Nursing Home Methodology Workgroup

July 29, 2015

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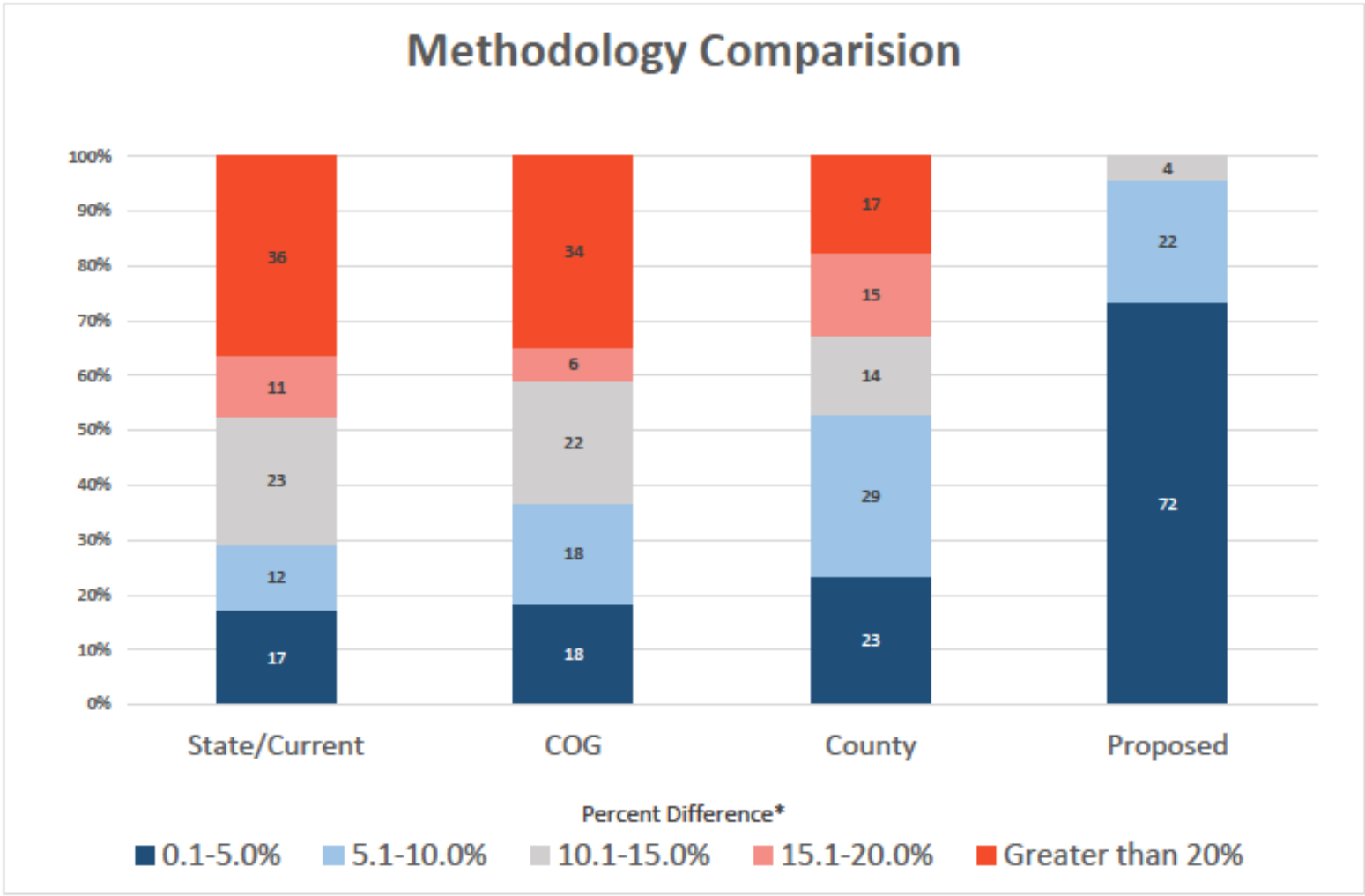
Additional Data Analysis

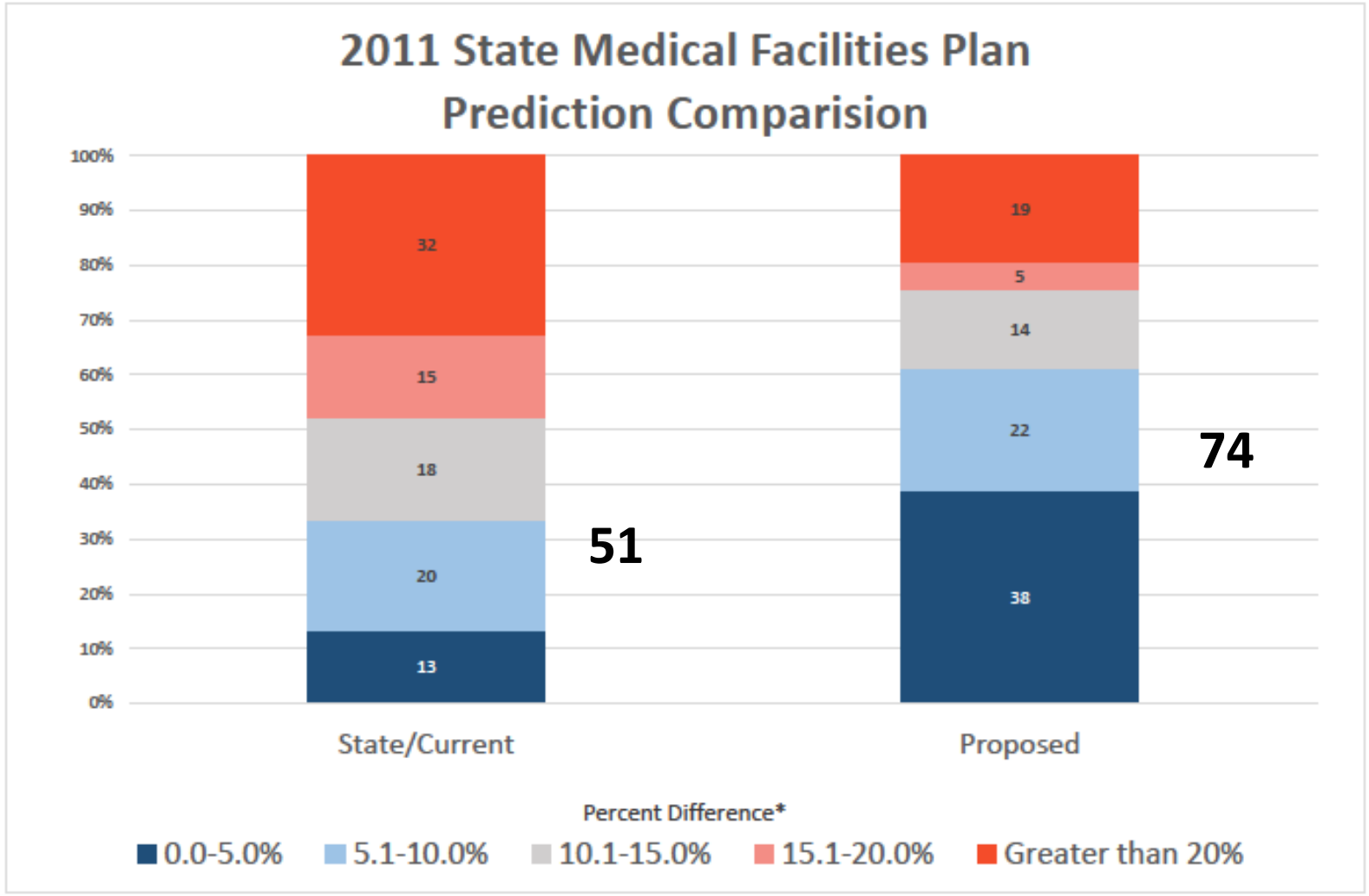
- County Rate Model
  - In/Out Migration of Patients
    - Adjust rates
    - Adjust population
- Hybrid Model
  - 1, 1.5, and 2 Standard Deviations
- Vacancy Factors
  - 90% and 93%
- Change CCRC Exclusion to 15%
- Review Outlier Data for Patterns

Proposed Changes to the Methodology

- One use rate (no age groups) calculated by county with annual change rate projection of 36 months.
- Smoothing of average change rate applied to each county with substitution of the state rate at ½ standard deviation (SD) above and below the mean.
- Vacancy factor applied to bed utilization summary (93%).
- Use of median occupancy rate among all facilities in a county for need determinations.

Validation of Proposed Methodology


Methodology Comparision
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
36
11
23
12
17
34
6
22
18
18
17
15
14
29
23
4
22
72
State/Current
COG
County
Proposed
Percent Difference*
0.1-5.0%
5.1-10.0%
10.1-15.0%
15.1-20.0%
Greater than 20%


2011 State Medical Facilities Plan
Prediction Comparision
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
32
15
18
20
13
51
19
5
14
22
38
74
State/Current
Proposed
Percent Difference*
0.0-5.0%
5.1-10.0%
10.1-15.0%
15.1-20.0%
Greater than 20%

Proposed Methodology

Changes to the Methodology

Proposed Methodology

- One use rate (no age groups) calculated by county with annual change rate projection 36 months.
- Smoothing of average change rate applied to each county with substitution of the state rate at +/- ½ Standard Deviation (SD).
- Vacancy factor applied to bed utilization summary (93%).
- Use of median occupancy rate among all facilities in a county for need determinations.

Current Methodology

- Four age group use rates calculated statewide applied to each county and projected forward 30 months.
- No smoothing.
- No vacancy factor.
- Weighted average occupancy rate used in need determination.

Changes in Projected Bed Utilization Calculation

Nursing Home Methodology: Rates

Chapter 10. Basic Assumption #10.

The following bed-to-population ratios were derived from combined patient utilization data as reported on 2014 Nursing Home License Renewal Applications and on Nursing Care Supplements to the 2014 Hospital License Renewal Applications, projected forward 30 months based on trend lines reflecting the previous five years' data by age group. (p. 190)

2015 SMFP Rates

Age Group	Beds Per 1,000 Population
Under 65	0.63
65 – 74	7.05
75 – 84	24.20
85 and Over	86.92

Behind the Scene Calculations: County Rates

For Each of the Previous 5 Years

$$\frac{\text{Total Number of Patients (LRAs) in all Facilities in County}}{\text{Total Population for Year for County}} \times 1{,}000$$

Combined County Rate with Projected Bed Utilization Summary

County	2018 Population (Civilian)	Rates					Selected Average Change	Final Calculated Rate	2018 Projected Bed Utilization Summary
		2009	2010	2011	2012	2013			
Alamance	156,708	5.39	5.74	5.23	5.25	4.99	-0.0177	4.72	740
Alexander	37,364	3.32	2.93	3.01	3.29	3.23	-0.0040	3.19	119
Alleghany	11,060	7.48	7.03	7.23	6.93	7.07	-0.0132	6.79	75
Anson	26,427	6.11	5.88	5.65	5.56	5.24	-0.0113	5.06	134

Annual Change Rates -0.038 -0.038 -0.017 -0.057

Total ÷ 4

Average Change Rate -0.038

Rate Substituted for the state average change

Combined County Rate with Projected Bed Utilization Summary

County	2018 Population (Civilian)	Rates					Selected Average Change	Final Calculated Rate	2018 Projected Bed Utilization Summary
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Final Calculated Rate = (2013 Rate x Selected Average Change X 3) + 2013 Rate

(5.24 x -.0113 x 3) + 5.24 = 5.06

Changed from projected 2.5 (30 months) to 3 years (36 months)

Combined County Rate with Projected Bed Utilization Summary

County	2018 Population (Civilian)	Rates					Selected Average Change	Final Calculated Rate	2018 Projected Bed Utilization Summary
		2009	2010	2011	2012	2013			
Alamance	156,708	5.39	5.74	5.23	5.25	4.99	-0.0177	4.72	740
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Projected Bed Utilization Summary = (Final Calculated Rate X Population)

(26,427/1000) x 5.06 = 134

Projection of Rate Change

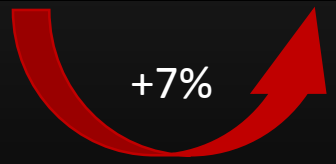
- Changing from a rate projection of 30 months to 36 months aligns with the 3 year time frame of the population and the projection of need.
- The higher the projection the longer trend is carried out in time.
  - If trend is decreasing then Bed Utilization Summary decreases.
  - If trend is increasing then Bed Utilization Summary increases.
  - This includes the outlier counties that are assigned the state average change rate.

Vacancy Factor

Vacancy Factor

Vacancy Factor* Applied to 2018 Projected Bed Utilization Summary

County	2018 Projected Bed Utilization Summary	2018 Projected Bed Utilization Summary (93%)	Licensed Plus Previous Allocations	Sum of Exclusions	Total Inventory	Surplus/-Deficit
Alamance	740	792	888	43	845	53
Alexander	119	128	183	49	134	6



Vacancy factor was calculated with a 7% increase to the Projected Bed Utilization Summary.

Vacancy Factor* Applied to 2018 Projected Bed Utilization Summary

County	2018 Projected Bed Utilization Summary	2018 Projected Bed Utilization Summary with Vacancy Factor (93%)	Licensed Plus Previous Allocations	Sum of Exclusions	Total Inventory	Surplus/-Deficit
Alamance	740	792	888	43	845	53
Alexander	119	128	183	49	134	6

Surplus/Deficit = Total Inventory – Projected Utilization with Vacancy Factor

134 – 128 = 6

Occupancy Rate

County Weighted Average

- Current method of calculating the occupancy rate is a county weighted average.
- Calculated by adding all the days of care and then dividing by the maximum number of days of care in the county.

		Total Number of Beds	Reported Days of Care	Maximum Days of Care	Percentage
Granville	Facility I	80	22,353	29,200	76.55%
	Facility II	160	50,067	58,400	85.73%
	County Totals	240	72,420	87,600	82.67%

Facility Median

- Proposed method of calculating the occupancy rate is a facility median.
- Calculated for each facility such that the reported days of care is divided by the maximum number of days of care.
- Find the median of occupancy rates for all facilities in the county.

		Reported Days of Care	Maximum Days of Care	Percentage	Median
Granville	Facility I	22,353	29,200	76.55%	81.14%
	Facility II	50,067	58,400	85.73%	

Higher of either the County Weighted Average or Median

- Median is usually higher, but not always. Many counties (14) had higher County Weighted Averages.

		Total Number of Beds	Reported Days of Care	Maximum Days of Care	Percentage
Lenoir	Facility 1	175	54,175	63,875	84.81%
	Facility 2	26	4,308	9,490	45.40%
	Facility 3	106	20,145	38,690	52.07%
	County Totals	307	78,628	112,055	70.17%

Median
52.07%

Exclusions

The Current Methodology: Exclusions

- Continuing Care Retirement Communities (CCRC)
  - 50% of beds developed under policy NH-2
- Religious or Fraternal
  - Percent of total changes annually
  - Basic Assumption #5: “To the extent that out-of-area patients are served by religious or fraternal organizations, beds so occupied will be excluded from the inventory.”
- State and Federal facilities

CCRC Exclusions 50% versus 15%

- 21 Counties have CCRCs with beds excluded through Policy NH-2.

County	Total NH 2 Beds	50% Excluded	15% Excluded	Beds Added to Inventory
Totals	1,927	964	289	675

Discussion

Appendix 1: Initial Data Analyses

Analyses from First Presentation

- State Rate
- COG
- Utilization (AKA Days of Care Rate)
- County Rates

Appendix 2: Other Data Analyses

- Hybrid Standard Deviation (.5, 1, 1.5, 2, 2.5 SD)
- In-Out Migration
- County Age Rates with Smoothing (.5SD, 1SD, 2SD)
- Combined County Rates (.5,1 SD, 2 SD)
- Combined County Rate with Smoothing in Projected Rate (.5 SD, 1SD, 2SD)
- Combined County Rate with Smoothing in Trendline (20%, 25%, 15%)
- Combined County Rate with Smoothing in Trendline Adjusted Denominator (20%, 25%, 15%)
- Combined County Rate with Smoothing in Average change Rate (.5 SD, 1SD, 2SD)
- Combined County Rate with Smoothing in Average change Rate_With Cap (.5 SD, 1SD, 2SD)
- Combined County Rate_No Smoothing (Variable validation 1-5 Years)
- Combined SD State Rate Substitution (Variable SD with rate substitution; 1-5 years of validation)
- Combined with Cap (Variable SD with rate substitution; CAP being equivalent to SD; 1-5 years of validation)
- Combined with SD St. Substitution and Smoothed Validation.