https://amazingbedtimestory.com/little-red-riding-hood-story/

Storytelling I

Business Intelligence

https://amazingbedtimestory.com/little-red-riding-hood-story/

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Let’s Recall a Famous Story

A Few Lessons from Knaflic (2015)

1. Understand the context
2. Choose an appropriate visual display
3. Eliminate clutter
4. Focus attention where you want it
5. Think like a designer
6. Tell a story

Knaflic, C. G. (2015). Storytelling with Data.

Where We Are

- ✓ Connect Tableau to various Datasets: Excel and CSV files

Import

- ✓ Create Barcharts
- ✓ Create Maps
- ✓ Create Piecharts
- ✓ Create Interactive Dasl
- ✓ Create Area Charts
- ✓ Create Scatterplots
- ✓ Create Treemaps
- ✓ Create Storylines

Explore

```
> # how did we do with test set? confusion matrix
> confusionMatrix(data = churn_test$pred_churn,
+                 reference = churn_test$Churn,
+                 mode = "prec_recall",
+                 positive = "Yes")
Confusion Matrix and Statistics

          Reference
Prediction  No Yes
       No  906 186
       Yes 126 187

               Accuracy : 0.7779
                 95% CI : (0.7553, 0.7994)
    No Information Rate : 0.7345
    P-Value [Acc > NIR] : 9.989e-05

                  Kappa : 0.3998

 Mcnemar's Test P-Value : 0.0008371

            Precision : 0.5974
               Recall : 0.5013
                   F1 : 0.5452
           Prevalence : 0.2655
       Detection Rate : 0.1331
 Detection Prevalence : 0.2228
    Balanced Accuracy : 0.6896

     'Positive' Class : Yes
```

Evaluate

Question

Wrangle

- ✓ Understand Types of Joins and how they work

Model

```
case_when(condition-1 ~ output-1  # IF
         ,condition-2 ~ output-2  # ELIF
         ,condition-3 ~ output-3  # ELIF
         ,TRUE ~ output-else      # ELSE
         )
```

Test

Deployment

Database → Statistics → Machine Learning

Where We Are

- ✓ Connect Tableau to various Datasets: Excel and CSV files

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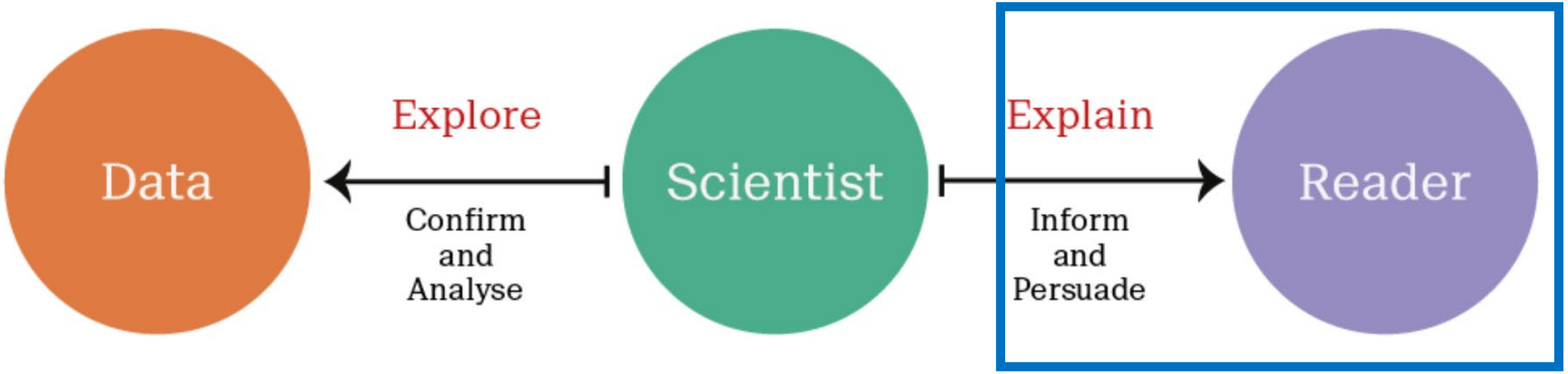
- ✓ Understand Types of Joins and how they work

Question → Import → Wrangle → Explore → Model → Evaluate → Test → Present → Deployment

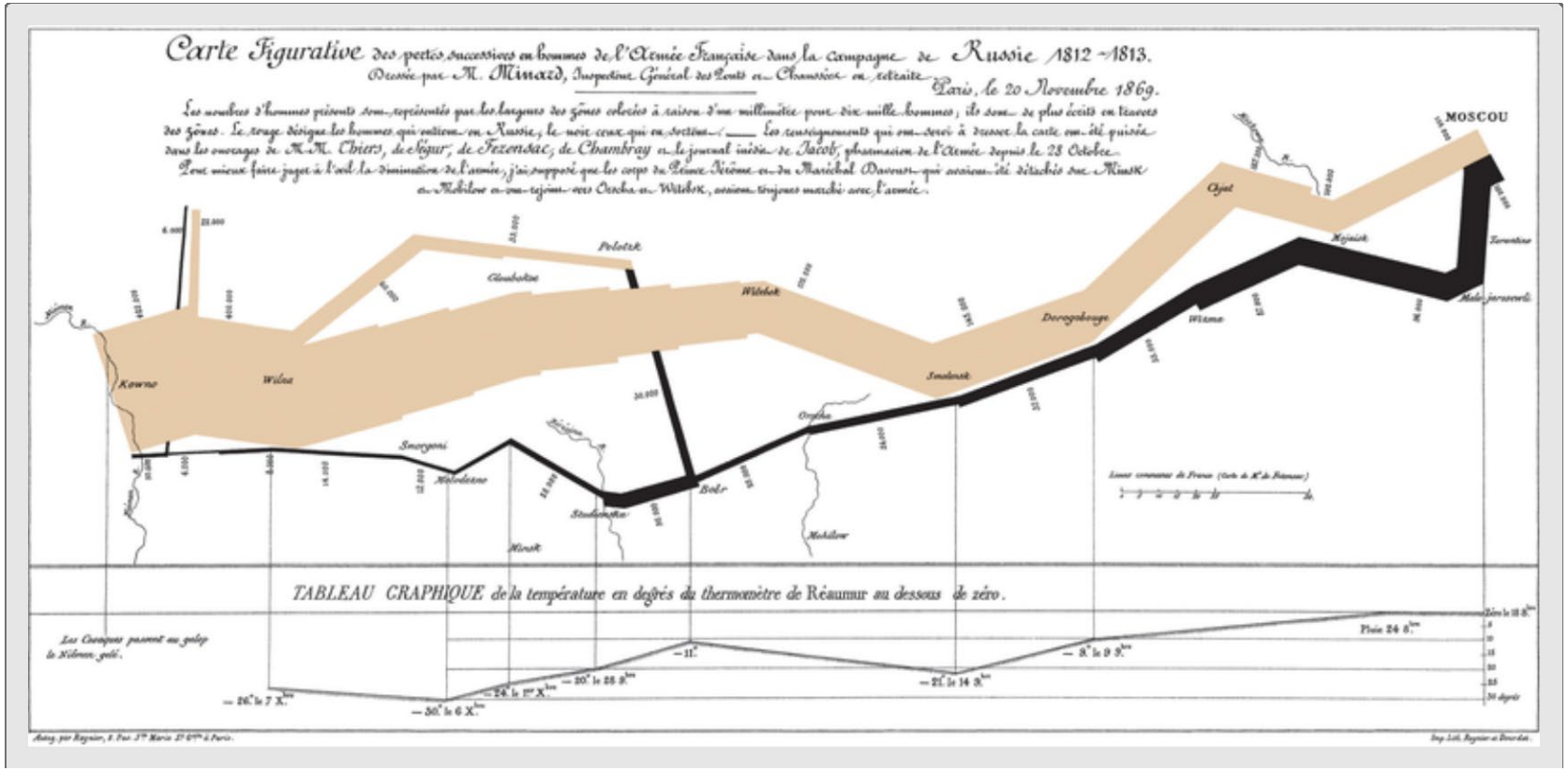
Database → Statistics → Machine Learning

Exploratory versus explanatory



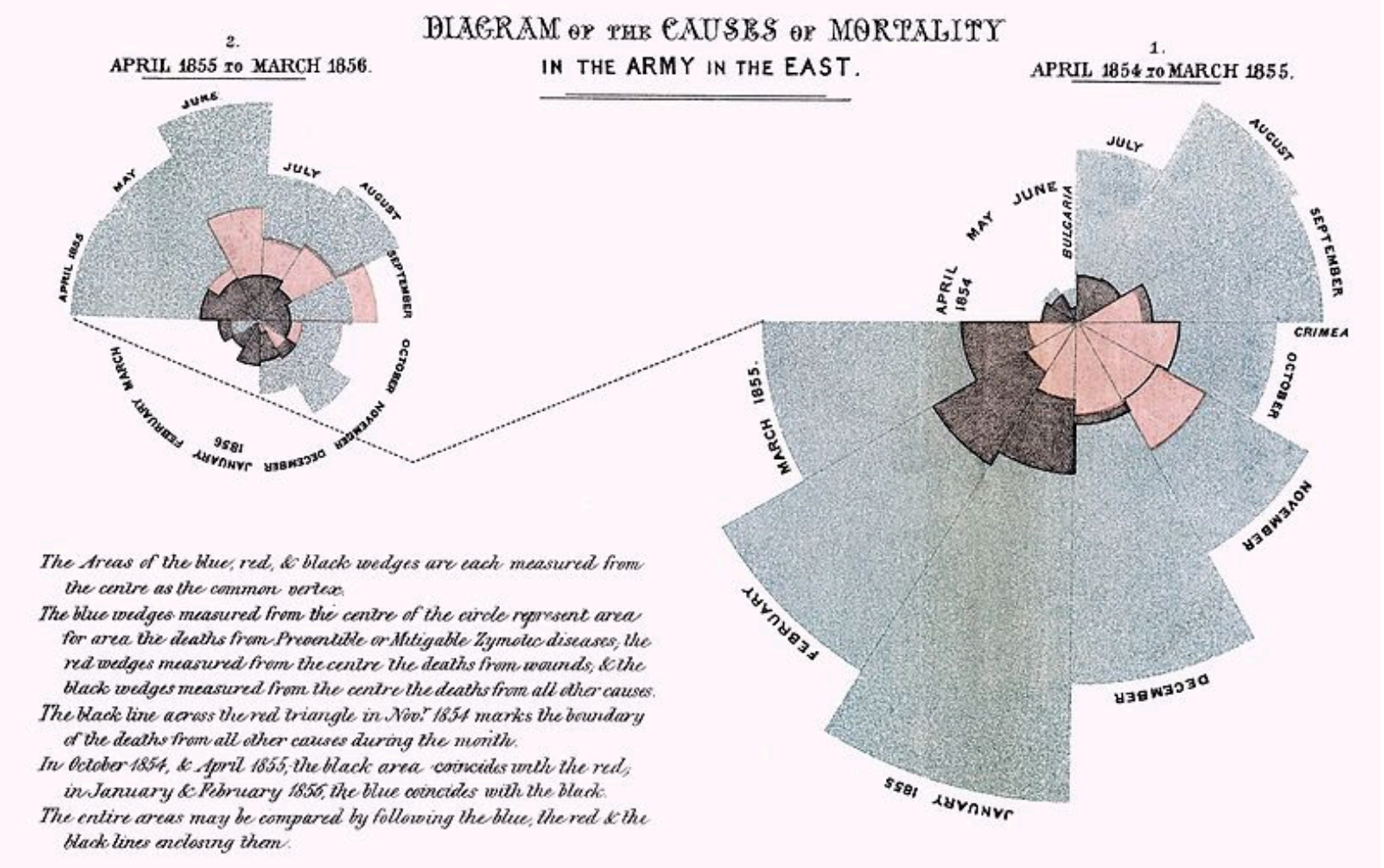
- Easily-generated
- Data-heavy
- Small specialist audience (yourself/colleagues)
- Graphical data analysis.

- Labor-intensive
- Data-specific
- Broader audience (publications or presentations)
- Part of the communications process.



A graphical representation of Napoleon Bonaparte's invasion and of subsequent retreat from Russia during 1812. The graph shows the size of the army, its location and the direction of its movement. The temperature during the retreat is drawn at the bottom of figure. Drawn by Charles Joseph Minard in 1861, it is generally considered to be one of the finest graphs ever produced.

Florence Nightingale

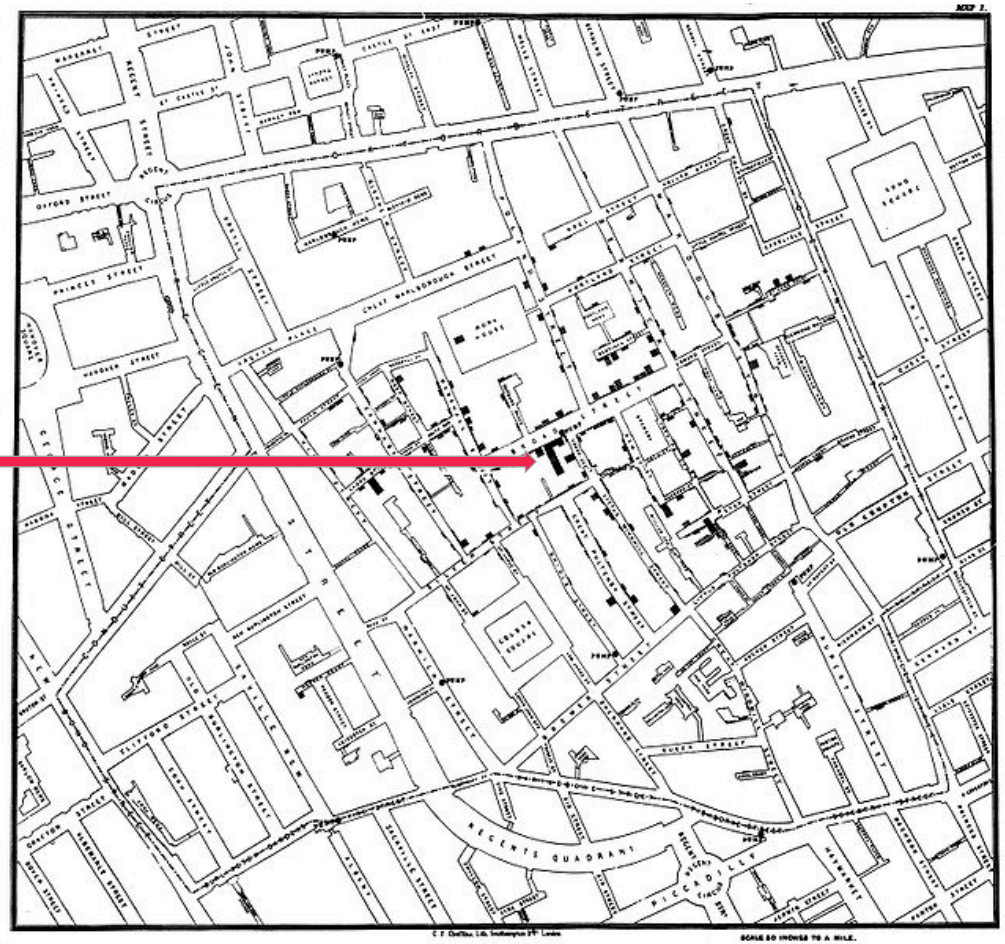


https://www.gq-magazine.co.uk/culture/article/jon-snow-game-of-thrones-spin-off-series-kit-harington-details
https://imgflip.com/memegenerator/128394222/game-of-thrones-you-know-nothing-jon-snow

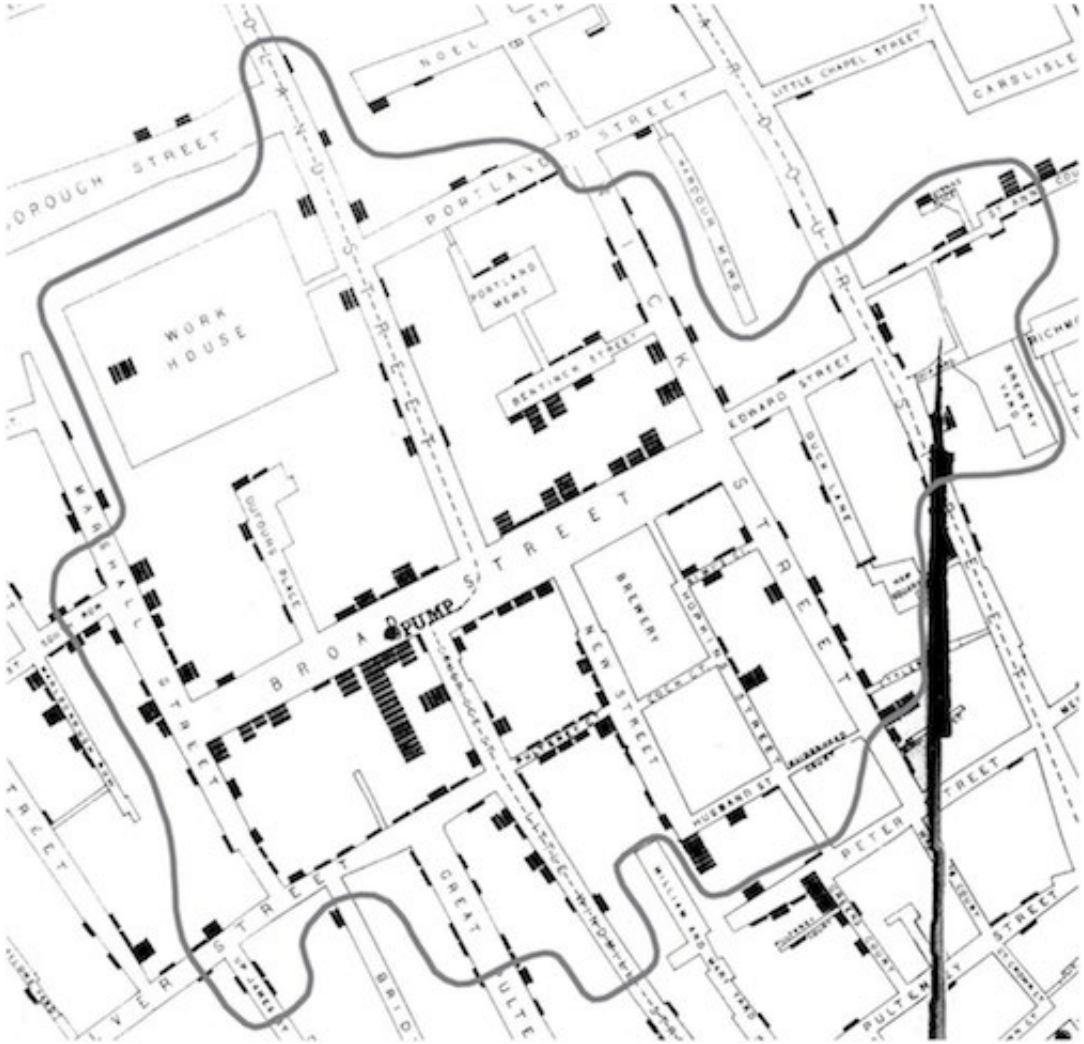
John Snow

1854 Broad Street cholera map

Water pump



Snow's less famous map shows the closest walkable pump



Vox
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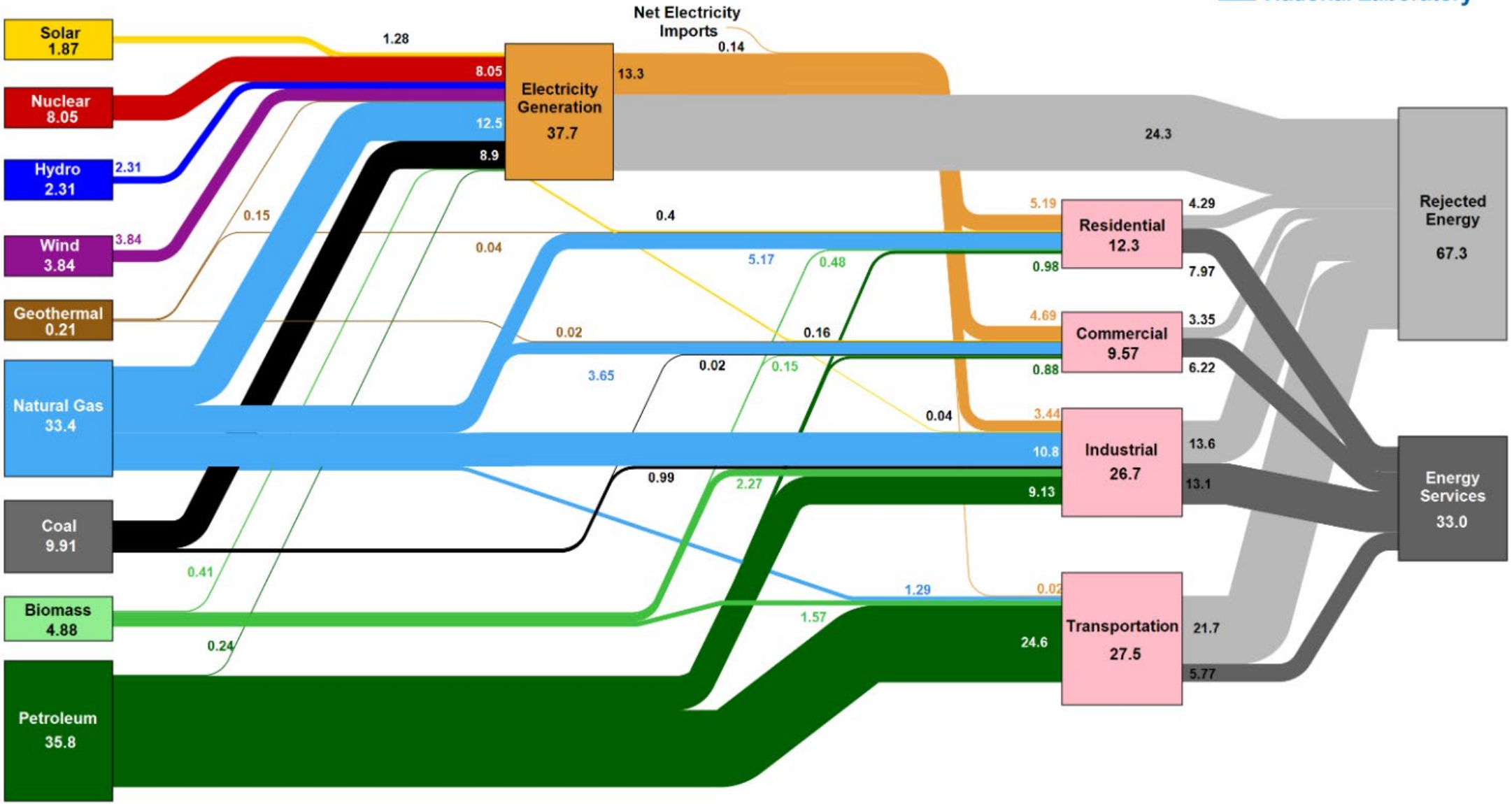
Estimated U.S. Energy Consumption in 2022: 100.3 Quads

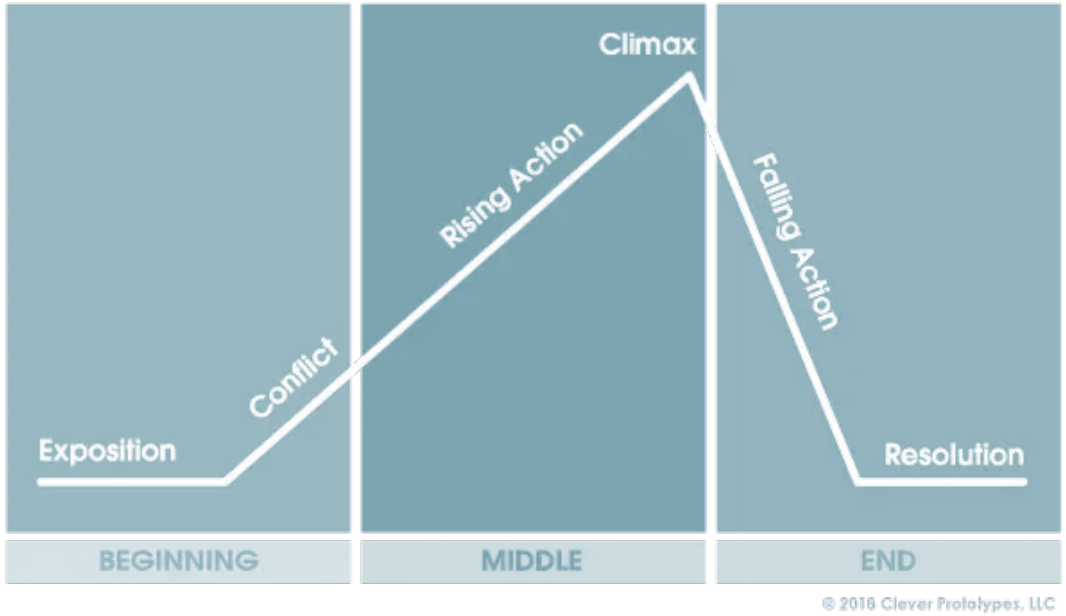
Lawrence Livermore National Laboratory



Constructing the Story

Every story has a beginning, middle, and end

a.k.a., Freytag Pyramid



https://www.storyboardthat.com/articles/e/plot-diagram

Developing a Story Outline

Help to organize content

Keep story focused

Enable better flow between parts

Easier to get started on

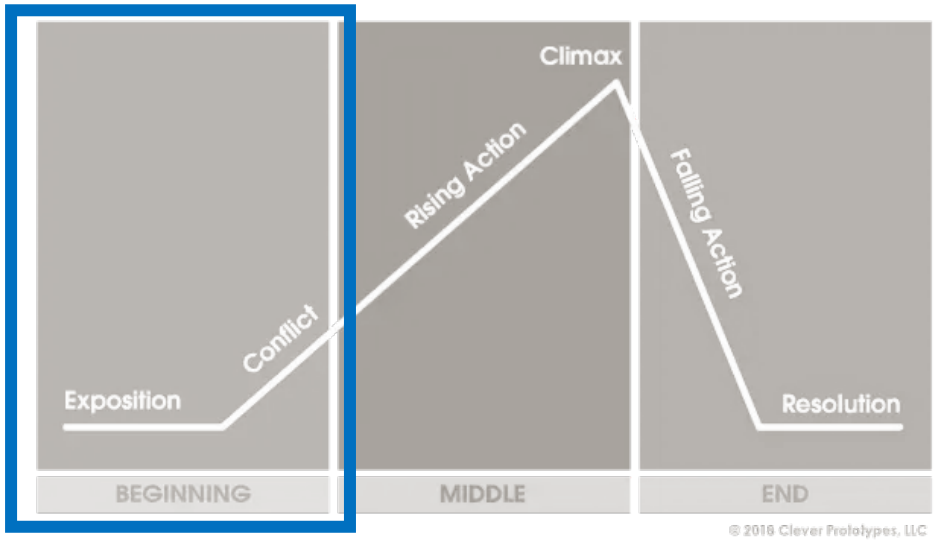
Save time in editing

1. *Exposition*
   - *Describe context*
   - *When/where/who*
2. *Conflict*
   - *Introduce the situation*
   - *Depict opportunity*
3. *Rising Action*
   - *Develop the situation*
   - *What will happen if nothing changes?*
4. *Climax*
   - *Introduce approach*
   - *Detail solution*
5. *Falling Action*
   - *Highlight value of solution*
6. *Resolution*
   - *Communicate next steps*

Example Outline: Churn at T-Mobile

Beginning

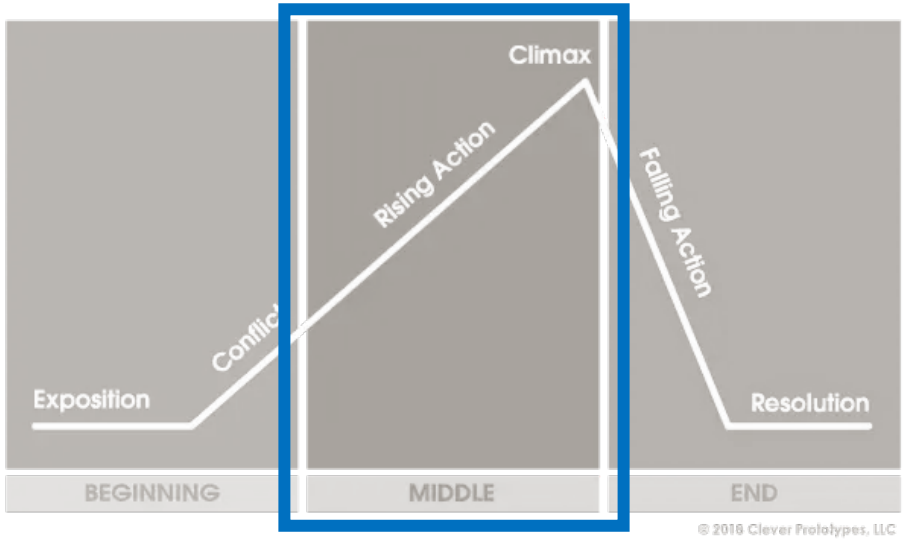
Exposition	You are a team of data analysts working for T-Mobile's consumer research department T-Mobile is an American wireless network operator with shareholders across the world
Conflict	The unresolved situation at T-Mobile right now is the increased level of churn The opportunity is to decrease churn and increase revenue The situation is problematic because the company is losing money Nothing has changed in the last 6 months The goal of the analytics team is to develop a strategy that will allow T-Mobile to realize this opportunity



Example Outline: Churn at T-Mobile

Middle

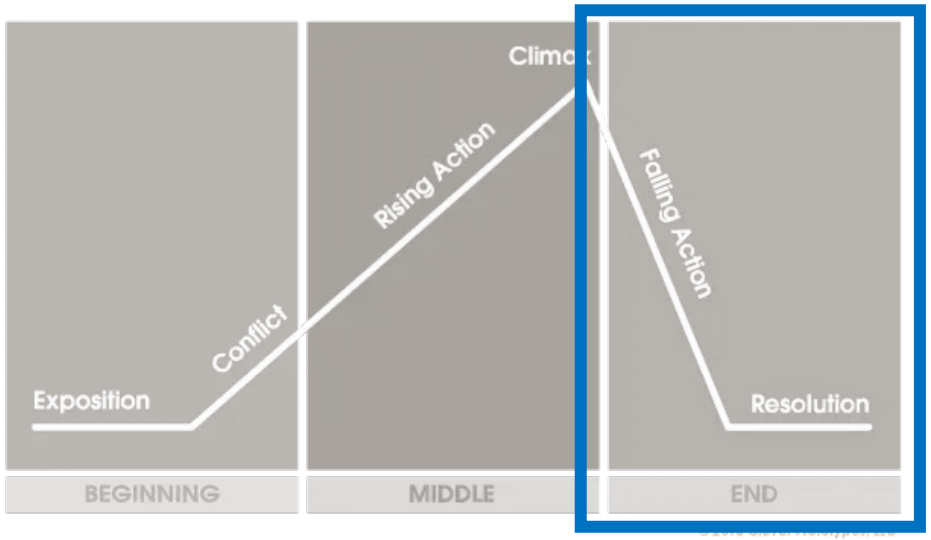
Rising Action	Research shows that 68% of customers churn because of bad customer service We examined T-Mobile's customer service data and found that churn is up by 5% - dissatisfaction levels also went up by 15% If nothing changes, the churn situation could get even worse, and the company could lose more money Some have argued that one way to improve customer service and decrease churn levels is through personalization
Climax	Explored this solution by first creating a ML model to predict which customers are likely to churn The performance of the model is great (> 90% of accuracy, precision, and recall) Next used the model to detect customers at risk, targeting them with personalized messages (multiple field experiments) Results are actionable! (those at risk that received personalized messages churned less than those who did not)



Example Outline: Churn at T-Mobile

End

Falling Action	The major benefit of sending personalized messages to customers at risk of churning is a 15% increase in revenue It will cost anywhere from 10K to 40K dollars to automate the churn prediction model with personalized messages Since benefit > cost, we should move forward with system deployment
Resolution	First step is to schedule a meeting with ML engineers to discuss system requirements There is also a need to meet with marketing to discuss personalization content Starting these conversations are crucial for allowing T-Mobile to decrease churn and increase revenue by 15%



What's your Story?

Let's discuss the story of your final project by identifying the first pieces.

- Exposition
- Conflict
- Rising Action