New Mexico Sentencing Commission

New Mexico Sentencing Commission Staff June 2013

NEW MEXICO PRISON POPULATION FORECAST: *FY 2014—FY 2023*

National Trends

- The total U.S. prison population (state and federal) fell to 1,598,780 at year end 2011, a decrease of 0.9% (15,023 prisoners) from year end 2010. This was the second consecutive year that the total U.S. prison population declined.
- The decline was due to a decrease of 21,614 in the number of state prisoners. The federal prison population grew by 6,591 prisoners. This was the second consecutive year in which the state's prison population decreased while the federal prison population increased.
- 26 states reported decreases in their prison populations during 2011. California's decline of 15,493 state inmates accounted for more than 70% of the decrease in the total number of state prisoners in 2011. New Jersey, New York, Michigan, Florida and Texas also reported decreases of more than 1,000 prisoners in 2011.
- Females comprised 6.7% of the state and federal prisoner population in 2011.

New Mexico Trends

- The most notable trend in New Mexico has been the recent 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 the female population since that time. The FY 2013 high count (through May 2013) has been 661 female inmates.
- 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 very stable. The high count in FY 2013 (through May 2013) has been 6,188 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 2014, the projected high count for the female population is 666.
- In FY 2015, the projected high count for the female population is 681.
- Males: The short-term forecast is for continued slow growth in the male inmate population.
- In FY 2014, the projected high count for the male population is 6,297.
- In FY 2015, the projected high count for the male population is 6,369.

Factors Influencing Prison Population

- In an effort to better understand the increase in the female inmate population, the New Mexico Sentencing Commission published a report entitled "New Mexico's Female Prisoner's: Exploring Recent Increases in the Inmate Population" (Kristine Denman, Linda Freeman and Nona Gronert) (August 2012). 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, and there have been more return/new admissions as opposed to admissions for probation/parole violations.
- The number of women serving some portion of their sentence as in-house parolees has increased over time.
- No single variable can account for the increase in the female prison population. Instead, it appears that small changes in multiple areas are impacting the female prison population.

INTRODUCTION

This prison population forecast was prepared by the New Mexico Sentencing Commission. 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 held quarterly meetings (September 2012, January 2013 and June 2013) 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 2013, the projections for the male and female populations have been within 3% of the actual populations in every month (See Appendix A).

Going forward, Sentencing Commission staff will brief legislators, Sentencing Commission members and other policy makers on the forecast. Members of the Sentencing

Commission include representatives from law enforcement, the judiciary, prosecutors, the criminal defense bar and the New Mexico Corrections Department. Commission members 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 an annual report regarding trends in the U. S. prison population. The most recent report, entitled "Prisoners in 2011" (Carson and Sabol) (December 2012), provides data on prisoners under the jurisdiction of federal and state correctional authorities from year end 2010 to year end 2011.

The following data points were highlighted in the report:

--The total U.S. prison population (state and federal) fell to 1,598,780 at year end 2011, a decrease of 0.9% (15,023 prisoners) from year end 2010. This was the second consecutive year that the total U.S. prison population declined.

--The decline was due to a decrease of 21,614 in the number of state prisoners. The federal prison population grew by 6,591 prisoners. This was the second consecutive year in which the state's prison population decreased while the federal prison population increased.

--26 states reported decreases in their prison populations during 2011. California's decline of 15,493 state inmates accounted for more than 70% of the decrease in the total number of state prisoners in 2011. New Jersey, New York, Michigan, Florida and Texas also reported decreases of more than 1,000 prisoners in 2011.

--In May 2011, the U.S. Supreme Court ruled that the state of California must reduce its prison population to alleviate overcrowding. In response to the U.S. Supreme Court's decision, the California Legislature and Governor enacted laws to reduce the prison population. In part, the new policies in California provide for the incarceration of nonviolent, nonsexual offenders in county jails, rather than in prison.

--Females comprised 6.7% of the state and federal prisoner population in 2011.

NEW MEXICO TRENDS

The most notable trend in New Mexico has been the recent 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:

- the FY 2011 high count was 629 female inmates;
- the FY 2012 high count was 649 female inmates; and
- the FY 2013 high count (through May 2013) has been 661 female inmates.

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 very stable. The high count in FY 2013 (through May 2013) has been 6,188 male inmates.

FACTORS INFLUENCING PRISON POPULATION

In an effort to better understand the increase in the female inmate population, the New Mexico Sentencing Commission published a report entitled "New Mexico's Female Prisoner's: Exploring Recent Increases in the Inmate Population" (Kristine Denman, Linda Freeman and Nona Gronert) (August 2012). 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, and 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.

--No single variable can account for the increase in the female prison population. Instead, it appears that small changes in multiple areas are impacting the female prison population.

As noted in previous population forecast reports authored by the New Mexico Sentencing Commission, there are a number of factors that may explain the 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, 2012, the jail census in New Mexico was 6,953. On that same date, there were 6,730 inmates being held in state prisons.

--In 2006, the New Mexico Sentencing Commission developed legislation that amended the statute regarding earned meritorious deductions (EMD's) for state inmates. Senate Bill 21 (2006) authorized the award of EMD's to non-violent offenders during the initial sixty days of receipt by the Corrections Department. Sentencing Commission staff estimates that the enactment of Senate Bill 21 yields an annual savings of 81 prison beds.

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

Finally, Sentencing Commission staff meets on a quarterly basis with New Mexico Corrections Department 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 New Mexico Corrections Department has re-prioritized duties for existing full-time employees and increased the number of staff assigned to the department's Recidivism Reduction Division;

--The Governor's Task Force on Recidivism Reduction has been organized and held its initial meeting in May 2013;

--The New Mexico Corrections Department has been working with the Anderson School of Business at the University of New Mexico to modernize the department's business plan for inmate vocational programs;

--The New Mexico Corrections Department is auditing inmate files to identify instances when inmates were released early. The department has revised its policies regarding review of inmate files to better ensure accurate discharge dates;

--The New Mexico Corrections Department's Fugitive Apprehension Team actively searches for, locates, and apprehends probation and parole absconders and returns them to custody;

--The New Mexico Corrections Department recently reviewed and revised its policies regarding lump sum awards of earned meritorious deductions, which will increase inmate's length of stay.

CURRENT OPERATIONAL CAPACITY

On June 1, 2013, the operational capacity for male inmates in the New Mexico Corrections Department was 6,763 beds. This is an increase of 332 beds for male inmates since June 1, 2012. The 332 additional beds are located at the Otero County Prison Facility. The beds are used to house Level II and Level III inmates, many of whom were convicted for committing sex offenses.

The New Mexico Corrections Department reports that in FY 2014, the department will shutter sub-standard housing units for males located at the Central New Mexico Correctional Facility in Los Lunas, resulting in a decrease of 56 beds.

On June 1, 2013, the operational capacity for female inmates in the New Mexico Corrections Department was 668 beds. That number is unchanged since June 1, 2012. The operational capacity at the New Mexico Women's Correctional Facility is 606 beds. Additional beds for female inmates are located at the Western New Mexico Correctional Facility. Both facilities are located in Grants, New Mexico.

SHORT-TERM FORECAST

The short-term forecast sets forth projections for the next two fiscal years (FY 2014 and FY 2015).

MALES:

The short-term forecast is for continued slow growth in the male inmate population.

In FY 2014, the projected high count for the male population is 6,297.
In FY 2015, the projected high count for the male population is 6,369.
Both of those figures are less than the current operational capacity for male inmates of 6,763 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 significant upward trend in the female inmate population.

In FY 2014, the projected high count for the female population is 666. In FY 2015, the projected high count for the female population is 681. Both of those figures exceed the current operational capacity at the New Mexico Women's Correctional Facility in Grants (606 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 2023. 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 2023, the projected high count for the male population is 6,952.

FEMALES:

In FY 2023, the projected high count for the female population is 807.

Table 1. Highest Actual Monthly Populations 2002 through 2013 and Projected Monthly Highs for 2014 through 2023

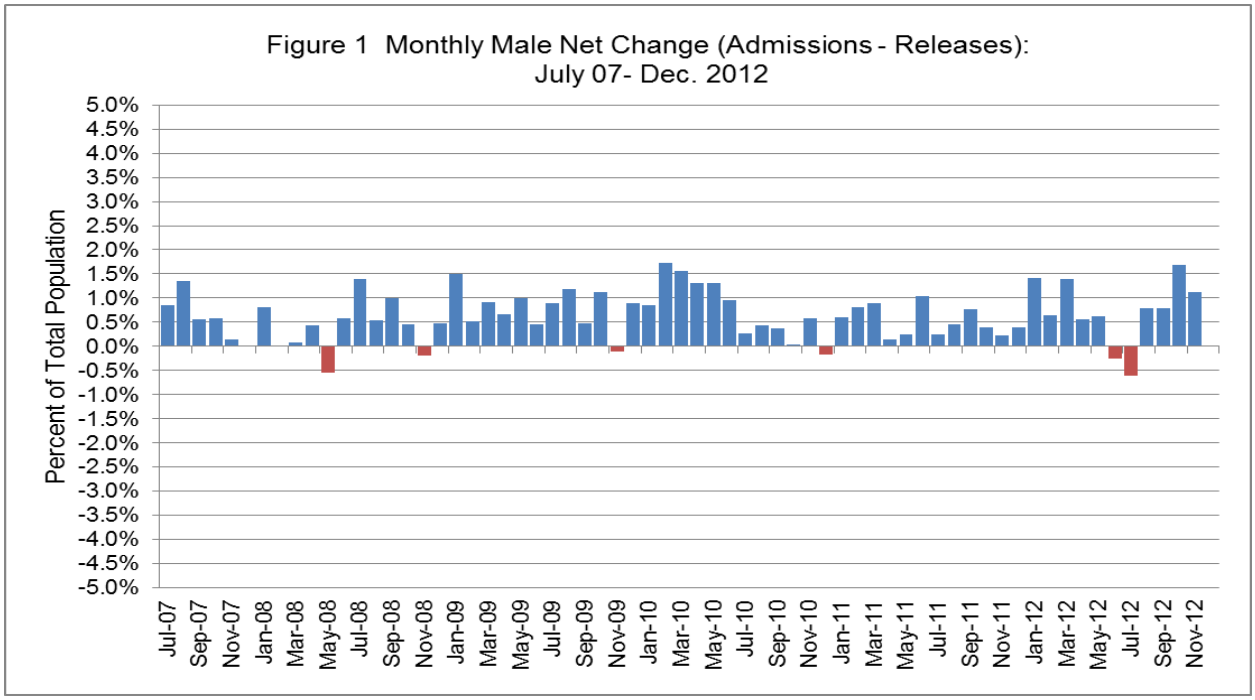
Fiscal Year	Male Population	Female Population	Change in Male Population	Change in Female Population
2002	5,410	530		
2003	5,643	568	4.31%	7.17%
2004	5,811	600	2.98%	5.63%
2005	6,001	636	3.27%	6.00%
2006	6,134	696	2.22%	9.43%
2007	6,174	713	0.65%	2.44%
2008	6,012	629	-2.62%	-11.78%
2009	5,879	619	-2.21%	-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	661	0.60%	1.85%
2014	6,297	666	1.76%	0.76%
2015	6,369	681	1.14%	2.25%
2016	6,442	697	1.15%	2.35%
2017	6,515	713	1.13%	2.30%
2018	6,588	728	1.12%	2.10%
2019	6,661	744	1.11%	2.20%
2020	6,734	760	1.10%	2.15%
2021	6,806	775	1.07%	1.97%
2022	6,879	791	1.07%	2.06%
2023	6,952	807	1.06%	2.02%

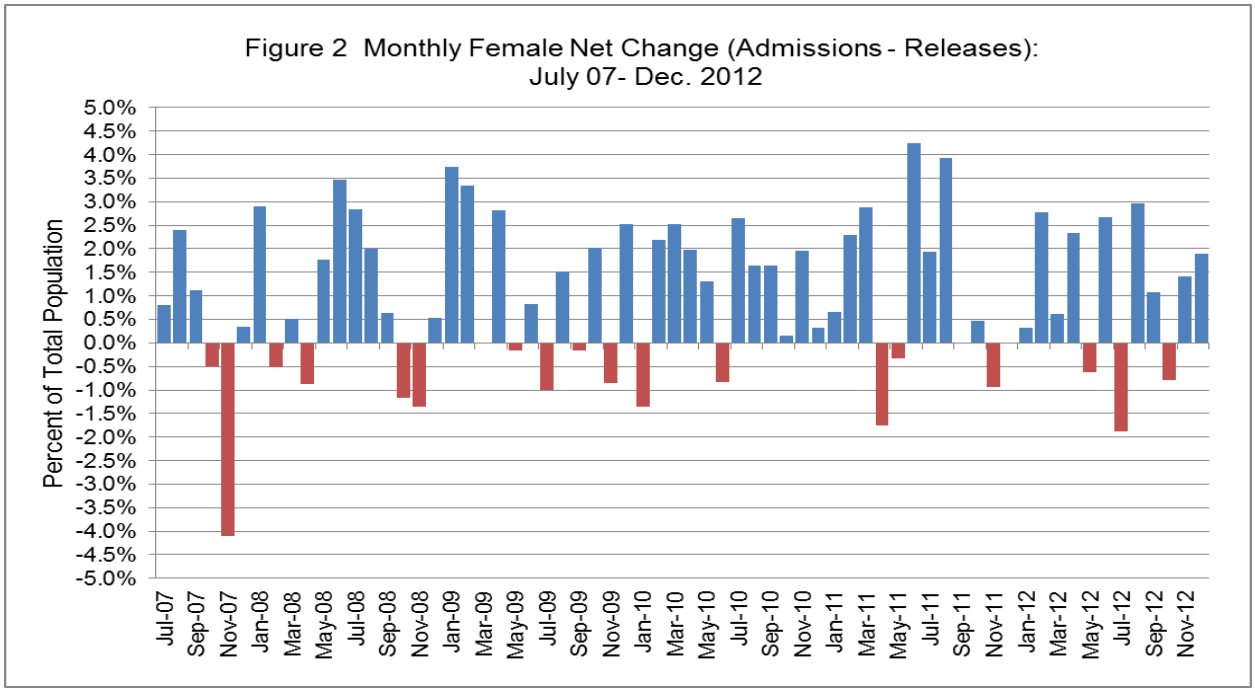
Notes: Highest actual monthly populations 2002 through May 2013 shown in darker background color.

ADMISSIONS AND RELEASES

Figure 1 shows the monthly relationship between admissions and releases for male inmates. Admissions have outpaced releases in nearly every month for the time period from July 2007 through December 2012. When measured as a percent of the total male population the difference between admissions and releases is quite small. This data point is consistent with the stability of the male inmate population since FY 2007.

Figure 2 illustrates the monthly relationship between admissions and releases for female inmates. For the time period between July 2007 and December 2012, there are 18 months when releases actually exceed admissions. However, in the remaining months when admissions outpace releases, the percent of the total female population is often significant. This data point is consistent with the recent volatility of the female inmate population.

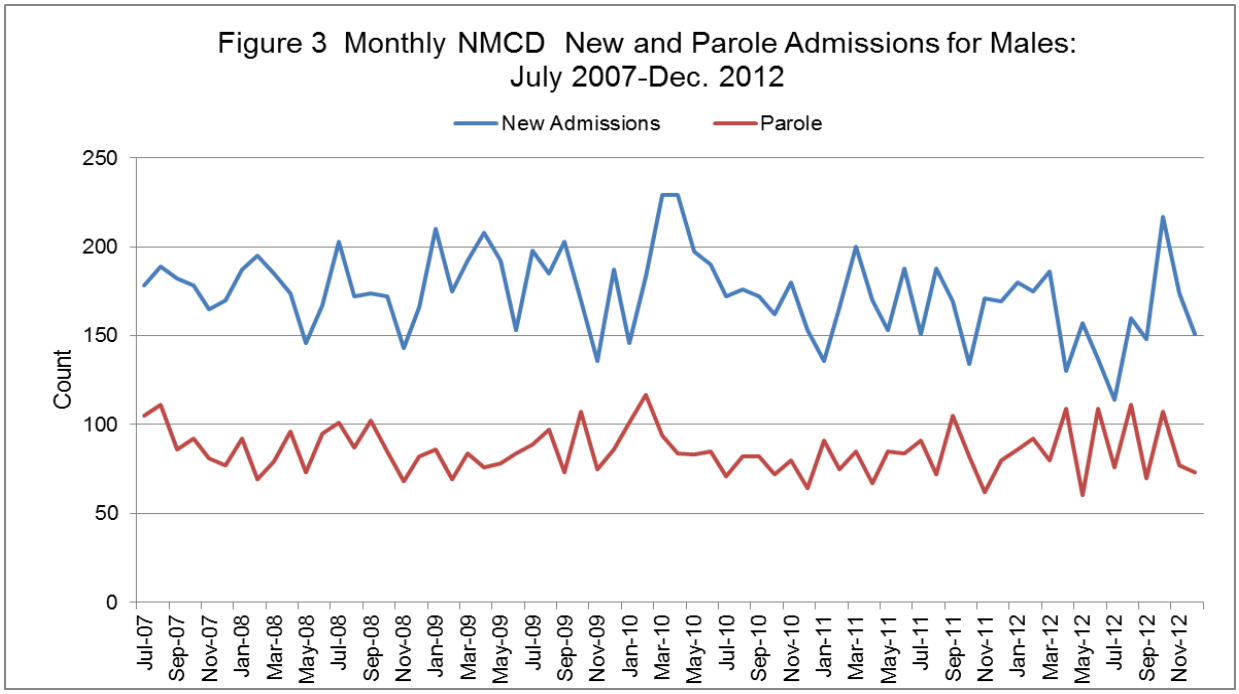


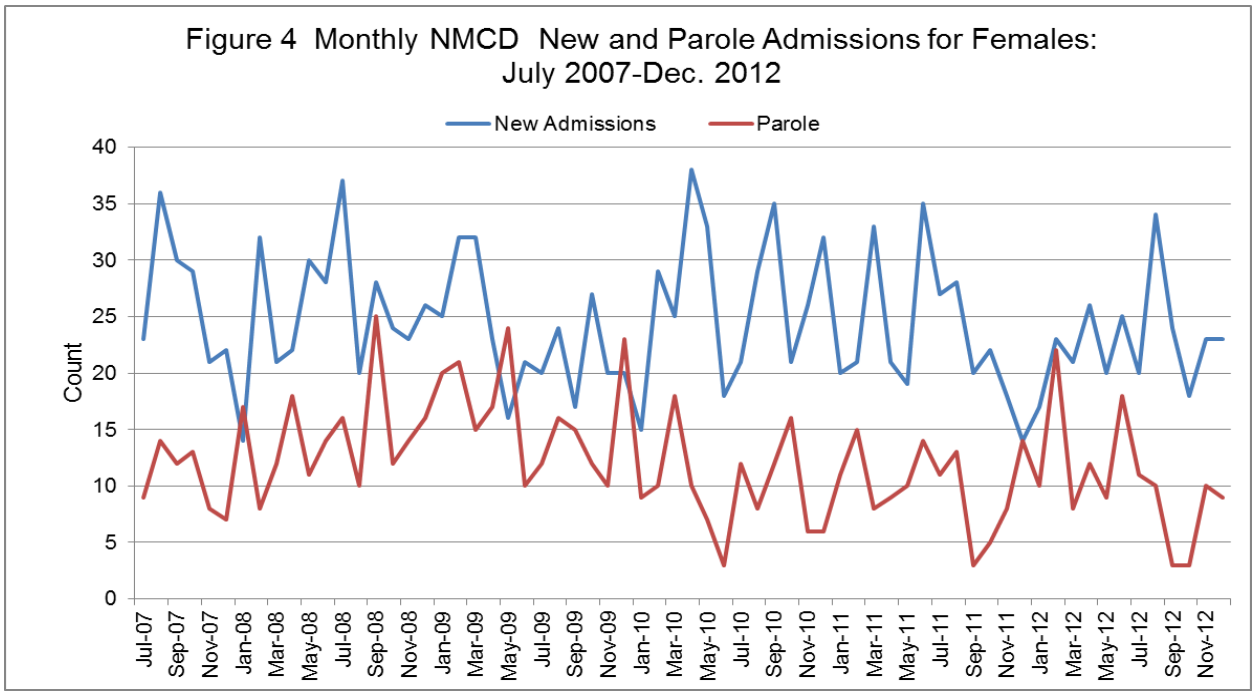


NEW ADMISSIONS AND PAROLE ADMISSIONS

Figure 3 shows the trends for new and parole admissions for male inmates. The data reflects admissions for the time period July 2007 through December 2012. 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 2007 through December 2012. Generally, admissions for new offenses outpace parole admissions. However, there are several instances when parole admissions exceed new admissions for females.

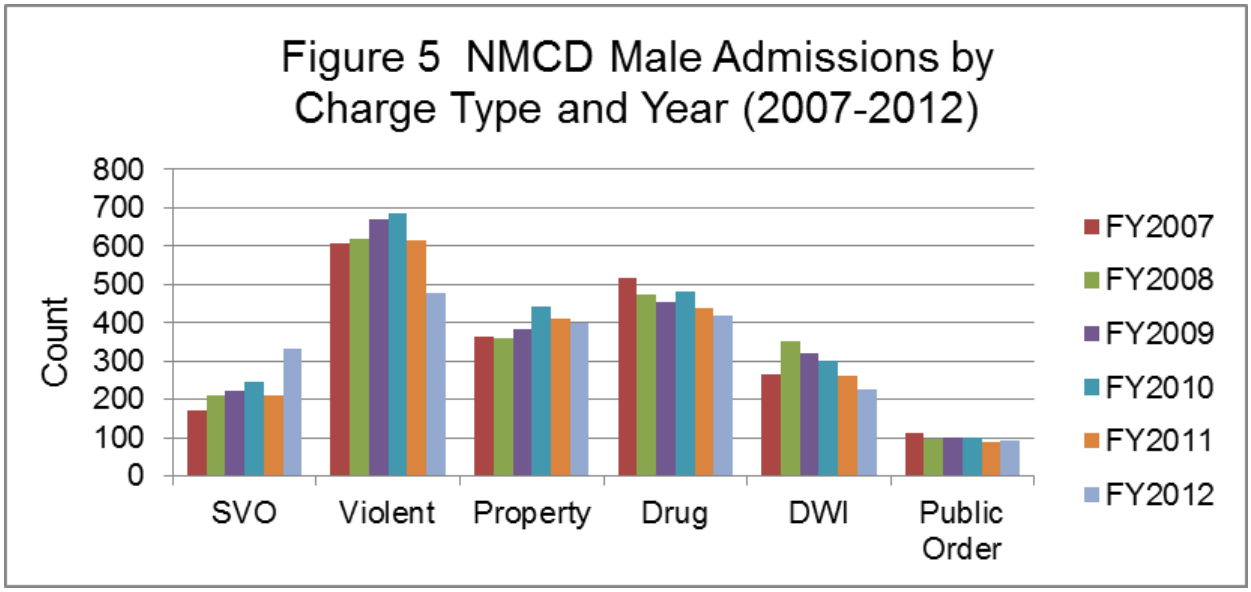




NEW ADMISSIONS BY CHARGE TYPE

Figure 5 illustrates new admissions by charge type for male inmates. Table 2 on page 8 provides additional detail. Violent offenses are the largest category for new admissions. Also, new admissions for serious violent offenders continues to trend upward. Beginning in FY 2009, new admissions for drug offenses have been evenly divided between drug possession and drug trafficking offenses. Since a high point in FY 2009, the number of new admissions for DWI offenses has declined every year.

Figure 6 illustrates new admissions by charge type for female inmates. Table 3 on page 9 provides additional detail. Property offenses and drug offenses are the largest categories for new admissions. Beginning in FY 2010, new admissions for drug trafficking offenses have outpaced new admissions for drug possession offenses. New admissions for violent offenses have been trending upward.



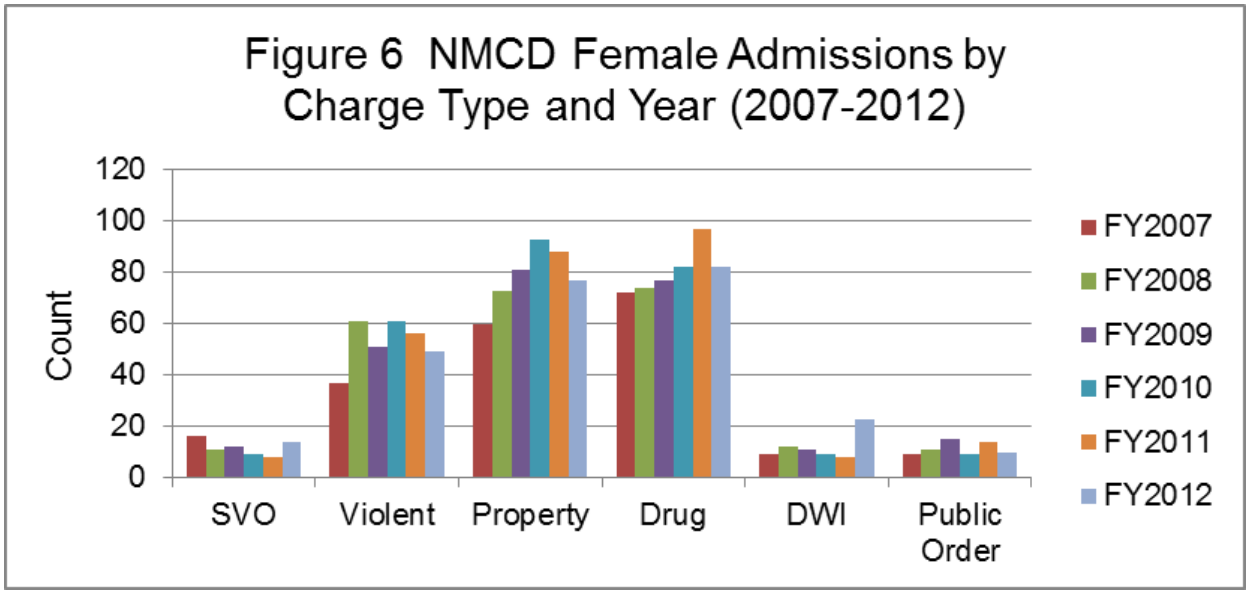


Table 2. Male Admissions Over Time						
	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012
New Admissions						
Violent Offenses						
SVO	170	212	223	244	211	331
Sex Crime	86	81	85	85	78	60
Assault & Battery	246	249	256	269	221	185
Other Violent (e.g., kidnapping, robbery, child abuse)	275	288	330	330	314	233
Property Offenses						
Burglary	165	167	182	230	214	229
Other Property (e.g., larceny, arson, fraud)	198	193	202	211	195	168
All Other Offenses						
Drug Trafficking	195	198	232	254	212	211
Drug Possession	320	277	222	227	226	209
DWI	266	350	319	300	263	226
Other Public Order (e.g., possession of weapon by felon, bribery of witness, escape from custody)	111	98	102	99	90	93
Parole	1030	1056	1002	1091	938	1028
Other Admission Types (e.g., probation, diagnostic)	449	411	497	546	559	468
TOTAL	**3511**	**3580**	**3652**	**3886**	**3521**	**3441**

Table 3. Female Admissions Over Time						
	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012
New Admissions						
Violent Offenses						
SVO	16	11	12	9	8	14
Sex Crime	3	3	3	0	2	1
Assault & Battery	12	17	16	16	11	15
Other Violent (e.g., kidnapping, robbery, child abuse)	22	41	32	45	43	33
Property Offenses						
Burglary	13	12	12	20	18	18
Other Property (e.g., larceny, arson, fraud)	47	61	69	73	70	59
All Other Offenses						
Drug Trafficking	31	29	34	44	61	44
Drug Possession	41	45	43	38	36	38
DWI	9	12	11	9	8	23
Other Public Order (e.g., possession of weapon by felon, bribery of witness, escape from custody)	9	11	15	9	14	10
Parole	148	143	200	145	127	133
Other Admission Types (e.g., probation, diagnostic)	123	75	69	78	83	79
TOTAL	**474**	**460**	**516**	**486**	**481**	**467**

APPENDIX A.

Table 4. MALE ACTUAL, FORECAST and PERCENT DIFFERENCE: FY2013

Date	Actual	Forecast	% Diff.
Jul-12	6,108	6,175	1.09
Aug-12	6,050	6,186	2.24
Sep-12	6,122	6,184	1.01
Oct-12	6,136	6,185	0.80
Nov-12	6,169	6,159	-0.17
Dec-12	6,172	6,149	-0.37
Jan-13	6,156	6,176	0.33
Feb-13	6,142	6,201	0.96
Mar-13	6,166	6,208	0.68
Apr-13	6,180	6,214	0.55
May-13	6,188	6,224	0.58

Table 5. FEMALE ACTUAL, FORECAST and PERCENT DIFFERENCE: FY2013

Date	Actual	Forecast	% Diff.
Jul-12	639	636	-0.47
Aug-12	642	640	-0.31
Sep-12	645	644	-0.16
Oct-12	642	639	-0.47
Nov-12	638	638	0.00
Dec-12	652	634	-2.76
Jan-13	650	633	-2.62
Feb-13	642	639	-0.47
Mar-13	639	637	-0.31
Apr-13	648	638	-1.54
May-13	661	651	-1.51

APPENDIX B.

Figure 7 Actual Total Prison Population and Forecast: July 2010 to June 2016

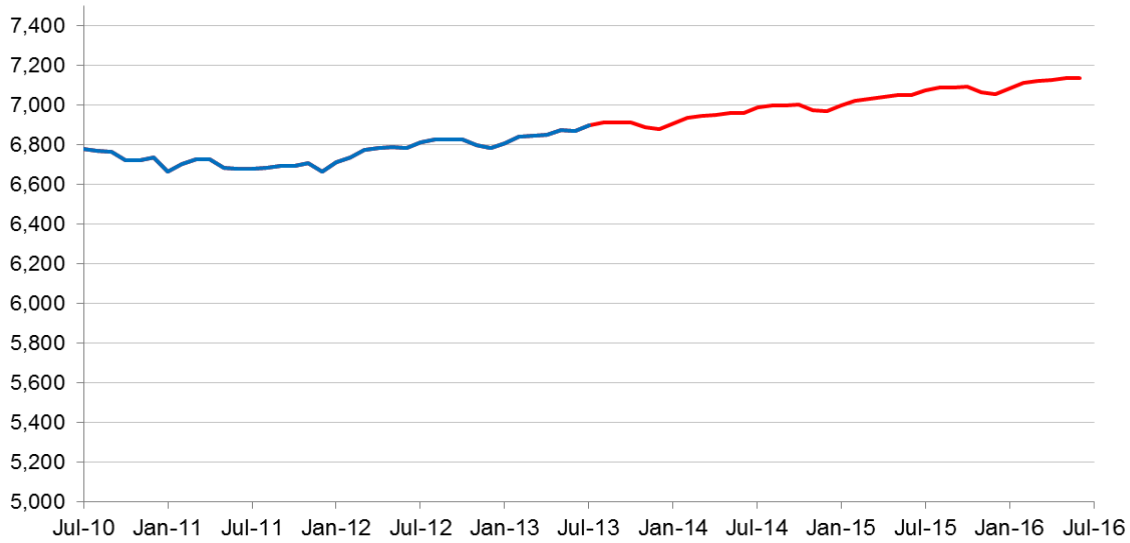


Table 6. TOTAL POPULATION PROJECTIONS: July 2013 to June 2023

Month	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
January		6,908	6,997	7,085	7,174	7,262	7,351	7,439	7,528	7,616	7,705
February		6,934	7,023	7,111	7,200	7,288	7,376	7,465	7,553	7,642	7,730
March		6,943	7,031	7,120	7,208	7,297	7,385	7,474	7,562	7,650	7,739
April		6,950	7,039	7,127	7,216	7,304	7,392	7,481	7,569	7,658	7,746
May		6,961	7,050	7,138	7,226	7,315	7,403	7,492	7,580	7,669	7,757
June		6,960	7,048	7,137	7,225	7,314	7,402	7,490	7,579	7,667	7,756
July	6,897	6,988	7,076	7,164	7,253	7,341	7,430	7,518	7,607	7,695	
August	6,911	7,000	7,088	7,177	7,265	7,354	7,442	7,530	7,619	7,707	
September	6,911	6,999	7,088	7,176	7,265	7,353	7,441	7,530	7,618	7,707	
October	6,913	7,002	7,090	7,179	7,267	7,356	7,444	7,533	7,621	7,710	
November	6,888	6,977	7,065	7,153	7,242	7,330	7,419	7,507	7,596	7,684	
December	6,880	6,969	7,057	7,146	7,234	7,322	7,411	7,499	7,588	7,676	

Figure 8 Actual Male Prison Population and Forecast: July 2010 to June 2016

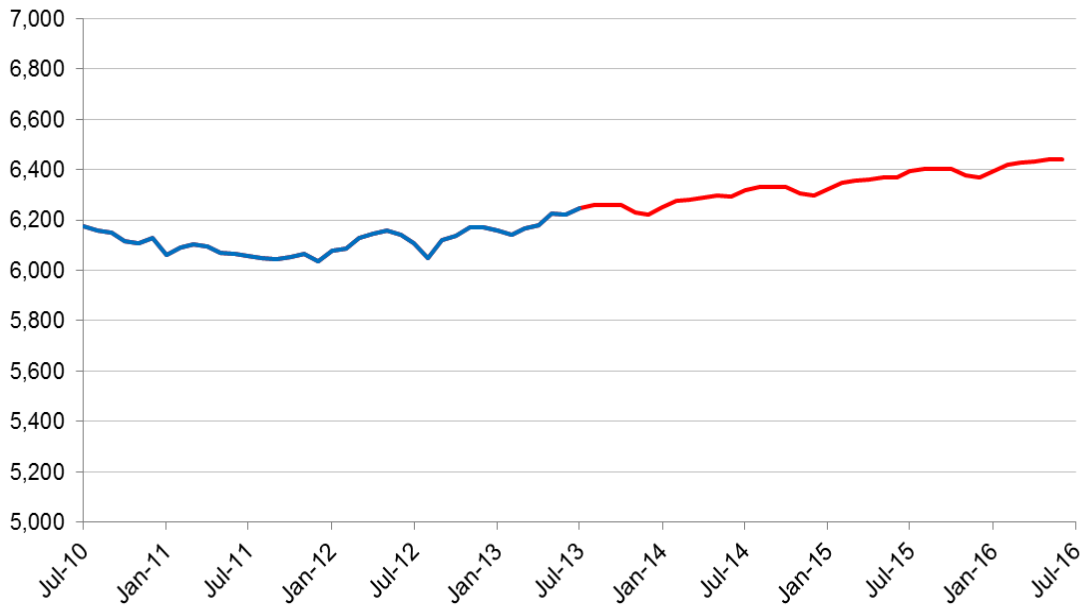


Table 7. MALE POPULATION PROJECTIONS: July 2013 to June 2023

Month	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
January		6,249	6,322	6,395	6,468	6,541	6,613	6,686	6,759	6,832	6,905
February		6,274	6,346	6,419	6,492	6,565	6,638	6,710	6,783	6,856	6,929
March		6,281	6,354	6,427	6,499	6,572	6,645	6,718	6,791	6,863	6,936
April		6,287	6,360	6,433	6,505	6,578	6,651	6,724	6,797	6,870	6,942
May		6,297	6,369	6,442	6,515	6,588	6,661	6,734	6,806	6,879	6,952
June		6,294	6,367	6,440	6,512	6,585	6,658	6,731	6,804	6,876	6,949
July	6,248	6,320	6,393	6,466	6,539	6,612	6,685	6,757	6,830	6,903	
August	6,259	6,331	6,404	6,477	6,550	6,623	6,695	6,768	6,841	6,914	
September	6,257	6,329	6,402	6,475	6,548	6,621	6,694	6,766	6,839	6,912	
October	6,258	6,331	6,404	6,477	6,549	6,622	6,695	6,768	6,841	6,913	
November	6,231	6,304	6,377	6,450	6,523	6,595	6,668	6,741	6,814	6,887	
December	6,222	6,295	6,368	6,441	6,514	6,586	6,659	6,732	6,805	6,878	

Figure 9 Actual Female Prison Population and Forecast: July 2010 to June 2016

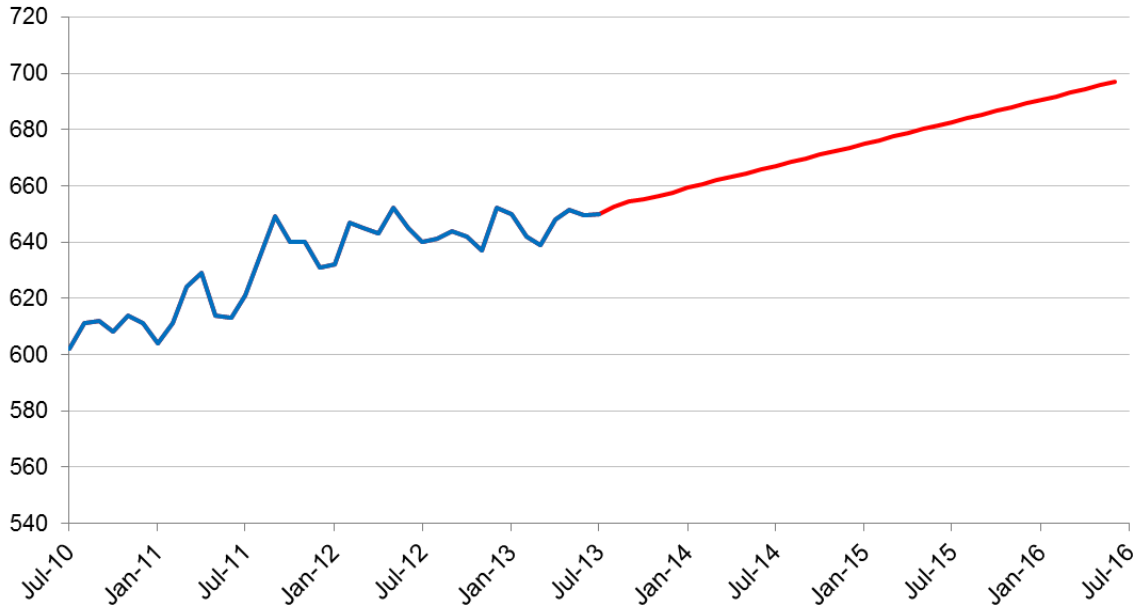


Table 8. FEMALE POPULATION PROJECTIONS: July 2013 to June 2023

Month	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
January		659	675	691	706	722	737	753	769	784	800
February		661	676	692	707	723	739	754	770	786	801
March		662	677	693	709	724	740	756	771	787	803
April		663	679	694	710	726	741	757	773	788	804
May		664	680	696	711	727	743	758	774	790	805
June		666	681	697	713	728	744	760	775	791	807
July	650	667	683	698	714	730	745	761	777	792	
August	653	668	684	700	715	731	747	762	778	794	
September	655	670	685	701	717	732	748	764	779	795	
October	655	671	687	702	718	734	749	765	780	796	
November	656	672	688	704	719	735	750	766	782	797	
December	658	674	689	705	721	736	752	767	783	799	

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

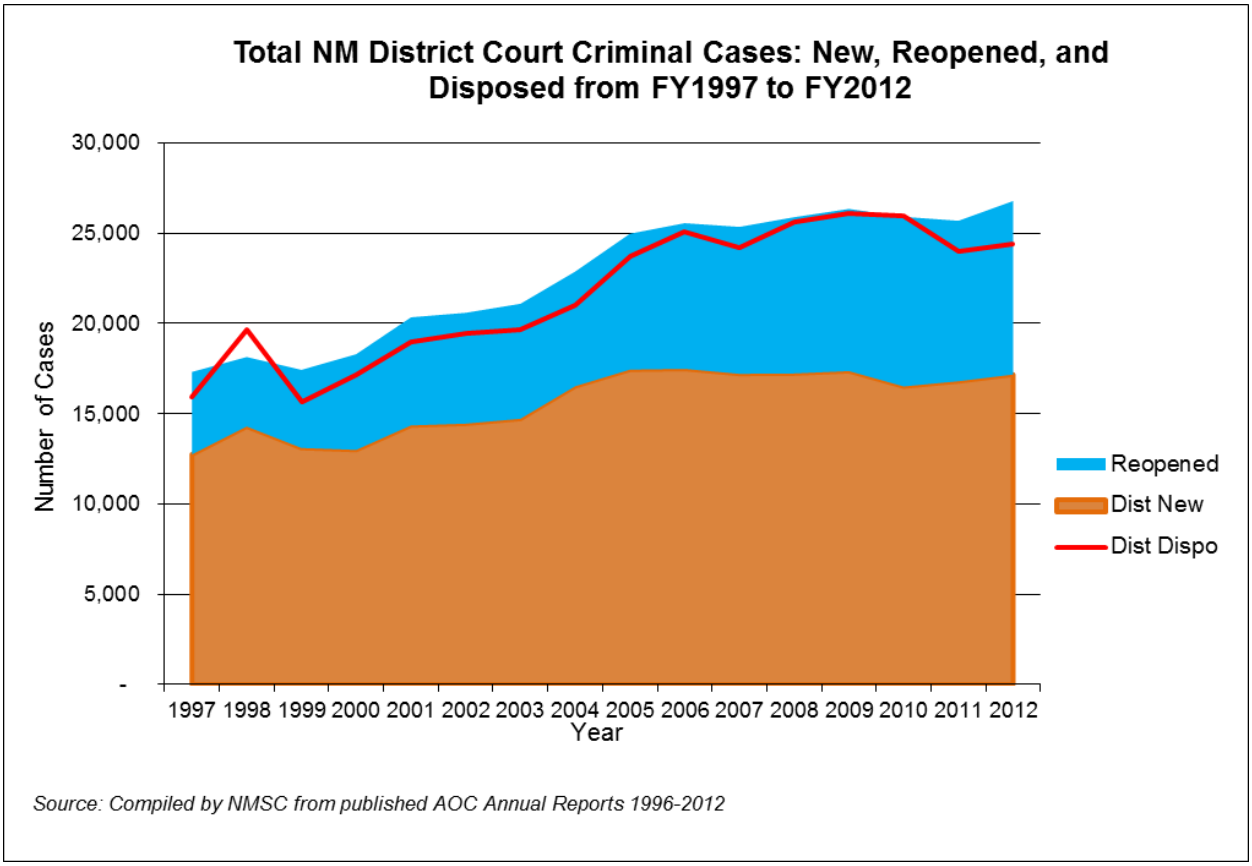
The historical monthly high data for females includes the time range between July 2010 through April 2013. The starting date was chosen after performing graphical analysis and conversations with colleagues regarding recent history specific to the female population. The information regarding recent history 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 ARIMA model identification, including whether a difference is needed to account for non-random patterns in the data, such as seasonal effects.

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) and a seasonal AR 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.

Consequently, Model I was then used to forecast out one year, thereby providing 12 more observations. The next step was then to repeat the model fitting process for the time range of July 2010 through March 2013. For the last twelve months of this range, the observations are actually forecasted values from Model I. The results from re-fitting the data produced a similar model with the exception that the AR process was of order two, and a first difference was used. The Box Jenkins method was implemented when specifying both Model I and II, inclusive of fit assessment and residual checks. Model I fit the data well for the shorter time period, while Model II performed well for the second time period. As with the men, the women's long term forecast exhibits varying seasonality following an upward trend.

APPENDIX E: NEW MEXICO JUDICIARY DATA



Source: Compiled by NMSC from published AOC Annual Reports 1996-2012

New Mexico District Court Criminal Cases FY1997 to FY2012				
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