Chapter II

Understanding Health Disparities Through Geographic Information Systems

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The emerging discipline of health geographics uses the concepts and techniques of medical geography (Meade, Florin & Gesler, 1988) together with modern automated Geographic Information Systems (GIS) methods to investigate health issues (Ricketts, Savitz, Gesler & Osborne, 1994). The main aim of this chapter is to bring the exciting potential contributions inherent in this approach to the attention of health practitioners and researchers.

With the development of powerful, yet affordable geo-technologies, digital maps and visual displays are produced that can be used for research,
practice and/or health policy analysis. One major advantage of this technology is that complex information can be displayed for the consumer in more intuitive, self-explanatory form. This is accomplished by linking and overlaying health data to standard census geographic areas which can be accessed quickly and flexibly from national and state agencies (Devesa, Grauman, Blor, Pennello, Hoover, & Fraumeni, 1999; Kim, 1998).

This chapter will illustrate how a GIS-based, multi-method approach can be applied to the study of health disparities. Using the pressing public health issue of access to kidney transplantation in California as an example, we will explore the notion of health disparities using a geographic conceptual framework for studying and understanding existing gaps in transplantations conducted. Different GIS techniques to addressing this issue are presented with a discussion of the relative advantages of each approach and a final review on how to most effectively use a GIS-based approach in studying health disparities.

PERSISTENCE OF HEALTH DISPARITIES

Public health has been traditionally concerned with disease prevention and health promotion activities directed at populations or communities rather than individuals (Turnock, 2001). Considerable effort has been devoted to the assessment of health needs and disparities in our communities. Health disparities exist both at a global scale and at the national level. Poor countries have fewer resources to invest into developing their public health infrastructure as compared to wealthier nations. In the United States (U.S.), one of the most developed and affluent countries in the world, persistent, and often increasing, health disparities between various racial and ethnic populations have been documented. Minority groups consistently lag behind the majority of Americans in almost all morbidity and mortality rates, as well as access to health care (United States Senate, 2000). Similarly, minorities are documented to receive generally less health care services, including but not limited to appropriate preventive care, intensive hospital care, cardiovascular procedures and organ transplants (Fiscella, Franks, Gold & Clancy, 2000). Health disparities are not limited to minorities, but include the underserved rural areas and areas of low socioeconomic status (United States Senate, 2000). Health indicators for rural areas are similar to those of minority groups. Health disparities have also been cited in relation to type of health insurance coverage, and access to health care by the "working poor" (Hogue, Hargraves & Collins, 2000). In addition, health disparities exist with regard to gender, with women documented to suffer health disparities more than men (United States Senate, 2000).
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