LET’S GET VISUAL!
TODAY’S Goals

- Understand the power of visualizations
- Collect tools to create effective visualizations
- Find creative inspiration for your visualizations
DATA VISUALIZATION 101
So, what is data visualization anyways?

The representation and presentation of data to facilitate understanding.
TIME FOR A GAME

• We are going to show you 3 slides.
• Your job is to figure out the key message in each.
• You will have 3 seconds per slide.
Between 2011 and 2016 the population of the City of Guelph increased from 114,943 to 121,688 residents. This represents 8.3% growth in a five year period. Guelph’s growth rate during this time was higher than Ontario and Canada’s, which were 4.6% and 5.3% respectively.
Shelburne had the highest population growth of all townships in Dufferin County between 2011 and 2016.

- Shelburne: 39.0%
- Mono: 14.1%
- Grand Valley: 8.4%
- Melancthon: 6.0%
- Orangeville: 3.3%
- Amaranth: 2.9%
- Mulmur: 2.6%
- East Garafraxa: -0.6%
What was each slide trying to communicate?
Cannabis Survey Results
Wellington-Dufferin-Guelph - Highlights

While cannabis legalization is generally popular there is significant public concern and a lack of understanding of its health impacts and risks.

70% agree It would be easy to access cannabis in the next 24 hours

65% agree Using cannabis is socially acceptable

77% agree Using cannabis can be beneficial

23% agree Cannabis use is a problem in their community

33% disagree 10% don’t know Using cannabis daily or almost daily can cause problems with memory, learning and decision-making

10% disagree 24% don’t know Using cannabis while pregnant can cause harm to the fetus/child

15% disagree 3% don’t know Using cannabis before driving increases your risk of a motor vehicle collision

47% disagree 5% don’t know Using cannabis may result in dependence or addiction

Attitudes towards cannabis

Cannabis knowledge

Non-medical cannabis usage

Of those who have used non-medical cannabis in the past year:

25% use cannabis daily

24% have driven a motor vehicle within two hours of using cannabis

Of those who have not used non-medical cannabis in the past year:

39% are moderately to very likely to try cannabis once legal.

These findings are representative of this survey's respondents and not necessarily the larger Wellington-Dufferin-Guelph population. Anonymous and voluntary online survey. Respondents of Wellington County, Dufferin County and the City of Guelph Ages 16+. 2,796 responses. June 7, 2018 – July 5, 2018.
HOW TO MAKE AN EFFECTIVE VISUALIZATION

Worksheet: Creating a data visualization

This worksheet has been arranged into a series of steps to help guide you through the visualization process. However, the data visualization process isn’t always a linear one—data visualization can be a bit like a chicken and an egg. Sometimes you even with a purpose then create the data and vice versa. Complete the steps in whole order unless the more suits to you.

**STEP 1: Understand your data**

- **Questions:**
  1. What type of data do you have? Is it quantitative? Qualitative? Can you analyze it?
  2. Why are you looking at this data? What are your data suggesting your key message?
  3. Are there any limitations on sharing your data? What can and cannot you share with different audiences?

**PROCESS:**
You likely have a list of data in mind. Take your time doing this. Focus on data points that add value to your message or are important for your vision.

**STEP 2: Define your purpose**

- **Questions:**
  1. What are you trying to communicate with this visualization? Do you wish to share knowledge, generate excitement, inspire action, or something else?
  2. What are you trying to accomplish? Is it reader by reader, understanding by a high degree of precision or demand or building the story up to a climax?

**Worksheet:**
Please fill out the following worksheet to further define your purpose.

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Please fill out the following worksheet to further define your purpose.
STEP 1: UNDERSTAND YOUR DATA

- What type of data do you have?
- What is your data telling you?
- Are there any limitations on sharing your data?
# Reproductive Health Indicators in Wellington-Dufferin-Guelph

<table>
<thead>
<tr>
<th>Location</th>
<th>% Mothers Who Did Not Take Folic Acid Pre-Conception</th>
<th>% Mothers Who Smoked During Pregnancy</th>
<th>% Mothers Who Did Not Breastfeed Exclusively Until 6 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clifford</td>
<td>88%</td>
<td>5%</td>
<td>60%</td>
</tr>
<tr>
<td>Guelph</td>
<td>22%</td>
<td>24%</td>
<td>34%</td>
</tr>
<tr>
<td>Mapleton</td>
<td>10%</td>
<td>2%</td>
<td>90%</td>
</tr>
<tr>
<td>Mount Forest</td>
<td>95%</td>
<td>0%</td>
<td>13%</td>
</tr>
<tr>
<td>Orangeville</td>
<td>20%</td>
<td>2%</td>
<td>88%</td>
</tr>
<tr>
<td>Shelburne</td>
<td>70%</td>
<td>0%</td>
<td>55%</td>
</tr>
</tbody>
</table>
STEP 2: DEFINE YOUR PURPOSE

◉ What are you trying to accomplish with this visualization?
◉ What tone are you trying to convey (e.g. reading vs. feeling)?
◉ What data will you include in your visual?
STEP 3: DEFINE YOUR AUDIENCE

- Who are you creating this visualization for?
- How comfortable is your target audience with interpreting data?
- How will they access your visualization?
- What does your target population care about?
- How will you combine your target audience’s interests and the findings from the data to frame your key messages?
Screen time has increased steadily over the past 6 years. Increased screen time is strongly associated with poorer mental health.

Students who report 2+ hours of screen time a day are 3.6 times more likely to be at risk of depression.
STEP 4: BEGIN FORMULATING YOUR IDEA

◉ What keywords come to mind when you think about your visual?
◉ What mental images come to mind?
◉ What inspiration can you draw from elsewhere to help shape your visual?
STEP 5: DEVELOP YOUR VISUAL SOLUTION PART 1

Which type of chart/graphic works best for your type of data, purpose, message and audience?
**BUBBLE PLOT**
A scatter plot variation. When you want to change the size of each point (or bubble) depending on a third variable.

Bubble plots don’t work well if the values on the x- or y-axes have limited variation in their values. Annotate a few key data points to get your message across.

**PICTOGRAM**
When you need a fun way to represent a fraction or percentage (e.g., 1/5 or 20%).

A single symbol may represent one or many units (e.g., one symbol could represent one person or 100 people). You can display a number with decimals (e.g., 5.5 out of 6 can be displayed by colouring 5 and half people then graying out the other half of the 6th person). Symbols should be intuitively recognizable. Note: pictograms are best made in Piktochart.

**WORD CLOUD**
When you have qualitative data and when individual words have meaning.

Use wordle.net to create word clouds. You can select your font, colour scheme and shape of word cloud. You’re also able to right click on words in the cloud to remove them.

**QUOTATIONS**
When you have qualitative data and when comments from a survey or interview have meaning.

Use colour to pull out one or two key words. When you have consent, add a photo to humanize the words. When a photo of the speaker isn’t an option, add an icon or photo that represents a key point from their quote.

“To invent, you need a good imagination and a pile of junk.” —Thomas A. Edison

**PICTURES**
When you want to supplement other data or show the impact of a project (e.g., community garden or bike lanes).

Use high resolution photos otherwise your images may appear blurry in PowerPoint or Word. Ensure you have consent to use the photo if there are people in it or if it is not yours.

**INFOGRAPHICS**
When you want to combine multiple visualizations into a poster or online visual.

Infographics take time; give yourself time to review and revisit your infographic. Follow standard guidelines for any visual (see checklist). Arrange your infographic around a central image or arrange in rows with two, three or four columns. Try out an agency template!
STEP 5: DEVELOP YOUR VISUAL SOLUTION PART 2

Sketch it out!
Since July, **boys** have experienced more head trauma than girls.

Free bicycle helmets given to girls. Helmets have prevented trauma among girls. Free helmets should be introduced for boys too.
STEP 6: TEST, MODIFY, & SHARE!

◉ What feedback do your colleagues have about your visual?
◉ What feedback do people in the target audience have about your visual?
◉ How does your visual need to be changed in order to accommodate the feedback?
◉ Share your visual!
His athleticism and ball-handling create a lot of high-percentage shots near the basket. He prefers the wing locations beyond the 3-point line. His midrange game is his weakest.

Some Visuals to INSPIRE

THE YEAR IN NEWS from ECHELON INSIGHTS
What America talked about in 2014, as viewed through 184.5 million Twitter mentions.

SOURCES OF INSPIRATION

Storytelling with Data by Cole Nussbaumer Knaflic

Data Visualization: A Handbook for Data Driven Design by Andy Kirk

Effective Data Visualization: The Right Chart for the Right Data by Stephanie Evergreen
RECOMMENDED ONLINE RESOURCES

http://flowingdata.com/
http://www.informationisbeautiful.net/
http://www.vizhealth.org/gallery/
http://www.flaticon.com/
http://stephanieevergreen.com/
http://www.visualisingdata.com/

RECOMMENDED BOOKS

Storytelling with Data by Cole Nussbaumer Knaflic
Data Visualization by Andy Kirk
Effective Data Visualization by Stephanie Evergreen
THANKS!

Any questions?