

What is your current experience with Tableau & PowerBI?

Please tell me your current experience level, have you used this before, if so what/how, what data did you analyse, what was the context?

Instructions



Collaborate Board

What is your current experience with Tableau & PowerBI?

DATA TECHNICIAN

INTRODUCTION TO VISUALISATION TOOLS: TABLEAU & POWERBI -DAY 1-



Just IT

B2W group

Apprenticeships | Training | Recruitment

OBJECTIVES -DAY 1

- **Intent:**

To identify what the Tableau system is, understand the benefits of Tableau compared to Excel and to be able to import data into the Tableau system for analysis. You'll understand how to set up relationships and understand the purpose of a dashboard.

- **Implementation:**

Delivered using practical labs. Concepts explained through examples and exercises/quizzes

- **Impact:**

Gain the skills and confidence needed to understand data analysis processes and their types , preparing for more advanced studies or real-world applications. The impact measured through in-class mini-projects, labs & Quiz

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Classroom Expectations

BE PREPARED, BE PROFESSIONAL,
BE READY TO LEARN!

01

CAMERAS ON



Cameras should be switched on with an appropriate background, and with you visible at your screen. If you have technical/ personal difficulties, inform your tutor.

02

MICS ON MUTE



Place your mics on mute unless asking or answering a question. Use the 'raise hand' function in MS teams to gain attention.

03

APPROPRIATE LANGUAGE USED



Use appropriate and professional language at all times.

04

BE READY



Be focused, ensuring you all have all equipment ready and a drink by your side. Be prepared to learn without interruption.

05

ENGAGE - TAKE NOTES AND ASK QUESTIONS!

 Take notes throughout your session, ask questions and support each other.
Help create a positive learning environment for everyone.

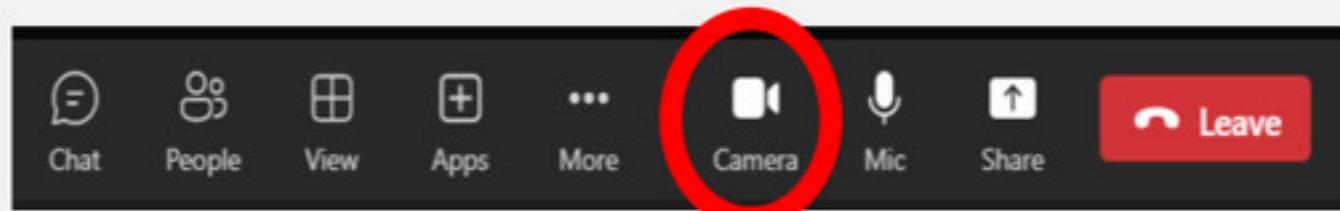


CAMERA EXPECTATIONS

Before we start... Please have your camera switched on.

This is a mandatory requirement for the duration of the course.

- We have a duty of care to ensure you are in a safe learning environment.
- Our job is to prepare you for work in an age where in almost any job there is likely to be at least some aspect of remote engagement with your employer.
- Online learning is to be treated the same way as a classroom learning, you must be physically visible to interact with your tutor and other learners in order to create an engaging group dynamic.



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SAFEGUARDING & PREVENT

Out of normal working times please refer to our website <https://www.justit.co.uk/safeguarding/> for sources of information and support or contact the following agencies for immediate help.

- The Samaritans <https://www.samaritans.org/how-we-can-help/contact-samaritan/>
- Mind <https://www.mind.org.uk/information-support/>
- Local authority support
<https://www.gov.uk/find-a-community-support-group-or-organisation>
- Anxiety UK <https://www.anxietyuk.org.uk/>
- Women's Aid <https://www.womensaid.org.uk/information-support/>
- Andy's Man Club <https://andysmanclub.co.uk/>

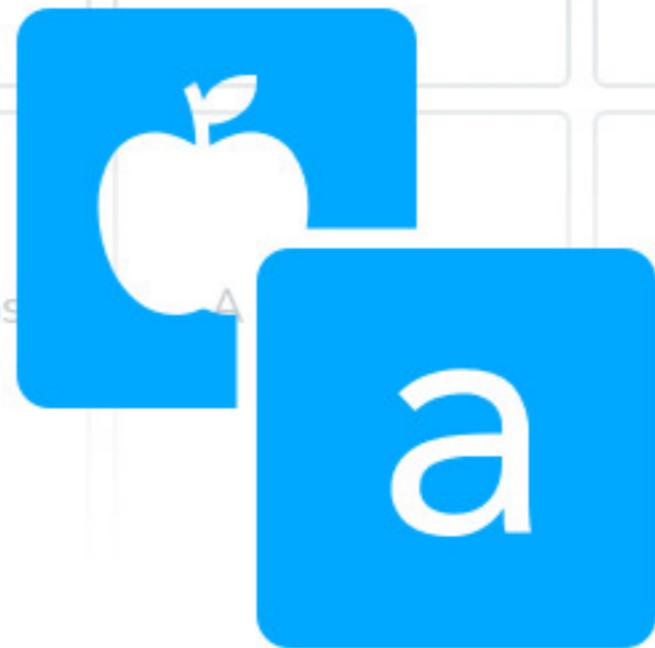
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Can you guess the idioms from the emojis?

Instructions



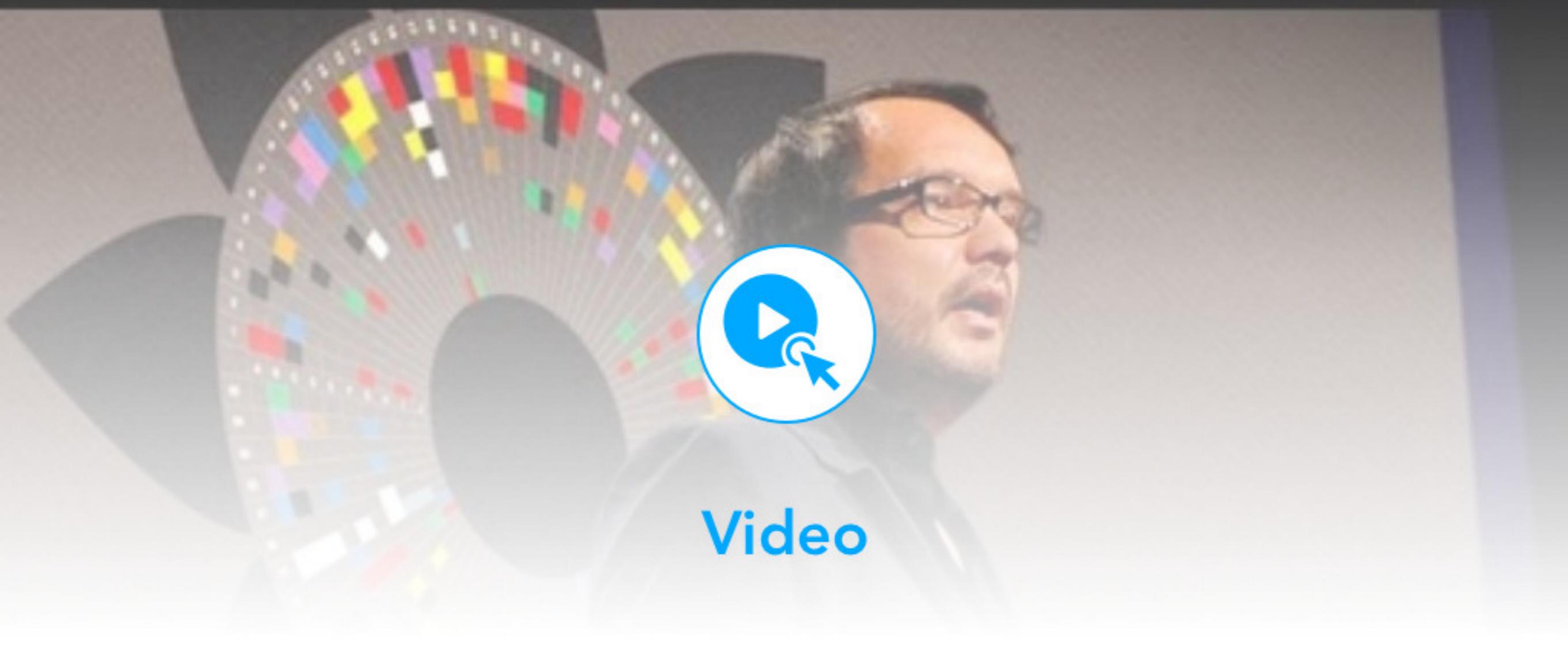
To be as cool as
a cucumber



A storm in a
teacup

To see eye to
eye

Matching Pairs



Video

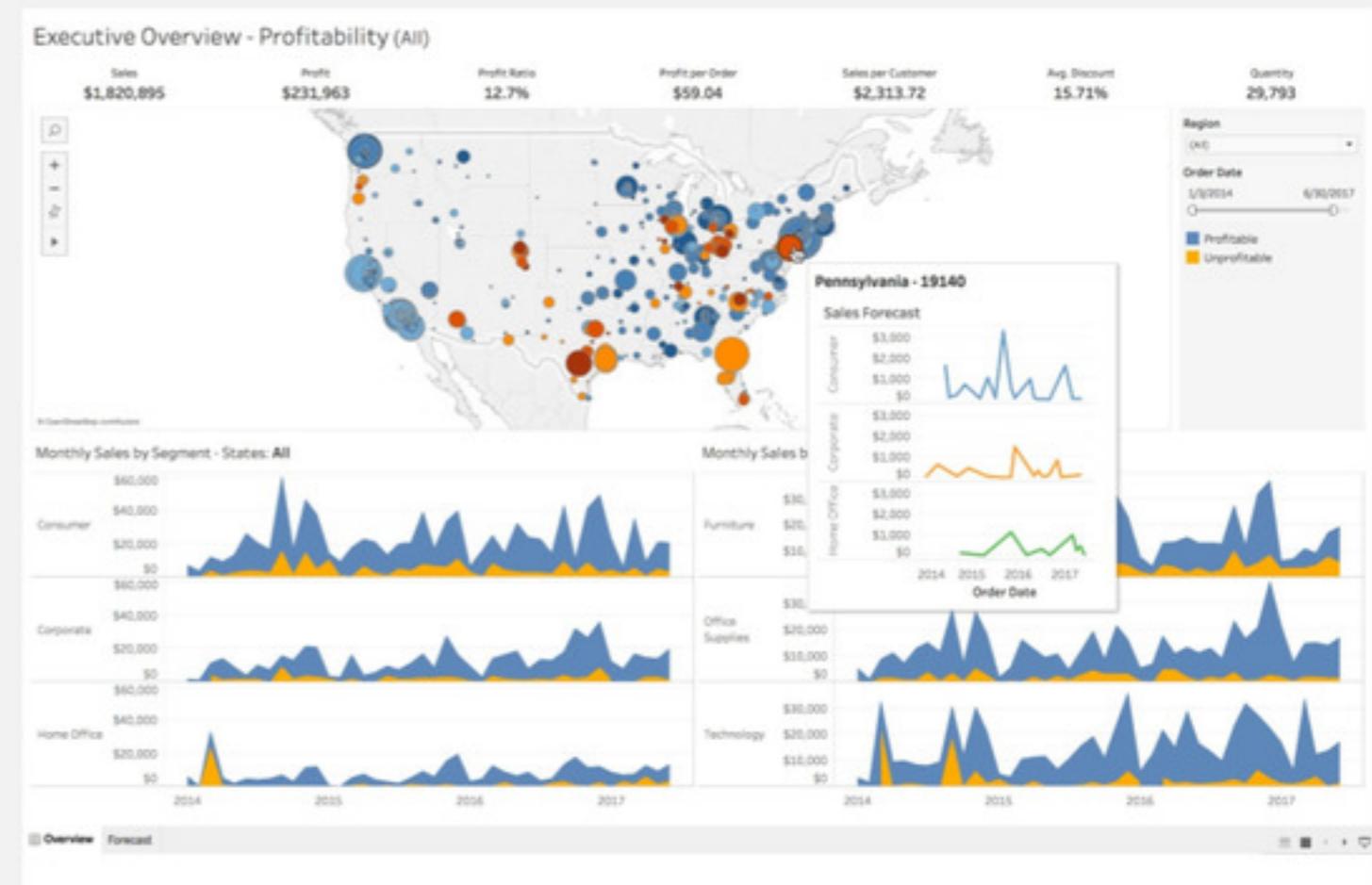
The beauty of data visualization - David McCandless

Open-Ended Question

What is the importance of data visualization?

WHAT IS TABLEAU?

Tableau is a visual analytics platform that **focuses on creating beautiful and effective visuals**. It does so by giving the user powerful but easy-to-use tools to build dashboards.



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What is Tableau? | Tableau Overview | Tableau in 5 Mins | Tableau For Beginners | Simplilearn

TABLEAU vs EXCEL

Excel	Tableau
Quick visualizations and reports.	Great for storytelling.
Spreadsheet tool.	Data Visualization tool.
Good for medium sized datasets.	Good for large datasets.
Plugins are required to connect to external data sources.	Integrates easily with external data sources.
Knowledge on custom functions and scripting.	No coding knowledge required.
Charts are limited and simple.	Wide range of built-in custom charts.
Sharing is not so easy.	Sharing is easy.

Data Types

	Date	Numeric	Geographic
Abc			
String	Date & time	#	T F

Discrete Data

Continuous Data

Can be counted.

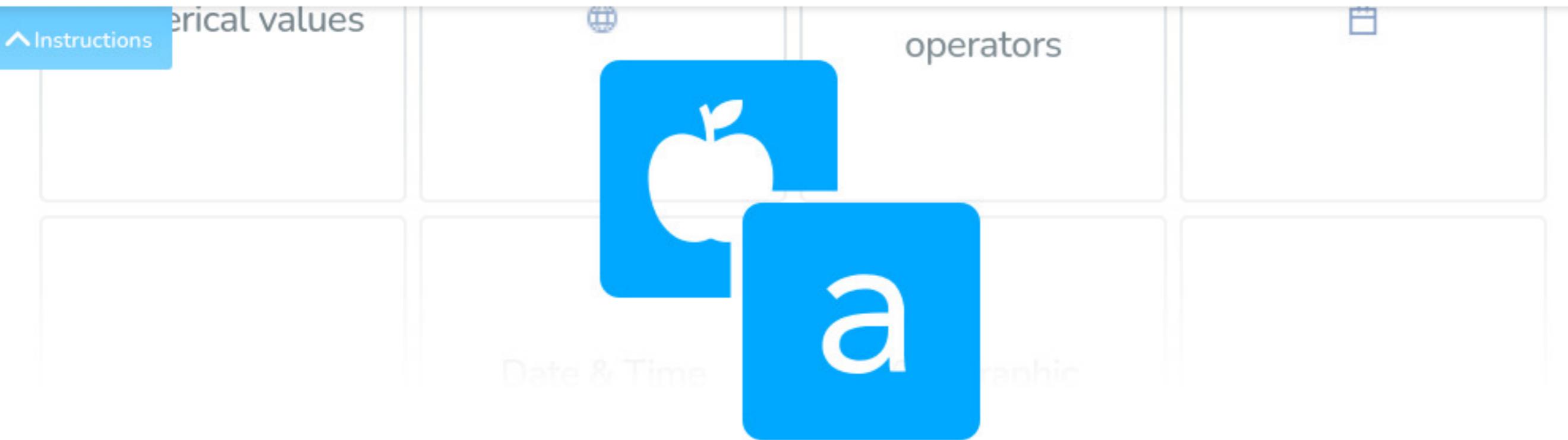
Can be measured.

Example: Age and shoe size.

Example: Temperature and distance.

Image Source: Tableau

Match the symbol with correct data type



Matching Pairs

DATA TYPES

Discrete Dimensions

Product Name

Continuous Dimensions (dimensions with a data type of String or Boolean can't be continuous)

YEAR(Order Date)

Discrete Measures

SUM(Profit)

Continuous Measures

SUM(Profit)

Qualitative

Data



Quantitative

Discrete Data

- 5 kids
- 96 workers
- 3 laptops

Continuous Data

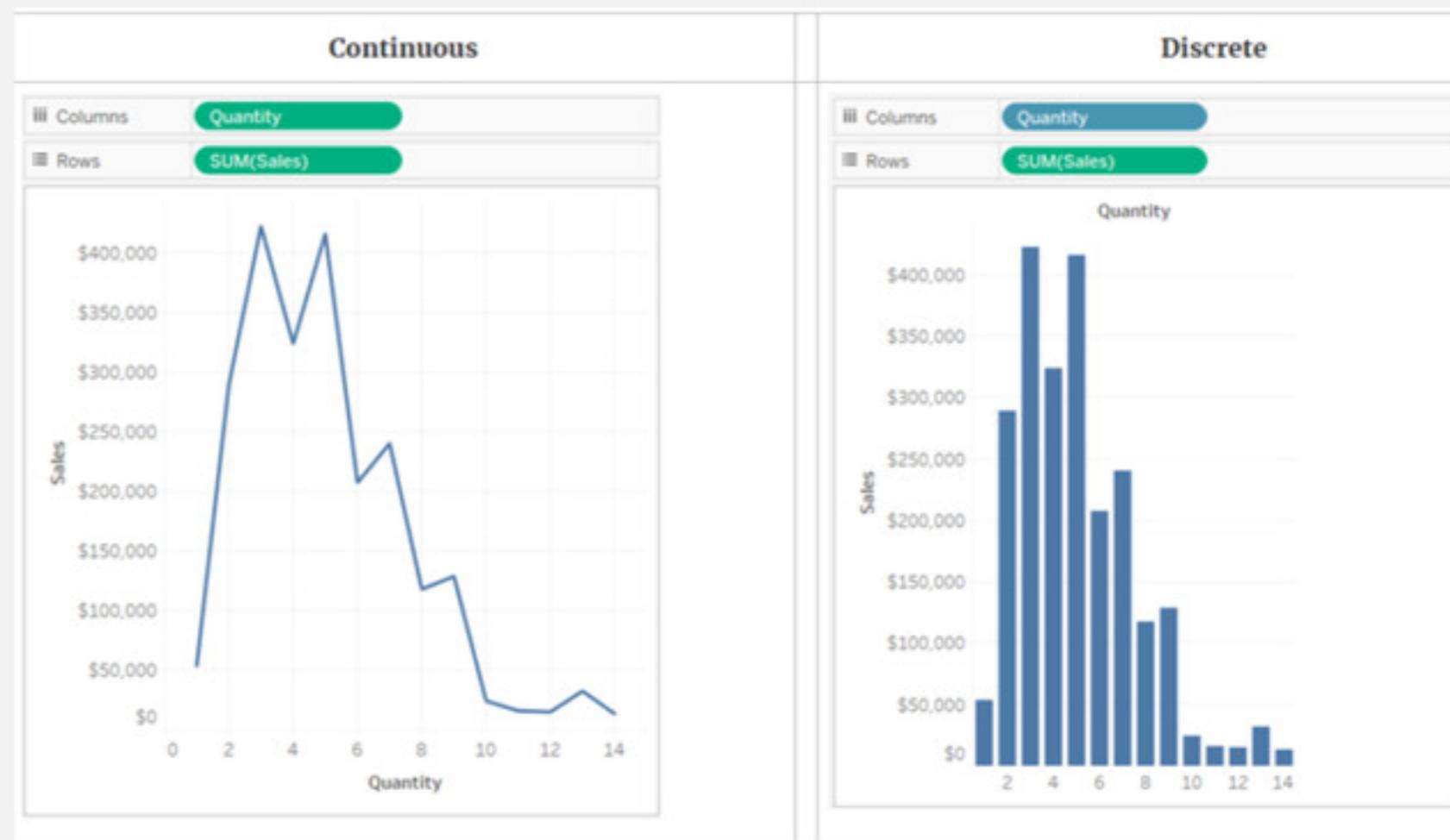
- 3.25 kg
- 1.32 miles
- 7.25 inches

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DIMENSION & MEASURES (BLUE & GREEN)

In Tableau, the colour of the field affects how the data is displayed:

- Blue (Discrete): Creates categories or distinct groups (e.g., bar charts showing separate regions or products).
- Green (Continuous): Creates smooth axes or ranges (e.g., line charts tracking monthly sales or temperature).



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TABLEAU TRAINING

Confused?



Blue vs Green?

[Video](#)



Tableau Tutorial - Dimensions vs Measures, Blue vs Green, Discrete vs Continuous | sqlbelle

Multiple Choice

What is a Dimension in Tableau?

- A field that is used for numerical calculations.
- A categorical field that describes the data and is often used to segment or group data.
- A measure that is always blue.
- A filter for limiting data.

What are Measures in Tableau typically used for?

- Grouping data into categories.
- Applying filters to the data.
- Representing quantitative, numerical values that can be aggregated.
- Sorting data by alphabetical order.

What does a blue pill represent in Tableau?

- A continuous field that is used to build charts.
- A field used exclusively for filters.
- A field with no data.
- A discrete field that segments data.

What does a green pill represent in Tableau?

- A discrete field that is categorical.
- A continuous field, often used for numeric values.
- A null value in the data.
- A filtered value.

Which of the following statements is true about Dimensions and Measures?

- Dimensions are typically blue, while Measures are green.
- Measures are discrete, and Dimensions are continuous.
- Dimensions typically define the structure of the data, while Measures provide numerical values for analysis.
- Dimensions are always numeric.

Polli

Find a word that begins with P as quickly as possible.

RADIUSPLACELUNCHSCHOOL

Find a word that begins with C as quickly as possible.

NATIONPLACE**LUNCH**COMPUTER

Find a word that begins with R as quickly as possible.

NATIONLUGGAGE**REMOTE**COMPUTER

Which word was easy to find ?

- The word that begins with P
- The word that begins with C
- The word that begins with R

DATA DASHBOARDS

The dashboard is a **visual, graphical user interface** that gives the user an overview of the data.

By making use of dashboards, company owners can make decisions quicker.

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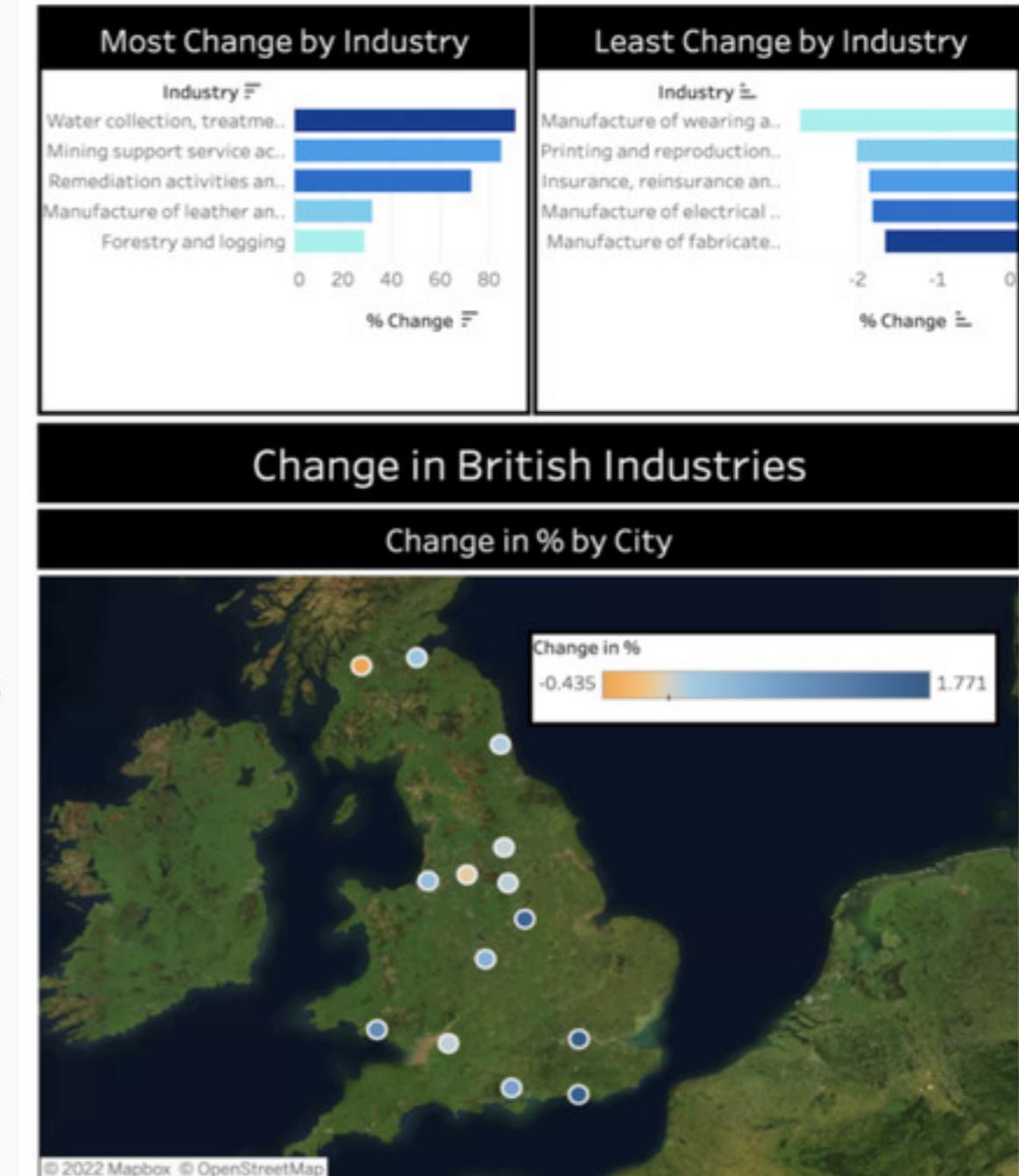


TABLEAU WORKFLOW

```
graph LR; A[Import data] --> B[Check data types]; B --> C[Set relationship]; C --> D[Build basic charts]; D --> E[Handle missing values]; E --> F[Build a dashboard]
```

Import data → Check data types → Set relationship → Build basic charts → Handle missing values → Build a dashboard

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INSTALLING TABLEAU

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1. Create an account by clicking on '[sign in](#)' on Tableau Public:

<https://public.tableau.com/app/resources/learn>

2. Then click [here](#) > Create > Download Tableau Desktop Public Edition

3. Enter required information > Download Tableau Public

4. Follow instructions on screen

5. Hands up when complete, let me if you get any errors

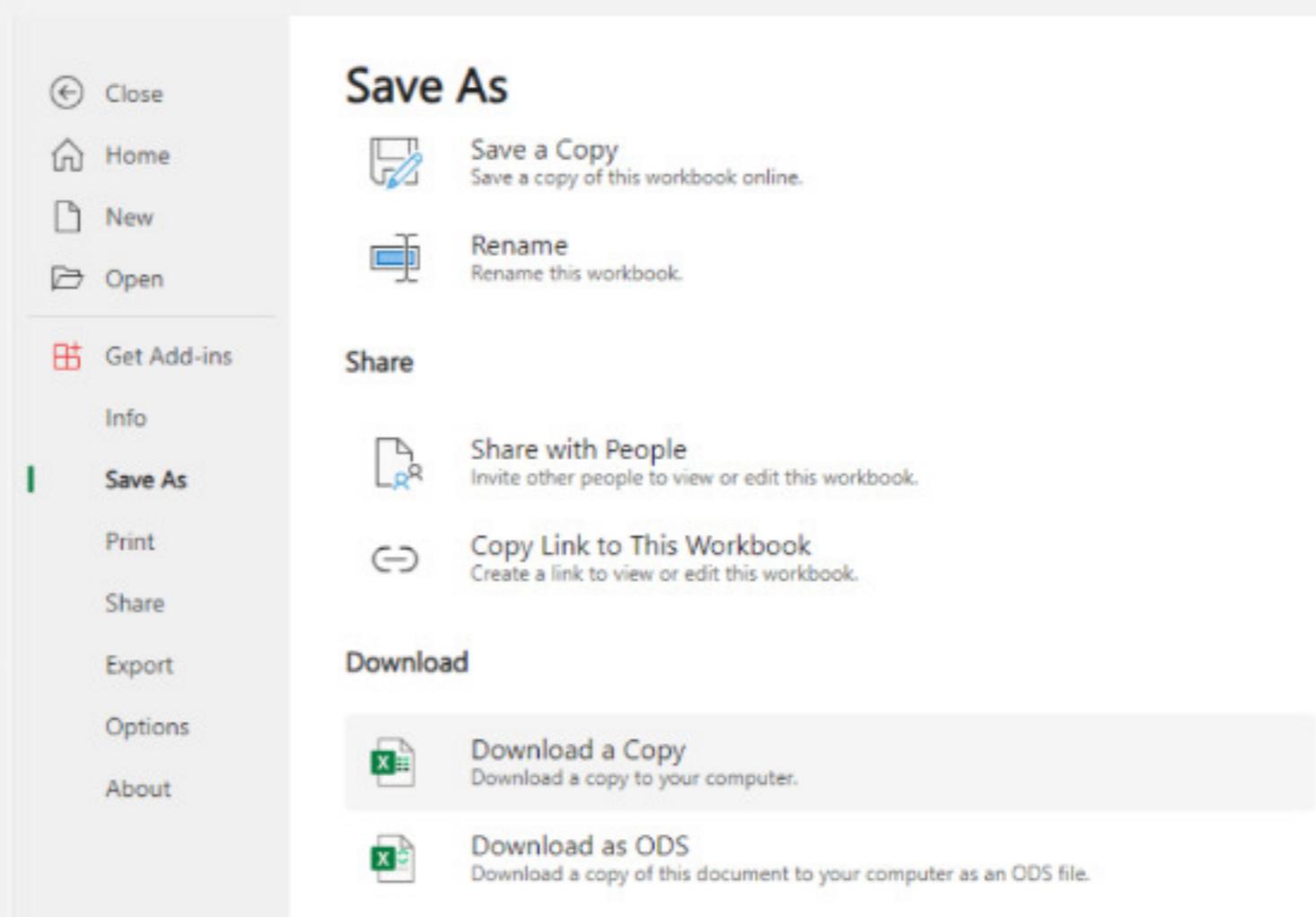
The screenshot shows the Tableau Public website's 'Learn' section. At the top, there are 'Create' and 'Learn' dropdown menus. Below them are links for 'Web Authoring' and 'Download Tableau Desktop Public Edition'. The 'Learn' section features a large heading 'Learn' and a sub-section 'How-To Videos' which is underlined. Other options include 'Sample Data' and 'Community Resources'. A prominent call-to-action box in the center says 'You'll be exploring in minutes' and 'Almost there!'. It includes fields for 'First name', 'Last name', 'Business email', and 'Country/Region'. A note at the bottom states: 'By registering, you confirm that you agree to the processing of your personal data by Salesforce as described in the [Privacy Statement](#)'. A blue button at the bottom right says 'DOWNLOAD THE APP'.

TIME FOR THE DATA

About the Data:

Employment data by industry for 2011 and 2014 by city for Great Britain.

[Click here to download dataset](#)



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TABLEAU INTRODUCTION



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Tableau User Interface



Demo on Importing Data & Setting Relationships

File Data Help

Tableau Public Desktop Upgrade

Connect Open Open from Tableau Public

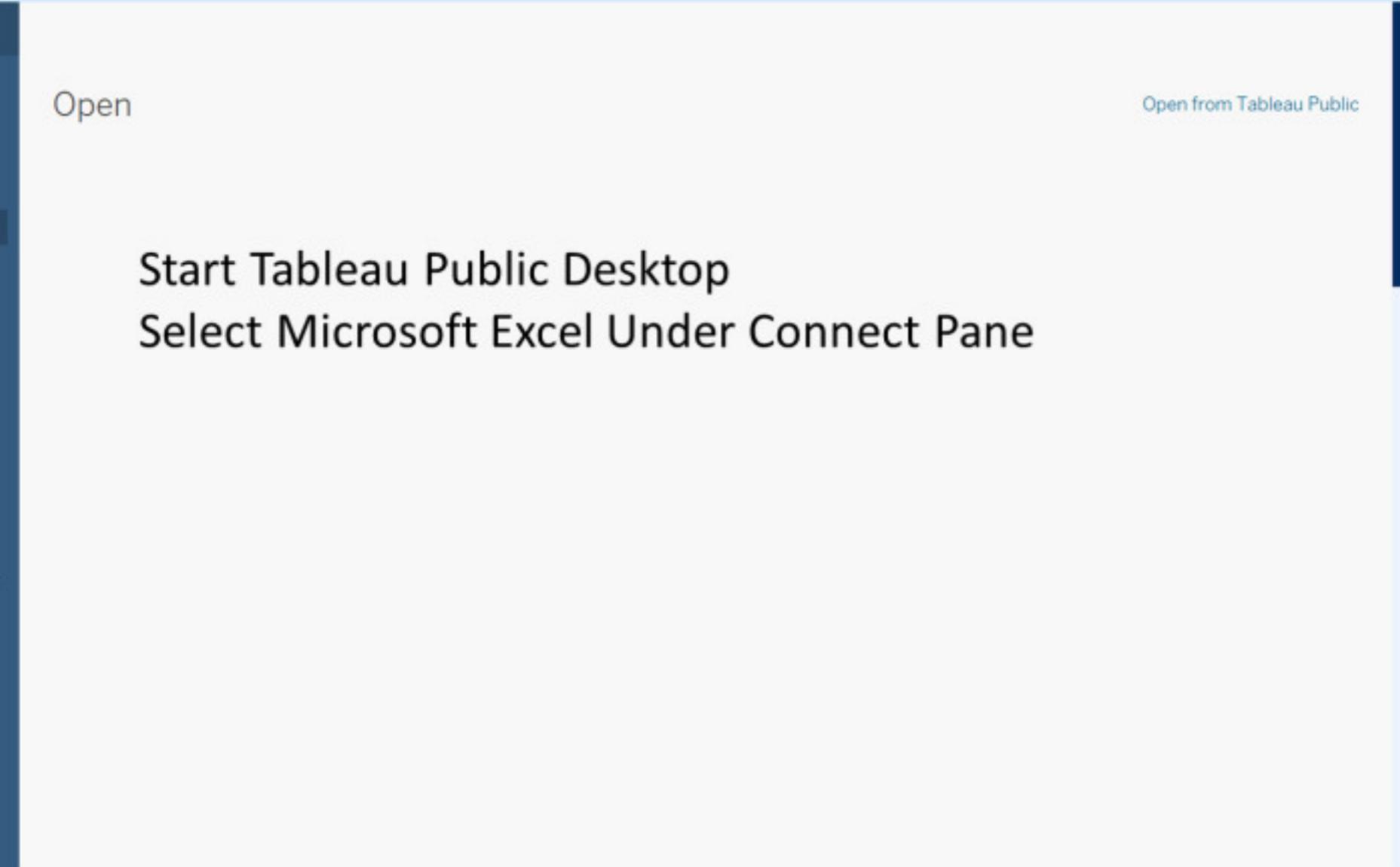
To a File Microsoft Excel Text file JSON file Microsoft Access PDF file Spatial file Statistical file

To a Server OData More... >

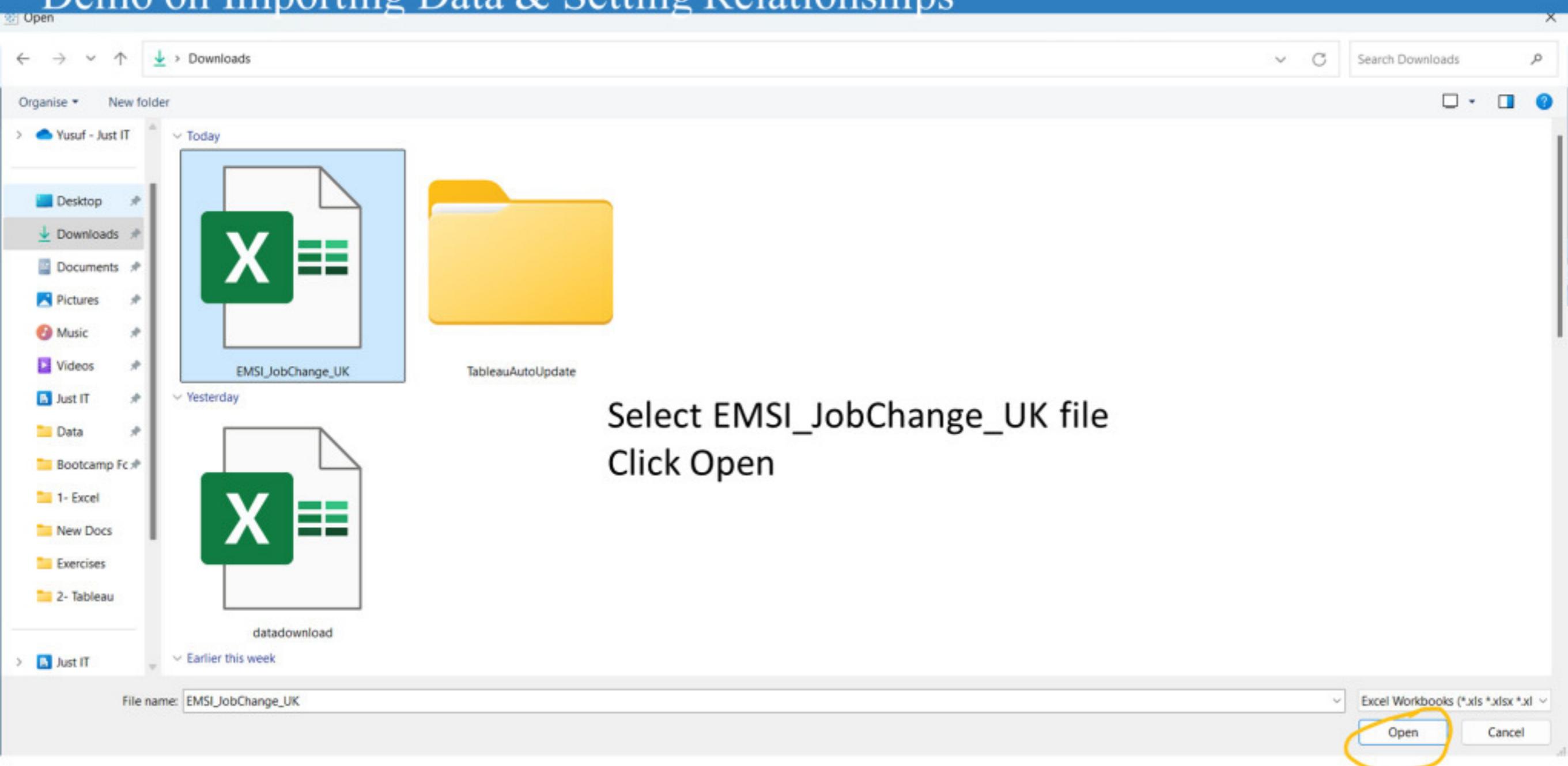
What's new
You can now [save your work locally](#) or publish to your Tableau Public profile. Local save is available on Tableau Desktop Public Edition 2024.2
[UPGRADE NOW →](#)

Learn Tableau
 [Get started with Tableau Public](#)
 [Watch how-to videos](#)
 [Explore sample data sets](#)
 [Learn on Trailhead: Tableau hands-on challenges](#)
 [Read the blog](#)
[EXPLORE TODAY'S VIZ →](#)
[SEE TRENDING VIZZES →](#)
[VIZ OF THE DAY ARCHIVE →](#)

Start Tableau Public Desktop
Select Microsoft Excel Under Connect Pane

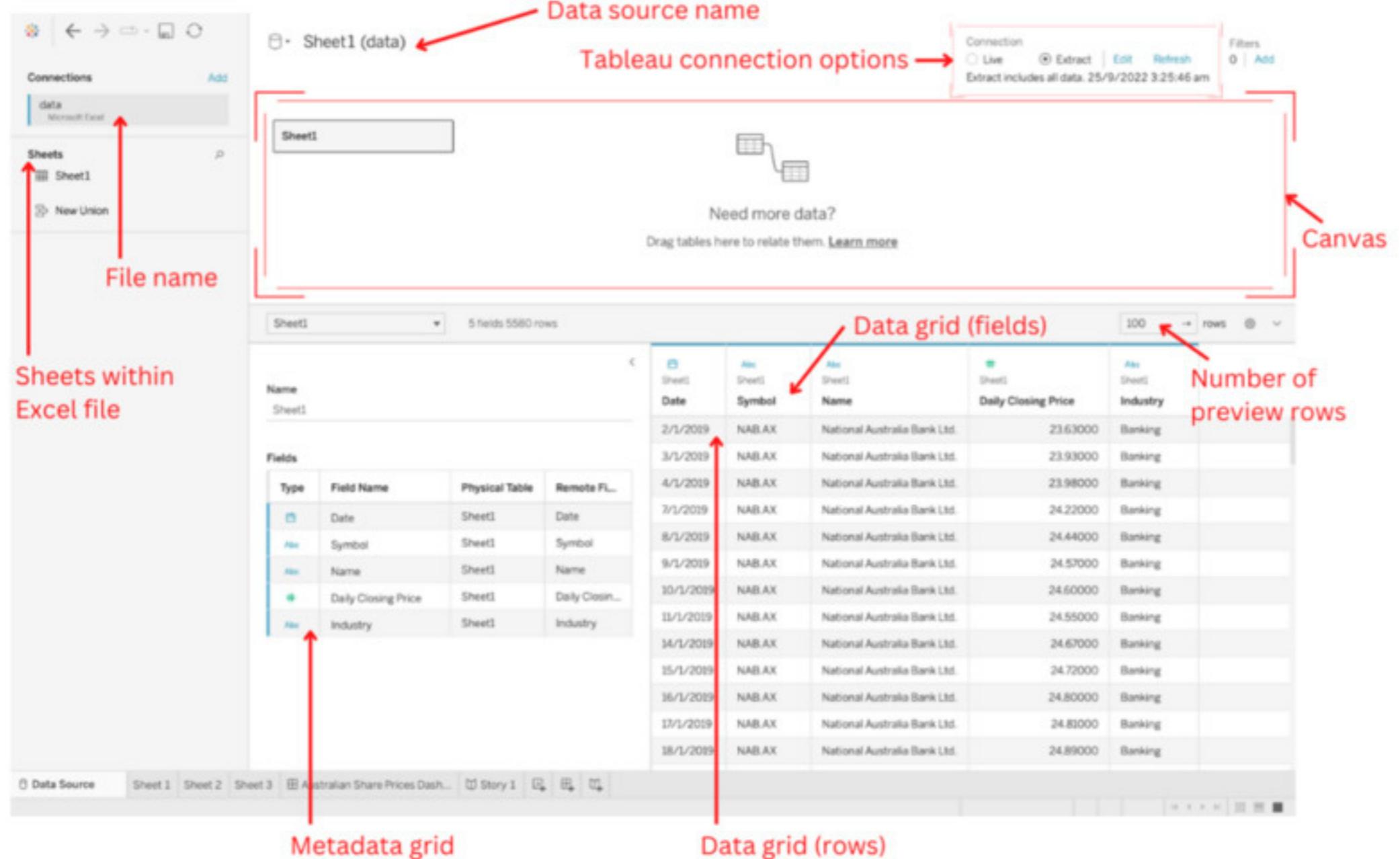


Demo on Importing Data & Setting Relationships



You can also download from Tableau Public website. [Link here.](#)

Tableau User Interface



Demo on Importing Data & Setting Relationships

Tableau Public Desktop Upgrade

Connections Add

EMSI_JobChange_UK

Sheets

1 digit (circled)

2 digit

New Union

New Table Extension

Drag and drop tables 1 digit and 2 digit

Drag tables here to create a data model

Learn more

1 digit — 2 digit ▾ Select Country Fields to set relationships 100 → rows ⚙ ▾

How do relationships differ from joins? [Learn more](#)

1 digit Operator 2 digit

Abc Country = Abc Country (2 digit ▾)

+ Add more fields

< >

2 digit City (2 digit)	2 digit Country (2 digit)	Abc Sic-1	Abc SIC-1 name	Abc Sic-2	Abc Industry (2 digit)
Aberdeen	UK	G	WHOLESALE AND RETAIL TR...	47	Retail trade, except of motor ...
Aberdeen	UK	M	PROFESSIONAL, SCIENTIFIC...	71	Architectural and engineerin...
Aberdeen	UK	Q	HUMAN HEALTH AND SOCIA...	86	Human health activities
Aberdeen	UK	B	MINING AND QUARRYING	09	Mining support service activi...

> Performance Options

Why set relationships ?

Relationships are a dynamic, flexible way to combine data from multiple tables for analysis.

A relationship describes how two tables relate to each other, based on common fields, but doesn't merge the tables together.

When a relationship is created between tables, the tables remain separate, maintaining their individual level of detail and domains.

More Info

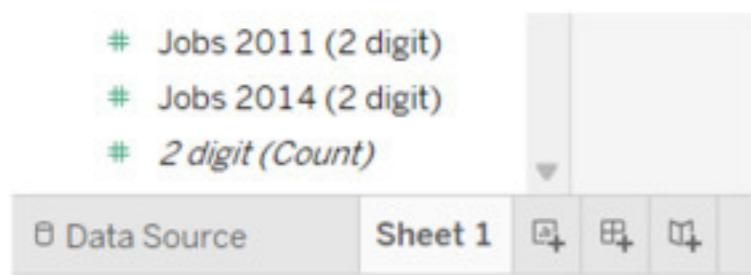
Demo on Importing Data & Setting Relationships

Explore and check data types for each column

2 digit	2 digit	2 digit	Abc 2 digit	Abc 2 digit	Abc 2 digit	Abc 2 digit
City (2 digit)	Country (2 digit)	Sic-1	SIC-1 name	Sic-2	Industry (2 digit)	
Aberdeen	UK	G	WHOLESALE AND RETAIL TR...	47	Retail trade, except of motor ...	
Aberdeen	UK	M	PROFESSIONAL, SCIENTIFIC...	71	Architectural and engineerin...	
Aberdeen	UK	Q	HUMAN HEALTH AND SOCIA...	86	Human health activities	
Aberdeen	UK	B	MINING AND QUARRYING	09	Mining support service activi...	

Demo on Importing Data & Setting Relationships

Click on Sheet 1 to go to worksheet.



You can hide and show field in the table by down arrow.
Hide Field of 1 digit table.

1 digit
> Country, City
Abc Industry
Abc SIC Code
% Change
Change
Jobs 2011
Jobs 2014
1 digit (Count)
2 digit
⊕ City (2 digit)
⊕ Country (2 digit)

Click on Show Me to hide.



Tableau User Interface

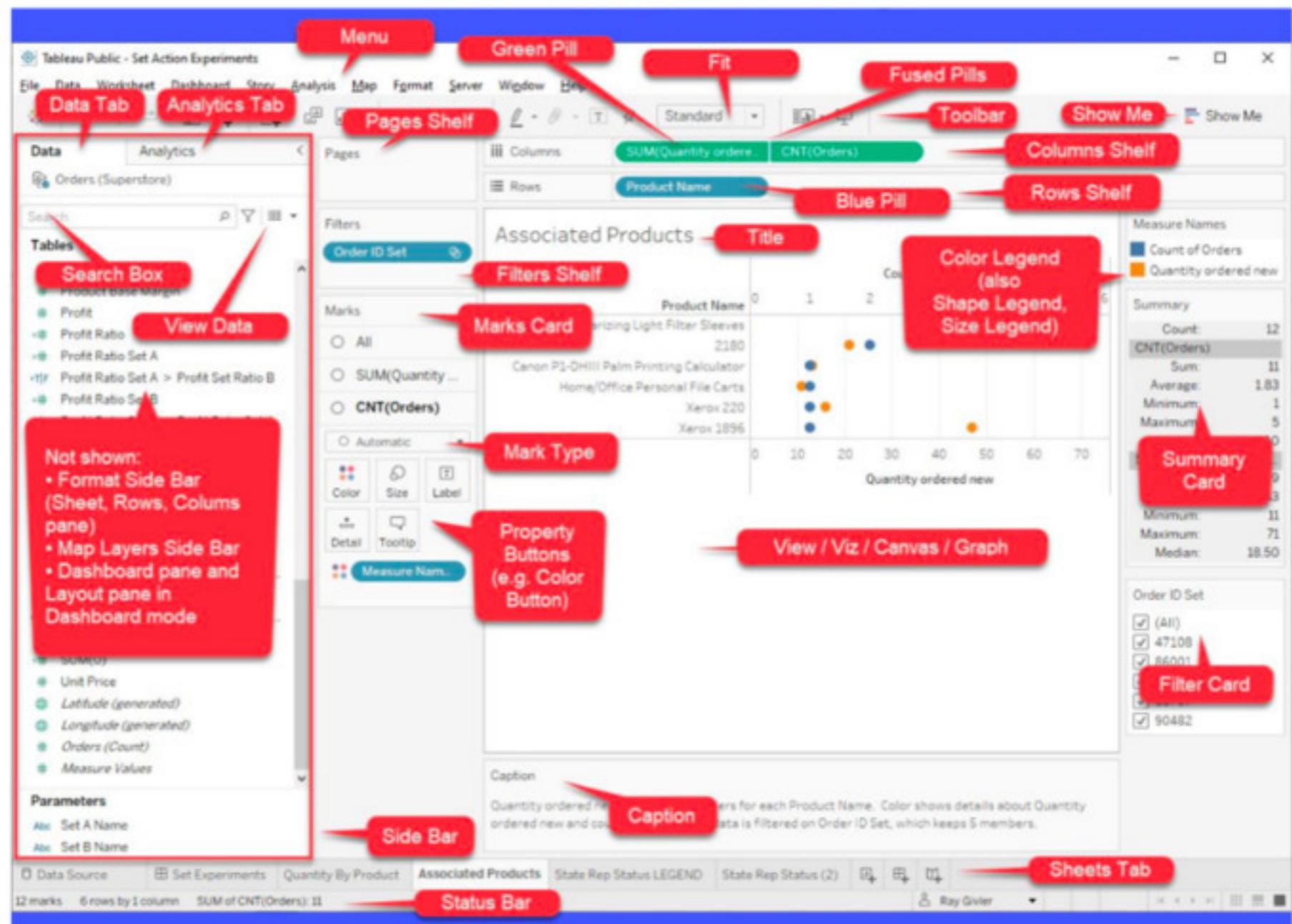
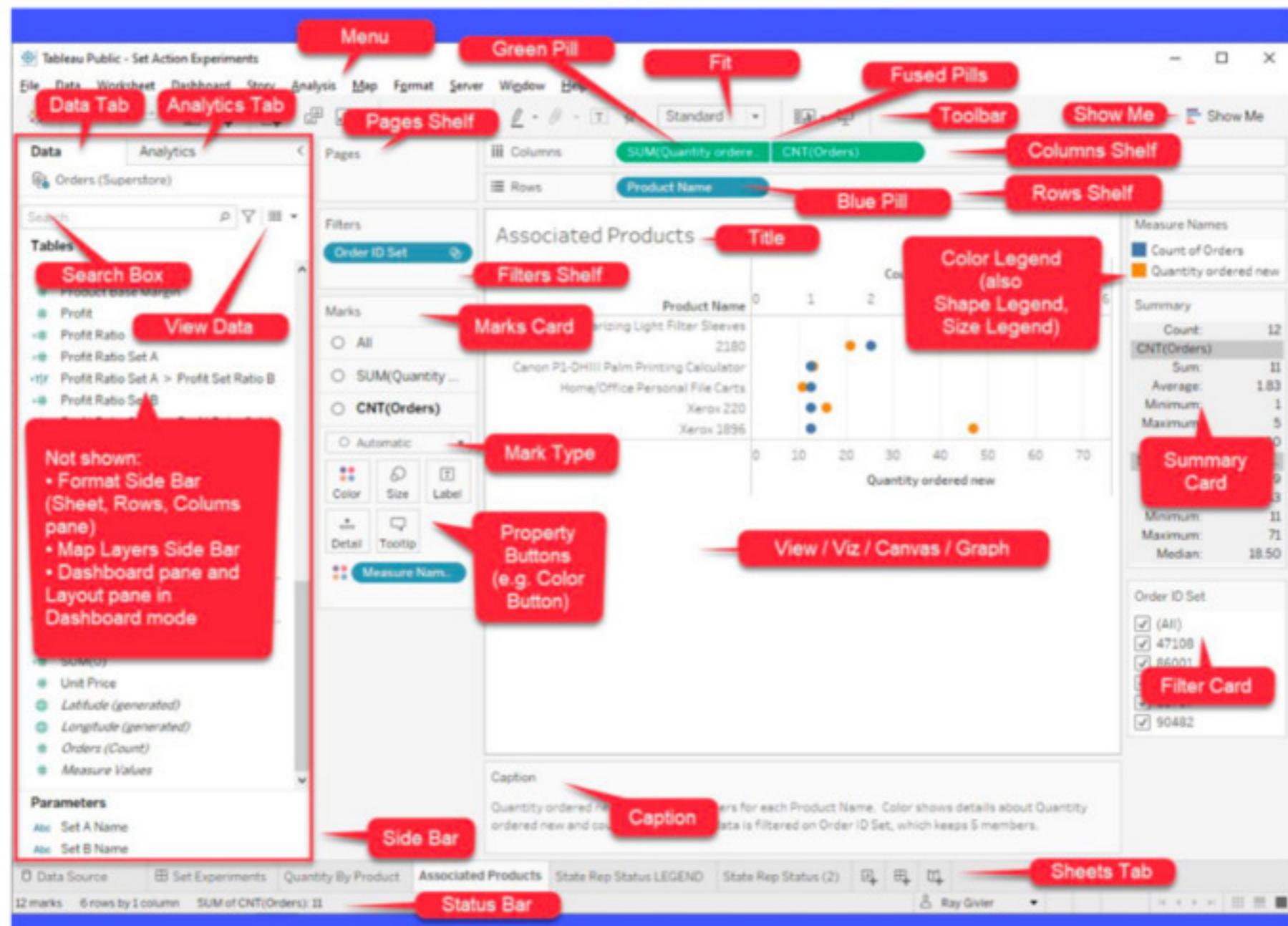
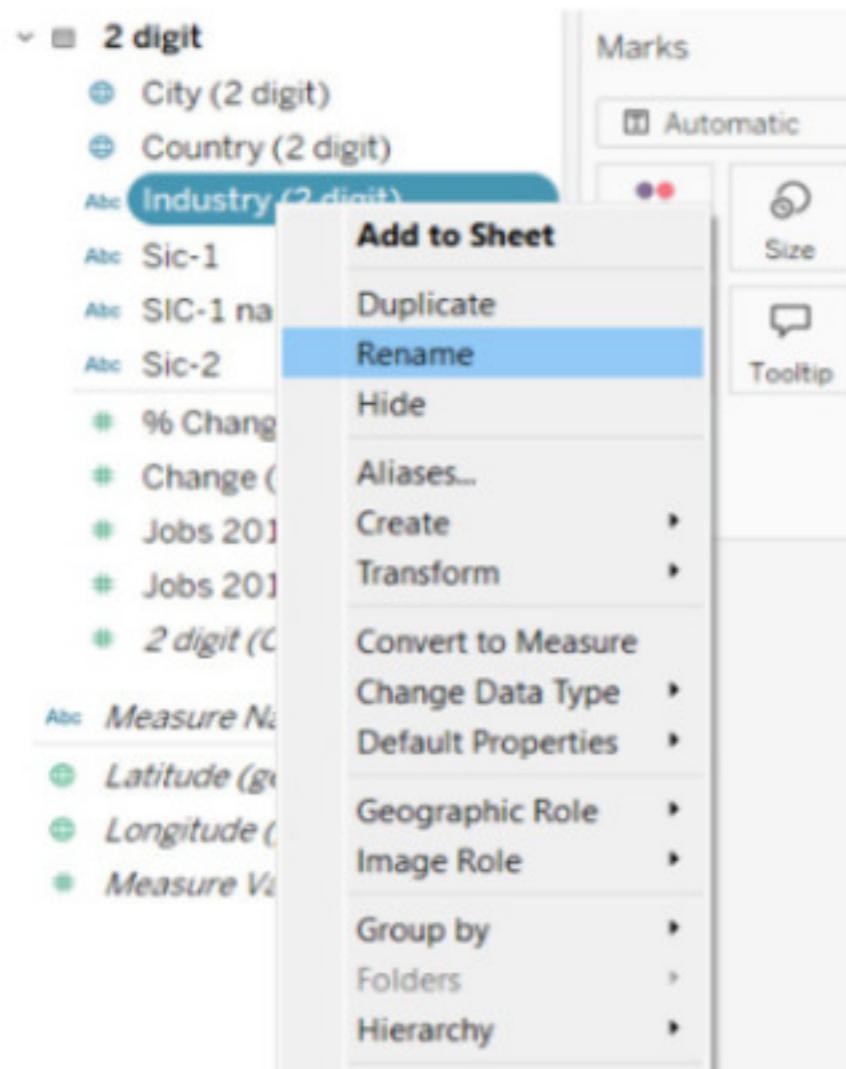


Tableau User Interface



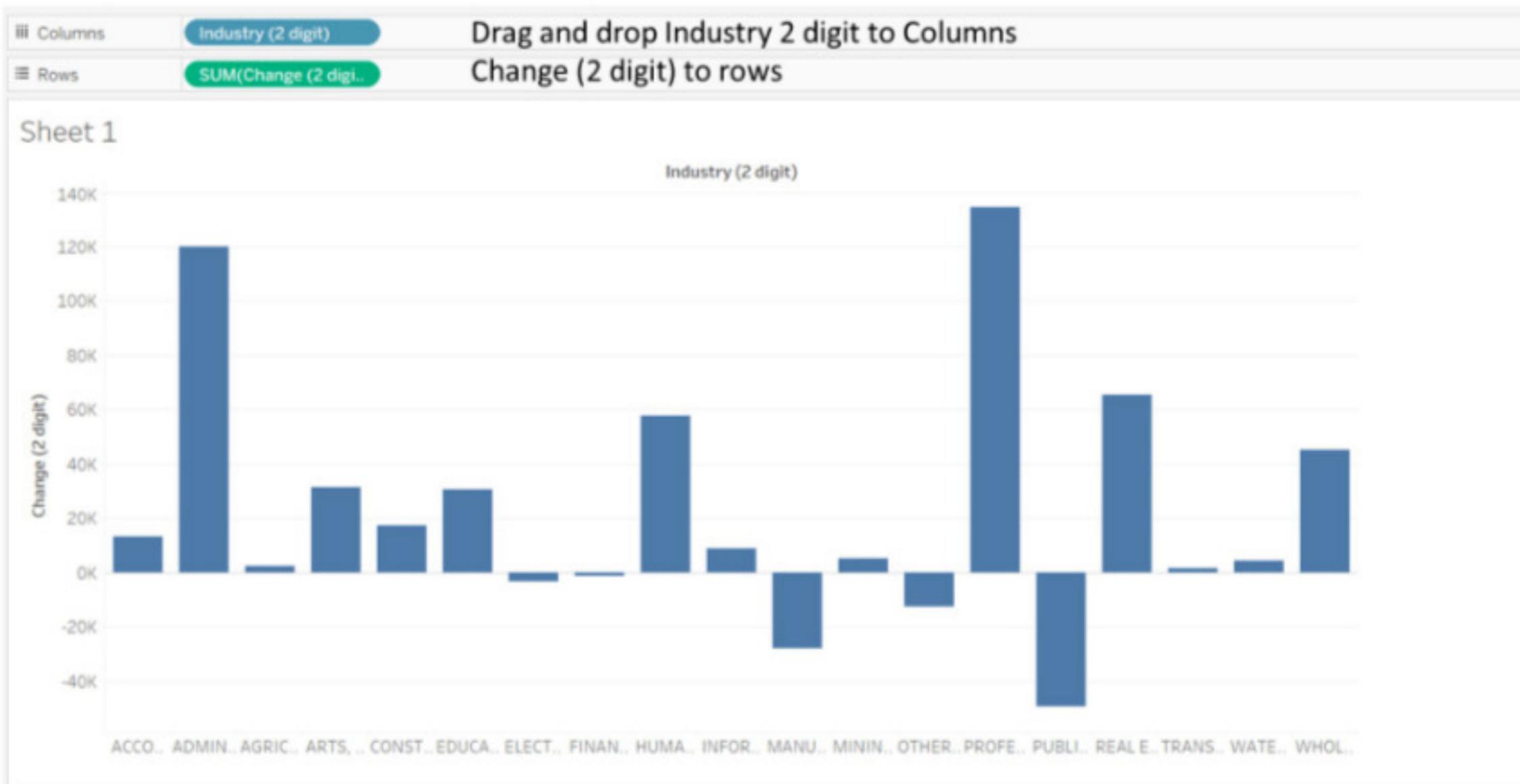
Renaming Columns



Make following changes

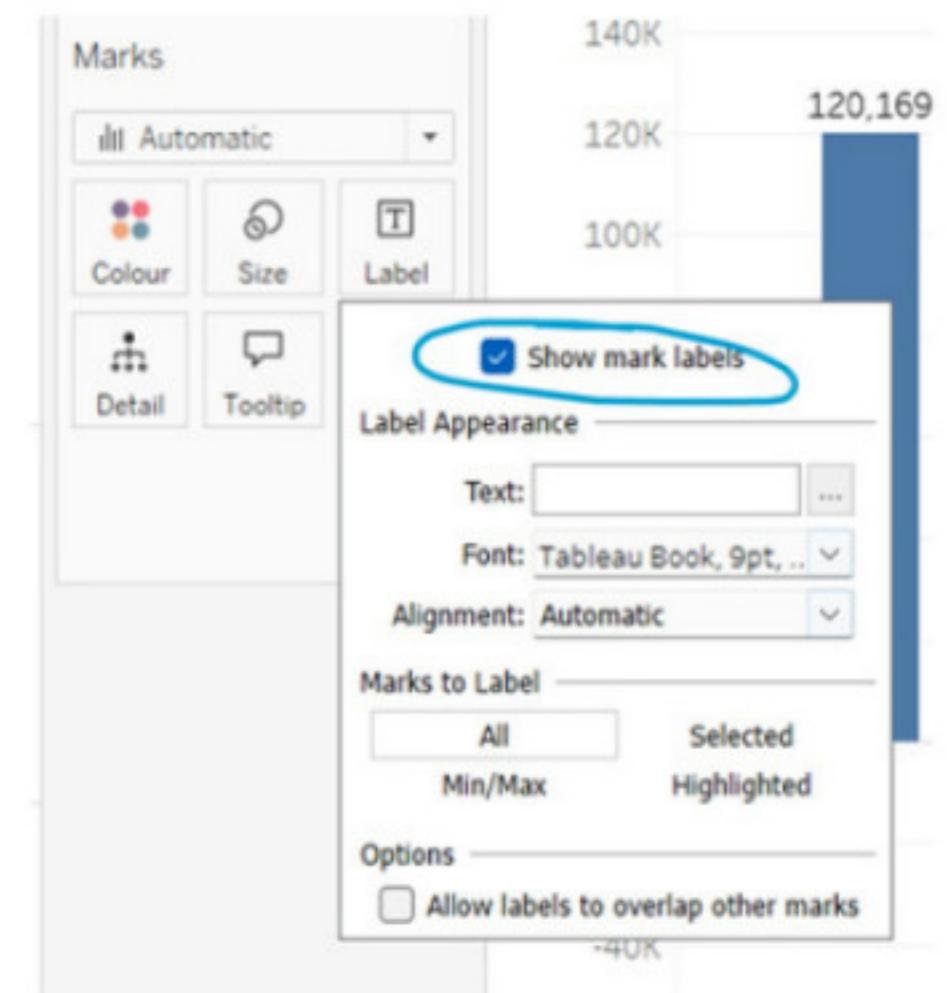
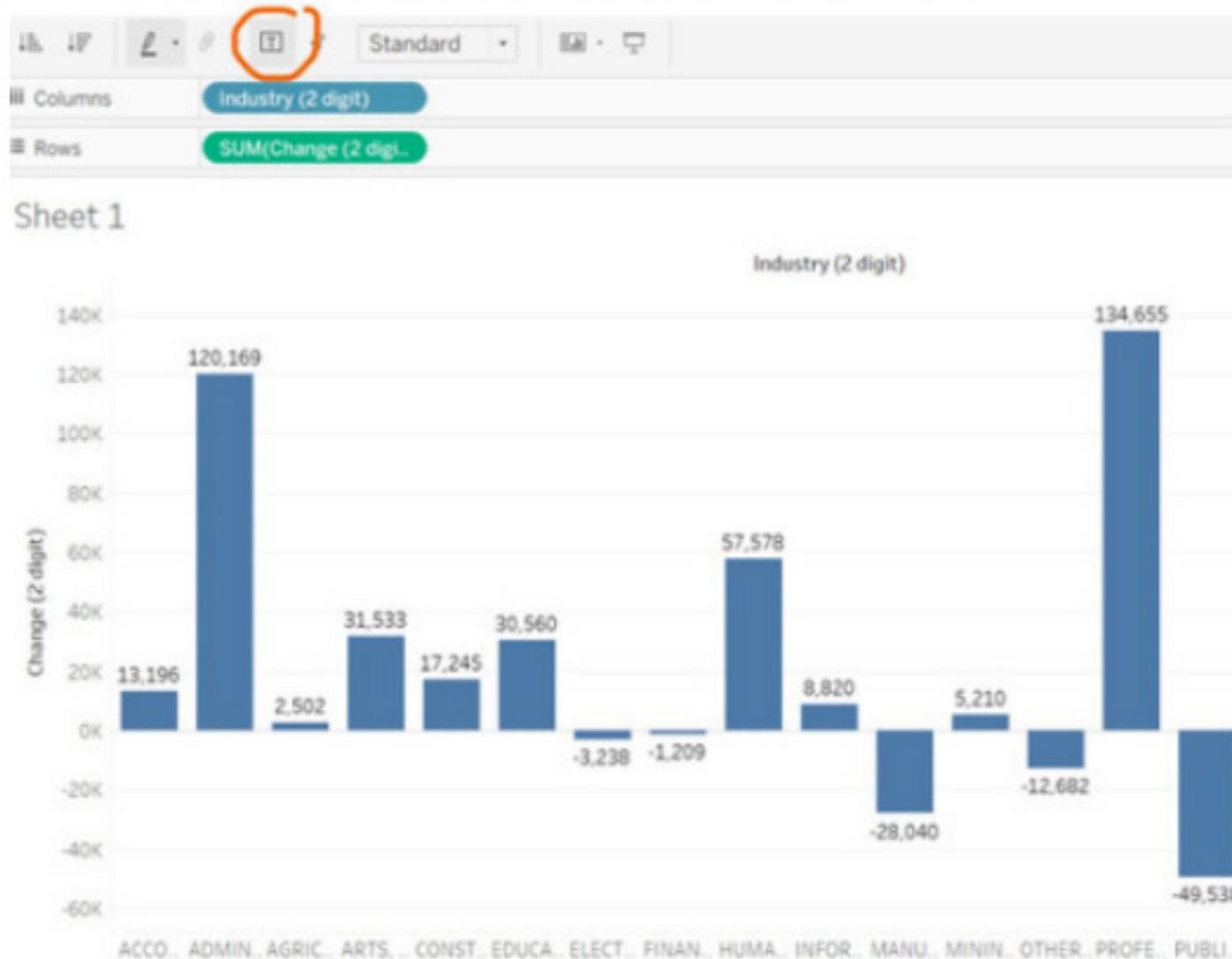
- 1) Right click and Rename Industry (2 digit) as Sub-Industry (2 digit)
- 2) Right click and Rename SIC-1 Name as Industry (2 digit)

1st Visual



Showing Labels

Enable labels from marks card or toolbar menu



Sorting

Use menu bar to sort values in ascending or descending order.



You can also sort values by pill on your visual.

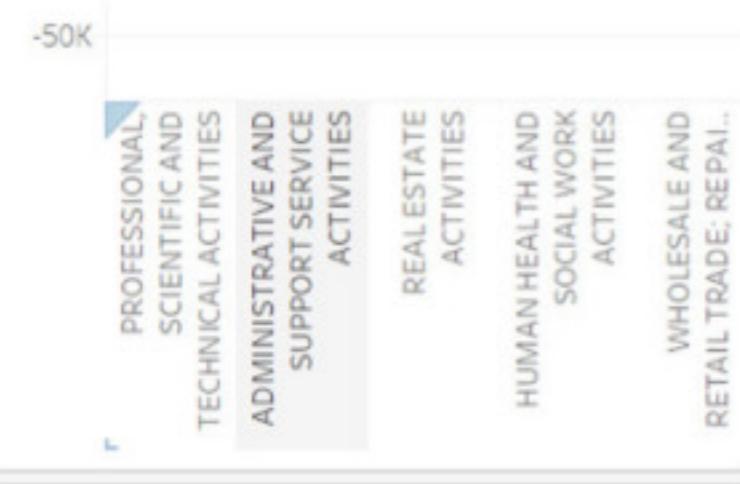


Open-Ended Question

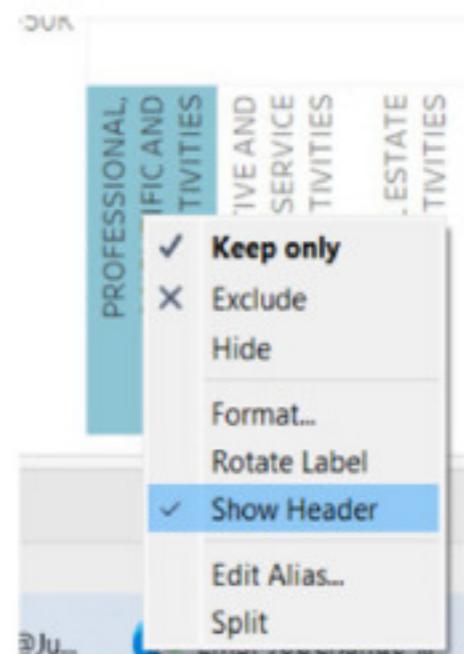
Which industries shows decrease in employment in the visual?

Axis Labels and Chart Title

You can change size of column labels by expanding it.



You can also rotate labels.

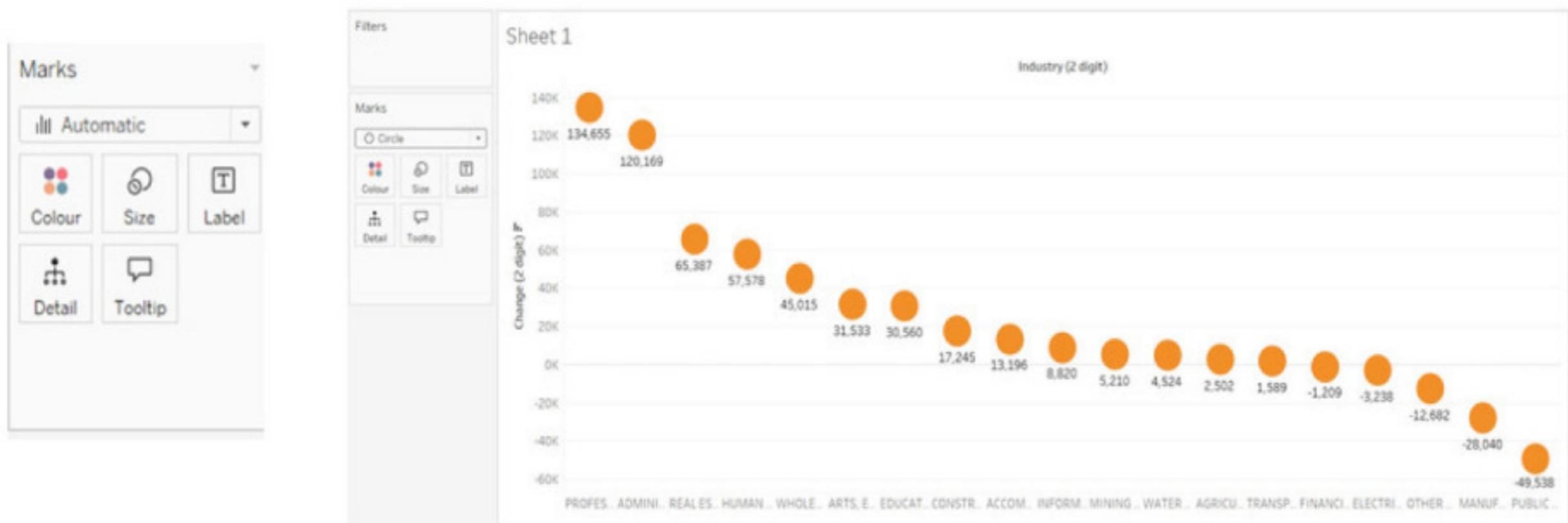


Update chart title by double clicking
Sheet 1.

Sheet 1

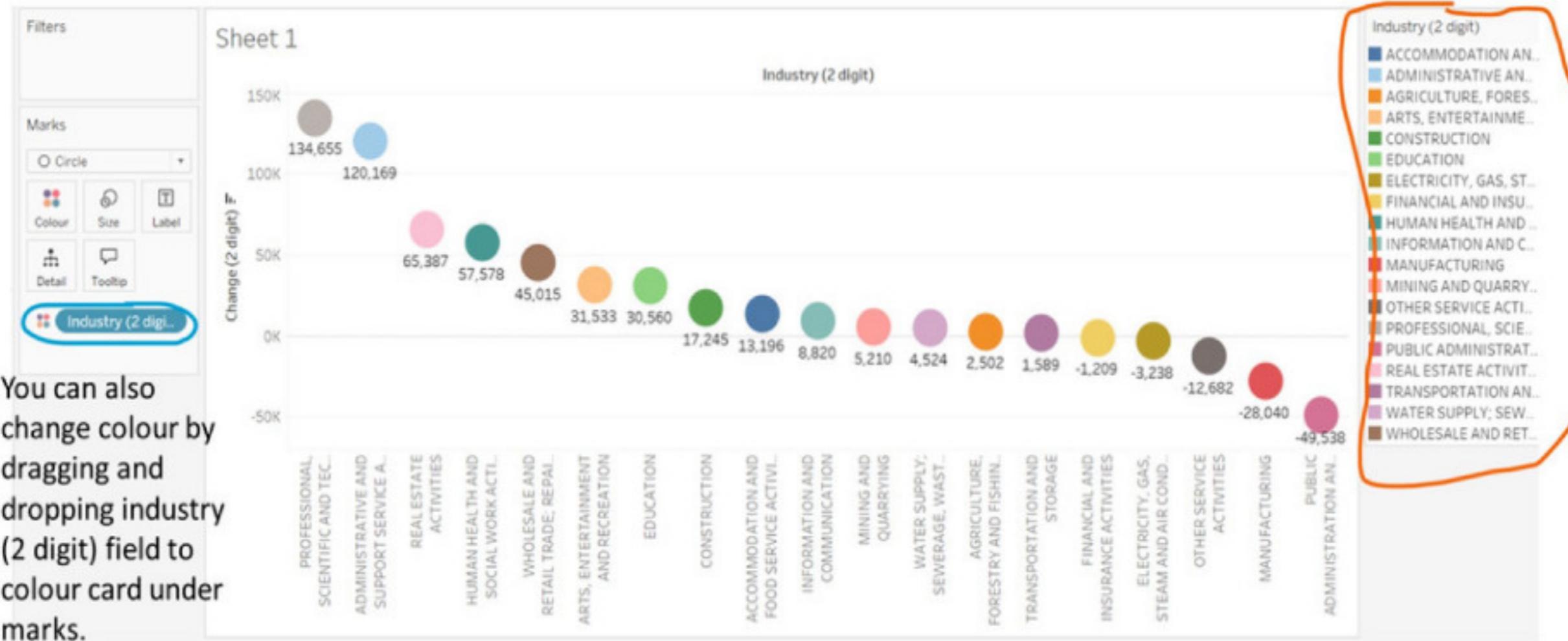
Marks Card

Play along with the marks card to see how it affect your visual.



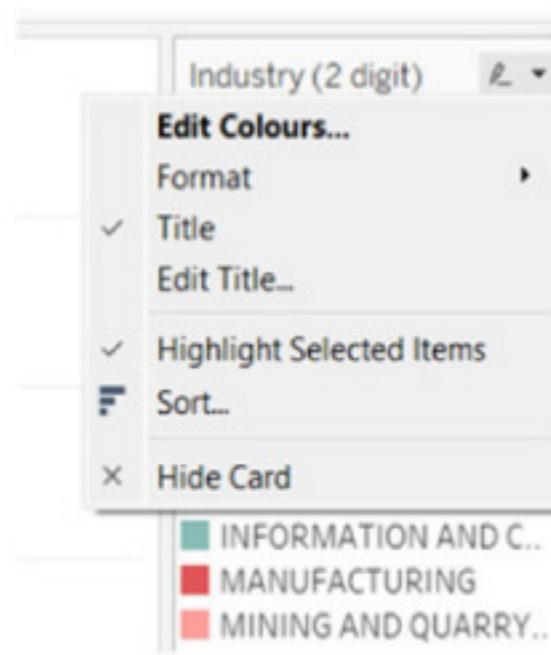
Colours Legend

Colour Legend



Colours Legend

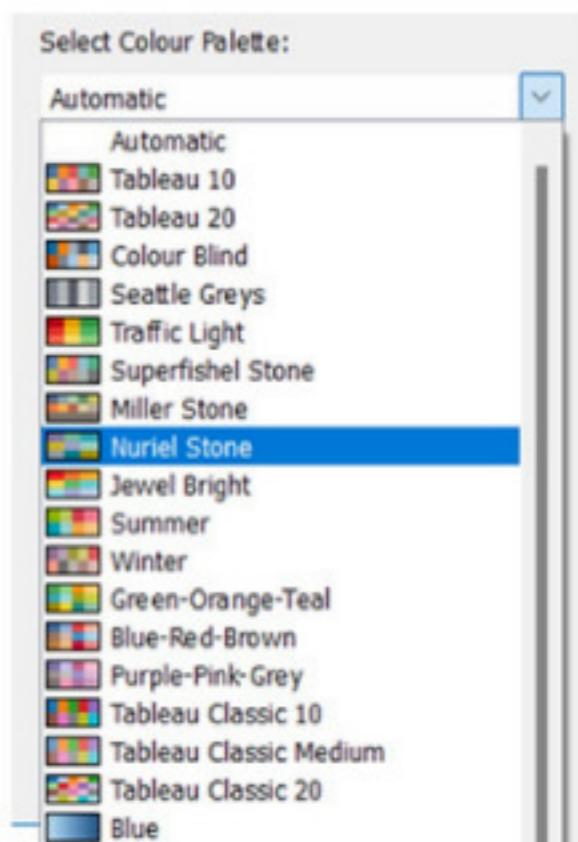
Go to colour legend.
Click on options and edit colours.



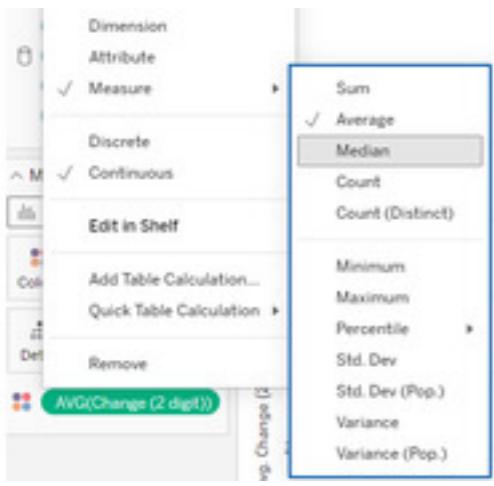
You can pick a colour for each industry.



You can also pick a colour combination from colour palette.
Click yes to continue. Then apply to see colour change.



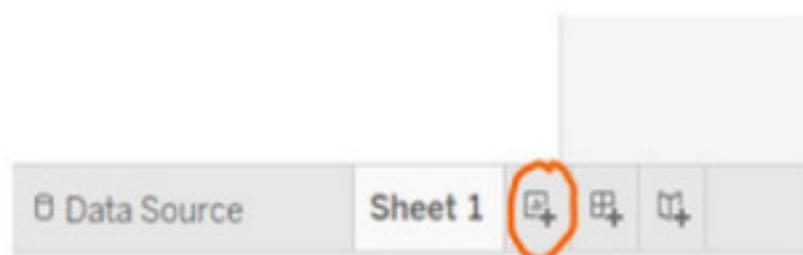
Open-Ended Question



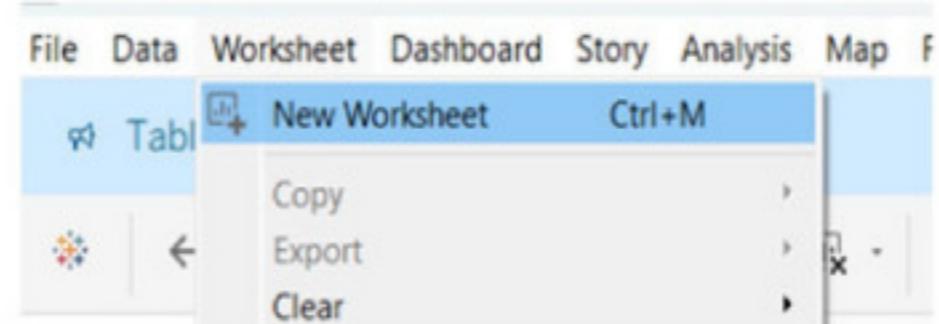
Right Click on Change(2 digit) under Marks Card and change measure to average to answer the questions below. What is the average change in employment for Education? Which industry has the highest change in employment? Which industry has the lowest change in employment?

New Worksheet

1) Create a new worksheet.



2) Use toolbar worksheet tab to create a new worksheet.

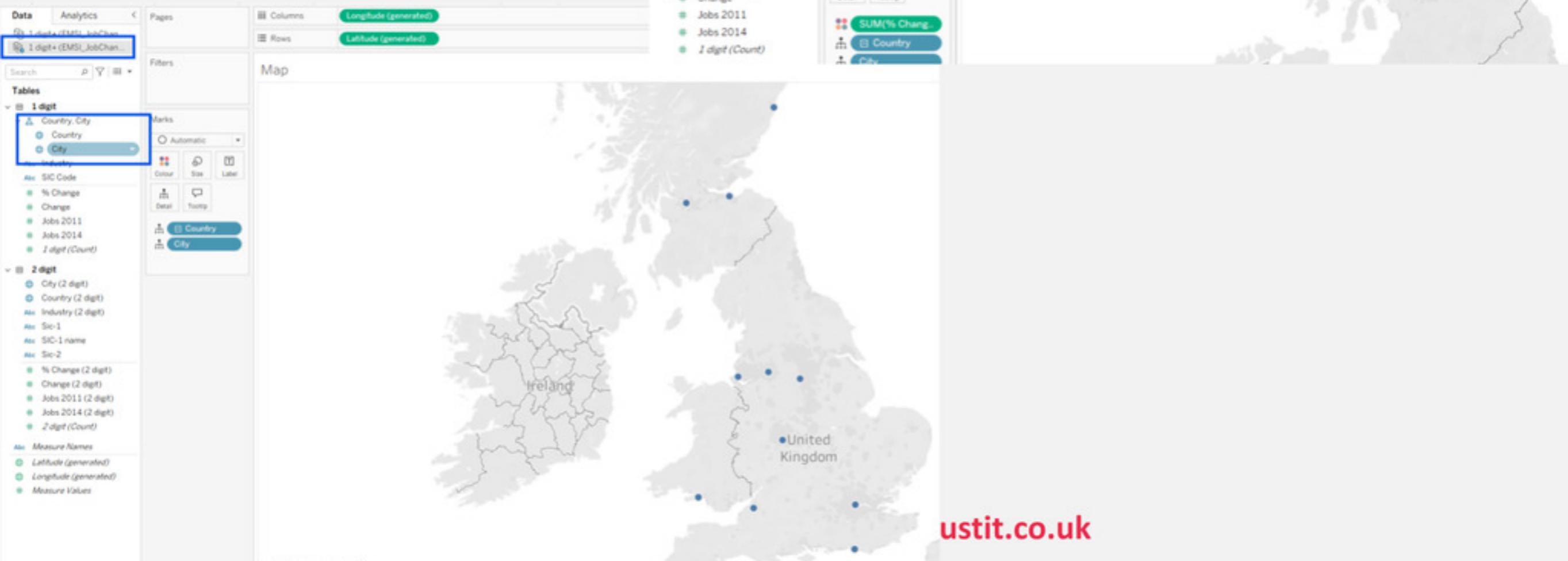


3) You can also use keyboard shortcut

CTRL + M in Windows

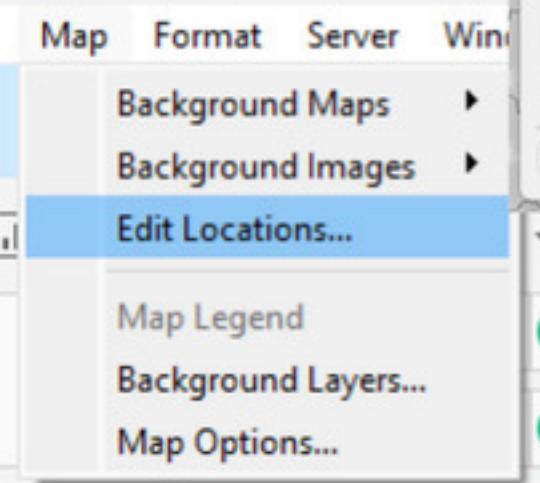
CMN + M in MacOS

CREATING MAPS



ustit.co.uk

NO NEWCASTLE?



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ADDING NEWCASTLE

Edit Locations

Geographic roles

Country/Region: United Kingdom

State/Province: None

City: City ⚠ 4 issues

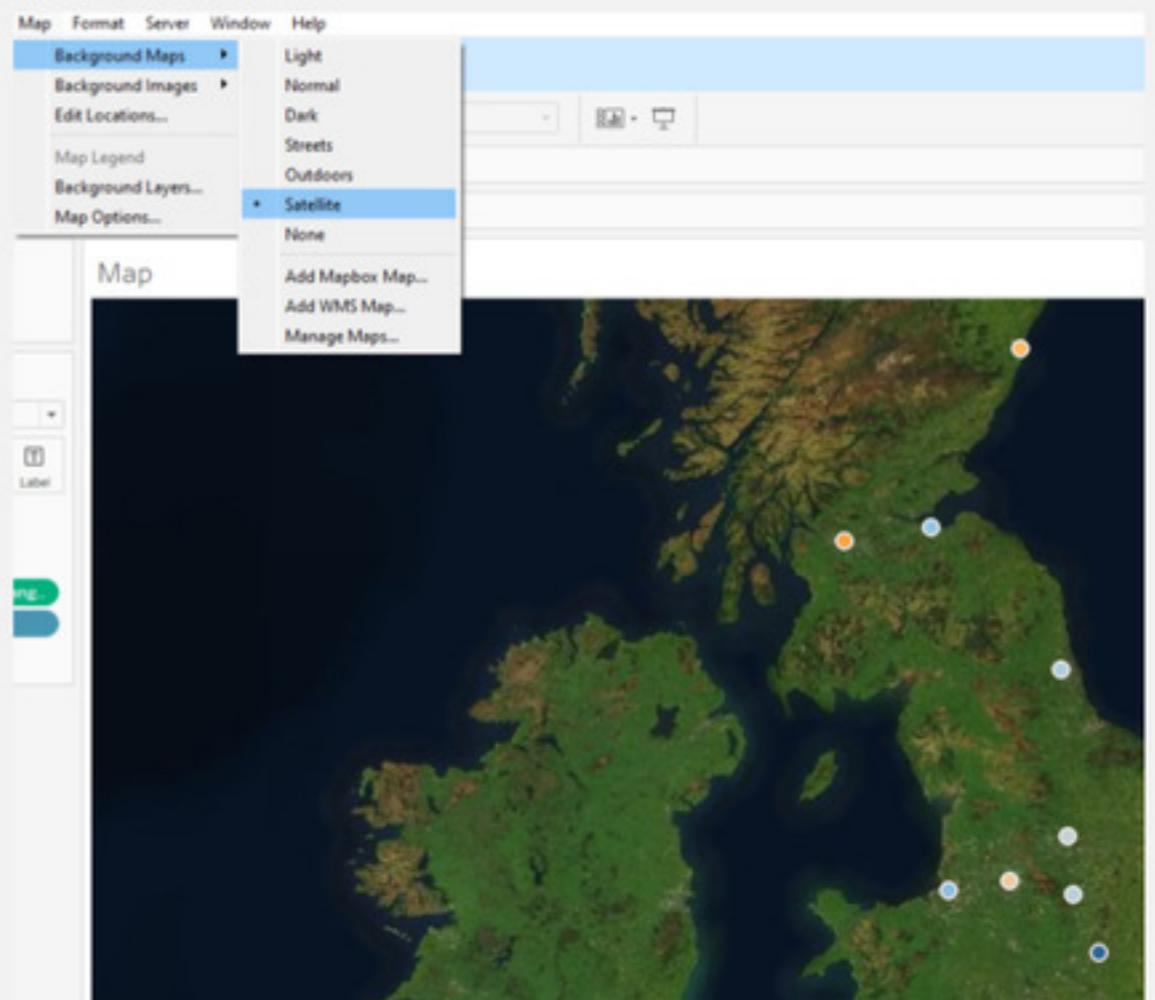
Match values to locations

⚠ City

Your Data	Matching Location
Cardiff-Newport	Cardiff
Leeds-Bradford	leeds
Newcastle-Sunderland	Enter a Latitude and Longitude...
Nottingham-Derby	Leeds Unrecognised
Southampton-Portsmouth	Unrecognised
Aberdeen	Aberdeen
Birmingham	Birmingham
Brighton	Brighton
Devon	Devon

Show only unmatched locations in drop down list

Reset Matches OK Cancel



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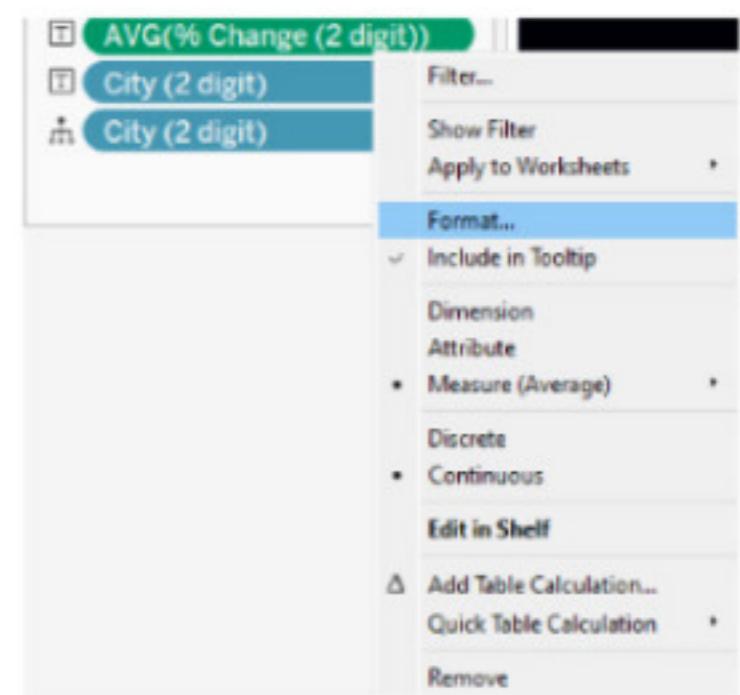
% Symbol

We will add % sign to values on map.

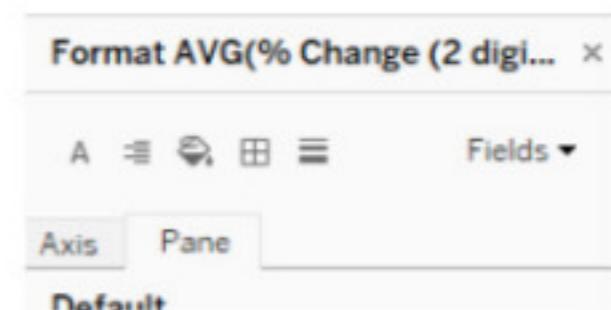
- 1) Right click avg(% Change(2 digit)) under marks card and select Format.
- 2) Format pane will open left side of the page.
- 3) Under Default select number > number (Custom)
- 4) Change suffix to %

The screenshot shows the Tableau interface with the 'Format' pane open. The pane is titled 'Number (Custom)' and contains the following settings:

- Decimal places: 2
- Negative values: -1234%
- Display Units: None
- Prefix / Suffix: %
- Include thousands separators



5) Close the format pane



Multiple Choice quiz

What was the average change in employment for London according to the map?

- 1.22%
- 0.39%
- 0.09%
- 0.53%

What was the average change in employment for Manchester according to the map?

- 0.22%
- 1.2 %
- 0.25 %
- 0.33%

Which of the following Cities has lowest average change in employment ?

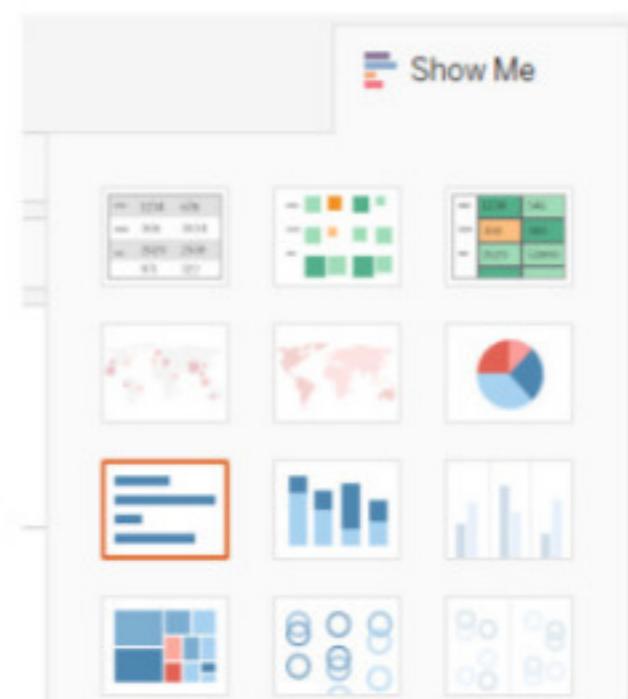
- Edinburgh
- Leeds
- Sheffield

% Change by Sub-Industry

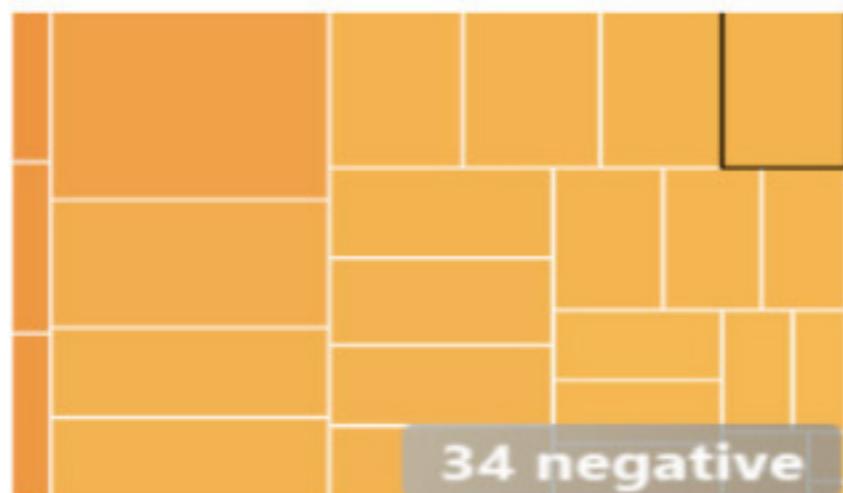
Now, we will make use of Show Me feature.

- 1) Hold down **CTRL** key to select Sub-Industry and Change (2 digit) fields under 2 digit table
- 2) Expand Show Me option
- 3) Select different visual types to make best chart
- 4) See the requirement for each chart type
- 5) Select treemap

Abc Sic-1
Abc Sic-2
Abc **Sub-Industry (2 digit)**
% Change (2 digit)
Change (2 digit)
Jobs 2011 (2 digit)
Jobs 2014 (2 digit)
2 digit (Count)

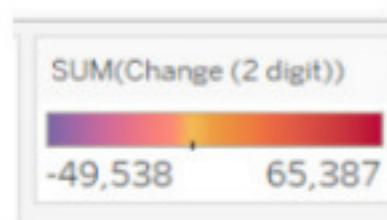


% Change by Sub-Industry



There are some negative values which are not present on your chart.
We will get rid of them later by filtering

You can use different colour combinations.
Use colour legend.



Drag and drop Change(2 digit) to Label card to display change on your chart

% Change by Sub-Industry

We will filter data on visual.

There are two fields on your charts right now. We will drag and drop each field in order to see different filtering options.

- 1) Drag and drop Sub-Industry(2 digit) to filter card.
- 2) You have 4 different options to use as filter.

General: Selecting and filtering sub-industries manually.

Wildcard: Use it if you are looking for pattern or word

Condition: Use this option to filter by another field

Top: Use this option to filter by top or bottom rows.

% Change by Sub-Industry

1) Use general option to filter by "sport".

Click on None

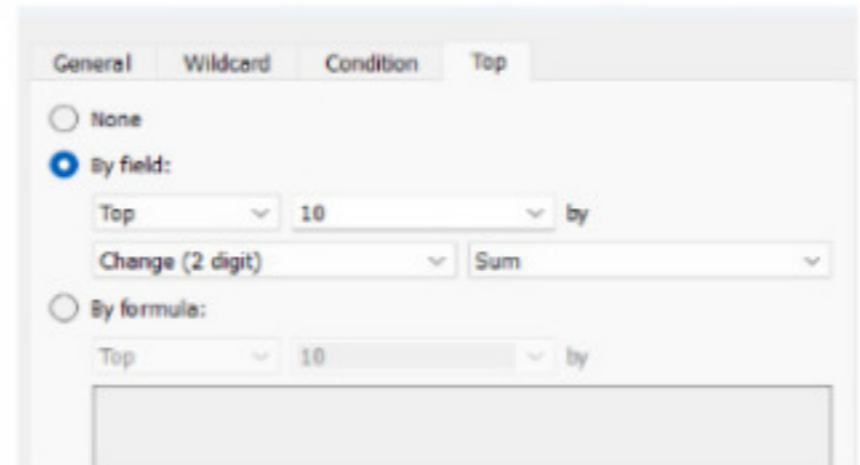
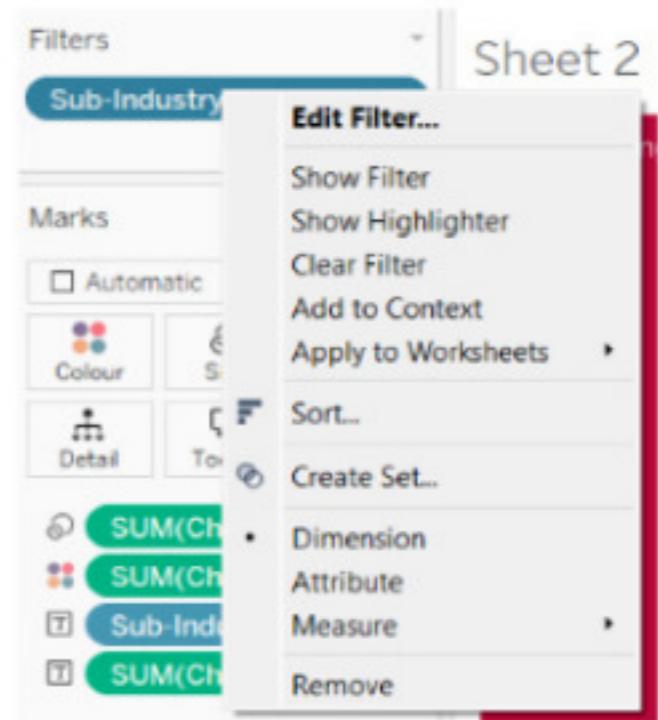
Select sub-industries

Click on apply and ok.

To reset filter right click Sub-Industry under Filters card and choose clear filter.

2) Use wildcard option to filter Sub-Industries that startswith "A"

3) Use Top option to filter Top 10 Sub-Industries by Change.

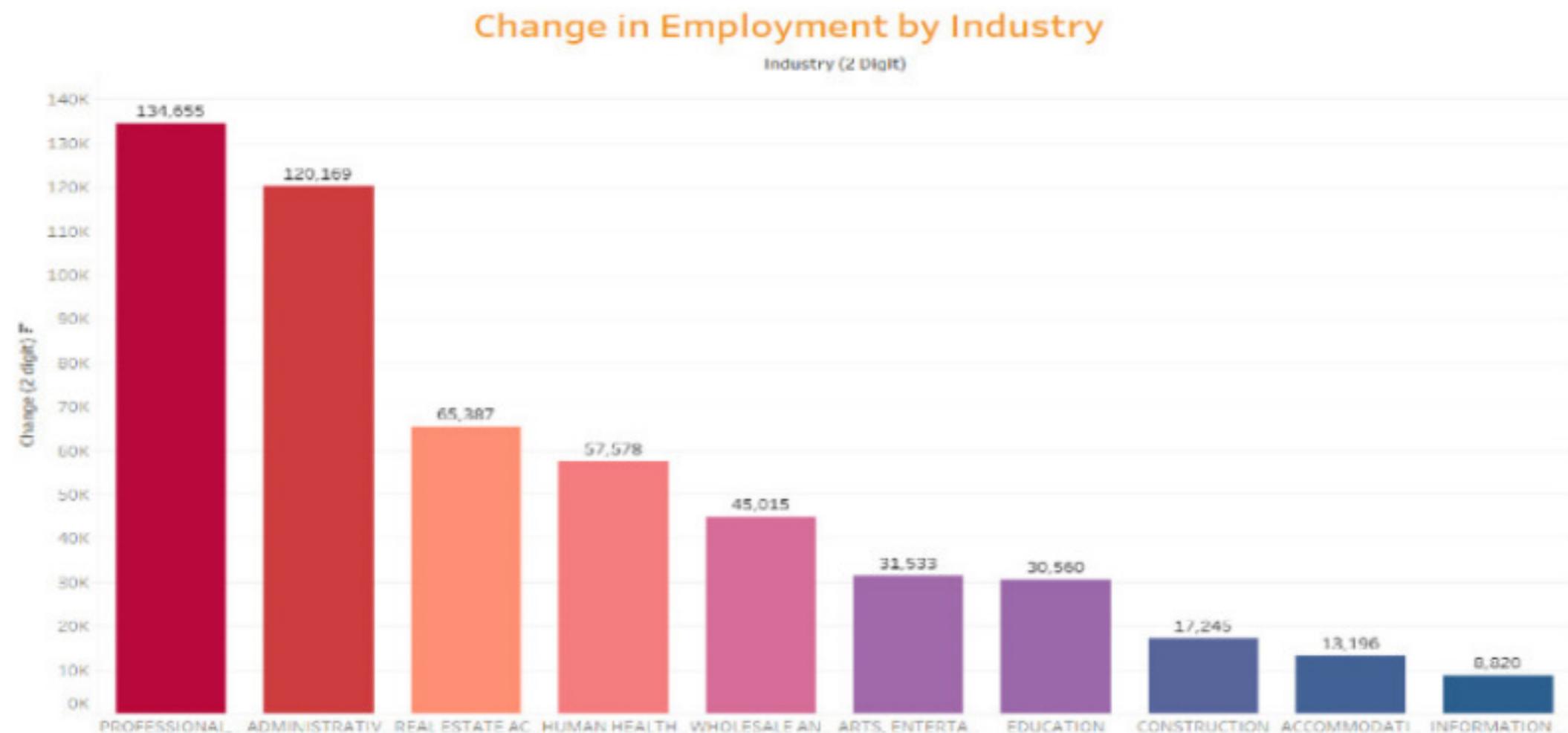


Open-Ended Question

Use filtering to answer the questions below How many sub-industries are there in total? Are there any sub-industries that starts with "N"? How many sub-industries are ending with letter "T"? Which Sub-Industry has lowest change in employment ? (use bottom filter and absolute values)

% Change by Sub-Industry

Use filter card to show Top 10 Industries on first visual.



Multiple Choice quiz

Which sub-industry has the highest number of changes in employment?

- Human health activities
- Real estate activities
- Advertising and market research
- Services to buildings and landscape activities

What is the change in employment for the 'Services to buildings and landscape activities' subindustry?

- 43,316
- 57,176
- 51,691
- 30,560

Which sub-industry has a lower employment change than 'Education'?

- Legal and accounting activities
- Employment activities
- Human health activities
- Activities of head offices; management consultancy activities

What is the change in employment for 'Legal and accounting activities'?

- 17,111
- 24,731
- 17,210
- 51,691

Last Visual

Use skills you gained so far to create another visual of your choice.

- 1) Use color palette.
- 2) Use filter card
- 3) Use show me

The screenshot shows the Tableau Data Prep interface. The top navigation bar includes 'Data' and 'Analytics' tabs, with 'Data' currently selected. Below the navigation is a search bar and a dropdown menu. The main area is divided into several sections:

- Data pane:** Shows a list of tables and measures:
 - Tables:** 1 digit, 2 digit (expanded to show City (2 digit), Country (2 digit), Industry (2 Digit), Sic-1, Sic-2, Sub-Industry (2 digit), % Change (2 digit), Change (2 digit), Jobs 2011 (2 digit), Jobs 2014 (2 digit), and 2 digit (Count)).
 - Measure Names:** Latitude (generated), Longitude (generated), and Measure Values.
- Analytics pane:** Shows 'Pages' and 'Filters' sections.
- Marks pane:** Shows settings for 'Automatic' marks, with options for Colour, Size, Text, Detail, and Tooltip.
- Sheet 4:** A blank sheet with a header 'Sheet 4' and a placeholder 'Drop field here'.

Dashboard

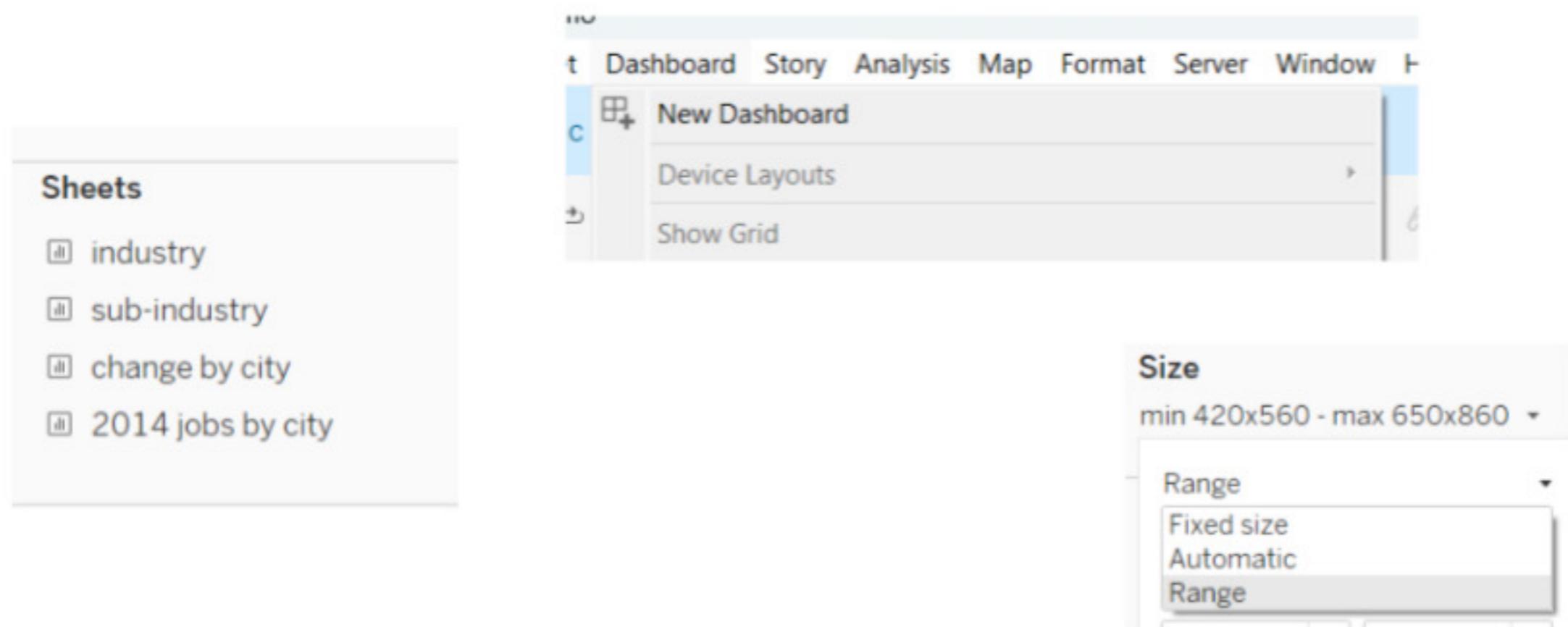
A dashboard is a way of displaying various types of visual data in one place. Usually, a dashboard is intended to convey different, but related information in an easy-to-digest form. And oftentimes, this includes things like key performance indicators (KPI)s or other important business metrics that stakeholders need to see and understand at a glance.

[Link to Article: What is a dashboard?](#)

Dashboard

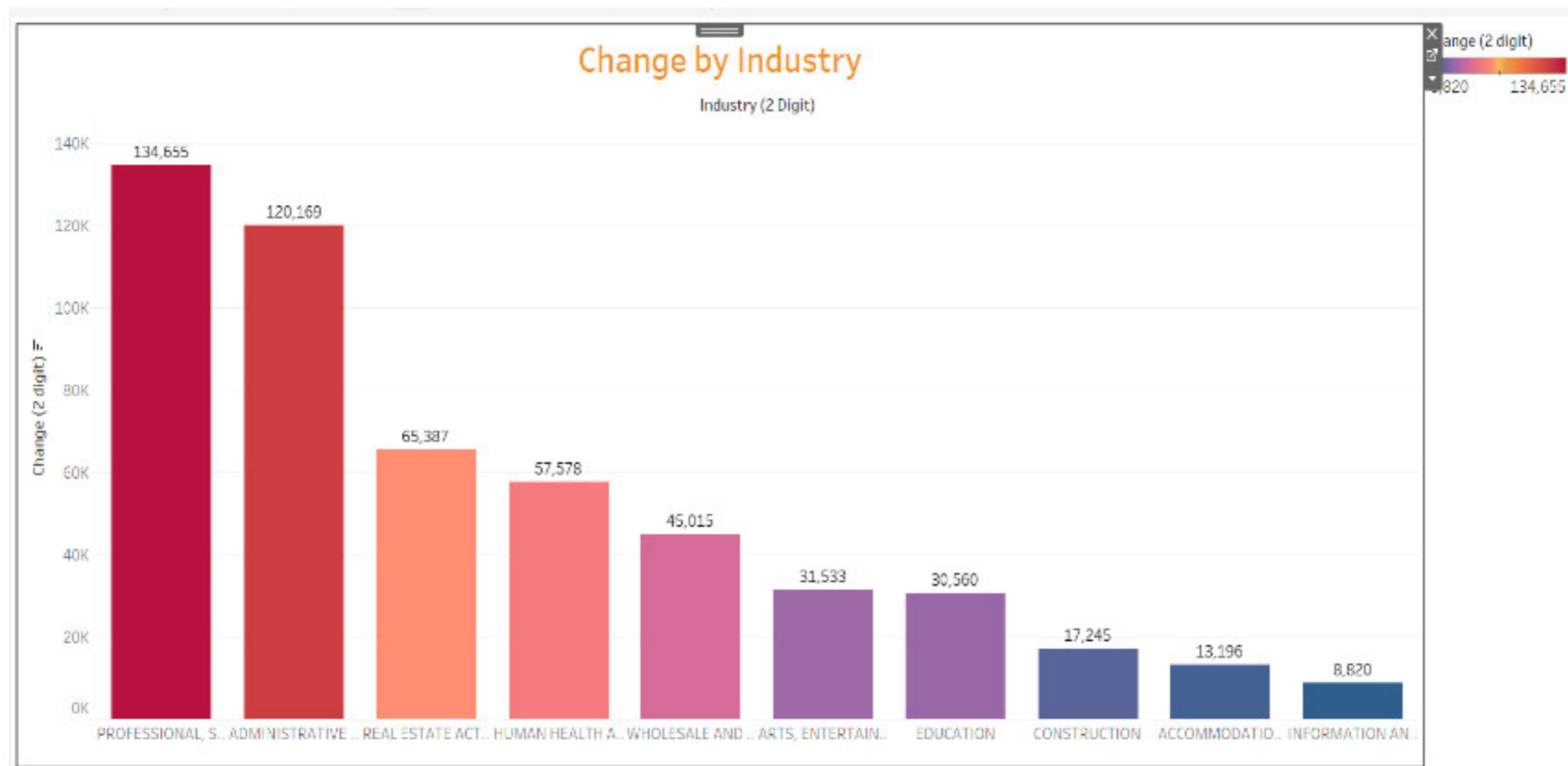
We will combine 4 visuals on a single page.

- 1) Create a new dashboard page by selecting dashboard from toolbar menu and choose New Dashboard.
- 2) You will see all your charts are listed under Sheets pane.
- 3) Select size and set it to automatic.



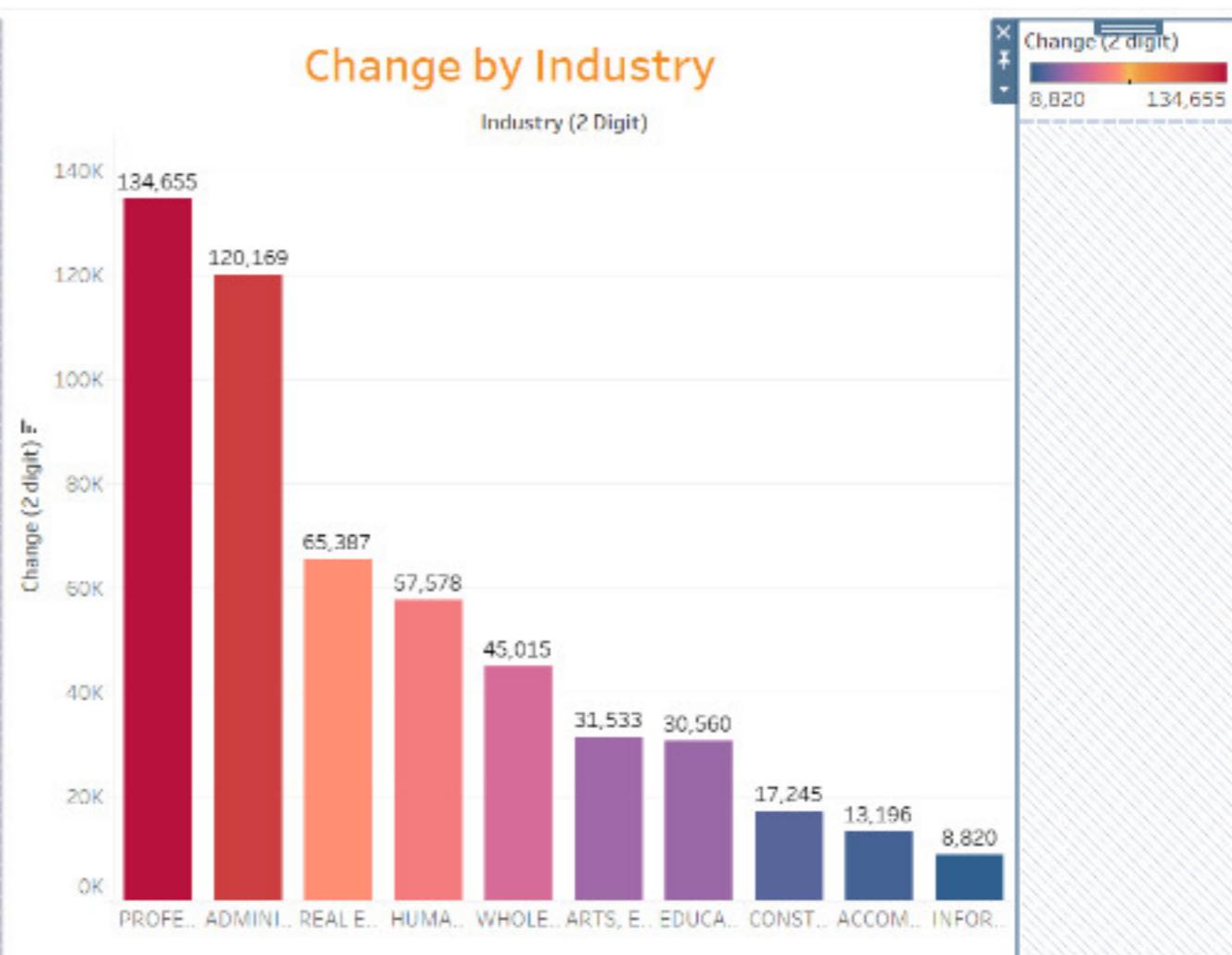
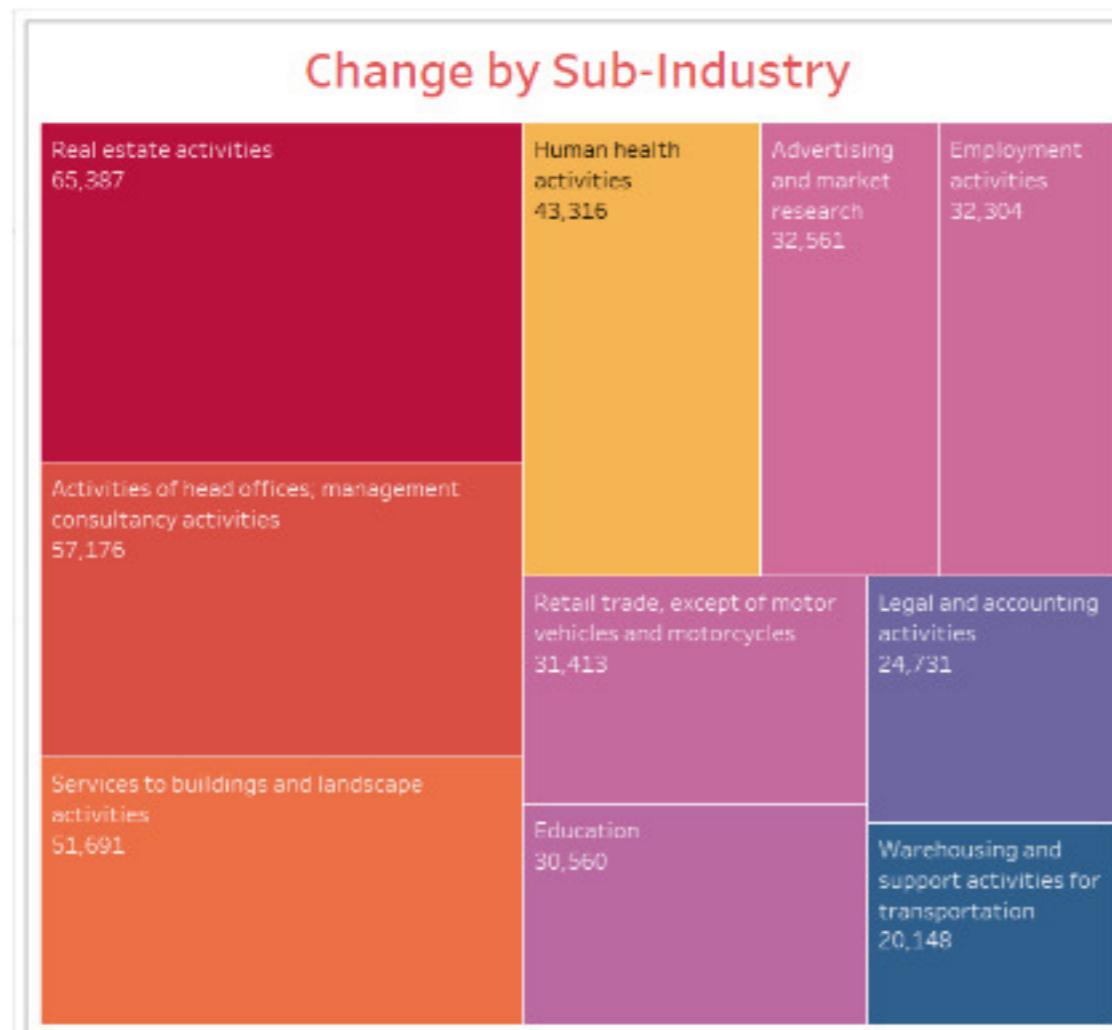
Dashboard

You can drag and drop your first visual to dashboard page. You will see that it will cover all of the container. Any colour legend or filter will be inside another container on right.



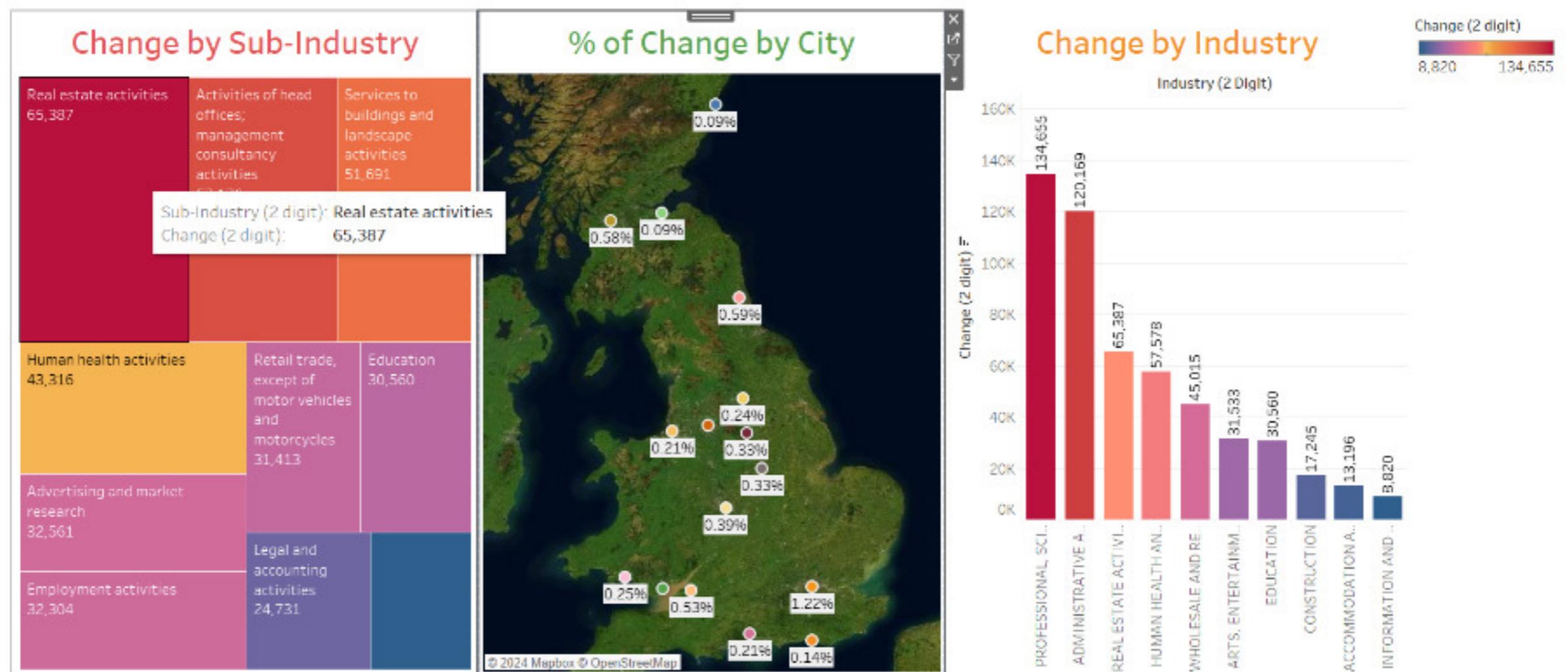
Dashboard

When you drag the second visual, you will be given options to split the first container.
You can split container by half in vertical or horizontal.



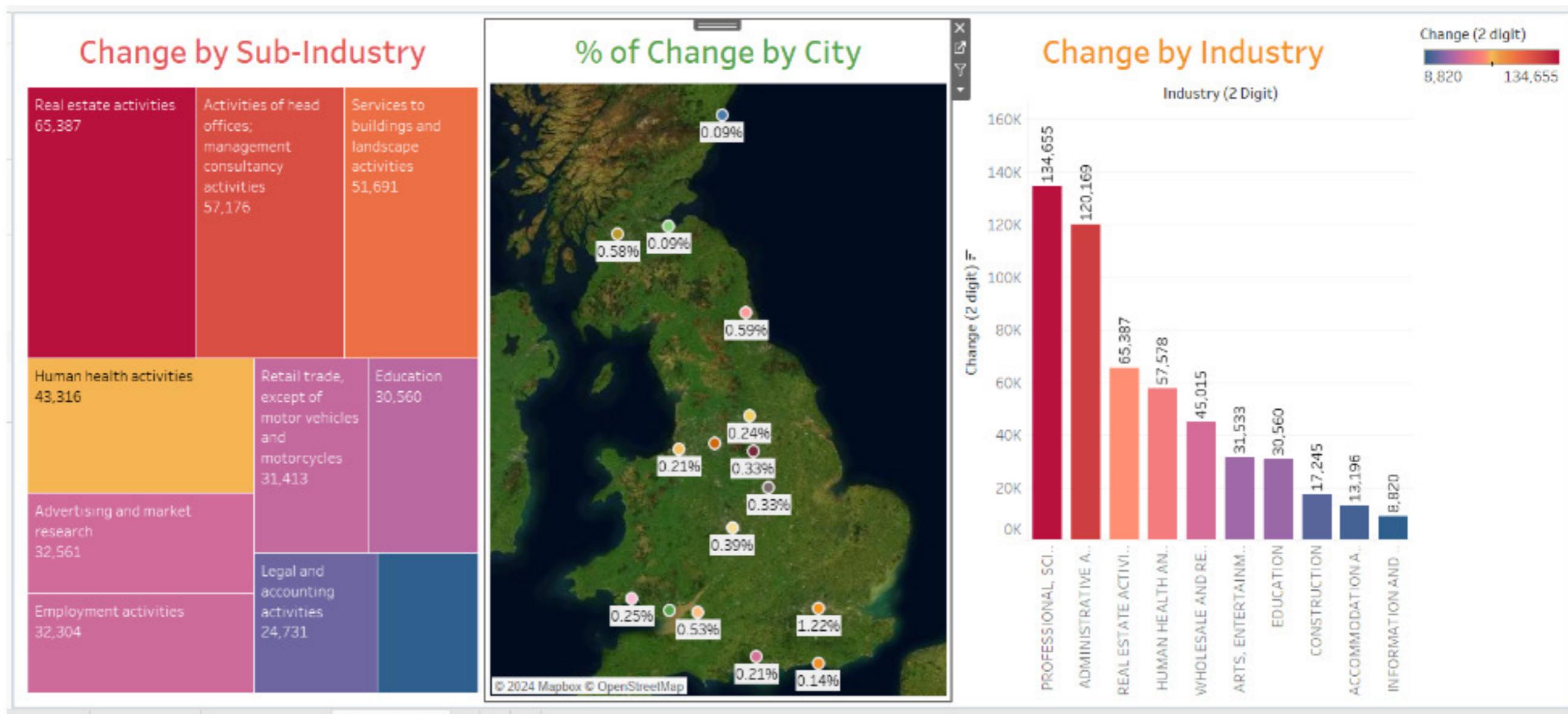
Dashboard

When it comes to 3rd visual, you have more options.
You can either split first or second container.
You can also place 4rd visual in between first two.
You can move visual by clicking and holding the visual by guard arrow.



Dashboard

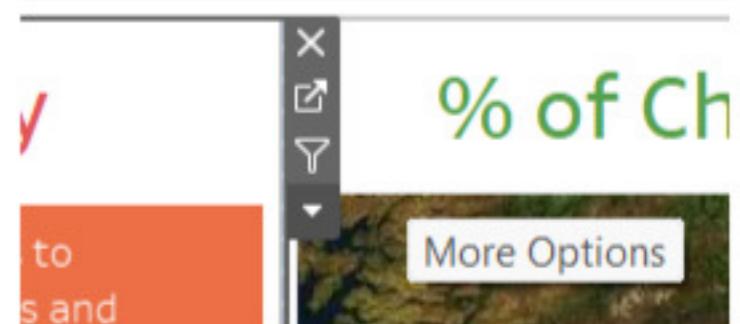
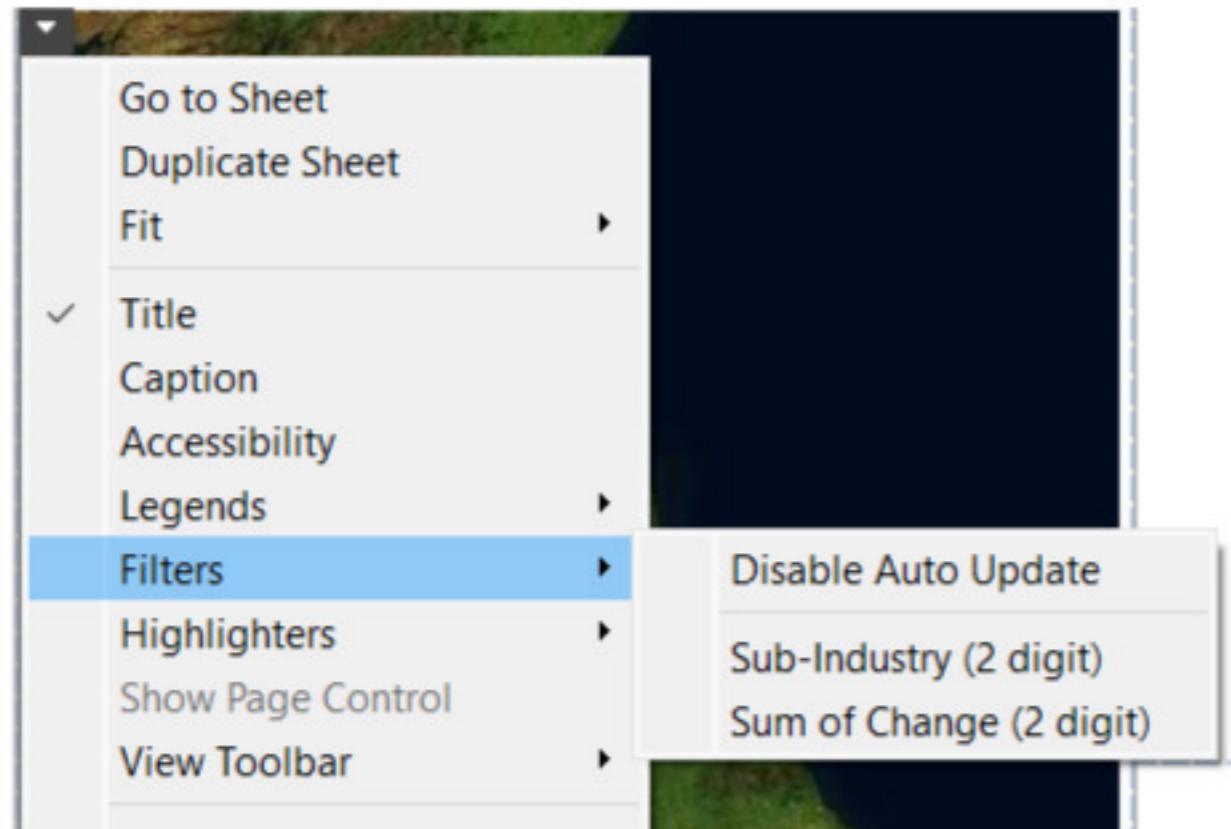
Complete your dashboard by placing your final visual on dashboard page. You can adjust the size of any visual by holding from the edge.



Dashboard

You can show Filters or colors legend on dashboard page by enabling from the visual options.

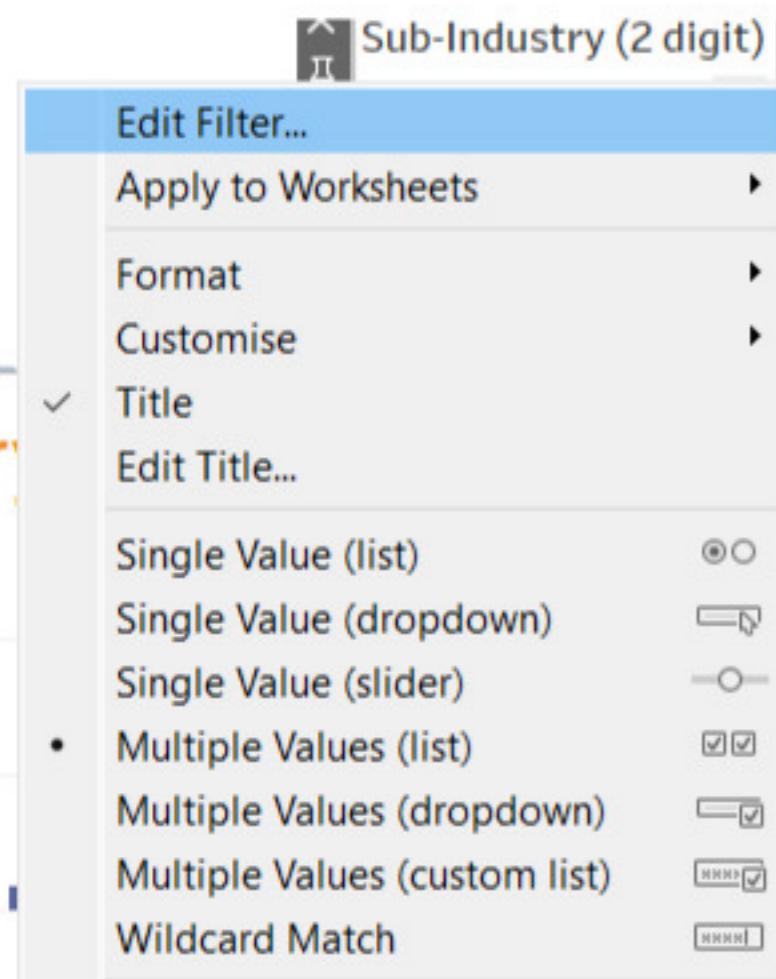
Select a visual and and select down arrow to see more options.
You can choose a filter to display from the menu.



Dashboard

We will see how to custom filters right now.

- 1) Select a filter from side pane and see more options.
- 2) There are different filter display types here.
- 3) Pick each filter type and see how it looks.



You can remove any unwanted filter or legend by click on it and removing from top left corner.

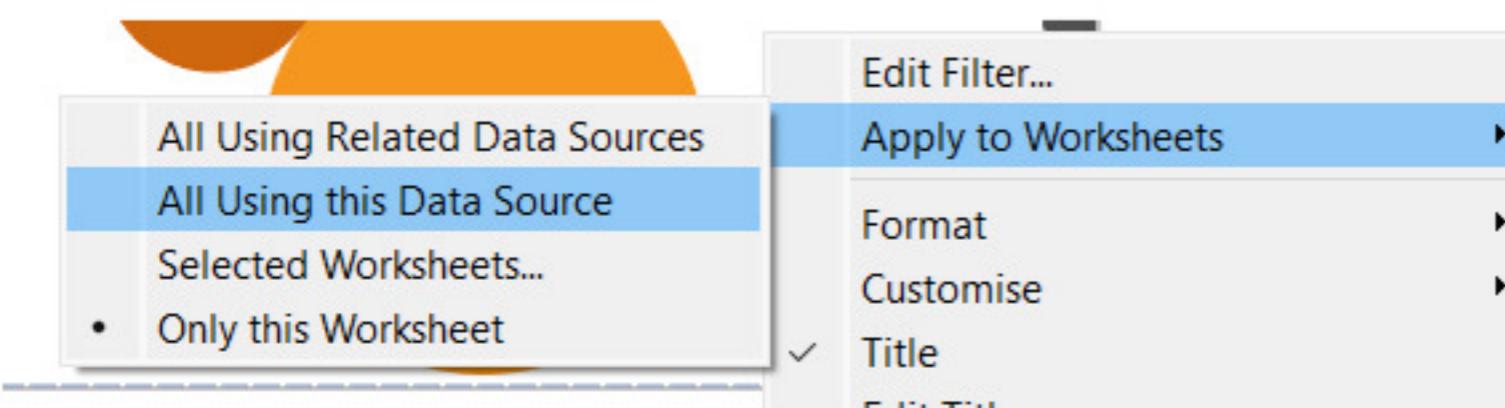
Dashboard

You can also apply same filter to different worksheets.

- 1) Select a filter.
- 2) Go to options.

3) Select **Apply to Worksheet**

- 4) You can set same filter to all visual if you choose **All Using this Data Source**.**
- 5) or you can manually select worksheets to apply by **Selected Worksheets**.**



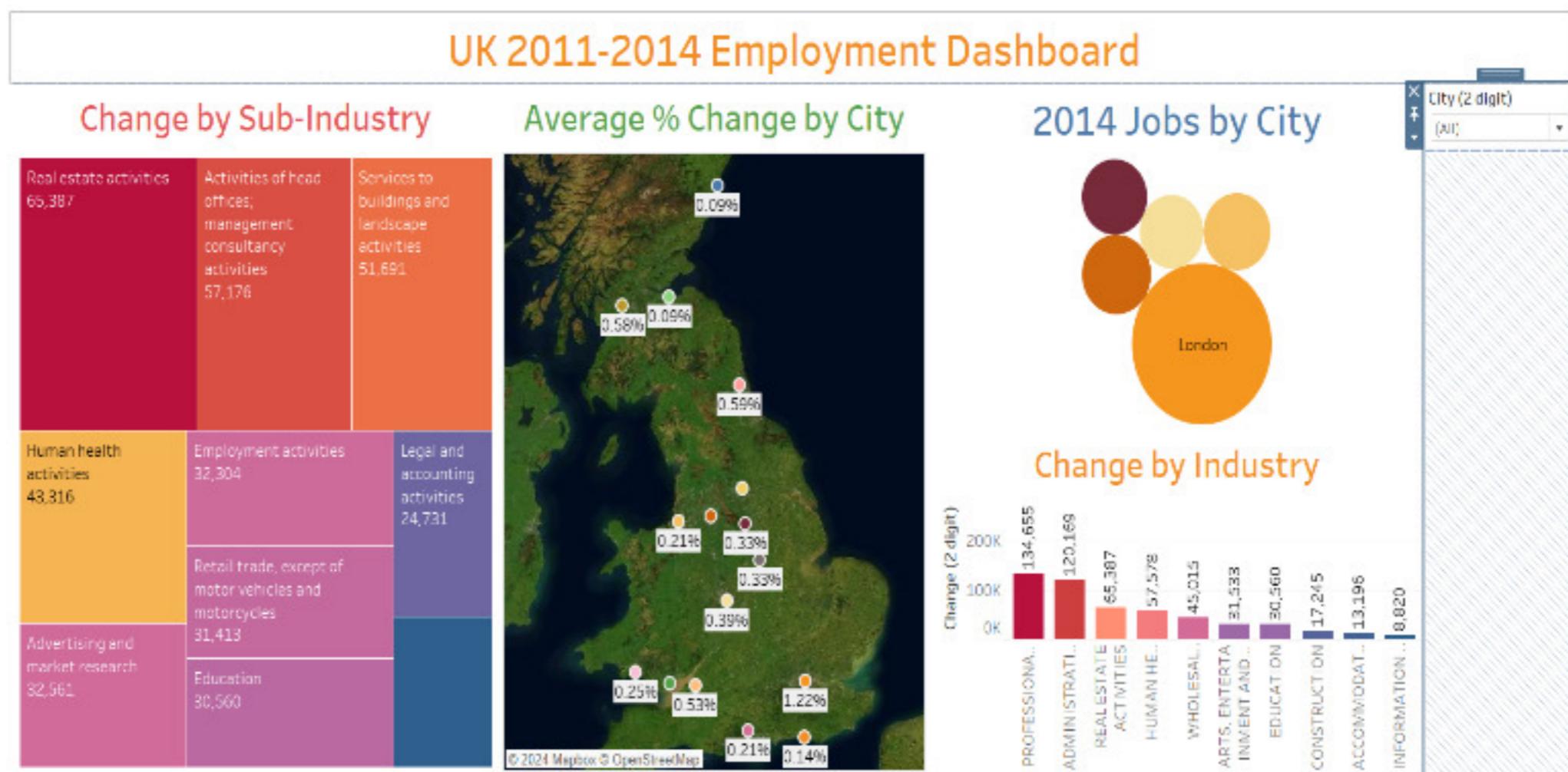
Open-Ended Question

Apply City(2 digit) filter and set it to All Using this Data Source. Set filter type to Single Value (dropdown) Select and filter by London Answer the following questions 1) Which industry has highest change ? 2) Which sub-industry has highest change ? 3) What is the change in Education Sub-Industry? 4) Number of jobs in 2014. 5) What industry has second highest change?

Dashboard

We will complete the dashboard by adding title and publishing it on Tableau site.

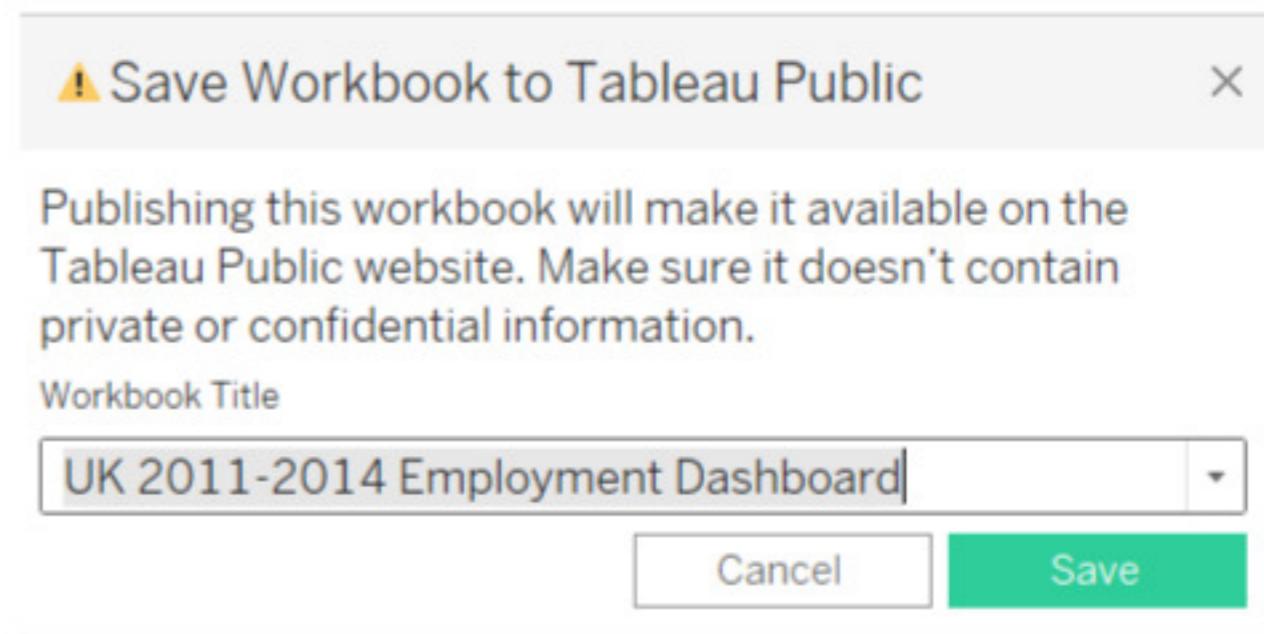
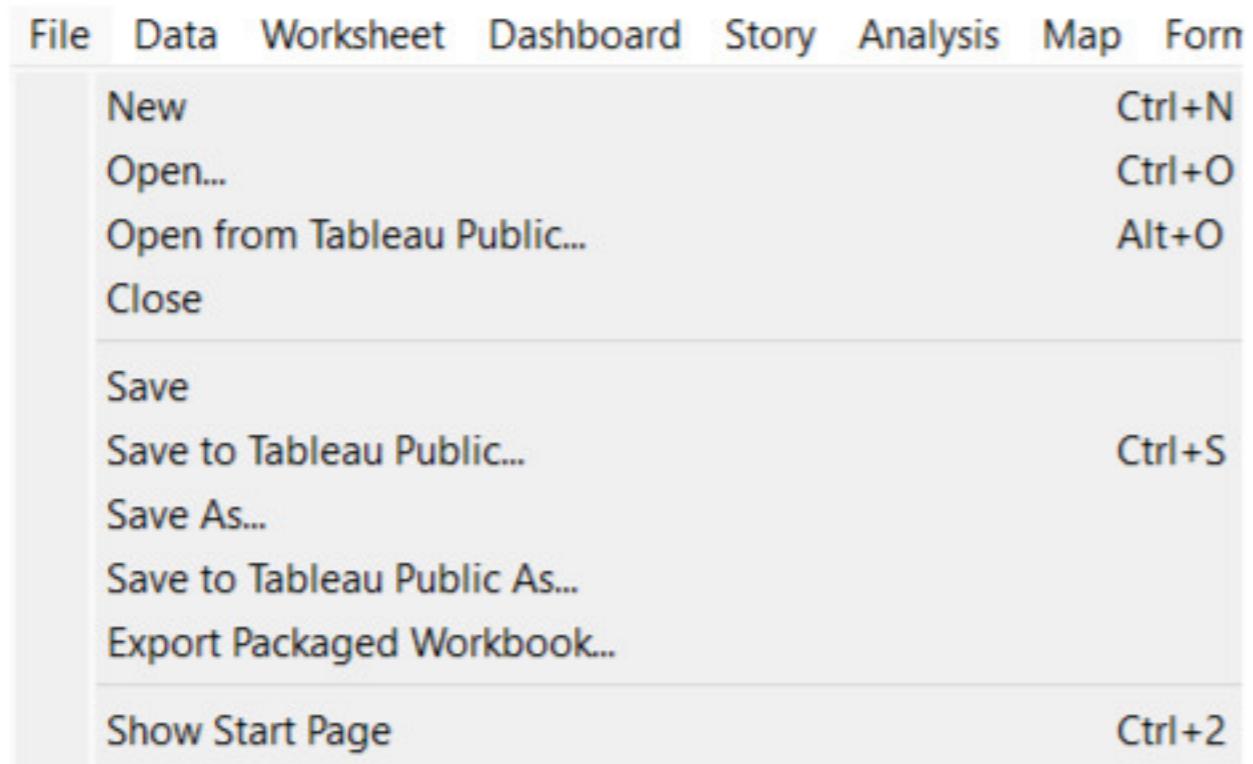
- 1) Enable dashboard title by ticking the box under objects pane.
- 2) You can edit title by double clicking on it.
- 3) Add your title.



Dashboard

When you are on dashboard page

- 1) Select File >> Save to Tableau Public as
- 2) Sign into your public tableau account
- 3) Add title to workbook
- 4) Your work will be saved and opened on browser.
- 5) Copy and paste URL of this page to chatbox to submit your work.



Workbook Activity

Within your workbook, please complete Day 1 tasks 1 & 2

If completed early please download the Extension_Task_SpotifyFeatures data [here](#) and complete an analysis via Tableau.

Day 1: Task 1

Please research the different versions of Tableau, compare and contrast them below and explain the limited functionality on 'Tableau Public'.

Different
Tableau
versions

Day 1: Task 2

Using the *EMSI_JobChange_UK* dataset, create your own dashboard, I want to see a bar chart showing percentage change and a UK based map showing the key city locations impacted.

Paste your
print screen
here

WORKBOOK ACTIVITY - 30 MINUTES

Within your workbook, please complete Day 1 tasks 1 & 2

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Using the *EMSI_JobChange_UK* dataset, create your own dashboard, I want to see a bar chart showing percentage change and a UK based map showing the key city locations impacted.

Paste your
print screen
here

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OBJECTIVES - DAY 1 RECAP

- **Intent:**

To identify what the Tableau system is, understand the benefits of Tableau compared to Excel and to be able to import data into the Tableau system for analysis. You'll understand how to set up relationships and understand the purpose of a dashboard.

- **Implementation:**

Delivered using practical labs. Concepts explained through examples and exercises/quizzes

- **Impact:**

Gain the skills and confidence needed to understand data analysis processes and their types , preparing for more advanced studies or real-world applications. The impact measured through in-class mini-projects, labs & Quiz

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Tell me one thing you have learned today

Instructions



Collaborate Board

Tell me one thing you have learned today

OBJECTIVES - DAY 2

- **Intent:**

To identify additional features of Tableau and use the 'calculated field'. You'll be able to apply more advanced techniques in Tableau and work with additional and more complex data sets. You will understand what PowerBI is and its features and functions.

- **Implementation:**

Delivered using practical labs. Concepts explained through examples and exercises/quizzes

- **Impact:**

Gain the skills and confidence needed to understand data analysis processes and their types , preparing for more advanced studies or real-world applications. The impact measured through in-class mini-projects, labs & Quiz

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