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# Illness severity and propensity to travel along the urban–rural continuum

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**Abstract**

In this paper, we examine whether the relationship between severity of illness and the propensity to travel greater distance relative to the norm (defined by peers in one's county of residence) is uniform across the urban–rural continuum of geography or over time. We focus on the elderly in New York State who have been admitted to hospital for ambulatory care sensitive conditions (ACSCs), admissions which are presumed to be representative of usual travel patterns. The two periods of time examined span the implementation of the Balanced Budget Act (BBA) of 1997, which established the Medicare Rural Hospital Flexibility Program, a major national initiative to strengthen rural health care with the development of rural Critical Access Hospitals (CAHs). As the number of NY rural hospitals certified as CAH increased with the expanded funding from the BBA, one might expect to see increased distance traveled by more severely ill rural elderly, as their CAHs referred them to their affiliated support hospitals. The logistic regression estimates support this expectation, highlighting an asymmetrical relationship between relative distance and severity across patients in rural and urban areas. Despite a general decline in average propensity to travel further than the norm across the landscape, severity had a larger impact on travel propensity in rural areas, which increased over time.
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## Introduction

Recently there has been an increased interest in hospital location and its implications for hospital access by the elderly. The major focus of the earliest empirical research in this area was the influence of distance on hospital choice. The research consistently showed that patients exhibited a strong tendency to be admitted to the closest hospital to their homes, even in metropolitan areas where there are numerous hospital alternatives (Gregory et al., 2000, Goodman, 1997). However, rural patients, particularly those living in rural areas adjacent to urban areas, were found to travel more frequently (and longer distances) than urban patients (Hogan, 1988: Adams Houchens et al., 1991; Adams and Wright, 1991; Dranove et al., 1993).

More recently, important factors such as hospital networking of referrals, elderly enrollment in managed care, and selective contracting between

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managed care plans and hospitals have become important. Restricting the set of allowed hospitals available to the elderly under managed care may change travel patterns and distance traveled by the elderly to hospital (O'Neill, 2004). In terms of elderly access to hospitals, the set of hospitals available to the elderly today can vary by established referral patterns among hospital networks in the area and type of health insurance(s) held by the elderly person, so the admitting hospital may not always be the closest hospital to residence.

In this study, we examine distances traveled by elderly New York residents who had hospital admissions for ambulatory care sensitive conditions (ACSCs), with a focus on their residential location along the urban–rural continuum and severity of illness. We limit the study population to elderly with admissions for ACSCs because ACSC admissions are expected to be representative of usual travel patterns—moreso than admissions for urgent (i.e. hip fracture, stroke) or more discretionary (heart surgery) conditions. Also, ACSC admissions have been shown to vary with access to primary care (Bindman et al., 1995, 2005; Perrin et al., 1989), and improving access to primary care has been a goal of many rural communities (Ricketts et al., 1995; RUPRI, 1999). In addition, ACSC admissions may occur more frequently among the oldest old and the most severely ill because they may not be able to engage the healthcare system in a timely fashion due to limitations on their activities of daily living (McCall et al., 2004). Therefore it is quite important to examine the role of disease severity in ACSC admission patterns among the elderly. We examine patients with hospitalizations for a particular group of ACSCs that have been validated for the study of access to primary care by the elderly (McCall et al., 2004).

This study is conducted using data for two separate years (1997 and 2001), to examine whether or how travel patterns changed for the elderly over a time period in which the Balanced Budget Act (BBA) of 1997 was implemented. The BBA of 1997 had many sweeping changes which could have impacted access to care by the elderly. Payments to Medicare Managed Care (MMC) plans were tightened, which resulted in the exodus of many plans, especially from the less urban markets—and enrollment in or disenrollment from managed care has been shown to impact elderly ACSC admission rates (Culler et al., 1998; Kozak et al., 2001; Call et al., 2001). Among the Medicare population, beneficiaries enrolled in HMOs were found to receive significantly and substantially higher preventive care services than beneficiaries in traditional FFS Medicare (Riley et al., 1994, 1999; Rizzo, 2005), and managed care has improved access for the traditionally underserved populations (Bindman et al., 2005). The BBA of 1997 also established the Medicare Rural Hospital Flexibility program (MRHFP), which provided support for the development of rural Critical Access Hospitals (CAHs).[1] Rural CAHs developed networks with larger support hospitals in more urbanized areas (Moscovice and Elias, 2003).

New York State was one of the first to develop CAHs, and also one of the earliest states to embrace managed care. Therefore our study is conducted over a time period with significant changes in rural hospital resources and Medicare managed care market climate, which may have impacted the pattern of elderly ACSC admissions across NY hospitals. In this paper, we contribute to the literature by testing whether the relationship between illness severity and propensity to travel greater than normal distances varies along the urban–rural continuum, and whether this relationship changes over time in an environment where several changes have taken place—including changes in Medicare managed care penetration and the expansion in the New York Critical Access Hospital program.

## Background and Conceptual Model

Hospitalization both locally and at long distances from home is governed by the joint behavior of consumers and service providers (O'Neill, 2004). Generally, a decision for a distant hospitalization is prompted by severity of illness, availability and quality of local hospital care and network arrangements, and type of insurance coverage. Patients with more severe problems may be more willing to travel long distances to see specialized or well-reputed

[1]The Center for Medicare and Medicaid Services implemented a pilot program in 1989 to determine whether specially designated rural hospitals linked with larger support hospitals in more distant, urbanized areas could improve the access and quality of care received by rural elderly. New York state was one of seven states participating in the Essential Access Community Hospital (EACH) pilot program. The BBA of 1997 replaced the EACH program with MRHFP, which provided support for the development of Critical Access Hospitals (CAHs) nationwide (RUPRI, 1999).