The recent Interphone study left me a bit concerned about its lack of consideration for the social world. In his letter to the editor, Milham argues that there is some selection bias in the sample. I think that there is sufficient evidence to suggest that any selection bias may exist related to social inequality.

There are a variety of reasons to think that incidence of glioma is strongly related to social and economic factors. Socioeconomic status (SES) is known to impact the incidence, prevalence and mortality from disease. Furthermore, this gradient is particularly evident for diseases, like glioma, that are treatable. A good example of why SES might matter to glioma specifically is given by Tseng et al., who note that those in higher SES groups are more likely to have glioma, and survive longer with it.

A differential survival time based on SES is a particular problem for this study because of its relationship to cellphone uptake and use. Specifically, cellphone plans are more likely to be taken out by those who can afford them: minutes cost money, and those with more social resources are also more likely to be employed and to use their phones for work. The problem with this is that it introduces bias into the sample in a way that is not considered in the study, and that would bias them that is explicated in Morgan’s response paper. Specifically, we would expect that those who use their cellphones more and for longer periods of time would be protected from brain tumours and mortality, a result that is evident from the results presented: those using phones regularly (5–114.9 and 115–359.9 h) are significantly less likely to have meningioma [odds ratio (OR) 0.67–0.74] or to have glioma (OR 0.71–0.82). However, perhaps more frustrating for their results, those in the extreme use groups seem to have significantly higher odds of both cancers, a result that will have been suppressed by SES. Thus, while the study was clearly well designed and the authors completed an interesting and thorough study, I am concerned that these results may be tempered, by the dual relationship of SES to cellphone use and to glioma and meningioma in a way that may detract from, or even reverse, the authors’ claims.

References