

Educational Attainment of Youth in Transition

By: Angela Krontiris



Youth in Transition

Who Are Foster Youth in Transition?

Foster Youth in Transition are young people between the ages of sixteen and twenty-four who are in **transition** from state custody or **foster** care and are at-risk. Once they turn 18 they can no longer receive assistance from the systems of care that previously provided for many of their needs. Youth in this age group experience a number of challenges on their path to a successful adulthood.

The transition from youth to adulthood is critical for every young person. Ideally, during the transition years, youth acquire knowledge and learn skills they will need to maximize their independence and self-sufficiency in their communities. Being connected to programs, services, activities, information, and supports helps to maximize youth success.

Introduction

What will this project deliver?

- What is the education enrollment status of current and former foster youth?
- What is the highest level of education completed by a majority of foster youth?
- What are the top educational services utilized by the foster youth?
- Is there a correlation between the foster youth's educational outcomes and services they receive from the state (e.g. Post-secondary educational support)?

Introduction (Cont'd)

How will the analysis be performed?

- Analysis performed with Python
- Packages used: Pandas, NumPy, SciPy, Matplotlib, Seaborn, Sklearn, Statsmodel
- Datasets: *National Youth in Transition Database (NYTD) Outcomes and Services File, FY 2011- 2016* acquired from the National Data Archive on Child Abuse and Neglect (NDACAN), Cornell University, Ithaca, NY.

Where to access project code?

GitHub: <https://github.com/akront1104/Educational-Attainment-of-Foster-Youth.git>

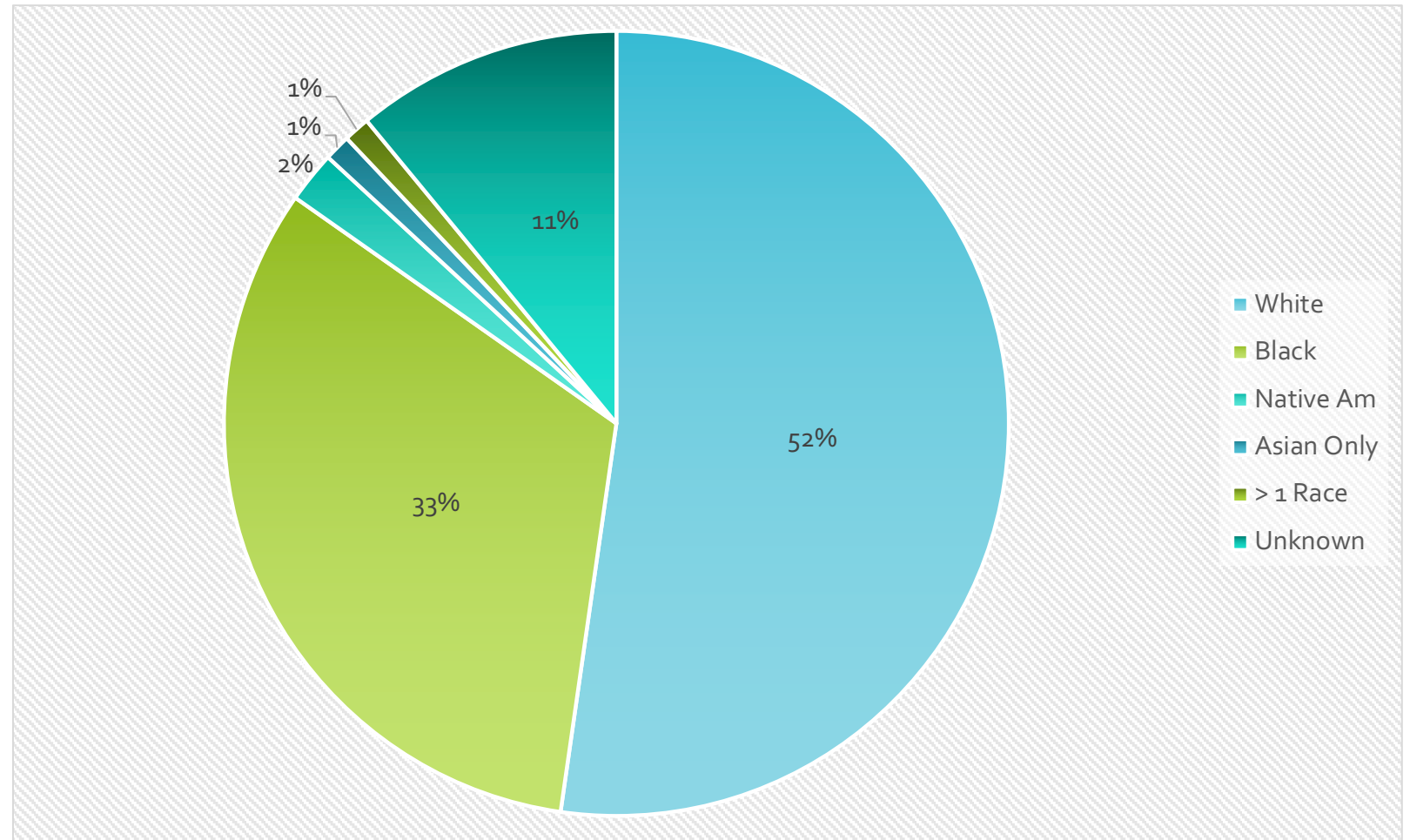
Acknowledgements

Thank you to my mentor, **Abhishek Sharma**, for all your support and assistance on this project.

The data used for my project were made available by the National Data Archive on Child Abuse and Neglect (NDACAN), Cornell University, Ithaca, NY, and have been used with permission. Data from the NYTD and AFCARS were originally collected by the states and provided to the Children's Bureau. Funding for the project was provided by the Children's Bureau, Administration on Children, Youth and Families, Administration for Children and Families, U.S. Department of Health and Human Services. The collector of the original data, the funder, the Archive, Cornell University and their agents or employees bear no responsibility for the analyses or interpretations presented here.

Foster Youth by Race

Foster Youth By Race



Education Enrollment Status

Enrollment Status – Foster Youth

	Former	Current
Yes	2,313	2,345
No	2,886	1,152
Blank	6,372	1,412

- 44 % of former youth are enrolled and attending school. More than half of former youth are not enrolled in school.
- 67% of current youth are enrolled and attending school.

Highest Educational Certification Received

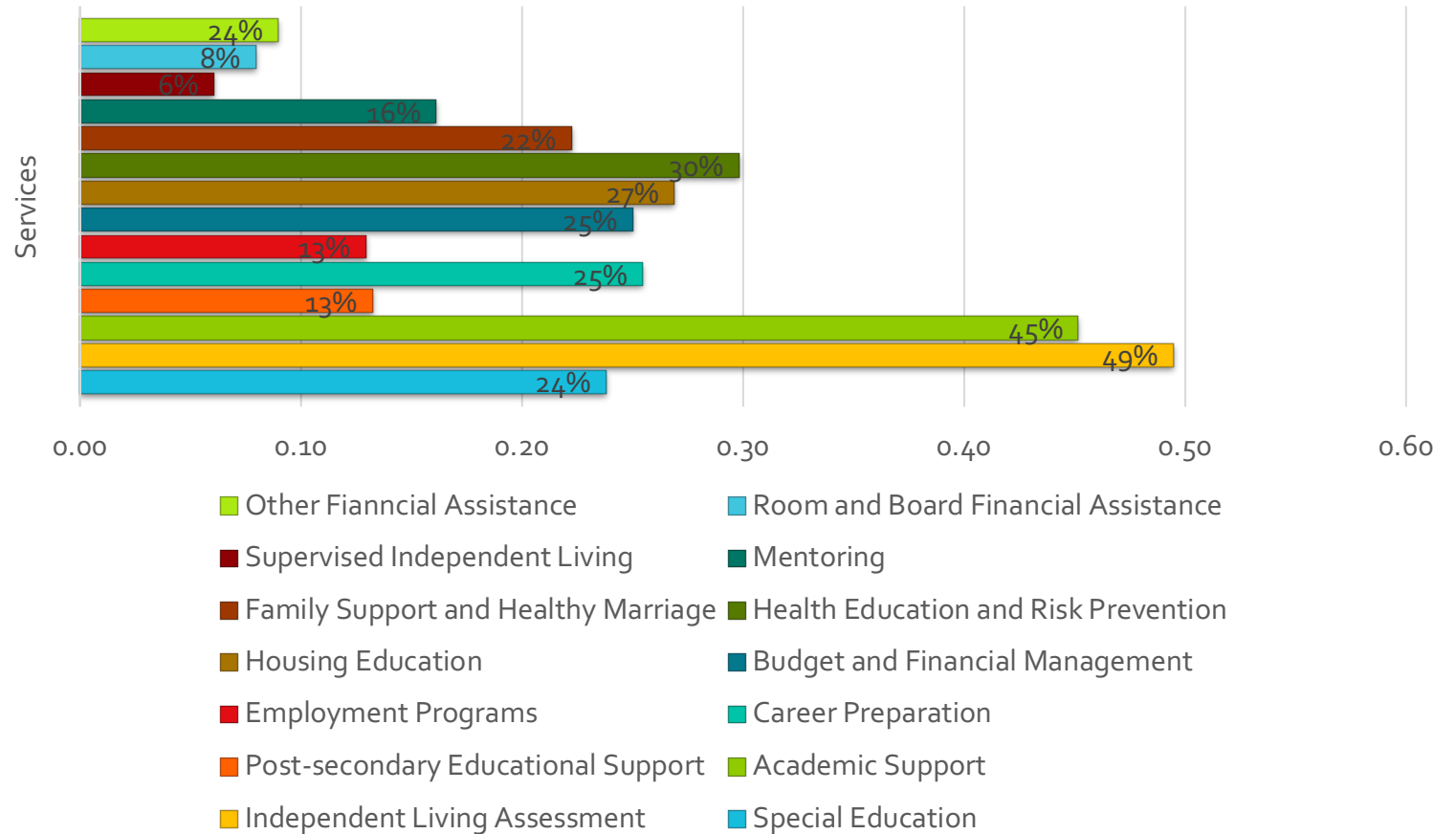
Highest Educational Degree of Foster Youth

High School or GED	5,209
Vocational Certification	111
Vocational License	45
Associate Degree	29
Bachelor Degree	10
Higher Degree	12
None of the Above	3,284
Blank	7,780

- Only 60 % of foster youth earned a high school diploma (Not including blank responses).
- 2.4 % completed post-secondary vocational training or college.

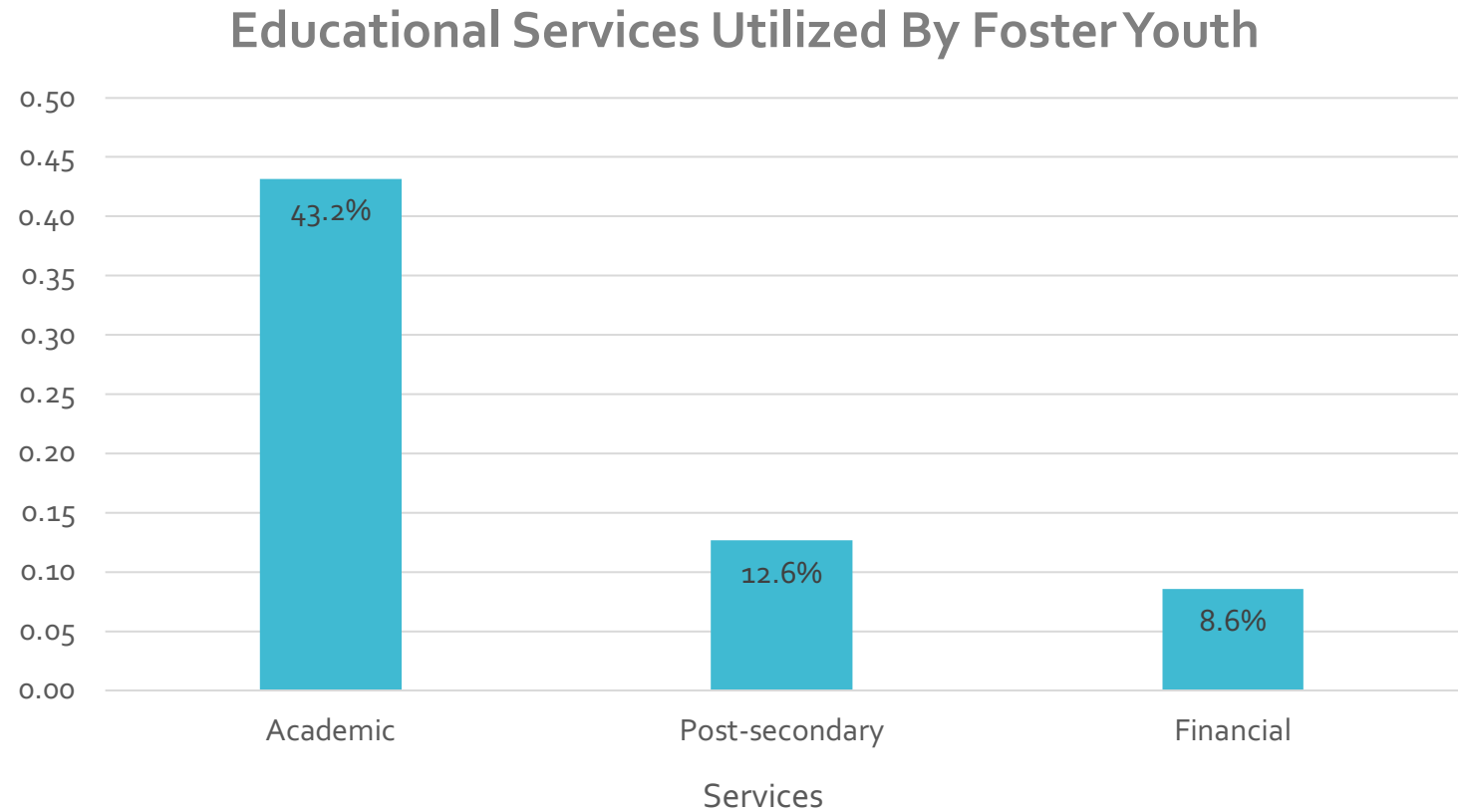
Services Utilized

Services Utilized By Foster Youth



The top three services utilized by youth in transition are **Independent Living Needs Assessment**, **Academic Support**, and **Health Education And Risk Prevention**.

Educational Services Utilized



- **43% of youth in transition received academic support such as counseling, studying for an exam, help with homework, etc...**
- **64% of youth in transition received educational support (Academic, Post-secondary, and Financial).**

Statistical Analysis

Chi-square test to validate the relationship between top 5 services received and a positive educational outcome from the foster youth.

Top Five Services					
	Independent Living Needs Assessment	Academic Support	Health Education And Risk Prevention	Housing Education And Home	Career Preparation
Enrolled	5245	4562	3118	2825	2711
Not Enrolled	335	266	174	134	140
P-value (significance level of 0.05)	0.00	0.00	0.00	0.00	0.00

All the **services** are **statistically significant** when compared to **educational attainment**.

Statistical Analysis (Cont'd)

Chi-square test to validate the relationship between foster youth receiving post-secondary support and college/post-secondary attainment.

Education Level	Post-secondary Services	
	Yes	No
Post-secondary	14	40
College	21	48
P-value (significance level of 0.05)	0.0000181	

P-value < 0.05

The relationship between **post-secondary services** and **college/post-secondary attainment** is statistically **significant**.

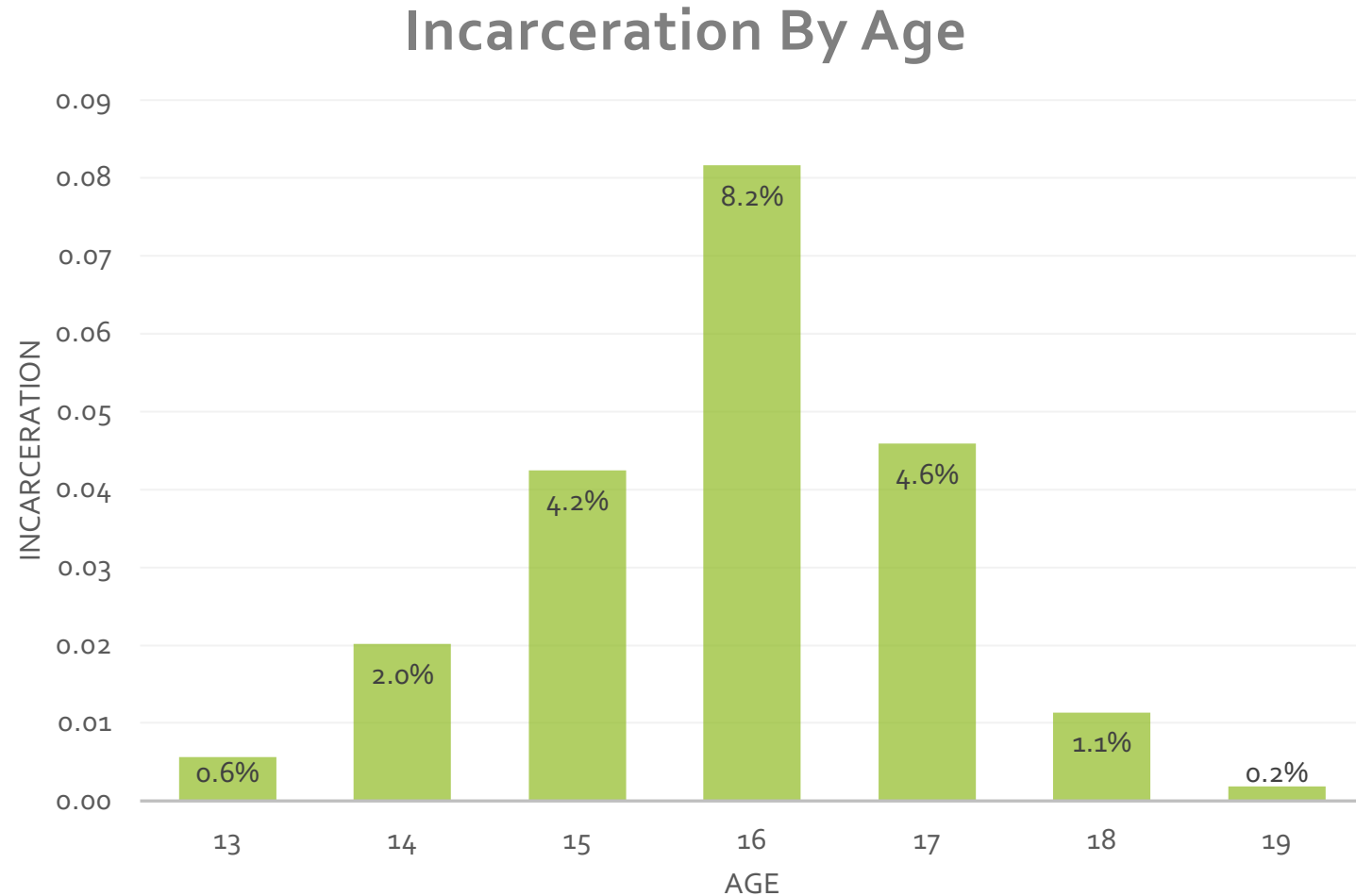
Statistical Analysis (Cont'd)

Chi-square test to validate the relationship between three negative outcomes and education level completed.

	Negative Outcomes		
	Substance Abuse	Incarceration	Children
> 6 th grade	42	56	11
8 th grade	489	594	96
11 th grade	360	423	65
College	10	14	1
P-value (significance level of 0.05)	0.00	0.00	0.00

There is a **negative correlation** between the outcomes (substance abuse, incarceration, and children) and the level of education completed by the foster youth. **The higher the education level, the lower negative outcomes.**

Association Between Incarceration & Age



Foster children at **age 16** are **more likely** to be incarcerated.

Random Forest Classifier

The classification goal is to determine which features are good predictors of educational attainment.

Top 10 features selected for this model using Random Forest's Feature Importance:

Features	Coef	Std Err	z	P> z	[0.025	0.975]
Female	1.320	0.078	16.957	0.000	1.168	1.473
Incarcerated	0.564	0.095	5.962	0.000	0.378	0.749
Received Independent Living Needs Assessment	1.012	0.073	13.888	0.000	0.871	1.157
Received Substance Abuse Referral	0.512	0.103	4.950	0.000	0.309	0.715
Receives Academic Support	0.984	0.082	12.024	0.000	0.824	1.145
Receives Other Financial Support	0.837	0.103	8.111	0.000	0.635	1.039
Receives Special Education Support	0.968	0.104	9.321	0.000	0.765	1.172
Employment Related Skills	1.166	0.126	9.235	0.000	0.918	1.313
Experienced Homelessness	0.351	0.119	2.944	0.003	0.117	0.584
Family Support and Healthy Marriage	0.592	0.118	5.021	0.000	0.361	0.822

All features are statistically significant

Random Forest Classifier (Cont'd)

Evaluating the model using a train (75%) and test (25%) split and estimating the classification performance

Confusion Matrix

	0	1
True label 0	32	80
True label 1	484	1523
Predicted label		

* 0 = Not Enrolled | 1 = Enrolled

1523 out of the 2007 sampled data made a correct prediction of a youth in transition enrolled and attending school (Positive Educational Outcome).

Precision and Recall

- Precision Score: 0.95
- Recall Score: 0.76

The random forest model predicts the youth in transition will have a positive educational outcome ('Enrolled') 96% correctly. The probability of making the correct prediction is 88%.

Logistic Regression Classification

The classification goal is to determine which services and outcomes are good predictors of educational attainment.

Top 10 features selected for this model using Recursive Feature Elimination (RFE):

Features	Coef	Std Err	z	P> z	[0.025	0.975]
Native Hawaiian or Other Pacific Islander	0.569	0.606	0.939	0.348	-0.619	1.757
State Submitting Report: Maine	0.346	0.783	0.442	0.659	-1.189	1.881
State Submitting Report: Minnesota	0.912	0.494	1.849	0.064	-0.055	1.882
State Submitting Report: North Dakota	0.389	0.745	0.522	0.602	-1.072	1.849
State Submitting Report: Nevada	0.660	0.482	1.371	0.170	-0.284	1.604
State Submitting Report: Vermont	0.174	1.015	0.172	0.864	-1.815	2.164
State Submitting Report: Wyoming	-0.435	0.542	-0.802	0.423	-1.497	0.628
State Submitting Report: Los Angeles	-1.075	0.188	-5.717	0.000	-1.443	-0.706
Connection to an Adult	2.898	0.053	54.708	0.000	2.794	3.002
Children	-0.493	0.173	-2.858	0.004	-0.831	-0.155

Three features are statistically significant to our model.

Logistic Regression Classification (Cont'd)

Evaluating the model using a train (75%) and test(25%) split and estimating the classification performance

Confusion Matrix

	0	1
0	36	76
1	241	1766

True label

Predicted label

* 0 = Not Enrolled | 1 = Enrolled

1766 out of the 2007 sampled data made a correct prediction of a youth in transition enrolled and attending school (Positive Educational Outcome).

Precision and Recall

- Precision Score: 0.96
- Recall Score: 0.88

The logistic regression model predicts a youth in transition will have a positive educational outcome ('Enrolled') 96% correctly. The probability of making the correct prediction is 88%.

State Significance

Which states are statistically significant and contribute more to the prediction of the youth's education status?

Top 10 states with the highest coefficient:

Features	Coef	Std Err	z	P> z	[0.025	0.975]
Iowa	3.837	0.364	10.537	0.000	3.123	4.550
Minnesota	3.830	0.552	6.942	0.000	2.749	4.912
Connecticut	3.820	0.483	7.906	0.000	2.873	4.767
Virginia	3.765	0.459	8.194	0.000	2.864	4.665
Florida	3.734	0.415	9.003	0.000	2.921	4.546
Nebraska	3.674	0.478	7.693	0.000	2.741	4.615
Colorado	3.635	0.476	7.632	0.000	2.701	4.569
Michigan	3.5810	0.454	7.886	0.000	2.691	4.471
Alabama	3.542	0.472	7.501	0.000	2.617	4.468
Massachusetts	3.456	0.375	9.221	0.000	2.721	4.190

Summary of Findings

- The highest level of education by most youth in transition is High School or GED.
- Only 2.4% of foster youth complete post-secondary vocational training or college.
- Foster youth who were still in care at age 19 had better educational outcomes than their peers who had left.
- Foster children at age 16 are more likely to be incarcerated. Using Pearson's correlation coefficient, there is a weak association between age and incarceration.
- There is a good indication that a youth in transition will enroll in college or post-secondary school if they are receiving post-secondary support from the state.
- All services provided by Chafee Act (e.g. Academic Support) have a positive impact on the foster youth's educational attainment.
- The State in which the youth lives has an impact on the youth's educational attainment. The states with the most significance to a positive educational outcome when compared to all other features are Los Angeles, Minnesota, Nevada, Wyoming, North Dakota, Maine, and Vermont.

Recommendation

Post-secondary education is an important indicator of the foster youth's success. The state should educate these children on youth transition services, such as post-secondary support, and should be made accessible to them. The more children that are informed about these services, more will utilize them, and therefore will lead to better educational outcomes.

