

Chapter 8

Telemedicine Utilization, Availability of Physicians, Distance, and Urbanity: An Exploratory Study

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ABSTRACT

This study examines the relationship between telemedicine utilization, the availability of physicians, the level of urbanity of a locality, and the physical distance between a locality and an urban health facility at the county level within a rural state in the United States. As an exploratory study, the author conducts correlation analysis and analysis of variance to test if the chosen exploratory variables may account for variations in telemedicine utilization. The author obtained statistically significant results, but recognizes that there are other potential variables to be included in further studies. The results are useful for practitioners and may motivate further studies. The chapter discusses the implications of the study in its conclusion.

INTRODUCTION

Shortage of physicians in underserved areas creates unmet demands for health services. These unmet demands are aggravated by an aging population (Glasgow 2000; Ziembroski 2006). To identify these underserved areas, researchers have utilized large-scale data in various ways. For example, using data from the National Center for Health Statistics, the Kaiser Family Foundation has shown

that physicians in patient care per 10,000 ranged from 17.0 to 65.9 across the fifty states in the U.S. in 2008 (The Kaiser Family Foundation 2008).

BACKGROUND

While demands for health services may not be reduced easily, it is possible to increase the availability of health services by utilizing new medical

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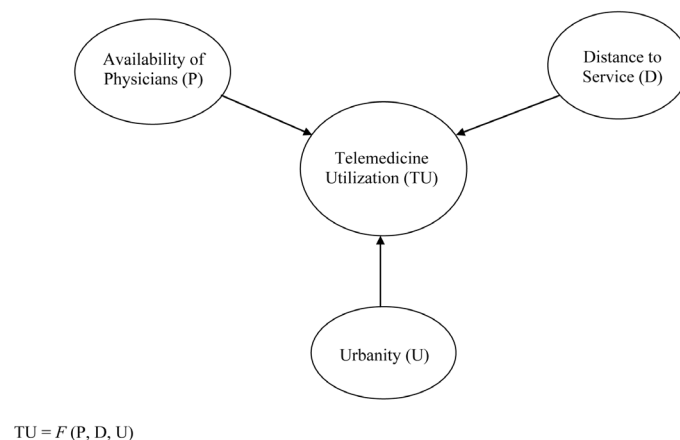
technology. One plausible solution is the utilization of telemedicine. Telemedicine may be defined as the provision of medical services that involves the exchange of medical information from one site to another via electronic communications for purposes of improving patients' health status (American Telemedicine Association 2012). Using telemedicine, a physician located in virtually anywhere can consult patients in underserved areas, prescribe treatment and even perform remotely directed minor surgeries (Bashshur & Shannon 2009; Courtney 2008; Paul 2004).

More specifically, telemedicine enables diagnosis and consultation by health providers to patients who reside in remote areas (Morrison et al. 2010; Pronovost et al. 2009). The term telehealth is sometimes used to indicate that telemedicine can be provided to patients at home or in medical facilities. In the former case, patients do not need to travel outside of home to receive services. This is desirable for older patients and for those who are physically disabled (Magnusson & Hanson 2005). Alternatively, patients can go to local clinics or medical centers to receive consultation from physicians in a telemedicine session, with the aid of nurses or medical assistants in the local medical facility (Kalternina et al. 2011). This study focuses on this latter case.

Intuitively, availability of physicians (McCarthy 1995), urbanity of a locality (Higgs 1999), and distance to an urban medical facility (Hasol et al. 1997) are decisive factors regarding the level of telemedicine utilization as an alternative form of medical consultation or treatment. For example, patients who reside in an underserved area, such as a rural town, need to travel for a long distance to an urban medical center to receive medical services. To avoid these travels, patients in underserved areas may be more likely to seek telemedicine in lieu of traditional, face-to-face health services. Yet, few studies in the literature examined how the supply of physicians, distance to an urban medical facility and the level of urbanity of a locality are associated with the utilization of telemedicine services with statistical precision. Figure 1 displays a model that may be developed systematically to account for the variations in the utilization of telemedicine.

This study aims to gather preliminary statistical evidence for the above model. The next section will explain the method of this study, including the data sources and statistical techniques. Then, the results section will summarize the main findings of this study. The discussion session will present the implications of the findings, particularly the economic value of telemedicine for patients in rural and underserved areas.

Figure 1. A model of telemedicine utilization



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