OYA Feeder System Technical Report: Predicting Adult Felony Convictions among Youth with Juvenile Department Dispositions

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Introduction

This report is one in a series examining where, when, and how youth at high risk for future adult felony convictions can be identified within other state-funded programs. These reports use administrative service records from participating state agencies to document services received prior to first-time adult felony convictions and to determine whether first-time adult felony convictions can be predicted from prior service contacts. The hope is that this work can be used to support earlier identification and targeted prevention/intervention services for youth who are at high risk for future adult felonies.

Using records from Self Sufficiency (SS), Medical Assistance (DMAP), Child Protective Services (CPS), Foster Care (FC), Mental Health (MH), Alcohol and Drug Services (AD), and the Oregon Youth Authority (OYA), previous Feeder System reports found a high prevalence of prior services among young adults convicted of their first adult felony (Racer, 2015a) and identified Alcohol and Drug Services and the Oregon Youth Authority as the services that were most predictive of a future adult felony conviction (Racer, 2015b).

This report examines county juvenile department (JD) contacts, which became available after the initial reports were completed. The goals of this report are to (1) describe the prevalence of future adult felony convictions among youth with juvenile department contact, (2) describe the prevalence of contacts with other state services prior to juvenile department contact, and (3) examine whether future adult felony convictions can be accurately predicted among youth with juvenile department contacts. It is presumed that a youth's history of contacts with other agencies will improve the prediction of a first-time adult felony conviction. This report provides an initial look at the added value of including cross-agency contacts by comparing the predictive accuracy of models using (a) demographics alone, (b) demographics and juvenile department records, and (c) demographics, juvenile department records, and cross-agency contact information (i.e., yes/no per agency).

General Methods

Sample

The analyses within this report use the previously described Feeder System dataset (see Braun, 2014; Racer, 2015a). The original dataset includes individual-level administrative records from the following Oregon state agencies and state programs: 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, including Community Corrections (DOC). (For the purpose of this report, programs within a larger state agency are referred to as an agency.) County juvenile department (JD) records subsequently became available and were added to the dataset prior to this report. The source data spans a 14-year period from 2000 to 2013 (1998 to 2010 for CPS and FC). The full dataset includes individuals of all ages (from 0 to 100+) who had contact with at least one of the included agencies during the 14-year tracking period.

The present report restricted analyses to individuals who were between the ages of 13 and 15 in 2000 and 26-28 in 2013 (years of birth (YOB) = 1985-1987). This allowed adult felony convictions to be tracked through age 25 for all individuals in the sample and ensured coverage of prior agency contacts from at least age 15 forward (age 13 forward for Child Protective Services and Foster Care). If an individual's only contact(s) with an agency occurred before these ages, there will be no record of that contact within the Feeder System dataset and the individual will be treated as if the contact did not occur.

The sample for this report is further restricted to youth who received one or more juvenile department dispositions (i.e. the outcome of a referral and its allegations) between 2000 and 2013, up to and including a disposition of formal probation (see Appendix A for disposition categories). Given the age range of the selected cohort (YOB 1985-1987), most of the juvenile department dispositions occurred between 2000 and 2004. Only youth whose initial juvenile department disposition occurred at least 90 days before their first adult felony conviction were included. The sample included 31,539 youth with one or more juvenile department dispositions. Youth with any juvenile DOC dispositions (n=588) were excluded from the predictive modeling analyses, as the outcome of interest was a *first-time* adult felony conviction between ages 18 and 25.

Data Reduction and Coding

Demographics. Self-reported (or parent-reported) gender and race/ethnicity were included in the administrative data from each agency. If a youth had contact with only one agency, gender and race/ethnicity were determined by that agency. If a youth had contact with multiple agencies, the gender and race/ethnicity that were recorded the most frequently were used. In cases where records were inconsistent and no single gender was recorded most often, youth gender was categorized as unknown (< 0.5% of cases). In cases where no one race/ethnicity was recorded most often, the youth was categorized as multiracial/multiethnic (2% of cases). For the predictive analyses, race/ethnicity was coded as a binary variable with White = 0 and all other races/ethnicities ("non-White") =1. Youth age was determined using birth dates recorded in the administrative data from each agency. In cases where different dates of birth were recorded across different agencies, the date of birth recorded most often was used to calculate youth age. Age at first program contact was coded as a truncated whole number (e.g., an age of 13 years, 8 months was recorded as 13 years).

Juvenile Department Data. Juvenile department referrals, dispositions and Juvenile Crime Prevention (JCP) risk/needs assessments were obtained for the years 2000-2013. JCPs were excluded from the analyses as they were not widely used until after the present cohort had turned 18. For the purposes of predictive modeling, juvenile referral data was summarized by offense type. Offense types were based primarily upon Oregon Revised Statute (ORS) criminal codes, although some related offense types were combined into higher-order categories. For each offense type, a yes/no variable was created with "yes" (coded as 1) indicating that the

youth had received at least one juvenile referral for that type of offense and “no” (coded as 0) indicating that the youth had received no juvenile referrals of that type. Referrals that occurred less than 90 days prior to an OYA disposition or DOC conviction were excluded, such that only referrals that were managed at the county level were summarized. Total number of juvenile criminal referrals was also included as a categorical predictor with 3 levels (1, 2, or 3+ criminal referrals). Juvenile disposition records were used to create indicators of whether the youth ever received a formal county probation disposition or ever received an OYA commitment. Youth with juvenile DOC dispositions were excluded from the predictive analyses because they had already entered the adult criminal justice system. Prevalence rates for each Juvenile Department predictor can be found in Appendix B.

Other agency contacts. Yes/no indicators of agency contact were created to summarize prior contacts with SS, DMAP, CPS, FC, MH, and AD. Contact with each agency was coded as “yes” if the contact occurred at least one day before the youth’s first known Juvenile Department disposition of any intensity; contact was coded as “no” if there was either no record of contact with that agency, or if the initial contact occurred after the first juvenile department disposition. For the regression analyses, “yes” was coded as ‘1’ and “no” was coded as ‘0’. See Table 3 for rates of prior program contacts.

Adult felony conviction. For all analyses, the outcome of interest was a first-time adult felony conviction as indicated by DOC administrative records. Youth with juvenile DOC dispositions are included in the descriptive analyses (Tables 1, 2, and 3) but are excluded from the regression analyses. Approximately 90% of first-time adult felony convictions resulted in probation and approximately 10% resulted in incarceration.

Section 1: How many youth with juvenile department involvement were convicted of an adult felony before age 26?

Methods

Sample. The sample included youth with records of juvenile department contact who were between the ages of 26 and 28 at the end of 2013 (years of birth 1985-1987). Juvenile department contact was defined as an initial juvenile department disposition of any intensity up to and including formal probation (i.e., youth whose first disposition was an OYA or juvenile DOC commitment were excluded). The sample consisted of 31,539 unique youth.

Although youth were selected for the juvenile department sample based on an initial disposition up to and including formal probation, the youth's entire juvenile justice (JJ) history, including any subsequent higher-intensity dispositions (e.g., OYA and juvenile DOC commitments) was included in the analyses (see Appendix A).

Outcome measure. The outcome measure was an adult felony conviction between the ages of 18 and 25, as indicated by DOC administrative records.

Results

Descriptive Statistics. Table 1 shows demographics and juvenile disposition histories for all juvenile department youth and for the subset of youth who received one or more dispositions of formal county probation. Approximately 25% of youth with any juvenile department contact received one or more dispositions of formal county probation. Of youth who received formal county probation, approximately 21% also received one or more Oregon Youth Authority dispositions, 9% received one or more OYA placements in a secure youth correctional facility (YCF) and 4% received juvenile DOC commitments in an OYA YCF. Males are overrepresented among the general juvenile department population (60% male) and even more so among youth who received formal county probation (74% male). Approximately 75% of both the general juvenile department and the formal county probation populations were identified as White. There appears to be a slight increase in the proportions of non-White youth in the Formal County Probation subset (with the exception of Asian youth); however there was also a decrease in the percentage of Other/Unknown race/ethnicity, so the apparent increase may be due to better documentation of racial/ethnic categories as youth move into formal county probation (i.e., fewer youth categorized as "unknown").

Table 1. Descriptive statistics for youth with juvenile department dispositions.

Descriptive Statistics	Any Juvenile Department Disposition		Any **Formal County Probation**	
	n	Percent	n	Percent
Total Number of Youth	31,539		7,842	
Sex				
Male	18,851	60%	5,778	74%
Female	12,596	40%	2,059	26%
Unknown	92	<1%	5	<1%
Race/Ethnicity				
White	24,107	76%	5,839	75%
Hispanic/Latino	2,824	9%	840	11%
Asian	437	1%	90	1%
African American	1,370	4%	407	5%
Native American	685	2%	275	4%
Other and Unknown	2,116	7%	391	5%
Mean (SD) age at first JD Disposition in records	15.1 (1.4) years		14.5 (1.3) years	
Ever Received Formal County Probation	7,842	25%		n/a
OYA Disposition History				
None	29,239	93%	6,174	79%
Any OYA Dispositions (including DOC)	2,300	7%	1,668	21%
Any OYA Probation Dispositions	1,293	4%	1,065	14%
Any OYA YCF Dispositions	947	3%	696	9%
Any DOC YCF Dispositions	588	2%	323	4%
No Juvenile History of Formal County Probation, OYA or DOC	22,982	73%	n/a	n/a

Adult Felony Rates. As shown in Table 2, 23% of youth with any juvenile department contact, and 38% of youth with any formal county probation dispositions were convicted of an adult felony between the ages of 18 and 25. Table 2 also shows adult felony rates for subsamples defined by demographics (gender, race/ethnicity) and by the types of juvenile dispositions received (county, OYA, DOC, etc.). Adult felony rates tended to increase as juvenile disposition intensity increased; from a rate of 18% for youth who never received formal county probation, to 35% for youth with formal county probation but no OYA commitments, to 52% for youth with OYA dispositions, and to 61% for youth with a history of OYA YCF dispositions. Adult felony rates were somewhat lower (45%) for youth with juvenile DOC dispositions, possibly due to lengthy YCF placements that limit the opportunity for these youth to re-offend prior to age 26. Among racial/ethnic groups, African American youth had the highest rates of adult felony conviction (32% for those with any juvenile department contact, and 48% for those with a history of formal county probation).

Table 2. Adult felony conviction rates, ages 18-25.

Adult (age 18-25) Felony Rates

	Youth with any Juvenile Department Disposition (up to and including formal probation)			Youth with one or more Formal County Probation Dispositions		
	Total N	N with adult felony before age 26	% with adult felony before age 26	Total N	N with adult felony before age 26	% with adult felony before age 26
Full Sample	31,539	7,150	**23%**	7,842	3,008	**38%**
Subpopulations	Total N	N with adult felony	% with adult felony	Total N	N with adult felony	% with adult felony
Males	18,851	5,532	29%	5,778	2,479	43%
Females	12,596	1,616	13%	2,059	528	26%
White	24,107	5,257	22%	5,839	2,169	37%
Hispanic/Latino	2,824	776	28%	840	353	42%
Asian	437	70	16%	90	33	37%
African American	1,370	435	32%	407	196	48%
Native American	685	185	27%	275	106	39%
Other and Unknown	2,116	427	20%	391	151	39%
No Juvenile History of Formal County Probation	23,697	4,142	18%	n/a	n/a	n/a
No Juvenile History of Formal County Probation, OYA, or DOC Dispositions	22,982	3,880	17%	n/a	n/a	n/a
No Juvenile History of OYA or DOC Dispositions	29,239	6,031	21%	6,174	2,135	35%
Any OYA Dispositions (incl. DOC	2,300	1,119	49%	1,668	873	52%
Any OYA Probation	1,293	656	51%	1,065	560	53%
Any OYA YCF Dispositions	947	555	59%	696	423	61%
Any DOC YCF Dispositions	588	218	37%	323	145	45%

Summary

Nearly a quarter of youth with any juvenile department contact, and nearly 40% of youth with a history of formal county probation, were convicted of an adult felony between the ages of 18 and 25. Youth with histories of OYA commitment, and particularly OYA YCF commitments, have especially high rates of felony conviction before age 26 (52% and 61%, respectively). Nearly half of all African American youth with a history of formal county probation received an adult felony conviction before age 26.

Section 2: What are the rates of prior service contacts among youth with juvenile department dispositions?

Methods

Sample. As in Section 1, the sample consisted of all youth with juvenile department contact who were born in the years 1985-1987. Records of agency contacts were available from at least age 15 (age 13 for Child Protective Services and Foster Care) through age 25 for each youth in the sample. The sample consisted of 31,539 unique youth.

Outcome Measures. The outcome measures were the rates of prior contact with other agencies. Administrative data from each agency was used to identify agency contacts that occurred >= 1 day prior to (a) the youth's first known juvenile department disposition of any intensity, and (b) the youth's first known disposition of formal county probation. Formal county probation is the most intense disposition provided by the county juvenile departments and, as noted in Section 1, only about 25% of juvenile department youth ever receive a formal probation disposition. Records were available for the following services: Self-Sufficiency (SS), Medical Assistance (DMAP), Child Protective Services (CPS; substantiated reports only), Foster Care placements (FC), Mental Health Services (MH), and Alcohol and Drug Services (AD).

Tracking Window. To allow tracking of adult felonies through age 25, the youth in this cohort were ages 13-15 during the first year that Feeder System records were available for SS, DMAP, MH, and AD (the year 2000), and age 11-13 during the first year that records were available for CPS and FC (1998). Thus, prior agency contacts can only be detected if they occurred at or after those ages. The rates reported below would likely be considerably higher if agency contacts were available from birth forward.

Results

Rates of Prior Agency Contacts. Approximately 45% of all juvenile department youth had prior contact with one or more of the Feeder System agencies. Of youth placed on formal probation, approximately 64% had prior contact with one or more of the Feeder System Agencies. Self-Sufficiency and Medical Assistance were the most common prior services received.

Approximately 13% of youth had contact with Mental Health services prior to any juvenile department contact, while 6% had contact with CPS, 4% had a prior foster care placement, and 4% had received drug and alcohol services. Rates of services prior to formal county probation were much higher, which may reflect a combination of both higher needs among youth who receive formal probation as well as the role of the juvenile department in connecting youth with services. Rates of prior Mental Health, Child Protective Services, and Foster Care contacts were approximately twice as high among youth who received formal county probation, as compared to the full sample of youth with any juvenile department contact. Rates of contact with Alcohol and Drug Services were nearly 5 times higher prior to a formal county probation disposition than prior to any juvenile department contact.

Table 3. Rates of prior service contacts (age 13-17) among youth with county juvenile department dispositions.

	Services Prior to Any Juvenile Department Disposition (Disposition Intensity <= 80)		**Services Prior to Any Formal County Probation (Disposition Intensity = 80)**	
	n	Percent	n	Percent
Total Number of Youth	31,539		7,842	
Prior Service Contacts				
Self-Sufficiency	11,122	35%	3,754	48%
Medical Assistance	12,157	39%	4,209	54%
Child Protective Services	1,889	6%	736	9%
Foster Care Placement	1,128	4%	586	8%
Mental Health Services	4,097	13%	2,119	27%
Alcohol and Drug Services	1,379	4%	1,479	19%
No Prior Service Contacts	17,425	55%	2,848	36%

Summary

Nearly half of all youth with juvenile department contact had prior adolescent contacts with one or more other agencies (records were available from approximately age 13 up). More than a third had prior contact with Self-Sufficiency and/or Medical Assistance, 13% had prior contact with Mental Health, 6% had a prior substantiated Child Protective Services claim, 4% had prior contact with Foster Care, and 4% had prior contact with Alcohol and Drug Services. Rates of contact with other agencies prior to formal county probation (the most intense county-level disposition) were considerably higher than the rates prior to all juvenile department dispositions combined.

Section 3:
Can adult felony convictions be predicted among youth with juvenile department involvement?

Methods

Sample. As in Sections 1 and 2, the sample consisted of all youth with juvenile department contact who were born in the years 1985-1987. Records of agency contacts were available from at least age 15 (age 13 for CPS and FC) through age 25 for each youth in the sample. For predictive modeling, 588 cases were excluded due to a history of juvenile DOC convictions, 92 cases were excluded due to missing gender information, and 393 cases were excluded due to missing referral information. The final sample consisted of 30,466 youth, 22% of whom (6,796) were convicted of an adult felony before age 26.

Outcome measure. A first-time adult felony conviction between the ages of 18 and 25.

Analytic Approach. Hierarchical stepwise logistic regression was used to identify which variables were most predictive of future DOC involvement, and to compare the relative contributions of demographic information (Step 1), juvenile department information (Step 2), and cross-agency contacts (Step 3). Models were built using a randomly-selected 80% of the sample ("development sample") and verified using the remaining 20% of the sample ("validation sample"). The development model used backwards elimination via the Wald statistic to retain only those variables that significantly contributed to the prediction of future DOC involvement.

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 first-time adult felony convictions 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 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 DOC and non-DOC groups, the AUC indicates how often the model produces a higher risk score for the person

from the DOC 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 DOC group versus the non-DOC 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. As reported below, overall model accuracy was consistent across the development and validation samples. However, some predictors that were significant for the development sample were not significant for the validation sample, suggesting that they could be excluded without significantly impacting model accuracy.

Results

Overview. Tables 4 and 5 show the results of the hierarchical stepwise logistic regression models for the Development (Table 4) and Validation (Table 5) samples. Model accuracy and fit statistics (Chi-Square, R^2, and AUC) are shown for each step in the far-right columns of the table. At each step, the model consists of the variables in that step and the preceding step(s). Model statistics for Step 1 describe the accuracy of demographics alone for predicting adult felony conviction. Model statistics for Step 2 describe the accuracy of demographics and juvenile justice history together for predicting adult felony conviction. Model statistics for Step 3 describe the accuracy of demographics, juvenile justice history, and other agency contacts for predicting adult felony conviction. Comparison of model statistics across steps shows the added value of juvenile justice history (Step 2 vs. Step 1) and other agency contacts (Step 3 vs. Step 2). Variable statistics are shown for each predictor in the model, based upon each predictor's contribution to the final (Step 3) model. Variables that were not statistically significant in the development model are denoted as "*not significant"* in the table.

Development Model. Table 4 shows the results for the regression model run on the development sample (80% of cases). Model statistics. As shown by the Step 1 model statistics, the three demographic variables (male, non-white, and age at first juvenile disposition) alone were significantly better than chance ($p < .001$) at predicting an adult felony conviction between the ages of 18-25. Overall accuracy for the model based on demographics alone was 64% (AUC = .64), meaning that if pairs of cases were selected at random from youth who did and did not receive adult felonies, the model would assign a higher risk score to the youth with a felony about 64% of the time. Step 2 model statistics show that adding Juvenile Justice information to the demographic variables increases the AUC by 8 percentage points, from 64% to 72%. Models with AUCs at or above 70% are generally considered to be accurate enough to be useful in the

social sciences. Thus, demographics and juvenile history together are reasonably accurate predictors of adult felony conviction. Step 3 model statistics show that adding information about prior agency contacts has minimal effect on the accuracy of the model. The Step 3 AUC and the proportion of variance accounted for (R^2) are identical to those of Step 2. Variable statistics. Variable statistics show the contribution of each variable to the final (three step) model. Wald statistics (bigger = better) and odds ratios (further from 1 = better) can be used to compare the relative strength of each predictor. Wald statistics show that male gender and the total number of criminal referrals are the two strongest predictors of adult felony conviction. Males involved with juvenile justice are at nearly 2.5x higher risk of an adult felony conviction by age 25 than females involved with juvenile justice. Youth with 2 criminal referrals are at 1.4x higher risk than youth with 1 criminal referral, and youth with 3 or more are an additional 1.4x higher risk above youth with 2 criminal referrals. Other notable contributors to the model are OYA YCF commitment (2.5x risk), OYA Probation (1.7x risk), and felony AOD referral (1.5x risk). Youth with a sex offense history were at substantially reduced risk of an adult felony conviction before age 26; in the development model, youth with a juvenile sex offense were at 1.7x *lower* risk (odds ratio = .60) of receiving an adult felony conviction. Although agency contacts as whole did not significantly improve the fit of the model, contacts with Foster Care and contacts with Alcohol and Drug Services were both retained the final model as significant predictors of adult felony conviction. Foster care was associated with a 1.4x increase in risk, and Alcohol and Drug Services were associated with a 1.2x increase in risk.

Validation Model. First, the development model was applied to the validation sample to evaluate the accuracy of the development model when applied to a new sample of youth. As shown in Table 4, the AUC was comparable for both the development sample (AUC = .72) and the validation sample (AUC = .73; see bottom of Table 4). Second, the variables that were retained in the final development sample model were entered into a new hierarchical stepwise regression model and run on the validation sample in order to evaluate the stability of the individual predictors across different samples. Results from the validation model were very similar to those described above for the development model, indicating good model stability across different samples. Some significant predictors in the development model did not reach significance in the validation model, which could be due in part to the smaller sample size of the validation model. However, the direction and magnitude of the effects for each predictor were similar across models. Furthermore, model statistics were very consistent across the development and validation samples, with the biggest gains in accuracy seen between Step 1 and Step 2, and minimal additional gain from adding other agency contacts in Step 3.

Table 4. Development model predicting first-time adult felony conviction before age 26.

Table 4. Juvenile Department Hierarchical Logistic Regression (Outcome = Adult felony conviction ages 18-25)									
Development Model									
80% Development Sample N=24,419 (5,404 DOC)	β	SE	Wald	Odds Ratio	p-value	Chi-Square	R^2	ΔR2	AUC
Step 1: Demographics only					.000	1115.57	.07	n/a	.64
Male	.88	.04	515.27	2.41	.000				
Non-White Race/Ethnicity	.18	.04	21.97	1.20	.000				
Age at first juvenile disposition	.07	.01	25.48	1.07	.000				
Step 2: Demographics plus Juvenile Justice History					.000	2748.08	.16	.10	.72
Ever Formal County Probation	.26	.04	35.20	1.30	.000				
Ever OYA Probation	.51	.08	40.02	1.67	.000				
Ever OYA YCF	.91	.10	87.12	2.48	.000				
Total County-Level[a] Juvenile Criminal Referrals, Grouped (1, 2,or 3+)	.32	.02	180.87	1.38	.000				
Any Felony	.18	.05	16.38	1.20	.000				
Any Misdemeanor	n.s.				.132				
Any Noncriminal	.17	.05	11.51	1.18	.001				
Any Person	.13	.05	7.79	1.14	.005				
Any Property	n.s.				.565				
Any Sex Offense	-.50	.10	27.07	.60	.000				
Any AOD Referral	.23	.04	26.83	1.25	.000				
Any Felony AOD Referral	.40	.07	28.31	1.49	.000				
Any Weapon Referral	n.s.				.344				
Any Criminal Mischief	n.s.				.781				
Any Arson	n.s.				.825				
Any Theft	.07	.04	3.14	1.08	.076				
Any Burglary	n.s.				.554				
Any Runaway	.28	.047	35.72	1.33	.000				
Any Criminal Trespass	n.s.				.953				
Any Curfew	.28	.05	32.58	1.33	.000				
Any Harassment	n.s.				.200				
Step 3: Demographics, JJ data, plus Contact with Other Agencies						2768.25	.16	.001	.72
Prior Contact with:									
Self Sufficiency	n.s.				.229				
Medical Assistance	n.s.				.718				
Child Protective Services	n.s.				.281				
Foster Care	.32	.09	13.67	1.37	.000				
Mental Health Services	n.s.				.999				
Alcohol and Drug Services	.19	.08	5.78	1.20	.016				
Constant	-3.70	.43	73.02	.03	.000				
Model AUC when applied to 20% Validation Sample									.73

[a]Only referrals that preceded OYA commitments by >= 90 days are included

Table 5. Validation model predicting first-time adult felony conviction before age 26.

Table 5. Juvenile Department Hierarchical Logistic Regression (Outcome = Adult felony conviction ages 18-25) **Validation Sample**									
20% Validation Sample N=6,047* (1,392 DOC)	β	SE	Wald	Odds Ratio	p-value	Chi-Square	R^2	ΔR2	AUC
Step 1: Demographics only					.000	314.92	.08	n/a	.65
Male	.92	.08	139.02	2.51	.000				
Non-White Race/Ethnicity	.11	.08	2.21	1.12	**.138**				
Age at first juvenile disposition	.05	.03	3.36	1.05	.067				
Step 2: Demographics plus Juvenile Justice History						743.29	.18	.10	.73
Ever Formal County Probation	.25	.09	8.48	1.29	.004				
Ever OYA Probation	.42	.16	6.50	1.52	.011				
Ever OYA YCF	.77	.20	15.46	2.15	.000				
Total County-Level Juvenile Criminal Referrals, Grouped (0, 1, 2, 3+)	.33	.05	48.19	1.39	.000				
Any Felony	.20	.09	4.98	1.22	.026				
Any Noncriminal	.36	.10	13.24	1.44	.000				
Any Person	.13	.09	1.85	1.13	**.174**				
Any Sex Offense	-.52	.19	7.74	.59	.005				
Any AOD Referral	.12	.09	1.84	1.13	**.175**				
Any Felony AOD Referral	.44	.15	8.94	1.55	.003				
Any Theft	.19	.08	5.15	1.20	.023				
Any Runaway	.27	.09	7.98	1.31	.005				
Any Curfew	.12	.10	1.49	1.13	**.222**				
Step 3: Demographics, JJ data, plus Contact with Other Agencies						747.82	.18	.01	.73
Prior Contact with:									
Foster Care	.30	.17	2.99	1.35	.084				
Alcohol and Drug Services	.19	.16	1.47	1.21	**.225**				
Constant	-3.70	.43	73.02	.03	.000				

Summary

Together, youth demographics and juvenile justice history were reasonably accurate predictors of first-time adult felony convictions before age 26 (AUC = .73). Male gender, total number of juvenile criminal referrals, felony AOD referrals, and juvenile OYA commitments were among the strongest risk factors for adult felony conviction before age 26, while juvenile sex offense histories reduced the risk. Foster Care and Alcohol and Drug Services prior to juvenile justice involvement were also associated with higher risk of an adult felony conviction, although they did not reach statistical significance in the validation model. As a whole, prior agency contacts did not improve the model beyond what could be achieved by demographics and juvenile justice information alone. However, it is possible that prior agency contacts would have more

predictive value if more history was available (e.g., records from birth or early childhood forward).

General Summary and Conclusions

Adult felony convictions before age 26 were fairly common among youth with juvenile department involvement, ranging from a low of 18% for youth who were never formally supervised by the juvenile department, to a high of 61% for youth who were ever committed to a secure OYA youth correctional facility. Among youth with any history of formal county probation, 40% were convicted of an adult felony between the ages of 18 and 25.

Nearly half of all youth with juvenile department contact had prior adolescent contacts with one or more of the tracked agencies. More than a third had adolescent contact with Self-Sufficiency and/or Medical Assistance, 13% had contact with Mental Health, 4% had contact with Alcohol and Drug Services, 6% had a substantiated Child Protective Services report, and 4% had contact with Foster Care. These rates would likely be higher if agency contacts were tracked from birth or early childhood.

Predictive modeling demonstrated that youth demographics and juvenile justice history can be used to predict first-time adult felony convictions with considerable accuracy (AUC = .73). Contrary to expectations, prior agency contacts did not improve the predictive accuracy beyond what was achieved by demographics and juvenile justice information alone. It is possible that prior agency contacts would have more predictive value if additional history was available (e.g., records from birth or early childhood forward).

Limitations. The present report tracked a cohort of youth whose contact with county juvenile departments occurred approximately 15 years ago (primarily 2000-2004). It would be useful to replicate these findings with more recent cohorts of youth as the data becomes available.

Other major limitations include the limited time window for detecting prior service contacts and the inability to include details of prior social service contacts (e.g., extent and type of involvement) as predictors in the model. Due to these limitations, the reported rates of prior service contacts are underestimates, and the contribution of prior services to the models predicting future adult felonies may have been underestimated as well.

Future Directions. The predictive models in this report were designed to show the feasibility of predicting adult felony convictions within the juvenile department population, and to examine the predictive value of prior contacts with other agencies. These models were able to predict adult felony convictions with reasonable accuracy and provide a starting point for more refined models. In the present sample, at least 1 in 5 youth who never escalated beyond formal county supervision as juveniles were nevertheless convicted of an adult felony before age 26. It may be advantageous to focus on developing tools to identify these higher-risk youth. Such tools would enable additional prevention and diversion resources to be offered to higher-risk youth in the hopes of preventing adult convictions.

References

Braun, M.J.F. (2014). Prevalence of DHS and OHA Program Access Prior to First Commitment: An Exploratory Analysis. Salem, OR: *Oregon Youth Authority*.

Racer, K. (2015a). Prevalence and Timing of DHR, OHA, and OYA Services Prior to First DOC Commitment. Salem, OR: *Oregon Youth Authority*.

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Appendix A

Juvenile Justice Disposition Categories

Juvenile justice dispositions are categorized according to a standard developed by the Juvenile Justice Information System 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 the level of juvenile justice involvement.

Dispositions in the "Juvenile Department" category were selected for the juvenile department sample. All disposition categories were included in the youth's juvenile justice history.

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
	Dismissed	Dismissed
	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
Juvenile DOC	Adult Court Process	Waived/Transfer
		Adult Sentence

Appendix B

Prevalence rates for Juvenile Justice predictors

Table B1. Prevalence rates for Juvenile Justice predictors.

Total N = 30,951*			
Predictor variable		**N with "Yes"**	**% with "Yes"**
Ever Formal County Probation		7,519	24.3%
Ever OYA Probation		1,222	3.9%
Ever OYA YCF		876	2.8%
Total County-Level[a] Juvenile Criminal Referrals, Grouped (1, 2,or 3+)	1	11,754	38.5%
	2	4,476	14.6%
	3	5,378	17.6%
Any Felony		8,462	27.7%
Any Misdemeanor		18,240	59.7%
Any Noncriminal		19,384	63.4%
Any Person		6,080	19.9%
Any Property		19,213	62.9%
Any Sex Offense		947	3.1%
Any AOD Referral		11,514	37.7%
Any Felony AOD Referral		1,513	5.0%
Any Weapon Referral		824	2.7%
Any Criminal Mischief		3,654	12.0%
Any Arson		402	1.3%
Any Theft		9,801	32.1%
Any Burglary		2,271	7.4%
Any Runaway		7,027	23.0%
Any Criminal Trespass		2,883	9.4%
Any Curfew		4,059	13.3%
Any Harassment		2,109	6.9%

*Youth with any history of juvenile DOC dispositions (n=588) were excluded from the predictive models (Section 3).