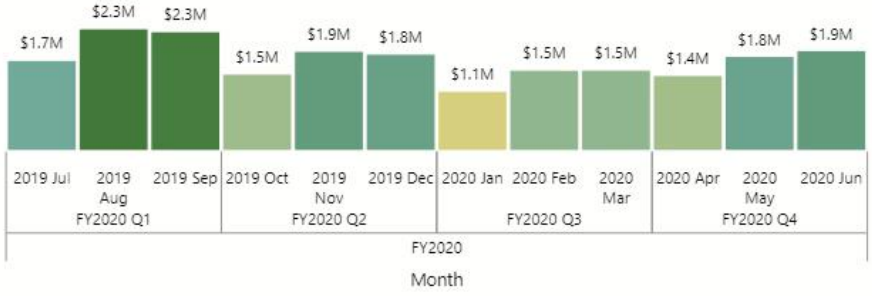
Total			**$20,927,177.22**

Sales Amount by Year, Quarter and Month



Sales Amount by State-Province

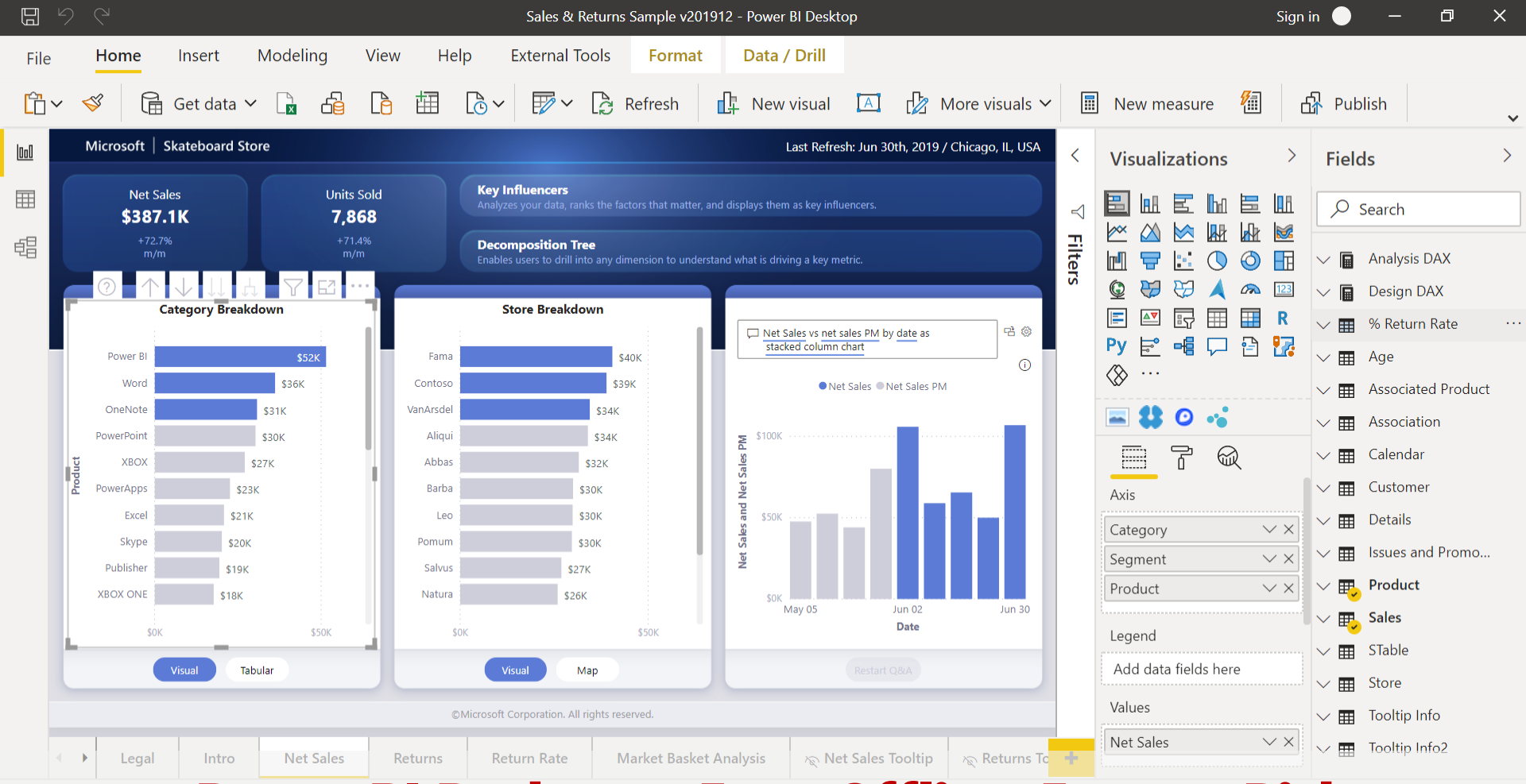
Filtering / Cross Filtering / ToolTips / Drill down/up / ...

Adventure Works

We don’t go EDA from raw data directly!

We prepare a **rich semantic model**
(reusable relationships, metrics, behaviors, etc)

EDA then reuses this semantic model



Power BI Desktop – Free, Offline, Feature Rich

Power BI Use Cases for DS/ML

First Tip...

Mineshaft AI

Project: Patient Conditions

Search...

- Welcome
- Data Sources
- Goal
- Robot
  - Configure
  - Skills/Plugins
- Results
- Models
- Export
- Publish
- About Mineshaft AI

Start ML Robot

Select Model

Show 5 entries Search:

	runId	runDesc	score	cols	alg	gridModels	timeTrain
1	#1	>masterTable	62.37	15	glmnet	31	3.4
2	#1	>features_masterTable_with_Lookup	67.48	23	glmnet	31	4.3
3	#1	>features_TemporalCount	67.14	24	glmnet	31	4
4	#1	>features_Drug_Specialty	67.07	40	glmnet	31	6.4
5	#1	>features_ProcedureGroupgrouping	67.03	33	glmnet	31	5.7

Showing 1 to 5 of 6 entries Previous 1 2 Next

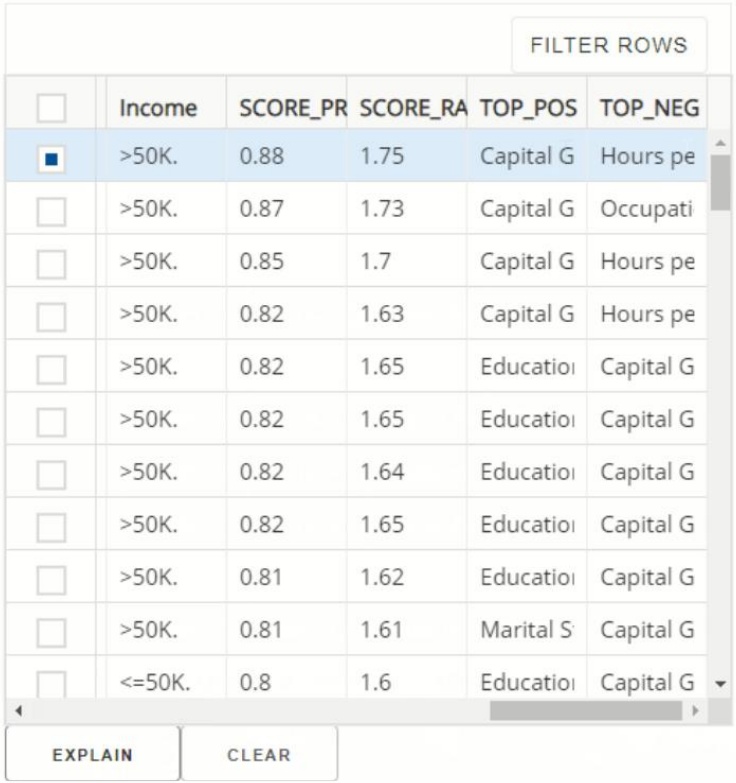
Summary Data Insights Reports Test/Predict

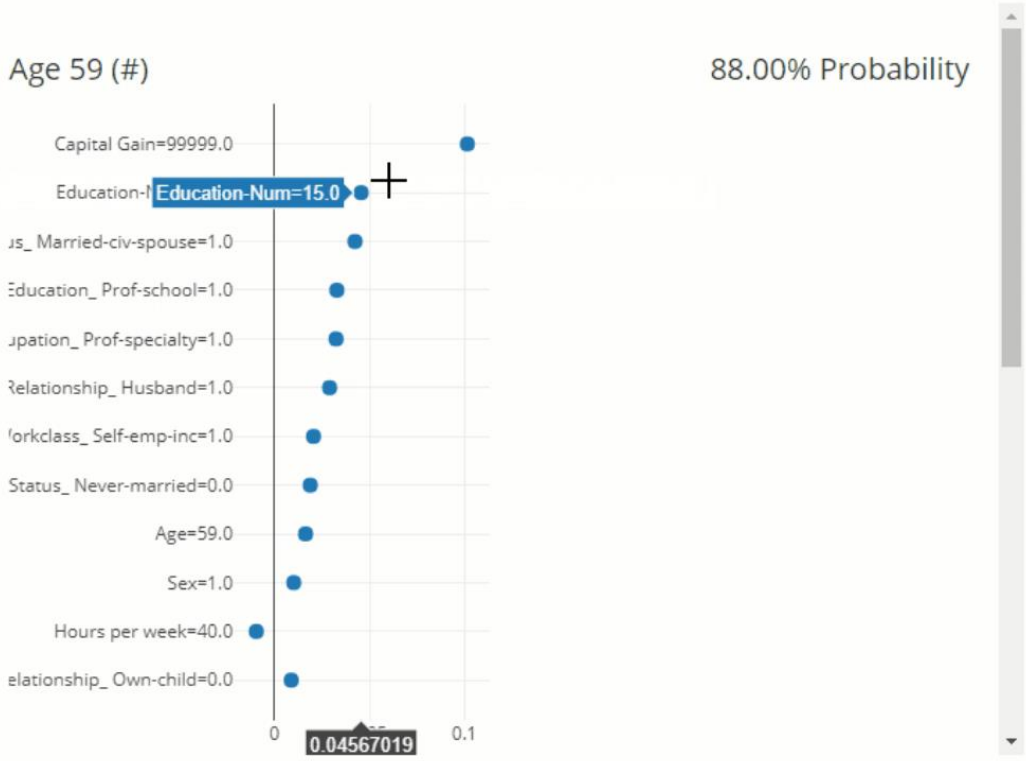
Show 5 entries Search:

	Overall
C_TemporalSpecialty_12	100
Year	43.5540129144048

Disclaimer: Know a bit of R Shiny...

SHAP Dash! Explanations on Dash - DevScope AI Lab





And Python Plotly Dash...

Choose Season:

2020_2021

Choose League:

Bundesliga

Choose Matchday:

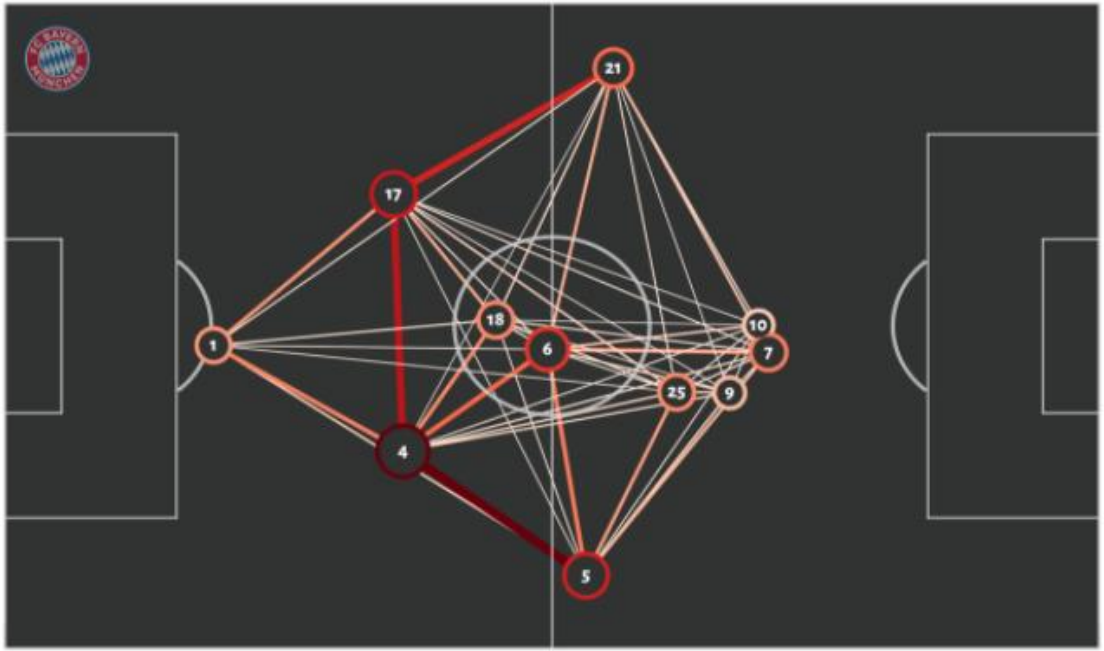
1

Choose Match:

Bayern_Schalke_Bundesliga_20...

Pick Home Team Color

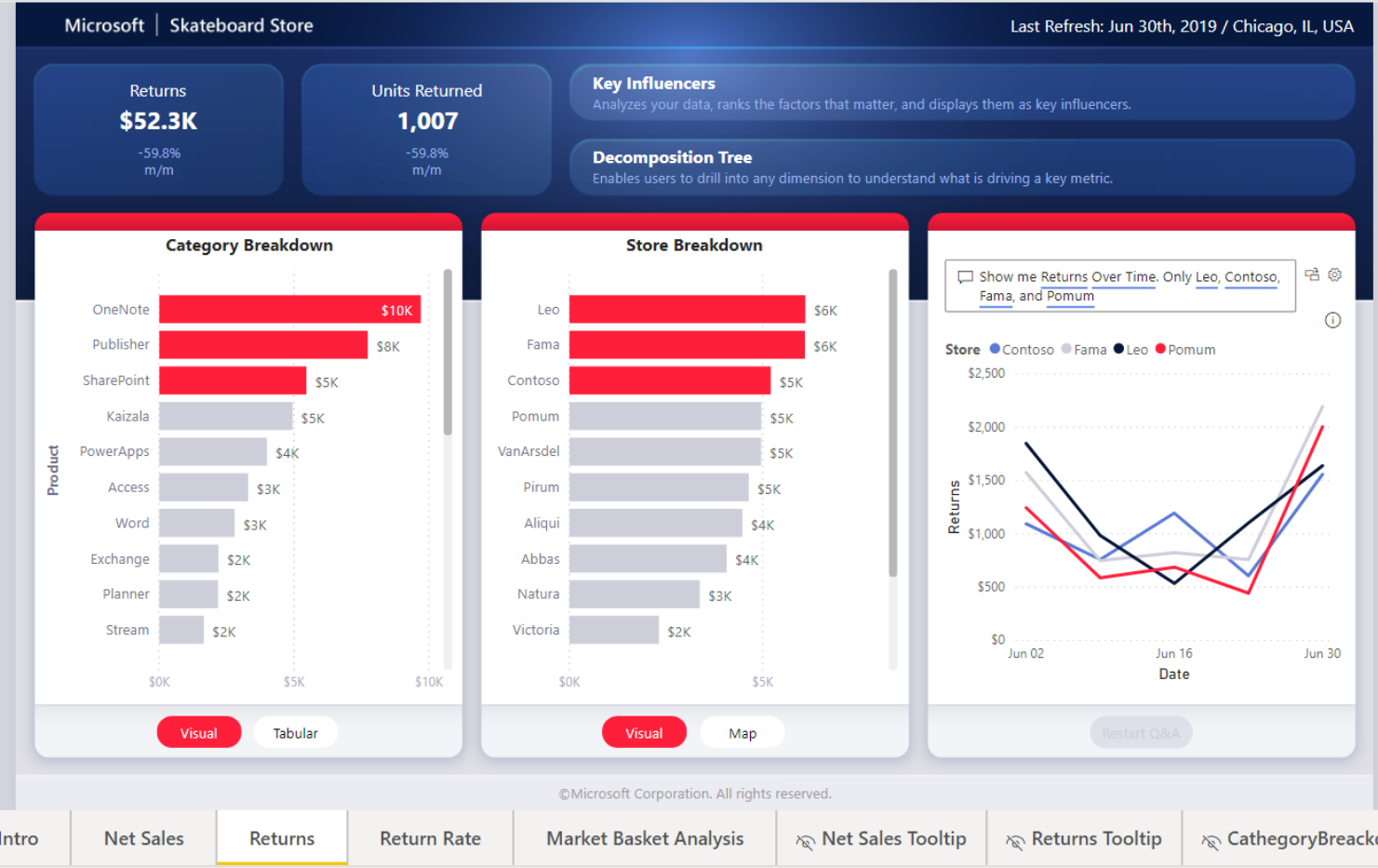
Pick Away Team Color



No	Player	Centrality
4	Niklas Süle	0.257
17	Jérôme Boateng	0.194
6	Joshua Kimmich	0.178
21	Lucas Hernández	0.132

No	Player	Centrality
4	Ozan Kabak	0.232
10	Nabil Bentaleb	0.216
13	Sebastian Rudy	0.159
24	Bastian Oczipka	0.158

Big fans of Python StreamLit... (credits to Luís Costa ☺)

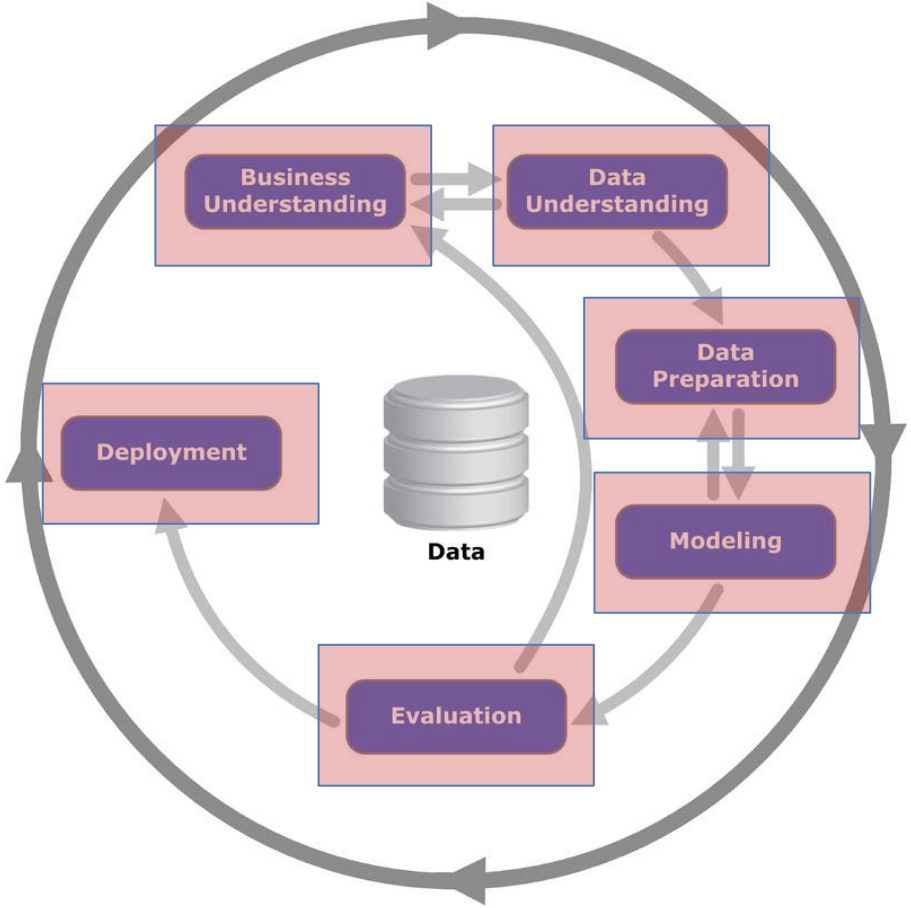


but... Business Reports/Dashboards with Shiny, Python, StreamLit, just don't!

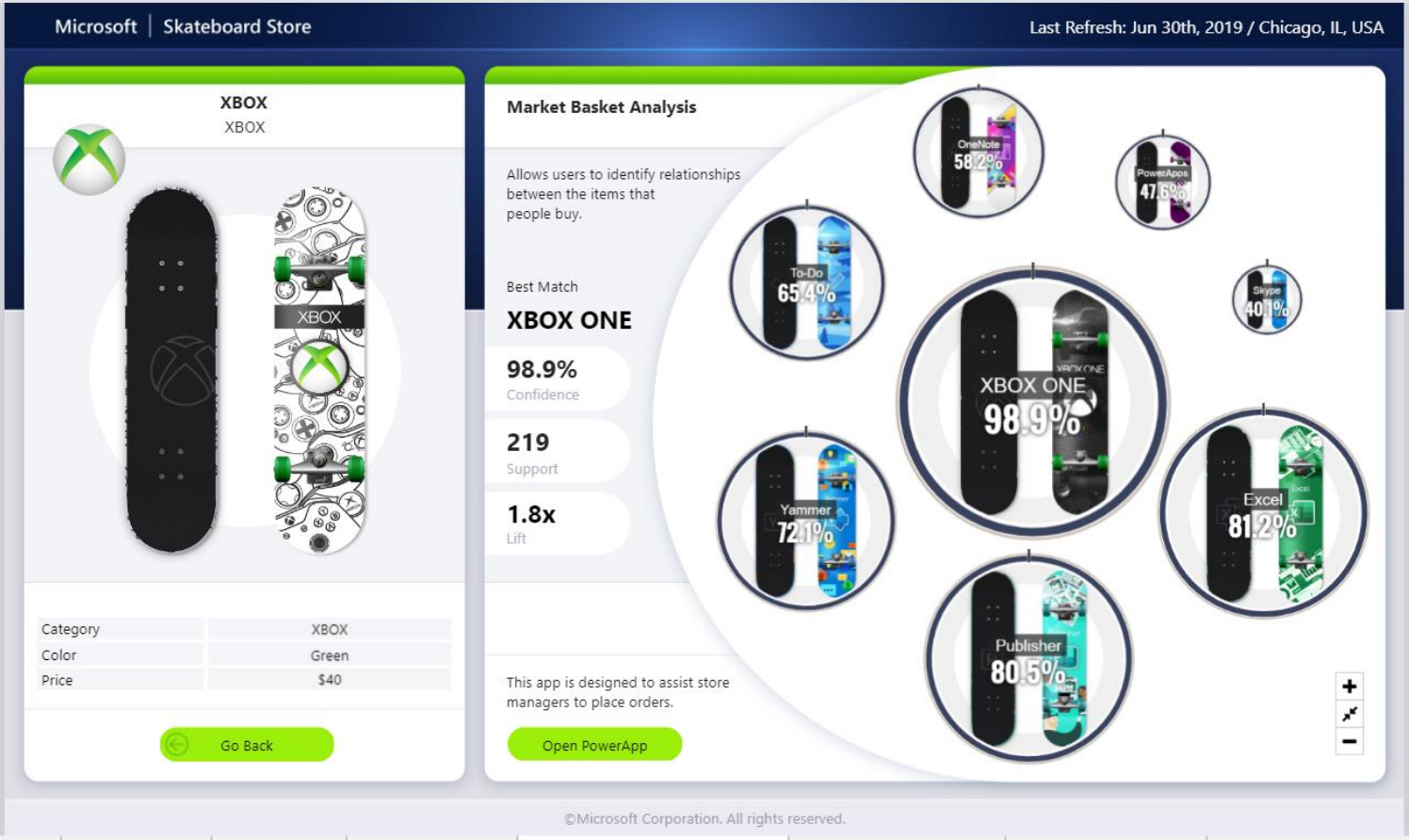
Where Power BI can help?

Actually...

(with new *Auto ML*)



https://en.wikipedia.org/wiki/Cross-industry_standard_process_for_data_mining



Delivering/Presenting DS/ML Outputs/Insights

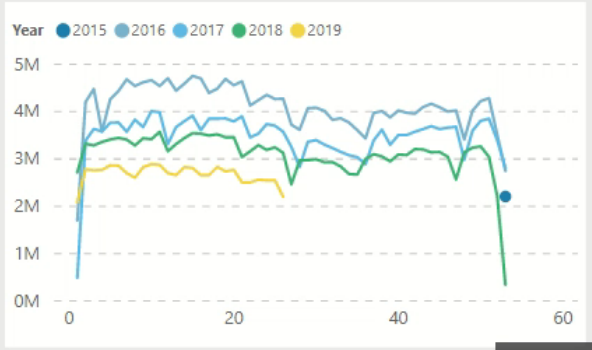
Time Series

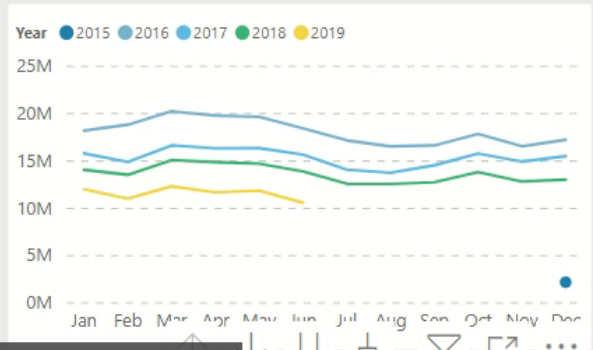
Metric: Taxi Passengers

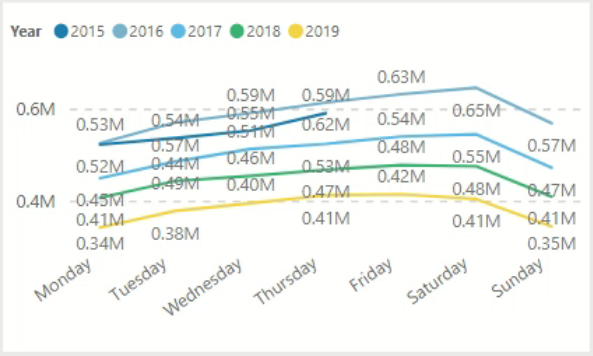
Service, Borough, Zone: All

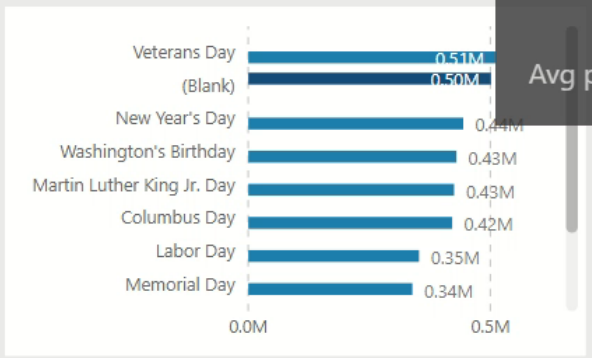
12/28/2015 – 12/31/2020

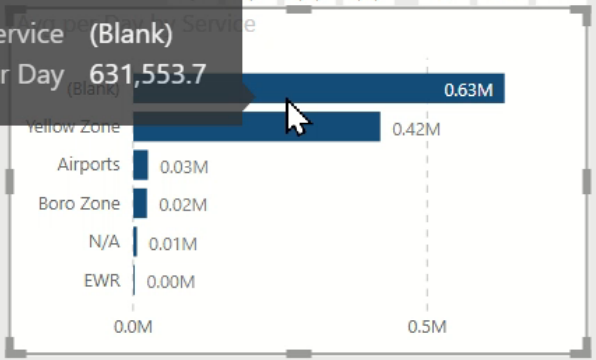
devscope











638M	498.1K	3.48M
Value	Avg per Day	Avg per Week

Reusable TimeSeries/Forecast EDA

2020-09-21 10:38:38

Forecast

Metric: All Trips (With Test)

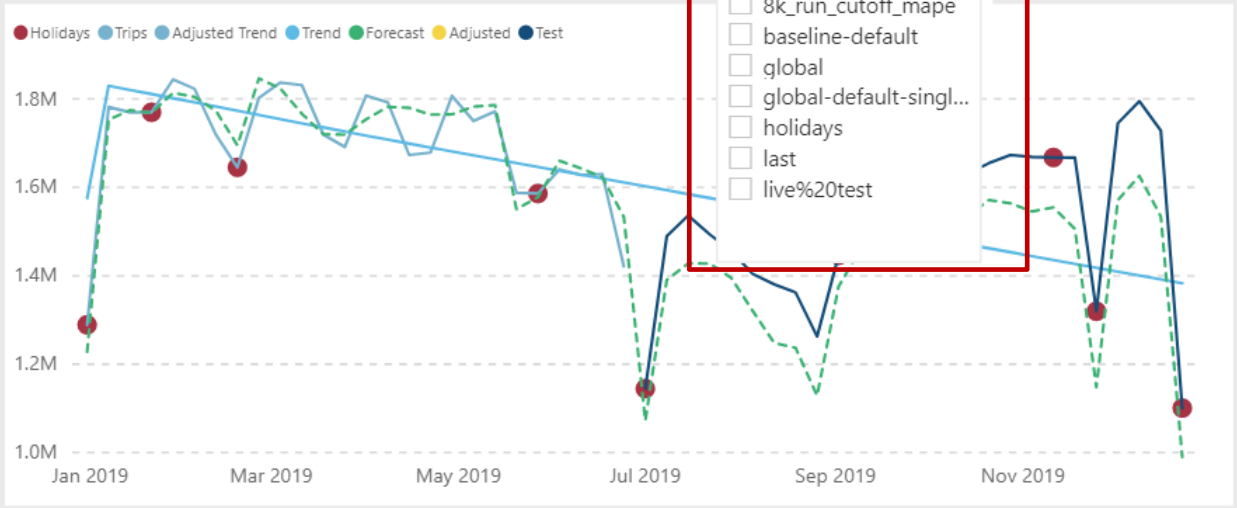
Forecast Version: 4k_run

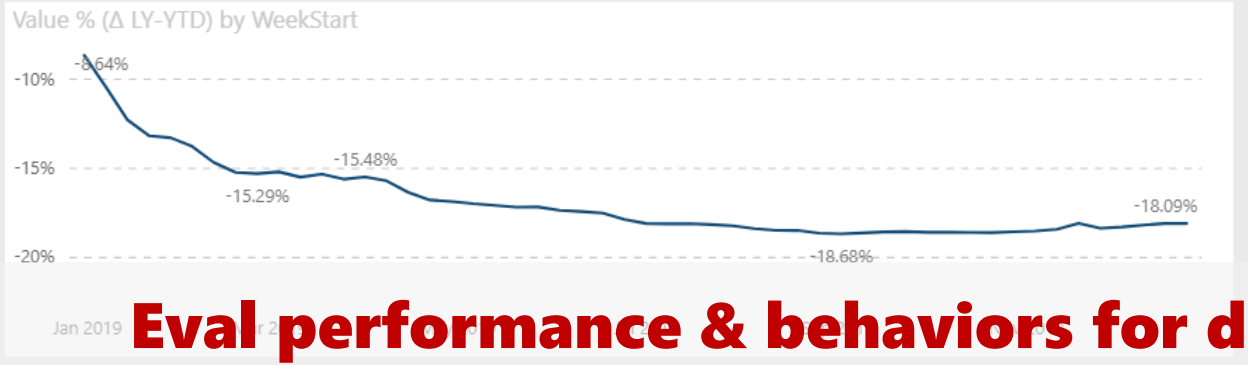
- 4k_run
- 8k_run_cutoff_mape
- baseline-default
- global
- global-default-singl...
- holidays
- last
- live%20test

Service, Borough, Zone: All

1/1/2019 – 12/29/2019

devscope





83,879,351
Year

-17.86%
% Diff (YTD)

84,437,750
Forecast (Simple)

0.67%
Abs. Perc. Error (Simple)

102,399,456
LY

-18.09%
Value % (Δ LY-YTD)

81,021,841
Forecast (Full Year)

3.41%
Abs. Perc. Error (Full Year)

-20.88%
Forecast % (Δ LY)

7.22%
Abs. Perc. Error

8.10%
MAPE (week)

39,587,847
Trips (Test)

36,730,337
Forecast (Test)

7.22%
Abs. Perc. Error

8.10%
MAPE (week)

Trend Adjustment: 0.00

Eval performance & behaviors for different models

2020-09-21 10:38:38

Wind-dependent Variables: Predict Wind Speeds of Tropical Storms

HOSTED BY RADIANT EARTH FOUNDATION

Press F11 to exit full screen

$13,000

7 WEEKS LEFT

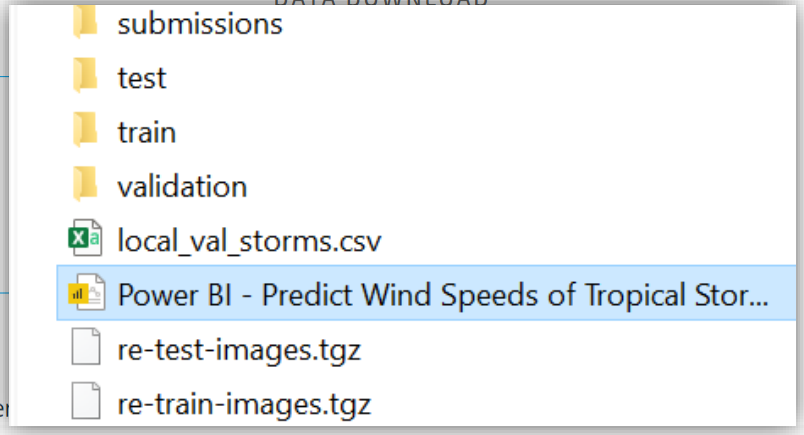
$13,000

Submissions

BEST	CURRENT RANK	# COMPETITORS	SUBS. MADE
8.4739	1	277	1 of 3

LEADERBOARD

DATA DOWNLOAD



SUBMISSION RESTRICTIONS

Competitors are allowed 3 submissions per 1 day.

Your next submission can be on Dec. 16, 2020 UTC.

PRIMARY EVALUATION METRIC

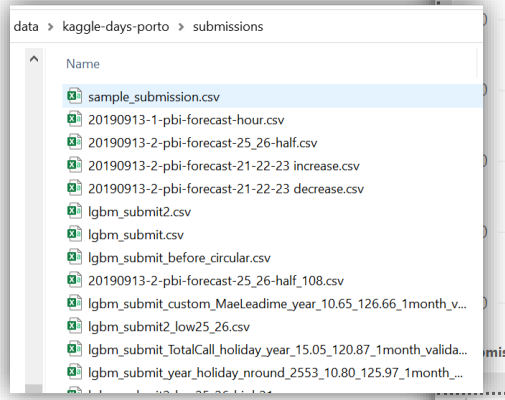
Root-mean-square Error $= \sqrt{\frac{1}{N}\sum_{i=0}^{N}(y_i - \hat{y}_i)^2}$

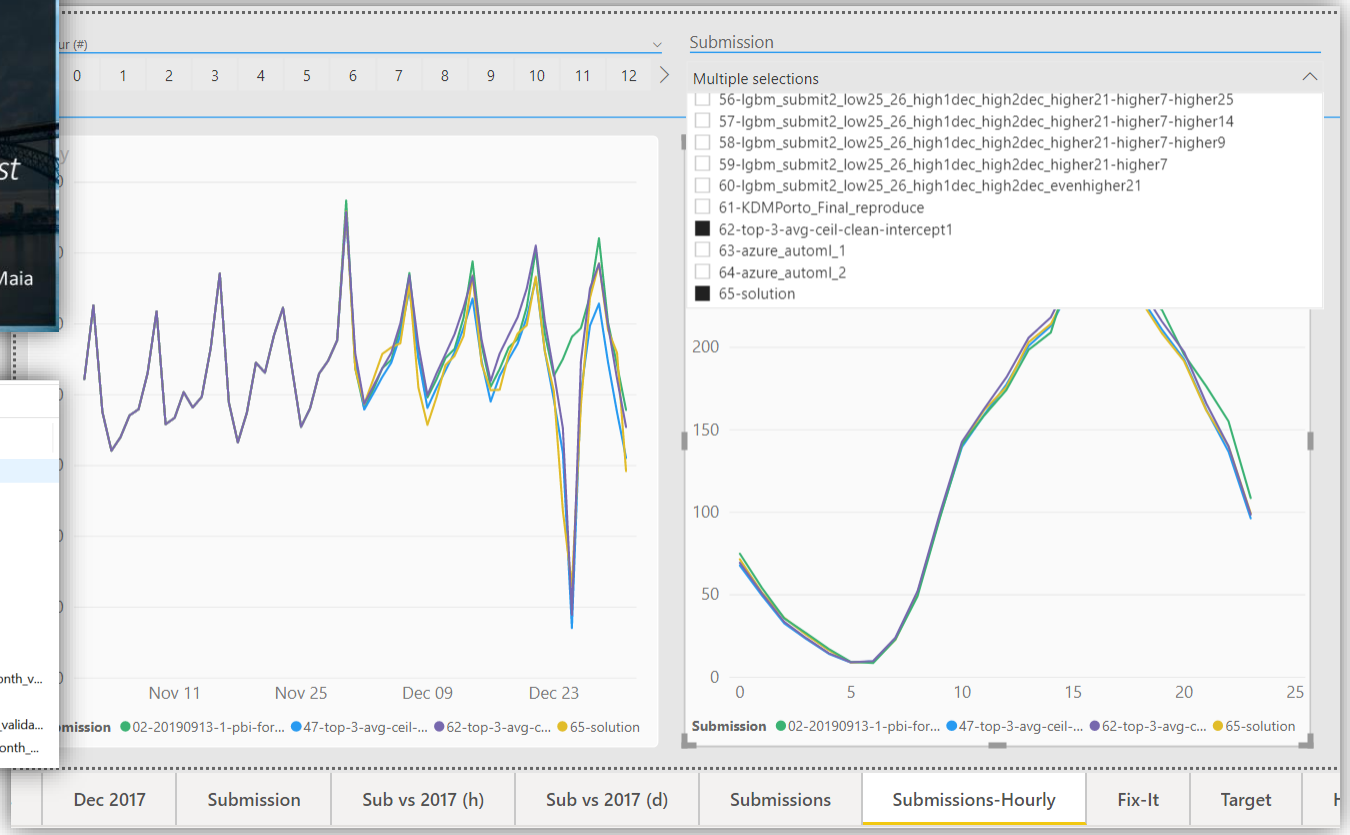
Root-mean-square error is the square root of the sum of the squared differences betwee
values and the actual values. The goal is to minimize RMSE.

Facebook Twitter LinkedIn Email

Awesome for ML Competitions (I kid you not! ☺)

SHARE YOUR WORK!



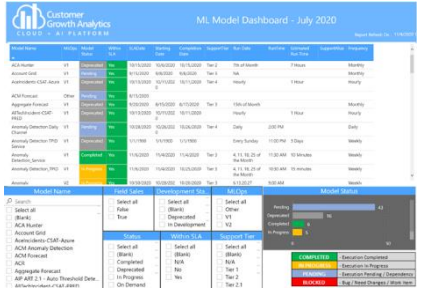


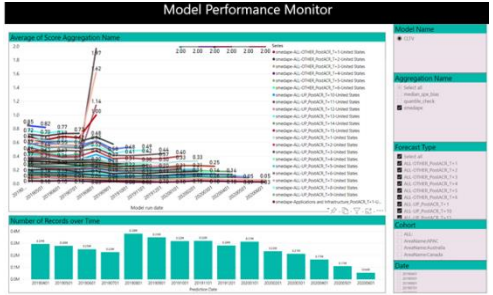
Leaderboards (ex: submission evaluation/validation)

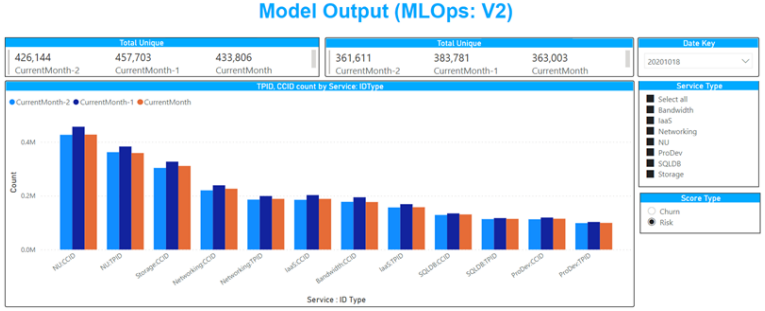
Machine Learning model governance at scale

Petersaddow Follow
Nov 13 · 13 min read

Author Peter Saddow is joined for this article by co-author Daniel Yehdego







Machine Learning Governance (msft CGA team Cloud+AI)

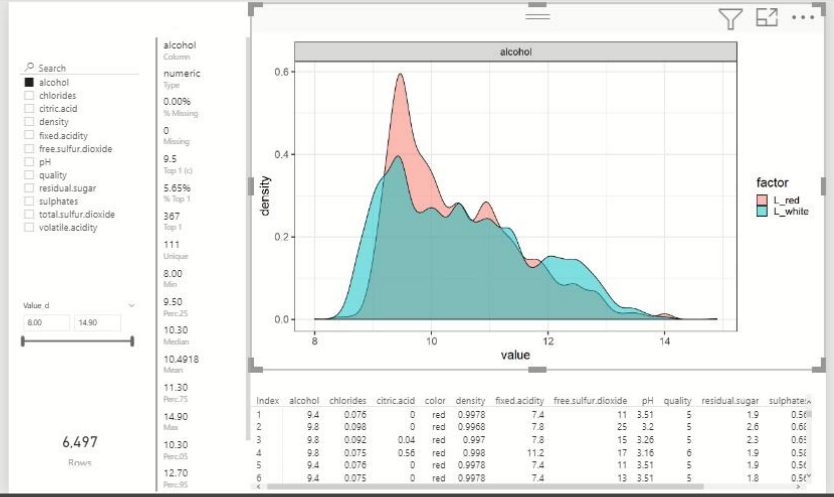
Advanced features for EDA

PowerBI-EDA-Classification - Power BI Desktop

Sign in

File Home Insert Modeling View Help External Tools Format Data / Drill

Get data Refresh New visual More visuals New measure Publish



Filters Visualizations Fields

R script editor

```
d=dataset
d$Column=as.character(d$Column)
d=with(d,d[order(Column,Index),])

colList=unique(d$Column)

colValues=lapply(colList,function(x){
  filtered=d[d$Column==x,]
```

Dataset Numerics Boxplots Scatterplot Matrix Correlation Matrix Discrete DecisionTree Missing Temp

Page 2 of 9

Custom R and Python interactive EDA

Questions to get you started

From the report author

show me average trip length by date

show me average trip length for the last year

top regions by average trip length YoY%

Other suggestions

Save and close

Cancel

average trip length for 2017 by date

Ask a related question

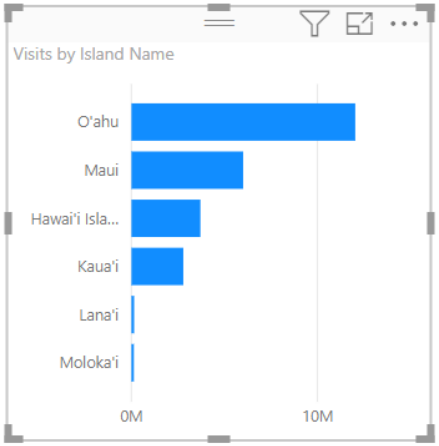
Clear

Add this question

Showing dates and average trip length, where year is in 2017

Filters (including highlights) from the source page have been applied.

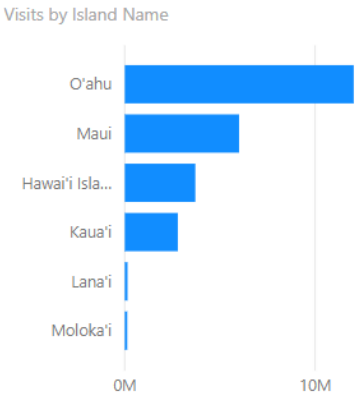
Use natural language for quick questions & visuals

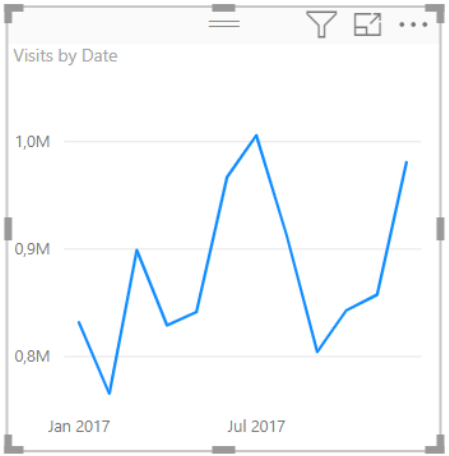


visits by island

- island (Islands)
- island weather island
- island friendly (Islands > Island Friendly Name)
- island name (Islands > Island Name)
- island weather (Island Weather)

Visual creation using Q&A feature





visits for 2017 by date

US Germany

United States Sales Summary

€ 20.93M	$7.00M	62K
Total Sales	COGS	Order Quantity

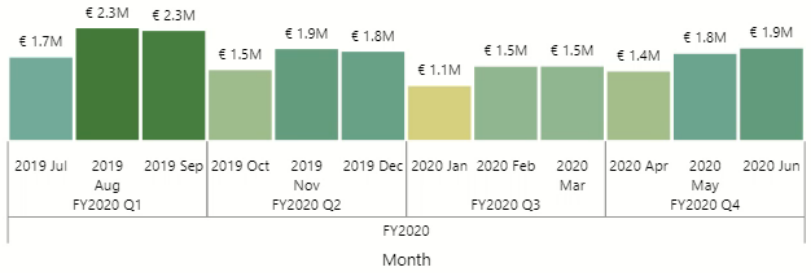
Reseller Search

Select row below to enable drill-through

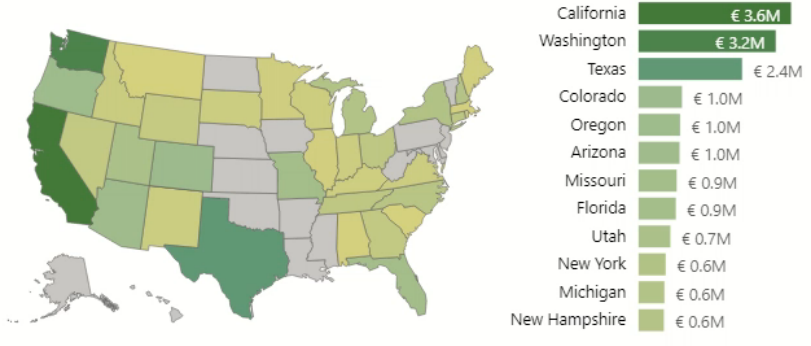
All

Reseller	City	State-Province	Total Sales
Westside Plaza	Sand City	California	€ 534,956.28
Field Trip Store	Loveland	Colorado	€ 427,305.59
Brakes and Gears	Tooele	Utah	€ 397,237.24
Thorough Parts and Repair Services	Lacey	Washington	€ 386,958.19
Rally Master Company Inc	Chandler	Arizona	€ 355,141.98
Outdoor Equipment Store	Nashua	New Hampshire	€ 314,662.56
Eastside Department Store	Union City	California	€ 296,328.92
Totes & Baskets Company	San Antonio	Texas	€ 289,777.50
Permanent Finish Products	Reno	Nevada	€ 288,088.47
Extraordinary Bike Works	Mesquite	Texas	€ 281,844.75
Safe Cycles Shop	Bellevue	Washington	€ 277,795.47
Great Bikes	Casper	Wyoming	€ 277,495.37
Excellent Riding Supplies	Memphis	Tennessee	€ 276,729.43
Area Bike Accessories	Modesto	California	€ 275,643.81
Total			**€ 20,927,177.22**

Total Sales by Year, Quarter and Month



Total Sales by State-Province

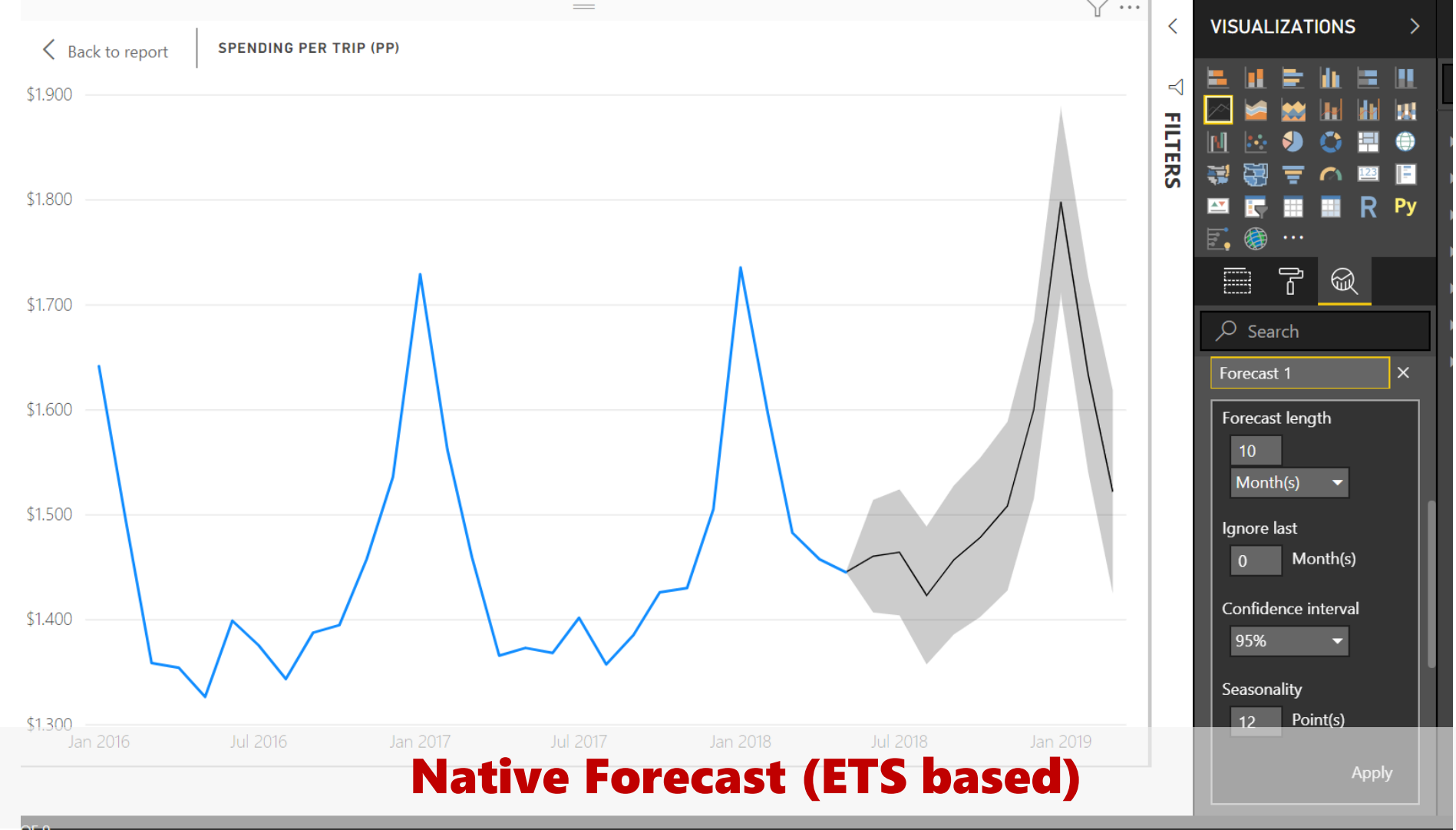


Filters

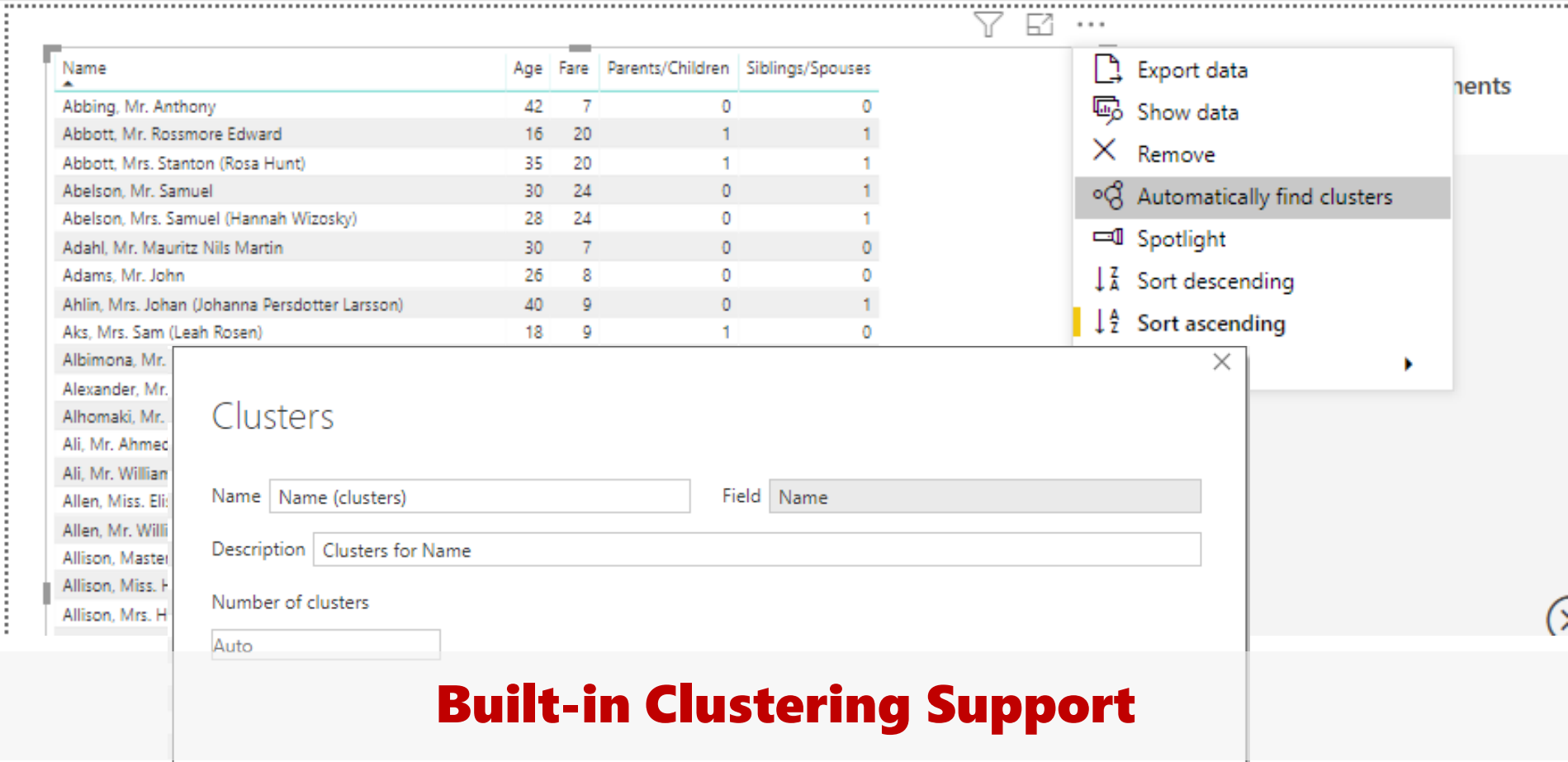
Last updated: 9/30/20 10:17 AM

Powerfull & Easily configurabe Drill Through Scenarios

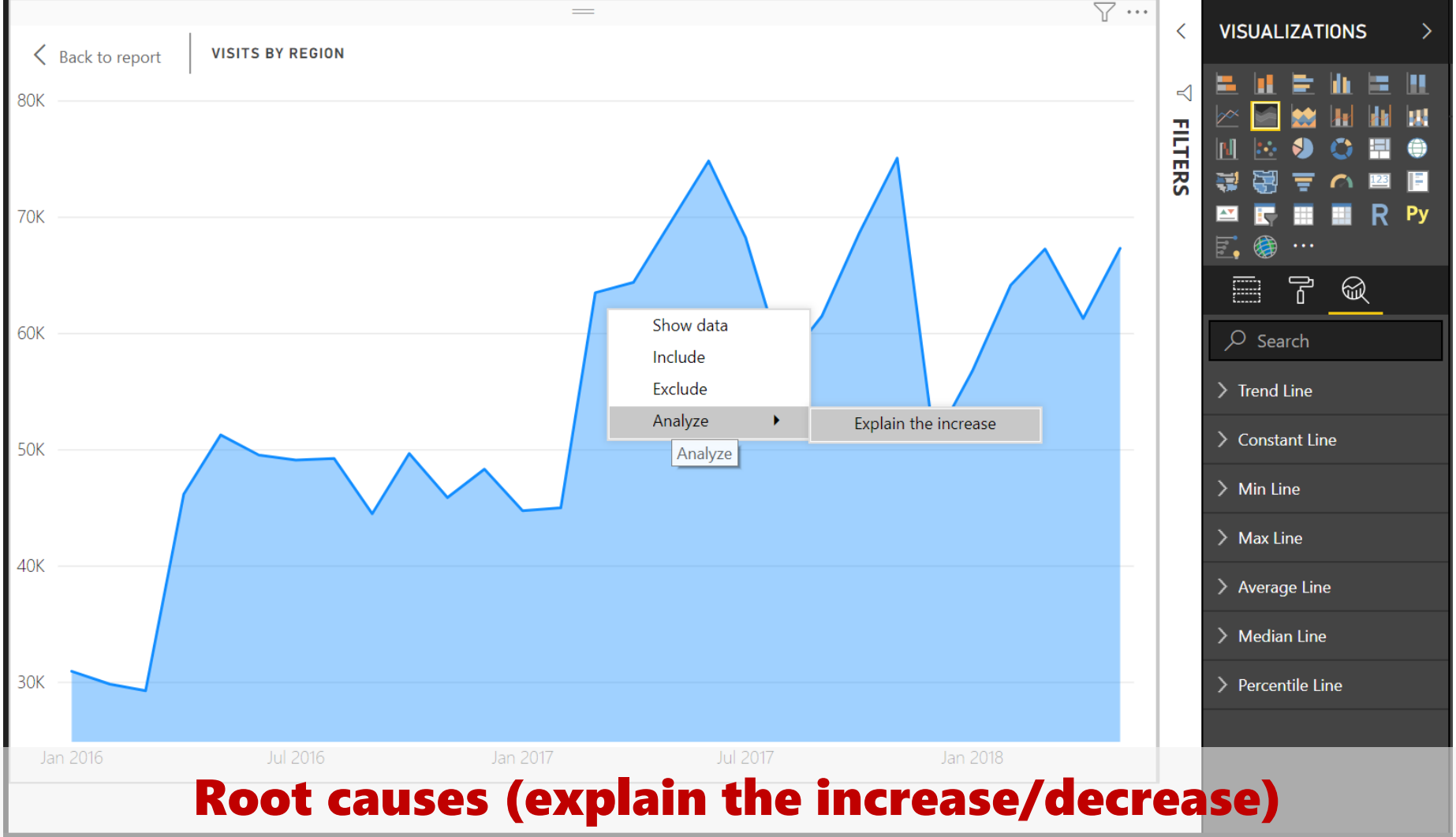
Introduction | Sales Summary | Reseller Drill through | Visual Zoom Slider | Anomaly Detection | Page 1



Native Forecast (ETS based)

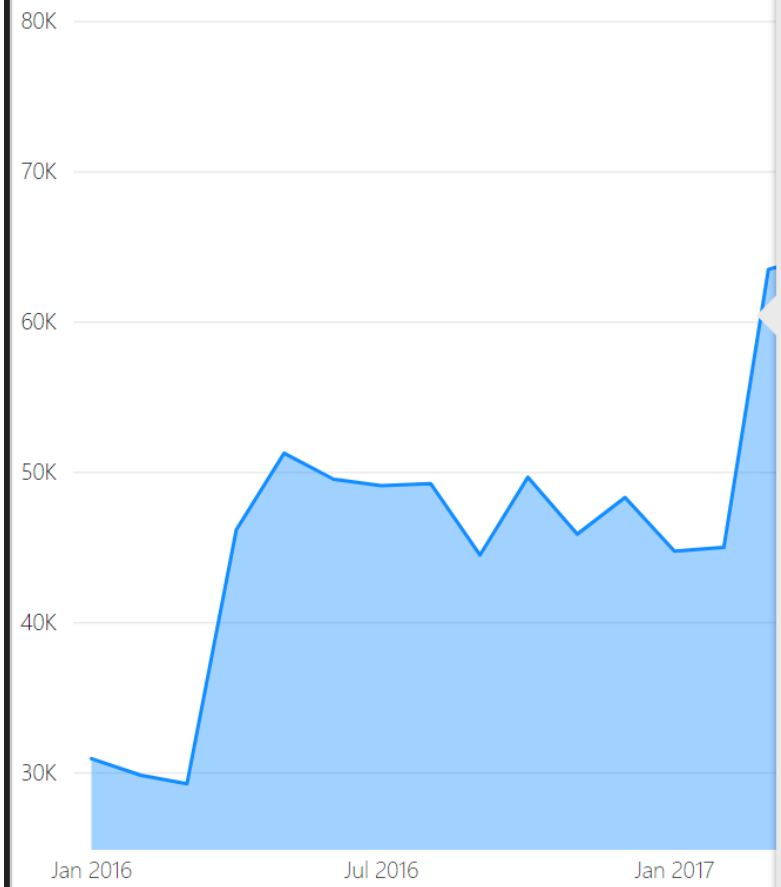


Built-in Clustering Support



Root causes (explain the increase/decrease)

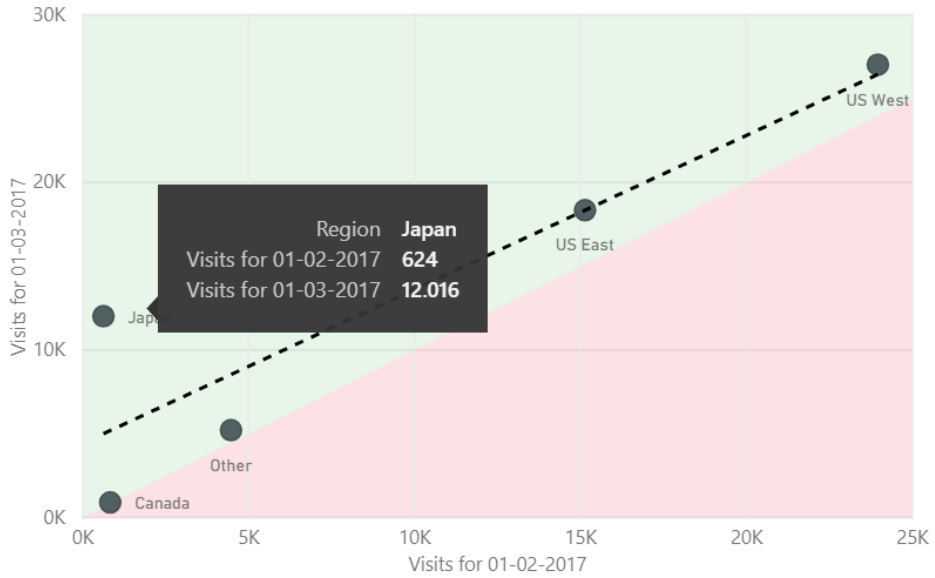
Back to report | VISITS BY REGION

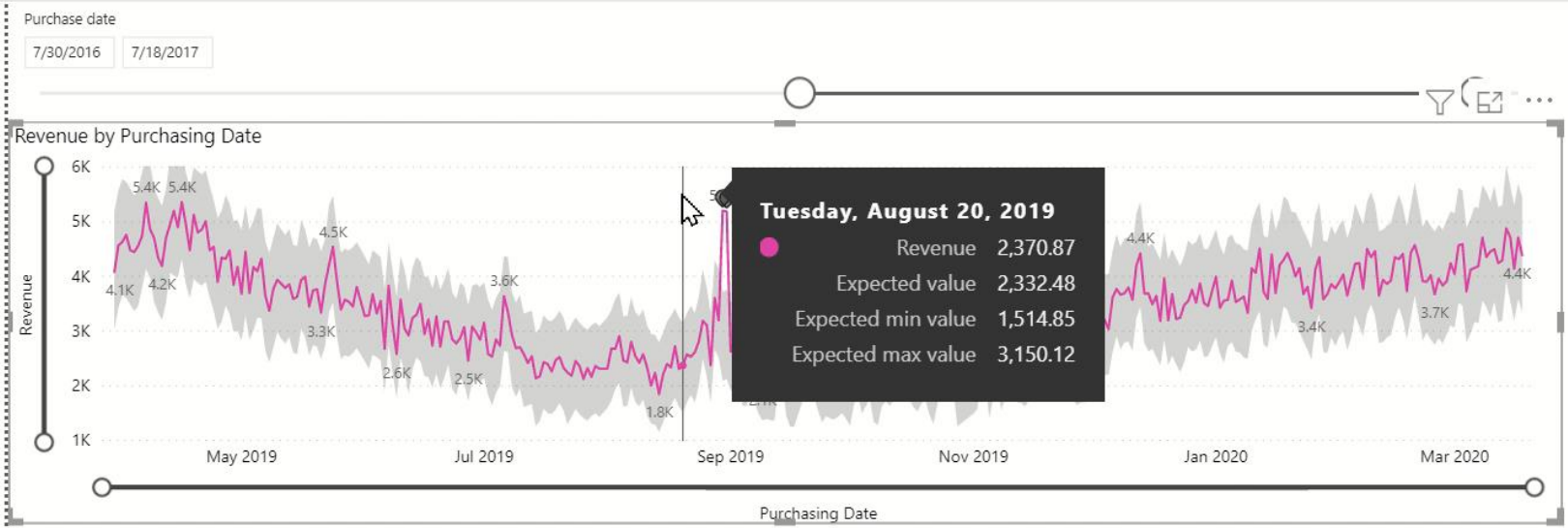


Here's the analysis of the 41.12% increase in Visits between 01-02-2017 and 01-03-2017

Visits for 01-02-2017 and Visits for 01-03-2017
BY REGION

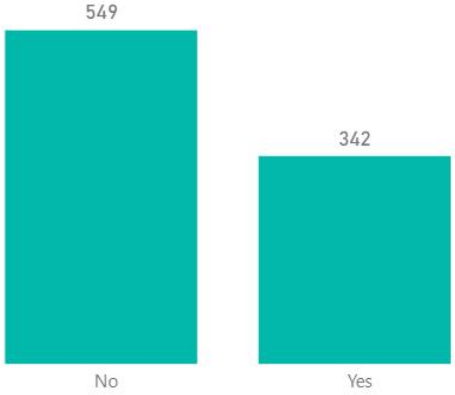
'Japan' accounted for the majority of the increase among Region. The relative contributions made by 'Japan', 'US West', and 'US East' changed the most.





Anomaly Detection and Root Cause Analysis

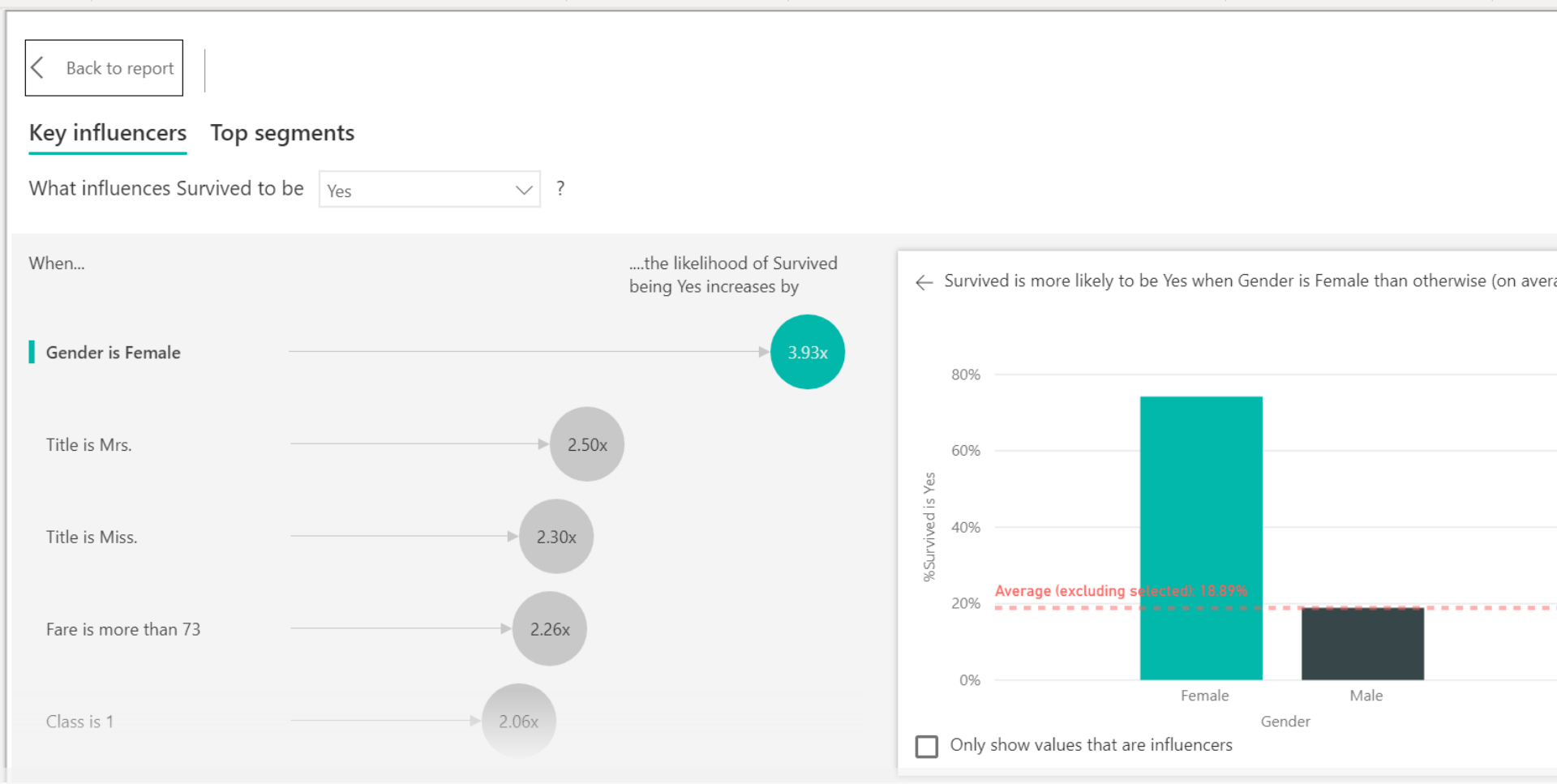
Passengers # by Survived



PassengerId	Name	Family	Sex	Age	Class	Fare	Parents/Children	Siblings/Spouses	Embarked	Ticket	Cabin	Title	Survived
1	Braund, Mr. Owen Harris	Braund	Male	22	3	7	0	1	Southampton	A/5 21171		Mr.	No
2	Cumings, Mrs. John Bradley (Florence Briggs Thayer)	Cumings	Female	38	1	71	0	1	Cherbourg	PC 17599	C85	Mrs.	Yes
3	Heikkinen, Miss. Laina	Heikkinen	Female	26	3	7	0	0	Southampton	STON/O2. 3101282		Miss.	Yes
4	Futrelle, Mrs. Jacques Heath (Lily May Peel)	Futrelle	Female	35	1	53	0	1	Southampton	113803	C123	Mrs.	Yes
5	Allen, Mr. William Henry	Allen	Male	35	3	8	0	0	Southampton	373450		Mr.	No
6	Moran, Mr. James	Moran	Male		3	8	0	0	Queenstown	330877		Mr.	No
7	McCarthy, Mr. Timothy J	McCarthy	Male	54	1	51	0	0	Southampton	17463	E46	Mr.	No
8	Palsson, Master. Gosta Leonard	Palsson	Male	2	3	21	1	3	Southampton	349909		Master.	No
9	Johnson, Mrs. Oscar W (Elisabeth Vilhelmina Berg)	Johnson	Female	27	3	11	2	0	Southampton	347742		Mrs.	Yes
10	Nasser, Mrs. Nicholas (Adele Achem)	Nasser	Female	14	2	30	0	1	Cherbourg	237736		Mrs.	Yes
11	Sandstrom, Miss. Marguerite Rut	Sandstrom	Female	4	3	16	1	1	Southampton	PP 9549	G6	Miss.	Yes
12	Bonnell, Miss. Elizabeth	Bonnell	Female	58	1	26	0	0	Southampton	113783	C103	Miss.	Yes
13	Saundercock, Mr. William Henry	Saundercock	Male	20	3	8	0	0	Southampton	A/5. 2151		Mr.	No
14	Andersson, Mr. Anders Johan	Andersson	Male	39	3	31	5	1	Southampton	347082		Mr.	No
15	Vestrom, Miss. Hulda Amanda Adolfina	Vestrom	Female	14	3	7	0	0	Southampton	350406		Miss.	No
16	Hewlett, Mrs. (Mary D Kingcome)	Hewlett	Female	55	2	16	0	0	Southampton	248706		Mrs.	Yes
17	Rice, Master. Eugene	Rice	Male	2	3	29	1	4	Queenstown	382652		Master.	No
18	Williams, Mr. Charles Eugene	Williams	Male		2	13	0	0	Southampton	244373		Mr.	Yes

Quick glimpse/preview of Key predictors/"influencers"

FILTERS



Key “influencers” visual

Distribution drivers & outliers


Back to report
VISITS BY REGION (YTD)
300K
250K
200K
150K
100K
50K
0K
188K
2016
Here are the filters that cause the distribution of Visits by Year to change the most
REGION
'Japan', with 20,4% of records; 'US East', with 20,4% of records; and 'Canada', with 20,4% of records, among others, most affect the distribution.
Japan
US East
Canada
Visits for Japan
Visits (Overall)
60K
40K
20K
0K
0,4M
0,3M
0,2M
0,1M
0,0M
Visits (Overall)
2016
2017
2018
Comparing proportions

Other Tips & Cool Features

2020SU11 Blog Demo - November - Power BI Desktop

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File Home Insert Modeling View Help External Tools Table tools Column tools

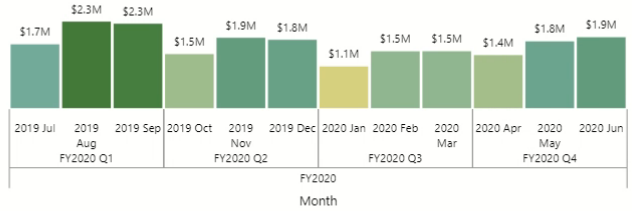
Name Sales Amount | Fixed decimal n... | Currency | $ % | .00 →0 | 0 | Sum

US Germany

United States Sales Summary

$21M	$7.00M	62K
Sales Amount	COGS	Order Quantity

Sales Amount by Year, Quarter and Month



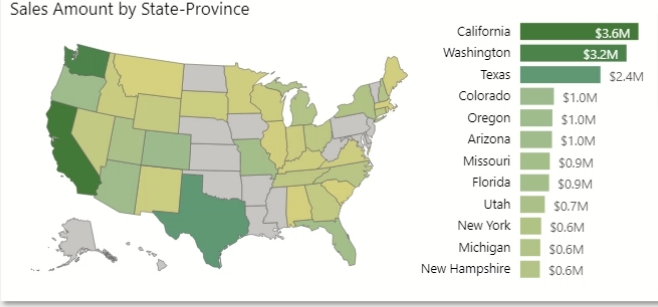
Reseller Search

Select row below to enable drill-through

All

Reseller	City	State-Province	Sales Amount
Westside Plaza	Sand City	California	$534,956
Field Trip Store	Loveland	Colorado	$427,306
Brakes and Gears	Tooele	Utah	$397,237
Thorough Parts and Repair Services	Lacey	Washington	$386,958
Rally Master Company Inc	Chandler	Arizona	$355,142
Outdoor Equipment Store	Nashua	New Hampshire	$314,663
Eastside Department Store	Union City	California	$296,329
Totes & Baskets Company	San Antonio	Texas	$289,777
Permanent Finish Products	Reno	Nevada	$288,088
Extraordinary Bike Works	Mesquite	Texas	$281,845
Safe Cycles Shop	Bellevue	Washington	$277,795
Great Bikes	Casper	Wyoming	$277,495
Excellent Riding Supplies	Memphis	Tennessee	$276,729
Area Bike Accessories	Modesto	California	$275,644
Total			**$20,927,177**

Sales Amount by State-Province



Last updated: 9/30/20 10:17 AM

Filters Visualizations

Fields

sales am

Sales

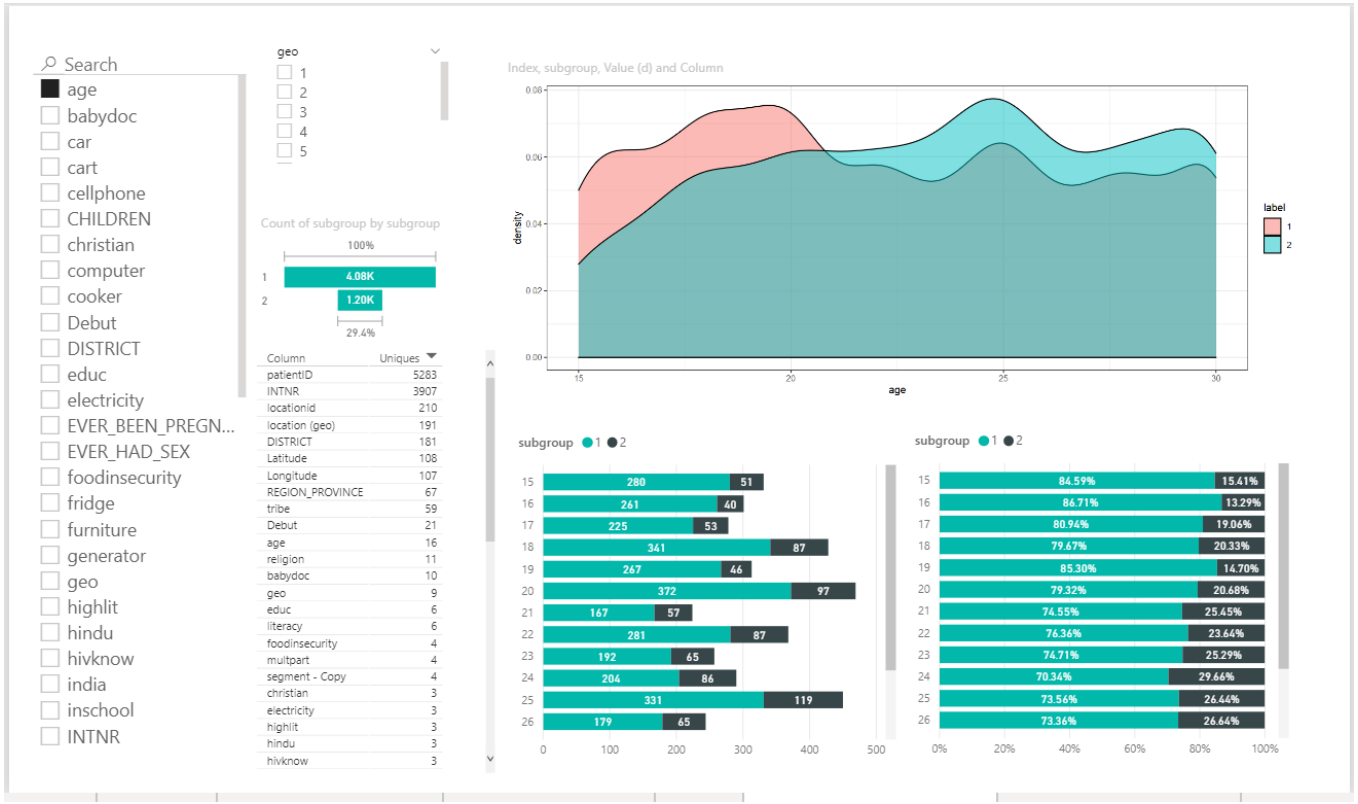
Sales Amount

Introduction | Sales Summary | Reseller Drill through | Visual Zoom Slider | Anomaly Detection | Page 1

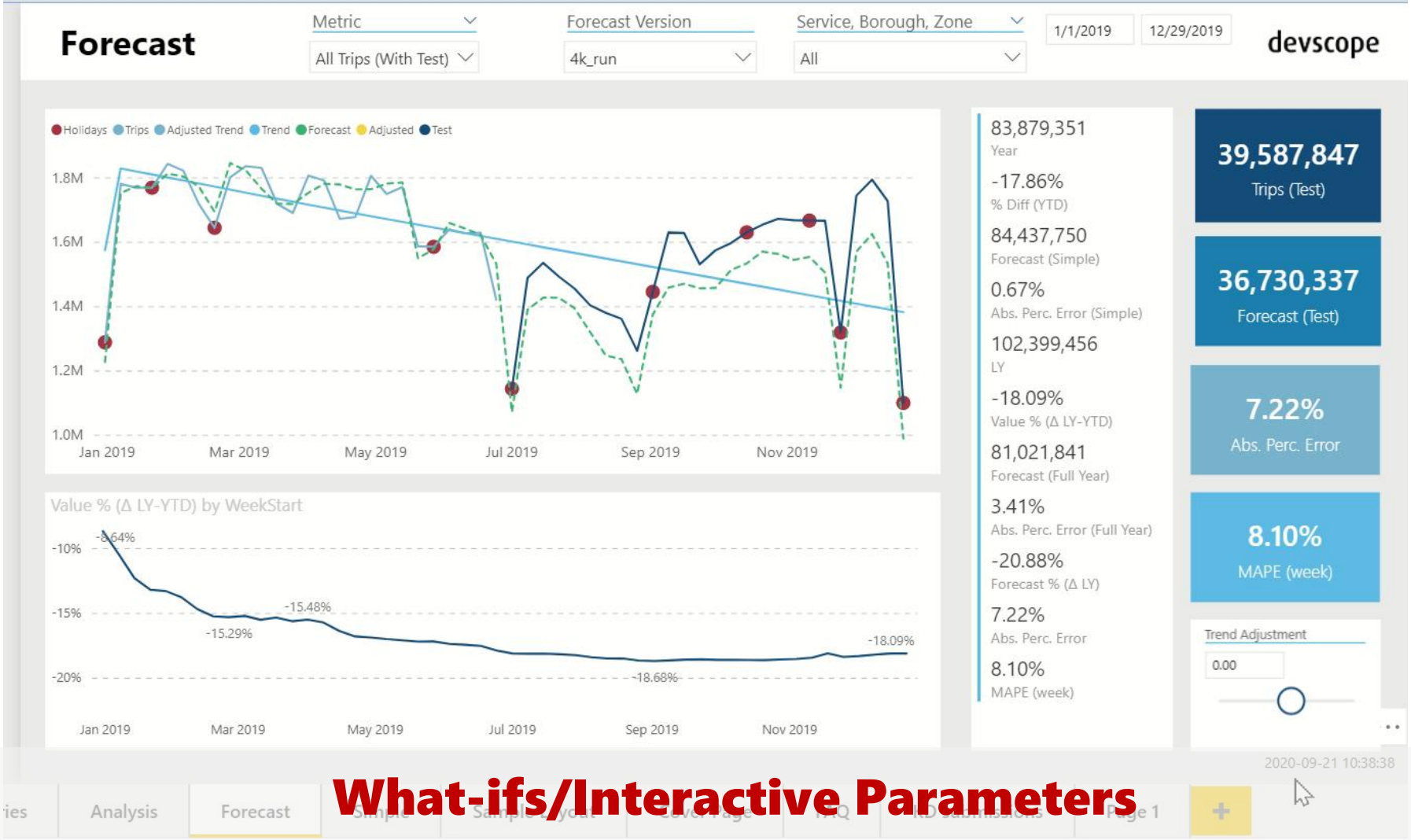
Page 2 of 6

Easy Refactoring, renames, measure formats,...

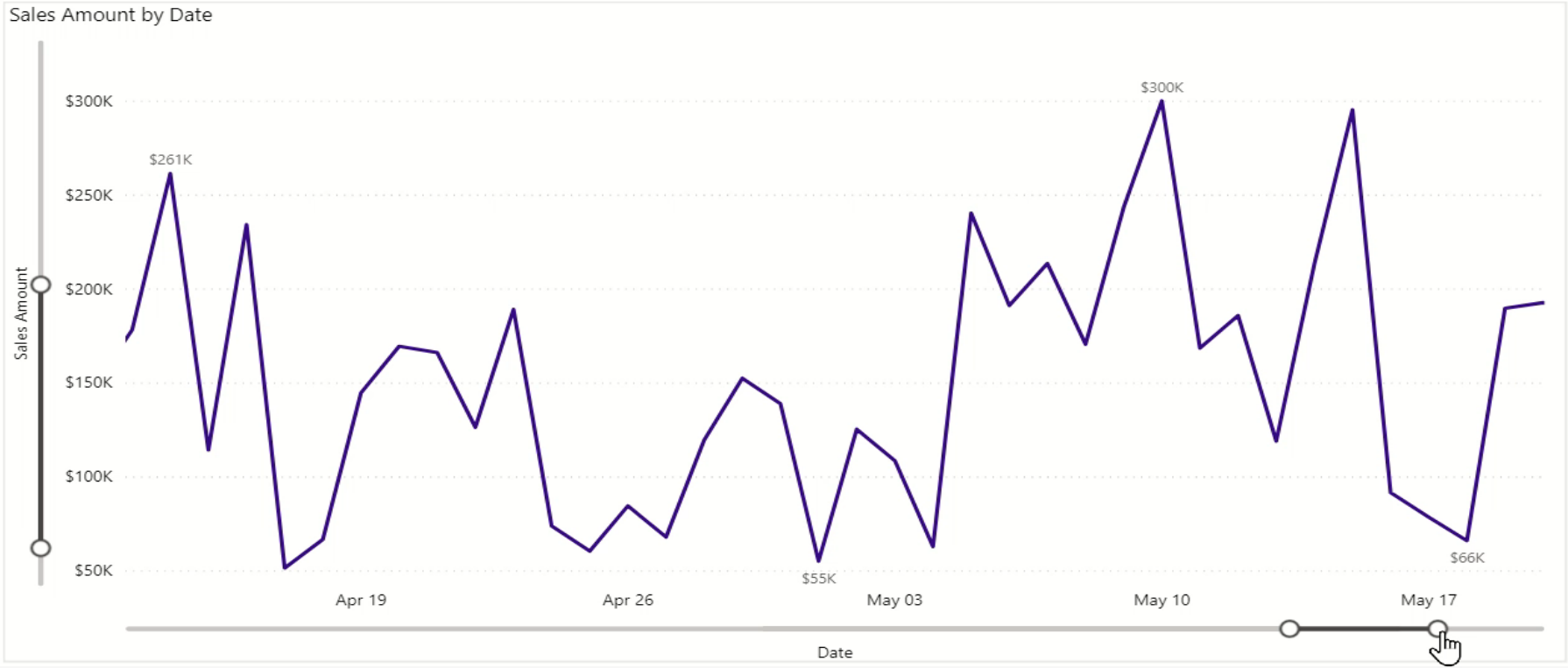
WomenHealth.pbix 8/5/2016 7:31 PM Microsoft Power BI D... 2,362 KB



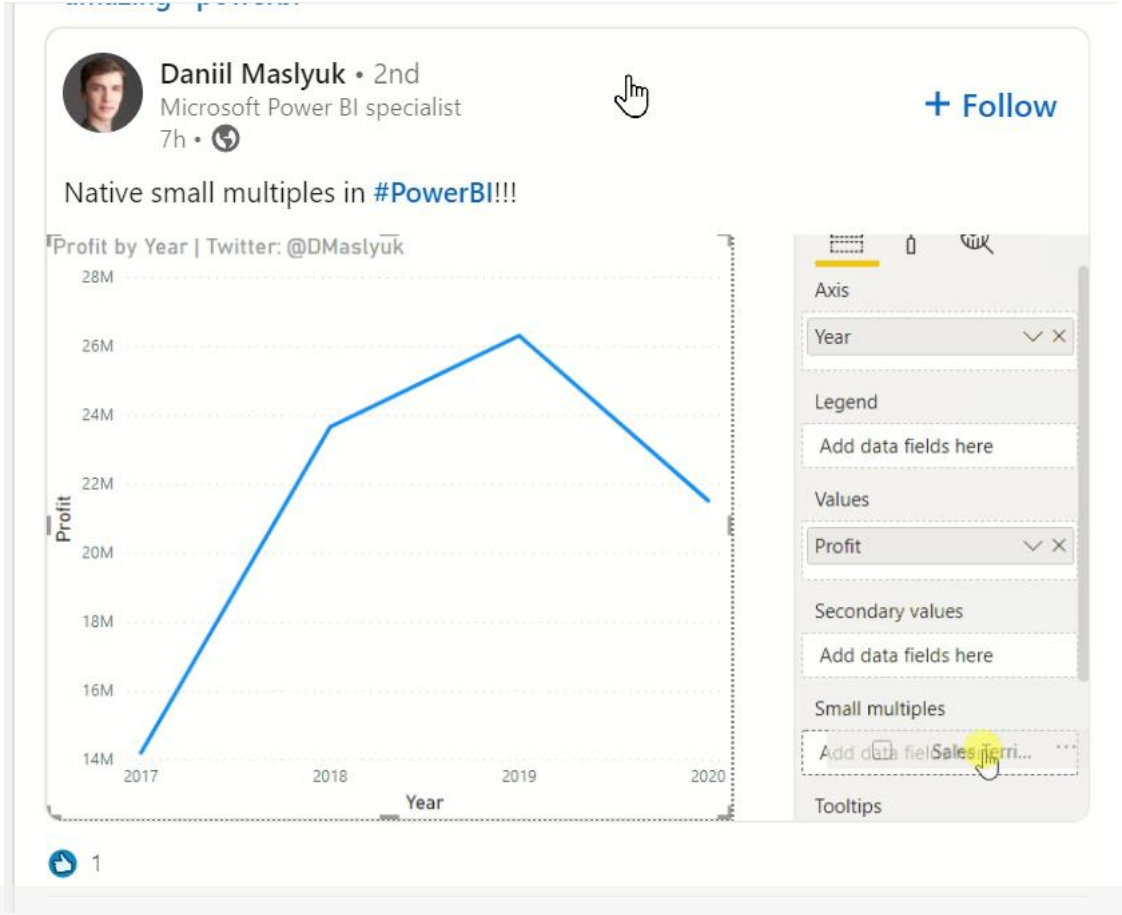
Reproducibility (just open it!)


Forecast
Metric
All Trips (With Test)
Forecast Version
4k_run
Service, Borough, Zone
All
1/1/2019
12/29/2019
devscope
Holidays Trips Adjusted Trend Trend Forecast Adjusted Test
1.8M
1.6M
1.4M
1.2M
1.0M
Jan 2019
Mar 2019
May 2019
Jul 2019
Sep 2019
Nov 2019
Value % (Δ LY-YTD) by WeekStart
-10%
-15%
-20%
-8.64%
-15.29%
-15.48%
-18.68%
-18.09%
Jan 2019
Mar 2019
May 2019
Jul 2019
Sep 2019
Nov 2019
83,879,351
Year
-17.86%
% Diff (YTD)
84,437,750
Forecast (Simple)
0.67%
Abs. Perc. Error (Simple)
102,399,456
LY
-18.09%
Value % (Δ LY-YTD)
81,021,841
Forecast (Full Year)
3.41%
Abs. Perc. Error (Full Year)
-20.88%
Forecast % (Δ LY)
7.22%
Abs. Perc. Error
8.10%
MAPE (week)
39,587,847
Trips (Test)
36,730,337
Forecast (Test)
7.22%
Abs. Perc. Error
8.10%
MAPE (week)
Trend Adjustment
0.00
2020-09-21 10:38:38
What-ifs/Interactive Parameters
Analysis
Forecast

Visual Zoom Slider

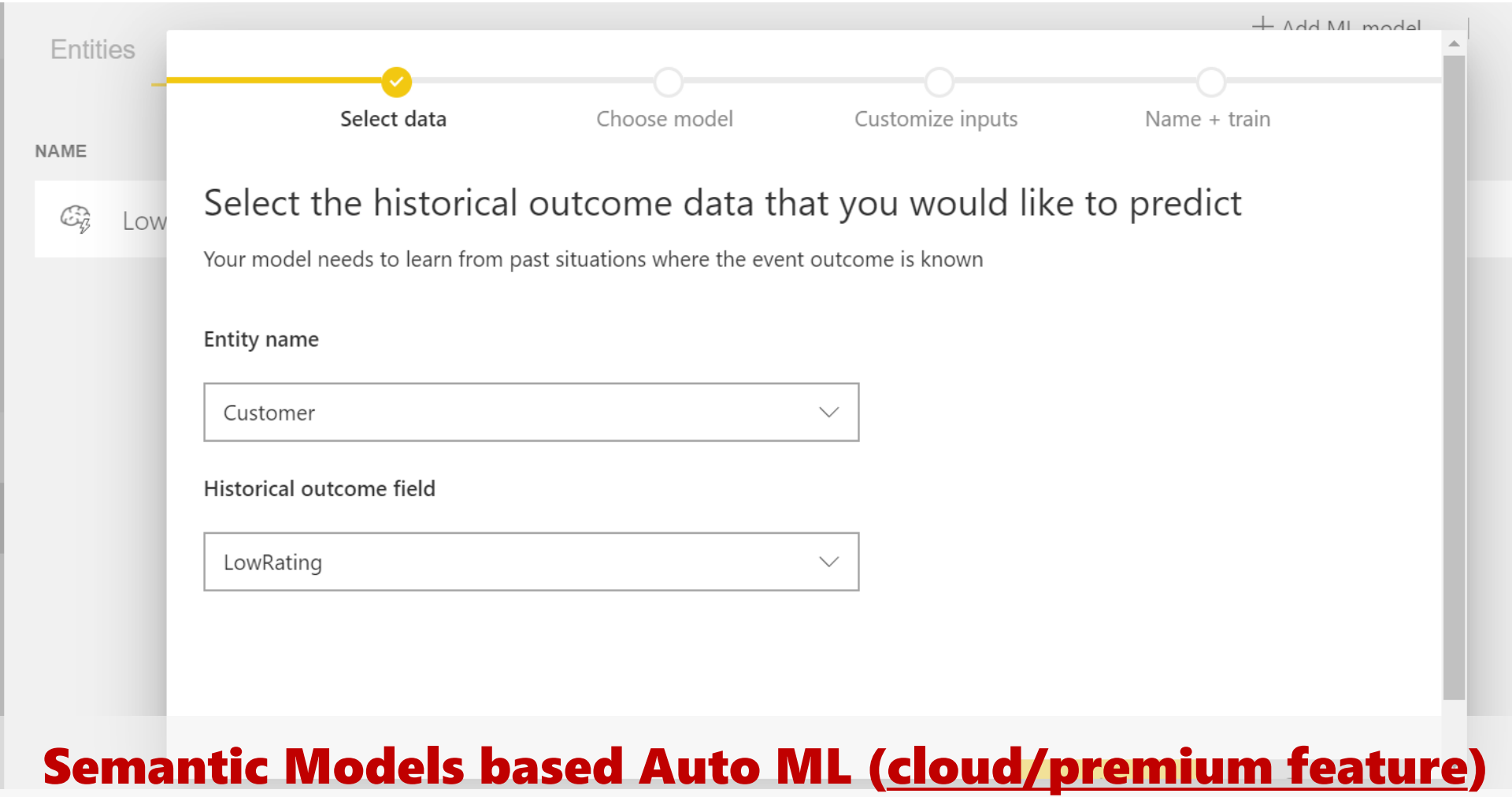


New Zoom Slider



New Native Small Multiples

Power BI & Auto ML



Semantic Models based Auto ML (cloud/premium feature)

Entities

Add ML model

Close

NAME

Low

Select data

Choose model

Customize inputs

Name + train

Choose a model type

Classification

Binary Prediction

Determine the likelihood of a specific outcome being achieved.

General Classification

Identify the category or class an entity belongs to.

Regression

Regression

Estimate a numeric value

Forecasting

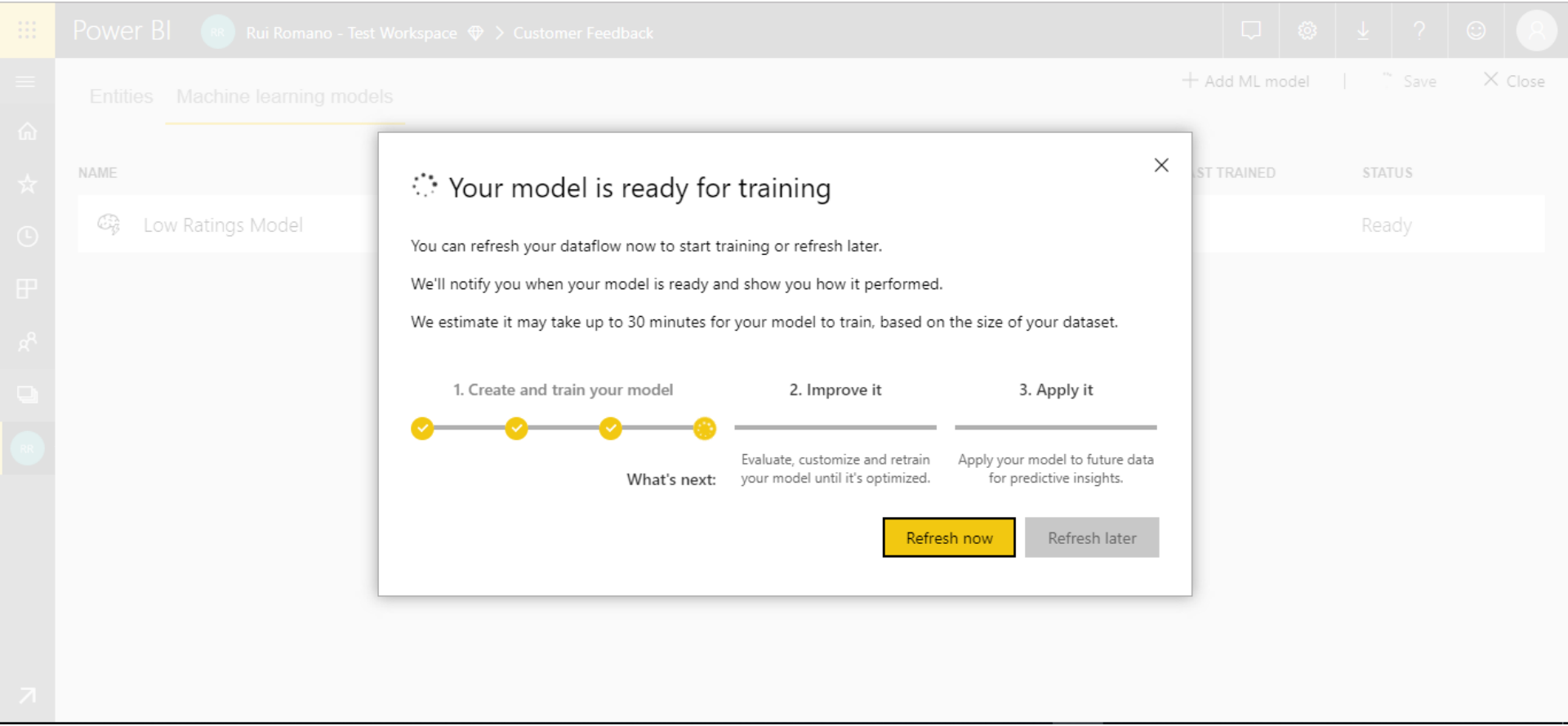
Forecasting

Estimate values and trends based on historical data.

Back

Next

Cancel


Power BI
Rui Romano - Test Workspace
Customer Feedback
Entities
Machine learning models
Add ML model
Save
Close
NAME
ST TRAINED
STATUS
Low Ratings Model
Ready
Your model is ready for training
You can refresh your dataflow now to start training or refresh later.
We'll notify you when your model is ready and show you how it performed.
We estimate it may take up to 30 minutes for your model to train, based on the size of your dataset.
1. Create and train your model
2. Improve it
3. Apply it
What's next:
Evaluate, customize and retrain your model until it's optimized.
Apply your model to future data for predictive insights.
Refresh now
Refresh later

Titanic Survival model accuracy preview

This report summarizes the accuracy of the binary prediction model and enables you to find an optimal threshold for defining your business outcome.

Apply model | Edit model

Model Performance

78%

Area under ROC curve

Training summary data

304 Total Data Provided	404 Total Data Sampled
304 Training Data	100 Validation Data

How the model was tested

The model predicted Survived probabilities for a test set of 100 records and compared the predicted outcomes (based on the selected threshold) to the historical outcomes.

Inspect your model

Learn about the performance of your model by inspecting the accuracy diagrams below.

Cumulative Gains Chart

A Cumulative Gains chart shows what percentage of the positive rows can be by detected by targeting a percentage of the total rows.

This chart compares the performance of 3 approaches:
- "Model" -- your model is used to sort the rows in descending order of the predicted score indicating the target category.
- "Ideal" -- a theoretically "perfect" model, which would always rank any rows in the target category above rows that do not belong to the target category
- "Random guess" -- no model being used. The rows are assumed to be evenly distributed so, for example, 10% of the total rows are expected to contain 10% of the target category

ROC Curve

An ROC (Received Operating Characteristics) curve tells you how capable your model is to distinguish between the target category (positive) and the other rows in your data (negative).

A model will produce probability, between 0 and 1, for each row it scores. Typically, you will select a threshold (e.g. 0.5) and decide that everything above that threshold will be treated as a positive prediction and everything below will be treated as a negative prediction.

Each point on the ROC curve represents a possible value of the probability threshold. The vertical coordinate represents the rate of correct positive predictions, while the horizontal coordinate represents the rate of negatives incorrectly labeled by your model as positives

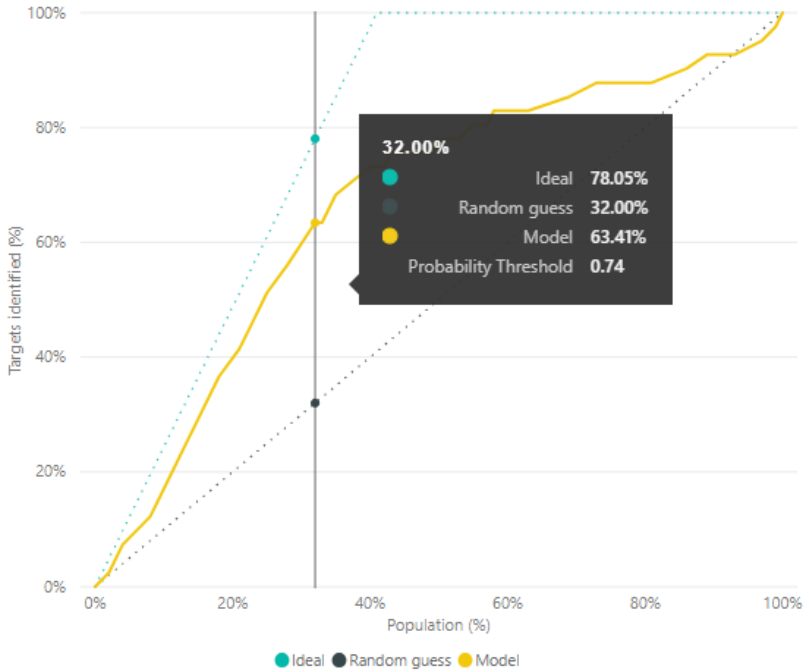
Titanic Survival model accuracy preview

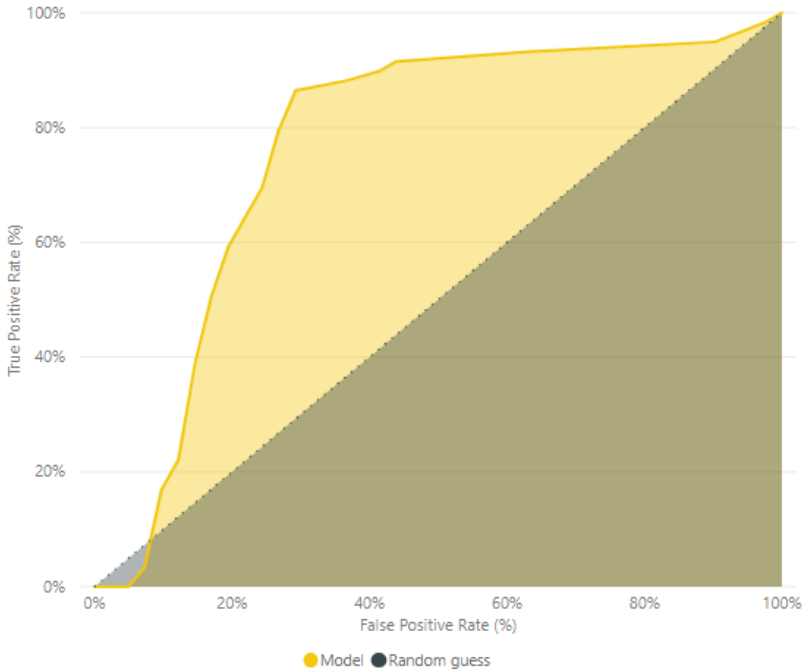
This report summarizes the accuracy of the binary prediction model and enables you to find an optimal threshold for defining your business outcome.

Apply model | Edit model

The performance of your model gets better as it gets close to the ideal model line.

ideal model that is achieved by your model. The higher the curve, the better your model is at predicting positives as positives and negatives as negatives.





Model Performance | Accuracy Report | Technical Details

How to Start?

Microsoft Power BI Desktop

Important! Selecting a language below will dynamically change the complete page content to that language.

Select Language: English

Download

Microsoft Power BI Desktop is built for the analyst. It combines state-of-the-art interactive visualizations, with industry-leading data query and modeling built-in. Create and publish your reports to Power BI. Power BI Desktop helps you empower others with timely critical insights, anytime, anywhere.

Details

Note: There are multiple files available for this download. Once you click on the "Download" button, you will be prompted to select the files you need.

Version:	Date Published:
2.88.621.0	12/16/2020
File Name:	**File Size:**
PBIDesktopSetup_x64.exe	318.8 MB
PBIDesktopSetup.exe	292.5 MB

Microsoft Power BI Desktop is a companion desktop application to Power BI.

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Power BI Portugal

Lisbon, Portugal
2,184 members · Public group
Organized by **Manuel D.** and **7 others**

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We are a group of Power BI users and data enthusiasts, interested on leveraging data analytics in real business scenarios. Our group will cover several areas, from Data Engineering, Data Modelling, Data Visualization, to more advanced analytics such as Machine Learning, Storytelling or Open Data, always learning from peers and industry experts.

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Message

Members (2,184)

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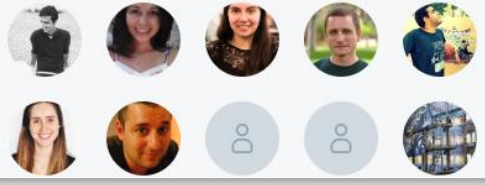


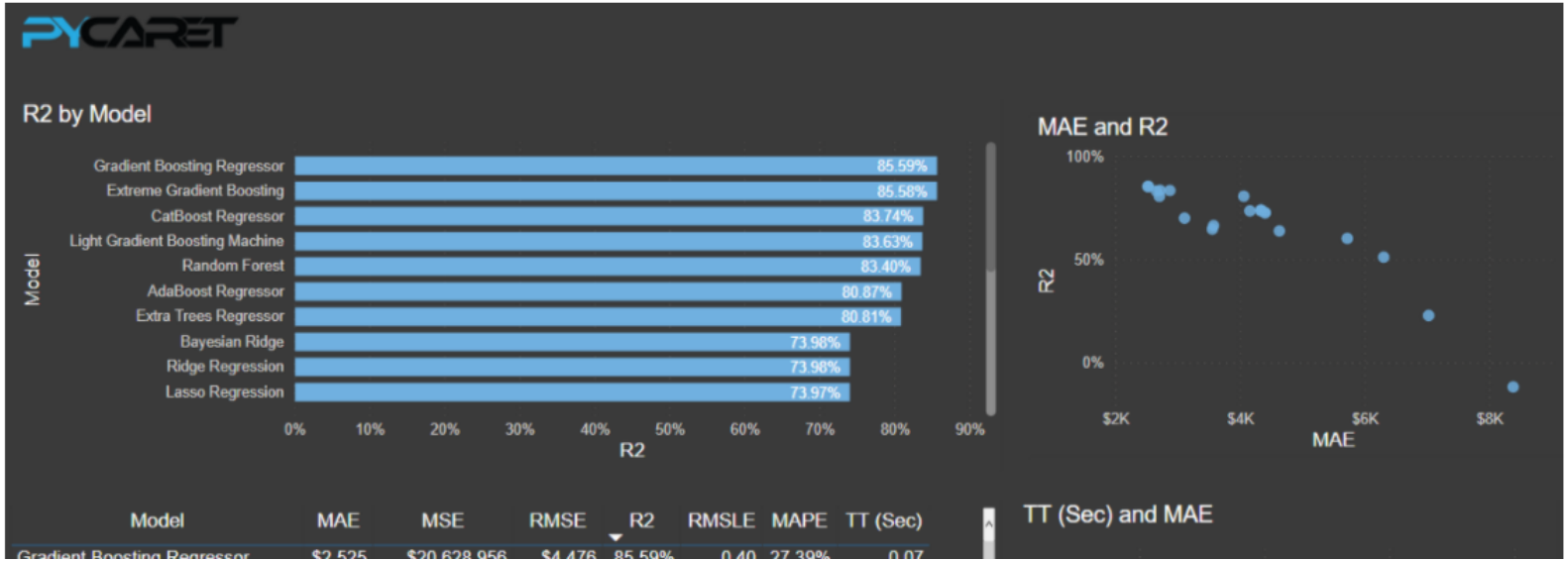
Some Limitations (Power BI Desktop)

- not a true Data Science/Machine Learning workbench (sadly... ☹)
  - Ex: no native distribution plots, histograms (custom visuals available)
- Yeap, not Open Source...
- Not the best format for CI/CD (binary)
- Not scriptable/automation friendly
- Windows only
  - No Linux, No MacOs
    (but note: lots of Power BI feature available on web/cloud version)
- Not the fastest reading formats like Excel, CSV
  - Like, *damn slow*...
  - But after load... “damn fast” ☺

References & Further reading

Build your own AutoML in Power BI using PyCaret 2.0

Moez Ali Aug 5 · 8 min read



Time series Forecasting in Power BI

Time series forecasting in PowerBI. (An Almost) Comprehensive Guide

Apr 24, 2020 • 37 min read

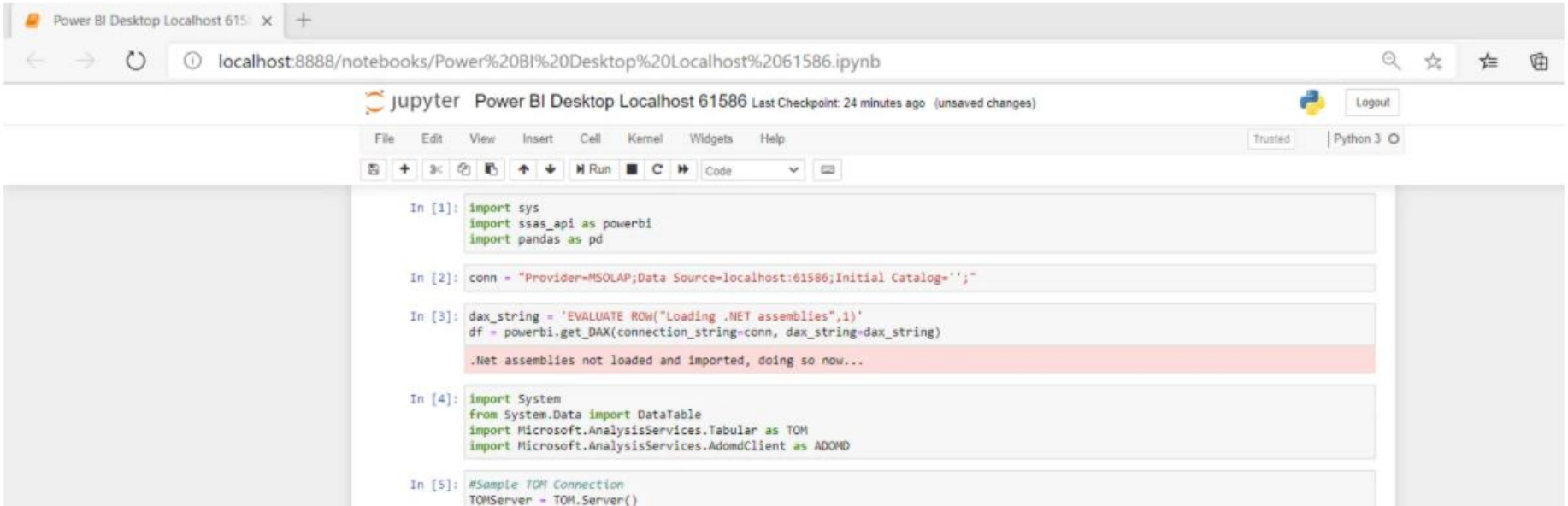
forecasting Python powerbi forecasting_in_powerbi

View On GitHub launch binder Open in Colab

Power BI Python

Jupyter as an External Tool for Power BI Desktop (Python Part 4)

By David Eldersveld | August 17, 2020



Thank you!

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 Medium /devscope-ai

 Github /DevScope/ai-lab

US Germany

United States Sales Summary

$20.93M	$7.00M	62K
Sales Amount	COGS	Order Quantity

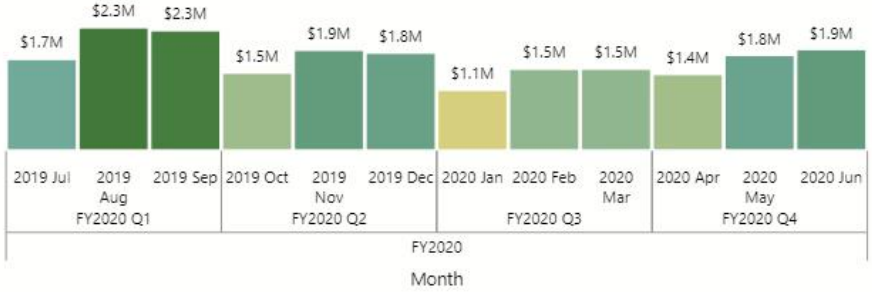
Reseller Search

Select row below to enable drill-through

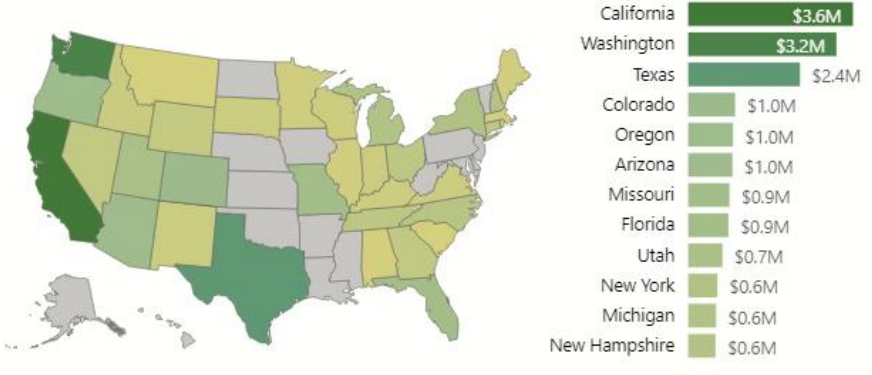
All

Reseller	City	State-Province	Sales Amount
Westside Plaza	Sand City	California	$534,956.28
Field Trip Store	Loveland	Colorado	$427,305.59
Brakes and Gears	Tooele	Utah	$397,237.24
Thorough Parts and Repair Services	Lacey	Washington	$386,958.19
Rally Master Company Inc	Chandler	Arizona	$355,141.98
Outdoor Equipment Store	Nashua	New Hampshire	$314,662.56
Eastside Department Store	Union City	California	$296,328.92
Totes & Baskets Company	San Antonio	Texas	$289,777.50
Permanent Finish Products	Reno	Nevada	$288,088.47
Extraordinary Bike Works	Mesquite	Texas	$281,844.75
Safe Cycles Shop	Bellevue	Washington	$277,795.47
Great Bikes	Casper	Wyoming	$277,495.37
Excellent Riding Supplies	Memphis	Tennessee	$276,729.43
Area Bike Accessories	Modesto	California	$275,643.81
Total			**$20,927,177.22**

Sales Amount by Year, Quarter and Month



Sales Amount by State-Province



ADVENTURE WORKS

Questions/ Feedback ?

Last updated: 9/30/20 10:17 AM

Questions/Feedback ?

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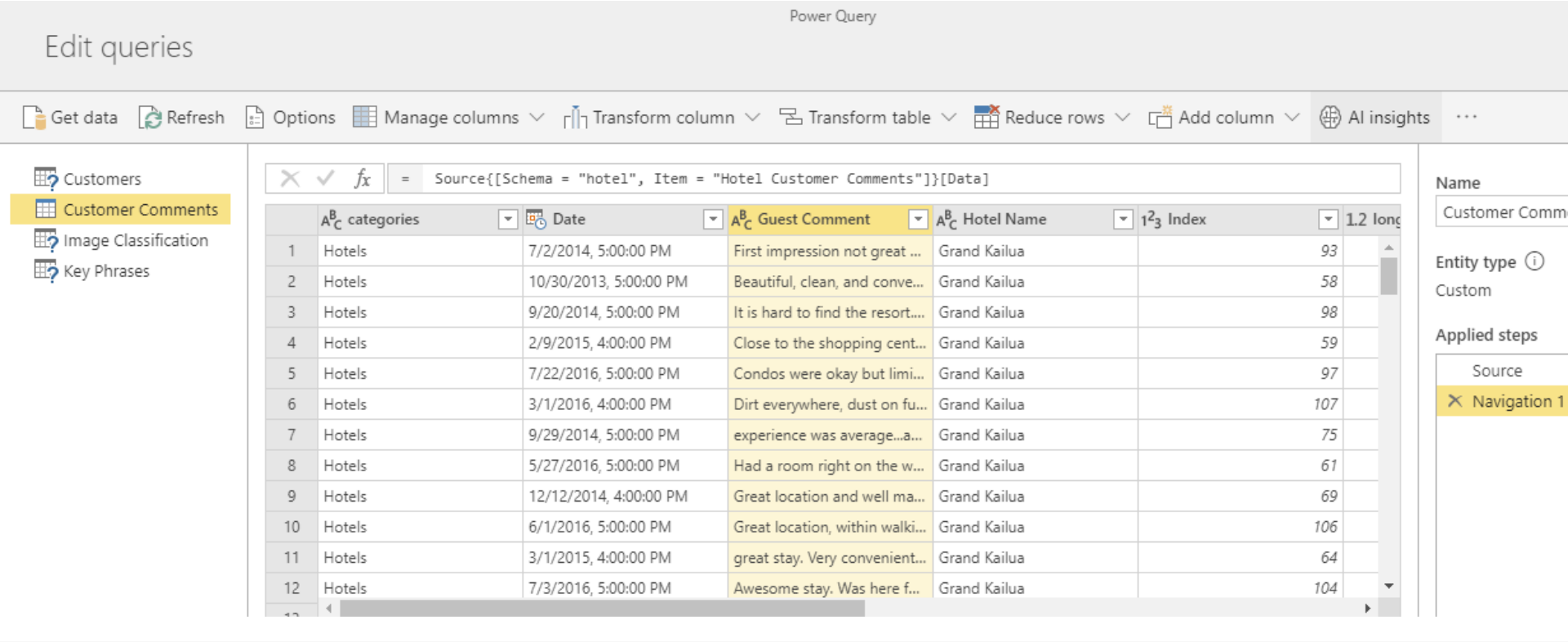
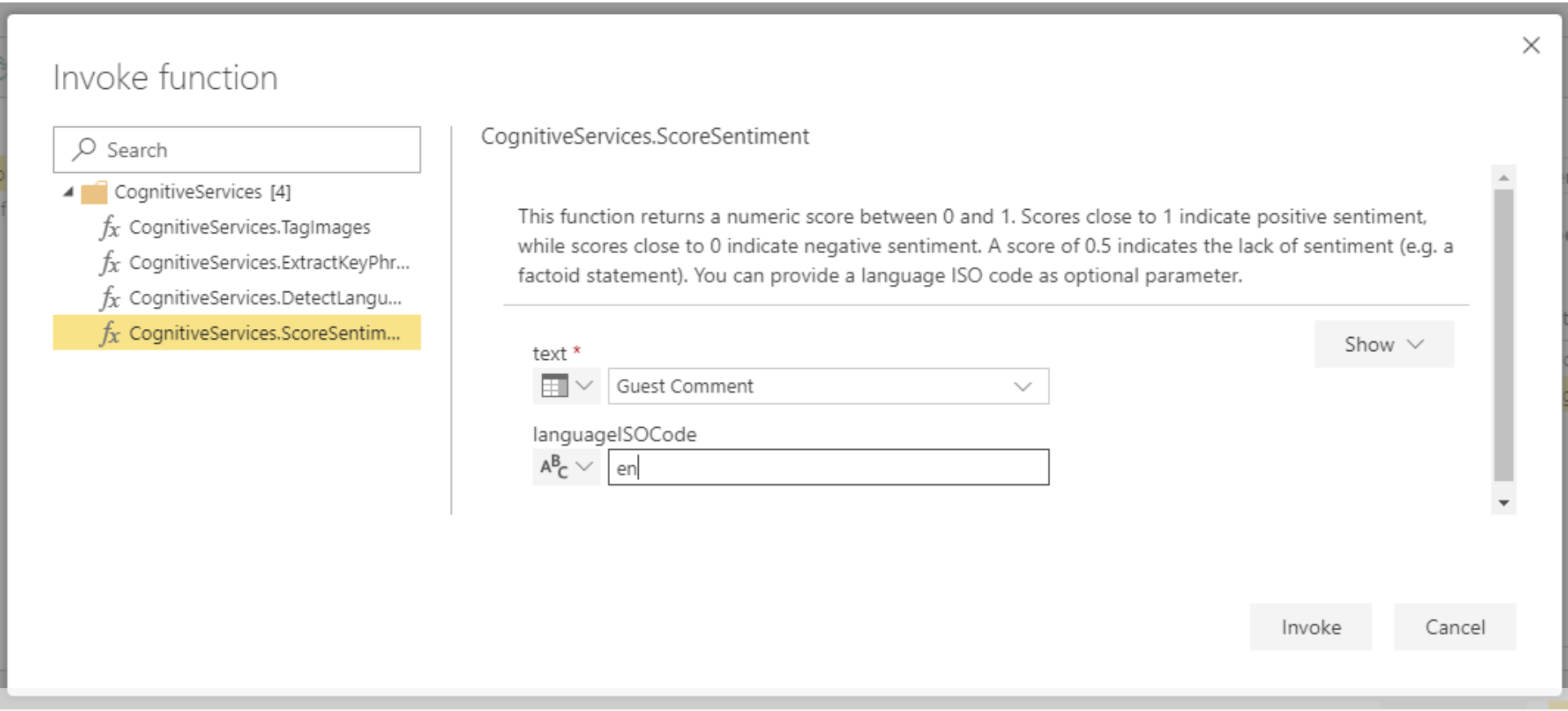
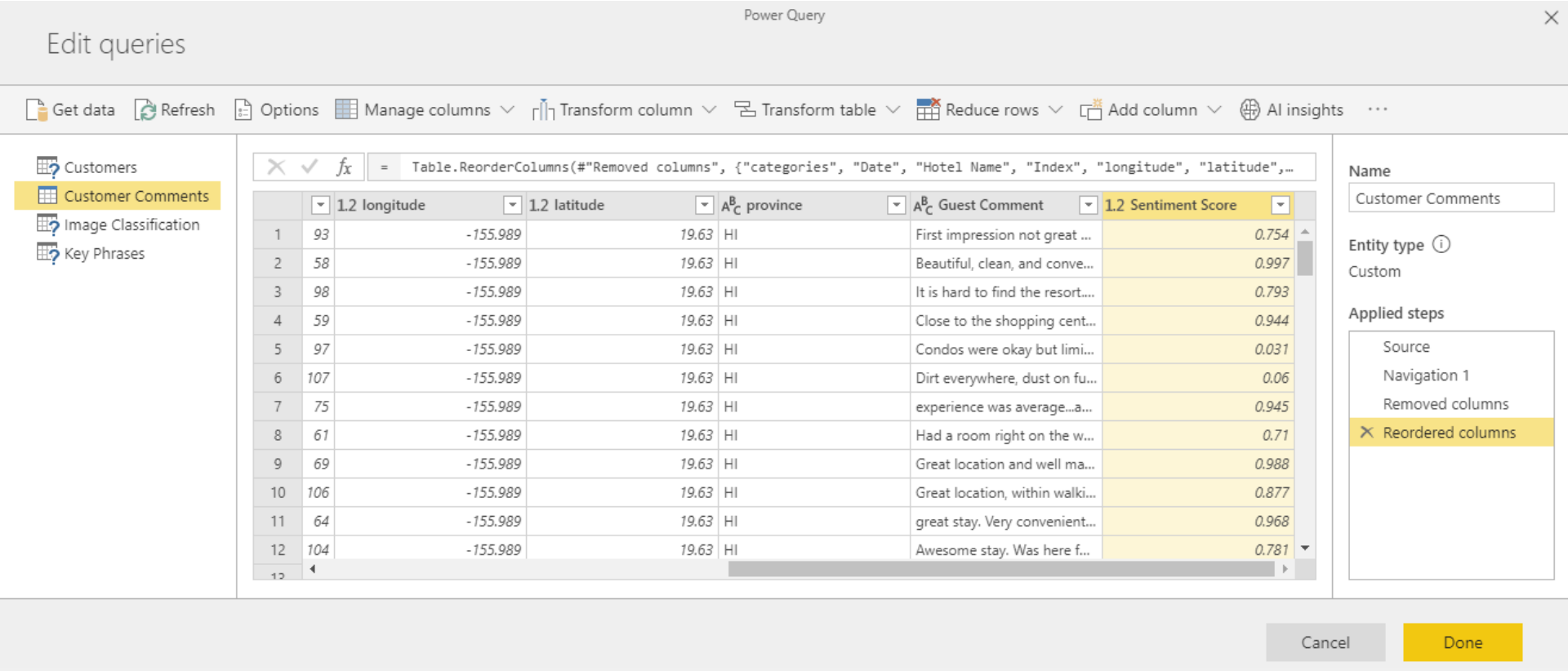
Power BI & AI Built-in models



Example: Natural Language Processing steps



Access to AI APIs (Azure Cognitive Services)



Sentiment Analysis of Guest Comments

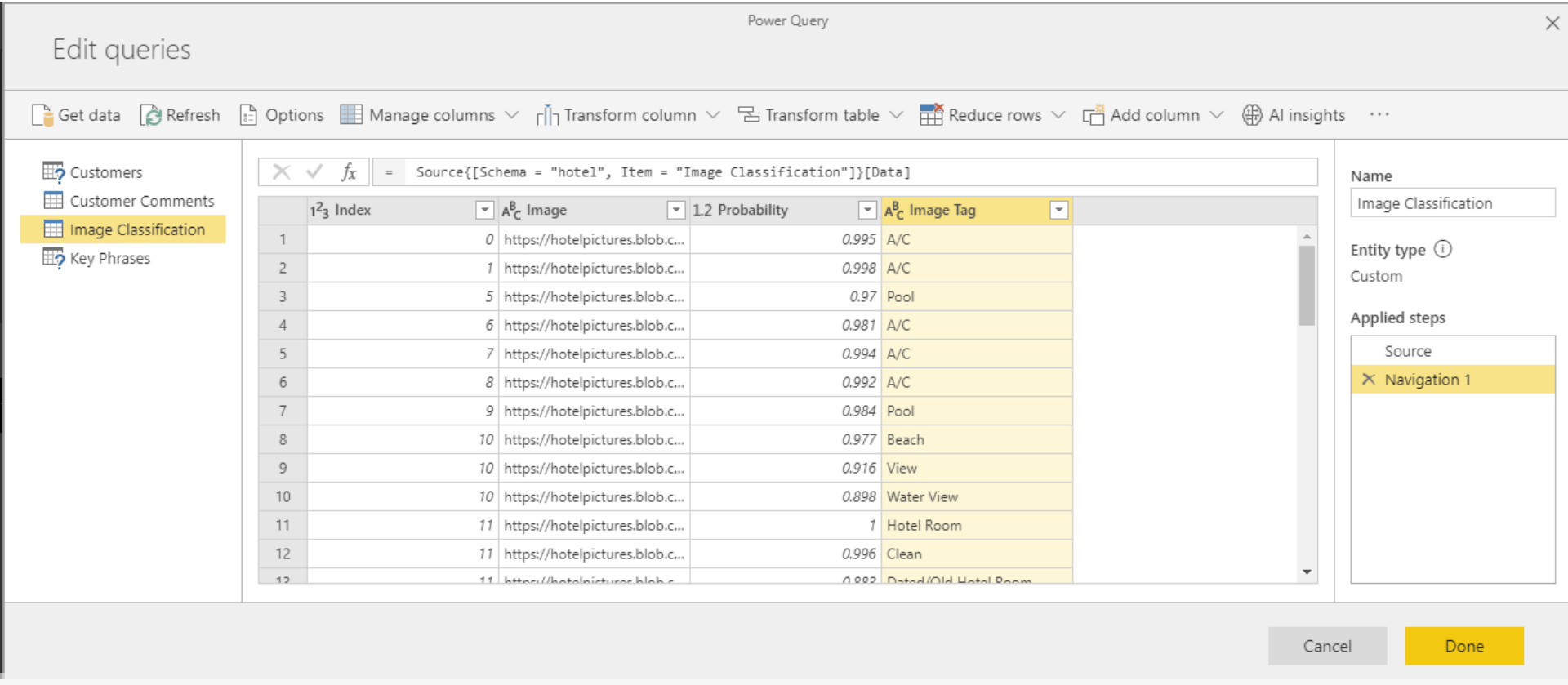


Image Tagging and Key Phrases

Power Query

Edit queries

Get data | Refresh | Options | Manage columns | Transform column | Transform table | Reduce rows | Add column | AI insights

- Customers
- Customer Comments
- Image Classification
- Key Phrases

```
= Source{[Schema = "hotel", Item = "Key Phrases"]}[Data]
```

	Index	Keyphrases
1	129	AC unit
2	45	AC unit
3	135	accommodating
4	79	accommodating
5	85	adults
6	20	adults
7	132	adults
8	104	air conditioning
9	101	air conditioning
10	89	air conditioning
11	49	air conditioning
12	96	air conditioning
13	78	air conditioning

GUEST REVIEWS

Our room was on the ground floor, facing the ocean. Great view. The lobby was beautiful- no walls. Breakfast

The accommodation is basic but you will have money left over for shopping and sightseeing.

Great beach park next to the hotel. Worth it if travelling with kids due to the large playground. Very quiet

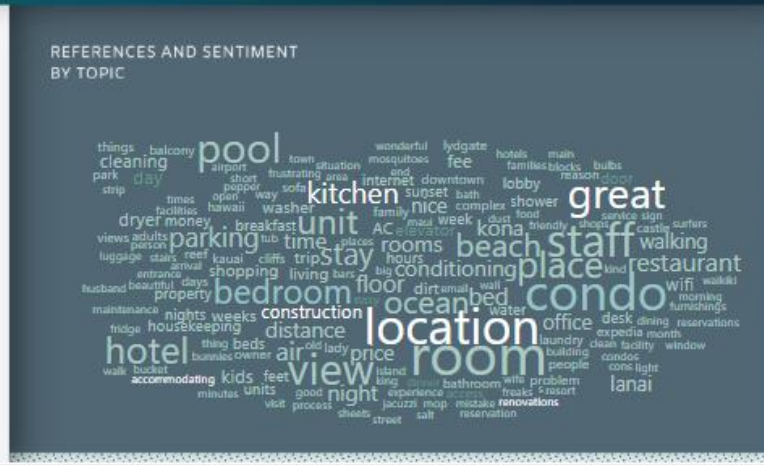
I would expect that the Jacuzzi would be hot (or at least warm) - it was not. Very disapointed with my stay..

Incredible hotel. Loved the view. Very friendly staff.

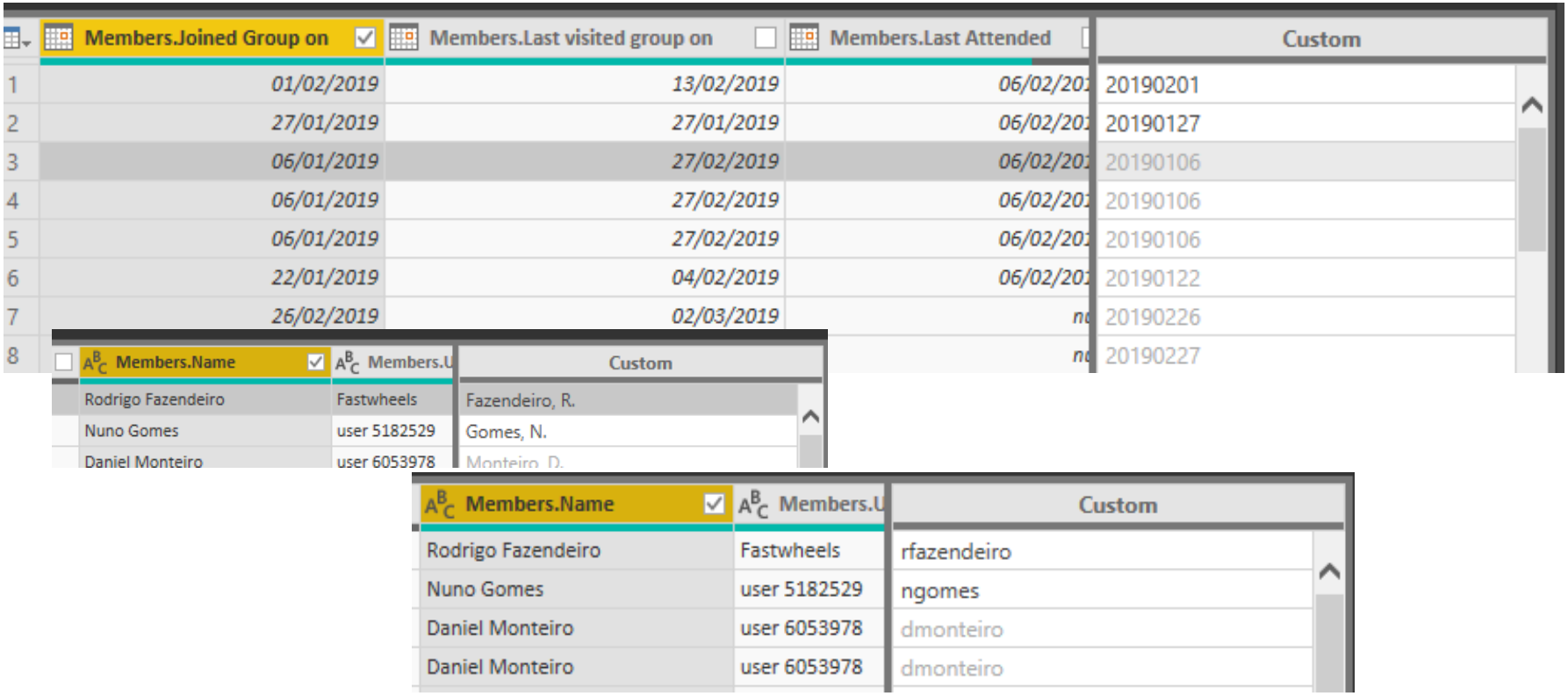
Amazing Japanese restaurant downstairs. The hotel is walking distance to all the necessary amenities.

Reserved a king room with ocean view. Was given a queen bed with a view. Notified desk was given a king

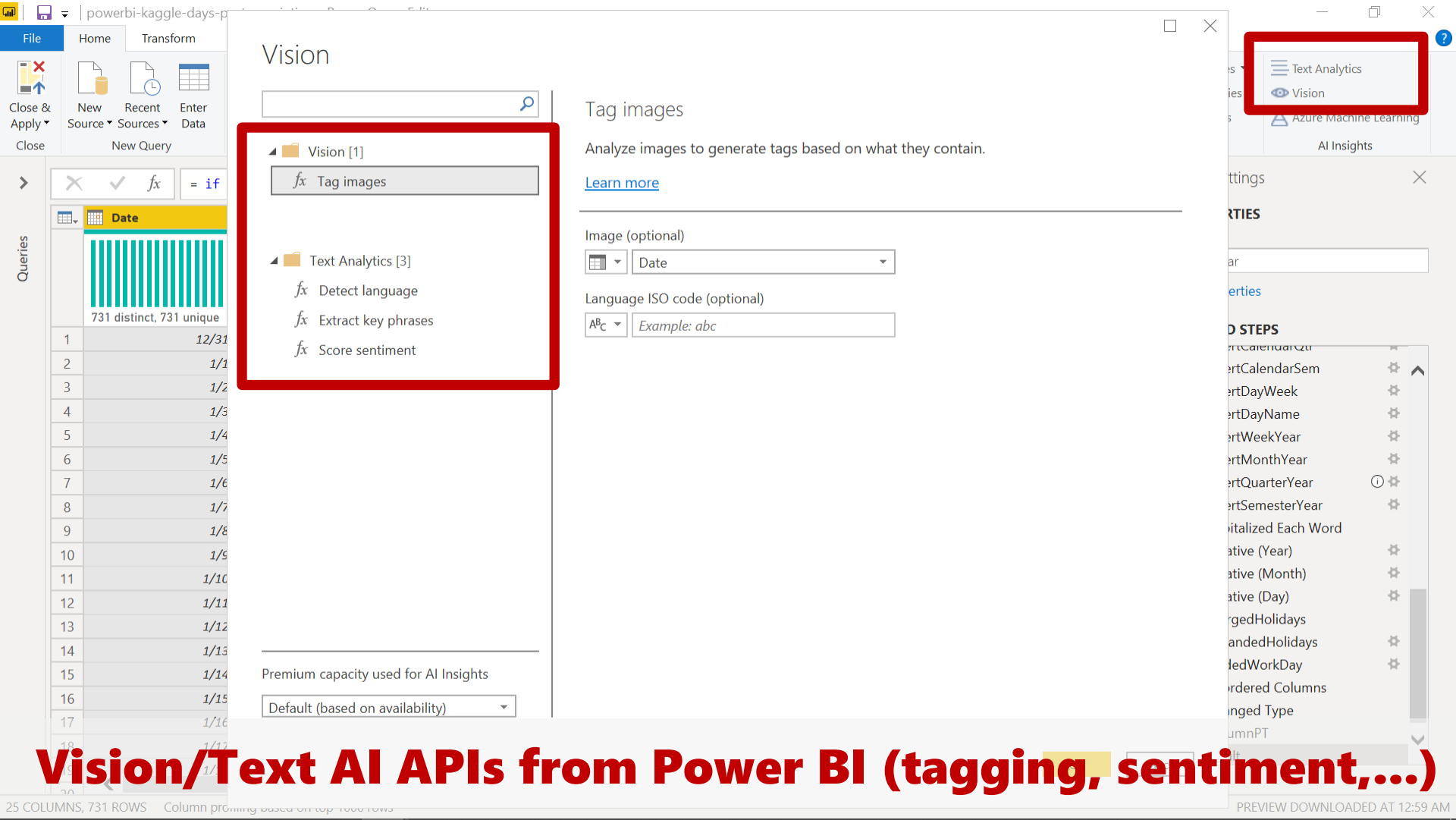
Clean, good location, fast WiFi, a very comfortable king bed. Ended up with a great view which was a nice



eviews | Guest Analytics | +



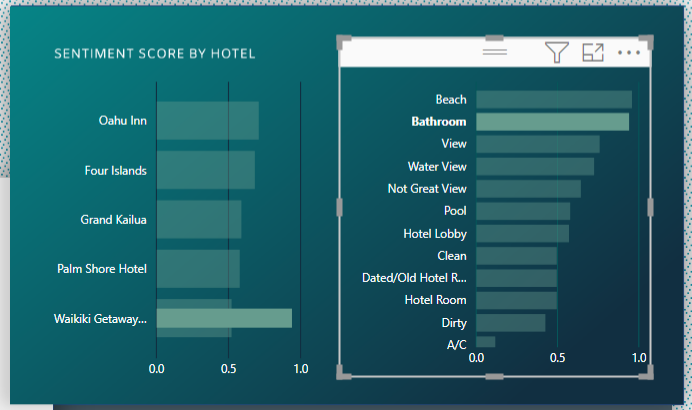
Prep by example

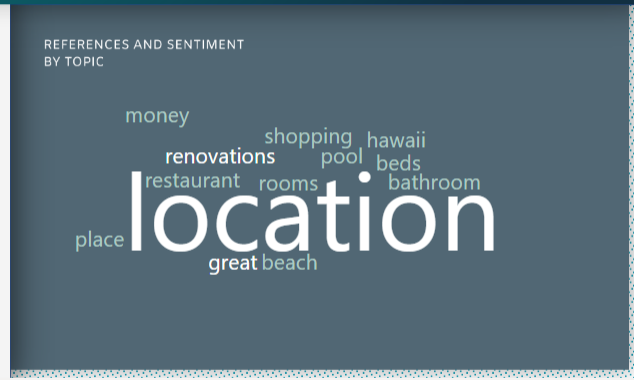

Vision
Vision [1]
Tag images
Text Analytics [3]
Detect language
Extract key phrases
Score sentiment
Premium capacity used for AI Insights
Default (based on availability)
Tag images
Analyze images to generate tags based on what they contain.
Learn more
Image (optional)
Date
Language ISO code (optional)
Example: abc
Text Analytics
Vision
Azure Machine Learning
AI Insights
Vision/Text AI APIs from Power BI (tagging, sentiment,...)

GUEST REVIEWS

Rooms were acceptable, basic but a decent size, older style. No major issues. The beds were very

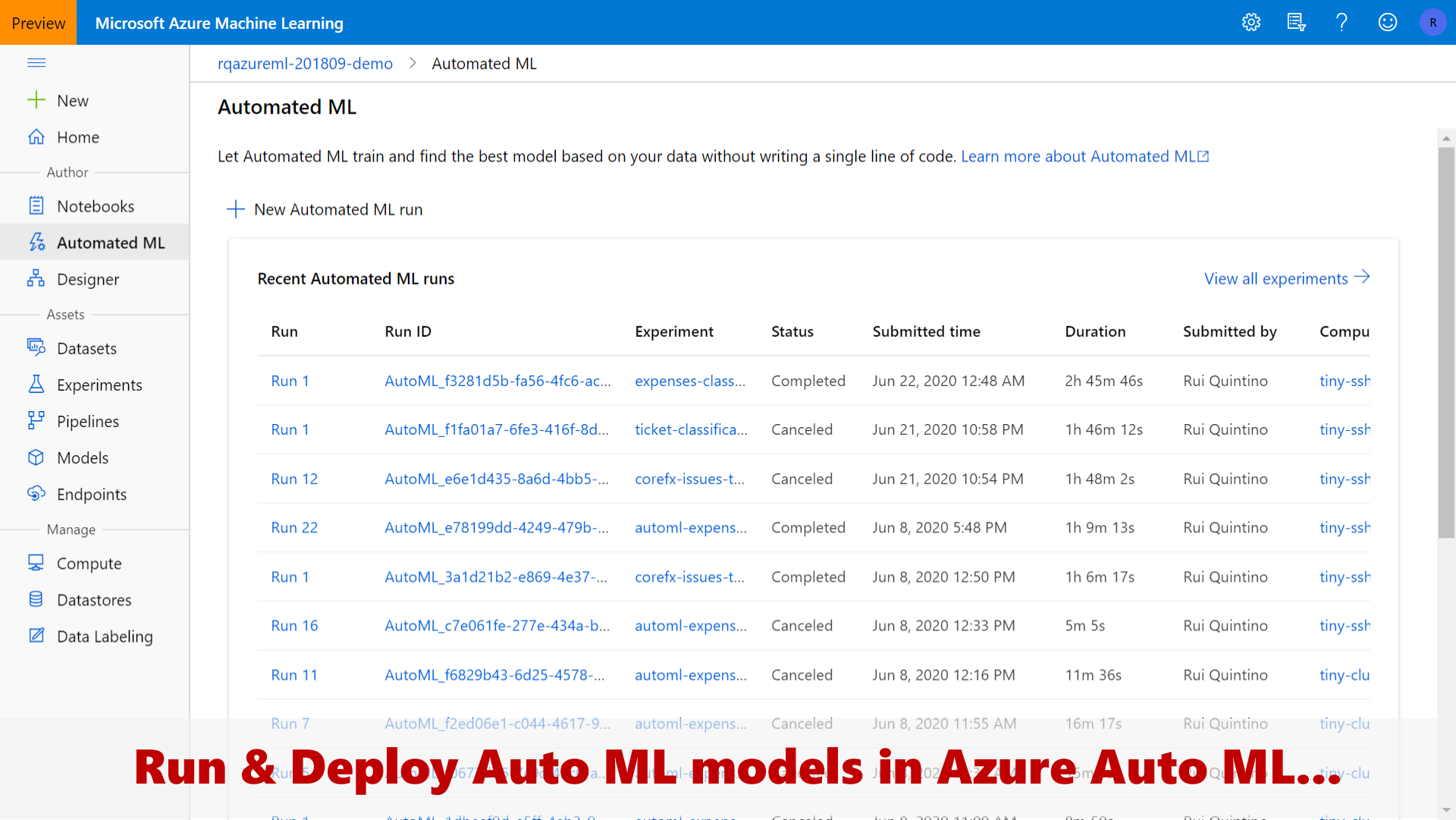
Clean room, older style, 1950ish, needs some remodelling, but the most important thing is of course,





Visualizations
Fields
Filters

Guest Reviews
Guest Analytics


Preview
Microsoft Azure Machine Learning
R
New
Home
Author
Notebooks
Automated ML
Designer
Assets
Datasets
Experiments
Pipelines
Models
Endpoints
Manage
Compute
Datastores
Data Labeling
rqazureml-201809-demo
Automated ML
Automated ML
Let Automated ML train and find the best model based on your data without writing a single line of code. Learn more about Automated ML
New Automated ML run
Recent Automated ML runs
View all experiments
Run
Run ID
Experiment
Status
Submitted time
Duration
Submitted by
Compu
Run 1
AutoML_f3281d5b-fa56-4fc6-ac...
expenses-class...
Completed
Jun 22, 2020 12:48 AM
2h 45m 46s
Rui Quintino
tiny-ssh
Run 1
AutoML_f1fa01a7-6fe3-416f-8d...
ticket-classifica...
Canceled
Jun 21, 2020 10:58 PM
1h 46m 12s
Rui Quintino
tiny-ssh
Run 12
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corefx-issues-t...
Canceled
Jun 21, 2020 10:54 PM
1h 48m 2s
Rui Quintino
tiny-ssh
Run 22
AutoML_e78199dd-4249-479b-...
automl-expens...
Completed
Jun 8, 2020 5:48 PM
1h 9m 13s
Rui Quintino
tiny-ssh
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AutoML_3a1d21b2-e869-4e37-...
corefx-issues-t...
Completed
Jun 8, 2020 12:50 PM
1h 6m 17s
Rui Quintino
tiny-ssh
Run 16
AutoML_c7e061fe-277e-434a-b...
automl-expens...
Canceled
Jun 8, 2020 12:33 PM
5m 5s
Rui Quintino
tiny-ssh
Run 11
AutoML_f6829b43-6d25-4578-...
automl-expens...
Canceled
Jun 8, 2020 12:16 PM
11m 36s
Rui Quintino
tiny-clu
Run 7
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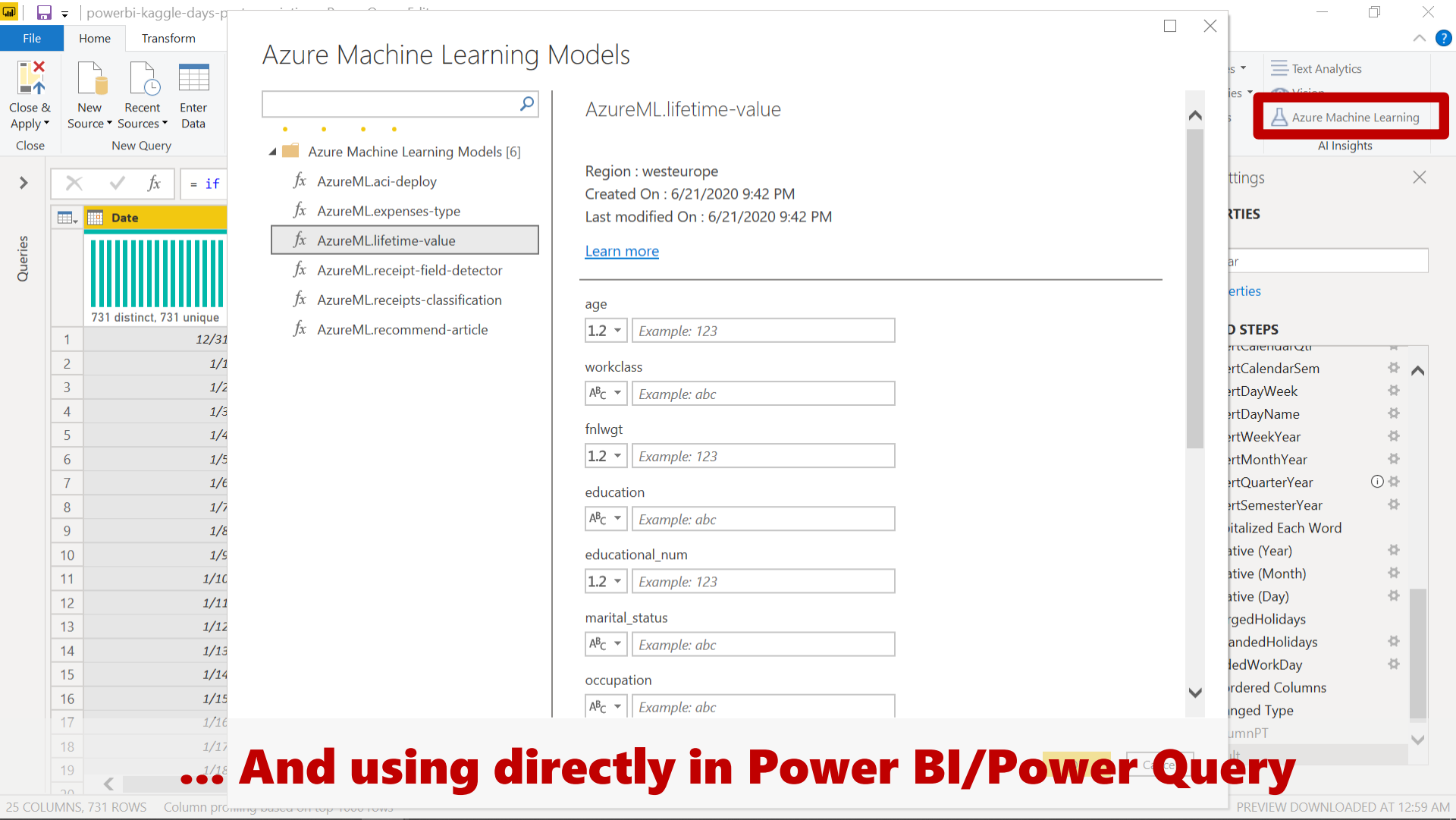
automl-expens...
Canceled
Jun 8, 2020 11:55 AM
16m 17s
Rui Quintino
tiny-clu
Run & Deploy Auto ML models in Azure Auto ML...

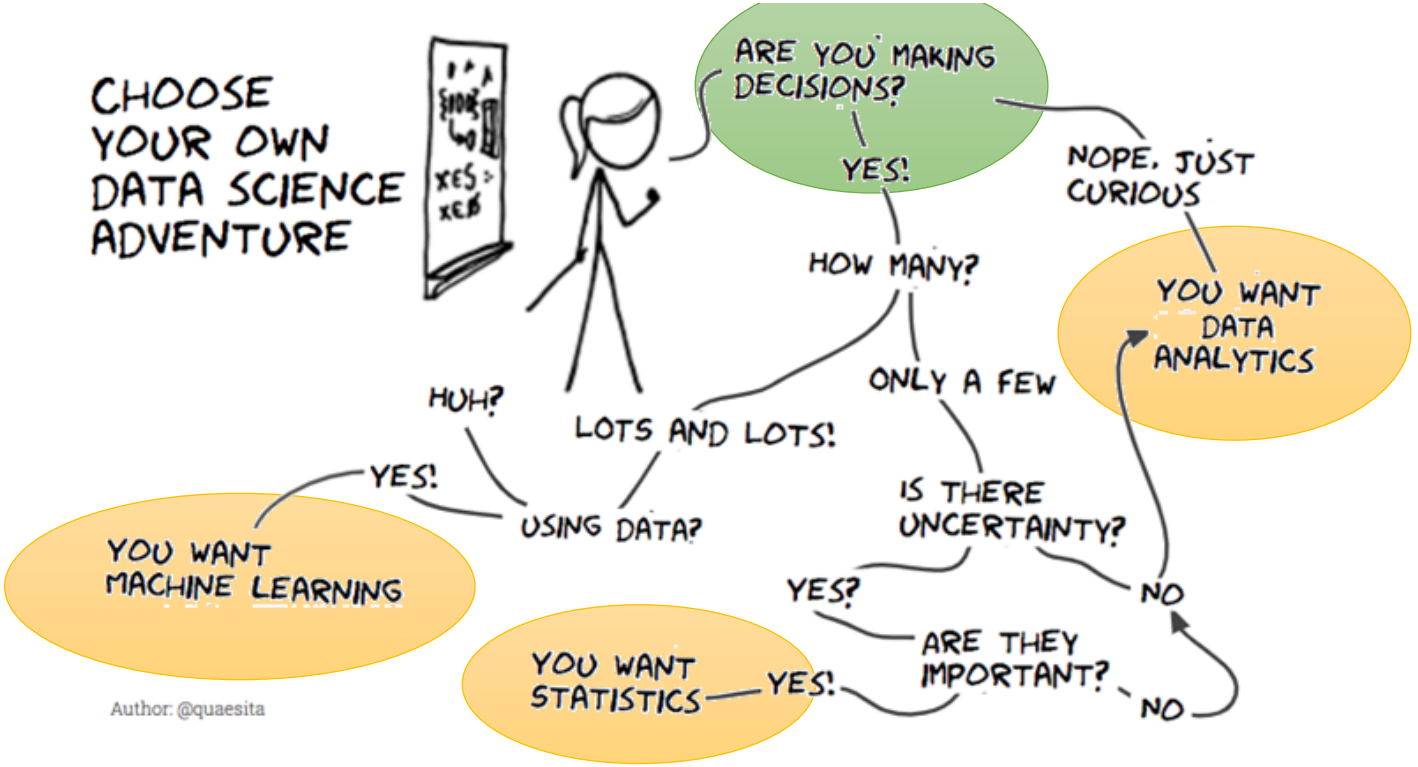

Azure Machine Learning Models
Azure Machine Learning Models [6]
AzureML.aci-deploy
AzureML.expenses-type
AzureML.lifetime-value
AzureML.receipt-field-detector
AzureML.receipts-classification
AzureML.recommend-article
AzureML.lifetime-value
Region : westeurope
Created On : 6/21/2020 9:42 PM
Last modified On : 6/21/2020 9:42 PM
Learn more
age
workclass
fnlwgt
education
educational_num
marital_status
occupation
Example: 123
Example: abc
Text Analytics
Azure Machine Learning
AI Insights
Date
731 distinct, 731 unique
... And using directly in Power BI/Power Query

BI, Analytics
&
Data Science/Machine Learning

What on earth is data science?

The quest for a useful definition

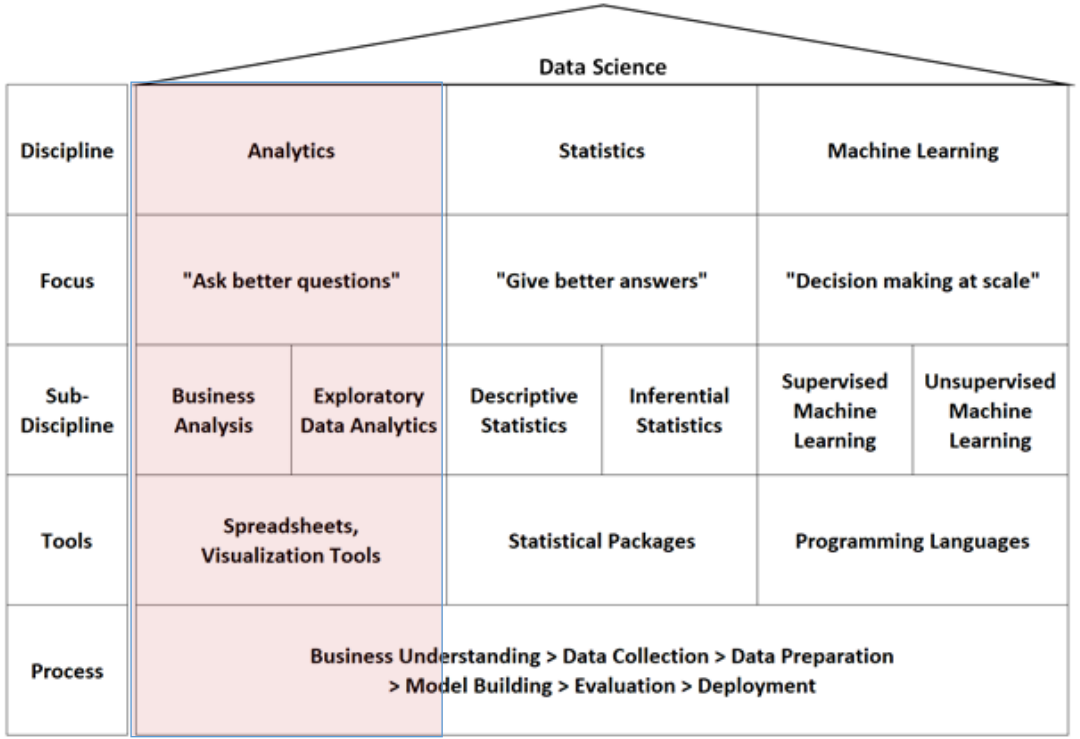
Cassie Kozyrkov Follow
Aug 18, 2018 · 7 min read



The Data Science Landscape

An attempt to provide structure and reference points in a complex field

Dr. Stefan Karenfort Nov 27 · 9 min read ★



https://towardsdatascience.com/the-data-science-landscape-f6f7842c9865