

# Estimating Long-term Care Need in California Prisons

Stephen Resch, March 28, 2008



# Project Overview

**Objective:** Estimate the current and future need for long-term care beds by level of care to inform new facilities construction for the California prison system

**Timeline:** December 2006 → August 2007

## Summary of Activities:

1. Assembled a Project Data Set (PDS) using extracts of existing data from CDCR administrative and clinical databases
2. Developed an Assessment Tool to capture inmate health and functional status through medical chart abstraction and proxy interviews with clinical and custody staff
3. Primary data collection (survey) of a stratified sample of inmates in all 33 prison facilities (959 inmates in medical beds, 1192 inmates in general population)
4. Analyses to evaluate the current health status of inmates in the medical and general populations
5. Statistical modeling to estimate the future long-term care beds needed at 3 acuity levels.

# Project Overview

Abt

## Team:

| CPR                     | CDCR                                   | Lumetra                   | Abt Associates     |
|-------------------------|--|---------------------------|--------------------|
| Terry Hill, MD          | Jay Atkinson                           | Alison Snow               | Ted Hammett, PhD   |
| Steve Cambra Jr.        | Lori Ascuncion                         | Saleema Hashwani, PhD, RN | Sofia Kennedy      |
| Jackie Clark, RN        | Amnon Igra                             | James Lett, MD            | Stephen Resch, PhD |
| Tim Rougeux             | Ryan Wong                              |                           | Bill Rhodes, PhD   |
| John Hagar              | Denny Salade                           |                           | Fatih Unlu, PhD    |
| Joe McGrath             | Dee Carrier                            |                           | Victoria Shier     |
| Justin Graham, MD       | Jacqui Coder                           |                           | Terry Moore, RN    |
| Rick Pollard (Maxor Rx) | Henry Willis, MD                       |                           |                    |
|                         | Ted Rauh                               |                           |                    |
|                         | Rosa Perez, RN                         |                           |                    |
|                         | <i>Clinical Staff at Facilities</i>    |                           |                    |
|                         | <i>Corrections Staff at Facilities</i> |                           |                    |

## Existing Data

- Assembled a Project Data Set (PDS) from existing sources at CDCR
  - Demographics, custody (DDPS / OBIS) – *basic inmate data*
  - In-house medical bed utilization (CADDIS) - *for billing*
  - Developmental Disabilities Program and the Disability Placement Program (ACTS) – *for compliance with court rulings*

*Poor data on health of inmate population in existing data systems*

# Primary Data Collection

*How to accurately measure current disease burden and long term care (LTC) needs of **entire** inmate population?*

- **Option 1: focus on medical charts alone**
  - Medical records system known to be in disarray
    - As many as 40% of charts not able to be located
  - Concern that a significant amount of disease burden and functional limitations would not be recorded in medical charts
    - No clear measures of functional status
- **Option 2: assess inmates directly**
  - Operationally complicated
  - Higher standard for IRB / informed consent
- **Pragmatic “hybrid” solution**
  - Chart abstraction + “proxy” interviews
  - Get what we can from charts, and leverage knowledge of CO and clinical staff that interact with inmates
  - Next study design issue to deal with: ***Precision!***

# Primary Data Collection

## *Solving the “Needle in haystack” problem*

- To maximize precision of estimates we had to “enrich” our sample of inmates with people likely to need LTC.
  - Medical beds seemed like a good place to start
- Medical Bed Census (All 33 facilities)
  - Census of all occupied medical beds in the CA prison system (excluding out-of-state, community corrections facilities, and work camps);
  - 724 inmates receiving treatment for physical illness were assessed (235 inmates in medical beds for mental health reasons were excluded)
  - Included inmates in OHU, CTC, GACH, SNF, hospice, and community hospital beds (HIV beds in Genpop were excluded)
  - One-day data collection “Sweep” by CDCR nurses

## Sampling Strategy (2)

### *Solving the “Needle in haystack” problem*

- We then used existing data in PDS, a survey of COs, the results of the medical bed census, and some statistical wizardry to partition the general population inmates into four risk groups according to their calculated risk of needing LTC
- General Population Sample (9 facilities)
  - Risk Model: Age, physical disability, prior healthcare utilization
  - CO nominations of 648 inmates they believed should be assessed for chronic disease or functional limitations
  - **No inmates sampled from the “low-risk and not nominated” stratum**
  - Of 45,523 inmates in 9 prisons 3,338 inmates eligible for assessment

|                                    |                                    |
|------------------------------------|------------------------------------|
| high-risk<br>CO-nominated<br>288   | low-risk<br>CO-nominated<br>360    |
| high-risk<br>not nominated<br>2690 | low-risk<br>not nominated<br>42185 |

# Assessment Tool

- Six Domains:
  - Demographics
  - Disease Burden (104 chronic diseases and other conditions)
  - Medical & Nursing Needs (54 items e.g. vitals, fingersticks)
  - Activities Of Daily Living (ADLs)
  - Prison Activities Of Daily Living (PADLs) – Brie Williams, MD
  - Cognitive Status (e.g. decision making, memory)

# Approach to predicting LTC needs

- LTC defined as chronic disease or functional impairment requiring care for longer than 3 months
- Five potential levels of LTC care were conceptualized by CPR staff in the context of anticipated new facility construction:
  1. high acuity medical beds
  2. low acuity medical beds
  3. specialized general population/ sheltered housing
  4. regular general population
  5. Hospice

# Approach to predicting LTC needs, *continued*

- Direct assessment in Medical Bed Census
  - Clinical staff serving as proxy respondents and a separate clinical team determined the appropriate level of care and length of care for each inmate based on data collected.
- Algorithmic assessment in General Population Sample:
  - Sampled inmates from the Medical Bed Census were used to understand determinants of placement;
  - Clinical and statistical algorithms were modeled;
  - ADL/PADL limitations, and cognitive impairment, were used to subset those inmates requiring care outside general population; and
  - The probability of needing long-term care were estimated using statistical models based on observed diagnoses and nursing needs

*Assessments **not** designed or used for individual inmate placement*

# General Population Assessment Data Collection

- Lumetra nursing teams conducted assessments at nine sampled facilities
- A total of 1,192 inmates (of the 3,338 inmates in the three strata eligible for assessments) were assessed

| <b>Facility</b>                     | <b>Sample</b> |
|-------------------------------------|---------------|
| High Desert State Prison            | 107           |
| California State Prison Solano      | 125           |
| California Medical Facility         | 214           |
| Avenal State Prison                 | 213           |
| Salinas Valley State Prison         | 103           |
| Central California Women's Facility | 86            |
| California Correctional Institution | 97            |
| Substance Abuse Treatment Facility  | 187           |
| California State Prison Centinela   | 60            |

# Results: Medical Bed Census

## Recommended Level of Care

|                       | High Acuity | Low Acuity | Sp. GP    | GP       | Hospice | Total     |
|-----------------------|-------------|------------|-----------|----------|---------|-----------|
| Long-term (>3 months) | 84 (12%)    | 85 (12%)   | 160 (23%) | -        | -       | 329 (48%) |
| Short-term            | 76 (11%)    | 126 (18%)  | 40 (6%)   | -        | -       | 242 (35%) |
| NA                    | -           | -          | -         | 87 (13%) | 29 (4%) | 116 (17%) |
| Total                 | 160 (23%)   | 211 (31%)  | 200 (29%) | 87 (13%) | 29 (4%) | 687*      |

\*Sample size 724; Acuity level was not determined for 1 inmate; an estimated duration was missing for 37 inmates (7 HA, 7 LA, 23 SGP).

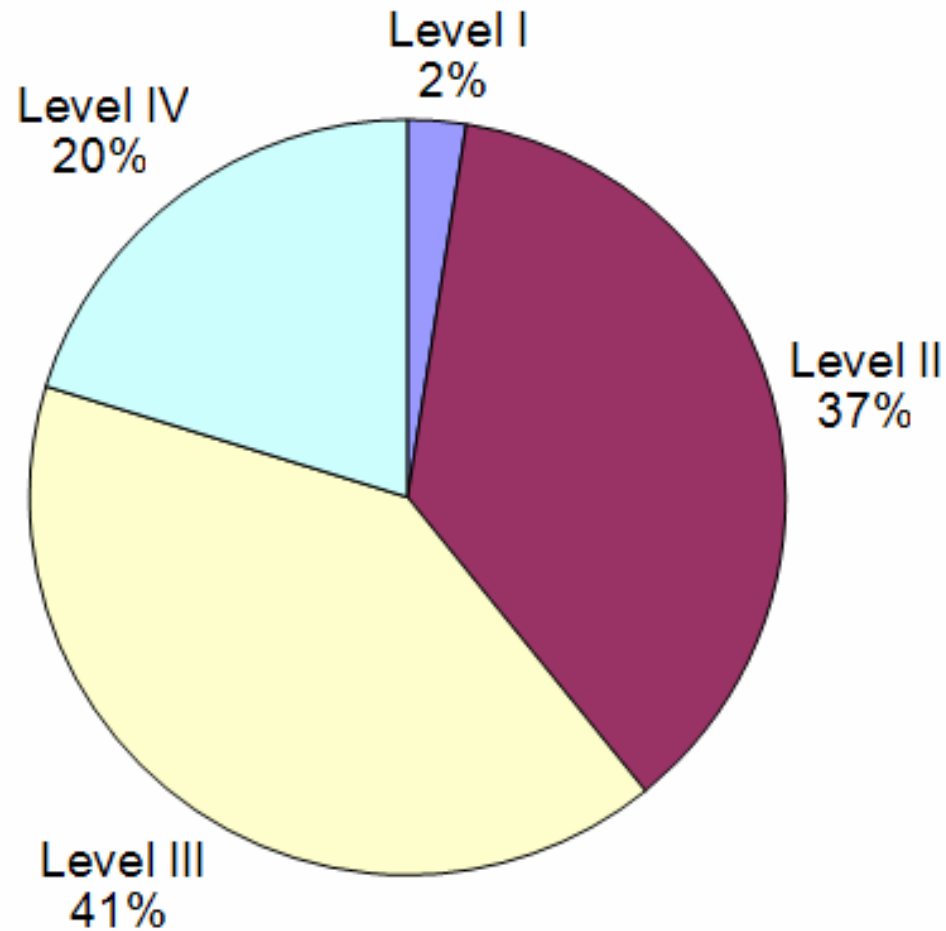
- 48% of inmates currently in infirmary-style medical beds were determined to need LTC
- 13% were determined not to need a medical bed at all
- 39% were appropriately in short-term care or hospice

# Findings – Estimate of Current LTC Need

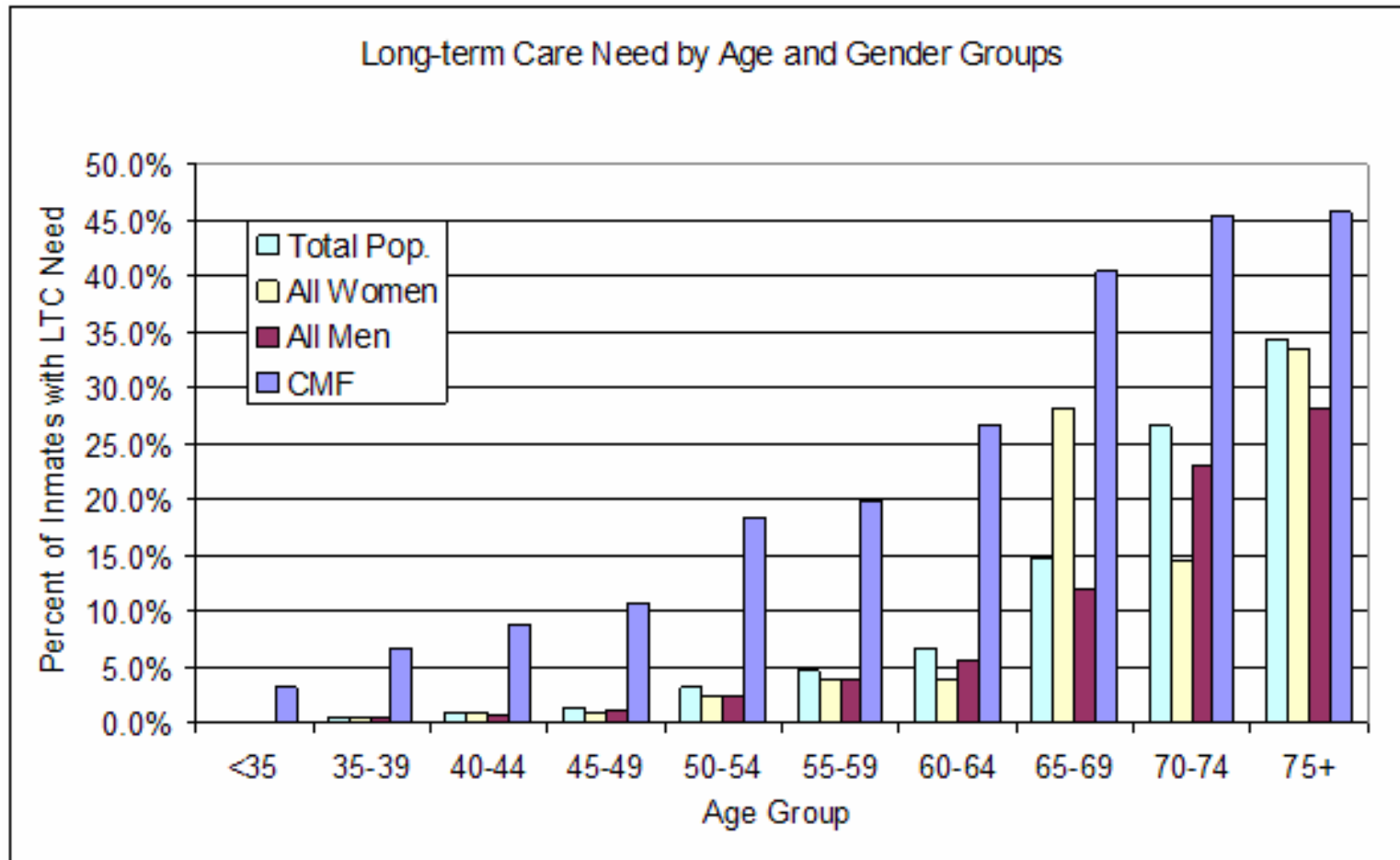
| Sub-population  | Level of Long-term Care |            |             | TOTAL        |
|---|-------------------------|------------|-------------|--------------|
|   | Specialized GP          | Low Acuity | High Acuity |              |
| Medical Beds - all prisons                                | 183                     | 92         | 91          | 366          |
| CMF   | 173                     | 43         | 18          | 233          |
| 8 other sampled facilities                                | 567                     | 125        | 46          | 738          |
| 24 unsampled facilities                                   | 934                     | 208        | 77          | 1,219        |
| TOTAL- All prisons , unadjusted**                         | 1,856                   | 469        | 232         | 2,557        |
| Adjustment Factor for Unsampled Stratum                   |                         |            |             | 1.19         |
| <b>TOTAL – All prisons, adjusted</b>                      | 2174                    | 541        | 259         | 2974         |
| 95 percent confidence Interval (Lower Bound, Upper Bound) |                         |            |             | (2713, 3233) |

# Findings – Current LTC Needs by Security Level

Security Level of Inmates needing LTC

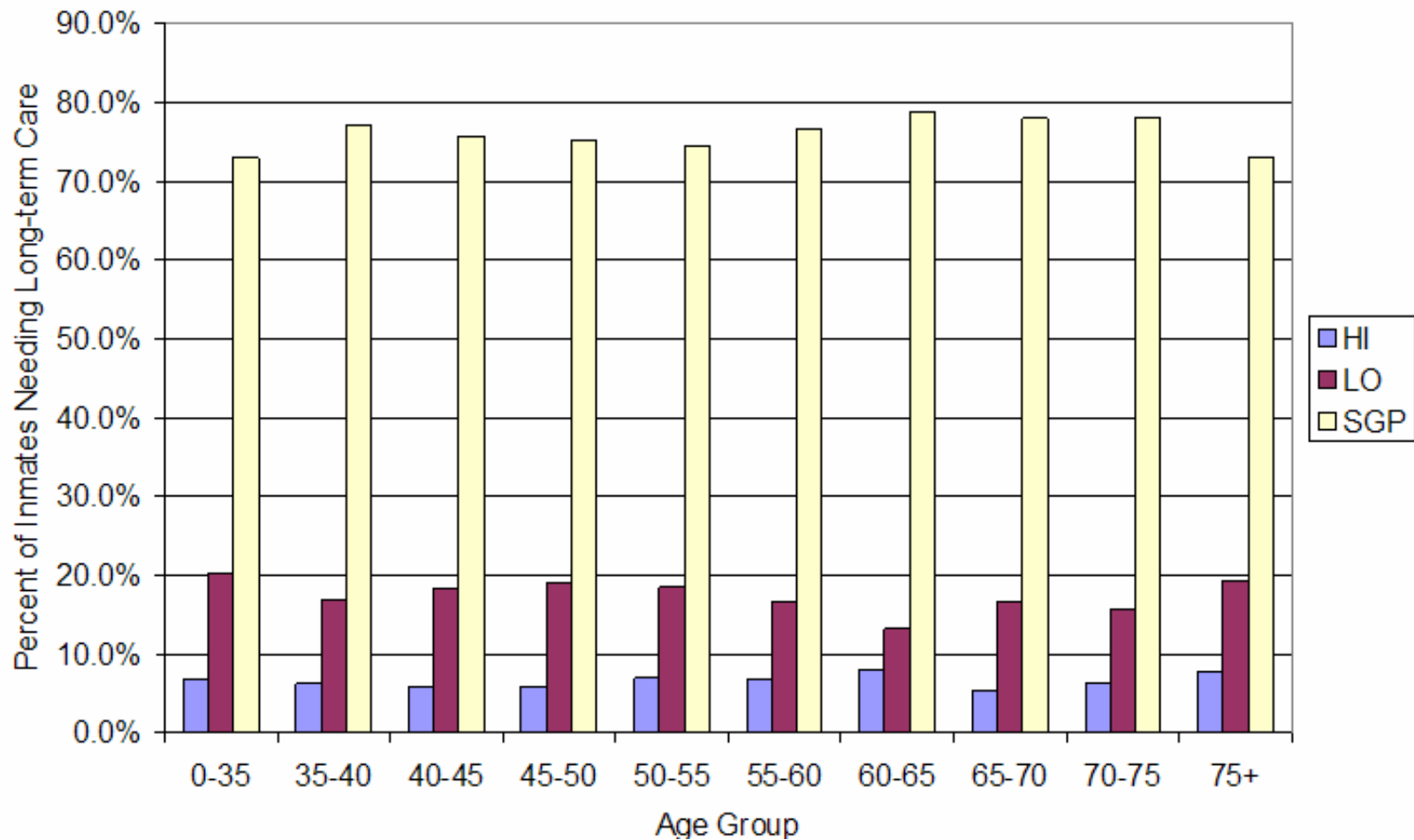


# Findings– Current LTC Acuity by Age Group



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Distribution of Long-term Care Beds by Acuity Level and Age Group

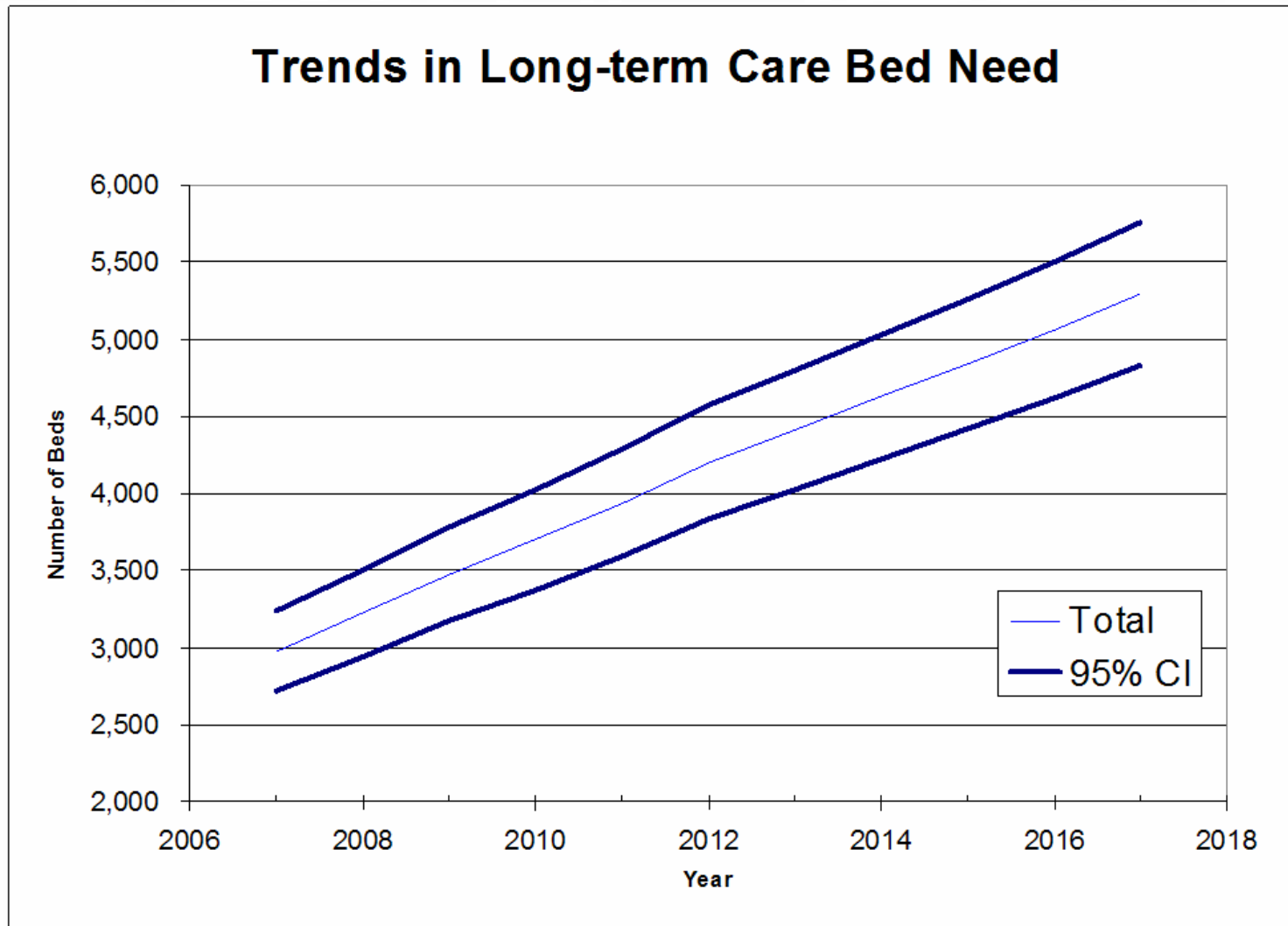


# Findings – Projections of Future LTC Needs

| Year | Maximum Likelihood Estimate | Lower Bound Estimate* | Upper Bound Estimate* |
|------|-----------------------------|-----------------------|-----------------------|
| 2007 | 2974                        | 2713                  | 3233                  |
| 2008 | 3224                        | 2941                  | 3504                  |
| 2009 | 3474                        | 3170                  | 3777                  |
| 2010 | 3697                        | 3373                  | 4019                  |
| 2011 | 3939                        | 3593                  | 4282                  |
| 2012 | 4204                        | 3835                  | 4570                  |

- Applied our data to age and sex-adjusted CDCR 5-year population projections
- Statistical modeling to extend results additional 5 years (next slide)

# Finding— Projected Growth in LTC Need



\*The projected trends do not reflect uncertainty in CDCR population projections over time and assume criminal justice policy does not change over period 2007-2018.

## Conclusions and Recommendations

- Results of these primary data on inmates physical and health status, as well as projections using these primary data, indicate that 2974 (95% CI: 2710, 3230) LTC beds are currently needed in California.
- The need for these beds will increase by roughly 230 beds per year over the next decade. By 2017, between 4,970 and 5,760 LTC beds will be needed
- Chronic and Long-term Care in California Prisons: Needs Assessment [ <http://nicic.org/Library/022549> ]
- THANK YOU