# The OYA Feeder System Project:
# Overview of Juvenile Justice Involvement and Adult Felony Convictions among Oregon Youth

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# Introduction

The Oregon Youth Authority's Feeder System project was established to address questions about the social service histories of adolescents and young adults who are involved in the criminal justice system. The primary questions include (1) How many justice-involved youth had prior contact with other state agencies? and (2) Can future criminal justice involvement be predicted from prior contacts with other state agencies? The hope is that this work can be used to support earlier identification and targeted prevention and intervention efforts for youth who are at risk of future criminal justice involvement.

The OYA Feeder System work began in 2013. Thanks to multi-agency collaboration and support, OYA was able to gather approximately 14 years of administrative records from Self Sufficiency (SS), Medical Assistance (DMAP), Child Protective Services (CPS), Foster Care (FC), Mental Health (MH), Alcohol and Drug Services (AD), county juvenile departments (JD), the Oregon Youth Authority (OYA), the Oregon Department of Corrections (DOC), and the Oregon Department of Education (ODE).[1] OYA researchers have been using this multi-agency dataset to examine pathways between state services and criminal justice involvement. Prior reports include a series of reports that specifically examined risk for OYA involvement (Braun 2014, 2015a, 2015b, 2015c, 2015d), and series of reports that examined risk for first-time adult felony convictions (Racer 2015a, 2015b, 2019a, 2019b, 2019c).

The current report provides an overview and summary of (1) the prevalence of contact with various state agency services, including juvenile justice, among a cohort of youth enrolled in Oregon public schools, (2) the prevalence of prior contact with state agency services among (a) youth with juvenile justice involvement and (b) young adults convicted of felonies, and (3) the feasibility of using prior service contacts to predict juvenile justice involvement or adult felony convictions.

This report is organized into two major sections that focus on different time windows within the Feeder System dataset. **Section 1** focuses on a cohort of youth for whom Feeder System records were available from approximately age 6 to age 20. Section 1 describes the prevalence of contacts with state services and juvenile justice among youth enrolled in Oregon public schools and examines whether prior service histories can be used to predict future juvenile justice involvement. **Section 2** focuses on a cohort of youth for whom Feeder System records were available from approximately age 13 to age 28. Section 2 describes the prevalence of future young-adult (age 18-25) felony convictions among adolescents served by each agency and examines whether adolescent service contacts can be used to predict felony convictions in early adulthood.

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[1] State agencies are often responsible for more than one type of social service. In this report, "agency" is used to designate a type of social service.

# Summary of Major Findings

## Service Contacts and Juvenile Justice Involvement (Cohort 1)

### How Common were Contacts with each State Agency before Age 18?

Approximately **52%** of Oregon schoolchildren had contact with one or more of the participating state service agencies (excluding juvenile justice) before the age of 18. Contacts with Self-Sufficiency and/or Medical Assistance were most common, followed by Mental Health, Child Protective Services, and Foster Care.

### What Percentage of Youth had Juvenile Justice Involvement?

Approximately **19%** of Oregon schoolchildren had one or more referrals to a county juvenile department before the age of 18. Approximately 4% were placed on formal county probation, and approximately 1% were committed to the Oregon Youth Authority before the age of 18.

### How Common were Prior Service Contacts among Youth with Juvenile Justice Involvement?

Of youth with any juvenile justice involvement before age 18, almost **75%** had at least one prior contact with the participating state services.

### How Common was Future Juvenile Justice Involvement among the Youth Served by Each Agency?

Approximately **30-40%** of the youth served by each agency had any future juvenile justice involvement. About 10% received formal county probation, and about 3% had a future OYA commitment.

### Can Service Contacts be used to Predict Future Juvenile Justice Involvement?

Statistical models using only demographic information and prior agency contacts were able to predict juvenile justice involvement with **70% accuracy** (area under the curve = .70), suggesting that the combination of demographic and agency contact information has potential for identifying youth who are at higher-than-average risk of future involvement with juvenile justice.

# Summary of Major Findings

## Service Contacts and Felony Conviction in Early Adulthood (Cohort 2)

### How Common were Adolescent Service Contacts among Adults Convicted of Felonies before Age 26?

Nearly **75%** of adults convicted of a felony before age 26 had received services from one or more of the participating state agencies (including juvenile justice) as an adolescent (ages 13-17). Juvenile justice involvement was common, with 57% having any history of juvenile department referrals, 23% having a history of formal county probation, and 8% having a history of Oregon Youth Authority commitment.

### How Common were Future Adult Felony Convictions among the Adolescents Served by Each Agency?

The percentage of youth served by each agency who went on to receive a felony conviction in young adulthood varied from **13% to 54%**, depending upon the service. The highest rate of future felony convictions was found among youth with an OYA commitment history, followed by formal county probation, Alcohol and Drug Services, Foster Care, and any juvenile justice involvement.

### Can Adolescent Service Contacts be used to Predict Adult Felony Convictions?

Statistical models using only demographic information and agency contacts before the age of 18 were able to predict felony convictions in young adulthood with **80% accuracy** (area under the curve = .80). This suggests that the combination of demographic information and agency contacts has potential for identifying youth who are at higher-than-average risk of receiving an adult felony conviction in young adulthood.

# Methods and Results

## Data Sources

The analyses within this report draw upon the previously described Feeder System dataset (see Braun, 2014; Racer, 2015a). The original dataset included approximately 14 years (2000-2013) of individual-level administrative records from the following Oregon state service agencies: Self-Sufficiency (SS), Medical Assistance (DMAP), Mental Health (MH), Alcohol and Drug Services (AD), Child Protective Services (CPS), Foster Care (FC), Oregon Youth Authority (OYA), and the Department of Corrections (DOC). County juvenile department (JD) and Oregon Department of Education (ODE) records subsequently became available and were added to the dataset prior to the present report. The available data is described in Table 1. State agencies are often responsible for more than one type of social service. In this report, "agency" is used to designate a social service. Note that there is some variation in the dates of coverage across agencies; while most agencies provided all administrative records from 2000 through 2013, Child Welfare (CPS and FC) provided records from 1998 through 2010 and Education provided records for the academic years 2004/5 through 2012/13.

Table 1. Agencies/Services represented within the Feeder System dataset.

| Source | Agency/Service Type | Acronym | Ages of Eligibility | Record Dates | Number of Unique Individuals |
|---|---|---|---|---|---|
| DHS | Self-Sufficiency | SS | 0-100+ | 2000-2013 | 2,046,969 |
| OHA | Medical Assistance | DMAP | 0-100+ | 2000-2013 | 1,789,174 |
| OHA | Mental Health | MH | 0-100+ | 2000-2013 | 430,990 |
| OHA | Alcohol and Drug Treatment | AD | 0-100+ | 2000-2013 | 394,377 |
| DHS | Substantiated Child Protective Services Reports | CPS | 0-17 | 1998-2010 | 109,172 |
| DHS | Foster Care Placements | FC | 0-17 | 1998-2010 | 53,128 |
| JJIS | County Juvenile Department Referrals and Dispositions | JD | 0-18 | 2000-2013 | 184,363 |
| JJIS | Oregon Youth Authority Referrals and Dispositions | OYA | 12-19 | 2000-2013 | 10,248 |
| DOC | Adult Felony Convictions | DOC | 15-100+ | 2000-2013 | 167,108 |
| ODE | Education Grades K-12 | ODE | 0-19+ | 2004-2013 | 1,127,452 |

DHS = Oregon Department of Human Services; OHA = Oregon Health Authority; JJIS = Oregon Juvenile Justice Information System; DOC = Oregon Department of Corrections; ODE = Oregon Department of Education

# Section 1 (Ages 6-20): Service Contacts and Juvenile Justice Involvement

## Section 1 Sample (Cohort 1)

**Purpose**

The Feeder System dataset consists of administrative records from multiple state agencies for approximately the years 2000-2013. At the individual level, this dataset provides a full history of contacts with the participating services over a 14-year time period. Cohort 1 was selected to answer questions about childhood and adolescent services, and the relationship between those services and juvenile justice involvement.

**Sample**

The Feeder System dataset was built by gathering and combining administrative records from each of the participating agencies. Only individuals who had contact with one or more of these agencies were included in the dataset. As such, the dataset was not designed to provide a general-population sample. However, the addition of Oregon Department of Education records made it possible to approximate a general-population sample for school-age youth, since most Oregon youth are enrolled in public schools.

To approximate a general-population sample and allow tracking of juvenile justice outcomes through age 18, the Section 1 analyses include youth born in the years 1993-1994 who had at least one year of education records available ("Cohort 1"). Each youth in the cohort was potentially tracked within the Feeder System dataset from age 6-7 through age 19-20, although the exact time frame varies somewhat by agency (see Figure 1). There were 113,450 youth in the selected cohort.

As indicated in Figure 1, Child Protective Services and Foster Care records were available from ages 4/5 through age 16/17, Education records were available from ages 10/11 through age 19/20, and all other records were available from ages 6/7 through 19/20.

Figure 1. Data coverage for Cohort 1.
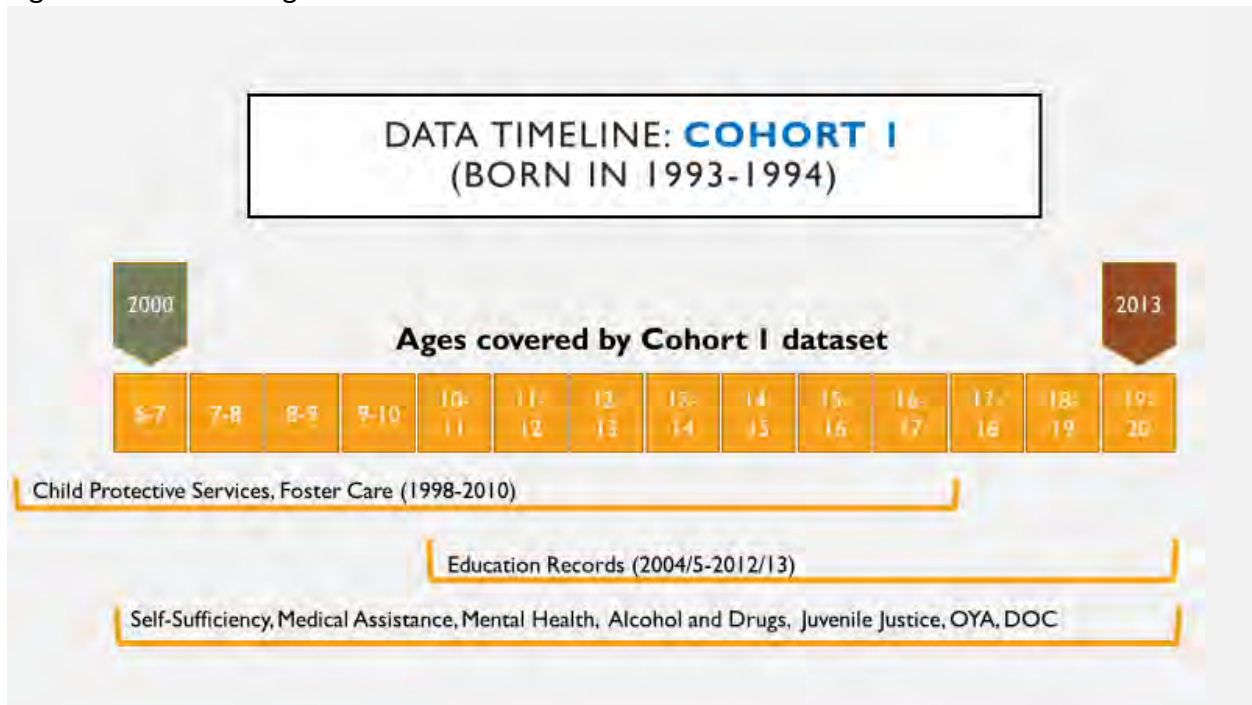
# Section 1A

**Purpose**

Section 1A addresses the following questions:

- How common were contacts with each state agency before age 18?
- What percentage of youth had juvenile justice involvement?

**Methods**

**Sample.** The Section 1A sample consisted of the 113,450 youth described above. These youth were born in the years 1993-1994 and had at least one education record available. Each youth in the sample was potentially tracked within the Feeder System dataset from age 6-7 through age 19-20.

**Agency Contacts.** Administrative data within the Feeder System dataset was used to identify contacts with each agency. Agency contact was coded as "yes" if a youth's first contact with an agency occurred prior to age 18. Prior agency contact was coded as "no" if a youth either had no known contacts with an agency or if the first known contact occurred at age 18 or older.

**Juvenile Justice Involvement.** Juvenile justice (JJ) involvement was defined as one or more juvenile dispositions of any intensity (see Appendix). Juvenile disposition records were also used to create indicators of whether a youth ever received formal county probation, an OYA commitment, or a juvenile DOC commitment.

**Results**

## How Common were Contacts with each State Agency before Age 18?

**Prevalence of Service Contacts Ages 6-17.** Of the 113,450 youth with education records available, approximately **52%** had contact with one or more other state agencies between the ages of 6 and 17. Self-sufficiency and Medical Assistance contacts were the most common (43-44%), but 14% of youth had contact with Mental Health Services, 8% had contact with Child Protective Services, and 3% had a Foster Care placement (see Figure 2). Rates of agency contacts were similar for males and females (see Figure 2 and Table 2), but varied by race/ethnicity (see Figure 3 and Table 3).

Figure 2. Percentage of Oregon schoolchildren who accessed each agency at least once between the ages of 6 and 17, overall and by gender.
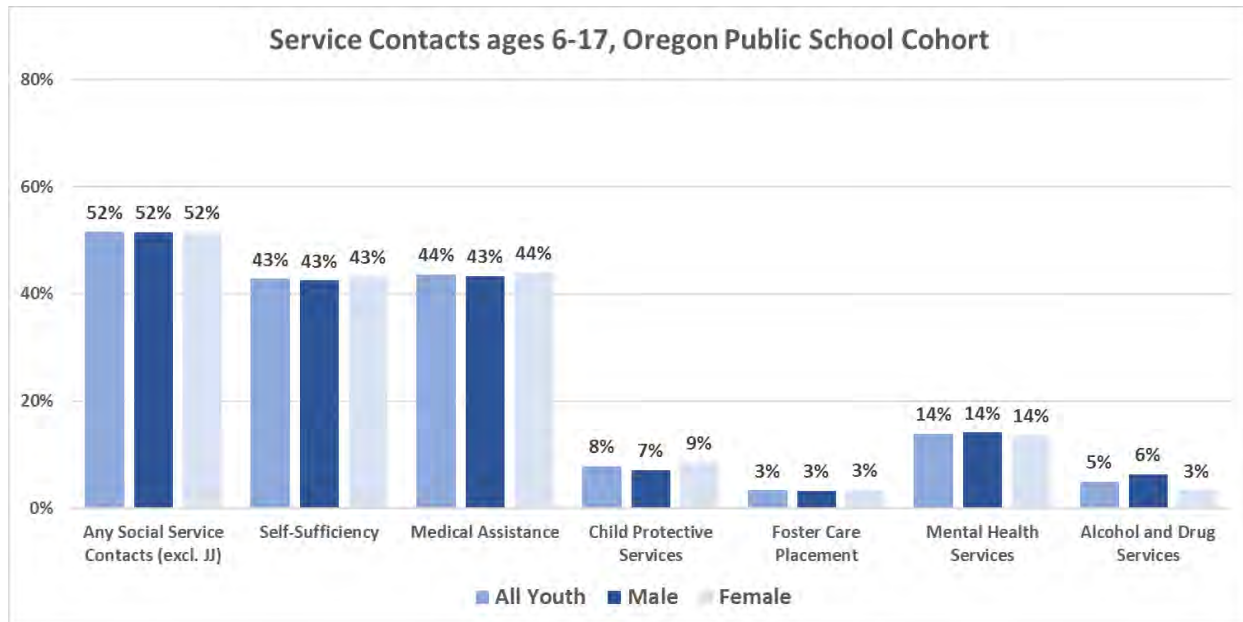


Table 2. Prevalence of contact with state agencies, overall and by gender.

| | All Youth | Male | Female |
|---|---|---|---|
| **YOB 1993-1994 (19-20 by end of 2013)** | N=113,450 | N=58,338 | N=55,112 |
| **Service Contacts Ages 6-17** | | | |
| Any Contacts | 51.6% | 51.1% | 51.6% |
| Self-Sufficiency | 42.8% | 42.5% | 43.2% |
| Medical Assistance | 43.6% | 43.4% | 43.9% |
| Child Protective Services | 7.8% | 7.1% | 8.5% |
| Foster Care Placement | 3.3% | 3.2% | 3.4% |
| Mental Health Services | 13.9% | 14.1% | 13.6% |
| Alcohol and Drug Services | 4.9% | 6.3% | 3.3% |

Figure 3. Percentage of Oregon schoolchildren who accessed each agency at least once between the ages of 6 and 17, overall and by race/ethnicity
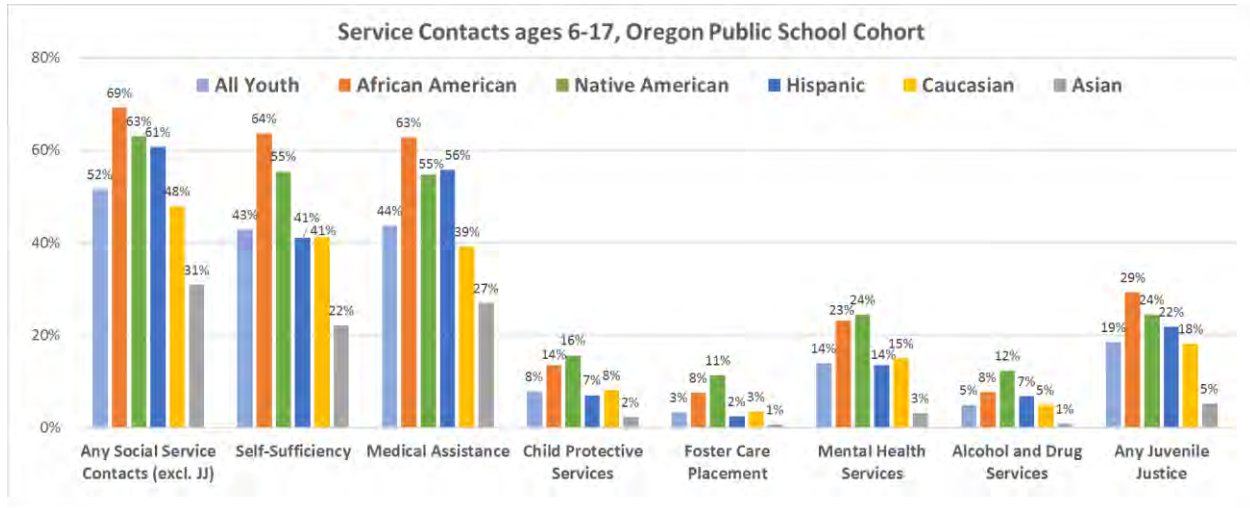


Table 3. Prevalence of agency contacts by race/ethnicity[2]

| YOB 1993-1994 | African American N=3,438 | Asian N=5,069 | Caucasian N=78,460 | Hispanic N=14,773 | Native American N=1,793 |
|---|---|---|---|---|---|
| **Service Contacts Ages 6-17** | | | | | |
| Any Contacts | 69.2% | 30.9% | 47.9% | 60.7% | 63.1% |
| Self-Sufficiency | 63.6% | 22.1% | 41.2% | 41.0% | 55.4% |
| Medical Assistance | 62.7% | 26.9% | 39.1% | 55.8% | 54.8% |
| Child Protective Services | 13.5% | 2.2% | 8.1% | 7.0% | 15.6% |
| Foster Care Placement | 7.5% | 0.7% | 3.4% | 2.4% | 11.3% |
| Mental Health Services | 23.1% | 3.1% | 14.9% | 13.5% | 24.4% |
| Alcohol and Drug Services | 7.6% | 0.8% | 4.9% | 6.8% | 12.3% |

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[2] Throughout this report, youth whose race/ethnicity was recorded as "unknown" or "other" are not included in the race/ethnicity breakouts.  These youth are included in the overall measures and the breakouts by gender.

## What Percentage of Youth had Juvenile Justice Involvement?

**Prevalence of Juvenile Justice Involvement.** Approximately **19%** of the 113,450 youth in the cohort received one or more referrals to a county juvenile department before the age of 18. Approximately 4% had one or more formal probation dispositions, 1% were committed to the Oregon Youth Authority, and < 1% received a juvenile DOC conviction. Rates of juvenile justice involvement were higher for males than females (see Table 4). Youth identified as African American, Hispanic, or Native American had higher rates of juvenile justice involvement than youth identified as Caucasian. Youth identified as Asian had the lowest rates of juvenile justice involvement (see Table 5 and Figure 4).

Table 4. Rates of Juvenile Justice involvement, overall and by gender.

| YOB 1993-1994 | | **All Youth** **N=113,450** | Males N=58,338 | Females N=55,112 |
|---|---|---|---|---|
| **Juvenile Justice Dispositions:** | | | | |
| | Any | **18.6%** | 21.8% | 15.1% |
| | Formal County Probation | **3.9%** | 5.7% | 2.0% |
| | Any OYA | **0.9%** | 1.5% | 0.4% |
| | Any Juvenile DOC | **0.3%** | 0.6% | 0.1% |

Table 5. Rates of Juvenile Justice involvement by race/ethnicity.

| YOB 1993-1994 | African American N=3,438 | Asian N=5,069 | Caucasian N=78,460 | Hispanic N=14,773 | Native American N=1,793 |
|---|---|---|---|---|---|
| **Juvenile Justice Dispositions:** | | | | | |
| Any | 29.3% | 5.2% | 18.2% | 21.8% | 24.4% |
| Formal County Probation | 7.2% | 0.8% | 3.8% | 5.3% | 8.6% |
| Any OYA | 2.5% | 0.2% | 0.8% | 1.5% | 1.6% |
| Any Juvenile DOC | 1.8% | 0.1% | 0.2% | 0.6% | 0.6% |

Figure 4. Percentage of Oregon schoolchildren with Juvenile Justice involvement before age 18, overall and by race/ethnicity.
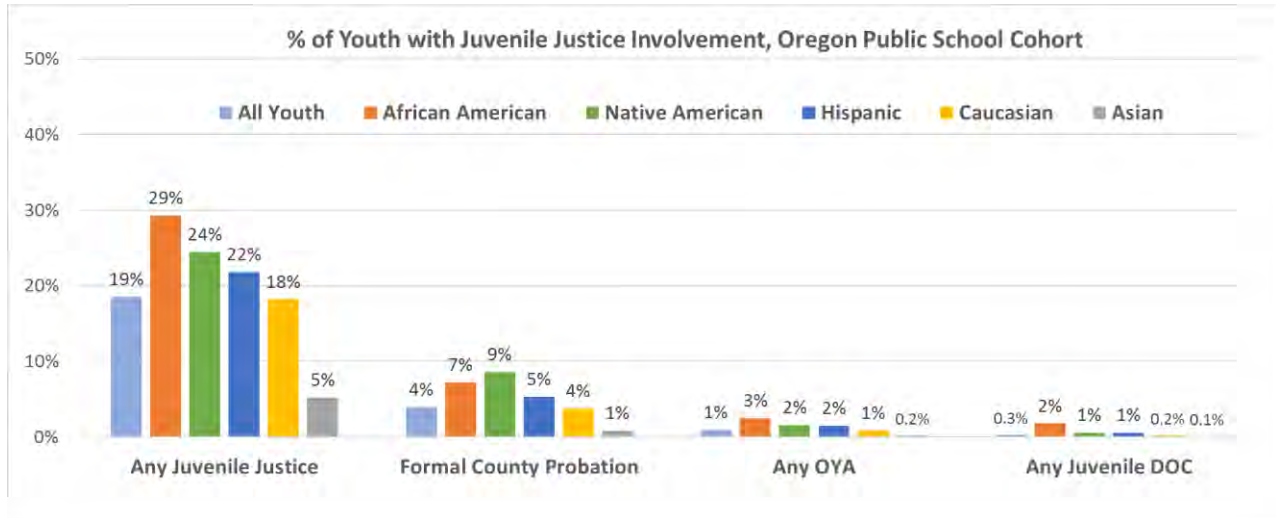


**Summary**

More than half of the Oregon schoolchildren in Cohort 1 had contact with one or more state services between the ages of 6 and 17. Rates of prior contact were similar for males and females but differed by race/ethnicity. African American, Native American, and Hispanic youth were more likely than Caucasian youth to have at least one agency contact. Asian youth were less likely than Caucasian youth to have at least one agency contact. Nearly 20% of the Oregon schoolchildren in Cohort 1 were referred to a county juvenile department at least once before age 18. Juvenile justice involvement was more common among males than females and was more common among youth of color than Caucasian youth. Approximately 4% of youth received formal county probation before age 18, and about 1% were referred to the Oregon Youth Authority.

## Section 1B

**Purpose**

Section 1B addresses the following question:

- How common were prior service contacts among youth with juvenile justice involvement?

**Methods**

**Sample.** The sample consisted of the 18.6% of youth from the original cohort described above (Methods, Section 1A) who had one or more juvenile dispositions (n=21,024). Each youth in the sample was potentially tracked within the Feeder System dataset from age 6-7 through age 19-20.

**Agency Contacts.** Administrative data within the Feeder System dataset was used to identify each youth's earliest record of contact for each agency. Prior agency contact was coded as "yes" if a youth's first contact with an agency occurred at least one day prior to their first known juvenile department contact. Prior agency contact was coded as "no" if a youth either had no known contacts with an agency or if the first known contact occurred after their first known juvenile department contact.

**Results**

### How Common were Prior Service Contacts among Youth with Juvenile Justice Involvement?

**Prevalence of Other Agency Contacts Prior to Juvenile Justice Involvement.** Of the 21,024 youth with juvenile justice involvement, nearly 75% had contact with one or more other state agencies prior to their earliest involvement with juvenile justice (see Table 6). Self-sufficiency and Medical Assistance contacts were the most common (63-64%), but 24% had prior contacts with Mental Health Services, 16% had prior contact with Child Protective Services, and 7% had a prior Foster Care placement. Rates of prior contact were similar for males and females (see Figure 5 and Table 6), but varied by race/ethnicity (see Figure 6 and Table 7).

Table 6. Prevalence of prior agency contacts among youth with Juvenile Justice involvement.

| YOB 1993-1994 (19-20 by end of 2013) | All JJ Youth N=21,024 | Males N=12,717 | Females N=8,307 |
|---|---|---|---|
| **Pre-JJ Service Contacts (>= 1 day before first JJ)** | | | |
| Any Contacts | **73.8%** | 73.6% | 74.1% |
| Self-Sufficiency | **62.7%** | 62.1% | 63.7% |
| Medical Assistance | **64.1%** | 63.9% | 64.5% |
| Child Protective Services | **15.8%** | 14.1% | 18.4% |
| Foster Care Placement | **6.5%** | 6.0% | 7.3% |
| Mental Health Services | **23.5%** | 23.4% | 23.7% |
| Alcohol and Drug Services | **3.2%** | 3.3% | 3.1% |

Figure 5. Percent of juvenile justice involved youth with prior service contact (ages 6 and up), by gender.
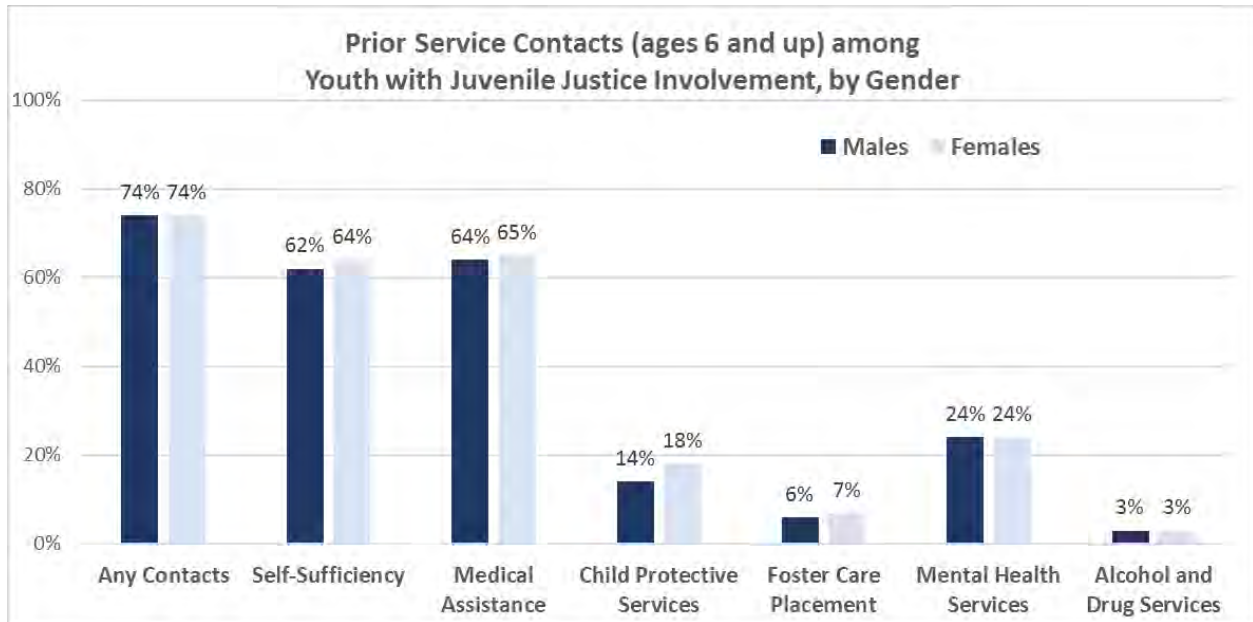
Figure 6. Percent of juvenile justice involved youth with prior service contact (ages 6 and up), overall and by race/ethnicity.
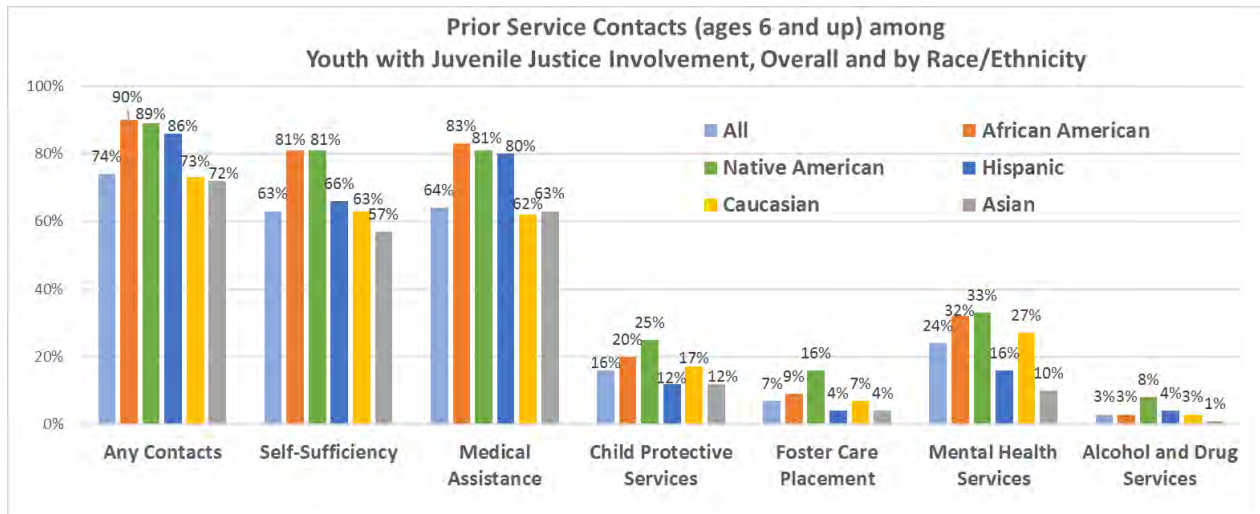


Table 7. Rates of prior agency contacts by race/ethnicity.

| YOB 1993-1994 | African American N=1,009 | Asian N=266 | Caucasian N=14,270 | Hispanic N=3,223 | Native American N=438 |
|---|---|---|---|---|---|
| **Pre-JJ Service Contacts** | | | | | |
| Any Contacts | 89.8% | 72.2% | 72.9% | 85.5% | 88.6% |
| Self-Sufficiency | 81.2% | 57.1% | 63.2% | 65.7% | 81.3% |
| Medical Assistance | 82.7% | 62.8% | 61.9% | 79.7% | 81.1% |
| Child Protective Services | 20.2% | 12.4% | 17.0% | 12.4% | 24.7% |
| Foster Care Placement | 9.4% | 3.8% | 7.0% | 4.1% | 16.2% |
| Mental Health Services | 31.7% | 10.2% | 26.6% | 16.4% | 32.6% |
| Alcohol and Drug Services | 2.7% | 0.8% | 3.3% | 3.7% | 8.4% |

**Summary**

Nearly 75% of youth with juvenile justice involvement had prior contact with one or more state agencies. Rates were similar across males and females but varied by race/ethnicity. African American, Native American, and Hispanic youth were more likely than Caucasian and Asian youth to have at least one agency contact prior to juvenile justice involvement. Asian and Caucasian youth had similar rates of any prior contact, although their rates differed somewhat for individual agencies.

# Section 1C

**Purpose**

Section 1C addresses the following questions:

- How common was future juvenile justice involvement among the youth served by each agency?

**Methods**

**Sample.** The full sample of 113,450 youth who were born in the years 1993-1994 and had at least one education record available (see Methods, Section 1A). Each youth in the sample was potentially tracked within the Feeder System dataset from age 6-7 through age 19-20.

**Agency Populations.** The sample was subdivided into separate but overlapping subsets of youth who had contact with each agency. For example, the "mental health" subpopulation consisted of all youth who had contact with mental health either before age 18 (for youth with no juvenile justice involvement ever) or before the youth's earliest juvenile justice involvement. That is, only contacts that preceded juvenile justice involvement (if any) were used in creating the subsample. Because most youth had contact with more than one agency, the same youth can appear in multiple agency populations (i.e., they are not mutually exclusive).

**Agency Contacts.** Administrative data within the Feeder System dataset was used to identify contacts with each agency. Agency contact was coded as "yes" if a youth's first contact with an agency occurred prior to age 18 *and* prior to juvenile justice involvement (if any). Prior agency contact was coded as "no" if a youth either had no known contacts with an agency or if the first known contact occurred after age 18 or after juvenile justice involvement (if any).

**Juvenile Justice Involvement.** Juvenile justice (JJ) involvement was defined as one or more juvenile dispositions of any intensity. Juvenile disposition records were also used to create indicators of whether a youth ever received formal county probation, an OYA commitment, or a juvenile DOC commitment (see Appendix A).

**Results**

## How Common was Future Juvenile Justice Involvement among the Youth Served by Each Agency?

**Rates of Future JJ Involvement by Agency.** Approximately **30-40%** of the youth served by each agency had any future juvenile justice involvement (see Figure 7). About 10% of the youth served by each agency ever received formal county probation, and about 3% had a future OYA commitment. Rates of future juvenile justice involvement were similar across the populations of youth served by Child Protective Services, Foster Care, Mental Health, and Alcohol and Drug Services. Rates of future juvenile justice involvement were lower among the populations of

youth served by Self-Sufficiency and Medical Assistance, and lowest among youth who had no prior agency contacts. Table 8 shows rates of future juvenile justice involvement for each agency by gender and race/ethnicity. Rates of future juvenile justice involvement were highest for African American youth and lowest for Asian youth across all agencies except Alcohol and Drug Services. Rates of future juvenile justice involvement were similar for all youth receiving Alcohol and Drug Services, regardless of gender and race/ethnicity.

Figure 7. Percent with future juvenile justice involvement for youth served by each agency, by intensity of juvenile justice involvement.



Prevalence of Future Juvenile Justice Involvement for Youth Served by Each Agency, by Disposition Intensity

| Agency | % Any Juvenile Justice | % Formal County Probation | % OYA | % Juvenile DOC |
|---|---|---|---|---|
| Alcohol and Drug Services | 43% | 12% | 3% | 1% |
| Mental Health Services | 38% | 11% | 3% | 1% |
| Foster Care Placement | 45% | 13% | 4% | 1% |
| Child Protective Services | 41% | 11% | 3% | 0.9% |
| Medical Assistance | 28% | 7% | 2% | 0.6% |
| Self-Sufficiency | 28% | 7% | 2% | 0.5% |
| No Prior Agency Contacts | 10% | 1% | 0.3% | 0.1% |

Table 8. Rates of future juvenile justice involvement among the youth served by each agency.

| N=113,450 Agency Population | Total N | Total % Involved with JJ | Gender | | Race/Ethnicity | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | African American | Asian | Caucasian | Hispanic | Native American |
| No Agency Contacts | 56,706 | 10% | 11% | 8% | 9% | 2% | 9% | 8% | 7% |
| Self-Sufficiency | 46,990 | 28% | 33% | 23% | 38% | 14% | 29% | 36% | 37% |
| Medical Assistance | 47,926 | 28% | 33% | 23% | 40% | 12% | 30% | 32% | 37% |
| Child Protective Services | 8,176 | 41% | 47% | 35% | 50% | 32% | 41% | 43% | 41% |
| Foster Care Placement | 3,069 | 45% | 51% | 39% | 50% | *** | 46% | 44% | 40% |
| Mental Health Services | 13,160 | 38% | 45% | 30% | 50% | 21% | 38% | 34% | 41% |
| Alcohol and Drug Services | 1,580 | 43% | 44% | 42% | 43% | *** | 45% | 42% | 42% |

***Percentages are not reported for cells with < 50 youth

## Summary

Approximately 30-40% of the youth served by each agency had future juvenile justice involvement. In contrast, only about 10% of youth with no agency contacts had future juvenile justice involvement. Rates of future juvenile justice involvement were generally higher for males than females, and higher for African American youth compared to youth of other racial/ethnic backgrounds.

## Section 1D

**Purpose**

Section 1D uses statistical modeling to address the following question:

- Can service contacts be used to predict future juvenile justice involvement?

**Methods**

**Sample.** The 113,450 youth from the original sample described in Section 1 above. Each youth in the sample was potentially tracked within the Feeder System dataset from age 6-7 through age 19-20.

**Outcome measure.** Juvenile justice involvement was defined as one or more juvenile dispositions of any intensity.

**Analytic Approach.** Hierarchical logistic regression was conducted using the "enter" method, which retains all available predictors in the final model. The enter method was chosen due to the relatively small number of available predictors and the practical and theoretical value of quantifying the strength of each predictor. All available predictors were included in both the development and validation models. Contacts with SS and DMAP were highly correlated (most youth who have contact with one also have contact with the other; r = .74). Predictors that are highly correlated with each other can lead to model instability; however, all variance inflation factors were less than 2.30, indicating that both SS and DMAP could be included without compromising the stability of the models.

**Variable Coding.** Gender and race/ethnicity were included as demographic predictors of juvenile justice involvement. Male gender was coded as 1 and female was coded as 0. Race/ethnicity information was coded into separate and mutually-exclusive indicators of African American, Asian, Caucasian, Hispanic, and Native American (yes = 1, no = 0). For youth with juvenile justice involvement, prior contacts with other agencies were coded as 1 if the contact date for an agency preceded the earliest recorded juvenile justice involvement date by 1 or more days, and as 0 if there was either no record of contact with that agency or if the first contact occurred after age 18 or after the first involvement with juvenile justice. For youth with no juvenile justice involvement, prior contacts with other agencies were coded as 1 if the contact occurred prior to age 18 or 0 if there was either no record of contact or the first known contact occurred at age 18 or older.

**Evaluating predictors.** Odds ratios are used to quantify the relative contributions of individual predictors within the final models. For binary (e.g., yes/no) variables, odds ratios reflect the multiplication of risk associated with a "yes" versus "no" response. For example, an odds ratio of 2.0 indicates that the risk for individuals with a "yes" response on that predictor variable is two times higher than the risk for individuals with a "no" response on that variable. Odds ratios less than 1.0 indicate protective factors, with "yes" responses reducing risk compared to "no"

responses; for example, an odds ratio of 0.5 indicates that the that the risk for individuals with a "yes" response on that predictor is two times lower (1/0.5 = 2.0) than the risk for individuals with a "no" response on that predictor. For variables with more than two categories (e.g., age in whole years), the odds ratio reflects the multiplication of risk between each level of the category (e.g., each 1-year increase in age).

**Evaluating model accuracy.** The overall ability of the model to accurately predict juvenile justice involvement was evaluated using the area under the curve (AUC) statistic. The AUC indicates how often the model would produce a higher risk score for an individual who actually received an adult felony conviction versus an individual who did not receive an adult felony conviction. In other words, if pairs of individuals were randomly selected from the juvenile-justice and no-juvenile-justice groups, the AUC indicates how often the model produces a higher risk score for the person from the juvenile-justice group. AUC can range from 0.50 to 1.00, with 1.00 indicating a perfect fit (the model always assigns higher risk scores to those in the juvenile-justice group versus the no-juvenile-justice group) and 0.50 indicating that the model does not improve predictions beyond what would be achieved by chance ("coin-toss" predictions).

**Evaluating model stability.** Cases were divided randomly into a development sample (80% of cases) used to create the initial model and a validation sample (20% of cases) used to evaluate the stability of the model when applied to a new sample. Two validation approaches were used: first, the development model was applied to the validation sample to evaluate the stability of the AUC across samples; second, a new regression model was run on the validation sample using only those variables that were significant in the development model. The second method was used to evaluate the stability of the individual predictors (i.e., odds ratios and significance levels) across different samples.

Results

## Can Service Contacts be used to Predict Future Juvenile Justice Involvement?

Models using both demographic and prior agency contact information performed significantly better than chance at predicting future juvenile justice involvement (AUC = .70). Results for the development sample model are shown in Table 8. Inclusion of prior agency contacts improved the model substantially over demographics alone (the proportion of variance accounted for increased from 3% to 12%, and the AUC increased from .59 to .70). Overall model fit and the predictive strength of individual predictors was similar across both the development (Table 9) and validation (Table 10) models. In both models, Asian youth were less likely to have juvenile justice involvement and African American and Hispanic youth were more likely to have juvenile justice involvement. Effects for Caucasian and Native American race/ethnicity were weaker and less consistent. With the exception of Foster Care, all types of agency contacts were associated with a higher likelihood of future juvenile justice involvement. This suggests that youth

receiving Self Sufficiency, Medical Assistance, Child Protective Services, Mental Health Services, or Alcohol and Drug Services from the state of Oregon are at elevated risk for future juvenile justice involvement, and that a youth's risk increases if they are involved with multiple agencies. These results should not be interpreted as suggesting that agency contacts *cause* an increase in risk; the models do not assess causality and it is most likely that service contacts are serving as a proxy for risk factors (needs) that are themselves associated with risk for involvement in juvenile justice. Among the available predictors, contact with Alcohol and Drug Services was the strongest single risk factor for future juvenile justice involvement (odds ratio = 2.1-2.7) and Asian race/ethnicity was the strongest (and only) protective factor (odds ratio = 0.3-0.4).

Table 9. Development Sample, Hierarchical Logistic Regression.

| Hierarchical Logistic Regression (Outcome = Any Juvenile Justice Dispositions) Development Sample | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 80% Development Sample N=90,815 (18.5% JJ) | β | SE | Wald | Odds Ratio | p-value | Chi-Square | $R^2$ | ΔR2 | AUC |
| **Step 1: Demographics only** | | | | | .000 | 1659.66 | .029 | | .588 |
| Male | .51 | .02 | 775.19 | 1.66 | .000 | | | | |
| African American | .47 | .05 | 76.32 | 1.60 | .000 | | | | |
| Asian | -1.12 | .08 | 201.92 | .33 | .000 | | | | |
| Caucasian | .06 | .03 | 3.70 | 1.06 | .054 | | | | |
| Hispanic | .26 | .04 | 47.65 | 1.30 | .000 | | | | |
| Native American | .22 | .07 | 9.50 | 1.25 | .002 | | | | |
| **Step 2: Demographics plus Prior Contact with Other Agencies** | | | | | .000 | 7206.70 | .124 | | .698 |
| Prior Contact with: | | | | | | | | | |
| Self Sufficiency | .51 | .03 | 364.98 | 1.66 | .000 | | | | |
| Medical Assistance | .48 | .03 | 307.49 | 1.62 | .000 | | | | |
| Child Protective Services | .62 | .03 | 341.06 | 1.85 | .000 | | | | |
| Foster Care | .08 | .05 | 2.28 | 1.08 | .131 | | | | |
| Mental Health Services | .49 | .03 | 362.42 | 1.64 | .000 | | | | |
| Alcohol and Drug Services | .74 | .06 | 146.39 | 2.09 | .000 | | | | |
| Constant | -2.48 | .04 | 5115.58 | .08 | .000 | | | | |
| | | | | | | | | | |
| **Model AUC when applied to 20% Validation Sample** | | | | | | | | | .695 |

Table 10.  Validation Sample, Hierarchical Logistic Regression

| **Hierarchical Logistic Regression (Outcome = Any Juvenile Justice Dispositions)** **Validation Sample** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 20% Validation Sample N=22,635 (18.7% JJ) | β | SE | Wald | Odds Ratio | p-value | Chi-Square | R² | ΔR2 | AUC |
| **Step 1: Demographics only** | | | | | .000 | 348.43 | .025 | | .581 |
| Male | .49 | .04 | 180.63 | 1.63 | .000 | | | | |
| African American | .41 | .11 | 15.38 | 1.51 | .000 | | | | |
| Asian | -.83 | .15 | 31.32 | .44 | .000 | | | | |
| Caucasian | .16 | .07 | 5.93 | 1.17 | .015 | | | | |
| Hispanic | .30 | .08 | 14.82 | 1.34 | .000 | | | | |
| Native American | .10 | .15 | .46 | 1.11 | .498 | | | | |
| **Step 2: Demographics plus Prior Contact with Other Agencies** | | | | | .000 | 1763.28 | .121 | .096 | .696 |
| Prior Contact with: | | | | | | | | | |
| Self Sufficiency | .47 | .05 | 80.35 | 1.60 | .000 | | | | |
| Medical Assistance | .51 | .05 | 88.10 | 1.66 | .000 | | | | |
| Child Protective Services | .57 | .07 | 77.45 | 1.77 | .000 | | | | |
| Foster Care | .00 | .10 | .00 | .99 | .993 | | | | |
| Mental Health Services | .54 | .05 | 109.71 | 1.72 | .000 | | | | |
| Alcohol and Drug Services | .99 | .12 | 64.95 | 2.68 | .000 | | | | |
| Constant | -2.53 | .07 | 1316.00 | .08 | .000 | | | | |

**Summary**

Logistic models using demographic information and prior agency contacts were able to predict juvenile justice involvement with nearly 70% accuracy, suggesting that the combination of demographic and agency contact information has potential for identifying youth who are at higher-than-average risk of future involvement with juvenile justice.

## Section 1 Summary: Service Contacts and Juvenile Justice Involvement

Rates of juvenile justice involvement and contacts with other state agencies were examined among a cohort of youth who were enrolled in Oregon public schools and for whom Feeder System data was available from ages 6-7 through ages 19-20. Approximately 19% of the cohort (22% of males and 15% of females) received one or more juvenile dispositions of any intensity by the age of 18, while 4% received at least one formal probation disposition. More than half of the cohort had contact with one or more other state agencies (primarily Self-Sufficiency and Medical Assistance).

Of youth with juvenile justice involvement, nearly 75% had prior contact with one or more other state agencies. These rates were similar across males and females, but ranged from a low of 72% to a high of 90% across different racial/ethnic subgroups. These rates show that the vast majority of youth who became involved in juvenile justice had previously received services from one or more state agencies. These prior service contacts present opportunities for diversion if the youth at highest risk of future juvenile justice involvement can be reliably identified.

Approximately 30-40% of all youth served by each agency had future juvenile justice involvement. About 10% of youth with no agency contacts had future juvenile justice involvement. Rates of future juvenile justice involvement were generally higher for males than females, and higher for African American youth compared to youth of other racial/ethnic backgrounds.

Regression models using demographics and agency contacts to predict juvenile justice involvement achieved AUCs of almost 0.70, indicating a nearly 70% probability that the model would assign higher risk scores to youth with juvenile justice involvement than to youth with no juvenile justice involvement. This suggests that demographic and agency contact information have potential for identifying youth who are at higher-than-average risk of future involvement with juvenile justice. Model accuracy could likely be further improved by including additional details (e.g., service details, education history, family context) that were beyond the scope of the present analyses.

## Section 2 (Ages 13-28): Service Contacts and Young Adult Felony Convictions

### Section 2 Sample (Cohort 2)

**Purpose**

Cohort 2 was selected to examine questions about adolescent service contacts among young adults with felony convictions and to determine whether adult felony convictions can be predicted from adolescent service contacts.

**Sample**

Recall that Cohort 1 had extensive coverage of childhood and adolescent services (ages 6 and up) but coverage ended by age 20. This worked well for examining juvenile justice outcomes but is insufficient for tracking adult felony convictions. To capture adult felony convictions while also retaining coverage of services received before age 18, a new cohort of youth (Cohort 2) was selected consisting of youth born in 1985-1987. Cohort 2 had Feeder System records available from age 13/15 through age 26/28 (see Figure 8). This allowed adult felony convictions to be tracked through age 25 for all youth in the cohort. Although it would be preferable to track felonies further into adulthood, prior Feeder System work has shown that nearly 40% of adults with Oregon felony convictions received their first conviction before age 26 (Racer, 2015a).

Unlike Cohort 1, Cohort 2 does not approximate a population-based sample because public school records were not consistently available within the Cohort 2 timeframe. Rather, individuals must have accessed one or more state agencies between the ages of 13/15 and 26/28 in order to appear in the Cohort 2 dataset. Individuals who did not access any agencies between the ages of 13 and 28 are not included. When distinctions are made between individuals who had agency contacts in adolescence (ages 13-17) and individuals who did not, it is understood that those who did not have contacts before age 18 must nevertheless have had agency contacts after age 18 in order to appear in the dataset.

The full cohort consisted of 176,011 unique individuals. Because the outcome of interest is a first-time adult felony conviction, youth who received an adult felony conviction as a juvenile (e.g., Measure 11) were excluded from analyses (n=424), resulting in a total of 175,587 unique youth in Cohort 2. Approximately 7% of the cohort (12,529 youth) received a first-time adult felony conviction between the ages of 18 and 25 (see Table 11). More than 90% of the first-time felony convictions resulted in community supervision (e.g., probation) and about 9% resulted in incarceration.

Figure 8. Data coverage for Cohort 2.
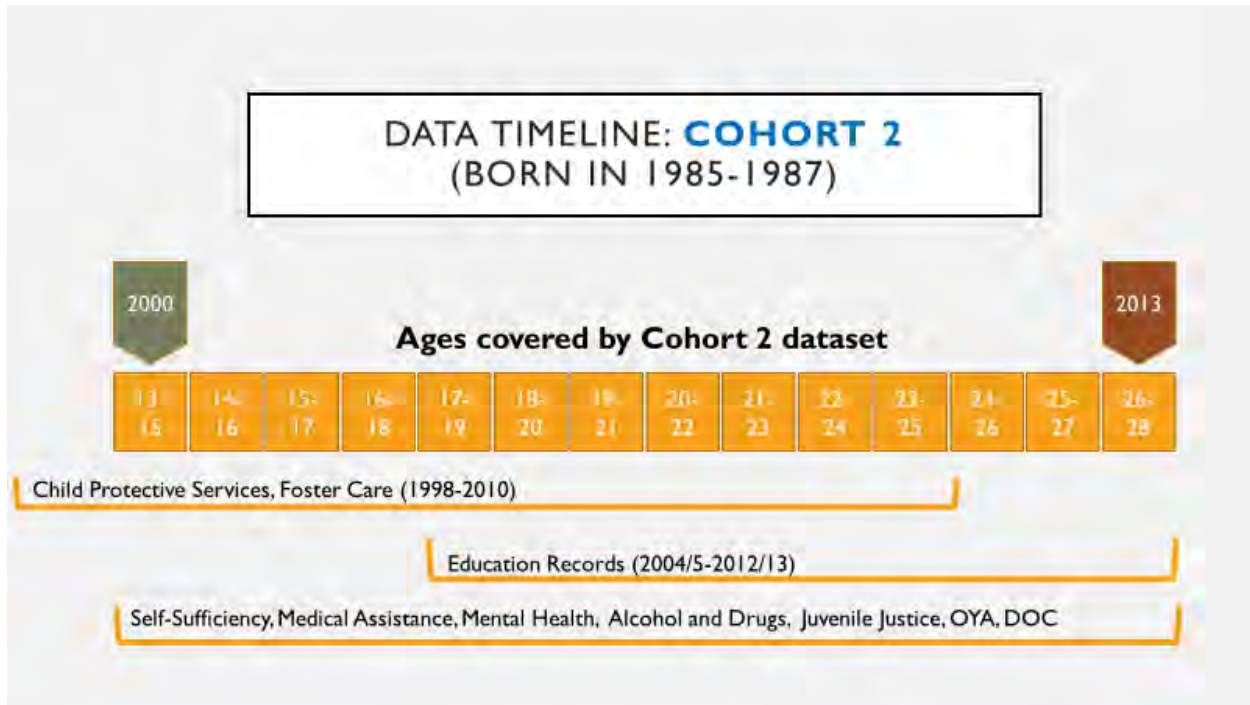


Table 11. Cohort 2 demographics and adult felony conviction (ages 18-25) rates.

| Cohort 2 Demographics | Total N | N with Adult Felony Conviction (ages 18-25) | % with Adult Felony Conviction (ages 18-25) |
|---|---|---|---|
| Full Sample | 175,587 | 12,529 | 7.1% |
| Gender | | | |
| Male | 87,382 | 9,524 | 10.9% |
| Female | 85,372 | 3,001 | 3.5% |
| Unknown | 2,833 | 4 | -- |
| Race/Ethnicity | | | |
| African American | 5,398 | 648 | 12.0% |
| Asian | 5,110 | 142 | 2.8% |
| Caucasian | 123,468 | 8,648 | 7.0% |
| Hispanic | 14,971 | 1,288 | 8.6% |
| Native American | 3,387 | 317 | 9.4% |
| Other or Unknown[3] | 23,253 | 1,486 | 6.4% |

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[3] As noted earlier (see Footnote 2) youth whose race/ethnicity was recorded as "other" or "unknown" are not included when results are broken out by race/ethnicity, but they are included in the overall descriptives and the breakouts by gender.

## Section 2A

**Purpose**

Section 2A addresses the following questions:

- How common were adolescent service contacts among adults convicted of felonies before age 26?

**Methods**

**Sample.** The sample consisted of the 12,529 Cohort 2 youth who received a first-time adult felony conviction between the ages of 18 and 25. Each youth in the sample was potentially tracked from age 13-15 through age 26-28.

**Agency Contacts (Pre-18).** Administrative data within the Feeder System dataset was used to identify contacts with each agency. Agency contact was coded as "Yes" if a youth's first contact with an agency occurred prior to age 18. Prior agency contact was coded as "No" if a youth either had no known contacts with an agency or if the first known contact occurred after age 18.

**Adult Felony Conviction (ages 18-25).** First-time adult felony convictions were identified using administrative data provided by the Oregon Department of Corrections (DOC).

**Results**

### How Common were Adolescent Service Contacts among Adults Convicted of Felonies before Age 26?

**Prevalence of Pre-18 Services among Young Adults with First Felony Conviction ages 18-25.** Of the 12,529 youth with adult felony convictions between the ages of 18 and 25, **74%** had adolescent (ages 13-17) contacts with juvenile justice and/or social services (see Figure 9 and Table 12). Rates varied by gender (see Table 12) and race/ethnicity (see Table 13). Although the overall rate of service contacts was similar for males and females (73% vs 76%), females generally had higher rates of contact with social services, while males tended to have higher rates of contact with juvenile justice. African American and Native American offenders were most likely to have at least one agency contact prior to age 18, while Asian offenders were the least likely to have received services prior to age 18.

Figure 9. Prevalence of adolescent service contacts among young adults with a felony conviction, by service type.

**Prevalance of Pre-18 Service Contacts among Young Adults with a Felony Conviction, by Service Type**

| Service Type | Percentage |
|---|---|
| Self-Sufficiency | 44% |
| Medical Assistance | 49% |
| Mental Health | 23% |
| Alcohol and Drug | 23% |
| Child Protective Services | 7% |
| Foster Care | 6% |
| Juvenile Justice - Any | 57% |
| Juvenile Justice - FCP | 23% |
| OYA | 8% |
| Any Services | 74% |
| Any Non-JJ Services | 61% |
| No Services | 26% |

Table 12. Prevalence of adolescent service contacts among young adults with a felony conviction, overall and by gender.

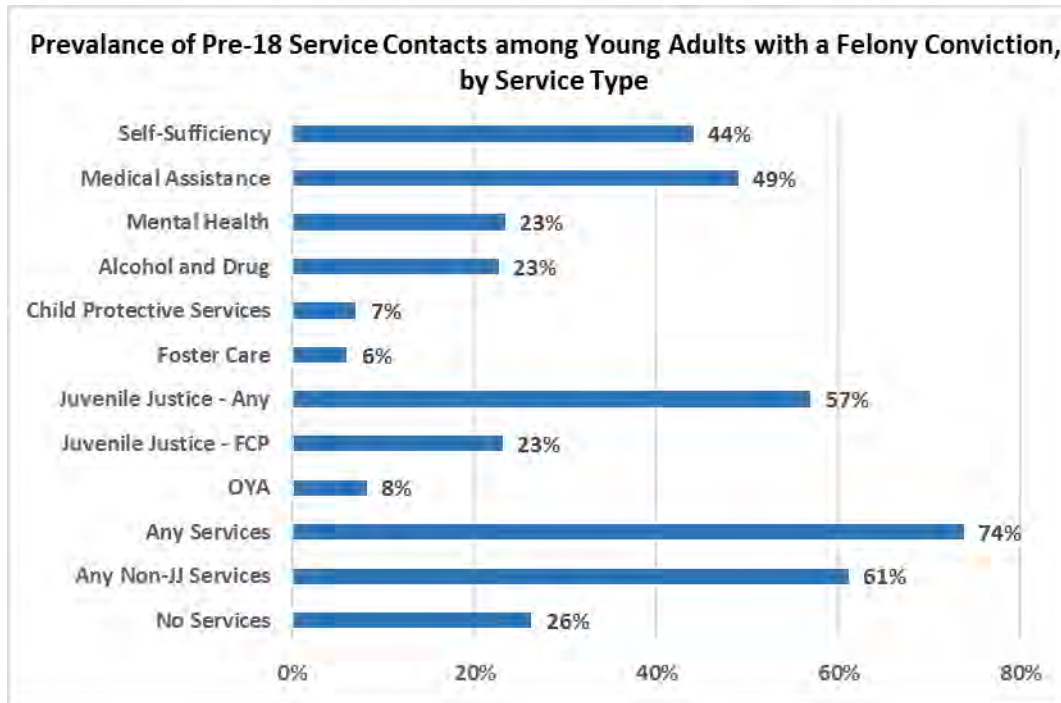| YOB 1993-1994 (19-20 by end of 2013) | All Youth N=12,529 | Male N=9,524 | Female N=3,005 |
|---|---|---|---|
| **Service Contacts Ages 6-18** | | | |
| Self-Sufficiency | 44.0% | 41.2% | 52.8% |
| Medical Assistance | 49.0% | 46.6% | 56.5% |
| Mental Health Services | 23.4% | 22.1% | 27.4% |
| Alcohol and Drug Services | 22.7% | 23.0% | 21.8% |
| Child Protective Services | 7.0% | 5.4% | 12.1% |
| Foster Care Placement | 6.0% | 5.0% | 8.9% |
| Juvenile Justice – Any Disposition | 56.9% | 57.9% | 53.8% |
| Juvenile Justice – Formal County Probation | 23.1% | 24.9% | 17.5% |
| Oregon Youth Authority | 8.2% | 9.2% | 5.0% |
| Any Services (including Juvenile Justice) | 73.7% | 72.9% | 76.4% |
| Any Social Services (non-Juvenile Justice) | 61.1% | 59.2% | 67.2% |
| No Pre-18 Services | 26.3% | 27.1% | 23.6% |

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Table 13.  Prevalence of adolescent service contacts among young adults with a felony conviction, overall and by race/ethnicity.

| YOB 1993-1994 (19-20 by end of 2013) | African American N=648 | Asian N=142 | Caucasian N=8,648 | Hispanic N=1,288 | Native American N=317 |
|---|---|---|---|---|---|
| **Service Contacts Ages 6-18** | | | | | |
| Self-Sufficiency | 56.6% | 35.2% | 44.6% | 39.4% | 62.5% |
| Medical Assistance | 66.7% | 42.3% | 51.7% | 52.2% | 67.2% |
| Mental Health Services | 33.6% | 12.0% | 25.7% | 19.7% | 33.4% |
| Alcohol and Drug Services | 23.1% | 16.2% | 25.2% | 21.7% | 33.8% |
| Child Protective Services | 7.9% | 2.8% | 7.8% | 5.1% | 8.8% |
| Foster Care Placement | 12.8% | 1.4% | 6.1% | 5.0% | 11.7% |
| Juvenile Justice – Any Disposition | 66.4% | 47.9% | 60.7% | 60.5% | 59.6% |
| Juvenile Justice – Formal County Probation | 28.2% | 21.8% | 24.3% | 26.2% | 32.5% |
| Oregon Youth Authority | 10.3% | 4.9% | 9.0% | 9.0% | 10.1% |
| Any Services (including Juvenile Justice) | 81.3% | 69.0% | 76.1% | 75.8% | 85.2% |
| Any Social Services (non-Juvenile Justice) | 73.6% | 50.7% | 62.1% | 61.2% | 81.4% |
| No Pre-18 Services | 18.7% | 31.0% | 23.9% | 24.2% | 14.8% |

**Summary**

Nearly 75% of young adults convicted of felonies between ages 18 and 25 had contact with one or more state agencies before the age of 18 (including juvenile justice contacts). Approximately 57% of young adults convicted of felonies had prior contact with juvenile justice, and 61% had contact with at least one social service agency (i.e., agencies other than juvenile justice). Rates of prior contact varied by service type, gender, and race/ethnicity.

# Section 2B

**Purpose**

Section 2B addresses the following question:

- How common were future adult felony convictions among the youth served by each agency?

**Methods**

**Sample.** The sample consisted of the 175,587 youth who had records in the Feeder System dataset and were born in the years 1985-1987 (Cohort 2). Each youth in the cohort was potentially tracked from age 13-15 through age 26-28.

**Agency Populations.** The sample was subdivided into separate but overlapping subsets of youth who had contact with each agency before age 18. For example, the "Mental Health Services" subpopulation consisted of all Cohort 2 youth who had contact with Mental Health Services before age 18. Because most youth had contact with more than one agency, the same youth can appear in multiple agency populations (i.e., they are not mutually exclusive).

**Agency Contacts (pre-18).** Administrative data within the Feeder System dataset was used to identify contacts with each agency. Agency contact was coded as "yes" If a youth's first contact with an agency occurred prior to age 18. Prior agency contact was coded as "no" if the first known contact occurred at age 18 or older.

**Adult Felony Conviction (ages 18-25).** First-time adult felony convictions were identified using administrative data provided by the Oregon Department of Corrections (DOC). For the Cohort 2 youth, more than 90% of the first-time convictions resulted in community supervision (e.g., probation) and about 9% resulted in incarceration.

**Results**

## How Common were Future Adult Felony Convictions among the Youth Served by Each Agency?

**Rates of Future Adult Felony Conviction (ages 18-25) by Agency.** The rate of future adult felony convictions (ages 18-25) varied widely across agencies, from a low of 13% for adolescents served by Self-Sufficiency and Medical Assistance, to a high of 54% for adolescents with an OYA commitment history (see Figure 10 and Table 14). Young adult felony convictions were much less common (3%) among members of the cohort who had no history of adolescent service contacts (i.e., individuals who first known contacts began after age 18). Figure 11 shows the total number of Cohort 2 youth with adult felony convictions who were served by each agency as an adolescent.

Figure 10. Prevalence of future adult felony convictions (ages 18-25) among Cohort 2 youth who received services as adolescents (ages 13-17), by agency.



**% with Future Adult Felony (Ages 18-25)**

- Self-Sufficiency: 13%
- Medical Assistance: 13%
- Mental Health Services: 20%
- Alcohol and Drug Services: 27%
- Child Protective Services: 16%
- Foster Care Placement: 24%
- Juvenile Justice – Any Disposition: 23%
- Juvenile Justice – Formal County Probation: 39%
- Oregon Youth Authority: 54%
- No Pre-18 Services: 3%

Figure 11. Number of Cohort 2 youth with future adult felony convictions (ages 18-25) who received services as adolescents (ages 13-17), by agency.



**Number with Future Adult Felony (Ages 18-25)**

- Self-Sufficiency: 5,513
- Medical Assistance: 6,138
- Mental Health Services: 2,931
- Alcohol and Drug Services: 2,843
- Child Protective Services: 873
- Foster Care Placement: 748
- Juvenile Justice – Any Disposition: 7,132
- Juvenile Justice – Formal County Probation: 2,897
- Oregon Youth Authority: 1,027
- No Pre-18 Services: 3,283

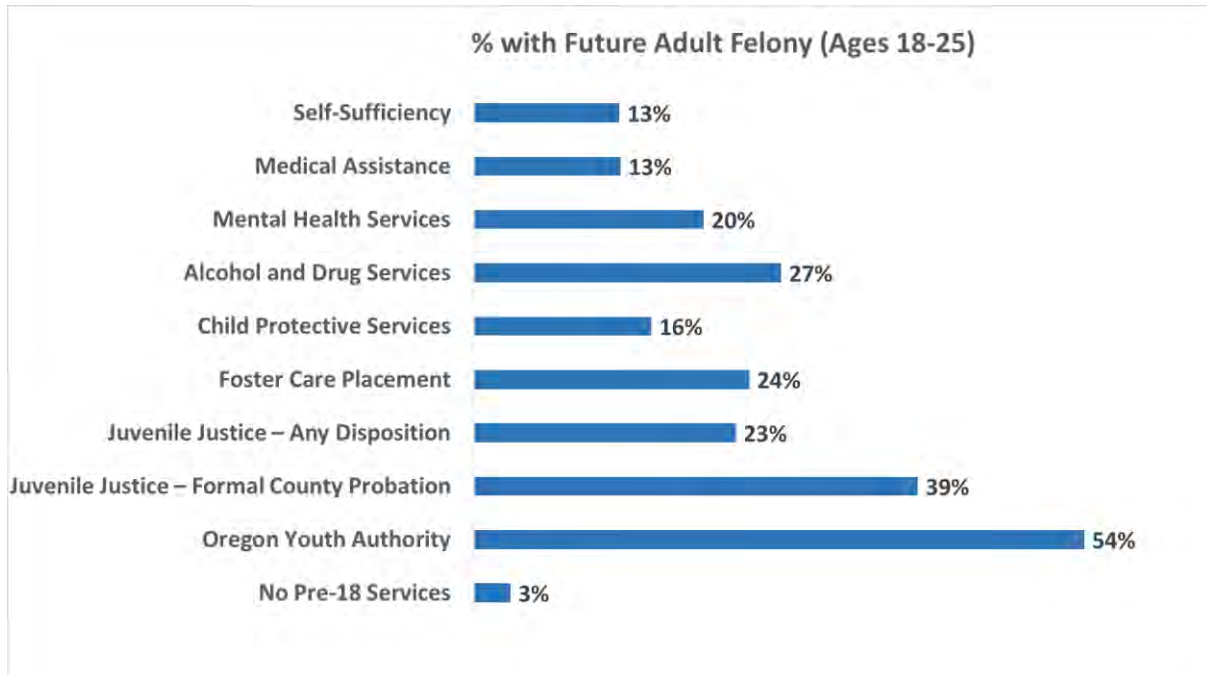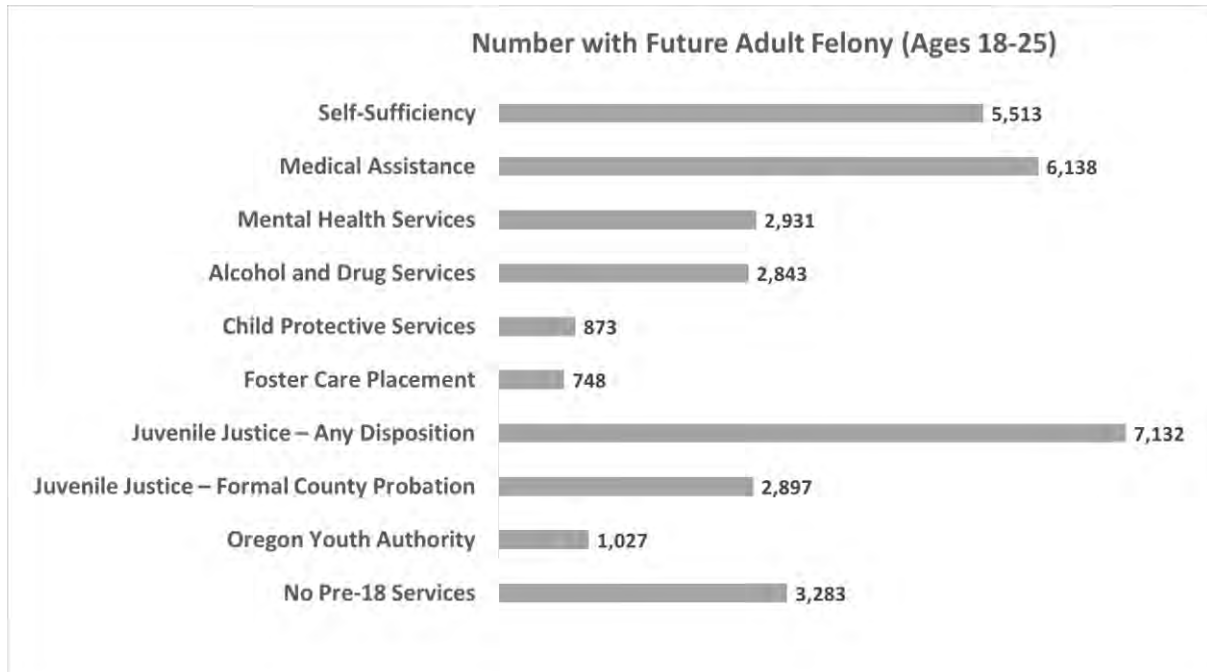Table 14.  Prevalence of future adult felony convictions (ages 18-25) among Cohort 2 youth served by each agency as adolescents (ages 13-17), overall and by gender and race/ethnicity.

| N=175,587<br><br>Agency Population (ages 13-17) | Total N | Total % with adult felony conviction | Gender | | Race/Ethnicity | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | African American | Asian | Caucasian | Hispanic | Native American |
| No Agency Contacts (ages 13-17) | 102, 173 | 3.2% | 5.2% | 1.3% | 4.7% | 1.2% | 2.9% | 4.1% | 3.7% |
| Self-Sufficiency | 43,017 | 12.8% | 18.4% | 7.3% | 18.3% | 5.7% | 12.4% | 14.2% | 19.3% |
| Medical Assistance | 47,560 | 12.9% | 19.1% | 7.0% | 20.1% | 5.5% | 13.2% | 12.3% | 12.6% |
| Mental Health Services | 14,501 | 20.2% | 29.7% | 11.1% | 32.3% | 13.5% | 19.2% | 22.2% | 27.1% |
| Alcohol and Drug Services | 10,538 | 27.0% | 32.2% | 17.5% | 43.2% | 20.7% | 25.9% | 32.6% | 22.4% |
| Child Protective Services | 5,583 | 15.6% | 24.0% | 10.5% | 21.5% | 7.1% | 16.0% | 14.4% | 20.3% |
| Foster Care Placement | 3,094 | 24.2% | 34.4% | 15.8% | 36.2% | 6.7% | 22.9% | 27.6% | 29.8% |
| Juvenile Justice – Any Disposition | 30,955 | 23.0% | 29.9% | 12.9% | 33.4% | 16.2% | 22.2% | 28.1% | 28.1% |
| Juvenile Justice – Formal County Probation | 7,429 | 39.0% | 43.7% | 26.2% | 51.7% | 37.3% | 37.5% | 43.0% | 40.9% |
| Oregon Youth Authority | 1,915 | 53.6% | 58.5% | 36.1% | 65.0% | 53.8% | 52.5% | 57.4% | 49.2% |

As shown in Table 14, adult felony rates were higher among males than females within every service population, and higher for African American youth than youth of other racial/ethnic backgrounds within every service other than Self-Sufficiency. Among youth served by Self-Sufficiency, adult felony rates were similar for both African American and Native American youth, and lower for youth of other racial/ethnic backgrounds.

**Summary**

The prevalence of future adult felony convictions among Cohort 2 youth with adolescent service contacts varied by agency, from a low of 13% for the populations served by Self-Sufficiency and Medical Assistance, to a high of 54% for youth with an OYA commitment history Among the Cohort 2 youth with no adolescent service contacts, only 3% had received an adult felony conviction by age 26. Across all services, future adult felony rates were higher for males than females and, with the exception of Self-Sufficiency, higher for African American youth than youth of all other races/ethnicities.

## Section 2C

**Purpose**

Section 2C uses statistical modeling to address the following question:

- Can adolescent service contacts be used to predict adult felony convictions?

**Methods**

**Sample.** The 175,587 individuals from the original sample described in Section 2 above. Each individual was potentially tracked within the Feeder System dataset from age 13-15 through age 26-28.

**Outcome measure.** For all analyses, the outcome of interest was a first-time adult felony conviction as indicated by DOC administrative records.

**Analytic approach.** Hierarchical logistic regression was conducted using the "enter" method, as in Section 1D, above. Please see Section 1D for additional details.

**Variable Coding.** Gender and race/ethnicity were included as demographic predictors of adult felony conviction. Male gender was coded as 1 and female was coded as 0. Race/ethnicity information was coded into separate and mutually-exclusive indicators of African American, Asian, Caucasian, Hispanic, and Native American (yes = 1, no = 0). Prior contacts with other agencies were coded as 1 if the contact occurred prior to age 18 or 0 if there was either no record of contact or the first known contact occurred at age 18 or older.

**Evaluating Predictors.** As in Section 1D, odds ratios are used to quantify the relative contributions of the individual predictors within the final models. See Section 1D for additional details.

**Evaluating model accuracy.** As in Section 1D, the overall ability of the model to accurately predict adult felony conviction was evaluated using the area under the curve (AUC) statistic. See Section 1D for additional details.

**Evaluating model stability.** As in Section 1D, model stability was evaluated by comparing model accuracy and predictors across a randomly selected development sample (80% of cases) and validation sample (the remaining 20% of cases). See Section 1D for additional details.

**Results**

### Can Adolescent Service Contacts be used to Predict Adult Felony Convictions?

Models using both demographics and adolescent service contacts (ages 13-17) performed significantly better than chance at predicting young adult (ages 18-25) felony convictions (AUC = .80). Results for the development sample model are shown in Table 15. Inclusion of prior agency contacts improved the model substantially over demographics alone (the proportion of

variance accounted for increased from 6% to 22%, and the AUC increased from .66 to .80). Overall model fit and the predictive strength of individual predictors was similar across both the development (Table 15) and validation (Table 16) models. Among the demographic variables, all racial/ethnic categories other than African American were associated with a reduced risk of adult felony conviction (odds ratios < 1.0). Every type of agency contact was associated with a higher likelihood of a felony conviction in young adulthood, although Foster Care was not significant in the validation model. Juvenile justice involvement was the strongest single predictor (odds ratio = 4.4). This suggests that justice-involved youth, as well as youth receiving social services from the state of Oregon, are at elevated risk for felony convictions in young adulthood. These results should not be interpreted as suggesting that agency contacts *cause* an increase in risk; the models do not assess causality and it is most likely that program contacts are serving as a proxy for risk factors (needs) that are themselves associated with risk for adult felony conviction. Among the available predictors, any juvenile justice contact was the strongest single risk factor for felony conviction in young adulthood (odds ratio = 4.3-4.4) and Asian race/ethnicity was the strongest protective factor (odds ratio = 0.3-0.4).

Table 15. Prediction model of adult felonies before age 26 from pre-18 service contacts, development sample.

| Hierarchical Logistic Regression (Outcome = Adult Felony Ages 18-25) Development Sample | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 80% Development Sample N=140,359 (7.1% Felony 18-25) | β | SE | Wald | Odds Ratio | p-value | Chi-Square | $R^2$ | ΔR2 | AUC |
| **Step 1: Demographics only** | | | | | | | .06 | | .66 |
|     Male | 1.14 | .03 | 1959.52 | 3.11 | .000 | | | | |
|     African American | .00 | .06 | .00 | 1.00 | .998 | | | | |
|     Asian | -1.00 | .10 | 95.40 | .37 | .000 | | | | |
|     Caucasian | -.47 | .04 | 176.39 | .63 | .000 | | | | |
|     Hispanic | -.25 | .05 | 26.28 | .78 | .000 | | | | |
|     Native American | -.26 | .08 | 10.78 | .77 | .001 | | | | |
| **Step 2: Demographics plus Pre-18 Contacts with Other Agencies** | | | | | .000 | 12918.21 | .22 | .16 | .80 |
|     Pre-18 Contact with: | | | | | | | | | |
|         Any Juvenile Justice | 1.47 | .03 | 2984.91 | 4.35 | .000 | | | | |
|         Any OYA | .59 | .06 | 91.86 | 1.80 | .000 | | | | |
|         Formal County Probation | .50 | .04 | 181.67 | 1.65 | .000 | | | | |
|         Alcohol and Drug Services | .55 | .03 | 254.74 | 1.73 | .000 | | | | |
|         Mental Health Services | .25 | .04 | 48.43 | 1.28 | .000 | | | | |
|         Self Sufficiency | .22 | .03 | 48.54 | 1.25 | .000 | | | | |
|         Medical Assistance | .18 | .03 | 27.70 | 1.19 | .000 | | | | |
|         Foster Care | .22 | .06 | 12.25 | 1.24 | .000 | | | | |
|         Child Protective Services | .10 | .05 | 3.65 | 1.11 | .056 | | | | |
|   Constant | -3.71 | .04 | 10013.97 | .02 | .000 | | | | |
| | | | | | | | | | |
| **Model AUC when applied to 20% Validation Sample** | | | | | | | | | .80 |

Table 16. Prediction model of adult felonies before age 26 from pre-18 service contacts, validation sample.

| Hierarchical Logistic Regression (Outcome = Adult Felony Ages 18-25) Validation Sample | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 20% Validation Sample N=35,228 (7.4% Felony 18-25) | β | SE | Wald | Odds Ratio | p-value | Chi-Square | R² | ΔR2 | AUC |
| **Step 1: Demographics only** | | | | | | | .06 | | .66 |
| Male | 1.14 | .05 | 513.57 | 3.12 | .000 | | | | |
| African American | .12 | .12 | 1.07 | 1.13 | .302 | | | | |
| Asian | -1.17 | .21 | 30.63 | .31 | .000 | | | | |
| Caucasian | -.41 | .07 | 35.23 | .66 | .000 | | | | |
| Hispanic | -.33 | .10 | 11.67 | .72 | .001 | | | | |
| Native American | -.30 | .17 | 3.26 | .74 | .071 | | | | |
| **Step 2: Demographics plus Pre-18 Contacts with Other Agencies** | | | | | .000 | 3316.10 | .22 | | .80 |
| Pre-18 Contact with: | | | | | | | | | |
| Any Juvenile Justice | 1.45 | .07 | 759.45 | 4.25 | .000 | | | | |
| Any OYA | .66 | .12 | 29.26 | 1.94 | .000 | | | | |
| Formal County Probation | .62 | .07 | 68.61 | 1.85 | .000 | | | | |
| Alcohol and Drug Services | .47 | .07 | 45.06 | 1.59 | .000 | | | | |
| Mental Health Services | .24 | .07 | 11.39 | 1.27 | .001 | | | | |
| Self Sufficiency | .13 | .06 | 4.47 | 1.14 | .035 | | | | |
| Medical Assistance | .22 | .07 | 11.37 | 1.25 | .001 | | | | |
| Foster Care | .08 | .13 | .37 | 1.08 | .543 | | | | |
| Child Protective Services | .30 | .10 | 8.40 | 1.35 | .004 | | | | |
| Constant | -3.67 | .07 | 2546.78 | .03 | .000 | | | | |

**Summary**

Logistic models using demographic information and adolescent agency contacts were able to predict adult felony convictions in young adulthood (ages 18-25) with 80% accuracy, suggesting the combination of demographic and agency contact information has potential for identifying adolescents who are at higher-than average risk of adult felony convictions.

## Section 2 Summary: Service Contacts and Young Adult Felony Convictions

Young adult felony convictions and adolescent service contacts were examined among a cohort of youth whose contacts with state agencies were tracked from ages 13-15 through ages 26-28. Approximately 7% of the cohort (11% of males and 3.5% of females) received a first-time adult felony conviction between the ages of 18 and 25.

Most young adults convicted of a felony between the ages of 18 and 25 (74%) had a history of adolescent contacts with one or more state agencies. Rates of adolescent service contacts varied somewhat by gender and race/ethnicity, but were consistently high. Among all young adults with felony convictions, the lowest rates of prior service contacts were found among Asian offenders (69% had accessed any services in adolescence) and the highest rates were found among African American and Native American offenders (81-85% had accessed any services in adolescence).

Looking prospectively from adolescent services (ages 13-17) to young adult felony convictions (ages 18-25), felony convictions in young adulthood were at least 4 times more common among young adults who accessed one or more services in adolescence than among young adults who only accessed services at age 18 or older (13% vs. 3%, respectively). Not surprisingly, the highest adult felony rates (54%) were found for young adults with a history of Oregon Youth Authority commitment. Adult felony rates for other adolescent services ranged from 13% (Self-Sufficiency and Medical Assistance) to 39% (formal county probation). Adult felony rates were consistently higher for African American youth than for youth of other races or ethnicities.

Regression models using demographics and adolescent service contacts were able to predict felony convictions in young adulthood with 80% accuracy (area under the curve = .80), indicating an 80% probability that the model would assign higher risk scores to youth with young adult felony convictions than to youth without felony convictions. This suggests that the combination of demographics and agency contact information has potential for identifying youth who are at higher-than-average risk of a felony conviction in young adulthood. Model accuracy could likely be further improved by including additional details (e.g., service details, education history, family context) that were beyond the scope of the present analyses.

# General Summary

This report examined two cohorts of youth within the OYA Feeder System dataset in order to answer questions about the social service histories of adolescents and young adults who are involved in the Oregon criminal justice system. Section 1 described the prevalence of contacts with state services and juvenile justice among youth enrolled in Oregon public schools (Cohort 1) and examined whether prior service histories could be used to predict future juvenile justice involvement. Section 2 described the prevalence of young-adult (age 18-25) felony convictions among adolescents receiving social services (Cohort 2) and examined whether adolescent service contacts could be used to predict felony convictions in early adulthood.

Almost 19% of the Oregon public school cohort (Cohort 1) received one or more juvenile dispositions of any intensity before the age of 18, although the percentage of youth who were ever placed on formal county probation was much smaller (4%). Among youth who received social services from one or more of the state agencies participating in the Feeder System dataset, the rate of future juvenile justice involvement was approximately 30-40% and the rate of formal county probation was about 10%. More than half of the Oregon public school cohort received one or more social services before the age of 18. Of youth with juvenile justice involvement, nearly 75% had prior contact with one or more state agencies. These prior service contacts present opportunities for juvenile justice prevention and diversion. Regression models using demographics and agency contacts to predict juvenile justice involvement were moderately accurate (AUC = .70), suggesting that demographic and agency contact information has potential for identifying youth who are at higher-than-average risk of future involvement with juvenile justice. Model accuracy could likely be further improved by including additional details (e.g., service details, education history, family context) that were beyond the scope of the present analyses.

Findings from Cohort 2 (youth whose agency contacts were tracked from ages 13-15 to 26-28) were largely similar. Among adolescents who received services from one or more state agencies, 13-54% (depending on the agency) received an adult felony conviction before age 26. Conversely, nearly 75% of young adults convicted of a felony between the ages of 18 and 25 had a history of adolescent service contacts. As with Cohort 1, these prior service contacts present opportunities for prevention and diversion. Regression models using demographics and adolescent service contacts were able to predict felony convictions in young adulthood with considerable accuracy (AUC = .80), suggesting potential for identifying youth who are at higher-than-average risk of a felony conviction in young adulthood. As with the juvenile justice model, accuracy could likely be further improved by including additional details that were beyond the scope of the present analyses.

As a whole, the present report documents the high rate of prior service contacts among adolescents and young adults with criminal justice involvement and demonstrates the feasibility of using service histories to identify high-risk youth for the purposes of prevention

and diversion. Although the present study relies on cross-agency information to predict future criminal justice outcomes, prior Feeder System reports have demonstrated that high-risk individuals can also be identified using only the administrative data collected by a particular agency or service (see Racer 2019a, Racer 2019b, Racer 2019c). A within-agency approach may be advantageous when cross-agency information is not readily available.

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# Appendix

Juvenile Justice Disposition Categories

Juvenile justice dispositions are categorized according to a standard developed by the Juvenile Justice Information System (JJIS) Data and Evaluation Committee and modeled after national reporting standards.  Detailed dispositions have been grouped into reporting categories. Dispositions are listed in intensity order, from least intense to most intense, based on an estimated level of juvenile justice involvement.

| Organization | Action | Disposition |
|---|---|---|
| Juvenile Department | Review and Close | No Jurisdiction |
| | | Referred to Another Agency |
| | | Review & Close |
| | | Warning |
| | | Divert & Close |
| | | Intake Office Contact & Close |
| | | Rejected by DA/Juvenile Department |
| | | Alternative Process |
| | Authorized Diversion Programs or Other Informal Dispositions | Diversion Supervision |
| | | Diversion – Youth Court |
| | | Diversion – Traffic/Municipal Court |
| | | Informal Sanction(s)/Supervision |
| | | Formal Accountability Agreement |
| | Petitioned - Dismissed | Dismissed |
| | Petitioned - Alternative Process | Plea Bargain or Alternative Process |
| | Adjudicated Delinquent – Formal County Supervision | Formal Sanction |
| | | Probation |
| Oregon Youth Authority | Adjudicated Delinquent – OYA Commitment | Probation and Youth Authority Commitment for Community Placement |
| | | Youth Authority Commitment for Youth Correctional Facility Placement |
| DOC Juvenile | Adult Court Process | Waived/Transfer |
| | | Adult Sentence |