

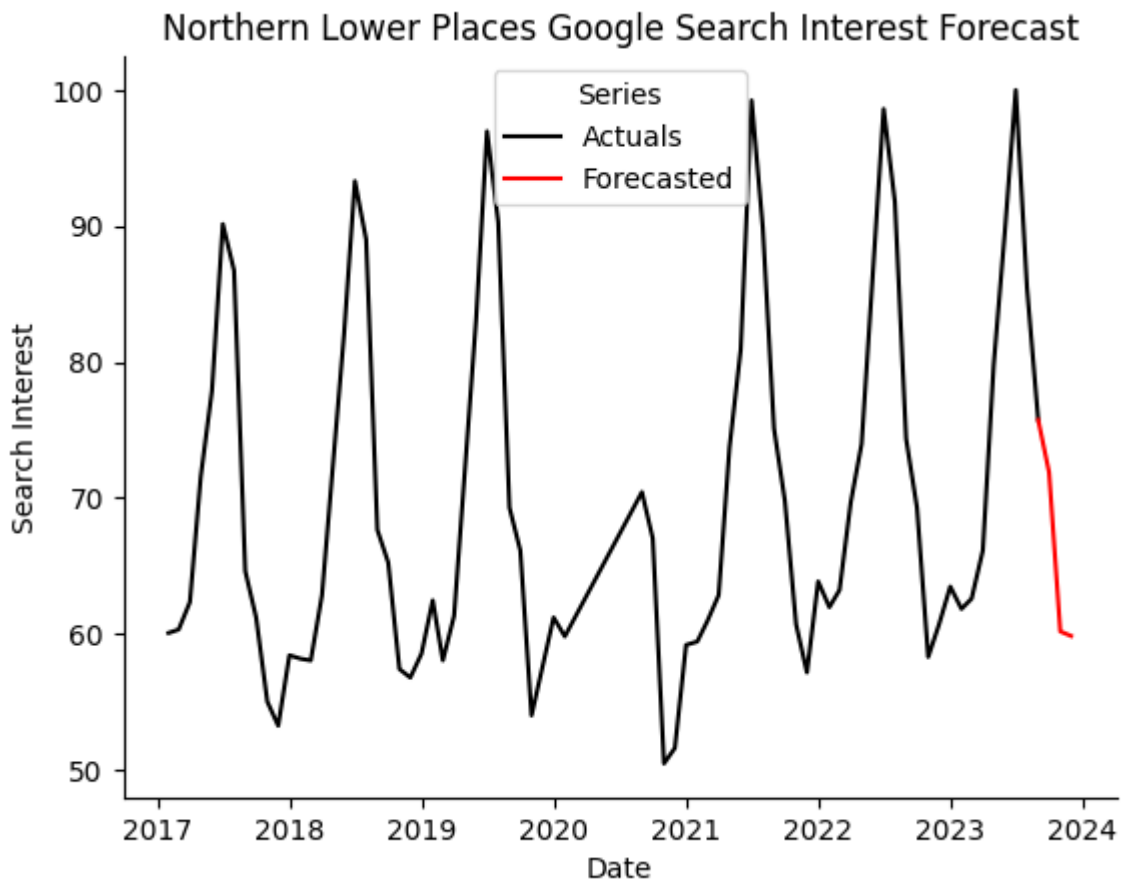
# October-December 2023 Northern Michigan Search Interest Forecast

Author: Dan Shaffer

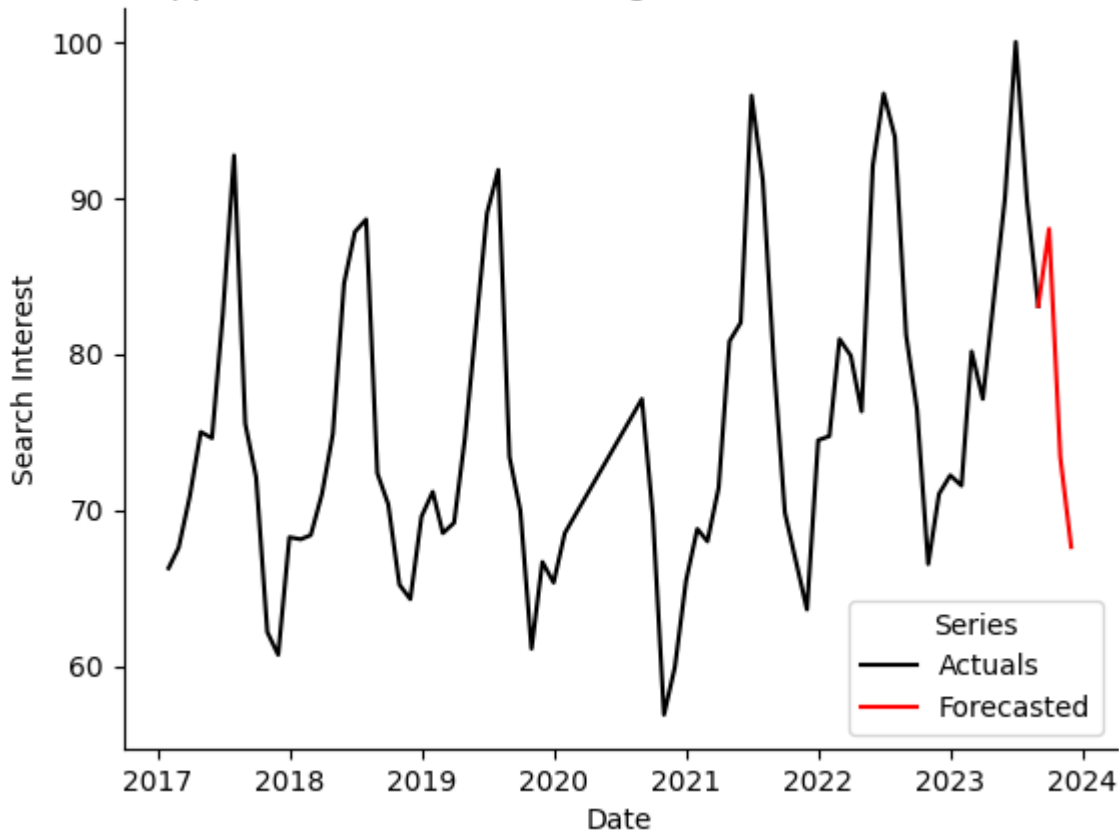
Below are the search interest forecasts for the combined Northern Lower and combined Upper Pensinsula places for October, November, and December 2023. Note that the possible range for historical search interest is normalized to a maximum of 100, but forecasts outside this range are permissible as these values are forecasted to be outside the historical range.

Also provided are barcharts comparing the average search interest for the forecast months (October, November, December) to the same months in previous years.

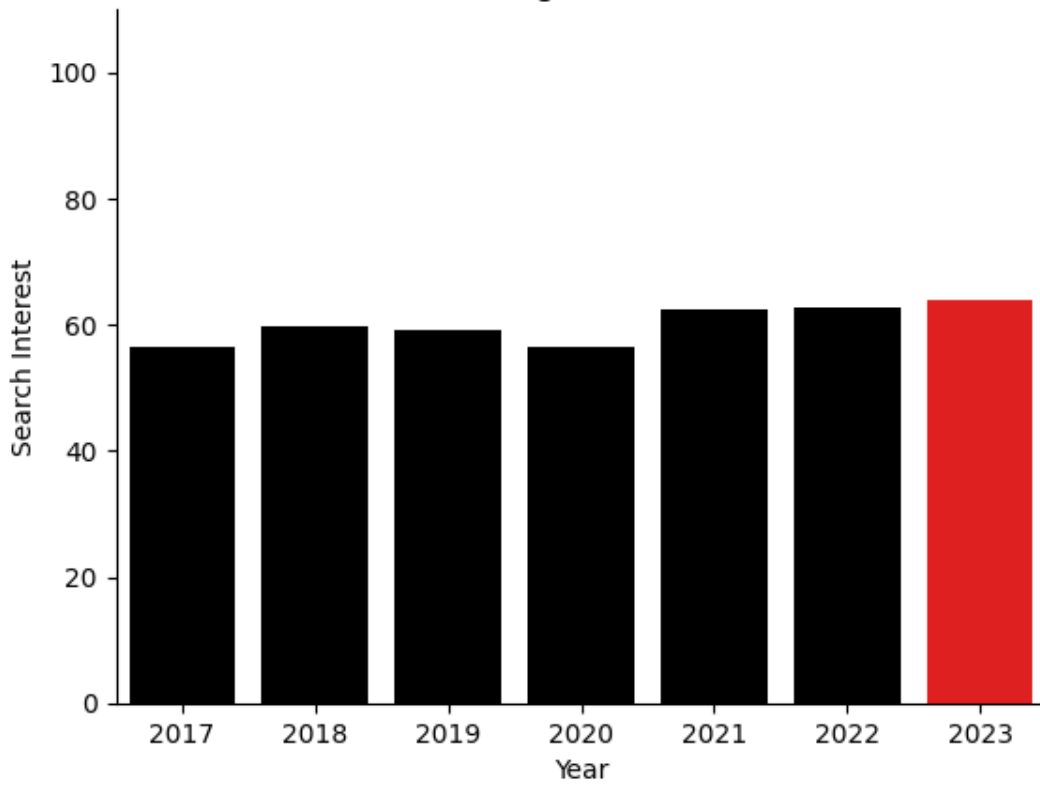
The forecast for the Upper Pensinsula is higher relative to past years than for the Lower Peninsula.



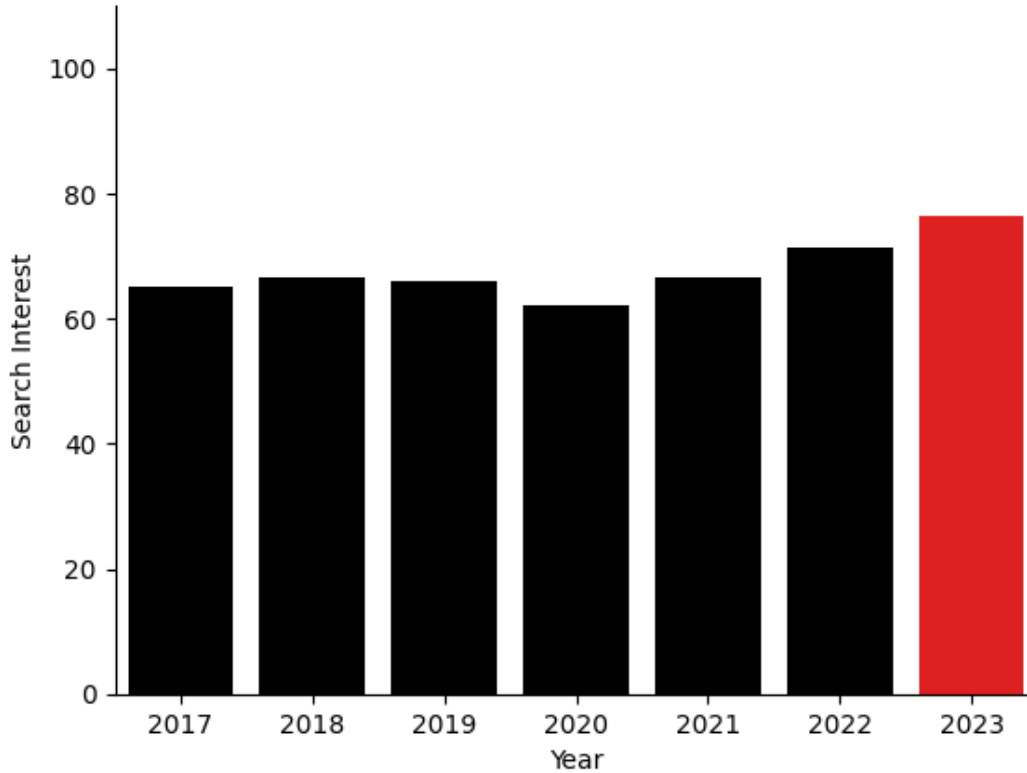
Upper Pensinsula Places Google Search Interest Forecast



Northern Lower Search Interest Averaged for October, November, and December



## Upper Peninsula Search Interest Averaged for October, November, and December



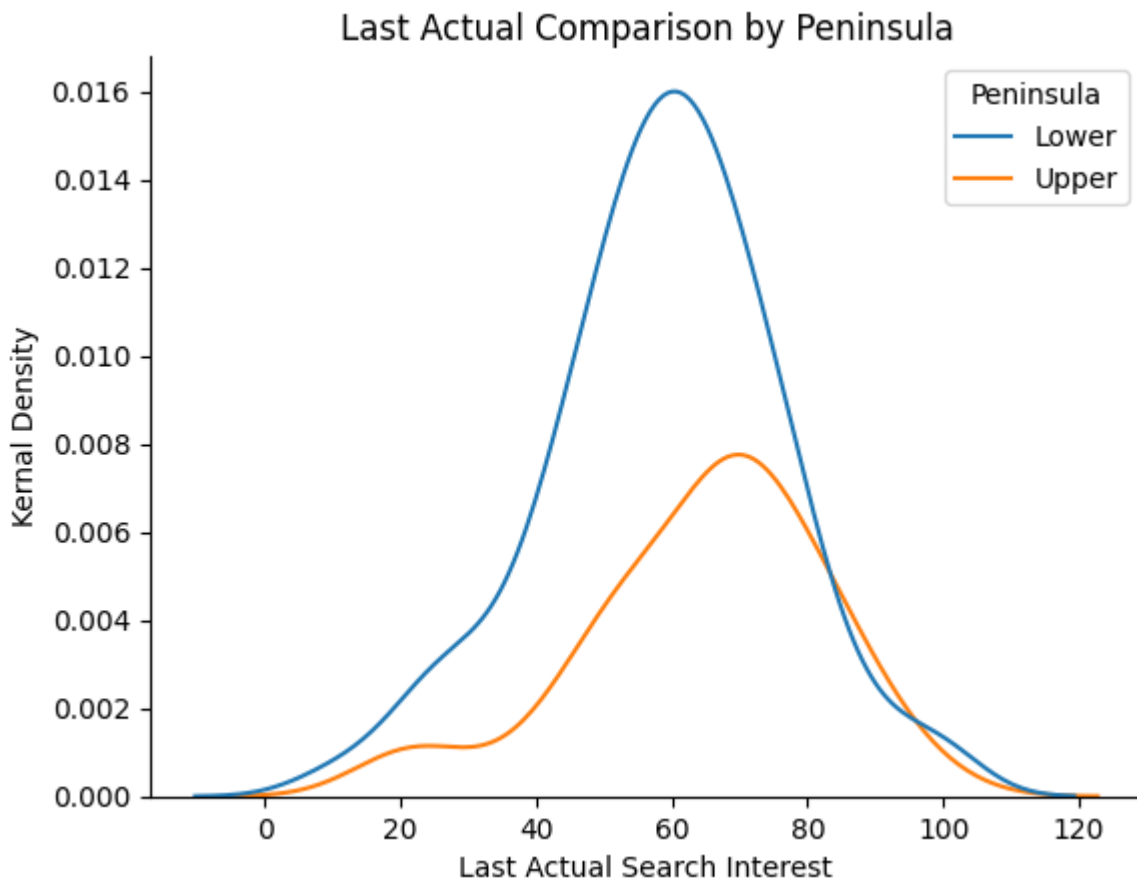
The following table shows the top five places that are forecasted to have the highest search interest compared to the same time period in 2022. While the Upper Pensinsula forecast is more favorable than the Lower Pensinsula in aggregate, four of the five towns listed are from the Lower Peninsula. Three of these are relatively small towns in the Northwest Lower Peninsula.

	Place	Peninsula	Difference
0	Ironton	Lower	56.4
1	Copper City	Upper	46.5
2	Posen	Lower	44.5
3	Alba	Lower	42.8
4	Empire	Lower	33.8

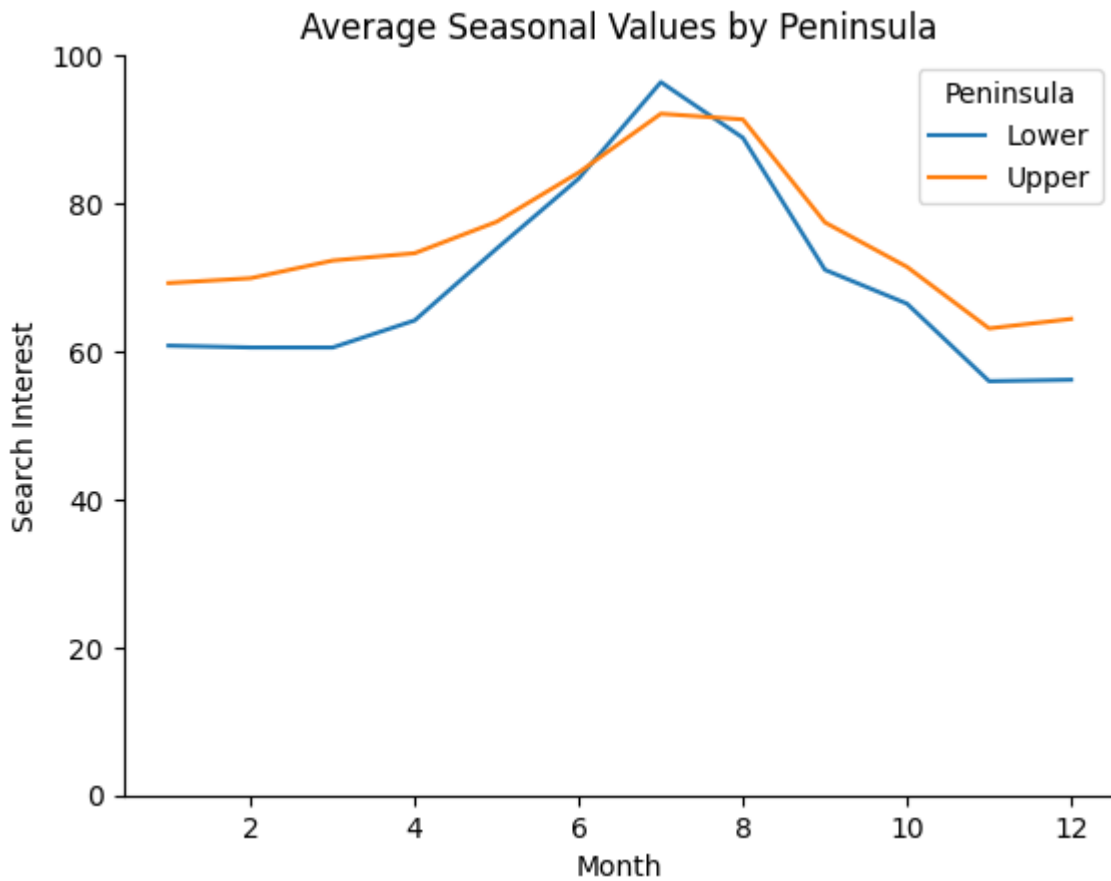
Three things impact the value of the search interest forecasts for each place.

1. The last available monthly value: since models are differenced, it matters how high the last month's value is
2. Seasonality: if search interest is typically high during a month, it will be forecasted to be high again
3. Model difference: based on forecasted atypical weather and gas price changes, the model will predict the deviation from historical and seasonal values.

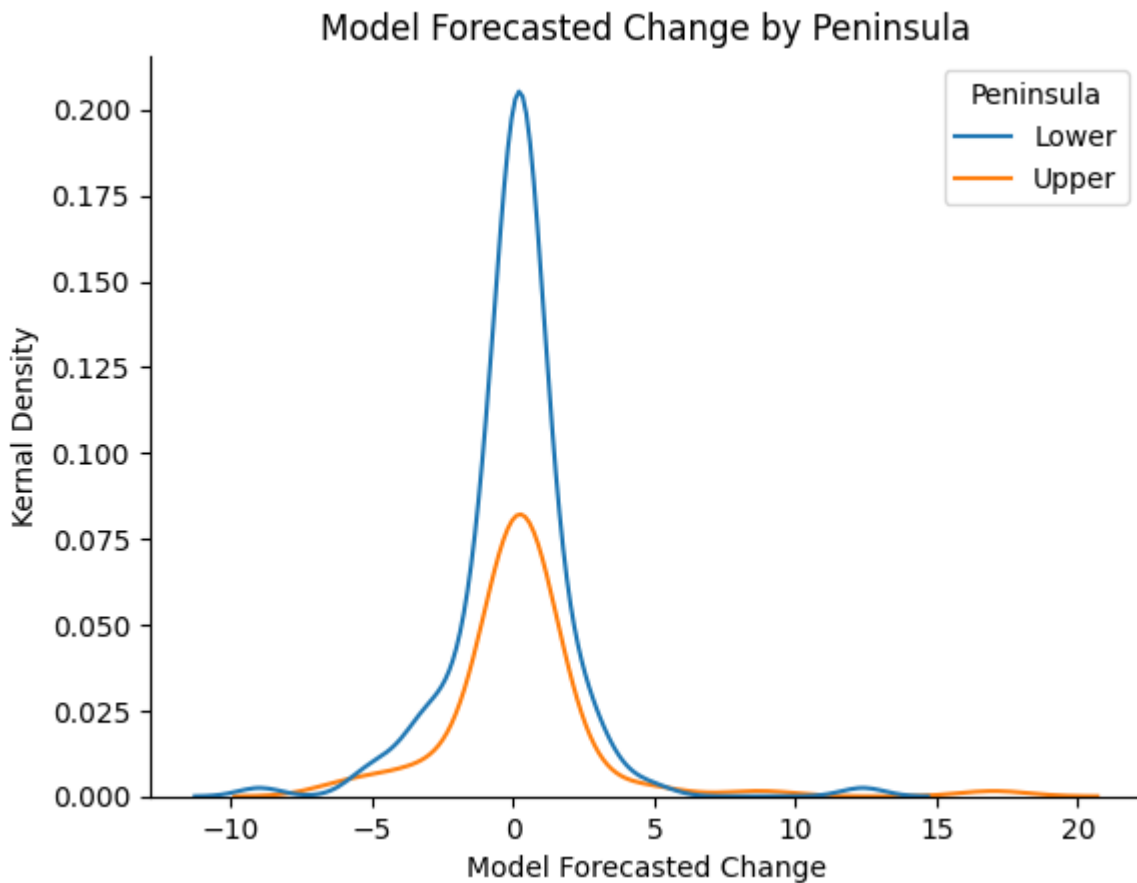
The following shows last actual values for September 2023 for search interest in the Lower and Upper Peninsula. The distribution of last actuals is higher for the Upper than the Lower Pensinsula. Note that due to kernal smoothing the plot shows values outside of 0-100 which are the possible values.



The following figure shows the aggregate average search interest for each month. Both the Upper and Lower Peninsulas have a seasonal peak in July/August with the Lower Peninsula peak solidly in July. The Upper Peninsula values have higher values for January-March likely due to winter snow sports like snowmobiling. For the October-December forecast period, we should expect some of the lowest search interest values.



Finally, forecasts are determined by the forecasted change based on weather and gasoline prices. For both peninsulas, the most likely forecasted change is near zero, however there are larger positive change values than negative ones, especially for the Upper Peninsula.



## October Forecast Edition: Lower Pensinsula Places with High October/November Search Interest

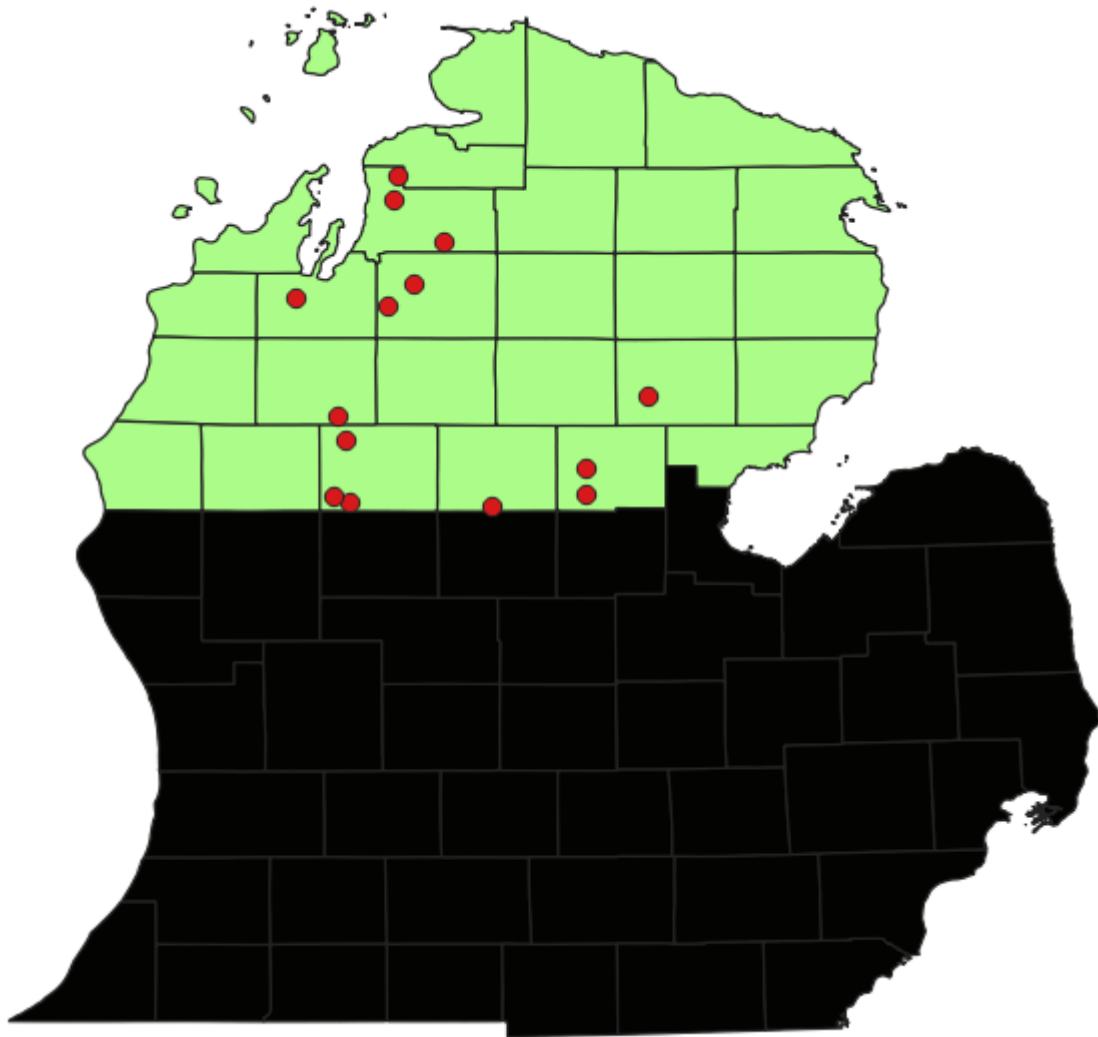
The most striking feature of search interest is the seasonality which favors the summer months. This is especially the case for the Lower Pensinsula. Anecdotally, many Lower Peninsula locations receive a lot of visitors in October/November due to interest in fall tree colors and hunting. It's likely that much of this interest doesn't show up in search interest for cities and towns. Instead, many of these tourists are possibly consistent yearly visitors who do not websearch their plans. Further, they are potentially more likely to websearch natural areas than towns and cities.

Nonetheless, I have identified 14 Lower Peninsula towns and cities that show relatively high search interest for October and November. These are relatively small towns located in the southern or northwest counties of the region. Since these places have low relative search interest overall, they are only lightly represented in the aggregate Northern Lower Peninsula trend.

My conjecture is that interest in the southern counties is driven mostly by hunting. Note that the counties below Northern Michigan generally have few public lands and those they have are highly congested. These counties in the south of Northern Michigan have public lands while also being relatively close travel times to the lower portion of the state. Furthermore, these areas likely have less comparative interest for summer vacations making October/November search interest higher by comparison.

It's likely that places in the northwest of the state are also more popular for fall tree color tourism. The fact that small towns appear to be those represented might be because this interest relatively impacts towns closer to natural areas as opposed to typical resort areas.

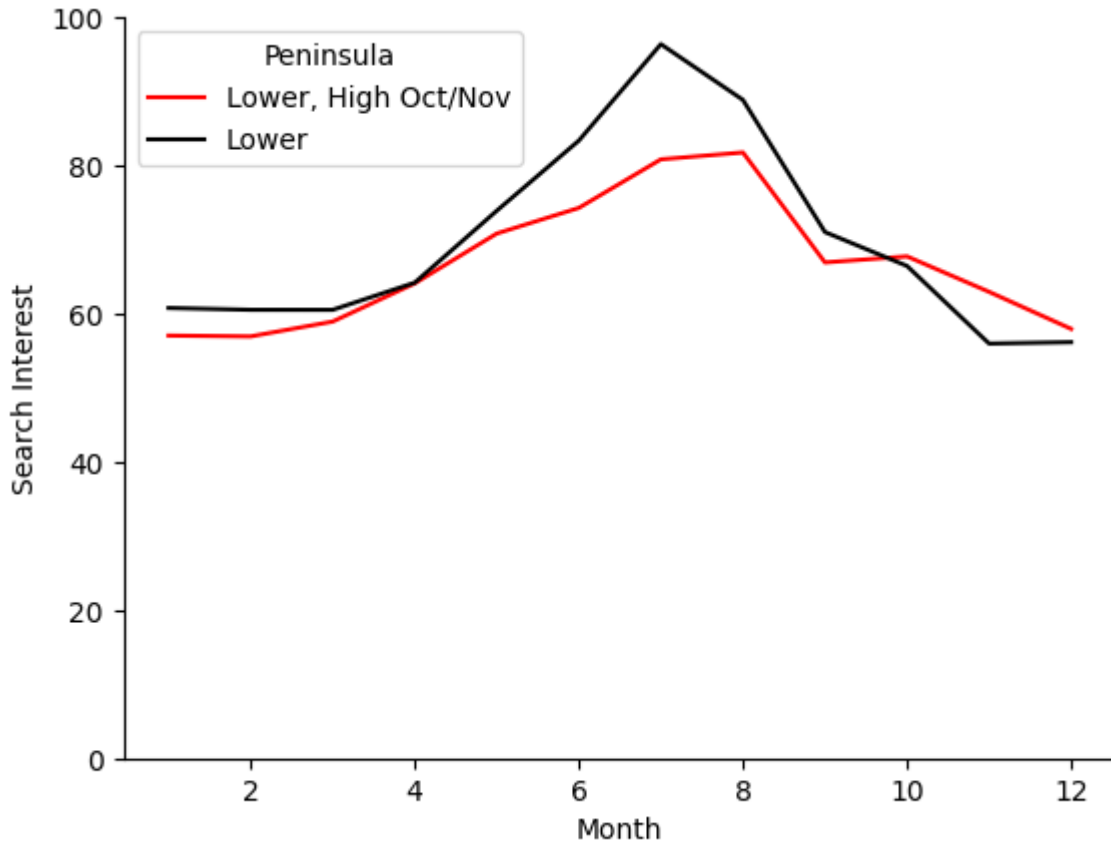
Below is a map showing where these places are located and a table listing the place names chosen as high October/November search interest places.



**High Fall Interest**

0	Reed City
1	Hersey
2	Beaverton
3	Central Lake
4	Wedgewood
5	Mancelona
6	Gladwin
7	Chums Corner
8	Ellsworth
9	Farwell
10	South Boardman
11	Kalkaska
12	Tustin
13	West Branch

The figure below demonstrates the degree that seasonality for 14 places with high October/November search interest (in red) differs from the overall Northern Lower Peninsula trend (in black). Note that the summer peak seasonality is much less pronounced for these 14 places than the aggregate Northern Lower Peninsula. Further, there is relatively less drop in search interest for October and November. Finally, for the 14 places search interest is higher in October/November compared to January-March relative to the aggregate values.



Finally, the chart below shows the average search interest forecast for these 14 places compared for October/November this year to previous years. While the forecast is lower than the previous two years for these places, it is generally higher than 2020 and before.



High Autumn Search Interest Place (14 Places) Averaged for October and November

