

Are Melatonin Product Labels Misleading?



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OBJECTIVES

- Obtain label data from the National Institute of Health Dietary Supplement Label Database
- Scrape Amazon to obtain data regarding melatonin labels and products labels
- Analyze and visualize data of interest to increase awareness of melatonin products and potential safety concerns

BACKGROUND

- Melatonin is a popular over-the-counter (OTC) dietary supplement available in stores or online which is unregulated by the FDA.
- According to the CDC, a **500% consumption increase** has led to serious outcomes among pediatric patients.

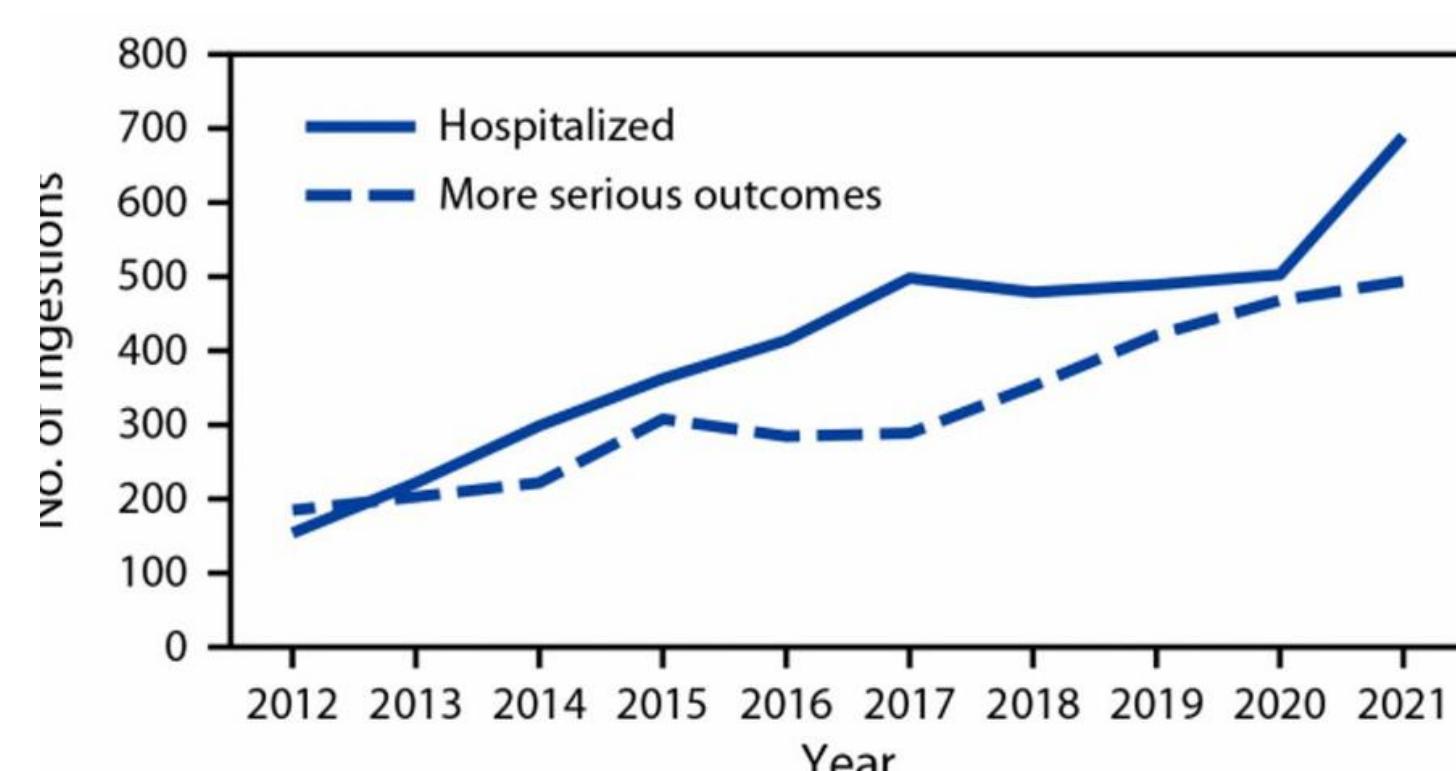
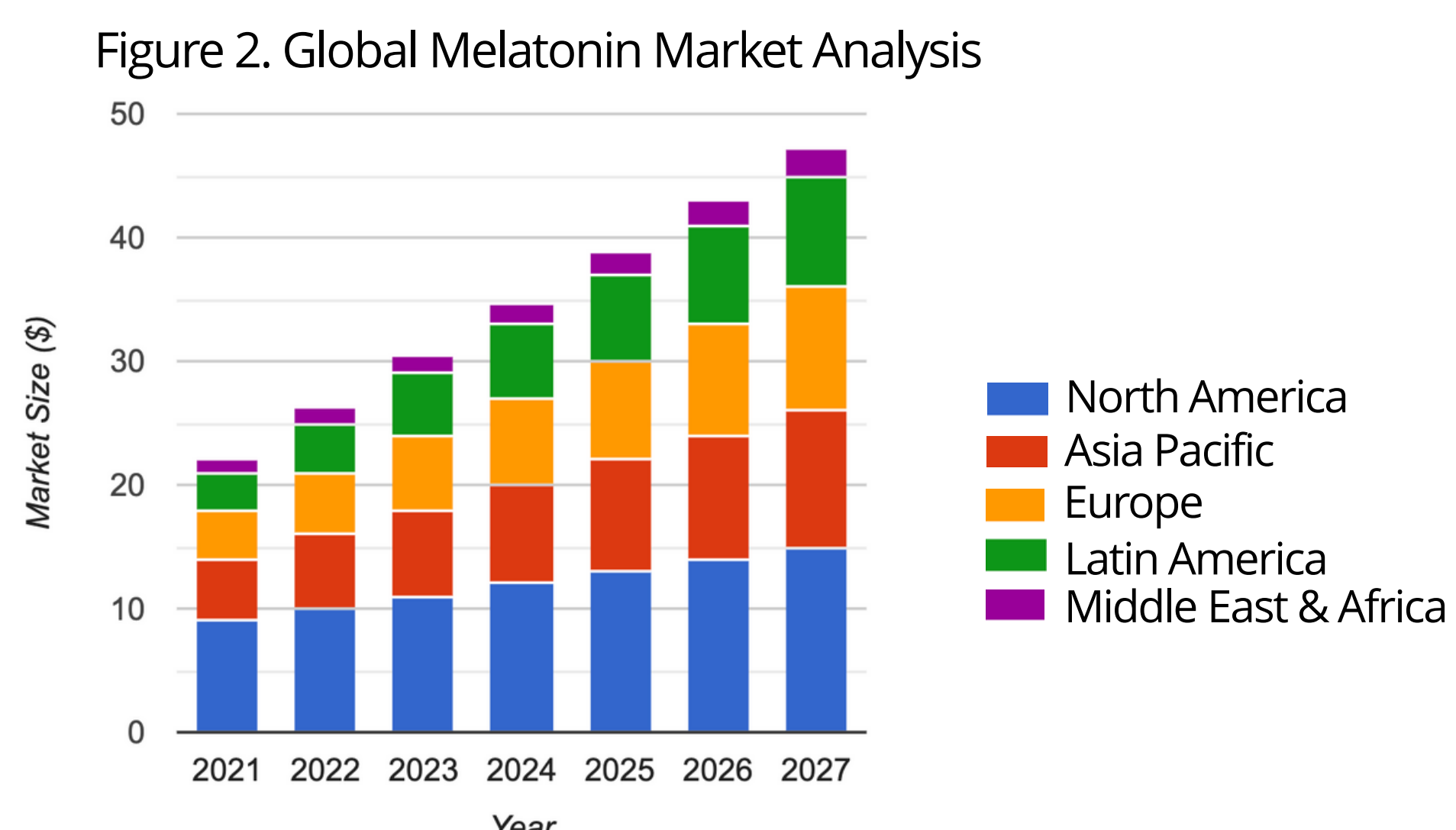


Figure 1. Number of pediatric melatonin ingestions reported to poison control centers

- There were **5,896** pediatric melatonin overdoses in Indiana between 2015-2021.
- Product label inconsistencies may be contributing to the increase in ingestions and accidental overdoses.
- Despite melatonin being banned for OTC use in areas such as Australia, the U.K., and much of Europe, the melatonin market in the US continues to thrive.



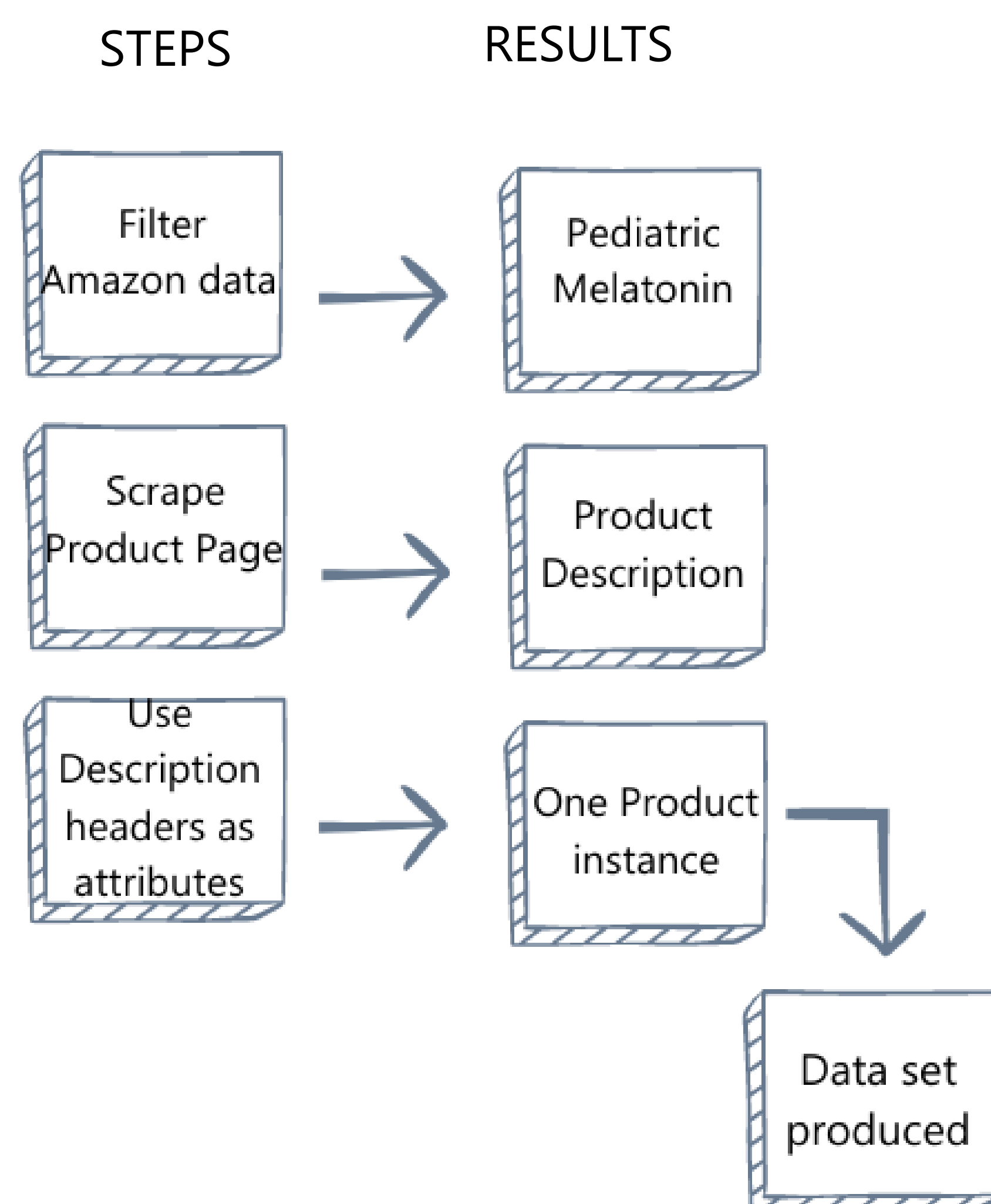
ACKNOWLEDGEMENTS

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REFERENCES

Please visit our QR Code:

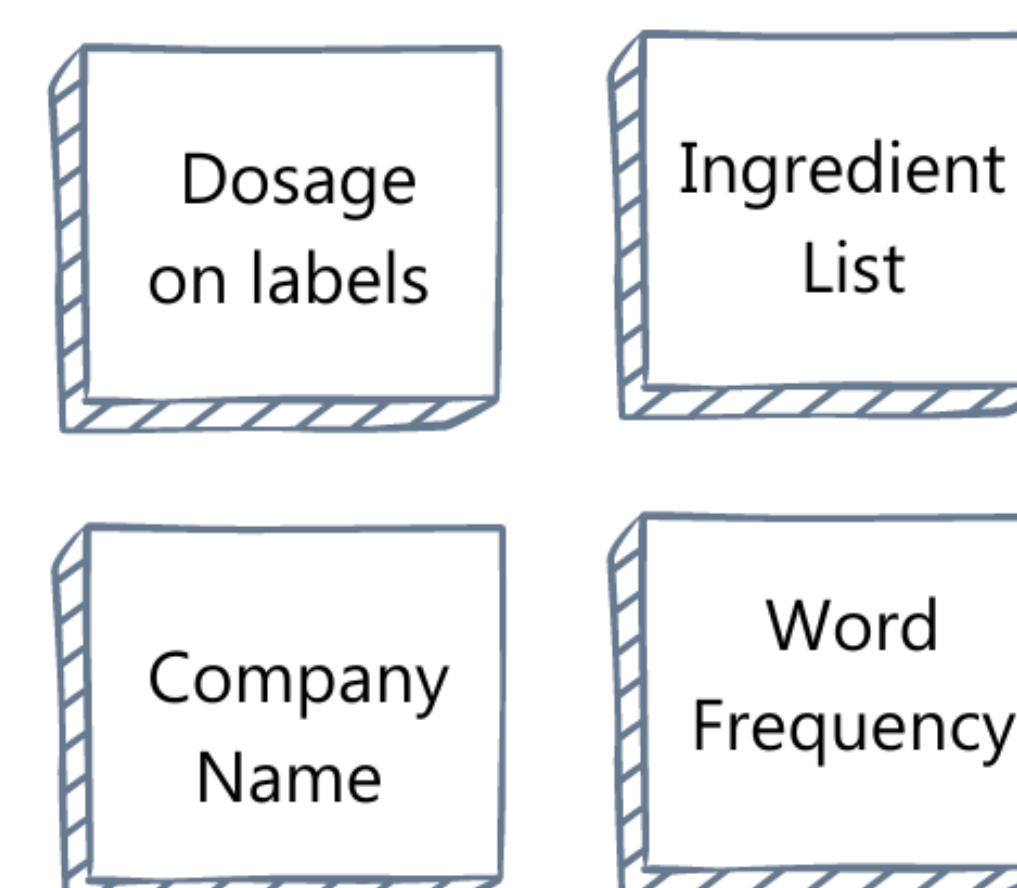
METHODS



Amazon Data Extraction

- Data set contained 314 Amazon products for analysis.
- By filtering Amazon products, we obtained melatonin products marketed towards children.
- Scraped Amazon using free Python library Selenium.
- Used product description headers as the columns (attributes) in our data set with each product being a row.

KEY VARIABLES OF INTEREST

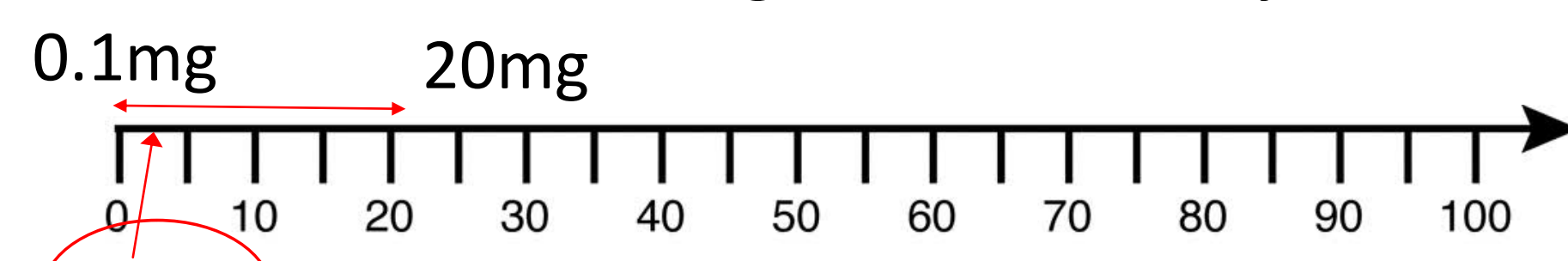


NIH Data Extraction

- Data was extracted from the National Institutes of Health (NIH) Dietary Supplement Label Database.
- After retrieving the products, an analysis was conducted on statistical software R Studio, STATA, and SAS 9.4

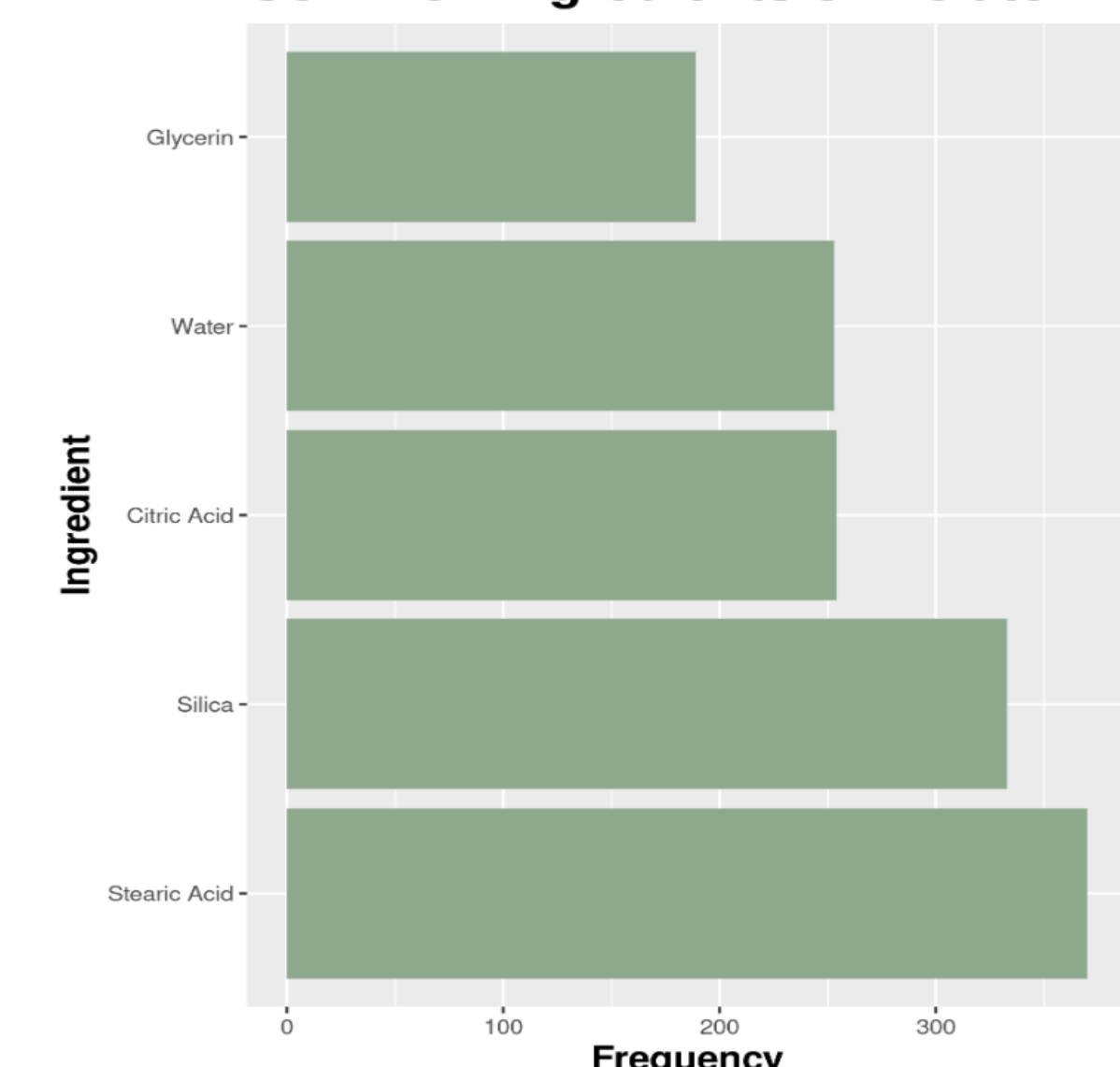
RESULTS (NIH DATA)

- Two most common formulations: 1. Tablets 2. Capsules
- Recommended dosages varied widely:

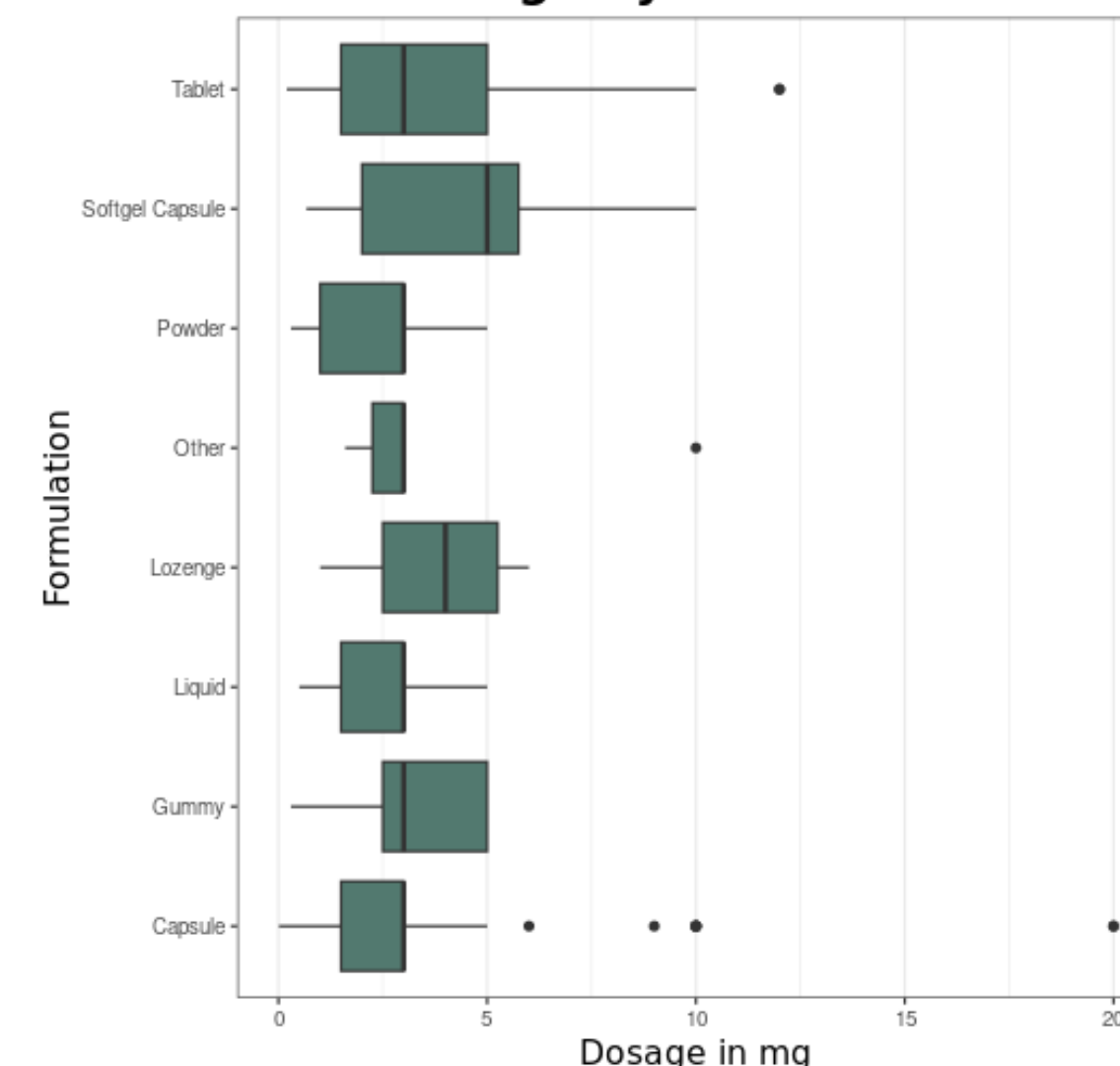


- **3 mg** was the most common dosage
- Products had different units including milligrams or micrograms
- Most common ingredient (besides melatonin): Stearic Acid

Common Ingredients of Melatonin



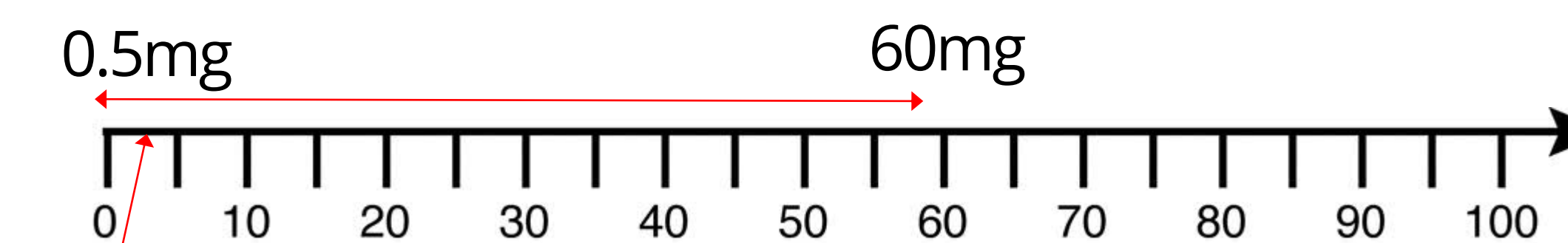
Dosage by Formulation



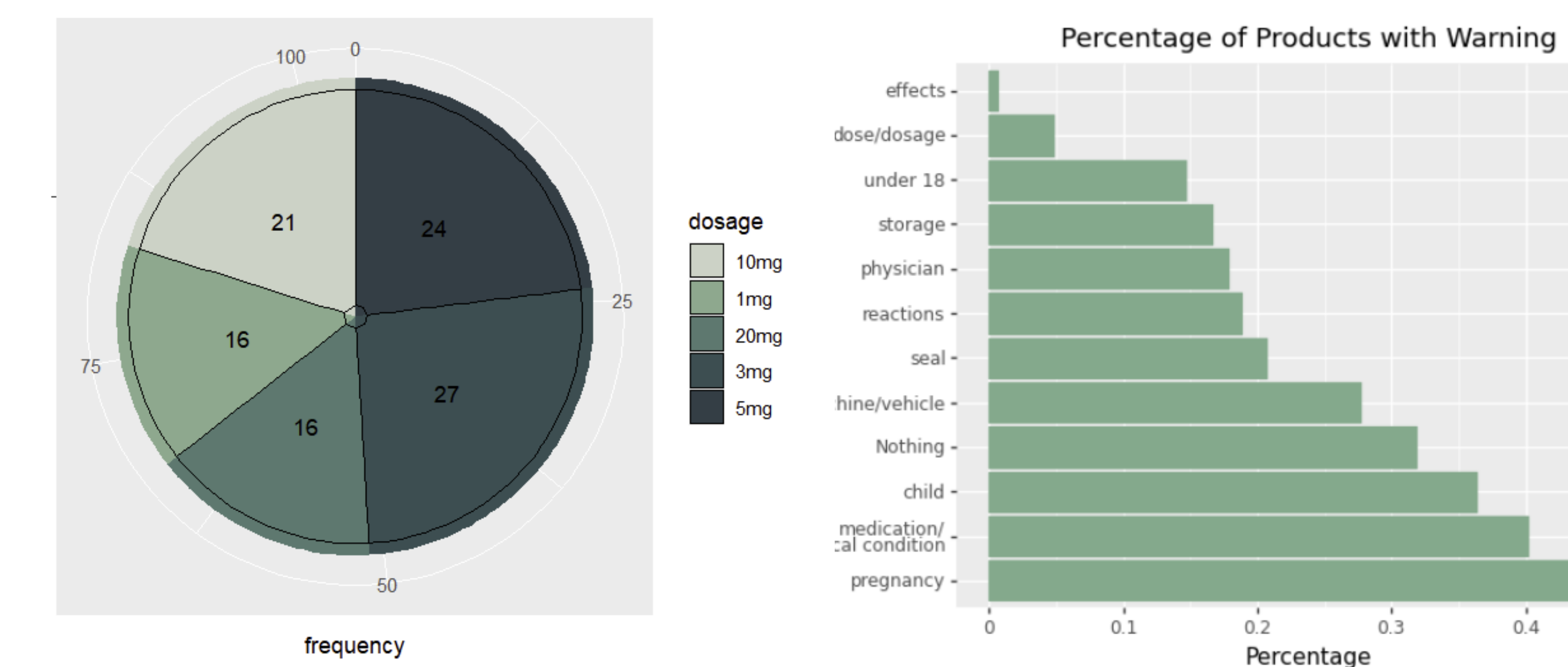
Dietary Supplement Label Database

RESULTS (AMAZON DATA)

- Two most common formulations: 1. Tablets 2. Gummies
- Recommended dosages varied widely:



- **3 mg** was the most common dosage
- More than 30% of products had no warnings on Amazon.
- Top 5 warnings included the following terms:
 1. Pregnancy
 2. Medication/Medical Condition
 3. Child
 4. Nothing
 5. Machine/ Vehicle



CONCLUSIONS

Challenges

- Data was duplicated and inconsistent in the dosages and warnings of melatonin products across both data sets.
- Manual review and data cleaning in R were necessary to make the data sets uniform and accurate.
- The dataset did not contain much information on patients under 4.

Recommendations

- Find a dataset that reflects products for all ages.
- Results suggest the FDA should regulate melatonin products.

IMPACTS AND FUTURE DIRECTIONS

Impacts

- Our research may encourage policymakers to lobby for FDA regulation of melatonin
- We presented our findings to **over 70** CDC officials, manufacturers, policymakers and stakeholders at the CDC PROTECT annual meeting last November
- FDA regulations may reduce annual pediatric overdoses in Indiana

Future Plans

- Gather patient demographics using Indiana Poison Center datasets
- Address the limitations of the research
- Scrape Reddit

