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# Oregon Youth Authority Demand Forecast

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October 2010

## **Background**

The Office of Economic Analysis produces the semi-annual Juvenile Corrections Population Forecast which provides projections for close custody bed space managed by the Oregon Youth Authority (OYA). Executive Orders 98-06, 04-02, and 08-15 direct 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 uses the forecast for planning and budgeting.

The forecast is for close custody beds (incarcerated youths). 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 three 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 population forecast is an estimate 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 population.

### **Juvenile Corrections Population Forecasting Advisory Committee**

Torri Lynn (Chair)  
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Multnomah County Department of Community Justice  
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Oregon Youth Authority

# 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.

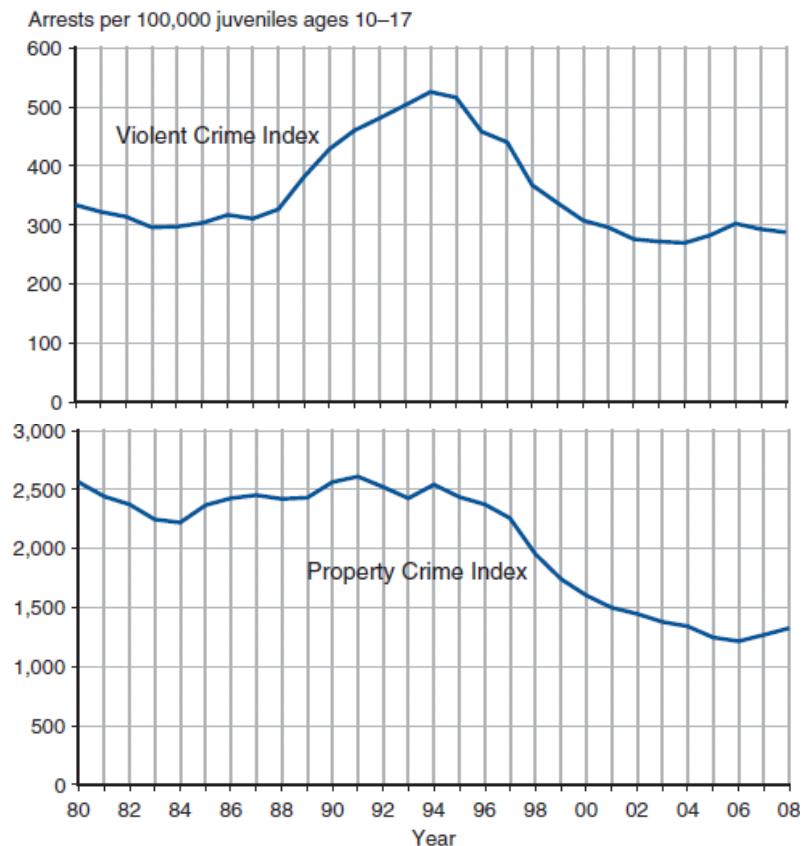
Additionally, national data and research in juvenile crime are surveyed prior to each forecast. Although national level research and statistics are based on data that is typically several years old, it is valuable in understanding trends seen in Oregon in comparison to national trends.

## 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 early 2000's, followed by relatively little change through current 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, and has been relative stable since the mid 2000's.

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. The December 2009 Juvenile Justice Bulletin provides charts (right) displaying those index rates for juveniles, as well as juvenile arrest rates for a number of other crime categories<sup>1</sup>.

The nationwide violent crime rate and property crime rate for juveniles reached peak levels in the mid 1990's. Since then, they fell rapidly through the early 2000's to roughly half their peak levels and have not seen major changes in recent years.



<sup>1</sup> Juvenile Justice Bulletin, Dec. 2009. Juvenile Arrests 2008. <http://www.ncjrs.gov/pdffiles1/ojjdp/228479.pdf>

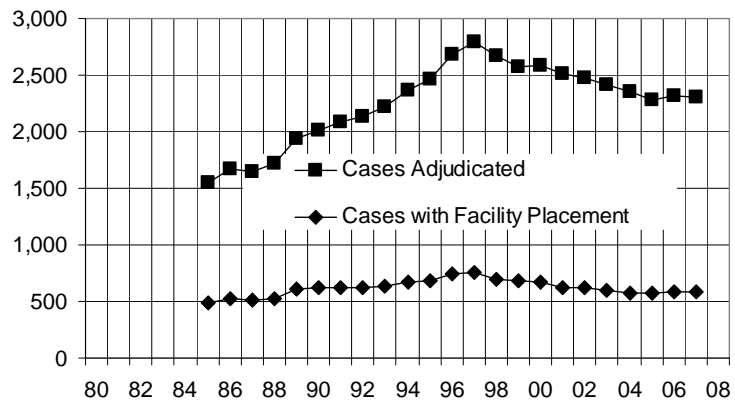
Juvenile court case statistics provide another measure of juvenile crime. Adjudicated cases, and specifically those resulting in a facility placement, also serve as measures of relative demand for juvenile correctional services. Those trends (chart right) peaked in the mid 1990's, then fell gradually, leveling off in recent years at a level about 20 percent below the peak<sup>2</sup>.

Serious violent crimes perpetrated by youths aged 12 to 17, based on survey data, has declined dramatically from peak levels in the 1990's<sup>3 4</sup>. As compared to the Violent Crime Index (above), which is based on law enforcement agency reports of arrests, this 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.

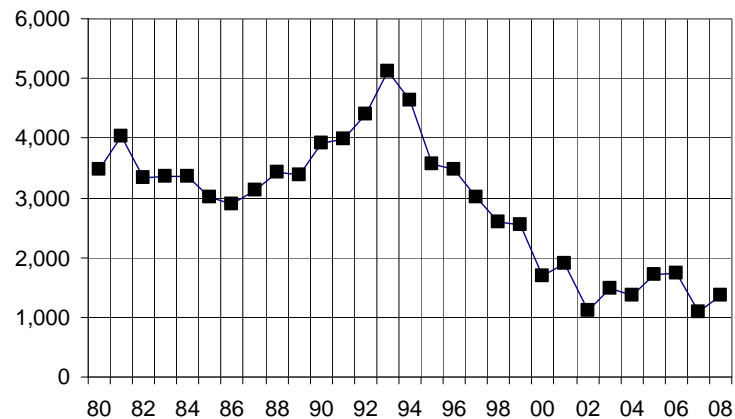
Underlying much national criminal justice research and juvenile criminality is data from the Federal Bureau of Investigation's Uniform Crime Reporting (UCR) program and U.S. Census Bureau's censuses and surveys of criminal justice agencies. Below is a listing of agencies which maintain references to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

Juvenile Court Cases per 100,000 Juveniles Age 12 to 17



Serious Violent Crimes per 100,000 Juveniles Age 12 to 17



<sup>2</sup> Office of Juvenile Justice and Delinquency Prevention. Juvenile Court Statistics. <http://www.ojjdp.gov/ojstatbb/ezajcs/>

<sup>3</sup> Bureau of Justice Statistics. National Criminal Victimization Survey. <http://bjs.ojp.usdoj.gov>

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

## **JJIS Data**

Reports from national data are not available for the most recent years and they generally lack sufficient detail to use directly for the forecast. Oregon's JJIS data system, in contrast, provides current information in much greater detail.

Referrals to Oregon county juvenile departments are the primary source for measuring juvenile criminality for the forecast. Youths are referred by law enforcement or other entities such as schools, parents, or a community agency. In general, a referral is analogous to an arrest for a crime in the adult criminal justice system. Individual referral data going back through 1996 is used for the forecast. For each referral, a variety of characteristics are identified, including date of offense, 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".

JJIS also tracks youths under the supervision of OYA and county juvenile departments. This can be combined with the referral data to characterize the number, demographics, and criminal backgrounds of youths under supervision at various points in time.

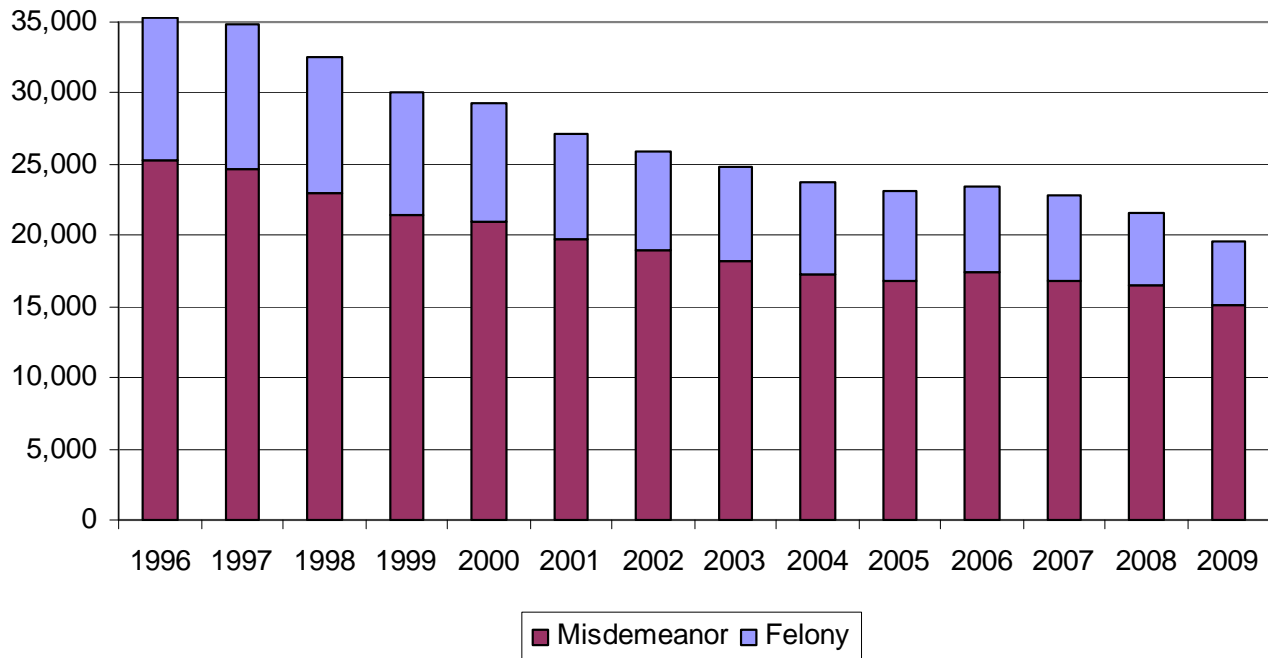
The forecast makes use of JJIS data updated through July 2010 for trend analysis.

## Crime Trends from JJIS Referral Data

Juvenile crime, measured by the number of referrals, has dropped steadily in Oregon since the mid 1990's. In 2009, felony referrals numbered fewer than half the number in 1996. Misdemeanor referrals also dropped significantly. The reduction was relatively rapid from 1998 to 2002, gradual from 2003 to 2007, and relatively rapid again from 2008 on. Over the past several years, the annual percentage reduction in the number of referrals has averaged approximately 13 percent for felony referrals 5 percent for misdemeanor referrals (both are reductions).

The general reduction in crime rates is not specific to Oregon or to the juvenile population. Declines in crime rates are observed nationwide. Although the reduction in juvenile crime is a national phenomenon and much research has been devoted to analyzing the reasons, there is no single widely accepted explanation for the reduction. Various sources discuss theories related to race, gender, curfew enforcement, weapon laws, drug use, gang activity, economic factors, social factors, geographic factors, etc. Most reports provide analyses that demonstrate significant declines across various categories, but fail to make satisfying conclusions as to the underlying causes. This suggests the reduction is a general societal change. Additional factors influencing the trend may include successful youth programs as evidenced by a reduction in recidivism, law enforcement reductions or shifts in emphasis, or juveniles effectively avoiding enforcement.

*Annual Number of Referrals for Felonies and Misdemeanors:*



## Measure 11 Crime

The DOC and PSR populations at OYA are comprised primarily offenders who have committed crimes listed in Measure 11 (the most serious person crimes). Referrals for these crimes comprise only about 3.5 percent of the total number of criminal referrals, but account for a substantial and increasing portion of OYA's total close custody population. As with criminal referrals in general, referrals for Measure 11 crimes have dropped significantly since the late 1990's from roughly 1,100 per year to roughly 650 per

year currently, a 40 percent reduction. Since 2004, Measure 11 referrals have dropped by 25 percent while all criminal referrals dropped only 10 percent.

Many referrals for Measure 11 crimes do not result in an entry to the DOC or PSR populations due to downward pleas or failures to prosecute and convict. The entries to the DOC and PSR populations number about 20 percent of the number of referrals for Measure 11 crimes overall, but this relationship has changed in recent years where the number of entries increased to roughly 30 percent of referrals. In other words, starting in 2006, there are increasingly more entries to the PSR or DOC population for each Measure 11 referral. One reason for this could be changes in arrest reporting and prosecution practices as the impact of Measure 11 continues to evolve. The impact can be observed in the increase to the DOC population starting in 2007, while the number of related referrals was decreasing.

Since the connection between the number of Measure 11 crimes and the number of entries to the DOC and PSR populations has changed, the number of crimes is less valuable as a predictor of the DOC and PSR population sizes than it was in the past.

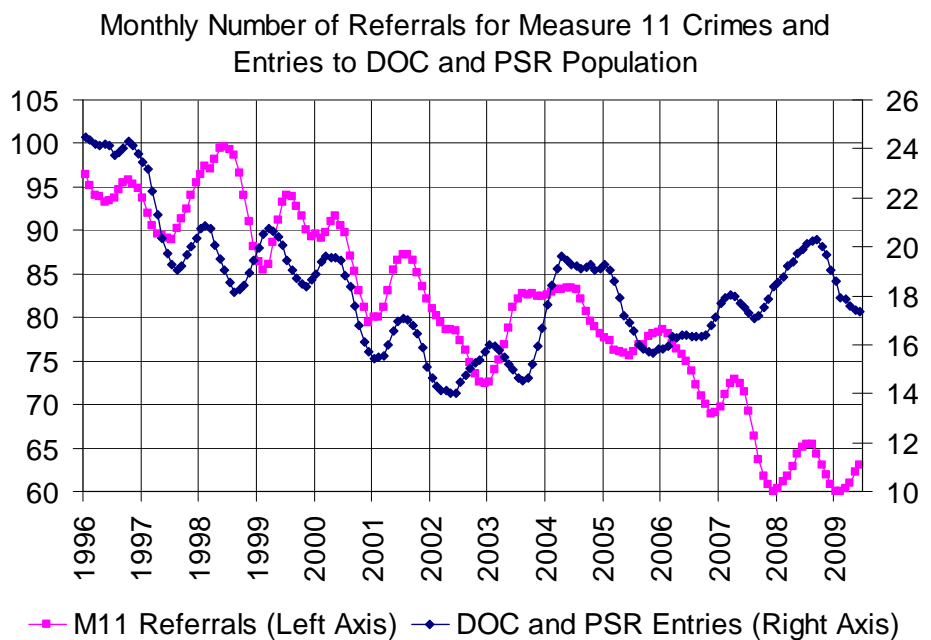
### Crime Connected to Discretionary Close Custody

For the discretionary close custody (DCC) population, there is not a specific class of crime that leads to incarceration as there is with the PSR and DOC populations. Rather, entry is discretionary based on a variety of factors relating to a youth's criminal history and background, as well as availability of space, and ultimately is a judge's decision.

Demand for DCC beds is defined by the advisory committee based on their knowledge of the juvenile justice system and consideration of statistical measures of juvenile criminality. Statistical measures based on referrals suggest a trend of decreasing juvenile criminality overall, including criminality characteristics most closely associated with DCC entries.

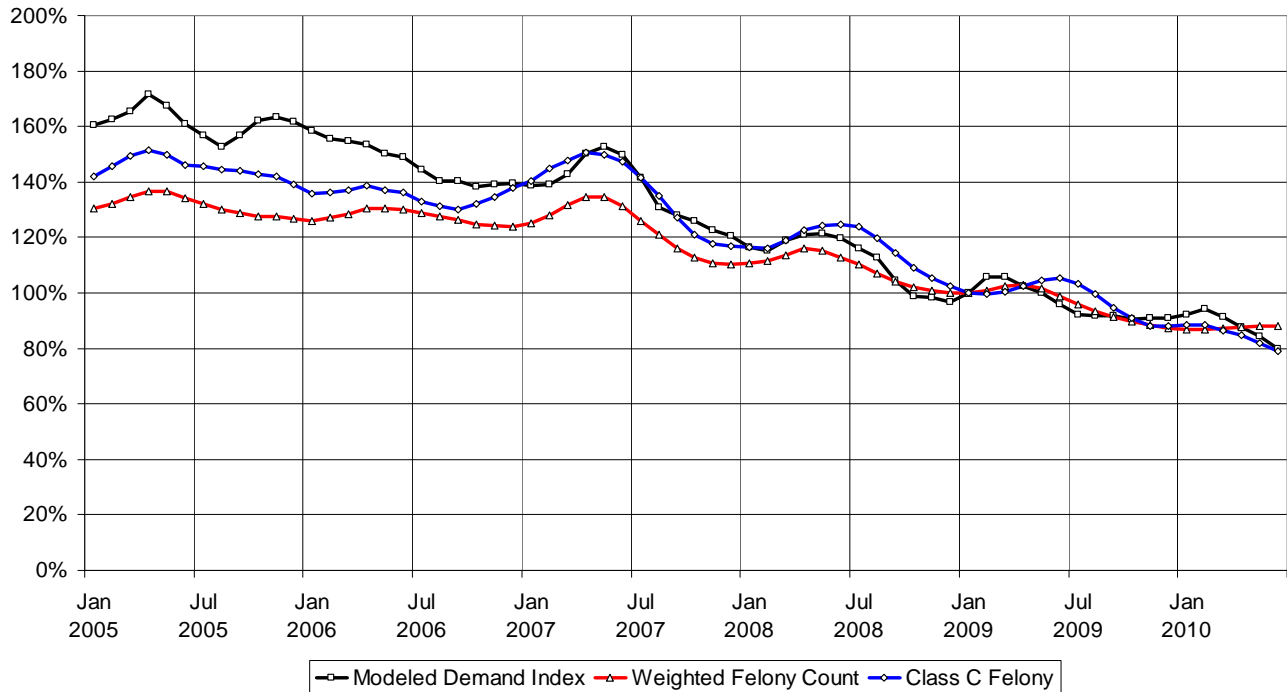
The discretionary demand index is a measure of demand based on statistical modeling. The model uses known characteristics for youths who both entered DCC and who did not enter. The model then provides a weighting of characteristics from referral data which are specifically associated with DCC entry (as opposed to any other outcome of the referral such as no action, probation, or entry to the DOC population).

Other measures can be based on monthly counts of referrals, and reflect similar trends. Examples of other statistical measures include the count of felony referrals, the number of prior offenses associated with the juveniles who are referred, or the total of the offense severities from all referrals. The chart below displays several measures: the discretionary demand index, a weighted count of offenses where serious offenses count higher, and the simple number of class C felonies. These are shown simply as examples, and are not necessarily suggested to be the most appropriate to assess demand for DCC beds;



however, the trends shown are typical of other measures. The graph shows each measure scaled relative to its level in early 2009 since the committee last referenced demand at 550 beds at that time.

*Trends in Juvenile Criminality – Example Measures for Discretionary Demand (Jan 2009=100%):*



# Population Size and Forecast Tracking

## Population Size

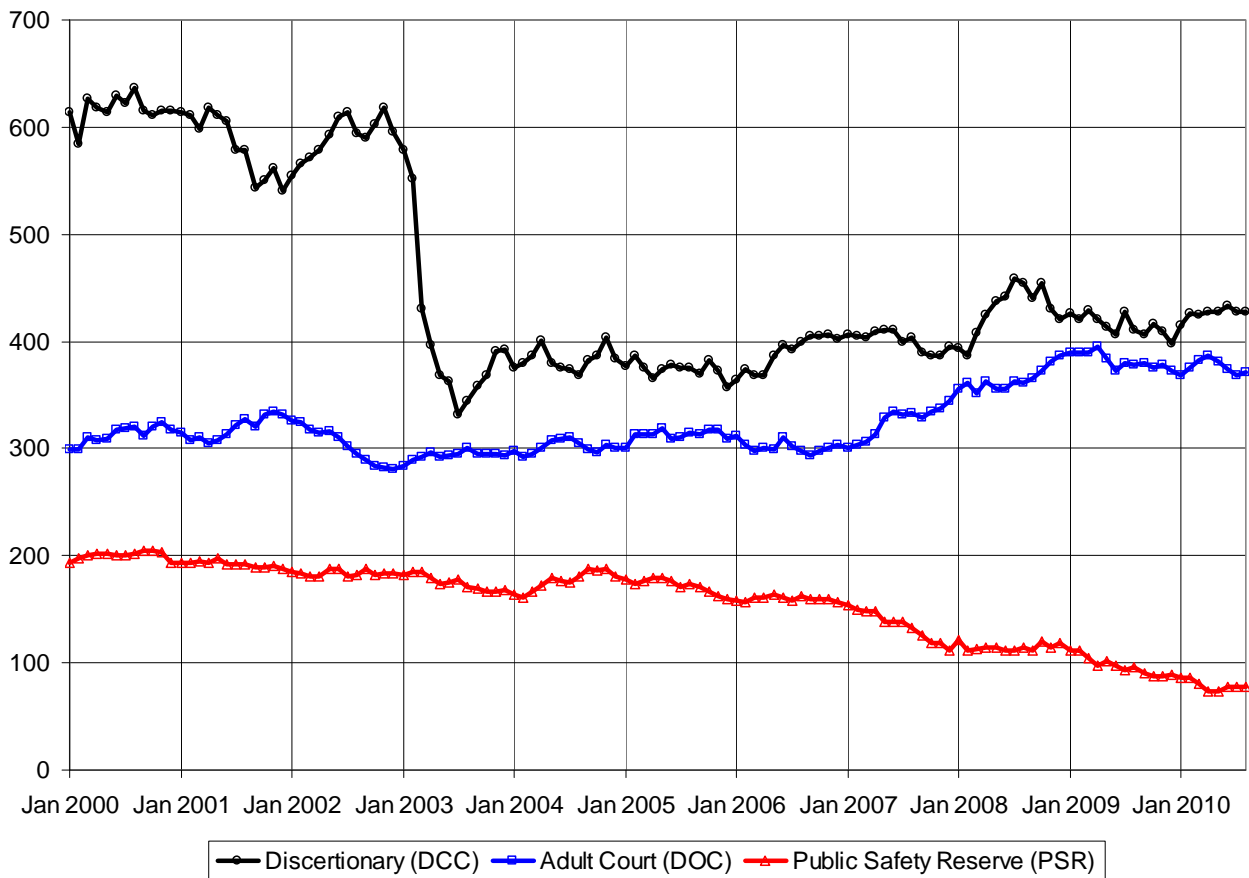
The PSR population stayed relatively constant at about 200 from 1996 to 2002. From 2002 on it has decreased and by April 2009 it dropped below 100 and has continued to decline to the current level near 80. The general decline in the population is attributable simply to fewer entries over time, reflective of fewer Measure 11 crimes being committed by young teens.

The DOC population increased rapidly from 1996 through 1999 to roughly 300. The rapid increase was largely due to Measure 11. It remained near 300 through 2006, and then gradually increased through 2008 to exceed 390 in April 2009. Since then it has dropped slightly to its current level near 370.

Over the past several years, increases seen in the DOC population have been largely offset by the decreases in the PSR population.

The DCC population size is primarily driven by budgeted capacity. Budget levels set the number of discretionary beds available, and whatever is available is generally used. The marked drop in early 2003 displays the impact of budget cuts which significantly reduced the number of DCC beds.

*Monthly Population Size: DCC, PSR, and DOC*



## Prior Forecast Tracking

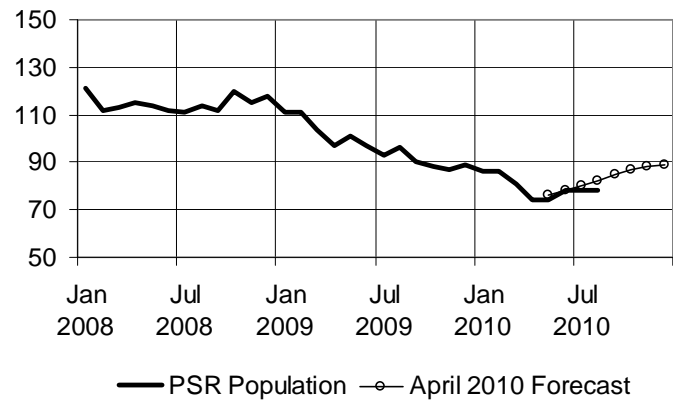
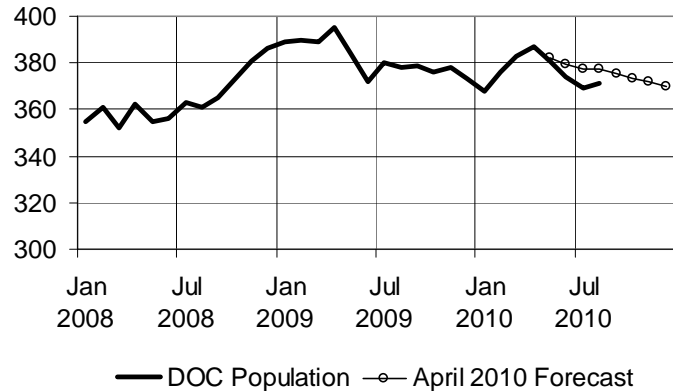
The previous forecast, released April 2010, tracked very close to actual population levels over the past several months since new data on the actual populations has been available.

The DOC population tracked closely with forecast. The forecast overestimated the population slightly with a maximum error of 9 beds. The forecast variance does not suggest a need to change the forecast.

The PSR population was also lower than forecast with a maximum error of 4 beds. The forecast variance does not suggest a need to change the forecast.

For the DCC group, the forecast predicts demand for beds as opposed to actual beds occupied. Since April 2010, the discretionary demand index and other statistical indicators of demand have dropped slightly, while the forecast predicted no change in demand. However, the slight change in the statistical indicators is not believed to indicate an actual reduction in demand (the short time period since April is not sufficient to establish such changes, and is subject to seasonal variation). Because there is not a strong statistical indication of a change in demand since April, and because Committee input does not suggest a significant change, demand is determined to be at the same level (500 beds) as previously expected.

April 2010 Forecast Tracking



## **Forecast Methodology**

### **General Discussion**

The DOC and PSR population forecasts are for the number of youth who will require OYA close custody bed space. The DOC population is comprised primarily of Measure 11 offenders. The PSR population is comprised of youth who commit similar crimes but are too young to be prosecuted under Measure 11 (under age 16). The forecast for those populations is a direct count. Together these populations comprise the non-discretionary population.

The DCC forecast is conceptually different since the population size is based on budgeting. The available beds for DCC equals the total number of budgeted beds less the number taken by the DOC and PSR populations. The DCC beds are generally used to capacity. The number of beds available is viewed as insufficient to meet the demand for such beds. Since a forecast of the number of beds occupied would be a direct function of total budgeted capacity and the DOC and PSR forecast levels, it would not serve to quantify the demand for DCC bed space. To address this, the DCC forecast quantifies the demand for beds as opposed to directly forecasting the number of beds which will be occupied.

The demand for DCC beds can be viewed in the context of the overall pressure on the juvenile corrections system. More criminal youths and higher criminal severity leads to higher the pressure on the system. Some of that pressure is absorbed by county correctional programs, by social programs or OYA community placements for less criminal youths, and by the DOC and PSR populations for the most severe criminality. The DCC population is comprised of the remaining youths who warrant close custody supervision (subject to bed availability).

### **DOC and PSR Populations**

The DOC and PSR forecasts derive from forecasted entries and exits to the populations and the current starting base (number currently in the population). Entries are based on historical trends, the number of juveniles in Oregon, and trends in juvenile criminality which drive entries. Exits are driven by the characteristics of the current population using a survival analysis approach to estimate the outflow of the current base.

The model tracks how many beds are occupied broken out by estimated length of stay. The monthly number of beds is the previous month's number, minus youths who had less than 1 month length of stay, plus the number of projected entries.

The entry forecast relies on youth criminality trends and assumptions about how those trends might change in the future. It also relies on the stability of crime definitions, sentencing and plea practices, and policy decisions concerning how long OYA supervises a youth before transfer to DOC.

In the near term, criminality trends are expected to remain stable. The significant declines in juvenile criminality from the late 1990's have leveled off and are not expected to continue in the long term.

### **DCC Population**

Demand for DCC beds is subjective. There is no objective way to determine whether a youth, in general, constitutes demand, and no absolute measure to look back on to say that demand was a certain number at some time in the past. On the other hand, the youths who do actually go to DCC are assumed to constitute demand simply by way of being there – they went because they were judged to constitute demand, and space was available. Difficulties arise in determining how many youth should have gone to DCC, but did not due to space limitations. Another way to view this is to ask "how many youth would go to DCC if there were no space limitations?"

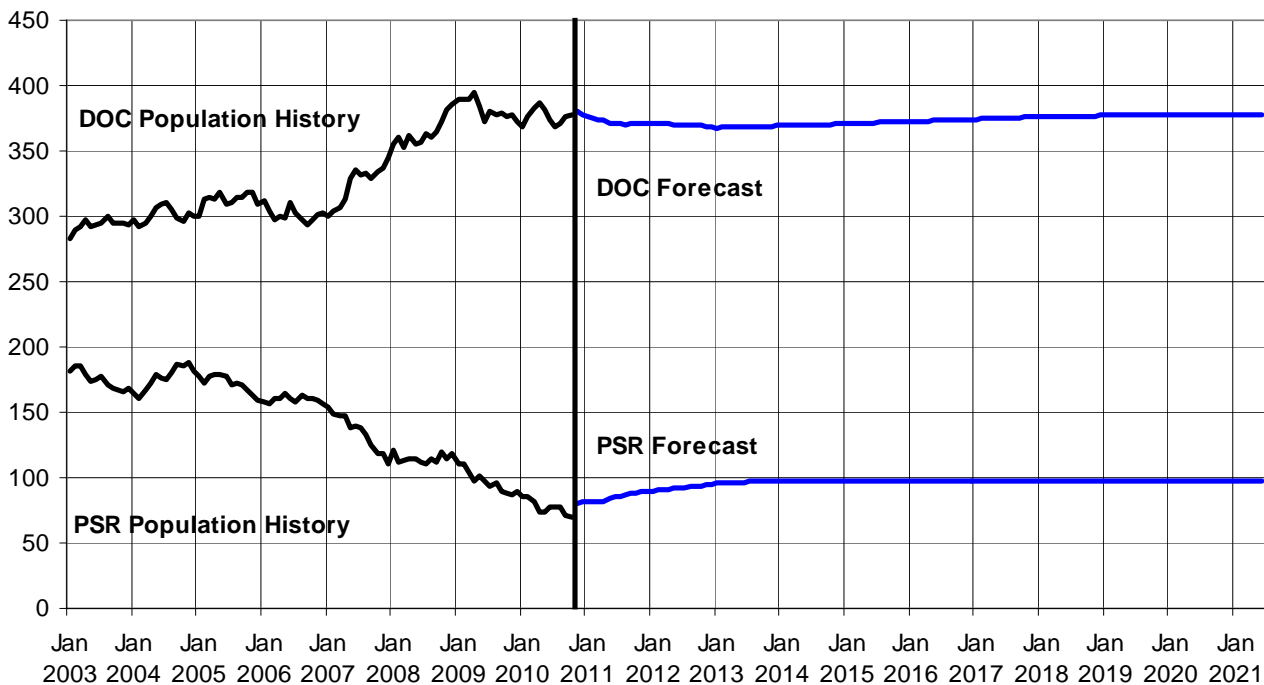
Since demand is not a directly measurable quantity, several perspectives are considered in determining forecast values. Statistical measures related to demand which are considered in the forecast include the discretionary demand index, the number of felony referrals, and the number of prior felonies for youth who are referred. Changes over time in these parameters (calculated monthly) provide an indication of changing demand from the perspective of referral characteristics. The advisory committee considers the movement of the statistical measures along with their observations concerning juvenile offenders and availability of treatment resources and both the county and state level. These perspectives are discussed and general agreement is reached for a balanced approach to the forecast level and future trend.

## Forecast

The total demand for Oregon Youth Authority close custody beds is approximately 960 through 2010, dipping slightly to 955 in mid 2011, then increasing gradually to exceed 970 in five years. This represents no change from the prior forecast except a slight adjustment to match the most recent actual population numbers.

The DOC and PSR population forecasts are essentially unchanged from prior forecast, except for an adjustment to match population actuals; the long term trends follow the same general assumptions as the prior forecast. Those assumptions are that the DOC population will grow at a very gradual rate and the PSR population will rebound from its historic low level.

*DOC and PSR Population Forecast – History and Forecast:*



The DCC bed demand forecast is 500 beds each month through the forecast horizon.

Measures related to demand from referral data, such as number of felonies and the discretionary demand index, have trended down over the past several years. This indicates a reduction in the amount and severity of juvenile crime, and thus a reduction in demand for discretionary beds. On the other hand, committee advice suggests that other factors related to the risk profiles of juveniles under community supervision indicate increasing demand. The forecast balances these perspectives in a flat projection of demand over the ten year forecast horizon.

## Forecast Risks

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:**

*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.

*Budgetary restrictions.* Over the next several years budget levels for law enforcement, criminal justice courts, education, and juvenile programs will decrease from past service levels. 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.

*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 could increase dramatically.

*Data Sources.* The discretionary demand is measured based on recorded referrals to county juvenile departments. If the information recorded for juvenile referrals changes over time, criminal characteristics would not be scored for criminality in the same manner as during the reference period. This could potentially misstate discretionary demand.

*Perception of Demand.* Demand for discretionary beds is a subjective measure. In consultation with the advisory committee, this forecast uses a definition based on a bed capacity of 550 in early 2009 being sufficient to satisfy demand. As views change regarding the level of criminality which constitutes demand, the reference level could change leading to significant changes in demand going forward.

*Applicability of Discretionary Demand Index.* The demand index may not fully or appropriately characterize demand for discretionary beds. If so, the determination of demand based on movement in the index could lead to misstated discretionary demand.

*Interaction with County Resources.* 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.

## Forecast Values

Date	Department of Corrections Population	Public Safety Reserve Population	Demand for Discretionary Beds
11/1/2010	380	80	500
12/1/2010	378	81	500
1/1/2011	376	82	500
2/1/2011	375	81	500
3/1/2011	373	82	500
4/1/2011	373	82	500
5/1/2011	371	85	500
6/1/2011	371	85	500
7/1/2011	371	86	500
8/1/2011	370	87	500
9/1/2011	371	88	500
10/1/2011	371	88	500
11/1/2011	371	89	500
12/1/2011	371	90	500
1/1/2012	371	90	500
2/1/2012	371	91	500
3/1/2012	371	91	500
4/1/2012	371	91	500
5/1/2012	370	92	500
6/1/2012	370	92	500
7/1/2012	370	93	500
8/1/2012	369	94	500
9/1/2012	369	94	500
10/1/2012	369	94	500
11/1/2012	368	95	500
12/1/2012	369	95	500

Table is continued on the next page.

## Forecast Values

Date	Department of Corrections Population	Public Safety Reserve Population	Demand for Discretionary Beds
1/1/2013	368	96	500
2/1/2013	368	96	500
3/1/2013	368	96	500
4/1/2013	368	96	500
5/1/2013	369	96	500
6/1/2013	369	96	500
7/1/2013	369	97	500
8/1/2013	369	97	500
9/1/2013	369	97	500
10/1/2013	369	97	500
11/1/2013	369	97	500
12/1/2013	369	97	500
1/1/2014	369	97	500
2/1/2014	369	97	500
3/1/2014	370	97	500
4/1/2014	370	97	500
5/1/2014	370	97	500
6/1/2014	370	97	500
7/1/2014	370	97	500
8/1/2014	370	97	500
9/1/2014	370	97	500
10/1/2014	370	97	500
11/1/2014	370	97	500
12/1/2014	371	97	500
1/1/2015	371	97	500
2/1/2015	371	97	500
3/1/2015	371	97	500
4/1/2015	371	97	500
5/1/2015	372	97	500
6/1/2015	372	97	500
7/1/2015	372	97	500
8/1/2015	372	97	500
9/1/2015	372	97	500
10/1/2015	372	97	500
11/1/2015	372	97	500
12/1/2015	372	97	500

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Forecast Values

Date	Department of Corrections Population	Public Safety Reserve Population	Demand for Discretionary Beds
1/1/2016	372	98	500
2/1/2016	373	98	500
3/1/2016	373	98	500
4/1/2016	373	98	500
5/1/2016	373	98	500
6/1/2016	373	98	500
7/1/2016	374	98	500
8/1/2016	374	98	500
9/1/2016	374	98	500
10/1/2016	374	98	500
11/1/2016	374	98	500
12/1/2016	374	98	500
1/1/2017	374	98	500
2/1/2017	374	98	500
3/1/2017	375	98	500
4/1/2017	375	98	500
5/1/2017	375	98	500
6/1/2017	375	98	500
7/1/2017	375	98	500
8/1/2017	376	98	500
9/1/2017	376	98	500
10/1/2017	376	98	500
11/1/2017	376	98	500
12/1/2017	376	98	500
1/1/2018	376	98	500
2/1/2018	376	98	500
3/1/2018	376	98	500
4/1/2018	376	98	500
5/1/2018	376	98	500
6/1/2018	376	98	500
7/1/2018	377	98	500
8/1/2018	377	98	500
9/1/2018	377	98	500
10/1/2018	377	98	500
11/1/2018	377	98	500
12/1/2018	377	98	500

Table is continued on the next page.

## Forecast Values

Date	Department of Corrections Population	Public Safety Reserve Population	Demand for Discretionary Beds
1/1/2019	377	98	500
2/1/2019	377	98	500
3/1/2019	377	98	500
4/1/2019	377	98	500
5/1/2019	378	98	500
6/1/2019	378	98	500
7/1/2019	378	98	500
8/1/2019	378	98	500
9/1/2019	378	98	500
10/1/2019	378	98	500
11/1/2019	378	98	500
12/1/2019	378	98	500
1/1/2020	378	98	500
2/1/2020	378	98	500
3/1/2020	378	98	500
4/1/2020	378	98	500
5/1/2020	378	98	500
6/1/2020	378	98	500
7/1/2020	378	98	500
8/1/2020	378	98	500
9/1/2020	378	98	500
10/1/2020	378	98	500
11/1/2020	378	98	500
12/1/2020	378	98	500
1/1/2021	378	98	500
2/1/2021	378	98	500
3/1/2021	378	98	500
4/1/2021	378	98	500
5/1/2021	378	98	500
6/1/2021	378	98	500

End of listing.