Create a Tableau Story Write-Up

Summary

The story primarily relies on openly available US government data to explore trends in homelessness in the United States of America from 2007 to 2017. It looks at total and per capita rates of homelessness, for individuals, youth and families experiencing homelessness. Correlations between homelessness rates and rental prices are explored as part of systemic causes of homelessness. Current effective solutions are introduced and a call to action is made.

Design

Background

This story was developed from a dataset and project that I had begun working on some time ago. I had completed the major data wrangling for the homelessness data. I collected additional data regarding population, rental rates, unemployment rates, and study results from homelessness intervention projects.

Data	Source	Details	Link
Homelessness data by state from 2007 to 2017	PIT and HIC Data Since 2007	Published: December 2017 by HUD Exchange, Acessed: May 2018	link
Population estimates by state from 2010 to 2017	State Population Totals and Components of Change: 2010-2017	Published: May 2018 by US Census Bureau, Accessed: July 2018	link
Population estimates by state from 2007 to 2009	Population and Housing Estimates	Published: December 2016 by US Census Bureau, Accessed: July 2018	link
Average rental prices per states for dwellings from 2014 to 2017	Apartment List Rent Data	Published: July 2018 by Apartment List, Accessed: July 2018	link
Unemployment rates by state from 2010 to 2017	Unemployment Rates for States Annual Average Rankings 2010 – Present	Published by Rhode Island Department of Labor and Training, Accessed: July 2018	link
Study results	Opening Doors: Federal Strategic Plan to End Homelessness	Published June 2018 by US Interagency Council on Homelessness, Accessed: July 2018	link

While I explored the unemployment data I wasn't satisfied with my ability to clearly explain its impact at the time, so I didn't include it in the viz.

Initial Notes

Prior to creating the pages in Tableau, I mapped out a general structure in a notepad. It was important to me to create a call to action and motivate people to respond to a problem presented through a story. This was my initial general proposed structure.

Title: Homelessness is Everyone's Problem

The Problem

- It is a national problem (x in 1000)
- It affects all types of people
    - Youth and veterans, highlight?
- It is influenced by the economy

What Can Be Done?

- The cost of supports
- The importance of early intervention

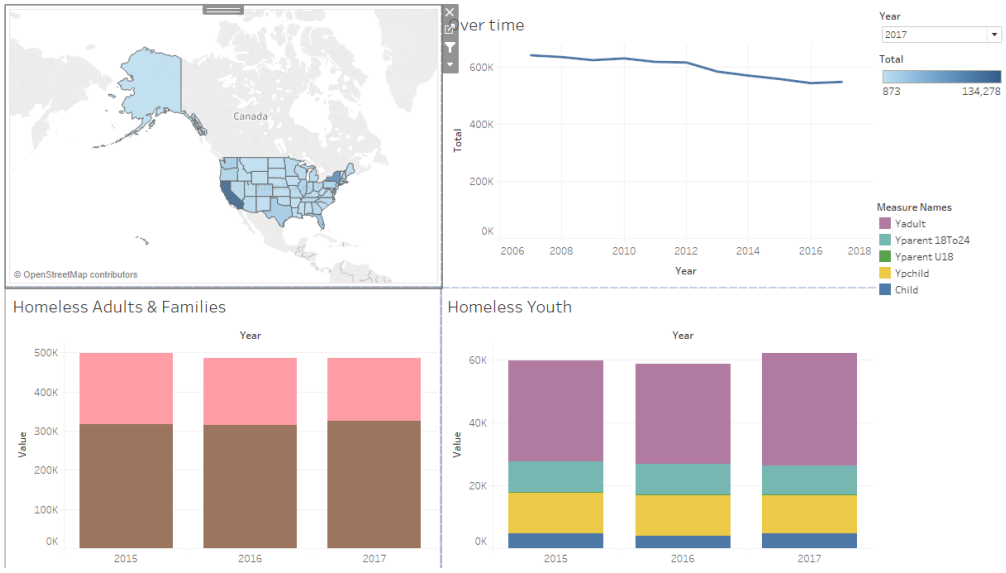
What Can I Do?

- Provide data support
- Support prevention/early intervention
- Don't just call the police

Process

First Steps

I quickly created four charts that gave an overview of what I imagined for one of the main interactive pages. And added them to a dashboard. The focus was not that they were perfectly formatted, structured or colored, but that I knew what I was leading up to.

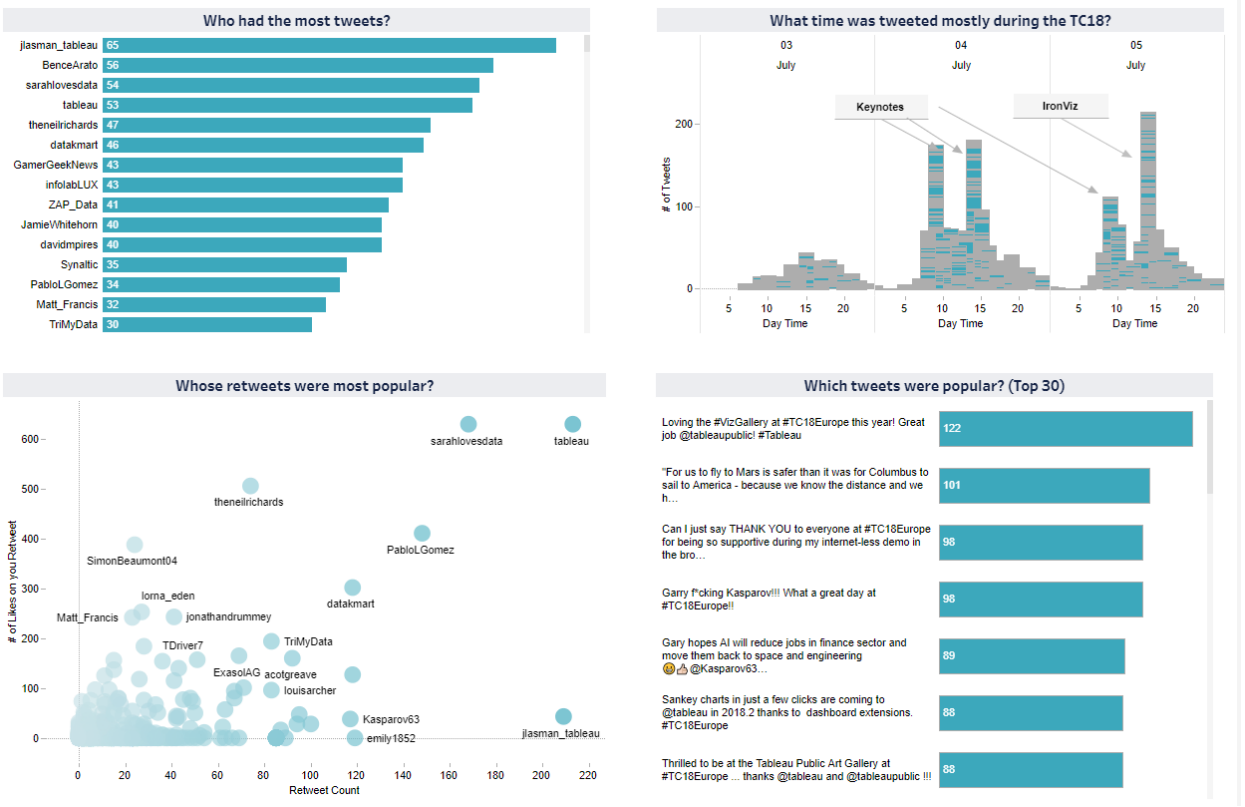


The chart shows a distribution of the total homeless count numbers across the US, the change in totals over time, and the numbers of adults, families, and youth who are included in that count. With the creation of this dashboard I also decided not to include veteran information because I felt that it could create too many 'sub-focuses' for the presentation.

From here I went on to build out other pages of the story. An initial version of that story can be found here.

Initial Viz:
https://public.tableau.com/views/Homelessness_11/HomelessnessinAmerica?:embed=y&:display_count=yes

However, as I was building the story, I found this visualization of #TCEurope18 Tweets Analysis by Dilyana featured in the Tableau Gallery.



It gave me a much better idea of the potential capabilities of a Tableau viz and so I substantially reworked my project. This is where the viz landed after that, and what I presented to others for feedback.

Subsequent Viz:
https://public.tableau.com/profile/rebecca.barnes8329#!/vizhome/HomelessnessinAmericaOriginal/HomelessnessinAmerica

This was also hosted on my personal website (https://rebeccaebarnes.github.io/2018/07/13/homelessness-in-america)

Overall Design Decisions

I made multiple design decisions that were consist across the pages.

- Dashboard captions were kept small and used to orient the user navigation
- I used a blue/grey theme for heading and text formatting as a relatively neutral palette
- I maintained a consistency in use of color and sizing for different types of headings to assist the user in identifying information
- Language used in discussing homelessness is designed to promote the personhood and the dignity of people experiencing homelessness
- Sizing and positioning was designed around the default size for publication on Tableau Public
- Major elements of the dashboards were tiled for conformity in spacing
- Titles for charts, axes and other chart information were limited as much as possible and included when necessary for understanding
- Filters or legends were floated for better space utilization and located in places that are common in other visualizations
- Variables were renamed to facilitate use in the dashboard to promote understanding
- As much as possible with interactivity with filters and selections I limited to options available to the user so that they didn't inadvertently click on something and not be able to undo the action
- I removed titles from elements unless they were adapted to have a functional purpose, e.g. giving instructions about interactivity
- For all maps I pre-positioned them and then locked them into place, removing all navigation options
- I used text to prompt the user on how to interact with the page to cater to an audience unfamiliar with using Tableau
- I adjusted centering and spacing of text for ease of viewing
- I used white space boxes to adjust the sizing of elements and improve viewability

Page 1 – What is homelessness?

- Key definitions were provided to orient the user and provide the key details to assist in understanding the story data
- Bolding and italics were used to draw the users attention to key pieces of information

Page 2 – Where does homelessness exist?

- Maps were used to clearly demonstrate geographic information
- Different colors were used for each map to indicate different metrics (total counts and per capita)
- Blue and orange palettes were used to be distinguishable by colorblind users
- Shading was used to highlight areas of high concentrations of the variable with less concern about middle to end ranges
- I positioned the maps to maximize the area of the mainland states while still including Alaska and Hawaii
- 2017 was used as the starting year as the most recent information
- Scrolling filters were used to limit the number of actions a user needed to complete to navigate through the years and to simulate the same feeling of an automated scrolling (which is not supported on Tableau Public web hosting)
- I changed the tooltip and legend information to better communicate the data being represented

Page 3 – Who experiences homelessness?

- I planned this dashboard to be the focal interactive page of the story
- The map was used for filtering the bar chart info by hovering to limit required user actions
- I created calculated fields for non-youth families and singles adults
- Stacked bar charts were used to show relative representations of the different categories while also providing total values
- Bar stack orders and coloring were selected to facilitate identification of each of the categories
- Blue and greens were used in in the bar chart on the left and separated from the orange in bar chart on the right to facilitate use by those who are colorblind but also create contrast in
- Grey was used for single adults as a non-featured category of the dashboard
- Text was added at the bottom to highlight the top states per capita for youth and families

Page 4 – Is the situation improving?

- Line charts were used to show progression over time
- Charts for state information were made larger because they contained more information
- A selection of key states were chosen to highlight different examples of changes in homelessness over time
- Colors for states were coordinated between the two charts
- The legend was used as a filter option with an action that un/highlighted the state with a click (this also gave an option for colorblind users with the wider range of colors necessary to capture many states)

Page 5 – What causes homelessness?

- Scatterplots were used to compare two numerical variables
- I eventually want to use this data in homelessness prediction and modeling, so I wanted to include regression lines and correlation information
- Population was used to size the bubbles to assist in ease of identification of the state in the other plot – I didn't use highlight actions because this created a regression line for the single plot
- I attempted to size the plots to capture the relative differences in the slopes
- I originally had these plots set up to automatically cycle through the years but this is not possible on Tableau Public and so the years were set to 2014 and scrolls used to simulate this effect

Page 6 – What can be done?

- Horizontal bar charts were used to read the information down
- Orange was used to highlight the greater 'before' costs
- Links were provided to more clearly explain the underlying programs/principles referenced on the page

Page 7 – What can I do?

- A variety of options were provided to users to act on the information that has been presented
- Links are primarily provided using images

Page 8 – References

- References were provided in the order in which they were referenced in the story
- Numbered lists captured the appearance of these lists in Word

Changes made after feedback

1. Created a calculated field for ranking total counts and per capita rates and added these as tooltips for Page 2
2. Added a lightbulb as a 'Definitions' hover point to better explain "major services" for Page 6
3. Changed the size of the presentation from "Desktop Browser" to "Web Browser" and adjusted all sizing and spacing as a result
4. Created calculated field for ranking youth and family per capita homelessness, removed total homelessness, and added total and ranking information to the tooltip for Page 3
5. Removed the "top 3" info at the bottom of the stacked bar charts and added reactive titles that responded to the hover filtering on Page 3
6. Added additional text for the filter by legend on Page 4
7. Removed the comma after "At state level" on Page 4
8. Added 'Definitions' lightbulb for category definitions on Page 3

Changes made by me after posting

1. Added 'Definitions' lightbulb for population definition on Page 4
2. Added 'Definitions' lightbulb for average monthly rent on Page 5
3. Added further highlighting of key actions on Page 7
4. Changed reference to github repo to an image because I couldn't get the link to fit

Final viz:

https://public.tableau.com/profile/rebecca.barnes8329#!/vizhome/homelessness-v2/HomelessnessinAmerica?publish=yes

Feedback

Feedback was gathered from multiple sources. While some of this was done interactively, the key points have been captured rather than the full conversations.

User 1

I liked the interactivity and being able to click on the states. Was there a reason you aren't using Canadian data?
In the second section (tab) , having the maps in blue and orange made it a bit hard to compare them. Consider having them both in the same colour or some other matching strategy. I could only match the highest homelessness rates by colour yet you were discussing categorising then by two metrics (total and per capita). It was hard to see which states came first, second, third etc in each map. The raw data was easy to see but some form of written ranking would add to the clarity.

Overall it was really clear and easy to understand. And communicates the meaning well

Yeah, you indicated that it was western states for per capita but it was only represented with colour changes and those were quite subtle

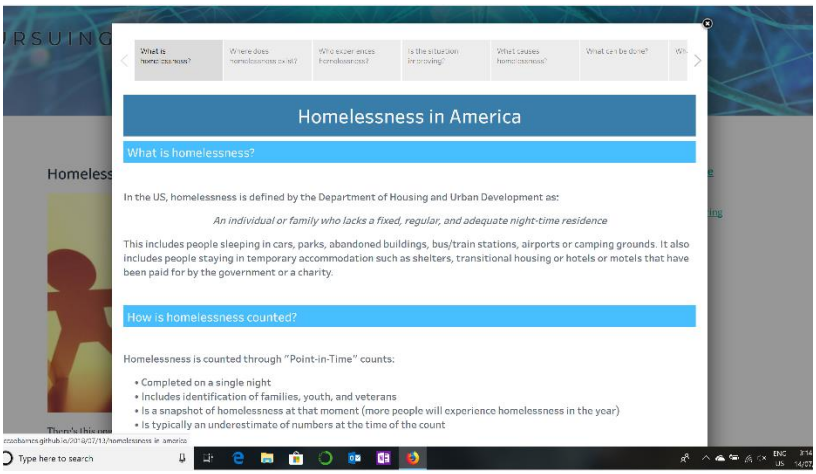
Either more distinction between colours or additional text saying that the state was ranked 5th for this data set

Yep I loved the rest!

The only other thing was could you give an example of what 'major services' are? I can guess but not sure if I'm right

User 2

I tried doing full screen, but it is still bigger than my screen

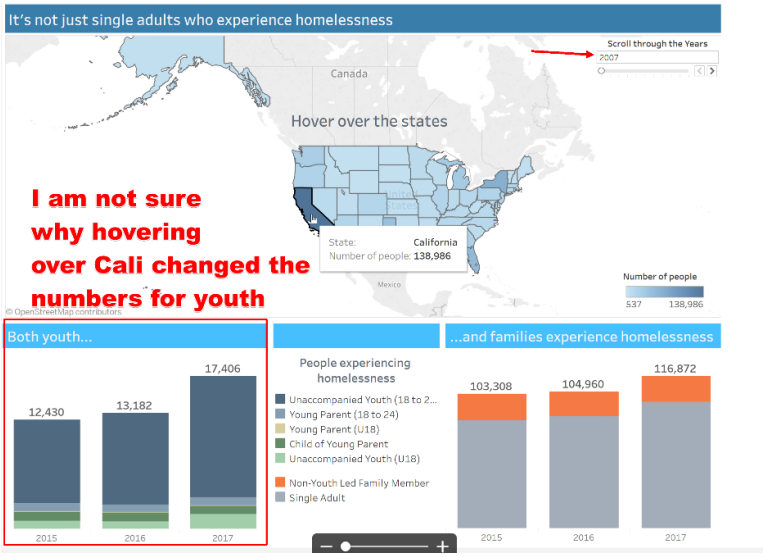


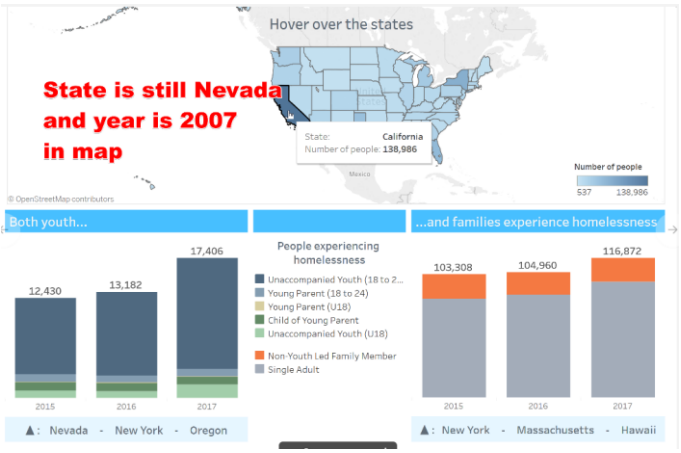
I don't know if it's possible or even if it would look amazing, but besides color, is it possible to add a visual identifier for whoever is first, or ranked top 3? It would be cool when I scroll through the years to really see how it changes

Oh. Ok. For slide three, the interactions are confusing

Maybe it's not the case, but as I was scrolling from 2007 to 2017, because there was interaction between the map and the bar charts when I clicked on an area in the map, I also expected those numbers to update when not filtering by state, but scrolling through the years

I get that they aren't because there are labels at the bottom, but the fact that the map interacts with the bars in certain circumstances, but not others, would confuse me as a user



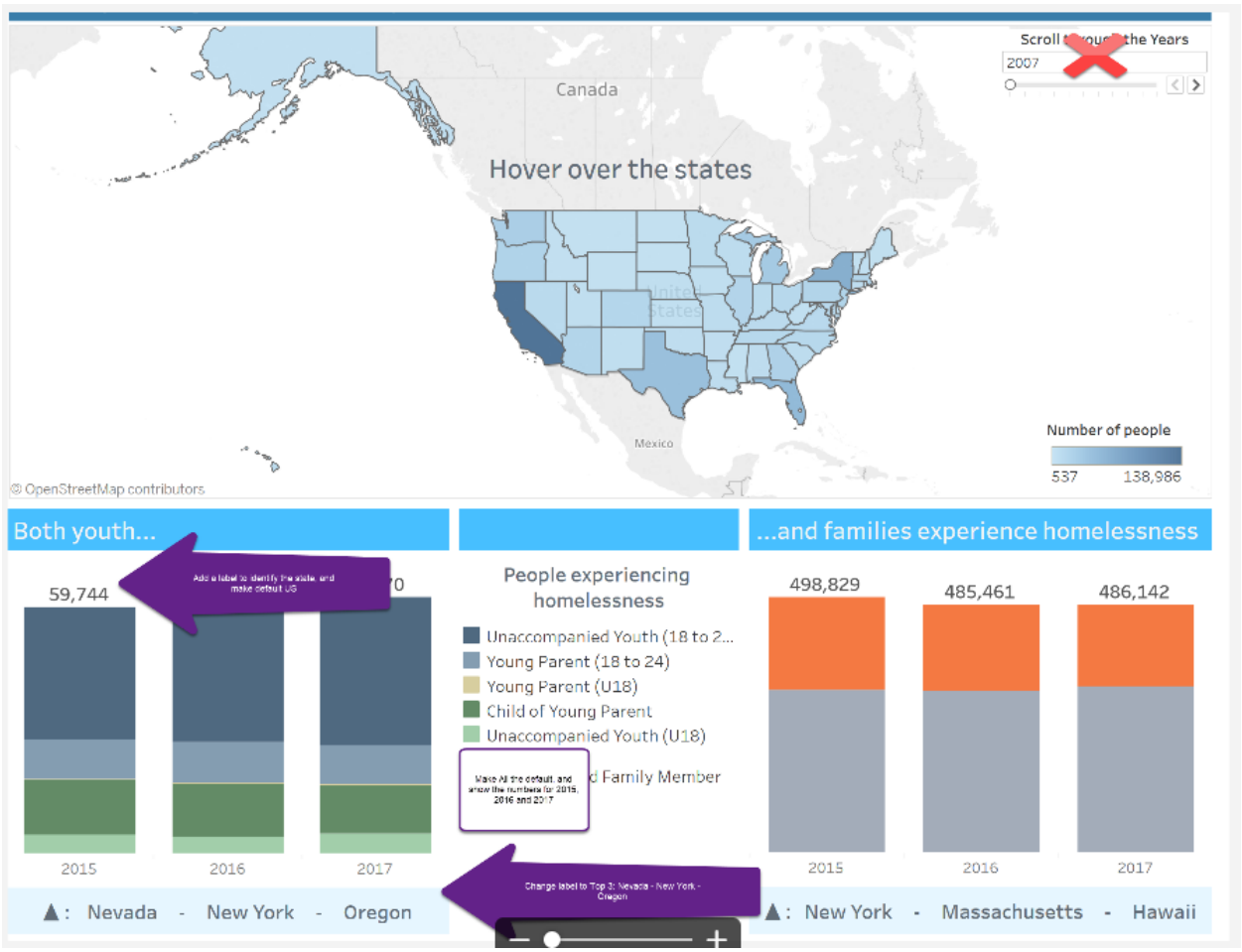


It also means you can get rid of the time series in the map for this one slide

Yes, the Nevada etc...

Like, the moment I click on Cali, the text fields go away

And then come back when I'm not filtering per state



Sorry that I'm approaching it a bit like a tester 😛 But you need to add an "all" to your filter on the fourth slide so that you can have everything highlighted again

State level numbers. Although, not that much of a big thing since you aren't presenting any national numbers, it's more something only I would notice

User 3

@Rebecca a really cool feature you could add on your second tab

Homelessness where does it exist

is making it move

automatically go through the years and show the years pass by

Rebecca 🇨🇦 12:55 PM

Ah, I wish this was possible 😟 It IS when you are working with the product on the desktop, but doesn't translate to the web-hosted version unless you augment it with JavaScript. (And I do not have these skills 🙂)

User 4

I like how you add instructions. Otherwise I might not play around with the filters, etc.

User 5

You have given a wholesome project which even a lame man can understand.

User 6

Rebecca, this is great! I wasn't sure what 'non-youth led family member' was. Also, is 'cost of major service use' cost of services (like health care, social services, etc.) per homeless individual? Is is an average? Some specifics here would be illuminating. Overall your project is very impressive!

Resources

How to Label the Top of Stacked Bar Charts in Tableau
https://www.youtube.com/watch?v=8JMZbdZcLzU

Tableau Essentials: Formatting Tips – Labels
https://interworks.com/blog/ccapitula/2015/01/22/tableau-essentials-formatting-tips-labels/

How to Create Scatter Plot in Tableau
https://www.youtube.com/watch?v=qKxEhW6tPyA

Create Advanced Highlight Actions
https://onlinehelp.tableau.com/current/pro/desktop/en-us/actions_highlight_advanced.html

Creating Connected Scatter Plots in Tableau
https://www.youtube.com/watch?v=6a1OOBwv0Qc

Add Trend Lines to a Visualization
https://onlinehelp.tableau.com/current/pro/desktop/en-us/trendlines_add.html

How To Make Hover Text Help in Tableau
https://www.youtube.com/watch?v=Es7aSLs4qKI

adding a dimension to tooltip (one that isn't used on the worksheet)
https://community.tableau.com/thread/154972