November 30, 2016

Juveniles Charged as Adults and Held in Adult Detention Facilities:

Trend Analysis and Population Projections

Submitted to:
Maryland General Assembly,
Pursuant to Chapter 412, 2014 Laws of Maryland

By
Governor's Office of Crime Control & Prevention
Maryland Department of Juvenile Services
Office of Budget and Fiscal Services

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Executive Summary

In Maryland, juveniles who are alleged to have committed a delinquent act and are determined to require secure detention are typically held in one of the state's juvenile detention facilities. Under certain circumstances, Maryland law authorizes youth to be held in adult pre-trial detention facilities. Youth may be admitted to an adult detention facility and detained pending trial if:

- the youth has been directly charged as an adult because the juvenile court does not have jurisdiction due to the age of the juvenile and the nature of the alleged offense.[1]
- after a hearing, the juvenile court waives its jurisdiction to the adult court.

Conversely, if the youth is eligible for a transfer of jurisdiction to juvenile court, Maryland law permits an adult court, after review of the youth's charges and circumstances, to order a youth to be held in a juvenile detention facility.[2]

The focus of this report is the population of youth charged as adults and held in adult detention facilities (in accused status) as well as in juvenile facilities in Maryland. The Maryland Department of Juvenile Services (DJS) partnered with the Governor's Office of Crime Control and Prevention (GOCCP) to develop a forecast of the population of juveniles charged as adults and detained in state and local detention facilities. Data collected as part of the Compliance Monitoring Data Collection System (CMDCS) maintained by the GOCCP were used for this purpose. Compliance data are systematically collected by GOCCP to ensure that Maryland meets the requirements of the Juvenile Justice and Delinquency Prevention Act with regard to juveniles held in adult jails (e.g., sight and sound separation from adult offenders). GOCCP collects these data biennially from detention facilities in Maryland and they were deemed the best available electronic source of juvenile admissions to pre-trial adult detention facilities.

There were issues that limited the amount of data available for analysis and necessitated an estimation of length of stay for juveniles in adult facilities changing from accused status to sentenced status. (The data issues pertaining to this population are described in Section 1.) Based on the assumption of 8-month maximum stay for missing release date:

- The annual Average Daily Population (ADP) decreased from 201 to 128 between FY2012 and FY2015, and then increased over the last two fiscal years, rising to 154 in FY2016. The ADP for first four months of FY2017 is around 161.
- In March 2014, the monthly ADP peaked at 173, the highest it has been since January 2013. The estimated monthly ADP was 169 in October 2016.
- ADP for juveniles charged as adults and held in DJS facilities continued to grow while ADP in adult detention facilities stayed stable between FY2014 and 2016.

[1] Maryland Department of Juvenile Services, *Department of Juvenile Services: Overview of the Youth Charged as Adults Population*, December 2012.
[2] Md. Code, Criminal Procedure, §4-202

In 2014, DJS entered into an agreement with Baltimore City such that DJS will house qualified juveniles who have been charged as adults and would otherwise be held in the City's adult pre-trial detention center. Juveniles housed by DJS through this agreement are included in the population figures discussed above.

During the 2015 session of the Maryland General Assembly, the law[3] regarding pre-transfer detention for youth charged as adults was amended to create a presumption that youth charged as adults should be held in a juvenile detention facility. Effective October 1, 2015, the court shall order a youth charged as adult who is eligible for transfer to the juvenile system to be held in a juvenile detention facility while pending that transfer decision unless: (1) the youth is released on bail, recognizance or other pre-trial condition; (2) there is no capacity in the secure juvenile facility; or (3) the court finds that detention in a secure juvenile facility would pose a risk of harm to the child or others, and states the reasons for the finding on the record.

Admissions and length-of-stay are critical drivers of the population. Data indicate:

- The number of juveniles charged as adults admitted to pre-trial detention decreased by 36% between FY2012 to FY2015, and then increased by 20% from FY2015 to FY2016.
- Juvenile admissions in FY2016 were mostly males, black, and age 17.
- Juveniles charged with robbery and assault offenses together accounted for the majority of total admissions in both FY2011 and FY2016.
- Length-of-stay (LOS) for juveniles held in adult facilities decreased from FY2012 to FY2016, while the LOS for juveniles held in DJS-operated facilities increased.

Population Projections

Population of Juveniles Charged as Adults and Held in Adult Detention Facilities in Accused Status and DJS Facilities

	Year	Average Daily Population (ADP)
Historical	FY2012	201
	FY2013	159
	FY2014	147
	FY2015	128
	FY2016	154
	FY2017*	162
Projected	FY2017	176
	FY2018	185
	FY2019	192
	FY2020	200
	FY2021	207

*162 for FY2017 in historical is the average of daily population for July through October 2016.

[3]Chapter 422, 2015 Laws of Maryland. see Md. Code, Criminal Procedure, §4-202

Projections for the population of juveniles charged as adults and held in Maryland's adult detention facilities (specifically those in accused status) and juvenile detention facilities were developed using an estimate of 8-month maximum LOS for any missing release date. Projections were produced using a set of statistical techniques known as time-series forecasting. Such models implicitly assume that current policies and practices will continue into the future. The projections are shown in Section 3 disaggregated by facility. Moreover, the trend of monthly ADP in FY2016 and the first few months of FY2017 are provided in Section 3 to explain the increase of projected population.

Such projections may assist the Maryland Department of Juvenile Services to identify ways in which some of the youth charged as adults in Maryland might be served in a juvenile detention facility rather than an adult pre-trial facility. However, not all youth charged as adults are eligible for transfer to a juvenile detention facility. Maryland statute prohibits the transfer of cases to juvenile court if:

1) the youth was convicted in an unrelated case of an offense excluded from the jurisdiction of the juvenile court, or
2) the alleged crime is murder in the first-degree and the accused youth was 16 or 17 years of age when the alleged crime was committed.

Juveniles whose cases are ineligible for transfer from adult court to juvenile court may not be transferred to a juvenile detention facility while awaiting trial. The data available for this study, however, do not include information necessary to consistently identify those prohibited from transfer due to a previous conviction ((1) above). Only a small number of juveniles charged with violations of adult probation, indicative of a prior conviction in the adult system, could be identified. The data do permit the identification of youth ineligible for transfer due to a first-degree murder charge ((2) above).[4] The historical and projected ADP is shown below excluding ineligible juveniles charged with violations of probation or first-degree murder.

Population of Juveniles Charged as Adults and Held in Adult Detention Facilities in Accused Status and DJS Facilities*

	Year	Average Daily Population (ADP)
Historical	FY2012	194
	FY2013	154
	FY2014	142
	FY2015	121
	FY2016	146
Projected	FY2017	170
	FY2018	179
	FY2019	186
	FY2020	194
	FY2021	201

* Excluding juveniles 16 years of age or older charged with first-degree murder and juveniles returned to the adult system for a violation of probation.

[4] Only completed acts were identified here.

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Introduction

Maryland juveniles who are alleged to have committed a delinquent act and are determined to require secure detention may be held in juvenile detention facilities or, under certain circumstances, adult pre-trial facilities. A juvenile may be admitted to an adult detention facility and detained pending trial if he or she has been directly charged as an adult because the juvenile court does not have jurisdiction.[5] Maryland's juvenile courts do not have jurisdiction over:

- a youth at least 16 years old alleged to have committed certain violent crimes;
- a youth at least 16 years old alleged to have violated certain traffic or boating laws;
- a youth at least 14 years old alleged to have committed an act that, if committed by an adult, would be a crime punishable by death or life imprisonment, and;
- a youth who has previously been convicted as an adult of a felony and subsequently is alleged to have committed an act that would be a felony if committed by an adult.[6]

Youth may also be detained in an adult detention facility if the juvenile court waives its jurisdiction to the adult court. A juvenile court may waive its jurisdiction in a delinquency case involving a child who is 15 years or older, or a child who has not reached his/her 15th birthday but is charged with committing an act which, if committed by an adult, would be punishable by death or life imprisonment.[7] The juvenile court may waive its jurisdiction only after it has conducted a waiver hearing and determined that the child is unfit for rehabilitation in the juvenile system. Conversely, Maryland law permits an adult court, after review of the youth's charges and circumstances, to order a youth with an adult charge to be held in a juvenile detention facility if the youth is eligible for a transfer of jurisdiction.[8] Youth found to be appropriate for juvenile detention may remain there pending a transfer hearing to determine if jurisdiction should remain in the adult court or be transferred to the juvenile court.

During the 2015 session of the Maryland General Assembly, the law[9] regarding pre-transfer detention for youth charged as adults was amended to create a presumption that youth charged as adults should be held in a juvenile detention facility. Effective October 1, 2015, the court shall order a youth charged as adult who is eligible for transfer to the juvenile system to

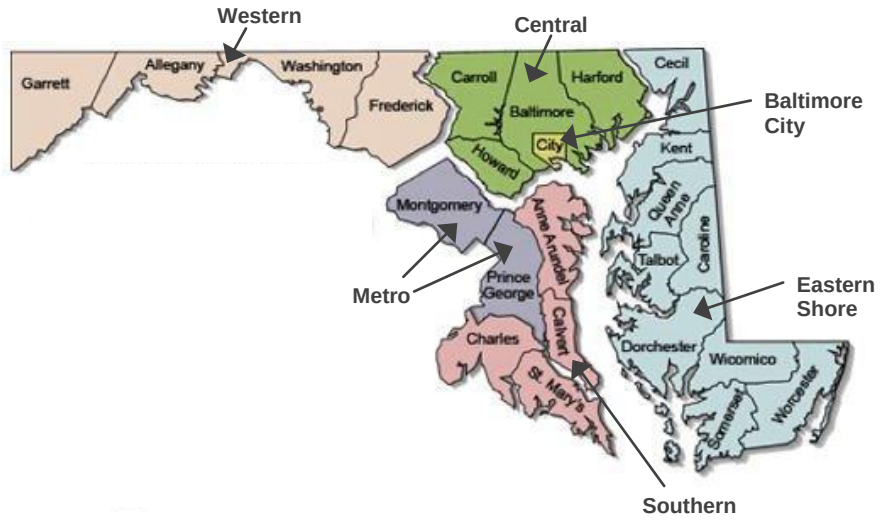
[5] Maryland Department of Juvenile Services, *Department of Juvenile Services: Overview of the Youth Charged as Adults Population*, December 2012.
[6] Md. Code, Courts and Judicial Proceedings, §3-8A-03
[7] Maryland Department of Juvenile Services, *Department of Juvenile Services: Overview of the Youth Charged as Adults Population*, December 2012.
[8] Md. Code, Criminal Procedure, §4-202
[9] Chapter 422, 2015 Laws of Maryland. Md. Code, Criminal Procedure, §4-202

be held in a juvenile detention facility while pending that transfer decision unless: (1) the youth is released on bail, recognizance, or other pre-trial condition; (2) there is no capacity in the secure juvenile facility; or (3) the court finds that detention in a secure juvenile facility would pose a risk of harm to the child or others, and states the reasons for the finding on the record.

This report focuses on the population of youth who are charged as adults and held in Maryland's adult detention facilities (in accused status) as well as in juvenile detention facilities. The Maryland Department of Juvenile Services (DJS) partnered with the Governor's Office of Crime Control and Prevention (GOCCP) to forecast the population of juveniles charged as adults and detained in state and local detention facilities. In Section 1, trends in the population, admissions, and length-of-stay are discussed. Important data issues pertaining to the population are also described in this section. In Section 2, factors that may contribute to changes in the population are examined. Projections of the population through FY2021 are presented in Section 3. The projections may assist DJS in identifying ways in which some of the youth charged as adults might be served in one of Maryland's juvenile detention facility instead of an adult pre-trial facility.

The DJS regions referenced in this report are shown on the map below.

Maryland Department of Juvenile Services (DJS) Regional Map



Region I - Baltimore City
Baltimore City

Region II - Central Maryland
Baltimore County
Carroll County
Harford County
Howard County

Region III - Western Maryland
Allegany County
Frederick County
Garrett County
Washington County

Region IV - Eastern Shore
Caroline County
Cecil County
Dorchester County
Kent County
Queen Anne's County
Somerset County
Talbot County
Wicomico County
Worcester County

Region V - Southern Maryland
Anne Arundel County
Calvert County
Charles County
St. Mary's County

Region VI - Metro
Montgomery County
Prince George's County

Section 1 Population of Juveniles Charged as Adults and Held in Maryland's Adult Detention Facilities

The population of juveniles charged as adults and held in Maryland's adult detention facilities was calculated based on admission records collected as part of the Compliance Monitoring Data Collection System (CMDCS) maintained by the Governor's Office on Crime Control and Prevention (GOCCP). Compliance data are systematically collected on a biennial basis from local jails and detention centers in Maryland.[10] These data were available in electronic format beginning in January 2008. Examination revealed, however, that data prior to FY2011 were not complete for all months and for all facilities.[11] Therefore, population figures were computed using data between FY2011 and FY2016. Due to missing data, the population computed for the early months of FY2011 may be lower than the actual population during that time period.

For juveniles charged as adults and admitted to adult pre-trial detention, some may be released, once certain conditions are met, to await trail. Other juveniles will remain in jail through the conclusion of their trial. If a confined juvenile is found guilty, his or her status will change from "accused" to "sentenced". Due to data limitations, the average daily population (ADP) calculated from CMDCS admission and release dates cannot be disaggregated to determine the number of juveniles who became sentenced during their period of confinement.[12] In essence, the ADP calculated represents an upper bound of the population of juveniles in accused status, since the actual population will not be higher and in most, if not all, months it will be lower than those figures.

[10] Given the biennial nature of the CMDCS data collection effort, the facility release date – a field critical to the forecast – was often missing. Each local jail or detention facility was therefore asked to review their CMDCS submissions for accuracy and completeness and to fill in missing release dates. An excel spreadsheet was forwarded to each facility for this purpose. Each facility returned an updated spreadsheet to DJS for analysis.

[11] In early 2010, GOCCP changed data collection systems and adopted a web-based system for submissions. During this conversion period, GOCCP relied in large part on hard copy submissions. Accurate counts of juvenile admissions to adult jails or detention facilities were not available between January and May 2010. In addition, a single facility was missing admissions prior to June 2010.

[12] CMDCS data are collected at the point of admission to a detention facility. A youth's legal status (whether accused or sentenced) is recorded at this point in time. If a youth's status changes from *accused* to *sentenced* during the course of their confinement period, the change in legal status is not documented. Therefore, for these youth, it is not possible to distinguish days served in pre-trial detention from days served post-sentence.

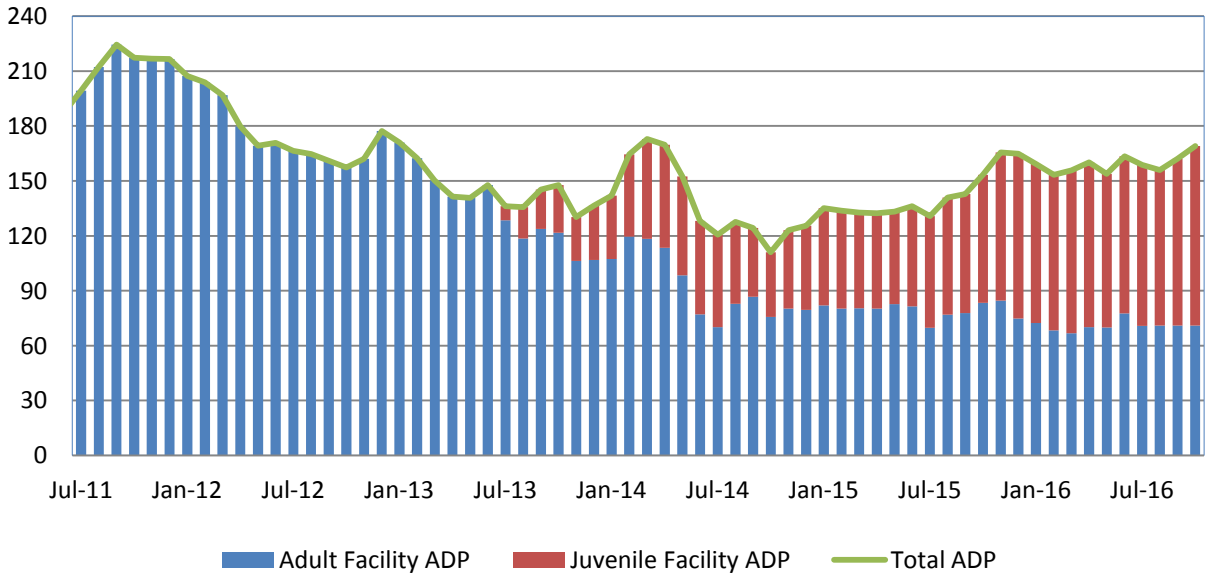
CMDCS data contain some missing release dates. DJS analysis revealed that during 2011, the median circuit court case processing time from arrest to adjudication was 8.2 months (i.e., half of the cases were concluded in less than 8.2 months and half were concluded after more than 8.2 months). To estimate the population with missing release dates, it was assumed that all juveniles charged as adults and admitted to adult detention facilities had become sentenced if they remained confined beyond eight months. ADP was then calculated using days served up to eight months for cases with missing release date.

In July 2013, an agreement was reached between DJS, the Department of Public Safety and Correctional Services (DPSCS), the Circuit Court for Baltimore City, the Baltimore City State's Attorney, and the Public Defender regarding youth charged as adults in Baltimore City. Specifically, the parties mutually agreed that all youth charged as adults who are eligible for a transfer to the juvenile system will be housed in the DJS-operated juvenile detention facilities while awaiting their transfer hearing. Juveniles housed by DJS through this agreement are included in the population trend analysis in this report unless other specified.

The historical monthly ADP trend for juvenile charged as adults and held in both adult and juvenile detention facilities is presented in Figure 1.1 below. Based on the assumption of upper bound of length of stay (8-month) for cases with missing release date,

- The annual ADP decreased from 201 to 128 between FY2012 and FY2015, and then increased over the last two fiscal years, rising to 154 in FY2016. The ADP for first four months of FY2017 is around 161.
- In March 2014, the monthly ADP peaked at 173, the highest it has been since January 2013. The estimated monthly ADP was 169 in October 2016.
- ADP for juveniles charged as adults and held in juveniles facilities continued to grow while juveniles in adult detention facilities stayed stable between FY2014 and 2016.

Figure 1.1
Population of Juveniles Charged as Adults and Held in Maryland's Detention Facilities



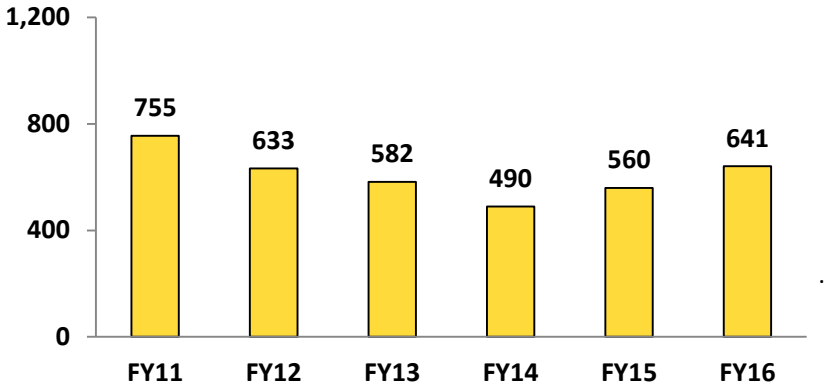
Average Daily Population (ADP) FY2011-2016*

Fiscal Year	Adult Detention ADP	Juvenile Detention ADP	Total Detention ADP
FY2011	159	N/A	159
FY2012	201	N/A	201
FY2013	159	N/A	159
FY2014	112	35	147
FY2015	80	48	128
FY2016	74	80	154

*ADP was calculated based on an assumption of 8-month maximum length of stay if juveniles had missing release date from detention facilities.

For any criminal justice population, the number of admissions is a key determinant of the size of the overall population. Available data indicate that, in FY2011, 755 juveniles charged as adults were admitted to adult pre-trial detention facilities (Figure 1.2). For this population, annual admissions decreased between FY2012 and FY2014 from 633 to 490, and then increased to 641 in FY2016. There were 15% fewer admissions in FY2016 than in FY2011.

Figure 1.2
Juvenile Charged as Adults and Admitted to Detention Facilities (Accused Status)*



* In order to avoid double-counting juveniles who were transferred to or from other facilities, figures shown here exclude admissions to the Baltimore City Detention Center and admissions to DJS juvenile facilities as courtesy holds.

The number of admissions is shown by facility in Figure 1.3 below. In Baltimore City, incoming arrestees are brought to the Central Booking and Intake Center. From there, juveniles who remained confined may be transferred to the Baltimore City Detention Center. All juveniles admitted to Baltimore City Juvenile Justice Center (BCJJC) were also placed through Central Booking and Intake Center. Therefore, total admissions in this section excluded admissions to Baltimore City Detention Center and any other DJS juvenile facilities to avoid over-counting.

Figure 1.3
Juveniles Charged as Adults and Admitted to Adult Detention Facilities (Accused Status) and DJS Juvenile Detention Facilities by Facility, FY2014-2016

Facility	FY2014	FY2015	FY2016
Allegany County Detention Center	0	0	4
Anne Arundel County			
Jennifer Road Detention Center	26	29	26
Ordnance Road Correctional Center	7	3	5
Baltimore City			
Baltimore City Central Booking and Intake Center	146	156	163
Baltimore City Detention Center	118	138	125
Baltimore County Detention Center	85	123	99
Calvert County Detention Center	3	1	4
Caroline County Detention Center	2	3	0
Carroll County Detention Center	0	5	1
Cecil County Detention Center	2	6	7
Charles County Detention Center	3	7	16
Dorchester County Detention Center	3	1	1
Frederick County Detention Center	4	3	14
Garrett County Detention Center	0	0	0
Harford County Detention Center	7	8	8
Howard County Detention Center	12	8	12
Kent County Detention Center	0	0	0
Montgomery County Detention Center*	48	101	118
Prince George's County Detention Center	97	83	93
Queen Anne's County Detention Center	2	1	0
Somerset County Detention Center	4	2	11
St. Mary's County Detention Center	1	1	2
Talbot County Detention Center	4	2	5
Washington County Detention Center	6	6	15
Wicomico County Detention Center	22	6	31
Worcester County Jail	6	5	6
Juveniles charged as adults and held in Maryland Department of Juvenile Services (DJS) Facilities by agreement:			
Baltimore City Juvenile Justice Center	131	111	156
Other DJS Facilities	58	85	152
Total Admissions**	490	560	641

*Data from the Montgomery County Detention Center and the Montgomery County Correctional Facility were combined in the forecast due to data issues. Two years of admissions appear to have been misattributed in the CMDCS database. Where youth were transferred directly from one Montgomery facility to the other, the admission records were combined to create a single, continuous period of confinement.

**Total Admissions exclude admissions to the Baltimore City Detention Center and admissions to the DJS facilities in order to avoid double-counting juveniles transferred to or from other facilities.

Juveniles charged as adults and admitted to detention facilities in FY2016 were mostly males, black, and age 17 (Figure 1.4). Males accounted for approximately 90.2% of the total admissions to adult detention facilities in FY2016. In FY2016, 79.6% of juveniles charged as adults and admitted in adult facilities were black. White youth made up about 13.3% of the admissions, while other race groups (including Hispanic, American Indian, Asian, and Other) accounted for 7.2%. For age at admissions, juveniles 17 years old represented more than half (53.2%) of the total admissions, followed by age 16 (41.8%).

Figure 1.4
Juveniles Charged as Adults and Admitted to Adult Detention Facilities (Accused Status) by Sex, Race and Age at Admission, FY2016

		Admissions to Adult Facilities
Sex		
Male		578
Female		63
Race		
Black		510
White		85
Hispanic/Other		46
Age		
14		5
15		11
16		268
17		341
18-20		7
Error/Missing		9
	Total*	641

*Total Admissions exclude admissions to the Baltimore City Detention Center and admissions to the DJS facilities as courtesy hold in order to avoid double-counting juveniles transferred to or from other facilities.

Comparing FY2011 and FY2016, the distribution of offenses for admitted juveniles has not change significantly for most offense categories (Figure 1.5). In FY2011, robbery/carjacking accounted for 38.3% of all juveniles charged as adults and admitted pre-trial, while assault accounted for 25.8%. Together, these two offense types represented nearly two-thirds of admissions in FY2011. In FY2016, the percentage of admitted juveniles charged with robbery/carjacking stayed stable as FY2011 (38.2%) while assault decreased to 23.1%. Despite the decrease in assault offenses, these two offense types continue to account for the majority of juveniles charged as adults and admitted to pre-trial detention (61.3% in FY2016).

Figure 1.5
Juveniles Charged as Adults and Admitted to Adult Detention Facilities (Accused Status) by Offense Category, FY2011 and FY2016*

Offense Category	FY2011	FY2016
Murder/Manslaughter	11.2%	7.8%
Rape/Sex Offense	3.7%	7.0%
Robbery/Carjacking	38.3%	38.2%
Kidnapping/False Imprisonment	0.1%	0.0%
Assault	25.8%	23.1%
Firearms & Other Weapons	11.6%	16.8%
Burglary	1.3%	2.0%
Arson	0.1%	0.3%
Theft	0.9%	0.5%
Narcotics	2.9%	1.2%
Other	2.4%	3.0%
Unknown	1.3%	0.0%
Total Admissions**	755	641

*Percentages may not add to 100% due to rounding.
**Total Admissions exclude admissions to the Baltimore City Detention Center and DJS juvenile detention facilities in order to avoid double-counting juveniles transferred to or from other facilities.

In addition to admissions, length-of-stay (LOS) is a critical factor affecting the size of the population. LOS was calculated for all juveniles who had been charged as adults and held in pre-trial facilities. A subset of these juveniles, however, changed from accused status to sentenced status during their period of confinement. As noted above, the number of juveniles who switch from accused to sentenced status cannot be determined due to data availability. LOS for all juveniles released from pre-trial facilities corresponds to the upper bound limit of the population. In cases where release date is missing, LOS was calculated based on the assumption of eight months processing time from arrest to adjudication. For juveniles charged as adults and released from adult detention facilities during FY2011-FY2016, data indicate that over 80% of them stayed less than 8 months (excluding releases from the Baltimore City Central Booking and Intake Center).

The computed LOS in days is shown in Figure 1.6. The average LOS for juveniles charged as adults and held in adult facilities declined from 102.5 days to 59.2 days from FY2012 to FY2016, while LOS for juveniles held in DJS facilities as courtesy hold increased from 65.1 days to 93.1 days from FY2014 to FY2015 and decreased to 81.7 days in FY2016.

Figure 1.6
Average Lengths-of-Stay (Days) for
Juveniles Charged as Adults and Held in Detention Facilities*

	Juveniles Released from Adult Facilities	Juveniles Released from DJS Detention Facilities
FY2012	102.5	N/A
FY2013	95.5	N/A
FY2014	86.9	65.1
FY2015	77.2	93.1
FY2016	59.2	81.7

*LOS was computed excluding juveniles admitted to the Baltimore City Central Booking and Intake Center as these juveniles should be transferred to another facility. Figures also exclude juveniles admitted with a code indicating he/she was a federal hold.

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Section 2 Factors Contributing to Change in the Population

Many factors may affect the number of youth who are charged as adults and held in adult pre-trial facilities in Maryland. At the broadest levels, these may include demographic changes, trends in crime rates and offenses reported, and the volume and patterns of arrests.

According to population estimates from the Maryland Department of Planning, Maryland's 11-to-17 year old population declined by 0.9% between FY2013 and FY2015 (Figure 2.1). Change in this subpopulation, however, has varied considerably across the different regions of the state. For Baltimore City and Metro Region, the data show that the number of juveniles in this age group has decreased by 18.8% and 3.0% respectively during this time period. For the Central, Western, and Southern regions, increases in this age group ranged from 3.8% to 5.3%. In the Eastern Region, the population grew by less than 1%.

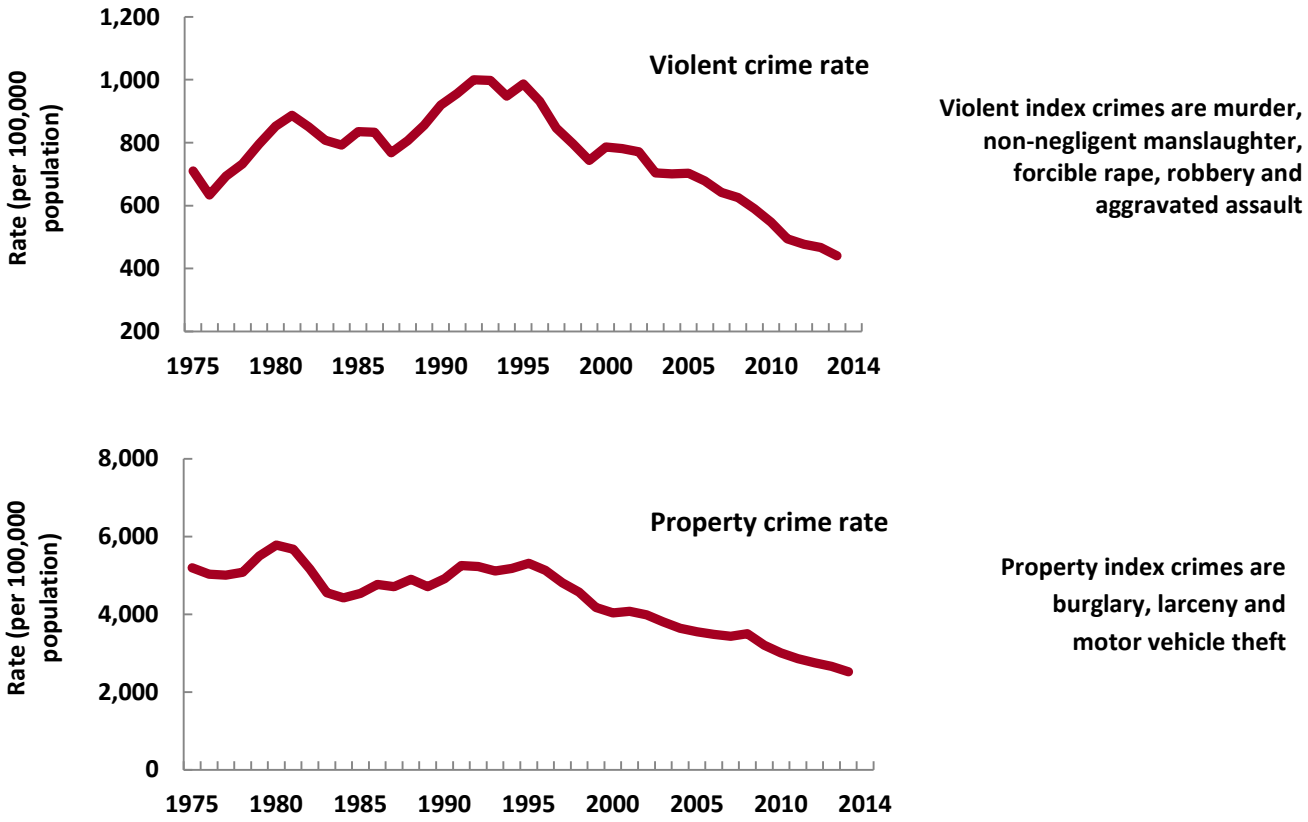
Figure 2.1
Population of Maryland 11 to 17 Years of Age by DJS Region

Region	FY2013	FY2014	FY2015	Change FY2013-FY2015
Baltimore City	60,124	58,966	48,825	-18.8%
Central Region	136,757	135,756	141,989	3.8%
Western Region	42,880	42,389	45,151	5.3%
Eastern Region	39,881	39,248	40,146	0.7%
Southern Region	80,580	80,142	84,382	4.7%
Metro Region	175,748	174,769	170,456	-3.0%
Total	535,970	531,270	530,949	-0.9%

Source: Maryland Department of Planning, Population Estimation for the State of Maryland
Note: Data for each Fiscal Year above were population estimates on July 1st of each year.

Crime rates in Maryland, as in much of the nation, have declined over the past 20 years. Maryland's violent index crime rate has decreased by 56% since its peak in 1992 and, in 2014, it was the lowest recorded over the last 40 years (Figure 2.2 upper panel). Maryland's property index crime rate has also decreased significantly. Between 1995 and 2014, the property crime rate decreased by 53% and is at a 40-year low (Figure 2.2 lower panel). Crime rates in Baltimore City, which are substantially higher than the statewide average, dropped steeply after 1995.

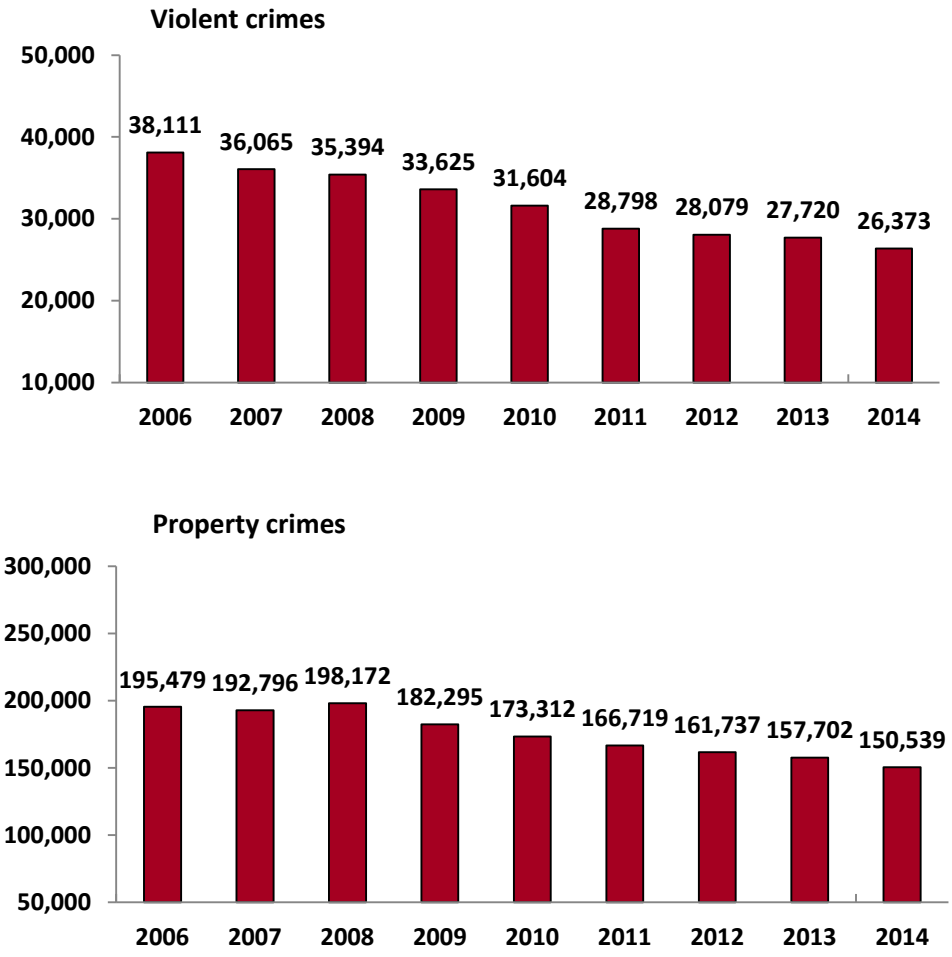
Figure 2.2
Index Crime Rates in Maryland, 1975-2014



Source: Maryland State Police – Crime in Maryland UCR Reports

Because crime rates are affected by increases or decreases in the state's population, the number of crimes reported to law enforcement was also examined. Mirroring the decrease in the violent crime rate, the number of violent index crimes reported to police has shown a marked decline. Since 2005, the number of violent index crimes has decreased each year (Figure 2.3 upper panel). While the number of property index crimes reported has generally decreased since 2004, an increase was recorded from 2007 to 2008 (Figure 2.3 lower panel). After 2008, the number of reported property crimes resumed its downward trend.

Figure 2.3
Number of Index Crimes Reported in Maryland



Source: Maryland State Police – Crime in Maryland UCR Reports

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Section 3 Population Projections

Projections of the population of juveniles charged as adults, including those confined in adult facilities (in accused status) and held in DJS-operated detention facilities, were developed separately and combined into one group of numbers during forecast.

The proposed projection model for juveniles in adult facilities was generated using a common forecasting technique: auto-regressive integrated moving average (ARIMA) analysis. ARIMA forecasting assumes that there is a pattern in the historical values that can be identified. The goal is to define the pattern, understand the short-term and long-term trends, and identify any seasonal fluctuations. Time parameters are tested in a times-series model and the statistically significant parameters are retained. For forecasting purposes, a minimum of 60 observations, or data points, is preferred, particularly if a seasonal component is to be modeled.

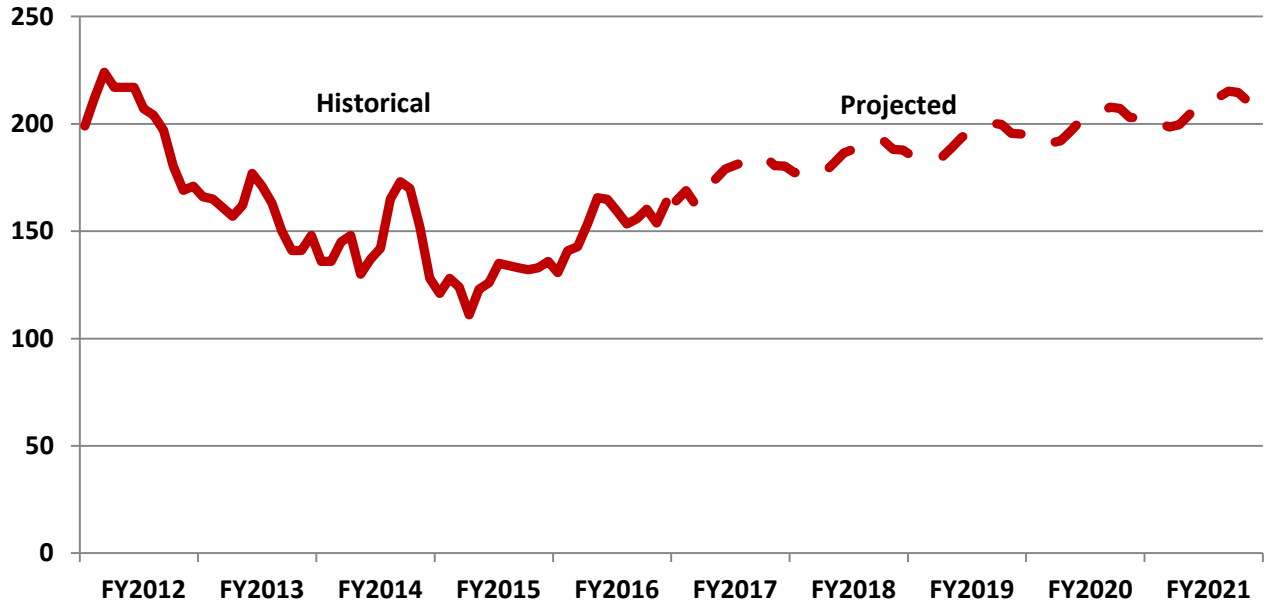
Admission records dating back to January 2008 were available for analysis, but, data prior to FY2011 were incomplete. (See Section 1 for a full discussion of the data limitations). ADP can be calculated using data from FY2011 through FY2016; however, the population computed for the early months of FY2011 may be lower than the actual population during that time period. Therefore, ADP data from January 2011 through end of FY2016 were used for model development. When reviewing historical monthly ADP data, the series demonstrate pronounced seasonality for month of July.

The final model selected is ARIMA (0, 1, 1) plus a constant and a dummy variable for month of July. The model was selected based on rigorous statistical testing based on Akaike Information Criteria (AIC) (see Appendix A for model selection steps and multiple model comparison). These models implicitly assume that current policies and practices (for example, prosecutors' charging practices and juvenile court decisions to waive jurisdiction) will continue into the future.

In this section, projections of the average daily population for each fiscal year from FY2017 through FY2021 are presented in Figure 3.1. (For better understanding of population variance, the monthly data table is also listed in Appendix B). While a 15-year forecast is desirable, such a long forecast horizon is not advisable given the relatively small number of data points available for building projection models. Therefore, five-year projections are presented in this report. The final model projected the average daily population will increase in FY2017 to 176 and to 207 in FY2021. The increase in admissions could be a factor that contributes to the population increase. Based on trend analysis of monthly ADP for FY2016 and the first few months in FY2017 (Figure 3.2), the population is expected to continue to increase in the next few years.

Figure 3.1

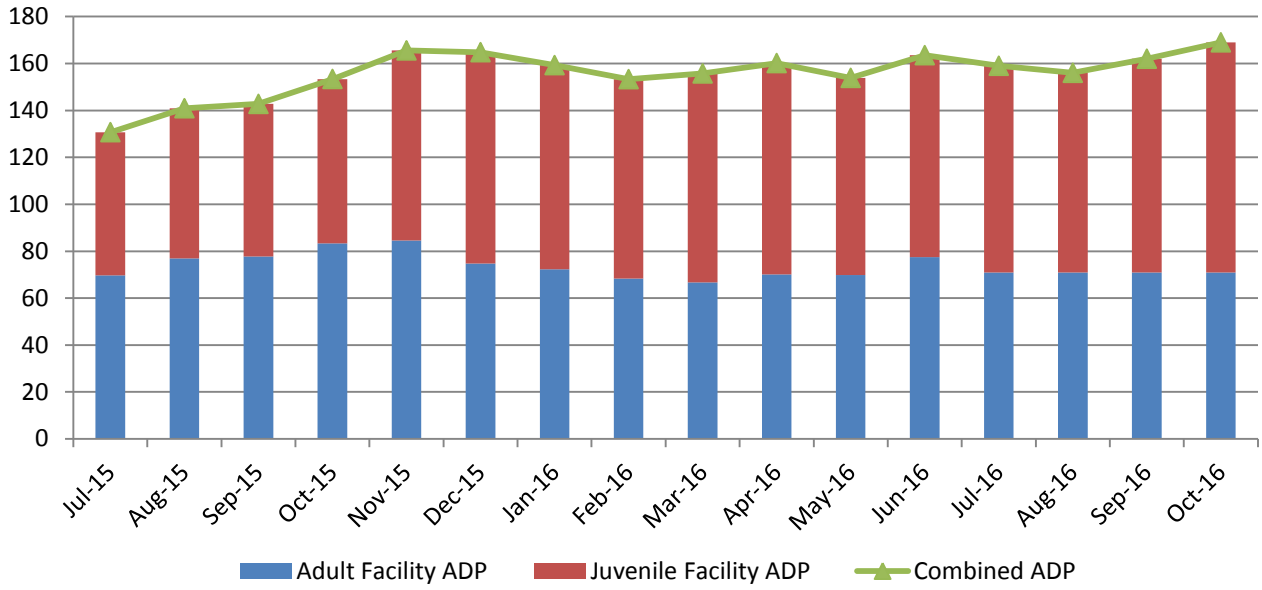
Historical and Projected Population of Juveniles Charged as Adults and Held in Adult Detention Facilities and DJS-Operated Facilities



	Year	Average Daily Population (ADP)
Historical	FY2012	201
	FY2013	159
	FY2014	147
	FY2015	128
	FY2016	154
	FY2017*	162
Projected	FY2017	176
	FY2018	185
	FY2019	192
	FY2020	200
	FY2021	207

*162 for FY2017 in historical is the average of daily population for July through October 2016.

Figure 3.2
Monthly Population of Juveniles Charged as Adults and Held in Adult Detention Facilities and DJS-Operated Facilities, FY2016-FY2017*



Monthly Average Daily Population (ADP) FY2016-FY2017*

Month	Adult Facility ADP	Juvenile Facility ADP	Combined ADP
Jul-15	70	61	131
Aug-15	77	64	141
Sep-15	78	65	143
Oct-15	83	70	153
Nov-15	85	81	166
Dec-15	75	90	165
Jan-16	72	87	159
Feb-16	68	85	153
Mar-16	67	89	156
Apr-16	70	90	160
May-16	70	84	154
Jun-16	78	86	164
Jul-16	71**	88	159
Aug-16	71**	85	156
Sep-16	71**	91	162
Oct-16	71**	98	169

*FY2017 data shown above are for July 2016 through October 2016 only.
**Population data for adult facilities from July 2016 to October 2016 were estimated by the average monthly population from January through June 2016 due to data availability.

These projections may assist DJS to identify ways in which additional youth charged as adults might be served in a juvenile detention facility rather than an adult pre-trial facility. However, some of the juveniles charged as adults would not be eligible for transfer to a juvenile facility. Maryland law prohibits the transfer of cases involving juveniles who are at least 16 years of age and accused of first-degree murder and juveniles who have been convicted in an unrelated case of an offense excluded from the jurisdiction of the juvenile court. The data available for this study, however, do not include information necessary to consistently identify those prohibited from transfer due to a previous conviction for an excluded offense. Only a small number of juveniles charged with violations of adult probation, indicative of a prior conviction in the adult system, could be identified. The data do permit the identification of youth excluded from transfer due to a first-degree murder charge.[13] The historical and projected ADP, excluding ineligible juveniles charged with violations of probation or first-degree murder, is shown in Figure 3.3 below.

Figure 3.3
Historical and Projected Population of Juveniles
Charged as Adults and Held in Adult Detention Facilities and DJS Facilities*

	Year	Average Daily Population (ADP)
Historical	FY2012	194
	FY2013	154
	FY2014	142
	FY2015	121
	FY2016	146
Projected	FY2017	170
	FY2018	179
	FY2019	186
	FY2020	194
	FY2021	201

*Excludes juveniles 16 years of age or older charged with first-degree murder and juveniles returned to the adult system for a violation of probation. Previous convictions of these offenses were not applied due to data availability.

[13] Only completed acts were identified here.

To generate the projections by facility, the characteristics of the population in FY2015 and FY2016 were examined. The resulting percentages are shown in Figure 3.4. Since October 2015, the court had ordered more youth charged as adult who is eligible for transfer to the juvenile system to be held in a juvenile detention facility. A dramatic increase in the percentage of juvenile facilities during FY2016 is shown in table below. This trend is expected to increase in near future. Therefore, calculating an average over the last 2- or 3- year period for ADP distribution would not accurately reflect this new policy change and its impact on the juvenile facility population.

Figure 3.4
Percentage of ADP Distribution by Facility, FY2015-2016

Facility	FY2015	FY2016
Allegany County Detention Center	0.0%	0.0%
Anne Arundel County		
Jennifer Road Detention Center	2.0%	2.3%
Ordnance Road Correctional Center	0.0%	0.0%
Baltimore City		
Baltimore City Central Booking and Intake Center	2.4%	0.9%
Baltimore City Detention Center	12.0%	8.0%
Baltimore County Detention Center	19.1%	10.5%
Calvert County Detention Center	0.1%	0.0%
Caroline County Detention Center	0.2%	0.7%
Carroll County Detention Center	0.0%	0.0%
Cecil County Detention Center	0.6%	0.5%
Charles County Detention Center	0.6%	2.3%
Dorchester County Detention Center	0.0%	0.5%
Frederick County Detention Center	1.7%	0.5%
Garrett County Detention Center	0.0%	0.0%
Harford County Detention Center	0.4%	0.9%
Howard County Detention Center	0.7%	0.2%
Kent County Detention Center	0.0%	0.0%
Montgomery County Detention Center	5.7%	2.6%
Prince George's County Detention Center	13.0%	10.7%
Queen Anne's County Detention Center	0.0%	0.4%
Somerset County Detention Center	1.1%	0.9%
St. Mary's County Detention Center	0.0%	0.0%
Talbot County Detention Center	0.1%	1.0%
Washington County Detention Center	0.1%	0.1%
Wicomico County Detention Center	2.5%	4.8%
Worcester County Jail	0.4%	0.7%
Juveniles charged as adults and held in DJS facilities		
Baltimore City Juvenile Justice Center	25.9%	26.4%
Other DJS Facilities	11.4%	25.0%
Total	**100.0%**	**100.0%**

Projections of ADP for FY2017-FY2021, broken out by facility, are shown in Figure 3.5. These projections include juveniles 16 years of age or older charged with first-degree murder and juveniles returned to the adult system for a violation of probation.

Figure 3.5
Projected Population of Juveniles Charged as Adults
and Held in Adult Detention Facilities and DJS-Operated Facilities

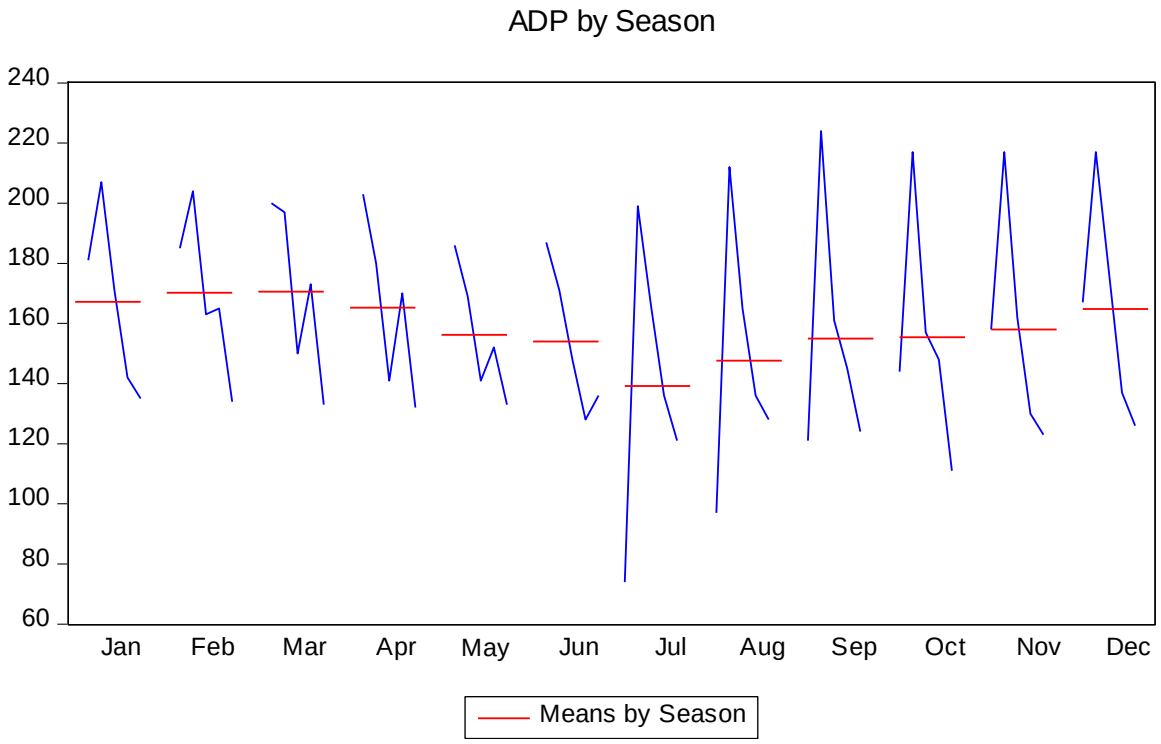
Facility	FY2017	FY2018	FY2019	FY2020	FY2021
Allegany County Detention Center	0	0	0	0	0
Anne Arundel County					
Jennifer Road Detention Center	4.0	4.3	4.4	4.6	4.8
Ordnance Road Correctional Center	0.0	0.0	0.0	0.0	0.0
Baltimore City	0.0	0.0	0.0	0.0	0.0
Baltimore City Central Booking and	1.6	1.7	1.7	1.8	1.9
Intake Center	0.0	0.0	0.0	0.0	0.0
Baltimore City Detention Center	14.1	14.8	15.4	16.0	16.6
Baltimore County Detention Center	18.5	19.4	20.2	21.0	21.7
Calvert County Detention Center	0.0	0.0	0.0	0.0	0.0
Caroline County Detention Center	1.2	1.3	1.3	1.4	1.4
Carroll County Detention Center	0.0	0.0	0.0	0.0	0.0
Cecil County Detention Center	0.9	0.9	1.0	1.0	1.0
Charles County Detention Center	4.0	4.3	4.4	4.6	4.8
Dorchester County Detention Center	0.9	0.9	1.0	1.0	1.0
Frederick County Detention Center	0.9	1.0	1.0	1.0	1.1
Garrett County Detention Center	0.0	0.0	0.0	0.0	0.0
Harford County Detention Center	1.6	1.7	1.8	1.8	1.9
Howard County Detention Center	0.3	0.4	0.4	0.4	0.4
Kent County Detention Center	0.0	0.0	0.0	0.0	0.0
Montgomery County Detention Center*	4.6	4.8	5.0	5.2	5.4
Prince George's County Detention Center	18.8	19.8	20.5	21.4	22.1
Queen Anne's County Detention Center	0.7	0.7	0.8	0.8	0.8
Somerset County Detention Center	1.6	1.7	1.8	1.8	1.9
St. Mary's County Detention Center	0.0	0.0	0.0	0.0	0.0
Talbot County Detention Center	1.7	1.8	1.9	2.0	2.0
Washington County Detention Center	0.2	0.2	0.3	0.3	0.3
Wicomico County Detention Center	8.5	9.0	9.3	9.7	10.0
Worcester County Jail	1.2	1.2	1.3	1.3	1.4
Juveniles held in DJS facilities					
Baltimore City Juvenile Justice Center	46.5	48.8	50.7	52.8	54.6
Other DJS Facilities	44.0	46.3	48.0	50.0	51.8
Total	175.9	184.9	191.9	199.9	206.9

* Historical data from the Montgomery County Detention Center and the Montgomery County Correctional Facility were combined in the population count due to data issues. Thus, the forecast represents the combined population.

Appendix A

Population Projection (Adult Facility) Model Selection and Comparison

Seasonality Graph



Note: The above graph is a seasonal average plot for ADP time series during FY2011 through FY2016. The population is lower for the month of July during that period. Therefore a dummy variable of July (value 1 for July and 0 for other months) was used in the final model.

Autocorrelations and Partial Autocorrelations

Date: 11/21/16 Time: 13:16
Sample: 2010M07 2021M06
Included observations: 72

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |*******	. |*******	1	0.964	0.964	69.714	0.000
. |*******	.*| . |	2	0.916	-0.184	133.57	0.000
. |******|	. | . |	3	0.871	0.051	192.21	0.000
. |******|	. | . |	4	0.830	-0.002	246.17	0.000
. |******|	. | . |	5	0.788	-0.026	295.61	0.000
. |***** |	.*| . |	6	0.744	-0.067	340.27	0.000
. |***** |	. | . |	7	0.698	-0.029	380.20	0.000
. |***** |	. | . |	8	0.656	0.036	416.05	0.000
. |**** |	. | . |	9	0.620	0.030	448.58	0.000
. |**** |	.*| . |	10	0.582	-0.074	477.65	0.000
. |**** |	.*| . |	11	0.532	-0.170	502.33	0.000
. |*** |	.*| . |	12	0.474	-0.100	522.24	0.000
. |*** |	. | . |	13	0.420	0.042	538.20	0.000
. |*** |	. | . |	14	0.374	0.017	551.04	0.000
. |** |	. | . |	15	0.328	-0.052	561.06	0.000
. |** |	.*| . |	16	0.274	-0.113	568.22	0.000
. |** |	. | . |	17	0.224	0.041	573.07	0.000
. |*. |	. | . |	18	0.181	0.032	576.29	0.000
. |*. |	. | . |	19	0.140	-0.059	578.28	0.000
. |*. |	. | . |	20	0.105	0.044	579.41	0.000
. | . |	. | . |	21	0.067	-0.052	579.87	0.000
. | . |	. | . |	22	0.025	-0.043	579.94	0.000
. | . |	.*| . |	23	-0.020	-0.105	579.98	0.000
.*| . |	.*| . |	24	-0.066	-0.091	580.46	0.000
.*| . |	. | . |	25	-0.108	0.018	581.79	0.000
.*| . |	. |*. |	26	-0.144	0.086	584.19	0.000
.*| . |	.*| . |	27	-0.181	-0.081	588.05	0.000
**| . |	.*| . |	28	-0.218	-0.100	593.83	0.000
**| . |	. | . |	29	-0.251	0.027	601.61	0.000
**| . |	. | . |	30	-0.280	-0.034	611.59	0.000
**| . |	. | . |	31	-0.310	-0.053	624.11	0.000
**| . |	. | . |	32	-0.337	0.017	639.25	0.000

Note: Autocorrelation plots are a commonly-used tool for checking randomness in a data set. This randomness is ascertained by computing autocorrelations for data values at varying time lags. If random, such autocorrelations should be near zero for any and all time-lag separations. If non-random, then one or more of the autocorrelations will be significantly non-zero. The nonseasonal difference will be used for better model performance.

Augmented Dickey-Fuller Test for Unit Root

Null Hypothesis: ADP_ADULT_FACILITY has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.242789	0.0065
Test critical values:	1% level	-4.094550	
	5% level	-3.475305	
	10% level	-3.165046	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ADP_ADULT_FACILITY)
Method: Least Squares
Date: 11/21/16 Time: 13:20
Sample (adjusted): 2010M09 2016M06
Included observations: 70 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ADP_ADULT_FACILITY(-1)	-0.157905	0.037217	-4.242789	0.0001
D(ADP_ADULT_FACILITY(-1))	0.273675	0.102733	2.663950	0.0097
C	35.20941	8.172756	4.308144	0.0001
@TREND("2010M07")	-0.399111	0.095263	-4.189573	0.0001

R-squared	0.383130	Mean dependent var	-0.271429
Adjusted R-squared	0.355091	S.D. dependent var	9.587010
S.E. of regression	7.698968	Akaike info criterion	6.975495
Sum squared resid	3912.091	Schwarz criterion	7.103980
Log likelihood	-240.1423	Hannan-Quinn criter.	7.026531
F-statistic	13.66393	Durbin-Watson stat	1.863611
Prob(F-statistic)	0.000000		

Note: Based on the above ADF test for unit root, the hypothesis of unit root can be rejected. The t-value for one lag of ADP equals to -4.242789 which exceeds (in absolute terms) 1% critical value of -4.094550. The series should be modeled as trend stationary with a constant. The 1st differencing models were also tested through model auto-selection. Differencing technique will improve model statistics for this time series.

Model Comparison by AIC Value

Model Selection Criteria Table
Dependent Variable: D(ADP_ADULT_FACILITY)
Date: 11/21/16 Time: 13:26
Sample: 2011M01 2016M06
Included observations: 66

Model	LogL	AIC*	BIC	HQ
(0,1)(0,0)	-230.289186	7.099672	7.232379	7.152111
(2,0)(0,0)	-229.459366	7.104829	7.270712	7.170377
(0,2)(0,0)	-230.036735	7.122325	7.288208	7.187874
(1,1)(0,0)	-230.143108	7.125549	7.291432	7.191097
(2,1)(0,0)	-229.418384	7.133890	7.332950	7.212548
(3,0)(0,0)	-229.425090	7.134094	7.333153	7.212752
(0,3)(0,0)	-229.610317	7.139707	7.338766	7.218364
(1,2)(0,0)	-229.702302	7.142494	7.341554	7.221152
(1,0)(0,0)	-231.870361	7.147587	7.280293	7.200025
(2,3)(0,0)	-228.081861	7.153996	7.419408	7.258873
(4,0)(0,0)	-229.366033	7.162607	7.394843	7.254375
(4,2)(0,0)	-227.375728	7.162901	7.461490	7.280888
(2,2)(0,0)	-229.418380	7.164193	7.396429	7.255961
(3,1)(0,0)	-229.418384	7.164193	7.396430	7.255961
(2,4)(0,0)	-227.502833	7.166753	7.465342	7.284739
(0,4)(0,0)	-229.517086	7.167184	7.399421	7.258952
(1,3)(0,0)	-229.567025	7.168698	7.400934	7.260465
(5,0)(0,0)	-228.855060	7.177426	7.442839	7.282303
(3,2)(0,0)	-229.140847	7.186086	7.451499	7.290963
(5,2)(0,0)	-227.197446	7.187801	7.519567	7.318898
(4,3)(0,0)	-227.211274	7.188220	7.519986	7.319317
(4,1)(0,0)	-229.262806	7.189782	7.455195	7.294659
(3,3)(0,0)	-228.374701	7.193173	7.491762	7.311160
(2,5)(0,0)	-227.411688	7.194294	7.526059	7.325390
(0,5)(0,0)	-229.516882	7.197481	7.462894	7.302358
(1,4)(0,0)	-229.517061	7.197487	7.462899	7.302364
(0,0)(0,0)	-234.540534	7.198198	7.297728	7.237527
(5,1)(0,0)	-228.789207	7.205734	7.504323	7.323720
(5,3)(0,0)	-227.182460	7.217650	7.582593	7.361856
(3,4)(0,0)	-228.191752	7.217932	7.549698	7.349028
(4,4)(0,0)	-227.206538	7.218380	7.583322	7.362586
(1,5)(0,0)	-229.381152	7.223671	7.522261	7.341658
(3,5)(0,0)	-227.782025	7.235819	7.600761	7.380025
(5,4)(0,0)	-226.961503	7.241258	7.639377	7.398573
(4,5)(0,0)	-227.174595	7.247715	7.645834	7.405031
(5,5)(0,0)	-226.702459	7.263711	7.695007	7.434136

Final ARIMA Model for Population Projection

Dependent Variable: D(ADP_ADULT_FACILITY)
Method: ARMA Maximum Likelihood (BFGS)
Date: 11/21/16 Time: 13:53
Sample: 2011M01 2016M06
Included observations: 66
Convergence achieved after 4 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.663100	1.428590	-0.464164	0.6442
JULY	-7.039560	2.850266	-2.469791	0.0163
MA(1)	0.423477	0.123617	3.425730	0.0011
SIGMASQ	62.65156	13.37614	4.683830	0.0000

R-squared	0.946540	Mean dependent var	-1.348485
Adjusted R-squared	0.905243	S.D. dependent var	8.633552
S.E. of regression	8.166615	Akaike info criterion	7.099672
Sum squared resid	4135.003	Schwarz criterion	7.232379
Log likelihood	-230.2892	Hannan-Quinn criter.	7.152111
F-statistic	3.548476	Durbin-Watson stat	2.026601
Prob(F-statistic)	0.019418		

Inverted MA Roots	-.42

Appendix B

Monthly Projections of Juveniles Charged as Adults Held in Adult Detention Facilities and DJS-Operated Facilities, FY2017-2021

Month	FY2017	FY2018	FY2019	FY2020	FY2021
July	164	177	185	192	200
August	169	178	185	193	200
September	162	176	184	191	199
October	170	177	185	192	200
November	174	182	189	197	204
December	179	186	194	201	209
January	181	188	196	203	211
February	183	190	198	205	212
March	185	193	200	208	215
April	185	192	200	207	215
May	181	188	196	203	210
June	180	188	195	203	210
FY Average	***176***	***185***	***192***	***200***	***207***