

Economic Impact of
Rockcastle Hospital and Respiratory Care Center, Inc.
On Four Kentucky Counties:
Fayette, Jefferson, Franklin & Madison

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PREFACE

This report is being furnished to the Rockcastle Hospital and Respiratory Care Center, Inc. through their request. The Kentucky Rural Health Works Program (a program of the University of Kentucky Department of Agricultural Economics, UK Cooperative Extension Service, Kentucky State Office of Rural Health and UK Center for Rural Health) was contacted to conduct an economic impact study. The Kentucky Rural Health Works Program offers decision-making information to rural health care providers, local community leaders and policymakers regarding health care and its impact on rural economies. This is carried out through market demand studies, feasibility studies, policy research studies and economic impact studies. The Kentucky Rural Health Works Program combines the health care knowledge and strengths of the UK Center for Rural Health with economic development expertise of the UK College of Agriculture.

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INTRODUCTION

This report examines the economic impact of Rockcastle Hospital and Respiratory Care Center on the following four Kentucky counties: Fayette, Jefferson, Franklin and Madison. This analysis shows the economic impact of output (sales), employment and labor income due to Rockcastle Hospital and Respiratory Care Center on the local economies of these four counties. On average, the Rockcastle Hospital and Respiratory Care Center generates an approximate total impact of \$9,162,185 in output (sales) within the 4 counties. The 9,162,185 represents the amount of local sales or revenue generated in Fayette, Jefferson, Franklin and Madison Counties due to the impact of the Rockcastle Hospital and Respiratory Care Center. As a result, Rockcastle Hospital and Respiratory Care Center's expenditures create nearly 139 jobs and have a total impact of \$4,675,985 in labor income in these areas.

METHODOLOGY AND DATA

Methodology

The IMPLAN Model was used to generate the economic impact of Rockcastle Hospital and Respiratory Care Center. IMPLAN is an input-output Model that can be used to examine the economic impact of new industries, loss of an existing industry, fiscal impact analysis and the existence of supply demand gaps. Model version 2.0 was used in this study with the 2000 Kentucky data and structural matrices.

For this study, it was important to capture the nature of Rockcastle Hospital's purchasing patterns as opposed to the use of national standard production function. After the initial models for Fayette, Jefferson, Franklin and Madison Counties were developed, the expenditure records for the hospital were reviewed to determine hospital spending patterns in each of the four counties. These patterns were in some cases slightly different from the original IMPLAN hospital expenditure patterns. Also, the regional purchase coefficients were significantly

different in some cases between the original IMPLAN Model and the revisions based on Fayette, Jefferson, Franklin and Madison Counties records. The revisions of local spending correspond with findings from other studies that indicate how rural hospitals generally affect wholesale and retail trade activities on a county level

A series of steps were followed to generate the economic impact results. First, the Fayette, Jefferson, Franklin and Madison Counties 2000 Models were estimated from IMPLAN. Second, the study area data was edited to include the actual hospital figures in sector 492. Under the hospital sector, the sales and employment (where appropriate) figures were entered along with the changes in the gross absorption coefficients, as well as, the differences between national and local production functions. Changes in the production functions were based on an examination of hospital records for the 2003 preliminary financial report. Finally, the model was re-run to calculate the new multiplier values. These new multipliers represent the revised Rockcastle Hospital's direct, indirect and induced economic effects. The economic impact was calculated by removing the hospital sector through the Impact screen and determining the loss in employment, labor income and output.

Data

The data for this report came from the IMPLAN Model and the Rockcastle Hospital and Respiratory Care Center's accounting records and financial statements. The 2000 Kentucky data set was used for the IMPLAN Model. The Rockcastle Hospital financial statements indicated a total expenditure of \$27,237,072 during the 2003 fiscal year. This figure includes cash expenses related to depreciation and amortization.

In 2003, Rockcastle Hospital spent approximately \$7,224,073 in other expenditures (less wages and benefits) within 27 Kentucky counties. However, of the \$7,224,073, over 90% was spent in Fayette, Rockcastle, Jefferson, Franklin and Madison Counties. Among these four

counties, Rockcastle Hospital spent approximately 41% in Fayette county, nearly 17% in Jefferson County, 10% in Franklin County and about 3.4% in Madison County, Kentucky.

ECONOMIC IMPACT MULTIPLIERS

The impact of the local health care system and health care employee expenditures on the local economy are called multiplier effects. Multiplier effects are a simplified and compact way of representing these economic effects in a local economy. The multiplier is interpreted as the impact of a one-unit change in sales, employment or labor income that results in an “X” impact on the local economy. In essence, the multiplier represents the recycling of local dollars and income in the community. This recycling process creates new job opportunities and higher wages for individuals. Leakage of dollars and income out of the community, via taxes or non-local spending, reduces the size of the multiplier effect and the potential size of the local economy.

There are three multipliers effects based on the type of economic impact analysis: direct effect, indirect effect and induced effect (see Table 1). The direct multiplier effect is based on an industry’s initial economic impact on the community. For example, if a manufacturing plant has revenue of 5 million dollars, then this figure becomes the direct economic impact on the community. The indirect multiplier effect is based on industry-to-industry transactions only. For example, health care providers may purchase laundry, food, landscaping and floral services from local businesses. It is important to note that the indirect multiplier does not include the effect of employee spending on retail and service sectors in the community. Alternatively, the induced multiplier effect includes both the industry-to-industry transactions and household purchases, which includes employee spending. The total economic impact is defined as the direct plus indirect plus induced economic effects.

The direct, indirect and induced multiplier effects can be classified as output (sales), employment and labor income multipliers (see Table 1). Output (sales) multipliers represent the change in local sales or revenue due to a change in an industry. Economic output is measured as a change in total sales for a new or existing business or institution in a region. Employment multipliers are the impact of a one million dollar change in economic output on the number of jobs in a local economy. Labor income multipliers represent a one-unit change in economic output on local income.

Table 1: Health Care Related Economic Impact Multipliers

Multiplier Type	Direct Impact	Indirect Impact	Induced Impact
Employment	Health care jobs	Health care supplier jobs	Local retail and service jobs related to health care employee spending
Income	Health care employee income	Health care supplier employee income	Local retail and service income related to health care employee spending
Output (Sales)	Health care revenue	Health care supplier revenue	Local retail and service revenue related to health care employee spending

ECONOMIC IMPACT ANALYSIS

The analysis is divided into three sections according to following multipliers: 1) output or sales, 2) employment, and 3) labor income. Each section shows the direct, indirect, induced and total economic impacts for the various economic impact categories.

The sales or output multiplier represents the amount of local sales or revenue generated in the Fayette, Jefferson, Franklin and Madison Counties due to the impact of the Rockcastle Hospital and Respiratory Care Center expenditures in those counties (see Table 2). The hospital expenditures represent the direct impact on these particular counties. For example in Table 2, Rockcastle Hospital spent \$3,032,493 in Fayette County, Kentucky, which is the direct impact of the hospital on output or sales in Fayette County. Rockcastle Hospital vendors are supplied by other vendors, which creates more employment and income opportunities. Therefore, the indirect impact on Fayette County, Kentucky is \$651,478 and represents the Rockcastle Hospital vendors' spending within Fayette County, Kentucky. This \$651,478 is associated with industry-to-industry transactions within Fayette County.

Employees who are associated with hospital vendor firms and the firms whom supply those vendors in the region purchase goods and services in the local economy and represent the induced impact on the community. The induced impact on Fayette County economy is \$1,077,762 and is associated with the employees' purchases of goods and services within Fayette County, Kentucky. Based on the direct impact of \$3,032,493, Rockcastle Hospital has a significant total economic impact of \$4,761,734 on Fayette County, Kentucky. This total impact represents generated revenue based on direct suppliers to the hospital, indirect suppliers to the hospital and employees purchases in the local economy. Overall, Rockcastle Hospital had a direct impact of \$6,096,197, indirect impact of \$1,122,710, induced impact of \$1,122,710, and a total impact of \$9,162,185 on these four Kentucky counties.

**Table 2: Rockcastle Hospital and Respiratory Care Center
Impact on County Output (Sales)**

County	Direct Impact	Indirect Impact	Induced Impact	Multiplier	Total Impact
Fayette	\$3,032,493	\$651,478	\$1,077,762	1.57	\$4,761,734
Jefferson	\$1,221,370	\$256,187	\$459,178	1.59	\$1,936,735
Franklin	\$729,945	\$ 57,374	\$ 94,922	1.21	\$882,241
Madison	\$1,112,389	\$157,671	\$311,415	1.42	\$1,581,475
Total	\$6,096,197	\$1,122,710	\$1,943,277	-----	\$9,162,185

Source: 2000 IMPLAN Data Base and 2002 hospital data

The employment multiplier demonstrates the relationship between the Rockcastle Hospital and Respiratory Care Center expenditures and employment creation in the Fayette, Jefferson, Franklin and Madison Counties. Rockcastle Hospital and Respiratory Care Center actually employs 36 people who live in Fayette and Madison Counties (See Table 3 below). However, the direct impact represents the hospital jobs plus jobs associated with the hospital vendors' within these counties. Therefore, the direct impact due to Rockcastle Hospital on Fayette County employment is about 48 jobs. The indirect impact represents industry to industry transactions; thus the indirect effect creates another 8.4 jobs in Fayette County, Kentucky. Moreover, employee spending within Fayette County creates an induced impact of 14.7 jobs (see Table 3). Overall, Rockcastle Hospital has a total impact of 71.3 jobs on Fayette County employment. Fayette County is the biggest employment impact recipient from the expenditures of Rockcastle County Hospital.

The Rockcastle Hospital and Respiratory Care Center employment multiplier for Fayette County is 1.48 as shown in Table 3. This employment multiplier indicates that for every Rockcastle Hospital job, an additional 0.48 jobs are created in Fayette County local economy.

In total, 138.6 jobs in Fayette, Jefferson, Franklin and Madison Counties are directly or indirectly tied to the existence of the Rockcastle Hospital and Respiratory Care Center.

**Table 3: Rockcastle Hospital and Respiratory Care Center
Impact on County Employment**

County	Actual Hospital Jobs	Direct Impact	Indirect Impact	Induced Impact	Multiplier	Total Impact
Fayette	3 jobs	48.1 Jobs	8.4 Jobs	14.7 Jobs	1.48	71.3 Jobs
Jefferson	0 jobs	17.3 Jobs	3.2 Jobs	6.0 Jobs	1.53	26.4 Jobs
Franklin	0 jobs	12.0 Jobs	0.9 Jobs	1.5 Jobs	1.20	14.4 Jobs
Madison	33 jobs	18.5 Jobs	2.7 Jobs	5.4 Jobs	1.44	26.5 Jobs
Total	36 jobs	95.9 jobs	15.2 jobs	27.6 jobs	-----	138.6 jobs

Source: 2000 IMPLAN Data Base and 2002 hospital data

Table 4 depicts the direct, indirect and induced impact on Fayette, Jefferson, Franklin and Madison Counties' labor income due to Rockcastle Hospital and Respiratory Care Center. The impact from labor income indicates the level of personal income dependent on the existence of the hospital. In Fayette, Jefferson, Franklin and Madison Counties, employees are paid an estimated \$ 3,512,965 in direct payroll. In Fayette County, the direct impact of Rockcastle Hospital on the local economy is about \$1,739,943. The direct economic impact of this payroll is due to hospital employees and vendors who serve the Rockcastle Hospital in these counties.

This direct payroll impact translates into local spending and more jobs, which creates more income and economic opportunity in these counties. The indirect impact from labor income for the Rockcastle Hospital is estimated to be \$446,806 on all four counties. This indirect impact represents the expenditures of the hospital vendors on the payroll of other

business in these counties. In other words, the vendors serving the hospital spend their money on needed supplies and materials which has the effect of increasing employment and payroll for other firms in the four counties.

The induced labor income impact on Fayette, Jefferson, Franklin and Madison Counties due to Rockcastle Hospital is \$716,213 and the total labor income impact is \$4,675,985. In Fayette County, the indirect impact is \$261,095, the induced impact is \$399,405 and the total impact is \$2,400,444. The induced impact represents the spending of hospital vendor employees and the employees of other firms on the labor income and payroll of service, retail and other consumer-oriented establishments in the four county economies. The Rockcastle Hospital income multiplier on Fayette County is 1.38. This means that for every dollar of income generated due to Rockcastle Hospital and Respiratory Care Center, an additional 0.38 cents of income is generated in the Fayette County local economy.

**Table 4: Rockcastle Hospital and Respiratory Care Center
Impact on County Labor Income**

County	Direct Impact	Indirect Impact	Induced Impact	Multiplier	Total Impact
Fayette	\$1,739,943	\$261,095	\$399,405	1.38	\$2,400,444
Jefferson	\$737,496	\$101,237	\$172,768	1.37	\$1,011,501
Franklin	\$411,492	\$24,420	\$32,462	1.14	\$468,374
Madison	\$624,034	\$60,054	\$111,578	1.28	\$795,666
Total	\$3,512,965	\$446,806	\$716,213	-----	\$4,675,985

Source: 2000 IMPLAN Data Base and 2002 hospital data

SUMMARY

The results indicate that Rockcastle Hospital and Respiratory Care Center is an important economic contributor to the Fayette, Jefferson, Franklin and Madison County local economies. The economic impact is primarily felt through hospital expenditures on local services and employee spending in the local retail and service sector. Like many rural and urban hospitals, complex medical equipment and other supplies must be purchased outside the local community, which reduces the size of the economic impact.

To reiterate, the sales or output multiplier represents the amount of revenue that is generated in Fayette, Jefferson, Franklin and Madison Counties due to the impact of the Rockcastle Hospital and Respiratory Care Center expenditures in those counties. Based on the output multiplier, the Rockcastle Hospital has a total economic impact of nearly \$9,162,185 on Fayette, Jefferson, Franklin and Madison Counties. The employment multiplier demonstrates the relationship between the Rockcastle Hospital and Respiratory Care Center expenditures and employment creation in these four counties. Overall, approximately 138 jobs in Fayette, Jefferson, Franklin and Madison Counties are directly or indirectly associated with Rockcastle Hospital expenditures within those respective counties. The labor income multiplier indicates the level of personal income in Fayette, Jefferson, Franklin and Madison Counties that is dependent on Rockcastle Hospital expenditures in those counties. The total impact on county labor income on all four counties due to Rockcastle Hospital is estimated to be \$4,675,985.

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