School of Public Health Mengcen Qian

PHPM1100062 Spring 2017

Problem Set 4

Due on 04/20 (Week 8)

1. Consider the following annual model of the death rate (per million population) due to coronary heart disease in the United States (Yt):

|  |  |
| --- | --- |
| Y=annual death rate | (1) |
|  |  |
| Per capita cigarette consumption (pounds of tobacco) in year t (Ct) | 10.0\*\*\* |
|  | (2.5) |
| Per capita consumption of edible saturated fats (pounds of butter, margarine, and lard) in year t (Et) | 4.0\*\*\* |
|  | (1.0) |
| Per capita consumption of meat (pounds) in year t (Mt) | -1.0\* |
|  | (0.5) |
|  |  |
| Sample size | 31 |
| Adjusted R-square | 0.678 |

Notes: \*\*\*significant at 1% level; \*significant at 10% level.

The most likely cause of a coefficient that is significant in the unexpected direction is omitted variable bias. Which of the following variables could possibly be an omitted variable that is causing *βM’s* unexpected sign? Explain (*Hint:* be sure to analyze expected bias in your explanation)

Bt: per capita consumption of hard liquor (gallons) in year t

Ft: the average fat content (percentage) of the meat that was consumed in year t

Rt: per capita number of miles run in year t

Ht: per capita open-heart surgeries in year t

Ot: per capita amount of oat bran eaten in year t.