New Mexico
Sentencing Commission

New Mexico Sentencing Commission Staff July 2015

NEW MEXICO PRISON POPULATION FORECAST: *FY 2016—FY 2025*

National Trends

•The three-year decline in the state prison population stopped in 2013. There were 6,300 more prisoners under the jurisdiction of state prisons in 2013 than 2012. At year end 2013, the number of inmates held in state prisons was 1,358,875.

-The female prison population increased in 36 states, including Texas, California, Florida, New York, Arkansas, Vermont, New Hampshire, Wyoming, Colorado and New Mexico. Females comprised 7.1% of the state prisoner population in 2015.

-Nationally since 2010, the female jail population has been the fastest growing correctional population, increasing by an average of 3.4% annually.

-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 2013. This rate was unchanged from 2012, when it dropped to the lowest rate observed since 1997.

New Mexico Trends

Females:
-On June 30th, 2015 in New Mexico, females comprised 10.7% of the total inmate population.

-In FY 2011, the high count for the female inmate population was 629 inmates. There has been a significant upward trend in subsequent fiscal years:

FY 2012 high count: 649 female inmates;
FY 2013 high count: 661 female inmates;
FY 2014 high count: 704 female inmates.

-The high count in FY 2015 has been 782 female inmates, an increase of 78 female inmates (+11%) from the FY 2014 high count.

-There has also been a significant upward trend in the percentage of females incarcerated in county jails in New Mexico. From 2010 to 2014, the percentage of female inmates incarcerated in county jails in New Mexico has increased from 12.9% to 15.7% of the total jail census.

Males:
-In FY 2011, the high count for the New Mexico male inmate population was 6,175 inmates. In subsequent fiscal years, the male inmate population was relatively stable:

FY 2012 high count: 6,151 male inmates;
FY 2013 high count: 6,188 male inmates;
FY 2014 high count: 6,344 male inmates.

The high count in FY 2015 was 6,558 male inmates, an increase of 214 male inmates (+3.4%) from the FY 2014 high count.

Short-Term Forecast

Females:
In **FY 2016**, the projected high count for the female inmate population is 855.

In **FY 2017**, the projected high count for the female inmate population is 904.

Males:
In **FY 2016**, the projected high count for the male inmate population is 6,583.

In **FY 2017**, the projected high count for the male inmate population is 6,638.

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. NMSC staff met three times (October 2014, April 2015 and June 2015) 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 includes national prison population trends, prison population trends in New Mexico, factors that influence prison population, data regarding admissions to and releases from prison, and short-term and long -term forecasts for the male and female populations.

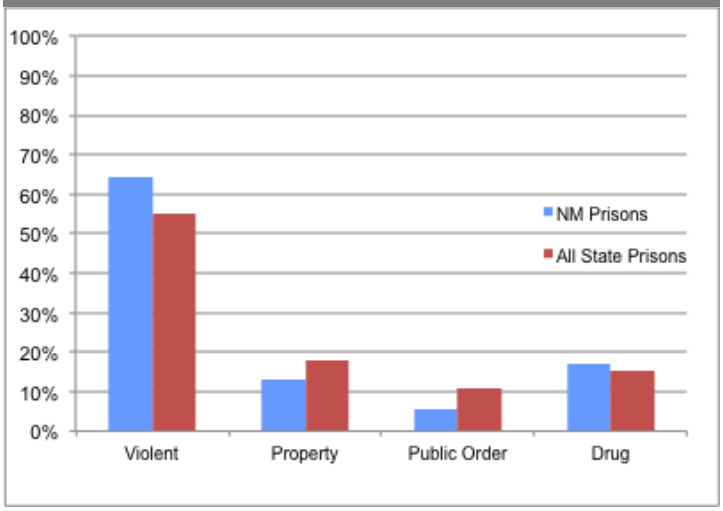
NMSC strives to produce inmate population projections within the range of 3% of the actual populations for males and females. During FY 2015, the projections for the male inmate population were within 3% of the actual population in every month (See Appendix A).

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

Going forward, NMSC staff will brief legislators, other policy makers, and Sentencing Commission members on the forecast. Members of the Sentencing Commission include representatives from law enforcement, the judiciary, the District Attorney's Association, 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.

Figure 1. Comparison of Confined Male Population By Crime Committed



NATIONAL TRENDS

The U.S. Department of Justice publishes annual reports regarding trends in the U. S. prison population. The reports use data collected pursuant to the National Prisoner Statistics Program. Data has been collected on an annual basis since 1926. The most recent full-year reports are **Prisoners in 2013** 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 2012 to year end 2013.

The following data points were included in the reports:

- The total U.S. prison population (state and federal) totaled 1,574,700 at year end 2013. This was an increase of 4,300 prisoners over yearend 2012.

- The federal prison population decreased in size for the first time since 1980. There were 1,900 fewer prisoners under the jurisdiction of federal prisons in 2013 than 2012. At year end 2013, the number of inmates held in federal prisons was 215,866.

- The three-year decline in the state prison population stopped in 2013. There were 6,300 more prisoners under the jurisdiction of state prisons in 2013 than 2012. At year end 2013, the number of inmates held in state prisons was 1,358,875.

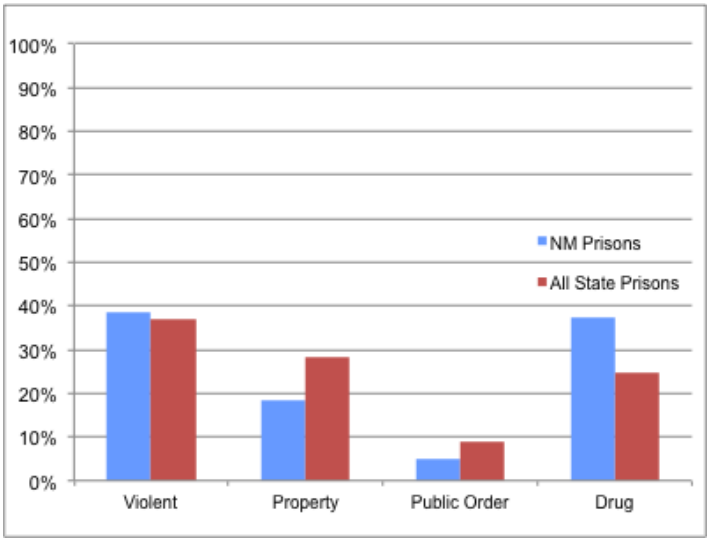
- The female prison population increased in 36 states, including Texas, California, Florida, New York, Arkansas, Vermont, New Hampshire, Wyoming, Colorado and New Mexico. Females comprised 7.1% of the state prisoner population in 2013.

- Since 2010, the female jail population has been the fastest growing correctional population, increasing by an average of 3.4% annually.

- 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 2013. This rate was unchanged from 2012, when it dropped to the lowest rate observed since 1997.

- 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 confined in all

Figure 2. Comparison of Confined Female Population By Crime Committed



state prisons convicted of a violent offense was 55% . In New Mexico on June 30, 2014, 64.5% of males were convicted of a violent offense.

- The percentage of women confined in New Mexico convicted of a violent offense was also higher than the national percentage: 38.6% in New Mexico compared to the national percentage of 37.1%.

NEW MEXICO TRENDS

Females: The most notable trend in New Mexico is the continuing, significant increase in the female inmate population. In New Mexico on June 30th, 2015, females comprised 10.7% of the total inmate population.

In FY 2011, the high count for the female inmate population was 629 inmates. There has been a significant upward trend in subsequent fiscal years:
∗ FY 2012 high count: 649 female inmates;
∗ FY 2013 high count: 661 female inmates;
∗ FY 2014 high count: 704 female inmates.

The high count in FY 2015 was 782 female inmates**,** an increase of 78 female inmates (+11%) from the FY 2014 high count.

Moreover, there has also been a significant upward trend in the percentage of females incarcerated in county jails in New Mexico. From 2010 to 2014, the percentage of female inmates incarcerated in county jails in New Mexico has increased from 12.9% to 15.7% of the total jail census.

Males: In FY 2011, the high count for the New Mexico male inmate population was 6,175 inmates. In subsequent fiscal years, the male inmate population was relatively stable:
∗ FY 2012 high count: 6,151 male inmates;
∗ FY 2013 high count: 6,188 male inmates;
∗ FY 2014 high count: 6,344 male inmates.

The high count in FY 2015 was 6,558 male inmates, an increase of 214 male inmates (+3.4%) from the FY 2014 high count.

FACTORS INFLUENCING PRISON POPULATION

In an effort to better understand the increase in the female inmate population, in August 2012, NMSC published a report entitled **"New Mexico's Female Prisoners: Exploring Recent Increases in the Inmate Population"** . Findings set forth in the report included 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.

Earlier this year, the New Mexico Statistical Analysis Center/Institute for Social Research published a study entitled, **"Prison Program Utilization and Recidivism Among Female Inmates in New Mexico"**. Findings set forth in the report included the following:

- Women who participated in educational programming were less likely to re-offend;

- Matching, recommending and promoting programming appropriate to criminogenic needs may decrease future offending; and

- Post-release supervision was associated with decreased adjudications and incarcerations for new offenses.

For this report, NMSC staff gathered data regarding the female population incarcerated in county jails. From 2010 to 2014, the percentage of female inmates incarcerated in county jails has increased from 12.9% to 15.7% of the total jail census.

As noted in previous population forecast reports authored by the NMSC, 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 D).

- 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 exceeds the prison population. On June 30, 2014, the jail census in New Mexico was 7,280. On that same date, there were 6,845 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.

NMSC staff meets on a quarterly basis with NMCDstaff 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 department has a self-imposed goal of reducing recidivism by 10% within the next three years;

- In 2014, the NMCD revised its policies regarding review of inmate files to better ensure accurate discharge dates;

- In 2014, the NMCD revised its policies regarding lump sum awards of earned meritorious deductions. The criteria for lump sum awards are now more restrictive, including an emphasis on completion of programming. The reduced availability of lump sum awards will increase inmate's length of stay;

- The NMCD continues to work with the PEW-MacArthur Foundation, the Legislative Finance Committee and the New Mexico Sentencing Commission on implementation of the Results First Initiative. The initiative employs an evaluation model to identify cost effective programs that reduce recidivism. Also, the NMCD is working directly with PEW staff on an inventory of inmate programming in facilities;

- The NMCD has created a Recidivism Reduction Data Advisory Council, in part to develop accepted standards for measuring recidivism rates. Staff from the PEW Research Center and the NMSC also serve on the council.

- The number of female, "release eligible inmates," still incarcerated due to not having an approved parole plan, reached a high count of 56 in December 2013. On June 29, 2015, that number had been reduced to 23 female inmates who were release eligible but still incarcerated at NMCD.

- The New Mexico Corrections Department opted out of the behavioral health collaborative and no longer pays the 12% administrative fee on every dollar spent for services. Based upon those savings and capital outlay dollars received for transitional living facilities, the department will increase the number of transitional living facility beds for offenders. There will be an **additional** 42 beds for women and 41 beds for men.

- Earlier this year, the New Mexico Supreme Court implemented a new case management system for the Second Judicial District Court. A primary goal of the system is to reduce pre-trial length of stay for inmates in the Bernalillo County Metropolitan Detention Center (BCMDC). If successful, reduced pre-trail stay in BCMDC may yield increased length of stay for inmates subsequently adjudicated and incarcerated in state prisons; and

- The enactment of Senate Judiciary Committee Substitute for Senate Bill 42, as amended (Laws 2015, Chapter 127), regarding provision of Medicaid enrollment for incarcerated persons. This should increase the availability of medical and treatment services for inmates upon discharge.

CURRENT OPERATIONAL CAPACITY

On April 22, 2015, the operational capacity for male inmates in the New Mexico Corrections Department was 6,763 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 (1,301)
- 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 (1,267)
- Guadalupe County Correctional Facility, located in Santa Rosa (601)
- Northeast New Mexico Detention Facility, located in Clayton (626)

- Otero County Prison Facility (332)

On April 22, 2015, the operational capacity for female inmates in the New Mexico Corrections Department was 744 beds: 742 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 2016 and FY 2017).

MALES:

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

In FY 2016, the projected high count for the male population is 6,583.

In FY 2017, the projected high count for the male population is 6,638.

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 continuing, significant upward trend in the female inmate population.

In FY 2016, the projected high count for the female population is 855.

In FY 2017, the projected high count for the female population is 904.

Both of those figures exceed the current operational capacity at the New Mexico Women's Correctional Facility in Grants, which is 742 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 2025. 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 2025, the projected high count for the male population is 7,082.

FEMALES:

In FY 2025, the projected high count for the female population is 1,298.

Table 1. Highest Actual Monthly Populations 2002 through 2015 and Projected Monthly Highs for 2016 through 2025

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	6,344	704	2.52%	6.51%
2015	6,558	782	3.37%	11.08%
2016	6,583	855	0.38%	9.34%
2017	6,638	904	0.84%	5.73%
2018	6,694	953	0.84%	5.42%
2019	6,749	1003	0.82%	5.25%
2020	6,805	1052	0.83%	4.89%
2021	6,860	1101	0.81%	4.66%
2022	6,916	1150	0.82%	4.45%
2023	6,971	1199	0.80%	4.26%
2024	7,027	1249	0.80%	4.17%
2025	7,082	1298	0.78%	3.92%

Notes: Highest actual monthly populations 2002 through 2015 shown in darker background color.

ADMISSIONS AND RELEASES

Figure 3 shows the relationship between admissions and releases for male inmates relative to the monthly high population figure for each month from July 2010 - April 2015. Positive percentages indicate months where admissions outpaced releases. Admissions have outpaced releases in nearly every month since November, 2013, but the difference between admissions and releases is quite small. This data confirms the relative stability of the male inmate population since FY 2011. Figure 4 illustrates the relationship between admissions and releases for female inmates relative to the monthly high population figure for each month from July 2010 and April 2015. Admissions have outpaced releases in every month but one since November 2013. The difference between admissions and releases is significant, which accounts in part for the growth in the female inmate population.

Figure 3 Monthly Male Net Change (Admissions - Releases):

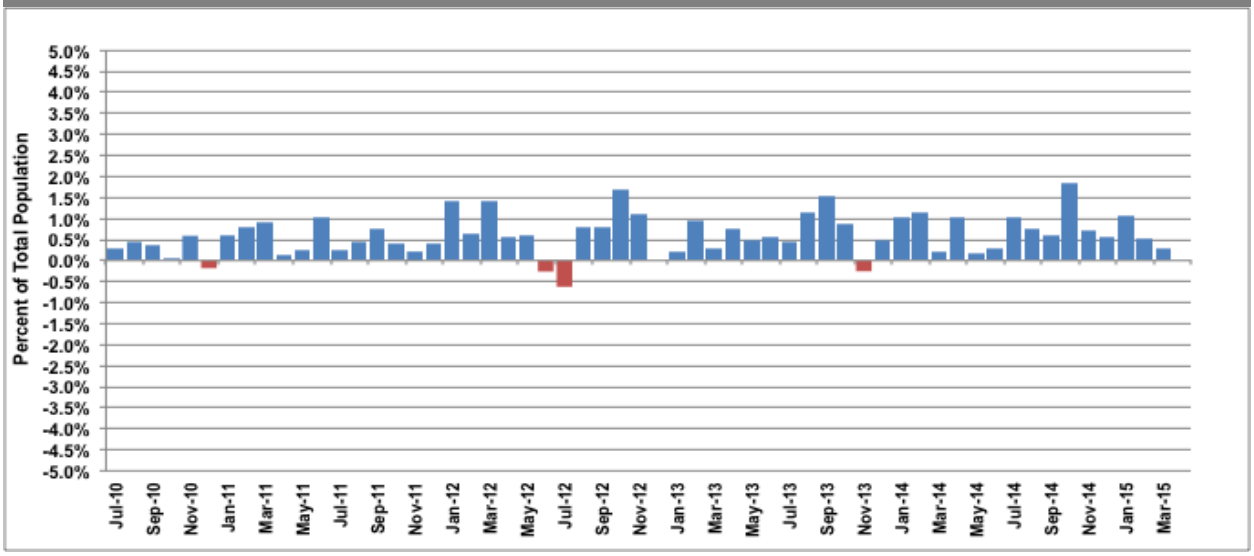
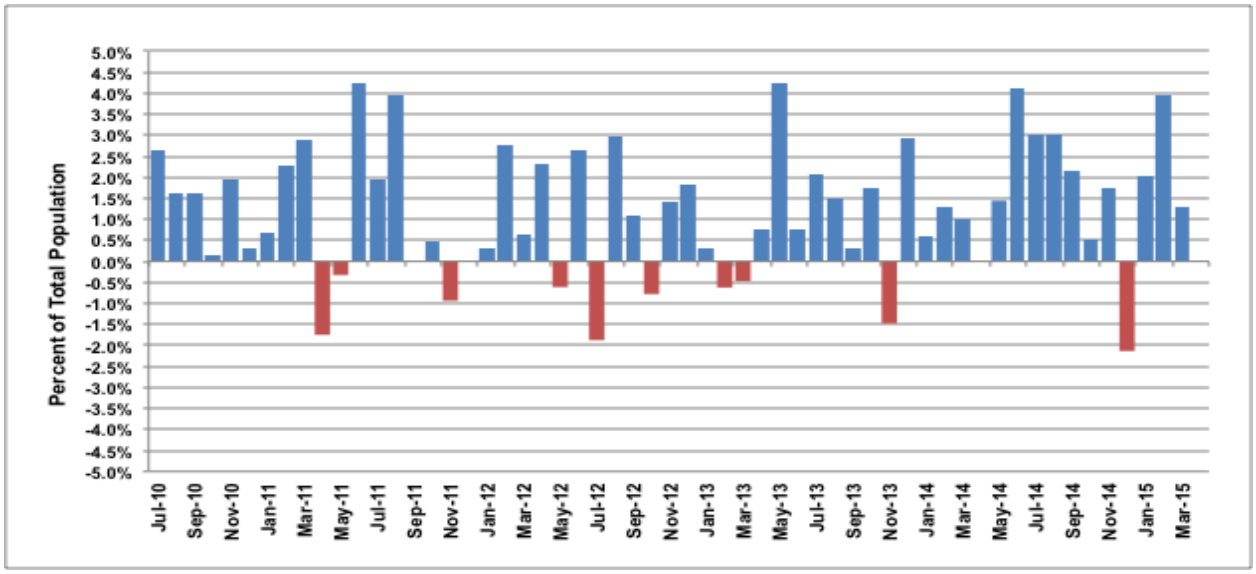


Figure 4 Monthly Female Net Change (Admissions - Releases):



NEW ADMISSIONS AND PAROLE ADMISSIONS

Figure 5 shows the trends for new and parole admissions for male inmates. The data reflects admissions for the time period July 2010 through April 2015. Admissions for new offenses outpace parole admissions in every month during that time period.

Figure 6 shows the trend for new and parole admissions for female inmates. The data reflects admissions for the time period July 2010 through April 2015. There are a few instances when parole admissions nearly equal new admissions for females. However, admissions for new offenses outpace parole admissions in every month.

Figure 5 Monthly NMCD New and Parole Admissions for Males: July 2010 - April 2015

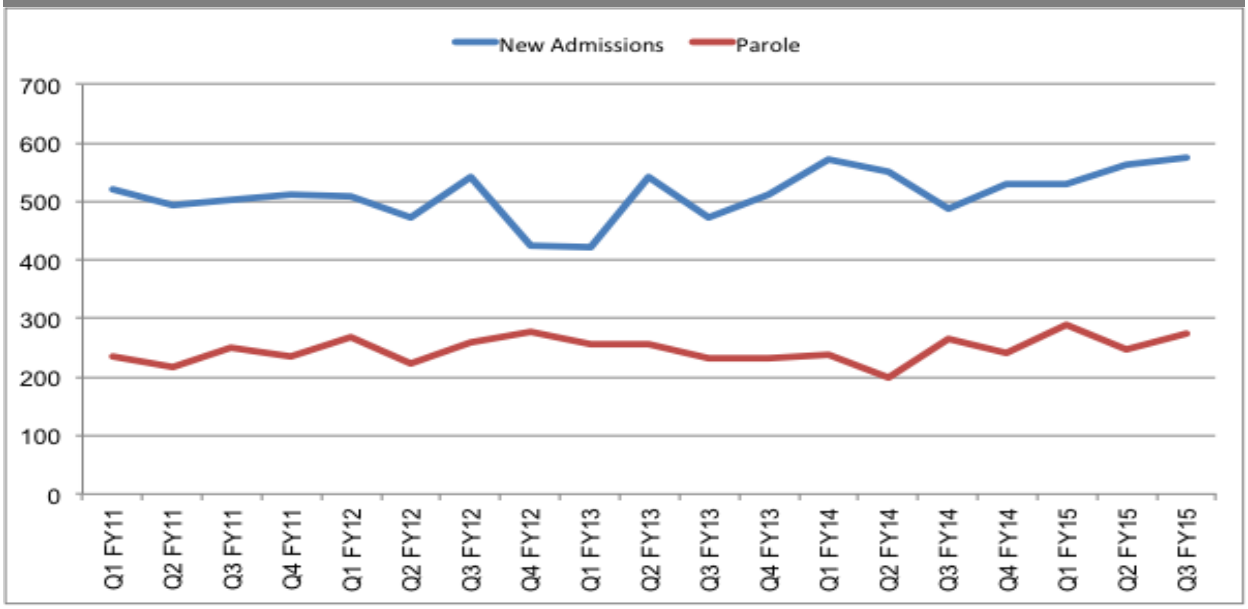
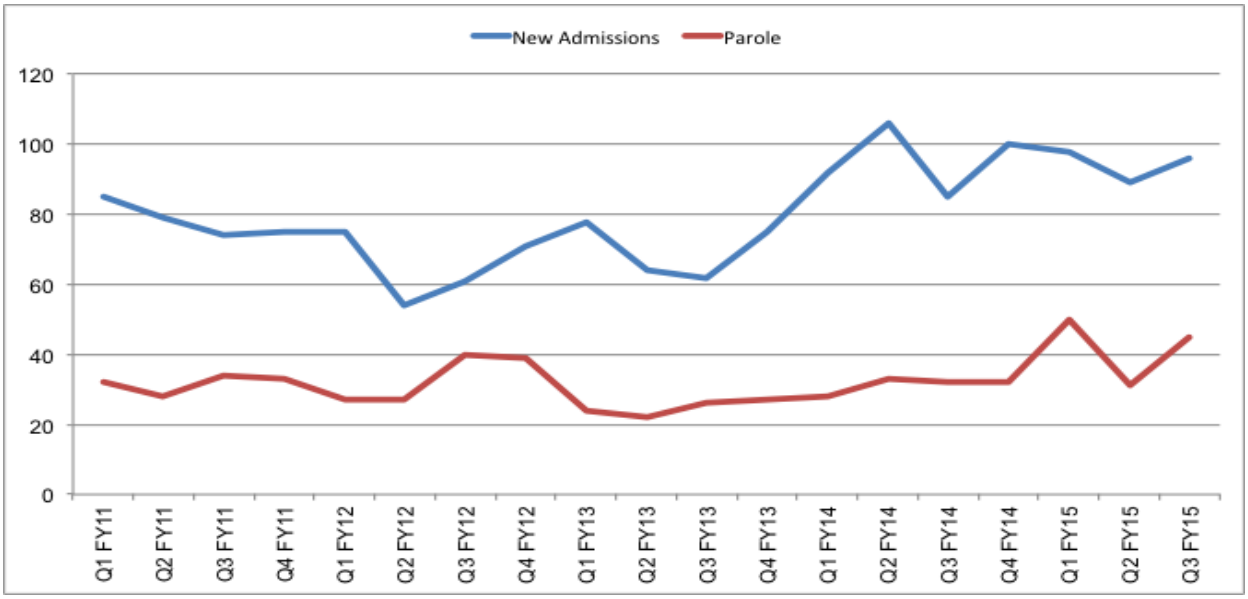


Figure 6 Monthly NMCD New and Parole Admissions for Females: July 2010 - April 2015



NEW ADMISSIONS BY CHARGE TYPE

Figure 7 illustrates new admissions by charge type for male inmates. Table 2 provides additional detail. For all five fiscal years illustrated in Figure 7, 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 2014 (169) is nearly half of the count for DWI admissions in FY 2010 (300).

Figure 8 illustrates new admissions by charge type for female inmates. Table 3 provides additional detail. For all five 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, but in FY 2014 (19) that trend ceased.

Figure 7 NMCD Male Admissions by Charge Type and Year (2010-2014)

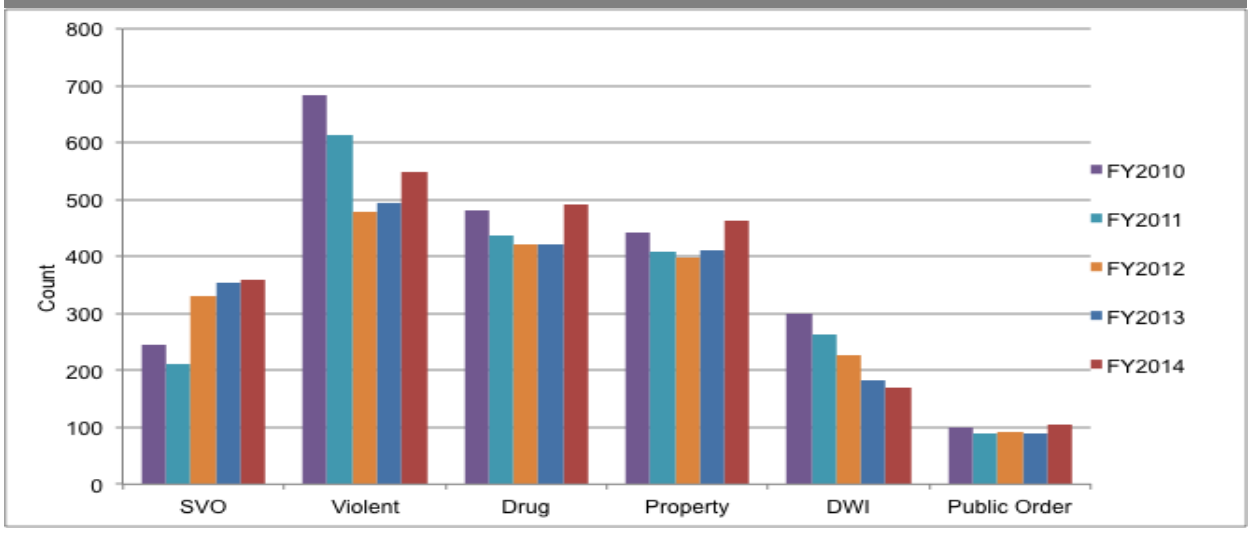


Figure 8 NMCD Female Admissions by Charge Type and Year (2010-2014)

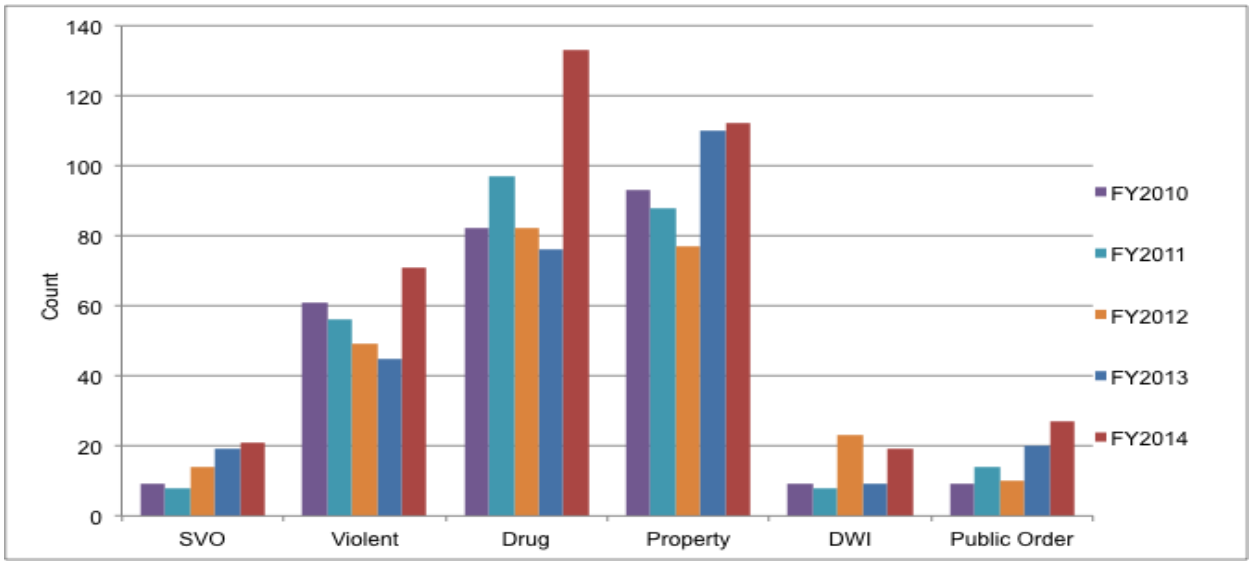


Table 2. Male Admissions Over Time	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014
New Admissions							
Violent Crimes							
SVO	212	223	244	211	331	353	360
Other Violent (e.g., kidnapping, robbery, child abuse)	288	330	330	314	233	219	257
Sex Crime	81	85	85	78	60	40	57
Assault & Battery	249	256	269	221	185	235	234
Property Crimes							
Burglary	167	182	230	214	229	203	238
Other Property (e.g., larceny, arson, fraud)	193	202	211	195	168	208	226
Drug Crimes							
Drug Trafficking	198	232	254	212	211	221	235
Drug Possession	277	222	227	226	209	199	257
Public Order Crimes							
DWI	350	319	300	263	226	182	169
Other Public Order (e.g., possession of weapon by felon, bribery of witness, escape from custody)	98	102	99	90	93	89	105
Parole	1,056	1,002	1,091	938	1,028	979	945
Other Admission Types (e.g., probation, diagnostic)	411	497	546	559	468	422	443
TOTAL	**3580**	**3652**	**3886**	**3521**	**3441**	**3350**	**3526**

Table 3. Female Admissions Over Time	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014
New Admissions							
Violent Crimes							
SVO	11	12	9	8	14	19	21
Other Violent (e.g., kidnapping, robbery, child abuse)	41	32	45	43	33	25	54
Sex Crime	3	3	0	2	1	2	2
Assault & Battery	17	16	16	11	15	18	15
Property Crimes							
Burglary	12	12	20	18	18	19	34
Other Property (e.g., larceny, arson, fraud)	61	69	73	70	59	91	78
Drug Crimes							
Drug Trafficking	29	34	44	61	44	34	62
Drug Possession	45	43	38	36	38	42	71
Public Order Crimes							
DWI	12	11	9	8	23	9	19
Other Public Order (e.g., possession of weapon by felon, bribery of witness, escape from custody)	11	15	9	14	10	20	27
Parole	143	200	145	127	133	99	125
Other Admission Types (e.g., probation, diagnostic)	75	69	78	83	79	74	81
TOTAL	**460**	**516**	**486**	**481**	**467**	**452**	**589**

APPENDIX A.

Table 4. MALE ACTUAL, FORECAST and PERCENT DIFFERENCE: FY 2015			
DATE	ACTUAL	FORECAST	% DIFF
14-Jul	6,330	6,320	-0.15%
14-Aug	6,342	6,331	-0.17%
14-Sep	6,361	6,329	-0.50%
14-Oct	6,404	6,331	-1.14%
14-Nov	6,428	6,304	-1.93%
14-Dec	6,480	6,295	-2.85%
15-Jan	6,474	6,322	-2.35%
15-Feb	6,501	6,346	-2.38%
15-Mar	6,491	6,354	-2.11%
15-Apr	6,527	6,360	-2.56%
15-May	6,523	6,369	-2.35%
15-Jun	6,558	6,367	-2.91%

Table 5. FEMALE ACTUAL, FORECAST and PERCENT DIFFERENCE: FY 2015			
DATE	ACTUAL	FORECAST	% DIFF
14-Jul	728	701	-3.71%
14-Aug	734	702	-4.36%
14-Sep	743	702	-5.52%
14-Oct	751	705	-6.13%
14-Nov	753	704	-6.51%
14-Dec	750	709	-5.47%
15-Jan	736	709	-3.67%
15-Feb	760	712	-6.32%
15-Mar	773	711	-8.02%
15-Apr	782	717	-8.31%
15-May	780	716	-8.21%
15-Jun	779	722	-7.32%

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

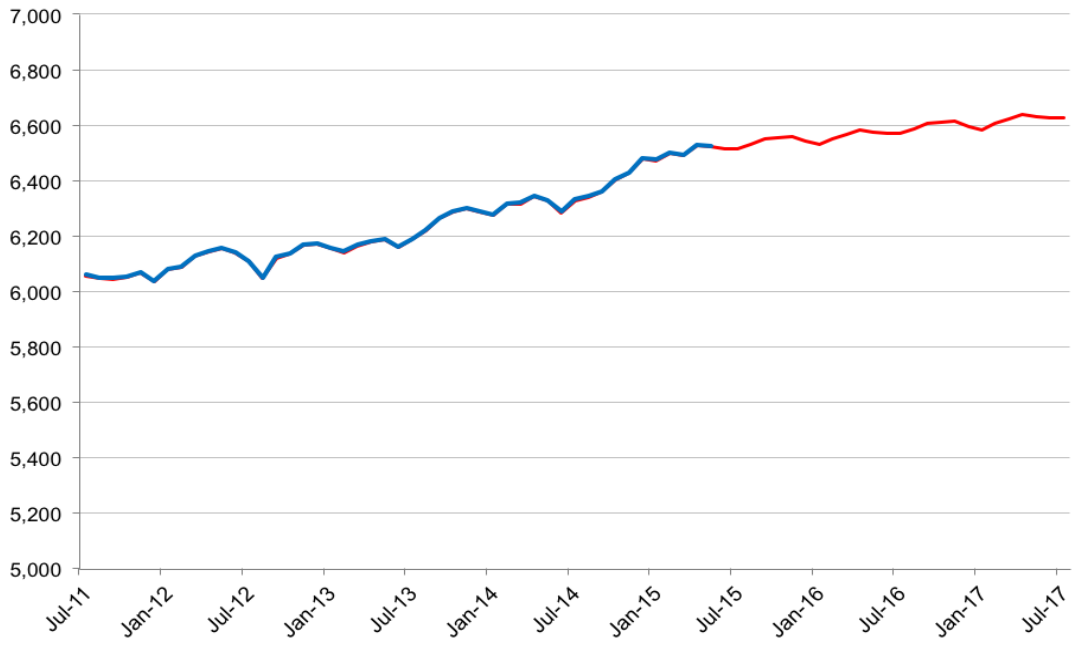


Table 7. MALE POPULATION PROJECTIONS: July 2015 to June 2025

Month	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
January		6,530	6,586	6,641	6,697	6,752	6,808	6,863	6,919	6,974	7,030
February		6,553	6,608	6,664	6,719	6,775	6,830	6,886	6,941	6,997	7,052
March		6,570	6,625	6,681	6,736	6,792	6,847	6,903	6,958	7,014	7,069
April		6,583	6,638	6,694	6,749	6,805	6,860	6,916	6,971	7,027	7,082
May		6,576	6,632	6,687	6,743	6,798	6,854	6,909	6,965	7,020	7,076
June		6,573	6,628	6,684	6,739	6,795	6,850	6,906	6,961	7,017	7,072
July	6,517	6,572	6,628	6,683	6,739	6,794	6,850	6,906	6,961	7,017	
August	6,533	6,588	6,644	6,699	6,755	6,810	6,866	6,921	6,977	7,032	
September	6,551	6,606	6,662	6,717	6,773	6,828	6,884	6,939	6,995	7,051	
October	6,555	6,610	6,666	6,721	6,777	6,832	6,888	6,943	6,999	7,054	
November	6,560	6,616	6,671	6,727	6,782	6,838	6,893	6,949	7,004	7,060	
December	6,542	6,598	6,653	6,709	6,764	6,820	6,875	6,931	6,986	7,042	

Figure 10 Actual Female Prison Population and Forecast: July 2011 to June 2017

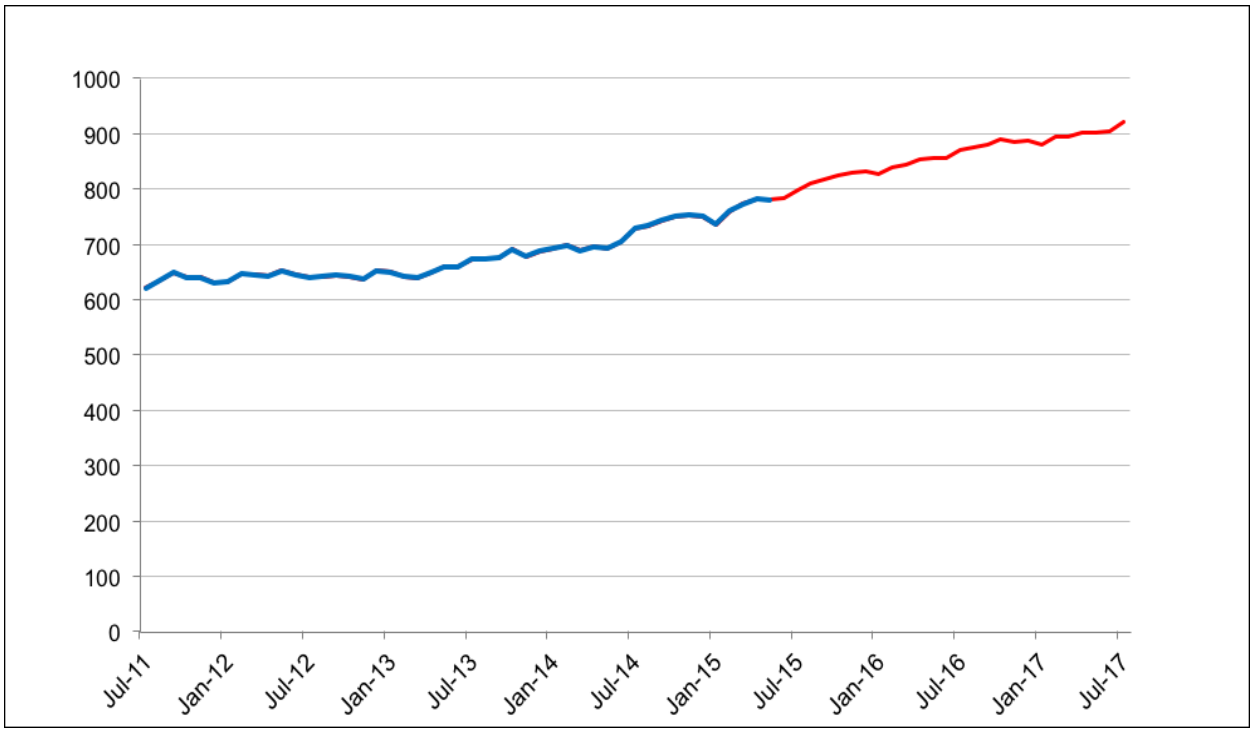


Table 8. FEMALE POPULATION PROJECTIONS: July 2015 to June 2025

Month	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
January		828	881	930	979	1028	1078	1127	1176	1225	1274
February		843	894	943	992	1041	1090	1140	1189	1238	1287
March		847	896	945	994	1043	1092	1142	1191	1240	1289
April		855	902	952	1001	1050	1099	1148	1197	1247	1296
May		852	901	950	1000	1049	1098	1147	1196	1245	1295
June		855	904	953	1003	1052	1101	1150	1199	1249	1298
July	806	871	920	969	1018	1068	1117	1166	1215	1264	
August	812	875	924	973	1023	1072	1121	1170	1219	1269	
September	820	881	930	979	1029	1078	1127	1176	1225	1274	
October	833	889	938	988	1037	1086	1135	1184	1233	1283	
November	831	885	934	984	1033	1082	1131	1180	1229	1279	
December	833	887	936	985	1034	1083	1133	1182	1231	1280	

Appendix B: 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. In 1970, the state and federal prison population was less than 190,000. The latest report by the U.S. Department of Justice put the 2013 state and federal prison population at nearly 1.6 million. U.S. Department of Justice 2014). Between 1970 and 2011 the U.S. state and federal prison population grew by approximately 700% (PEW Public Safety Performance Project 2011). The prison population increase slowed between 1990 and 2000, but still grew by 69% over that time period (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, which mimic the actual flow of the correctional system based on current and future probabilities of being admitted to prison under a particular legal status, with a certain sentence for a certain crime, and being released at a certain time based on probabilities of receiving good time and being released on parole, a flow model method pioneered in Texas, auto-regression integrated moving average (ARIMA), and a micro-simulation model. These micro simulation models are designed to mimic the flow of (1) the current prisoner population, and (2) the expected new admissions over the projection horizon based on these internal factors (PEW Public Safety performance Project 2011). 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).

Traditionally, prison populations were estimated using time series or trends analysis. This was easy to do since the historic counts were readily available and it required little skill to use such methods. These methods were very inaccurate, especially in an environment where policy is very dynamic. Time series models can show only what has already occurred. They can not estimate the future populations based on current or future criminal

justice policies and sentencing legislation (PEW Public Safety Performance Project 2011).

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 C: 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 April, 2015. 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, which has an ARIMA equivalent. ARIMA specifications tested well for this time frame also. However, given the fact that the WA model has performed well for out last three forecasts, and predicted our May 2015 actual population more accurately, it was decided to continue use of this particular specification. 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 and 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. Initially, 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. The robust performance of this particular model in predicting the male monthly highs can be seen in Appendix A.

FEMALES

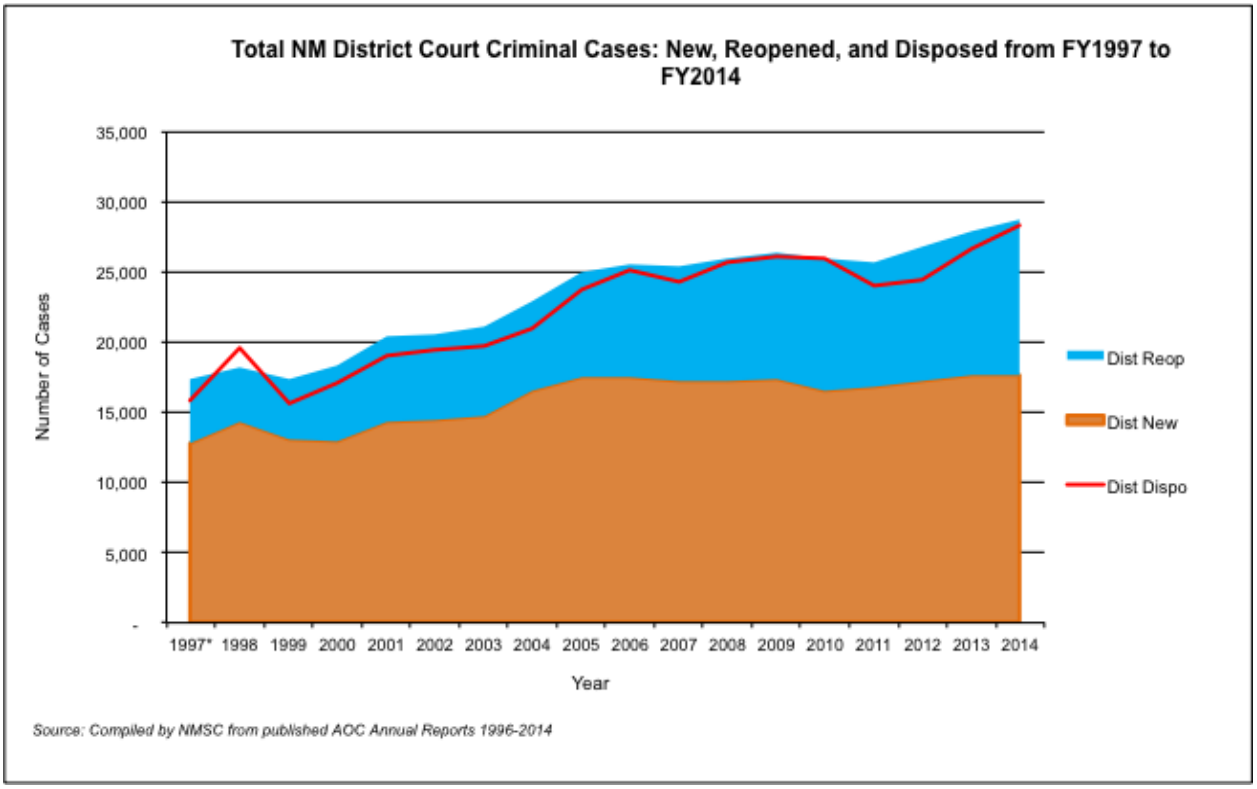
The historical monthly high data for females includes the time range between July 2011 through April 2015. The starting date was chosen after performing graphical analysis and conversations with colleagues regarding recent history specific to the female population. The information regarding recent history 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 a moving average (MA) of order one and seasonal autoregressive (AR) of order one. This model (Model I) performed well for a short term forecast and predicted the May 2015 actual monthly high with a .01% difference. A starting date of July 2011(rather than July, 2010 as used in previous forecasts) created a situation of utilizing 12 fewer observations. However, this model predicted well in the short term.

Next, this model was used to forecast out to May 2016. These forecasted values were added to our actuals, creating a new range from July 2011 through May 2016. The Box Jenkins method was then utilized and a new model specified (Model II). This data was found to follow an AR of order one with a seasonal MA of order one (including seasonal difference) and is used for the 10 year forecast published in this report.

APPENDIX D: NEW MEXICO JUDICIARY DATA



New Mexico District Court Criminal Cases FY1997 to FY2014				
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
2014	17,591	11,140	28,731	28,304