**Project Proposal**

Assessing West Coast Salmon Population Trends:

An Interactive Visualization Approach

The aim of our project is to explore and visualize the trends and factors impacting the salmon population on the West Coast. We aim to investigate relationships between population changes over time, locations with higher or lower population densities, the impact of environmental factors like water temperature or pollution, and other related correlations that may emerge from the data.

**Data Sources**

Potential data sources may include:

[The National Oceanic and Atmospheric Administration](https://www.webapps.nwfsc.noaa.gov/apex/parrdata/inventory/tables/table/population_data_and_references_for_the_salmon_population_summary_sps_database) (NOAA) Fisheries Data: They maintain extensive data sets on fisheries, including salmon population numbers.

Focusing on: [Population, location, population over time,](https://stateofsalmon.wa.gov/statewide-data/salmon/dashboard/) etc.

US Geological Survey (USGS): They provide water quality and temperature data, which can be relevant factors.

Do certain areas have increasing or decreasing temperatures? Did those factors affect the population that year?

State and local government databases: State environmental agencies might also have data on salmon populations and local environmental conditions.

Research papers and studies: Studies on salmon populations could provide valuable data and insights.

**Data Visualization Ideas**

* *Time Series Analysis*: A line chart depicting salmon population trends over time. This could be broken down by species, hatchery vs wild within each population, etc.
* *Geographic Distribution*: A Leaflet map showing the geographical distribution of salmon populations, with color-coded markers indicating population densities in different rivers or regions.
* *Environmental Factors*: A series of scatter plots or correlation matrices showing the relationship between salmon populations and environmental factors like water temperature, pollution levels, etc.
* *Interactive Dashboard*: An interactive dashboard which allows users to filter and view the data based on different parameters like year, species, location, etc.

This project will utilize a Python Flask-powered API for data processing, HTML/CSS and JavaScript for the frontend, and a database such as MongoDB for storing the data. We will include at least one JavaScript library not covered in class to provide additional interactivity or data visualization features.

User-driven interaction will be a key feature of our visualization, with interactive elements such as dropdowns to select a specific species or year, and textboxes for searching specific locations. Our final visualization will ideally present at least three different views of the data, such as temporal trends, geographical distribution, and environmental correlations.

We will ensure the data story is clear, visually appealing, and easy to understand for users of all levels. The final page will be designed to run without errors, providing a seamless experience for the end user.