

# ETC5523: Communicating with Data

## Narrative

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📅 Week 10

🌐 [cwd.numbat.space](http://cwd.numbat.space)

## ! Aim

- Compose effective data stories by:
  - identifying the goals,
  - selecting appropriate data, visualisations and aesthetic designs, and
  - receiving feedback.
- Understand and apply narrative structures and techniques to enhance communication with data

# Recall: Communication is a **process**

Transactional communication model

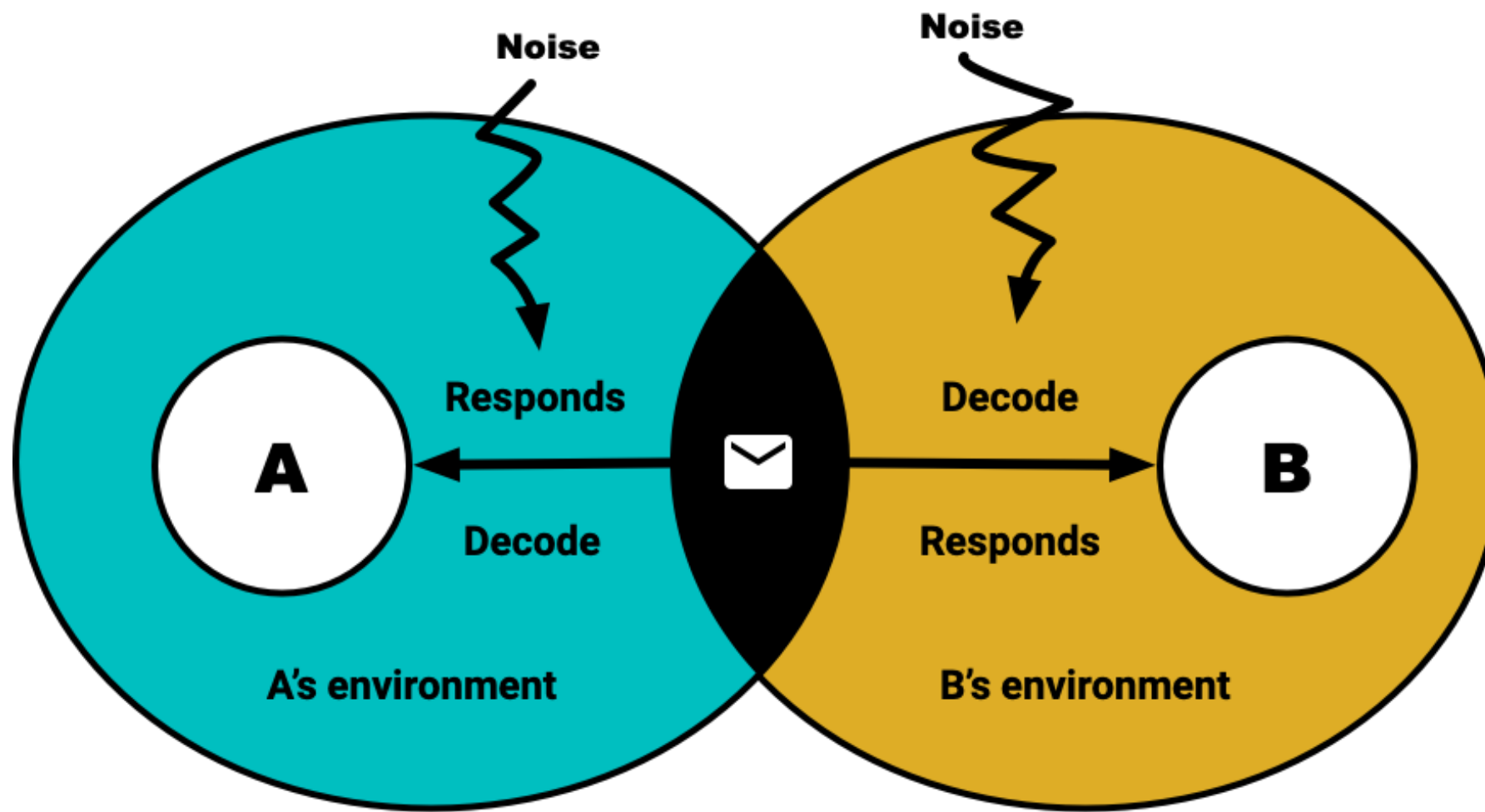


Figure inspired by Adler and Rodman (2006) Understanding Human Communication  
Drawn by @statsgen

# Communication problems

## *The technical problem*

How accurately can the symbols of communication be transmitted?

## *The semantic problem*

How precisely do the transmitted symbols convey the desired meaning?

## *The effectiveness problem*

How effectively does the received meaning affect conduct in the desired way?

# Principles of Communicating Data

1. Know your goal (target audience, intended message, desired effect)
2. Use the right data
3. Select suitable visualisations
4. Design for aesthetics
5. Choose an effective medium and channel
6. Check the results, i.e. get **feedback**

# Recall: Communicating with Data

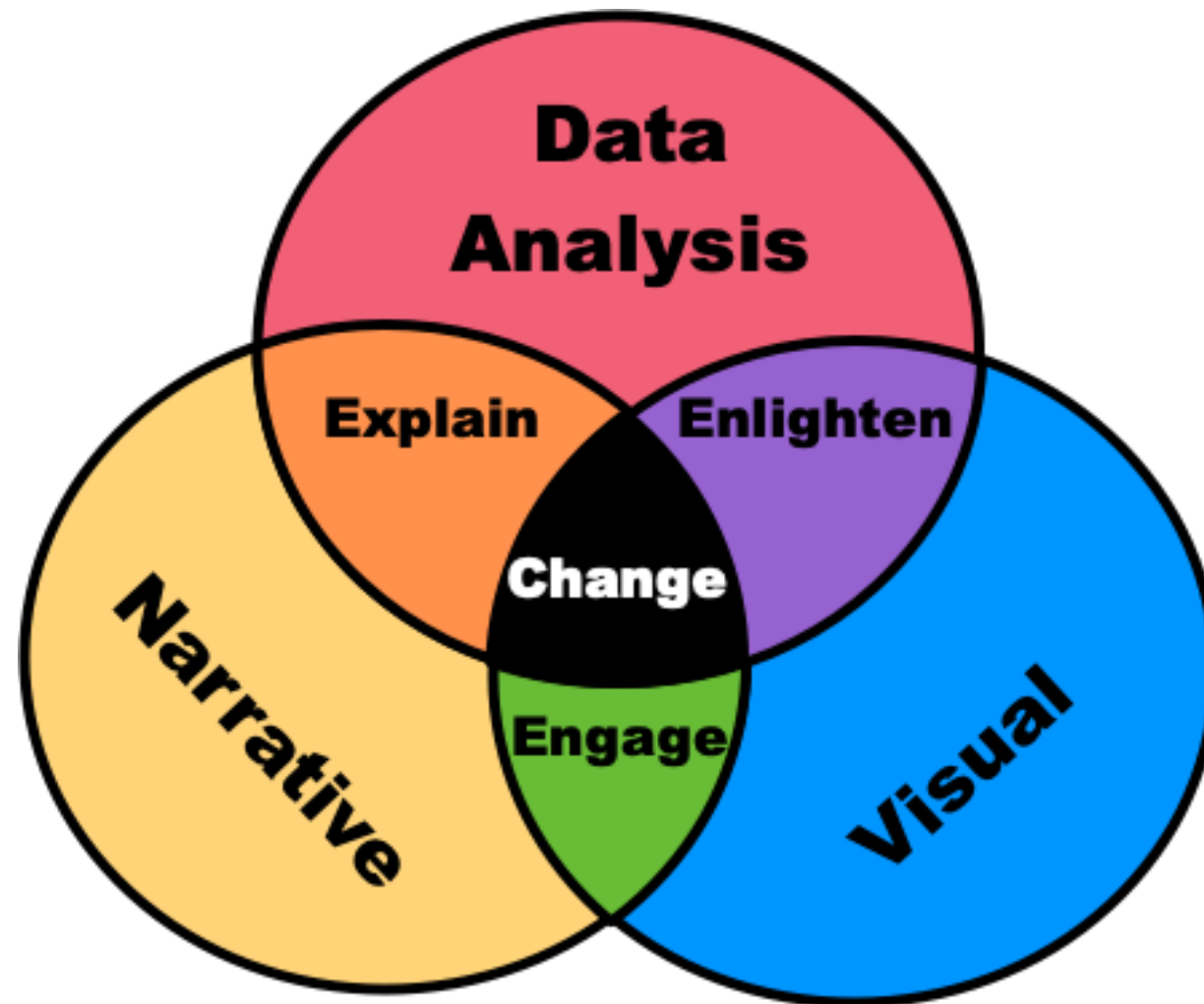
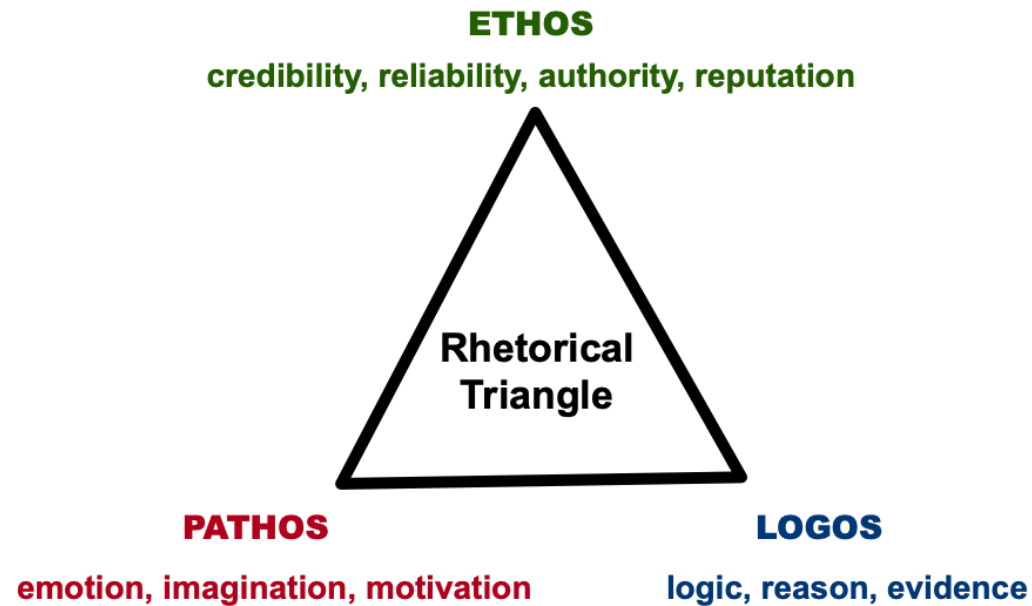


Figure inspired by Spencer (2022) Data in Wonderland  
Drawn by @statsgen

# Recall: Rhetorics

- The art of effective or persuasive speaking or writing

## Rhetorical triangle



## Rhetorical situation

- Writer or Speaker
- Purpose
- Message
- Audience
- Context



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

# Basic Story Types

# One Story Type

# Conflict



# Seven Story Types

1. Overcoming the monster
2. Rags to riches
3. The quest
4. Voyage and return
5. Comedy
6. Tragedy
7. Rebirth

# Twenty Story Types

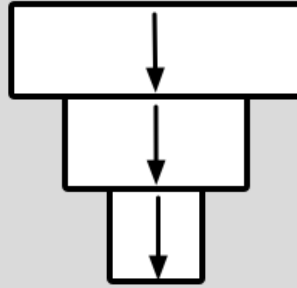
- |               |                    |                     |
|---------------|--------------------|---------------------|
| 1. Quest      | 8. Rivalry         | 15. Forbidden Love  |
| 2. Adventure  | 9. Underdog        | 16. Sacrifice       |
| 3. Pursuit    | 10. Temptation     | 17. Discovery       |
| 4. Rescue     | 11. Metamorphosis  | 18. Wretched Excess |
| 5. Escape     | 12. Transformation | 19. Ascension       |
| 6. Revenge    | 13. Maturation     | 20. Descension.     |
| 7. The Riddle | 14. Love           |                     |

# Basic Data Story Types

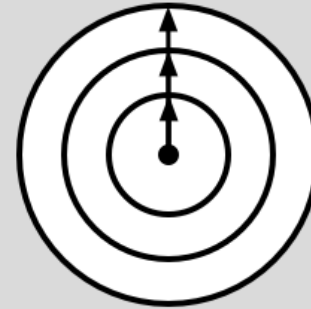
# Data Story Types



Change over time



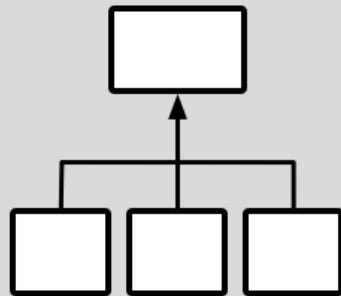
Drill down



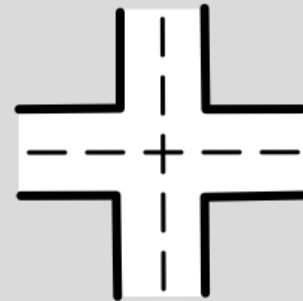
Zoom out



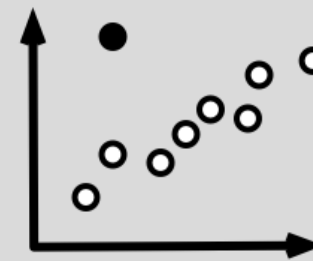
Contrast



Factors



Intersections



Outliers



# Data: key crop yields

```
1 # devtools::install_github("etc5523-2022/data", ref = "tut9")
2 cwdata::key_crop_yields
```

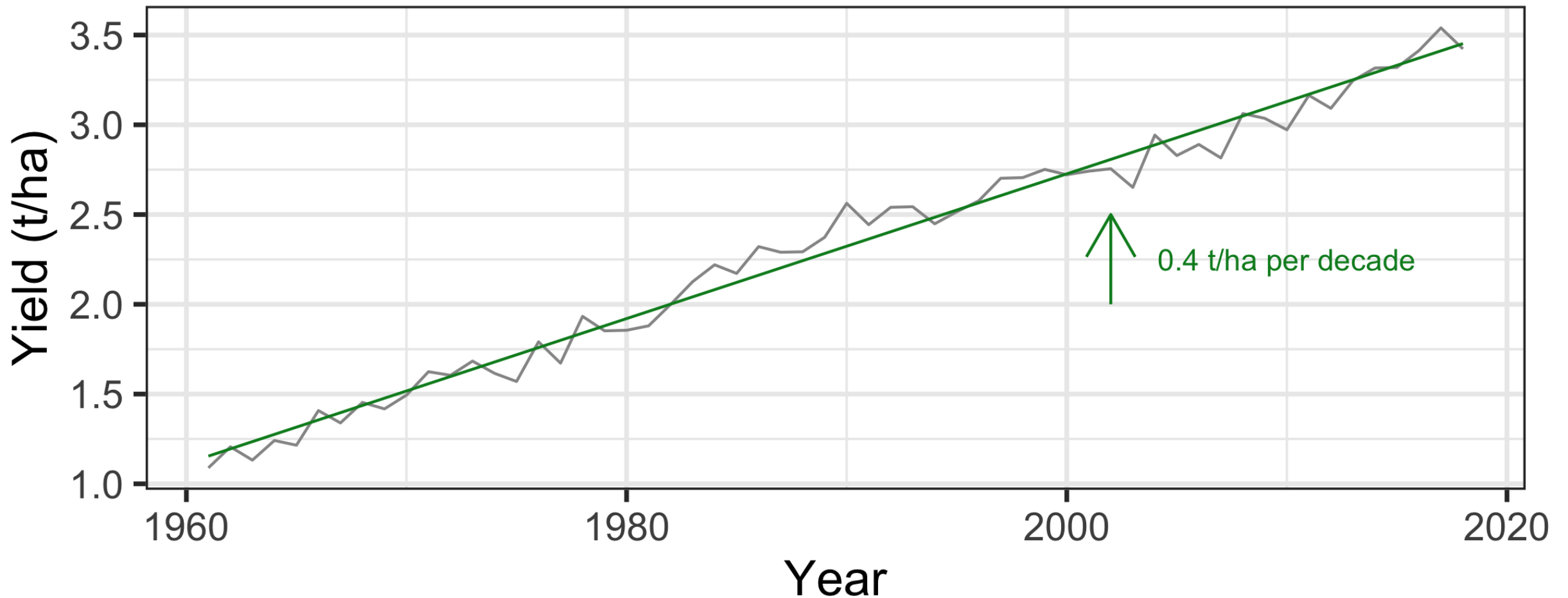
```
# A tibble: 143,825 × 5
  entity      code  year crop      yield
  <chr>      <chr> <dbl> <chr>    <dbl>
1 Afghanistan AFG    1961 wheat     1.02
2 Afghanistan AFG    1961 rice      1.52
3 Afghanistan AFG    1961 maize     1.4
4 Afghanistan AFG    1961 soybeans  NA
5 Afghanistan AFG    1961 potatoes  8.67
6 Afghanistan AFG    1961 beans     NA
7 Afghanistan AFG    1961 peas      NA
8 Afghanistan AFG    1961 cassava   NA
9 Afghanistan AFG    1961 barley    1.08
10 Afghanistan AFG    1961 cocoa     NA
# ... with 143,815 more rows
```

One data, many stories



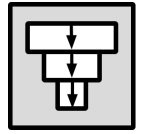
# Change over time

Total world wheat yield is increasing



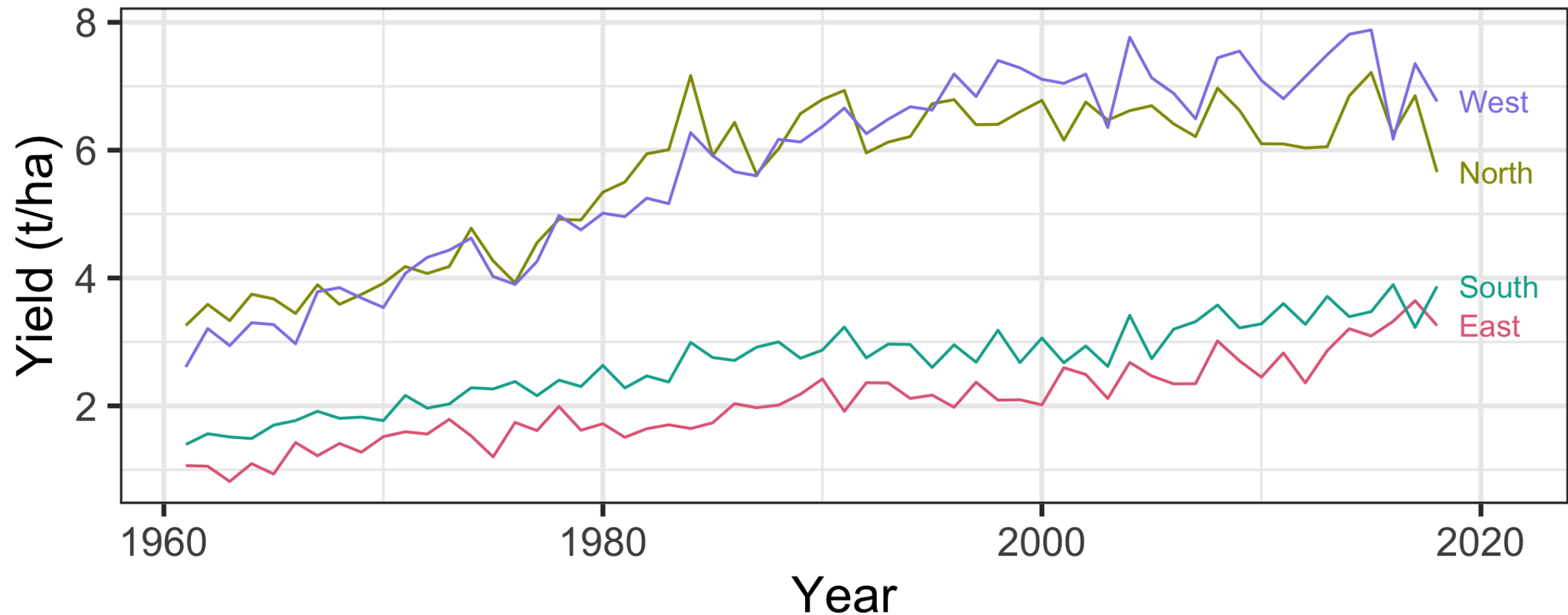
Source: Our World in Data / Tidy Tuesday 2020-09-01





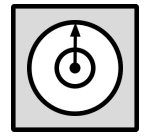
# Drill down

Major wheat yield in Europe is in North and West



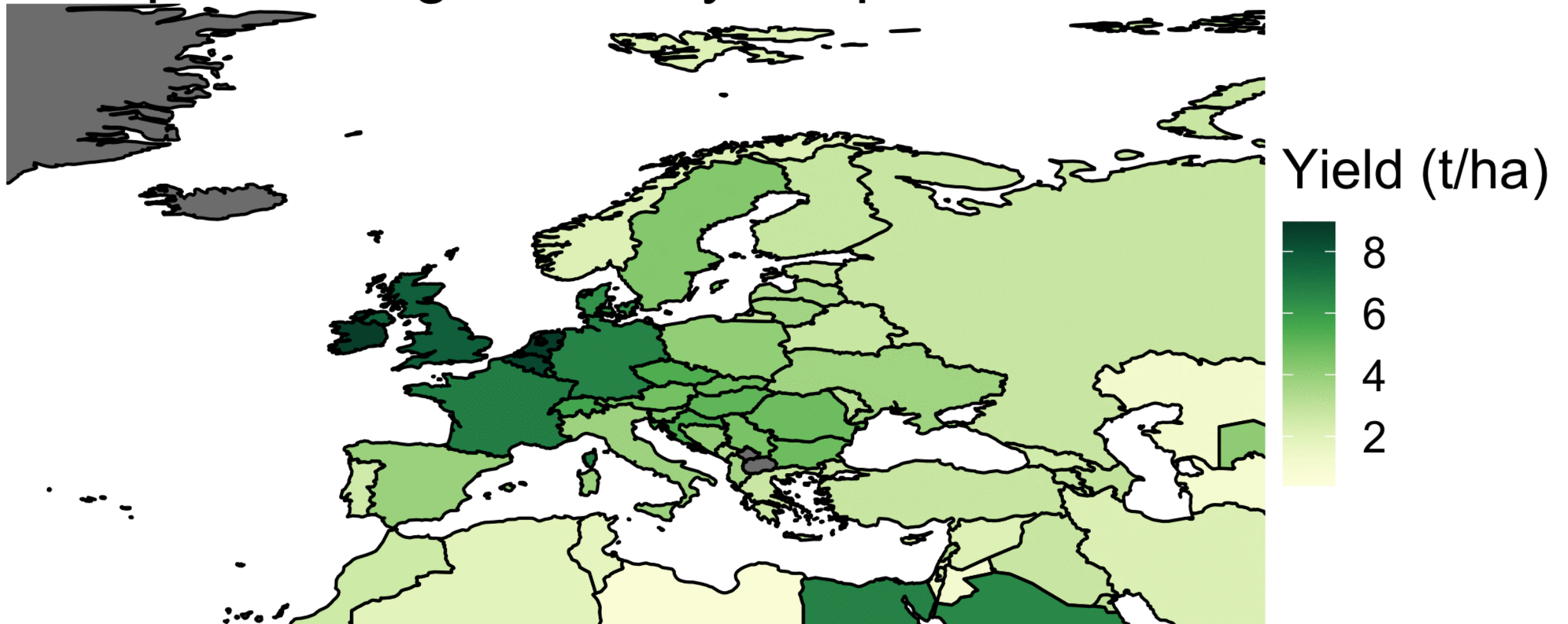
Source: Our World in Data / Tidy Tuesday 2020-09-01





# Zoom out

Europe has high wheat yield per hectare, 2018



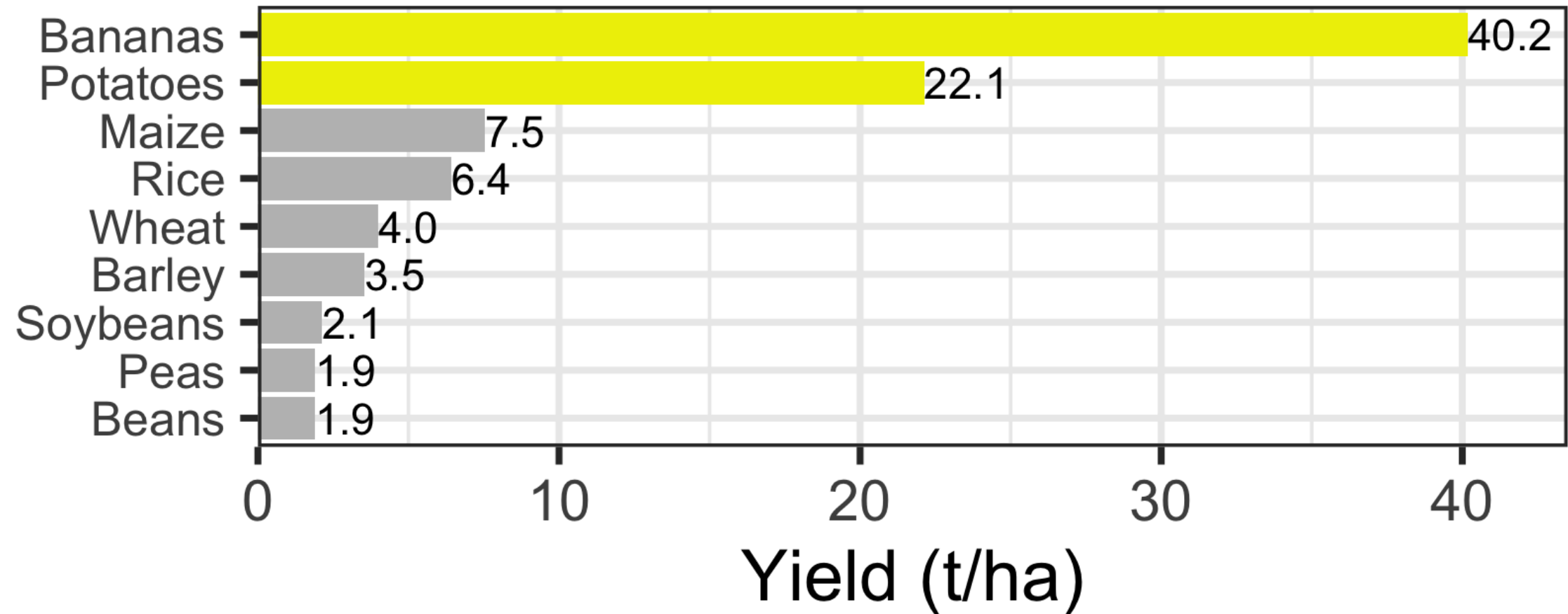
Source: Our World in Data / Tidy Tuesday 2020-09-01  
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# Contrast

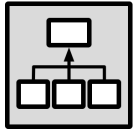
Bananas and potatoes are Europe's staple food,



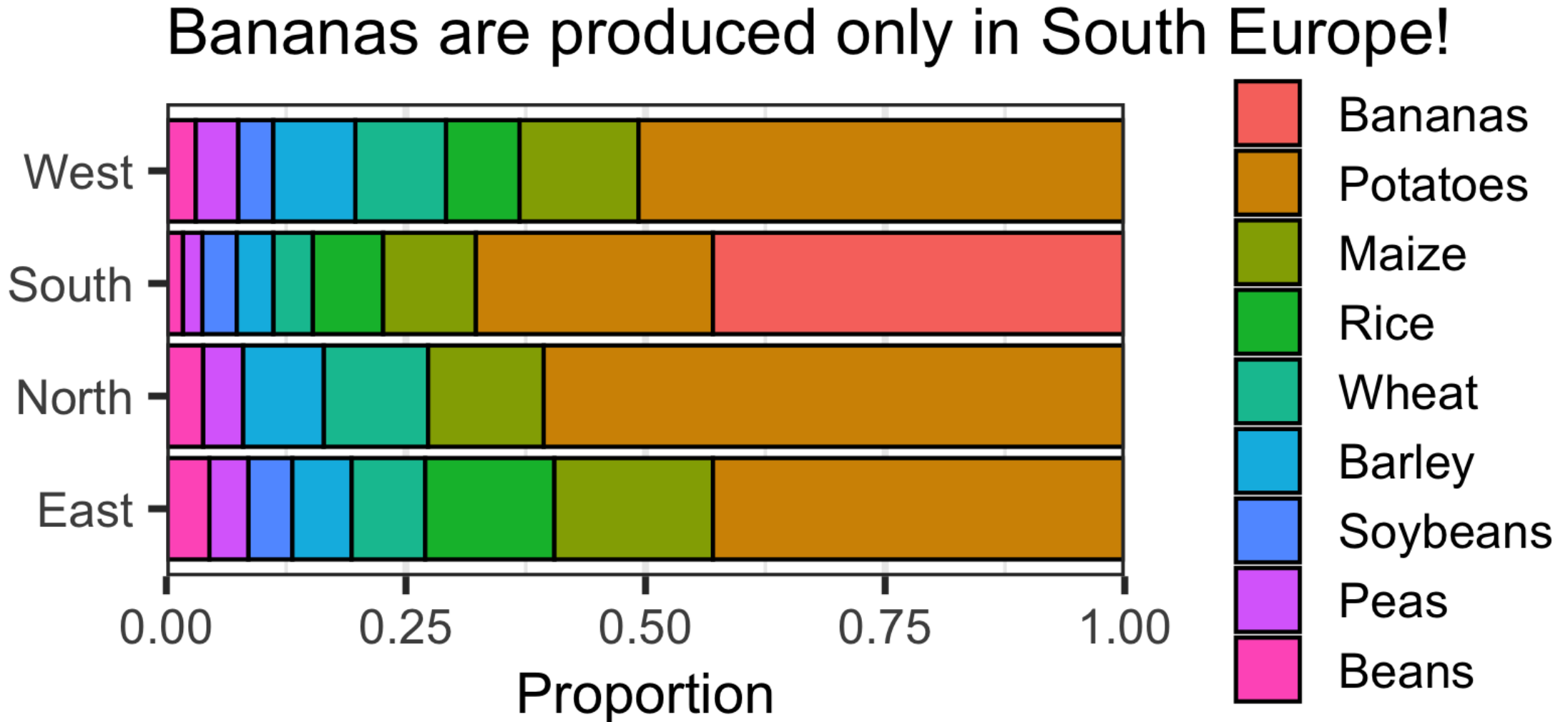
Source: Our World in Data / Tidy Tuesday 2020-09-01





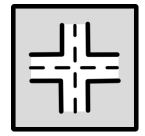


# Factors



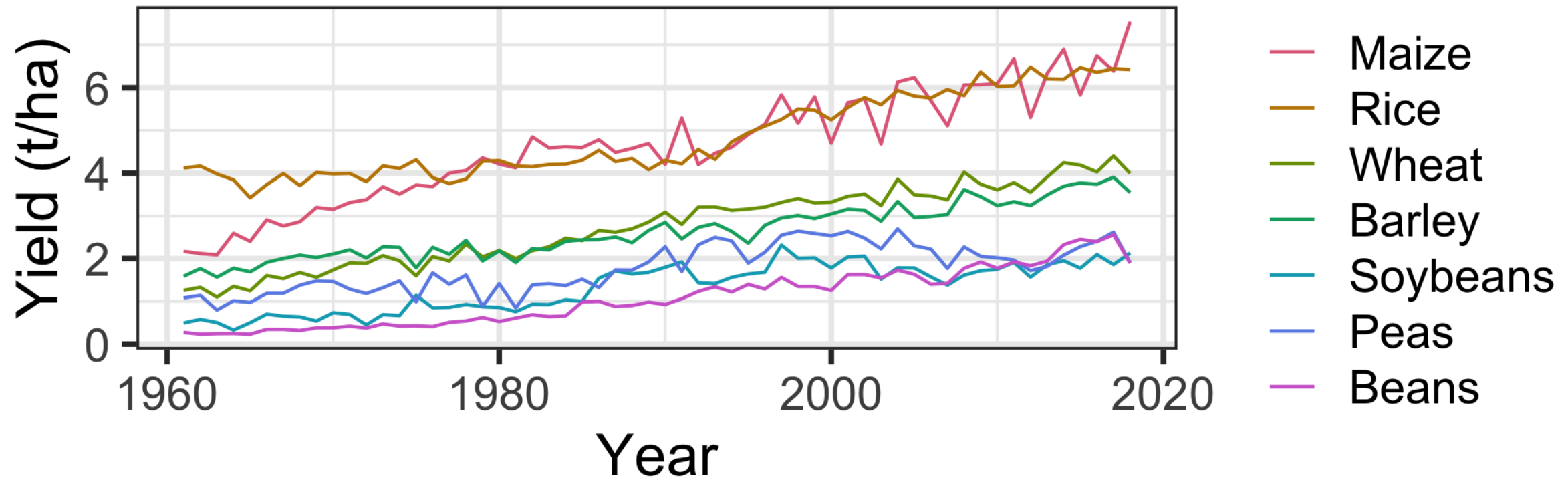
Source: Our World in Data / Tidy Tuesday 2020-09-01



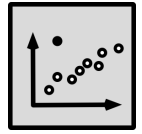


# Intersections

Maize became as popular as rice in Europe!

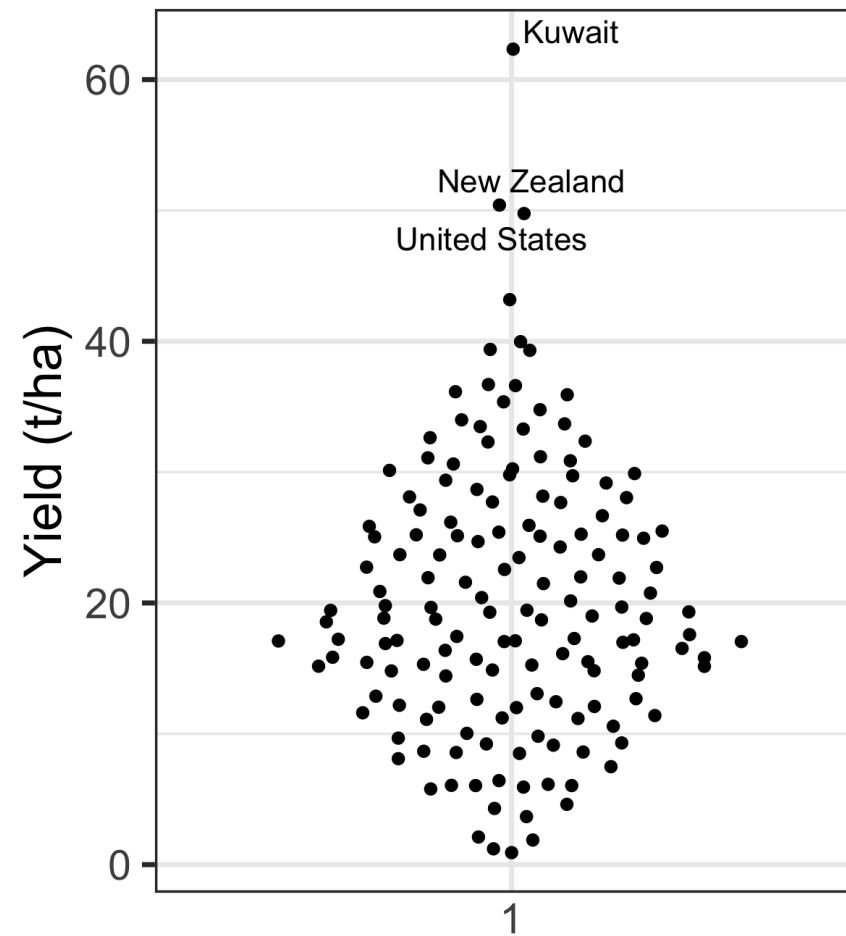


Source: Our World in Data / Tidy Tuesday 2020-09-01



# Outliers

Kuwait, NZ & USA have highest potato yields, 2018

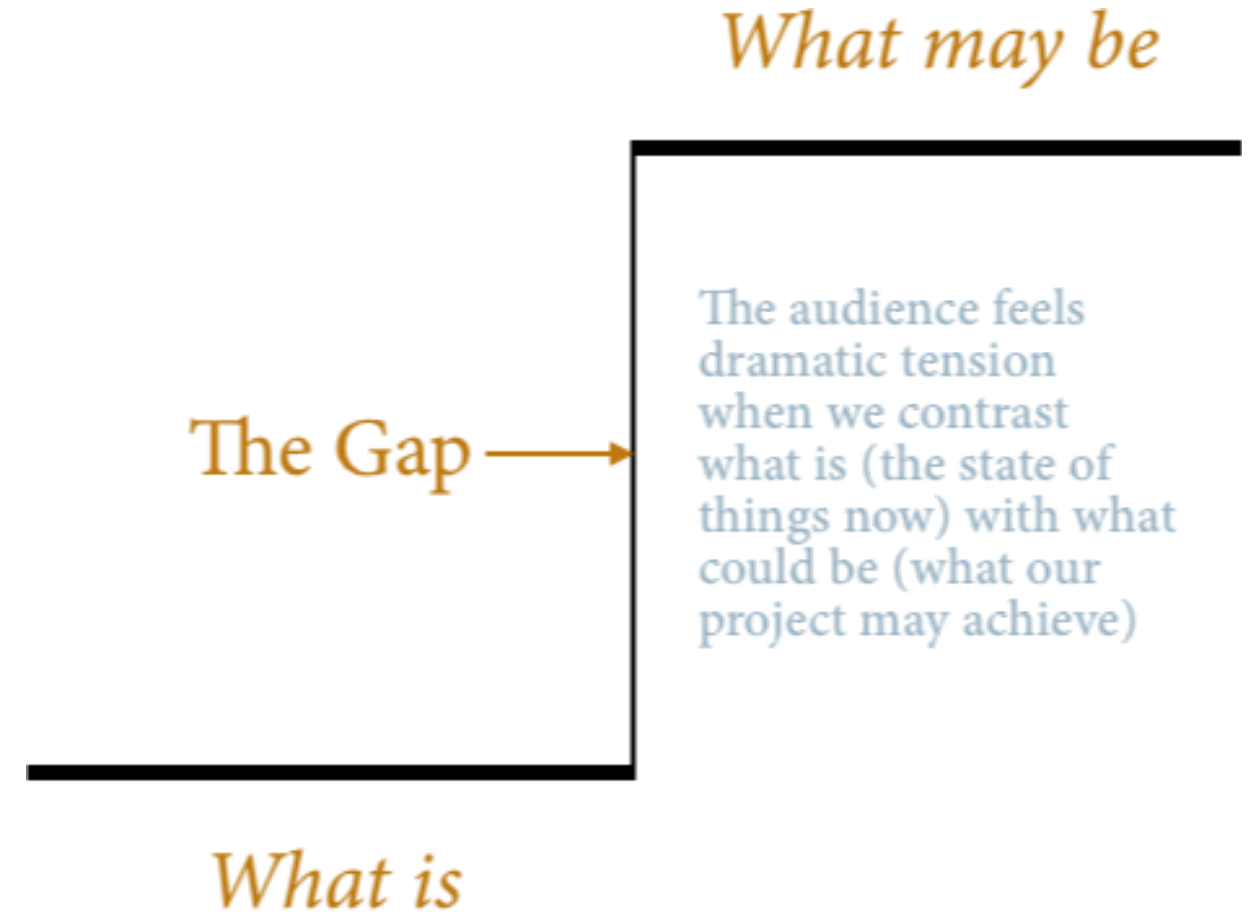
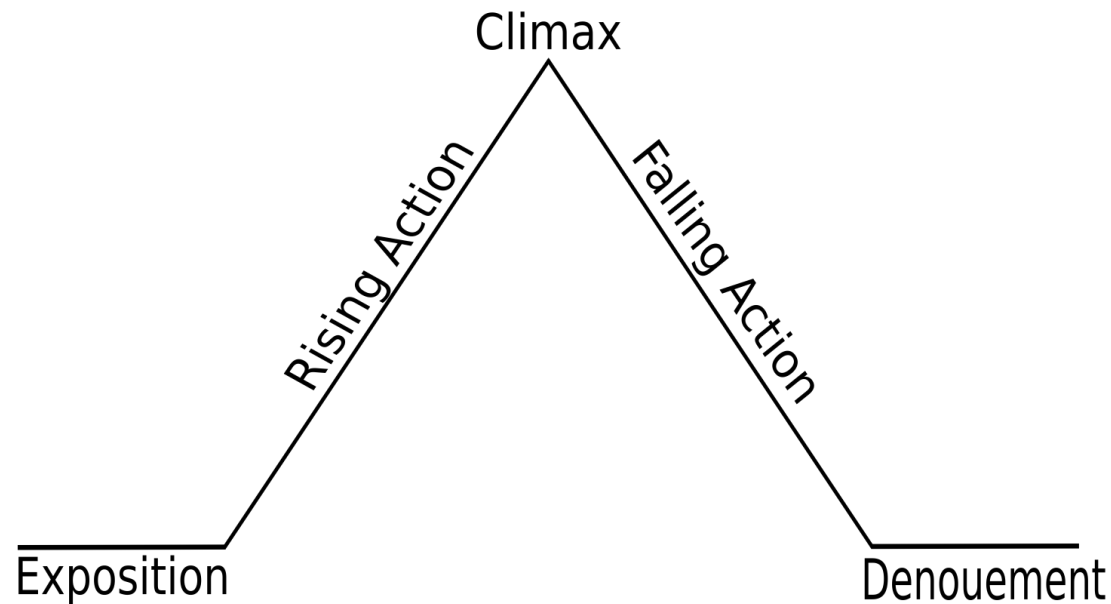


Source: Our World in Data / Tidy Tuesday 2020-09-01



# Narrative structure

# Narrative structure





# Elements of statistical persuasion

- **Magnitude of effects:** the strength of a statistical argument is enhanced in accord with the quantitative magnitude of support for its qualitative claim.
- **Articulation of results:** the degree of comprehensible detail in which conclusions are phrased.
- **Generality of effects:** the replicability of the results.
- **Interestingness of argument:** the potential to change people believe.
- **Credibility of argument:** the believability of a claim.

# Narrative techniques

- **Metaphor, simile, analogy or anecdotes**, e.g. “one in three households is wasting the equivalent of a shopping bag full of food each week.”
- **Comparisons**, e.g. “While the average Australian man has \$52,786 in their savings account right now, the average woman sits at around half that figure – \$26,132.”
- **Flow of information**, e.g. new information before old, simple before complex information.

# Improving communication

# Feedback loops

- Recall **there is no single, ideal way to communicate.**
- Get in a habit to seek feedback from others about:
  - **Reach:** Did the audience even receive your message at all? Who did and who didn't?
  - **Understanding:** Did the audience interpret the data message in the way you intended?
  - **Impact:** Did the audience react in the way you wanted them to react?

# Week 10 Lesson

## Summary

- Storytelling is a powerful technique to communicate data
- Compose effective data stories requires you to
  - know your the goals (audience, message, desired effect),
  - selecting appropriate data, visualisations and aesthetic designs, and
  - receiving feedback.

## Resources

- [Spencer \(2022, Feb. 17\). Data in Wonderland. Section 1.](#)
- Jones (2014) Communicating Data with Tableau