

NYTD Modeling: Visual Data Report

A Statistical Analysis of Foster Care Youth Outcomes in Tennessee



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How to Use This Report

- ▶ Click on any section in the **Table of Contents** to jump directly to that analysis
- ▶ Each section contains **Key Findings** highlighted in boxes for easy scanning
- ▶ All charts and detailed data are in the **Appendix**
- ▶ Statistical details support each finding

Introduction

Quick Facts

- ▶ **599 foster care youth** from Tennessee analyzed
 - ▶ **19 reliable relationships** found between care experiences and adult outcomes
 - ▶ **3 cohorts** tracked from 2014-2024
 - ▶ **6 key life areas** measured 1-4 years after leaving care
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This report analyzes outcomes for youth in foster care using Tennessee's National Youth in Transition Data (NYTD). The analysis identifies which factors during foster care predict success or challenges in young adulthood.

What We Studied:

- ▶ Youth outcomes in education, housing, employment, and criminal justice
- ▶ Factors that influence these outcomes (placement type, services, demographics)
- ▶ Statistical relationships between experiences in care and adult results

Data Sources:

- ▶ NYTD Outcome Survey (ages 17, 19, 21)
- ▶ NYTD Services records

- ▶ AFCARS placement data

Key Limitations:

- ▶ Small sample size (599 youth)
- ▶ Tennessee-specific results
- ▶ Voluntary participation creates bias
- ▶ Missing data from 2011 cohort

Executive Summary

Bottom Line Up Front

19 reliable connections found between foster care experiences and adult outcomes.

Placement stability is the most important factor affecting youth success.

Most Important Findings

Critical Risk Factors:

- ▶ **Placement moves** - More moves = worse outcomes in all areas
- ▶ **Group home placement** - Higher incarceration rates than foster homes
- ▶ **Male gender** - 5x more likely to be incarcerated
- ▶ **Having a disability** - Higher homelessness and lower employment

Protective Factors:

- ▶ **Stable placements** - Fewer moves lead to better outcomes
- ▶ **Foster homes** - Better results than group homes

- **Longer time in care** - Reduces some risks
- **Early adult relationships** - Strong lasting positive effects

Key Statistics

Challenges:

- **35.7%** experienced incarceration
- **29.3%** experienced homelessness
- **18.5%** received substance abuse referrals

Successes:

- **94.3%** maintain adult connections
- **64.8%** in education or employment
- **Foster homes** consistently outperform other placements

What This Means

Keep youth in stable foster home placements with supportive adults. Focus extra resources on males, youth with disabilities, and those in group homes.



Summary Dashboard

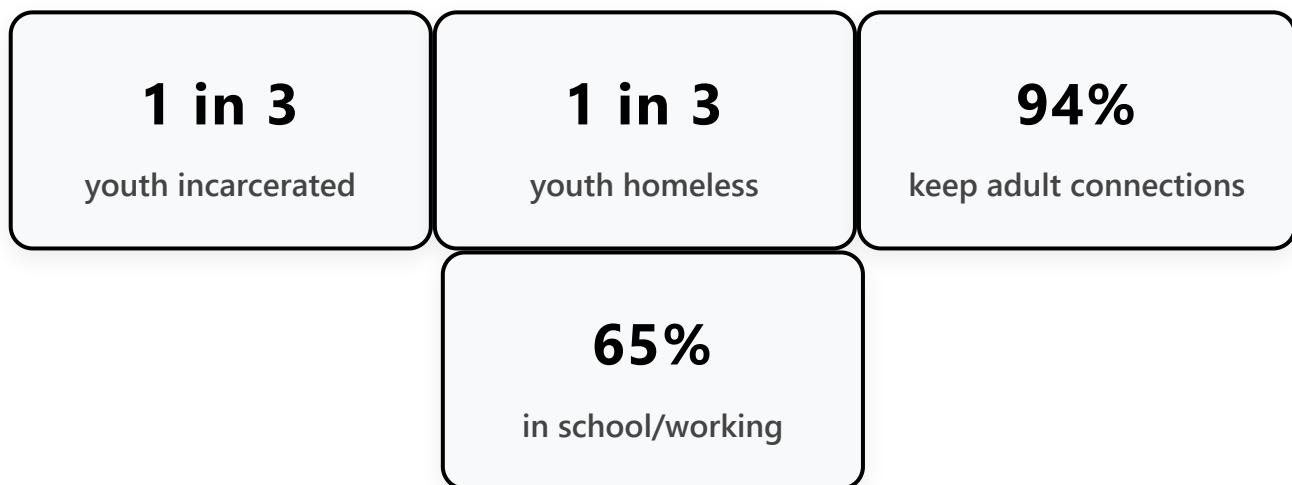
⚠ Highest Risk Factors

RISK FACTOR	IMPACT	AFFECTED OUTCOMES
Placement Moves	More moves = higher incarceration, homelessness, substance abuse	Criminal justice, housing, substance use, education
Group Home Placement	2x higher incarceration risk	Criminal justice involvement
Having a Disability	Higher homelessness, lower employment	Housing stability, education/employment
Male Gender	5x more likely to be incarcerated	Criminal justice involvement

✓ Protective Factors

PROTECTIVE FACTOR	IMPACT	AFFECTED OUTCOMES

PROTECTIVE FACTOR	IMPACT	AFFECTED OUTCOMES
Foster Home Placement	Better outcomes than all other placements	Multiple positive outcomes
Longer Time in Care	Lower incarceration, better outcomes	Criminal justice, education/employment
Service Access	More education aid, higher enrollment	Educational outcomes



Key Findings

Statistical Results Summary

19 reliable relationships found between foster care experiences and outcomes ($p < 0.05$).

Most Important Predictors

1. Placement Stability

- ▶ Affects 4 different outcomes
- ▶ More moves = higher incarceration (13.9x higher odds)
- ▶ More moves = higher substance abuse (12.2x higher odds)
- ▶ More moves = higher homelessness (4.4x higher odds)

2. Gender Differences

- ▶ Males much more likely to be incarcerated
- ▶ Most reliable predictor in the analysis (99.99% confidence)

3. Disability Status

- ▶ Increases homelessness risk
- ▶ Decreases education/employment success

- ▶ Affects multiple life domains

4. Placement Type

- ▶ Group homes have higher incarceration rates
- ▶ Foster homes show better outcomes across measures

Outcome-Specific Findings

Education & Employment Success:

- ▶ Stable placements help
- ▶ Females do better
- ▶ Longer time in care helps
- ▶ Having a disability hurts

Criminal Justice Involvement:

- ▶ Males at much higher risk
- ▶ Group homes increase risk
- ▶ More placement moves increase risk
- ▶ Longer time in care reduces risk

Housing Stability:

- ▶ Having a disability increases homelessness
- ▶ More placement moves increase homelessness

Substance Use:

- ▶ More placement moves increase referrals
- ▶ Longer time in care slightly reduces risk

 **Adult Connections:**

- ▶ Early supportive relationships predict lasting connections
- ▶ 94.3% of youth maintain these relationships

 **Key Insight**

Placement stability emerges as the most universal predictor. Youth with frequent placement moves struggle across nearly every outcome measured. This suggests that reducing placement disruptions should be a top policy priority.



Data Overview

Primary Data Sources

- ▶ **NYTD Outcome Survey:** Youth outcomes at ages 17, 19, and 21
- ▶ **NYTD Services:** Service utilization records
- ▶ **AFCARS:** Placement history and demographics
- ▶ **Final Dataset:** 599 youth with complete data

Analysis Approach

- ▶ **Method:** Statistical analysis (logistic regression)
- ▶ **Focus:** Reliable relationships between experiences and outcomes
- ▶ **Significance Level:** $p < 0.05$ for reliable findings
- ▶ **Validation:** Manual checks and cross-validation of results

Data Quality

- ▶ **Missing Data:** Very low (under 2% for most outcomes)
- ▶ **Sample Size:** 599 youth from 3 cohorts (2014-2024)
- ▶ **Geographic Scope:** Tennessee only
- ▶ **Participation:** Voluntary (introduces selection bias)

Outcome Statistics

Results by Life Domain

Housing & Family

OUTCOME	RATE	COUNT	INTERPRETATION
Having Children (Unmarried)	22.4%	159/709	About 1 in 5 youth
Experiencing Homelessness	29.3%	211/719	Nearly 1 in 3 youth

Education & Employment

OUTCOME	RATE	COUNT	INTERPRETATION
Education/Employment	64.8%	464/716	Nearly 2 out of 3 youth
Adult Connections	94.3%	678/719	Almost all youth

Criminal Justice & Health

OUTCOME	RATE	COUNT	INTERPRETATION
Incarceration	35.7%	256/718	About 1 in 3 youth
Substance Abuse Referrals	18.5%	133/717	About 1 in 6 youth



Key Insights

- ▶ **Most youth maintain adult connections** (94.3%) - major success
- ▶ **Two-thirds pursue education/employment** (64.8%) - positive trend
- ▶ **One in three face major challenges** (incarceration/homelessness) - areas for improvement
- ▶ **Data quality is excellent** - missing data under 2%

Appendix

Detailed Data, Charts, and Model Results



Variable Definitions

Reference: These variables support findings in [Key Findings](#), [Outcome Statistics](#), and [Summary Dashboard](#).

Outcome Variables (What We Measured)

DOMAIN	VARIABLE	DESCRIPTION
Education & Employment	Connected_Youth	In school or working full-time
Social Connections	CnctAdult_w23	Has supportive adult relationship
Housing	Homeless_w23	Experienced homelessness
Health & Wellness	SubAbuse_w23	Received substance abuse referral
Criminal Justice	Incarc_w23	Was incarcerated
Family	Children_NoMarriage_w23	Had children without marriage

Predictor Variables (What We Studied)

DOMAIN	VARIABLE	DESCRIPTION
Demographics	Sex	Male or female
Disability Status	DiagDis	Diagnosed with a disability
Placement Factors	PlacementType	Where placed (foster home, group home, other)
Placement Factors	PlacementInstability	Number of different placements
Placement Factors	MonthsInCare	Total time in foster care system
Early Indicators	SubAbuse_w1	Substance abuse referral while in care
Early Indicators	CnctAdult_w1	Had supportive adult while in care
Removal Reasons	RR_neglect, RR_abuse, RR_other	Why removed from home



Complete Statistical Results

Reference: These tables provide complete statistical support for Key Findings and Summary Dashboard.

Top 10 Most Reliable Findings

RANK	FINDING	CONFIDENCE	EFFECT SIZE	IMPACT
1	Males more likely incarcerated	99.99%	Large	Major risk factor
2	Group homes increase incarceration	99.99%	Large	Placement matters
3	Other placements increase incarceration	99.93%	Large	Foster homes best
4	More moves increase incarceration	99.89%	Very Large	Stability crucial
5	Longer care reduces incarceration	99.85%	Medium	Time helps
6	More moves increase substance abuse	98.92%	Very Large	Multiple impacts
7	Disabilities increase homelessness	98.84%	Medium	Support needed
8	More moves reduce education success	99.18%	Large	Affects everything
9	Adult connections predict connections	96.76%	Large	Relationships matter
10	Disabilities reduce education success	97.72%	Medium	Barrier to success

Outcome Frequency Summary

OUTCOME	YES	NO	TOTAL	SUCCESS RATE
Adult Connections	678	41	719	94.3%
Education/Employment	464	252	716	64.8%
Incarceration	256	462	718	35.7% (challenge)
Homelessness	211	508	719	29.3% (challenge)
Children (Unmarried)	159	550	709	22.4%
Substance Abuse	133	584	717	18.5% (challenge)



Charts and Visualizations

 **Reference:** These visualizations support findings in [Outcome Statistics](#), [Key Findings](#), and [Summary Dashboard](#).

Available Charts

- ▶ **Forest Plots by Outcome** - Shows effect sizes for all reliable findings
- ▶ **Outcome Distribution Bar Charts** - Visual breakdown of all outcome rates
- ▶ **Predictor Distribution Bar Charts** - Shows distribution of risk factors
- ▶ **Placement and Care Distribution** - Time in care and placement patterns
- ▶ **Variable Frequency Plot** - Which factors appear most often in results
- ▶ **Model Results Dashboard** - Statistical summary ranked by effect size

Note: Chart images referenced in original document (all_visual_data_forest_plot.png, each_outcome_bar_chart.png, etc.) provide detailed visual representation of these findings.



Methods and References

 **Reference:** Complete methodology supports analysis in Key Findings and statistical approach.

Analysis Method

- ▶ **Statistical Approach:** Logistic regression for binary outcomes
- ▶ **Significance Level:** $p < 0.05$ for reliable findings
- ▶ **Sample Size:** 599 youth with complete data
- ▶ **Validation:** Manual verification of key results

Data Sources

- ▶ **Foster Care Analysis Reports:** univariate_analysis_report_v3.pdf, bivariate_analysis_report_v4.pdf
- ▶ **Model Creation:** all_visual_data.ipynb
- ▶ **Research Foundation:** "Aging Out of Foster Care: Homelessness, Post-Secondary Education, and Employment" (Journal of Public Child Welfare)

Key Limitations

- **Geographic Scope:** Tennessee only - results may not apply elsewhere
- **Sample Size:** Relatively small for some subgroup analyses
- **Selection Bias:** Voluntary participation affects generalizability
- **Missing Data:** 2011 cohort could not be included due to ID matching issues

Data Quality Notes

- **NYTD Outcomes:** 720 youth across 4 cohorts (2011-2024)
- **AFCARS Match:** 599 youth across 3 cohorts (2014-2024)
- **Missing Data Rate:** Under 2% for most key variables
- **Validation:** Cross-checked unique identifiers and calculations

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