

**Market Demand Analysis for a
Wellness Center in Ohio County, Kentucky:**

Prepared for Ohio County Hospital

Prepared By:

KY Rural Health Works
<http://www.ca.uky.edu/KRHW/>

Eric A. Scorsone, Ph.D.
UK Department of Agricultural Economics

Bethany Adams, BSMT
KY Rural Hospital Flexibility Program

Olanrewaju Yebovi, M.Sc Student
UK Department of Agricultural Economics

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Executive Summary

The objective of this market demand analysis was to project the future demand for wellness services associated with the development of the Bluegrass Crossings Regional Business Center Industrial Park. This analysis projects the population change in the Ohio County Hospital market area over the next decade and the subsequent change in market share.

The current market area for the proposed wellness center was defined on the basis of county census tracts and the current market area of Ohio County Hospital. In all, thirteen census tracts comprise the proposed wellness center market area, which included all of Ohio County, and parts of Muhlenberg, Breckinridge and Grayson Counties. Following the estimation of the current market area and the market area population, the wellness center future patient volume was calculated. Future patient volume is based on future demand rather than current patient demand. Therefore, the market area population was adjusted to account for the impact of the industrial park. It has been estimated by this analysis that approximately 6000 new residents will move into Ohio County Hospital market area over the next decade. The 6000 new residents will be distributed over an eight-year period from 2003 through 2010. Consequently, approximately 750 new residents will be added to Ohio County Hospital total market area population. Of the 750 new residents, approximately, 570 will be added to Ohio County Hospital total market share per year from 2003 to 2010. The 570 new residents represent the expected change in market share that reflects the impact of the industrial park. The change in market share per year is the portion of the new incoming residents that are potentially new clients for Ohio County Hospital and the wellness center.

According to the Centers for Disease Control, wellness visits represent 35.7 percent of all outpatient visits on a national basis. Therefore, nearly one-third of all outpatient department visits ordered or provided one or more preventive or therapeutic services. Wellness services include, for example, diet/nutrition, tobacco cessation and injury prevention. Injury prevention services are associated with employee compensation and safety programs and represent 8.1% of all wellness services.

Introduction

Ohio County Hospital (OCH) has undertaken a feasibility study to determine the market potential for a new stand-alone wellness center. The proposed wellness center would be operated as an outpatient clinic through Ohio County Hospital and would be located near the newly constructed industrial park; the Bluegrass Crossings Regional Business Center. The industrial park development provides new opportunities for Ohio County Hospital to expand its outpatient services. The proposed wellness center future demand for services is related to the construction and operation of the Bluegrass Crossings Regional Business Center. The objective of this study is to estimate future demand for outpatient services for the stand-alone clinic.

This market demand analysis is divided into two sections. The first section determines the market area, estimates the change in the market area population base and calculates Ohio County Hospital market share. The second section details the computation of the expected patient volume in terms of annual patient visits for the wellness center. National, regional and state utilization rates project the level of outpatient usage by a population base in a particular geographic region.

Study Methodology

The study methodology proceeded in four steps to complete the two sections of the analysis: 1) Current market area is defined and the current population is calculated, 2) Market area population is forecasted over a period of 2003 through 2010, 3) Future market share is calculated, 4) Number of annual expected outpatient visits is calculated from 2003 through 2010.

Current Market Area

The market area is the geographical region from which a health care facility draws its patients. The market area was defined by using regional science techniques and Geographic Information Systems (GIS) technology. The analysis is based on the ability of a household or individual to travel along major transportation routes to gain access to a health care facility. It should be noted that there are many factors that determine where a person or household will seek medical care. These may include physician referral patterns, physician or hospital reputation, distance and ease of travel, previous experiences, level of education and income and insurance coverage among others. It is difficult to quantify or objectively assess some of these factors.

Census tracts are used by the US Bureau of Census to define city, county, state and national population for the decennial population census. Census tracts are small geographic designations used to collect population data. They are generally smaller than counties, but follow county lines. For example, Ohio County has seven census tracts within the county boundary.

Using regional science techniques and Geographic Information Systems (GIS) technology, the proposed wellness center market area was calculated using transportation routes (see Ohio County Market Area Map). This analysis was primarily conducted using

distance factors and hospital in-patient data obtained from Kentucky Hospital Association. The proposed wellness center market area was defined on the basis of county census tracts, which included all of Ohio County, and parts of Muhlenberg, Breckinridge and Grayson Counties. In all, thirteen census tracts comprise the proposed wellness center market area. Table 1 shows the counties, census tracts, census tract populations and the percentage of the census tract populations that are included in the current market area. The total market area population was calculated by applying the percentage of the census tract that is actually within the market area to the census tract population. From Table 1, the total market area population that the wellness center and Ohio County Hospital could possibly serve today is approximately 25,280 people.

Table 1: Current Market Area Population

| County Census Tract in Market Area | CT Population In Market Area Year 2000 | Percentage of CT Population In Market Area | Total Market Area Population Year 2000 |
|---|---|---|---|
| Breckinridge 9604 | 1,346 | 20% | 269 |
| Grayson 9506 | 3,750 | 10% | 375 |
| Grayson 9507 | 2,212 | 20% | 442 |
| Muhlenberg 9601 | 965 | 10% | 97 |
| Muhlenberg 9602 | 7,919 | 10% | 792 |
| Muhlenberg 9607 | 3,886 | 10% | 389 |
| Ohio 9801 | 3,235 | 100% | 3,235 |
| Ohio 9802 | 3,231 | 100% | 3,231 |
| Ohio 9803 | 4,010 | 100% | 4,010 |
| Ohio 9804 | 1,945 | 100% | 1,945 |
| Ohio 9805 | 6,606 | 100% | 6,606 |
| Ohio 9806 | 2,246 | 100% | 2,246 |
| Ohio 9807 | 1,643 | 100% | 1,643 |
| Total Population | 42,994 | --- | 25,280 |

Market Area Population Projections

With the market area population determined, patient volume can be assessed. However, due to the development of the industrial park, the wellness center patient volume will be based on future demand rather than current patient demand. Therefore, the impact of the industrial park on the market area population must be calculated to determine future patient demand for the wellness center. Future patient demand can then be the basis for a capital budget analysis.

The US Census Bureau provides a ten-year population forecast for each county based on information from census tracts. Table 2 shows the U.S. Census Bureau projected population for each census tract and the entire market area. This forecast is based on historical patterns and does not include the impact of major changes in the local economy such as an industrial park. These historical patterns include birth and death

rates, historic migration patterns and employment growth. The U.S. Census Bureau forecast serves as the basis for this market area population forecast for the proposed wellness center. This population forecast must be adjusted to account for the impact of a new industrial park so that future demand for the wellness center can be determined.

Table 2: Market Area Population Forecast for 2003-2010

| County Census Tract | Projected Population from U.S. Census Bureau <i>Without the Impact of the Industrial Park</i> Years 2003 – 2010 | | | | | | | |
|------------------------------|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Breckinridge 9604 | 1394 | 1411 | 1428 | 1445 | 1462 | 1480 | 1497 | 1515 |
| Grayson 9506 | 3820 | 3844 | 3868 | 3892 | 3916 | 3941 | 3965 | 3990 |
| Grayson 9507 | 2253 | 2267 | 2281 | 2296 | 2310 | 2324 | 2339 | 2353 |
| Muhlenberg 9601 | 962 | 961 | 961 | 960 | 959 | 958 | 957 | 957 |
| Muhlenberg 9602 | 7899 | 7893 | 7886 | 7880 | 7873 | 7867 | 7860 | 7854 |
| Muhlenberg 9607 | 3876 | 3873 | 3870 | 3867 | 3863 | 3860 | 3857 | 3854 |
| Ohio 9801 | 3286 | 3303 | 3320 | 3337 | 3355 | 3373 | 3390 | 3408 |
| Ohio 9802 | 3282 | 3299 | 3316 | 3333 | 3351 | 3368 | 3386 | 3404 |
| Ohio 9803 | 4073 | 4094 | 4116 | 4137 | 4159 | 4181 | 4202 | 4225 |
| Ohio 9804 | 1975 | 1986 | 1996 | 2006 | 2017 | 2027 | 2038 | 2049 |
| Ohio 9805 | 6710 | 6745 | 6780 | 6816 | 6851 | 6887 | 6923 | 6960 |
| Ohio 9806 | 2281 | 2293 | 2305 | 2317 | 2329 | 2341 | 2354 | 2366 |
| Ohio 9807 | 1668 | 1677 | 1686 | 1695 | 1704 | 1713 | 1722 | 1731 |
| Total Market Area | 43,479 | 43,646 | 43,813 | 43,981 | 44,149 | 44,320 | 44,490 | 44,666 |

New industrial parks typically bring in migrant workers, employees from outside the area that are not factored into U.S. Census Bureau population forecast. Because of the development of an industrial park in the region, the population is expected to increase due to new jobs and migrant workers. To adjust the U.S. Census Bureau population forecast to account for the impact of the industrial park, information regarding expected future employment from the industrial park was required. The Green River Area Development District (GRADD) was contacted and queried about the Bluegrass Regional Business Center employment data. It is expected that approximately 2,000 to 5,600 jobs will be created over the next decade due to the industrial park expansion. Based on GRADD employment projection, the midpoint of 3,750 jobs will be used in this analysis.

New jobs created by the industrial park expansion and occupied by in-migrant workers (new residents) represent future new households. The GRADD projected number of 3750 jobs must be converted into household or population figures. Empirical evidence presented in the current economic literature estimates that eighty percent (80%) of the jobs

created by an industrial park would be occupied by in-migrant workers while the remaining twenty percent (20%) would be held by current residents. By using the expected future employment expansion of 3,750 jobs, an in-migrant occupancy rate of 80% and an average household size of 2.0 people, the projected change in population can be estimated. The projected change in the market area population is estimated to be approximately 6000 new residents. Therefore, approximately 6000 new residents will move into Ohio County Hospital market area over the next decade.

The 6000 new residents will be distributed over an eight-year period from 2003 through 2010. As a result, approximately 750 new residents will be added per year to Ohio County Hospital's existing market area over an eight-year period. A ratio of the census tract population over the total census tract population from Table 1 was calculated for each census tract within the market area. This ratio was used to estimate each census tract's share of the 2000 population (see column 2 of Table 3). By applying this ratio to the estimated 750 potentially new residents on a per year basis, the 750 new residents can be distributed across each county census tract (See column 3 of Table 3). For example, 24 new residents will be added per year for eight years to Breckinridge County, Census Tract number 9604. The number of new residents added per year per census tract is then used to estimate the total market area population that reflects the impact of the industrial expansion.

Table 3: Number of Residents Added to Market Area Per Year

| County Census Tract (CT) | Ratio of CT Population Over Total CT Population Year 2000 | No. Of New Residents Added To Each CT Per Year Years 2003 - 2010 |
|-------------------------------------|--|---|
| Breckinridge 9604 | 0.0313 | 24 |
| Grayson 9506 | 0.0872 | 65 |
| Grayson 9507 | 0.0514 | 39 |
| Muhlenberg 9601 | 0.0224 | 17 |
| Muhlenberg 9602 | 0.1842 | 138 |
| Muhlenberg 9607 | 0.0904 | 68 |
| Ohio 9801 | 0.0752 | 56 |
| Ohio 9802 | 0.0752 | 56 |
| Ohio 9803 | 0.0933 | 70 |
| Ohio 9804 | 0.0452 | 34 |
| Ohio 9805 | 0.1536 | 115 |
| Ohio 9806 | 0.0522 | 39 |
| Ohio 9807 | 0.0382 | 29 |
| Total- | 1.0 | 750 |

Table 4 shows the total projected population plus the new additional residents from the industrial park expansion. Table 4 illustrates the population increase in each county census tract and in the total market area based on the addition of 750 new residents per year. Again, this information is based on the U.S. Census Bureau population forecast and it reflects the impact of the 6000 new residents due to the development of the industrial park.

Table 4: Market Area Population Forecast with Impact of Industrial Park

| County Census Tract (CT) | No. Of New Residents Added to Each CT per year | Projected Population Plus Additional New Residents from Industrial Park Years 2003 - 2010 | | | | | | | |
|-------------------------------------|--|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Breckinridge 9604 | 24 | 1418 | 1459 | 1500 | 1541 | 1582 | 1624 | 1665 | 1707 |
| Grayson 9506 | 65 | 3885 | 3974 | 4063 | 4152 | 4241 | 4331 | 4420 | 4510 |
| Grayson 9507 | 39 | 2292 | 2345 | 2398 | 2452 | 2505 | 2558 | 2612 | 2665 |
| Muhlenberg 9601 | 17 | 979 | 995 | 1012 | 1028 | 1044 | 1060 | 1076 | 1093 |
| Muhlenberg 9602 | 138 | 8037 | 8169 | 8300 | 8432 | 8563 | 8695 | 8826 | 8958 |
| Muhlenberg 9607 | 68 | 3944 | 4009 | 4074 | 4139 | 4203 | 4268 | 4333 | 4398 |
| Ohio 9801 | 56 | 3342 | 3415 | 3488 | 3561 | 3635 | 3709 | 3782 | 3856 |
| Ohio 9802 | 56 | 3338 | 3411 | 3484 | 3557 | 3631 | 3704 | 3778 | 3852 |
| Ohio 9803 | 70 | 4143 | 4234 | 4326 | 4417 | 4509 | 4601 | 4692 | 4785 |
| Ohio 9804 | 34 | 2009 | 2054 | 2098 | 2142 | 2187 | 2231 | 2276 | 2321 |
| Ohio 9805 | 115 | 6825 | 6975 | 7125 | 7276 | 7426 | 7577 | 7728 | 7880 |
| Ohio 9806 | 39 | 2320 | 2371 | 2422 | 2473 | 2524 | 2575 | 2627 | 2678 |
| Ohio 9807 | 29 | 1697 | 1735 | 1773 | 1811 | 1849 | 1887 | 1925 | 1963 |
| Total Market Area population | 750 | 44,229 | 45,146 | 46,063 | 46,981 | 47,899 | 48,820 | 49,740 | 50,666 |

Market Share Projections

The proposed wellness center market area was estimated to include all or part of thirteen census tracts within a four county region based on Ohio County Hospital market area. From Table 1, the counties, census tracts and percent of market share is applied to the projected market area population in Table 4 to estimate the total market share for years 2003 through 2010. Table 5 details the expected increase per year in Ohio County Hospital market share due to the impact of the industrial park development. Ohio County Hospital potential total market share for the year 2003 is 26,101 people and could possibly increase to population base of 30,105 by year 2010.

Table 5: Total Market Share with the Impact of the Industrial Park

| County Census Tract (CT) | Percentage of Market Share Per CT | Total Market Share with the Impact of Industrial Park Years 2003 - 2010 | | | | | | | |
|-------------------------------|---|--|--------|--------|--------|--------|--------|--------|--------|
| | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Breckinridge 9604 | 20% | 284 | 292 | 300 | 308 | 316 | 325 | 333 | 341 |
| Grayson 9506 | 10% | 389 | 397 | 406 | 415 | 424 | 433 | 442 | 451 |
| Grayson 9507 | 20% | 458 | 469 | 480 | 490 | 501 | 512 | 522 | 533 |
| Muhlenberg 9601 | 10% | 98 | 100 | 101 | 103 | 104 | 106 | 108 | 109 |
| Muhlenberg 9602 | 10% | 804 | 817 | 830 | 843 | 856 | 870 | 883 | 896 |
| Muhlenberg 9607 | 10% | 394 | 401 | 407 | 414 | 420 | 427 | 433 | 440 |
| Ohio 9801 | 100% | 3342 | 3415 | 3488 | 3561 | 3635 | 3709 | 3782 | 3856 |
| Ohio 9802 | 100% | 3338 | 3411 | 3484 | 3557 | 3631 | 3704 | 3778 | 3852 |
| Ohio 9803 | 100% | 4143 | 4234 | 4326 | 4417 | 4509 | 4601 | 4692 | 4785 |
| Ohio 9804 | 100% | 2009 | 2054 | 2098 | 2142 | 2187 | 2231 | 2276 | 2321 |
| Ohio 9805 | 100% | 6825 | 6975 | 7125 | 7276 | 7426 | 7577 | 7728 | 7880 |
| Ohio 9806 | 100% | 2320 | 2371 | 2422 | 2473 | 2524 | 2575 | 2627 | 2678 |
| Ohio 9807 | 100% | 1697 | 1735 | 1773 | 1811 | 1849 | 1887 | 1925 | 1963 |
| Total Market Share population | | 26,101 | 26,671 | 27,241 | 27,811 | 28,384 | 28,956 | 29,529 | 30,105 |

Table 6 illustrates the expected change in each census tract and the total market share from 2004 through 2010. This analysis estimates that approximately 570 new residents will be added to Ohio County Hospital market share per year from 2003 to 2010. The change in market share per year represents the portion of the new incoming residents that are potentially new clients for Ohio County Hospital and the wellness center.

Table 6: Expected Change in Market Share

| County Census Tract (CT) | Percentage of Market Share Per CT | Expected Change in Market Share With Impact of industrial Park Years 2004 – 2010 | | | | | | |
|---|---|--|------------|------------|------------|------------|------------|------------|
| | | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Breckinridge 9604 | 20% | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Grayson 9506 | 10% | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Grayson 9507 | 20% | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| Muhlenberg 9601 | 10% | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Muhlenberg 9602 | 10% | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Muhlenberg 9607 | 10% | 7 | 7 | 7 | 6 | 7 | 7 | 7 |
| Ohio 9801 | 100% | 73 | 73 | 73 | 74 | 74 | 73 | 74 |
| Ohio 9802 | 100% | 73 | 73 | 73 | 74 | 73 | 74 | 74 |
| Ohio 9803 | 100% | 91 | 92 | 91 | 92 | 92 | 91 | 93 |
| Ohio 9804 | 100% | 45 | 44 | 44 | 45 | 44 | 45 | 45 |
| Ohio 9805 | 100% | 150 | 150 | 151 | 150 | 151 | 151 | 152 |
| Ohio 9806 | 100% | 51 | 51 | 51 | 51 | 51 | 52 | 51 |
| Ohio 9807 | 100% | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| Total Change in Market Share population Per Year | | 570 | 570 | 570 | 573 | 572 | 573 | 576 |

Utilization Rates and Patient Volume

Utilization rates are ratios that describe the number of patient visits per X number (100, 1000 or 10,000) of people per year. It can be interpreted as Y number of visits that can be expected per X number of people. This number allows health care facilities to project the expected annual number of visits in a new population base. National and regional utilization rates were obtained from the Centers for Disease Control and the state utilization rates were provided by the Kentucky Department of Public Health.

National and regional utilization rates were multiplied by the projected market share population figures from Table 5 to estimate the annual outpatient visits in Table 7 for years 2003 through 2010. The national outpatient department (OPD) utilization rate of 31.1 per 100 people and regional OPD utilization rate of 26.5 per 100 people represent usage rates for all OPD clinics and services. These national and regional utilization rates allow this analysis to provide an expected high and low range of visits. For example, it is estimated that in year 2003, the Ohio County Hospital could potentially have 6,917 to 8,117 visits. In this analysis, one visit represents one patient visit per day per year. This interpretation does not take into account that a patient may visit more than one OPD clinic in one day.

In comparing this information to Ohio County Hospital current outpatient statistics, it is important to note that these numbers represent one person as an outpatient once per year. The hospital's current outpatient statistics represent the total number of outpatient visits. However, with the hospital statistics, one person may visit the hospital multiple times in a year and may require multiple services during a visit. Therefore, one person may be counted multiple times in a year in the hospital statistics. The wellness center estimated outpatient visits and current hospital statistics are not comparable due to this issue. To make this data comparable, information on average visits per person per year would be required from a national or local data source.

According to the Centers for Disease Control, wellness visits represent 35.7 percent of all outpatient visits on a national basis. Therefore, nearly one-third (1/3) of all outpatient department visits ordered or provided one or more preventive or therapeutic services. The wellness rate of 35.7% was applied to the calculated high and low OPD visits to estimate a range of OPD visits that may result in preventive or wellness services. Table 7 represents the expected annual range of utilization of all outpatient department services and wellness services for years 2003 through 2010. For example, in year 2003, it is estimated that Ohio County Hospital could possibly have 2,469 to 2,898 potential wellness visits.

Table 7: Expected Annual Utilization

| Expected Annual Visits Based On The Projected Market Share Population Years 2003 – 2010 | | | | | | | | |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Total market share population | 26,101 | 26,671 | 27,241 | 27,811 | 28,384 | 28,956 | 29,529 | 30,105 |
| Total pop. / 100 | 261 | 267 | 272 | 278 | 284 | 290 | 295 | 301 |
| Regional OPD visits / 100 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 |
| Total Regional OPD visits (low range) | 6,917 | 7,068 | 7,219 | 7,370 | 7,522 | 7,673 | 7,825 | 7,978 |
| National OPD visits / 100 | 31.1 | 31.1 | 31.1 | 31.1 | 31.1 | 31.1 | 31.1 | 31.1 |
| Total National OPD visits (high range) | 8,117 | 8,295 | 8,472 | 8,649 | 8,827 | 9,005 | 9,183 | 9,363 |
| 35.7% of OPD visits: wellness services | 35.7% | 35.7% | 35.7% | 35.7% | 35.7% | 35.7% | 35.7% | 35.7% |
| Total Regional Wellness Visits (low range) | 2,469 | 2,523 | 2,577 | 2,631 | 2,685 | 2,739 | 2,794 | 2,848 |
| Total National Wellness Visits (high range) | 2,898 | 2,961 | 3,024 | 3,088 | 3,151 | 3,215 | 3,279 | 3,343 |

Note: 1 visit represents 1 patient visit per day per year.

Table 8 represents a list of preventive services that are defined as wellness services by the Centers for Disease Control and details the percentage of wellness visits by type. Wellness services include diet/nutrition, exercise, mental health, tobacco use/exposure, prenatal instruction, growth and development and injury prevention. In general, wellness is preventive care. These percentages represent the expected number of wellness visits based on the type of wellness service provided by the proposed clinic in Ohio County. Table 8 provides information to generate potential scenarios of service usage and lines of services provided by the proposed wellness clinic. For example, 8.1% of all wellness services provided are injury prevention services that could be associated with employee compensation and safety programs. By applying this percentage to Table 7, it is estimated that in year 2003, the proposed clinic could potentially provide 200 to 235 injury prevention services.

Table 8: Wellness Services By Type

| Wellness Care by Type | Percent Of wellness visits |
|------------------------------|-----------------------------------|
| Diet / Nutrition | 37.8% |
| Exercise | 19.2% |
| Mental Health | 9.7% |
| Tobacco Use / Exposure | 9.2% |
| Prenatal Instructions | 8.1% |
| Growth Development | 8.1% |
| Injury Prevention | 8.1% |

Conclusion

The objective of this market demand analysis was to determine the market potential for a new stand-alone wellness center and project the future demand for wellness services associated with the Bluegrass Crossings Regional Business Center industrial park expansion. This information is necessary in determining the future potential of an outpatient clinic in a chosen area. This analysis offers projected population change in the general market area of the wellness center and Ohio County Hospital over the next decade and the subsequent change in market share. This information may be useful for other potential service additions or changes in this market area.

The University of Kentucky Department of Agricultural Economics, University of Kentucky Center for Rural Health and the Kentucky State Office of Rural Health conducted this market demand analysis under the Kentucky Rural Health Works Program for Ohio County Hospital. This analysis does not account for the fixed and operating costs necessary to open and operate a new wellness center or outpatient clinic in Ohio County. Therefore, further information will be required to determine the financial costs and benefits of operating such a facility.

You can contact Eric Scorsone at:
University of Kentucky
Department of Agricultural Economics
304 Charles E. Barnhart Bldg.
Lexington, KY 40546-0276

Phone: 859-257-7257
Fax: 859-323-1913
E-mail: escorson@uky.edu
URL: <http://www.uky.edu/Ag/AgEcon/scorsone.html>

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