Edibility of Mushrooms: Data & Exploratory Data Analysis

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Agenda

- Executive Summary
- Project Plan Recap
- Data
- Exploratory Data Analysis

Executive Summary

- **Problem:** Friendly Dog Park has a mushroom overgrowth problem. They need a method for park staff to classify any poisonous mushrooms for removal.
- **Solution:** Use a Decision Tree model to predict the edibility of mushrooms based on various physical characteristics.

Project Plan Recap

Deliverable	Due Date	Status
Data & EDA	3/25/2025	Complete
Methods, Findings, and Recommendations	4/1/2025	Not Started
Final Presentation	4/22/2025	Not Started

Data

Data

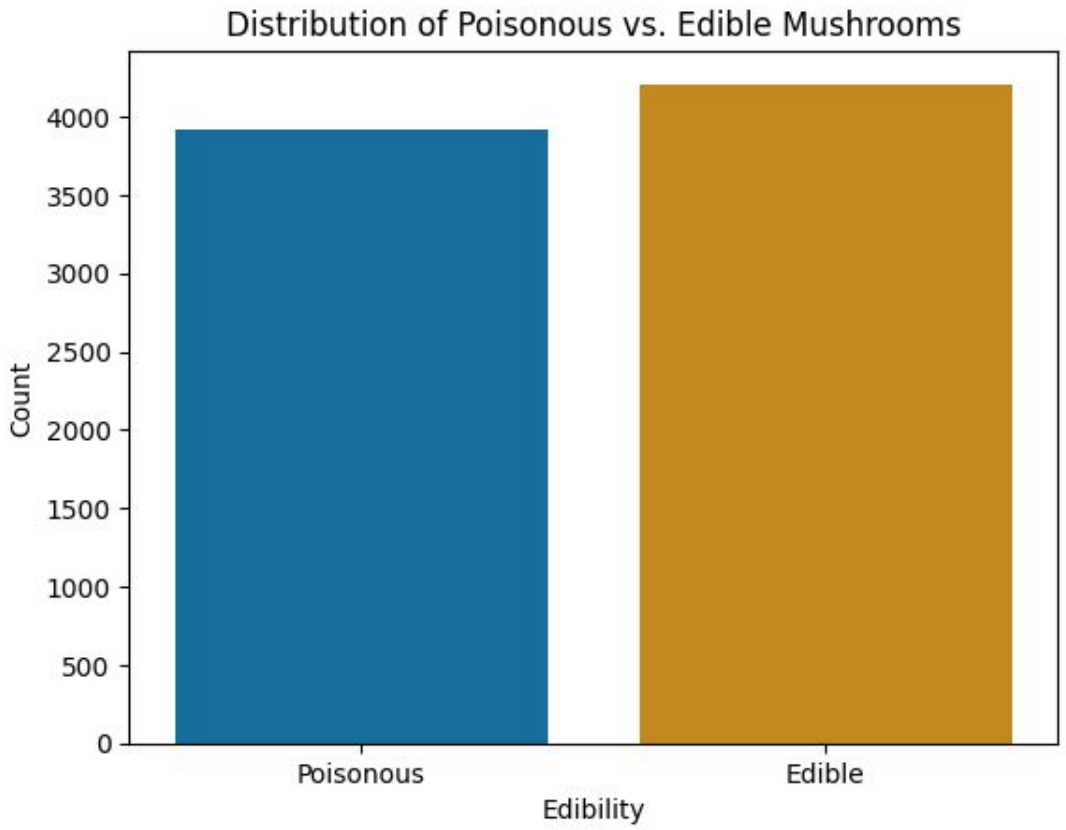
- Mushroom Dataset (University of California Irvine Machine Learning Repository)
- 8,124 observations (mushrooms)
- Time period: none
- Mode imputation used for one feature (stalk-root)
- Assumption: Edibility pertains to being able to be consumed by humans and dogs.

Exploratory Data Analysis

Distribution of Poisonous vs. Edible Mushrooms

Key Takeaway(s):

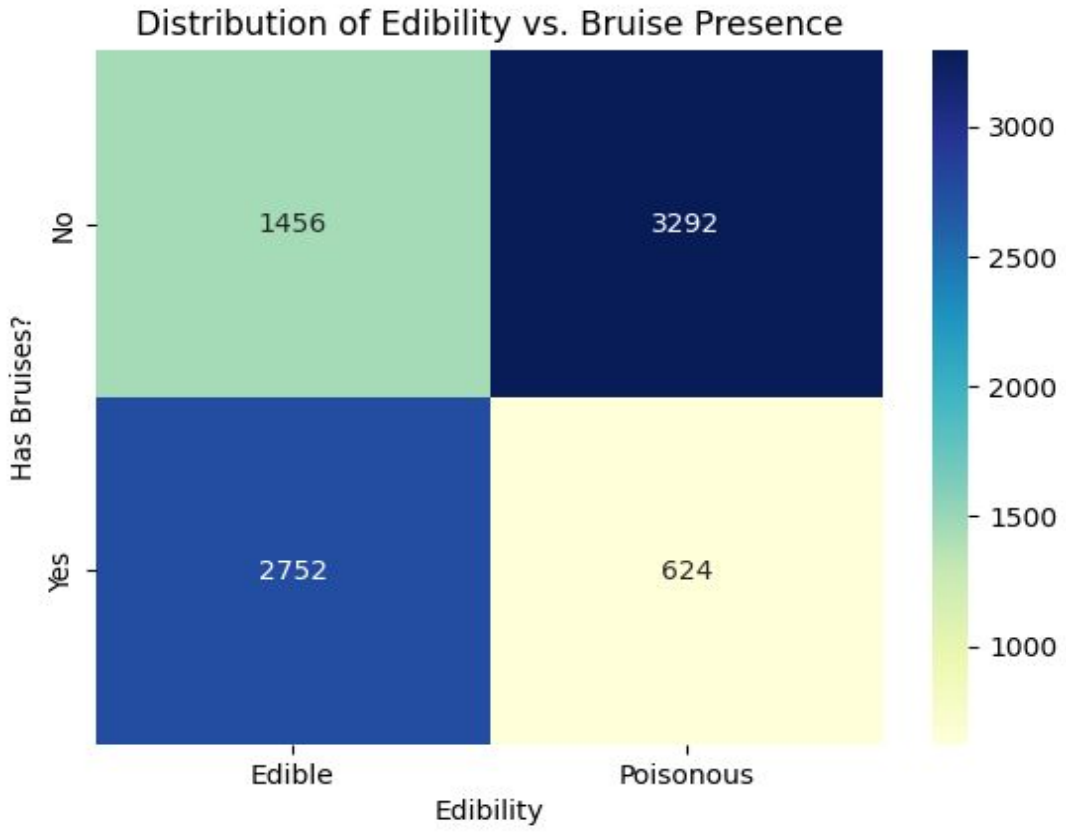
- Slight unbalance between the amount of edible and poisonous mushrooms in the dataset.



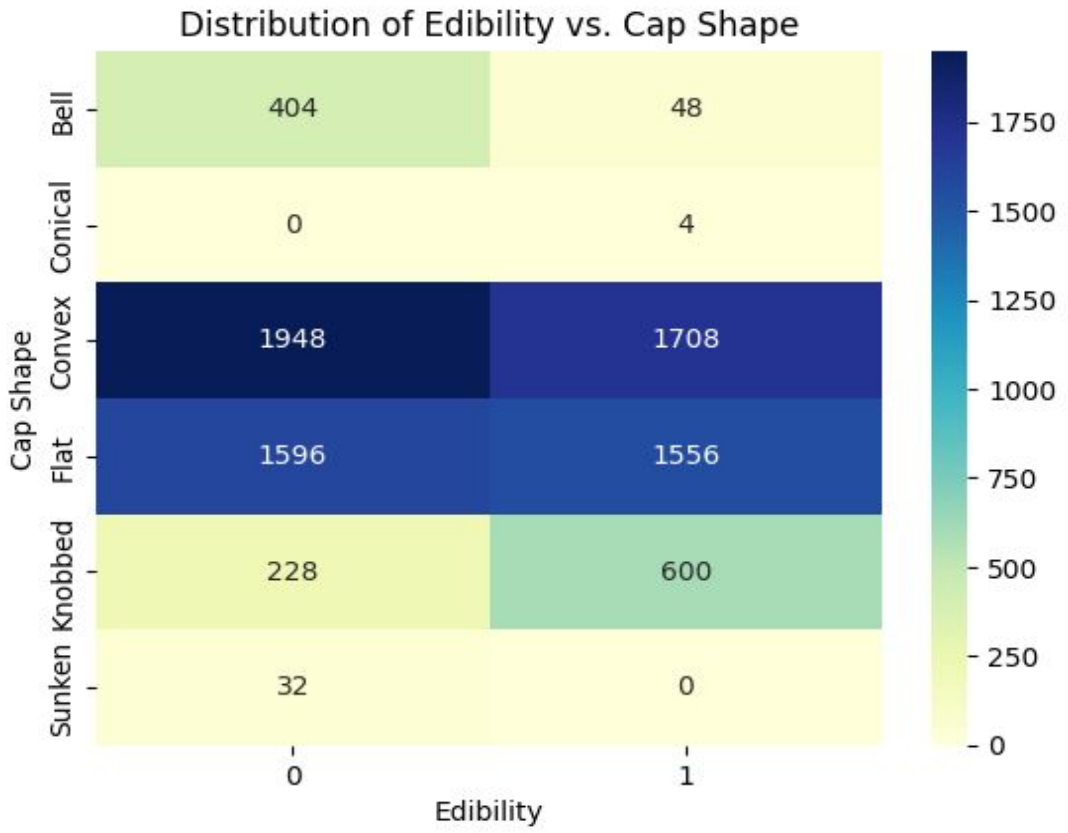
Distribution of Edibility vs. Bruise Presence

Key Takeaway(s):

- Most of the poisonous mushrooms in the dataset did not have bruises.
- Most of the mushrooms that had bruises were edible.



Distribution of Edibility vs. Cap Shape



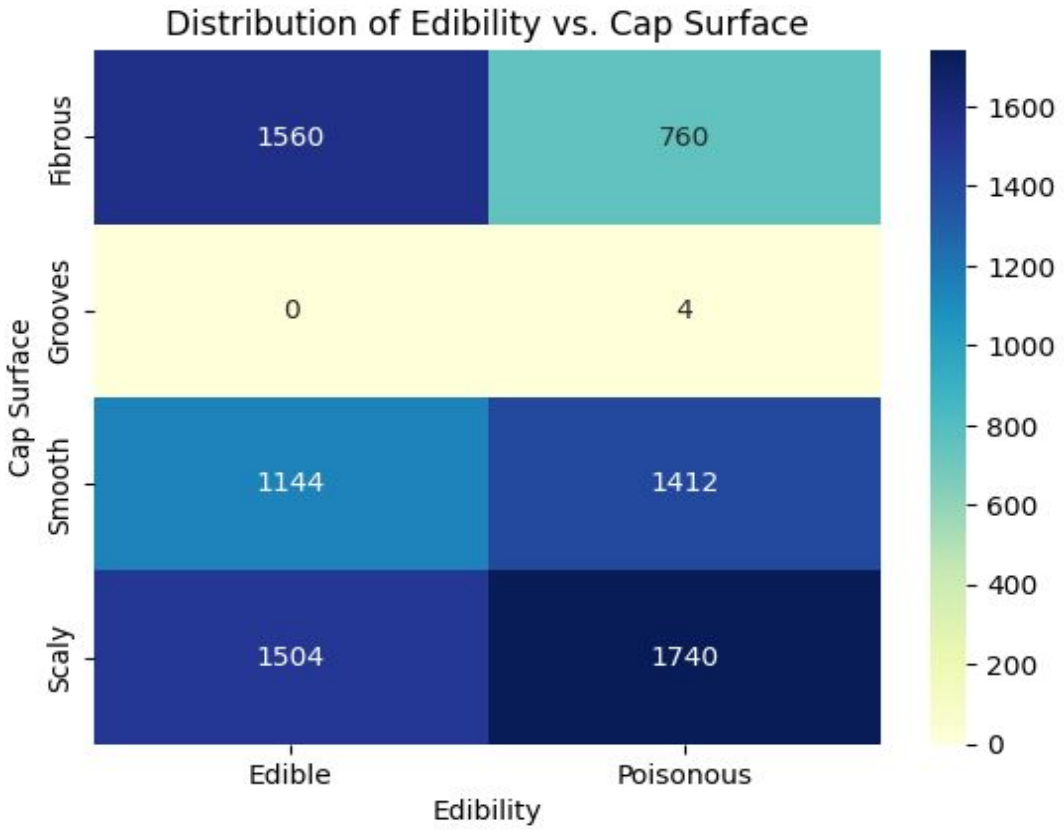
Key Takeaway(s):

- Some cap shape types have less observations compared to others (class imbalance).
- Most mushrooms in the dataset appeared to have flat or convex cap shapes, with somewhat equal levels of poisonous and edible mushrooms for each.

Distribution of Edibility vs. Cap Surface

Key Takeaway(s):

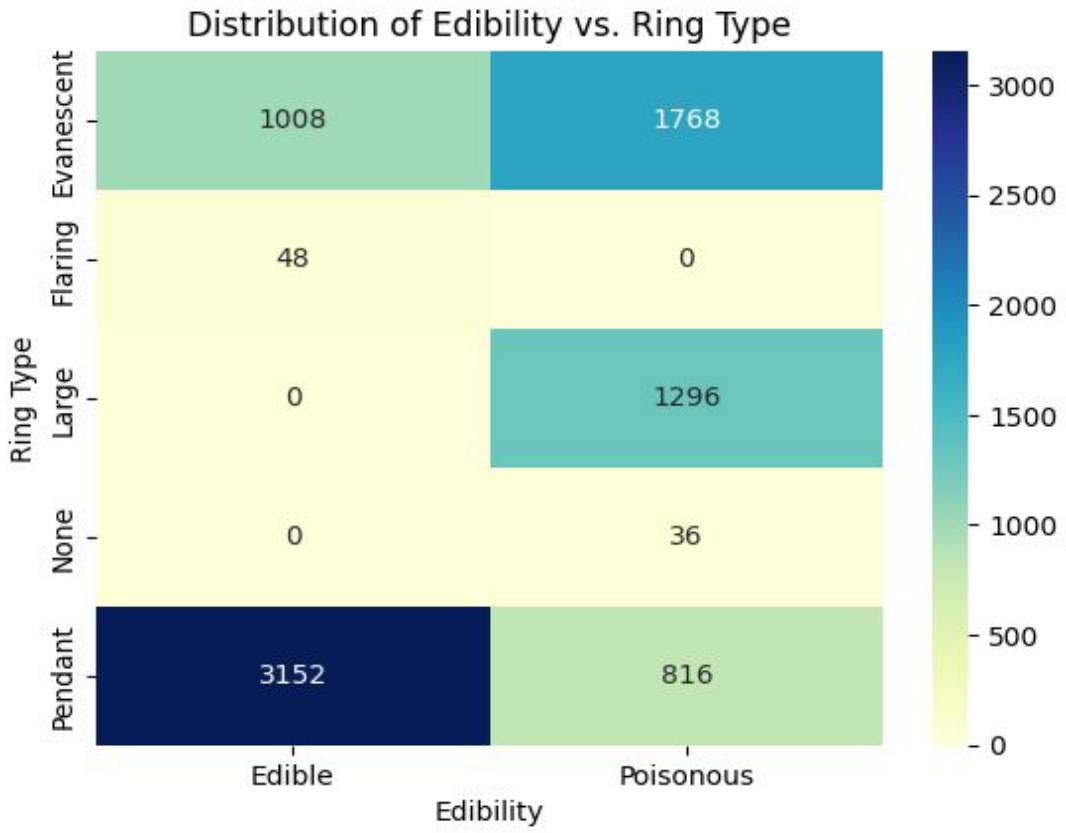
- Some cap surface types (grooves) lack observations compared to other types.
- Cap surface, based on the chart, isn't a glaring indicator of edibility.



Distribution of Edibility vs. Ring Type

Key Takeaway(s):

- Most mushroom ring types appear to be evanescent or pendant.
- Most of the edible mushrooms had a pendant ring type.



Appendix