

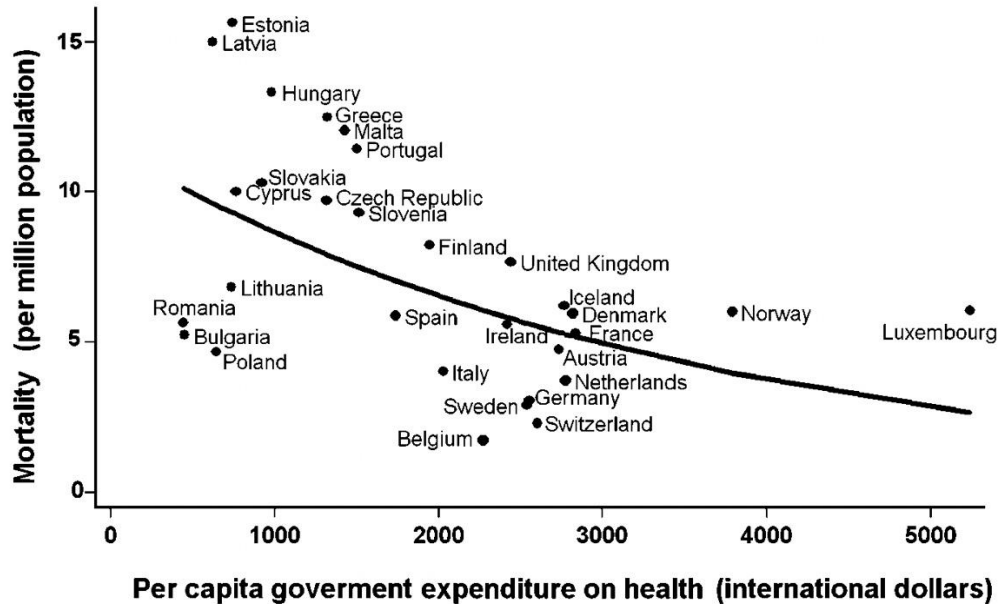
**E2040 Practical session  
Week 11**

1. You are conducting a study on the association between job status (managerial positions, non-manual jobs, manual jobs) and lung cancer. Suggest what variables might act as confounders in this relationship.
  
2. Table 1 shows the results (mortality per 1,000 people) from a hypothetical study on mortality and air pollution in a large urban agglomeration. The data are stratified by the material deprivation index.
  - a) At first glance, what can you infer from this table?
  - b) Calculate the relative risks of mortality and the risk differences in mortality for different levels of pollution (separately for each deprivation stratum).
  - c) How would you interpret these results?

	<b>Low deprivation</b>	<b>High deprivation</b>	<b>Low deprivation (RR)</b>	<b>High deprivation (RR)</b>	<b>Low deprivation (RD)</b>	<b>High deprivation (RD)</b>
Low pollution	5.6	9.3				
Medium pollution	6.8	11.2				
High pollution	9.1	17.5				

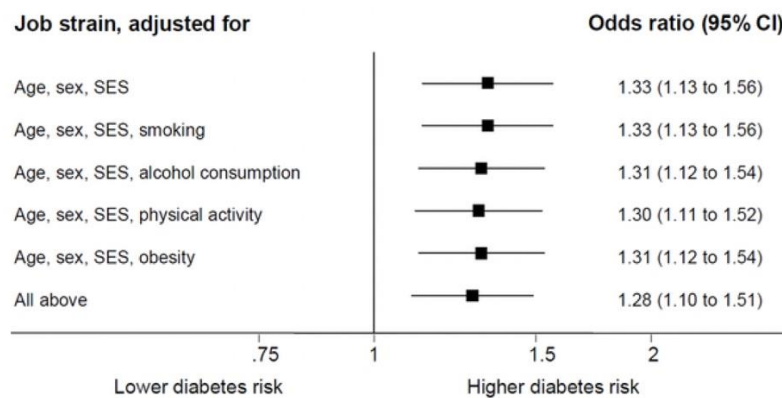
3. The figure below shows the mortality due to influenza during the 2009 pandemic, plotted against healthcare expenditure in 30 European countries. From these data the authors have concluded that healthcare spending had a major effect on influenza mortality.

Relation between per capita government expenditure on health and pandemic A (H1N1) 2009 mortality in 30 European countries.



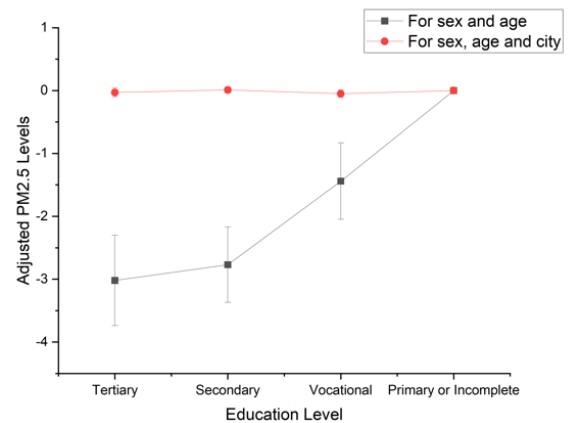
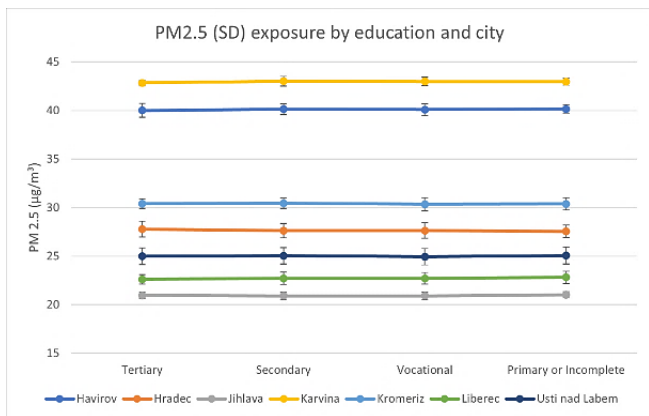
- What study type is this?
- This type of study suffers from what type of problem?
- What factors could have acted as confounders in this relationship?

4. Below are the findings from a study examining the effect of work stress (measured using an instrument focused on “job strain”) on the risk of diabetes in middle-aged individuals.



- What is the role of age, sex, SES, alcohol consumption and obesity in the association between occupational stress and diabetes?
- Were any of these factors acting as confounders in this study?

5. A researcher is interested in understanding the effects of education and air pollution (Particulate Matter <2.5 microns in diameter) on lung function, measured as FEV1 – forced expiratory volume. The study is conducted in several Czech cities: Havirov, Hradec, Jihlava, Karvina, Kromeriz, Liberec and Usti nad Labem. The mean annual PM2.5 levels in each city are shown in the first panel and the association between education and PM2.5 is shown in the second panel. The regression coefficients are adjusted for sex and age (blue squares) and also for sex, age, and city (red circles).



- Do sex, age and city act as confounders in this study?
- Use a “triangle” diagram to show how sex, age, and city fit in the relationship between education and air pollution. Can you determine based on the study panels above and the confounder criteria whether these three variables meet the criteria for a confounder.