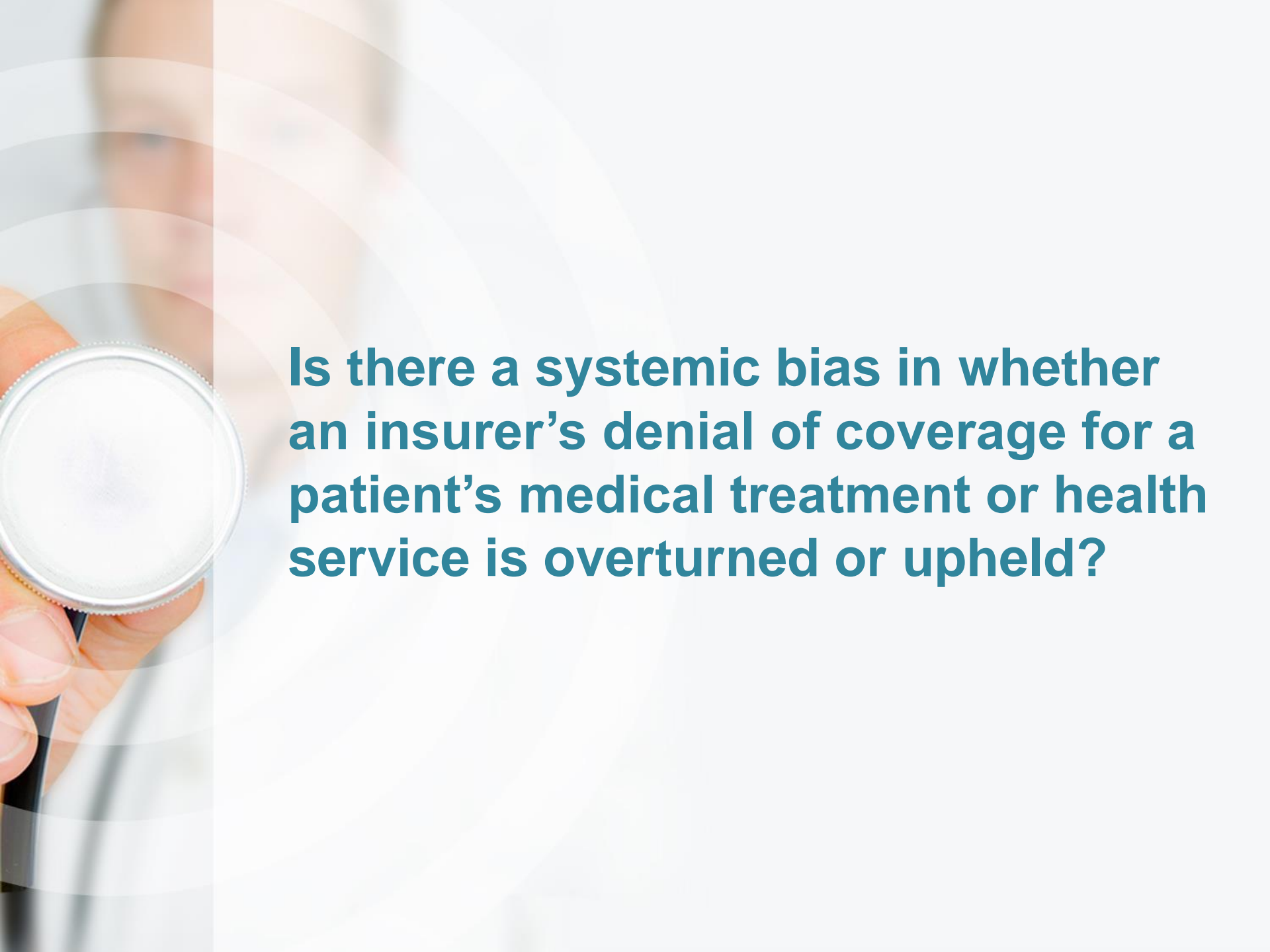




California's Independent Medical Reviews

Are arbitrators persuaded by elements other than the facts?

A hand holding a stethoscope is visible on the left side of the image. The background is a blurred photograph of a person in a white lab coat, likely a healthcare professional. The text is overlaid on the right side of the image.

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"

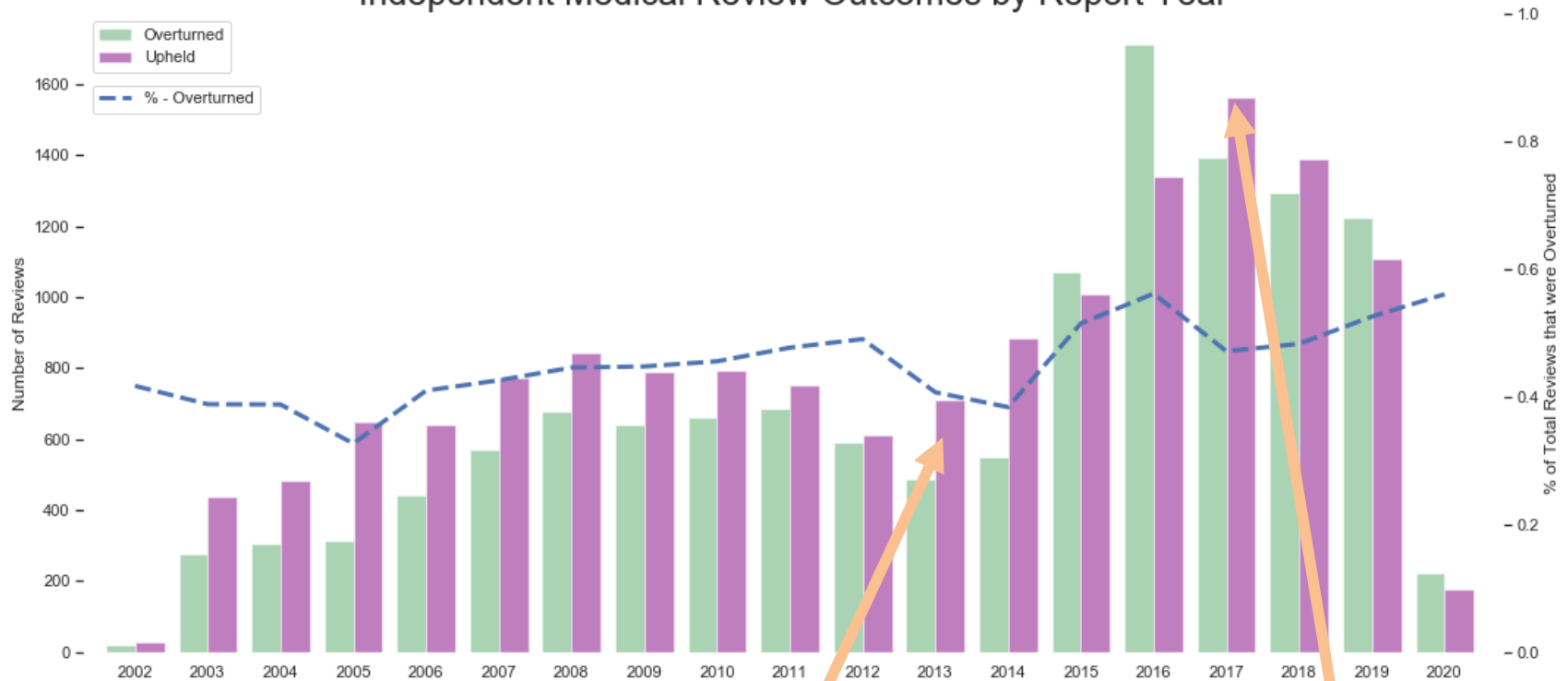
Data Processing

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

Exploratory



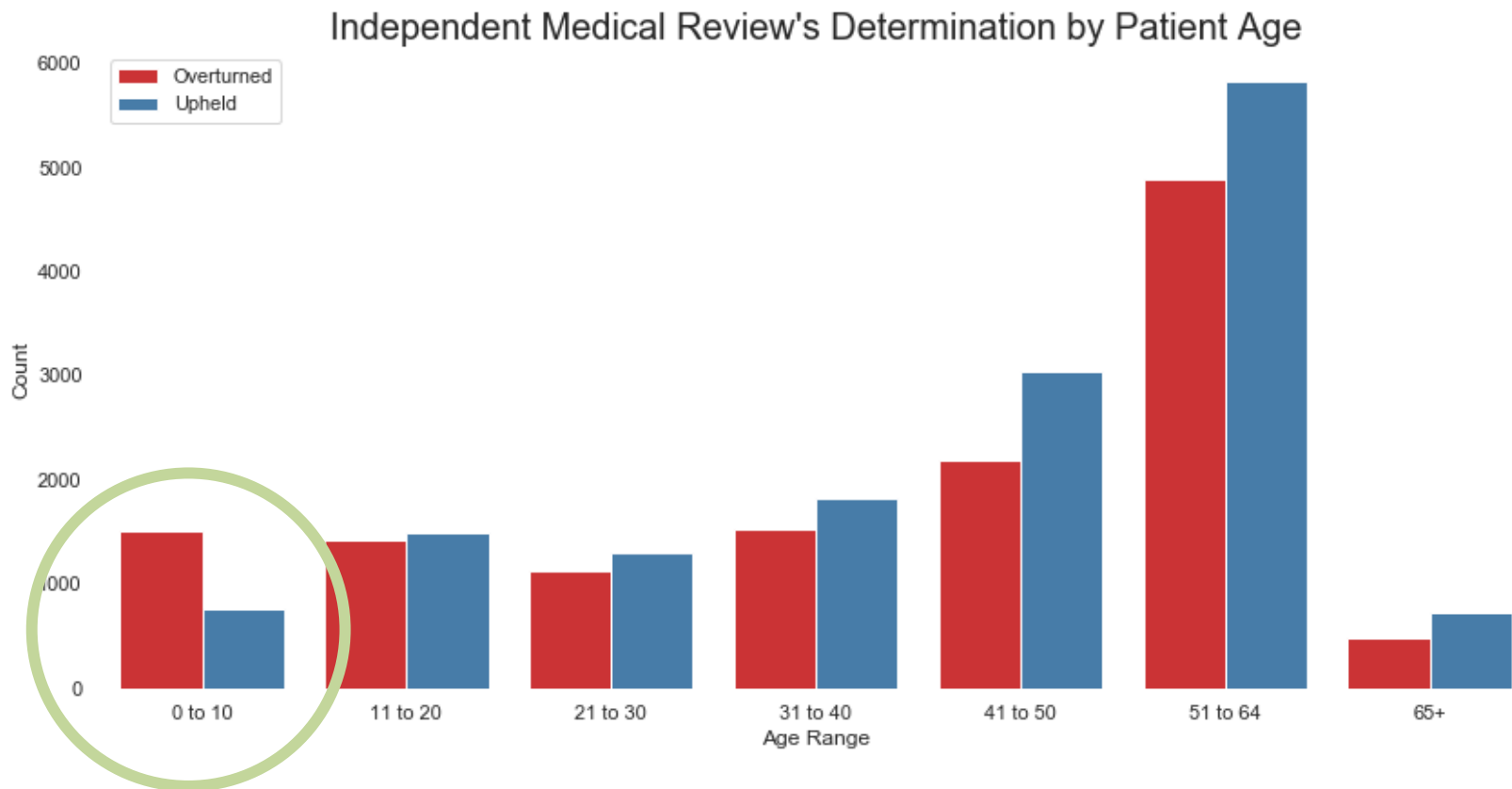
Independent Medical Review Outcomes by Report Year



CA implemented
ACA in Oct '13

↓ in federal refunds
to insurers.

Exploratory (cont'd)

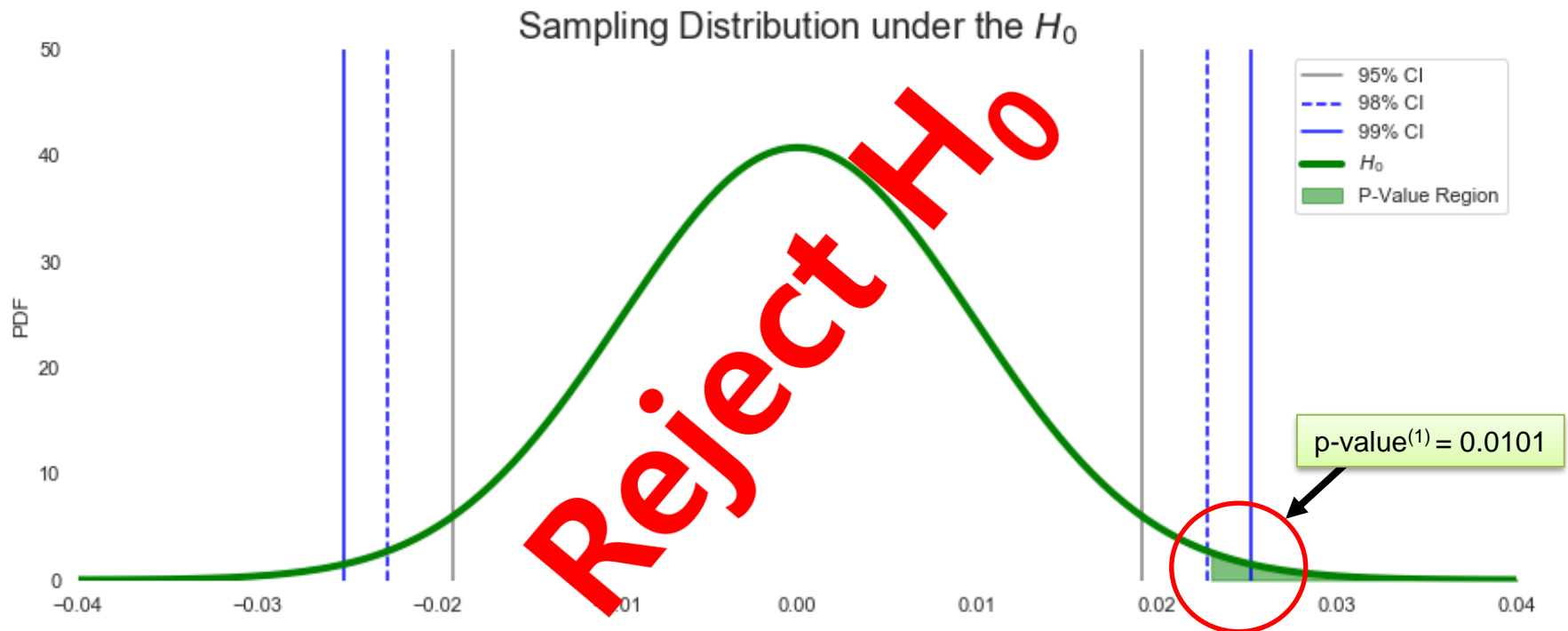


Hypothesis Testing



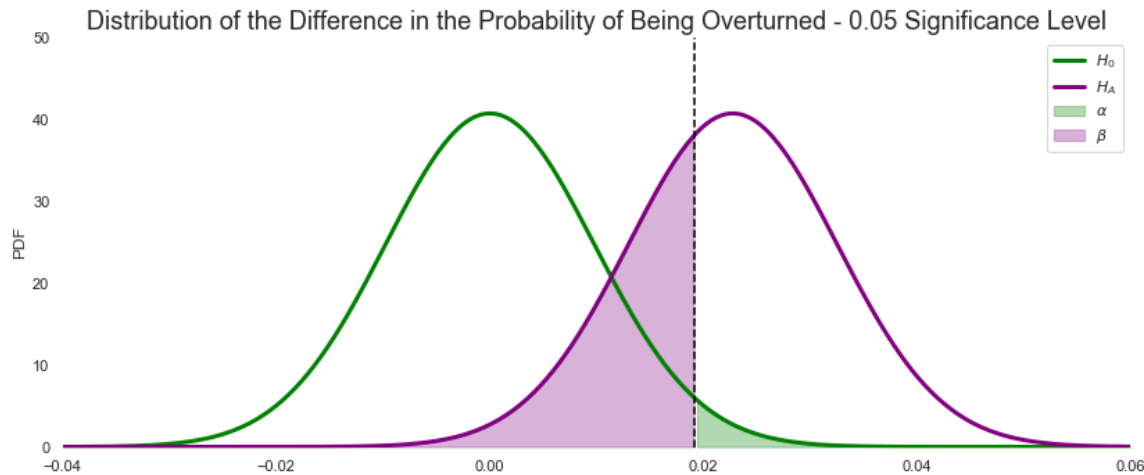
H_0 : Child's expected "overturn rate" = Expected "overturn rate" of patients who are 11 years and older

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



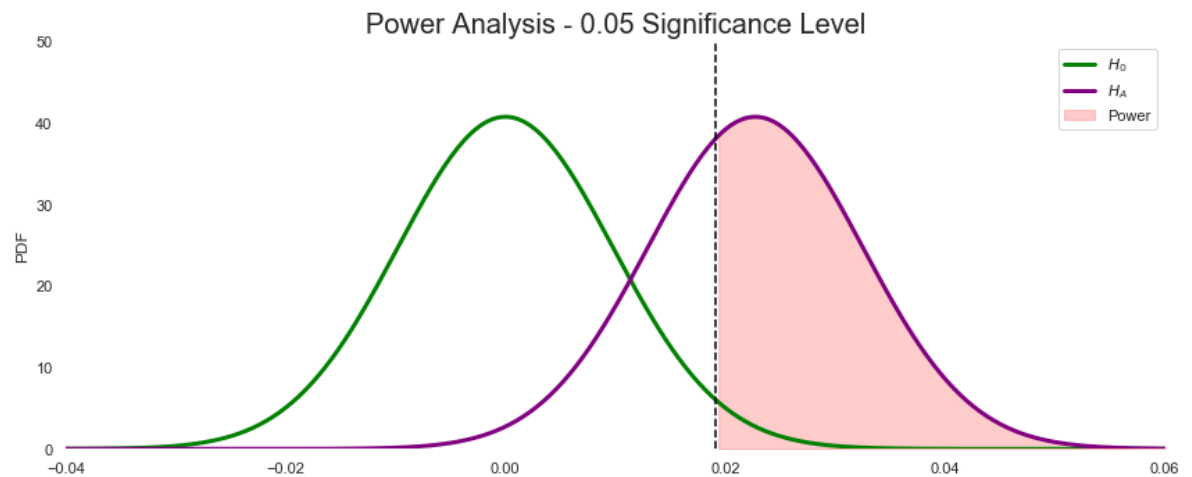
(1) Both Mann-Whitney U-test and Welch's T-test (divided by two) arrive at a p-value ~ 0.0101 .

Hypothesis Testing (cont'd)

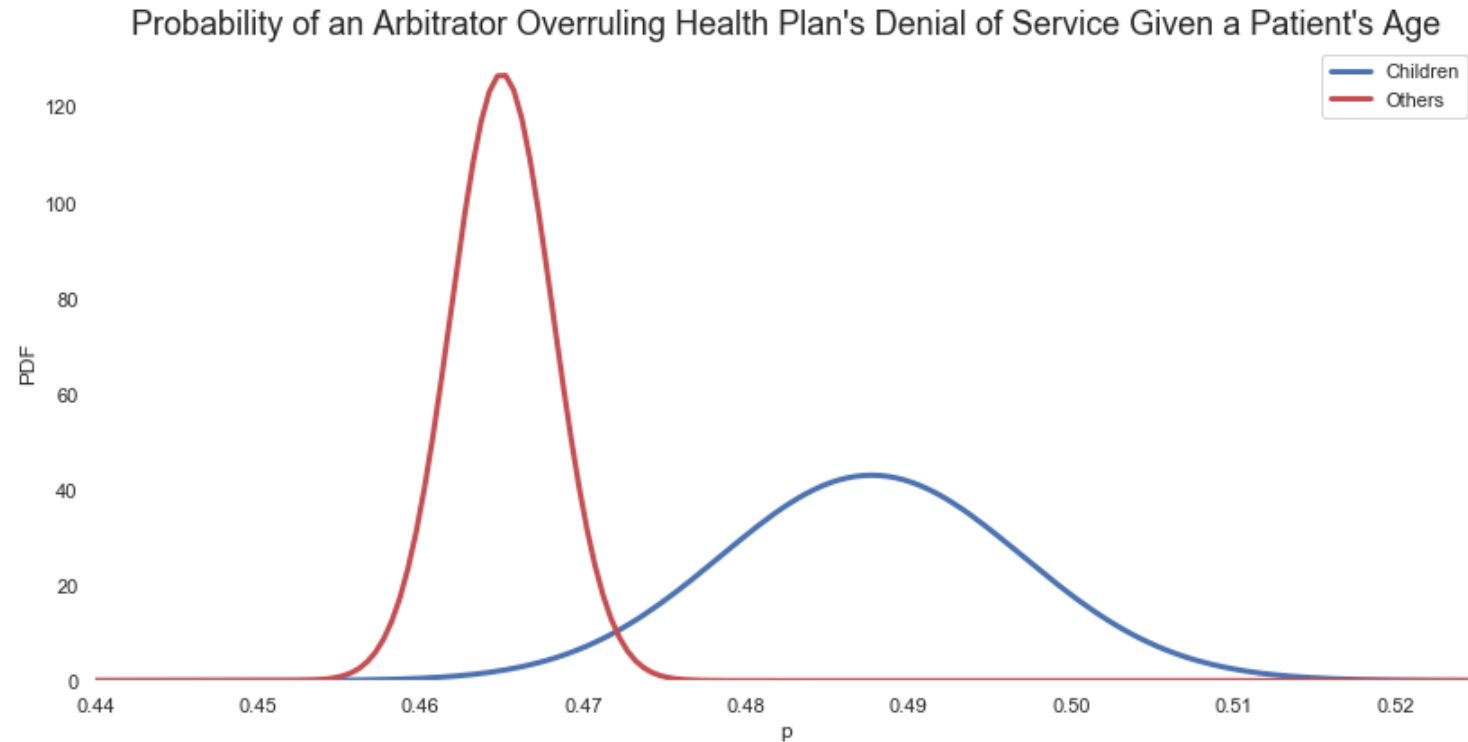


$$\text{FPR } (\alpha) = 0.025$$
$$\text{FNR } (\beta) = 0.358$$

$$\text{Power} = 0.642$$



Bayesian Inference



~99% like that probability of a child's case being overturned is greater than the probability of "other" patient's being overturned.



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 denied coverage for each case?