**EX1: Identifying Mean (Average) Conditions**

1. Collect the data and add it to Table 5.1.

Table 5.1 Vancouver Harbour and Okanagan Centre Maximum Temperatures and Total Precipitation for June 21, 1991 - 2020

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Vancouver Harbour** | **Vancouver Harbour** | **Okanagan Centre** | **Okanagan Centre** |
| **Year** | Maximum Temperature (⁰C) | Total Precipitation  (mm) | Maximum Temperature (⁰C) | Total Precipitation  (mm) |
| 2020 | 20.7 | 0.0 | 27.0 | 0.0 |
| 2019 | 22.5 | 0.0 | - | - |
| 2018 | 22.0 | 0.0 |  |  |
| 2017 | 19.6 | 0.0 |  |  |
| 2016 | 18.5 | 15.6 |  |  |
| 2015 | 24.8 | 0.0 |  |  |
| 2014 | 19.7 | - |  |  |
| 2013 | 18.1 | 1.0 |  |  |
| 2012 | 21.0 | 0.0 |  |  |
| 2011 | - | - |  |  |
| 2010 | 16.3 | - |  |  |
| 2009 | 18.3 | 0.2 |  |  |
| 2008 | 20.7 | 0.0 |  |  |
| 2007 | 22.1 | 0.2 |  |  |
| 2006 | 20.4 | - |  |  |
| 2005 | 23.4 | 6.0 |  |  |
| 2004 | 27.8 | 0.0 |  |  |
| 2003 | 17.7 | - |  |  |
| 2002 | 25.9 | 0.0 |  |  |
| 2001 | 24.9 | 0.0 |  |  |
| 2000 | 21.5 | 0.0 |  |  |
| 1999 | 17.9 | 2.8 |  |  |
| 1998 | 23.5 | 0.2 |  |  |
| 1997 | 16.6 | 21.8 |  |  |
| 1996 | 22.8 | 0.0 |  |  |
| 1995 | 20.1 | 0.0 |  |  |
| 1994 | 23.7 | 0.0 |  |  |
| 1993 | 16.3 | 3.2 |  |  |
| 1992 | 28.4 | 0.0 |  |  |
| 1991 | 16.1 | 0.2 |  |  |
| **Mean** |  |  |  |  |

1. Calculate the mean value for each variable at both locations, and fill in the bottom row of Table 5.1.
2. What are these numbers telling you about whether or not it is a good idea to hold the wedding at Vancouver Harbour vs. Okanagan Centre? (1 - 2 sentences)

**EX2: Examining the Probability of Rain or Extreme Temperatures**

1. Based on what has happened over the past 30 years, what is the probability of it raining on June 21 at
   1. Vancouver Harbour?
   2. Okanagan Centre?
2. Based on what has happened over the past 30 years on June 21, what is the probability of temperatures
   1. exceeding 30 ⁰C at Vancouver Harbour?
   2. being less than 20 ⁰C at Vancouver Harbour?
   3. exceeding 30 ⁰C at Okanagan Centre?
   4. being less than 20 ⁰C at Okanagan Centre?
3. Based on your responses to the above questions, what are your conclusions about where to hold the wedding? (2 - 4 sentences)

**EX3: Have Precipitation and Temperature Changed Over the Past 30 Years?**

1. Paste your bar graph of June precipitation at Vancouver Harbour for the period 1991 - 2020 here:
2. Paste your line graph of June mean daily maximum temperature in Vancouver for the period 1991- 2020 here:
3. Are there any trends here? Your opinion will be a little subjective, but try to be as objective as possible. There are world-wide datasets that show warming trends. Explain your results in this world-wide context. (2 - 4 sentences)
4. In the context of climate change, is the average for the past 30 years a good way to estimate the probability of what will happen next year? On the basis of climate trends you identified, do you have any reason to adjust your thinking about the probability of rain or extreme temperatures in Vancouver? (2 - 4 sentences)

**Reflection Questions**

1. Now that you have some experience calculating means, can you think of another use for this new skill of yours?
   1. Describe a scenario where calculating the mean could help you make a decision in **your** life. Include a description of the data you would need to collect to help inform your decision.
   2. How long would you need to collect the data for in order for the mean to be representative? Explain your reasoning.
2. In EX3 you assessed trends in climate data based on one relatively small set of data. What type of data would you need to see larger trends?