Variance between Piste Difficulty Ratings by Resort

Fall 2024 Geography 181A Final Project

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Introduction

Ski resorts give their trails ratings based on difficulty, with “green” and “blue” trails being easier to navigate, and “black diamond” runs being more difficult to navigate. Ski trail ratings are relative at each resort. This means that a “black diamond” at one resort might be rated “blue” at a different resort. For skiers who are unfamiliar with a given resort, this can present a significant hazard. For this project, we will use geographic data to classify trails at a selection of resorts on the same objective scale.

The goal of this project is to answer the following question:

How many difficulty levels separate a ski trail with the same rating at two different resorts?

Methods

First, I selected a set of ski resorts on which to perform my analysis. In order to improve digitzation accuracy, I selected resorts which I’ve visited in the past. This helped me correlate landmarks on the official trail map with landmarks in base map data. I selected:

- Bear Mountain, CA, a small resort with local customers that advertises itself as family-friendly
- Mammoth Mountain, CA, a destination resort that advertises itself as family-friendly
- Brighton Resort, UT, a moderately-sized resort with local customers that advertises both beginner offerings and expert terrain
- Snowbird, UT, a destination resort that specifically advertises its expert terrain

Second, I selected the trails to digitize and analyze. To prevent bias, I used the same number of trails of each difficulty level at each resort. At resorts with more than this number of trails for a given rating, the alphabetically-first trails with that rating were chosen for analysis. This prevents geographic bias in trail selection from affecting calculated difficulty levels.

Last, I selected variables to use to determine the difficulty of a given trail.

- Trail steepness: percent grade in the trail direction of the steepest 50m section of the trail
- Terrain exposure: average absolute percent grade across the entire trail
- Trail width: estimated percentage of a twenty-meter buffer around the trail’s center which is covered in vegetation

From here, I used the following procedure to execute that plan:

1. Import NAIP imagery covering each ski resort.
2. Digitize the selected trails at each resort.
3. Import Digital Elevation Models for each resort.
4. Use the “Add Surface Information” tool to attach a trail steepness value to each trail.
5. Use the “Slope” tool to generate a raster containing percent grade across the resort region.
6. Use the “Add Surface Information” tool with the generated raster to attach a terrain exposure value to each trail.
7. Use the “Raster Calculator” tool to compute an NVDI raster from the NAIP imagery.
8. Create a buffer around each trail.
9. Generate a Zonal Statistics Table for each buffer polygon layer to determine trail width.

Results

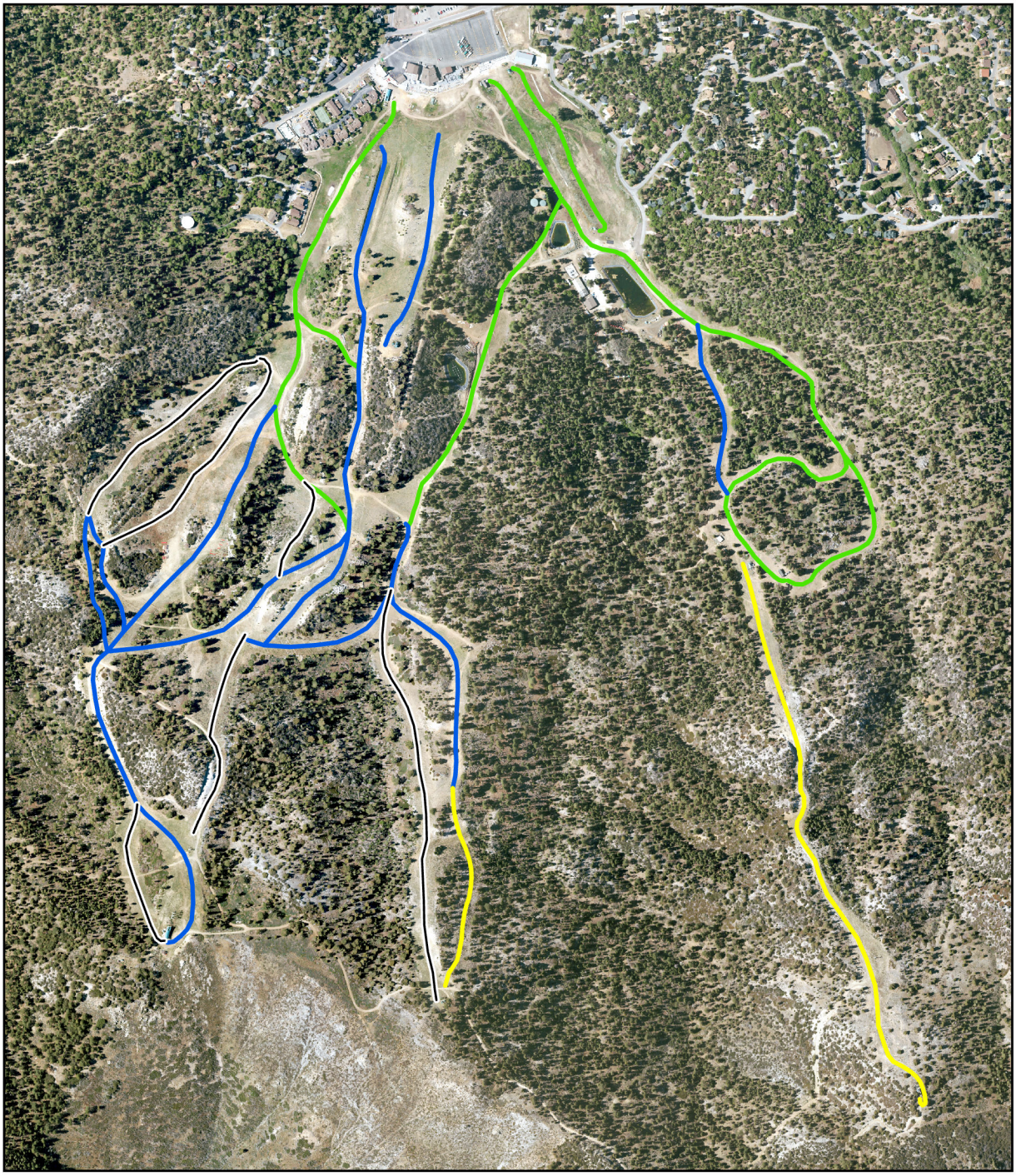
	A	B	C	D
1	Green Runs			
2	Snowbird	Brighton	Mammoth	Bear Mountain
3	Alice Avenue	Backdoor	Apple Pie	Amusement Park
4	Bass Highway	Canyon	Back for More (Lower)	Back Yard
5	Chickadee	Lost Maid	Big Bird	Easy Street
6	Chickadee Chutes	Lower Mary	Easy Rider	Inspiration
7	Creek Road	Lower Thunder Road	Ginger Bread	Learning Curve
8	Easy Street	Main Street	Hansel	Park Run (Lower)
9	Lower Emma	Mary Back	Holiday	The Gulch
10	Blue Runs			
11	Snowbird	Brighton	Mammoth	Bear Mountain
12	Bananas	Backbone	Antin Alley / Chickadee	Accelerator
13	Bassanova	Cat Track	Bridges	Boneyard
14	Bicarbonate Gully	Christy Bowl	Bristlecone	Central Park
15	Bird's Nest	Easy Out	Broadway	Expressway
16	Bluebell	Elk Park	Christmas Tree	Hidden Valley
17	Bryce's Run	Golden Needle	Cloverleaf	Outlaw's Alley
18	Cat Crew Cutoff	Hawkeye	Comeback Trail	Park Run (Face)
19	Chip's Access	Lonestar	Comin' Thru	Park Run (Upper)
20	Chip's Bypass	Lower Majestic	Critters	Pipeline
21	Chip's Run/Phone 3 Road	Majestic Access	Downhill (Lower)	Ripcord
22	Claim Jumper	Milly Access	Europa Cup	Silver Connection
23	Cliff Access	Pacific Highway	Exhibition	Street Scene
24	Black Runs			
25	Snowbird	Brighton	Mammoth	Bear Mountain
26	49er Gully	Aspen Glo	Agee's Run	Exhibition
27	Adager	Chute 2	Andy's Double Gold	Gambler
28	Bass Benches	Desperado	Baby Dave's Glades	Grizzly
29	Black Forest	Devil's Dip	Blue Ox	Outlaw
30	Blackjack Gully	Doyle's Dive	Bluejay	Rip's Run
31	Blackjack Traverse	Elk Park Ridge	Breakover	Showtime
32	Double Black Runs			
33	Snowbird	Brighton	Mammoth	Bear Mountain
34	Alimony Chutes	Clark's Roost	Avalanche Chutes	Geronimo
35	Altar Bowl	Endless Winter	Climax	The Wedge

Table 1: Trails selected for analysis

The following maps show the selected trails digitized with NAIP imagery.

Bear Mountain NAIP Imagery and Selected Trails

Map layout by Randall Scharpf



N

0 0.15 0.3 0.6 0.9 1.2 Miles

1:12,000 Scale

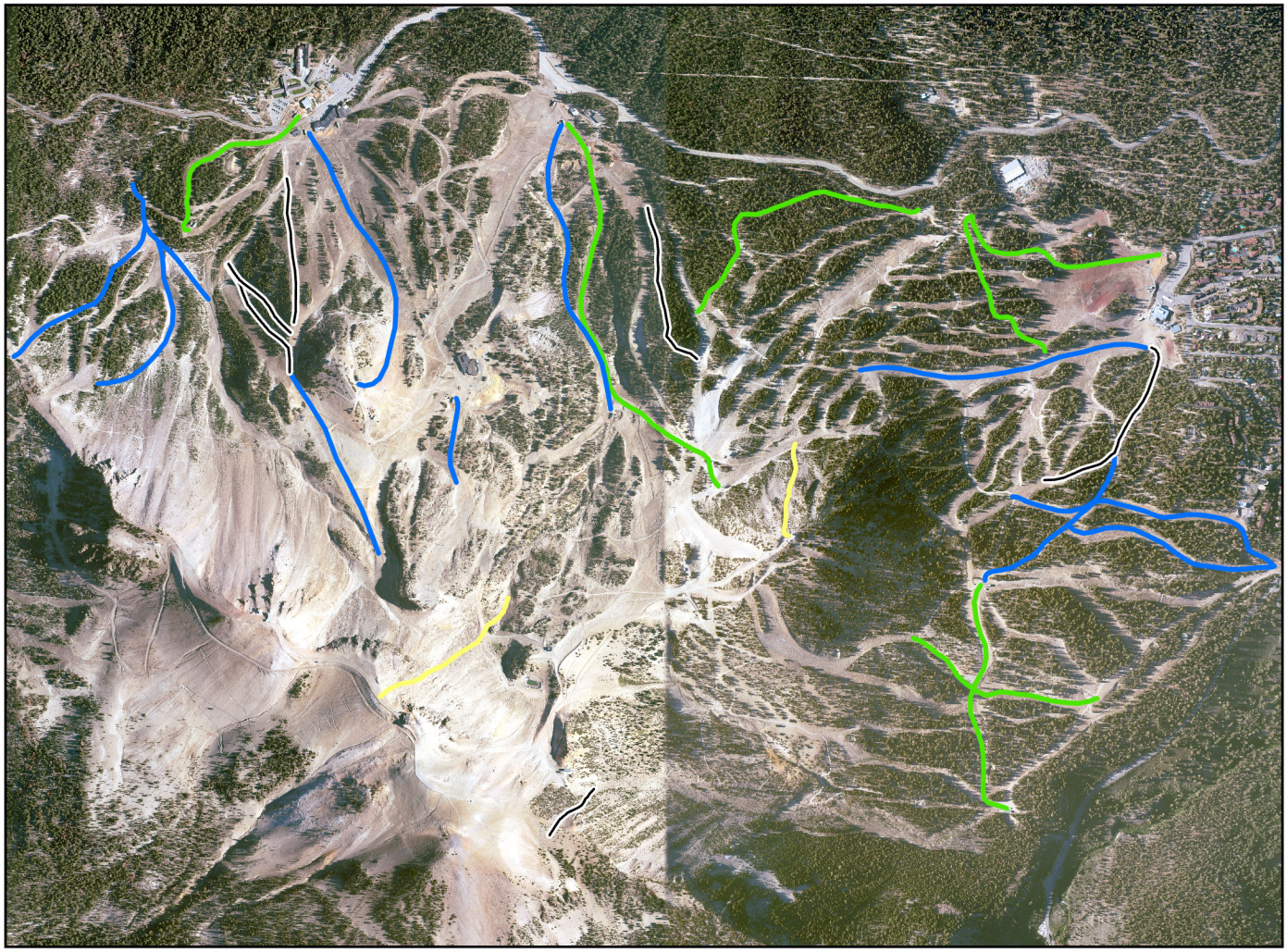
- Double Black Runs
- Black Runs
- Blue Runs
- Green Runs

NAIP imagery from USGS Earth Resources Observation and Science
Provided through USGS Earth Explorer Application
Trails digitized using official Bear Mountain resort map and NAIP imagery

Projected Coordinate System: NAD 1983 UTM Zone 11N

Mammoth NAIP Imagery and Selected Trails

Map layout by Randall Scharpf



0 0.25 0.5 1 1.5 2 Miles

1:26,000 Scale

N

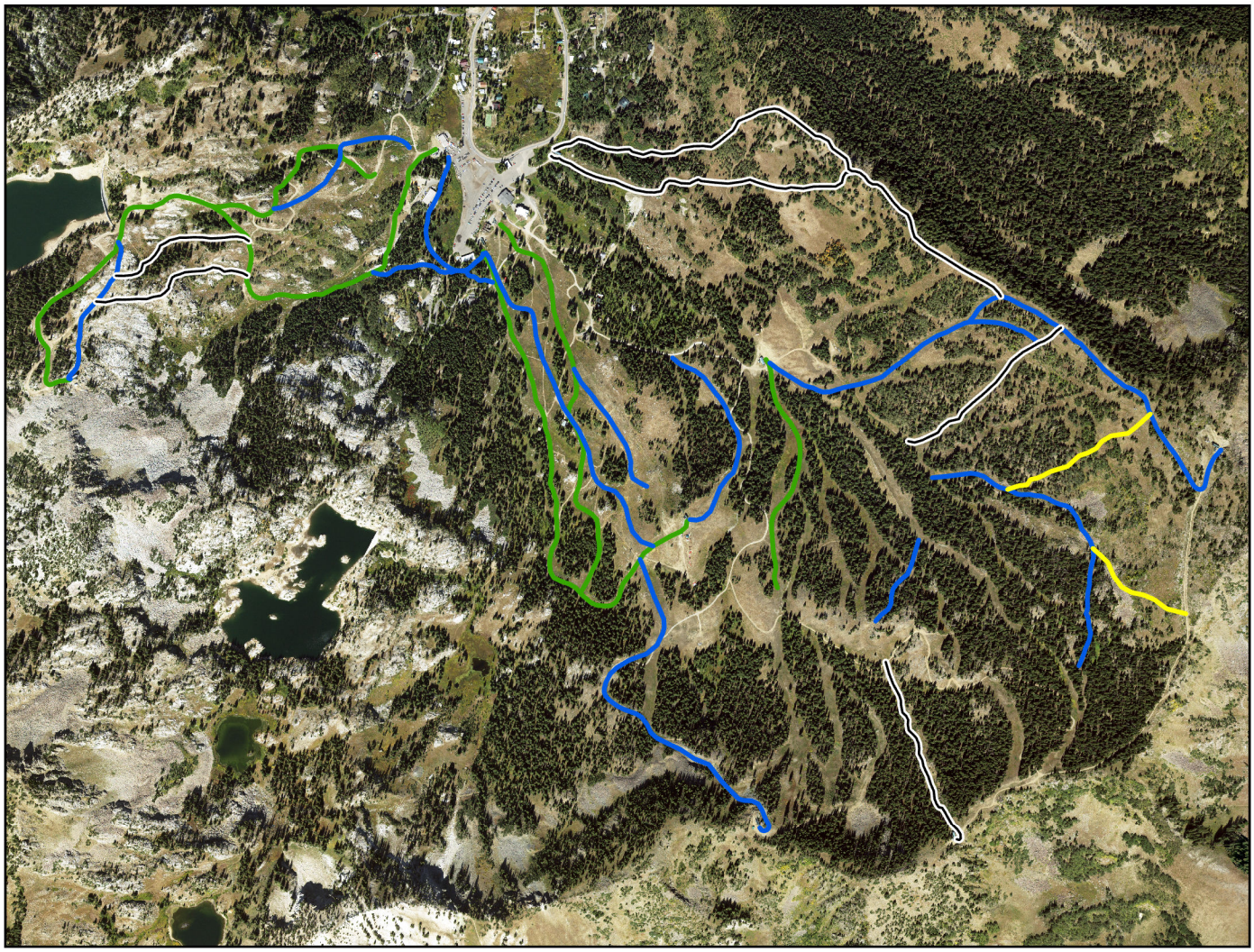
- Double Black Runs
- Black Runs
- Blue Runs
- Green Runs

NAIP imagery from USGS Earth Resources Observation and Science
Provided through USGS Earth Explorer Application
Trails digitized using official Mammoth resort map and NAIP imagery

Projected Coordinate System: NAD 1983 UTM Zone 11N

Brighton NAIP Imagery and Selected Trails

Map layout by Randall Scharpf



0 0.2 0.4 0.8 1.2 1.6 Miles

1:18,000 Scale

N

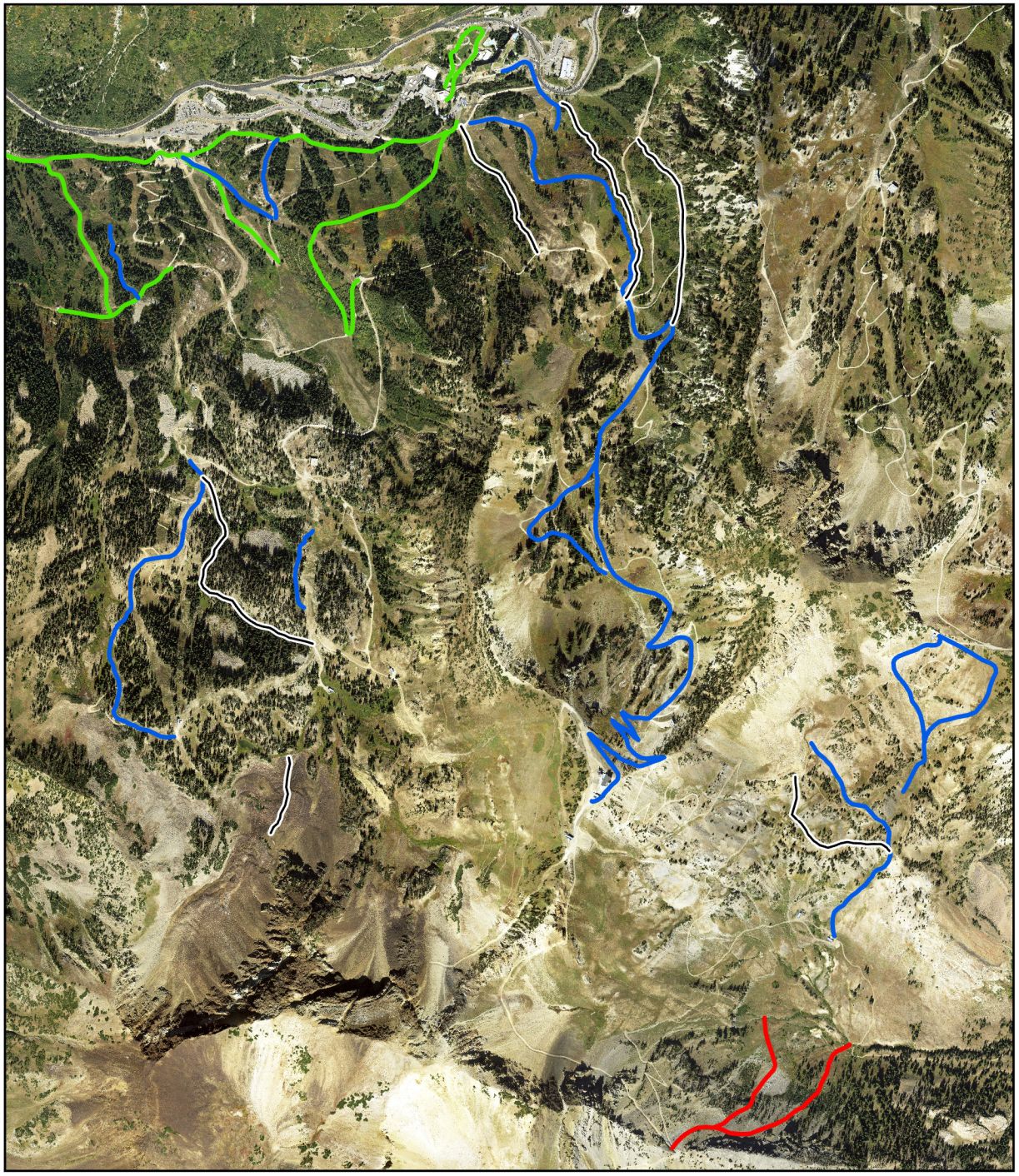
- Double Black Runs
- Black Runs
- Blue Runs
- Green Runs

NAIP imagery from USGS Earth Resources Observation and Science
Provided through USGS Earth Explorer Application
Trails digitized using official Brighton resort map and NAIP imagery

Projected Coordinate System: NAD 1983 UTM Zone 12N

Snowbird NAIP Imagery and Selected Trails

Map layout by Randall Scharpf



N

0 0.25 0.5 1 1.5 2 Miles

1:22,000 Scale

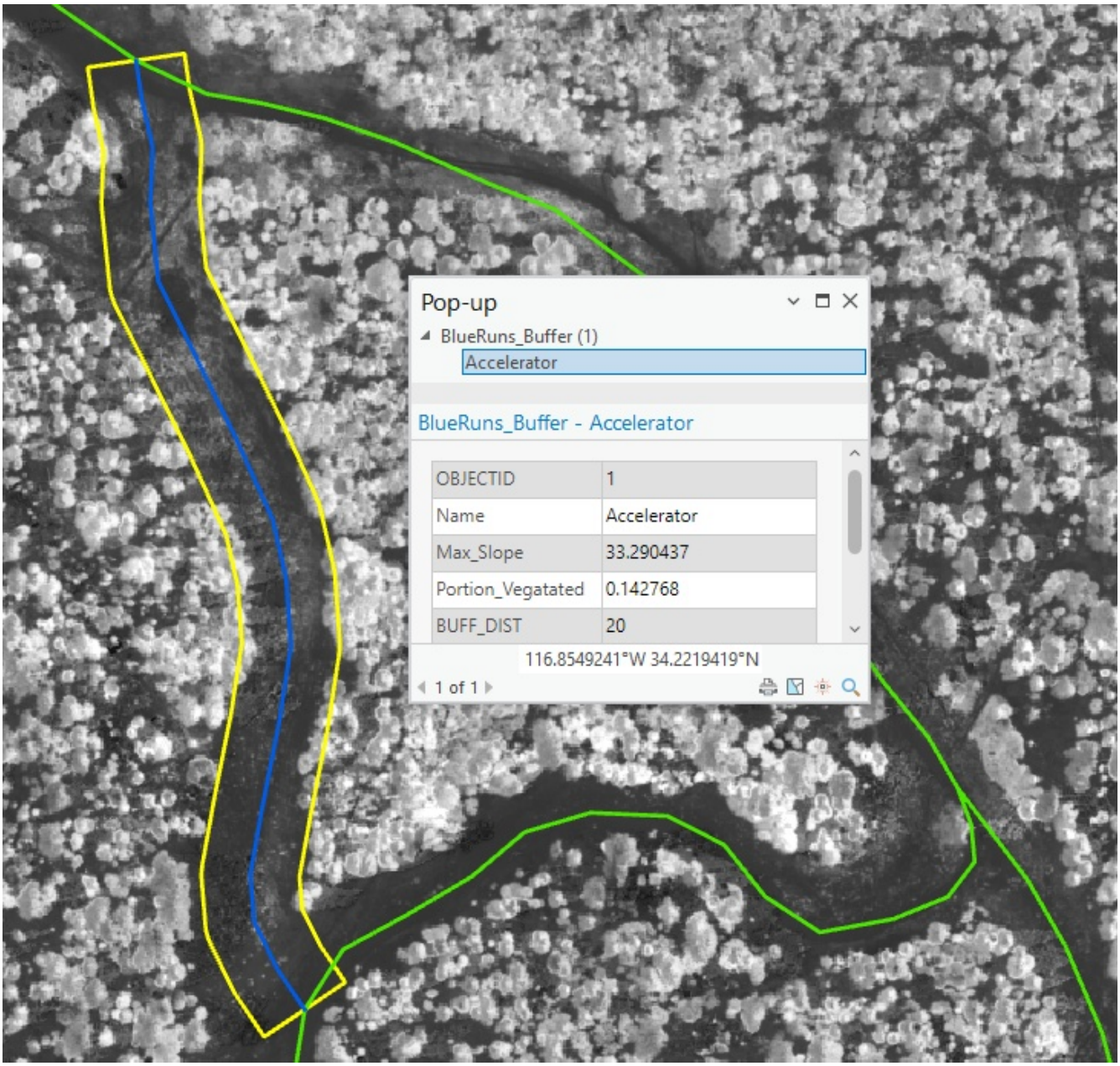
- Double Black Runs
- Black Runs
- Blue Runs
- Green Runs

NAIP imagery from USGS Earth Resources Observation and Science
Provided through USGS Earth Explorer Application
Trails digitized using official Snowbird resort map and NAIP imagery

Projected Coordinate System: NAD 1983 Contiguous USA Albers

The following screenshot illustrates:

- High NVDI values (white) correspond to off-trail, tree-covered regions, while low NVDI values (gray to black) correspond to trails.
- The 20m buffer surrounding the trail captures the vegetation that bounds the trail's edges. The trail is detected as approximately 15% vegetated, which corresponds to a trail width of 34m, given by 2*20m*(100%-15%).
- The steepest 50m of the trail has a 33.3% grade.



Analyzing each trail gives the following data tables:

	A	B	C	D	E	F
1	Resort	Run Name	Max Slope	Mean Terrain Slope	Mean NVDI	Difficulty
2	Bear Mountain	Learning Curve	23.6	17.9	0.128	1
3	Bear Mountain	Easy Street	14.6	13.2	0.124	1
4	Bear Mountain	Inspiration	19.5	12.5	0.098	1
5	Bear Mountain	Amusement Park	21.1	16.7	0.134	1
6	Bear Mountain	The Gulch	19.6	18.7	0.070	1
7	Bear Mountain	Park Run (Lower)	20.2	19.6	0.084	1
8	Bear Mountain	Back Yard	28.7	19.3	0.112	1
9	Bear Mountain	Accelerator	33.3	24.4	0.143	2
10	Bear Mountain	Ripcord	29.5	24.5	0.060	2
11	Bear Mountain	Silver Connection	28.7	22.2	0.044	2
12	Bear Mountain	Park Run (Upper)	34.5	25.9	0.104	2
13	Bear Mountain	Expressway	24.3	26.1	0.067	2
14	Bear Mountain	Boneyard	26.6	26.1	0.057	2
15	Bear Mountain	Park Run (Face)	33.9	26.2	0.020	2
16	Bear Mountain	Outlaw's Alley	13.7	22.8	0.121	2
17	Bear Mountain	Street Scene	29.0	23.2	0.145	2
18	Bear Mountain	Pipeline	30.4	26.4	0.045	2
19	Bear Mountain	Hidden Valley	22.5	16.6	0.158	2
20	Bear Mountain	Central Park	27.5	26.1	0.071	2
21	Bear Mountain	Exhibition	36.9	32.6	0.022	3
22	Bear Mountain	Showtime	46.1	31.6	0.036	3
23	Bear Mountain	Rip's Run	34.7	33.3	0.083	3
24	Bear Mountain	Outlaw	38.5	29.5	0.107	3
25	Bear Mountain	Gambler	38.6	28.5	0.031	3
26	Bear Mountain	Grizzly	39.1	29.8	0.092	3
27	Bear Mountain	Geronimo	46.9	36.0	0.041	4
28	Bear Mountain	The Wedge	46.9	41.2	0.063	4

Table 2: Bear Mountain Trail Difficulty Variables

	A	B	C	D	E	F
1	Resort	Run Name	Max Slope	Mean Terrain Slope	Mean NVDI	Difficulty
2	Mammoth	Apple Pie	13.1	9.5	0.128	1
3	Mammoth	Back For More (Lower)	23.8	19.4	0.054	1
4	Mammoth	Big Bird	28.6	14.7	0.271	1
5	Mammoth	Easy Rider	23.1	18.7	0.005	1
6	Mammoth	Ginger Bread	18.0	13.2	0.141	1
7	Mammoth	Hansel	25.4	18.3	0.029	1
8	Mammoth	Holiday	11.0	14.6	0.041	1
9	Mammoth	Antin Alley / Chickadee	20.0	15.9	0.128	2
10	Mammoth	Bridges	33.7	16.5	0.072	2
11	Mammoth	Bristlecone	28.4	21.0	0.055	2
12	Mammoth	Broadway	42.6	27.8	0.026	2
13	Mammoth	Christmas Tree	29.0	18.6	0.085	2
14	Mammoth	Cloverleaf	24.9	16.6	-0.003	2
15	Mammoth	Comeback Trail	21.1	28.0	0.064	2
16	Mammoth	Comin' Thru	20.0	13.2	0.073	2
17	Mammoth	Critters	33.0	24.0	0.127	2
18	Mammoth	Downhill (Lower)	26.4	15.8	0.021	2
19	Mammoth	Europa Cup	28.3	23.0	-0.052	2
20	Mammoth	Exhibition	32.4	23.8	0.010	2
21	Mammoth	Agee's Run	36.4	34.1	0.000	3
22	Mammoth	Blue Ox	38.7	35.4	0.072	3
23	Mammoth	Andy's Double Gold	41.9	36.3	0.103	3
24	Mammoth	Baby Dave's Glades	52.6	51.0	0.036	3
25	Mammoth	Bluejay	31.7	23.8	0.143	3
26	Mammoth	Breakover	49.9	29.4	0.277	3
27	Mammoth	Avalanche Chutes	88.0	66.0	0.068	4
28	Mammoth	Climax	56.0	43.1	-0.022	4

Table 3: Mammoth Mountain Trail Difficulty Variables

	A	B	C	D	E	F
1	Resort	Run Name	Max Slope	Mean Terrain Slope	Mean NVDI	Difficulty
2	Brighton	Backdoor	30.1	29.7	0.363	1
3	Brighton	Canyon	26.2	15.2	0.374	1
4	Brighton	Lost Maid	20.4	18.3	0.433	1
5	Brighton	Lower Mary	36.5	17.3	0.368	1
6	Brighton	Mary Back	18.9	15.7	0.313	1
7	Brighton	Lower Thunder Road	22.3	16.8	0.442	1
8	Brighton	Main Street	29.7	22.4	0.283	1
9	Brighton	Backbone	38.8	29.9	0.176	2
10	Brighton	Cat Track	29.7	20.7	0.323	2
11	Brighton	Christy Bowl	36.7	26.0	0.286	2
12	Brighton	Easy Out	30.6	27.4	0.529	2
13	Brighton	Elk Park	38.2	27.6	0.365	2
14	Brighton	Golden Needle	30.5	20.9	0.341	2
15	Brighton	Hawkeye	26.2	19.9	0.367	2
16	Brighton	Lonestar	29.7	17.5	0.482	2
17	Brighton	Lower Majestic	35.3	20.1	0.244	2
18	Brighton	Majestic Access	19.9	22.1	0.520	2
19	Brighton	Milly Access	20.0	12.9	0.453	2
20	Brighton	Pacific Highway	20.0	25.8	0.362	2
21	Brighton	Aspen Glo	42.0	28.0	0.343	3
22	Brighton	Chute 2	61.8	27.5	0.343	3
23	Brighton	Desperado	50.3	27.2	0.381	3
24	Brighton	Devil's Dip	47.4	31.2	0.212	3
25	Brighton	Doyle's Dive	55.0	31.3	0.406	3
26	Brighton	Elk Park Ridge	48.8	24.1	0.415	3
27	Brighton	Endless Winter	65.8	37.7	0.399	4
28	Brighton	Clark's Roost	51.8	44.2	0.327	4

Table 4: Brighton Resort Trail Difficulty Variables

	A	B	C	D	E	F
1	Resort	Run Name	Max Slope	Mean Terrain Slope	Mean NVDI	Difficulty
2	Snowbird	Alice Avenue	44.9	26.2	0.401	1
3	Snowbird	Bass Highway	32.0	36.1	0.420	1
4	Snowbird	Chickadee	21.3	14.9	0.250	1
5	Snowbird	Chickadee Chutes	30.7	21.2	0.281	1
6	Snowbird	Creek Road	28.7	19.1	0.397	1
7	Snowbird	Easy Street	20.1	45.6	0.491	1
8	Snowbird	Lower Emma	33.2	20.7	0.221	1
9	Snowbird	Bananas	53.8	25.9	0.238	2
10	Snowbird	Bassanova	49.1	31.3	0.143	2
11	Snowbird	Bicarbonate Gully	49.3	27.4	0.397	2
12	Snowbird	Bird's Nest	39.5	25.3	0.143	2
13	Snowbird	Bluebell	45.0	27.0	0.511	2
14	Snowbird	Bryce's Run	43.0	23.2	0.321	2
15	Snowbird	Cat Crew Cutoff	51.2	28.5	0.322	2
16	Snowbird	Chip's Access	19.9	48.7	0.113	2
17	Snowbird	Chip's Bypass	35.3	27.9	0.349	2
18	Snowbird	Chip's Run / Phone 3 Rc	52.8	35.7	0.277	2
19	Snowbird	Claim Jumper	55.2	40.1	0.034	2
20	Snowbird	Cliff Access	26.4	21.9	0.286	2
21	Snowbird	49er Gully	46.1	36.9	0.149	3
22	Snowbird	Adager	70.6	42.8	0.472	3
23	Snowbird	Bass Benches	64.1	42.3	0.306	3
24	Snowbird	Black Forest	63.1	29.9	0.421	3
25	Snowbird	Blackjack Gully	89.7	35.1	0.470	3
26	Snowbird	Blackjack Traverse	79.8	51.2	0.450	3
27	Snowbird	Alimony Chutes	51.0	56.2	0.348	4
28	Snowbird	Altar Bowl	76.6	51.4	0.287	4

Table 5: Snowbird Trail Difficulty Variables

The trail ratings used by Bear Mountain were chosen as a standard by which to re-rate the other resort's trails. A linear relationship between the trail difficulty variables and the overall trail difficulty was assumed. The best fit between the trail difficulty variables and the trail difficulty assigned at Bear Mountain was calculated using the following model equation:

$$y_1 = a_0 + a_1x_1 + a_2x_2 + a_3x_3$$

where

- x_1 is the maximum slope
- x_2 is the mean terrain slope
- x_3 is the mean NVDI within a run's 20m buffer
- y_1 is the expected trail difficulty assigned by Bear Mountain
- a_0 through a_3 are the parameters determined that best fit the data

The results of the regression are:

- a_0 = -1.272
- a_1 = 0.022
- a_2 = 0.103
- a_3 = 2.182

	A	B	C	D
1	Resort	Run Name	Difficulty	Re-rating
2	Bear Mountain	Learning Curve	1	1.35
3	Bear Mountain	Easy Street	1	0.67
4	Bear Mountain	Inspiration	1	0.65
5	Bear Mountain	Amusement Park	1	1.20
6	Bear Mountain	The Gulch	1	1.22
7	Bear Mountain	Park Run (Lower)	1	1.36
8	Bear Mountain	Back Yard	1	1.57
9	Bear Mountain	Accelerator	2	2.26
10	Bear Mountain	Ripcord	2	2.01
11	Bear Mountain	Silver Connection	2	1.73
12	Bear Mountain	Park Run (Upper)	2	2.36
13	Bear Mountain	Expressway	2	2.08
14	Bear Mountain	Boneyard	2	2.11
15	Bear Mountain	Park Run (Face)	2	2.19
16	Bear Mountain	Outlaw's Alley	2	1.63
17	Bear Mountain	Street Scene	2	2.06
18	Bear Mountain	Pipeline	2	2.20
19	Bear Mountain	Hidden Valley	2	1.27
20	Bear Mountain	Central Park	2	2.16
21	Bear Mountain	Exhibition	3	2.92
22	Bear Mountain	Showtime	3	3.05
23	Bear Mountain	Rip's Run	3	3.08
24	Bear Mountain	Outlaw	3	2.83
25	Bear Mountain	Gambler	3	2.56
26	Bear Mountain	Grizzly	3	2.83
27	Bear Mountain	Geronimo	4	3.53
28	Bear Mountain	The Wedge	4	4.11

Table 6: Re-rating of trails at Bear Mountain

Only two trails change rating under our model. Additionally, anecdotal evidence indicates that both of these changes would be reasonable in the real world. This validates our model, so we can proceed to re-rate trails at other resorts.

	A	B	C	D
1	Resort	Run Name	Difficulty	Re-rating
2	Mammoth	Apple Pie	1	0.26
3	Mammoth	Back For More (Lower)	1	1.35
4	Mammoth	Big Bird	1	1.45
5	Mammoth	Easy Rider	1	1.16
6	Mammoth	Ginger Bread	1	0.78
7	Mammoth	Hansel	1	1.22
8	Mammoth	Holiday	1	0.56
9	Mammoth	Antin Alley / Chickade	2	1.07
10	Mammoth	Bridges	2	1.31
11	Mammoth	Bristlecone	2	1.62
12	Mammoth	Broadway	2	2.56
13	Mammoth	Christmas Tree	2	1.45
14	Mammoth	Cloverleaf	2	0.96
15	Mammoth	Comeback Trail	2	2.20
16	Mammoth	Comin' Thru	2	0.68
17	Mammoth	Critters	2	2.19
18	Mammoth	Downhill (Lower)	2	0.97
19	Mammoth	Europa Cup	2	1.59
20	Mammoth	Exhibition	2	1.90
21	Mammoth	Agee's Run	3	3.02
22	Mammoth	Blue Ox	3	3.36
23	Mammoth	Andy's Double Gold	3	3.59
24	Mammoth	Baby Dave's Glades	3	5.18
25	Mammoth	Bluejay	3	2.17
26	Mammoth	Breakover	3	3.43
27	Mammoth	Avalanche Chutes	4	7.57
28	Mammoth	Climax	4	4.32

Table 7: Re-rating of trails at Mammoth Mountain

	A	B	C	D
1	Resort	Run Name	Difficulty	Re-rating
2	Brighton	Backdoor	1	3.22
3	Brighton	Canyon	1	1.68
4	Brighton	Lost Maid	1	2.00
5	Brighton	Lower Mary	1	2.09
6	Brighton	Mary Back	1	1.43
7	Brighton	Lower Thunder Road	1	1.90
8	Brighton	Main Street	1	2.29
9	Brighton	Backbone	2	3.02
10	Brighton	Cat Track	2	2.20
11	Brighton	Christy Bowl	2	2.82
12	Brighton	Easy Out	2	3.36
13	Brighton	Elk Park	2	3.18
14	Brighton	Golden Needle	2	2.28
15	Brighton	Hawkeye	2	2.14
16	Brighton	Lonestar	2	2.22
17	Brighton	Lower Majestic	2	2.09
18	Brighton	Majestic Access	2	2.57
19	Brighton	Milly Access	2	1.48
20	Brighton	Pacific Highway	2	2.60
21	Brighton	Aspen Glo	3	3.26
22	Brighton	Chute 2	3	3.63
23	Brighton	Desperado	3	3.45
24	Brighton	Devil's Dip	3	3.43
25	Brighton	Doyle's Dive	3	4.02
26	Brighton	Elk Park Ridge	3	3.17
27	Brighton	Endless Winter	4	4.89
28	Brighton	Clark's Roost	4	5.10

Table 8: Re-rating of trails at Brighton Resort

	A	B	C	D
1	Resort	Run Name	Difficulty	Re-rating
2	Snowbird	Alice Avenue	1	3.27
3	Snowbird	Bass Highway	1	4.05
4	Snowbird	Chickadee	1	1.26
5	Snowbird	Chickadee Chutes	1	2.19
6	Snowbird	Creek Road	1	2.18
7	Snowbird	Easy Street	1	4.92
8	Snowbird	Lower Emma	1	2.06
9	Snowbird	Bananas	2	3.08
10	Snowbird	Bassanova	2	3.32
11	Snowbird	Bicarbonate Gully	2	3.48
12	Snowbird	Bird's Nest	2	2.49
13	Snowbird	Bluebell	2	3.59
14	Snowbird	Bryce's Run	2	2.74
15	Snowbird	Cat Crew Cutoff	2	3.47
16	Snowbird	Chip's Access	2	4.41
17	Snowbird	Chip's Bypass	2	3.12
18	Snowbird	Chip's Run / Phone 3 F	2	4.14
19	Snowbird	Claim Jumper	2	4.12
20	Snowbird	Cliff Access	2	2.17
21	Snowbird	49er Gully	3	3.85
22	Snowbird	Adager	3	5.69
23	Snowbird	Bass Benches	3	5.12
24	Snowbird	Black Forest	3	4.09
25	Snowbird	Blackjack Gully	3	5.30
26	Snowbird	Blackjack Traverse	3	6.69
27	Snowbird	Alimony Chutes	4	6.36
28	Snowbird	Altar Bowl	4	6.29

Table 9: Re-rating of trails at Snowbird

By tabulating the average ratings by difficulty at each resort, we can complete the analysis and produce an answer to the original question.

	A	B	C	D	E	F
1		Bear Mountain	Mammoth	Brighton	Snowbird	Range
2	Green Runs	1.15	0.97	2.09	2.85	1.88
3	Blue Runs	2.00	1.54	2.50	3.34	1.80
4	Black Runs	2.88	3.46	3.49	5.12	2.24
5	Double Black Ru	3.82	5.94	5.00	6.33	2.50
6	Average					2.11

Table 10: Range of run difficulty for a given rating

So if a given ski trail is re-rated at a different resort, the difficulty can shift by about two ratings.

Conclusion/Discussion

The specific determined difficulty range (2.11 levels) is tightly tied to the analysis techniques used by the project. The specific indicator variables used to determine trail difficulty are subjective. This analysis makes no consideration of weather conditions, because those are so difficult to analyze, even though they are a vital part of ski trail difficulty. It also doesn't account for the complicating factor that different resorts might use different indicator variables in their own rating systems. Further, the assumption that indicator variables are linearly related to trail difficulty is dubious. Given the small dataset we have to work with, the linear model is effective because it prevents statistical overfitting, but with more data (more resorts, more trails within each resort), a better model could be used. The time limitations of this project limit the amount of data that can be digitized and analyzed.

The use of NVDI to estimate trail width is not necessarily accurate. The specific types of soils and vegetation in different regions might produce different NVDI values. A more complex analysis could account for regional plant diversity and geologic background to improve trail width estimates. However, the ability of a resort to create sufficient artificial snow cover and keep that cover in good condition can be the determining factor in usable trail width. Currently, none of the data in this project can accurately estimate this facet of trail width.

Overall, this project serves as an effective proof of concept for a unified rating system. Each individual resort ends up with average ratings that match their initial ratings internally. Bear Mountain's ratings, which were used as the standard for assigning other ratings, experienced insignificant, reasonable changes. The rating variance between resorts at each level makes sense in the context of how the resorts advertise themselves. Regardless of the exact degree to which difficulty ratings are inconsistent between ski resorts, the conclusion for skiers is the same: don't trust an unfamiliar resort's difficulty ratings to be at all similar to those at a familiar resort.