PHC 7000

Time Series

Joe Brew (joebrew@gmail.com)

Students will each be assigned one topic related to epidemiologic methods. For that topic, the student should identify at least one reference that is a general description of the method, and one reference that is an example of the method being applied in the literature. Students should prepare homework questions related to the topic, and will provide comment on the submitted homeworks from each student. Preparing for this presentation often takes several weeks of planning, and the instructors are available to assist with these presentations.

Methodological reading:
https://github.com/joebrew/uf/blob/master/phc7000/time_series/Commentary___Time_Series_Analyses_of_Count_Data_to.12.pdf?raw=true

Article reading:
https://github.com/joebrew/uf/blob/master/phc7000/time_series/nihms417093.pdf?raw=true

Reading questions:

1. Explain the “best-known of time-series models.”
2. What model is well-suited to low incidence epidemiological count data? Justify.
3. Thompson suggests in his conclusion that epidemiologists should invest resources into “cross-validation” techniques. Explain what these are, give examples related to your own work, and defend or criticize Thompson’s assertion.
4. What is auto-correlation? Why does it matter?
5. Sum up Goldstein’s conclusion. Are traditional linear models appropriate?

In-class activity:
Instead of simply talking about time series methods, we’ll use them!
Task: Assess the effect of temperature and humidity on the incidence of influenza-like illness cases among Alachua residents, adjusting for overall emergency room utilization.

- Steps: scrape weather data for the last 4 years (code HERE)
- Get (sanitized) case counts for influenza like illness for the last 4 years (data HERE)
- Get (sanitized) case counts for ALL emergency room visits for the last 4 years (data HERE)
- Model the effect of weather on ILI (and make some decisions regarding *how* based on the readings)