



# Banning Butts on the Beach: Does it Decrease Environmental Pollution?

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## Background

- Cigarette butts account for ~1/3 of beach litter collected globally
- Toxins from butts leach into the environment, and the plastic filters are non-biodegradable
- Smoking is banned on all San Diego County beaches but it remains legal on most state beaches
- The effectiveness of local smoking ban policies on beaches is unknown

## Objectives

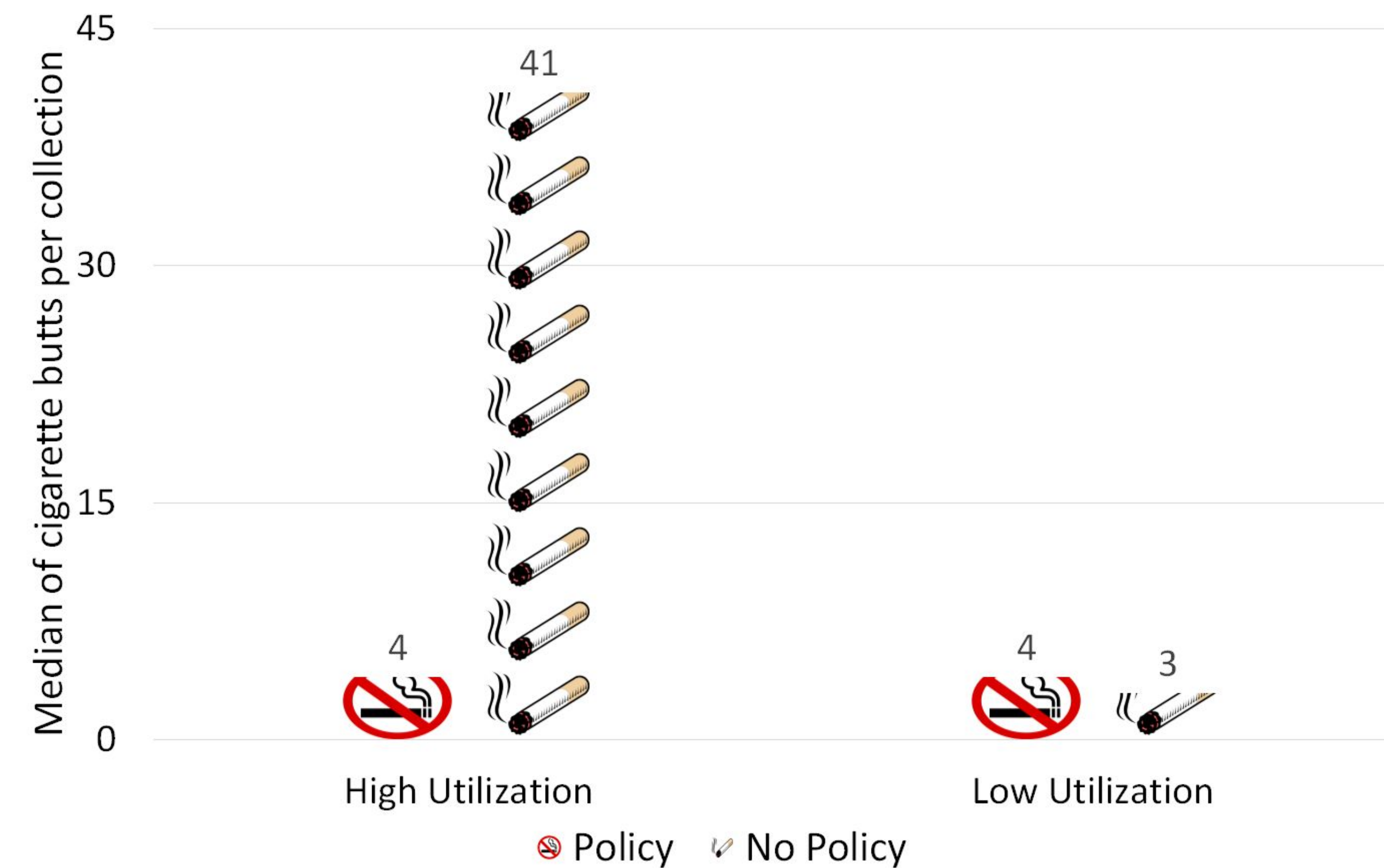
- To assess if the local smoking ban policies were implemented as legislated
- To determine if the law is being routinely enforced
- To compare cigarette butt pollution on beaches with the ban to beaches without the ban

## Methods

- Three beaches with bans (La Jolla Shores, Coronado, Moonlight) and three without bans (Torrey Pines, Silver Strand, Cardiff) selected; matched by proximity and community economics
- Three cigarette butt collections per beach
  - Standardized 100m x 5m areas on each beach
  - Stratified by high/low utilization (cutoff: 126,000 visitors/month)
- Median number of butts per collection compared for beaches with and without smoking bans
- All smoking ban signs on beaches with no smoking policies photographed and evaluated for readability
- Survey 123 used to measure median distances between trash cans on all 6 beaches
- Differences in medians tested with Wilcoxon rank sum test
- Three in-depth interviews conducted with police and lifeguards from San Diego counties concerning attitudes on enforcement and citations for violations

## Results

Was there a difference in the median number of butts collected on beaches with and without a smoking ban?



The median number of butts on high-utilization beaches without a ban was 10 times higher than on those with the ban ( $p=0.04$ )

What is the condition of the signage on the beaches with the smoking ban policy?

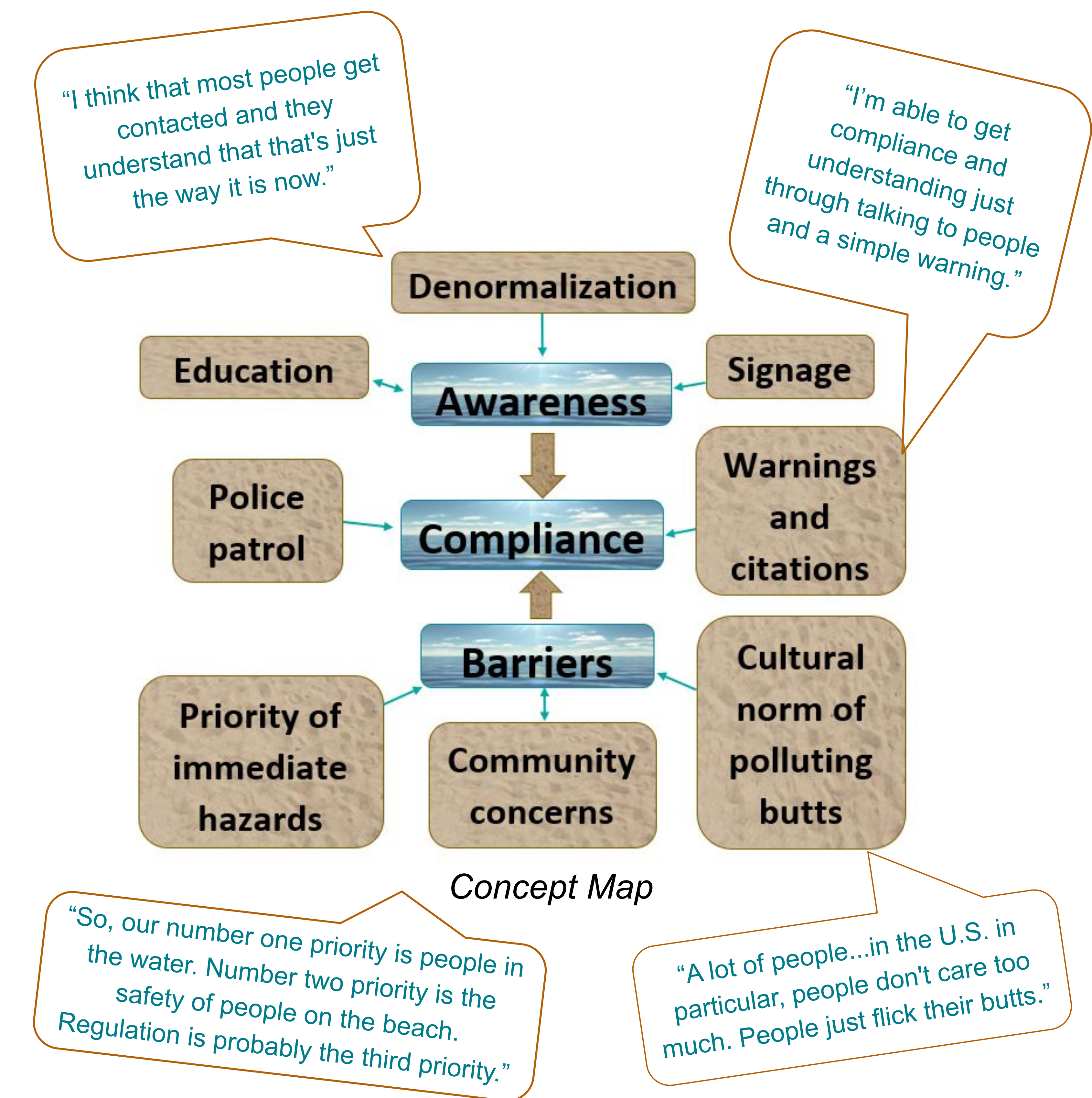
43% of signage unreadable (Main issues: Sun-bleached and faded)



What about the trash can spacing?

The median distance between trash cans was nearly 1.8 times higher for beaches without the ban compared to those with the ban (30 meters vs. 17 meters;  $p=0.03$ )

How do the lifeguards and police feel about the ban?



## Limitations

- Weather-dependent data collections
- Small sample size
- Not peak attendance season for beaches
- Other beach cleanups happening concurrently
- Limited accessibility of lifeguards and police
- Smoking on the beach not the only source for cigarette butt litter on beaches

## Conclusions

- High-utilization beaches with smoking ban policies had significantly fewer cigarette butts, suggesting that banning smoking may be effective in reducing cigarette butt waste
- To further investigate factors contributing to cigarette butt waste, signage should be studied in greater detail, smokers should be surveyed about their behavior, and larger beach areas should be sampled during peak seasons