

Colorado Fourteeners

Edgar Mendoza

Lanea Blackburn

Priya Panati

Jacob Boeckenstedt

ABSTRACT

Colorado is known for its variety of outdoor adventures. In the Winter, many people snowboard or ski. In the Summer, people tend to go hiking. Although Colorado has many beautiful trails, it also is home to 53 mountains that are higher than 14,000 feet in elevation. For the novice hiker, but also an avid adventurer, this might seem daunting. However, we have created four visualizations in order to help individuals begin their 14er journey. Depending on the visualization, we have depicted location, difficulty, elevation gain, length of the hike, and traffic patterns around each mountain. These interactive visualizations will not only help out people new to hiking, but also experienced hikers.

INTRODUCTION

Our team all grew up in Colorado and we have lived up to the stereotypes of the state. Most of us snowboard/ski and we all definitely hike, a lot. However, there are many individuals who have not had the luxury of living in Colorado, but have always dreamed of spending summers or winters here. In order to help out these individuals, we became very interested in the data behind 14ers and visualized it for them to see.

RESEARCH

To look at work that is already out there about 14ers and their traffic, level of difficulty and distance, it is interesting to start to understand how they all relate to one another and how that has been researched in the past. On the [website](#) regarding all 14ers and how to preserve them, they provide us with valuable information that shows their use and the economical impact that it has. This relates to the traffic that is seen on these hikes and the kinds of lengths that people are going to to hike a fourteener. Another major website, [COTrip.org](#) has information on current traffic on major highways and streets in Colorado. Our traffic near fourteeners visual builds off this to look at specific locations near fourteeners.

In addition to the traffic of a 14er, a new hiker could look on the [Coloradan.com](#). This page shows the top 5 beginner fourteeners in Colorado. They show the name of the fourteener elevation, elevation gain, and approximate time it will take to climb each mountain. Our visuals build off this so everyone can make their own decision whether they want a beginner fourteener or a more advanced hike. While looking at an [article](#) about 14ers and their difficulty, it is interesting to start to see how they compare to the data that we found and collected.

The list of the 53 fourteeners mentioned did match our visualizations and it proved that those with the heaviest traffic that were also close to Denver (not a conditional in the link above) had the highest amount of people visiting. This website also proved to be valuable as we started to look at the details it gave about the fourteeners and we could see that the shorter the distance the lower class it was meaning the easier it was.

As we recommend 14ers to new hikers, the most loved ones will definitely be mentioned. According to [Colorado Life Magazine](#), the top 5 most loved 14ers in Colorado are Crestone Needle, Wilson Peak, Mount Evans, North Maroon Peak, and Pikes Peak. Crestone Needle lies in the Sange de Cristos range and is one of the most beautiful mountain ranges in Colorado. However, because Crestone Needle is a difficult hike, a much easier and also very loved alternative is Mount Evans. You don't even have to hike it because there is a 14 mile road to the peak of Mount Evans.

On the other hand, there are a variety of difficult 14ers as well. Class 4 difficulty is the toughest difficulty which includes mountains such as Capitol Peak, Little Bear Peak, and Pyramid Peak, according to the [Denver Channel](#). These hikes are not for

the faint of heart. For most of these mountains, it is not the most enjoyable ride and they include sections of loose rock, rugged terrain, and relentless climbs

Our visuals represent 53 14ers, but when is the best time to hike one? Obviously it will be very difficult to hike a 14er in the middle of Winter. [Fox in the Forest](#) says that the best time to hike a 14er is extremely early in the morning between July and September. The weather will be nice at this time and you will miss the afternoon showers that usually occur in Colorado during the Summer. However, if someone is looking for a challenge and has some experience, they can possibly hike a 14er during a different season.

Additionally, some [equipment](#) is essential to hike a 14er Sun protection is important because of the elevation, a person can get burned rather quickly. Food and water are essentials in order to have enough energy to complete the hike. Also a variety of clothing layers is important because it tends to get cold at the peaks. Other important equipment includes first aid and hiking shoes.

DESCRIPTION OF PROJECT

1. In the 3D visualization, we looked at the many factors that have to do with ft and the difficulties that can come with hiking a fourteenner. Within the process of extracting the data to better understand how you can prepare yourself for an intense hike, it is valuable to know the distance of the hike and its relativity to ft gained and elevation gain. To anyone that has hiked before, this information is relevant as it pertains to the intensity of the hike and it is useful for someone who may not be interested in a harsh elevation gain with a short distance.

To read the data within the graph, the further back corner of the data will show you the easiest mountains to climb and the further out and up you go the more difficult they are presumed to be. This visualization holds true to different visual perceptions that one may have when looking for conclusions from a visualization with the use of joining different data points and using color as a discrepancy drawing conclusion starts to become easier after interacting with the data.

2. In the Tableau visualization we looked at traffic conditions at different fourteenners. We thought this was an important visual to create because with the increase of people moving to Colorado in the past 10 years. Colorado's population increased 700,000 between 2010 and 2018 according to [the Denver Channel](#). This visual has circles depicting fourteenners on a colorado map. The darker the color, the more traffic there is around that fourteenner. We can see that the fourteenners closer to Denver that aren't considered as difficult have the most traffic, and the more west you go the less traffic there is. This visual uses a sequential color scale to show traffic patterns. The dark means more traffic and light color represents less traffic, as the viewer would expect. The dataset type is Geometric (map) since the dots on the map are where they are.
3. The visualization with boxplots separates each 14er into its respective mountain range and shows the distribution of peak elevations. Each range varies in elevation and difficulty, so this was important to depict. Additionally, each datapoint is interactive in order to see which peak it is and its specific name. In order to catch the viewers' attention, the ranges are all grouped into their own unique color. Overall, this visualization allows users to compare all of the ranges and choose which mountain range or specific peak they would like to attempt first.
4. Our most interactive visual uses both geometric and tabular data. All of the 14ers were placed onto a map and given categorical attributes. This is extremely helpful for those looking to hike their next 14er. The categories are the mountain ranges that each peak is apart of and all have different colors. If you analyze the visualization, you will see that the difficulty of the hikes increase the further west you go. Also peaks that are closer to each other tend to be similar difficulties. As you put your cursor over a peak, information about that peak will show up. This visualization is the easiest for a user to understand at first glance and probably the most helpful to decide which 14er to hike.

FINDINGS

Overall, 14ers in Colorado offer a wide range of experiences. From extremely busy and easy hikes to remote, but challenging hikes, they all offer an experience to push yourself out of your comfort zone. 14ers are a wonder in this world and provide some of the most breathtaking views you'll ever see. Even if you haven't hiked before, you can definitely start with an easier 14er and work your way up in difficulty. Specifically, start in Colorado's front range and then head West!

REFERENCES

Lloyd Athearn, Mountain Safety, [Colorado 14er Initiative](#), December 13, 2019

Spencer Mckee, Colorado's 14ers Ranked by Difficulty, [OutThere Colorado](#), December 13, 2019

Stephen Meyers, Top 5 beginner fourteeners, [Coloradoan](#), December 13, 2019

Road Conditions, [COTrip](#), December 13, 2019

Fourteen 14ers Loved by Colorado, [Colorado Life Magazine](#), December 14, 2019

7 Most Difficult 14ers in Colorado, [The Denver Channel](#), December 14, 2019

Tips and Tricks to Hike a Colorado 14er, [foxintheforest](#), December 14, 2019

10 Essentials, [Gear Junkie](#), December 14, 2019