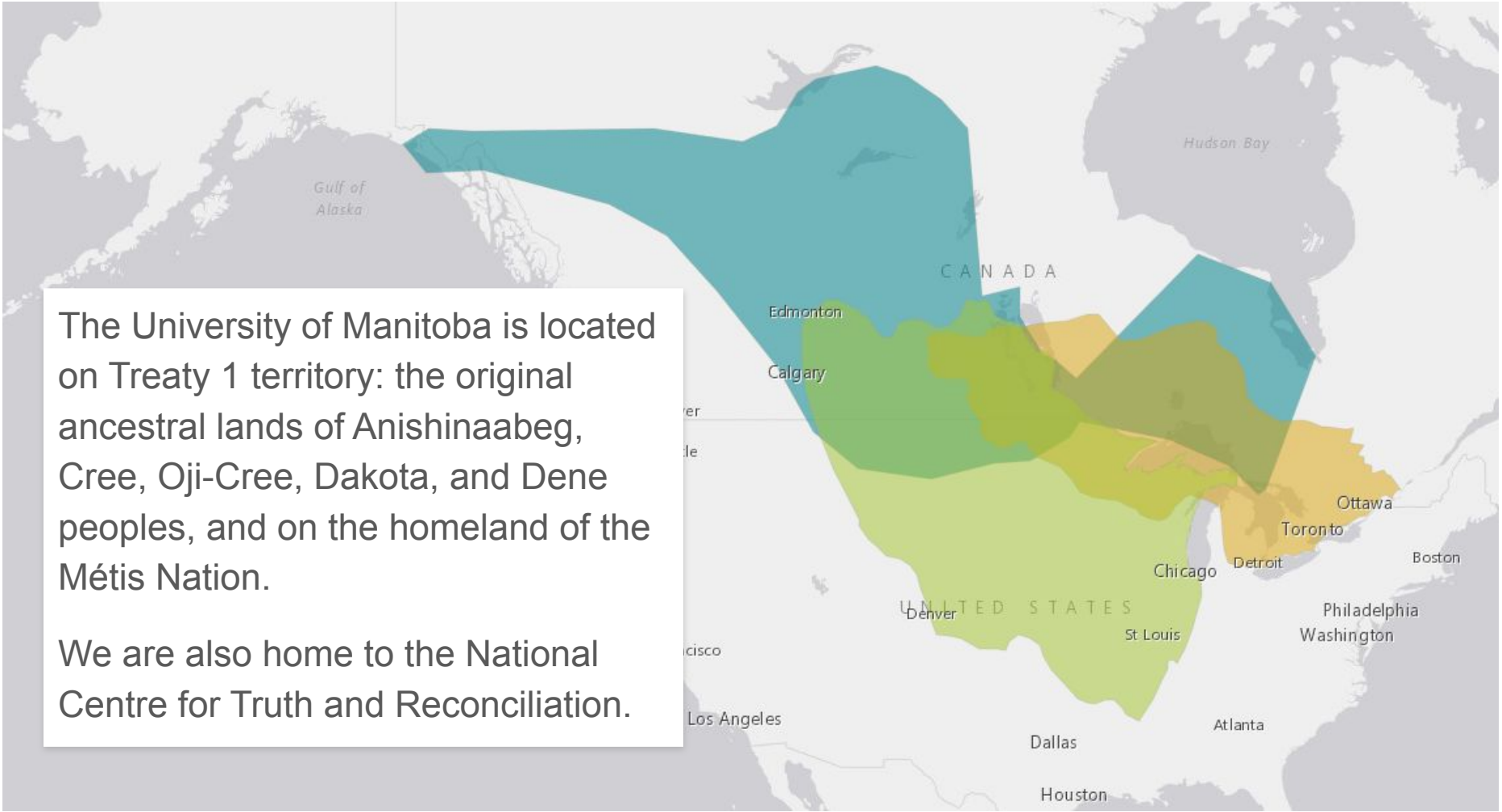
Capture Your Audience

Effective Data Visualization and PowerPoint Strategies

Resources: bit.ly/chlaviz

Meg Miller & Hal Loewen

Land Acknowledgement



The University of Manitoba is located on Treaty 1 territory: the original ancestral lands of Anishinaabeg, Cree, Oji-Cree, Dakota, and Dene peoples, and on the homeland of the Métis Nation.

We are also home to the National Centre for Truth and Reconciliation.

native-land.ca

&

bit.ly/nctrmap

Expectations

Open & safe

Expectations

Open & safe

Dialogue

Expectations

Open & safe

Dialogue

Take away 3 strategies

Schedule / Timeline

Introduction

Schedule / Timeline

Introduction

Visualization Theory

Schedule / Timeline

Introduction

Visualization Theory

Applying viz theory to data

Schedule / Timeline

Introduction

Visualization Theory

Applying viz theory to data

Data Viz Exercise (60mins)

Schedule / Timeline

Introduction

Visualization Theory

Applying viz theory to data

Data Viz Exercise

Break (20 mins)

PPT Theory

PPT Theory

PPT Exercise

Schedule / Timeline

PPT Theory

PPT Exercise

Show and Tell

Schedule / Timeline

PPT Theory

PPT Exercise

Show and Tell

“A New Presentation”

Schedule / Timeline

PPT Theory

PPT Exercise

“A New Presentation”

Wrap Up

Schedule / Timeline

PPT Theory

PPT Exercise

“A New Presentation”

Wrap Up

Assessment

Stuff That’s Cool

A Recent Presentation

FOREST CREATURES & ACTIVITY

RECREATIONAL OPPORTUNITIES FOR WOODLAND CREATURES IN CITY PARKS

THE PROJECT

Recreation and recreation activities within the city of Winnipeg is just as important to woodland creatures as it is to humans. And, the time of year makes a big difference on they types of activity in which squirrels, raccoons, deer, mice, and skunks can partake. Our study aims to look at each of these populations, the types of activities in which they participate, and the levels of participation based on the time of year. From this study we hope to develop a strategy to reach out these different populations and encourage them to seek recreational activities in the months where, historically not been as active.

STUDY PARTICIPANTS

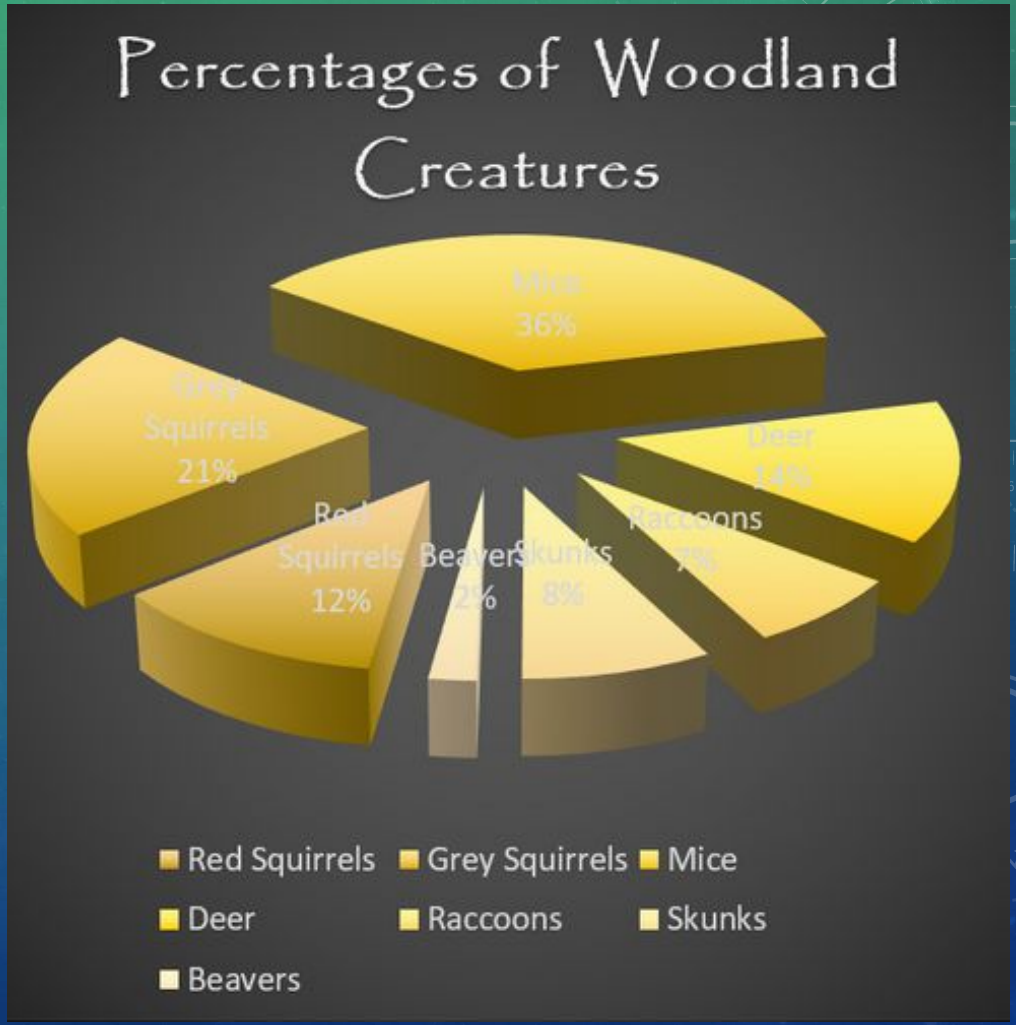
Included Animals

- Red and Grey Squirrels
- Mice, but not rats
- Deer
- Raccoons
- Skunks
- Beavers

Excluded Animals

- Feral cats
- Domesticated dogs and cats

WOODLAND CREATURE POPULATIONS



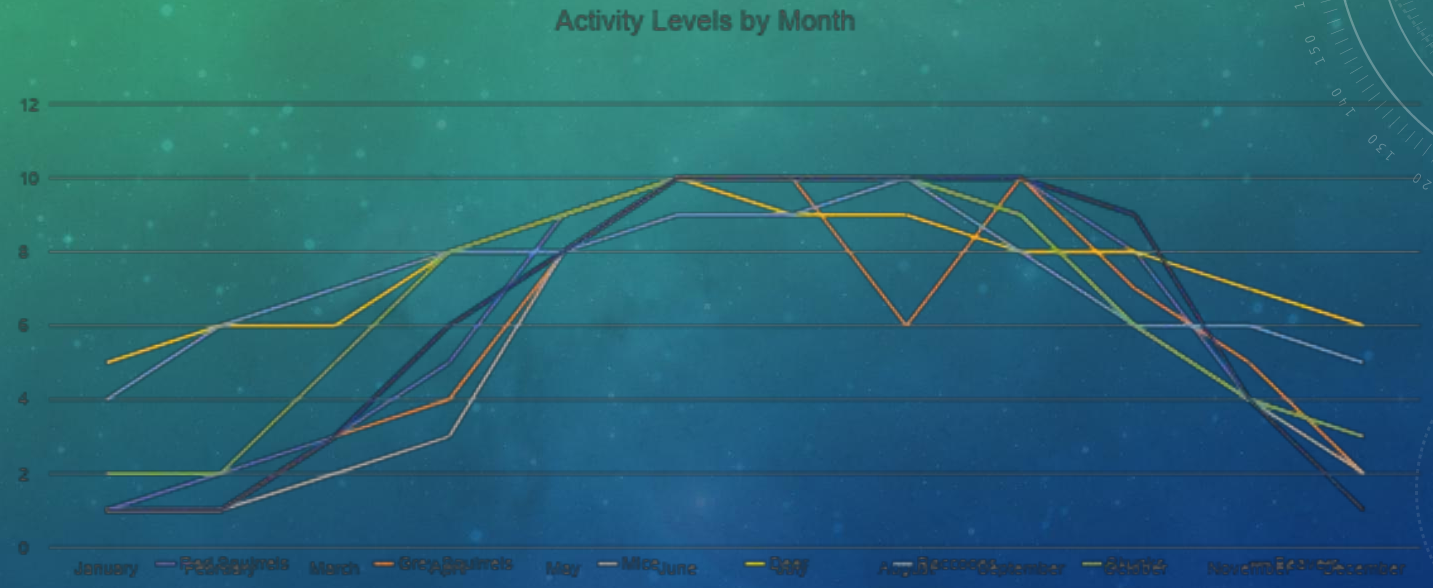
RECREATIONAL ACTIVITIES

- Chilling – this is where woodland creatures just stand around, and like, mind their own business
- Chasing – primarily a squirrel activity, can be either territorial behaviour or having fun
- Running or Leaping – not to be confused with being chased by another species

MOST POPULAR LOCATIONS

Quadrant	Name	Address	Popularity
South	Assiniboine Forest	950 Shaftesbury Blvd.	27
South	Assiniboine Park	6 Locomotive Dr.	20
East	Buhler Recreation Park	135 Murdock Rd.	3
South	Crescent Drive Park *	781 Crescent Dr.	10
North	John Blumberg Park	4540 Portage Ave. Headingley, MB	6
East	Kilcona Park *	1229 Springfield Rd.	8
North	Kildonan Park *	2015 Main St.	15
South	King's Park *	198 King's Drive	3
South	La Barriere Park *	4403 Waverley St. (south of the Perimeter Hwy.)	14
North	Little Mountain Park *	64093 Klimpke Rd. RM of Rosser	10
East	Maple Grove Park	100 Frobisher Road	9
East	St. Vital Park *	190 River Road	6

PARK USE BY MONTH



SQUIRRELS

- Obligate hibernators are animals that spontaneously, and annually, enter hibernation regardless of ambient temperature and access to food. Obligate hibernators include many species of ground squirrels, other rodents, mouse lemurs, European hedgehogs and other insectivores, monotremes, and marsupials. These species undergo what has been traditionally called "hibernation": a physiological state wherein the body temperature drops to near ambient temperature, and heart and respiration rates slow drastically. (Hibernation, n.d.)

Hibernation. (n.d.) In *Wikipedia*. Retrieved March 6, 2020 from https://en.wikipedia.org/wiki/Hibernation

Visualization Theory

Data Viz and PowerPoints

Visual Elements

White Space

White Space

- Calming

Visual Elements

White Space

- Calming
- Focused

Visual Elements

White Space

- Calming
- Focused
- No clutter

White Space

Balance and Alignment

Visual Elements

White Space

Balance and Alignment

- Order to chaos

Visual Elements

White Space

Balance and Alignment

- Order to chaos - or not

Visual Elements

White Space

Balance and Alignment

- Order to chaos - or not
- Symmetrical

Visual Elements

White Space

Balance and Alignment

- Order to chaos - or not
- Symmetrical
- Asymmetrical

Visual Elements

White Space

Balance and Alignment

- Order to chaos - or not
- Symmetrical
- Asymmetrical
- Radial

Visual Elements

White Space

Balance and Alignment

- Order to chaos - or not
- Symmetrical
- Asymmetrical
- Radial

Images

Font

2 Fonts at most

Font

2 Fonts at most

Contrast

Font

2 Fonts at most

Contrast

Accessibility

Font

2 Fonts at most

Contrast

Accessibility

Balance and alignment

Font

2 Fonts at most

Contrast

Accessibility

Balance and alignment

Purpose (poster vs text)

Font

2 Fonts at most

Contrast

Accessibility

Balance and alignment

Purpose (poster vs text)

A tool like FontPair can help

Where would you rather spend January?

Winnipeg or Toronto

Do you like the cold?

The lowest monthly minimums were...

-28.1°C vs **-12.2°C**

What about snow?

The total precipitation for the month was...

Data Sources: Environment Canada, Wikimedia

powered by
PIKTOCHART

Accessibility

Problems with colour

Problems with colour

Font and weight

Accessibility

Problems with colour

Font and weight

Balance, alignment, and white space

Cognitive Load

3-5 is ideal

3-5

6 or 7 if you must

Consistency

Familiarity

Consistency

Familiarity

Learnability

Consistency

Familiarity

Learnability

Eliminate confusion

Clarity

Less is more

Clarity

Less is more

KISS

Clarity

Less is more

KISS (Keep It Simple, Silly)

Now apply that to data

Think of your audience

Purpose

Display data in a way that makes it **easier** for your audience to **understand** your work.

Purpose

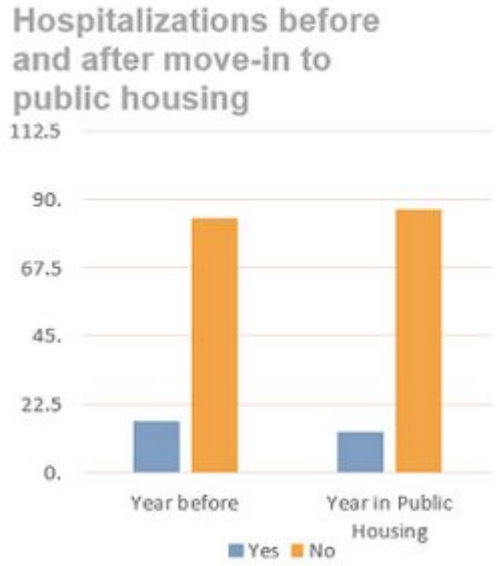
Definition

Chart Junk

Purpose

Definition

Chart Junk



A move to public housing made NO significant difference in percentage of the cohort requiring hospitalization.

Purpose

Definition

Chart junk

Don’t mislead the user

Selecting the right chart type

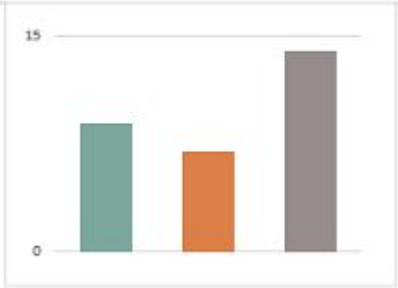
Chart type

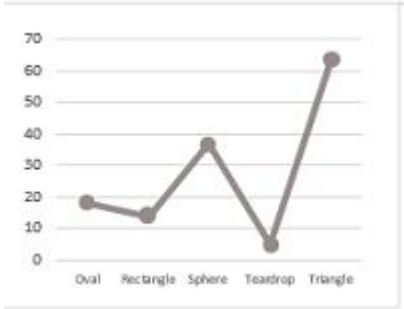
What trend are you going to show?

Chart type

Decide on a trend:

- Comparison, composition, distribution, relationship





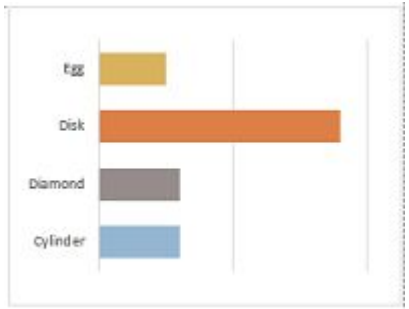
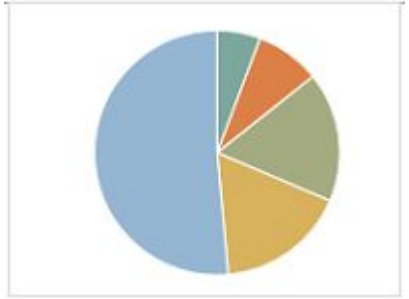


Chart type

Decide on a trend:

- Comparison, **composition,** distribution, relationship



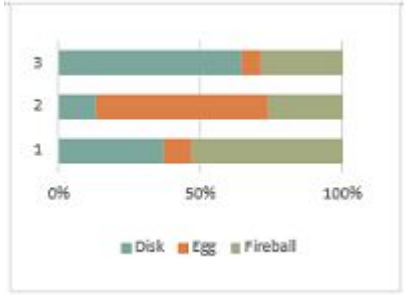
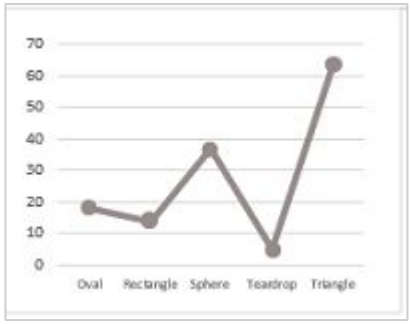
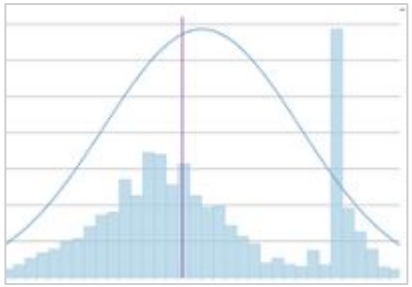


Chart type

Decide on a trend:

- Comparison, composition, **distribution,** relationship





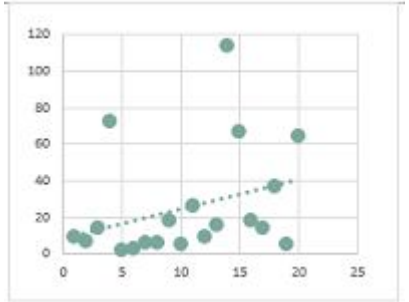


Chart type

Decide on a trend:

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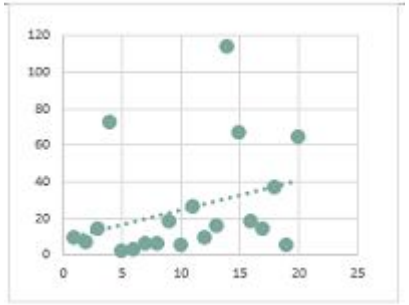
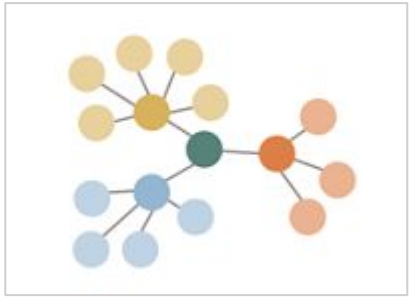




Audience

Audience

Who are they?

Audience

Who are they?

- Demographics

Audience

Who are they?

- Demographics
- Location

Audience

Who are they?

- Demographics
- Location
- Purpose (exploratory vs explanatory)

Requirements

Technology

Requirements

Technology

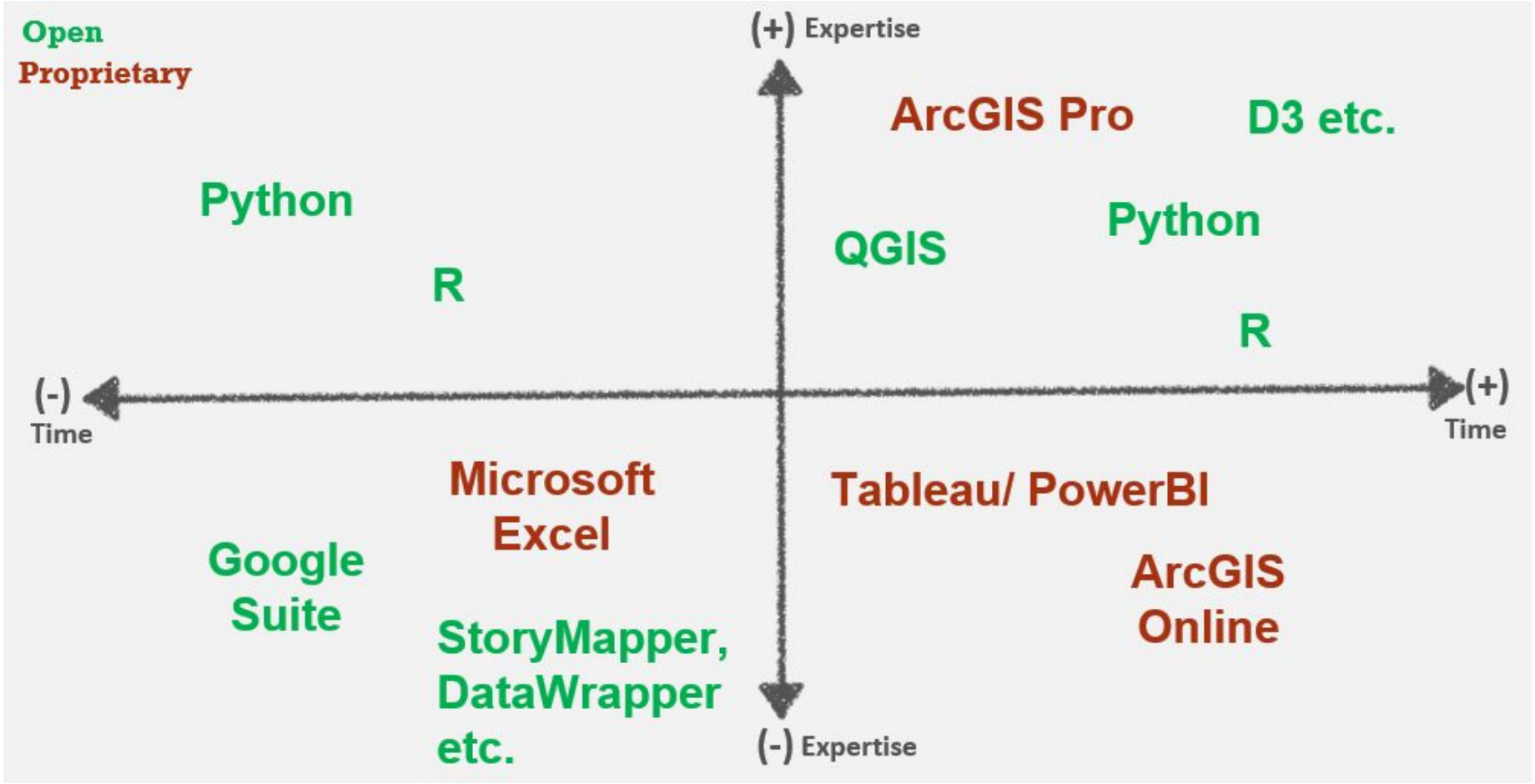
Humans

Requirements

Technology

Humans

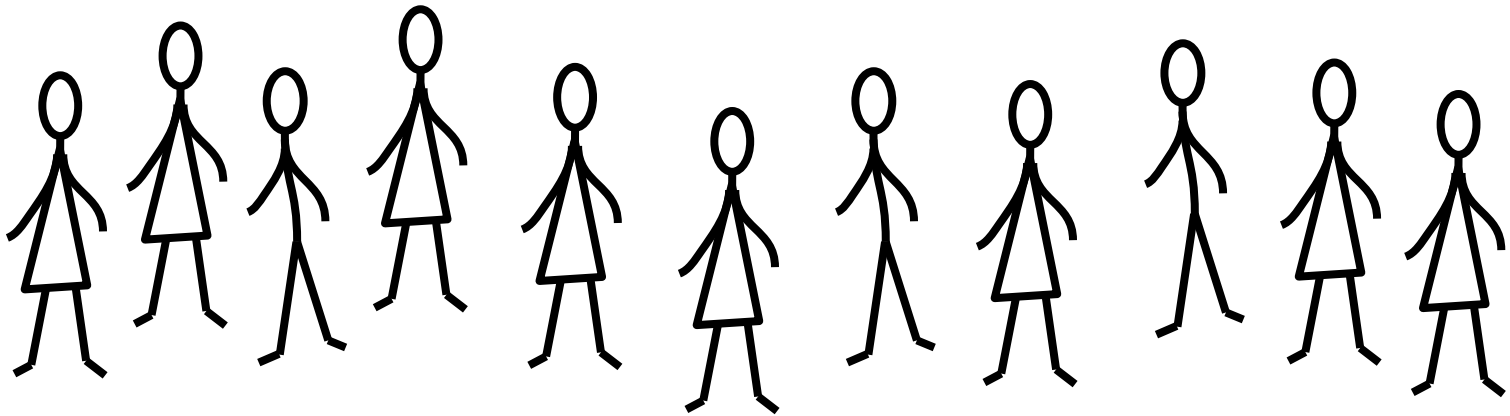
Data


Open
Proprietary
(+) Expertise
ArcGIS Pro
D3 etc.
Python
QGIS
Python
R
R
(-)
Time
(+)
Time
Microsoft
Excel
Tableau/ PowerBI
Google
Suite
ArcGIS
Online
StoryMapper,
DataWrapper
etc.
(-) Expertise

On average, how often did you use the library, whether in-person or online?

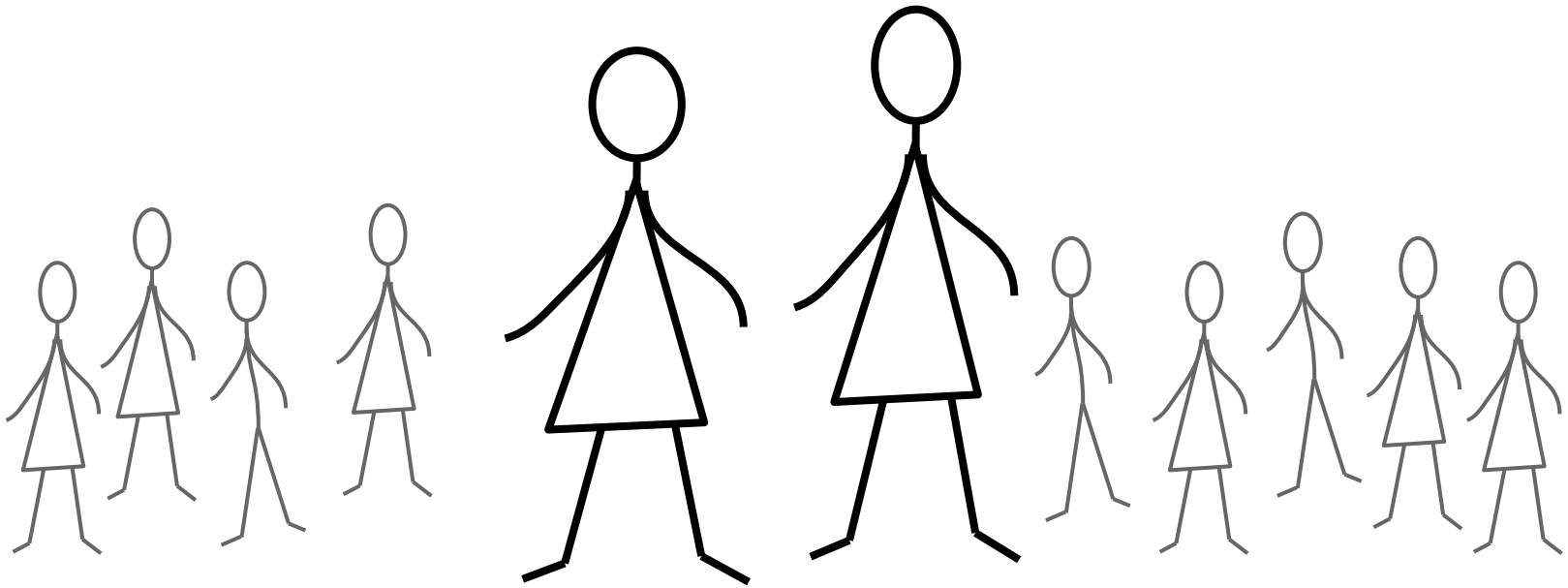
- ☐ daily
- ☐ 2-3 times a week
- ☐ weekly
- ☐ 2-3 times a month
- ☐ never
- ☐ 2-3 times a semester
- ☐ very rarely

Survey Question - Dental Hygiene



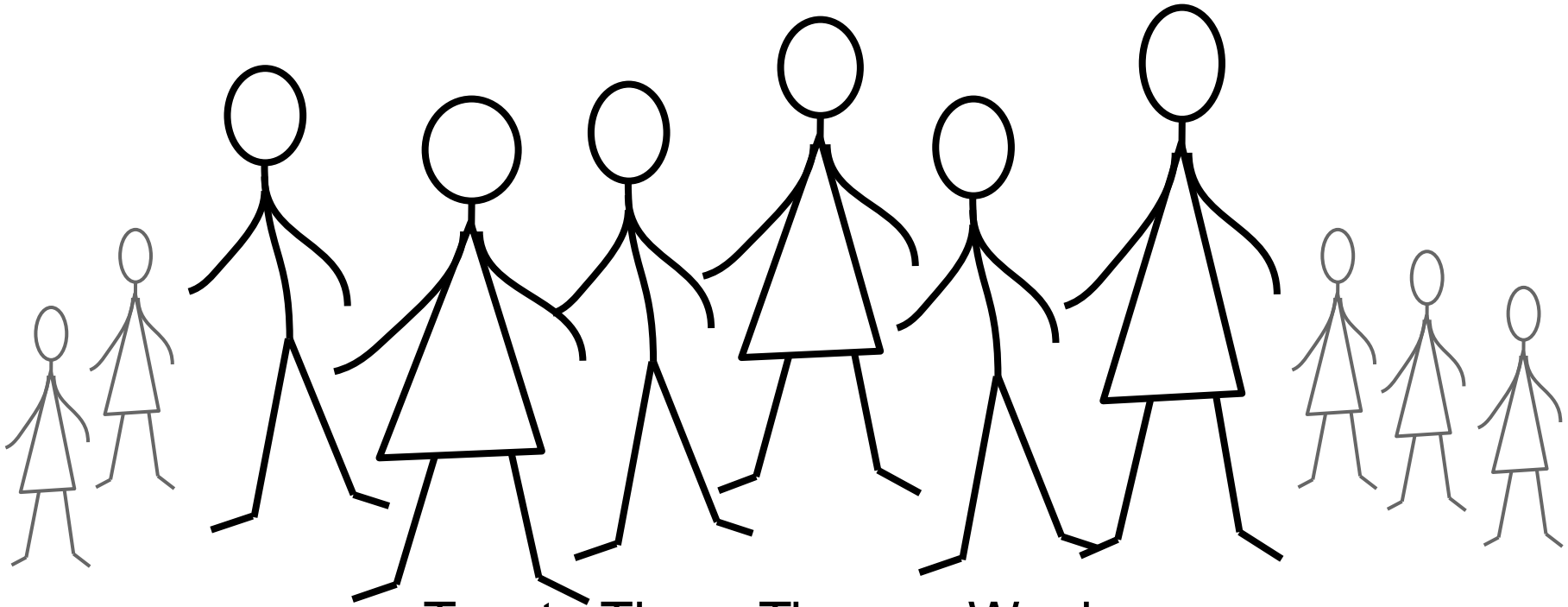
Graduating Dental Hygiene Students

Survey Question - Dental Hygiene



Daily Use

Survey Question - Dental Hygiene



Two to Three Times a Week

Best Practices

What are some best practices in colour selection for classification?

Symbolize discrete data with **hue**

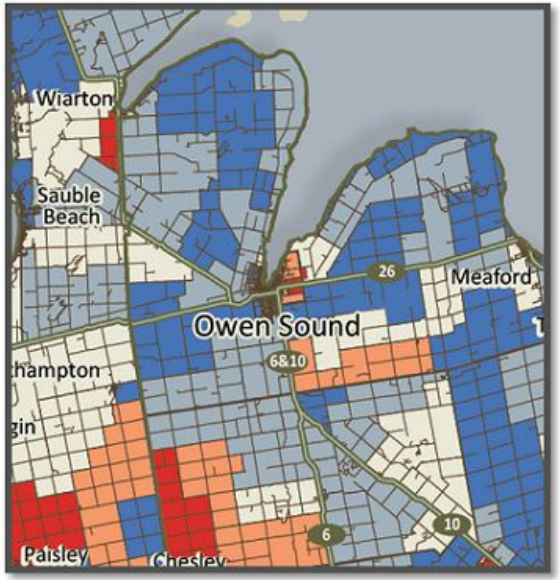
Discrete data

Use **shade/value** for continuous data

Best Practices: Colour

Discrete data

Continuous data



Discrete data

Continuous data

What about ugly?

Best Practices: Colour

Discrete data

Continuous data

What about ugly?

- Neutral with 2-3 accents

Best Practices: Colour

Discrete data

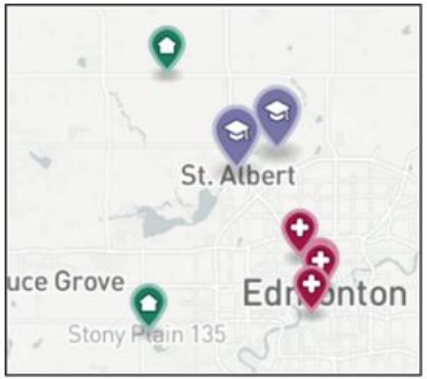
Continuous data

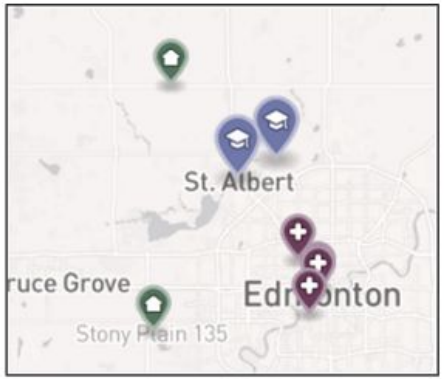
What about ugly?

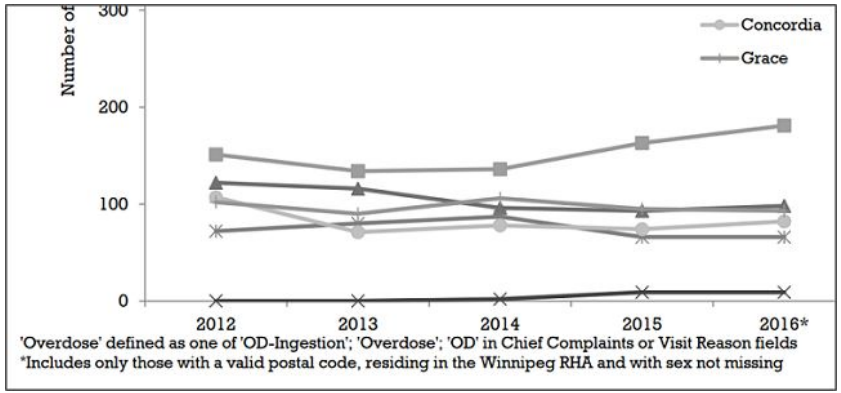
- Neutral with 2-3 accents
- A tool like Color Picker can help

How can we take accessibility into consideration when selecting colour palettes?

Accessibility: Colour







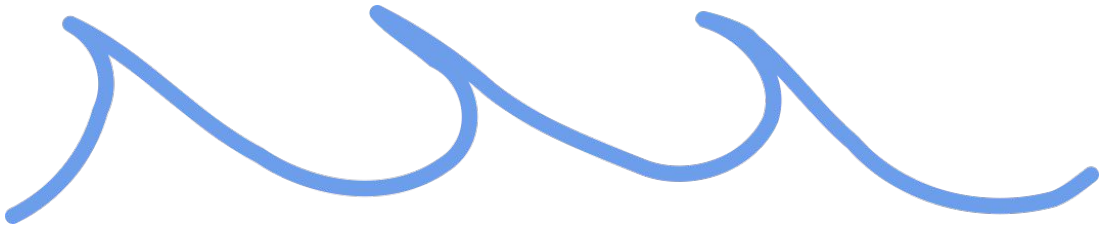
What are some unconscious perceptions we have about colour?

Red has negative connotations, **green** good

Unconscious perceptions: Colour

Red is bad, green is good

Light blue shapes on maps are **water**



Unconscious perceptions: Colour

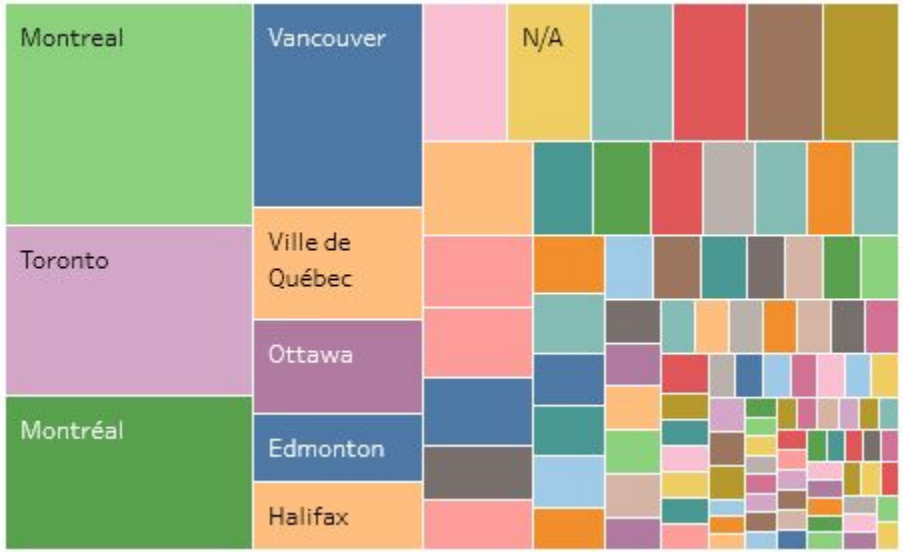
Red is bad, green is good

Light blue shapes on maps are water

Light colours represent **less**, dark **more**

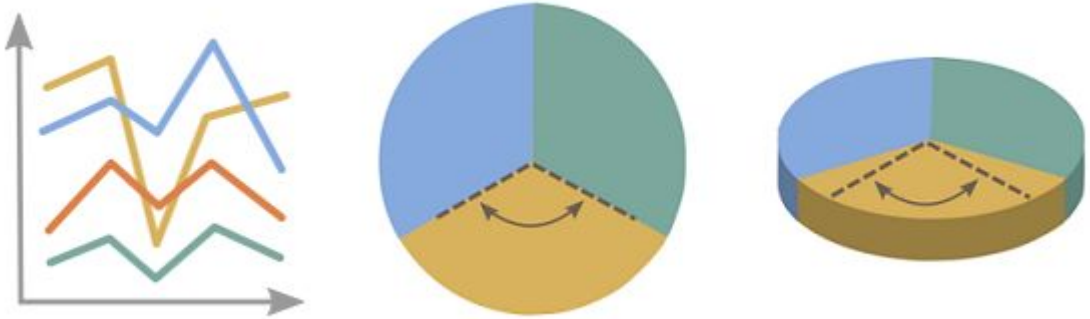
What does cognitive load mean in relation to data viz?

Categories


Montreal
Vancouver
N/A
Toronto
Ville de Québec
Ottawa
Montréal
Edmonton
Halifax

Categories

Special effects and stacking

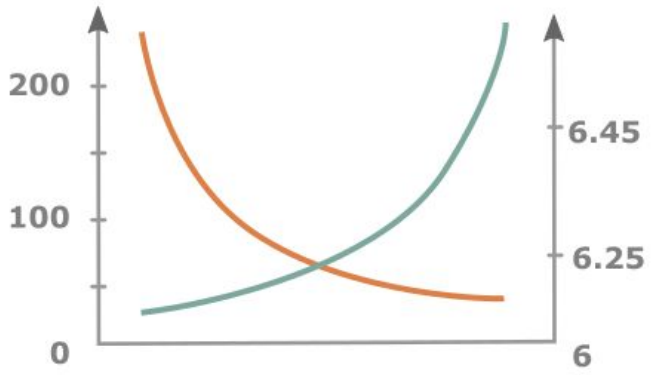


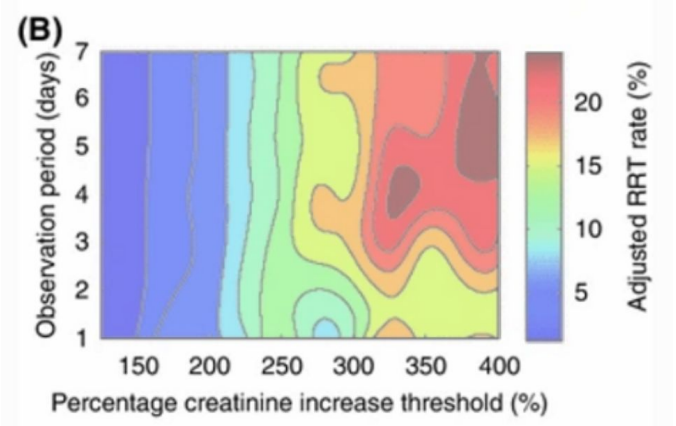
Cognitive load

Categories

Special effects and stacking

Consistency





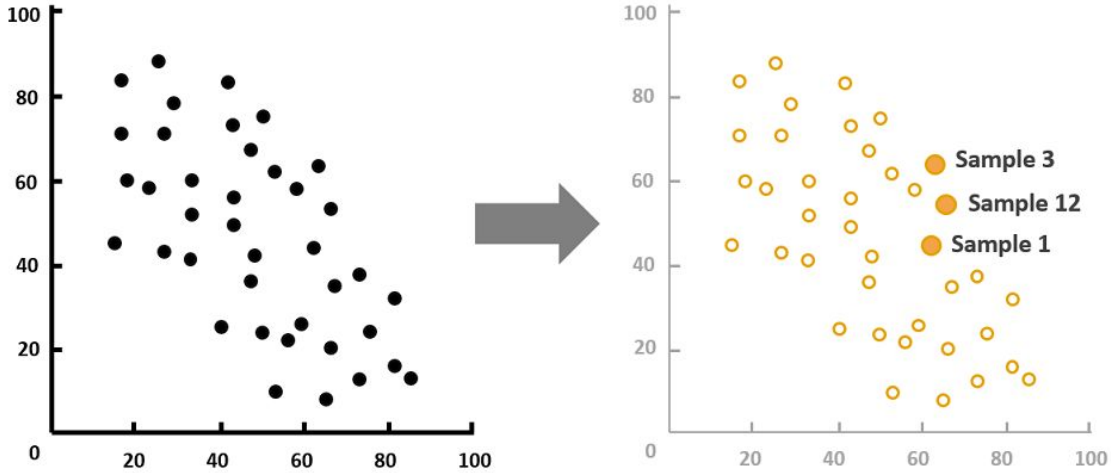
Cognitive load

Categories

Special effects and stacking

Consistency

Clarity



Message - be selective

Key Points

Message - be selective

Audience - you’re creating this for them

Key Points

Message - be selective

Audience - you’re creating this for them

Data - has structure & storage requirements

Key Points

Message - be selective

Audience - you’re creating this for them

Data - has structure & storage requirements

Be kind to your future self

Break

Data Viz Exercise time

60 mins

Tableau and data

Dimension

Dimension

Measure

participant	sessions_attended	sessions_registered
human1	1	8
human2	0	3
human3	4	12

Tableau and Data

Dimension

Measure

Dimension

Measure

Discrete

Tableau and Data

Dimension

Measure

Discrete

Continuous

Preparing your data

Measures in columns

Table 1

participant	human1	human2	human3
sessions_attended	1	0	4
sessions_registered	8	3	12

Table 2

participant	sessions_attended	sessions_registered
human1	1	8
human2	0	3
human3	4	12

Measures in columns

Remove non-data content

Preparing your data

Measures in columns

Remove non-data content

Know your data set

Now we can start :)

Break

Slide Presentations

Keep Your Audiences Engaged

Background

How to Avoid Death by PowerPoint

by David JP Phillips

Background

Ted Talk

My own PowerPoints

Background

Ted Talk
My own PowerPoints

Graphic design course

Background

Ted Talk
My own PowerPoints
Graphic design course

Changed my slides

Poll

Title Slide

How about now?

Have you gotten out of a big deal? 79 Yes 125 No

Are you planning on getting out of a big deal? 92 Yes 107 No

If you have gotten out of a big deal or are planning to, what was/is your reasoning?

104 Budget 10 Principle 1 Mandate 32 Other

If decision on principle, where did you reinvest the funds?

3 APCs 3 Open initiatives 9 On demand resources
20 Subscriptions to other resources 76 We have not gotten out of a deal

If you had the funds to renegotiate your journal packages with a publisher, would you re-enter a big deal?

20 Yes 86 Maybe 30 No 62 Have not gotten out of a deal

How about this slide?

The Search Process

This presentation examines the search process which is defined in the following 8 steps:

1. Understanding how information is organized
2. Understanding your question
3. Identifying your foreground question
4. Identifying background questions
5. Searching resources to answer your background question
6. Planning your foreground question search
7. Searching resources to answer your foreground question
8. Organizing the information retrieved

How to Avoid Death by PowerPoint

Coles/SparkNotes Version

One Message Per Point

Coles/SparkNotes Version

One Message Per Point

Contrast

Coles/SparkNotes Version

One Message Per Point

Contrast

Avoid Sentences

Coles/SparkNotes Version

One Message Per Point

Contrast

Avoid Sentences

Backgrounds

Coles/SparkNotes Version

One Message Per Point

Contrast

Avoid Sentences

Backgrounds

Six Objects

Number of slides does not matter

Coles/SparkNotes Version

Number of slides does not matter

Consider black background

Coles/SparkNotes Version

Number of slides does not matter

Consider black background

Coles/SparkNotes Version

Number of slides does not matter

Consider black background

Consistent

Coles/SparkNotes Version

Number of slides does not matter

Consider black background

Consistent

Use section slides

Anatomy of a Slide

Wide readership in your field

- What are the journals you read? Your supervisor and peers?
- Where is the research you are citing published?
- In which databases is your journal of interest indexed?

Wide Readership in Your Field

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Databases and indexing

Wide Readership in Your Field

Repeat of Section Slide, affirms that the information on this page is tied to that section

Journals you read

Your supervisor and peers

Citing research

Databases and indexing

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Databases and indexing

Point you are talking to, emphasis is on this information

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Databases and indexing

Simplified, gives you room to expand and talk

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Databases and indexing

High contrast in text colour to background, white space makes it easy on the eyes

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Databases and indexing

Less than six points

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Points previously covered are faded out to minimize distractions

Databases and indexing

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Databases and indexing

Before and After

PREPARING FOR YOUR FIRST PUBLICATION

6 Steps to Get You Ready

WIDE READERSHIP IN YOUR FIELD

Wide readership in your field

- What are the journals you read? Your supervisor and peers?
- Where is the research you are citing published?
- In which databases is your journal of interest indexed?

Preparing for Your First Publication

6 Steps to Get You Ready

Wide Readership in Your Field

Journals you read

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Wide Readership in Your Field

Journals you read

Your supervisor and peers

Citing research

Databases and indexing

How ~~To~~ I

Master Slides

Master Slides

Think in sections

How ~~To~~ I

Master Slides

Think in sections

Work backwards

Google Slides Exercise Time

45 minutes

Show and Tell

Retelling Our Research

Applying What We've Covered

FOREST CREATURES & ACTIVITY

RECREATIONAL OPPORTUNITIES FOR WOODLAND CREATURES IN CITY PARKS

THE PROJECT

Recreation and recreation activities within the city of Winnipeg is just as important to woodland creatures as it is to humans. And, the time of year makes a big difference on they types of activity in which squirrels, raccoons, deer, mice, and skunks can partake. Our study aims to look at each of these populations, the types of activities in which they participate, and the levels of participation based on the time of year. From this study we hope to develop a strategy to reach out these different populations and encourage them to seek recreational activities in the months where, historically not been as active.

STUDY PARTICIPANTS

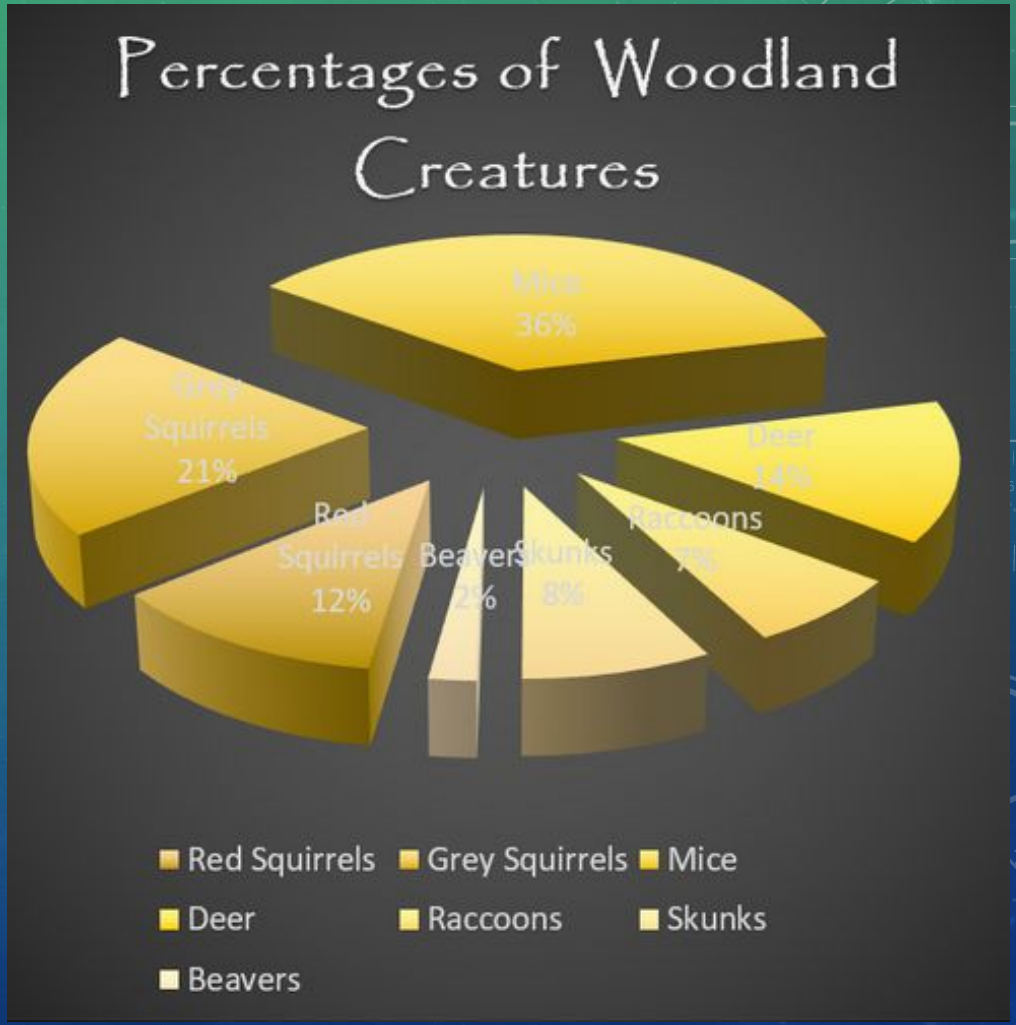
Included Animals

- Red and Grey Squirrels
- Mice, but not rats
- Deer
- Raccoons
- Skunks
- Beavers

Excluded Animals

- Feral cats
- Domesticated dogs and cats

WOODLAND CREATURE POPULATIONS



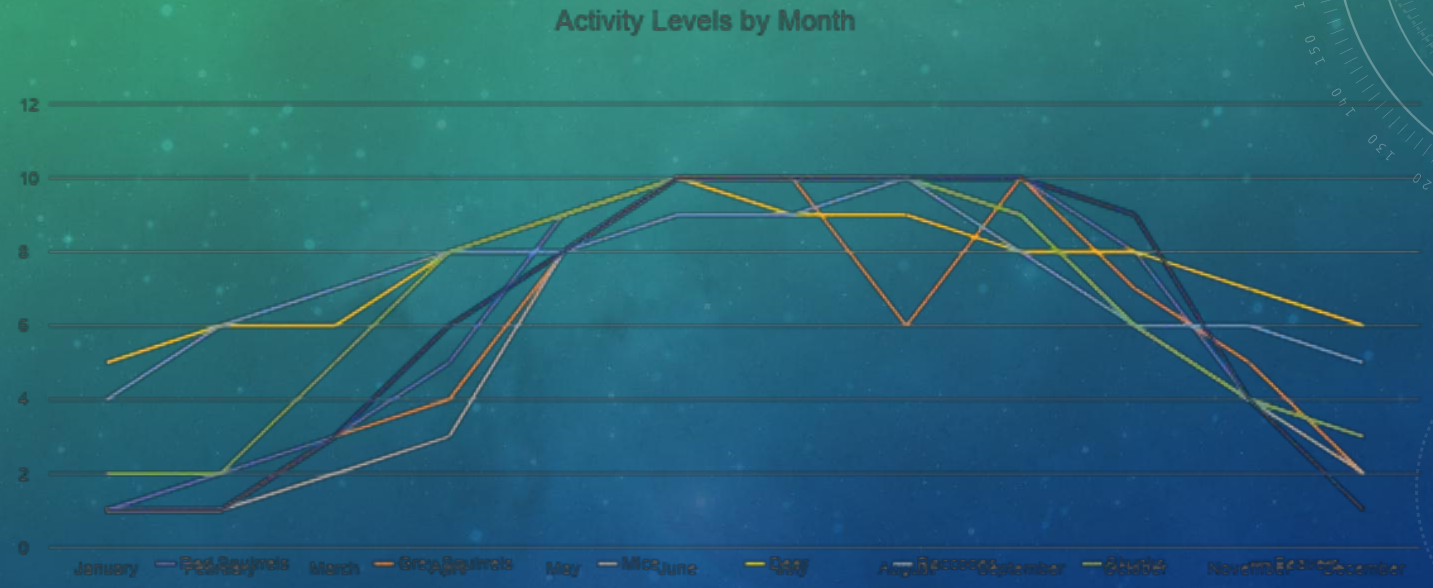
RECREATIONAL ACTIVITIES

- Chilling – this is where woodland creatures just stand around, and like, mind their own business
- Chasing – primarily a squirrel activity, can be either territorial behaviour or having fun
- Running or Leaping – not to be confused with being chased by another species

MOST POPULAR LOCATIONS

Quadrant	Name	Address	Popularity
South	Assiniboine Forest	950 Shaftesbury Blvd.	27
South	Assiniboine Park	6 Locomotive Dr.	20
East	Buhler Recreation Park	135 Murdock Rd.	3
South	Crescent Drive Park *	781 Crescent Dr.	10
North	John Blumberg Park	4540 Portage Ave. Headingley, MB	6
East	Kilcona Park *	1229 Springfield Rd.	8
North	Kildonan Park *	2015 Main St.	15
South	King's Park *	198 King's Drive	3
South	La Barriere Park *	4403 Waverley St. (south of the Perimeter Hwy.)	14
North	Little Mountain Park *	64093 Klimpke Rd. RM of Rosser	10
East	Maple Grove Park	100 Frobisher Road	9
East	St. Vital Park *	190 River Road	6

PARK USE BY MONTH



SQUIRRELS

- Obligate hibernators are animals that spontaneously, and annually, enter hibernation regardless of ambient temperature and access to food. Obligate hibernators include many species of ground squirrels, other rodents, mouse lemurs, European hedgehogs and other insectivores, monotremes, and marsupials. These species undergo what has been traditionally called "hibernation": a physiological state wherein the body temperature drops to near ambient temperature, and heart and respiration rates slow drastically. (Hibernation, n.d.)

Hibernation. (n.d.) In *Wikipedia*. Retrieved March 6, 2020 from https://en.wikipedia.org/wiki/Hibernation

Forest Creatures and Activity

Recreational Opportunities for Woodland Creatures in City Parks

Rady Faculty of Health Sciences | UM

The Project

Woodland creatures like recreation too.

Study Participants

Inclusion Criteria

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- Red and Grey Squirrels

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- Red and Grey Squirrels
- Mice

Study Participants – Inclusion Criteria

- Red and Grey Squirrels
- Mice, but not rats
- Deer

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- Red and Grey Squirrels
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- Raccoons

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- Mice, but not rats
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- Skunks

Study Participants – Inclusion Criteria

- Red and Grey Squirrels
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- Raccoons
- Skunks
- Beavers

Exclusion Criteria

Study Participants – Exclusion Criteria

- Feral Cats

Study Participants – Exclusion Criteria

- Feral Cats
- Domesticated Dogs and Cats

Woodland Creature Populations

Study Population

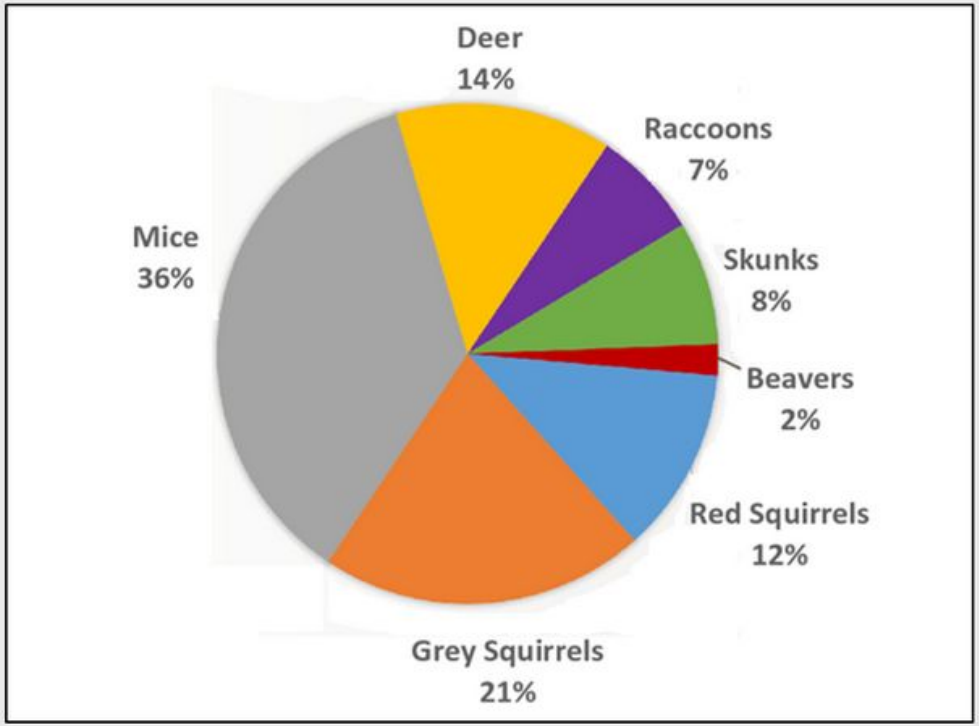


Figure 1: Study population composition

Recreational Activities

Chilling

(1)

Chasing

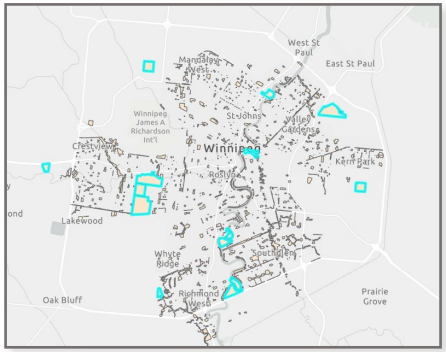
(2)

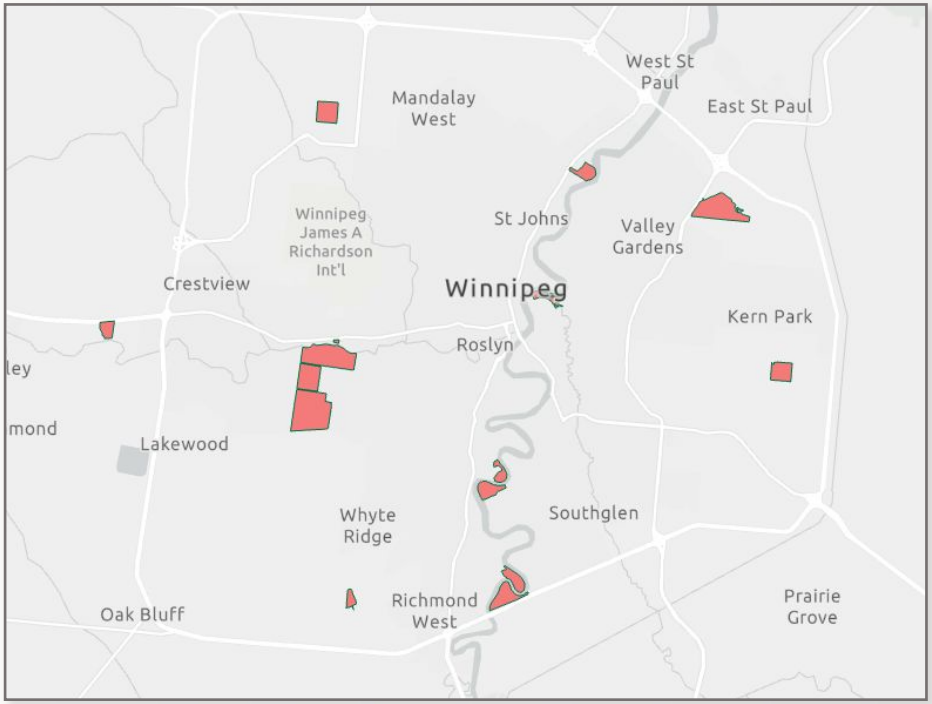
Leaping

(3)

Most Popular Recreational Locations

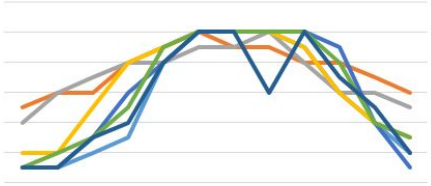
Most popular recreational locations

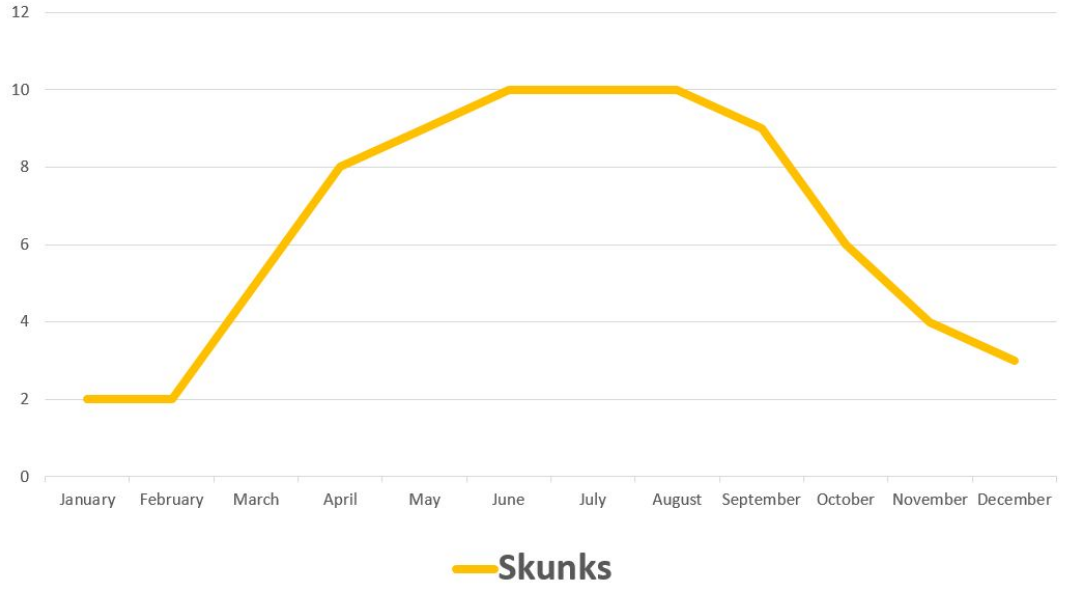


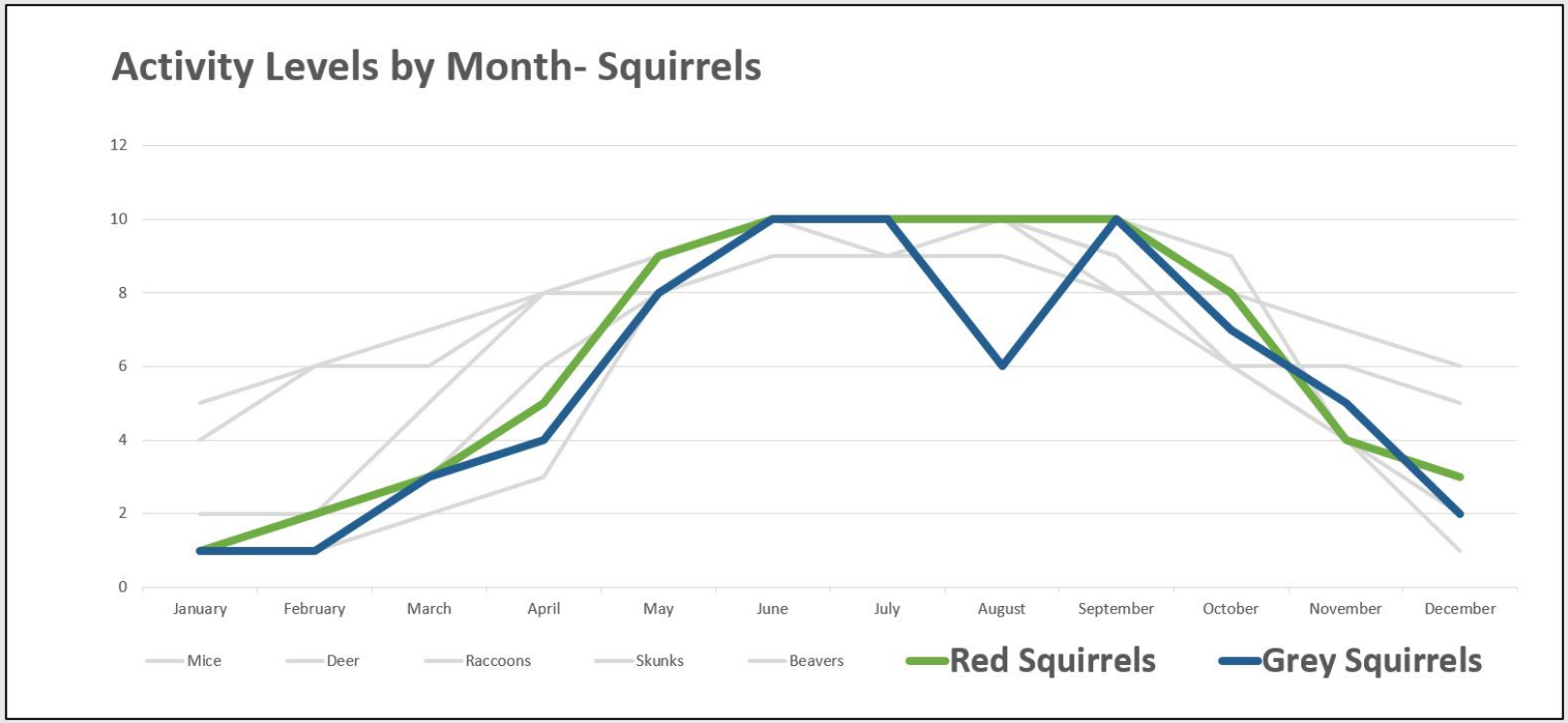


Activity Levels by Month

Activity Levels by Month- Skunks






Activity Levels by Month- Squirrels
12
10
8
6
4
2
0
January
February
March
April
May
June
July
August
September
October
November
December
Mice
Deer
Raccoons
Skunks
Beavers
Red Squirrels
Grey Squirrels

Squirrels – Obligate Hibernators

Squirrels – Obligate Hibernators

- Spontaneously, and annually, enter hibernation

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Squirrels – Obligate Hibernators

- Spontaneously, and annually, enter hibernation
- Regardless of temperature and access to food
- A physiological state
- Body temperature drops
- Heart and respiration rates slow

(4)

References

1. By Michael Hunter, CC–BY-SA-4.0, https://commons.wikimedia.org/wiki/File:A_Pair_of_Raccoon%27s_Sleeping_Red_Hill_Valley.JPG
2. Squirrels Chasing. (n.d.). Squirrels chasing each other. [Photograph]. Retrieved August 14, 2013 from http://media.nj.com/jersey-journal/photo/2012/08/11474342-essay.jpg
3. By Dwight Burdette, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=55128607
4. Hibernation. (n.d.) In *Wikipedia*. Retrieved March 6, 2020 from https://en.wikipedia.org/wiki/Hibernation

Wrap-Up

Visual Theory

Visual Elements

Wrap Up

Visual Theory

Visual Elements

Balance and Alignment

Wrap Up

Visual Theory

- Visual Elements
- Balance and Alignment

Fonts

Wrap Up

Visual Theory

- Visual Elements
- Balance and Alignment

Fonts

Accessibility

Cognitive Load

Cognitive Load

Consistency

Wrap Up

Cognitive Load

Consistency

Clarity

Wrap Up

Cognitive Load

Consistency

Clarity

Don’t Blind People with Science

Wrap Up

Cognitive Load

Consistency

Clarity

Don’t Blind People with Science, or Overpowering PowerPoints/Slides

Assessment