Oregon Youth Authority Demand Forecast

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Background

The Office of Economic Analysis produces the semi-annual Juvenile Corrections Population Forecast which provides projections for close custody and community placement demand for the Oregon Youth Authority (OYA). During the 2017 Legislative Session, House Bill 2334 was passed. This bill directs the Department of Administrative Services and the Juvenile Corrections Population Forecasting Advisory Committee to produce the forecast. The forecast is mandated to estimate monthly populations over a ten year period and is due April 15 and October 15 of each year. OYA incorporates the forecast as one element for planning and budgeting.

The forecast is for close custody beds (incarcerated youths) and OYA community placements. The close custody population is composed of three groups: the Public Safety Reserve (PSR), Department of Corrections (DOC) offenders who are supervised by OYA, and the discretionary close custody (DCC) population. The PSR and DOC offenders represent the portion of OYA's close custody population for which incarceration is mandatory. The remaining bed space is for DCC and is occupied by youths judged to need close custody incarceration above others, but it is not mandatory incarceration.

Each of the four population groups is forecasted separately. The DOC and PSR forecasts provide direct estimates of the number of beds that will be needed to house those populations. The DCC and community placement population forecasts are estimates of the demand for beds regardless of whether the demand is met.

The forecast advisory committee is comprised of individuals with knowledge of the juvenile justice system. It meets prior to each forecast to discuss issues and trends related to the system and how they could affect the forecast. The committee also defines the demand measure used for the discretionary close custody and community placement populations.

Juvenile Corrections Population Forecasting Advisory Committee

Torri Lynn (Chair)	Linn County Juvenile Department
Debra Patterson	Crook County Juvenile Department
Joe O'Leary	Oregon Youth Authority
Michelle Inderbitzen	Oregon State University
Judge Lindsay Partridge	Marion County Juvenile Court
Lynne Schroeder	Washington County Juvenile Department

Juvenile Crime Information

Information Sources

There are a number of sources for information concerning juvenile crime. The forecast analysis relies primarily on the Juvenile Justice Information System (JJIS). This data system maintains information on juvenile referrals in Oregon and juveniles supervised by OYA and county juvenile departments. It provides the most complete and timely source of juvenile crime data for Oregon.

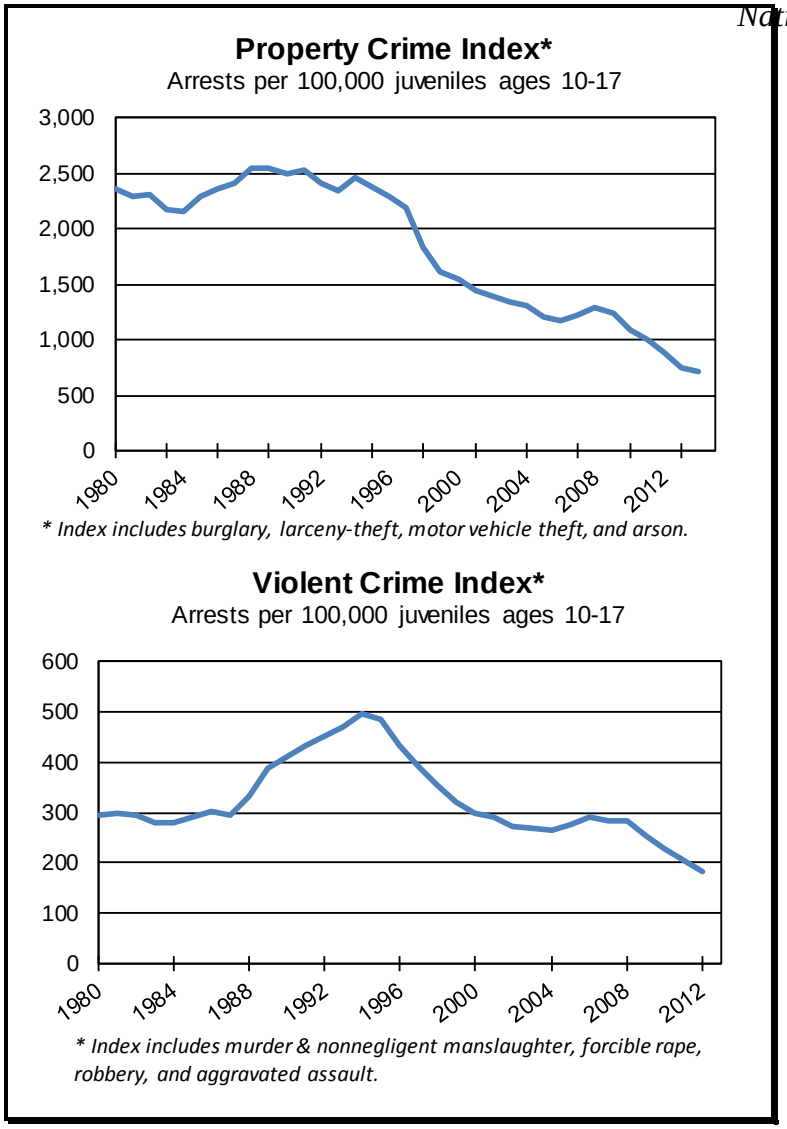
The advisory committee meets before each forecast and provides information related to factors driving trends, changes in judicial system processes, and identification of things which may impact the forecast but do not yet show up in statistical data.

Additionally, national data and research in juvenile crime are surveyed prior to each forecast. Although national level research and statistics are based on data that is typically several years old, it is valuable in understanding trends seen in Oregon in comparison to national trends.

National Data and Trends

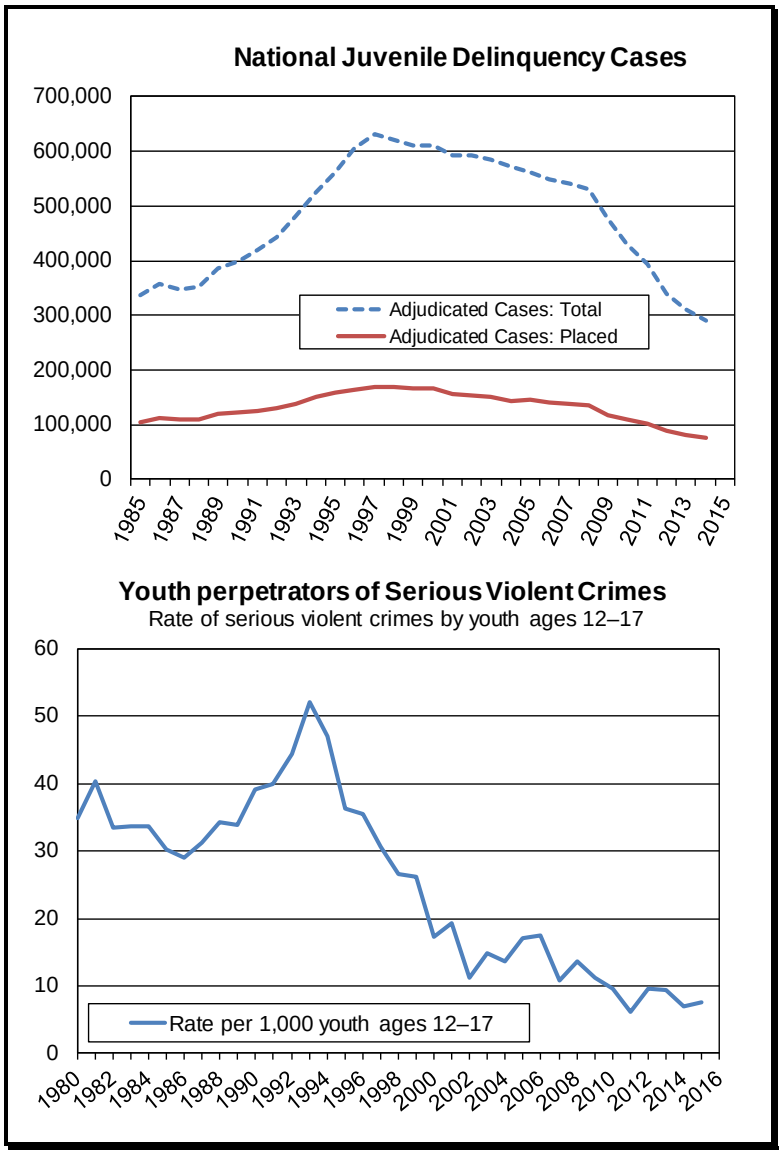
In general, national juvenile justice trends are reflected in Oregon specific data. National juvenile crime and delinquency trends generally indicate a substantial decrease in juvenile crime from the mid 1990's through the mid-2000's, followed by a modest increase associated with the financial crisis of 2008. This bump up in the late-oughts reversed course and rates have resumed falling through the latest data. The charts below display different measures of nationwide juvenile crime/delinquency based on arrests, court cases, and survey data. They indicate that serious juvenile crime/delinquency at the national level peaked in the mid 1990's, dropped substantially from then through the early 2000's, remained relatively stable since the mid 2000's and has dropped in the last three years that data are available.

The FBI Uniform Crime Reporting (UCR) program provides the number of arrests by age and crime type. The Violent Crime Index and Property Crime Index are standardized measures commonly used to characterize crime rates for those categories[1].



[1]Internet Citation: OJJDP Statistical Briefing Book. Online. Available: http://www.ojjdp.gov/ojstatbb/crime/JAR_Display.asp?ID=qa05201. Sept 23, 2013.

Juvenile court case statistics provide another measure of juvenile crime. Adjudicated cases, specifically those resulting in a facility placement, also serve as measures of relative demand for juvenile correctional services. Those trends (chart right) peaked in the mid 1990's, then fell gradually, leveling off in in the mid-2000s at a level about 20 percent below the peak[2]. Over the last four years that statistics are available, there has been a marked drop. Compared with charts that are calculated as a ratio of a certain number of youths, this graph does not adjust for population growth.



Serious violent crimes perpetrated by youths aged 12 to 17, based on survey data, have declined dramatically from peak levels in the 1990's[3] [4]. In 2015, the serious violent crime offending rate was 7.6 crimes per 1,000 juveniles ages 12-17. This is a large drop from the peak rate of 52 per 1,000 in 1993. As compared to the Violent Crime Index (above), which is based on law enforcement agency reports of arrests, this indicator assesses crime reported by victims when surveyed. As such, it is believed to capture more total crime since it does not depend on any interaction with, or success of, the criminal justice system.

Underlying much national criminal justice research and juvenile criminality are data from the Federal Bureau of Investigation's Uniform Crime Reporting (UCR) program and U.S. Census Bureau's surveys of criminal justice agencies. Below is a listing of agencies which maintain references to national level data.

- Bureau of Justice Statistics
- Office of Juvenile Justice and Delinquency Prevention
- National Juvenile Court Data Archive
- National Criminal Justice Reference Service
- National Archive of Criminal Justice Data
- Forum on Child and Family Statistics (general source for national data on children)

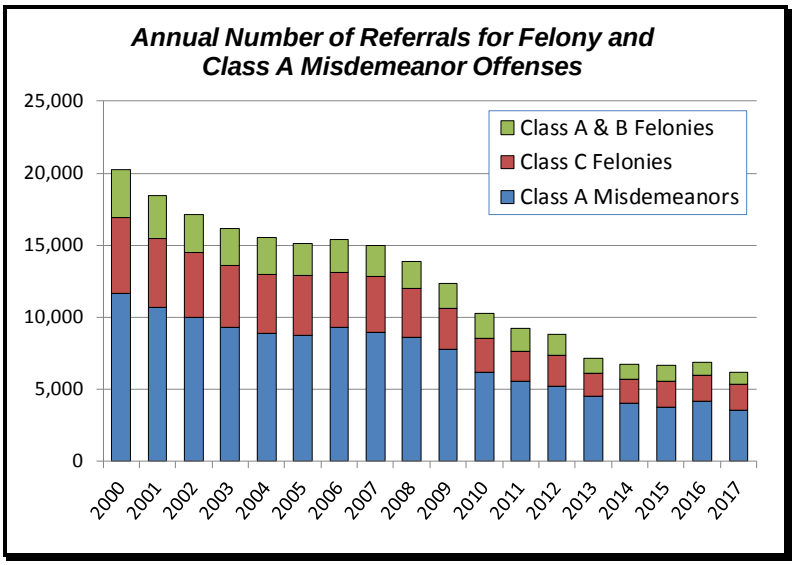
[2] Office of Juvenile Justice and Delinquency Prevention. Juvenile Court Statistics. http://www.ojjdp.gov/ojstatbb/ezajcs/

[3] Bureau of Justice Statitistics. National Criminal Victimization Survey. http://bjs.ojp.usdoj.gov

[4] America's Children in Brief: Key National Indicators of Well-Being, 2010. http://childstats.gov/americaschildren/index.asp

Oregon Data from the Juvenile Justice Information System (JJIS)

Reports from national data are not available for the most recent years and they generally lack sufficient detail to use directly in the forecast. Oregon's JJIS data system, in contrast, provides juvenile justice information from 1996 to the current day in considerable detail. The data system is used at both the county and the state level. Of interest in forecasting, it tracks individual events for each youth such as dates and offenses for referrals to county juvenile departments, dispositions ordered by a court, placement information for custody and supervision episodes, and risk assessment details. Informal events or dispositions are often not recorded. An example might be a court requirement for a youth to write an essay.



Referrals to Oregon county juvenile departments are the primary source for assessing overall juvenile criminality for the forecast. Youths are referred by law enforcement. In general, a referral is analogous to an arrest for a crime in the adult criminal justice system. Detail data on individual referrals is available going back through 1996, and is generally considered to be consistent over time in the way actual events are characterized in the data. The referral data are used for the forecast in establishing juvenile crime trends. For each referral, the data captures the youth's identity and a variety of characteristics including date of referral, age, gender, race, and offense information such as the statute violated, OYA's 19 point severity classification for the offense, and crime class such as "A Felony" or "B Misdemeanor".

Crime Trends from JJIS Referral Data

Juvenile crime, measured by the number of referrals, has dropped significantly in Oregon since the mid 1990's. In 1996, there were approximately 10,400 referrals for felonies. By 2013, that number had dropped to about 2,658, a 74 percent reduction (over the same period, the total number of juveniles in Oregon age 12 to 17 increased about 4.6 percent). Similarly, though less dramatic, the number of misdemeanor referrals over the same period declined by 49 percent. For both felony and misdemeanor referrals, reductions were relatively rapid from 1998 to 2002, gradual from 2003 to 2007, and rapid again into 2013. The average annualized percentage change in the number of felony referrals was about 0.3 percent over the past three years, indicating that we may have seen the end of the twenty-year decline in youth criminality. The general reduction in crime rates is not specific to Oregon or to the juvenile population. Declines in crime rates have been observed nationwide. Although the reduction in juvenile crime is a national phenomenon and much research has been devoted to analyzing the reasons for the decline, there is no single widely accepted explanation for the reduction. Various sources discuss theories related to race, gender, smart policing and curfew enforcement, weapon laws, drug use, gang activity, economic factors, social factors, geographic factors, environmental factors, etc. Most reports provide analyses that demonstrate significant declines across various categories, but fail to draw satisfying conclusions as to the underlying causes. This suggests the reduction is a general societal change.

Population Size, Trends and Forecast Tracking

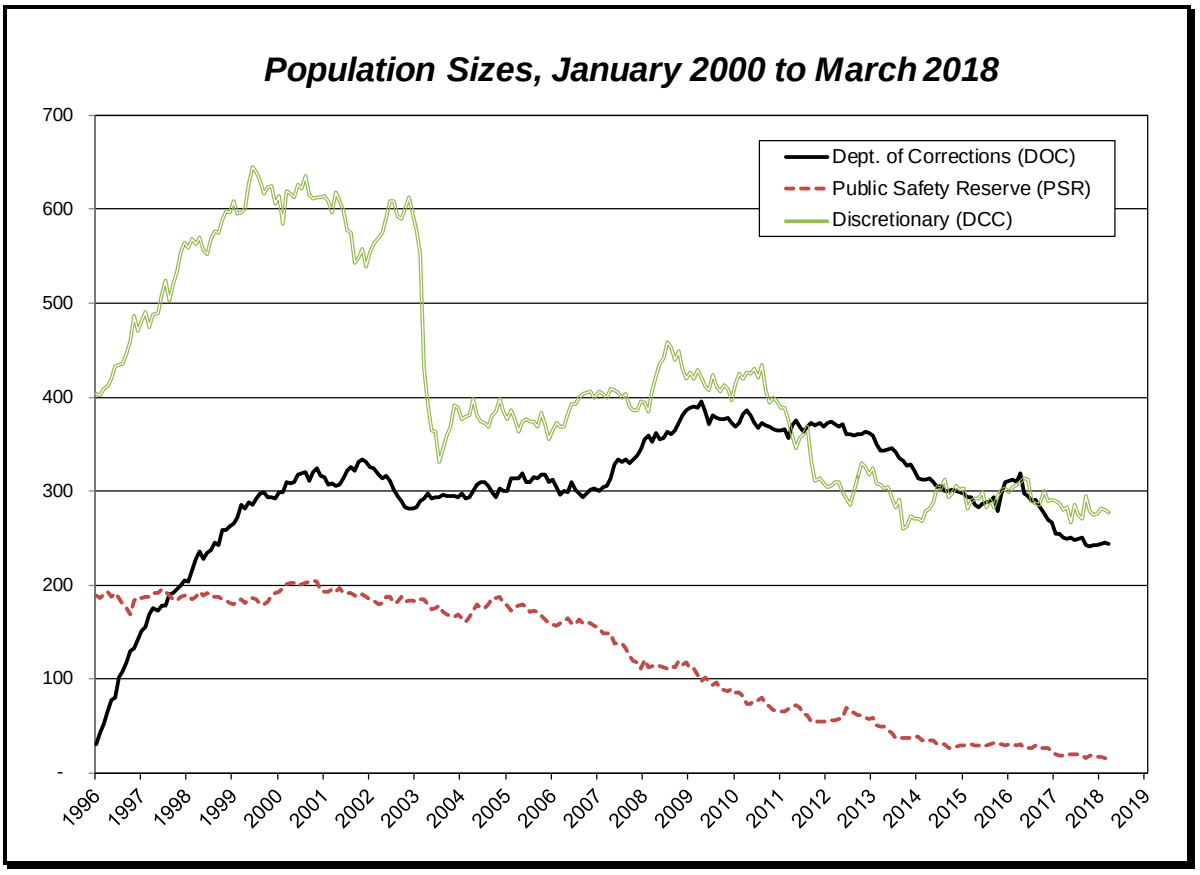
Population Size

The Public Safety Reserve (PSR) population stayed relatively constant at about 200 from 1996 to 2002. From 2002 on it has decreased steadily. The current PSR count is 15, below the most recent 12-month average of 18. The general decline is attributable simply to fewer juveniles entering the population over time, and is also reflective of fewer serious violent crimes being committed by young teens. Recent forecasts have projected the PSR population to stabilize and to resume minimal growth over the next ten years.

The Department of Corrections (DOC) population increased rapidly from 1996 through 1999 to roughly 300. The rapid increase was due to Measure 11 which made incarceration mandatory for serious violent crimes. It remained near 300 through 2006, and then gradually increased through 2008 to exceed 390 in April 2009. Since then, the DOC count had declined steadily. The current DOC population is 244, slightly below the most recent 12-month average of 246.

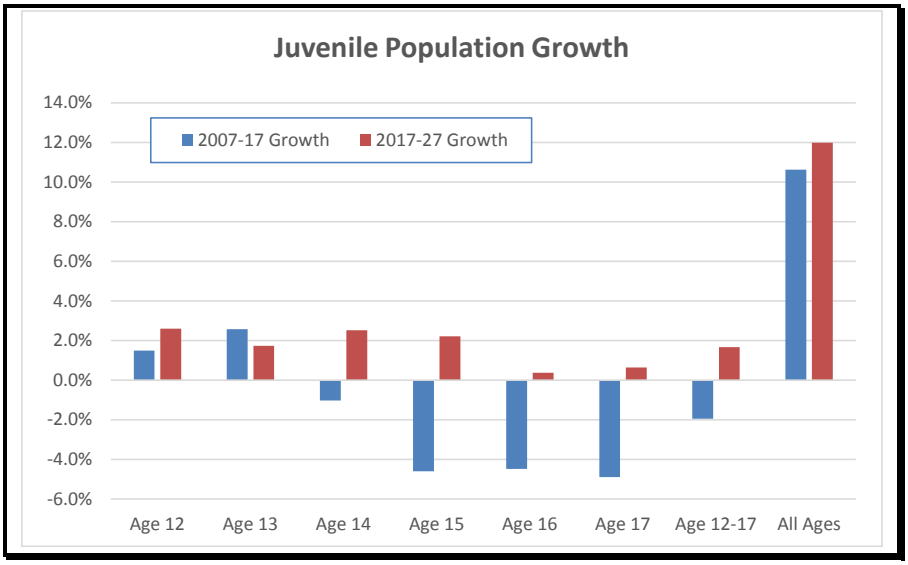
The Discretionary Close Custody (DCC) population size is primarily driven by budgeted capacity. Budget levels set the number of close custody beds available, which first serve DOC and PSR groups, with the remaining being allocated for discretionary use.

Prior to January 2003, the DCC population size was generally around 600. In January 2003, budget cuts significantly reduced the availability of DCC beds. In the first months of 2003, several hundred DCC youths were released on parole sooner than normal to achieve the reduction. The recent decrease in the DCC population (late 2010 through mid 2012) is also associated with budget reductions. The DCC population have averaged 279 over the last twelve months.



Oregon Youth Population Trends

Projecting Oregon's juvenile population over the next ten years, it is estimated that the population of youth ages 12-17 will grow by 1.7%, which is below the projected growth of 12.0% for all age groups.



Prior Forecast Tracking

Forecast tracking is evaluated for the DOC and PSR populations which are direct forecasts. The DCC population is not evaluated since the forecast is not tied to the actual population size (the forecast measures demand for DCC beds as opposed to actual occupation of beds).

The DOC population tracked somewhat below the prior forecast, although the population appears to be stabilizing. The maximum forecast deviation was 14 beds.

The PSR population averaged four beds below the forecast in the last six months. After a stable 18-month period, this population has resumed a modest downward motion.

Forecast Methodology

General Discussion

The Department of Corrections (DOC) and Public Safety Reserve (PSR) population forecasts are for the number of youth who will require OYA close custody bed space. The majority of the DOC population are youth convicted of a Measure 11 offense. The other significant DOC population is youth waived to adult court. The PSR population is comprised of youth who commit similar crimes but are too young to be prosecuted under Measure 11 (under age 15). The forecast for those populations is a direct count. Together these populations comprise the non-discretionary population. The forecasts are a function of recent trends and estimates of future growth in the 12-17 year old at-risk population.

The Discretionary Close Custody (DCC) forecast and the Community Placement forecast are conceptually different since the historical population size is a product of the number of beds approved in Legislatively Adopted Budgets. The available beds for DCC equals the total number of budgeted beds less the number taken by the DOC and PSR populations. The actual DCC population size has typically ranged from slightly below to slightly above the number of budgeted beds.

Forecasting the demand for DCC and Community Placement was changed significantly for the April 2013 and subsequent forecasts. The Oregon Youth Authority is developing the Youth Reformation System, a predictive analysis model to inform decisions at all levels of Oregon's juvenile justice system. The model uses juvenile data in Oregon's unique Juvenile Justice Information System to create better outcomes for youth in terms of returning to society ready to take part in a productive, healthy, crime-free life. The model, in turn, reduces victimization and reduces taxpayer expense.

Youth are scored based on a variety of variables, such as risk assessments and criminal history. The score amounts to the estimated success rate in that type of placement and is based on the performance of statistically similar youth in the past. It can also be thought of as the inverse of the likelihood to reoffend once released into the community. In other words, a success score of 70 means that the youth is 70 percent likely to not commit a new crime in the next three years, which implies a three-year recidivism risk of 30 percent.

Once scores are calculated for each youth and each type of placement, information is utilized to make informed decisions for youth creating the greatest likelihood for success. Where one success score clearly dominates, the youth is deemed appropriate for that placement. Questions arise when a youth's scores are close enough together as to be statistically indifferent. In these cases, the least restrictive placement, depending on crime and youth variables should be considered. In all cases, data informs professional discretion. The Youth Corrections Advisory Committee discussed these cases at length and developed a decision rule for classifying these "gray area" cases as appropriate for one type of placement or the other. Given a fixed placement rule, we can now define the demand for youth services, and forecast how this demand is likely to change in the future due to changes in crime trends or the size of the overall youth population.

Once existing youth are identified as appropriate for probation, community placement, or close custody, it remains to forecast the number of these youth ten years into the future. Given that crime rates have flattened out after twenty years of decline, the best available predictor of future growth in youth appropriate for an OYA placement is the predicted growth in the number of youth aged 12 to 17, otherwise known as the at-risk population. In the future, more robust data on at-risk populations, including those on human service caseloads, may be able to predict changes in demand to close custody and community placements with greater accuracy.

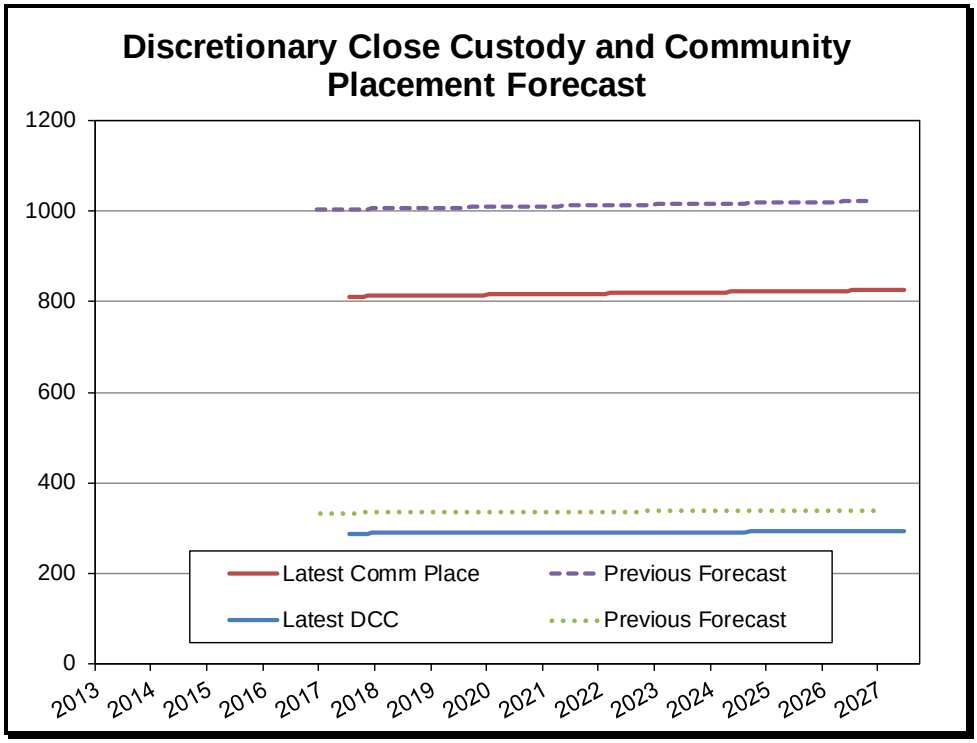
Note that the model is determining the ideal placement for youth regardless of cost, budget size or feasibility. The Youth Corrections Advisory Committee determined that this satisfies the definition of "demand" as characterized in past forecasts. The forecast numbers in this document reflect the ideal in terms of the number of beds in each type of placement that would be necessary to maximize each individual's chance of success and minimize the potential future criminality of this target population. It remains for agency experts and policymakers to determine the actual size and nature of youth services.

Forecast

The forecast for Oregon Youth Authority resources has been modified to include community placements. Discretionary close custody beds and community placements are to some extent substitutes in treating youth offenders. In characterizing the ideal number of each type of placement, in other words the "demand" for these types of beds, forecast should be taken as a whole picture of the system. Therefore, the demand forecast assumes a "package deal" where the decrease in demand for one type of OYA service is counterbalanced by an increase in another service where the youths are optimally placed according to OYA's placement algorithm.

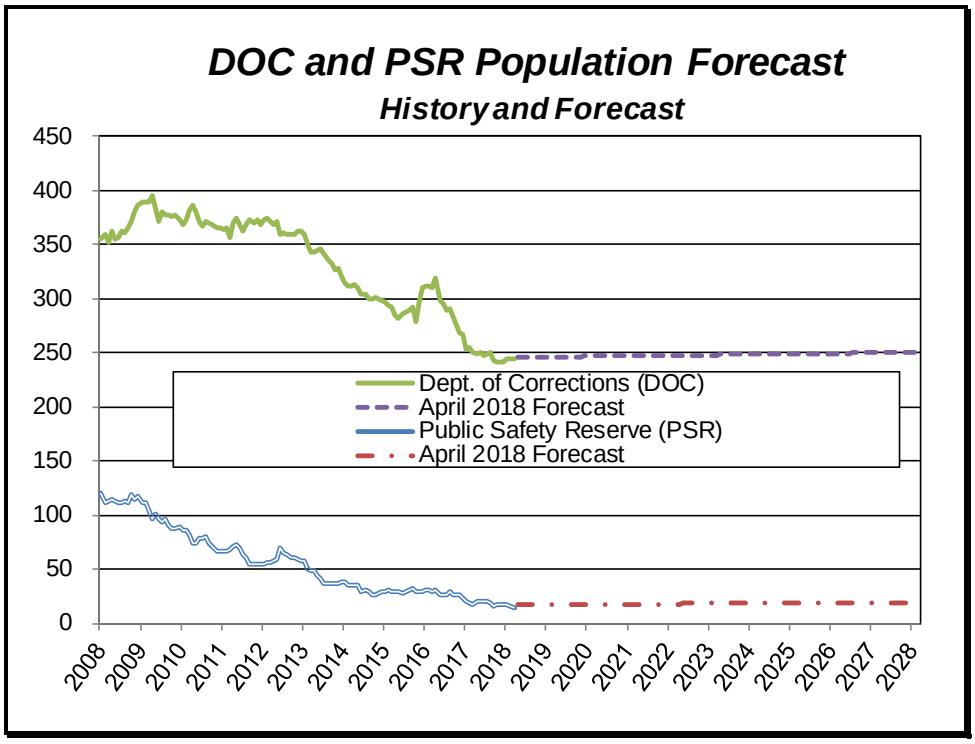
As depicted in Graph 1 below, the forecast for Discretionary Close Custody beds is 288 beds in the near term, rising negligibly over the forecast horizon. The forecast is somewhat lower than the previous forecast, the product of a change in composition of youth offenders in the system and the resulting imputation of success scores across the three placement categories. The forecast for the demand for community placements is 812 for October 2017, and increases to 826 in ten years. This is considerably lower than the previous forecast. As with DCC beds, the forecast is sensitive to changes in the composition of the referral cohort and the coefficients used to impute success scores for the subsample that have only taken one or the other instrument. The Oregon Youth Authority is working to automate the generation of the dataset used to derive the forecast numbers. A time-series dataset will allow for analyzing this time-dependent sensitivity, hopefully reducing the volatility of the forecast revisions in the future.

Note: as described previously, this document characterizes an assessment and forecast of the number of youth who would benefit from a close custody or community placement with the Oregon Youth Authority. This is different than characterizing the number of beds that the OYA would need to administer these youth, for a few reasons. First, the demand for both close custody and community placement are not static numbers. Due to the turnover that takes place from forecast to forecast, these numbers vary significantly over time. Necessary capacity needs to account for this variation. Secondly, research indicates that many youth in the close custody cohort would benefit from a "step-down" stay in a residential facility. Since the demand calculation assigns youth to one cohort or the other, the forecast for residential demand does not include these beds. Finally, an additional buffer in close custody and community placement is needed such that incoming youth can be placed in the right type of bed. The forecast does not account for these buffer beds. As such, sufficient capacity for both close custody and community placement may well exceed the current demand estimates presented in this document.



Graph 1

As noted above, the recent data for DOC and PSR beds indicates that the prior forecast over-projected those beds. As such, the both forecasts were lowered by a handful of beds. The long term growth in these forecasts has been pegged to the growth rate in the 12-17 year old at-risk population. The chart above (Graph 2) illustrates the recent history and latest forecast for these two bed allocations.



Graph 2

Forecast Risks

There are two kinds of error in the forecast. The first type is error in characterizing the current nature of the youth in the juvenile justice system, specifically those youth with a disposition at the last point in time that data were available. Identifying the "most appropriate" placement for each of these youth involves using decision rules regarding three success scores (county probation – JCP, OYA probation – community placement, and OYA incarceration). Only half the youth in the data set have all three scores. Where scores are missing, scores are imputed based on criminal history, demographics, and those scores that are available. This introduces error into the model in that the explanatory power of these variables in predicting the value of the scores being imputed is considerably less than 100 percent.

Contrast this "current" error with forecasting models where the population being forecasted is known (e.g., adult prison counts). It is the hope that this error approximates zero in the long run, in other words that the imputation of success scores is unbiased for the whole population over time, even if the error for any given youth is significant. In addition, it is anticipated that use of the risk instruments (JCP, RNA) will occur for a greater percent of the juvenile justice population, thereby increasing the explanatory power of the model and decreasing the number of youth for whom scores are imputed.

The second type of risk is the more typical risk associated with predicting the future. The forecast assumes that current laws and current criminal justice practices continue as they have in the past. It also assumes trends in juvenile criminal activity continue and that demographics follow expected trends. If those and other assumptions fail, the forecast is at risk. An additional general risk is associated with the prevalence and success of the juvenile justice system in deterring juvenile crime. The forecast does not assume changes in those programs or practices.

Additional specific risks include the following:

Criminal Trends. Juvenile crime rates have dropped significantly since the late 1990's. The forecast assumes that the lower rates will continue. If the juvenile crime rates rebound to levels of the mid-1990's, the need for juvenile corrections resources could increase dramatically.

Budgetary restrictions. Over the next several years budget levels for law enforcement, criminal justice courts, education, and juvenile programs will remain depressed, particularly at the county level. These cuts could impact the juvenile crime rate, juvenile crime prosecutions, and the number and length of placements in close custody in ways that are difficult to predict.

County Resources and Practices. The forecast does not examine the interaction between county funding levels and demand for OYA services, but recognizes that an interaction may exist. In some sense, OYA serves as a backstop when there is a lack of county diversionary resources, and if county resources change there could be an impact in the need for OYA services. In addition, use of OYA resources reflects decisions made at the county level. Systematic change in these practices would impact the forecast for OYA resources.

General Economic Conditions. While the impact of the economy on crime is not clear, it stands to reason that those with the least job skills will be impacted disproportionately when the economy is weak. Many juveniles fall into this category. As a result, depending on the degree to which juveniles will face limited job opportunities and turn to criminal activities, the forecast could understate demand.

Forecast Values

A more detailed spreadsheet is available in Excel spreadsheet format from the Office of Economic Analysis web site.

http://www.oregon.gov/DAS/OEA/oya.shtml