Protecting Young Passengers

Visualizing the Landscape of Child Car Thefts in America

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Final Product of Appropriate Form

- Simplified product to suit our target audience (public, media, nonprofit Kids & Car Safety - KACS).

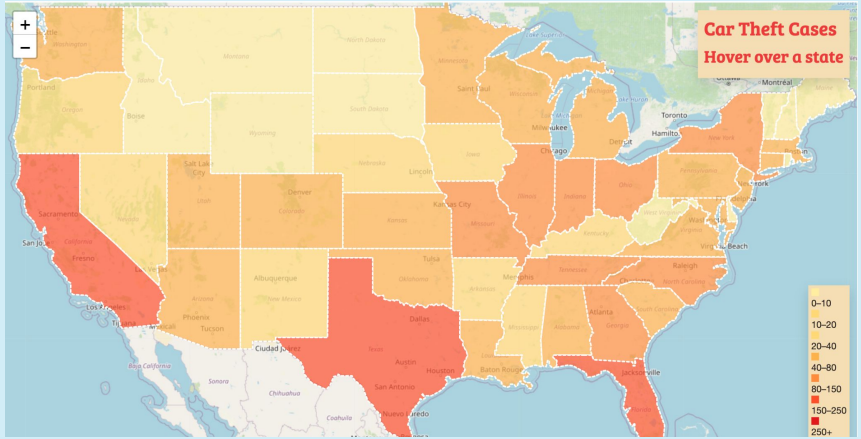
- It includes mostly everything that was asked of by KACS whether on website or in dashboard itself.

- The final product is a simple, one-dashboard visualization that allows user to filter by:
  - Person Data: Victim counts
  - Incident Data: Incident counts
  - Location: City & State
  - Seasonal: Number of incidents and/or victims by season

Solving the Problem for the User

- KACS problem: wanted to visualize in real time car thefts for the last 5-6 years.

- Current data vis on website not up-to-date & inaccurate (last year = 2021).



Alaska

Alabama

Arkansas

Arizona

California

Colorado

Connecticut

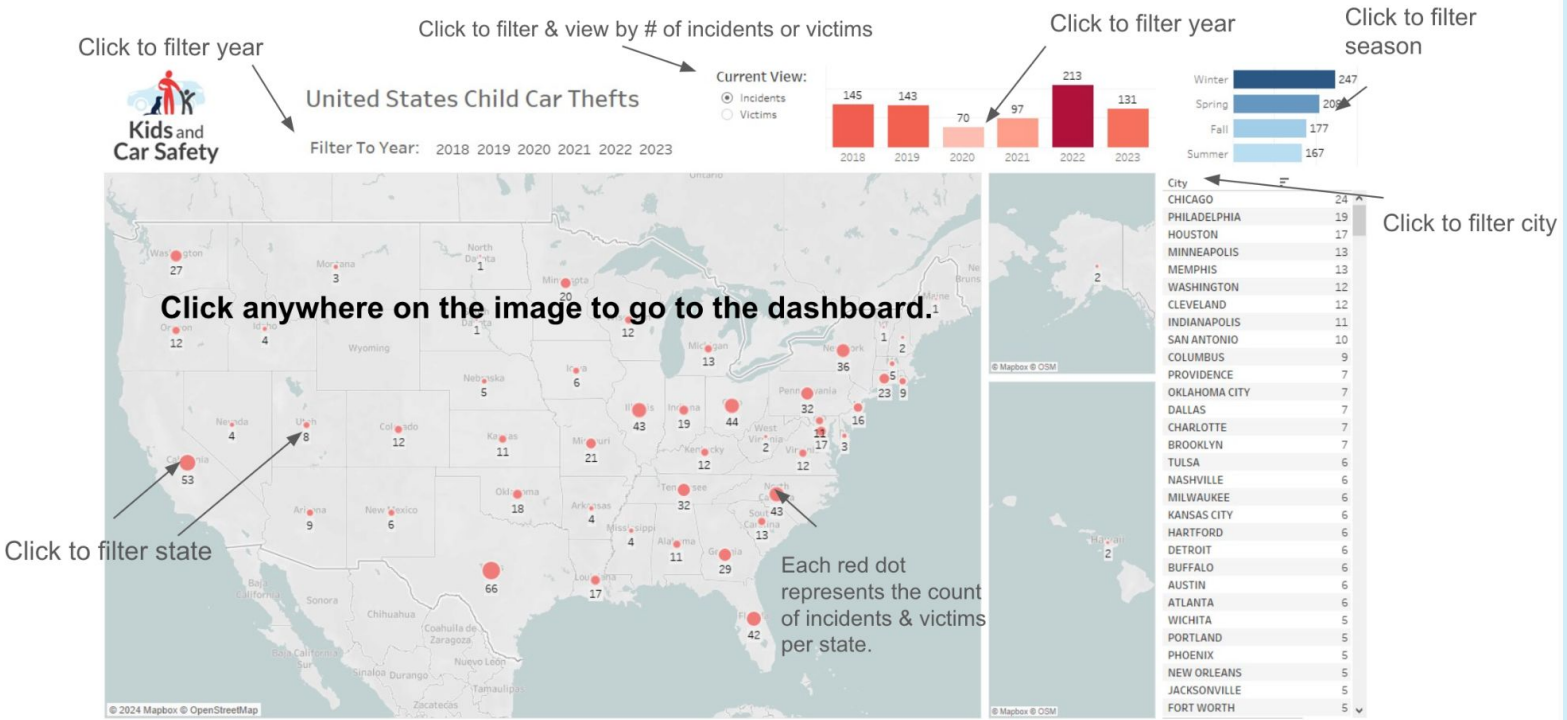
Solving the Problem for the User

- We took their recent data (2018 - 2023) and create a visualization that provided a more up-to-date reflection of car thefts in America.

- Media likes up-to-date data; not old data from years ago.

Date	City	State	Victims	Notes	Zip Code	VVI	Economic	Education	HealthCareAccess	N
1/2/2023	PROVIDENCE	RI	2	Car stolen when dad wen…	2903	0.303314065	0.635843902	-1.364393215	-1.588516319	-
1/3/2023	TULLAHOMA	TN	1	Car stolen while parent…						
1/6/2023	GASTONIA	NC	1	Car stolen by juvenile …	28052	2.248729463	0.884266999	0.593602595	-0.388542017	
1/8/2023	KENT	WA	1	Mom asked random man to…	98031	-0.64880137	-0.7193672	-0.2875207	-1.025243	
1/8/2023	OCEANSIDE	CA	2	Car stolen on street. C…	92054	-0.875483773	-0.1483381	-0.4763028	-0.6756508	

Explanatory Text



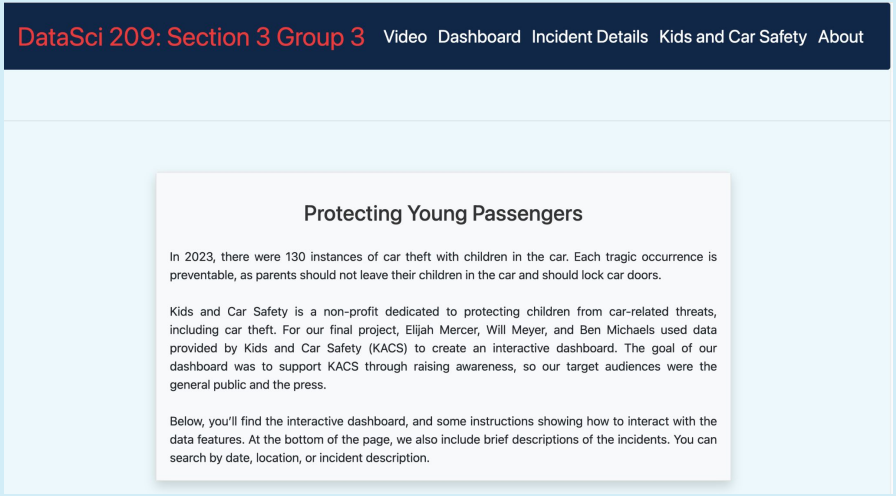
Incidents = The number of car theft events.

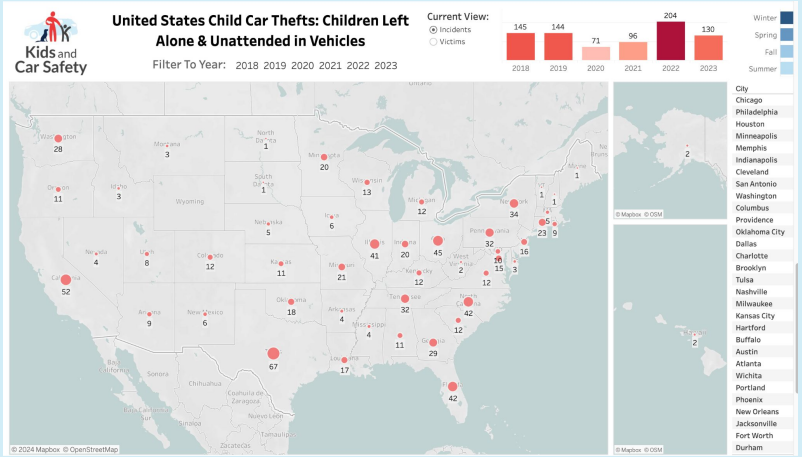
Victims = The number of children involved in car theft incidents.

Explanatory Text

- Provides clear instructions on where to click to access visualization
- Provides definitions of incidents & victims, which users & non-domain people don’t know
- Includes where to filter for:
  - Year (2 filters - chart and text)
  - By state
  - Current view: view of incidents or victims
  - Season
  - City

Final Product of Appropriate Form





Website link:
https://apps-spring.ischool.berkeley.edu/ProtectingYoungPassengers/

Iteration

- Initially wanted to include too much on dashboard
- Realized we needed to make it more simple, less complicated
- Reduced from 2 dashboards to 1
- Made a column filter for cities
- Made variables easier to search by on 1 page
- Made years easier to find by have two filters
- Extremely easy to click through

Visualization: Ease of Use and Digestion

- User feedback = reducing it to 1 slide
- Current vis is easy to read because it is 1 dashboard
- Very little effort to understand vis with explanatory text before
- Users can click & filter the vis for the info they need now more easily
- Map viz helps users understand the problem of car thefts across the U.S.

Aesthetics of the Visualization

- Borrowed colors from KACS logo
- Appeals to the organization
- Easy on the eyes
- No colors are too bright or dull, yet there is sufficient contrast
- Color used help emphasize and distinguish data

Kids and Car Safety

Usability Testing: What the Users Said

"**Lost** and **confused** with details dashboard (just a bit confusing)."

"**Difficulty** using basic functions of DB because of tablet."

"Initially **confused** by the bars going in different directions."

"Was **confused** by the abductions by city. Too many boxes all over the picture
Zooming in allows to see but **not straightforward**."

"**Should be clear** to user what they can click vs. what is static."

"Wanted to be able to drill through by state to the city information. Lack of numbers in city grid was **confusing**."

"**Requested simple visualizations**."

"Add text to **make it clear** what is a button contextualize things."

"Notes section on states dashboard is very **confusing** as there are nulls"

"**Confusing** on how everything is a filter and left California filter on."

Usability Testing: Our Response

- Entire re-design of viz was based on your usability study/testing
- To reduce dashboard confusion, we condensed to 1 dashboard
- We got rid of the old city filter and created a filter on the side for city
- Explanatory text page helps clear up static vs what users can click
- Added victims/incidents parameter
- Removed bar slider at the top for years and years are now easily filterable in 2 ways
    - Bar graph
    - Click of the years

Data Presentation in a Novel Way

- Overall, this will be the first and most current dashboard of its kind of these types of incidents in the United States.

- KACS is the leading non-profit in this space, and this represents an improvement from their prior attempts to visualize.

- Specifically, ours is an improvement by introducing new features:
  - Cross-filtering
  - Seasonal views
  - Better communication through:
    - Better encodings of data (size rather than shading)
    - Including data labels
  - More recent data (KACS stops at 2021)

Choice of Tools

- Google Workspace & Microsoft Excel - for data collection
- Python - for data cleaning
- Tableau & Observable - for visualization

Group Participation

Ben

- Tableau dashboard technical expertise
- Python analysis + data cleaning
- Project management / guidance
- Website Design
- User study data collection

Elijah

- Domain knowledge and expertise
- Project management
- Partner agreement with KACS to acquire data
- Data Cleaning via Excel / Google Sheets
- Tableau dashboard feedback
- User study data collection

Will

- Website design
- Python analysis
- Tableau dashboard technical expertise
- User study data collection

We are taking a necessary step to decrease this crime…

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