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

Analysis Brief

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I. Introduction

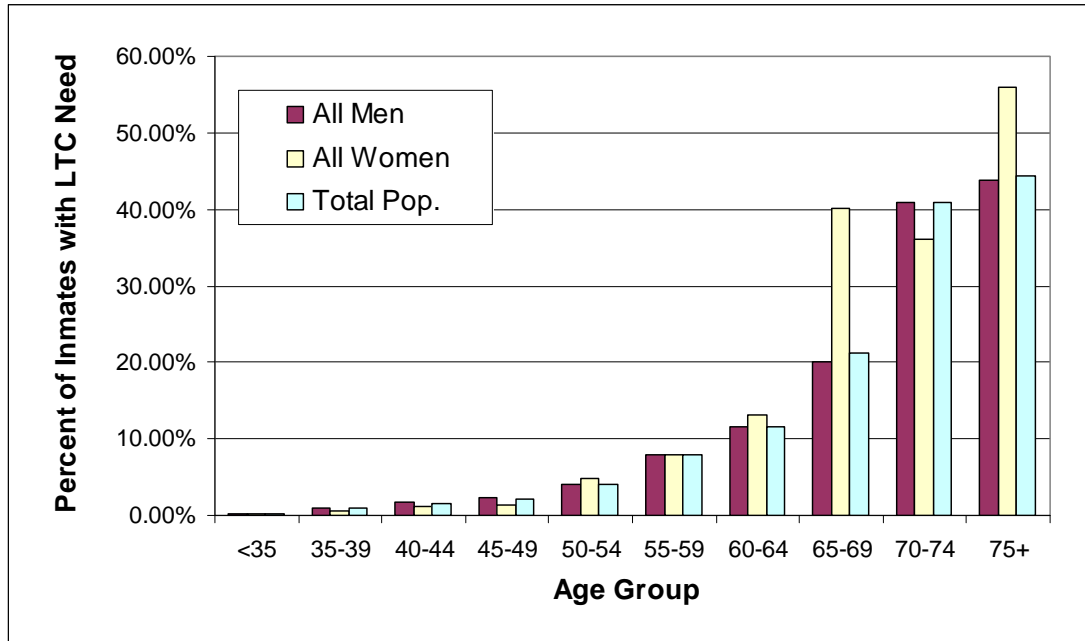
The Receivership plans to construct new long-term care (LTC) facilities for inmates with chronic illness and physical impairment. To assure that building plans were consistent with needs, the Receivership contracted with Abt Associates to estimate and project LTC needs over a ten-year time horizon. Abt 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**			TOTAL (number of inmates)
	Specialized GP (number of inmates)	Low Acuity (number of inmates)	High Acuity (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 policies that release 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 housed 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 in 2007

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%)	231.2
II	1.70%	37,244 (28.0%)	630.2
III	1.29%	39,849 (30.0%)	742.9
IV	1.68%	32,697 (24.6%)	549.9
All	1.45%	132,828 (100%)	2154.3
ADJUSTED TOTAL			
Custody Level	LTC Prevalence**	Population*	Adjusted Estimate of LTC Need**
I	1.18%	23,038 (17.3%)	272.6
II	2.02%	37,244 (28.0%)	749.9
III	1.54%	39,849 (30.0%)	610.7
IV	2.00%	32,697 (24.6%)	652.8
All	1.73%	132,828 (100%)	2286.1
*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*

Sub-population	Level of Long-term Care			TOTAL (number of inmates)**
	Specialized GP (number of inmates)	Low Acuity (number of inmates)	High Acuity (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

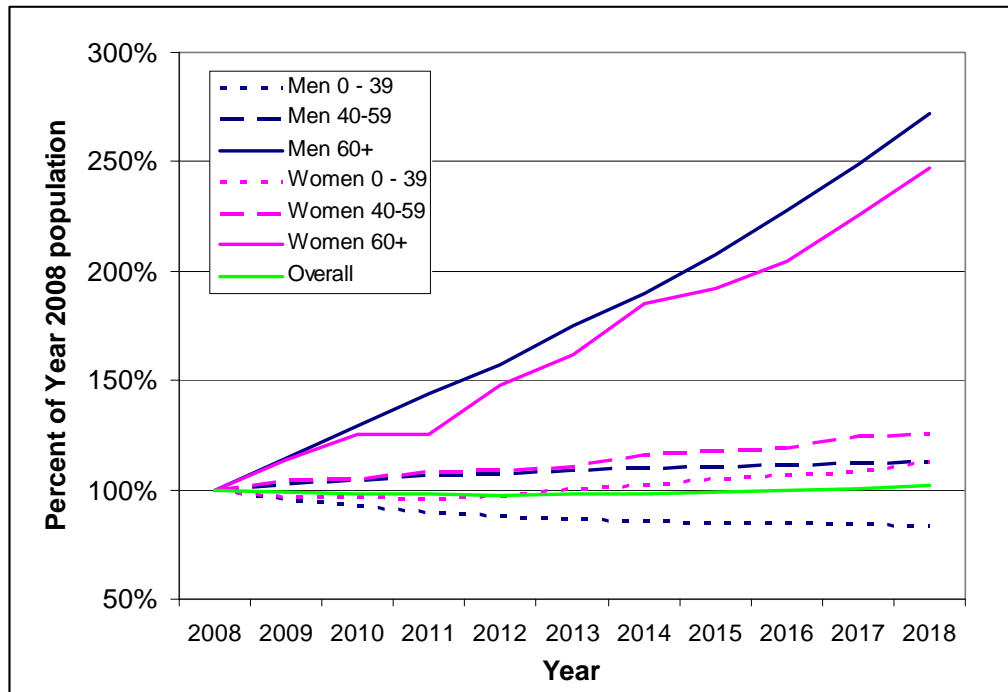
According to CDCR projections at the time of the 2007 study, the total CDCR inmate population was expected to increase by 8 percent through 2012, and the over-60 age group was expected to increase by 80 percent. We extrapolated the CDCR’s official projections for an additional five years (through 2017) 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 years¹. As in the original analysis, the population

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

of older inmates (age 60 and older) is expected to grow while the youngest age group is expected to decline.

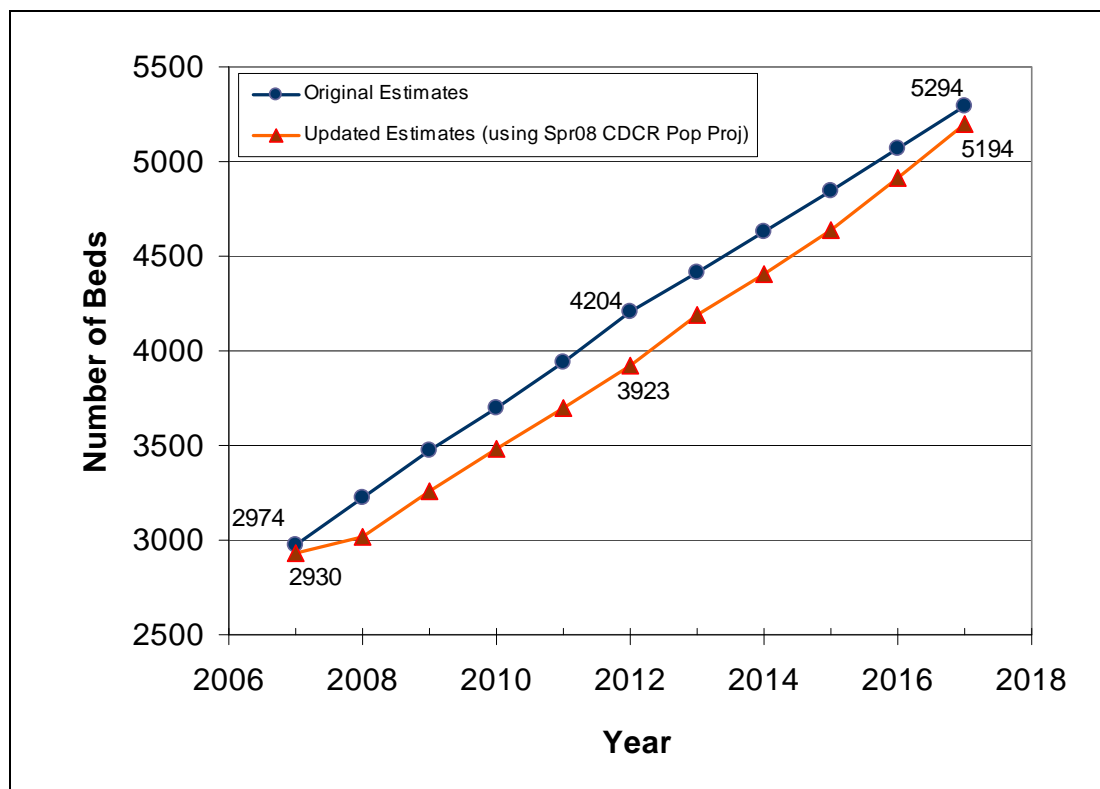
Figure 2: Revised Estimate of Population Growth by Age Category



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.

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 two alternative policies for the one-time release of Custody Level I and II inmates in 2009. The policies only differed in the number of inmates released; either 20,000 or 50,000.

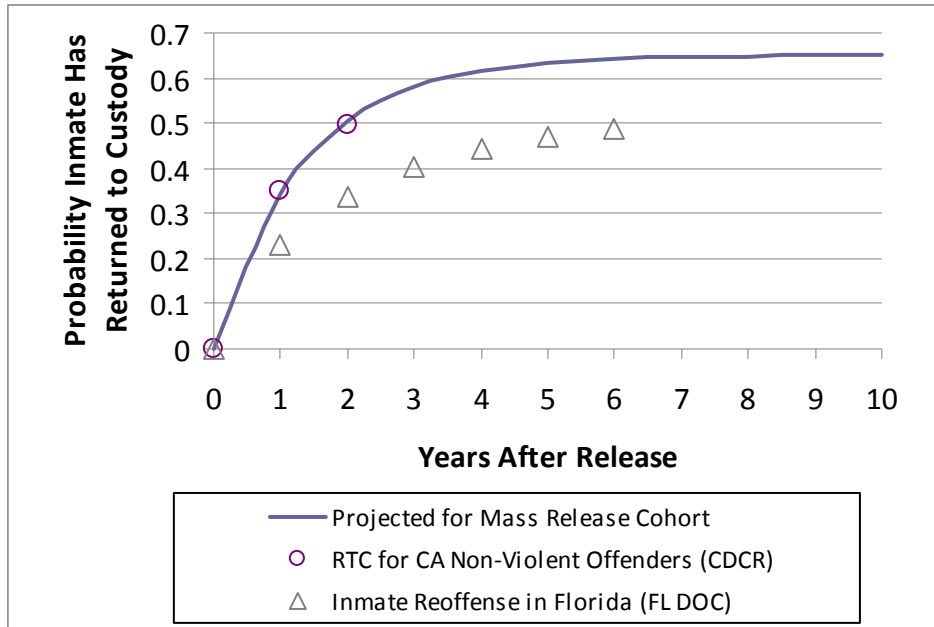
Because of the differences in LTC need across custody level, *ceteris paribus*, releasing Level I inmates can be expected to have less impact on LTC need than releasing inmates at higher custody levels. Likewise, releasing Level II inmates will reduce LTC need the most. We assumed that any of the approximately 60,000 inmates 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-violent² were returned to custody within 1 and 2 years,

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.

respectively. Data from Florida³ and other states indicate that recidivism can occur after 2 years following release. We modeled each policy with and without recidivism among the mass release cohort. For the recidivism scenario, we assumed that, irrespective of long-term care need, 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



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 in 2009 represents 15.5 percent of the estimated general population not in reception centers, community corrections or medical beds. The predicted reduction in LTC need by 390 inmates represents 12.0 percent of the LTC need among this population (Table 4). Likewise, the reduction of 50,000 inmates in 2009 represents 38.8 percent of the estimated general population not in reception centers, community corrections or medical beds. The predicted reduction in LTC need by 939 inmates represents 28.8 percent of the LTC need among this population (Table 4).

³ <http://www.dc.state.fl.us/pub/recidivism/2001/exec.html>

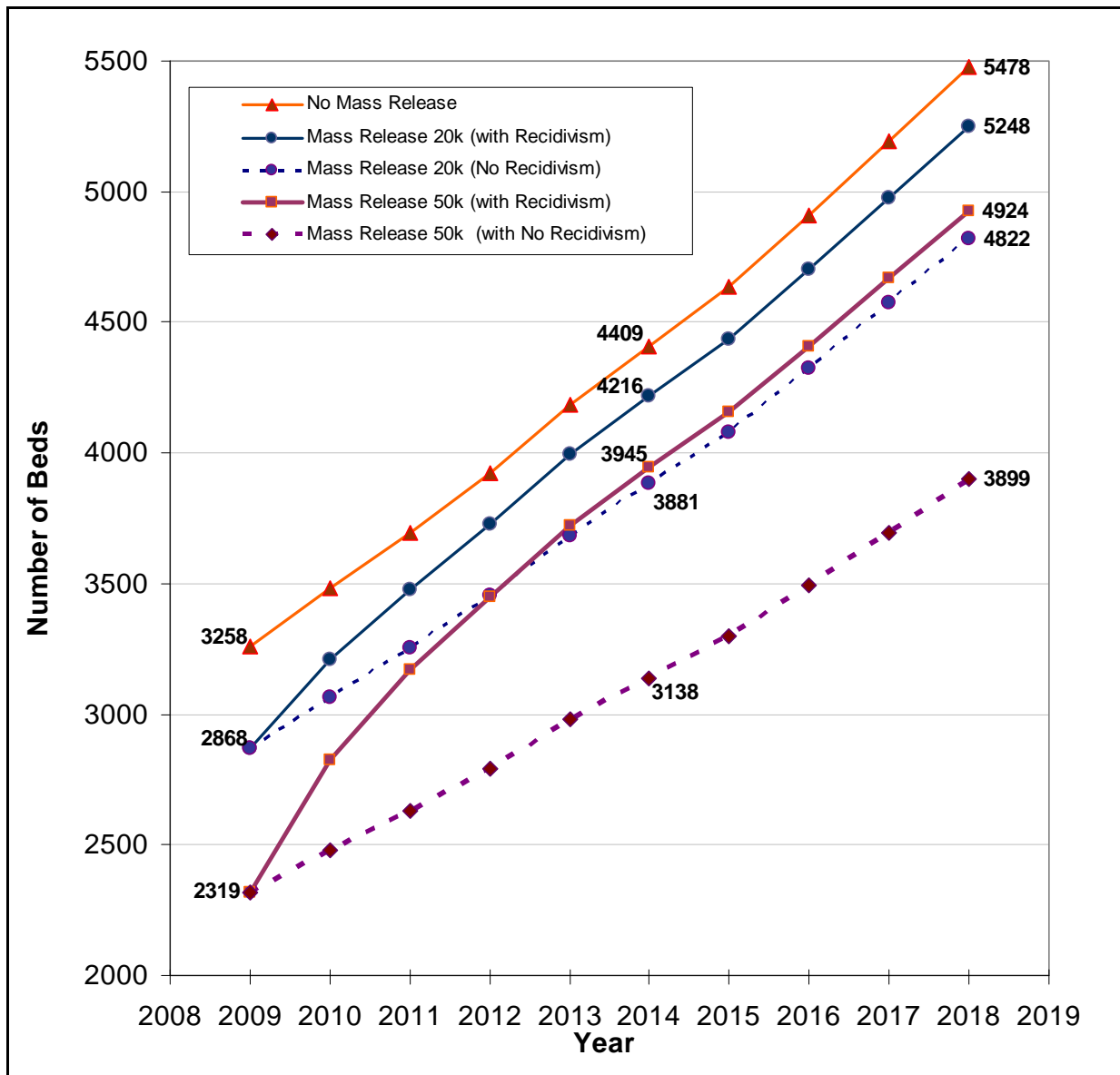
Table 4: Reduction in Population and Long-Term Care Inmates Due to a One-time Mass Release of Custody Level I and II inmates from General Population in 2009*

RELEASE OF 20,000						
Custody Level	Population			LTC Need		
	Projected w/o Release*	Reduction	Remaining	Projected w/o Release*	Reduction	Remaining
I	22,358	7,643	14,715	306	105	201
II	36,145	12,357	23,789	834	285	549
Total Level I&II	58,504	20,000	38,504	1,140	390	750
All Levels	128,910	20,000	108,910	3,258	390	2,868
RELEASE OF 50,000						
Custody Level	Population			LTC Need		
	Projected w/o Release*	Reduction	Remaining	Projected w/o Release*	Reduction	Remaining
I	22,358	19,109	3,929	306	252	54
II	36,145	30,891	6,353	834	687	147
Total Level I&II	58,504	50,000	10,282	1,140	939	200
All Levels	128,910	50,000	78,910	3,258	939	2,319
*Total population in 2009 not including reception centers or community corrections is estimated to be 128,910.						

To assess the impact over a 10-year time horizon beginning in 2009 under the recidivism scenario, we assumed that 65% of the released cohort of 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, if 20,000 inmates were mass released in 2009, LTC need would be reduced by 390 from 3258 to 2868 (Figure 5). Each subsequent 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, the number of inmates needing LTC 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 2018, LTC need is reduced to 4822, or 656 less than projected if there were no mass release.

If 50,000 inmates were released, then in 2009, the number of inmates needing LTC would drop by 939 from 3258 to 2319. If none of the mass released inmates returned to custody, then by 2018 there would be nearly 1600 fewer inmates needing LTC. However, if the release cohort returns to custody as described above, the number of inmates needing LTC over a 5-10 year horizon will only be about 550 fewer than if there had not been a mass release.

Figure 5: Projected Need for Long-term Care Beds (2009-2018) after a one-time release of 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.

The overall population decline is due to fewer intakes, primarily among younger inmates. As a result, LTC need will decline only modestly over the medium term (10 year time horizon) in response to lower rate of intakes. The "stock" of people already in prison is going to continue to age. 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 390 beds and a mass release of 50,000 inmates may reduce LTC by about 940 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 continue to develop chronic disease and functional impairment as they age. Over 10 years, LTC need in the 20,000 inmate cohort would grow to 655 persons and LTC need in the 50,000 inmate cohort would grow to 1579 persons. If 65% of the released cohort returns to custody over a 10-year period, much of the reduction in demand for LTC in prisons will be transient. However, a release of 20,000 inmates can be expected to permanently reduce the need for LTC beds by at least 200 and a release of 50,000 can be expected to permanently reduce the need for LTC beds by about at least 500.

It is reasonable to expect that individuals needing LTC need are less likely to return to custody because functional impairment limits their ability or desire to commit crimes. However, there is no data available to estimate the relationship between health status and recidivism. Therefore, we chose estimate a “with recidivism” case in which individuals in the mass release cohort had the same probability of returning to custody regardless of their health status. This case was compared to a scenario in which there was no recidivism among the released cohort. If individuals needing LTC need are less likely to return to custody (e.g. because functional impairment limits the ability or desire to commit crimes) then the impact of the mass release policies on the demand for LTC need in prison will likely fall somewhere between the “with recidivism” and “without recidivism” cases we modeled. For example, if one were to assume that no individual from the mass release cohort with LTC need will be re-incarcerated, then the projected number of inmates needing LTC would be very close to the “without recidivism” case. In that case, the only individuals from the mass release cohort who would eventually need LTC in prison would be those who return to custody *before* they develop LTC need. However, if a portion of individuals from the mass release cohort do commit new crimes despite their functional impairments or are re-incarcerated for technical violations or new convictions for crimes committed before they needed LTC, then the demand for LTC in prison will be higher.

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 about 12 percent in the short-term. But, over a 10-year time horizon, recidivism among the released cohort may diminish the magnitude of the reduction to as little as 4 percent. Even if none of the inmates in the released cohort who need LTC returned to custody, the demand for LTC in prison in 2018 would remain over 4800 beds. A one-time mass release of 50,000 Level I and II inmates would reduce total LTC need substantially--by 29 percent in the short-term. But, over a 10-year time horizon, recidivism among the released cohort may diminish the magnitude of the reduction to as little as 10 percent. Even if none of the inmates in the released cohort who need LTC returned to custody, LTC need in 2018 would be 3900 beds.