University of South Australia

Business Intelligence

INFS 2036

Study Period 5 2019

Assignment Guide

Contents

Plagiarism

Plagiarism is a specific form of academic misconduct. We **encourage and support** working in groups and seeking help, however your final submission must always represent your individual work, opinions and recommendations.

If plagiarism is found, all parties involved will be penalised. You need to retain all your assignment computer files (Excel, Word Tableau, *etc.*), which must remain unchanged after submission, for the purposes of checking, if required.

Plagiarism covers, but is not limited to, the following actions:

- Direct copying of the work of other persons, from one or more source, without clearly indicating the origin;
- Sending your files to another student for any reason whatsoever, even for the purposes of checking or comparing work;
- Submitting another student's work in whole or in part;
- Submitting work that has been written by someone else;
- Copying computer files without clearly indicating their origin;
- Submitting work that has been derived, in whole or in part, from another student's work or work found elsewhere by a process of mechanical transformation (e.g. changing variable names in computer files, paraphrasing);
- **A group-based effort to produce one assignment shared between individuals.** Working together is encouraged, however each written assignment submitted by each student must be written in its entirety by the individual student, including running analyses, producing Excel spread sheets other than the templates provided on the Course website and report writing. Working together where one individual types the collective thoughts of a group/produces analyses and/or spread sheets and then shares these files will be investigated for plagiarism.

All parties found to be involved in academic misconduct will incur, if appropriate, a penalty and a record in the University's Academic Integrity Database (UniSA Assessment and Procedures Manual 2019, Section 9, Clause 9.2.3 i.).

If you are unsure about what constitutes Academic Integrity

you are welcome to ask us for more information before submitting.

Assignment Aim
Part 1 + Part2 Overview

As a Business Intelligence (BI) consultant you would typically write a proposal for the CEO of an organisation detailing the product (dashboard) you will build for them.

If the CEO accepts your proposal, then the organisation would pay you to do the work and you would build the dashboard according to your proposal specifications. If the CEO doesn't accept your proposal, you won't have a job.

This assignment prepares you for this real-world process by being completed in **two** parts:

Assignment Part 1: Pitching for the job

Part 1 is to write a 2,000 word proposal for the CEO of an organisation, detailing the dashboard you will build for them by identifying a key priority and supporting questions that will help them understand and plan for that priority.

In Part 1 you will also provide an **example** of the dashboard you would build if you got the job, but you will do the actual dashboard building in Part 2 (you have to get the job first!).

Assignment Part 2: You've won the job! Now you have to build the dashboard

Part 2 is to put your money where your mouth is!

In Part 2, the CEO from your chosen organisation in Part 1 has given you the job and you will build a working dashboard from the priority, supporting questions and dashboard design you proposed in Part 1. You will build the dashboard using Tableau and the data you identified in Part 1. The CEO will be amazed at your talent and dashboard you deliver - as will we ☺

The proposal and dashboard together will give you practice with a real-world business intelligence project. You will also develop:

1. Your knowledge and skills in using data that is specific to the degree you are doing;
2. Your ability to show how data is relevant and useful. Data (and so Business Intelligence) is used in all jobs, all organisations and all sectors, as well as complex areas such as climate change, personal relationships and organisational culture; and
3. Your ability to understand your reader's perspective and needs, and being able to respond to those needs. Business Intelligence provides a means to see and understand a business problem and when done well, reveals new solutions the organisation didn't even consider.

We hope you enjoy the challenge of this assignment and we look forward to seeing what you come up with ☺

Assignment Part 1
Dashboard Proposal (2,000 words)

Due 10/09/2019 by 10:00am

Assignment Part 1 is worth 15% of your final grade.

Submission via LearnOnline as Microsoft Word document (.docx) ONLY.
zip and PDF files will not be accepted.

If you have problems submitting, keep proof of your submission attempt and email
belinda.chiera@unisa.edu.au

Assignment Part 1 Marking criteria

The 2,000 word proposal will be marked on how well you cover each of the points:

Area	Weighting
Overall layout and professional presentation • Following requested layout as per assignment guide	10%
Executive Summary	10%
Description and explanation of your chosen key priority. Marks will be awarded for innovation in the priority.	13%
The questions the dashboard will be designed to provide insights for including indicating which levels of management decision making (Strategic, Tactical, Operational) each question will allow for. Marks will be awarded for innovation in question design.	17%
Data and data sources	15%
Sample dashboard	15%
Potential challenges and issues with building the dashboard	10%
Referencing: UniSA guidelines and Quality & recency (See below)	10%
Too short or too long - 1 mark lost for every 200 words over or under allowable word limit	
Late marks – 10% of total mark awarded per working day or part thereof	

The Four Steps to Building a Dashboard

Building a working dashboard comes from completing 5 major steps:

1. Choosing an organisation of interest;
2. Identifying a priority for that organisation;
3. Identifying questions that support this priority by showing insight (not a final answer);
4. Obtaining data to visualise these insights, including dealing with data quality issues and joining the data; and
5. Building visualisations of the data to provide insights into the priority.

In Assignment Part 1 you will need to complete Steps 1, 2 and 3.

Step 4 involves data so you will start this step here in Assignment Part 1 and complete this data step in Assignment Part 2, when you build the working dashboard (Step 5).

A visual summary of the dashboard-building process is in Figure 1. Steps 1 + 2 are your starting point for any organisation. The supporting questions, which you will produce in Step 3 of Assignment Part 1, are designed to shed **insight** into the priority – **not** provide a definitive answer. In this part of the assignment you will write questions you believe support the organisation and its priority, with these questions supported in terms of available data.

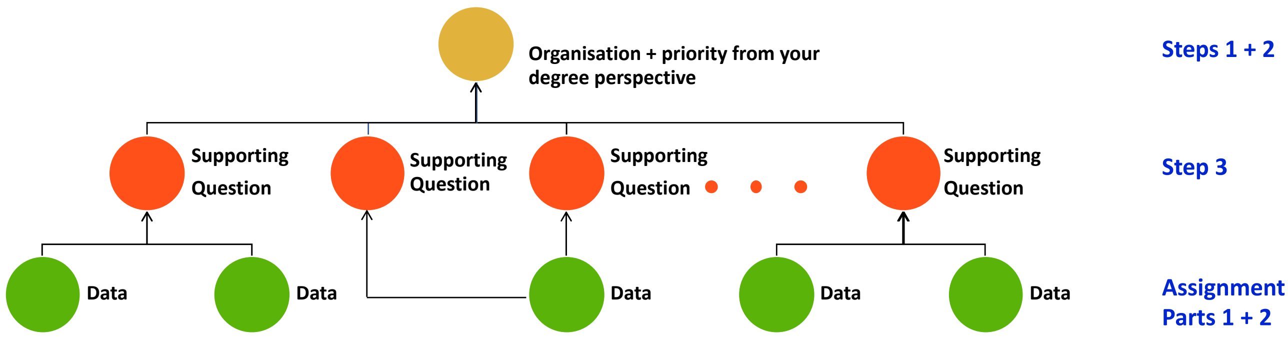


Figure 1: the inter-relationship between the components needed to build a working dashboard

Guidance for each of these steps for Assignment Part 1 is given in the following sections.

Steps 1 + 2: Choosing an Organisation + a Priority

Steps 1 + 2 from Figure 1 need to be completed as follows:

Step 1: Choose an organisation

Choose **one** of the following organisations for your assignment – you will focus on your chosen organisation in Parts 1 & 2 so pick something you like!

- Adelaide Airport
- Government of South Australia, or an individual government department
- Ray White Property Management
- Penfolds (wine producer)
- Trivago
- Hutt St Centre (homeless centre)
- Bupa Health Insurance
- Jamie's Italian Restaurants
- Toll Priority

Step 2: Identify a priority from your enrolled program perspective

Identify a single key priority, that would be of interest to your chosen organisation and is relevant to your enrolled degree program.

How to identify a priority?

You have two choices: (1) Come up with one yourself; or (2) look up publicly available reports produced by your chosen organisation and identify a priority from their reports that is most relevant to your degree.

An alternative way to think about this is if you got a job at your chosen organisation based on your chosen degree and were asked to work on one of the priorities, which one would make the most of your qualification/be a best fit to your skills?

This priority will be the focus of both Parts 1 and 2 of your assignment.

As you will need to build a working dashboard in Part 2 you have to think ahead now and identify a priority in an area where you can obtain enough data from different sources to be able to construct your dashboard. Before you panic we have a *Finding Data – HELP!!!!* section on page 9.

Once you have completed these two steps move on to Step 3.

The next page shows an example of a completed Step 1 + Step 2

before you start Step 3.

Example of Step 1 + Step 2

Example Organisation: Samsung. One of Samsung's competitive advantages is manufacturing high-quality smartphones and dispatching them to millions of customers across the globe. Some example priorities from different discipline perspectives are:

Accounting perspective:

- Dealing with challenges of variability of cost of raw materials in different countries
- Deciding on the optimal set of transport options for each region taking into account cost, reliability and corporate environmental goals

HR perspective:

- minimising worker injury
- ensuring quality of staff recruitment and training across a wide range of production centres

Law perspective:

- making sure production aligns with regulations specific to each region

Management perspective:

- ensuring alignment with delivery timelines across a wide range of geographic locations;
- managing multiple language groups

Marketing perspective:

- how to early detect and respond to bad news about manufacturing faults;
- how to capture first impressions of customers when they collect their new smartphone

IT perspective:

- making sure the IT systems that support distribution are working efficiently (eg: all the servers distributed around the globe are operating as expected and there is enough data storage)
- detecting possible breaches and cyber security incidents

Supply chain perspective:

- ensuring sustainable local distribution networks
- being prepared for breaks in the supply chain (eg: choosing alternative partners)

Step 3: Identifying Supporting Questions for your Chosen Priority

Now that you have completed Steps 1 + Step 2 from Figure 1, in Step 3 it's time to come up with questions you will pose in Assignment Part 1 and will ultimately give insight into this priority in Part 2, with real data in your working dashboard. In workshops you've seen the process we use with our weekly Case Studies to produce supportive questions of an organisation's priority.

Step 3: For Assignment Part 1 you need to come up with 5 questions the proposed dashboard will be able to deliver insights for that the CEO can't answer now or can't answer easily (otherwise why would you get the job?!?).

Question Self check: by providing insights to your proposed questions, will the CEO/Owner be able to use the dashboard to understand and plan for the priority?

When you construct your questions, remember you will use these questions to produce the visualisations in your dashboard in Part 2 – so think ahead and develop questions for which you can obtain enough data from different sources to be able to construct your dashboard. Again if you feel data panic rising remember - we have a *Finding Data – HELP!!!!* section right below ☺ Phew! ☺

Finding Data – HELP!!!!

In Part 1 you need to include **potential** data sources you will use in Part 2 when you finally build the working dashboard. Remember – you are **not** building the dashboard in Part 1 but you **do** need to think about the data in Part 1 and identify reliable data sources to support your proposal that you could use in Part 2 when you build the working dashboard. For example, imagine you're an architect — you work out the type of house you will build and what materials you would need beforehand. Thinking about potential data sources is like identifying the building materials in this case.

What happens if your data sources aren't useful in Part 2?

When you build the dashboard in Part 2 it is OK if you have added to or changed some of the data sources. You may find once you get into the detail that the data isn't what you expected.

Having to change the data for Part 2 will **not** result in loss of marks – we have guidelines on how to address this issue in Part 2. Revising plans due to data availability is how the business world works (unfortunately) and we will accommodate for this when we mark. However, the priority must remain the same – see more details below.

We strongly encourage you to make a genuine attempt to identify useful data sources from now to make your life less stressful as you get close to Week 9.

Allow enough time to find and prepare the data – don't leave this to the last minute! We will also practice finding data in the Workshops and Practicals.

Do not pay for any data.

Do not contact the organisation and ask for data.

Finding data about your organisation is **very similar to finding references** for your report. It is also a useful skill to develop and as a professional you will have to do it often in your career. It can be challenging to find good quality and reliable data. Done well, you can bring new insight and value to especially if it is not already available from internal systems (eg: like benchmarking info).

Importantly, think about the questions you want to answer with your dashboard because this will focus your search (too much data is also a problem!). Sometimes data can also help us think of questions too, so it's a balancing act we all learn to achieve with practice ☺

Tip: include the word 'statistics' in your search eg: 'Australian airline statistics'

Potential sources of data include - but are not limited to –

- Publicly listed companies (those that have shares and are on a stock exchange) will often have an investor page.
- Many organisations report to government bodies like regulators (ASIC, ombudsmen, etc.). Look for annual reports (which may be on the investor page if they have one)
- UniSA Company and Industry Guide — IbisWorld and Company360 are particularly good resources https://guides.library.unisa.edu.au/companyinfo
- The Australian Bureau of Statistics are useful (eg: Australian Bureau of Statistics http://www.abs.gov.au, SA Government http://data.sa.gov.au/, Australian Government http://data.gov.au/) and are also very good quality sources of data.
- European equivalents of the Australian government sites including EU Open Data Portal http://data.europa.eu/euodp/en/data/
- US equivalents of the Australian government sites including https://www.data.gov/ and the US Census Bureau https://www.census.gov/data.html
- UN Data http://data.un.org/
- Open Data Kit https://opendatakit.org/
- World Health Organisation https://www.who.int/gho/database/en/
- UNICEF https://data.unicef.org/
- Federations, associations and industry bodies (like the Australian Bankers Association if you were studying a bank) are another source. Often the data will be confidential and you can't obtain it - so consider using data related to that industry/sector. One source that is open is the World Bank Open Data https://data.worldbank.org/
- Kaggle https://www.kaggle.com/datasets
- A link to around 100+ data sites but choose data that appears to come from **reliable** sources https://www.columnfivemedia.com/100-best-free-data-sources-infographic
- Google dataset search https://toolbox.google.com/datasetsearch

Sources of data to avoid

- **Wikipedia, Wikidata and bloggers who are not experts in their fields!**

Written Proposal for Steps 1, 2 + 3: Presentation + Structure

For the purpose of this assignment, you can assume your client (the reader) knows a little about BI.

You should also assume they don't have any BI dashboards around the priority that you've chosen but obviously would have data.

Don't spend time researching what they currently have in BI dashboards – it's not a research assignment, it's a providing-a-new-solution assignment.

Since this is a proposal for a business audience, it should be presented in a professional format making it easy to read. The use of diagrams and graphs, particularly to show figures, will earn more marks. All figures and tables should be captioned and referenced by label in text (e.g. Table 1 contains …, Figure 1 shows …). An efficient layout is important but don't spend too much time on making it look good and not enough time on the content. Microsoft Word has many sample templates that can be used.

Using bullet points are OK occasionally but you'll need sentences for each point (i.e. just a bullet point list with no explanation isn't suitable).

Do not write in the first person ("I")

Important: Whenever you use technical terms, explain them using non-technical wording. Loss of marks will apply here.

Word Limit

2000 words +/- 10% (1800 – 2200 words part of allowable word limit)

Marks will be deducted if the assignment is too short or too long. Keeping to a word limit requires a focus on what the reader most needs to know.

Included in the word count:

- The body of the assignment:
- Headings
- Direct quotes (you will gain more marks by writing using your own words then using lots of direct quotes)
- Executive Summary
- Introduction
- Diagram headings and captions

Excluded from the word count:

- Title page
- Table of contents
- References
- Footnotes
- Text within diagrams (headings and captions contribute to the word limit)

The proposal should contain the sections below covering the points described:

Section	Explanation
Assignment Cover Page	• Standard UniSA cover page
Title Page	• See Microsoft Word templates for examples.
Table of Contents	• Section headings with page numbers. • You can create this manually or to save time make use of the Heading Styles and an automatic Table of Contents in Microsoft Word (in the References menu).
Executive Summary	• Executive Summaries are designed for busy readers who may not have time to read a whole report. • It is a summary of the whole assignment including questions your dashboard will give insights for. • Word limit: **strictly** no more than 200 words.
Introduction	• Explanation of what you will be covering in the proposal.
Overview of Selected Key Priority	• To demonstrate to your intended audience (the CEO/Owner) that you understand their organisation and their needs, provide an overview of your chosen priority • This overview should be enough for someone who doesn't know the organisation or the priority at all to have a new understanding by the end of reading – so if what you have written is not much more than what most people would know about the organisation and the priority you haven't delved into it enough. The priority should be (understood) and explained well enough so that once the dashboard provides insights to the questions (next section) it will enable the CEO/Owner to help them understand and plan for this priority.
Questions to be Answered by Dashboard	• Following the process we are using with the Workshop Case Studies, **come up with 5 questions** supporting the priority that the proposed dashboard will be able to answer. Remember the CEO/Owner can't answer these questions now or can't answer easily (because this is the value you would be providing). • Check: by providing insights into these questions, will the CEO/Owner be able to help them understand and plan for the Priority?

Section	Explanation

Data and Data Sources (which data you aim to use)	• Provide a table or diagram outlining to the CEO/Owner know which data you plan to use in you dashboard, including:
	  ○ Data item
	  ○ Data source
	  ○ Description (if necessary)
	
	• You **<u>must identify at least 3 data sources</u> that are publicly available** so you can use them in your dashboard.
	• Use **reliable, good quality** data sources.
	• Tip: use fewer data sources well, rather than more data sources not well
	• Check: will the data you propose allow you to answer the questions you have come up with?
	
	Data Note: when you build the dashboard (Part 2) it is OK if you have added to or changed some of the data sources. You may find once you get into the detail that the data isn't what you expected.
	
	Having to change the data for Part 2 will **<u>not</u>** result in loss of marks. Revising concepts due to data availability is how the business world works (unfortunately) and we will accommodate for this when we mark.

Sample Dashboard Screenshot	• Search on the web for images of a dashboard to include in the proposal to give the CEO/Owner an idea of what you would be building. • Alternatively, mock one up using a hand drawing/Word/Powerpoint or any other graphics software you like to include in the proposal • The sample dashboard should make use of a **visualisation** other than standard bar charts. • Quality of image is good and follows good design principles • Also include some captions and explanation of the dashboard • **<u>Do not</u>** build the dashboard to include here. You'll do this in Part 2. • The purpose of this section is to further convince the CEO/Owner of the value of the dashboard, **so demonstrate your understanding of good and bad dashboard design as well.**

Section	Explanation
Potential Challenges and Issues	• Explain to the CEO/Owner the potential challenges and issues you may encounter in building the dashboard such as ○ Data quality ○ Ethics ○ Consent ○ Data availability and reliability • The Workshop Case Studies will include examples of this
Conclusion/Summary	• A wrap up of the key points and why and how your proposed dashboard would be a good solution for them to pursue. • By the end of the proposal the CEO/Owner should have also gained an understanding of BI and the relevance and usefulness of BI.
Reference List	• Follow UniSA standards for all referencing including Harvard style of referencing. • Use references from at most the last 5 years. • Further information given in the Referencing Guide below and the references marking criteria will be taken from the Referencing Guide section right below ☺

Referencing Guide

Referencing is important for assignments to:

1. expand your knowledge of the assignment topic;
2. provide evidence to the claims you make;
3. demonstrate you know what you are talking about for a convincing proposal; and
4. provide other examples or case studies.

The general rule is if you are using information or data that is not of your own creation then you need to acknowledge it. Not only is this for academic integrity but to add weight to your recommendations – to show they are just not opinions.

This includes the screenshots, data you use and points taken from the presentations. See here for examples of referencing, including how to reference a data source (also called a data set): www.unisa.edu.au/referencing

Avoid citing Workshop material because it is not an official publication.

How many references?

A minimum of 3 references is required. Just adding as many references as possible without using them in the assignment is not acceptable and will not earn marks. It also depends on how many points you are making. Generally, more is better because you have used more sources to understand the topic and reinforce your points. We want **your** understanding on the topic, not copied words from experts – this only demonstrates that you can research well, not apply your learning.

Reference quality

The type (quality) of references makes a difference and this is considered in the marks as well. Feel free to use the readers and links from the lectures and Course Outline.

Avoid marketing/vendor sites and general websites - the quality is not assured because anyone can get a website up regardless of their expertise and marketing material from software companies is usually biased. The exception would be news sites when you want to report an event or where they are the sole vendor of a technology.

Rather than find references by Googling them — try the library catalogue instead.

Reference recency

Since Business Intelligence is a fast-changing area use references from the last 5 years. Consider if you were a senior manager considering a review or proposal – would you trust a report that is using information from 6 years ago?
The exception is if the reference is one of the supplied readings/viewings for the course.

In the case you are not able to find recent data then explain this (i.e. the data source you've found might be the best available even if it's old).

Referencing style

Use the *Harvard style* of referencing in-text citations. Refer to section on 'Harvard Rules' and 'Harvard Guide' here http://www.unisa.edu.au/referencing

The references for data used can be included in the references section.

References must be available when the assignment is being marked.

Assignment Part 2
Your Working Dashboard

Due 22/10/2019 by 10:00am

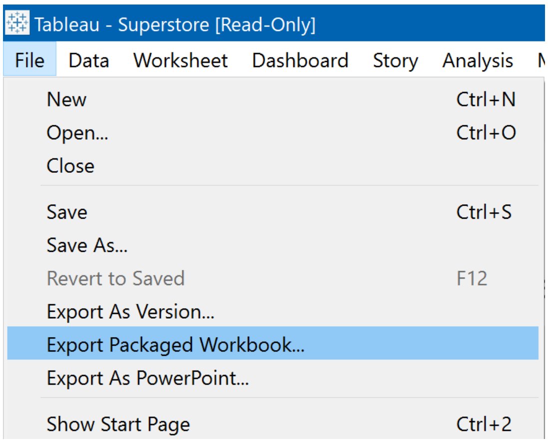
Assignment Part 2 is worth 15% of your final grade.

Submission via LearnOnline
Submit a packaged Tableau .twbx file and a Microsoft Word document (.docx) ONLY.
zip and PDF files will not be accepted.

If you have problems submitting, keep proof of your submission attempt and email me at *belinda.chiera@unisa.edu.au*

Part 2 Submission Preparation Instructions:

When you are ready to submit you will **upload two files**: a Microsoft Word .docx file and a working Tableau dashboard, submitted as a packaged Tableau file (.twbx). You have practiced how to create .twbx files in your practicals using the File menu in Tableau:



A .twbx file combines your data and dashboard into one file and we need this for assessment and marking.

Warning! If the marker cannot open the dashboard in Tableau the assignment you will be given 0 marks for this part of the assignment – you are not able to re-submit your work.

- **Once submitted do not edit any electronic files of your work.**
- **Assignments submitted late, without an extension being granted, will attract a penalty of 10 marks per each working day or any part thereof beyond the due date and time.** Please refer to the Course Outline for the course policy regarding extensions.
- **An incorrectly or partially filled cover sheet will result in lost marks and delays in the marking and return of your assignment.**

Assignment Part 2 Marking criteria

Area	Weighting
Dashboard Requirements	
A mixture of visualisations: • At least 4 and no more than 6 different visualisations • At least one visualisation must be a non-standard Excel visualisation (e.g. a geographical map or bubble diagram)	25%
Quality of dashboard: layout and good design – taking into account readability, variable type (eg. use of retinal variables), order of visualisations, instructional text. What is the story you are telling with your visualisations?	20%
Questions able to be answered	20%
Interactive features – allowing the CEO to use filters/slidebars or other means to change the data	10%
Correct linking of at least two data sources	10%
Written Submission	
Instructions, including questions and explanation for changes if necessary (maximum 350 words)	15%
Loss of 10 marks for incorrect file type submitted *Late marks – 10% of total mark awarded per working day*	

Part 2 will be the creation of the dashboard you proposed in Part 1. The dashboard needs to be built using Tableau with actual data. Your dashboard should be accompanied by a brief instruction (maximum 350 words) on how the dashboard should be operated to deliver insight into the questions you identified in Part 1. See below for what to do if you can't find data and also for guidelines on how to write the instruction document.

Need Dashboard Inspiration?

In Week 2 we gave you a copy of the Tableau whitepaper "Which chart or graph is right for you?" – you can download it from the course website (Workshops page, Week 2).

Tableau also have a massive visualisation gallery at https://public.tableau.com/en-us/gallery/?tab=viz-of-the-day&type=viz-of-the-day

Data – You Can't Find Data to Answer Your Questions?

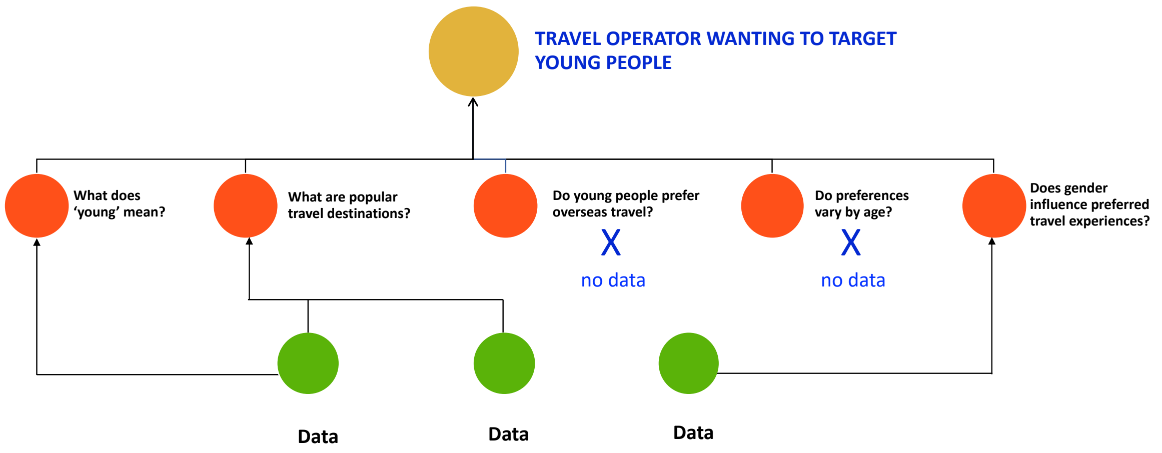
An unfortunate fact of any analysis is that we aren't always able to find data to support the questions we need to answer. In the real-world, if you won the job you might still find the organisation does not have the data you need or in the expected format and. you will need to revise your questions.

You might find you've just run into the same problem – you have the best questions ever in Part 1 but the real-world has let you down because you can't find data. Figures 2 (a) and (b) show an example of this situation and what you will need to do if this happens to you. **Remember, we will not deduct marks providing you explain this change in your written submission for Part 2. So no stress, just hit those data engines one more time ☺**

Priority: We have a clear priority that has a focus but is broad

Questions: We can come up with any questions that relate to/support providing insight into this priority.

Data: When we look at the data, some of the questions can be answered, some can't. What do we do?

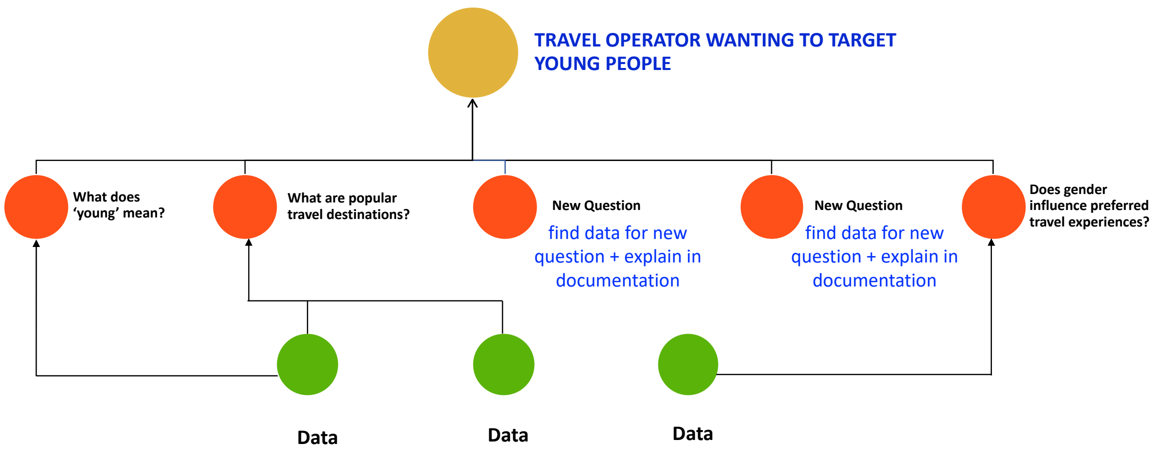


(a)

Priority: Stays the same

Questions: Keep questions we can answer, come up with new questions that support the priority

Data: Add more sources and/or use what we have



(b)

Figure 2: (a) no data to support questions and (b) the approach to take when/if this happens.

New Questions: think broadly around your chosen organisation for questions + data sets e.g.

- Qantas' performance is impacted by tourism, exchange rate, fuel prices, visa conditions, other airlines and terrorism;
- A physiotherapy practice you would look for health related data and aging population. Aging population is a hot topic especially in South Australia; and
- Demographic information on which age groups use mobile phones.

These are examples of different types of data to look for. The importance is the relevance to the question and the reliability of the data to answer the question - not so much the volume of data!

Working Dashboard Instructions for Assignment Part 2

Your working dashboard should be a .twbx file – we learned how to produce those in pracs! **The visual specifications for your working dashboard are given in the marking criteria at the start of the Assignment Part 2 section of this guide.**

Written Dashboard Instructions for Assignment Part 2: Presentation + Structure

Word Limit

Strict maximum of 350 words.

These instructions should be written in Microsoft Word .docx format **only**.

Marks will be deducted if the instructions are over this word limit. Keeping to a word limit requires a focus on what the reader most needs to know. The proposal should contain the sections below covering the points described:

Section	Explanation
Title Page	• The title page is separate to the assignment cover page • See Microsoft Word templates for examples.
Introduction	• A very brief statement introducing the Priority the dashboard supports.
Dashboard Instructions	• Explain which dashboard visual answers which Priority Question(s) and the insight(s) gained. • Document any issues with finding data and indicate whether questions have been dropped or replaced – if replaced, indicate the relevant visual to the new question(s). • Word limit: strictly no more than 350 words.
Reference(s)	• You must include the sources of data you used – can either be on the dashboard itself (if you have the space) or in the Dashboard Instructions • These are **excluded** from the word count. • If you do include references, refer to the referencing guide from Assignment Part 1 for formatting.