

[The comment below was posted on journalreview.org on December 29, 2010. Following the closing of that site, the comment was reproduced here in September 2012.]

One cannot determine whether high BMI increases mortality more in different age groups based on relative differences in mortality

Evaluating the effects of high body mass index in terms of relative differences in mortality, Berrington de Gonzalez et al.[1] find such effects to be greater among the young than the old and among non-smokers than smokers. But the analysis overlooks the statistical pattern whereby, for reasons inherent in the shapes of normal risk distributions, the rarer an outcome, the greater tends to be the relative difference in experiencing it and the smaller tends to be the relative difference in avoiding it.[2-5] See also the Measuring Health Disparities page (MHD),[6] Scanlan's Rule page,[7] and Mortality and Survival page,[8] of jpscanlan.com.

As shown in Table A hereto,[9] the data in the article's Table 1 enable one to show that commencing with the 30.0 to 34.9 BMI group, where the size of the hazard ratio for high BMI groups compared with the baseline group consistently decreases with age, the relative difference in survival consistently increases with age. Table A also shows that, consistent with the discussion in the introductory material on the Scanlan's Rule page, the absolute differences between rates increase with age while the difference measured by the odds ratio decreases with age. The final column shows that according to the methodology discussed in reference 5 (see also the Subgroup Effects page of the Scanlan's Rule page [10]), the effect of increased BMI does appear to decline with age. But an appraisal of that pattern should be undertaken with consideration of the factors discussed on the Irreducible Minimums sub-page of MHD.[11]

Unfortunately the authors do not present the underlying data that would allow exploration of these patterns of the effects of elevated BMI among smokers and non-smokers.

References:

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5. Scanlan JP. Interpreting Differential Effects in Light of Fundamental Statistical Tendencies. Presentation at 2009 Joint Statistical Meetings of the American Statistical Association, International Biometric Society, Institute for Mathematical Statistics, and Canadian Statistical Society, Washington, DC, Aug. 1-6, 2009: http://www.jpscanlan.com/images/JSM_2009_ORAL.pdf
6. <http://jpscanlan.com/measuresofassociation.html>
7. <http://jpscanlan.com/scanlansrule.html>

8. <http://www.jpscanlan.com/scanlansrule/mortalityandsurvival.html>
9. <http://jpscanlan.com/images/Table A to Comment on Berrington de Gonzalez .pdf>
10. <http://www.jpscanlan.com/scanlansrule/subgroupeffects.html>
11. <http://www.jpscanlan.com/measuringhealthdisp/irreducibleminimums.html> –