Interpreting Relative Risk
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In 50 to 100 of your own words, summarize this article.

This article analyzed the change in emergency departments (EDs) access by rural and urban communities between 2001 and 2005, and the likelihood that access became more difficult in vulnerable communities. According to Shen & Hsia (2010); vulnerable populations in this study are “those whose vulnerability is attributed to demographic characteristics (racial/ethnic minority, foreign-born, senior citizens) or economic status (low-income, unemployed)”. Communities were analyzed using zip codes to calculate the distance between each community and the closest ED, changes in distance between 2001 and 2005 was computed and communities were classified into 3 categories of access into; didn’t increase, increased by less than 10-minutes and increased by 10 or more minutes. This study showed that populations in urban community had much better access to EDs and less access deterioration than populations in rural community(Shen Y. & Hsia R., 2010).

Figure 1 compares access to emergency departments between urban and rural populations using "stacked bar graphs." The authors could have drawn two pie charts, one for urban and one for rural. Why do you think the authors chose to use bar graphs rather than pie charts? Which type of graphs would be easier to compare?

The authors chose to use bar graphs rather than pie charts because figure 1 is a dichotomous variable. As shown on the horizontal axis the response options are either urban or rural. According to Sullivan (2012); “dichotomous variables are best summarized using bar charts”.

The authors also found bar graphs useful for presenting and comparing data taken over a period of time. It compared access to emergency departments between rural and urban populations in 2001. Bar graphs present data in a form that helps to recognize patterns or trends (CDC, 2008). The “stacked bar graphs” in figure 1 condensed important and large amounts of information into an easy-to-understand and clear format and effectively communicated it to everyone.
It will be easier to compare several features at once with bar graphs. Pie charts will look messy. It will be difficult to understand and decipher pie charts with values of categories that are close in size (segments will be close in size) and with too many segments (Statistics Canada, 2011).

On page 1465, the authors describe how to interpret the relative risk of low-income communities in urban areas (the article calls this number the relative risk ratio). In the text, we define the relative risk as \( \frac{PP_{\text{exposed}}}{PP_{\text{unexposed}}} \) where \( PP_{\text{exposed}} \) is the Point Prevalence of the "exposed" population and \( PP_{\text{unexposed}} \) is the Point Prevalence of the "unexposed" population. In the article, the unexposed population is called the reference group. For the relative risk of low-income communities in urban areas, what is the exposed population, and what is the unexposed population?

In this study, for the relative risk of low-income communities in urban areas, the exposed populations are the low-income communities and the medium-income communities; “they were poorer and had higher shares of vulnerable populations and are more likely to face increased driving time by at least 10 minutes to the nearest ED” while, the unexposed populations are the high-income communities, “the reference group” (Shen Y. & Hsia R., 2010 p. 1465).

In Table 2, find the relative risk ratio of communities with a high share of foreign-born members in rural areas. What is the exposed population, and what is the unexposed population in this risk ratio? Interpret the value of this risk ratio.

The relative risk ratio of communities with a high share of foreign-born members in rural areas is 0.70. In this risk ratio the exposed population is the community with a medium and high share of foreign born population and the unexposed population is the community with a low share of foreign-born population.

The value of this risk ratio is less than 1; this means the community with a high share of foreign born members in rural area is less likely to have difficulty in accessing EDs (increase in driving time to EDs) than the (reference group) community with a low share of foreign born population in rural area.
References


