

## OP76 HOUSEHOLDS AND HEALTH: HOW SMALL CLUSTERS CAN INFLUENCE RESULTS

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**Background** There have been studies suggesting that various measures of health, health behaviours or health seeking cluster within households. Previous research on the impact of omitting small clusters from analyses have suggested little impact on parameter estimates or standard errors but have typically assumed small intraclass correlations – not usually the case for the household. Since there are typically few individuals per household, and many households contain just one person, several studies have excluded household from the analysis. We examine what difference it makes in practice when the level of household is excluded for a variety of outcomes.

**Methods** 7901 adults from 5063 households in 356 small areas were interviewed in the 2003 Scottish Health Survey; in 2512 (49.6%) of households just one adult participated. We analysed systolic blood pressure (SBP), BMI, current smoking status, eating 5+ portions of fruit and vegetables per day, eating oily fish at least once per week, and having seen a GP within the past 2 weeks. All results were adjusted for age and sex; in addition, we examined the effects of education, social class and area deprivation. Interactions were fitted between sex and all terms in the fixed and random parts of the model. Multiple imputation was used to account for item non-response. Multilevel linear and logistic regression models including and excluding household were fitted by Markov chain Monte Carlo and the results compared, with population average estimates obtained for logistic regression models.

**Results** The extent of clustering varied by outcome and gender; the proportion of the total unexplained variance at the household level ranged from 8.6% (95% Credible interval 0.3–24.5) for systolic blood pressure for women to 87.5% (83.7–90.7) for eating oily fish for women. Bias was evident in both the fixed parameter estimates and their standard errors. The bias in the fixed parameters tended to be higher for outcomes for which the household variance was higher.

**Conclusion** For all outcomes the inclusion of household provided an improvement in model fit. Excluding the level of household led to biases not just in the standard errors but also in the parameter estimates themselves. This has implications not only regarding the need to account for clustering within households but also regarding the use of “sandwich estimators” that adjust the standard error but not the regression coefficient.

## Public Health Policy Analysis

### OP77 TYPE A BEHAVIOUR PATTERN AND CORONARY HEART DISEASE: PHILIP MORRIS' "CROWN JEWEL"

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**Background** The Type A Behaviour Pattern (TABP) – characterised as individuals who are highly competitive, time-conscious and aggressive – has been the subject of research for over fifty years. The concept was developed in the 1950s by U.S. cardiologists Meyer Friedman and Ray Rosenman who argued that TABP was a risk factor for coronary heart disease (CHD), notably among white middle-class males. The theory was initially supported by findings from the Western Collaborative Group study (WCGS) and the Framingham study. However, subsequent studies found no consistent evidence that TABP predicts CHD onset or outcome. This pattern of early positive findings followed by negative findings (a “decline effect”) has long been a puzzle for TABP researchers. Despite this, the

concept of Type A behaviour has continued to enjoy public appeal, fostered through popular books by Friedman and Rosenman which describe “how to recognise the deadly Type A pattern in your own personality”. TABP has also remained the subject of contemporary public health research, and it features in discussions on the psychosocial causes of health inequalities. We analysed tobacco industry documents to show that Philip Morris and RJ Reynolds were major funders of TABP research, with selected positive findings used to counter concerns regarding tobacco and health.

**Methods** The Legacy Tobacco Documents Library (<http://legacy.library.ucsf.edu>) was systematically searched from 1959 to 2011 to identify relevant documents. The names of key individuals were identified through retrieved documents using a snowballing technique.

**Results** Our document analysis suggests that, in the case of TABP, the decline effects described above may be explained by the influence of tobacco industry funding. Phillip Morris channeled significant funds for TABP research through Duke and Yale Universities, including part-funding the Framingham study. It also funded a 10-year clinical trial of the effectiveness of counselling to reduce TABP, which it referred to as its “Crown Jewel”, and funded Meyer Friedman’s Institute to a total of almost US\$11million. A history of the relationship between TABP research and the Tobacco Industry will be presented.

**Conclusion** It has not previously been shown that research into TABP was strongly influenced by the Tobacco Industry. This analysis extends further our understanding of the extent to which the tobacco industry has shaped major themes in contemporary public health research. Our findings also help explain the inconsistencies in the findings of epidemiological studies into TABP and mortality.

### OP78 SCIENTISTS, COMPETING INTERESTS, AND THE MEDIA: A CONTENT ANALYSIS OF UK NEWSPAPER REPORTING IN H1N1 INFLUENZA

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**Background** Concerns were raised about the competing interests amongst scientists on advisory committees during the 2009/10 H1N1 influenza pandemic, particularly given the substantial public expenditure on antiviral drugs and vaccines. The media is known to strongly influence public demand for new drugs and policy decisions, and many scientists commented on the use of pharmaceutical products/emerging health risks during the 2009 H1N1 pandemic in the UK media. This study assessed competing interests for the scientists promoting or rejecting the use of antivirals and/or vaccines in newspaper articles during the early pandemic.

**Methods** We performed a retrospective content analysis of United Kingdom national newspaper articles on H1N1 influenza published during the period when the government decided its policy on antiviral/vaccine provision (20 April and 5 July 2009). Two reviewers coded 436 articles independently and identified those scientists promoting or rejecting the use of antivirals/vaccine according to a pre-specified protocol. Competing interests for these named scientists were then identified through a systematic search for potential or previously declared interests.

**Results** One in two scientists commenting on the use of antiviral/vaccines in H1N1 influenza had undisclosed competing interests. Potential competing interests were identified in 6 of the 9 scientists (66.7%) promoting vaccine use; 6 of the 10 scientists (60%) promoting antivirals; and 1 of 4 scientists (25%) rejecting antiviral use. The nature of these competing interests ranged from study funding to directorships of pharmaceutical companies. Only three articles made clear that the scientist concerned had a link with pharmaceutical companies.