

This is a sample of the instructor materials for *The Middleboro Casebook: Healthcare Strategy and Operations*, Third Edition, by James B. Lewis and Lee F. Seidel.

The book's extensive instructor's manual is divided into four sections:

- Section I: Using Middleboro
- Section II: Teaching Notes
- Section III: Assignments for Health Administration Press (HAP) Companion Texts
- Section IV: Other Materials

This sample includes the teaching notes and suggested assignments for Case 1, "The Community."

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## **Section II      Teaching Notes**

Note that population statistics approximate a standard normal distribution meaning it is not necessary to adjust the Hillsboro County population in order to use published state and national rates to estimate “expected occurrences.” Also, note that teaching note tables may be found at the end of the individual case discussions.

### **Case 1: The Community**

A typical initial student question is “Where are Hillsboro County and Middleboro?” The answer to this question is “anywhere you, the instructor, want it to be.”

At least two approaches can be taken.

One approach is to select a specific state in which to locate the county/towns. When used in this manner, we assign each student team to a different state. Your selection has implications given analyses to be completed. For example, the health profile of Colorado is very different from the profile for Mississippi, so comparing Middleboro case experience against the reference population of Colorado versus Mississippi will likely result in different findings and conclusions.

An alternate approach is to instruct students to use a reference population of the United States as a whole, rather than a particular state. This approach mitigates the variability observed when situating the case in any specific state.

Given that Hillsboro County and all cases are fictitious, however, this case can “fit” anywhere—it is ubiquitous.

### **A. Change in Hillsboro County**

Hillsboro County is experiencing slow but significant changes and many related issues and challenges. More are ahead.

One major change is the shifting locus of the population, business, and healthcare. The economic, demographic, and political center of the county is slowly shifting from Middleboro to Jasper. The commuter rail link between Jasper and Capital City will be completed in 18-24 months. The new road between Jasper and University Town will be completed in the foreseeable future. These linkages will accelerate change. A central question is how all these changes will develop and affect health and medical care providers serving the county.

Middleboro and Jasper also have different types of industries. Middleboro has an aging industrial base that includes heavy manufacturing and is surrounded by an agricultural area. Carlstead Rayon, its largest employer, has just closed. Middleboro has “always” been the healthcare, banking, and political center of the entire county. In contrast, Jasper is developing quickly. Jasper’s industrial park has attracted a broad range of service and light manufacturing industries. Increasingly, Jasper is also becoming a commuter town to Capital City. The future of both cities depends on their industries and their demographics.

This case also describes the focus of the state’s Certificate of Need Law. Note that a “Letter of Intent” has been submitted by Horizon Health Care, Inc., for a 65-bed drug and alcohol treatment hospital.

**Population/Demographics:** Hillsboro County may actually be two distinct areas. The area south of the existing interstate (Statesville and Jasper) may be different from the area north of interstate (Middleboro, Harris City, Mifflenville, Cartersville, Boalsburg, and Minortown). This difference includes demographics, economics, and many related factors. For example, the northern area of Hillsboro County is older and growing slower than the southern area.

It is important that students analyze the demographic and community data from multiple perspectives. For example, a downturn in heavy manufacturing—especially in the northern sector—may lead to a lower and different type of demand for occupational health service. Table II-1-A reports county population by age, as well as population growth.

## **B. The Pandemic**

The global pandemic was the most notable health-related event in the county, as well as much of the world. The impact of the pandemic on a relatively isolated and lightly populated area such as Hillsboro should be assessed by students. The local health care system was not prepared to deal with the crises brought about by the pandemic in terms of shifts in utilization, stresses on the financial health of local providers, deterioration of the mental health of residents, challenges to the local economy and increased stress within the social fabric of the community. Much of the immediate burden of coordination of services related to the pandemic fell to the County Health Department, an organization already burdened by understaffing and underfunding. Students should be cognizant of the challenges facing all health care organizations post-pandemic, as they attempt to recover their former operating stability.

## **C. Major Health Issues (apart from the pandemic)**

Hillsboro County is also facing a number of health issues that may deserve the attention of health services providers. Although more relevant data are also included in Case 9, the Hillsboro County Health Department, this case has sufficient data to determine “excess mortality” and related community and population health needs. Table II-1-B presents significant health needs facing the County.

The Vital Statistics reported for Hillsboro County also need to be considered. We recommend appropriate rates calculated using Hillsboro County data and then compared with the rates for an assigned state. Again, Z scores can be used to assess significant differences (especially helpful given the small size of the Hillsboro County numbers).

Hillsboro County has other specific health needs that may need to be acknowledged in the strategic plans for many health service providers. Data in this case and in the Hillsboro County Health Department case are sufficient for an analysis of the health status of Hillsboro County. The three community-wide health utilization metrics included in Table II-1-C are basic measures

of hospital inpatient utilization. They can be compared with national and state-specific metrics. Inpatient Occupancy and Average Length of Stay (ALOS) also need to be considered.

Table II-1-D reports specific 2024 market attributes for each hospital in Hillsboro County.

The dependency ratios by town should total 100% (including the relatively small number of patients who do not reside in one of the County’s communities). Market share percentages may or may not total to 100% depending on the number of patient days generated by town residents outside of the county in other hospitals.

A significant utilization question is whether Hillsboro County will have two hospitals located in Middleboro, especially given the changing dynamics in the Jasper market. Data in the case also are sufficient to assess the number and type of physicians in Hillsboro County, health insurance plans, the number of Intermediate Care and Skilled Care nursing home beds in the county, and several other indicators.

**TABLES**

**TABLE II-1-A**

**Hillsboro County Population by Age and Rate of Change**

<b>Community</b>	<b>Population 2224</b>	<b>Percent of Total Population 2024</b>	<b>Percent Pop &gt; 65 YOA 2024</b>	<b>Population 2019</b>	<b>Percent of Total Population 2019</b>
<b>Hillsboro Cty- All</b>	147,400		8.70%	144,768	
<b>Southern</b>	69,196	47.00%	8.48%	66,010	45.60%
<b>Northern</b>	78,204	53.00%	8.90%	78,758	54.40%

**Notes:**

(1) The **Market Dependency Ratio** or **Patient Origin Analysis** indicates what percentage of a specific hospital’s total patients resides in a specific town.

(2) In contrast, **Market Share** indicates what percentage of a specific town’s patient days was provided by a specific hospital.

(3) Southern = Jasper, Statesville; Northern = Middleboro, Harris City, Mifflenville, Carterville, Minortown, Boalsburg

Table II-1-B is an example using the latest available “all US cause-specific death rates.” It indicates statistically significant “excess mortality” associated with specific causes of death.

**TABLE II-1-B**

**Significant Health Needs (Excess Mortality) Facing Hillsboro County**

<b>Cause of Death</b>	<b>2024 Number of Deaths</b>	<b>Rate per 100,000 Note 1</b>	<b>2024 Expected</b>	<b>Z SCORE Note 2</b>
Diseases of the Heart	408	200.8	296.0	<b>6.51</b>
Malignant Neoplasms	254	182.7	269.3	-0.93
Cerebrovascular Diseases	84	45.7	67.4	<b>2.03</b>
Chronic Lower Respiratory	74	47.8	70.5	0.42
All Accidents	71	52.7	77.7	-0.76
Influenza and Pneumonia	54	15.2	22.4	<b>6.67</b>
Alzheimer’s Disease	42	37	54.5	-1.70
Pandemic	41	N/A	N/A	N/A
Diabetes Mellitus	40	26.7	39.4	0.10
Nephritis, Nephrotic Syndrome, and Nephrosis	23	15.7	23.1	-0.03
Intentional Self-Harm	22	14.9	22.0	0.01

Pandemic mortality rates not available for 2024.

**Notes:**

(1) Reference Rate US Death Rates per 100,000 as found in National Vital Statistics Reports, Volume 70, Number 9.

(2) Expected number of Hillsboro County Deaths = Reference Rate per 100,000 x Hillsboro County population in 100,000s (e.g., 147.4)

(3) O = Observed (actual) Number of Deaths. E = Expected Number of Deaths using Reference rate x population in 100,000s.

(4)  $Z = ((O-E)/\text{SQRT of } E)$ . To be statistically significant with 95% confidence that a difference exists, the Z score must be 1.96 or higher.

**TABLE II-1-C**

**Hospital Utilization: 2024**

<b>2024 Hospital Utilization</b>	<b>2024 Population</b>	<b>Patient Days per 1,000</b>	<b>Discharges per 1,000</b>	<b>Average Length of Stay (Days)</b>
	147,400	516.1	109.2	4.73
Jasper	54,293	478.5	101.0	4.74
Middleboro	49,003	550.0	124.0	4.44
Statesville	14,903	464.9	107.7	4.32
Harris City	11,895	568.0	106.9	5.31
Mifflenville	11,134	547.3	110.7	4.79
Cartersville	2,078	565.0	102.0	5.54
Minortown	2,109	533.9	69.7	7.66
Boalsburg	1,985	541.1	121.4	4.46
<b>Out of County</b>	NA	NA	NA	6.33

**TABLE II-1-D**  
**Hospital Market Characteristics**

<b>2024 Hospital Market Analysis</b>	<b>MIDCARE HOSPITAL</b>		<b>WEBSTER HOSPITAL</b>	
<b>Based on 2024 Patient Days</b>	<b>Marketing Dependency Ratio (%) -1</b>	<b>Market Share (%) - 2</b>	<b>Marketing Dependency Ratio (%) -1</b>	<b>Market Share (%) - 2</b>
<b>Jasper</b>	27.4%	49.3%	9.1%	5.8%
<b>Middleboro</b>	46.1%	80.0%	29.5%	18.1%
<b>Statesville</b>	9.6%	64.7%	13.6%	32.6%
<b>Harris City</b>	3.4%	23.8%	30.0%	73.7%
<b>Mifflenville</b>	8.4%	64.3%	12.2%	33.2%
<b>Minortown</b>	2.2%	90.6%	0.6%	8.7%
<b>Carterville</b>	1.6%	36.0%	4.4%	17.6%
<b>Boalsburg</b>	1.2%	54.0%	2.9%	45.3%

#### **IV. Other Assignments (By Case)**

- A. The Community
- B. Hillsboro Health
- C. Physician Care Services, Inc.
- D. Middleboro Community Mental Health Center
- E. Webster Hospital
- F. MIDCARE
- G. Medical Associates
- H. Jasper Gardens
- I. Hillsboro County Health Department
- J. Other Questions for Cases 1-8
- K. Questions for Cases 10,11,12 and/or 15
- L. Questions for Cases 13 and 14

#### **A. The Community**

**1. Demographic and Population Analysis:** We need an analysis of the population changes and characteristics in Hillsboro County. Please address each of the following questions and provide appropriate quantitative justification to support your conclusions and recommendations. Over the past five and ten years, which of the communities located in Hillsboro County have grown faster than the overall rate of population increase in Hillsboro County? Over the last five and ten years, which of the communities in Hillsboro County have grown slower than the overall rate of population growth in Hillsboro County? What should we expect the population to be in 2030 for all towns located in Hillsboro County? To what degree does the age profile of Hillsboro County resemble the overall age profile demographic of the United States? Which towns in the county are the oldest and the youngest? Assess the implications of your findings related to the delivery of health services in the county.

**2. Nursing Home Need Study:** National statistics indicate that approximately 3.9 percent of the population 65 or older lives in nursing homes. Historically, nursing homes in Hillsboro County have an average occupancy of 94 percent. Does Hillsboro County currently have a sufficient number of nursing home beds? Are additional nursing home beds needed as of today and/or by 2030? If yes, indicate where in Hillsboro County you recommend any additional nursing home beds be located.

**3. Health Priorities:** To assess and improve health services in Hillsboro County, we need a comprehensive understanding of population characteristics and anticipated changes. For example, the need and demand for health and medical care are both critically linked to demographic characteristics. Based on your answers to Question 1, indicate your five most significant assessments involving Hillsboro County and its communities. For each critical assessment, indicate your rationale and assess its significance on the health and healthcare services in Hillsboro County.

**4. Hospital Comparison:** We need an analysis of hospital utilization, cost, and quality in Hillsboro County. Consider average length of stay (ALOS), hospital admissions and patient days



per 1,000 population, and other appropriate statistics. Answer the following questions and provide appropriate quantitative justification to support your conclusions and recommendations. Indicate significant conclusions concerning 2024's countywide and town-specific hospital utilization statistics. Are local hospital utilization statistics in keeping with national rates and statistics? What should be the number of 2028 hospital discharges and patient days generated by the population in Hillsboro County? For each community, include your demographic forecast. This will require you to estimate national hospital utilization statistics (e.g., ALOS, patient days per 1,000). For the next five years, indicate the anticipated number of inpatient patient days and occupancy for MIDCARE and Webster Hospital. Assess the significance of your findings on the health and healthcare services in Hillsboro County.

**5. Physician Type Analyses:** We need a comprehensive understanding of the number and type of physicians in Hillsboro County. Address each of the following questions and provide appropriate quantitative justification to support your conclusions and recommendations. Based on available national statistics (e.g., physician/population ratios), does Hillsboro County have a significant excess or shortage of physicians? We define "significant" as meaning 15% too many or 15% too few. Excluding hospital-based specialties (e.g., pathologists), what medical specialties (e.g., general internal medicine) are in excess of national standards? As of 2024, how many additional physicians are needed in what specific medical specialties? Assess the significance of your findings on the health and healthcare services in Hillsboro County.

**6. Health Needs Study:** We need an analysis of the future health needs in Hillsboro County. Please address each of the following questions and provide appropriate quantitative justification to support your conclusions and recommendations. Assess Hillsboro County's mortality statistics. Is Hillsboro County experiencing significant "excess" mortality associated with specific causes of death? Are Hillsboro County's causes of death in accordance with or significantly different than disease-specific national or state rates and specific trends? Compare the health insurance coverage in Hillsboro County with national statistics. Is Hillsboro County similar to or different than the overall United States? Assess the significance of your findings on the health and healthcare services in Hillsboro County.

**7. Vital Statistics Analysis:** Assess Hillsboro County's vital statistics. Indicate whether the rates experienced in Hillsboro County are in accordance with national rates and trends. Assess the significance of your findings on the health and healthcare services in Hillsboro County.

**8. County-Wide Disaster Planning:** As you are aware, under a new federal and state program administered by the office of the governor, every county has the opportunity to apply for a planning grant, followed by implementation funding to better prepare for large-scale disasters. Each municipality in our county and all licensed health facilities and schools have existing disaster plans. Some of our larger employers also report having such plans. An analysis two years ago indicated that the number of first responders (police, fire, and EMT) in Hillsboro County per 1,000 residents is within 5 percent of national averages for a rural area. As such, we believe that we have sufficient infrastructure to address accidents and related issues. For the grant, we need to propose six to ten actions that could significantly enhance our area's ability to address large-scale weather disasters and/or other types of large-scale disasters that would involve a significant area response. Provide your list of six to ten actions with rationale.

**9. Hillsboro County Health Analysis:** Using the available data, indicate the top ten health challenges facing residents in this county. Use the state of \_\_\_\_\_ for purposes of reference. Note that Capital City is not in Hillsboro County. For Hillsboro County, list your findings in priority order with explanations and rationale. What are the implications of your findings on the organized health services in the county?

**10. Hillsboro County vs. Capital City:** Compare and contrast the health status of residents in these two areas. Your analysis should include vital statistics and disease-specific death rates. Are these two adjacent areas similar or different? Why? What are the implications?

**11. Regional Economic Analysis:** We need a regional economic analysis that indicates the anticipated five-year economic future for the major industries in Hillsboro County. Using North American Industry Classification System (NAICS) codes and related national analyses, assess the future markets for River Industries; Master Tractor; US Parts; National Yearbook; Office Pro; Chicken Farms, Inc.; and the Middleboro Trust Company. Which of these industries is expected to grow, remain approximately the same, or diminish in sales and employment? Given this information, what is your assessment of the regional economy?

**12. Community Health Needs Assessment:** You have been asked to complete the section of the Community Health Needs Assessment for Hillsboro County, with a specific charge to identify opportunities for collaboration between public health organizations/functions and healthcare organizations/functions. Draft a 2–3 page discussion on this subject.

## **B. Hillsboro Health**

**1. SWOT Analysis:** We are about to begin our annual strategic planning process that will culminate with our recommended budget and marketing plan. The primary purpose of this SWOT analysis is to establish our strategic agenda and suggest—if appropriate—changes to our mission. The SWOT will be presented to each board committee and then to the entire board. Based on the SWOT, management has been asked for three to five strategic recommendations to better position Hillsboro Health (HH) to fulfill its mission in a cost-effective manner. Report your recommendations with rationale.

**2. Personal Health Services Division:** This division and its many services need a detailed review. As demonstrated by utilization, the demand for services in this division continues to increase. Unlike the other divisions, this division is not influenced by grants or Medicare. It is, however, very susceptible to competition. Some board members feel that we should lower all our prices by 10 percent so that our prices are lower than the average charged in our market area. Others feel that prices should be lowered at least by 10 percent because we are a nonprofit agency. What is the impact of lowering our prices by 10 percent and 20 percent? Should our prices be lowered? If no, why? If yes, what will be the likely impact, and what is your plan to address the revenue and expense implications? Present a plan for this division so that it continues to meet area demands and contributes to Hillsboro Health's mission and goals.

**3. United Appeal:** Some members of our board also serve on the board of United Appeal (UA). These members have indicated that the renewal of the UA grant to our agency depends on our