INTRO

What is better than being able to explore a lake, a river, or a bay from the serene perspective of a silent kayak gliding through the water, propelled by your own power and leaving nothing by rippling water in your wake? Or harnessing that silence to creep out in the middle of the water and fish in the deepest areas, the way indigenous hunters in the arctic north developed millennia ago. Or use the maneuverability offered by a small boat and paddle and engage in whitewater sports. The kayak is a versatile instrument, capable of many different roles based on its design and user.

I originally became interested in learning about kayaks when I moved to the Elkhorn Slough area in California. The Elkhorn slough is a protected wetland river delta. Not only is kayaking common on the slough, but also around the Monterey Bay. The scenery and wildlife (including seals, sea otters, a plentiful variety of birds, jellyfish, etc.) make it an idyllic place to explore.

I had only kayaked a handful of times in my life through kayak rental services. So, I turned to the internet (as you do) to research what would be required and how to get started. It turns out kayaks are immensely more complicated than I originally anticipated. Here is a quick run down on what I learned.

Design is fundamental to how a kayak will operate in the water. Ultimately you want to maximize performance, which is defined as stability, maneuverability, and speed, while also minimizing the effort exerted by the paddler. The design elements that have the most impact are the kayak’s length, width, depth, weight, and displacement.

A longer kayak is faster and tracks better (requires less adjustment to stay straight) than a shorter kayak but is not as easy to maneuver as a shorter kayak. More experienced kayakers can keep the kayak straight with less effort (use proper paddling technique)- thus they may prefer shorter kayaks. However, again kayak design is important. Kayaks designed for long distance kayaking or sea kayaking where speed is preferred tend to be longer, while whitewater kayaks are shorter because they require greater maneuverability. A wider kayak is the most suitable for the inexperienced kayaker because it is more stable and will not tip as easily due to the paddler’s movements. But a larger kayak increases drag while decreasing maneuverability and speed, making the paddler exert more effort.

The primary types of kayaks considered in this project are recreational kayaks, fishing kayaks, sea kayaks, and whitewater kayaks. Though individual products do vary, their general differences are as follows:

Recreational/Flatwater: wider for primary stability, less than 12 ft., highest percentage of sales, typically mass produced with cheaper materials

“Some recreational kayak makers try to maximize hull volume (weight capacity) for a given length as shorter kayaks are easier to transport and store”

“Recreational kayak designers try to provide more stability at the price of reduced speed, and compromise between tracking and maneuverability, ranging from 9–14 feet”

Fishing: wider for primary stability

Sea: “trade maneuverability for seaworthiness, stability, and cargo capacity” and include rudders/skegs

Whitewater: shorter, highly impact resistant material, narrower

That is an absurd amount of variety and complexity for someone just starting out in kayaking! And that means that there is no general-purpose kayak. If I start out with a beginner kayak for recreational use in calm bodies of water to get my sea legs, so to speak, I can’t decide later down the line that I’d like to do more sea kayaking instead or that maybe I’ll take my kayak on hiking trips with me (which would more than likely require an inflatable or foldable kayak instead). Kayaks for one purpose can certainly be used periodically in a different setting, but you are more likely to experience trouble if you’re inappropriately using a kayak. Whether getting into turbulent water in a kayak that is easier to capsize, or simply exerting more effort than a kayak meant for that purpose would. And if I get to a kayaking level where I’d like to try whitewater kayaking, you can bet that I *require* an entirely new kayak for that purpose, otherwise things can get dangerous.

I quickly fell down the rabbit hole of information overload. There was so much more to it than finding a good quality kayak. Also adding to that, the price of a kayak is as much as a new computer (with as much variation). I was encouraged to apply my data collecting and analytical skills to help me go through all the variety of kayaks available on the market. My goal at the outset was to find a kayak that had the right combination of speed, stability, and maneuverability for my needs that I would be able to use it for years to come. This would be accomplished by finding the most popular kayaks by type and technical features and analyzing their variation.

The goal of my project is to analyze the different technical specifications (dimensions, materials, tracking system, and advertised primary use (flatwater, whitewater, racing, sea, etc.)) and see how reviews compare. Hypothetically I would like to see what combination of features are the most popular, and how ratings vary by design choices.

Disclaimer: I was getting on-the-water experience with a used kayak bought from a kayak rental store while working on this project.

METHODS

Data was collected from online retailers using web scraping techniques. REI turned out to be the best source of uniform data, having a consistent section outlining the kayaks’ “technical specifications” which would allow me to analyze not only based on price, ratings, intended use, but on the more nuanced differences between kayaks, such as the length, width, weight, etc. After the data collection was completed, it was processed in R and analyzed using ggplot2 to glean helpful information from the data.

ANALYSIS

Primary use

Primary use vs ratings

Primary use vs price

Primary use vs length vs width

vs depth vs weight