New Mexico Sentencing Commission

New Mexico Sentencing Commission Staff June 2014

NEW MEXICO PRISON POPULATION FORECAST: *FY 2015—FY 2024*

National Trends

- The federal prison population grew by 2,100 prisoners in 2012. The aggregate state prison population decreased by 23,200 prisoners. This was the third consecutive year in which the aggregate state prison population decreased while the federal prison population increased.
- The state prison population in California decreased by 14,600 in 2012, accounting for much of the decrease in the aggregate state prison population. The decrease can be attributed to California's Public Safety Realignment Act of 2011, which redirects nonviolent and nonsexual offenders from state prisons to county jails.
- About 1 in every 35 adult residents in the United States was under some form of correctional supervision (probation, parole, jail, state prison or federal prison) at year end 2012, the lowest rate observed since 1997.
- Females comprised 6.9% of the state and federal prisoner population in 2012.

New Mexico Trends

- The most notable trend in New Mexico is the continuing, significant increase in the female inmate population. In FY 2010, the high count for the female inmate population was 614 inmates.
- The high count in FY 2014 (through May 2014) has been 698 female inmates, a 13.7% increase from the FY 2010 high.
- Moreover, there has been a significant upward trend in the percentage of females incarcerated in county jails in New Mexico. From 2010 to 2013, the percentage of female inmates incarcerated in county jails in New Mexico has increased from 12.9% to 16.7% of the total jail census.
- In FY 2010, the high count for the New Mexico male inmate population was 6,177 inmates. In subsequent fiscal years, the male inmate population has been relatively stable.
- The high count in FY 2014 (through May 2014) has been 6,344 male inmates.

Short-Term Forecast

- **Females:** The female inmate population comprises approximately 10% of the total inmate population. The short-term forecast is for a significant upward trend in the female inmate population.
- In FY 2015, the projected high count for the female population is 722.
- In FY 2016, the projected high count for the female population is 745.
- **Males:** The short-term forecast is for continued slow growth in the male inmate population.
- In FY 2015, the projected high count for the male population is 6,369.
- In FY 2016, the projected high count for the male population is 6,442.

INTRODUCTION

This prison population forecast was prepared by the New Mexico Sentencing Commission (NMSC). The forecast is designed to assist the New Mexico Corrections Department (NMCD) in assessing immediate and future inmate populations. This report also includes information that may be of interest to policy makers during discussions of the correctional system. Sentencing Commission staff met three times (November 2013, April 2014 and June 2014) with NMCD staff to review inmate population trends and to discuss factors that may affect the forecast.

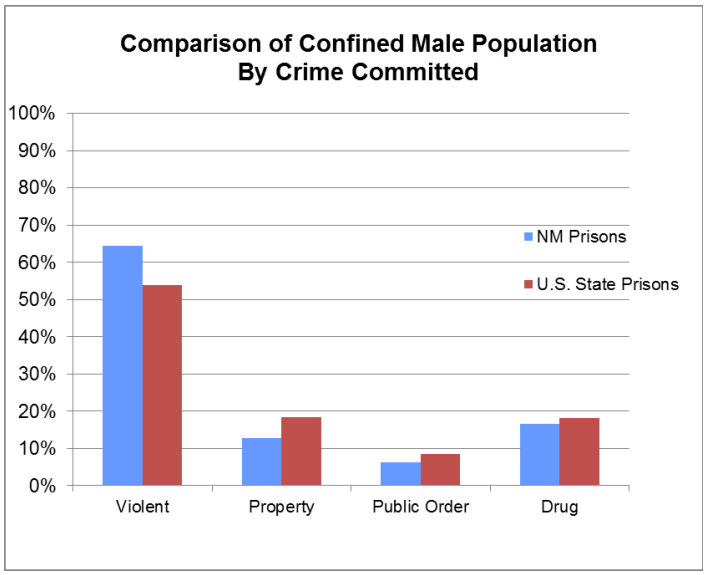
The prison population time series forecasts used to produce this report are based on historical prison population data. It is understood that there are many factors that drive prison populations, including arrest rates, the number of criminal cases filed in district courts, conviction rates, the availability of diversion programs, sentence lengths, admission and release rates, earned meritorious deductions and parole readiness. The historical prison population data is a result of all those factors. This report describes national prison population trends, prison population trends in New Mexico, sets forth data regarding admissions to and releases from prison, and provides short-term and long-term forecasts for the male and female populations.

The Sentencing Commission strives to produce inmate population projections within the range of 3% of the actual populations for males and females. During FY 2014, the projections for the male inmate population were within 3% of the actual population in every month (See Appendix A).

For the female inmate population, the projections were outside of the 3% range in every month (See Appendix A). The projections lagged behind the actual population and the continuing upward trend

in the female inmate population is a primary theme in this report.

Going forward, Sentencing Commission staff will brief legislators, other policy makers, and Sentencing Commission members on the forecast. Commission members, who include representatives from law enforcement, the judiciary, the District Attorney's Association, the criminal defense bar and the New Mexico Corrections Department, will be asked for their input on policies and practices in the criminal justice system that could potentially affect prison populations.



NATIONAL TRENDS

The U.S. Department of Justice publishes annual reports regarding trends in the U. S. prison population. The most recent full-year reports are Prisoners in 2012 and Correctional Populations in the United States. These reports provide data on prisoners under the jurisdiction of federal and state correctional authorities from year end 2011 to year end 2012.

The following data points were included in the reports:

- The total U.S. prison population (state and federal) totaled 1,483,900 at year end 2012. This was the third consecutive year that the total U.S. prison population declined.

- The federal prison population grew by 2,100 prisoners in 2012. The aggregate state prison population decreased by 23,200 prisoners. This was the third consecutive year in which the aggregate state prison population decreased while the federal prison population increased.

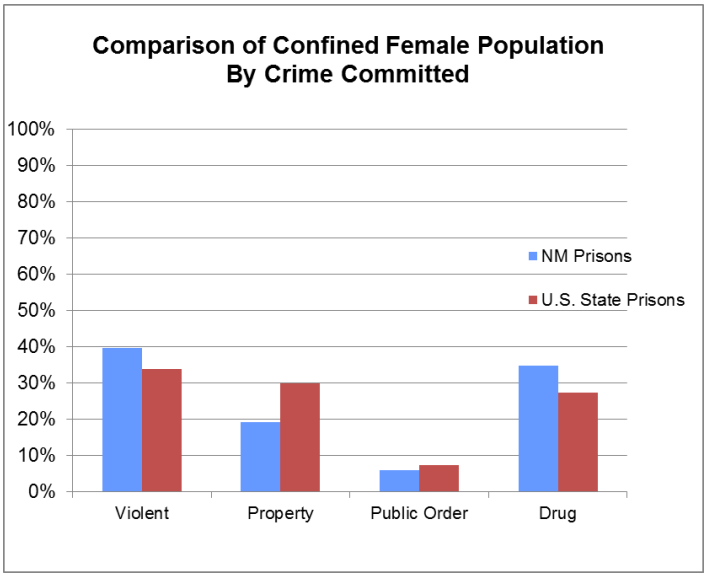
- The state prison population in California decreased by 14,600 in 2012, accounting for much of the decrease in the aggregate state prison population. The decrease can be attributed to California's Public Safety Realignment Act of 2011, which redirects nonviolent and nonsexual offenders from state prisons to county jails.

- About 1 in every 35 adult residents in the United States was under some form of correctional supervision (probation, parole, jail, state prison or federal prison) at year end 2012, the lowest rate observed since 1997.

- An estimated 1 in every 50 adult residents was supervised in the community on probation or parole in 2012, compared to an estimated 1 in every 108 adult residents incarcerated in federal prison, state prison, or in jail.

- Females comprised 6.9% of the state and federal prisoner population in 2012.

Compared to other state prisons, New Mexico houses a higher percentage of inmates convicted of violent offenses. According to the Bureau of Justice Statistics, the percentage of males housed in state prisons convicted of a violent offense was 53.8% . In New Mexico on June 30, 2013, 64.5% of males were convicted of a violent offense. The percentage of women convicted of a violent offense was also higher than the national percentage. The difference however was not as large (39.8% in New Mexico compared to the national percentage of 33.9%).



NEW MEXICO TRENDS

The most notable trend in New Mexico is the continuing, significant increase in the female inmate population. In FY 2010, the high count for the female inmate population was 614 inmates. There has been a significant upward trend in subsequent fiscal years:

- FY 2011 high count: 629 female inmates;
- FY 2012 high count: 649 female inmates;
- FY 2013 high count: 661 female inmates.

The high count in FY 2014 (through May 2014) has been 698 female inmates.

Moreover, there has been a significant upward trend in the percentage of females incarcerated in county jails in New Mexico:

- From 2010 to 2013, the percentage of female inmates incarcerated in county jails in New Mexico has increased from 12.9% to 16.7% of the total jail census.

In FY 2010, the high count for the New Mexico male inmate population was 6,177 inmates. In subsequent fiscal years, the male inmate population has been relatively stable:

- FY 2011 high count: 6,175 male inmates;
- FY 2012 high count: 6,151 male inmates;
- FY 2013 high count: 6,188 male inmates.

The high count in FY 2014 (through May 2013) has been 6,344 male inmates.

FACTORS INFLUENCING PRISON POPULATION

In an effort to better understand the increase in the female inmate population, the NMSC published a report entitled New Mexico's Female Prisoner's: Exploring Recent Increases in the Inmate Population. Findings set forth in the report include the following:

- The data suggests that the female prison population is being driven by length of stay rather than new admits, though periodic spikes in admissions do play a role.

- There is some indication that the female inmate population has been changing over time. Long-term trends indicate that incarcerations for violent crimes among women have increased. More recently, drug trafficking admissions have consistently exceeded admissions for drug possession. Additionally, there have been more return/new admissions as opposed to admissions for probation/parole violations.

- The number of women eligible for parole, who are serving some portion of their parole term in prison, has increased over time.

As noted in previous population forecast reports authored by the New Mexico Sentencing Commission, there are a number of factors that may explain the relative stability of the **total** New Mexico state inmate population in recent years. Those factors include the following:

- The number of new filings in district courts for criminal cases has been flat for several years (See Appendix E).

- Felony drug court programs and other specialty courts are established throughout New Mexico. Drug courts and other specialty courts are not a direct diversion from prison in most cases, but successful participation in specialty court programs may break the cycle of contact with the criminal justice system and eventual imprisonment.

- New Mexico is one of a small number of states where the jail population may exceed the prison population. On June 30, 2013, the jail census in New Mexico was 6,957. On that same date, there were 6,695 inmates held in state prisons.

- The adult parole board may impose sanctions other than a return to prison for parole violators whose infractions are technical in nature.

Sentencing Commission staff meets on a quarterly basis with NMCD staff to review inmate population trends and to discuss factors that may affect the forecast. Discussions have included the following subjects, which may have an impact on prison populations in the future:

- The NMCD has increased the number of staff assigned to the department's Recidivism Reduction Division.

- The Governor's Task Force on Recidivism Reduction continues to work on recommendations to improve reentry initiatives for state inmates. The task force plans to publish a Reentry White Paper later this year.

- The NMCD revised its policies regarding review of inmate files to better ensure accurate discharge dates.

- The NMCD revised its policies regarding lump sum awards of earned meritorious deductions. The criteria for lump sum awards are now more restrictive, which will increase inmate's length of stay.

- The NMCD is working with the PEW-MacArthur Foundation, the Legislative Finance Committee and the NMSC on implementation of the Results First Initiative. The initiative employs an evaluation model to identify cost effective programs that reduce recidivism.

CURRENT OPERATIONAL CAPACITY

On June 20, 2014, the operational capacity for male inmates in the NMCD was 6,784 beds. Correctional facilities for male inmates and their respective operational capacities are as follows:

- Penitentiary of New Mexico, located in Santa Fe (864)
- Central New Mexico Correctional Facility, located in Los Lunas (1,300)
- Southern New Mexico Correctional Facility, located in Las Cruces (768)
- Western New Mexico Correctional Facility, located in Grants (368)
- Roswell Correctional Center (340)
- Springer Correctional Center (296)
- Lea County Correctional Facility, located in Hobbs (1,279)
- Guadalupe County Correctional Facility, located in Santa Rosa (601)
- Northeast New Mexico Detention Facility, located in Clayton (626)
- Otero County Prison Facility (342)

On June 20, 2014, the operational capacity for female inmates in the NMCD was 708 beds. 706 of those beds are in the New Mexico Women's Correctional Facility, located in Grants. Two beds for females are in the Central New Mexico Correctional Facility, located in Los Lunas.

SHORT-TERM FORECAST

The short-term forecast sets forth projections for the next two fiscal years (FY 2015 and FY 2016).

MALES:

The short-term forecast is for continued slow growth in the male inmate population.
In FY 2015, the projected high count for the male population is 6,369.
In FY 2016, the projected high count for the male population is 6,442.
Both of those figures are less than the current operational capacity for male inmates of 6,784 beds.

FEMALES:

The female inmate population comprises approximately 10% of the total inmate population.

Accurately forecasting the female inmate population can be challenging, given its smaller absolute size compared to the male population. The short-term forecast is for a continuing, significant upward trend in the female inmate population.

In FY 2015, the projected high count for the female population is 722.

In FY 2016, the projected high count for the female population is 745.

Both of those figures exceed the current operational capacity at the New Mexico Women's Correctional Facility in Grants, which is 706 beds.

LONG-TERM FORECAST

It is important to remember that the long-term forecasts are based upon current sentencing statutes and current Corrections Department policies and practices. It is not difficult to imagine that statutes, policies and practices may be different in FY 2024. Even if our level of confidence diminishes as we move further into the future, the long-term forecasts may spur useful discussions among policy makers and criminal justice professionals.

MALES:

In FY 2024, the projected high count for the male population is 7,025.

FEMALES:

In FY 2024, the projected high count for the female population is 932.

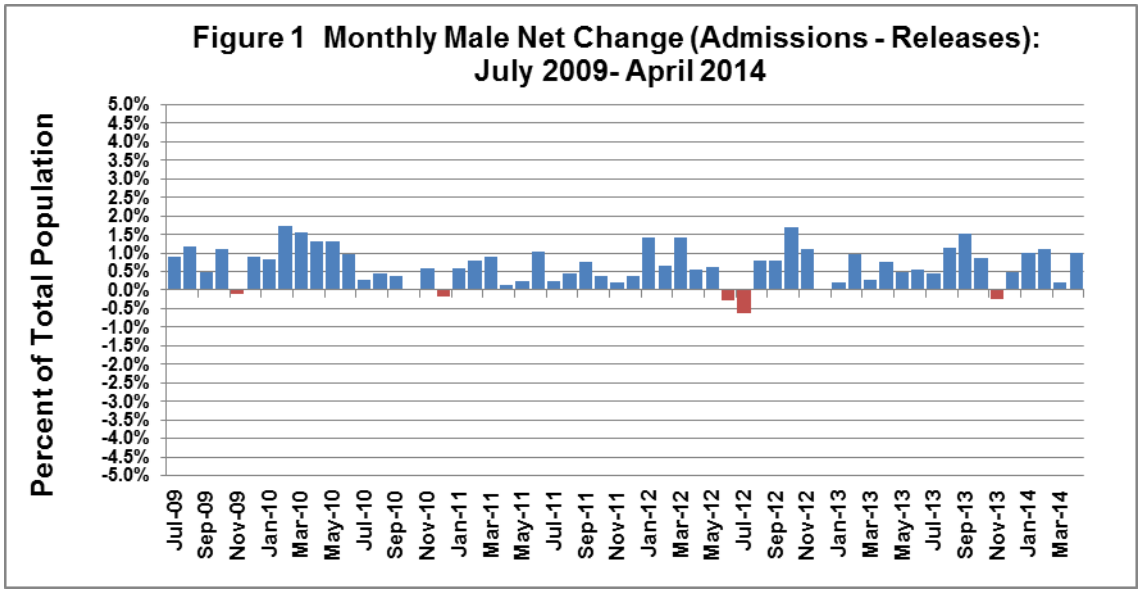
Table 1. Highest Actual Monthly Populations 2002 through 2014 and Projected Monthly Highs for 2015 through 2024				
Fiscal Year	**Male Population**	**Female Population**	**Change in Male Population**	**Change in Female Population**
2002	5,410	530		
2003	5,643	568	4.31%	7.17%
2004	5,811	600	2.98%	5.63%
2005	6,001	636	3.27%	6.00%
2006	6,134	696	2.22%	9.43%
2007	6,174	713	0.65%	2.44%
2008	6,012	629	-2.62%	-11.78%
2009	5,879	619	-2.21%	-1.59%
2010	6,177	614	5.07%	-0.81%
2011	6,175	629	-0.03%	2.44%
2012	6,151	649	-0.39%	3.18%
2013	6,188	660	0.60%	1.69%
2014	6,344	698	2.52%	5.76%
2015	6,369	722	0.39%	3.44%
2016	6,442	745	1.15%	3.19%
2017	6,515	769	1.13%	3.22%
2018	6,588	792	1.12%	2.99%
2019	6,661	815	1.11%	2.90%
2020	6,734	839	1.10%	2.94%
2021	6,806	862	1.07%	2.74%
2022	6,879	886	1.07%	2.78%
2023	6,952	909	1.06%	2.60%
2024	7,025	932	1.05%	2.53%

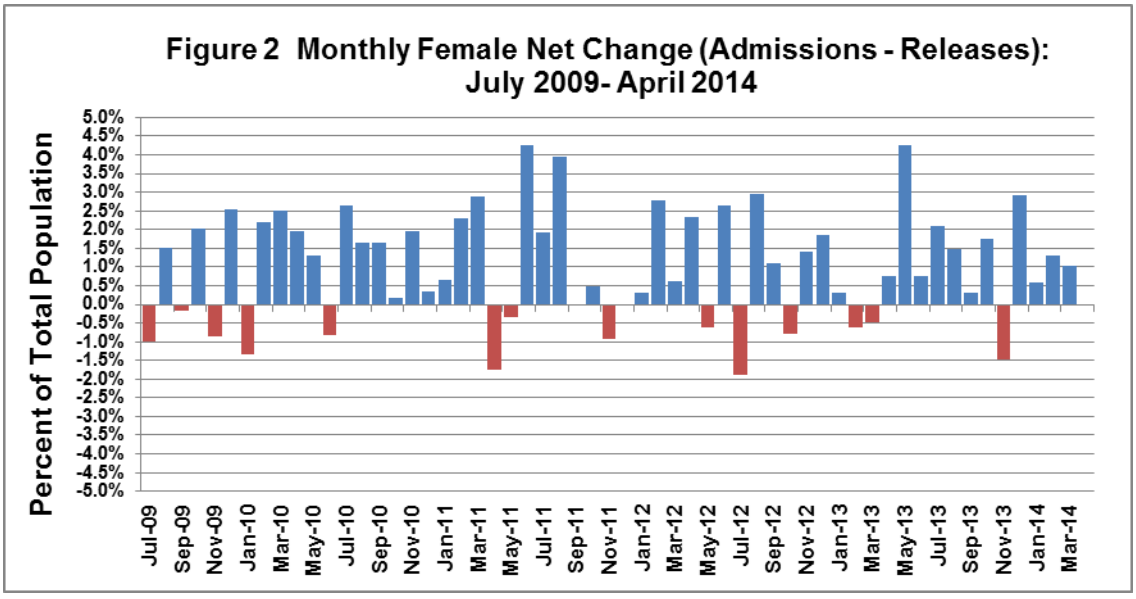
Notes: Highest actual monthly populations 2002 through 2014 shown in darker background color.

ADMISSIONS AND RELEASES

Figure 1 shows the relationship between admissions and releases for male inmates relative to the monthly high population figure for each month from July 2009 - April 2014. Positive percentages indicate months where admissions outpaced releases. Admissions have outpaced releases in nearly every month for this time period, but the difference between admissions and releases is quite small. This data confirms the relative stability of the male inmate population since FY 2007.

Figure 2 illustrates the relationship between admissions and releases for female inmates relative to the monthly high population figure for each month from July 2009 and April 2014. There are 14 months when the percentage of releases actually exceed admissions. However, in the remaining months admissions outpace releases, and in many cases the percentage is over 2%. This data shows the recent volatility of the female inmate population.

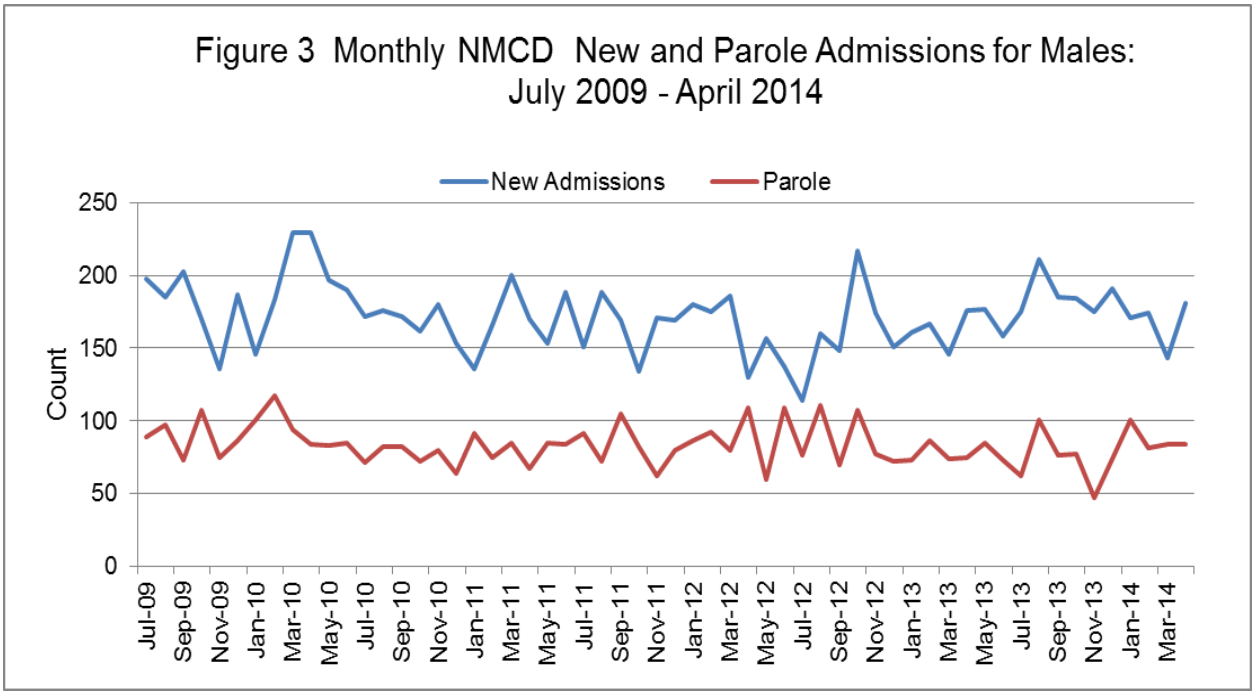


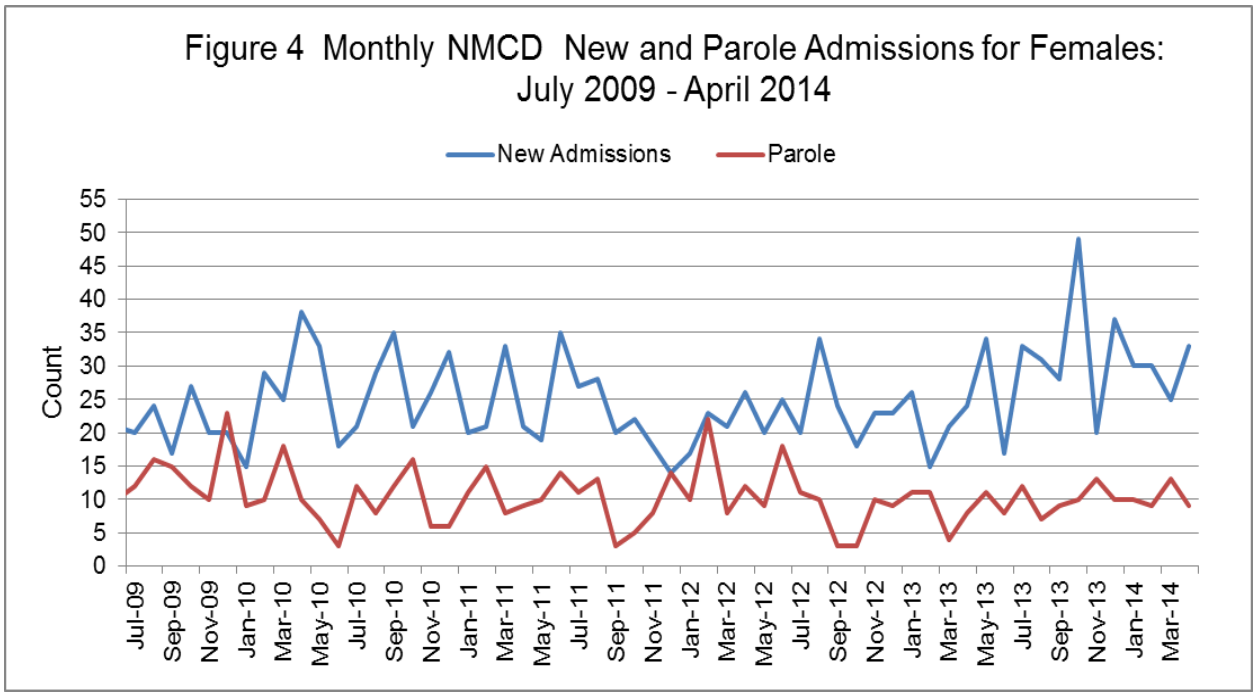


NEW ADMISSIONS AND PAROLE ADMISSIONS

Figure 3 shows the trends for new and parole admissions for male inmates. The data reflects admissions for the time period July 2009 through April 2014. Admissions for new offenses outpace parole admissions in every month during that time period.

Figure 4 shows the trend for new and parole admissions for female inmates. The data reflects admissions for the time period July 2009 through April 2014. There are a few instances when parole admissions exceed or nearly equal new admissions for females. However since February 2012, admissions for new offenses outpace parole admissions.

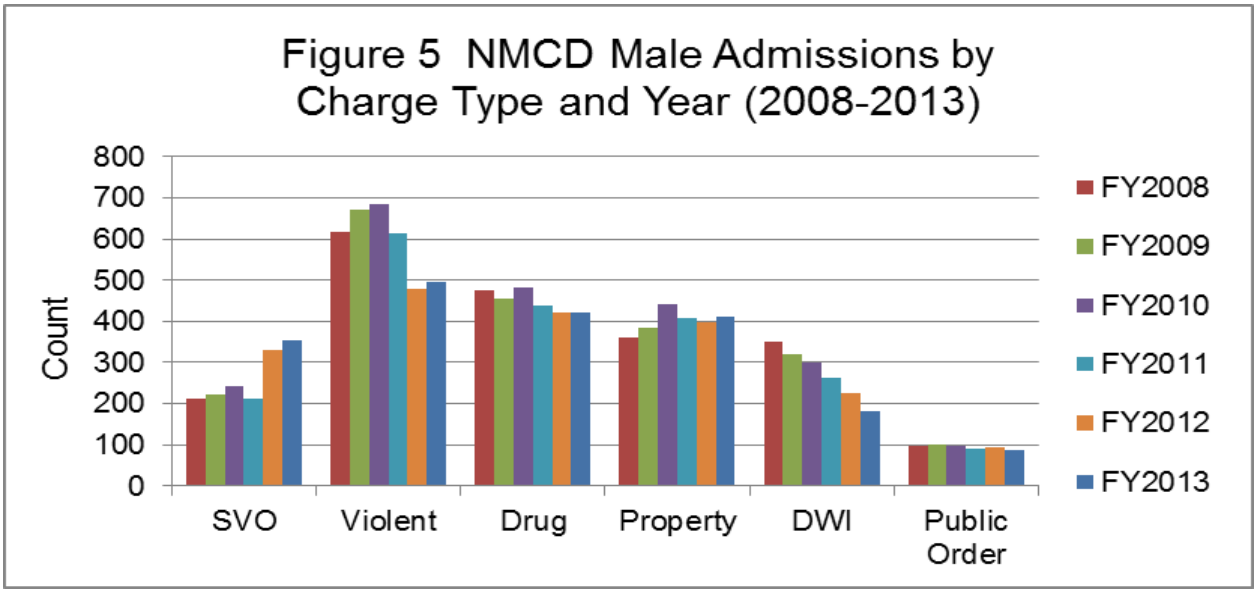




NEW ADMISSIONS BY CHARGE TYPE

Figure 5 illustrates new admissions by charge type for male inmates. Table 2 provides additional detail. For all six fiscal years illustrated in Figure 5, violent offenses are the largest category for new admissions. Also, new admissions for serious violent offenders continues to trend upward. For several fiscal years, new admissions for drug offenses have been evenly divided between drug possession and drug trafficking offenses. The number of new admissions for felony DWI offenses continues to decline. The number of new DWI admissions in FY 2013 (182) is nearly half of the count for DWI admissions in FY 2008 (350).

Figure 6 illustrates new admissions by charge type for female inmates. Table 3 provides additional detail. For all six fiscal years, property offenses and drug offenses are the largest categories for new admissions. Although it remains a small total number, new admissions for serious violent offenses have been trending upward. Between FY 2012 (23) and FY 2013 (9), there was a significant decline in new DWI admissions.



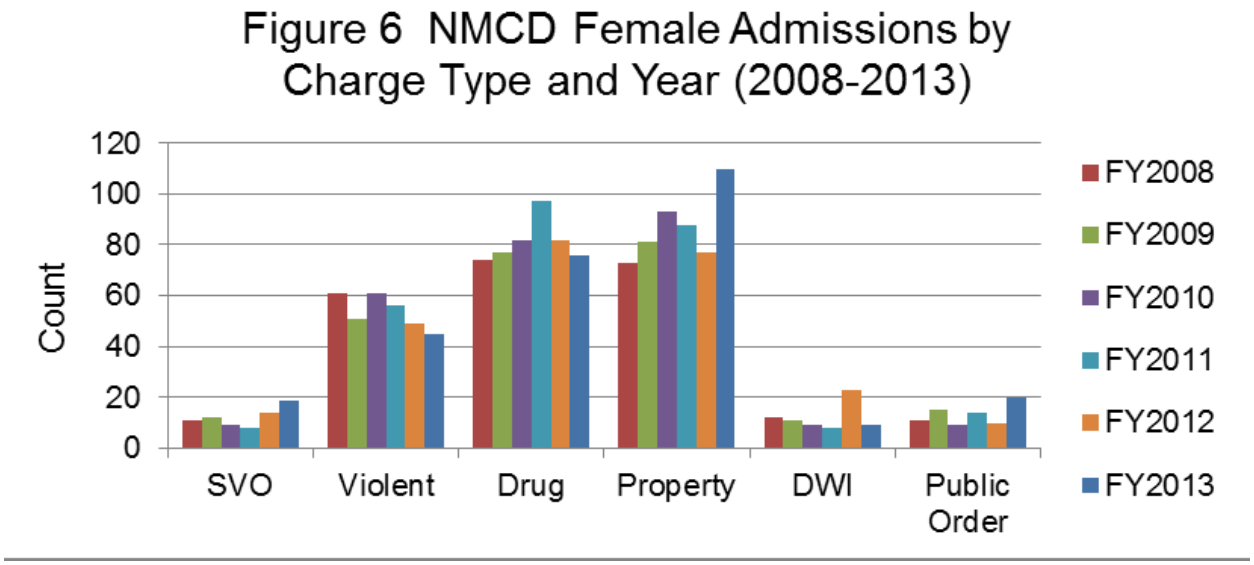


Table 2. Male Admissions Over Time						
	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
New Admissions						
SVO	212	223	244	211	331	353
Violent Crimes						
Other Violent (e.g., kidnapping, robbery, child abuse)	288	330	330	314	233	219
Sex Crime	81	85	85	78	60	40
Assault & Battery	249	256	269	221	185	235
Property Crimes						
Burglary	167	182	230	214	229	203
Other Property (e.g., larceny, arson, fraud)	193	202	211	195	168	208
Drug Trafficking	198	232	254	212	211	221
Drug Possession	277	222	227	226	209	199
DWI	350	319	300	263	226	182
Other Public Order (e.g., possession of weapon by felon, bribery of witness, escape from custody)	98	102	99	90	93	89
Parole	1,056	1,002	1,091	938	1,028	979
Other Admission Types (e.g., probation, diagnostic)	411	497	546	559	468	422
TOTAL	3,580	3,652	3,886	3,521	3,441	3,350

Table 3. Female Admissions Over Time						
	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
New Admissions						
SVO	11	12	9	8	14	19
Violent Crimes						
Other Violent (e.g., kidnapping, robbery, child abuse)	41	32	45	43	33	25
Sex Crime	3	3	0	2	1	2
Assault & Battery	17	16	16	11	15	18
Property Crimes						
Burglary	12	12	20	18	18	19
Other Property (e.g., larceny, arson, fraud)	61	69	73	70	59	91
Drug Trafficking	29	34	44	61	44	34
Drug Possession	45	43	38	36	38	42
DWI	12	11	9	8	23	9
Other Public Order (e.g., possession of weapon by felon, bribery of witness, escape from custody)	11	15	9	14	10	20
Parole	143	200	145	127	133	99
Other Admission Types (e.g., probation, diagnostic)	75	69	78	83	79	74
TOTAL	460	516	486	481	467	452

APPENDIX A.

Table 4. MALE ACTUAL, FORECAST and PERCENT DIFFERENCE: FY 2014

DATE	ACTUAL	FORECAST	% DIFF
Jul-13	6,187	6,248	0.98%
Aug-13	6,221	6,259	0.60%
Sep-13	6,264	6,257	-0.12%
Oct-13	6,288	6,258	-0.47%
Nov-13	6,301	6,231	-1.10%
Dec-13	6,288	6,222	-1.05%
Jan-14	6,277	6,249	-0.44%
Feb-14	6,317	6,274	-0.69%
Mar-14	6,318	6,281	-0.59%
Apr-14	6,344	6,287	-0.90%
May-14	6,329	6,297	-0.51%

Table 4. FEMALE ACTUAL, FORECAST and PERCENT DIFFERENCE: FY 2014

DATE	ACTUAL	FORECAST	% DIFF
Jul-13	673	650	-3.45%
Aug-13	674	653	-3.17%
Sep-13	675	655	-3.03%
Oct-13	691	655	-5.17%
Nov-13	678	656	-3.19%
Dec-13	687	658	-4.27%
Jan-14	693	659	-4.87%
Feb-14	698	661	-5.35%
Mar-14	689	662	-3.92%
Apr-14	696	663	-4.72%
May-14	692	664	-3.99%

APPENDIX B.

Figure 7 Actual Total Prison Population and Forecast: July 2011 to June 2017

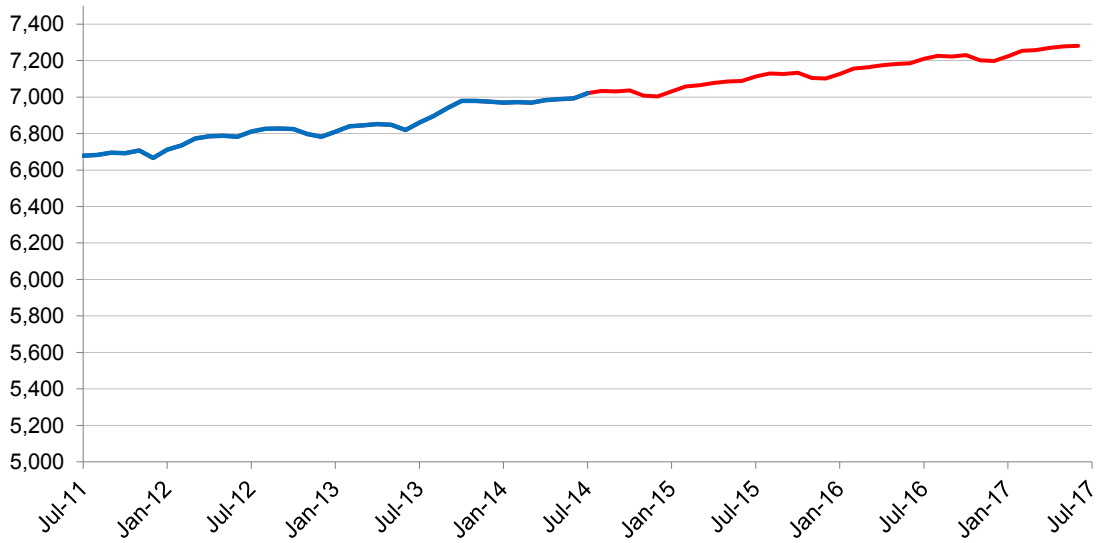


Table 6. TOTAL POPULATION PROJECTIONS: July 2014 to June 2024

Month	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
January		7,031	7,127	7,223	7,320	7,415	7,512	7,608	7,704	7,800	7,896
February		7,058	7,156	7,253	7,349	7,446	7,541	7,637	7,734	7,830	7,927
March		7,065	7,163	7,258	7,355	7,451	7,547	7,644	7,739	7,836	7,932
April		7,077	7,174	7,270	7,366	7,463	7,559	7,655	7,752	7,847	7,944
May		7,085	7,182	7,278	7,375	7,471	7,567	7,663	7,759	7,855	7,952
June		7,089	7,185	7,281	7,377	7,473	7,570	7,666	7,762	7,858	7,954
July	7,021	7,113	7,210	7,306	7,402	7,499	7,594	7,691	7,787	7,883	
August	7,033	7,130	7,226	7,323	7,419	7,514	7,611	7,707	7,804	7,900	
September	7,031	7,126	7,223	7,319	7,415	7,512	7,607	7,704	7,800	7,896	
October	7,036	7,134	7,230	7,325	7,422	7,518	7,615	7,711	7,806	7,903	
November	7,008	7,105	7,201	7,298	7,393	7,490	7,586	7,682	7,779	7,875	
December	7,004	7,102	7,198	7,294	7,390	7,486	7,583	7,679	7,775	7,871	

Figure 8 Actual Male Prison Population and Forecast: July 2011 to June 2017

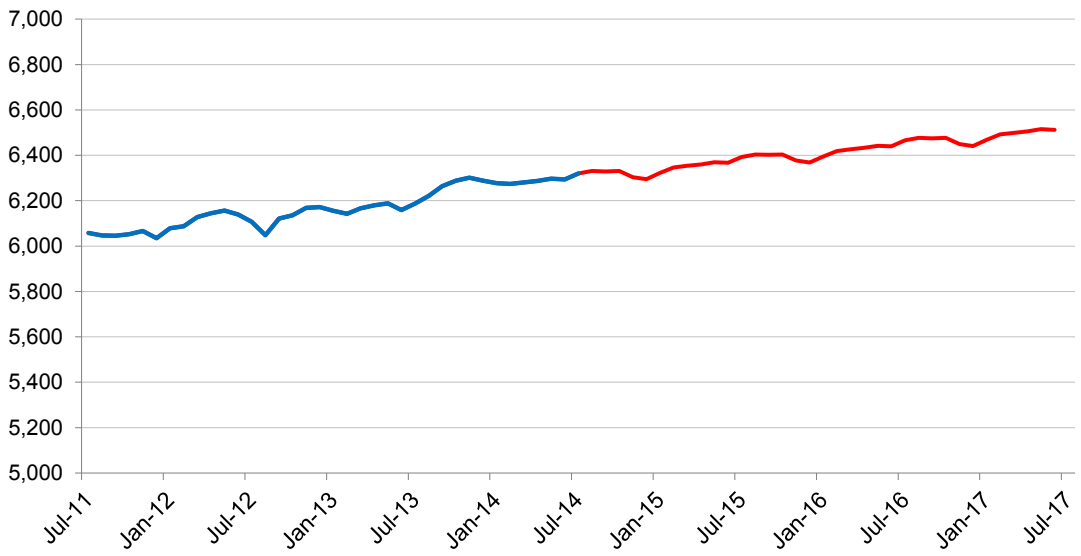


Table 7. MALE POPULATION PROJECTIONS: July 2014 to June 2024

Month	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
January		6,322	6,395	6,468	6,541	6,613	6,686	6,759	6,832	6,905	6,977
February		6,346	6,419	6,492	6,565	6,638	6,710	6,783	6,856	6,929	7,002
March		6,354	6,427	6,499	6,572	6,645	6,718	6,791	6,863	6,936	7,009
April		6,360	6,433	6,505	6,578	6,651	6,724	6,797	6,870	6,942	7,015
May		6,369	6,442	6,515	6,588	6,661	6,734	6,806	6,879	6,952	7,025
June		6,367	6,440	6,512	6,585	6,658	6,731	6,804	6,876	6,949	7,022
July	6,320	6,393	6,466	6,539	6,612	6,685	6,757	6,830	6,903	6,976	
August	6,331	6,404	6,477	6,550	6,623	6,695	6,768	6,841	6,914	6,987	
September	6,329	6,402	6,475	6,548	6,621	6,694	6,766	6,839	6,912	6,985	
October	6,331	6,404	6,477	6,549	6,622	6,695	6,768	6,841	6,913	6,986	
November	6,304	6,377	6,450	6,523	6,595	6,668	6,741	6,814	6,887	6,960	
December	6,295	6,368	6,441	6,514	6,586	6,659	6,732	6,805	6,878	6,950	

Figure 9 Actual Female Prison Population and Forecast: July 2011 to June 2017

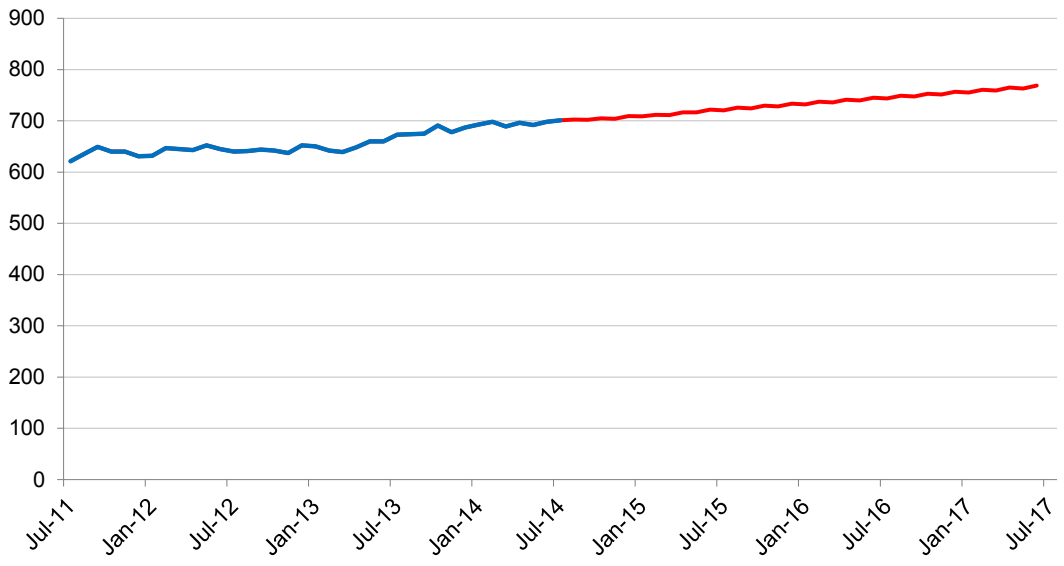


Table 8. FEMALE POPULATION PROJECTIONS: July 2014 to June 2024

Month	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
January		709	732	755	779	802	825	849	872	896	919
February		712	737	761	784	808	831	854	878	901	925
March		711	736	759	783	806	829	853	876	900	923
April		717	741	765	788	811	835	858	882	905	928
May		716	740	763	787	810	833	857	880	903	927
June		722	745	769	792	815	839	862	886	909	932
July	701	720	744	767	790	814	837	861	884	907	
August	702	726	749	773	796	819	843	866	889	913	
September	702	724	748	771	794	818	841	864	888	911	
October	705	730	753	776	800	823	847	870	893	917	
November	704	728	751	775	798	822	845	868	892	915	
December	709	734	757	780	804	827	850	874	897	921	

Appendix C: Predicting Prison Populations Literature Review

Introduction

Prison population forecasts are essential for prison administrators and policy makers to make management and budget decisions. Prison population forecasts are also significant for legislators to make informed decisions when passing laws that potentially affect prison populations.

The growth of prison populations in the past 30 years has made prison population forecasts necessary. Between 1980 and 1990 the U.S. prison population grew by approximately 134% (U.S. Department of Justice 1995). The prison population increase slowed between 1990 and 2000, but still grew by 69% (U.S. Department of Justice 2001). Martinez (2009) made the argument that prison population forecasts are crucial due to the length of time it takes to build a new prison. After legislators have approved funding for construction of a new prison, it can take two years for a prison to be built and staffed. Without prison population forecasts and with a continuing trend of increasing prison populations, prisons would become overcrowded for years before relief from a new prison comes to fruition.

Legislative and policy decisions have a direct impact on prison populations. According to a report produced by the Federal Bureau of Investigation in 2004, U.S. crime rates decreased in the previous10 years, but the prison population for that time period increased. The cause of the prison population increase has been attributed in part to changes in sentencing laws, including: longer prison sentences for some crimes; three strikes legislation; stricter habitual offender laws; an increase in mandatory minimum stays; tougher policies imposed on criminals in prison, on parole or probation; and the war on drugs (Martinez, 2009).

Prison Population Forecast Models: Then and Now

Since the 1960s, trying to project future prison populations has proven difficult. In 1984, the Federal Bureau of Prisons (BOP) announced:

> ". . . The 'state of the art' for predicting prison populations is still in its infancy and accurate and reliable methodologies simply do not exist. Our review of numerous prison population projection studies conducted by national experts reveals, with the wisdom of hindsight, that their projections have continually been in error."

In 1984, the General Accounting Office (GAO) surveyed the BOP, the District of Columbia, and the 50 states to find what methods were used to forecast prison populations. The GAO found that states used more than one method to forecast. Fifty-two percent analyzed admissions and releases to forecast prison populations. Nineteen states (38%) used trend analysis based on past prison populations, 17 (34%) performed a simulation of policies and practices then assessed how changes would impact the prison population. Thirteen states (26%) performed linear regressions using factors such as unemployment rates, which seemed to correlate to prison populations when the rates are lagged six months to a year. Twelve states (24%) used multiple linear regression, 20% projected future populations based on design or rated capacity of their facilities. Two states based projections on a "consensus statement" or group opinion (GAO, 1984).

In 2008, the American Correctional Associations in its journal, *Corrections Compendium*, published results of a survey of US and Canadian correctional systems. The agencies were asked to project their populations for the years 2008, 2010 and 2012. The survey found 28 U.S. correctional systems perform internal projections. The systems used a variety of methods including stochastic models, a flow model method pioneered in Texas, autoregression integrated moving average (ARIMA), and a micro-simulation model. Agencies also reported analyzing their own historical population data and conducting a general simulation of admissions, lengths of stay, and departures. If not developed and performed within their systems, the departments identified outside sources such as JFA Associates, the Connecticut Office of Policy and Management, a local university, the Criminal Justice Estimating Conference, and specific state agencies and boards. Twenty-seven agencies reported their figures were considered to be accurate or reasonably so, higher by 5 of the agencies and lower by 7 of the agencies (Corrections Compendium, 2008).

The 2008 Corrections Compendium survey revealed the methodologies used to produce prison population projections have not changed significantly since the GAO's 1984 report. Martinez (2008) stated, ". . .The methodologies used to produce prison population projections have not changed significantly in the past 10 to 15 years, despite the fact that advancing computer technologies could make the task much easier."

In the past it was thought that the total number of citizens in the population primarily affected the prison population. Based on this assumption, prison populations were expected to reach their pinnacle in the 1990s and start their decline with baby boomers passing out of the crime age population (18-36) (Barnett, 1987). As we now know, the rate of growth of prison populations has slowed, proving the inadequacy of predicting prison population growth on the total population of citizens in the community.

Prison population forecast models based on historical population data, admissions, lengths of stay, and departures are limited to the scope of population growth trends and legislation that are current at the time

the forecast is run (Barnett, 1987). More advanced models such as the flow, stochastic, autoregression integrated moving average (ARIMA), and micro-simulation models are considered to be more accurate than models based on primarily historical data and can be adjusted to include changes in policies and practices (Martinez, 2008).

Conclusion

Experts agree that predicting prison population is not an exact science. Predicting prison populations is a combination of facts and probabilities (Martinez, 2009). The state of the art prison population forecast model does not currently exist. The rapid advancement of computer technology should be utilized to produce the state of the art prison population forecast model. Experts believe the state of the art prison population forecasting model should be:

- A computer simulated model (BOP 1984, Martinez 2008)
- Intuitive so those who do not regularly deal in statistical mathematical concepts could understand the prediction output and could input their own queries (Martinez 2008)
- Able to answer 'what if' scenarios to help legislatures make informed decisions when passing laws that affect prison populations (Martinez 2008)
- Capable of taking into account the vast number of variables to produce an accurate forecasting model (BOP 1984, Martinez 2008).

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APPENDIX D: METHODOLOGY

The prison population time series forecasts used to produce this report are based on observed prison population data. It is understood that there are many factors that drive prison populations, including demographic trends, arrest rates, the number of criminal cases filed in district court, conviction rates, the availability of diversion programs, sentence lengths, admission rates and release rates, availability of earned meritorious deductions and parole readiness. The observed prison population is a result of all those factors and others. When new laws or polices come to bear which significantly affect the prison population, it is recommended that a new long-term forecast be produced which incorporates new data that reflects the changes.

Time series forecasting consists of examining historical prison population data, identifying potential methods for the forecast, fitting the data to a model which will use the data to produce a forecast into the future, and then testing the model. Testing includes assessing the overall model fit, producing estimates and comparing those estimates to actual data to see how well the chosen model performs. Diagnostic checks are applied to the differences between the estimated and actual counts to ensure that the model adequately explains and extracts all information that the historical data has to offer. It may turn out that more than one model specification fits the data well. When choosing between different candidate models, there are fit statistics produced for each model that can be compared.

The methodology described above was augmented at various steps by conversations with colleagues who have historical knowledge regarding prison population trends, factors that drive population and insight into population patterns. Moreover, Sentencing Commission staff held quarterly meetings with New Mexico Corrections Department staff to discuss inmate population trends. This information was crucial for choosing the starting date from which to forecast for males and females, respectively.

Next, examination of the daily and monthly high counts for males and then females was conducted via graphical analysis of the historical data plotted against time. As a result of this analysis, we came to the two following conclusions: 1) that the men's and women's population should be modeled separately and 2) that using monthly high population counts would be the best way to proceed.

Working with the male and female population time series data separately, we moved from graphical analysis to fitting and diagnosing models. It became apparent that each time series called for a different methodology in order to produce the forecasts. For the males, an Exponential Smoothing (ES) model was used and for the females the Box Jenkins (BJ) method was used to specify an Autoregressive Integrated Moving Average (ARIMA) model. Each of these methods are discussed below in the male and female sections.

MALES

The historical monthly high data for males included the time range between April, 2004 through March, 2012. The starting date was chosen after initial examination of the historical data, discussions among staff and then performing model fitting and diagnostics. It was found that the Exponential Smoothing method was best suited to handle the male data. Specifically, we tested a Winter's Additive (WA) model using a one period backward lagged dependent variable. The WA has an ARIMA equivalent or is a special case of such. For the ES method, the forecasts are based on weighted averages where the future values are weighted averages of past population observations, with more recent observations given more weight in the forecast than population observations in the more distant past.

The WA model performed better than other ES model candidates. As opposed to the ARIMA model, the residual diagnostics were very good implying that this model specification adequately explained the data process for the time period used. This model captured a slowly changing seasonal pattern that exhibits constant or additive seasonal variation along with a slowly changing linear trend. As apparent in the forecast, the varying cycle repeats in an upward trend.

Since ES methods are not based on a formal statistical method, it is recommended that a back forecast be produced and checked for accuracy. In this case, the data range was cut off at February 2011 and a forecast for the period between March 2011 and March 2012 was produced. The forecasted monthly highs were compared against the actual male population via calculation of the percentage difference between the two. The forecasted values were slightly lower, with an average difference over the 13 months of 1.16%. The highest differences were present in August, September and October of 2011 and the lowest differences were present in March and April of 2011 and March of 2012.

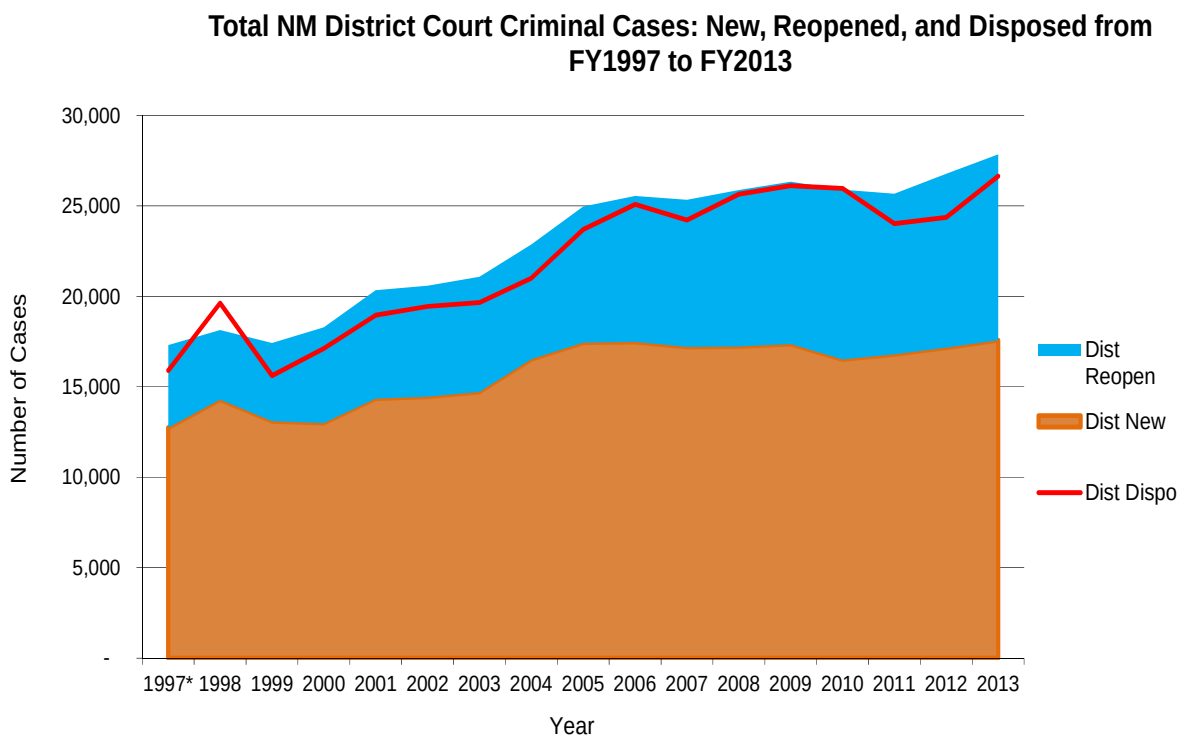
FEMALES

The historical monthly high data for females includes the time range of July 2010 through April 2014. The starting date was chosen after performing graphical analysis and conversations with colleagues regarding recent history specific to the female population. The information regarding recent history was important in choosing a time frame in which the population could be expected to exhibit a relatively stable pattern.

Choosing an appropriate forecasting model for the women entailed utilizing the Box Jenkins method to specify an ARIMA model. The Exponential Smoothing method did not adequately describe the female population data. The primary difference in the methodology is that the auto and partial autocorrelation functions (ACF's and PACF's) are also examined graphically to identify potential models. These show how correlated each value is with its past value for a number of periods in the past. They also aid in model identification, including whether a difference is needed to account for non-random patterns in the data, such as seasonal effects. Initial examination of the functions and analysis of the data for this time range led to the conclusion that differencing was necessary prior to forecasting rather than building it into the model. In addition, a first difference was not sufficient. Therefore, a second difference of the data was used prior to model fitting.

Specification of the forecasting model for the female population was a two-step process. First, the data was fit to a seasonal ARIMA model. It was found to follow an autoregressive (AR) of order two and seasonal moving average (MA) of order one. This model (Model I) performed well for a short term forecast. However, examination of the ten year forecast revealed problems, attributable to the fact that with so few observations it is difficult to capture long-term patterns.

APPENDIX E: NEW MEXICO JUDICIARY DATA



Source: Compiled by NMSC from published AOC Annual Reports 1996-2013

New Mexico District Court Criminal Cases FY1997 to FY2013				
Year	**New Cases**	**Reopened**	**New + Reopened**	**Total Disposed**
1997	12,743	4,570	17,313	15,905
1998	14,290	3,848	18,138	19,635
1999	13,101	4,327	17,428	15,625
2000	12,995	5,300	18,295	17,119
2001	14,349	5,991	20,340	18,972
2002	14,449	6,141	20,590	19,453
2003	14,718	6,372	21,090	19,660
2004	16,522	6,349	22,871	21,007
2005	17,439	7,530	24,969	23,708
2006	17,482	8,071	25,553	25,083
2007	17,206	8,139	25,345	24,224
2008	17,226	8,657	25,883	25,648
2009	17,359	8,983	26,342	26,111
2010	16,509	9,396	25,905	25,963
2011	16,796	8,888	25,684	24,018
2012	17,169	9,616	26,785	24,365
2013	17,572	10,285	27,857	26,649