

A Variational Study of Felis catus: Adventures in Measurement

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Abstract

This is what I did. I wrote it up in 12 pt font and double-spaced so that one can write comments on the draft. I did narrow the margins to get some of the paper back.

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Chapter 1

Introductory Material

1.1 Introduction

This is why this topic is interesting.

1.2 Background

This is what other people have done. Let me list a few things.

- I read this paper [1].
- I plan to read four more.

This is what my research group had already done before I started.

Chapter 2

Methodology

This is how I did it.

1. First I wondered how big kittens were. I want to knit them a sweater.
2. Then I set assembled the things I needed to measure kittens.
 - (a) I acquired several useful objects.
 - (b) I obtained a ruler from [Janine's House of Gadgets \[2\]](#).
 - (c) I also borrowed my housemate's kitten Floyd (*Felis catus*).

3. Then I used the ruler to measure Floyd over several days.

4. I also asked CHAT-GPT.

Chapter 3

Results and

Discussion

3.1 Results

3.1.1 A random result to illustrate illustrations

In Fig. 3.1 I show some results from Ref. [3]. I should always reference figures someplace in the text.

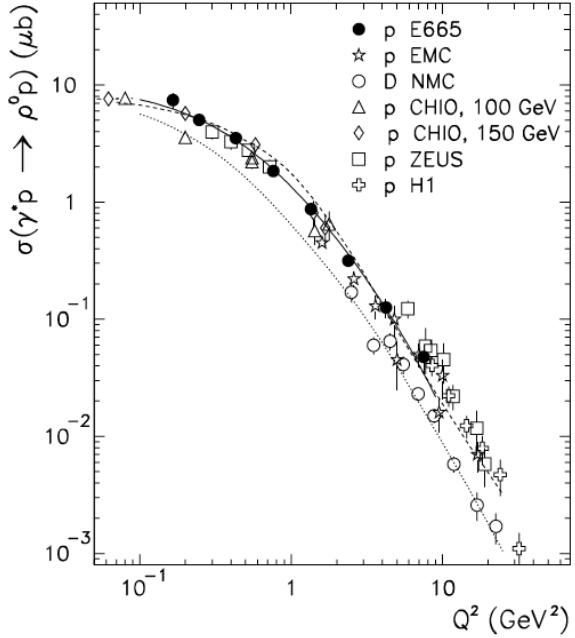


Figure 3.1: This is a figure that makes my data look good taken from [3]. The solid circles are the important ones.

3.1.2 Kitten size measurements

I measured Floyd's length from nose to tail-tip four times between August 3 and 5, 2023. See Table 3.1 for individual measurements.

3.1.3 Asking AI

I asked Chat-GPT 3.5 about the sizes of kittens[4], for a full transcript, see Appendix A. Its response was not very useful as it gave no real numbers. For example it provided minimal information about

Time	Length (cm)	comment
August 3, 12:00	29	asleep
August 4, 08:00	25	won't stay still
August 5, 16:00	32	stretching
August 5, 02:00	30	asleep

Table 3.1: Measurements of the length of Floyd the kitten from August 3 to August 5, 2023.

newborns: “Newborn: Kittens are usually born blind and deaf, and they are entirely dependent on their mother. They are tiny, typically fitting in the palm of your hand.” but no further size information on older kittens.

3.2 Analysis

A formula for the average length, L , of a cat is

$$L = \frac{\sum_{i=1}^N \ell_i}{N} \quad (3.1)$$

where there are N measurements, ℓ_i^{12} .

Floyd was measured to be, on average, 30 cm. long. However, there were significant variations in the measurements depending on his level of activity. His measured length ranged from 25-32 cm.

¹I used `displaystyle` for equation 3.2 as LaTeX wanted to mess with the placement of $i = 1$ and N .

²Also, I was careful to define all the terms in the equation.

Chapter 4

Conclusions

In Sec. 3 I showed a nice picture, Fig. 3.1.

I was unable to obtain precise data on kitten length. To obtain definitive results would require more kittens. CHAT-GPT[4] was not able to provide better information than a ruler.

Chapter 5

Acknowledgments

Thanks for letting me borrow Floyd.

This document was typeset using the `tagpdf`[[5](#)] accessibility package and the new table macros[[6](#)].

Chapter 6

References

- [1] B. Abi *et al.*, “First results on ProtoDUNE-SP liquid argon time projection chamber performance from a beam test at the CERN Neutrino Platform,” *JINST*, vol. 15, no. 12, p. P12004, 2020.
- [2] “Janine’s House of Gadgets,” 2023. <http://janinesgadgets.com/catalog/widget>. This site does not actually exist.
- [3] M. R. Adams *et al.*, “Diffractive production of $\rho^0(770)$ mesons in muon proton interactions at 470-GeV,” *Z. Phys. C*, vol. 74, pp. 237–261, 1997.

- [4] OpenAI, CHAT-GPT 3.5, “Prompt: size of kitten.” <https://chat.openai.com/chat>, 2023. Accessed: Sept. 16, 2023.
- [5] Ulrike Fischer, “tagpdf.” <https://ctan.org/pkg/tagpdf>. Accessed on October 14, 2025.
- [6] Ulrike and Frank, “The latex-lab-table package: Changes related to the tagging of tables.” <https://ctan.math.illinois.edu/macros/latex/required/latex-lab/latex-lab-table.pdf>. Accessed on October 14, 2025.

Appendix A

AI documentation

I used CHAT-GPT 3.5 because I am too cheap to pay \$20/month for 4.0. Here is the response [4].

A.1 Response

Prompt: "size of kitten"

"The size of a kitten can vary depending on its age, breed, and individual genetics. Typically, newborn kittens are very small, weighing only a few ounces (around 85 grams) and measuring a few inches in length. As they grow, their size will increase rapidly.

Here's a rough guideline for the size of kittens at different stages of development:

1. Newborn: Kittens are usually born blind and deaf, and they are entirely dependent on their mother. They are tiny, typically fitting in the palm of your hand.
2. 2-4 weeks old: During this stage, kittens start to open their eyes and ears, and they begin to explore their surroundings. They still remain quite small, but you'll notice some growth compared to the newborn stage.
3. 4-8 weeks old: By this point, kittens are becoming more active and playful. Their size has increased, and they are developing their coordination and social skills.
4. 8-12 weeks old: Kittens continue to grow rapidly during this period. They are more independent and may be weaned from their mother's milk onto solid food. Their size can vary widely depending on their breed.
5. 12 weeks and older: Once kittens reach 12 weeks of age, they are often considered juveniles or young cats. Their size will vary

greatly depending on their breed, with some breeds being larger than others.

Keep in mind that the size of a kitten's parents and their specific breed will also influence how big they eventually grow. Additionally, a kitten's overall health and nutrition play a significant role in their growth and development. If you have concerns about the size or growth of a kitten, it's a good idea to consult with a veterinarian to ensure they are healthy and thriving.”

A.2 More gnarly equation as a test

$$f(x) = |x| + \begin{cases} 1 & \text{if } x < 0 \\ 0 & \text{if } x = 0 \\ -1 & \text{if } x > 0 \end{cases} \quad (\text{A.1})$$

$$f(x) > -1 \quad \text{see (A.1)} \quad (\text{A.2})$$