

North Dakota



The Fate of Rural America in the Information Age: An Introduction and Preliminary Application of the 4C's Theory

Marsha A. Tate & Sheila S. Sager
The Pennsylvania State University



Pennsylvania



Abstract

Using data gathered for five rural counties in North Dakota and Pennsylvania, this paper frames rural high-speed Internet access in terms of the 4C's theory: context, connectivity, capability, and content. Our analyses suggest that there are significant variations between the two states and among individual counties. Despite these variations, in order to sustain socio-economic success, each of the 4C's must be considered both individually and collectively.



Introduction

Approach

4C's Theory

The fate of rural communities in the Information Age is inextricably linked to the quality and speed of access to telecommunications platforms that provide high-speed Internet connectivity, services, and content. As a public policy goal, access to the telecommunications infrastructure provides three levels of value to rural communities—civic, economic, and quality of life. For rural communities faced with decades of struggle against the penalties of isolation, high-speed telecommunications access offers nothing less than the opportunity for a rich quality of life; a quality of life with the potential of an asset capable of generating income.

We acknowledge the integral role played by telecommunications access in rural development strategies. A number of additional resources are also necessary for a rural community to successfully achieve full access and participation in an Information Age economy and society. These resources can be grouped into four determinants of access, namely: context, connectivity, capability, and content—referred to as the 4C's theory. While the 4C's theory distinguishes between the four determinants, it also acknowledges the multi-layered interrelationships between the determinants and their potential influence as a collective force.

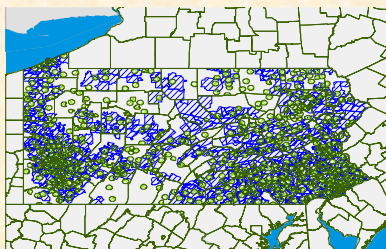
The purpose of the 4C's Theory is to develop practical e-readiness indicators that are applicable at the community level based upon four primary determinants of access:

Although rural broadband access is improving, rural areas still lag behind their urban and suburban counterparts. Moreover, the issue of information access in rural America extends beyond broadband access. Given the limited availability of alternate information assets broadband access therefore becomes even more critical for the survival for rural communities.

Using data gathered for five rural counties in Pennsylvania and North Dakota, this paper frames rural high-speed Internet access in terms of the 4C's theory.

- **Context** – history, geography, socio-economic demographics
- **Connectivity** – quantity and quality of access to telecommunications networks
- **Capability** – gauges the ability of individuals and institutions
- **Content** – information available

Cable Modem Coverage & DSL-Enabled Wire Centers: Pennsylvania



Legend:
■ Cable Modem Coverage
■ DSL-Enabled Wire Centers

Sources: Cable Modem Coverage - iMapData, January 2003; DSL-Enabled Wire Centers - MapInfo Exchange Infor/Map Data, May 2003; Counties - U.S. Census Bureau, June 2000

North Dakota	Pennsylvania
Population, 2001 estimate: 634,448	Population, 2001 estimate: 12,287,150
Land area: 68,976 square miles	Land area: 44,817 square miles
Home to two large U.S. Air Force bases (Grand Forks AFB (AMC) and Minot AFB (ACC))	Home to numerous public and private universities and colleges
Significant American Indian population (4.9%) (0.6% Black or African American persons)	10% Black/African American population
14.7% of population, 65 years or older	15.6% of population, 65 years or older
Significant portion of lands federally owned	Relatively small portion of lands federally owned (Exception: Forest county)
Rural counties losing population consistently and rapidly between 2000 and 2001	Rural counties showing modest population gains
Low concentration of population (9.3 persons per square mile)	High concentration of population (274 persons per square mile)
Telephone penetration, 2001 94.4%	Telephone penetration, 2001 97%
47% of households without a computer, 2002	47% of households without a computer, 2002
54% of households lack internet access, 2002	51% of households lack internet access, 2002



For More Information Contact

Marsha A. Tate (814) 359-3367 mt1@psu.edu
 Sheila S. Sager (814) 684-7374 ss2@psu.edu
 College of Communications
 The Pennsylvania State University
 115 Carnegie Building
 University Park, PA 16802