California's Independent Medical Reviews

Are arbitrators persuaded by elements other than the facts?

Is there a systemic bias in whether an insurer's denial of coverage for a patient's medical treatment or health service is overturned or upheld?

Dataset

Summary

- California Department of Managed Healthcare (DMHC)
- Outcomes of independent reviews of patient denial of coverage for medical treatments and health services.
- > 28k reviews
- Diagnoses, treatments, and patient profiles
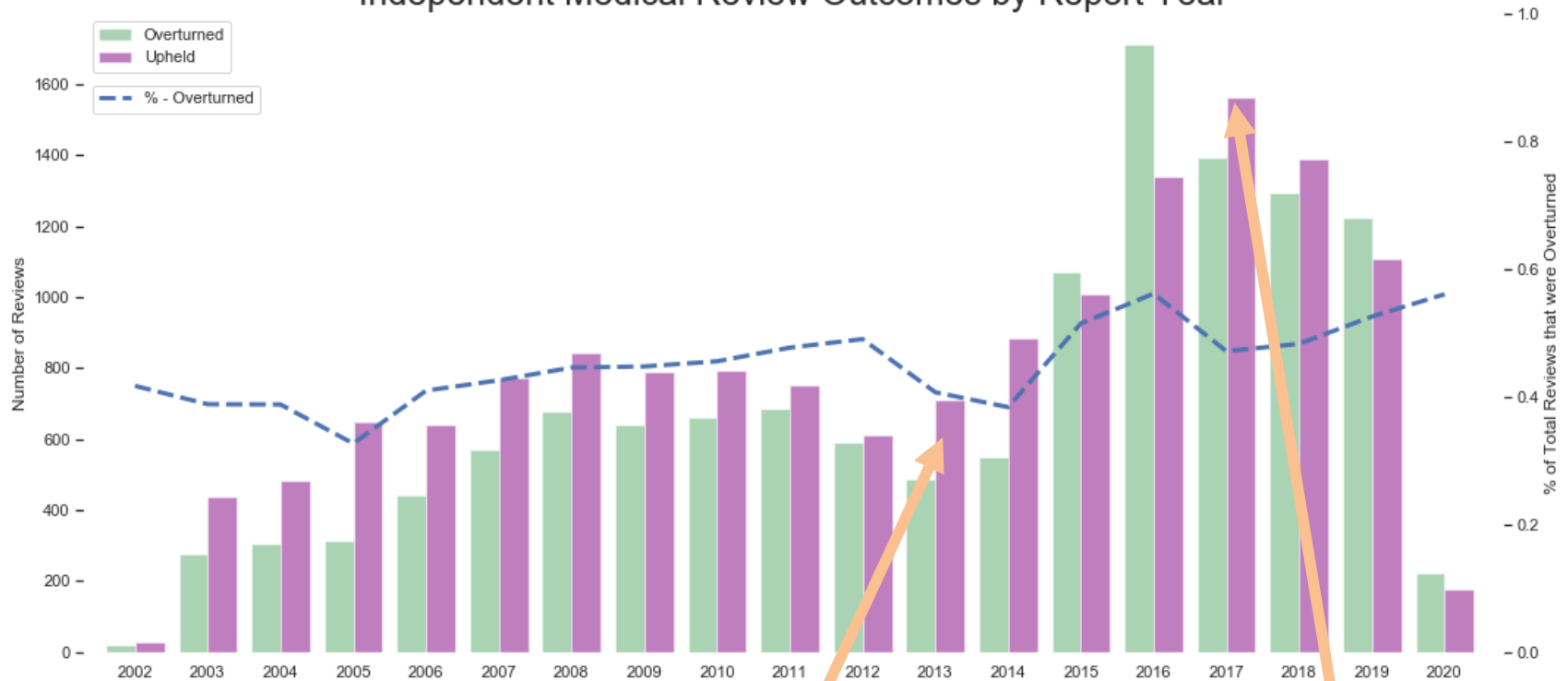- "Overturn rate"

Data Processing

- Applied medians to missing values in "Days to Review"
- Discarded 2.3% of observations due to missing values
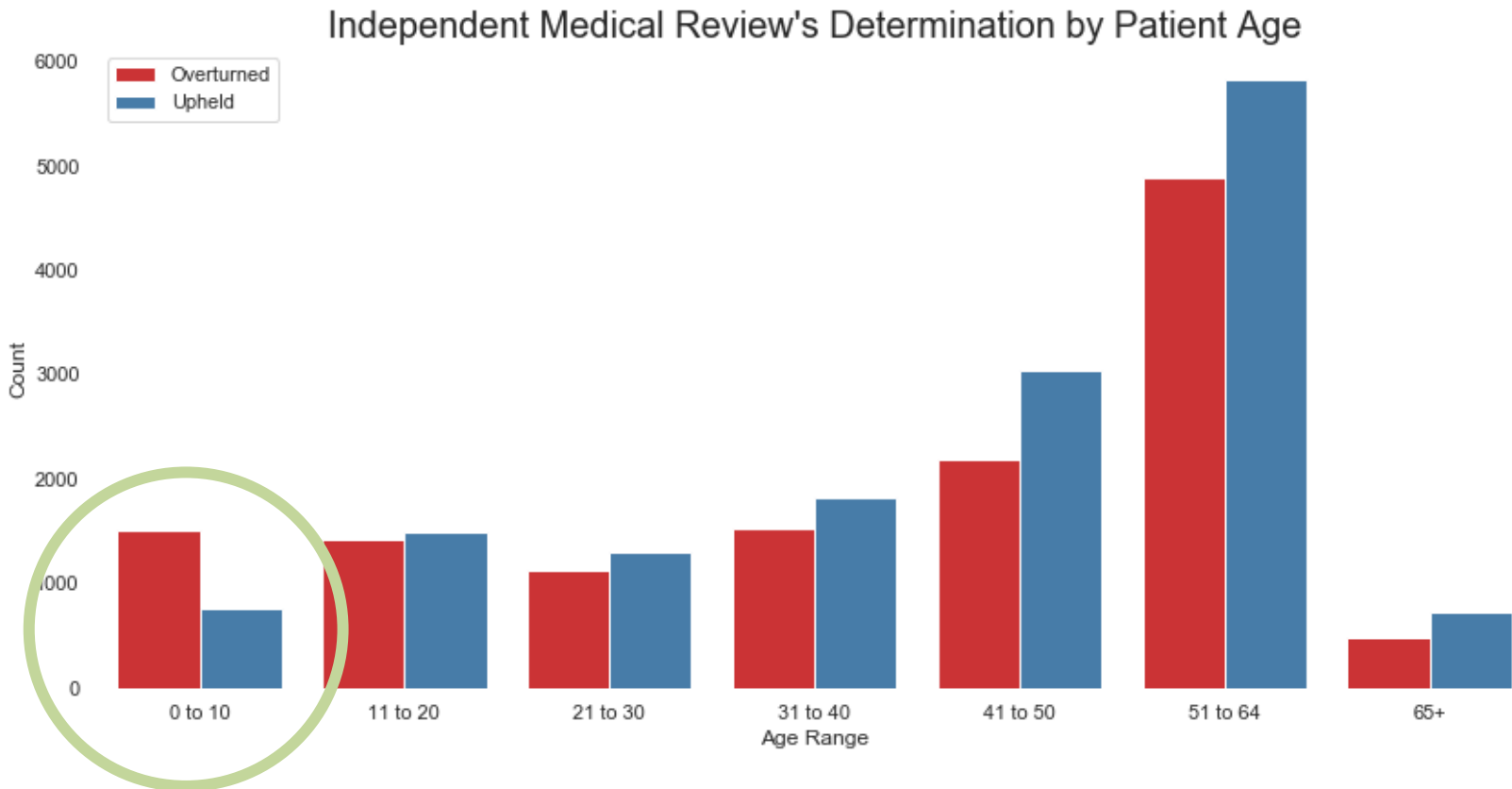 - Patient age range
  - Patient gender

Exploratory

Independent Medical Review Outcomes by Report Year

CA implemented ACA in Oct '13

↓ in federal refunds to insurers.
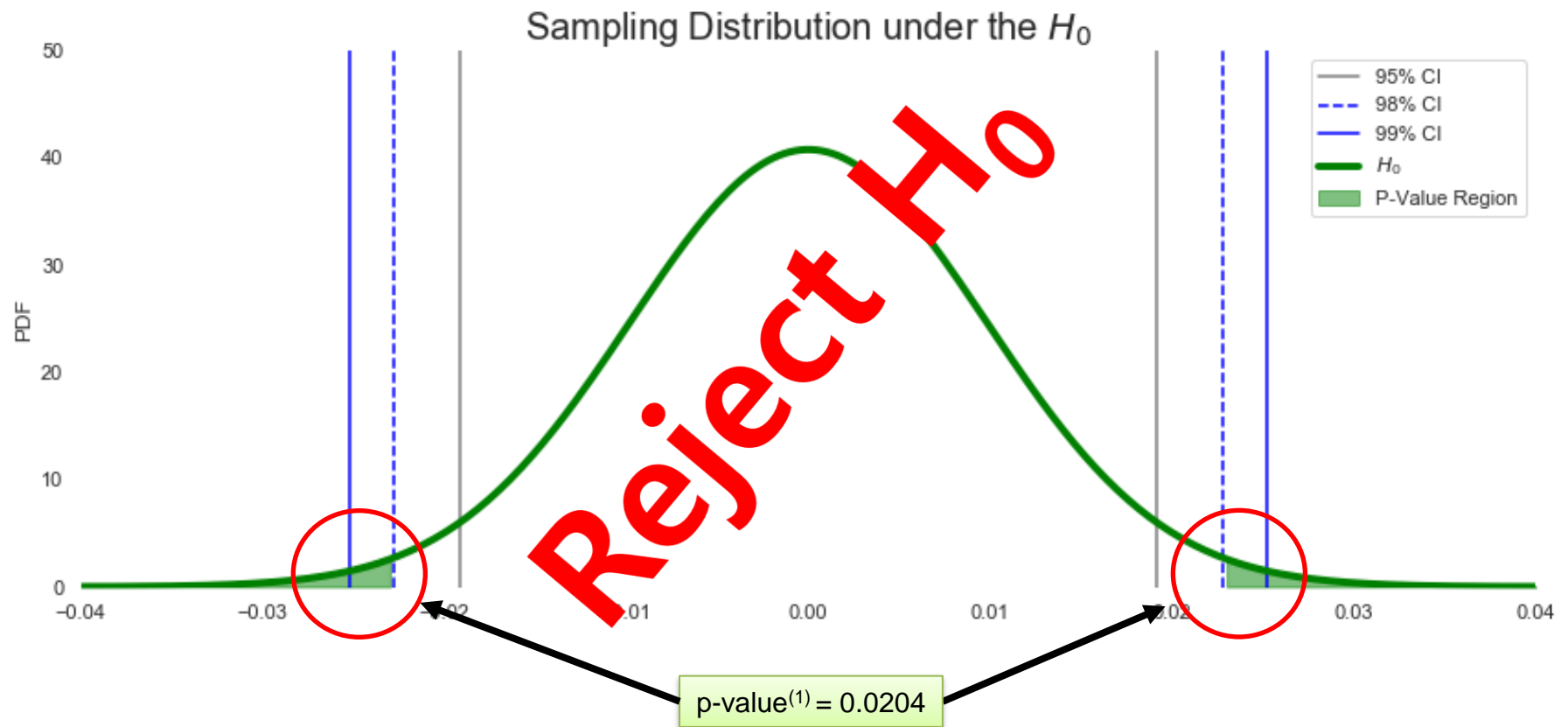
Exploratory (cont'd)

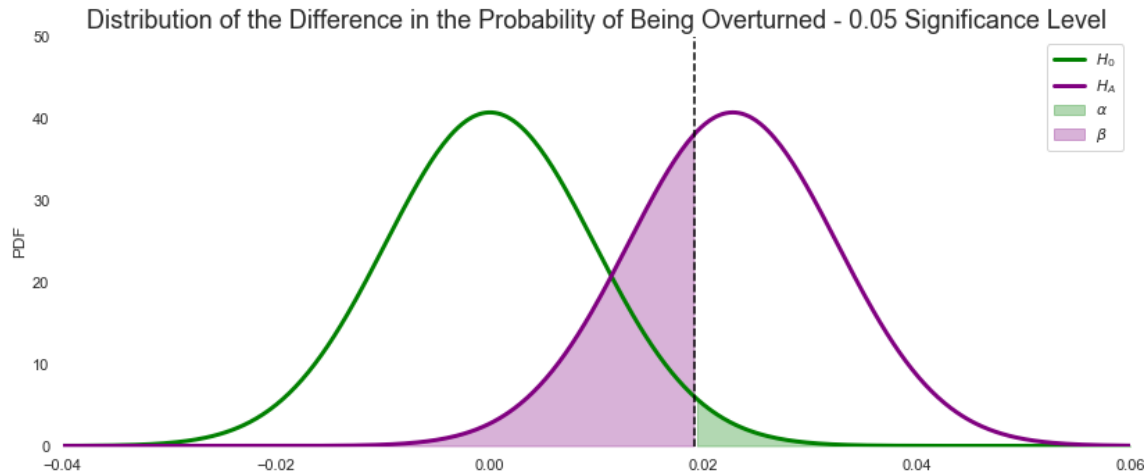# Hypothesis Testing

H_0: Child's expected "overturn rate" = Expected "overturn rate" of patients who are 11 years and older

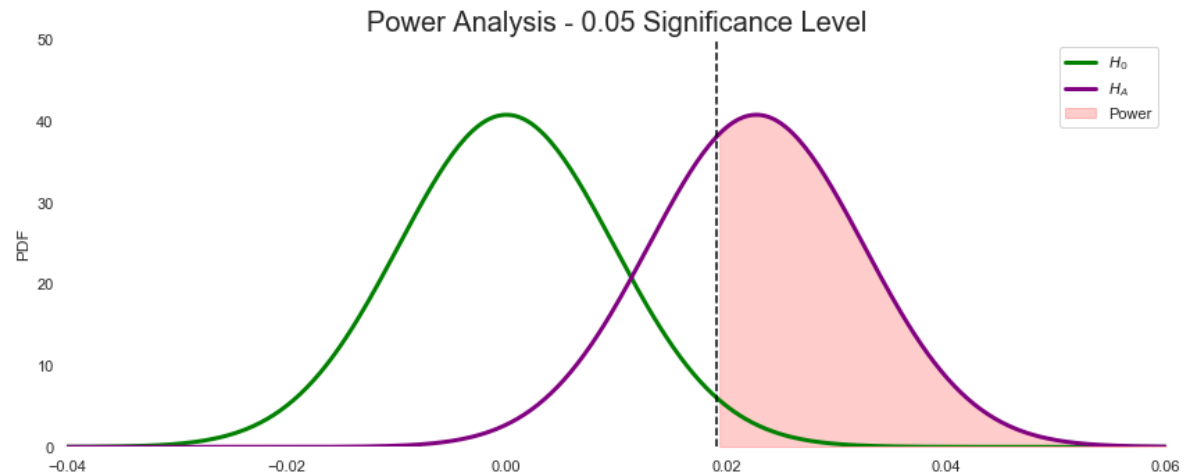H_A: Child's expected "overturn rate" ≠ Expected "overturn rate" of patients who are 11 years and older

(1) Welch's T-test

Hypothesis Testing (cont'd)

Distribution of the Difference in the Probability of Being Overturned - 0.05 Significance Level

FPR (α) = 0.025
FNR (β) = 0.358

Power = 0.642 [1]

Power Analysis - 0.05 Significance Level

(1) Power is less than ideal, indicating a notable probability of making false negative error.

Bayesian Inference

Probability of an Arbitrator Overruling Health Plan's Denial of Service Given a Patient's Age
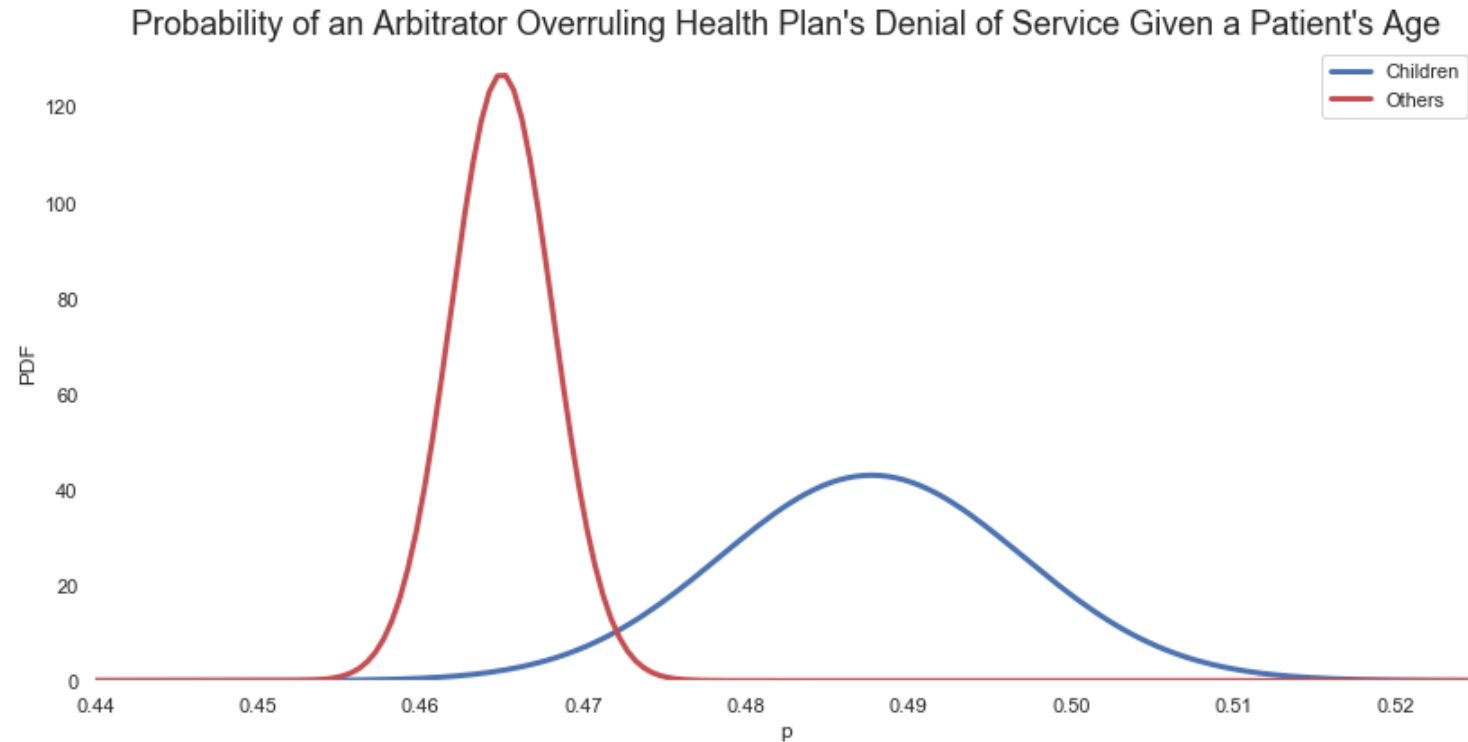
~99% more likely that a child's denial of coverage is overturned than a person older than 10 years of age having their dismissal of coverage reversed.

Conclusions

- To some degree, the Titanic ethos continues
  - Children first!

- Potential relationship between insurers access to federal funds and the likelihood of an independent reviewer overturning a patient's denial of service.

Further Discovery

- How many patients were denied medical coverage by their health plan since 2001?
- How are arbitrators selected? Arbitrators' profiles?
- Which insurer corresponds to each case? Is there a relationship between certain insurers and the probability of an arbitration resulting in an overturn?