



Modeling Recurrent Emergency Department Trends in the United States

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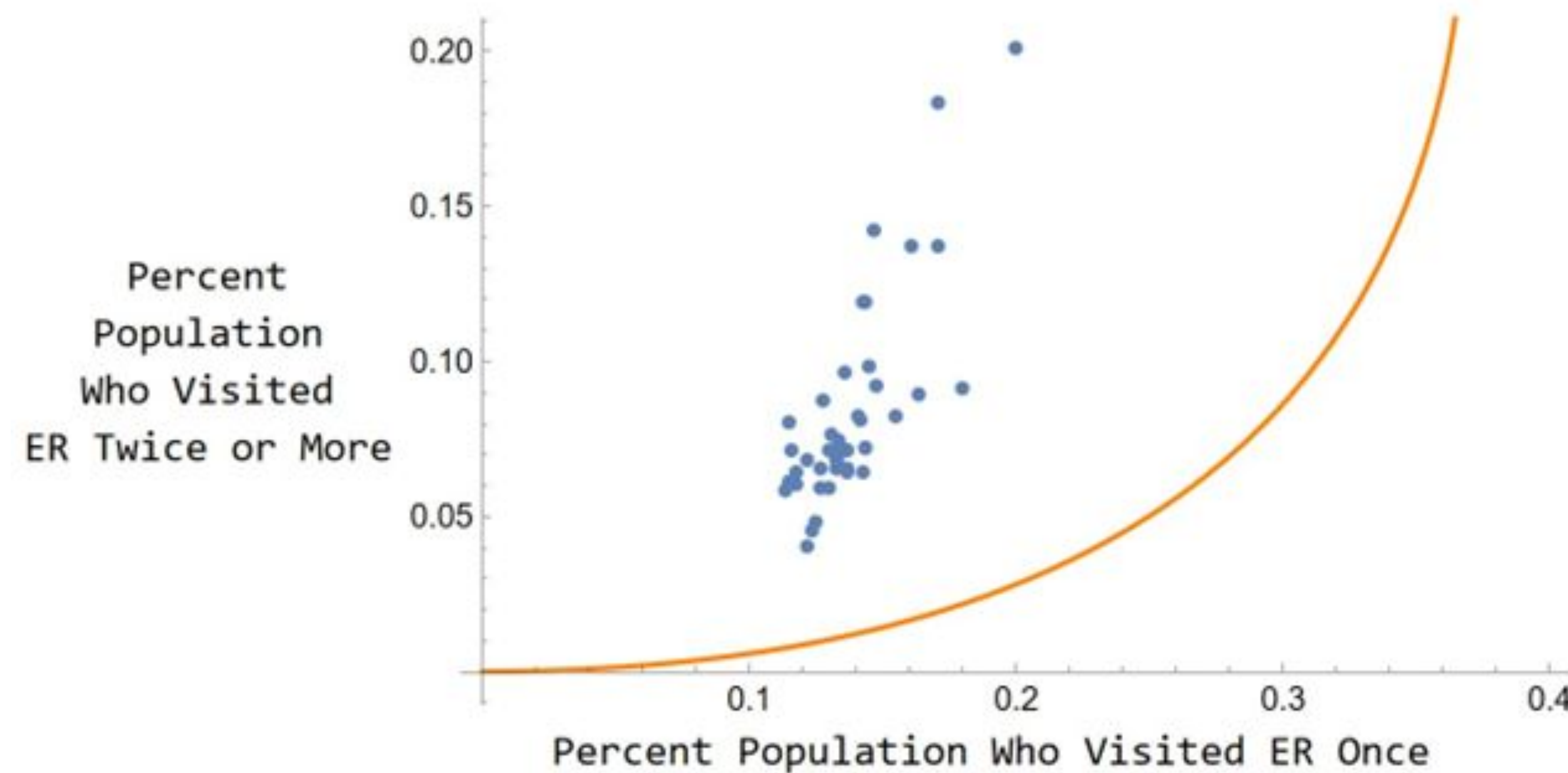
Background

- The recent COVID-19 pandemic greatly impacted the emergency department's ability to care for patients
- **ED overcrowding** occurs when patients require more emergency care and intervention than can be provided by an emergency department (American College of Emergency Physicians, 2023)
- It leads to negative patient health outcomes, job burnout, and staff shortages
- Understanding why some patients require multiple ED visits and addressing these issues to minimize the number of recurrent ED patients is important for reducing overcrowding
- There are two types of recurrent ED patients: **"frequent"** patients who present often with different symptoms each time and **"repeat"** patients who present often with the same symptoms each time (Slankamenac et al., 2019)

Methods

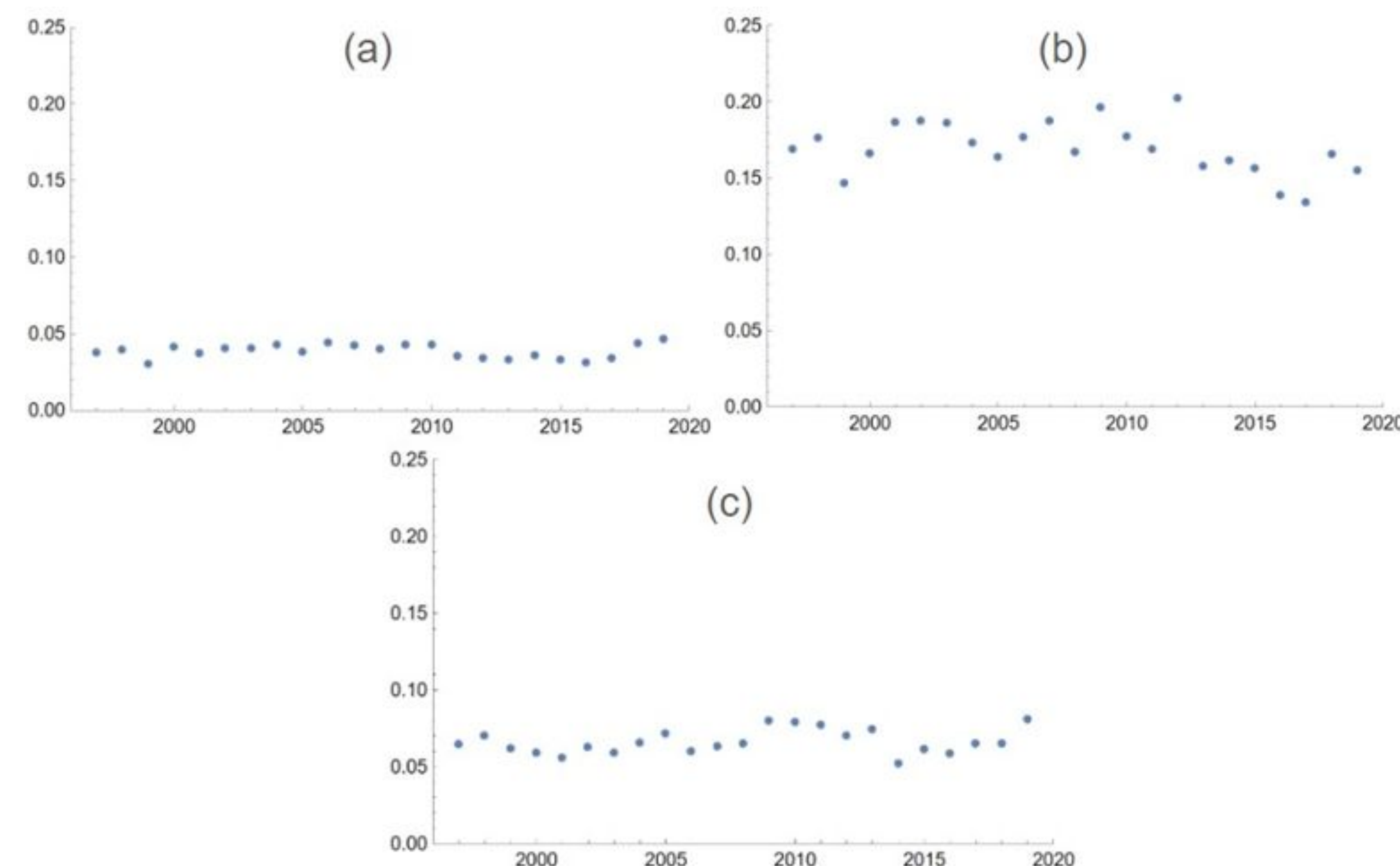
- Created a mathematical model representing the likelihood that a patient would experience a true emergency on any given day over the course of one year (**The Poisson Hypothesis**)
- Created a mathematical model that calculates the percentage of a population that may act as **"frequent flyers"** (**The Frequent Flyer Theory**)
- The National Center for Health Statistics has conducted a yearly National Health Interview Survey for the last 26 years
- One question they ask is "During the past 12 months, how many times have you gone to a hospital emergency room about your own health?"
- Compared this data from The National Center for Health Statistics to the predictions from both mathematical models and evaluated which one best represented the realities of the ED

Results



Discussion

- The data did not follow the trends predicted by The Poisson Hypothesis
- The data followed the trends predicted by The Frequent Flyer Theory in some cases, including 18-24 year-olds, 65-74 year-olds, males, privately insured patients, uninsured patients, and patients ranging from 100% to 400% or more of the poverty level
- There are several theories as to why there may be "frequent flyers" in each of these populations (i.e., ED's obligation to treat patients regardless of their ability to pay, complex medical conditions requiring advanced treatment, fully-booked primary care doctors and specialists, drug dependency, illness anxiety disorders, and lack of general health education), but more research is needed to determine why this is the case in each population
- The results of this study are limited by the small data set analyzed and the many social and emotional factors that push patients to seek emergency medical care but are not considered true emergencies or "frequent flyer" behaviors
- Future research should investigate the inconsistencies of The Frequent Flyer Theory in various populations and the factors that make The Frequent Flyer Theory valid in other populations



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