



**UNIVERSITY OF ALBERTA**  
ALBERTA SCHOOL OF BUSINESS

## **Department of Accounting and Business Analytics**

BTM 211

Management Information Systems

BA Assignment – Winter 2025

**Tableau**

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# Case Study: Alberta Aerospace Museum



## Background

Established in 2018, the Alberta Aerospace Museum (AAM) has become the standard for aerospace education in Canada. While its priority lies in showcasing Canada's contribution to space exploration, historic pieces from some of the most legendary space exploration missions can be seen at this state-of-the-art institution.

Located on the outskirts of Edmonton, AAM is complete with a modern education center and its most impressive addition, a vast hangar that houses larger aircraft and ongoing restoration projects. AAM's curator, Christina Hadfield, prides herself on ensuring that the museum always offers top-of-the-line interactive exhibits that offer educational fun for everyone!

## Problem

Christina Hadfield has expressed interest in using business analytic software to visualize her data. She needs five (5) visuals to express her artifact type, mission, exhibit, museum, and employee data. She also wants you to include another visual of your choice that will provide AAM with additional insights into their business operations.

# Requirements

Working **individually**, use Tableau to build a data analytics report using a variety of visualizations to answer the questions Christina Hadfield wants answered.

## 1. Download and Extract Data ZIP File

Extract the data ZIP file and save all nine (9) CSV files into a folder on your computer.

Data ZIP File: **AlbertaAerospaceMuseum.zip**

## 2. Importing Data into Tableau (7 marks)

Using Tableau, connect to the CSV files by uploading them as **text** files

Once you have connected the nine tables, make sure all relationships have been created according to the BA\_Assignment\_AAM\_Tableau\_Relationships PowerPoint slide deck. (Published in eClass).(1)

**Note:** Ensure your relationships match those in the slides. Tableau is case-sensitive. If you have trouble connecting tables, ensure that the data in the field that is connecting the tables is in the same case.

**Note:** You may have to manually create the relationship between Museum and LoanID because the names do not match exactly (MuseumID is the same as LoaneeMuseumID but Tableau doesn't recognize that).

Save your Tableau workbook as a **Packaged Workbook (.twbx)** .(5)

Arrange the Canvas view of the tables and relationships in Tableau so that all tables and relationships are viewable on the screen and take a screenshot. You may need to zoom out to capture everything.

Paste your screenshot below (1).

Tableau Desktop Public Edition

Buy Tableau

Exhibit+

Filters 0 | Add

Connections Add

Exhibit  
Text file

Files

☐ Use Data Interpreter  
Data Interpreter might be able to clean your Text file workbook.

- Artifact.csv
- ArtifactType.csv
- Employee.csv
- Exhibit.csv
- Loan.csv
- LoanItem.csv
- Mission.csv
- Museum.csv
- Visitor.csv

New Union

New Table Extension

Exhibit.csv 7 fields 20 rows

20 rows

#	Exhibit.csv	#	Exhibit.csv	#	Exhibit.csv	Abc	Exhibit.csv	#	Exhibit.csv	#	Exhibit.csv	Abc	Exhibit.c
Exhibit ID	Employee ID	Visitor ID	Exhibit Description	Sq Ft Qty	Budget	Tempo							
1	144	480	The History of Flight	8,000	50,000	N							
2	130	223	Spacesuits of the Apollo Era	600	11,000	Y							
3	125	244	Moon Rock Chronicals	2,000	63,000	N							
4	123	604	Mission Control: Apollo Era	1,900	57,000	Y							
5	148	190	The Surface of Mars	3,000	70,000	N							
6	148	235	Voyager: Beyond Our Solar S...	1,200	55,000	Y							
7	123	604	Rocket Evolution	900	16,000	Y							
8	125	552	Mars Science Lab	1,300	14,000	Y							
9	144	125	To Infinity and Beyond	4,500	90,000	N							
10	130	645	Aviation in Canada	800	12,500	Y							

Data Source Sheet 1

## 4. ArtifactType Visualization (12 marks)

### ArtifactType Viz (5 marks)

Rename sheet 1 to “**ArtifactType**”

Use the data tables **ArtifactType** and **Artifact** to create a **pie chart** visualization of the number of artifacts in each artifact type.

Your visualization should include the following in marks:

- ArtifactTypeCode (colour)
- Count of Artifact (angle)
- ArtifactType Description (label)

### Dashboard (7 marks)

Create a new **dashboard** and rename it to “**ArtifactType Chart**”

Add the sheet **ArtifactType** to the dashboard. Use the visualization to answer the following questions:

**1. What artifact type(s) do they source the most? (1)**

Aircrafts are the most sourced artifact types, with a count of 26.

**2. What artifact type(s) do they source the least? (1)**

Paper and Sample are the least sourced artifact types, with a count of 4 each.

**3. How can AAM use this information? (5)**

AAM can use this information in several ways – resource allocation, exhibit planning, development strategy, and loaning decisions.

Resources like more storage space, aircraft conservation and maintenance, and staff expertise can be properly allocated for most sourced artifacts. Looking at the source trends, AAM can use this information to prioritize artifact types when considering loans or new acquisitions. Most sourced artifacts could be featured prominently to attract visitors, where least sourced artifacts can be used for smaller exhibits or educational purposes. Low sourcing of paper and sample artifacts may suggest increasing focus on them and refine collection strategy.

## 5. Mission Visualization (12 marks)

### Mission Viz (5 marks)

Create a new sheet and rename it to “**Mission**”

Use the **Mission** and **Artifact** tables to create a **bar chart**. This visualization should include:

- Mission Name (x-axis)
- A count of the Artifacts (y-axis)

### Dashboard (7 marks)

Create a new **dashboard** and rename it to “**Mission Chart**”

Add the sheet **Mission** to the dashboard. Use this dashboard to answer the following questions:

**1. Which mission(s) have the most artifacts? (1)**

The mission NULL (mission name is not specified) has the most artifacts, i.e., 32 artifacts. Followed by NULL, Apollo Program has 16 artifacts.

**2. Which mission(s) have the least artifacts that is not NULL? (1)**

Mission Rosetta, New Horizons, Lunar Reconnaissance Orbiter and Juno are the missions that have the least artifacts, i.e., 1 artifact each.

**3. How can AAM use this information? (5)**

This information can be used to allocate resources effectively and to ensure proper preservation of valuable artifacts. Missions having the most artifacts can be utilized for more engaging exhibits, attracting more visitors and improving their experience. With this information, AAM can prioritize missions having lesser number of artifacts by expanding their collection for those missions.



## 6. Exhibit Viz (12 marks)

### Exhibit Viz (5 marks)

Create a new sheet and rename it to “**Exhibit**”.

Use the **Exhibit** and **Artifact** tables to create a **table**. This visualization should include:

- Exhibit Description (rows)
- Count of Artifacts (marks, text, sorted by DESC)

### Dashboard (7 marks)

Create a new **dashboard** and rename it to “**Exhibit Table**”

Add the sheets **Exhibit** to the dashboard. Use this dashboard to answer the following questions:

**4. Which exhibit(s) have the most artifacts? (1)**

‘World War 2: How It Changed Aviation’ has the most artifacts, i.e., 12 artifacts.

**5. Which exhibit(s) have the least artifacts? (1)**

‘The Forgotten Planet: Pluto and it’s Moons’, ‘Supersonic Flight’, ‘Rocket Evaluation’, ‘Eye of the Red Storm: Jupiter’, ‘Comets and Their Composition’ have the least artifacts i.e., 1 artifact each.

‘The International Space Station’ and ‘Rockets From Around the World’ have no artifacts.

**6. How can AAM use this information? (5)**

Exhibits having many artifacts will likely attract more visitors. Looking at this information, AAM can expand its collection of artifacts for exhibits having least artifacts and attract even more visitors. A high artifact count would require more space, conservation and maintenance, AAM can use this information to allocate such resources accordingly. If certain exhibits lack artifacts, AAM must ensure that the story of that exhibit is being narrated effectively. AAM can prioritize acquisition of artifacts fitting into popular exhibit themes.

## 7. Museum Location Visualization (20 marks)

### Map Viz (5 marks)

Create a new sheet and rename it to “**Museum: Map**”.

Using the **Museum** table, create a map visualization.

Use **Longitude (generated)** in the **columns** and **Latitude (generated)** in the **rows**.

Use **Country** in **marks** (colour).

### Table Viz (5 marks)

Create a new sheet and rename it to “**Museum: Table**”

Using **Country** (rows) and **Count of Museum** (marks, label), create a table.

### Dashboard (10 marks)

Create a new **dashboard** and rename it to “**Museum Location**”

Add the sheets **Museum: Map** and **Museum: Table** to the dashboard. Use this dashboard to answer the following questions:

#### 1. What conclusions can AAM draw from this visualization? (5)

Important conclusions about geographic distribution of museums can be drawn. The highest number of museums is 5, located in the United States. The least number of museums is 1, located in Australia and Germany. This information can be used by AAM in identifying potential areas of expansion. AAM can consider expansion to countries/areas with a smaller number of museums. Areas having less museums would require more marketing and outreach. AAM could use this information to analyze what areas would require more resource allocation. Since the United States has more museums, AAM could conduct loan and transactions from them, and collaborate.

#### 2. How does the table visualization enhance what AAM has learned from the map visualization? (5)

- A table can provide detailed numerical data, which could be difficult to represent on a map visualization.
- A table makes it easier to interpret and compare data across different countries.
- Tables can make filtering and sorting of data easier compared to a map visualization.
- Other information such as museum count, visitor count, etc., would be difficult to represent on a map visualization.
- Maps are good for showing trends and displaying locations, but a table is good at displaying exact data and values.

## 8. Employee Visualization (15 marks)

### Employee Viz (6 marks)

Create a new sheet and rename it to “**Employee**”

Use the **Employee** data table to create a **horizontal bar chart** that will answer the questions.

Your visualization should include the following:

- A new calculated field called **Full Name** that includes employee first name and last name as the **rows**
- A new calculated field called **Annual Salary** that includes **Salary \* 12** as the **columns**
- A new calculated field called **Years Employed** as the **Tooltips** in **marks** using the expression below:  
**DATEDIFF('year',Date([HireDate]),TODAY())**
- **Education** in **marks, label**
- Your bar chart should be ordered by **DESC**.

### Dashboard (9 marks)

Create a new **dashboard** and rename it to “**Employee Chart**”

Add the sheet **Employee** to the dashboard. Use this dashboard to answer the following questions:

1. **Is there a correlation between the number of years an employee has worked for AAM and their annual salary? (2)**  
Looking at the Employee Hire Date vs. Annual Salary visualization, we can observe that there is a very weak correlation between the number of years an employee has worked and their annual salary. There are staff member who have joined later, and earn a higher salary compared to those joined earlier.
2. **Is there a correlation between the education an employee has and their annual salary? (2)**  
Yes, there is a positive correlation between education of an employee and their annual salary. Christina who holds a Doctorate earns the highest compared to those who hold a high school diploma. We can observe this trend in the Employee Visualization.
3. **What conclusion can AAM draw from this visualization? (5)**  
From this visualization we can conclude that having a higher education level leads to a higher annual salary. We can identify employees with long tenures and their occupation at AAM.

## 8. Bells and Whistles (10 marks)

Create a new sheet and rename it to **“Bells and Whistles”**

You decide to proactively answer a question with a visualization for AAM that Christina has not asked. This will help you illustrate the “bells and whistles” of Tableau and explain how Tableau can be used to answer other questions using information hidden in the data.

Choose one or more of the nine (9) tables that are in the model and create a visualization and a dashboard.

**1. Identify the table(s) you selected: (1)**

Museum and Visitor

**2. Write a question that can be answered by your visualization: (2)**

What museums across the world have the most positive and most negative feedback?

**3. Describe how AAM can use this information: (7)**

- Identifying museums with the most positive feedback would help AAM understand their practices and replicate them. AAM can get inspired by them and improve its visitor experiences.
- This information can help in strategic planning. Knowing the likes and dislikes of audience in different countries can help AAM when expanding to various locations.
- Looking at negative feedback, it can help museums in identifying areas of improvement and enhancing visitor experience.
- Positive feedback could be used in marketing and outreach, which would potentially attract even more visitors.

## 9. Professional Layout, Spelling, and Grammar (10 marks)

You have creative freedom to create additional content for your report as required

In the professional business world, the look and appearance of what you publish is very important. The aesthetic design of the pages in your final report will be considered as part of the assessment of your work. You are encouraged to design the pages in your report with professional and appealing layouts.

**All visualizations should have a business professional title**

**Make sure that every visualization has an accompanying text box stating the question it intends to answer**

**All pages of your report should have no spelling or grammatical errors.**

# Submission Instructions (Total 100 marks)

Before the submission deadline, you must submit electronically the following:

- ZIP the folder from Q1 which should contain the following files:
  - One (1) completed BA Requirements document with your answers and screenshots
  - One (1) .twbx report
  - ~~One (1) Microsoft PowerPoint (.pptx) report~~

**Note:** Please ensure that you are submitting the correct, completed files as any incorrect submissions (i.e. wrong file attached, blank submissions, etc.) may be penalized.

File name convention: **LastName\_FirstName\_LectureSection**

# Cheating and Plagiarism

All work is to be done individually. Do not copy, in whole or in part, the work of others, including paper printouts, electronic files or computer programs. Do not use the work of others as a starting point and then modify it. All work submitted under your name must be yours and yours alone.

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student<sup>1</sup> and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

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