Predicting Youth's Entry to Residential Care in a Child Welfare System

Richard A. Epstein, Ph.D., M.P.H., Ka Ho Brian Chor, Ph.D., & Zhidi Luo, M.S.

CHAPIN HALL

Objective

Develop and validate a predictive model to identify youth entering the child welfare system who are at risk of entering residential care.

Background

- About 15% of youth in the U.S. child welfare system reside in residential care facilities.[1]
- Given concern about its restrictiveness, cost, and lack of clear evidence of effectiveness,[2] child welfare systems might leverage administrative data to identify youth at risk of entering residential care.
- Identifying youth at risk of entering residential care could provide opportunity to target preventive interventions to those at highest risk of entering residential care.

Method

Data Source: Illinois Department of Children and Family Services (DCFS) administrative data

Cohort: 91,068 DCFS legal custody spells for youth (ages 0-17) that began between 1/1/2000 and 6/30/2018

Analysis Plan: Cox proportional hazards regression predicting first residential care

Model Validation: Using 200 bootstrap samples, model prediction accuracy was assessed by bias-corrected indices: (1) c-statistics index; (2) Nagelkerke R^2; and (3) Shrinkage slope

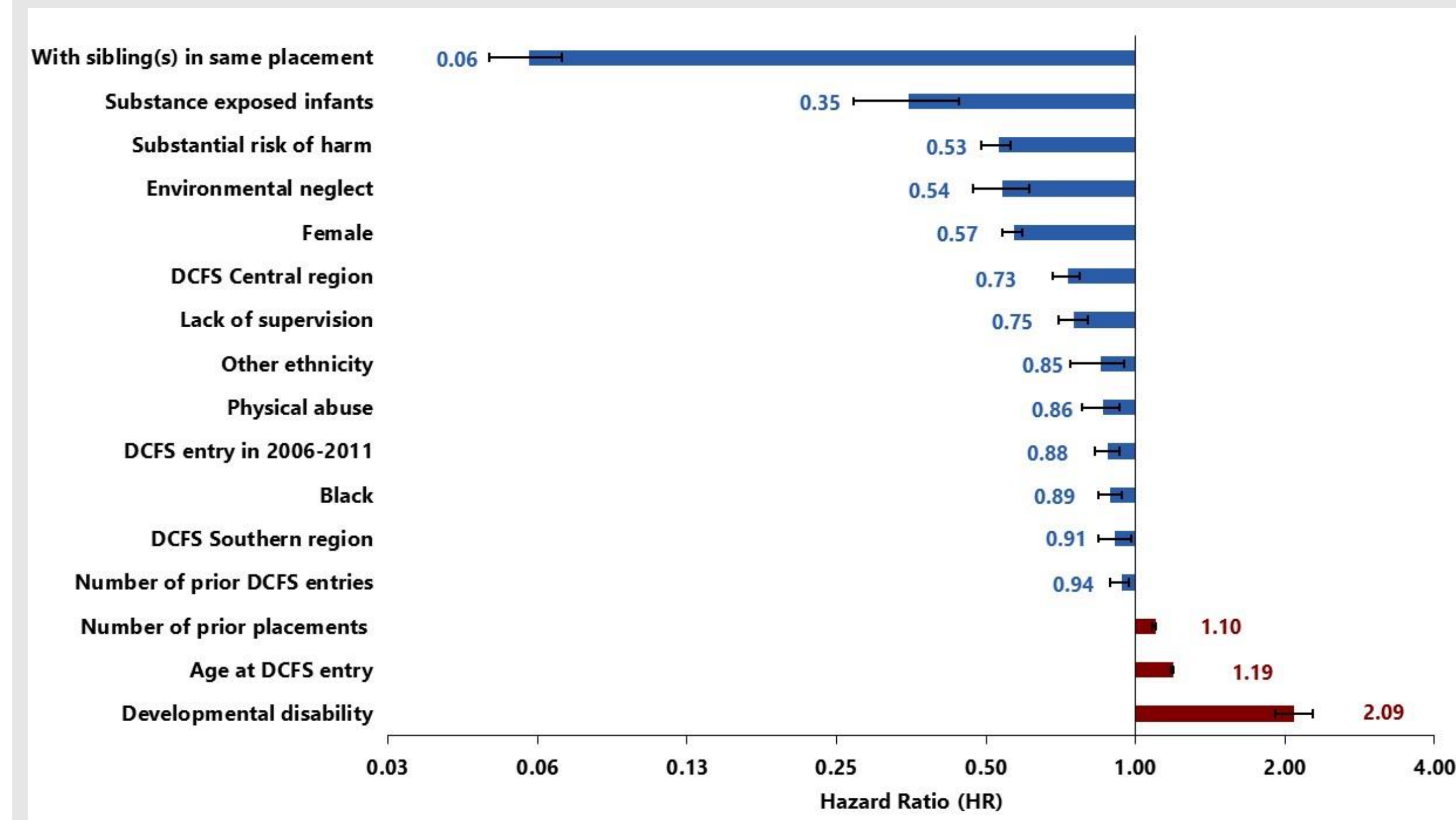**Outcome:** Residential care is defined using DCFS living arrangement and type service codes

Fixed Covariates: Age, gender, ethnicity, developmental disability status, DCFS regions, year of entry, number of prior DCFS spells

Time-Varying Covariates: Prior allegation, number of prior placements, and number of siblings in the same placement
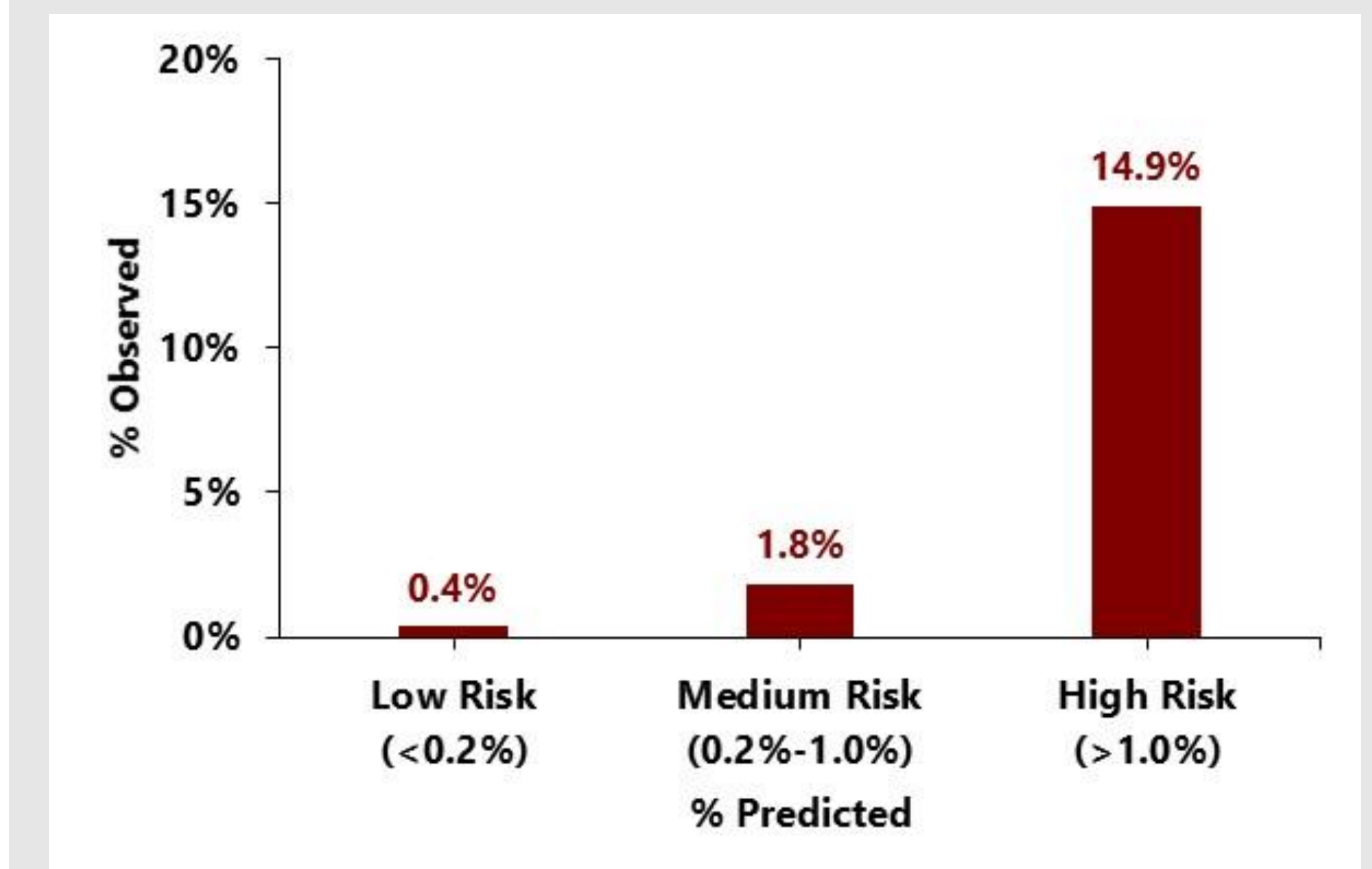
Results

- Spells with a placement in residential care (n = 8,268) were more likely than spells without to include youth who were male (61.7% vs. 50.2%), Black (54.4% vs. 45.2%), older (mean$\pm$sd age: 11.9$\pm$4.2 vs. 5.06$\pm$5.1), from Cook County (46.9% vs. 29.0%), entered DCFS legal custody in 2000-2005 (38.2% vs. 33.8%), and had greater average number of prior DCFS spells (mean$\pm$sd no. of prior spells: 0.27$\pm$0.56 vs. 0.14$\pm$0.41).
- Bias-corrected c-statistics, Naglkerke R^2, and shrinkage slope indices from the 200 bootstrap samples were all similar to those for the original cohort (c.f., original cohort c-statistic = 0.7878; bias-corrected c-statistic = 0.7874).

Figure 1. Significant predictors associated with placement in residential care

Figure 2. Observed vs. Predicted risk placement in residential care within 90 days of entering DCFS custody

Conclusions and Relevance to Policy, Delivery, and Practice

- 4% of spells included placements in residential care within 90 days of legal custody
- An empirical, validated predictive risk model can identify youth at low-, medium-, or high-risk of placement in residential care.
- Limitations include treating placements in residential care that were of different lengths as if they are the same and using covariates that may be unique to Illinois' child welfare system
- Predictive risk models can inform child welfare resource allocation and preventive interventions for residential care
- Differential strategies should be tailored to differential risks of entering residential care

References

1. U.S. Department of Health and Human Services, Administration for Children, Youth and Families. (2011). *The AFCARS Report*. Washington, D.C.: Author. Retrieved from https://www.acf.hhs.gov/cb.

2. Fields, S. A. & Ogles B. M. (2002). The system of care for children and the least restrictive alternative: Legal origins and current concerns. *Children's Services: Social Policy, Research & Practice, 5*(2), 75-93.

Funding and Contact Information