

The background of the slide is an abstract composition of vibrant, overlapping brushstrokes in shades of magenta, red, orange, yellow, and blue. The strokes are thick and expressive, creating a dynamic and artistic feel. The colors transition from deep magenta and blue on the left to bright yellow and orange on the right, with white spaces where the strokes don't overlap.

FDA Drug Recall Classifier

Predicting Recall Severity from Reason Text

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BACKGROUND

Problem: FDA recall notices are manually classified into Class I (urgent) to Class III (least risk), often with a delay.

Goal: Predict recall severity from the "reason for recall" text using machine learning to support faster regulatory and clinical action.

Motivation:

- Class I recalls involve the risk of serious injury/death.
- Timely classification helps protect public health.

DATASET & ACQUISITION METHOD

Source: FDA Enforcement Report API: <https://api.fda.gov/drug/enforcement.json>

- Sample size: 16,908 drug recalls (06/2012-05/2025)
- Row: Single drug recall event
- Variables: Recall Number, Classification, Reason, Product Description, Report Date, Recalling Firm, State, & Country

Exploration Highlights:

- Class II dominates (60%), followed by Class III (30%) and Class I (10%)
 - Term Frequency used to identify key terms by class
 - Word clouds revealed distinct language patterns
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FRAMEWORK & MODEL

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TAKEAWAY & NEXT STEPS

Takeaways:

- Natural Language Processing-based classifier can assist in the early detection of urgent recalls
- Deployed end-to-end using API + Shiny App

Next Steps:

- Enable batch predictions
- Add model explainability

Repo: <https://github.com/jannet1313/fda-drug-recall-classifier>

Thank you!
