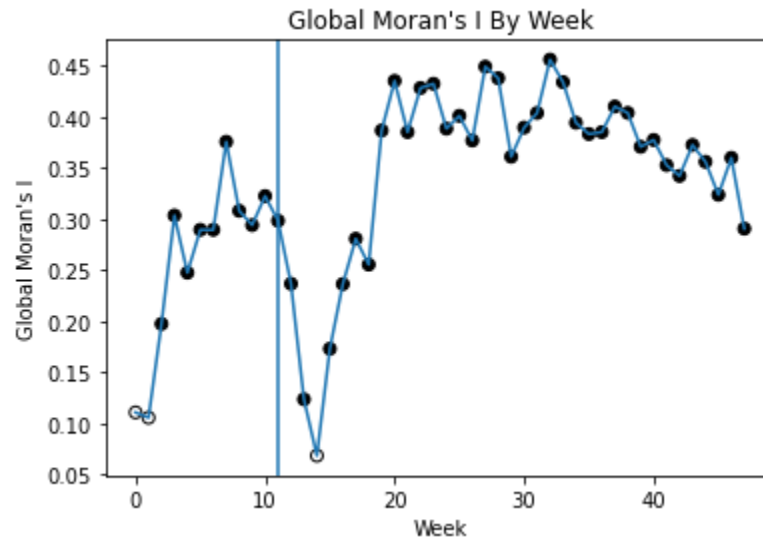
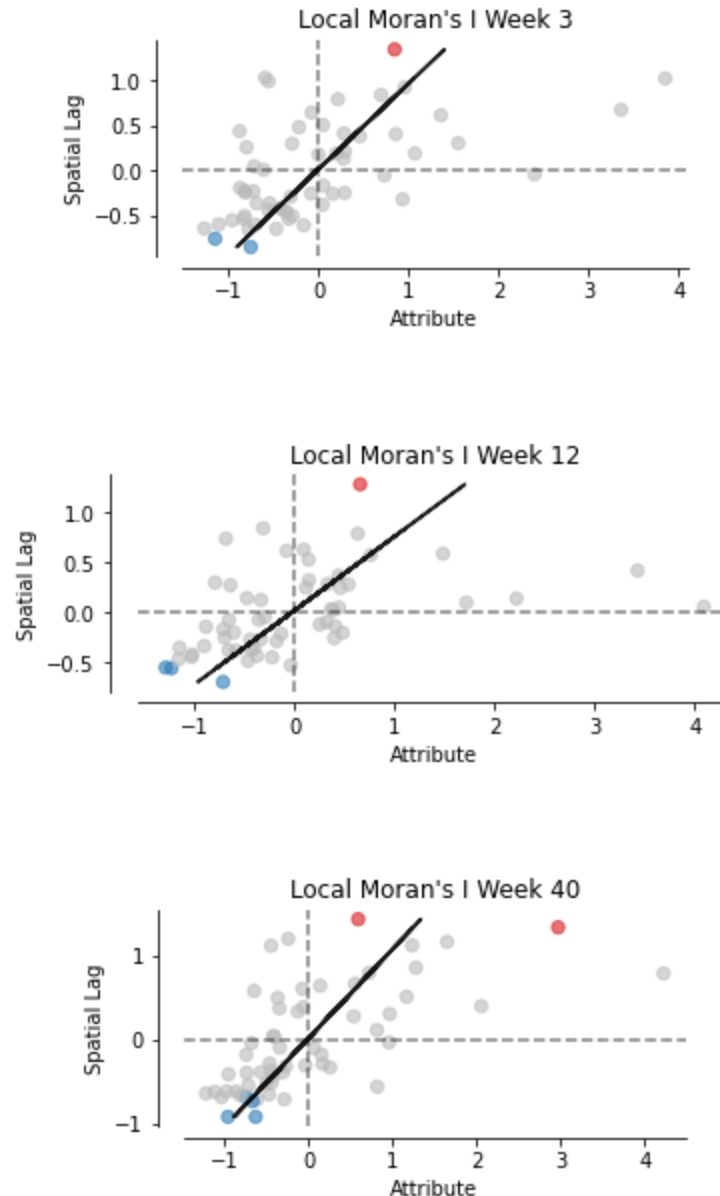


Global Moran's I Analysis



The graph for Global Moran's I for the weighted average shows a general increase in the value of Moran's I following the declaration of COVID-19 as a pandemic in week 11. The closer the value of Moran's I is to 1, the more that neighboring counties exhibit similar behavior. Thus, a higher Moran's I in this case suggests that there is a stronger relationship between neighboring counties in the weighted average distance travelled per week. The dip following the declaration of COVID-19 as a pandemic could suggest a disruption in the typical patterns of movement, as residents in neighboring counties may have collectively adopted different stances at the beginning of the pandemic or may have been affected differently by COVID. But as time passed, county mandates may have become more similar resulting in more uniform behavior for both high and low movement, and thus a general increase in the value of Moran's I over time.



The scatterplot for week 3 likely reflects pre-pandemic patterns of movement for California. In week 3, data points are more spread out, with some hotspots and some coldspots still appearing. This suggests that certain locations were hotspots and coldspots for movement even prior to the pandemic, possibly caused by varying commute distances. For example, many people commute from their homes to work in large cities such as Los Angeles or San Francisco. Those who live closer have shorter commute distances and vice versa. The increased scattering could be attributed to the fact that people are still very free to move as they wish, and are not being affected by travel restrictions and such.

The scatterplot for week 12 has more coldspot cores: 3 instead of 2, and fewer hotspot cores: 1 instead of 2. Additionally, more data points are in the bottom left quadrant, the Low-Low quadrant, which is for counties with low movement values surrounded by other counties with

low movement values. This, combined with the increased number of coldspots, suggests the presence of clusters of decreased movement when compared to week 3. Neighboring counties may have similar COVID-19 prevention protocols, resulting in similar values between neighbors, resulting in both hot and cold spots. Cold spots could be the result of stringent COVID policy causing less travel adding onto existing movement patterns. For example, many people who commute to San Francisco are tech workers and have the ability to work from home.

Alternatively, many of these people might make enough money to receive a pay cut/stop working in order to decrease travel. Additionally, many of those who still have to commute SF would have already had low commute distances due to living close. On the other hand, those living in other areas may have no choice but to continue commuting despite COVID, due to being essential workers or needing the money the job provides.

The scatterplot for week 40 is similar to week 12's but with an even greater amount of points in the low-low quadrant. This can be attributed to COVID policy tightening all across the state due to the increased severity of the pandemic when compared to week 12. Similar explanations to week 12's apply here for hot and coldspots, though week 40 has 4 coldspots and 2 hotspots.