

Natural Language Processing of Drug Reviews

Sentiment Analysis for Birth
Control Medications



Introduction



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UC Irvine

Bachelors - Chemical Engineering

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*Hobbies - Building mechanical
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Agenda

Business Problem

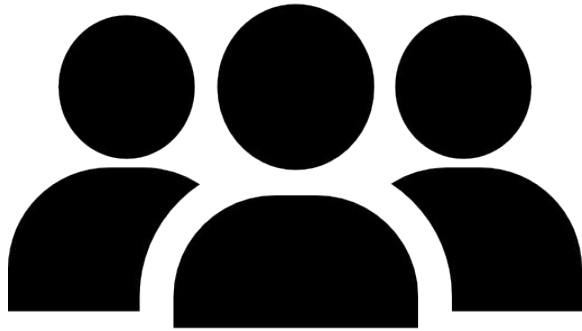
Data Overview

Modeling & Results

Recommendations

Next Steps

Improve Patient Satisfaction



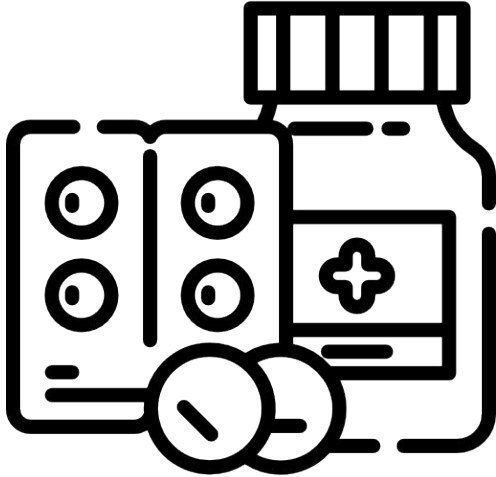
Customer User Ratings: Subjective

Sentiment: Better



Business Problem

Business Problem



- Problem: Online forums and websites contain valuable information regarding user preference
- Solution: Automate this for case specific sentiment analysis



Background

- Birth control considered a basic health care need for women
- Adverse side effects
- Monitoring drug sentiment



<https://www.plannedparenthood.org/learn/birth-control/birth-control-pill/what-are-the-benefits-of-the-birth-control-pill>





Data Overview

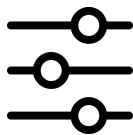
Data Process Overview

Scope



Drugs.com patient reviews

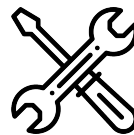
Filtering



Parsed data focusing on birth control

Applied custom text cleaning function

Engineering



Created new analytical features:

- Sentiment
- Emphasis
- Time periods

Modeling



Iterative modeling process for predicting sentiment

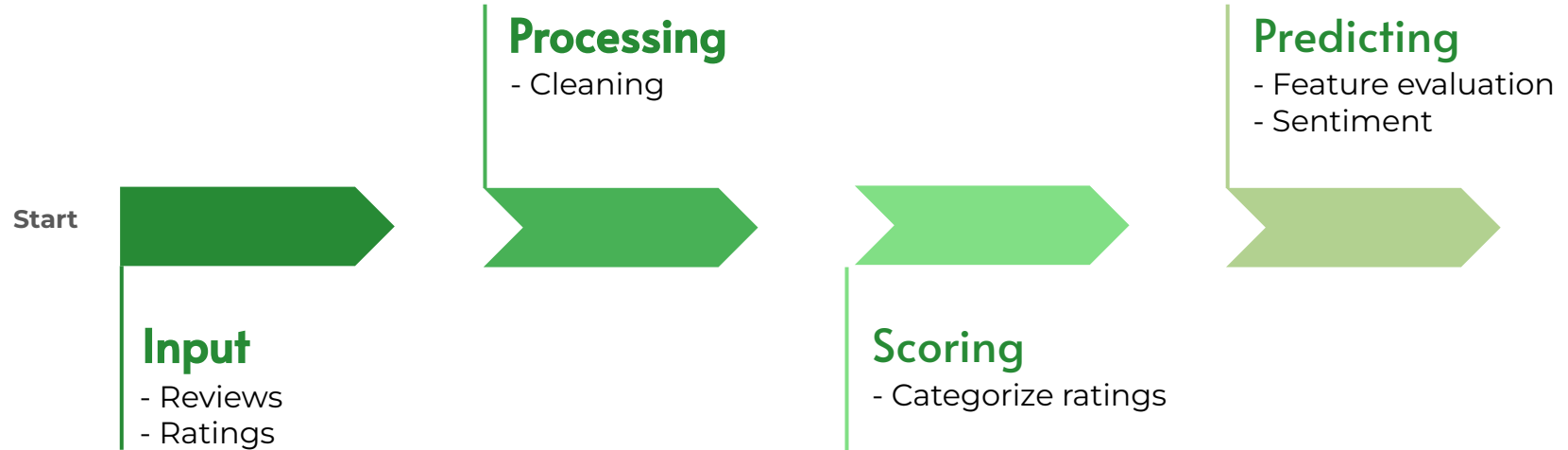
- **82% Accuracy** on new data





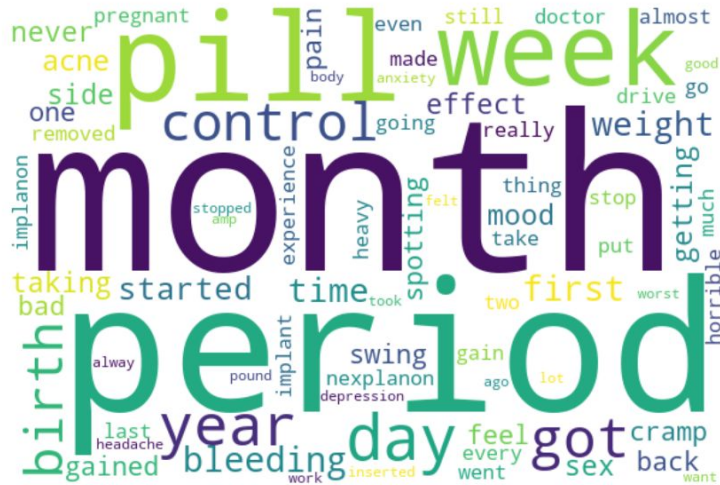
Modeling & Results

Model Yields 82% Accuracy



Sentiment Visualization

Negative Sentiment



Positive Sentiment





Recommendations

Recommendations

Sentiment Over Time




Analyze changes in product over time

Increased Market Awareness



See how each product on the market is trending

Deployment



Deploy process for companies to learn more about their products





Next Steps

Future Steps

Apply to Other
Conditions



BERT Modeling



Live Integration



Thank you!



Albert Chen
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Questions?

Sources

Data: <https://archive.ics.uci.edu/ml/datasets/Drug+Review+Dataset+%28Drugs.com%29>

Images: <https://www.healthline.com/health/birth-control/birth-control-pills>, <https://www.flaticon.com/>

Slide Deck: Provided by Slidesgo