Power BI Questions (Intermediate Management Accounting)

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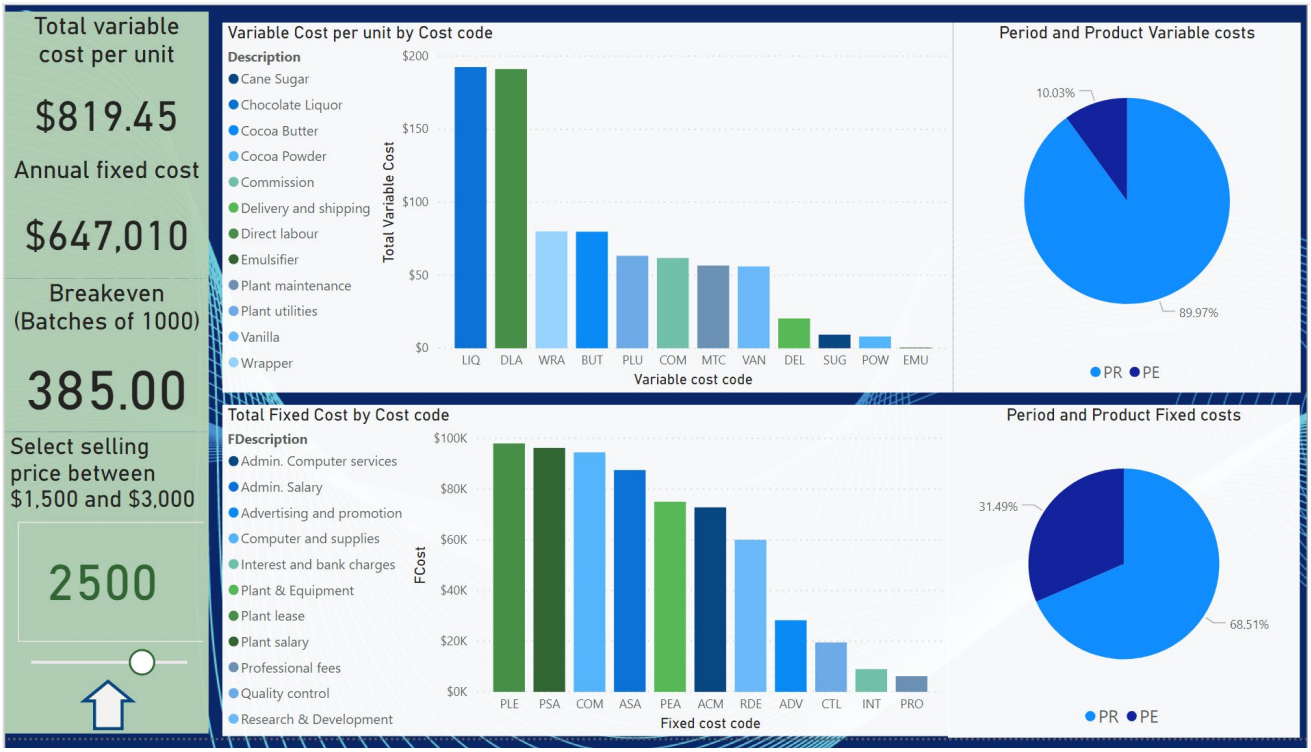
Question 1

The Boston Bar Chocolate Company (BBCC) is a privately owned business that takes pride in the value of its tasty and healthy chocolate bars. The company wholesales its product to high-end grocery outlets that specialize in gourmet foods. Customers keep coming back for more of BBCC's product, not only because of the great taste, but also because of the growing number of health reports stating that the flavanols in chocolate help to reduce blood pressure and increase memory retention. This gives the company a competitive advantage in the premium-quality chocolate market.

The company's management team is deeply invested in the use of data from a variety of sources, both internal and external, to be proactive to changing costs in the manufacturing of its chocolate bars, which are produced in batches of 1,000 bars. This will assist it in setting selling prices that will attract customer demand while reducing the risk of loss. It has engaged the use of an outside data analyst to assist in the development of a tool that can be used to both monitor and predict break-even points. As a starting point, the data analyst has sketched out the following prototype of a dashboard that can be used for this analysis:



The following data was extracted from the company's database as it relates to its current variable costs per batch of 1,000 chocolate bars and annual fixed costs:

Variable costs						
Cost code	**Description**	**Cost behaviour (V/F)**	**Cost classification (PR/PE)**	**Cost**	**Per**	**Number of units in finished product**
LIQ	Chocolate liquor	V	PR	$ 5.50	KG	35.0
BUT	Cocoa butter	V	PR	$ 6.00	KG	13.3
POW	Cocoa powder	V	PR	$ 1.15	KG	7.0
SUG	Cane sugar	V	PR	$ 0.70	KG	13.3
EMU	Emulsifier	V	PR	$ 0.80	KG	0.6
VAN	Vanilla	V	PR	$70.00	LITRE	0.8
WRA	Wrapper	V	PR	$80.00	EACH	1.0
DLA	Direct labour	V	PR	$32.40	DLH	5.9
PLU	Plant utilities	V	PR	$10.73	DLH	5.9
MTC	Plant maintenance	V	PR	$ 9.60	DLH	5.9
COM	Commission	V	PE	$61.80	EACH	1
DEL	Delivery and shipping	V	PE	$20.40	EACH	1

Annual fixed costs				
FCost code	**FDescription**	**FCost behaviour (V/F)**	**FCost classification (PR/PE)**	**FCost**
CTL	Quality control	F	PR	$19,500.00
COM	Computer and supplies	F	PR	$94,500.00
PEA	Plant and equipment	F	PR	$75,000.00
RDE	Research and development	F	PR	$60,000.00
PSA	Plant salary	F	PR	$96,250.00
PLE	Plant lease	F	PR	$98,000.00
ASA	Admin. salary	F	PE	$87,500.00
INT	Interest and bank charges	F	PE	$ 9,000.00
PRO	Professional fees	F	PE	$ 6,200.00
ADV	Advertising and promotion	F	PE	$28,260.00
ACM	Admin. computer services	F	PE	$72,800.00

For now, management is satisfied with a tool that uses internal data.

Required:

a) As the data analyst, you are required to develop the prototype into a dashboard using Power BI. The dashboard will not only inform on costs by behaviour, but also allow the management team to determine break-even batches based on proposed selling price per batch.

The process to create the dashboard is broken into the following tasks:

- **Task 1:** Develop a visualization of total variable costs per unit and a visualization of total annual fixed costs using the Card function. **Steps 1 and 2 — Appendix**

- **Task 2:** Develop a visualization that illustrates the variable costs using a bar chart and a visualization that illustrates the fixed costs using a bar chart. **Steps 3 and 4 — Appendix**

- **Task 3:** Develop a visualization that illustrates the proportion of period and product costs for fixed costs using a pie chart and a visualization that illustrates the proportion of period and product costs for variable costs using a pie chart. **Steps 5 and 6 — Appendix**

- **Task 4:** Develop a "what-if" analysis that allows the user to enter a selling price per batch between $1,200 and $3,000 and predict the break-even point in batches. This will result in an input field using a slider and a card visualization that displays the break-even point in batches. **Steps 7 and 8 — Appendix**

- **Task 5:** Arrange the components into a dashboard that looks similar to the prototype.

b) Using the working dashboard, answer the following questions:

i) Report the break-even point at the following selling prices per batch (round up to the nearest batch):

1. $2,000
2. $2,500
3. $3,000

ii) How does the batches-to-break-even figure change when only the product costs are taken into consideration? Use the selling prices from part (i). (Hint: Hold down the CTRL key and click on the Product Cost slice of the pie charts for both fixed and variable costs. The left sidebar will display results for only product costs.)

iii) How does the batches-to-break-even figure change if advertising and promotion costs are eliminated and selling price is $1,500?

c) Ideally, management would like to tie this information into external data to produce more results in real time and to make more predictions. Provide management with two ways in which the use of external data can improve this model. Your answer should discuss the possibilities of using both structured and unstructured external data.

It is important that you save the Power BI file you have completed and save it to your desktop. You will need it for working on your assignment project.

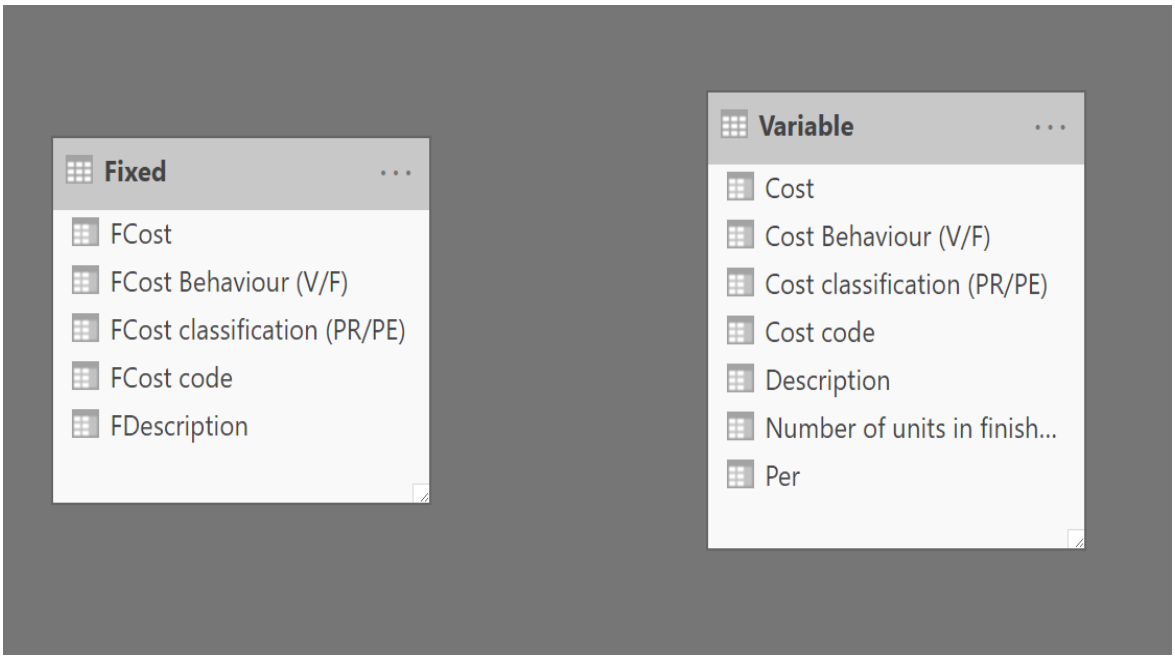
Appendix to Question 1

The following instructions assist in completing Question 1 using Power BI. If you are new to Power BI, it may be helpful to view the following tutorials:

- Get data: https://docs.microsoft.com/en-ca/learn/modules/get-data-power-bi/index
- Create and customize simple visualizations: https://docs.microsoft.com/en-ca/learn/modules/visuals-in-power-bi/2-create-simple-visuals

These tutorials will also assist with some of the details (formatting, colour, layout, and so on) that are not explained in the following steps.

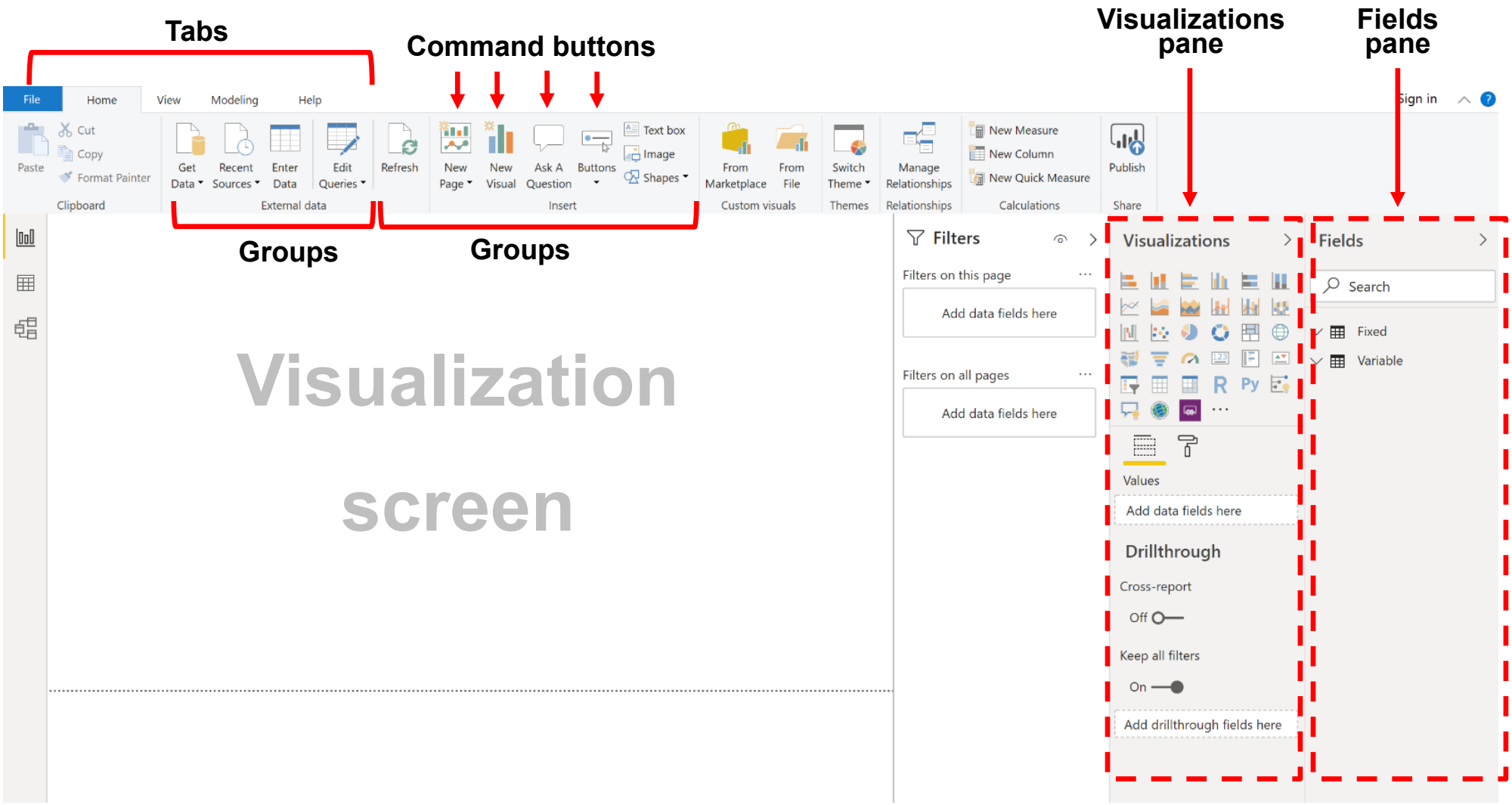
This screen print of the Question1-PROBDATA1 Excel file as it displays in Power BI in Model setting, showing that it consists of two tables with the following table structures. You should download this file from Brightspace (D2L) to your desktop.



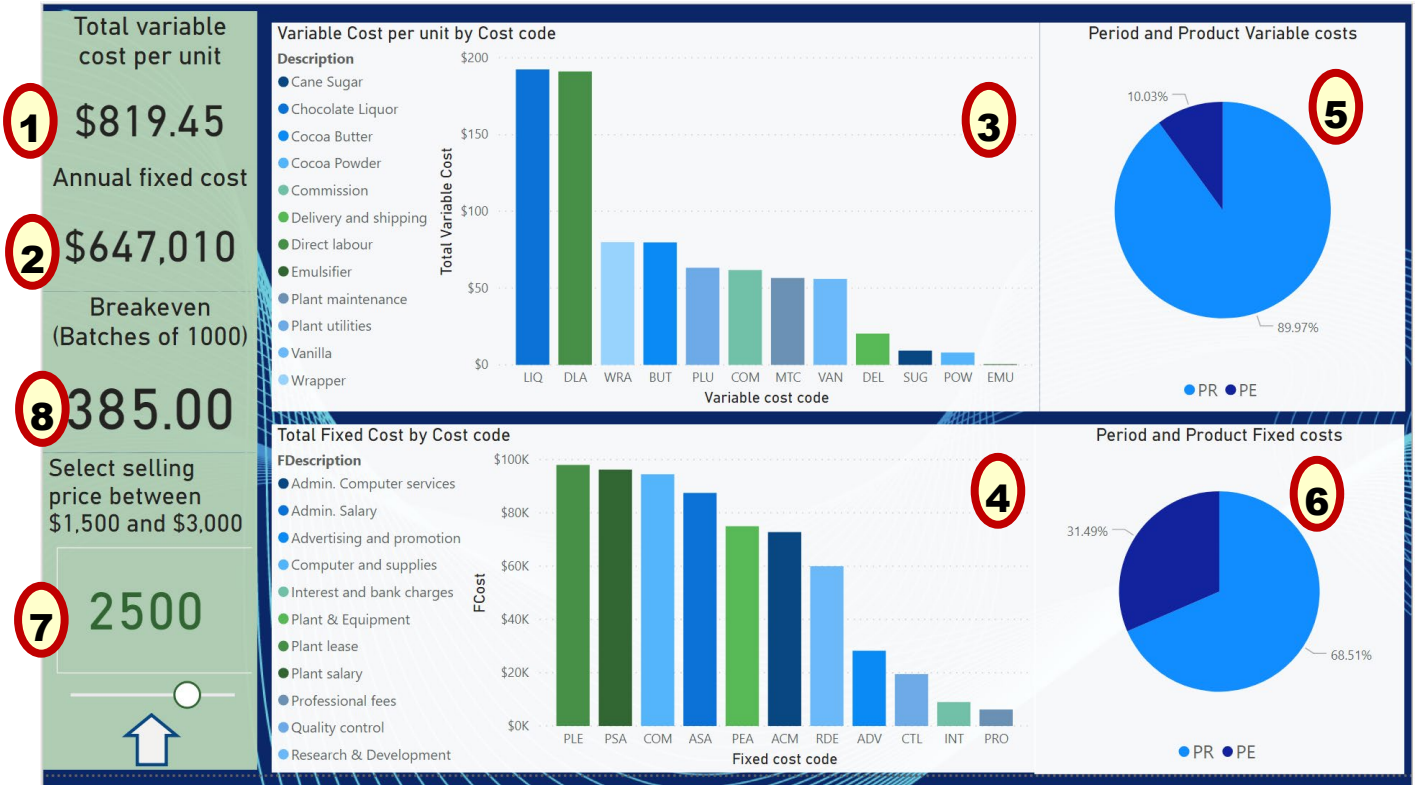
These tables contain the data listed in Question 1.

SCREEN LABELLING CONVENTIONS

The following illustration identifies the naming conventions used to explain the steps required to produce the dashboard containing multiple visualization.

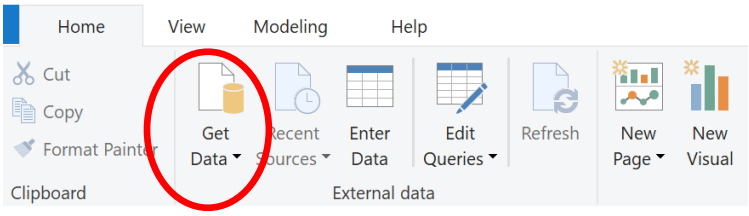


The tasks given in the Required section of the question are broken into steps. The following exhibit highlights each of the steps in numbers.

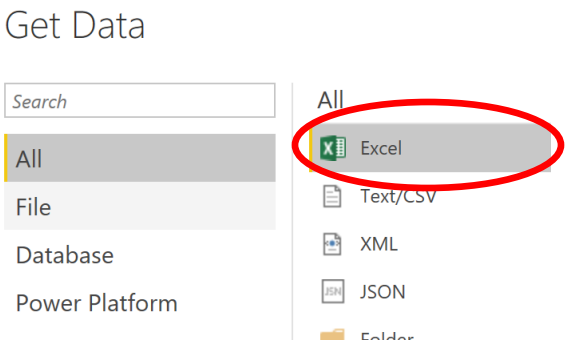


Getting started:

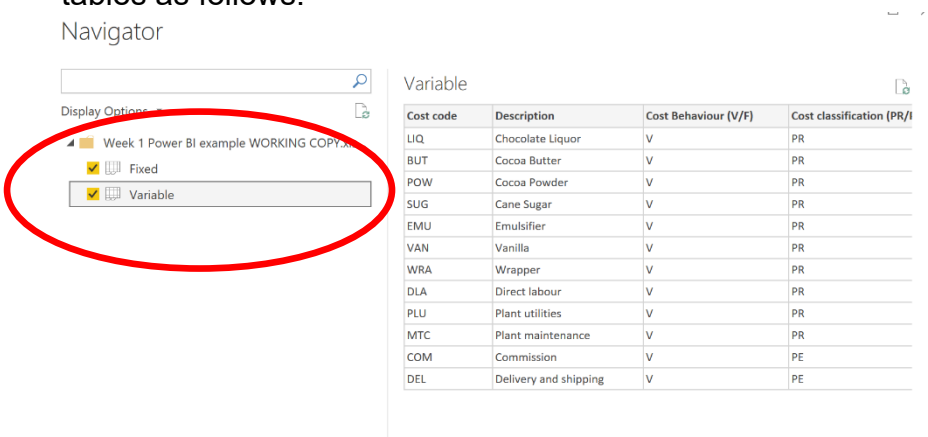
- Open Power BI and click the Get Data icon in the External data group.



- In the Get Data dialog box, select Excel.

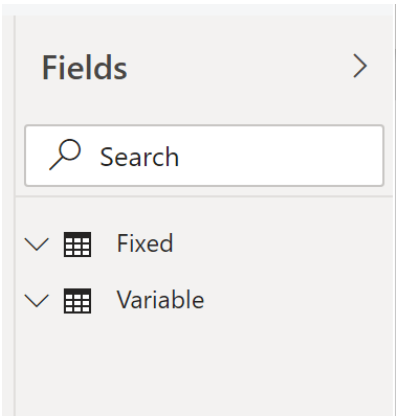


Find the Question1-PROBDATA file from your files and click “Open”. Select both tables as follows:



Cost code	Description	Cost Behaviour (V/F)	Cost classification (PR/I
LIQ	Chocolate Liquor	V	PR
BUT	Cocoa Butter	V	PR
POW	Cocoa Powder	V	PR
SUG	Cane Sugar	V	PR
EMU	Emulsifier	V	PR
VAN	Vanilla	V	PR
WRA	Wrapper	V	PR
DLA	Direct labour	V	PR
PLU	Plant utilities	V	PR
MTC	Plant maintenance	V	PR
COM	Commission	V	PE
DEL	Delivery and shipping	V	PE

- After clicking Load, the following should be displayed in the Fields pane:

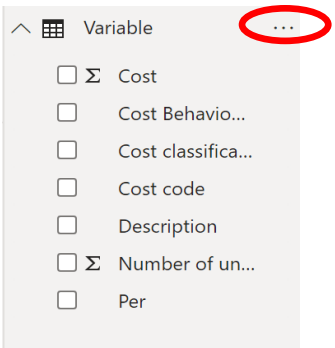


Task 1

Step 1: Prepare card visualization for total variable cost per unit.

- **Variable table:** Variables calculated based on existing data fields are rarely stored in a database. As such, the total variable cost per unit (number of units in finished product × cost) should be calculated.

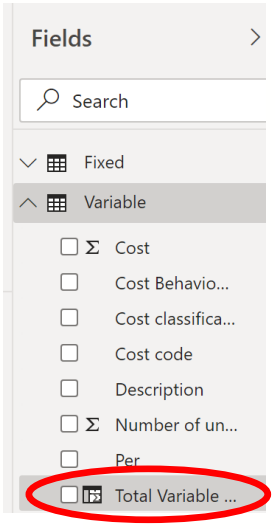
i. In the Fields pane, click on the three dots beside the Variable table name and select New Column.



ii. At the top of the visualization screen a formula bar will appear:

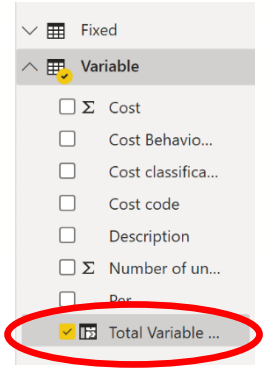
Delete “Column =” and type “Total Variable Cost = 'Variable'[Cost]*'Variable'[Number of units in finished product]”.

Resulting Fields pane:



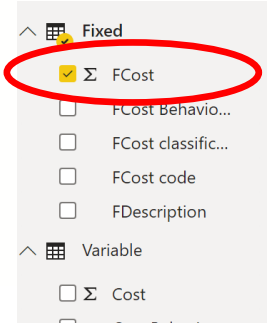
- Click on the Card 123 visualization tool from the Visualizations pane.
- Click on the check box to the left of Total Variable Cost in the Variable table. The visualization screen should display the sum of the variable cost per unit in the card.
- To format the total variable costs number , click on the Total Variable costs in the Fields pane, then under Modelling choose $ under Format.

- To create a title on the card, click the card, then click on the Formatting tool in the Visualizations pane : Click Title to On and click the dropdown to add the title and set the font size.



Step 2: Prepare card visualization for total annual fixed costs.

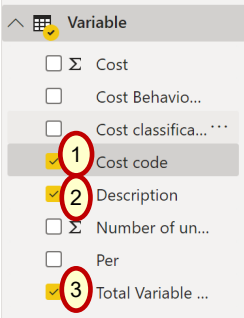
- First click outside the box of the newly created card. Click on the Card visualization tool from the Visualizations pane.
- Click on the check box to the left of ∑ FCost in the Fixed table. The visualization screen should display the sum of the annual fixed costs in the card. Check that the format is correct.



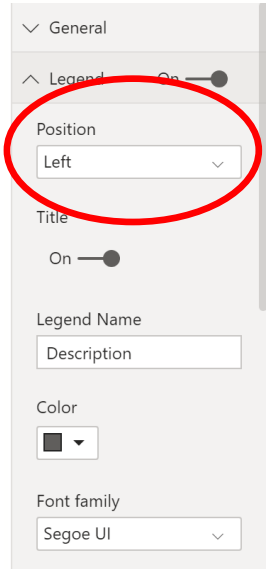
Task 2

Step 3: Prepare bar graph for variable costs.

- First click outside the box of the newly created card. Click on the Stacked Column Chart visualization tool from the Visualizations pane.
- Click on the check boxes in the Variable table in the following order:

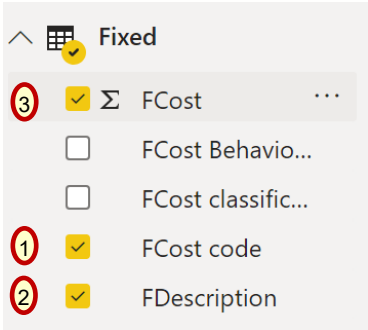


- To place the legend to the left of the chart, click on the Format tool in the Visualizations pane and change Position to Left. (The Format tool gives the user control over formatting, such as font, colour, labels, and so on. Formatting processes are user friendly and can be experimented with to achieve the desired effect.)



Step 4: Prepare bar graph for fixed costs.

Use the same procedure as in Step 3 using the Fixed table. Select the data in the following order:

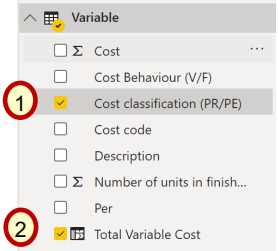


Task 3

Step 5: Prepare the pie chart for variable costs.

Up to this point, every variable and fixed cost has been presented. These next two steps provide a visualization indicating a summary of how much of these costs are product costs and how much are period costs.

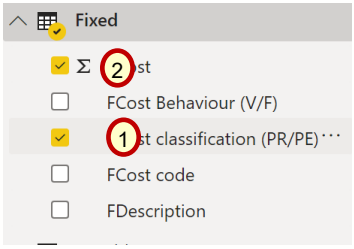
- Click on the Pie Chart visualization tool from the Visualizations pane.
- Click on the check boxes in the Variable table in the following order:



- This results in a pie chart showing the portion of total variable costs relating to period and product costs.

Step 6: Prepare the pie chart for fixed costs.

Use the same procedure as in Step 5 using the Fixed table. Select data in the following order:



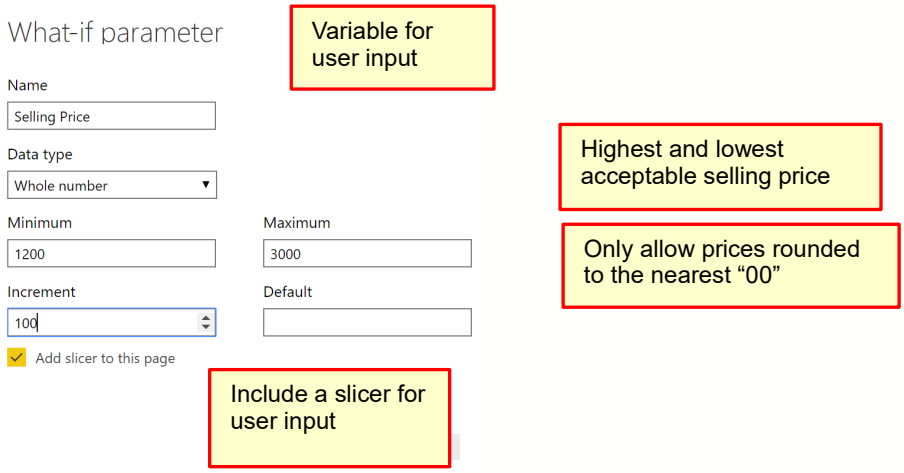
Task 4

Step 7: Capture user input.

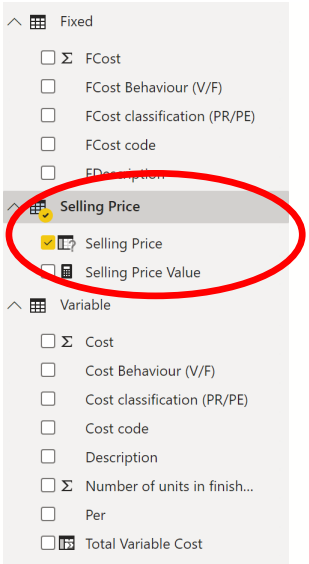
The visualizations created so far provide the user with basic information on cost data — in this case, budgeted figures. As such, they are classified as descriptive visualizations. Adding a “what-if” analysis adds a predictive element. Let’s say a planning team wants to determine how a selected selling price affects the break-even point. The following steps illustrate how data (selling price) can be captured from the user to perform this analysis.

- In the Modeling tab, click on the New Parameter What If command button.

- When the What-if parameter dialog box appears, fill it in with the following data and select OK:



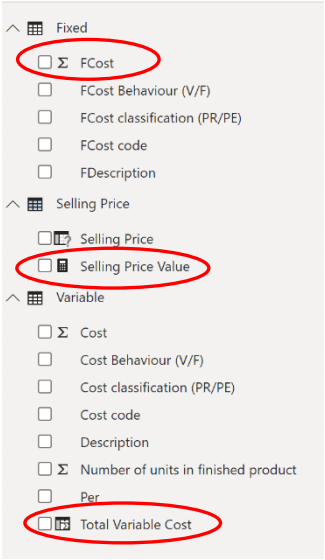
- This results in a visualization box that includes the words Selling Price, a box for user input, and a slider that allows the user to slide to select selling prices between $1,200 and $3,000. The user input data is captured in a variable called Selling Price Value. The Fields pane now includes a new table called Selling Price with the following variables:



This table is not part of the original data. Instead, it is there to capture the Selling Price Value variable input by the user.

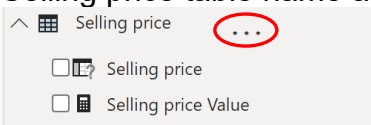
Step 8: Calculate the break-even point.

This step consists of calculating the break-even point given the total fixed and unit variable costs from the data given in the tables and the user input selling price. Because the selling price is dynamic, the break-even point should change every time the user enters a different selling price. All variables required to calculate the break-even point are available in the Fields pane as follows.



- The first step is to create a measure with a formula that calculates the break-even point using those variables. In the Fields pane, click on the three dots beside the

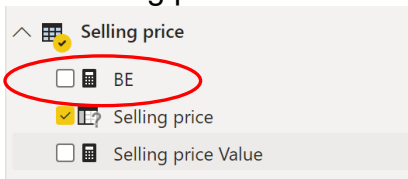
Selling price table name and select New Measure.



At the top of the visualization screen a formula bar will appear:

- Delete “Measure =” and type the break-even formula as follows:
  BE = SUM('Fixed'[FCost]) / ('Selling price'[Selling price Value] - SUM('Variable'[Total Variable Cost]))

  The Selling price table will now contain the break-even (BE) formula as follows:



- Click on the Card visualization tool from the Visualizations pane. Then select BE from the Selling price table. The break-even point in units will be shown on the card and updated every time a different sales price is entered.

Overall, the visualization is designed to be dynamic. Click on the Product Costs section of either of the pie charts and note the following:

- All period costs on the bar chart become shaded.
- The break-even point in units will be recalculated without the period costs.

Task 5

Arrange the individual items created into a format that is similar as shown in the question. (Note: You may want to review videos provided at the beginning of this appendix on formatting to gain knowledge about how to format your visuals).

Question 2

Ocean Fresh is a salmon processing plant that distributes salmon products across Canada. The production plant is a co-operative among several First Nations groups with operations up and down the west coast. They have a community approach to their organization and focus on environmental stewardship and sustainability. Their products are currently distributed to 17 cities and towns with a focus on high-end markets, museum gift shops, and cruise ship terminals. One of their strategies for the next four years is to expand their operations. The policy is to use existing networks to avoid the need to establish new distribution networks.

The organization's leadership team is preparing for its annual budget review. To prepare for its meeting with the local communities, the team wants to assess Ocean Fresh's profitability. While the First Nations groups' information system records the original budget for the year by city, the only reporting feature is a simple account-by-account comparison of actual and budgeted revenues and expenses.

Ocean Fresh's leadership team includes Shaaw Tláa Chilkat, a CPA and CAFM (Certified Aboriginal Financial Manager) who has some knowledge of Power BI. She has downloaded information from the following sources:

- the First Nations groups' transaction processing system
- the First Nations groups' budgeting system
- online resources with information pertinent to the analysis

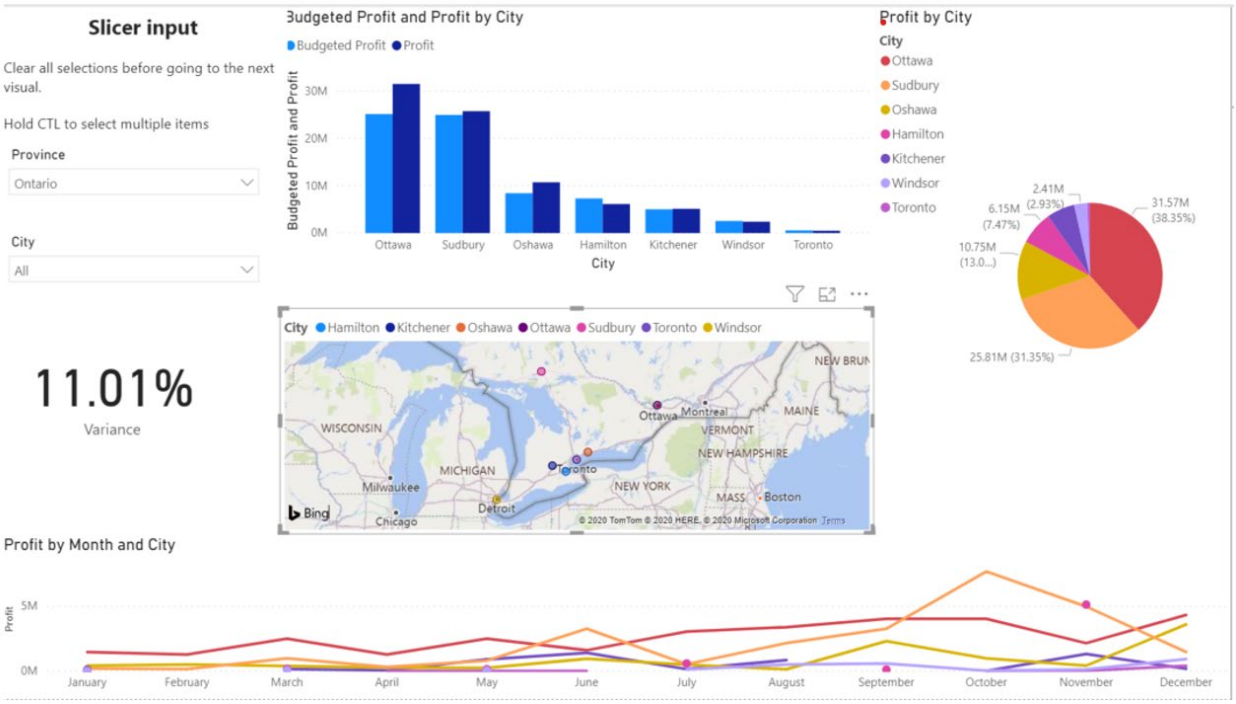
The data from the transaction processing system consists of revenues and product costs by day and month for the past year. This information was summarized and stored as profit per order by date and order number. The data from the budgeting system consists of profits per month for the year. Data on cities was downloaded from a credible online data bank. The following is a layout of the table formats:

BUDGET	
VARIABLE NAME	**FORMAT**
Date	mm/dd/yyyy
City	Text
Budgeted Profit	$999,999,999.99

CITIES	
VARIABLE NAME	**FORMAT**
City	Text
Province	Text
Population	999,999,999

ORDERS	
VARIABLE NAME	**FORMAT**
Order Date	mm/dd/yyyy
Order ID	Text
Product Name	Text
City	Text
Profit	$999,999,999.99

Shaaw provided the following prototype of a dashboard of the data that would be helpful in assessing the profitability of cities and provinces.



Required:

a) Prepare the dashboard using Power BI and the step-by-step instructions in the Question 2 Appendix.

b) Answer the following questions using the dashboard:

   i. What is the overall variance from budget? (Remember to determine whether it is favourable or unfavourable.)

   ii. Which province has the highest favourable variance?

   iii. If all cities with an unfavourable variance were eliminated, what would be the budget variance?

c) Using the following Information Format chart:

Level of management	**Decision type**	**Time frame affected (approximate)**	**Information format and source**
Employees and supervisors	Operational/routine decisions	Short term — one day to one month	Structured Sourced internally via: • transaction processing systems (accounting based) • Excel spreadsheets
Middle management	Tactical decisions — what-if analysis	One month to one year	Semi-structured Sourced mostly internally via: • reports from management information systems • Excel data analysis tools and dashboards
Senior management	Strategic decisions — one-off decisions	Long term — one year to future years	Non-structured/ad hoc: Sourced internally and externally via business intelligence systems: • decision support systems • data mining • expert systems

i. Identify which level of management would most likely use this dashboard. Back up your answer by discussing the decision type and the time frame affected.

ii. If the dashboard contained multiple years of data, how would your answer change?

d) Provide the leadership team with the following:

i. Ways in which the dashboard can be used to assist in future expansion plans.

ii. Ways in which the dashboard can be expanded to provide more information. Identify other performance measures the leadership team might be interested in seeing.

Appendix to Question 2

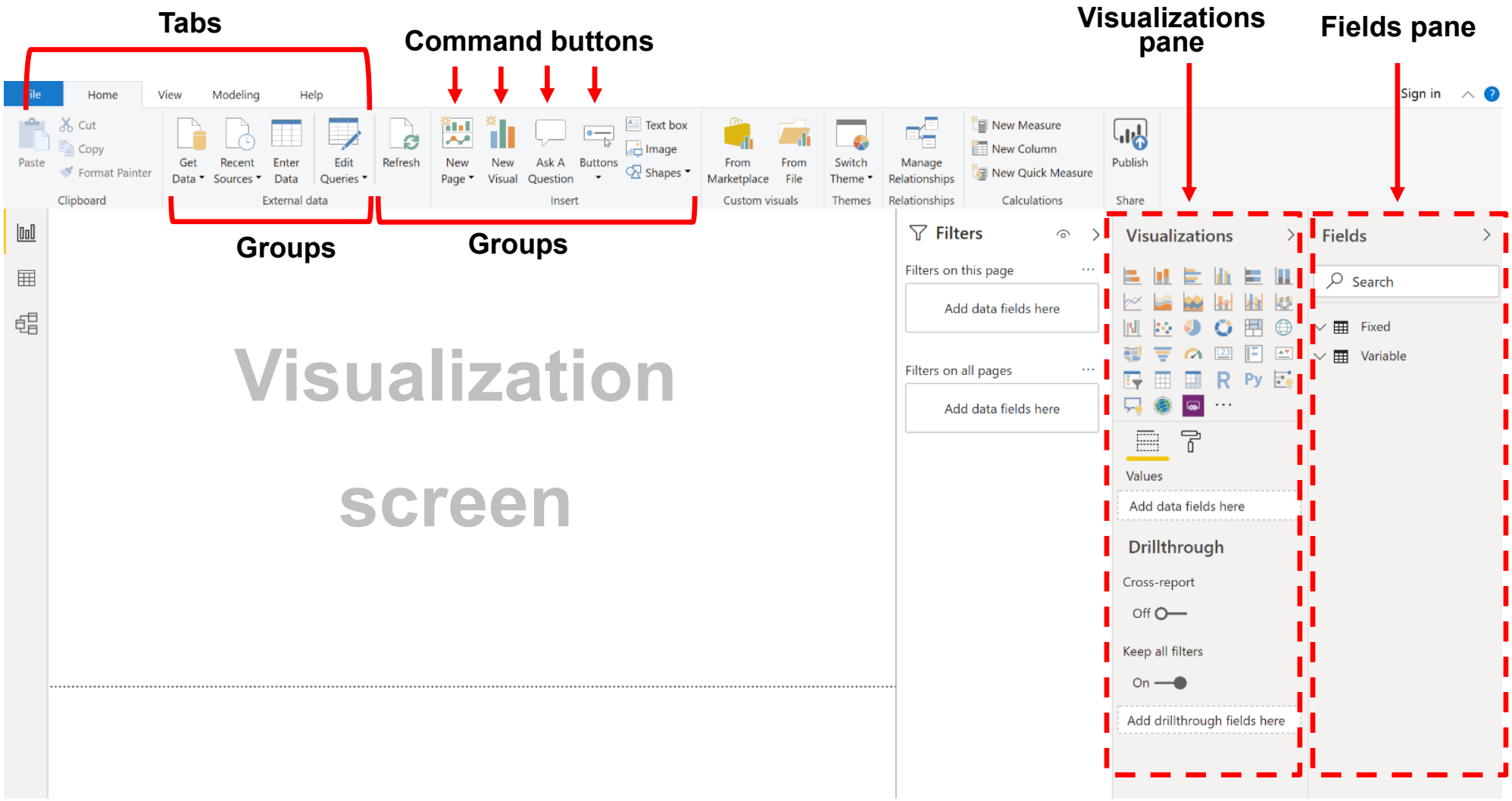
The following instructions will help you complete Question 2 using Power BI. If you are new to Power BI, it may be helpful to view the following tutorials:

- Getting data: https://docs.microsoft.com/en-ca/learn/modules/get-data-power-bi/index
- Create and customize simple visualizations: https://docs.microsoft.com/en-ca/learn/modules/visuals-in-power-bi/2-create-simple-visuals

These tutorials will also help you with some of the details (formatting, colour, layout, and so on) that are not explained in the following steps.

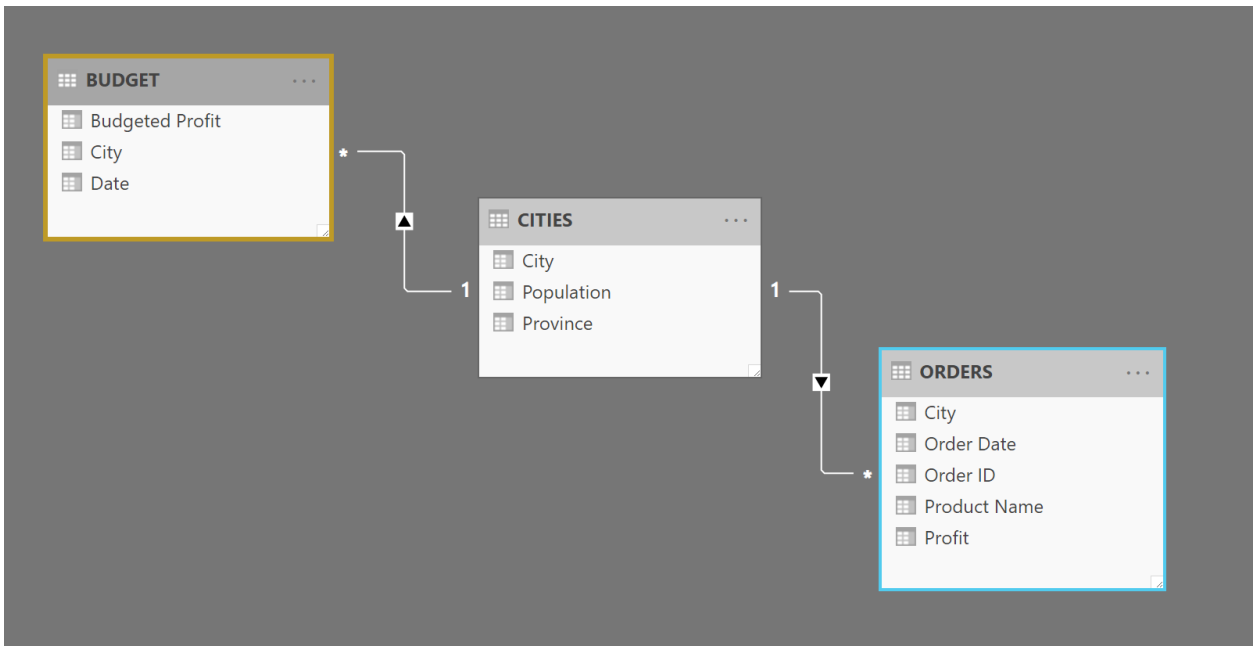
SCREEN LABELLING CONVENTIONS

The following illustration identifies the naming conventions used to explain the steps required to produce the visualizations.



This screen print of the Question2-PROBDATA Power BI file as it displays in Power BI in Model setting, which consists of three tables with the following table structures.

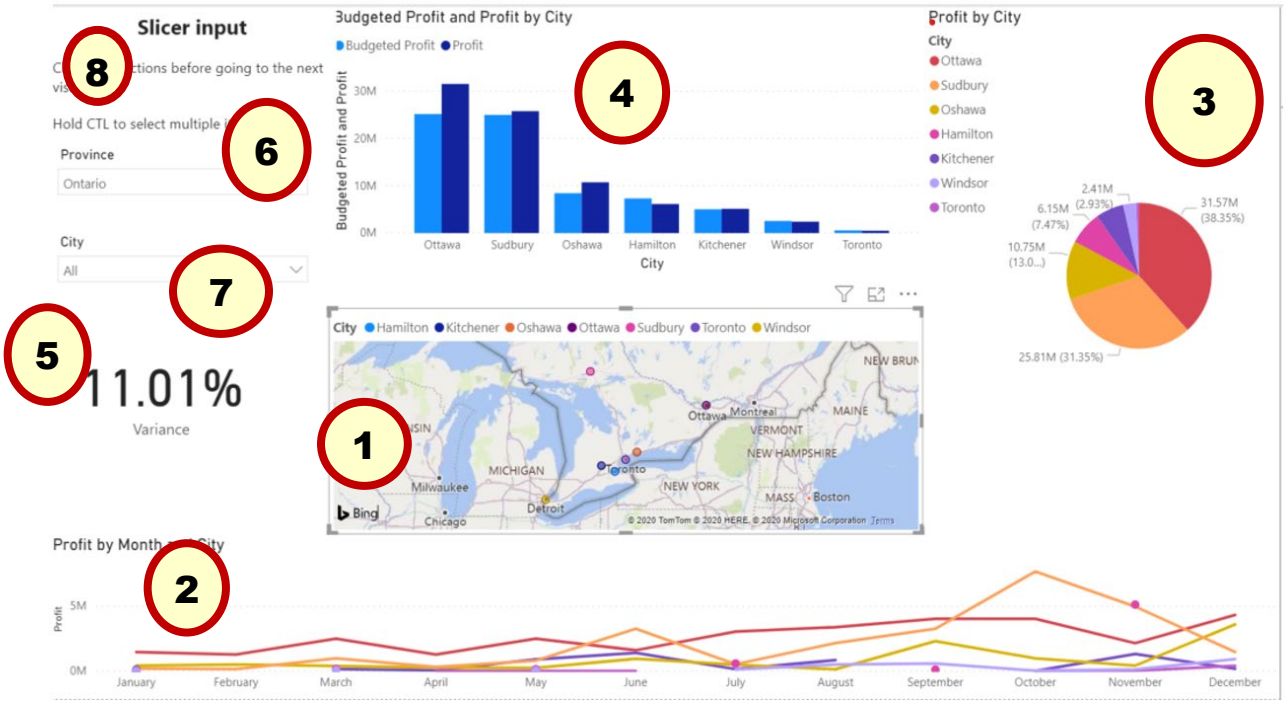
(This layout can be seen in Power BI by selecting the Model icon on the left-hand side of the visualization.)



The .pbix file format is a Power BI file. The data in this type of file is often imported from a variety of sources such as the corporate database and external databases. For purposes of the scenario in this question, the budget data was downloaded from the company's Sage budgeting and planning application, and the orders were downloaded from the last year of activity. The data in the Cities table was downloaded from https://simplemaps.com/data/ca-cities and revised for this question. Note that the population of each city is also included here. While not used in this question, it could be used to assess profits per capita.

The Cities table provides the link between the budget information and the order information by providing the province name so that profitability can be determined by province.

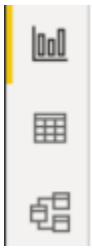
The tasks given in the Required section of the question are broken into steps. The following exhibit highlights each of the steps in numbers.

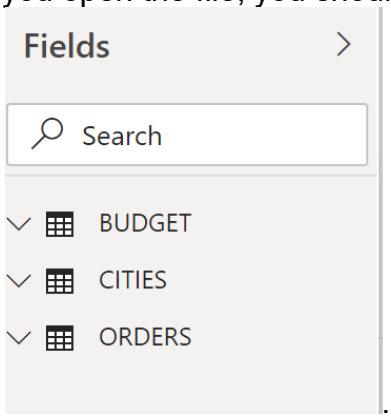


NOTE: Loading data and formatting (titles, colour, layout, and so on) instructions have not been included here in order to give only the basic tools that were used. This visualization uses the Question2-PROBDATA file.

Getting started:

- Open Question2-PROBDATA. This file contains all of the table information that was imported from various sources.
- Make sure you are in the Report view as shown:



After you open the file, you should see the following three table names in the Fields pane 

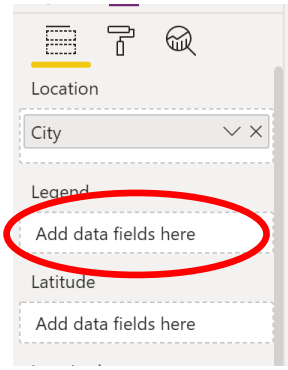
.

Step 1: Populate the Map visualization tool with Canadian cities.

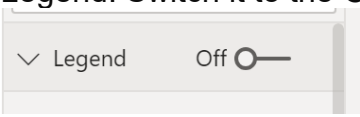
- Click on the Map visualization in the Visualizations pane.
- This diagram will appear on the visualization screen.
- Click on the variable “City” in the Cities table, and the map will populate with the city names in the appropriate spot on the Canadian map.

To colour distinguish the cities, click on “City” in the Fields pane in the Cities table and drag it to the Legend space in the Visualizations pane. Make sure the map is highlighted (clicked on) and that the Values

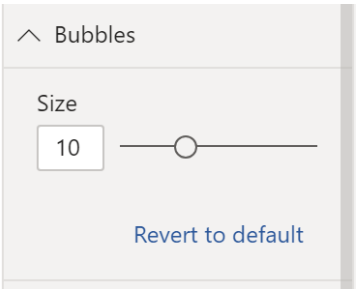
icon has been clicked to show the Legend criteria.



- Click on the Formatting tool below the VIsualization pane and scroll down to Legend. Switch it to the Off position. (We'll put the legend in another visualization.)

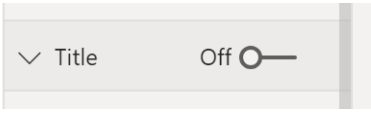


- Scroll further down the formatting information and select "Bubbles".



Change the size to 10. This increases the size of the dots on the map.

- Scroll further down the formatting one more time until you see



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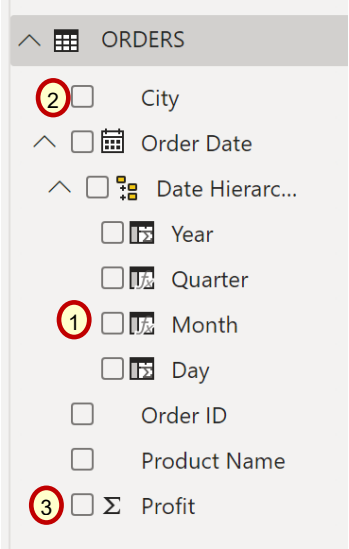
Set the toggle to Off to reduce the clutter of headings.

- You can play around with the size of the map to focus on Southern Canada, where all of the cities are located, by dragging the frame of the map. Using the mouse scroll wheel will focus the map. For example, you can focus on Southern Ontario or any other part of Canada.

Step 2: Prepare the line chart with profits by city by month:

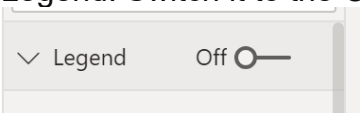
- First click outside the box of the newly created map.
- Then click on the Line Chart icon in the Visualizations pane.

- In the Orders table in the Fields pane click (in order) on the following fields:



- NOTE: The order in which you choose the fields determines the x and y axes on the chart. The first choice is the x-axis, the second is what each line represents, and the third is the y-axis.

- Click on the Formatting tool below the Visualization pane and scroll down to Legend. Switch it to the Off position. (We'll put the legend in the next visualization.)



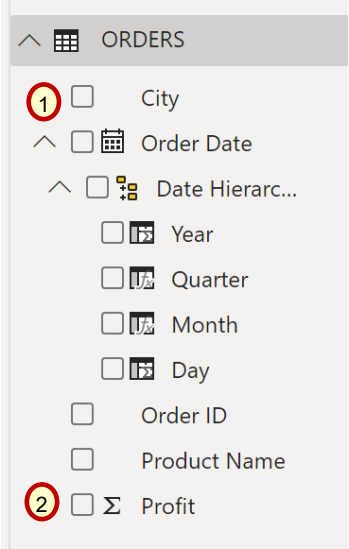
- Size the chart by stretching it across the visualization as was shown in the exhibit at the beginning of the appendix.

Step 3: Create the pie chart to show proportion of profits to cities.

- First click outside the box of the newly created line chart.

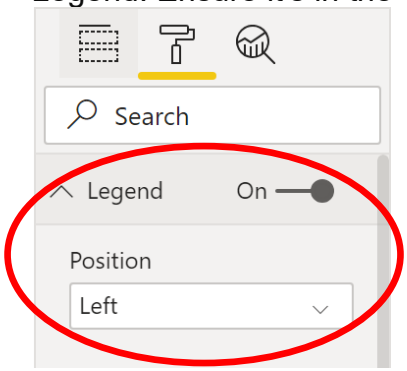
- Click on the Pie Chart icon in the Visualizations pane.

- In the Orders table in the Fields pane click (in order) on the following fields:



NOTE: Again, the order in which the fields are chosen impacts the information in the pie chart. In this case, the pie chart shows what percentage of the total the profit in a given city is.

- Click on the Formatting tool below the Visualization pane and scroll down to Legend. Ensure it's in the On position. Then, under Position select "Left".



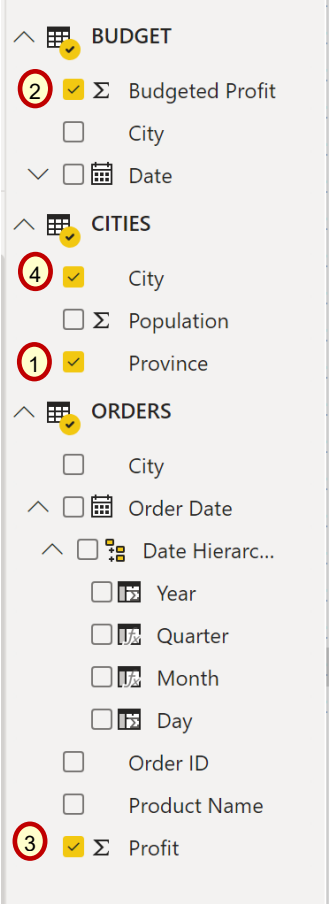
- Stretch the chart so that all cities are showing on the left-hand side.

Step 4: Create a budget versus actual profits clustered column chart.

- First click outside the box of the newly created pie chart.

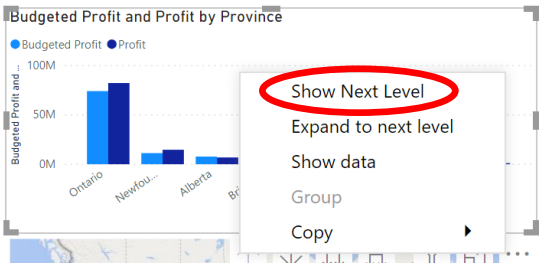
- Click on the Clustered Column Chart icon in the Visualizations pane.

- In the Fields pane click (in order) on the following fields:

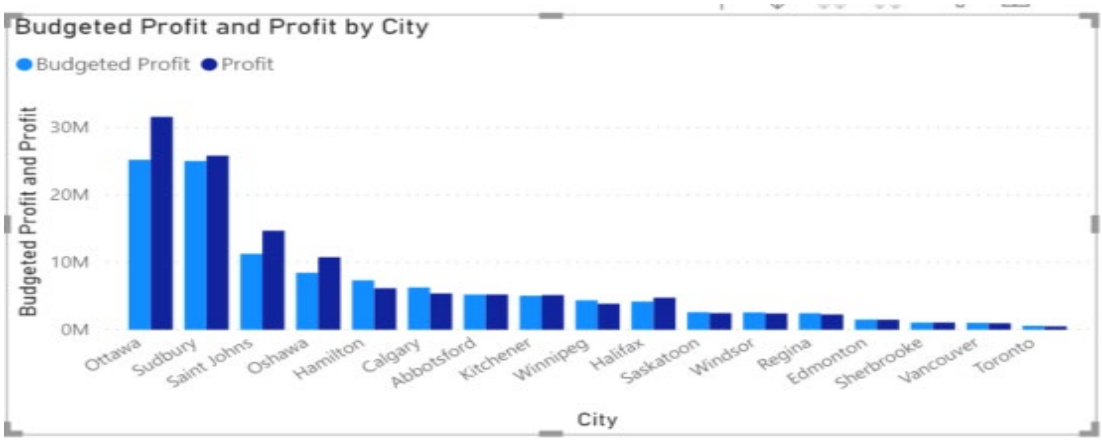


NOTE: The order of the selection of the variables impacts the output chart. By choosing Province first and then budgeted and actual profits, the chart indicates the budgeted and actual profits by province.

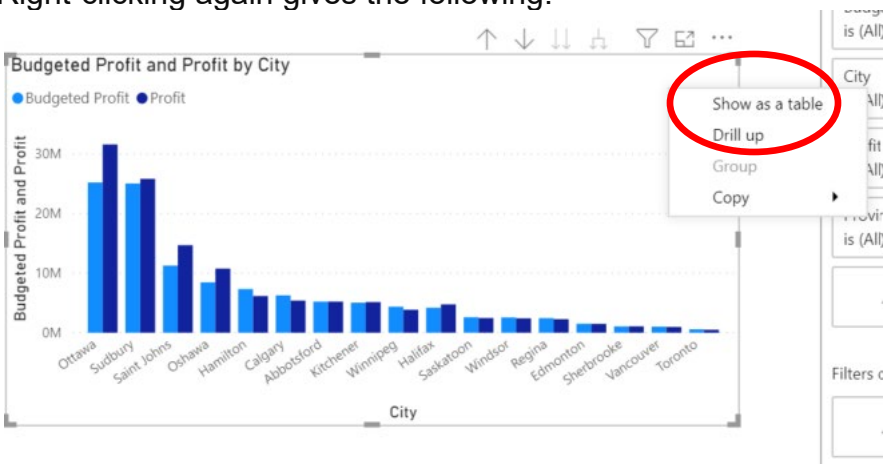
This selection of variables created a hierarchy in this chart. Right-click on the chart and you will see the following if the chart is currently showing budget/actual by province:



Clicking on “Show Next Level” shows budget/actual by city as follows:



Right-clicking again gives the following:

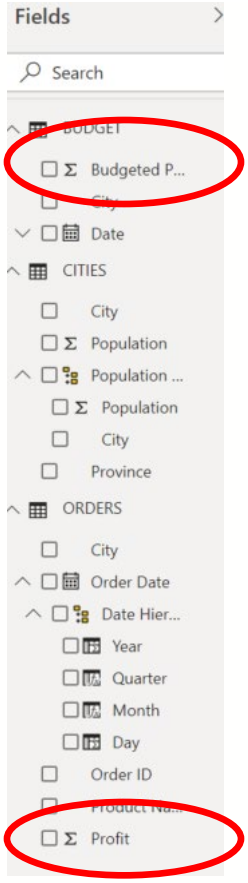


Clicking on “Drill up” brings you back to budget/actual by province.

- Size and move the chart to the top of the visualization screen.

Step 5: Create a Card visualization of the percentage variance from budget.

- First click outside the box of the newly created cluster bar chart.
- This step consists of calculating the percentage variance from budget. All variables required to calculate these figures are available in the Fields pane as follows:



- The first step is to create a measure with a formula that calculates the percent variance using those variables. In the Fields pane, click on the three dots beside the Budget table name and select “New Measure”.

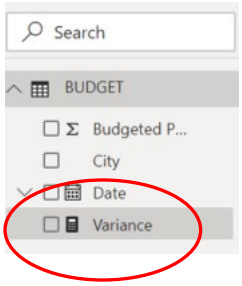
  At the top of the visualization screen a formula bar will appear:

  Remove “Measure =” and type the budget variance formula as follows:

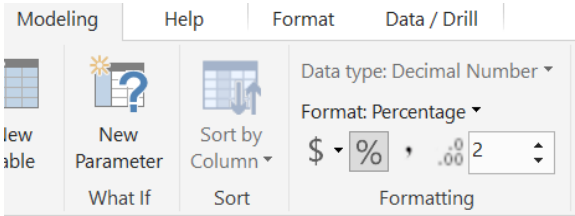
  Variance = (sum(ORDERS[Profit])-sum(BUDGET[Budgeted Profit]))/sum(BUDGET[Budgeted Profit])

  Then press the Enter key.

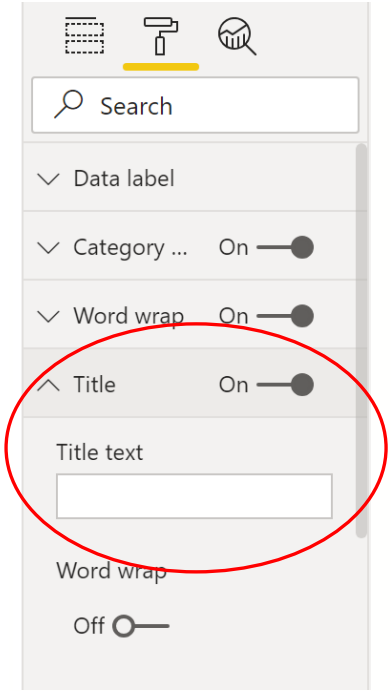
  The Budget table will now contain the Variance formula as follows:



- Click on the Card visualization tool from the Visualizations pane. Then select “Variance” from the Budget table. The percent budget variance will be shown on the card. In this case it will be shown for the total of all budgets and actual profits for all cities.
- To show the variance as a percentage, click on the “Variance” field in the Fields pane. Then select the Modeling tab, and then in the Formatting group click on the % icon.



- To make the card more descriptive, select the Formatting tool in the Visualizations pane and scroll down to Title. There you can add an appropriate title and format it.

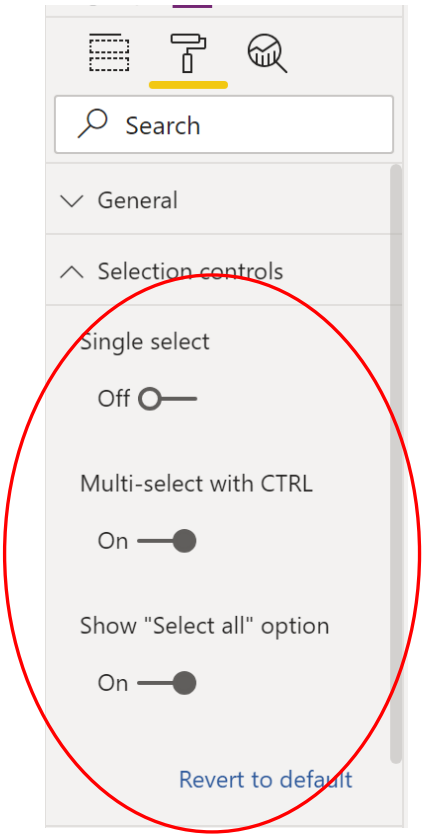


Step 6: Create a slicer to view data by province.

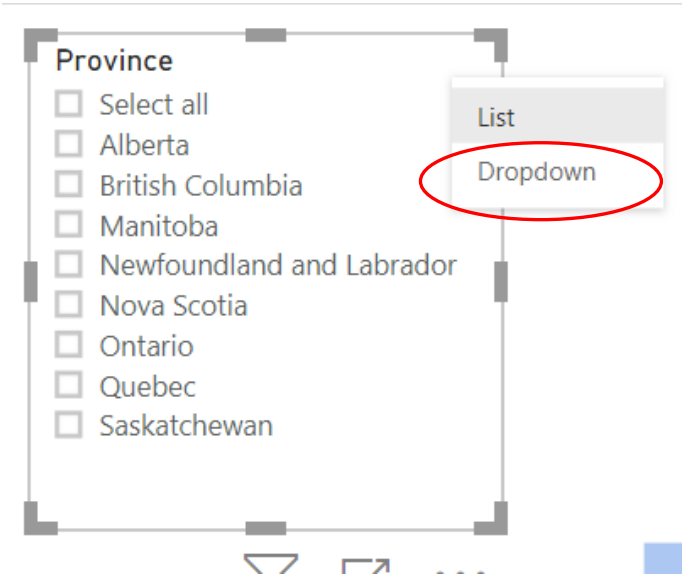
At this point the visualization displays data for all cities. Building in interactivity with a slicer allows the user to view different subsets of the data.

- First click outside the box of the newly created visualization card.
- Click on the Slicer icon in the Visualizations pane.
- Select “Province” from the Cities table as follows:

- For ease of use set the following selection controls in Format:
  - Ensure the Single select control is set to Off. This allows the user to include more than one province in the analysis.
  - The Multi-select control should be set to On. This allows the user to select more than one province by holding down the CTRL key.
  - The Show “Select all” option should be set to On to allow selection of all provinces.



To save space on the visualization, select the drop-down menu by clicking on the upper right-hand corner of the slicer as follows:



- Try out the slicer by selecting “Alberta”. All charts on the dashboard will now adjust to show only data relating to Alberta. Note that the visualization also displays details

in relation to Calgary and Edmonton. Try right-clicking on the bar chart to toggle between profit and budget for each city and for the province as a whole.

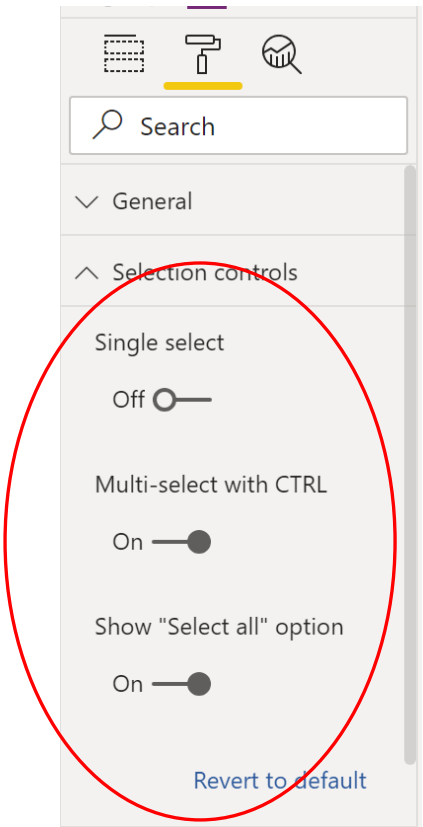
NOTE: Lines on the line chart will appear broken where data is missing for the month of reporting. For example, Edmonton does not have data for the months of April, May, July to September, October, and November, as there were no sales during those months.

Step 7: Create a slicer to view data by city.

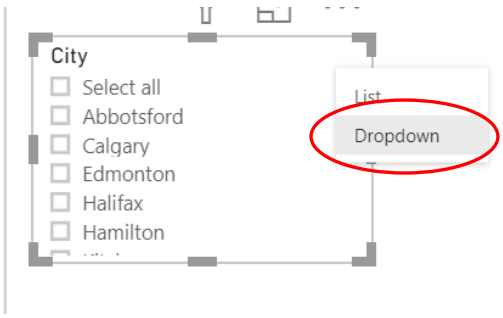
In addition to the Province subset, it may be necessary to view the data by city. This is done by setting up an additional slicer by city.

- First click outside the box of the newly created Province slicer.
- Click on the Slicer icon in the Visualizations pane.
- Select “City” from the Cities table as follows:

- As with the Province slicer, for ease of use set the following selection controls:
  - Ensure the Single select control is set to Off. This allows the user to include more than one city in the analysis.
  - The Multi-select control should be set to On. This allows the user to select more than one city by holding down the CTRL key.
  - The Show “Select all” option should be set to On to allow selection of all cities.



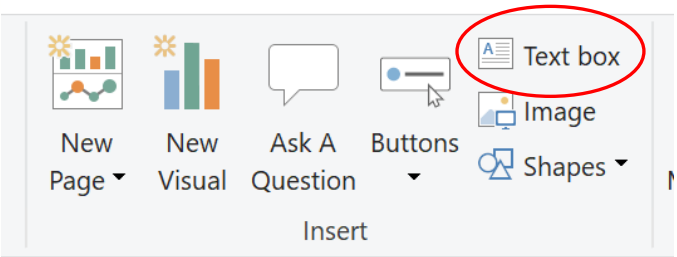
- To save space on the visualization, select the drop-down menu by clicking on the upper right-hand corner of the slicer as follows:



- The City slicer is used only after the province has been selected using the Province slicer. Then, the specific city can be selected. The slicer can be used to locate the specific city on the map and to view the city's profit line on the line chart.

Step 8: Create a text box with Slicer instructions.

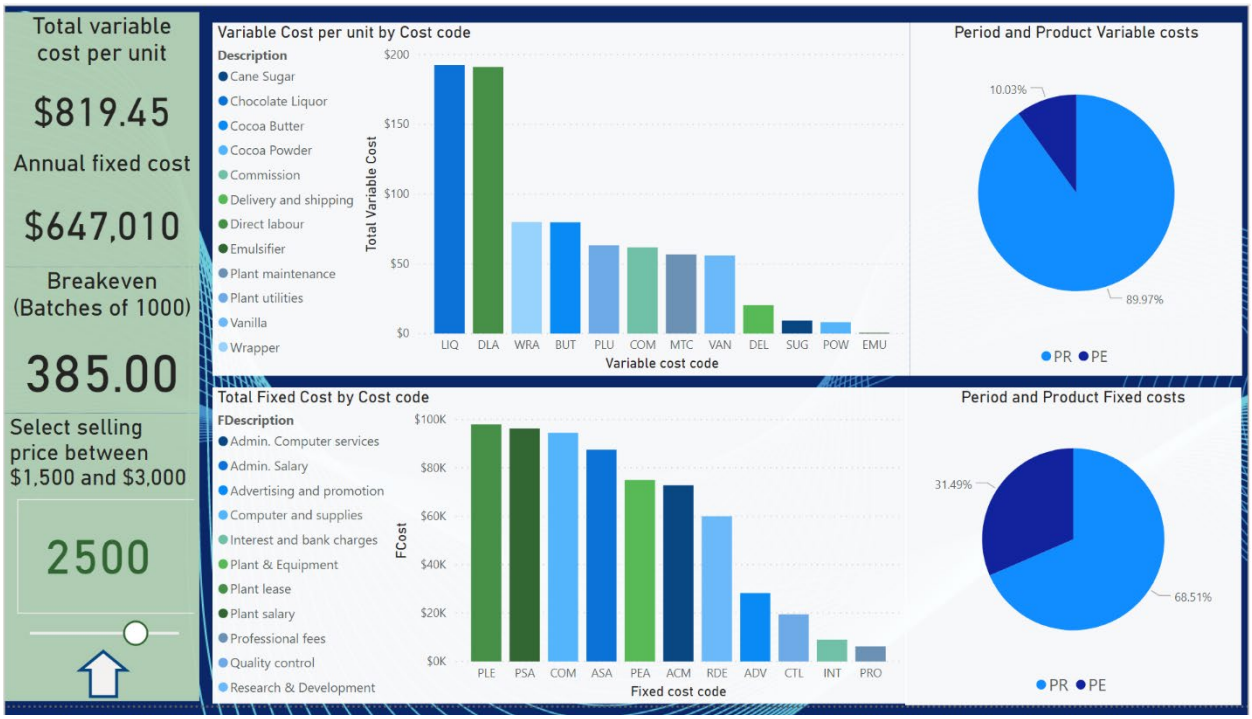
- On the Home tab and in the Insert group select the Text box command.



The text box has functions similar to a text box in Word. Add the user instructions.

Solution to Question 1

a) The solution to this section should be a working model of the following exhibit taken from the question:



b) i) 1. 549 batches
2. 385 batches
3. 297 batches

ii) 1. 352 batches
1. 252 batches
2. 196 batches

iii) 910 batches

c) Examples of external data that are useful in this situation:

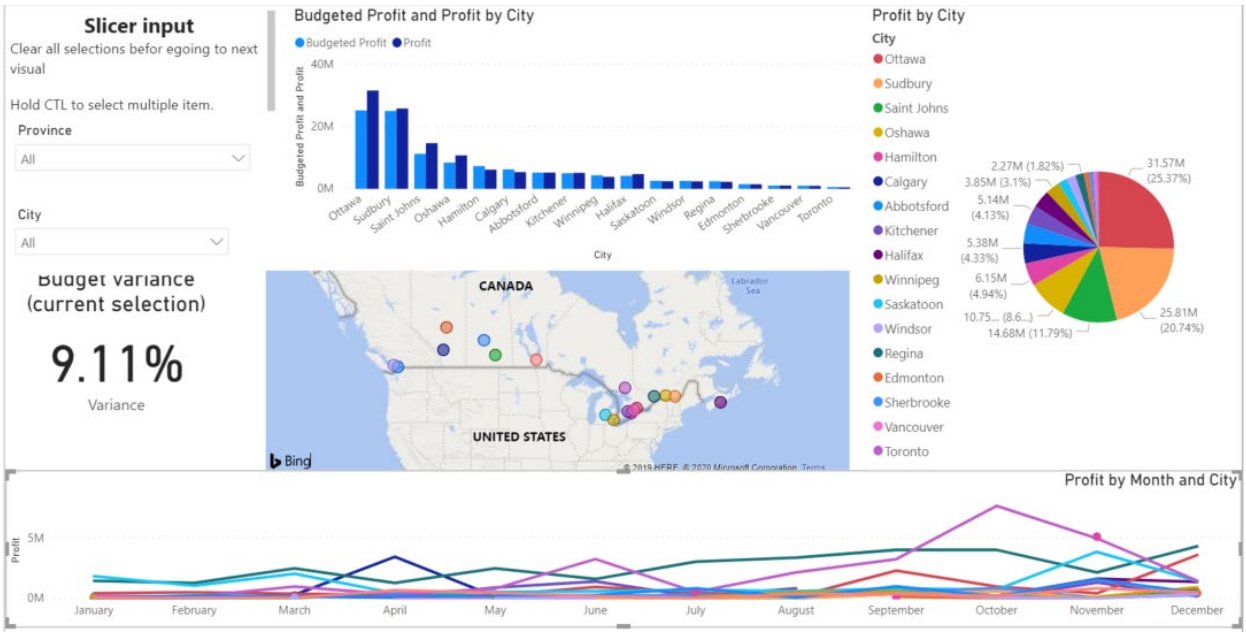
- Access supplier price lists. This would give management up-to-date information on ingredient costs and a more reliable break-even point. It could also tie into costs from competitive suppliers to determine the most economical choice of ingredients.
- Usage of commodity indices relating to major ingredient costs would help to show market trends. Some commodity indices will show trend lines based on historical data. A slider could be added to the model that would allow the user to extend data to a future point to predict break-even.
- Unstructured data could consist of a tie-in to news feeds to assess news articles related to major ingredients. For example, news of hurricanes in areas of major

cocoa suppliers would affect ingredient prices. A risk factor would be built into the model to determine the effect on cocoa costs in the next six months.

NOTE: This list is not exhaustive. Other external sources, such as labour market effect on labour costs, economic indicators for selling price, or government regulations that affect usage and price are valid.

Solution to Question 2

a) The solution to this section should be a working model of the following exhibit taken from the question:



Your illustration may not be exactly the same as this illustration depending on which Province and City slicer options have been chosen.

b) Each of the following answers was determined using the Province and City slicer options from the dashboard.

   i. The overall variance for all reporting cities should be 9.11% favourable (shown in the Budget Variance card visualization when all provinces are selected).

   ii. The province with the highest favourable budget variance is Newfoundland and Labrador at 30.43% (shown by selecting each province in the Province slicer).

   iii. Abbotsford, Sherbrooke, Kitchener, Sudbury, Halifax, Ottawa, Oshawa, and St. John's all have positive budget variances. If the other cities were eliminated the budget variance would be 15.9% favourable. (Select each city with actual profit greater than budget.)

c)

   i. The Information Format chart provided in the question lists "dashboards" as a middle management tool used for tactical decisions and what-if analysis affecting one-month to one-year plans and outcomes. A variance report such as this would be one of the tools used to assess where to focus sales efforts. Those cities where volume is low and budgets have not been met may be the target of reduced marketing efforts. These types of decisions are usually made on an annual basis, as annual advertising budgets would be affected.

ii. If the dashboard contained historical data for multiple years, the leadership team could use the dashboard for more strategic decisions using trend analysis for predicting future sales. This could lead to improved distribution channels in high-volume geographical locations. This would be an example of Senior Management (from the chart) usage of the dashboard.

d)

i. A large portion of cities with double-digit favourable budget variances are in middle to eastern Ontario, and the East Coast. This presents a good expansion opportunity, as Ocean Fresh would already have active distribution networks in these areas.

ii. Other measures that could be used to address future expansion are as follows:

- Use the population figures in each existing city to determine sales per capita. This could determine how much more expansion could take place in each.

  Because Ocean Fresh operates on the West Coast, it would be helpful to add the population of more local cities. Even though local distribution channels may not yet be established, the cost of offering may be lower than using established eastern networks.

- It would be helpful to tap into more information relating to the market and profitability for Ocean Fresh's products. In addition to tracking order profitability by date, it would be helpful to track it by customer type (high-end markets, museum gift shops, and cruise ship terminals). This would allow Ocean Fresh to determine the focus of its customer base.

- Adding distribution channel costs as another dimension would also be helpful in determining the best geographical expansion locations. As discussed in part (ii) above, while profitability is greater than expected in the eastern part of the country, local distribution networks would most likely be less costly.