**MAS 627 Shiny Project – Florida Black Bear Explorer**

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<https://zqliuyuura.shinyapps.io/mas627project/>

We designed our Florida Black Bear Explorer APP by using Florida Black Bear Related Calls data and Release Location data, both obtained from the Wildlife Incident Management System (WIMS) database maintained by the Florida Fish and Wildlife Conservation Commission (FWC). The two datasets generally record the locations of human-black bear interactions, the locations of releasing bears, the final actions of reported bears and the basic information of the bears in a time-based scale. Our goal of designing the app is to give the users a general idea of where the black bears locate in Florida and call attention to personal safety, especially for people who live close by or plan to travel around the reported area.

Graphical user interface, application

Description automatically generated

*Part1. An interactive Florida map.*

Our app consists of three main parts. The first part is an interactive Florida map. The map allows user to zoom in or out the areas and to replace the base map layers with Esri or OpenStreetmap. By setting the time range, users can take a look at the locations of calls from the human-black bear interactions in FL. By changing regions and counties, users can explore the data in a specific area. Below the map, there is a dynamic table for all data displaying on the current map. The second part is an interactive bar plot. By setting the time range, users can take a look at the black bear insights of sex, age class, capture reason and reported region in a specific time period. By changing the X variables and the bar filling variables, users can explore and compare the distributions in these four different aspects. To be more customized and more interactive, users are able to design their own plots by changing the colors of plot background and grid. Below the plot, there is a dynamic table for all data displaying on the current plot. The third part shows number of bears released each year since 1980 and the tendency can also be clearly seen from the chart. Users can use the dropdown menu to investigate the number or the tendency of bears released since 1980 in some specific region or county that they care about. If users care about the number of bears released in some specific capture reason and the release mode, it can be achieved by limiting the CapReason or FinAction. Users can also explore each year‘s proportion of sex group in the first plot and age group in the second plot.

Chart

Description automatically generated

*Part2. An interactive bar plot.*

Chart

Description automatically generated

*Part3. Two interactive bar plots.*

The first difficult part is to manipulate HTML tags. As we try to develop the app with a more customized look, we use HTML tags from R to add images. Users can be redirected to the homepage of FWC for more details by clicking the icon in title panel. Users can easily differentiate every tab button by the small icons. Besides, HTML tags is helpful to create custom settings like horizontal lines and blanks to improve the web layouts. The second difficult part is to clarify Shiny mechanisms. In the map, the counties are shown to users only when they are within the exact region which is already selected since we set session object to make sure that users can access data logically and functionally.