Prince George's County Vision Zero Story Map

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PALS
PARTNERSHIP FOR ACTION LEARNING IN SUSTAINABILITY

Table of Contents

Abstract

In the spring 2020 semester, the University of Maryland I-Consultancy tasked a team of college-level information scientists to consult with Prince George's County's Department of Public Works & Transportation (DPWT) on the development of a Vision Zero story map. This project was sponsored by the University of Maryland's Partnership for Action Learning in Sustainability (PALS) and overseen by DPWT employees, Andrea Lasker and Nima Upadhyay.

The Department of Public Works & Transportation oversees approximately 2,000 miles of roadways in the County and is responsible for ensuring safe road conditions by removing snow and ice, installing and upgrading streetlights, and much more. During the summer of 2019, Prince George's County announced it would join the Vision Zero Initiative, a worldwide project aimed at eliminating traffic fatalities and severe injuries. The County's participation requires that DPWT produce a story map or website that showcases data trends in crashes in the County.

The I-Consultancy team was tasked to help the department produce this deliverable. This report gives an overview of the Vision Zero story map and provides information on accessing, maintaining, and updating it.

Project Sponsors:

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Methods

The team communicated with Ms. Lasker and Ms. Upadhyay throughout the project to obtain the details and requirements needed to meet their expectations. Once the project requirements were clarified, the team divided into subgroups—assigning tasks to designers, ArcGIS specialists, and data visualization specialists.

Due to time constraints, this project adopted the agile project management methodology. The client was included in each step throughout the project and weekly Zoom meetings provided feedback and direction. Throughout the project, issues arose that had to be solved by the team. Additionally, there were times when the team needed further information from the client to complete a specific task. Ms. Lasker and Ms. Upadhyay consistently communicated with the team and quickly responded to requests. At the end of the project, the team was able to complete the deliverable with only minor changes needed based on client feedback.

Deliverables and Findings

The team's final deliverables are an ArcGIS story map, a final report, and a google drive folder containing the final presentation, the report and user manual, and the project's contextual analysis. The team achieved the overall project description by incorporating two dashboards into the story map layout. The dashboards incorporate an interactive map and multiple interactive charts that allow users to see different data visualizations.

The first dashboard shows pedestrians who were injured or killed in crashes in Prince George's County between 2015 and 2018. The map within the dashboard displays the geo points where the crashes occurred. The first dashboard displays the following information on summary graphs:

- pedestrians killed per year
- pedestrians killed per year by month
- days of the week that pedestrian fatalities occurred
- road maintenance responsibility at locations where pedestrians were killed in the County—the State of Maryland or the County
- pedestrians seriously injured per year
- pedestrians seriously injured per year by month
- days of the week pedestrian serious injuries occurred
- road maintenance responsibility at locations where pedestrians were seriously injured in the County—the State of Maryland or the County
- weather codes associated with crashes involving pedestrians.

The second dashboard shows data for fatal crashes involving vehicles in Prince George's County between 2015 and 2018. The map within the dashboard displays the geo points where accidents occurred. The second dashboard displays the following information on charts:

- number of motorists killed per year

- number of motorists killed per year by month
- day of the week motorist fatalities occurred
- road maintenance responsibility at locations of motorist fatalities in the County—the State of Maryland or the County
- weather codes associated with motorist fatalities
- light codes associated with motorist fatalities.

Maintenance of Story Map (User Manual)

Accessing and Editing the Dashboards

The links below are used to access the dashboards. To add new sections, charts or maps to the dashboards, use the toolbar at the top of the page—specifically the plus sign dropdown. To edit an existing map or chart, hover over the map or chart and use the edit tool in the top left.

- https://uofmd.maps.arcgis.com/apps/opsdashboard/index.html#/c6e91699f83c424a87430e56f3d103e6?mode=edit
- https://uofmd.maps.arcgis.com/apps/opsdashboard/index.html#/f57fc3c9c7274ed9b2a0ee2957783603?mode=edit

Editing and Updating Dashboard Data

The links below are used to access the actual data used within the dashboards. To upload new data, select update and choose a file to upload. The file must use the same file name as previous uploads and the user should select "overwrite data."

- https://uofmd.maps.arcgis.com/home/item.html?id=928e4ec21df34913bc536d4747edb4b1
- https://uofmd.maps.arcgis.com/home/item.html?id=75f35397533743c08b68735ee7a09d8f
- https://uofmd.maps.arcgis.com/home/item.html?id=7bb2da6c4bcc4ff2af1a32eed2bc9307
- https://uofmd.maps.arcgis.com/home/item.html?id=2b5e93896f8c45408b96e3e1daf7f36a

Editing and Updating the Story Map

The link below is used to edit the storyboard that contains the two dashboards. To add new sections (dashboards, images, text, etc.) use the plus signs before or each section and select the type of media to insert. Once the desired changes have been made, publish them using the tool bar at the top will make them publicly visible.

- https://storymaps.arcgis.com/stories/769ebbabacd04b518a73d30e8ba44d66/edit

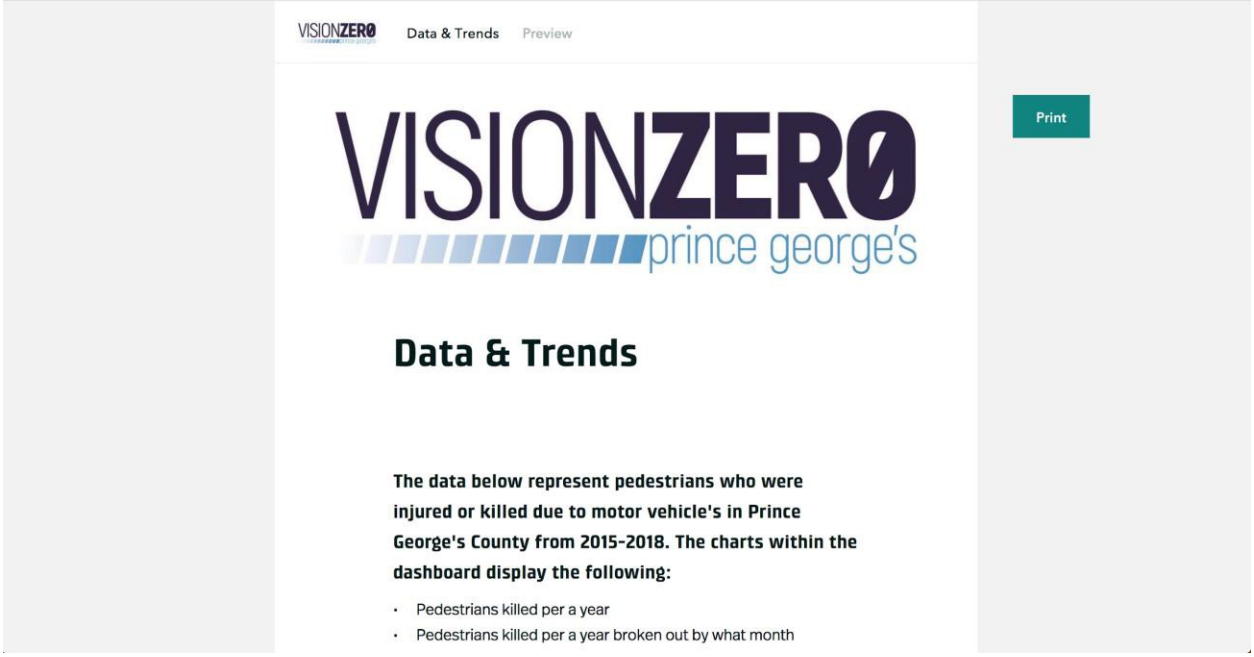
Deliverables

The final project deliverables are the story map, the dashboards, and a google drive folder containing the final presentation, the report and user manual, and the project's contextual analysis. The story map hosted by the ArcGIS software program enables the display of the dashboard (maps and graphs) along with

additional material that supports Vision Zero. Below are screen captures of the story map.

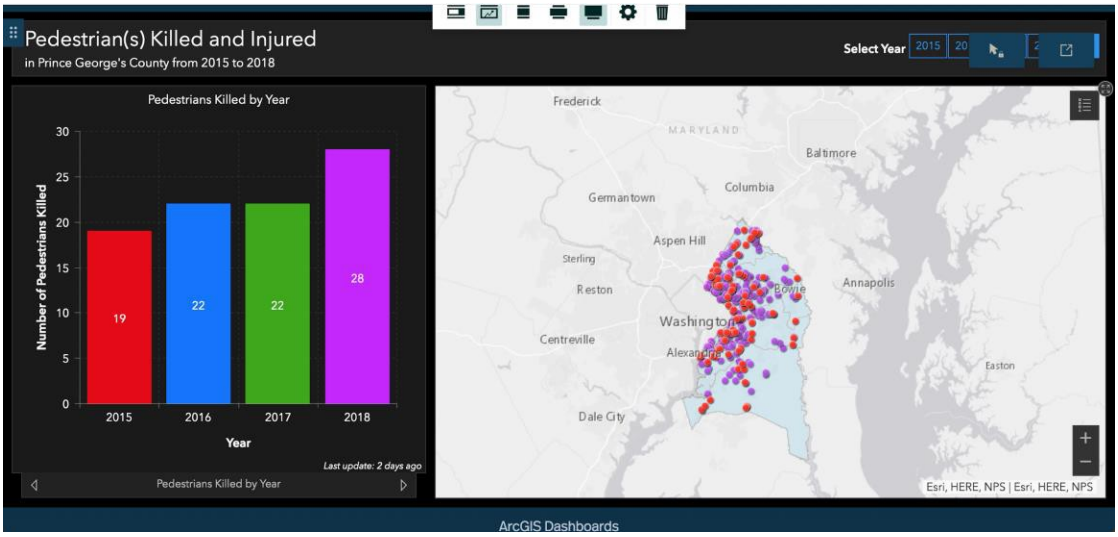
Vision Zero Website

The ArcGIS software offers web development services with the necessary tools to display and represent all the collected data. Below, is a screen capture of the story map.

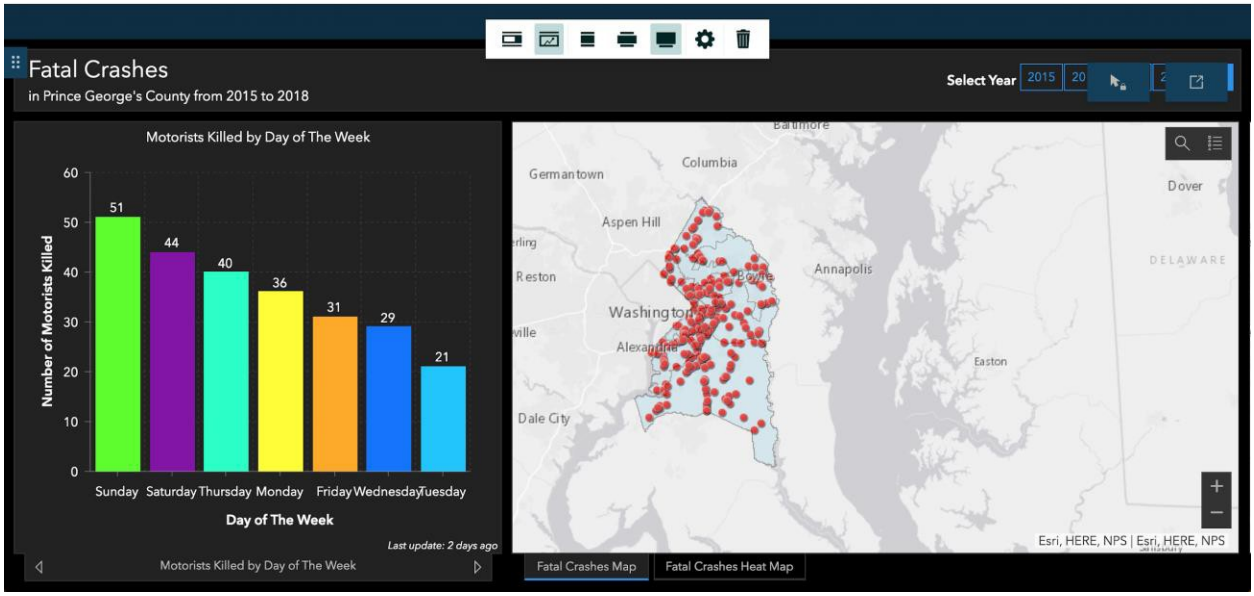


ARCGIS Dashboards

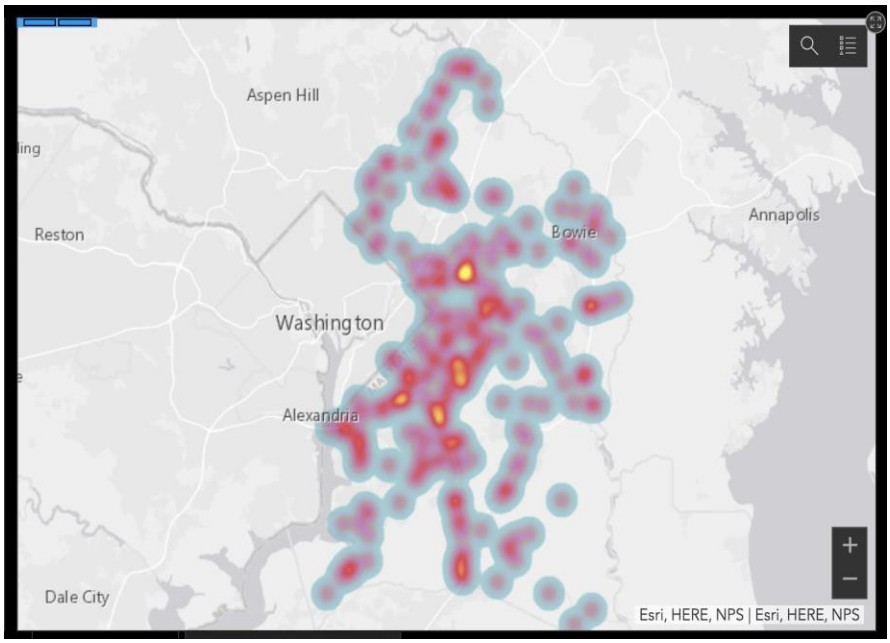
The screen capture of the pedestrian dashboard presents data about pedestrians injured or killed in crashes in Prince George's County between 2015 and 2018.



The dashboard below presents fatal vehicle crashes in Prince George's County between 2015 and 2018.



Heat Map of Crashes Prince George's County



Google Drive Link

- https://drive.google.com/drive/folders/1ehDP4nNTtzCJGdd_Mv4Uel461Cz5YAxE?usp=sharing

Google Drive Contents

- Contextual Analysis Interpretation Manual Final Report

Recommendations

Future updates should add more data and years to the dashboards. The project scope was narrowed to 2015-2018, if additional years were added, more data might reveal clearer trends. For example, due to a lack of data, the heat map doesn't highlight a hotspot and would benefit from more data points. Additionally, the heat map can benefit from including more feature layers such as live traffic updates and color coding the roads to identify freeways and local roads. The heat map became an area of interest late in the project, but substantial advancements can be made in the future.

For optimal use, the dashboard data should be simplified through frequent updates and by including detailed column names. Intuitive column names can simplify the process of interpreting the data and being able to understand the dashboard data is crucial to future developers. Moreover, up-to-date data is a key factor in how effective this Vision Zero story map will be. The dashboards only include data up to 2018. To easily update data more frequently, DPWT should pursue reporting crashes with its initial location coordinates instead of having the data geocoded. This would allow easy data migration into ArcGIS as well as including previous years' data in the dashboard.

Lastly, the story map could include more graphs targeted to county and local officials. However, the lack of information in the interpretation manual prohibited this. If possible, the team recommends returning to the source of the data and investigating what unspecified codes in the manual mean to fully interpret the data. The team believes this will help county and local officials be more effective in reducing crashes

Conclusion

The team recommends that plans for the Prince George's County Vision Zero story map include making it more detailed. An increase in data collection will provide more map points and lead to in-depth analysis. Increased data may reveal more patterns than the team was able to uncover.

A long-term goal for the story map would be to integrate real time or 48-hour crash updates. Real time implementation will allow for precise data showing areas with high crash rates. This will provide more insight into traffic management and areas for improvements.

Also, the goal to predict potential hotspots—locations where crashes might occur would be supported by a more advanced heatmap of high accident areas. This future work will take the Vision Zero story map to the next level and enable it to provide advanced analysis and predictions that will ultimately save lives.

Contact

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