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ABSTRACT

In this paper we demonstrate how small area population estimates and projections are used along with other factors such as patient days, maximum use rate, minimum use rate and experienced use rate to determine projected beds needed for general long term care. The Illinois Health Facilities and Services Review Board (the BOARD), established under the Illinois Health Facilities Planning Act (ACT) of 1974, is required to develop criteria and standards for health care facilities planning, conduct statewide inventories of health care facilities, maintain an updated inventory on the BOARD's website reflecting the most recent bed and service changes and updated need determinations when new census/population data become available or new need formulae are adopted. In developing health care facility plans, the Board is required to consider several factors including the size, composition and growth of the population of the area to be served. We used a combination of linear extrapolation and cohort-component methods to produce population estimates and projections for the Certificate of Need (CON) health service areas (HSAs). The

CON process required under the ACT is designed to restrain rising health care costs by preventing unnecessary construction or modification of health care facilities. Long term facilities are needed to care for the growing aging population who may have many chronic health conditions. We demonstrate how bed needs were computed and how population projections were used and discuss the materials presented to the Board that is part of assessment of the project to increase or decrease beds. Among those factors are the computed population and calculated need for long term care beds and utilization reports for existing facilities.

Population estimates and projections play a vital role in addressing health care needs of the population by distributing facilities and services equitably throughout the state. These estimates and projections help CON in facilitating population based long-term services for the elderly in Illinois.

Introduction

- We demonstrate how small area population estimates and projections are used along with other factors to determine projected beds needed for general long term care.
- In developing health care facility plans, the Illinois Health Facilities and Services Review Board is required to consider several factors including the size, composition and growth of the population of the area served.
- The Certificate of Need (CON) process required under the Illinois Health Facilities Planning Act is designed to restrain rising health care costs by preventing unnecessary construction or modification of health care facilities.

Formula Components

- In reviewing applications on health care planning projects, the Board considers the following factors:
- Size, composition, and growth of the population
- Utilization of existing facilities
- Multi-institutional systems
- Financial and economic feasibility
- Needs of religious bodies or denominations

Variances to Computed Bed Need

- Continuum of Care (for retirement community)
  - The project will provide a continuum of care for a geriatric population that includes independent living and/or congregate housing.
  - Serve only the residents of the housing complex.
  - The proposed number of beds are needed and limited to current residents of the independent living units and/or congregate housing.

Variances to Computed Bed Need

- Defined Population
  - The proposed project will serve a defined population group of a religious, fraternal or ethnic nature from throughout the entire health service area or from a larger geographic service area.
  - At least 85% of the residents of the facility will be members of the defined population group.

Formulas Used in Projecting Number of Needed Beds

- Demand-based:

- What has occurred in the past will occur in the future
- Uses inpatient days and projected populations

- Incidence based:
  - uses incidence rate of a disease or health condition to predict need

Variables Used to Compute Projected Beds Needed for General Long-Term Care

- Patient days
- (current) estimated population
- (five year) projected population
- Maximum use rate
- Minimum use rate
- Experienced use rate

General Long-Term Care Formula

- Additional Beds Needed = Projected Number of Beds Needed – Existing Beds >0 (<0 will indicate Excess beds)

Demand Based Services

- Medical=surgical/pediatrics
- Intensive care
- Rehabilitative
- General long-term care

This presentation will concentrate on general long-term care only.

Table 1:
Existing and Projected Beds Needed in Three Case study Areas

Case #	Existing # of Beds	Projected # of Beds Needed	Additional # of Beds Needed	Excess Beds
I	2993	3322	329	0
II	5868	5913	45	0
III	1118	1020	0	98

General Long-Term Care Age Groups for Estimated and Projected Population

- 0-64 years
- 65-74 years
- 75 years and older

Methods Used for Estimates and Projections of Population for Health Planning Areas

- Mathematical Extrapolation Method
- Cohort-Component Method

Population for General Long Term Care Areas (GLTCs) : 2010 and 2015 (Age Groups: 0-64, 65-74, 75+, Total)

Age groups are extrapolated forward from April 1, 2000 and April 1, 2010 base numbers (census counts) to July 1, 2010 estimate and 5-year projection (2015). These estimates and projections are computed for each township (Cook Suburban), community area (Chicago) and for each county in Illinois. We take average of estimates or projections produced by two

mathematical formulas. We control the estimates to appropriate level of geography using numbers produced by the U.S. Census Bureau.

In the absence of updated county population projections by age and sex produced by Illinois Sate, our general source of controls for county projections, came from the Nielsen Company (July 1, 2012). Usually these projections need to be interpolated to get our required projection year data. These Nielsen state, county and Chicago projections were produced by using the Cohort-Survival method. At all levels, the Cohort-Survival method started with five-year age/sex categories-separating persons in households from those in group quarters. Because Census 2010 data did not provide full age/sex detail for household versus group quarters populations, Nielsen estimated the details required to execute the cohort survival method. The January 1, 2013 estimates of population by age/sex were the starting point for five-year survivals to January 1, 2018. We, in IDPH, interpolated these data to get July 1, 2015 population projections to use them as independent controls for projections for CON geographies.

Table 2:
Population Estimates and Projections by Age for Three Health Planning Areas

Health Service Area	Health Planning Area (County)	Estimates 2010 Age Groups			Projections 2015 Age Groups		
		0-64	65-74	75+	0-64	65-74	75+
4	McLean	152,400	9,100	8,300	152,600	11,900	8,600
7	DuPage	810,800	58,200	49,000	804,400	78,600	51,600
8	Kane*	473,700	22,000	19,600	538,800	41,700	26,800

* Estimates for 2008 and Projections for 2018

Three General Long-Term Cases

- Case I – Project for additional beds approved
- Case II – Project for additional beds needed
- Case III – Project approved with Variance to projected beds need

Case I – Project for Additional Beds Approved

Location:

- existing facilities
- travel time
- need of additional 428 beds in the planning area

Alternatives:

- do nothing
- alternative services
- utilize existing structure
- **construct a new facility (a 170-bed skilled care facility at an estimated construction cost of $31,845,300)**

Need for Project:

- Increase in population of 65+
- Need for additional beds projected

Case II – Projects for Additional Beds Denied

Location:

- utilization of existing facilities
- travel time

Alternatives:

- **do nothing**
- alternative services
- utilize existing structure
- construct new facility

Need for Project:

- There was a need for 45 additional beds but the application was for 120 beds at an estimated cost of $18,664,800.

Case III – Project Approved with Variance to Projected Beds Needed

Although there an excess of 98 long term care beds, the Board approved the project to construct 18 long term care beds that would be limited to the residents of the Community Care Retirement community (CCRC). This case is an example of approval that was a Variance to projected beds need.

Discussion and Implications

Influence of Population Projections on Decision Making:

- Interaction with other variables
- Depends on number of existing beds
  - Limitations:
    - Data sources and methods
    - Potential challenges to population estimates and projections

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