

2020 NPCR LOUISIANA TUMOR REGISTRY SUCCESS STORY

STORY TOPIC: Data Use for Public Health Impact

STORY CATEGORY: Public Health Impact

STORY TITLE: Creating an Interactive Cancer Data Visualization in Louisiana

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SUMMARY

The Louisiana Tumor Registry (LTR)'s mission is to collect and report complete, high-quality, and timely population-based cancer data in Louisiana to support cancer research, control, and prevention. To enhance access and expand the use of our cancer registry data, the LTR prioritized the creation of an interactive, user-friendly online data visualization tool, in collaboration with a professional developer, for incidence, mortality, stage, survival, and prevalence data tailored to the needs of data users in Louisiana.

CHALLENGE

Converting tabulated cancer data into a visualization that would make interpreting data faster and easier, allow the user to quickly identify trends, and simultaneously, reduce the time spent on data reports and requests within the registry presented quite the challenge. After many years of presenting data in static reports containing numerous tables, a detailed process had to be defined in order to develop a data visualization tool that would be easy to use and comprehend in order to satisfy the needs of our data users.

SOLUTION

Step 1: Define Goal. Our challenge was that the data were not easy to search and understand in the format of static reports. We have published monographs and several statistical reports annually in PDF format; however, they were quite dense with numbers and very few figures. Therefore, it was not easy for users to find specific pieces of information or fully understand what it meant. Thus, we had two goals in mind: (1) create a user-friendly, interactive visualization tool to make our data easier to understand and tailored specifically for Louisiana, and (2) design a visualization tool covering a wide range of statistics to meet the needs of data users.

Step 2: Define Target Audience. Initially, we defined our audience as the lay public, after working through our goals outlined in Step 1, we realized that our primary audience was our data users which included hospital administrators, researchers, public health professionals, and cancer control organizations. They composed the majority of those who were contacting us on a regular basis for data, thus we hoped they would be able to obtain answers to their questions immediately through the visualization tool. With our data users as our primary audience, we were able to use terminology like incidence rates, statistically significant, stage at diagnosis, etc. without concern that the terminology in the visualization would be too technical.

Step 3: Define Resources. Once we defined our goals and audience, we needed to assess our resources for creating the initial visualization and those that would be available to update and continue to improve the data visualization tool. What staff and financial resources do we have now and in the future? At our disposal was a

liaison to manage the project, a data manager to extract and format the data, an IT lead to embed the visualization on our website, and student workers to test the visualization and provide feedback. In defining our needs, we realized an experienced and professional contractor would advance the project immensely given the time constraints of our registry staff members and significantly reduce the learning curve of the data visualization software.

Step 4. Choose Tool and/or Developer. Finding someone who was both familiar with cancer registry data and our audience was critical to the project's success. Tableau Software was chosen because it was the developer's primary data visualization tool, as well as reasonably priced, allowing us to purchase the software long-term and ensure the sustainability of the project.

Step 5. Extract the Data. While we thought this would be one of the easier steps, it proved to be a trial-and-error process from the get-go! We began with tables from our annual monograph, but after going back and forth with our developer, we realized that we could improve the formatting of the data for easier processing within Tableau. After reformatting our tables in SEER*Stat and SAS, as well as ensuring a consistent data dictionary across all files, we were ready to import the data into Tableau and build the visualization!

Step 6. Build the Visualization. The first aspect of this step was exploring the extracted data. By looking at the data in the chosen tool, we had a better idea of what would be possible with the data, allowed us to modify our goals if needed, and provided an opportunity to catch errors within the data extraction. Then, our developer began building the dashboards to reflect our goals and the needs of our data users. For example, we often received data requests for comparisons of parish data to both the region and Louisiana, as well as to the industrial corridor, thus we knew that this would be important in our visualization. Numerous iterations were created by the developer and shared with the LTR team for feedback. Once we were satisfied with the product, we entered a testing phase to ensure that all the data, labels, descriptions, etc. displayed properly and accurately within the tool.

Step 7. Publish! Final changes were made to the visualization after the testing phase, and then we published the visualization by embedding it directly on our website. Notifications regarding the publication of our visualization were sent out to our partners and promoted via social media.

RESULTS

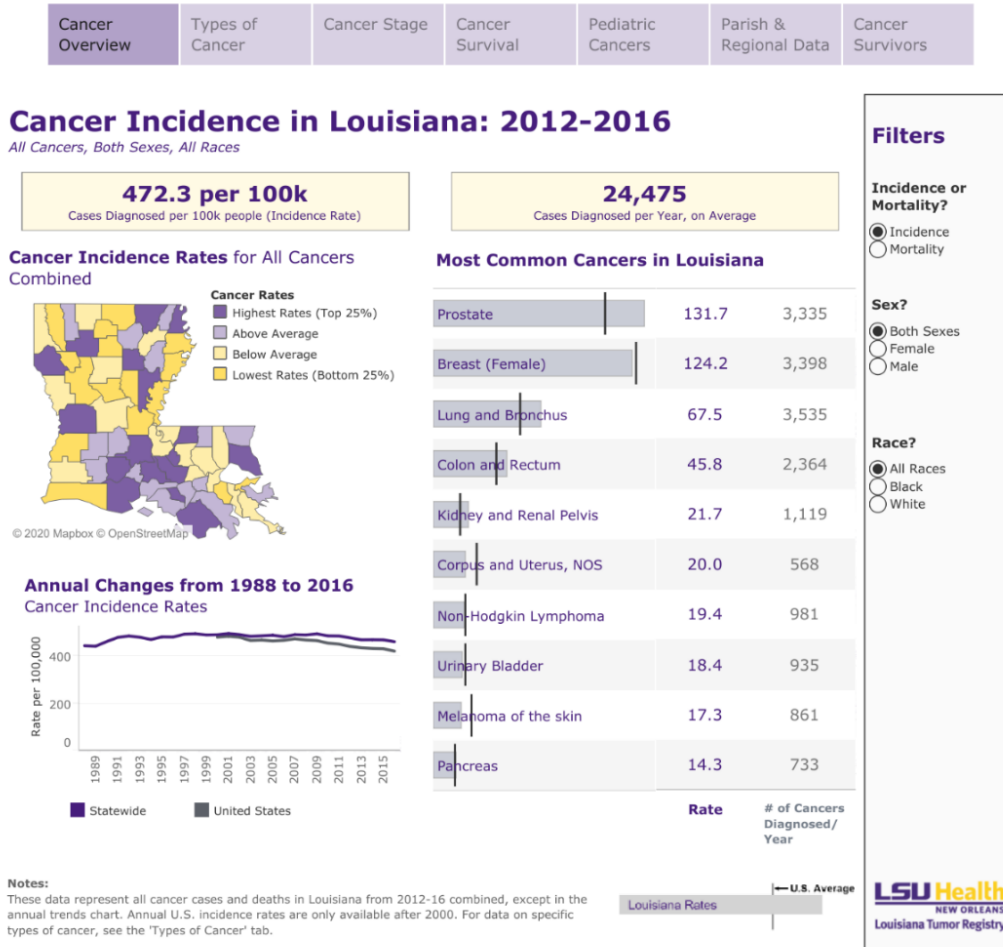


Figure 1. LTR Data Visualization, Cancer Overview Tab

Using this tool, LTR’s data users can now get an overview of cancer in Louisiana, as well as information on specific cancers, cancer stage, cancer survival, pediatric cancers, and parish and regional data, with a mouse click. In addition, that information can be further broken out, or filtered, into incidence and mortality rates, gender and race. There are also ways to visualize how the data compares to U.S. rates, as well as how parishes compare to its region and the state. LTR is the first population-based registry to produce such a comprehensive visualization tool for its data users.

One of our goals was to better serve our data users by making the data more accessible and useful. Our hope was that the data users would be able to find much of what they need directly in the data visualization. One measure of our ability to achieve this goal was the number of data requests that we received. If data users were able to find the information directly from the visualization, we might see a decline in the number of data requests. While we saw an initial decline in the 4th quarter of 2019 (the quarter following our launch date), it does appear that our data requests have risen back to their average levels before the data visualization was available.

Nevertheless, our data users continue to use our data visualization, which is illustrated by the web analytics for our data visualization website. Since our launch date on 9/30/2019, over 3,000 unique users have accessed the tool over 6,000 times. This truly underscores the value of this data visualization!

SUSTAINING SUCCESS

One of our goals for this project was ensuring sustainability of the product. During the planning phase, ownership of the final product and the ability to update the data internally were of utmost importance. The ability to purchase the software license allowed us to accomplish this internally and plan for future updates to the visualization. We realized very quickly that there were several important statistics and topics that we had yet to cover within the tool. After our first launch of the visualization, we continued to work with our developer to add a tab for cancer prevalence, as well as a second visualization covering tobacco-, obesity-, HPV-, and alcohol-related cancers.

REGISTRY CONTACT INFORMATION

Louisiana Tumor Registry | <https://sph.lsuhs.edu/louisiana-tumor-registry/>

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