Correlation:

Sliding window correlation

Before estimating the time-varying correlation, we checked the dynamic conditional correlation versus constant correlation using two diagnostics: the E-S and the LM tests. These tests use Chi-square fit values and check if dynamic conditional correlation should be used rather than constant correlation. Table [3](https://www.nature.com/articles/s41598-021-93836-y#Tab3) shows that the constant correlation hypothesis should be rejected for all of the series at p < 0.01. We suggest using a time-varying correlation to monitor the co-movement of symptom search and new cases emergence.