



# Documenting the Economic Impact of Telemedicine Service in a Rural Hospital

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**Brian Whitacre**

*Assistant Professor and Extension Economist*  
Oklahoma State University  
Email: [brian.whitacre@okstate.edu](mailto:brian.whitacre@okstate.edu)

**Sarah Boggs**

*Extension Specialist*  
Oklahoma State University  
Email: [sarah.boggs@okstate.edu](mailto:sarah.boggs@okstate.edu),

**Pam Hartman**

*Extension Specialist*  
Oklahoma State University  
Email: [pam.hartman@okstate.edu](mailto:pam.hartman@okstate.edu)

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**Abstract:** A seldom recognized contribution of teleradiology and telepsychiatry service in a rural hospital is the community-level benefit it can have to the local economy. Such benefits can include reduced hospital budgets, avoided travel and increased pharmacy use. This study provides a methodology for estimating the economic impact of these telemedicine services.

## BACKGROUND

The combination of information technology and health care (commonly referred to as “telemedicine”) has the potential to greatly impact the lives of rural residents. From a quality-of-life perspective, telemedicine allows rural individuals be “observed” by specialists in various parts of the county, and increases the spectrum of health care services available to them. In fact, the presence of telemedicine has been shown to increase the perception of health care quality in rural communities. However, the benefits of such a center to rural individuals and communities include much more than simply improved health services. The local economy is also enhanced via the addition of telemedicine capability.

## ACTION

This paper provides a methodology for estimating the economic impact of teleradiology and telepsychiatry in a rural community. This impact is broken into four distinct categories. Three categories deal with opportunity costs, or savings that are recognized due to telemedicine, while one deals with an increase in economic activity in the area. The four categories are:

- 1) Reduced personnel costs for hospitals since work is outsourced and full-time specialists are not directly employed;
- 2) Transportation savings to patients who would otherwise need to commute to an urban location;
- 3) Missed work income savings to patients who would otherwise need to commute to an urban location;
- 4) An increase in the use of local auxiliary medical services (i.e. laboratories or pharmacies) because patients do not travel to other communities for their initial consultation.

The primary source of data for this study comes from the 22 hospitals or clinics that participate in Oklahoma State University’s Telemedicine Network. Methodologies associated with each of the four

categories were applied to five rural communities with hospitals of varying size. The hospitals also differed in the types of telemedicine services they offered and the number of encounters performed.

The values of the four categories of impacts will vary based on the community where telemedicine is employed. Local factors that affect the economic impact include the number of telemedicine encounters that the community participates in, the number of full-time equivalent radiologists / psychiatrists that the hospital would otherwise employ, the distance to the nearest substitute location, and the average wage rate.

## RESULTS

In general, each community in the study recognizes an annual economic impact of at least \$300,000 generated by the use of telemedicine. For communities with bigger hospitals, the annual economic impact can be quite large, ranging from \$2.5-\$3.1 million. The primary components of these impacts can fluctuate dramatically between communities based on any number of factors, including the distance to nearest substitute location (typically quite large for psychiatric work) and the number of telemedicine encounters performed.

## CONCLUSIONS

While this report focuses on a number of savings and benefits to the community associated with telemedicine, it also recognizes that other issues may play into the decision on whether or not to implement telemedicine in a rural hospital. This can include costs of telemedicine equipment, reimbursement issues, and physician / patient acceptance. Using this report in conjunction with other sources of information should provide a basis for understand the overarching impacts of setting up a telemedicine system.

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