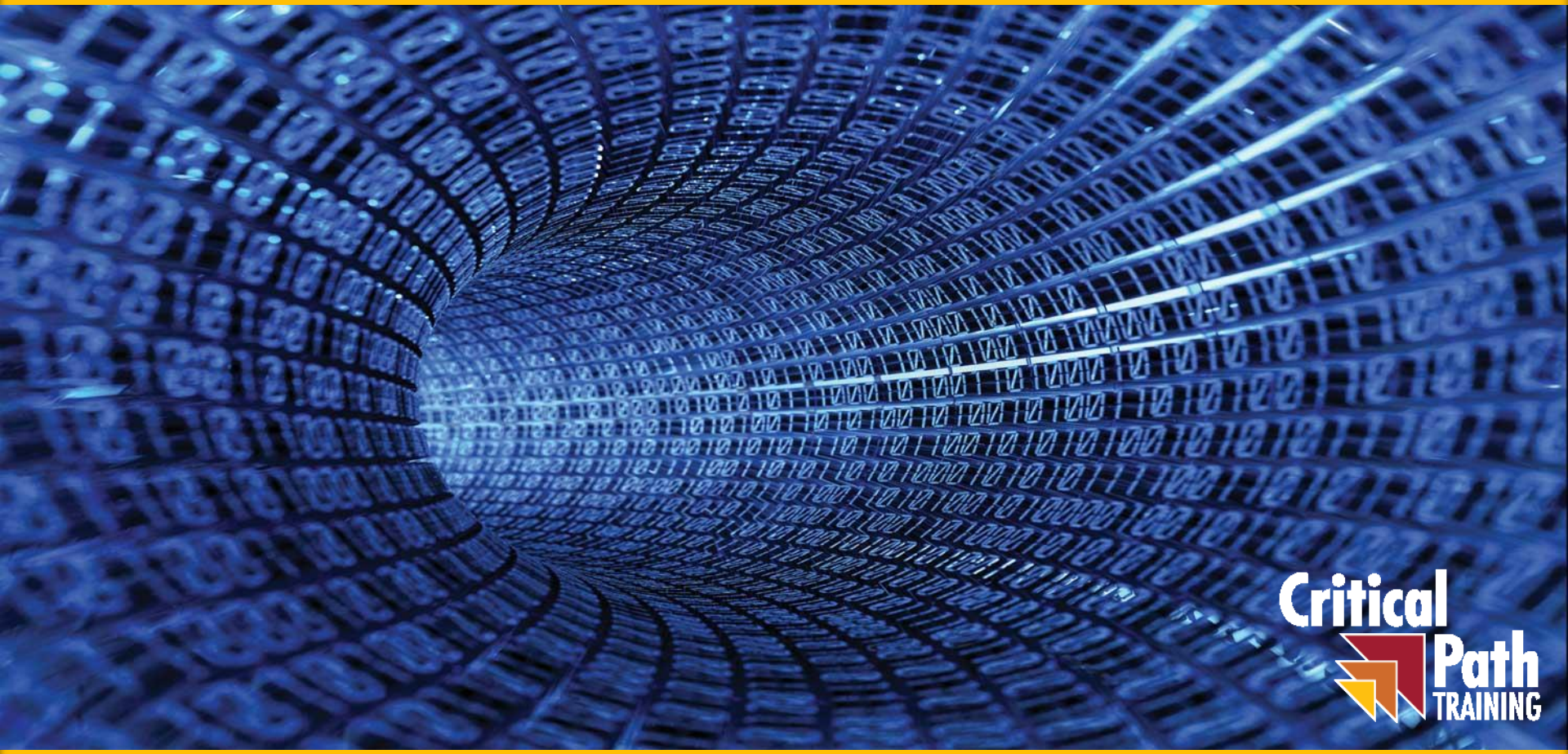
Designing Interactive Reports in Power BI Desktop



Agenda

- Designing Interactive Reports
- Importing Custom Visuals
- Publishing a Project to the Power BI Service
- Using the Publish to Web Feature
- Publishing Reports in SharePoint Online
- Implementing Row-level Security (RLS)

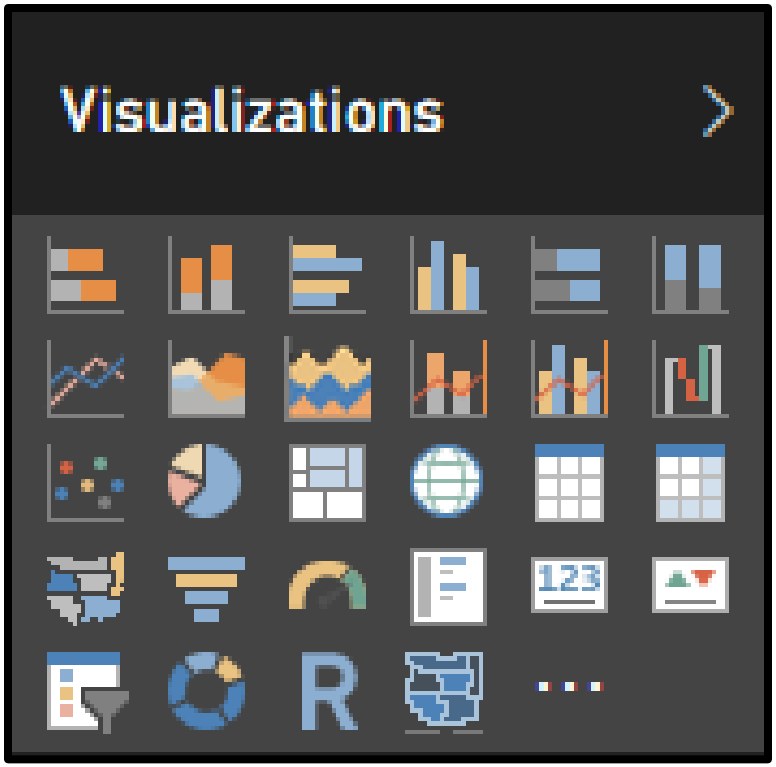
Creating Reports

- Power BI Desktop project contains one report
  - Report within project can contain multiple pages
  - Report pages contains visuals

- Reports can be created using filters
  - You can add filter to a specific visual
  - You can add page-level filters
  - You can add report-level filters
  - You can add interactive filters

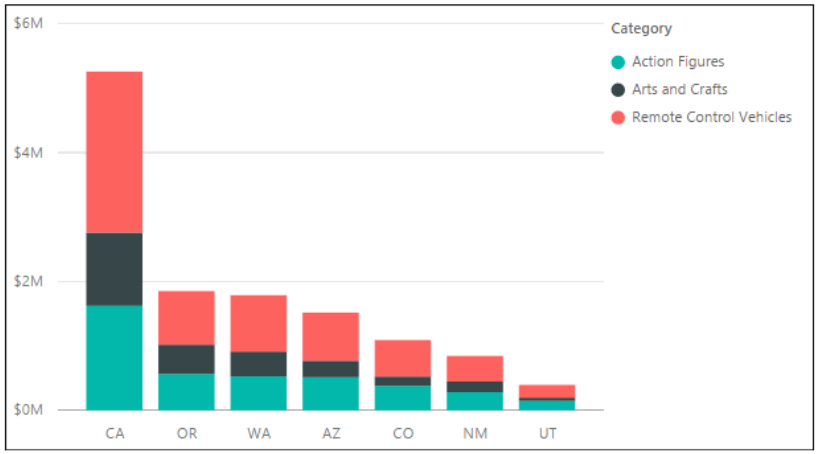
Built-in Visualization Types

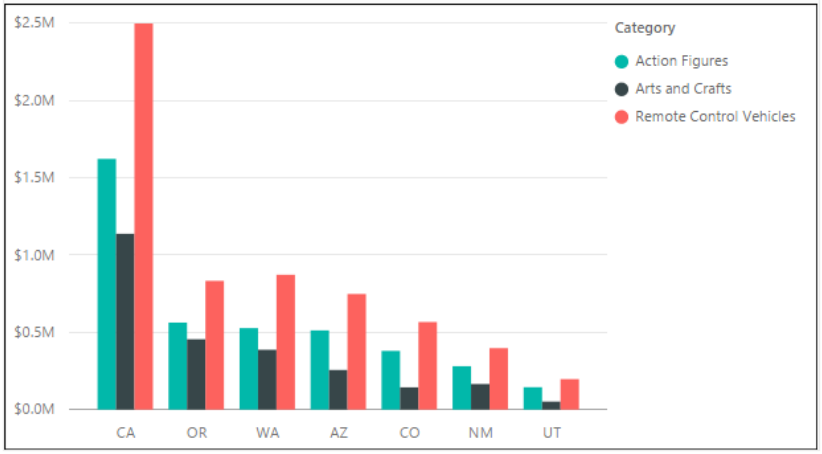
- Table and Matrix
- Bar charts and Column charts
- Pie charts and Doughnut chart
- Line chart and Area chart
- Scatter chart and Combo charts
- Card and Multi-row Card
- Treemap
- Waterfall charts
- Funnel charts
- Gauge charts
- Map and Filled Map
- Slicer
- R script visual
- Shape map (in preview)



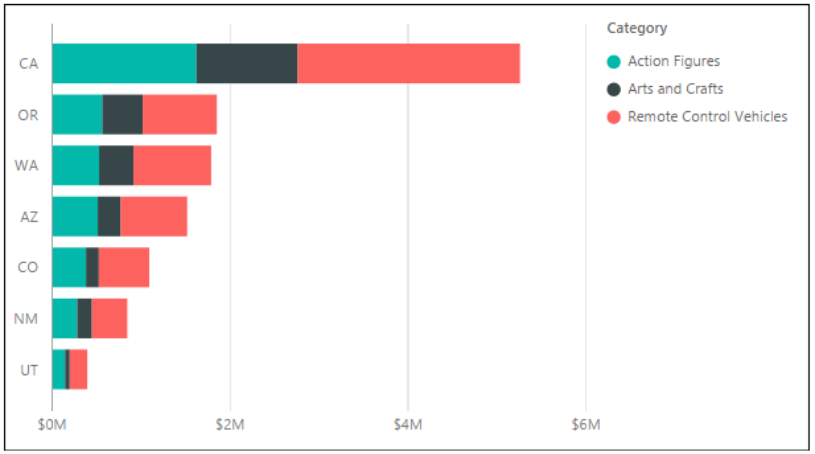
Column Chart and Bar Chart Variations

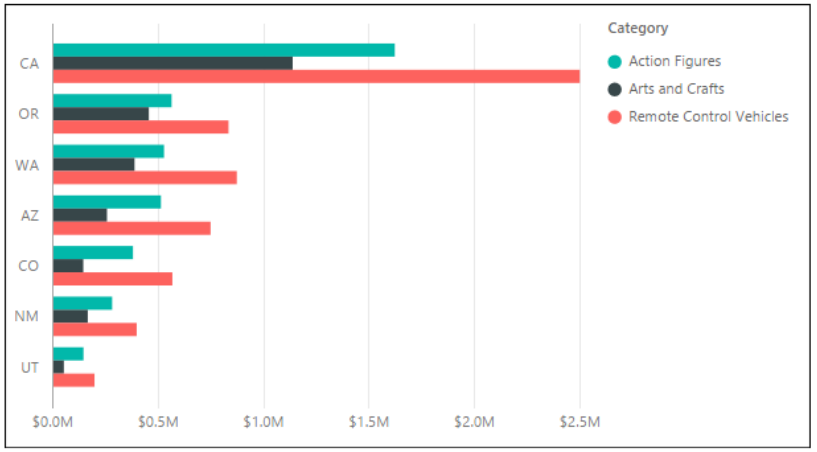
- Stacked Column Chart and Clustered Column Charted





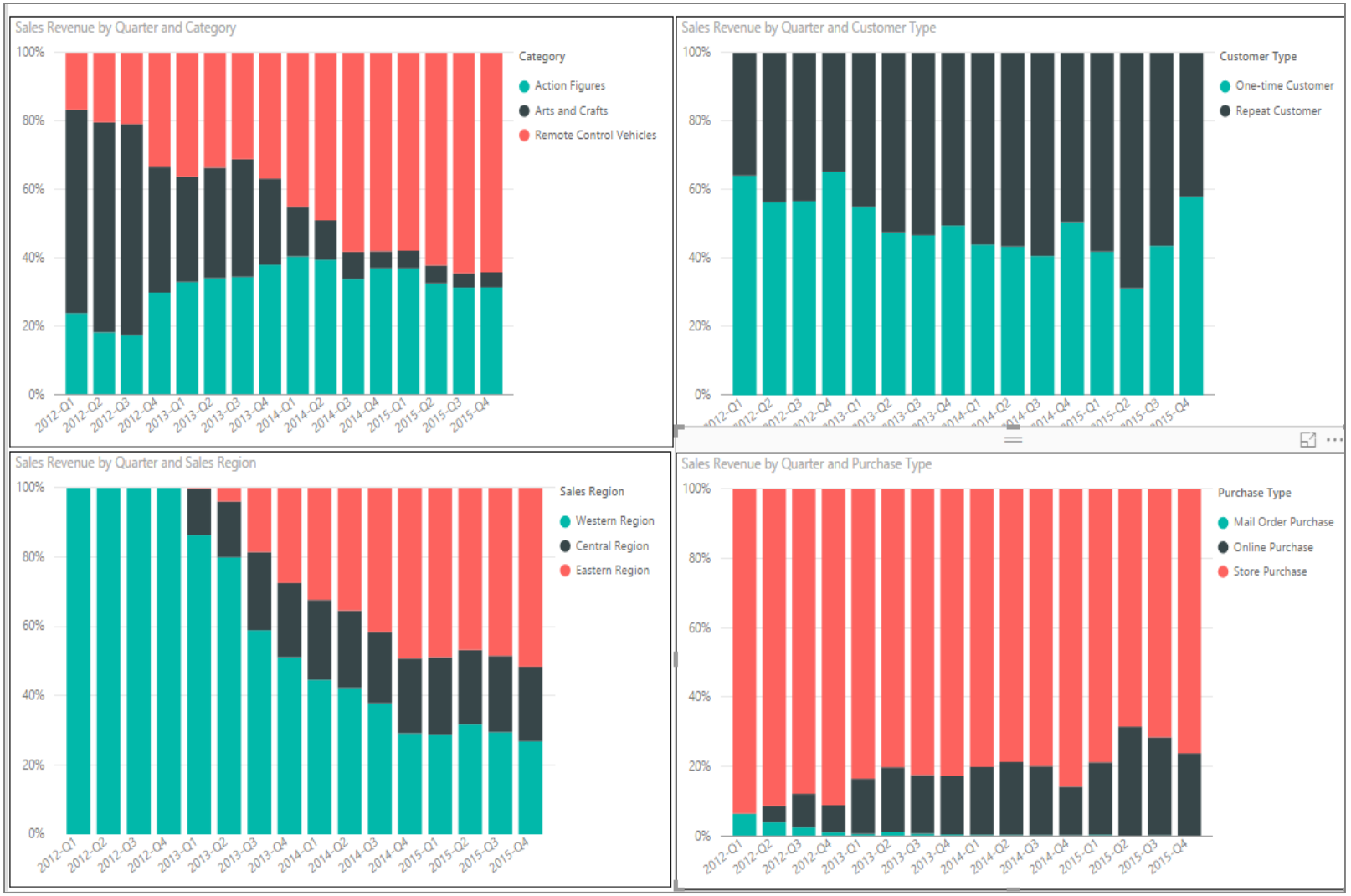
- Stacked Bar Chart and Clustered Bar Chart





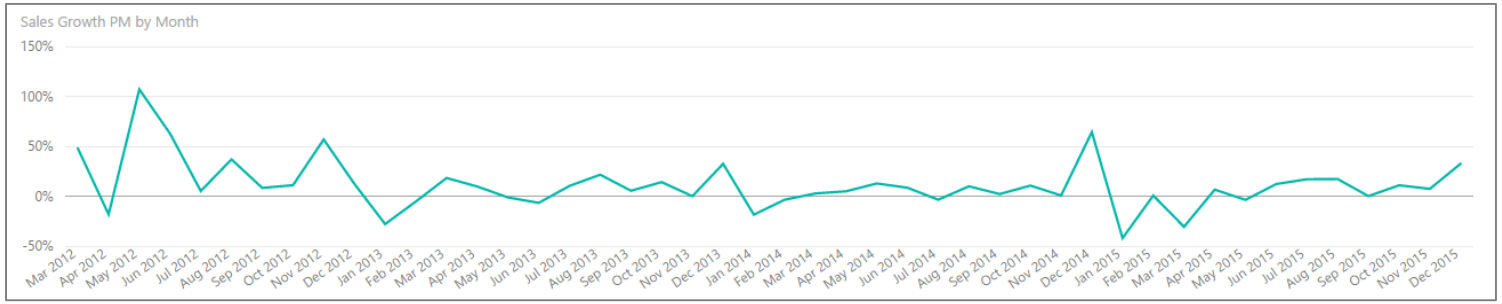
100% Stacked Column Chart

- Used to visual distribution over time across categories

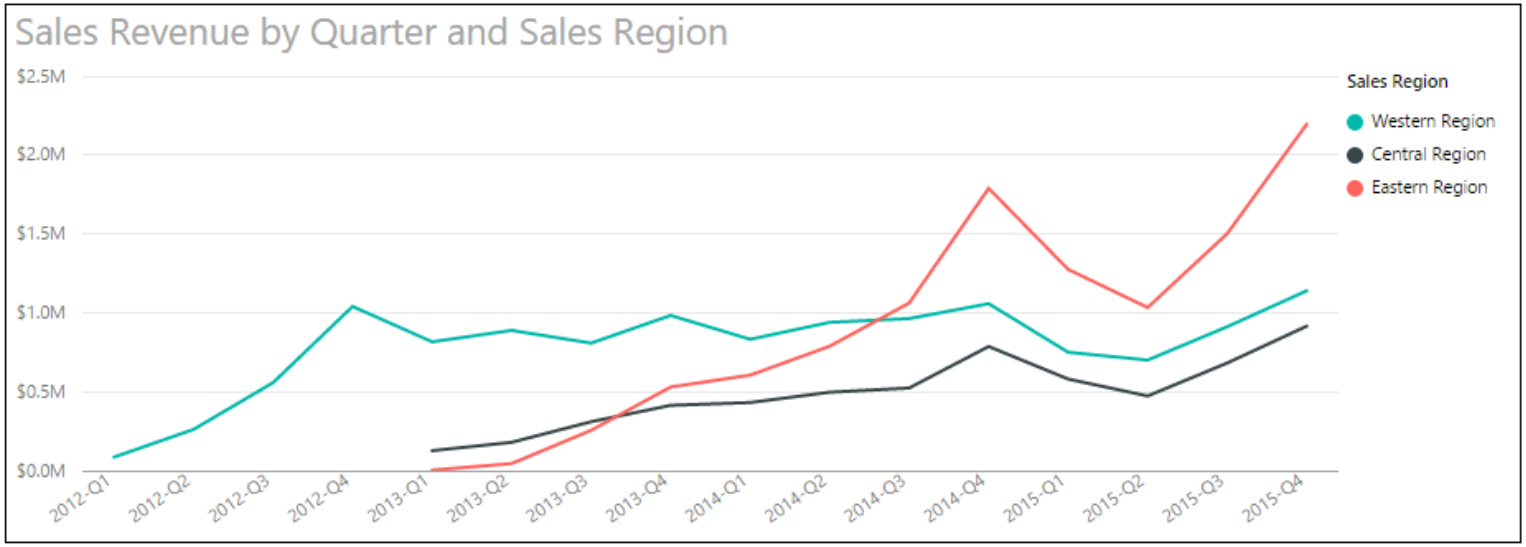


Line Charts

- Visualizes a series of data points across X and Y axis
  - Commonly used for time-based analysis

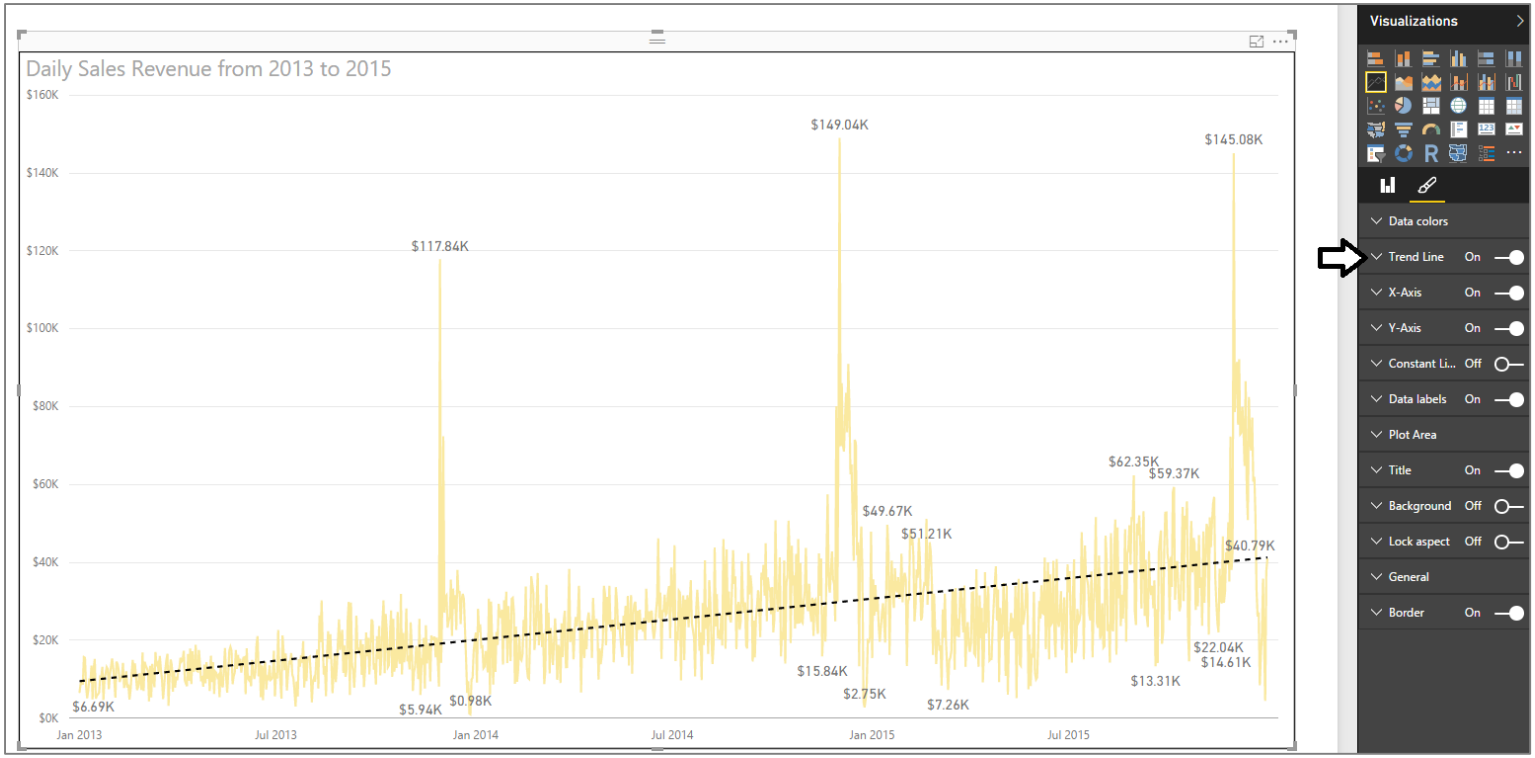


  - Add field to Legend to create multiple lines for comparative analysis



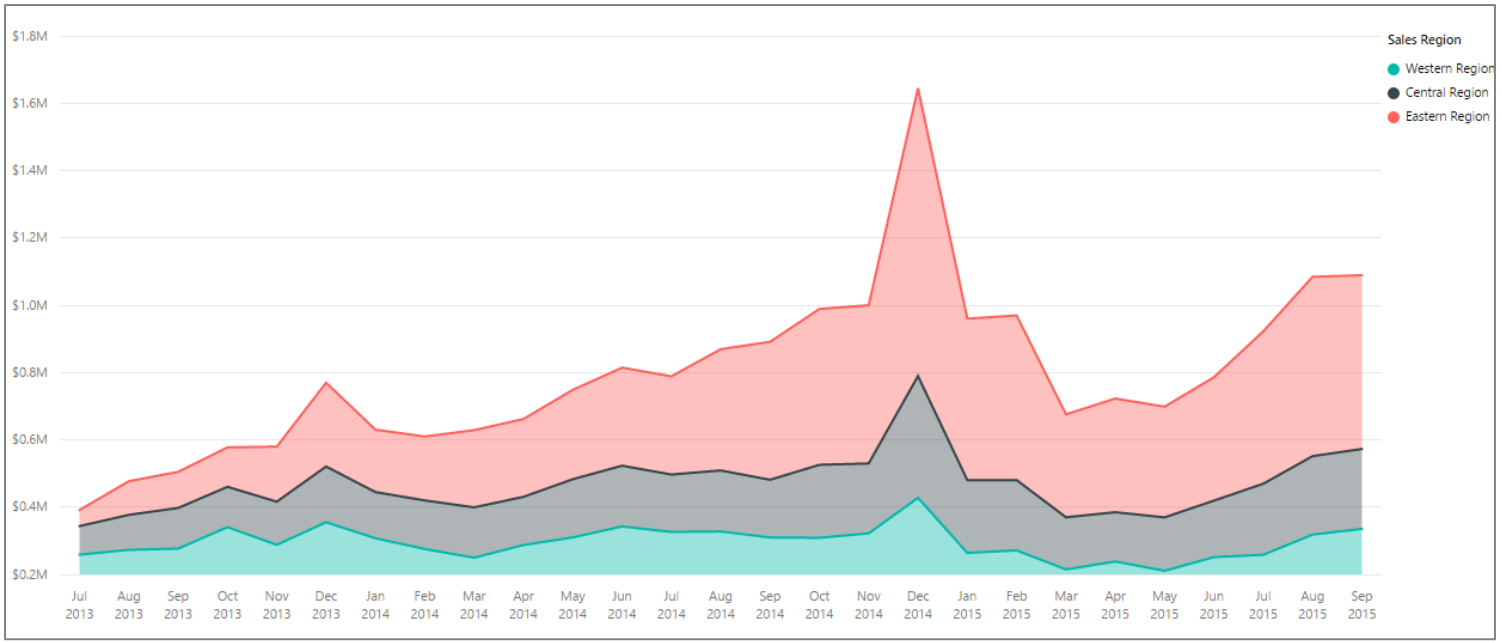
Trend Lines

- Used to visualize trends in series-based data
  - Flattens out the ups and downs
  - Used to determine if values are trending up or down



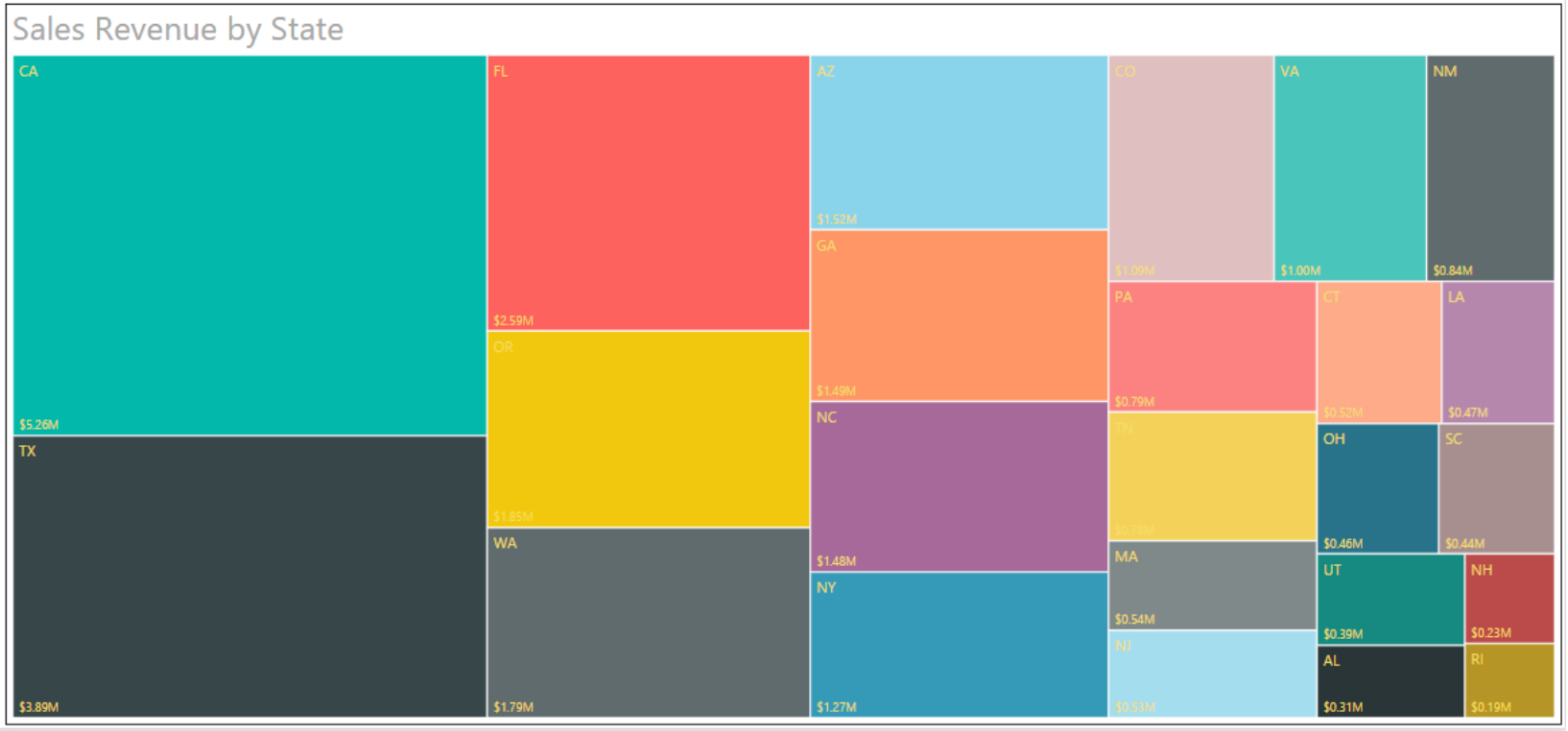
Stacked Area Chart

- Basically, a line chart with a little more personality
  - Areas under lines filled with colors



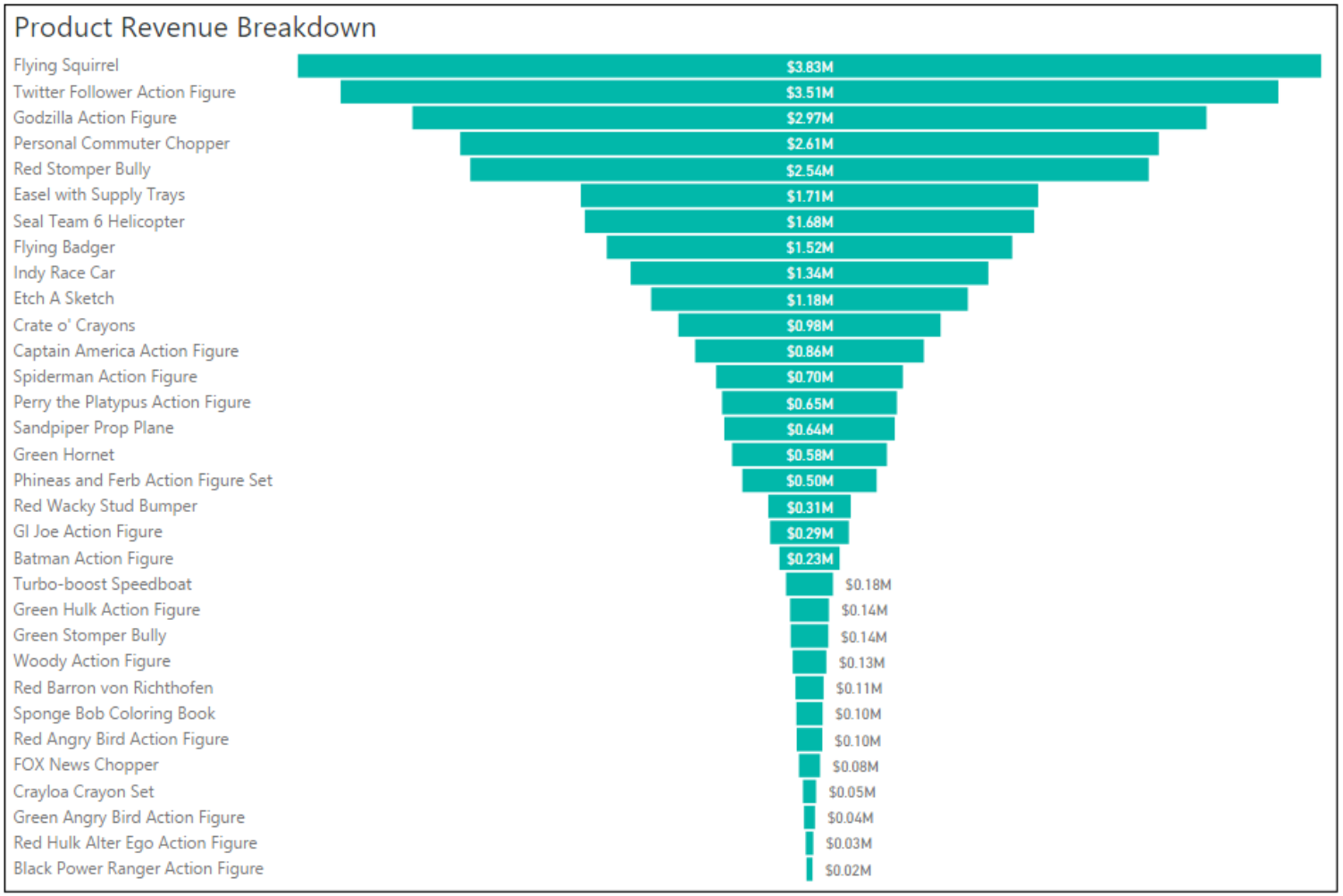
Treemap

- Simple visualization of category distribution



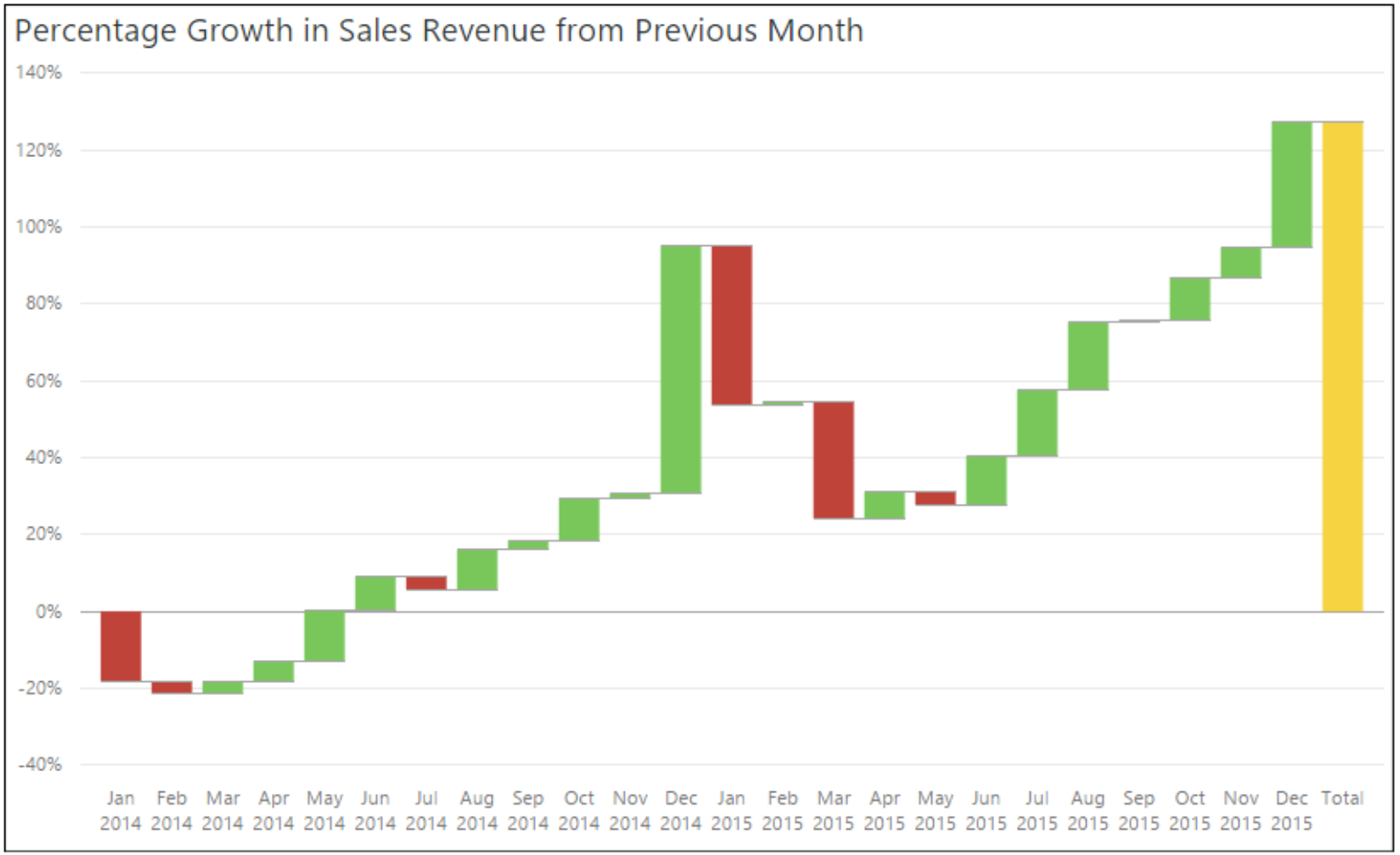
Funnel

- Visualizes distribution across categories as percentage of top value



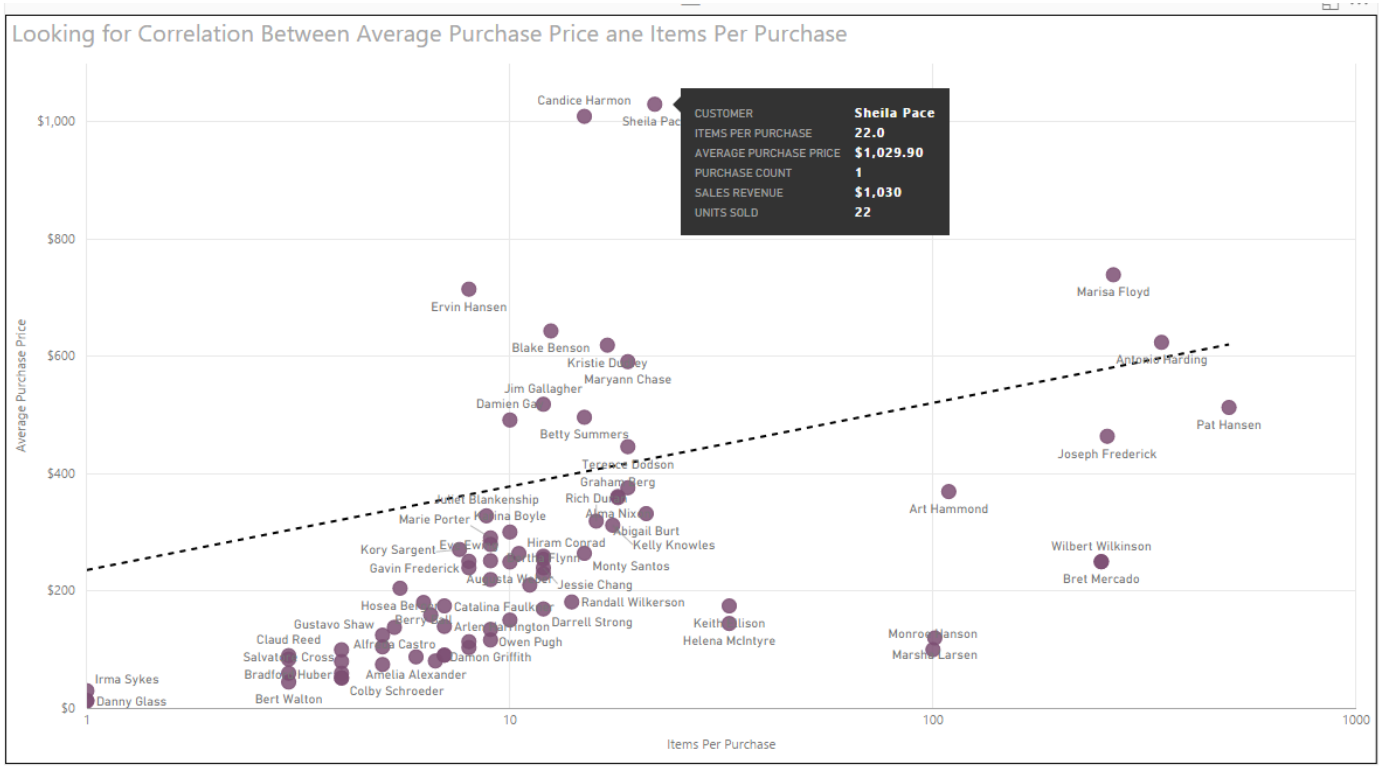
Waterfall

- Visualizes series-based data with positive and negative values



Scatter Chart

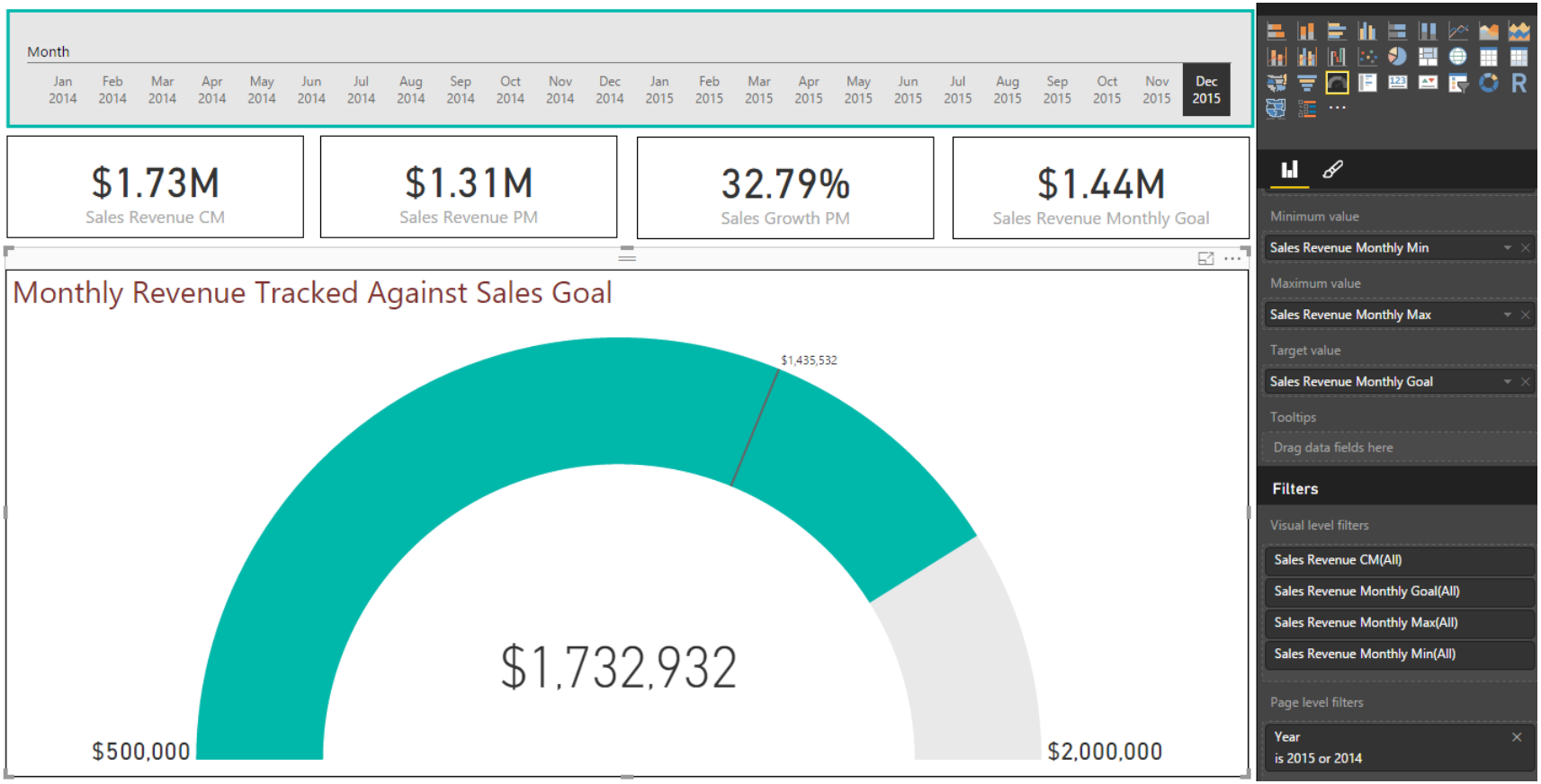
- Visualizes set of data points when looking for correlation
  - Scatter chart used to discover correlation between two variables
  - Each data point has two values which are mapped to X and Y axis



se price?

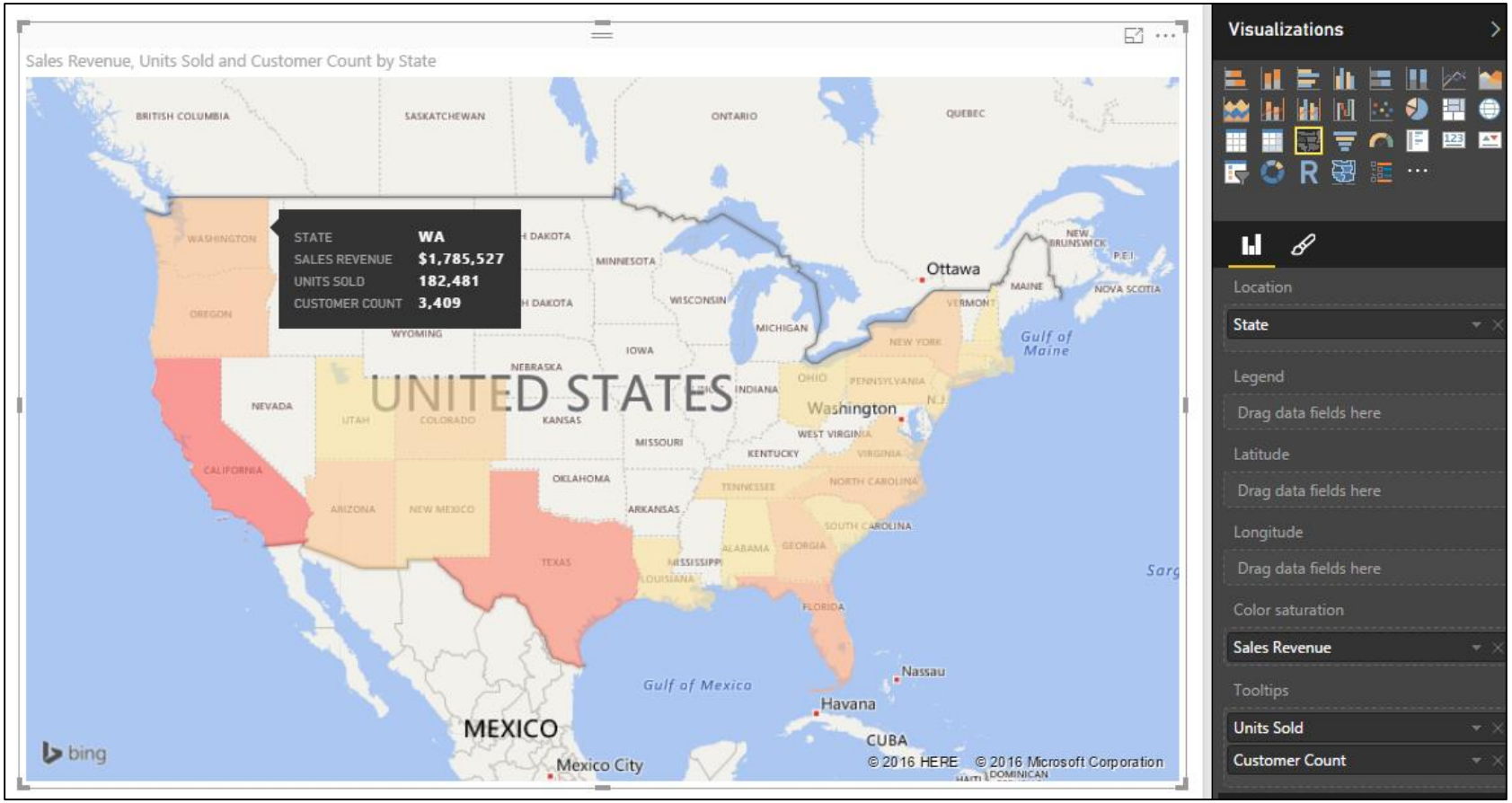
Gauge Visual

- Visualizes how measured value is tracking against goal or budget



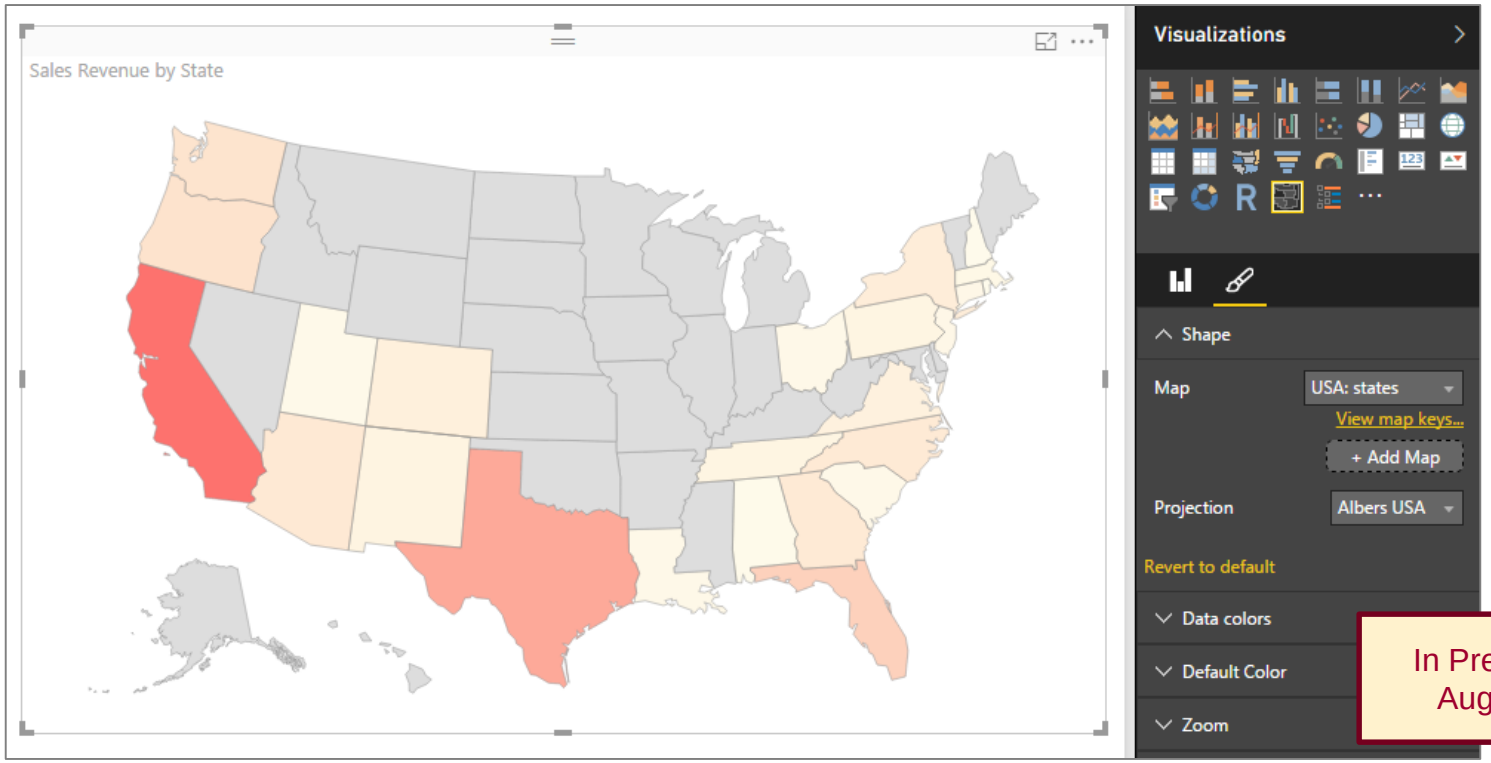
Filled Map

- Visualizes distribution across states and countries

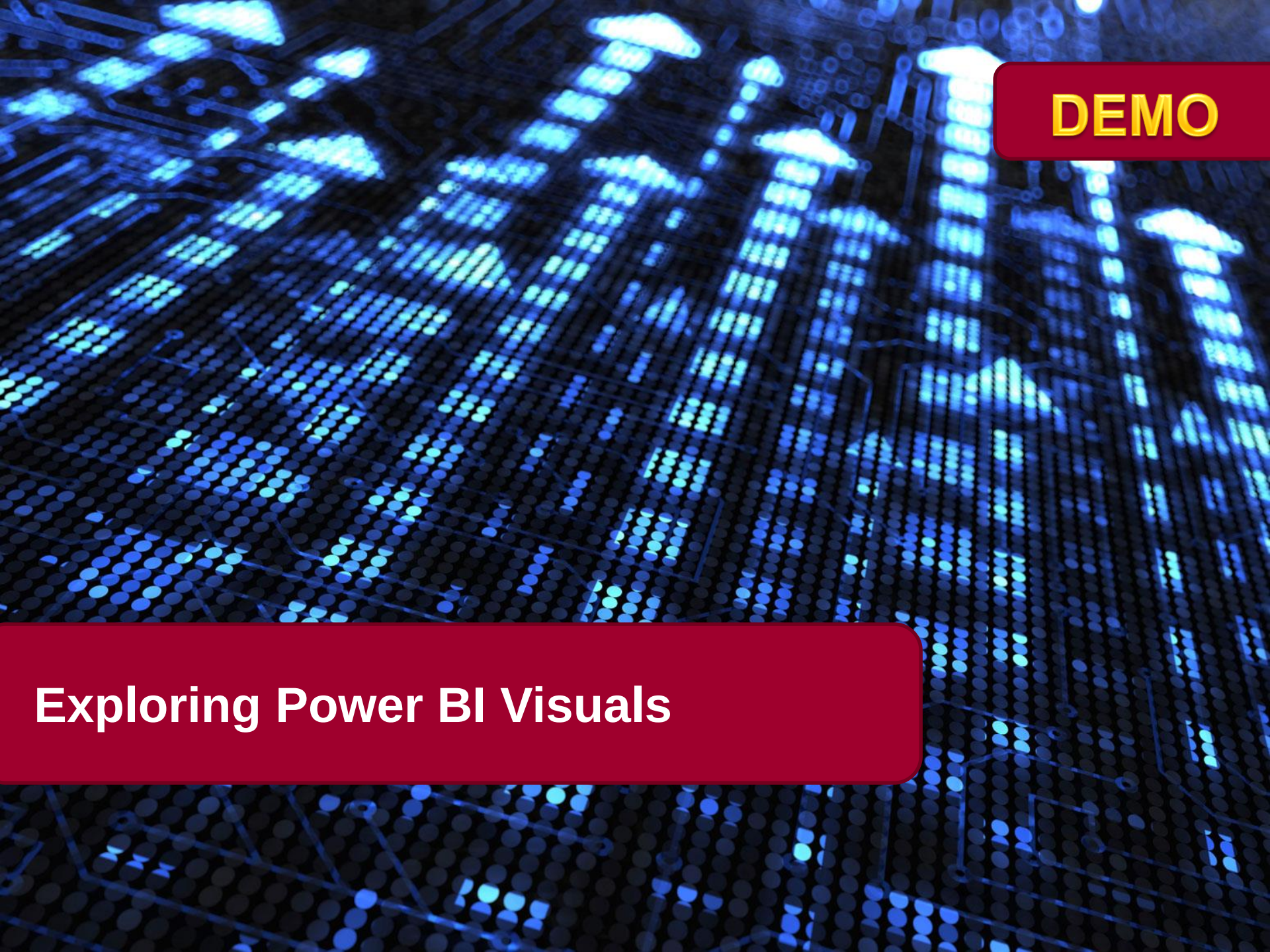


Inline Shape Map

- Similar to filled map with a few important exceptions
  - Based on **TopoJSON** map format created by ESRI
  - Allows for creation of custom maps using JSON
  - Create maps for geography, seating arrangements, floor plans, etc.

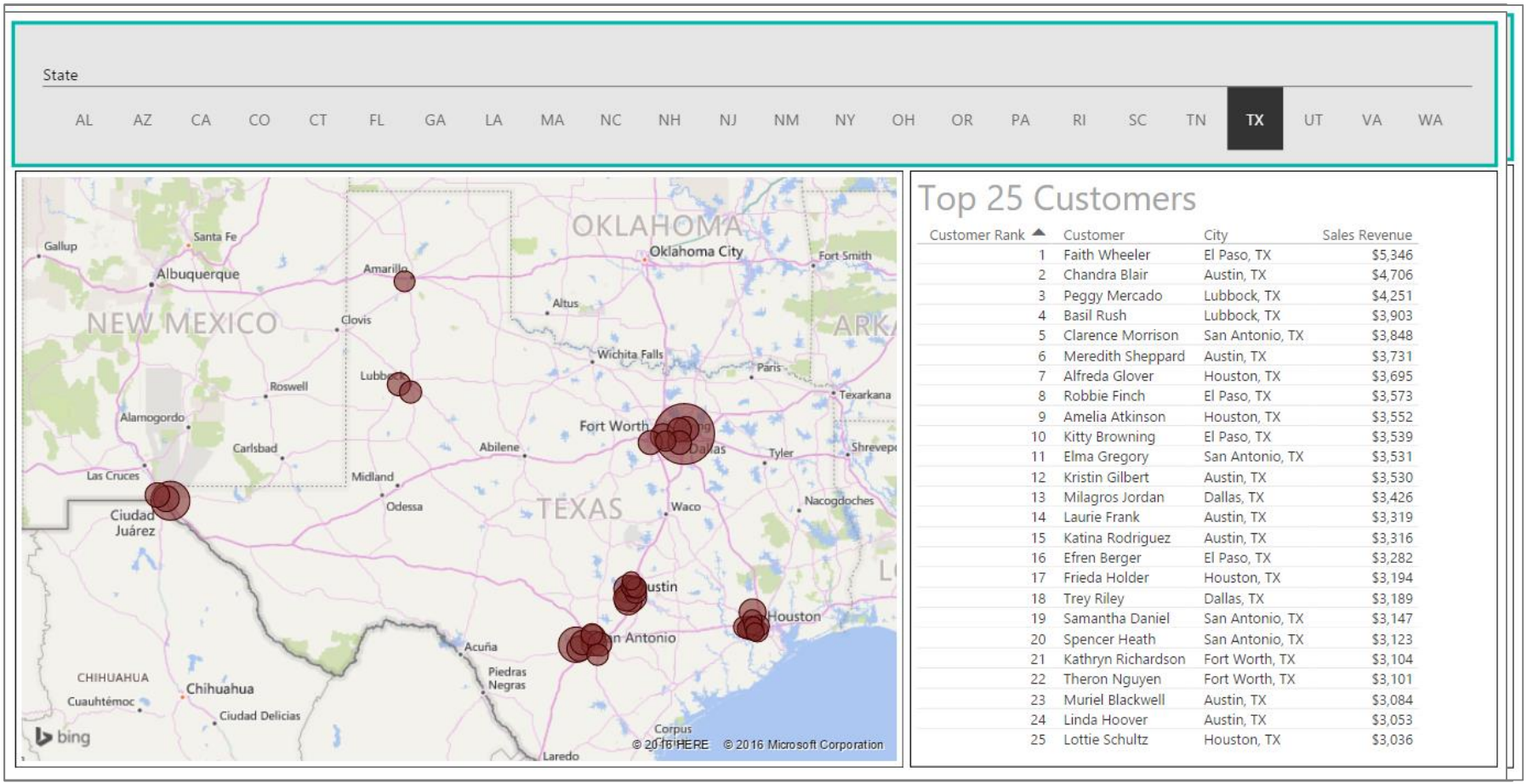


In Preview as of August 2016


DEMO
Exploring Power BI Visuals

User Interaction with Slicers & Highlighting

- Provides user with interactive filtering control

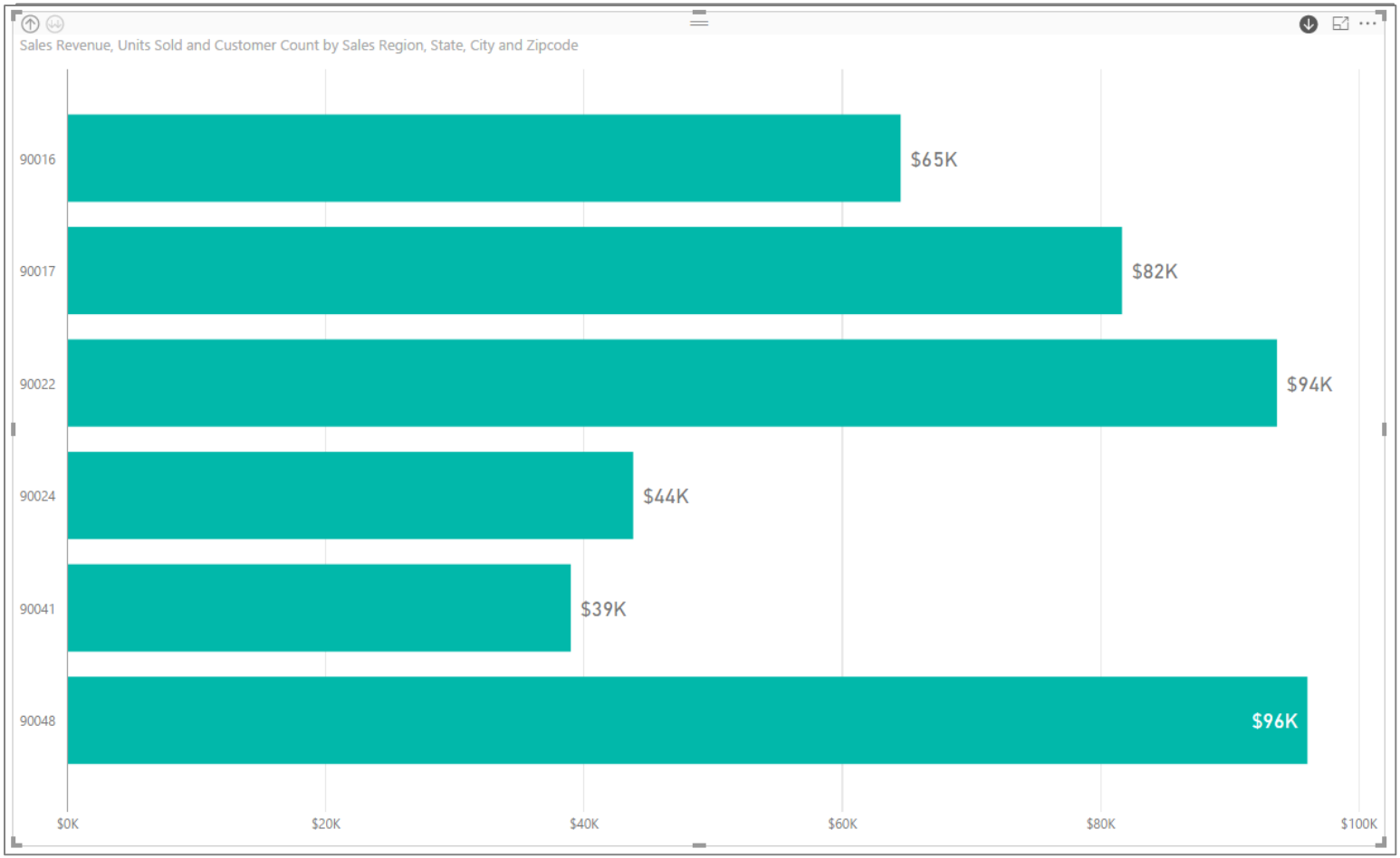


Top 25 Customers

Customer Rank	Customer	City	Sales Revenue
1	Faith Wheeler	El Paso, TX	$5,346
2	Chandra Blair	Austin, TX	$4,706
3	Peggy Mercado	Lubbock, TX	$4,251
4	Basil Rush	Lubbock, TX	$3,903
5	Clarence Morrison	San Antonio, TX	$3,848
6	Meredith Sheppard	Austin, TX	$3,731
7	Alfreda Glover	Houston, TX	$3,695
8	Robbie Finch	El Paso, TX	$3,573
9	Amelia Atkinson	Houston, TX	$3,552
10	Kitty Browning	El Paso, TX	$3,539
11	Elma Gregory	San Antonio, TX	$3,531
12	Kristin Gilbert	Austin, TX	$3,530
13	Milagros Jordan	Dallas, TX	$3,426
14	Laurie Frank	Austin, TX	$3,319
15	Katina Rodriguez	Austin, TX	$3,316
16	Efren Berger	El Paso, TX	$3,282
17	Frieda Holder	Houston, TX	$3,194
18	Trey Riley	Dallas, TX	$3,189
19	Samantha Daniel	San Antonio, TX	$3,147
20	Spencer Heath	San Antonio, TX	$3,123
21	Kathryn Richardson	Fort Worth, TX	$3,104
22	Theron Nguyen	Fort Worth, TX	$3,101
23	Muriel Blackwell	Austin, TX	$3,084
24	Linda Hoover	Austin, TX	$3,053
25	Lottie Schultz	Houston, TX	$3,036

User Interaction using Drill Actions

- Drill Actions supported when using hierarchies
  - You must enabled drilldown mode in visual



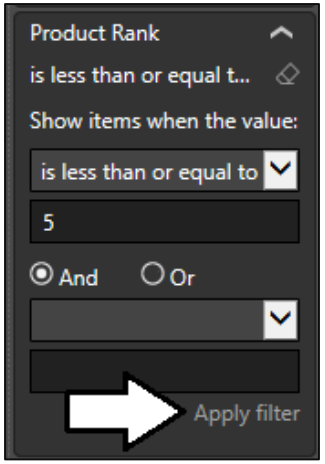
Ranking Products By Sales using RANKX

- DAX provides RANKX function for ranking
  - Can be used to track top 5 products by sales revenue

```
Product Rank =
RANKX(
    ALL(Products),
    CALCULATE( SUM(Sales[SalesAmount]) )
)
```

  - You can sort and filter on output of RANKX function

Product Rank	Product	Sales Revenue
1	Flying Squirrel	$3,828,783
2	Twitter Follower Action Figure	$3,508,806
3	Godzilla Action Figure	$2,970,735
4	Personal Commuter Chopper	$2,613,193
5	Red Stomper Bully	$2,538,233



Problems with the Filter Context

- RANKX function is affected by filter context
  - Sometimes you get the results you are expecting

Product Rank	Product	Sales Revenue
1	Easel with Supply Trays	$538,161
2	Etch A Sketch	$243,512
3	Godzilla Action Figure	$194,552
4	Red Stomper Bully	$158,825
5	Crate o' Crayons	$111,093

  - Sometimes you might get unexpected results

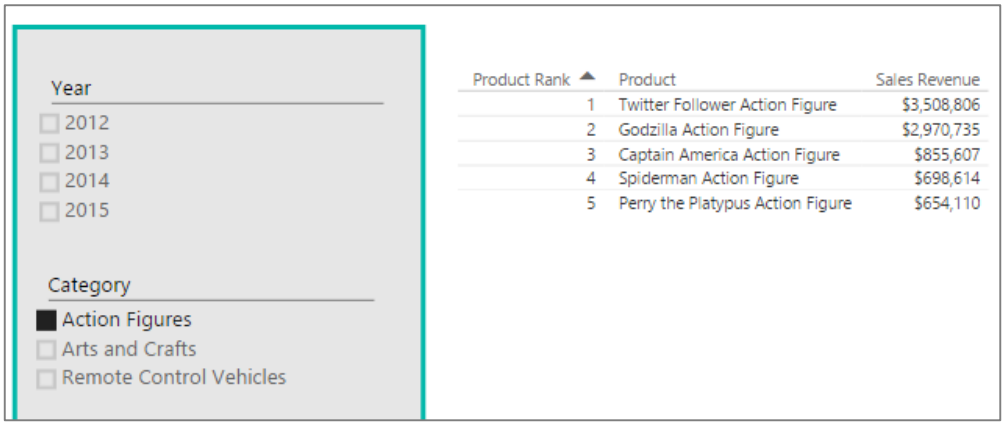
Product Rank	Product	Sales Revenue
2	Twitter Follower Action Figure	$3,508,806
3	Godzilla Action Figure	$2,970,735

Writing Context Aware DAX Code

- When using RANKX…
  - It's recommended to call **HASONEVALUE** function
  - When calling ALL function, pass one or more columns

```
Product Rank =
IF(
  HASONEVALUE(Products[Product]),
  RANKX(
    ALL( Products[Subcategory], Products[Product] ),
    CALCULATE( SUM(Sales[SalesAmount]) )
  )
)
```

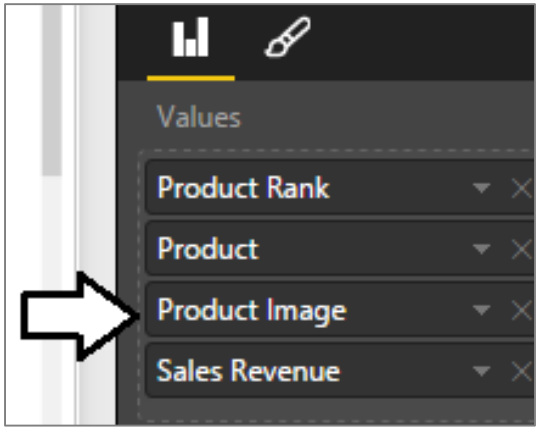
  - Ranking function now evaluates product ranking for specific Category



More Ranking Evaluation Problems

- Adding new column to table creates new problem
  - Ranking run separately for each separate Product Image
  - Every product has unique Product Image and is given rank of 1

Product Rank	Product	Product Image	Sales Revenue
1	Batman Action Figure		$40,395
1	Black Power Ranger Action Figure		$4,223
1	Captain America Action Figure		$125,110
1	Crate o' Crayons		$322,711
1	Crayloa Crayon Set		$12,868
1	Easel with Supply Trays		$928,620
1	Etch A Sketch		$293,175

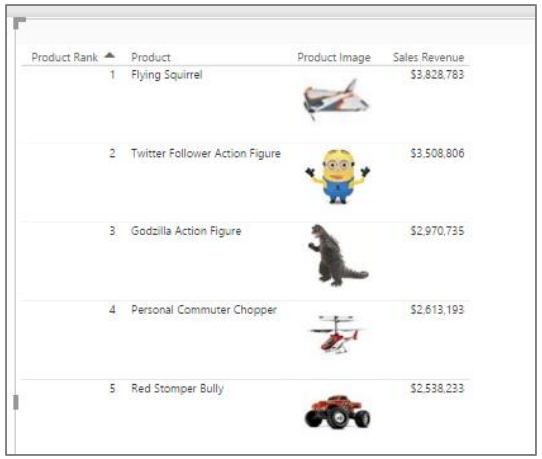


Getting It Right

- Call to RANKX must be modified again
  - You must specify which columns to factor into ranking

```
Product Rank =
IF(
  HASONEVALUE(Products[Product]),
  RANKX(
    ALL( Products[Subcategory], Products[Product], Products[Product Image] ),
    CALCULATE( SUM(Sales[SalesAmount]) )
  )
)
```

  - Context-aware DAX code corrects problems with visual



Product Rank	Product	Product Image	Sales Revenue
1	Flying Squirrel		$3,828,783
2	Twitter Follower Action Figure		$3,508,806
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4	Personal Commuter Chopper		$2,613,193
5	Red Stomper Bully		$2,538,233

Agenda

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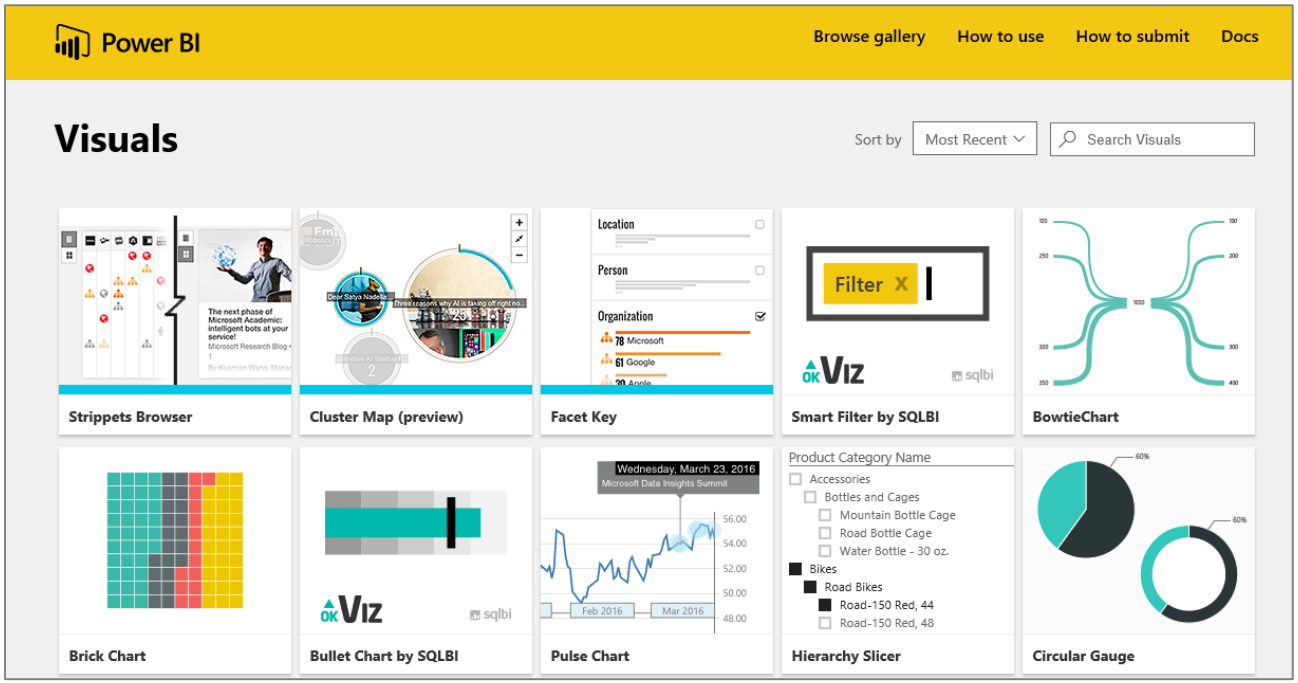
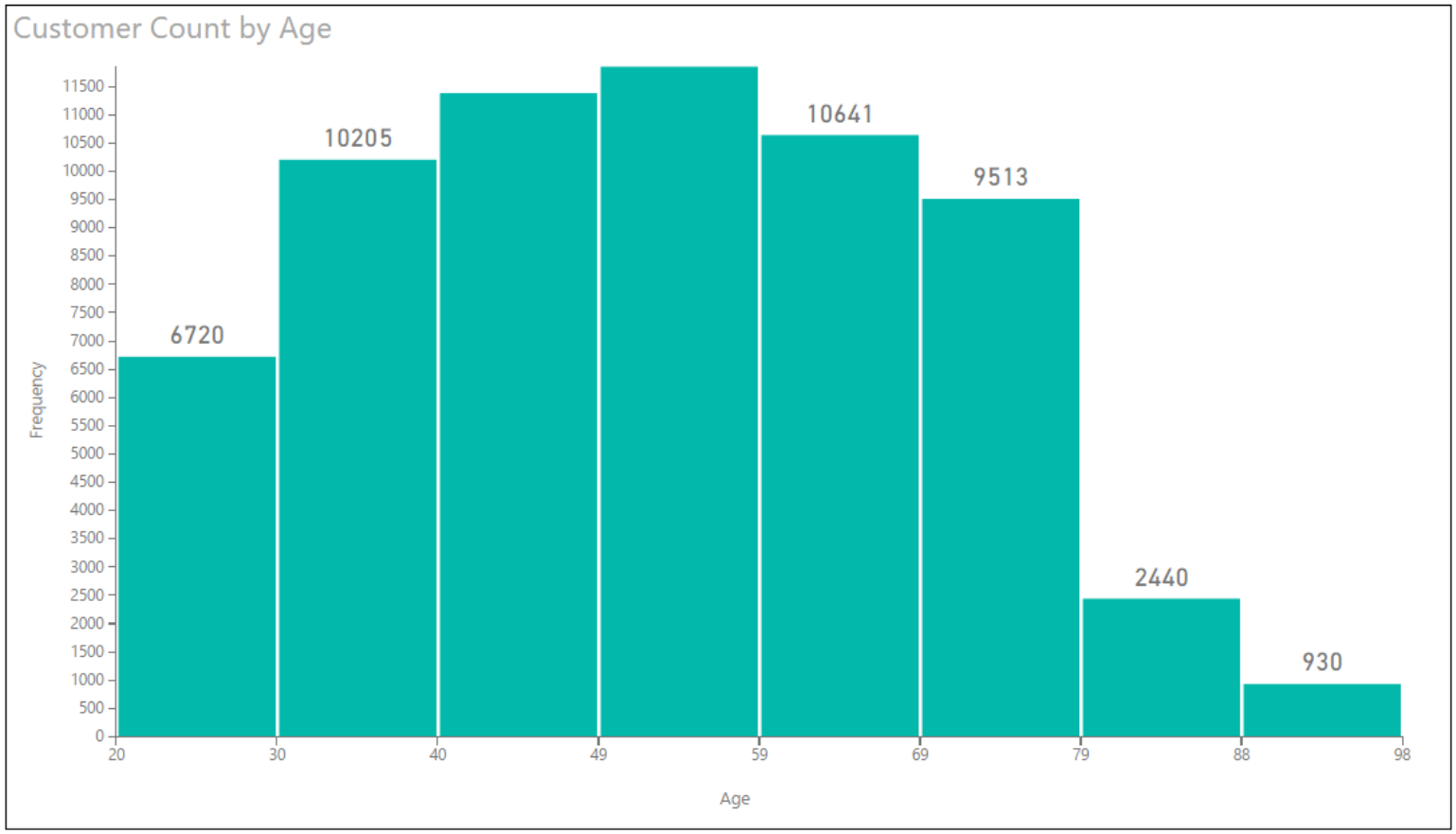
Custom Visual Gallery

- Power BI Framework for Visuals is Extensible
  - Developers can extend Power BI with Custom Visuals
  - Microsoft Hosts gallery of custom visuals
  - Gallery located at https://app.powerbi.com/visuals/



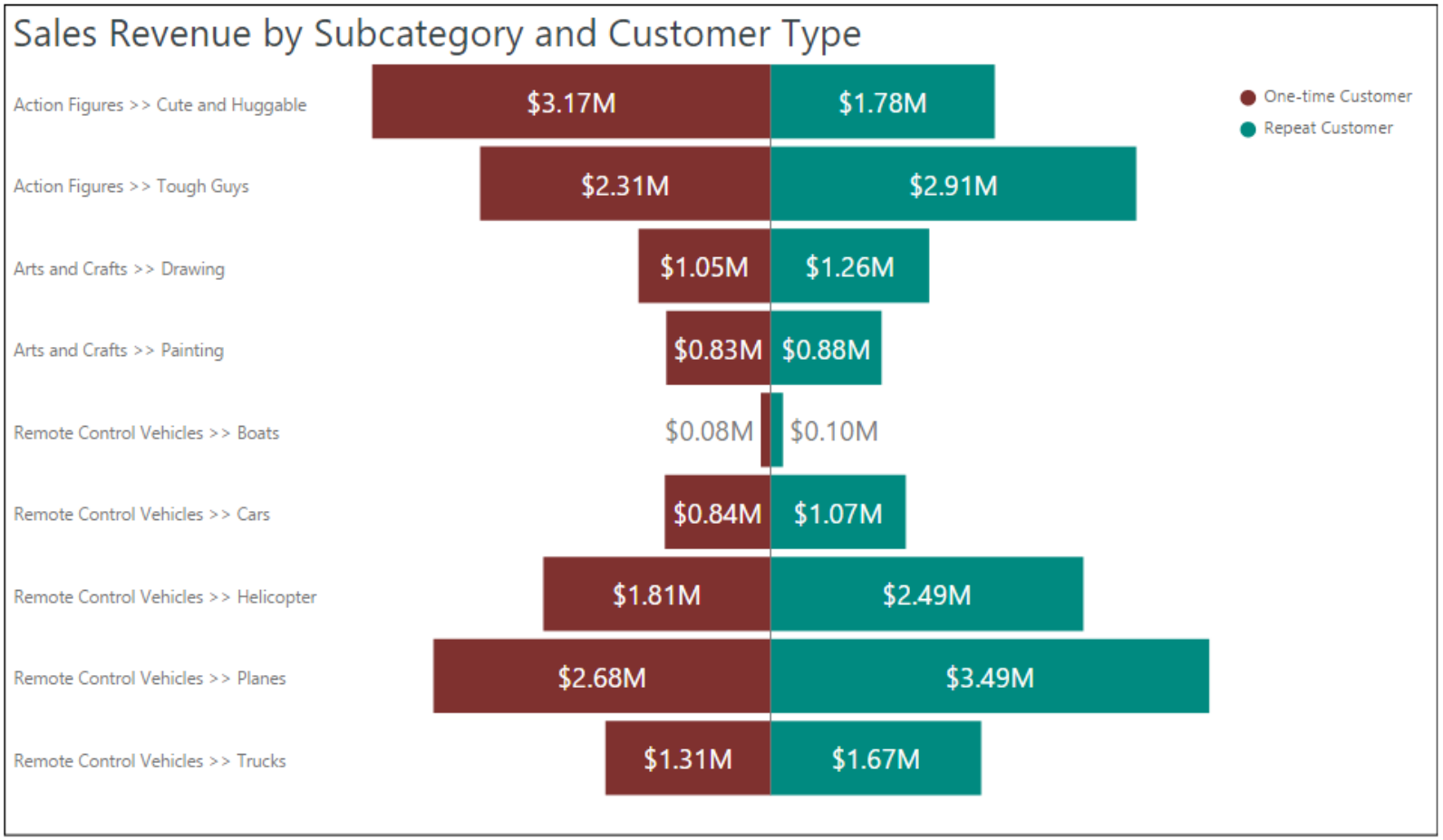
Histogram

- Custom Visual Example 1



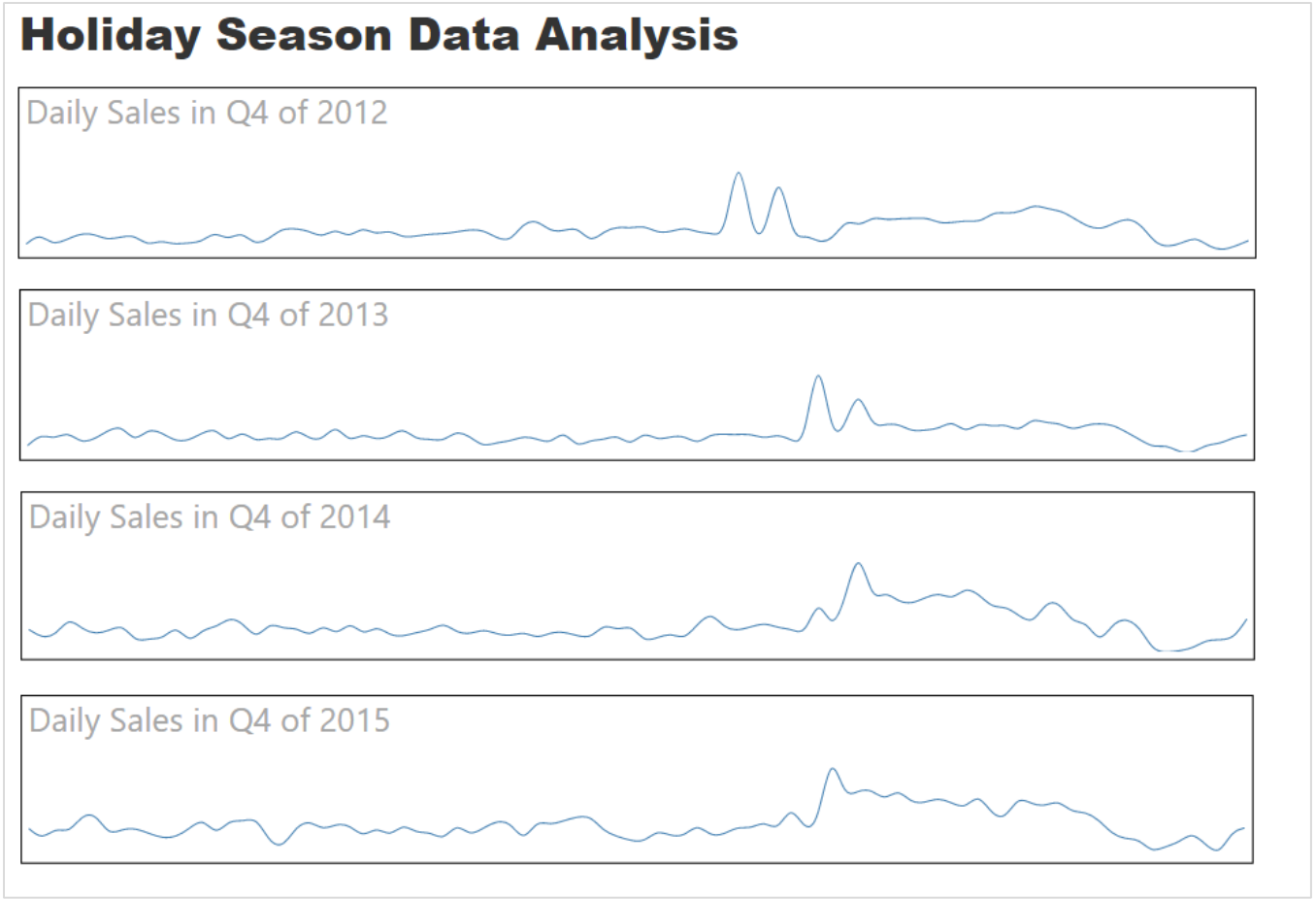
Tornado Chart

- Custom Visual Example 2



Spark Lines

- Custom Visual Example 3

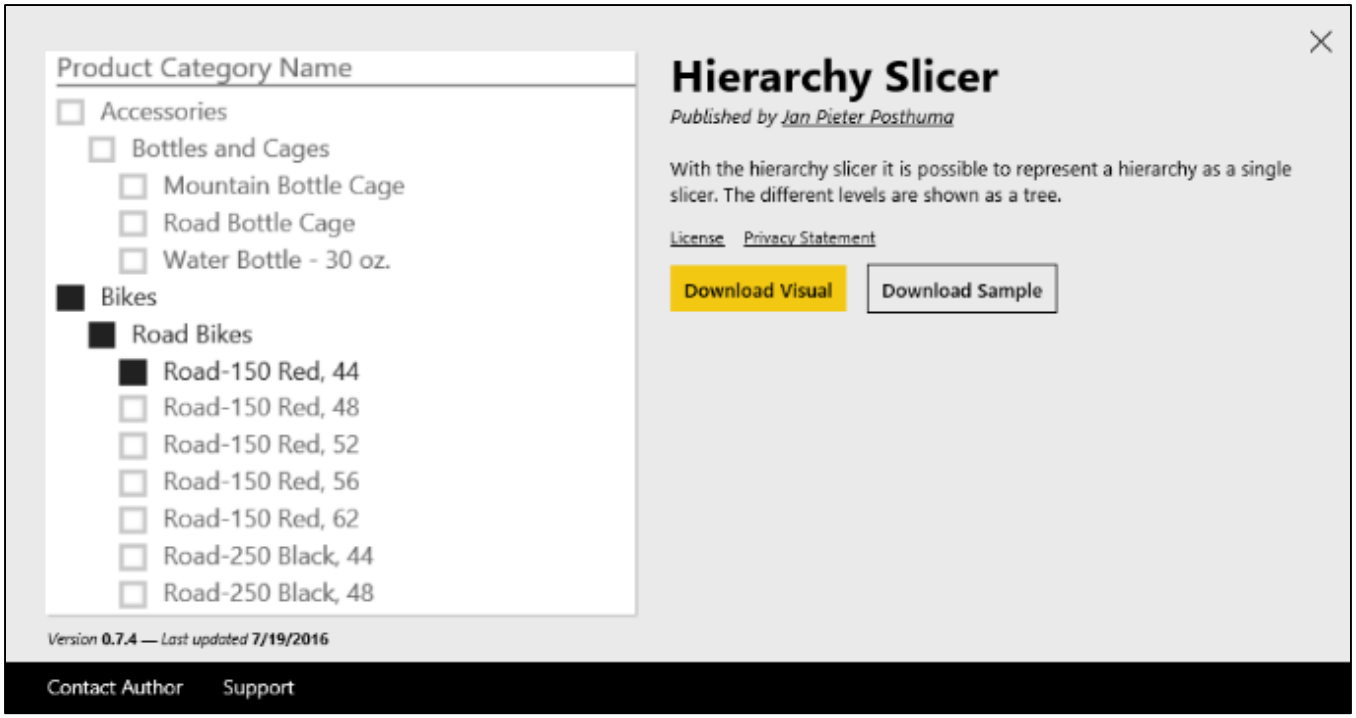


Hierarchy Slicer

- Custom Visual Example 4

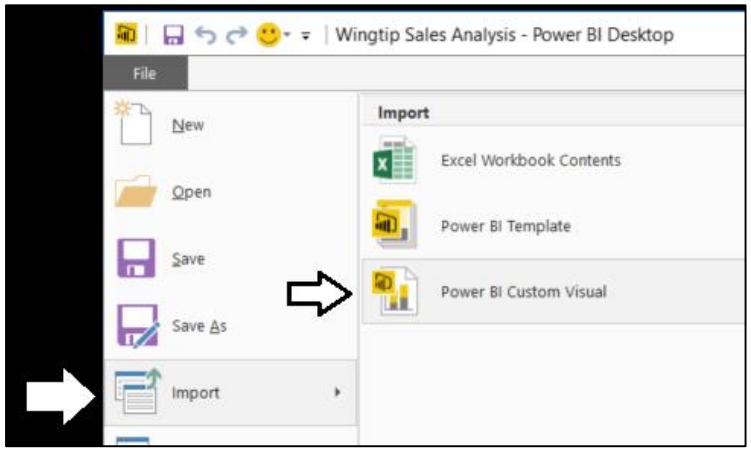
Downloading & Importing a Custom Visual

- Visual must be downloaded from Visuals Gallery
  - Custom Visual files packaged in PBIVIZ File
  - Custom Visual can be imported into Power BI Desktop project
  - Custom Visual can be imported into workspace in Power BI service

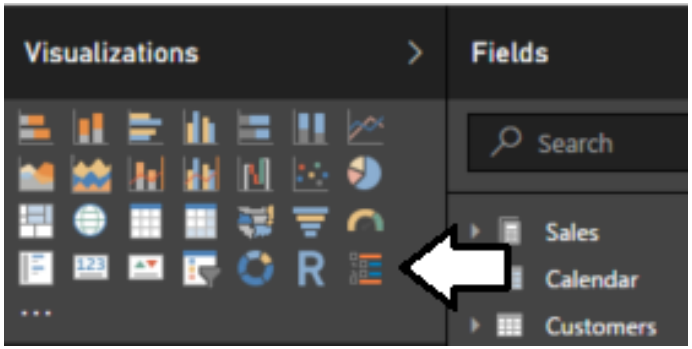


Importing a Custom Visual

- Import custom visual into Power BI Desktop project
  - Execute **Import > Power BI Custom Visual** menu command



  - After import, Custom Visual appears in **Visualizations** list



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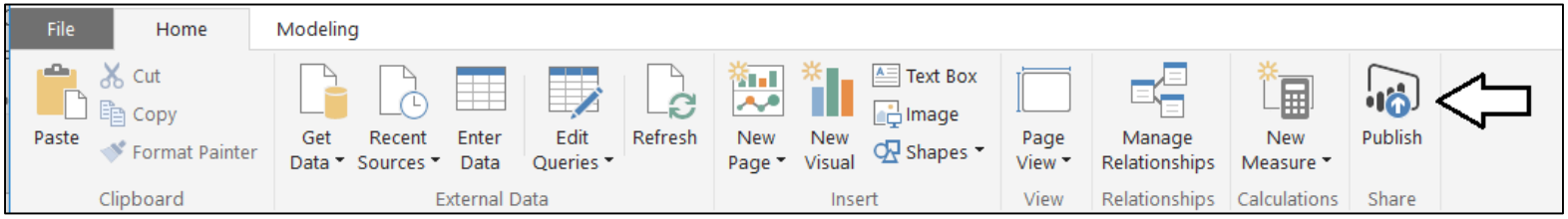
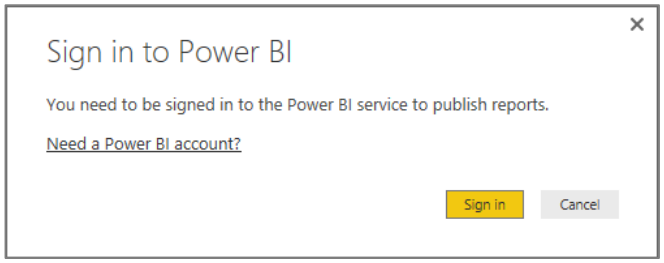
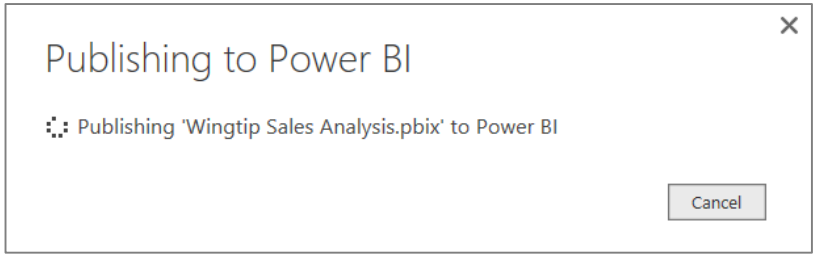
Publishing a Power BI Desktop Project

- Power BI Desktop provides **Publish** command
  - Used to publish project to Power BI service



  - Requires logging into your Office 365 account

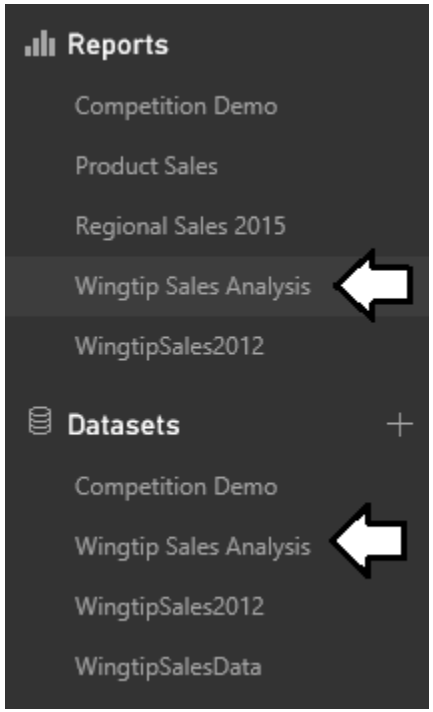




  - Published articles added to a specific workspace

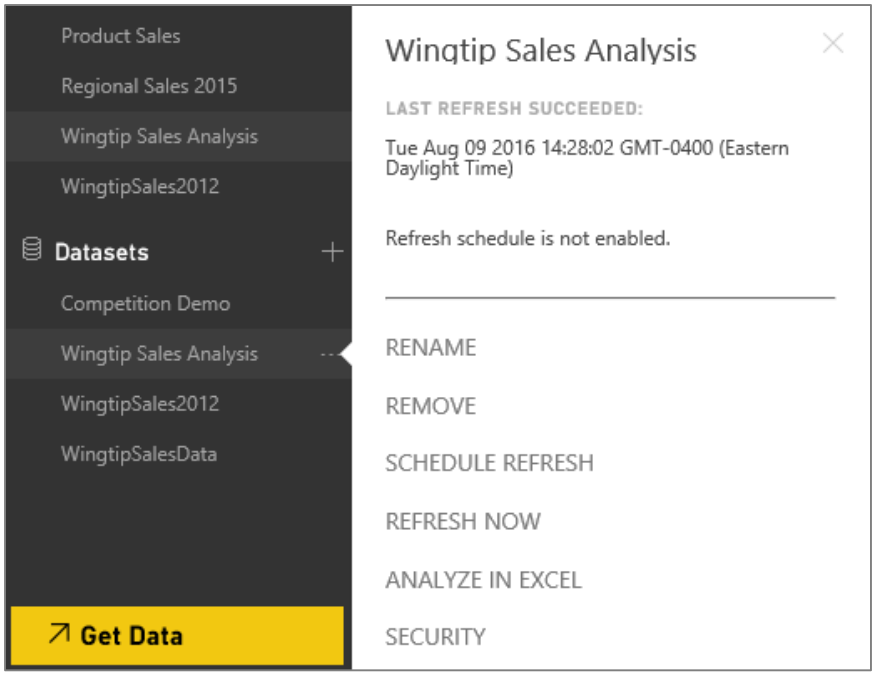
Examining What's Been Published

- What does project publishing add to workspace?
  - One dataset with same name as project
  - One report with same name as project



Dataset Configuration

- You can configure Dataset after its been published
  - Configure data source credentials
  - Configure refresh schedule
  - Configure Row-level Security

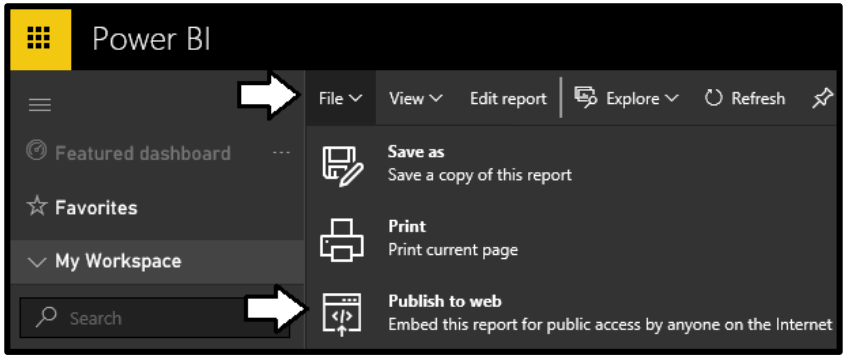


Agenda

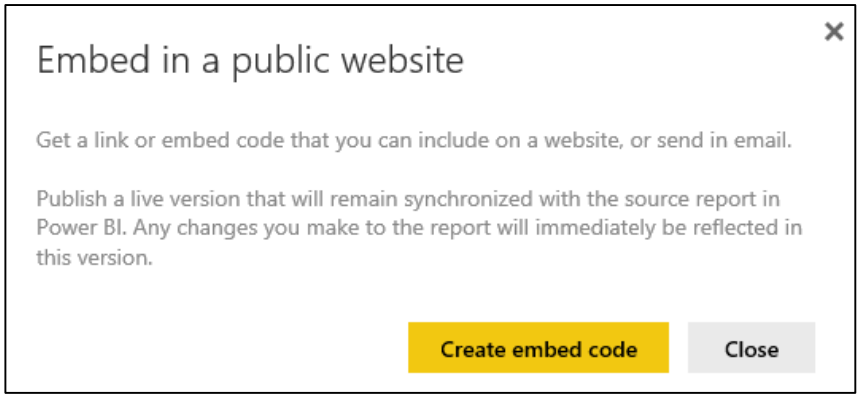
- ✓ Designing Interactive Reports
- ✓ Importing Custom Visuals
- ✓ Publishing a Project to the Power BI Service
- ➢ Using the Publish to Web Feature
- Publishing Reports in SharePoint Online
- Implementing Row-level Security (RLS)

Publish to Web

- **Publish to Web** command available on reports
  - Not supported for reports and datasets which implement RLS

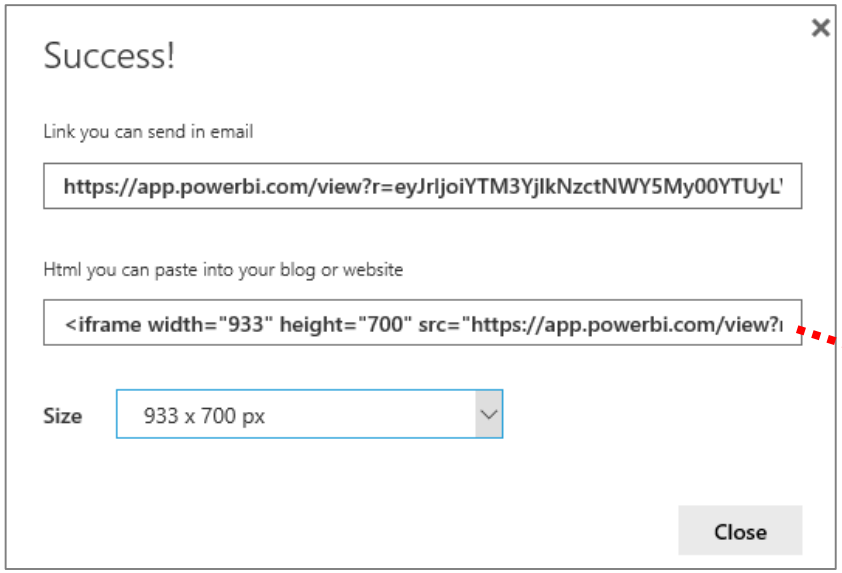


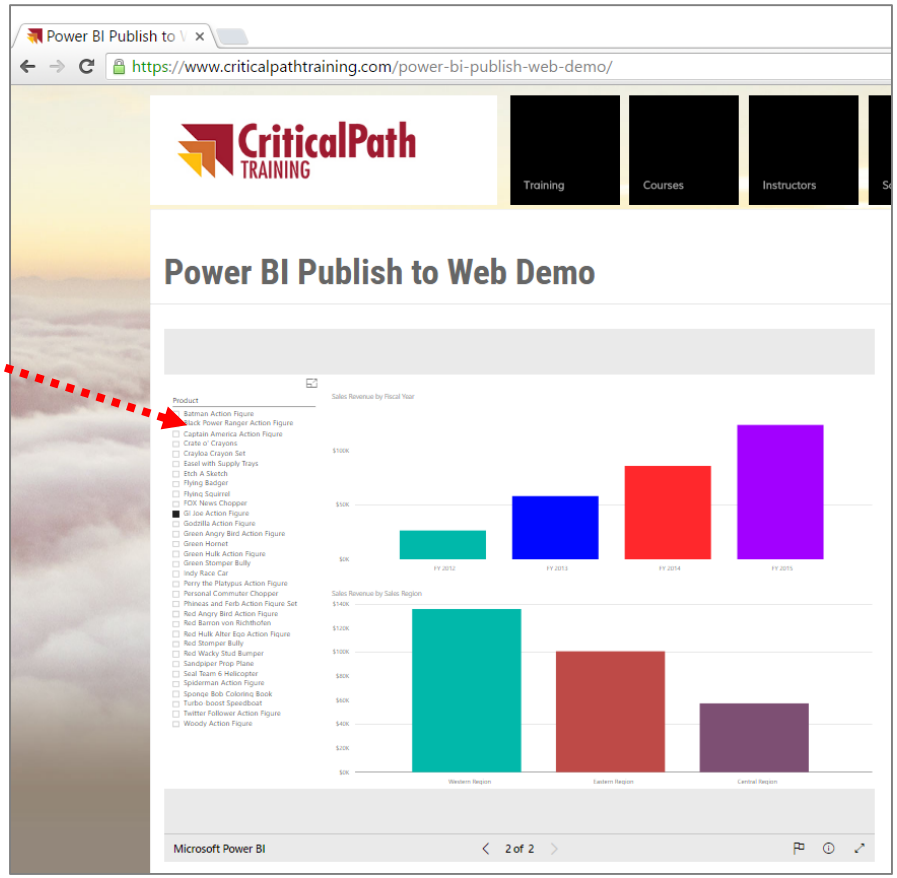
  - **Publish to Web** command used to generate embed codes



Generating Embed Codes

- Used to provide anonymous access to report
  - Provide link which can be posted, emailed or texted
  - Provides **iFrame** HTML element for embedding in public web site





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DEMO
Using the Publish to SharePoint Feature

Agenda

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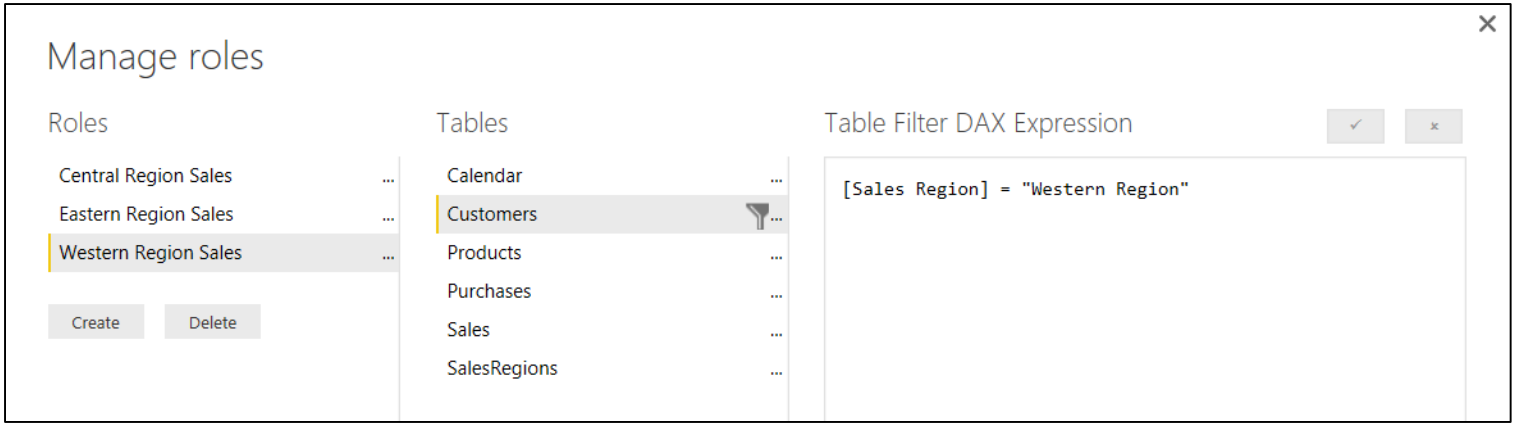
What Is Row-level Security (RLS)

- Security Scheme based on Named Roles
  - Roles are defined using Power BI Desktop
  - Each role is scoped to the dataset within a PBIX project
- Role defined using one or more DAX expressions
  - DAX expressions restrict which rows are accessible




DEMO
Configuring Row-level Security

Summary

- ✓ Designing Interactive Reports
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