**Mushroom Dataset: Comprehensive Analysi**s

**1. Dataset Overview**

Total mushrooms: 8,124

Number of features: 22 (excluding classification)

Edible mushrooms: 4,208 (51.80%)

Poisonous mushrooms: 3,916 (48.20%)

**2. Feature Distributions**

Most common cap shape: x (3,656 occurrences)

Most common cap surface: y (3,244 occurrences)

Most common cap color: n (2,284 occurrences)

Most common odor: n (3,528 occurrences)

Most common stalk shape: t (4,608 occurrences)

Most common habitat: d (3,148 occurrences)

**3. Correlation Between Features and Toxicity**

Odor is highly predictive:

Some odors (e.g., "foul" or "pungent") are exclusive to poisonous mushrooms.

Mushrooms with no odor are mostly edible (96.6%).

Gill color and size matter:

Some gill colors appear only in edible mushrooms, while others are exclusive to poisonous ones.

Bruising is significant:

Mushrooms that bruise are 81.5% likely to be edible, whereas non-bruising ones are 69.3% likely to be poisonous.

Spore print color impacts classification:

White, brown, and black spore prints are more common in poisonous mushrooms.

**Habitat differences:**

Certain environments, like "woods," exclusively contain edible mushrooms, while "paths" have mostly poisonous ones.

4. **Key insights & recommendations**

Odor is a strong predictor of toxicity. If a mushroom smells foul, it's likely poisonous.

Machine learning models can classify mushrooms effectively based on these features.

Mushroom hunters should pay attention to cap shape, bruising, and habitat when identifying edible species.

Would you like visualizations or further statistical analysis? 🚀 ​