Alexander Ruffini

IGME 382

Which New Hampshire cities have the most/least accessible ski options given road network and resort characteristics?
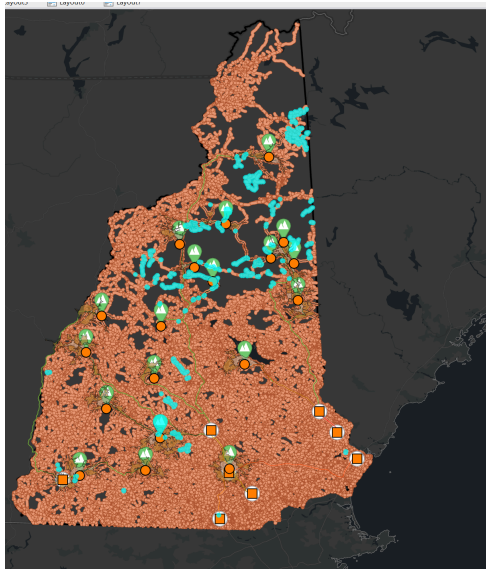
I chose the topic of ski resorts in New Hampshire. This is an important topic as it covers the aspect of affordable entertainment that is outside. Skiing has been a staple of my household but I recognize it is a place of privilege to be able to go do it. Especially in New Hampshire where prices of everything can add up fast.

I first looked at ski resorts websites to gather the actual non spatial data about each mountain. I wrote it all to a PDF and then later added some geospatial information for later use.
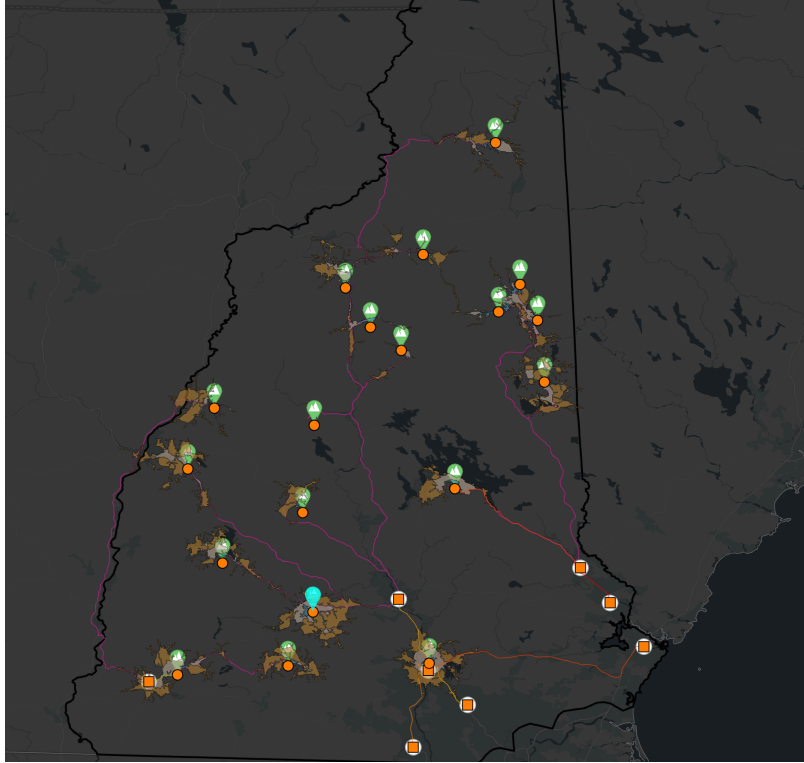
Name	Lift Ticket Price (1 Day Adult on Jan 8th 2026)	Rental Prices (Assuming Skis, Boots, Poles, Helmet)	# Of Lifts (doubles, quads, magic carpets, etc)	Highest Peak (in feet)	Vertical Drop (in feet)	# of Peaks	# Green Circle	# Blue Square	# Black Diamond	# Double Black Diamond	# Terrain parks	# Glades	Total Trails
Cannon Mountain	$99	$69	9	4,080	2180	2	16	51	32	0	3	23	
Loon Mountain	$89	$65	14	3065	2190	3	18	34	19	1	6	0	
Tenney Mountain	$69	$55	3	2350	1500	1	10	22	18	1	1	7	
Wildcat Mountain	$109	$66	5	4,062	2,112	1	9.6	22.56	15.84	0	0	8	
Pats Peak	$79	$61	11	1,460	770	1	14	6	3	5	2	9	
Cranmore	$79	$78	7	2000	1200	1	18	27	15	0	4	6	
Bretton Woods	$99	$69	9	3100	1,500	3	25	40	25	10	1	34	
Gunstock Mountain	$94	$67	8	2,300	1,340	1	7	25	15	1	2	5	
Attitash	$121	$66	8	2,350	1,750	2	22	33	20	0	3	5	
Waterville Valley Resort	$90	$59	10	4,004	2,020	2	9	40	14	3	5	6	
Mount Sunapee	$121	$73	8	2,743	1510	1	19	31	6	9	4	5	
Ragged Mountain	$69	$61	6	2,286	1,250	2	17	15	21	4	3	17	
King Pine	$57	$52	5	850	350	1	7	6	2	2	2	1	
McIntyre Ski Area	$53	$65	4	510	200	1	7	4	0	0	1	3	
Crotched Mountain Ski and Ride	$88	$57	5	2,068	1000	1	7	10	8	0	2	4	
Darthmouth Skiway	$60	$45	4	1,943	968	2	6	14	7	1	0	1	
Granite Gorge	$30	$50	3	390	250	1	6	6	5	2	7	2	
Whaleback Mountain	$20	$50	5	1,800	700	1	8	11	6	5	1	6	
Black Mountain	$62	NULL	5	2,350	1100	1	16	20	15	8	0	11	

I then used the built in ArcGis online most popular US cities, I then wrote some SQL code to only include cities in NH with a population of around 30,000. I did this in order to showcase the difference between where the resorts were and where the majority of people lived.
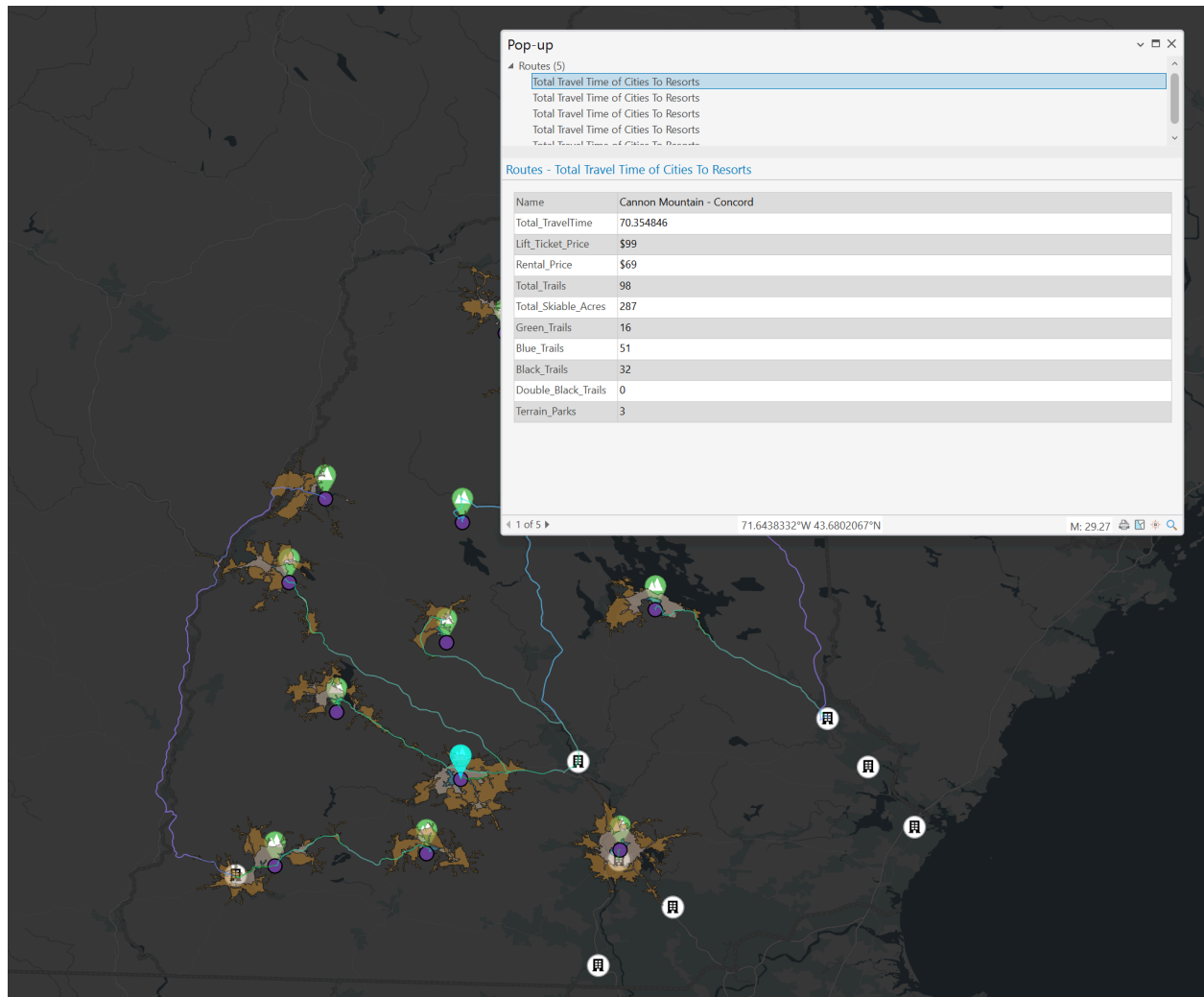
I also used the NH's Dot major cities and once again included only NH. This was going to be used later to run the networking analysis.

I did quite a lot of modifications to data inside and outside ArcGIS. As mentioned before I ran some queries to focus the data on NH's Highways and the cities inside NH. after that I had to run Network Analysis to see the distance between resorts and the major cities. I also ran it again to see the closest city from every resort. The results were pretty shocking!

I also included a network analysis of the rural drive time around the resorts. Which is what the brown areas around each resort represent. I wanted to showcase this as some of the resorts can be quiet tricky to reach. Finally, I took the data I collected from the resorts as a GEOJson and joined it on the Road features so that the user could see how far and how much a mountain is.

Speaking of GeoJson, outside of ARCGis I had to learn how to use it alongside Folium and Pandas to create the web app you can see on the website. I am not the most thrilled with the final result, however I feel like it is a good starting point. Folium was a very powerful tool and was definitely fun to work with! Speaking, a lot of issues came down while trying to make this project work. Some of the information about the resorts was just plain wrong or hard to fact check. Furthermore, I had to learn how to work with GeoJson and that had a bit of a learning curve at first. Inside ArcGIS I had a lot of issues, including a few crashes and data not appearing correctly. In the end everything came out okay but it was not the best representation of my ability.

The results showed that there is a great variety of trails nearby that could benefit everyone. Pats Peak is in Southern NHand had a wide variety of different kinds of trails for a reasonable price. For beginners, Mcintyrne Ski Area also seemed like a great place to start due to its low height, cost, and lack of black diamond trails. I was honestly shocked by the results and thought they were going to be very different!

The results mean that ski resorts are accessible and have a wide range of variety in NH. However, when looking at a cost to worth ratio it is hard to come with a definite answer. As the issue with skiing is that there can be a wide range of price changes that can affect people's buying power and decisions. For example, there is the existence of an 'Indy pass' which lets you essentially park hop between mountains, not too dissimilar to Six Flag's newer take on Season Passes. I also had to consider rental prices, but even those could have been changed so I made the following list of data design notes to consider.

- Lift tickets were for 1 adult on January 8th 2026
- Glades, while technically can be blue square all the way to black diamond, were just going to be labeled as glades
- If a mountain did not directly say the # of trails specifically, I would hand count them and come up with the split instead of relying on Google's AI and chat forms
- Night skiing is a good way to save some money and was thus included in the google sheet.
- Only true resorts were considered, while a local slope / trail would be cool to also include there was not enough time

Finally, for ethics, I fear that if misused this data could be used to price gouge or even undercut competition between the different mountains. This would not seem like a big deal except for the fact some of the mountains are owned by Vail Resorts which is a chain of skiing resorts. They have grown very large over the years and have brought both good and bad changes to the mountains. If they misused the current GIS findings, it is possible they could create a monopoly in the skiing industry.

I learned that research can take a very long time, especially when working with GeoSpatial Data, and it needs to be handled with the upmost care. Furthemore, I also learned that it can be very hard to not lose yourself in the little details that don't even end up in the final project. From here I would love to expand on this project more and include data for other states as well. I think it would also be interesting to import the slope data with Open Street map and work closer with skiing websites like OpenSkiMap and OnTheSnow.

Works Cited

"ArcGIS." *Arcgis.com*, ESRI, 2025,

    ritarcgis.maps.arcgis.com/home/item.html?id=9df5e769bfe8412b8de36a2e618c7672.

    Accessed 9 Dec. 2025.

"Attitash Mountain | Attitash Mountain Resort." *Www.attitash.com*, www.attitash.com/.

"Black Mountain Ski Area." *Black Mountain*, 2025, www.blackmt.com/. Accessed 9 Dec. 2025.

"Cannon - Cannon Mountain." *Cannon Mountain*, 2025, www.cannonmt.com/.

"Crotched Mountain | Crotched Mountain Resort." *Www.crotchedmtn.com*,

    www.crotchedmtn.com/.

"Dartmouth Skiway." *Dartmouthskiway.com*, 2021, dartmouthskiway.com/. Accessed 9 Dec.

    2025.

"GIS Data Catalog." *Department of Transportation*, 2020,

    www.dot.nh.gov/about-nh-dot/divisions-bureaus-districts/planning-community-assistance

    /gis-data-catalog. Accessed 9 Dec. 2025.

"Granite Gorge Mountain Park – Skiing, Riding, Terrain Parks, Lessons and Snow Tubing in

    New Hampshire." *Granitegorge.com*, 2025, granitegorge.com/. Accessed 9 Dec. 2025.

"Home." *Ragged Mountain Resort*, 7 Dec. 2025,

    www.raggedmountainresort.com/?gad_source=1&gad_campaignid=15070537642&gbrai

    d=0AAAAAC9ekR5MhXPjoyufdCwCJDxYUPHaB&gclid=Cj0KCQiAi9rJBhCYARIsA

    LyPDtuKu7U0RYJqEaooUtrrdVWv8Ff7FD2CoL9k6_qcf-cXhAoDAF1rjfAaAletEALw

    _wcB. Accessed 9 Dec. 2025.

"Home - Cranmore." *Cranmore*, 17 Nov. 2024, cranmore.com/.

"Home - McIntyre Ski Area." *McIntyre Ski Area*, Dec. 2025, www.mcintyreskiarea.com/.

    Accessed 9 Dec. 2025.

"Indy Pass | 200+ Resorts ❄ 2 Days Each. ❄ 1 Pass." *Www.indyskipass.com*,

    www.indyskipass.com/.

"King Pine Ski Area | All Ages Skiing & Lodges in East Madison, NH." *King Pine Ski Area*, 15

    Oct. 2025, www.kingpine.com/. Accessed 9 Dec. 2025.

"Loon Mountain Resort." *Www.loonmtn.com*, www.loonmtn.com/.

Mountain, Whaleback. "Whaleback Mountain." *Whaleback Mountain*, 2019,

    www.whaleback.com/. Accessed 9 Dec. 2025.

"New Hampshire Skiing & Snowboarding | Mount Sunapee Ski Resort." *Mountsunapee.com*,

    2025, www.mountsunapee.com/. Accessed 9 Dec. 2025.

"Pats Peak - Pats Peak Ski Area in Henniker, NH Is Southern New Hampshire's Premiere Ski

    Area." *Www.patspeak.com*, www.patspeak.com/.

"Ski and Snow Reports, Webcams, Skiing Reviews | OnTheSnow.com." *Www.onthesnow.com*,

    www.onthesnow.com/.

"Tenney Mountain Resort." *Tenney Mountain Resort*, 28 Mar. 2025, skitenney.com/.

Vail Resorts. "Vail Resorts, Inc." *Vail Resorts*, 2025, www.vailresorts.com/.

"Welcome to Omni Mount Washington Resort in Bretton Woods, NH." *Www.brettonwoods.com*,

    www.brettonwoods.com/.

"Wildcat Mountain | Wildcat Mountain Resort." *Www.skiwildcat.com*, www.skiwildcat.com/.