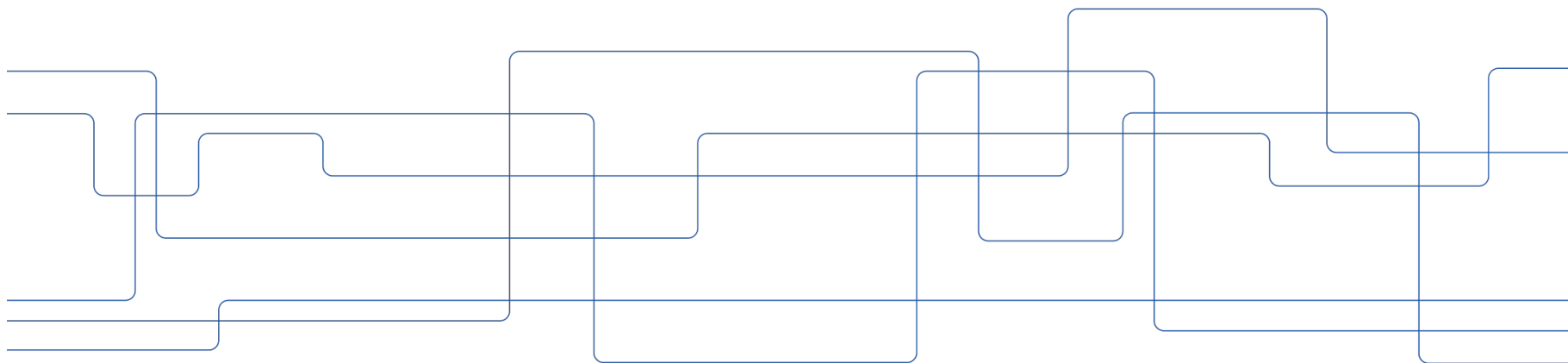


Writing your project report for DA150X

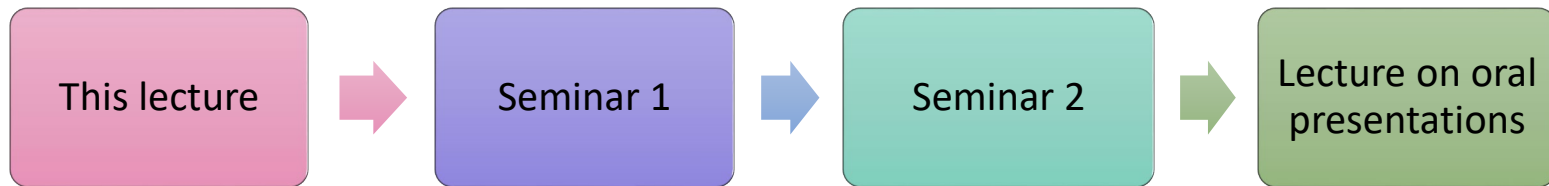
Susanna Lyne, KTH Language and Communication

21 March 2023





Welcome!



Seminars: Susanna Lyne, Jane Bottomley
Lecture on presentations: Linda Söderlindh



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Centre for Academic Writing and Rhetoric

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Please note that all consultations are currently done online via Zoom.



Peer review seminar 1

- Thu 30 March, Fri. 31 March + Mon. 3 April
- You attend *ONE* of these (more info on Canvas)
- Preparation:
 - Write as much as you can! Problem Statement – theoretical background - Method.
 - Study the KTH Guide to Scientific Writing:
 - > Text Flow: Coherence and cohesion
 - > Sentence structure
 - > Scientific style
- In the seminars, you will *read* and *comment on* each others' texts.
- We'll also talk more about text flow and scientific style.

[Kth.se/writingguide](https://kth.se/writingguide)



List of useful links

- See the Writing module in Canvas. For instance:
- www.kth.se/writingguide
- <http://phrasebank.manchester.ac.uk>
- <http://dictionary.cambridge.org>
- Svenska.se
- Svenska skrivregler (e-book, KTHB)



In today's lecture

The structure of a degree project report

- What should go under each heading?
- What is the purpose of each section?

The language of a project report

- What is good scientific style?
- What are some common errors we should be aware of?



Before we start

Sign in to Mentimeter menti.com code 4429 1405



Why write a report?

Answer a question

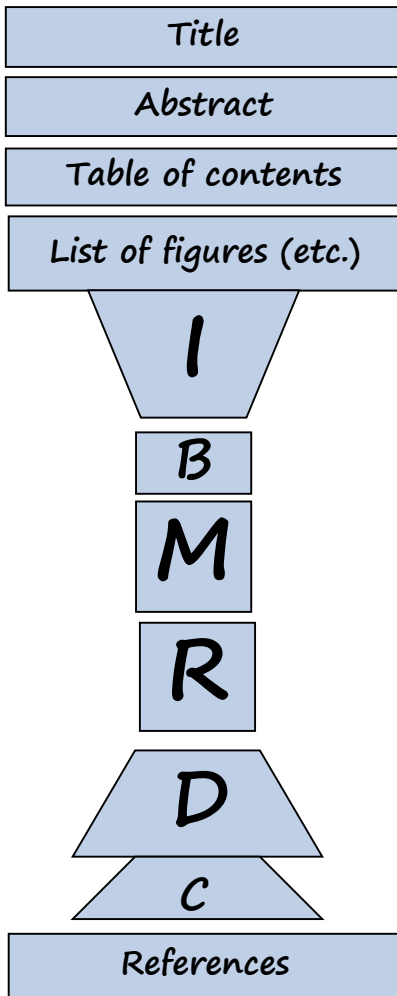
Describe and explain
events and
circumstances

Discuss a problem
and possible
solutions

Critically examine
results and others'
results

Argue for or against a
statement

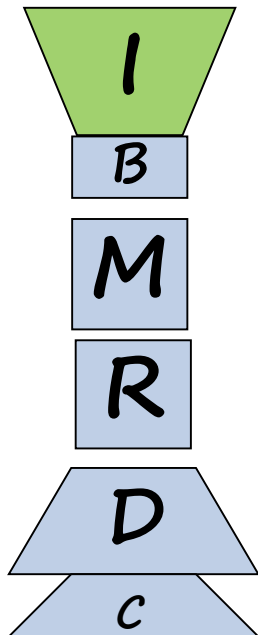
Gain knowledge –
and show it



The structure of the report

- Introduction (Inledning)
- Background (Bakgrund)
- Method (Metod)
- Results (Resultat)
- Discussion (Diskussion)
- Conclusion (Slutsats)

The Introduction



- Note that this word is *Inledning* in Swedish
 - Rapportens/textens **inledning**
 - En **introduktion** till ämnet



- The *Introduction* sets the scene
- Places your study in context – in the world, in the research field
- Tells readers what your aim is, what you will do
- Motivates why your project is relevant, important, interesting...
- Get all your prospective readers on board
 - **Think and make notes:** Who are your readers? Where will you have to start? What terminology will you have to explain? What is evident to everyone?



A funnel-shaped Introduction

- From DA1600, you'll recall the “funnel” shape of an Introduction - Tratten
- Start with a general statement/fact/statistic, then narrow the topic down.
- Introduce the topic
- Move on to a problem...
- ... what others have done about it, and why it's still a problem
- Ends with a clearly specified aim and research question.

An example of a reader-friendly Introduction

With the rise of social media as everyday communication tools, these platforms have also gained a role as important sources of information.

An example of such a platform is Twitter, a social media and microblog service, on which users post messages, also referred to as 'tweets', composed of no more than 140 characters. Initially, Twitter served as a platform on which users shared information and expressed their opinions, but has now developed into a service where global news can

be followed in real time. Due to the convenience, Twitter is now embraced not only by the general public, but also by influencers, governments, corporations and media channels, who use it to reach out and communicate with their followers.

Starts in something the general reader can relate to

Moves to a specific platform

Narrows down to the *users* of Twitter, and purposes

(continues on the next slide)

An example of a reader-friendly Introduction

Twitter and other social media platforms are a strong asset to the media landscape since they can instantly distribute information in the case of attacks, crises and other newsworthy events. However, as regards Twitter, the quality and trustworthiness of that information becomes an essential concern.

From "general information" to "instant information under important circumstances"

A **problem** with Twitter (trustworthiness)

[...]

In sum, misinformation on social media has become an evident problem across society today. The purpose of this paper, therefore, is to research the effect of academic education on young adults' judgement regarding news-related information on social media, in particular Twitter. The study aims to investigate the following:

Stating a problem...

...which has prompted you to do this research.

Note how the *problem* is identified before the aim and research questions are presented.



Your *problem* and *research question* is the core of the Introduction

- No research without problems
- Use words like *however* to signal the problem in the text
- Use e.g. *therefore* to signal the **link** between the problem and your research question
- The research question must be **easy to detect**

With a partner:
Describe your
problem and
research question
to each other.

*In order to gain a deeper
understanding of...*

För att få en djupare förståelse av...

This study explores...

Denna studie utforskar...



*The purpose of the present study is,
therefore, to...*

*Syftet med föreliggande studie är
därför att...*



The Introduction should not be too long

- ***Common problem:*** The author gives too much background and too detailed reviews of previous research before getting to the research question / the aim of the study.
- Readers want to get to the aim quickly – but they also need some background.
- Look at the Introductions and Backgrounds in the reports in the Hall of Fame

Subsections in the *Introduction*

Remember that the *problem* must be identified before the *aim*

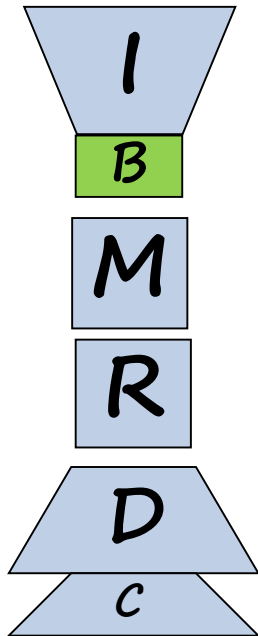
- **Problem definition / problem statement**
- **Aim (purpose) and research questions**
 - The research question(s) should end a longer passage with the problem and aim. **Do not write the research question in a separate subsection.**
- **Scope / Delimitations**
 - What you chose to include, and to exclude, from your research
- **Approach**
 - A brief description of the method and/or theories used (this will be expanded on in the Method section)
- **Thesis outline**
 - A few sentences about the structure of the remaining sections.



Tenses in Introduction sections

- Write in the *present simple* tense, not in the future tense (both in Swedish and English)
 - *This study explores... (föreliggande studie undersöker...)*
 - *This study is exploring...*
 - *The aim of the present thesis is to... explore...*
- Use the *perfect tense* (*has/have*) to describe recent developments which are still ongoing
 - *As social media has developed, so has artificial intelligence (AI).*
 - *Sociala medier har utvecklats...*
- Use the *past tense* to describe completed events in the past
 - ***In the 1990s**, neural networks were considered inferior to other machine learning algorithms.*
 - *Under 1990-talet ansågs...*
 - ***Early networks** consisted of a number of workstations. / De första nätverken bestod av ...*

The Background

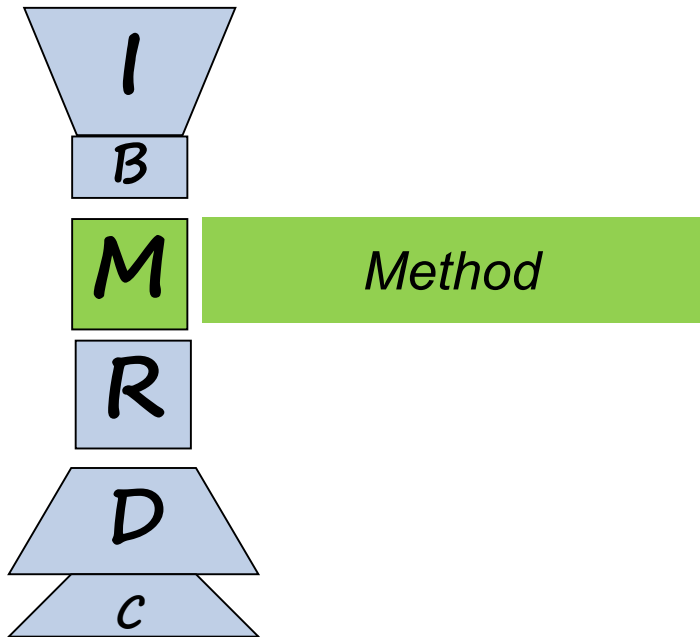


- Note: The Introduction will also include some background, but an **overview**.
- Theory
- Definitions
- Previous research
- Purpose:
 - Expand on the relevant details
 - Give readers the necessary background to understand the rest of the paper
 - Show what you've read, what you know
 - Previous literature: how does your study stand out?



Background sections (cont.)

- **Tip:** Study the Background sections in the *Hall of Fame* reports.
- There are several possible ways to organise the Background.
- **You are the expert** – you decide what you want your readers to know, depending on
 - How specific your topic is – what background knowledge do your readers have?
 - What you have brought up in the Introduction – add only *relevant* information to the Background.



- Well motivated (“in order to”)
- Clearly described
- Often written in the *passive* (“were selected”)
- Sometimes divided into two subsections: Material(s) and Method(s)

An example of a Method section

The scraper was written in Python, using the Selenium framework in conjunction with the libraries BeautifulSoup and MySQLdb. Selenium allowed for automation of browser behaviour, which was used to request and retrieve the result from Twitter's advanced search function. The search endpoint returned a JSON response, which contained the markup of the tweets to be loaded, as well as an attribute that specified whether more tweets were available for the feed to load.

Passive (*was written*)

Past tense (you describe your *process*, what you did, step by step)



Be clear about what *you* have done, and what is a reference to a *general/traditional* method.

Example:

“For this purpose, machine learning algorithms **are used to perform** classification.”

- *Are always used?*
- *Have traditionally been used?*
- *Is used in the specific method of this paper?*

Clearer:

For this purpose, we use machine learning to...

In this study, machine learning algorithms are used...

In most cases, machine learning algorithms are used to...

Can we write *we*?

A green speech bubble with a white border and a shadow, containing the word 'Yes!' in white text.

Yes!

- It shows you are taking responsibility for your choices and what you've done
- “We propose”, “We have shown” and “We believe” show confidence. Good for Introductions, Discussions and Conclusions

A blue speech bubble with a white border and a shadow, containing the text 'Well, it depends...' in white text.

Well, it depends...

- Too frequent use gives the text an informal touch – especially if many sentences **start** with the word *we*.
- What is in focus? *The application was installed* instead of *we installed the application*.

For an excellent video on the topic, go to: www.youtube.com/watch?v=sGjDPHnYDrM



Method: Avoid being “chatty” - don’t talk us through every step

- ✗ when you talked to your supervisor
- ✗ how you realised what you would have to learn before starting
- ✗ how you read up on the topic using library resources
- ✗ what you didn’t understand at first, and then how you eventually understood it

**RARELY
RELEVANT!**



Concise Method sections - an example

✗ **Our first plan** was to run 30 tests, **but this turned out to take** more time than expected. We then decided that 10 tests would still yield the results we needed.

✓ In all, 10 tests were run. This number yielded sufficiently strong results, while still allowing us to keep within the time allocated.



Results and Discussion sections

Results

Showing and describing
what you found

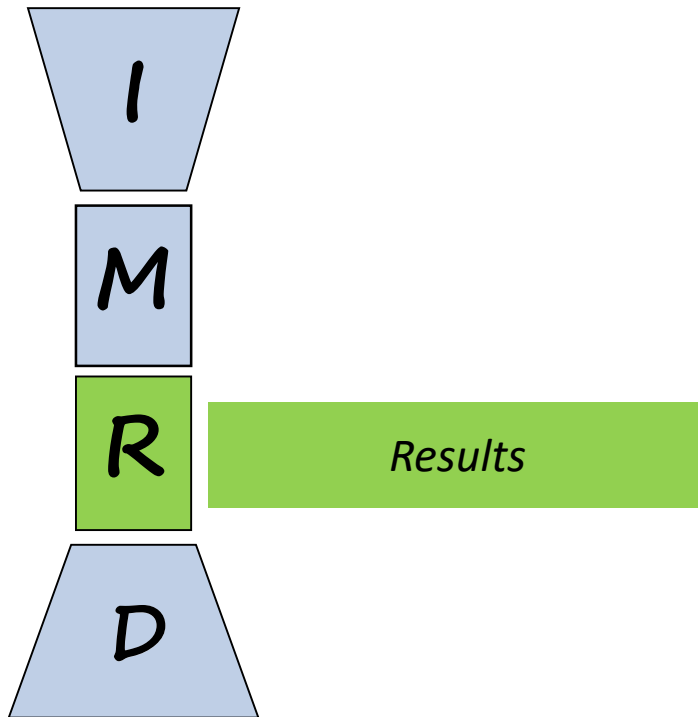
Reminding readers of aim
and method

Discussion

Taking a wider perspective

Problematizing, criticising,
speculating

Separate sections!



- This is where you report the findings
- Graphs, tables and text must *collaborate*
- Guide the reader through what you are showing.
- Give a background to the Results section.
- *Remind* readers of the problem/aim

A problematic opening of a Results section

4.1 SA rating difference

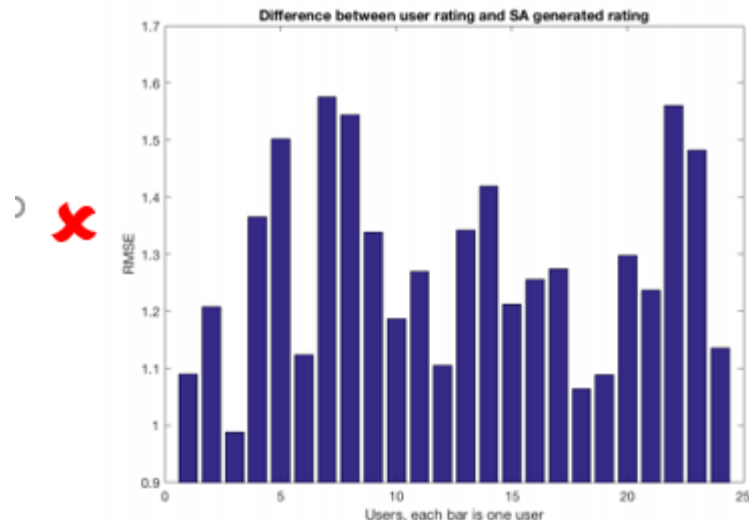


Figure 4.1: Difference between user rating and SA generated rating

Users? Sentiment rating?

Why is lower better?

The x-axis in figure 4.1 represents each user and the y-axis represents the error (RMSE) between the sentiment rating and the actual rating. The mean RMSE value is 1.2777. Lower is better.

Open the Results section with some context

Start with a general statement about the results

4 Results

The result section is divided into four parts. The first part describes the resulting baseline datasets after the data collection. The second part describes the results from experiments focusing on the first research question. The third part describes results from experiments focusing on the second research question. Finally, the fourth part describes results on which classifier of the ones tested that performed best overall.

A short overview (if needed)

4.1 Baseline datasets

The data collection resulted in data from 523,838 unique users. Description of the baseline datasets (Day 1 - Day 10) are presented in Table 4.1. Given our method, the dataset before splitting into train and test sets had 2 % converters. As seen in Table 4.1 the random splitting into train datasets resulted in datasets with approximately 2 % converting users each.

Reference to the method and/or the research question

TABLE 4.1: Descriptive statistics of baseline datasets.

Dataset	#Users	#Converters
Day 1	34604	712
Day 2	35040	692
Day 3	34939	704
Day 4	34973	699
Day 5	37753	761
Day 6	37418	743
Day 7	33700	681
Day 8	33231	683
Day 9	34202	678
Day 10	33365	702

Reference to the table



Results need explanation and interpretation

The aggregated results for LDA and SVM in Table 1 show no big difference in CA for the different choices of training data. Hence, the results do not support the hypothesis, i.e. that choosing the session closest in time to the test session (session B), would give better performance than choosing session A as training data. Further, the two methods used for classification, LDA and SVM, achieved equal average results (Table 1).

Your tables and figures are not
Results without explanation.

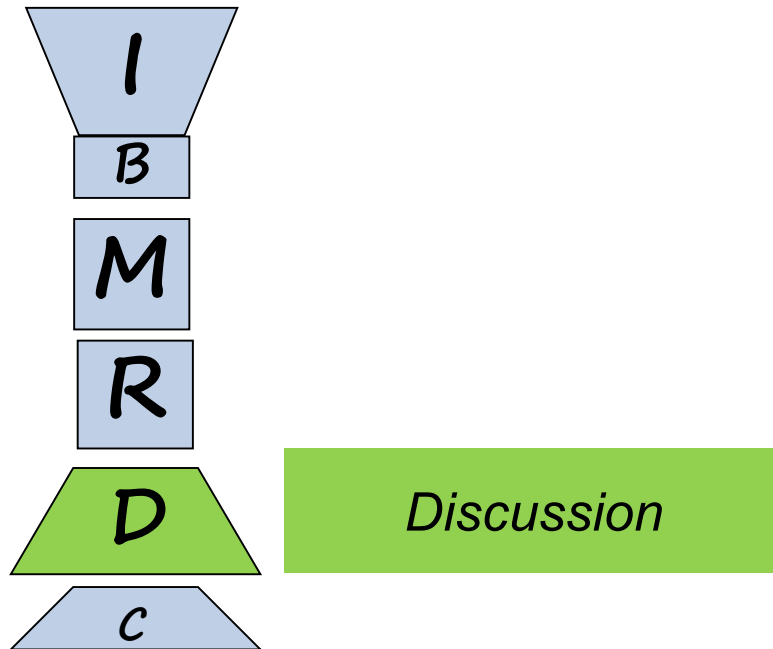
Show the reader what you want to
highlight.

The importance of “telling a story”

“You know where you are going with these results, but the reader does not; without narrative guidance, the direction of the results may be unclear.”



The Discussion



- This is where you move from the specific Results in your study, and take a wider perspective:
- What do your results imply? Take different perspectives.
- Do your results confirm or reject any hypotheses?
- How do your results fit in with previous research?
- Does your study have limitations?
- Problems with the method?
- What can we learn from your results?



Discussion – an example

Surprisingly, the time differences between reducing 81 clues and 17 clues were almost identical between the two implementations, and **lower than expected**. This **could mean** that benchmarks for grids with different number of clues and difficulty labels can be determined by the elapsed time of the solving algorithm and not by the reduction.

The reduction time for all clues in the naive implementation took longer to solve than the majority of Sudoku puzzle with the optimized implementation and DLX, **as was seen in Figure 5.2**. This **further strengthens** the importance of optimizing the reduction rather than the solving algorithm.

Cross-refer to tables and figures in Results

Did results meet our expectations?

Use words like *could*, *may*, *might*, *likely*, *possibly* to signal uncertainty

Use words like *confirm*, *strengthen*, *highlight* to signal your confidence

What do my results imply in a wider perspective? What can we learn?



Discussion: an example

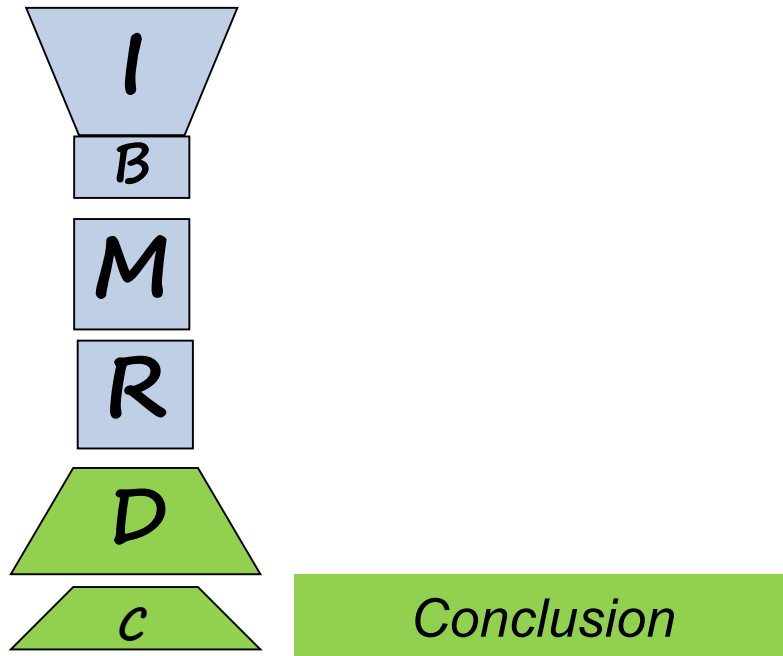
It should be noted that there was significantly more test data for 17 clues than for 22 clues, 49,151 grids compared to 758, but the grids that took the longest to solve still belong to the collection with 22 clues.

One possible explanation for this is that the majority of grids with 18 clues or more were labeled with hard difficulty rating. This **could be explored in further studies** using the same number of grids, but labelling these grids with *easy*, as opposed to *hard*, difficulty rating. If a correlation between the difficulty ratings and running time is then found, a more accurate explanation could be given.

Commenting on the method (remind readers about the details)

Looking ahead: what could be done?

The Conclusion



- Long Discussion, short Conclusion!
- One or two paragraphs
- Start by referring back to the aim and research question. Some readers may turn to the Conclusion before reading anything else.
- End on a positive note: what you have achieved, rather than what you haven't achieved.

Writing is an iterative process

- All sections are connected
- Changes to one section might prompt you to make changes to others (terminology? focus?)
- Therefore, go back to your Problem Statement now and then to make sure that you are "on track"





Ask questions to develop your idea and your arguments

Introduction:

- *Why is this interesting?*
- *To whom is this relevant?*
- *What is the problem?*
- *Who says there's a problem?*
- *What may happen if the problem is not solved?*

Method:

- *Why did we choose this method?*
- *Could we have chosen other methods?*
- *Has anyone else used this method?*

Results:

- *Could a reader interpret my graph in a different way?*
- *What information do the readers need to follow my story?*
- *What do I want to highlight?*

Discussion:

- *How do I know my statement is correct?*
- *Could there be other possible explanations? Why? Why not?*