Abt Associates Inc.

Update to the California Prison Long-term Care Needs Assessment: Impact of Prison Population Reductions

Analysis Brief

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June 13, 2008

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I. Introduction

The Receivership plans to construct new long-term care (LTC) facilities for inmates with chronic illness and physical impairment. To assure that building plans were consistent with needs, the Receivership contracted with Abt Associates to estimate and project LTC needs over a ten-year time horizon. Abt Associates based prevalence estimates on a census of inmates in medical beds in all 33 California prisons and a probability sample of other inmates in nine of these prisons. According to that study, in 2007, nearly 3000 California inmates needed LTC (Table 1). Relying on California Department of Corrections and Rehabilitation (CDCR) projections of inmate population by age category, Abt Associates projected that demands for long-term care would increase steadily to nearly 5300 inmates by 2017.

The aging of the inmate population and the strong association between age and long-term care need (Figure 1) were identified as the underlying drivers of the projected growth in long-term care need among the prison population in the next 10 years.

Table 1: Original Estimates of Need for Long-Term Care Beds in the California State Prison System in 2007*

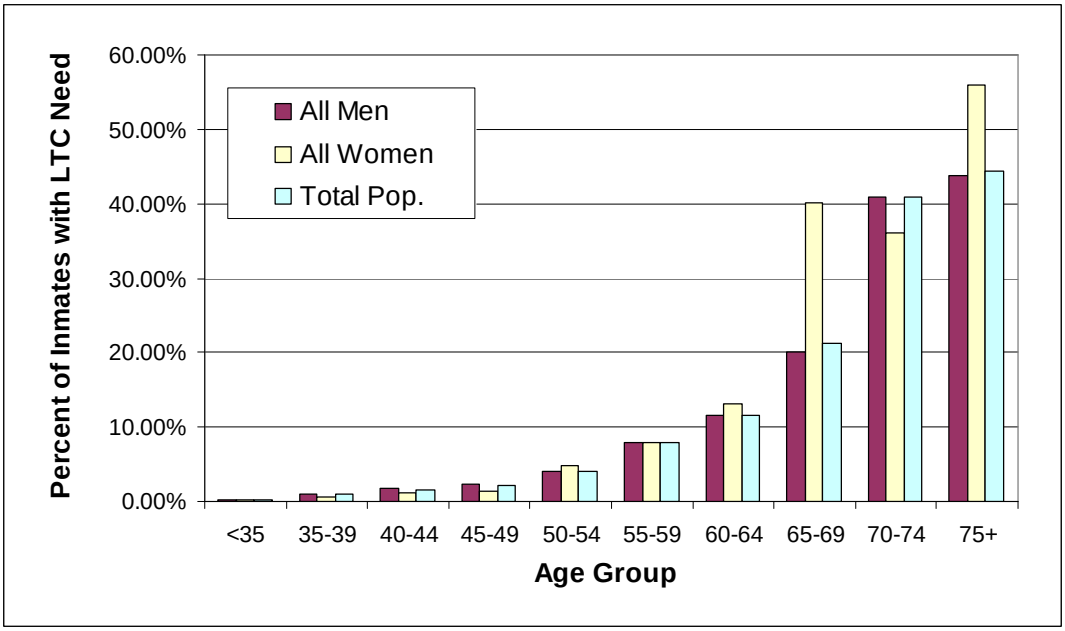
Sub-population	Level of Long-term Care**			
	Specialized GP (number of inmates)	**Low Acuity (number of inmates)**	**High Acuity (number of inmates)**	**TOTAL (number of inmates)**
Medical Beds - all prisons	183	92	91	366
California Medical Facility	173	43	18	233
8 other sampled facilities	567	125	46	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
TOTAL – All prisons, adjusted for LTC need within unsampled stratum	**2174**	**541**	**259**	**2974**
†95 percent confidence Interval (Lower Bound, Upper Bound)				(2713, 3233)

*Based on a population of 135,863 that does not include ~28,000 inmates in reception centers or ~7500 in community corrections. *See original report for methodological detail*

**Levels of care: From lowest to highest level of care, these are 1) specialized general population (equivalent to sheltered housing or congregate living), 2) low acuity medical beds (equivalent to assisted living), and 3) high-acuity medical beds (equivalent to skilled nursing beds).

†95% CI = E(X) +/- 1.96 * SQRT (Var(X)) where X is the estimated number of beds needed

Figure 1. Long-term Care Need by Age and Sex in General Population of Nine Sampled Prisons



The CDCR recently reduced its five-year projections of inmate population growth. Moreover, pending legislation aims to reduce populations substantially beyond what CDCR projects. One such proposal would release 22,000 individuals convicted of non-violent offences. Such sharp reductions in prison population are likely to impact the need for LTC in prisons. However, the impact on LTC need will depend on the LTC need among inmates who are released and the rate at which released inmates return to custody.

In this Analysis Brief, we present updates to the original report that account for custody level in the projection model, incorporate CDCR Spring 2008 population projections, and consider the impact of a "mass release scenario." Specifically, we conducted the following analyses.

- We post-stratified the sample by custody level and developed estimates of LTC need that are specific to each custody level stratum. This provided new estimates of LTC needs that did not differ greatly from previous estimates that did not post-stratify by custody level. This is discussed in Section II.
- We updated the analysis using new population projections from CDCR that were not available at the time of the original study. This is discussed in Section III.
- We tested a policy that releases a large number of non-violent offenders who were confined at the lowest two custody levels to see how this would affect the need for LTC. This is discussed in Section IV.

II. Accounting for Custody Level

CDCR inmates are classified into custody levels I, II, III, and IV, based on security risk. Among the entire prison population in our original cohort 75%, 5%, and 20% of females were housed at level I, II, and III. Likewise, 14%, 29%, 35%, and 22% of males were houses at level I, II, III, and IV. However, our sample of female inmates only included inmates at custody level I and the distribution of inmates in the eight male institutions we sampled was

6%, 36%, 32%, and 26% for the four custody levels, I, II, III, and IV, respectively. Because the custody level distribution of our sample is different from the overall population, our estimates of LTC need may be biased if they are not adjusted for custody level. Moreover, proposed policies to release large numbers of inmates generally set criteria for release that restrict eligibility to inmates that are low security risks (e.g. nonviolent offenders with custody level of I or II). If LTC need is greater among inmates at high custody levels, the release of inmates at low custody levels may have a little impact on LTC need. Conversely, if LTC need is greater among low custody levels, the release of these inmates will have a greater impact on LTC need.

In order to control for variation in the prevalence of LTC need across custody level, we augmented the projection model to explicitly consider custody level as a factor when estimating LTC need. Specifically, we calculated LTC need separately for the inmate population at each custody level, and generalized from the nine sampled facilities to the 24 unsampled facilities within each custody level group. In this way we account for variation in the prevalence of LTC need across custody level and the difference in the distribution of inmates across custody levels in our sample compared to the full population.

In the original study, general population inmates were partitioned into low- and high-risk groups based on age, prior hospitalizations, and known physical disabilities. Generalization from the sampled facilities to the unsampled facilities was carried out separately within each risk group. In the new analysis, the risk groups and corresponding generalizations are further broken out by custody level.

Table 2 show the LTC need among general population inmates by risk group and custody level. Excluding reception centers and community corrections and after adjusting for the unsampled stratum (see original report for details of sample design), we estimate that 1.73% of the general population inmates are in need of some level of LTC. The prevalence of LTC need is lowest among Level I inmates (1.18 %) and highest for Level II and IV inmates (about 2.01%). About 1.54% of Level III inmates needed LTC.

Table 2: Long-term Care Need Among General Population Inmates by Custody Level

LOW RISK GROUP			
Custody Level	**LTC Prevalence**	**Population***	**Inmates with LTC Need**
I	0.41%	22,468 (17.7%)	92.3
II	0.24%	35,610 (28.0%)	86.9
III	0.16%	38,133 (30.0%)	60.4
IV	0.15%	30,893 (24.3%)	47.5
All	0.23%	127,104 (100%)	287.1
HIGH RISK GROUP			
Custody Level	**LTC Prevalence**	**Population***	**Inmates with LTC Need**
I	23.99%	570 (10.0%)	136.8
II	33.25%	1,634 (28.5%)	543.4
III	26.39%	1,716 (30.0%)	452.8
IV	27.78%	1,804 (31.5%)	501.1
All	28.55%	5,724 (100%)	1634
TOTAL			
Custody Level	**LTC Prevalence**	**Population***	**Inmates with LTC Need**
I	0.99%	23,038 (17.3%)	229.1
II	1.70%	37,244 (28.0%)	630.2
III	1.29%	39,849 (30.0%)	513.2
IV	1.68%	32,697 (24.6%)	548.6
All	1.45%	132,828 (100%)	1921.1
ADJUSTED TOTAL			
Custody Level	**LTC Prevalence****	**Population***	**Adjusted Estimate of LTC Need****
I	1.18%	23,038 (17.3%)	231.2
II	2.02%	37,244 (28.0%)	630.2
III	1.54%	39,849 (30.0%)	742.9
IV	2.00%	32,697 (24.6%)	549.9
All	1.73%	132,828 (100%)	2154.3

*Not including reception centers, community corrections, or medical beds. 366 inmates needing LTC are currently in medical beds.
**Adjusted for unsampled stratum by multiplying unadjusted estimates by 1.19

When accounting for variation in LTC need by custody level of general population inmates, our mean estimate of current (Year 2007) LTC need is reduced by 42 specialized general population (SGP) beds and three low-acuity beds compared to the original analysis so that the total current need for LTC beds declines 1.5% from 2974 to 2930 (Table 3).

Table 3: Updated Estimates of Need for Long-Term Care Beds in the California State Prison System in 2007*

	Level of Long-term Care			
Sub-population	**Specialized GP (number of inmates)**	**Low Acuity (number of inmates)**	**High Acuity (number of inmates)**	**TOTAL (number of inmates)****
Medical Beds - all prisons	183	92	91	366
CMF	173	43	18	233
8 other sampled facilities	566	126	46	739
24 unsampled facilities	899	206	77	1,182
TOTAL- All prisons , unadjusted**	1,821	467	232	2,520
Adjustment Factor for unsampled stratum				1.19
TOTAL – All prisons, adjusted for LTC need within unsampled stratum	**2,132**	**539**	**259**	**2,930**

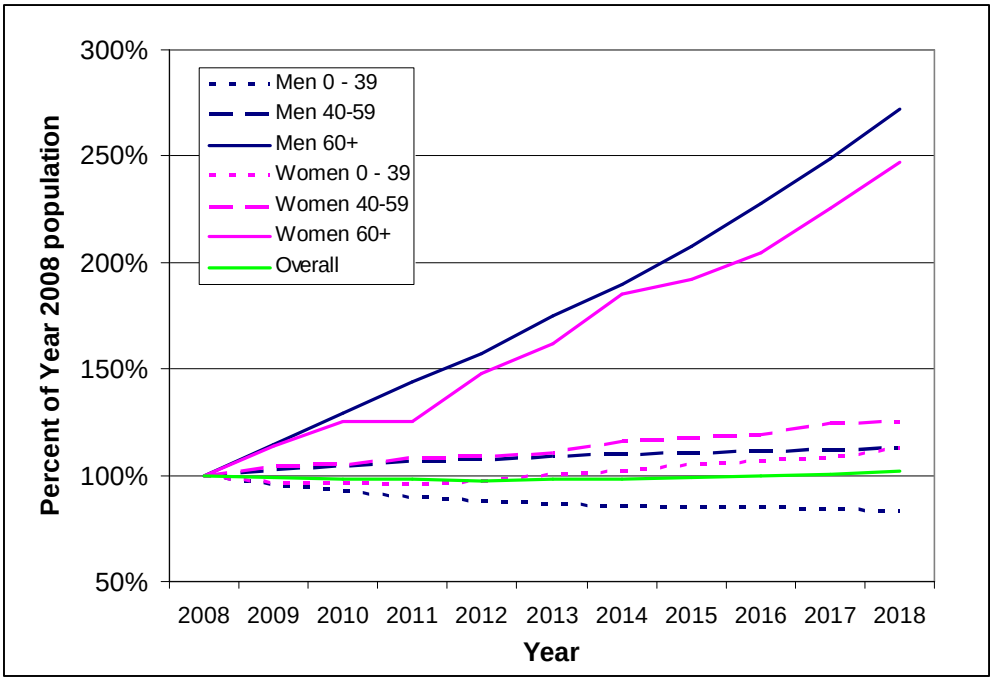
III. Accounting for New CDCR Population Projections

According to CDCR projections at the time of the 2007 study, the total CDCR inmate population was expected to increase by 8 percent through 2012, and the over-60 age group was expected to increase by 80 percent. We extrapolated the CDCR's official projections for an additional five years (through 2017) by fitting a curve to the growth rates within age strata and projecting the change in population within these age groups. To generate projections of LTC bed need, we partitioned the current inmates needing LTC into 10 age groups. Then we applied age-group-specific prevalence of LTC need to the CDCR's age-structured population projections. The resulting projections indicated a steady rise in LTC need from 2974 inmates in 2007 to 5294 in 2017.

CDCR's most recently published semiannual update of its 5-yr prison population projections indicates that a modest *decline* in prison population is expected. According to the CDCR report, the change in the projections from Spring 2007 to Spring 2008 is "largely due to a decrease in new admissions from court and a decrease in parole violators returned to custody." Although CDCR only releases 5-year population projections to the public, their model can forecast population trends beyond that time horizon. Using the Spring 2008 modeling assumptions, CDCR generated age- and sex-stratified projections through 2018 for Abt Associates to use in updating estimates of LTC need. In Figure 2, the expected population growth for male and female inmates by age category are shown. The updated trends reflect a modest decline in the overall population (green line) over the

next 5 years, followed by an equivalent increase in the subsequent 5 years[1]. As in the original analysis, the population of older inmates (age 60 and older) is expected to grow while the youngest age group is expected to decline.

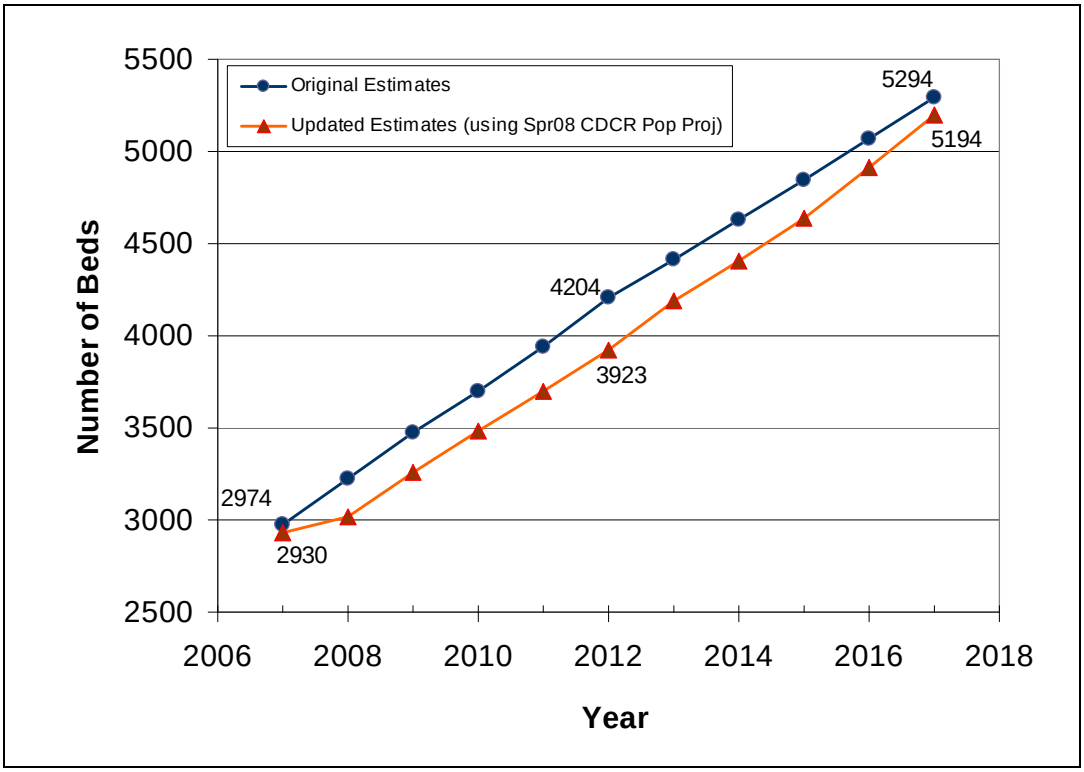
Figure 2: Revised Estimate of Population Growth by Age Category



Recalculating age-group specific LTC prevalence estimates and applying these estimates to the updated age- and sex- structured population projections yielded new estimates of future LTC need that are somewhat lower than originally reported. Starting from a lower level (due to the revised model that accounts for custody level as discussed in Section I above), LTC need grows over the next 6-7 years at a slightly slower rate than predicted in the original model (Figure 3). By 2012, LTC need reaches 3923 beds, as compared to 4204 beds in the original analysis. By 2017, LTC need is projected to reach 5194—100 fewer beds than originally predicted.

[1] CDCR Population Projection unit only publicly reported Spring 2008 projections through 2013. The extended Spring 2008 projections (through 2018) were provided to the Receivership by CDCR for this updated analysis. In the original analysis, we extrapolated the CDCR 5-year Spring 2007 projections by fitting curves to the projected trends. In this update, we used the extended Spring 2008 projections from CDCR population projection model directly.

Figure 3: Projected Need for Long-term Care Beds (2007-2017) Using CDCR Spring 2008 Population Projections



IV. Impact of a one-time mass release policy

Specification of Release Policy

Using the updated model, we consider the impact of a one-time release of 20,000 Custody Level I and II inmates. Because of the differences in LTC need across custody level, *ceteris paribus*, releasing Level I inmates can be expected to have less impact on LTC need than releasing inmates at higher custody levels. Likewise, releasing Level II inmates will reduce LTC need the most.

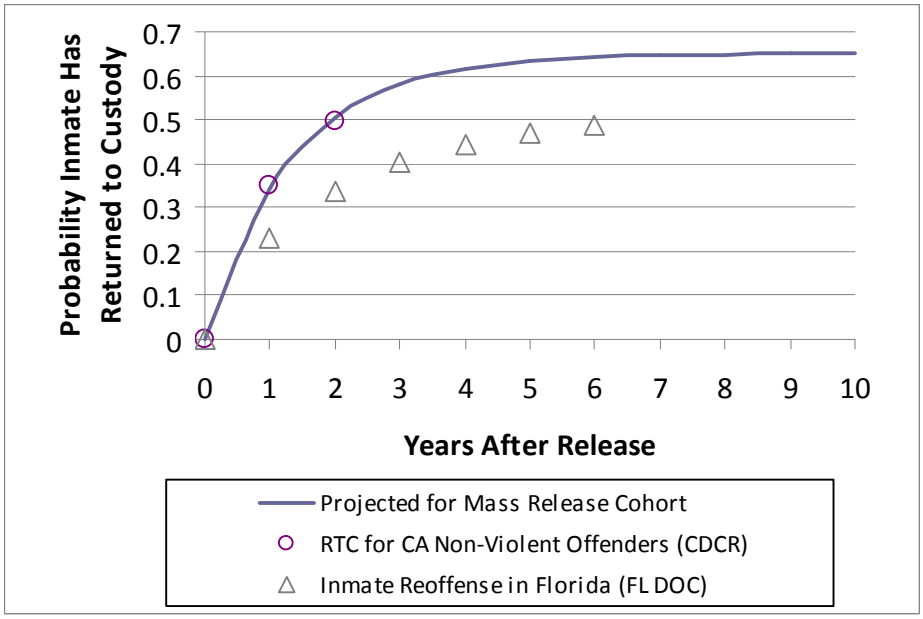
We assumed that any inmate at Custody Level I or II had an equal chance of being released under the proposed policy. If, in fact, Level I inmates are more likely to be released, then the reduction in LTC need may not be as large as we predicted. Likewise, if, within each custody level, *younger* inmates are more likely to be released under the proposed policy, then our assumption may cause us to further overestimate the reduction in LTC need.

It is likely that some portion of the cohort of released inmates will return to custody during the time horizon of the analysis. CDCR data on 1- and 2-year recidivism rates shows that 35% and 50% of inmates whose principal commitment offense is non-violent[2] were returned

[2] We assumed the following offenses were non-violent: forgery/fraud, other property, controlled substance (CS) possession, CS possession for sale, CS sales, CS manufacture, CS other, hashish possession, marijuana possession, marijuana possession for sale, marijuana sales, marijuana other.

to custody within 1 and 2 years, respectively. Data from Florida[3] and other states indicate that recidivism can occur after 2 years following release. We assumed that 65% of the released inmates would return to custody within 10 years at a rate of 0.75 per released inmate per year. At this rate, the 1- and 2-year recidivism rates match those observed for non-violent California paroles with non-violent primary commitment offenses. If, in fact, fewer inmates from the mass cohort are returned to custody, or these inmates return to custody at a slower rate, then our assumption will cause us to underestimate the reduction in LTC need due to the mass release.

Figure 4: Probability of Returning to Custody



For convenience, we assumed the mass release occurs in the first year of our time horizon (i.e. 2007).

Results

A one-time release policy targeting inmates at Custody Level I and II can be expected to reduce the number of LTC beds roughly in proportion to the reduction in the overall population size. The reduction of 20,000 inmates represents 15.1 percent of the general population not in reception centers, community corrections or medical beds. The predicted reduction in LTC need by 340 inmates represents 13.3 percent of the LTC need among this population (Table 4).

[3] http://www.dc.state.fl.us/pub/recidivism/2001/exec.html

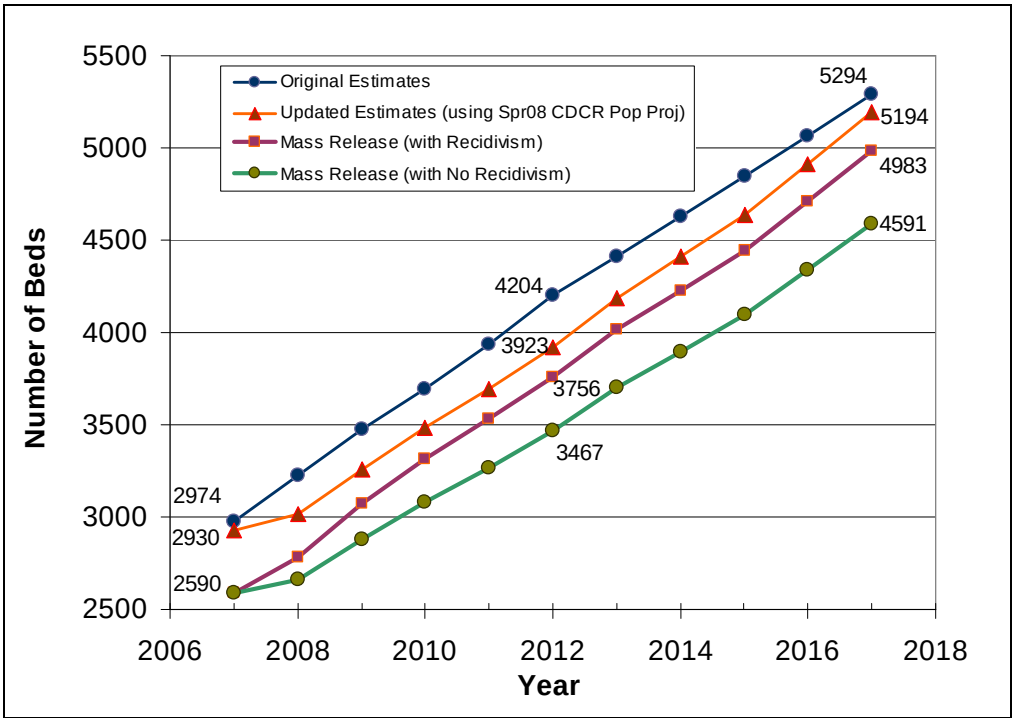
Table 4: Reduction in Current Long-Term Care Bed Need Due to a One-time Mass Release of 20,000 Custody Level I and II inmates from General Population*

Custody Level	Population			LTC Need**		
	Original	Reduction	Remaining	Original	Reduction	Remaining
I	23,038	7,643	15,395	275	91	184
II	37,244	12,357	24,887	750	249	501
TOTAL	60,282	20,000	40,282	1,025	340	685

*Not including reception centers, community corrections, or medical beds. 366 inmates needing LTC are currently in medical beds.
**Adjusted for unsampled stratum by multiplying unadjusted estimates by 1.19

To assess the impact over a 10-year time horizon, we assumed that 65% of the released cohort of 20,000 inmates would eventually return to custody at a rate of 0.75 per person per year. We also assumed that LTC would develop with age among the mass release cohort at the same rate experienced by the unreleased inmates. Under these assumptions, the current LTC need would be reduced by 340 from 2930 to 2590 (Figure 5). Each year, the level of LTC would be lower than if no mass release occurred. However, the rate of growth in LTC would be significantly higher in the first few years as a portion of the release cohort returns to custody. After the first 5 years, LTC need will be approximately 200 beds lower under the mass release scenario compared to the updated estimates with no mass release. To illustrate the impact of recidivism, we also show, in Figure 5, the trend for LTC bed need under the assumption that no inmates from the mass release cohort return to custody. In this scenario, by 2017, LTC need is reduced to 4591, or 603 less than projected if there were no mass release.

Figure 5: Projected Need for Long-term Care Beds (2007-2017) after a one-time release of 20,000 Custody Level I & II Inmates



V. Discussion

Accounting for custody level in the estimation of current LTC need has a small impact, reducing our original estimate by 1.5% from 2974 to 2930. Updating the CDCR population projections on which LTC projections are based has a more substantial impact. The Spring 2007 CDCR Projections used for the original analysis predicted an increase of 1.5% to 1.75% per year. In contrast, the Spring 2008 CDCR projections show 4.5% decrease in prison population by 2012, followed by a rise back to 2007 levels by 2017. We estimate that these reductions in projected overall prison population growth rate may reduce LTC need by 281 beds in the next 5 years compared to our original estimates.

Because the overall population decline is due to fewer intakes, primarily among younger inmates, then the "stock" of people already in prison is going to continue to age. LTC need will decline only modestly over the medium term (10 year time horizon) in response to lower rate of intakes. Of course, those that eventually get released may have a lower probability of being re-incarcerated, but the effect on LTC need will be small.

This logic also applied to the mass release policy. If the release criteria is only based on custody level, then the impact on LTC will be roughly proportional to the reduction in overall population size, as we have shown. However, if older or sicker inmates are more likely to be release under the policy—either by coincidence or by design--then the impact on LTC need could be substantial larger.

Finally, in order to have a lasting impact on LTC need, released inmates must not return to custody. If released inmates return to custody at rates that have been observed historically, the prison population reduction may be largely transient.

A mass release of 20,000 Level I and II released inmates may reduce LTC by about 340 beds. But, assuming that released inmates return to custody at rates that are consistent with those observed historically by CDCR, most of the initial drop in LTC need would only be temporary. The released cohort would continued to develop chronic disease and functional impairment as they age, and over 10-years, LTC need in the cohort would grow to 603 persons. If 65% of the released cohort returns to custody over a 10-year period, we estimated the total LTC bed need in the prison system will rise to 4983—just 211 beds less than would have been needed if no mass release occurred.

Even after accounting for differences in LTC prevalence by custody level and updating the underlying CDCR population projections to reflect newly anticipated population trends, the burden of LTC among California inmates remains high. Current need still remains over 2900 beds and is expected to increase to 3923 by 2012 and 5194 by 2017. A one-time mass release of 20,000 Level I and II inmates might reduce total LTC need further--by as much as 11.6% in the short-term. But, over a 10-year time horizon, recidivism among the released cohort would diminish the magnitude of the reduction to about 4.1%. Even if none of the inmates in the released cohort returned to custody, LTC need in 2017 would remain over 4500 beds.