

## Letters to the Editor

RE: "CHART-CONFIRMED GUILLAIN-BARRE SYNDROME AFTER 2009 H1N1 INFLUENZA VACCINATION AMONG THE MEDICARE POPULATION, 2009–2010"

In a recent article, Polakowski et al. (1) presented interesting results related to the association between monovalent H1N1 influenza vaccination and risk of Guillain-Barré syndrome. They found an incidence rate ratio of 2.41 (95% confidence interval: 1.14, 5.11). In their sensitivity analysis, which used a stricter definition of Guillain-Barré syndrome (exclusion of 3 out of 29 cases), the corresponding incidence rate ratio was 1.97 (95% confidence interval: 0.90, 4.34). The authors noted that the nonsignificance was "likely due to the exclusion of additional cases and corresponding decrease in power" (1, p. 970), but in their abstract they stated, "[H]owever, additional results that used a stricter case definition (Brighton level 1 or 2) were not statistically significant" (1, p. 962). The use of "however" in this sentence reveals that the statistical nonsignificance of their sensitivity analysis makes a difference to the authors. Don't we all agree that the sensitivity analysis provided more or less the same results as the main analysis? Is there really anybody who would claim that an incidence rate ratio of 1.97 (less precise) and an incidence rate ratio of 2.41 (more precise) produce qualitatively different interpretations?

A count in 2000 of over 300 warnings on the limitations of null hypothesis significance testing (2) was followed a year later by compilation of a list of 402 references (3), among which we found 89 in biomedical publications. Despite the many cautions, significance testing of the null hypothesis remains one of the most prevalent, misused, and abused statistical procedures in the biomedical literature (4).

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Conflict of interest: none declared.

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**Editor's note:** In accordance with Journal policy, Polakowski et al. were asked whether they wished to respond to this letter, but they chose not to do so.

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RE: "EXAMINATION OF HOW NEIGHBORHOOD DEFINITION INFLUENCES MEASUREMENTS OF YOUTHS' ACCESS TO TOBACCO RETAILERS: A METHODOLOGICAL NOTE ON SPATIAL MISCLASSIFICATION"

In a recent article, Duncan et al. (1) compared tobacco retailer density and proximity measures computed within 2 administrative and 4 egocentric neighborhood definitions and precisely identified which measures significantly differed across neighborhood definitions. This comparative analysis led the authors to conclude, rightly so, that how one defines "neighborhood" may considerably influence neighborhood-level exposure measures. These findings echo the importance of both zoning and spatial scale, which has often been underlined in the health literature (2–4) since Openshaw first defined

the Modifiable Areal Unit Problem in 1984 (5). The authors went on to conclude that "whenever possible, egocentric neighborhood definitions should be used" and that "the use of larger administrative neighborhood definitions can bias exposure estimates for proximity" (1). However, the authors should not have extended their findings, which concerned the difference between neighborhood resource accessibility measures, to a judgment on the most relevant spatial units to use in neighborhood and health research. We believe their conclusion stems from the following 2 assumptions that are pervasive in the literature

and deserve to be discussed: that “egocentric is better” and that “smaller is better.”

First, when concluding that egocentric neighborhoods should be preferred, the authors assume that isotropic areas (i.e., spreading out uniformly in all directions around individuals' homes) are necessarily the optimal way to delineate neighborhoods (6). However, historical, social, and political processes may prevent people from experiencing certain places and reaching specific resources despite being their located close to their homes. Administrative areas, which are, by definition, not centered on individuals' homes, may in some cases provide more adequate estimates of neighborhood resource accessibility than egocentric areas would, notably when they have been delineated by taking historical, social, and political divisions into account. There is a real need to discuss the unjustified use of administrative areas to define neighborhoods. However, one should not fall into the opposite extreme by claiming that egocentric neighborhoods are necessarily better.

Second, the authors assume that using administrative areas larger than census tracts would inevitably increase the likelihood of spatial misclassification. Actually, depending on the profile and location of individuals in a city, it could be more relevant to derive neighborhood exposure measures from units larger than census tracts. In a study in the Paris, France, metropolitan area, people's health-seeking behaviors were better modeled by neighborhood resource densities computed from groups of adjacent census tracts than from the residential census tract only (4). Areas larger than census tracts have also been found to better fit with inner-Paris inhabitants' perceived neighborhoods (7).

We therefore urge neighborhood and health researchers to justify their choice of a given neighborhood definition by comparing it with validity criteria involving people. Although there is no “gold standard,” the following 3 people-based criteria may be distinguished:

- The most common approach is to undertake sensitivity analyses by correlating neighborhood exposure measures with people's health indicators to identify the neighborhood definition that maximizes measures of association (4, 8, 9).
- Investigating the correlation between people's subjective assessments of neighborhood resources and objective measures of these same resources in various spatial units (10) is also a promising avenue for selecting spatial units that closely approximate people's assessments (6).
- It may be relevant to choose a neighborhood delineation that fits people's neighborhood experiences. Cognitive mapping, which has highlighted that perceived neighborhoods may vary greatly in spatial extent according to people's profile and location, may, for instance, provide invaluable insights for comparing neighborhood definitions (7, 11).

The above are mere suggestions, but whichever validity criterion is chosen, we strongly recommend that researchers refer to people, and not only to places, before concluding that there is spatial misclassification in neighborhood exposures.

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