

ETC5523: Communicating with Data

Basic communication theory and practice

Lecturer: *Michael Lydeamore*

Department of Econometrics and Business Statistics

✉ michael.lydeamore@monash.edu

📅 Week 1

🌐 cwd.numbat.space

Aim

- Basic communication theory and its relevancy with communicating with data
- Demonstrate communication competency by selecting appropriate behaviour based on audience and self monitoring
- Identify and apply rhetorical elements to improve data storytelling
- Clearly articulate and express technical problems for others to help you

Why

- Effective communication with data is a blend of hard and soft skills
- You need the hard skills to process and understand the data
- But you also need the soft skills to get the message across to others

Communicating

“ *To effectively communicate, we must realize that we are all different in the way we perceive the world and use this understanding as a guide to our communication with others.*

– Anthony Robbins

Communicating **with data**

“ *The two words ‘information’ and ‘communication’ are often used interchangeably, but they signify quite different things. Information is giving out; communication is getting through.*

– *Sydney J. Harris*

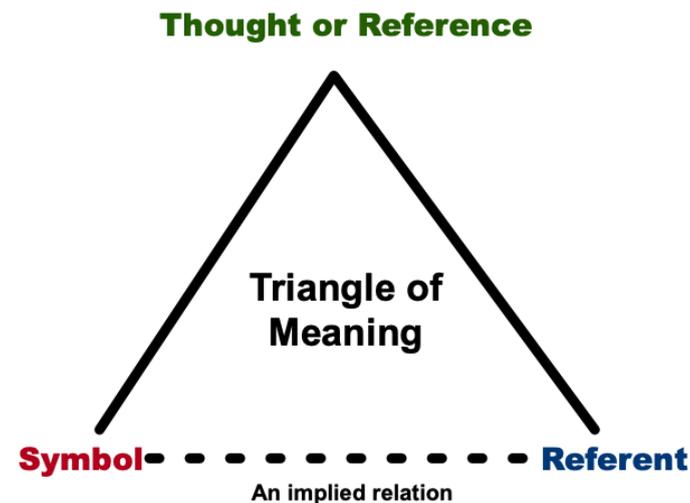
The Basics of Communication Theory

 Communication here refers to human communication

In this section, communication refers to *human* communication.

Communication is **symbolic**

- Arbitrary nature of symbols is overcome with linguistic rules
- Agreement among people about these rules is required to effectively communicate
- Meanings rest in people, not words



Ogden and Richards (1923) *The Meaning of Meaning*
Drawn by @statsgen

Communication is a **process**

Communication is often thought of as discrete, independent acts but in fact it is a continuous, ongoing process.

Linear communication model

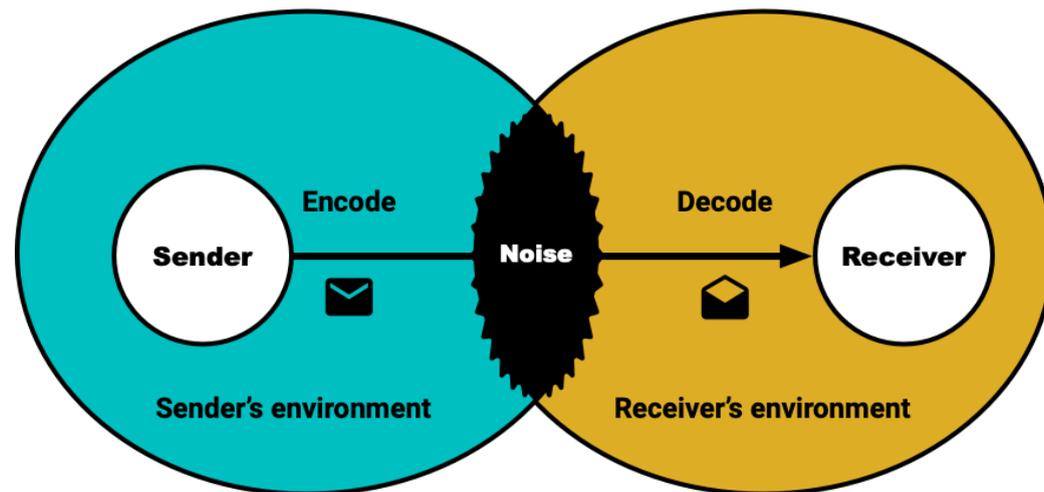


Figure inspired by Adler and Rodman (2006) Understanding Human Communication
Drawn by @statsgen

Transactional communication model

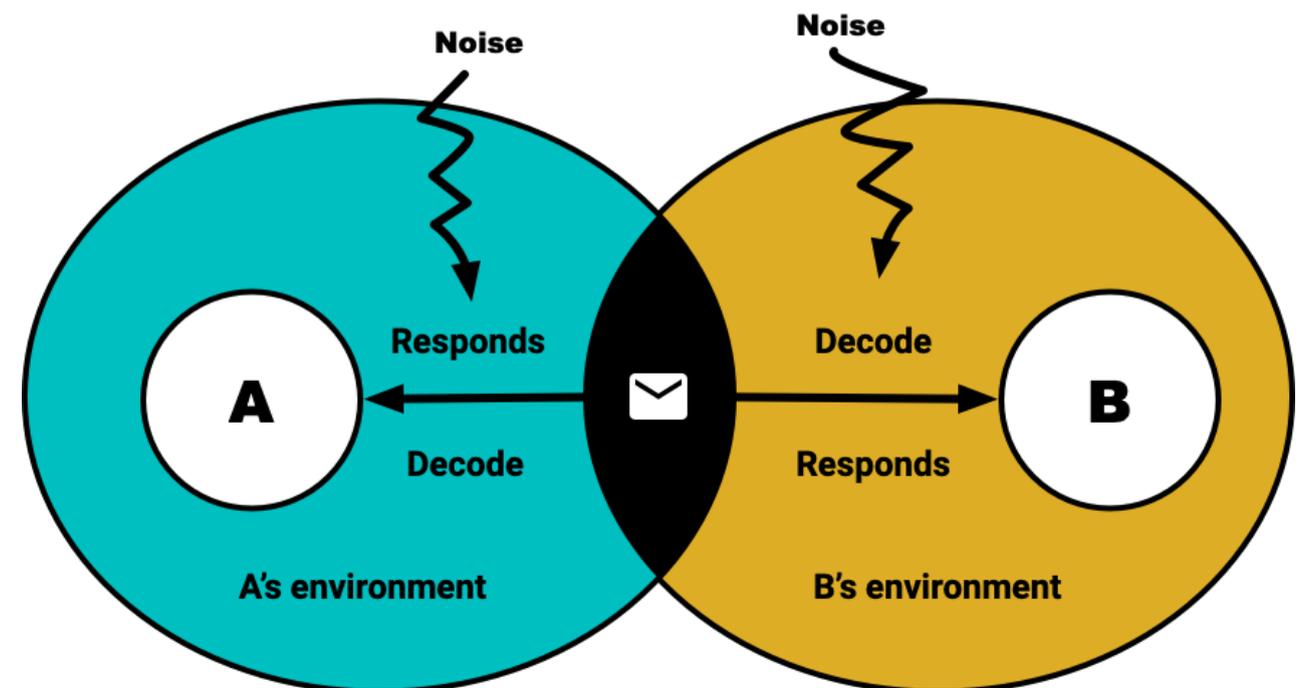


Figure inspired by Adler and Rodman (2006) Understanding Human Communication
Drawn by @statsgen

Communication **competence**

- There is no single, ideal way to communicate
- Competence is situational and relational (where, what and who)
- Ability to **select the most appropriate behaviour** in a particular situation
- Skill to **perform behaviour** not just knowing them
- **Empathy** or perspective taking
- **Cognitive complexity** – ability to construct a variety of framework for viewing an issue
- **Self-monitoring** – paying close to your own behaviour and use this to shape your behaviour

Types of communication

- **Intrapersonal** – communicating with one-self
- **Dyadic/interpersonal** – two people interacting
- **Small group** – two or more people interacting with group membership
- **Public** – a group too large for all to contribute
- **Mass** – messages transmitted to large, wide-spread audiences via media

Tutorial

How does your communication strategy change for different types of communication?

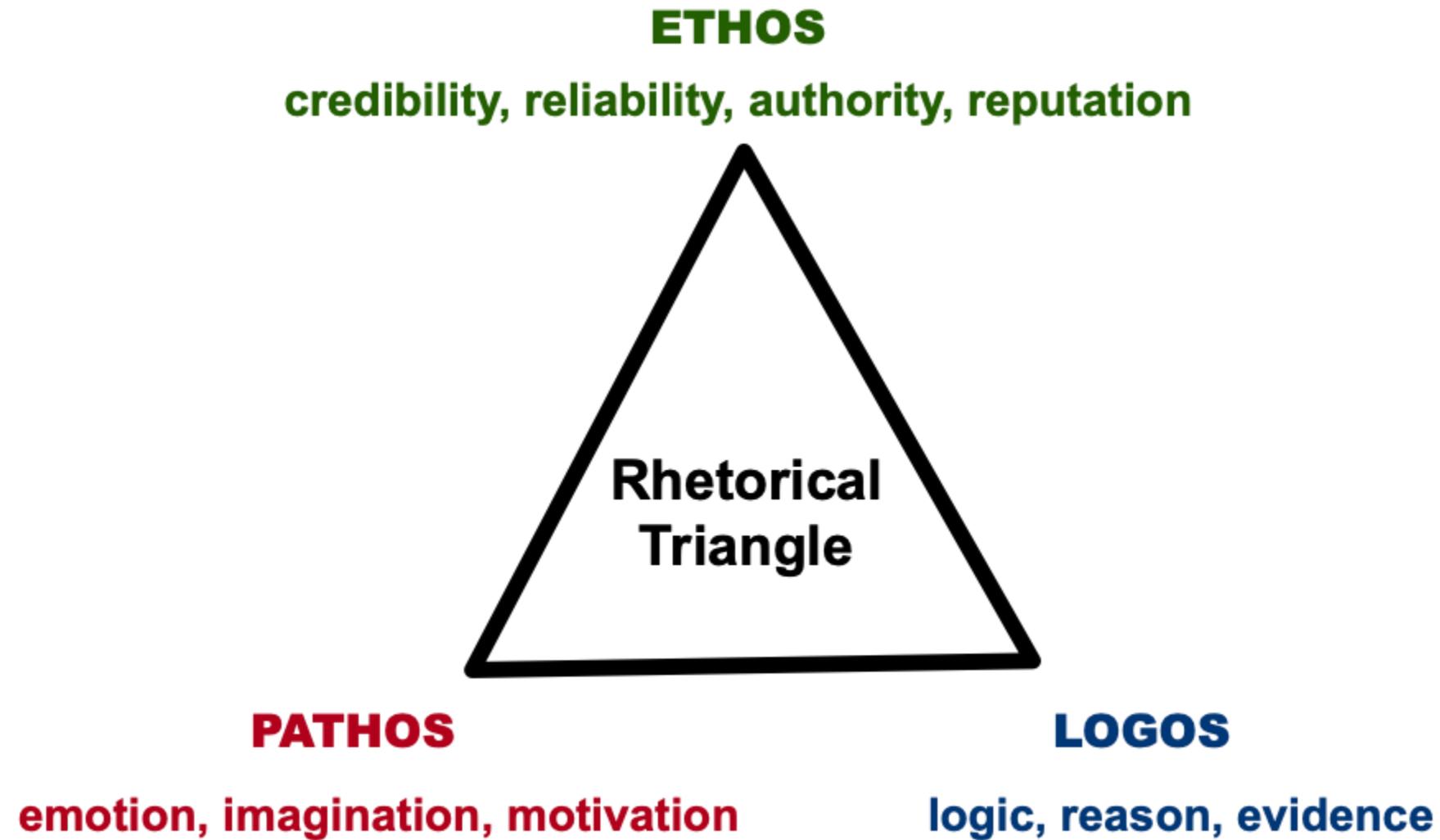
Effective communication

- Communication doesn't always require complete understanding
- We notice some messages more and ignore others, e.g. we tend to notice messages that are:
 - **intense,**
 - **repetitious, and**
 - **constrastive.**
- **Motives** also determine what information we select from environment

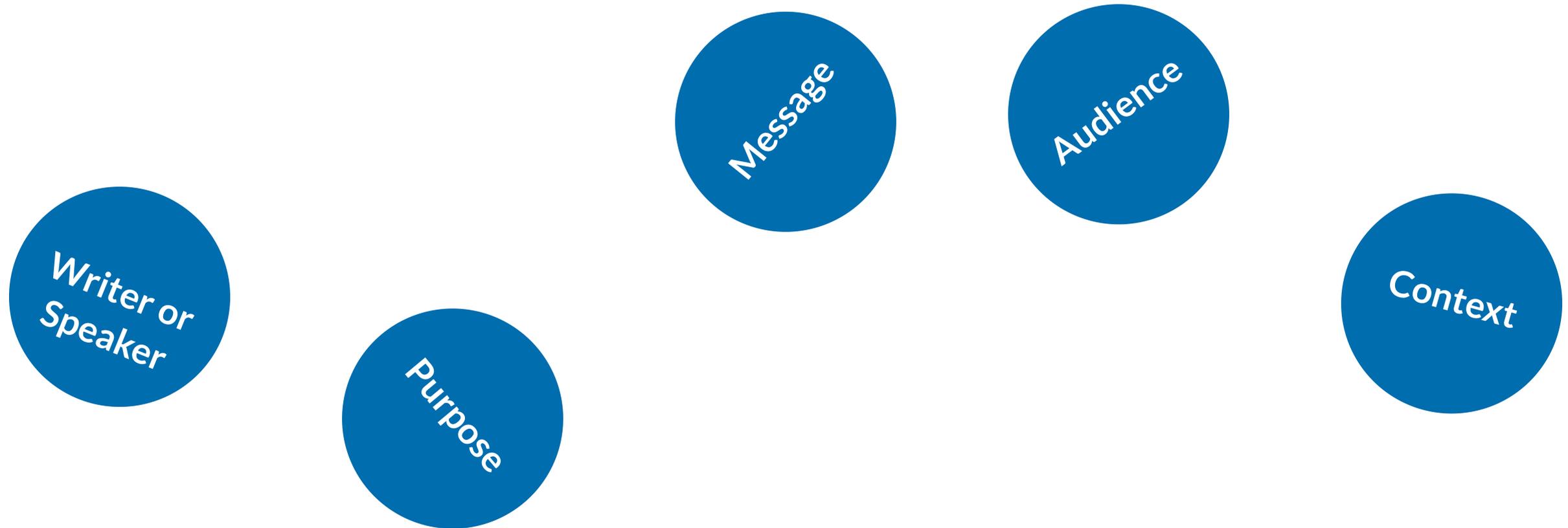
Rhetorics

The art of effective or persuasive speaking or writing

Rhetorical Triangle



Rhetorical Situation



“ *No one ever made a decision because of a number. They need a story.*
– *Daniel Kahneman*

“ *Maybe stories are just data with a soul.*
– *Brene Brown*

Hans Rosling

Communicating *your problem*

- Asking for help, requires you to communicate what your problem is to another party.
- How you communicate your problem, can assist you greatly in getting the answer to your problem.

SOS Asking for help **1** Part 1

- What do you think about the question below?

Adjusting size of two ggplots within single R chunk in Rmarkdown

Ask Question

Asked 2 days ago Active 2 days ago Viewed 13 times



-1

I am looking to adjust the size of two separate ggplots within the same R chunk in Rmarkdown. These plots must be different sizes when outputted as a pdf, so defining the dimensions at the beginning of the chunk doesn't work. Does anyone have any ideas?



Thank you!



r ggplot2 latex r-markdown

SOS Asking for help **1** Part 2

- What do you think now?

I am looking to adjust the size of two separate ggplots within the same R chunk in Rmarkdown. These plots must be different when outputted as a pdf, so defining the dimensions at the beginning of the chunk doesn't work. Does anyone have any ideas? My code is below.

```
1 ```{r, fig.height = 3, fig.width = 3}
2 ggplot(df, aes(weight, height)) +
3   geom_point()
4
5 ggplot(df, aes(height, volume)) +
6   geom_point()
7 ```
```

SOS Asking for help **1** Part 3

- Is this better?

I am looking to adjust the size of two separate ggplots within the same R chunk in Rmarkdown. These plots must be different when outputted as a pdf, so defining the dimensions at the beginning of the chunk doesn't work. Does anyone have any ideas? My code is below.

```
1 ```{r, fig.height = 3, fig.width = 3}
2 library(ggplot2)
3 ggplot(df, aes(weight, height)) +
4   geom_point()
5
6 ggplot(df, aes(height, volume)) +
7   geom_point()
8 ```
```

SOS Asking for help **1** Part 4

- Okay better now?

I am looking to adjust the size of two separate ggplots within the same R chunk in Rmarkdown. These plots must be different when outputted as a pdf, so defining the dimensions at the beginning of the chunk doesn't work. Does anyone have any ideas? My code is below.

```
1 ```{r, fig.height = 3, fig.width = 3}
2 library(ggplot2)
3 df <- read.csv("mydata.csv")
4 ggplot(df, aes(weight, height)) +
5   geom_point()
6
7 ggplot(df, aes(height, volume)) +
8   geom_point()
9 ```
```

SOS Asking for help **1** Part 5

- Are we done now?

I am looking to adjust the size of two separate ggplots within the same R chunk in Rmarkdown. These plots must be different when outputted as a pdf, so defining the dimensions at the beginning of the chunk doesn't work. Does anyone have any ideas? My code is below.

```
1 ```{r, fig.height = 3, fig.width = 3}
2 library(ggplot2)
3 ggplot(trees, aes(Girth, Height)) +
4   geom_point()
5
6 ggplot(trees, aes(Height, Volume)) +
7   geom_point()
8 ```
```

? How to ask questions?

Checklist (note: not an exhaustive checklist)

- Is the problem clearly and succinctly described?
- Is the expected solution or behaviour outlined?
- Are you asking the right people at the right place?

If the question is asked in an public forum or similar:

- Can people who can answer your question find your question? E.g. does the post have appropriate tags or keywords to reach the right experts?

If the problem is computer system related...

- Can the problem be easily reproduced on other people's system?
- Is the minimum reproducible code or steps supplied?

If the problem is based on data ...

- Is the data supplied?
- If the data is big, could you cull your data further to communicate or reproduce the problem?

SOS Asking for help 1 Check

Adjusting size of two ggplots within single R chunk in Rmarkdown

[Ask Question](#)

Asked 2 days ago Active 2 days ago Viewed 13 times

▲ -1 I am looking to adjust the size of two separate ggplots within the same R chunk in Rmarkdown. These plots must be different sizes when outputted as a pdf, so defining the dimensions at the beginning of the chunk doesn't work. Does anyone have any ideas?

▼ Thank you!



r ggplot2 latex r-markdown

- Is the problem clearly and succinctly defined?
- Is the expected solution or behaviour outlined?
- Is the problem asked at the right place or person?
- Can people who can answer your question find your question?
- Can the problem be easily reproduced on other people's system?
- Is the minimum reproducible code or steps supplied?
- Is the data supplied?
- If the data is big, could you cull your data further to communicate or reproduce the problem?

SOS Asking for help 2

- How about the question on the right?
- What makes it *hard* or *easy* for people to answer this question?

How to plot line graph using date as x and freq as y in R using ggplot?

Asked 3 days ago · Active 3 days ago · Viewed 26 times

I have this data frame `Count_date1` That I need to plot using date wise order

	Date	freq
1	13-04-2015	24
2	13-05-2015	12
3	13-06-2015	32
4	14-04-2015	23
5	14-05-2015	15
6	14-06-2015	16
7	15-04-2015	12
8	15-05-2015	15
9	15-06-2015	12
10	16-04-2015	12
11	16-05-2015	12
12	16-06-2015	12
13	17-04-2015	12
14	17-05-2015	12
15	17-06-2015	12
16	18-04-2015	12
17	18-05-2015	12
18	18-06-2015	12
19	19-04-2015	12
20	19-05-2015	12
21	19-06-2015	12
22	20-04-2015	12
23	20-05-2015	12
24	20-06-2015	12
25	21-04-2015	12
26	21-05-2015	12
27	21-06-2015	12
28	22-04-2015	12
29	22-05-2015	12
30	22-06-2015	12
31	23-04-2015	12
32	23-05-2015	12
33	23-06-2015	12
34	24-04-2015	24
35	24-05-2015	7

The Overflow Blog

- ✓ The key comp community
- ✓ Podcast 258: v

Featured on Meta

I tried this code

```
ggplot(count_date1, aes(Date, freq)) +
  geom_point() +
  geom_line(aes(group=Date)) +
  xlab("Date") +
  ylab("No. of Complaints")
```

but the graph looks too ugly and uninterpretable with dates getting congested can anyone help ???

0 R: How to plot a line graph using a loop

0 How to plot a line graph with error plots w

Hot Network Q

- How languages co different syllables f
- Would mail in votin Republicans?
- Am universitie gu

Session Information

You can easily get the session information in R using `sessioninfo::session_info()`.

Scroll to see the packages used to make these slides.

```
1 sessioninfo::session_info()

- Session info -----
setting  value
version  R version 4.3.0 (2023-04-21)
os       macOS Ventura 13.4
system   aarch64, darwin20
ui       X11
language (EN)
collate  en_US.UTF-8
ctype    en_US.UTF-8
tz       Australia/Melbourne
date     2023-07-18
pandoc   3.1.2 @ /usr/local/bin/ (via rmarkdown)

- Packages -----
package  * version date (UTC) lib source
```



Reproducible Example with **reprex** LIVE DEMO

- Copy your minimum reproducible example then run

```
1 reprex::reprex(session_info = TRUE)
```

- Once you run the above command, your clipboard contains the formatted code and output for you to paste into places like [GitHub issues](#), [Stackoverflow](#) and forums powered by [Discourse](#), e.g. [RStudio Community](#).
- For general code questions, I suggest that you post to the community forums rather than Moodle.

Communicating with Data

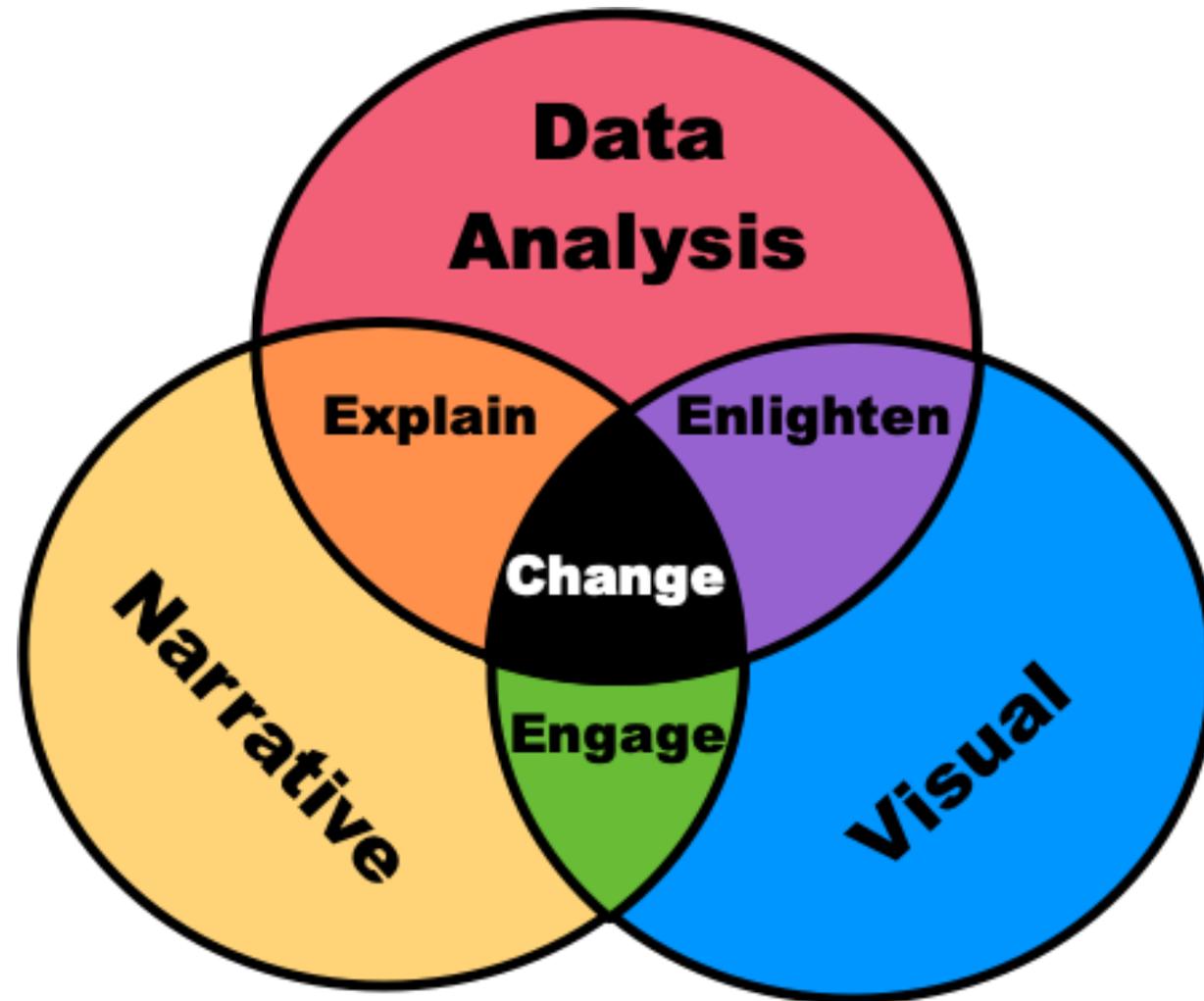


Figure inspired by Spencer (2022) Data in Wonderland
Drawn by @statsgen

Week 1 Lesson

! Summary

- Communication is a symbolic, ongoing process that requires ***getting through*** to other parties
- There is no single ideal way to communicate – communication competence depends on situation and relations but a competent communicator can select and perform appropriate behaviour based on **seeing other people's perspectives** and **understanding their own behaviour**
- We discussed about the **elements of rhetorics** and how it relates to telling a compelling data story
- We looked at the case study with communicating your problem to ask for help

Week 1 Lesson

Resources

- See more at [Learn R Chapter 3: Troubleshooting and asking for help](#)
- Watch more about storytelling with data at:
 - [Why storytelling is so powerful in the digital era](#)
 - [Why storytelling is more trustworthy than presenting data](#)
 - [Making data mean more through storytelling](#)

