Investigating the Causal Relationship between Childhood Disabilities and Non-Parental Care

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The Situation

Objective:

Explore causality between child disability and non-parental care participation.

Contribute to understanding factors affecting childcare decisions for disabled children.

Background:

Childcare is vital for childhood development and family support.

Establishing causality informs policy and support for families of disabled children.

The Data

Early Childhood Program Participation (ECPP) survey from 2019.

- Household Level Data
- 7000 Rows, 600 Columns

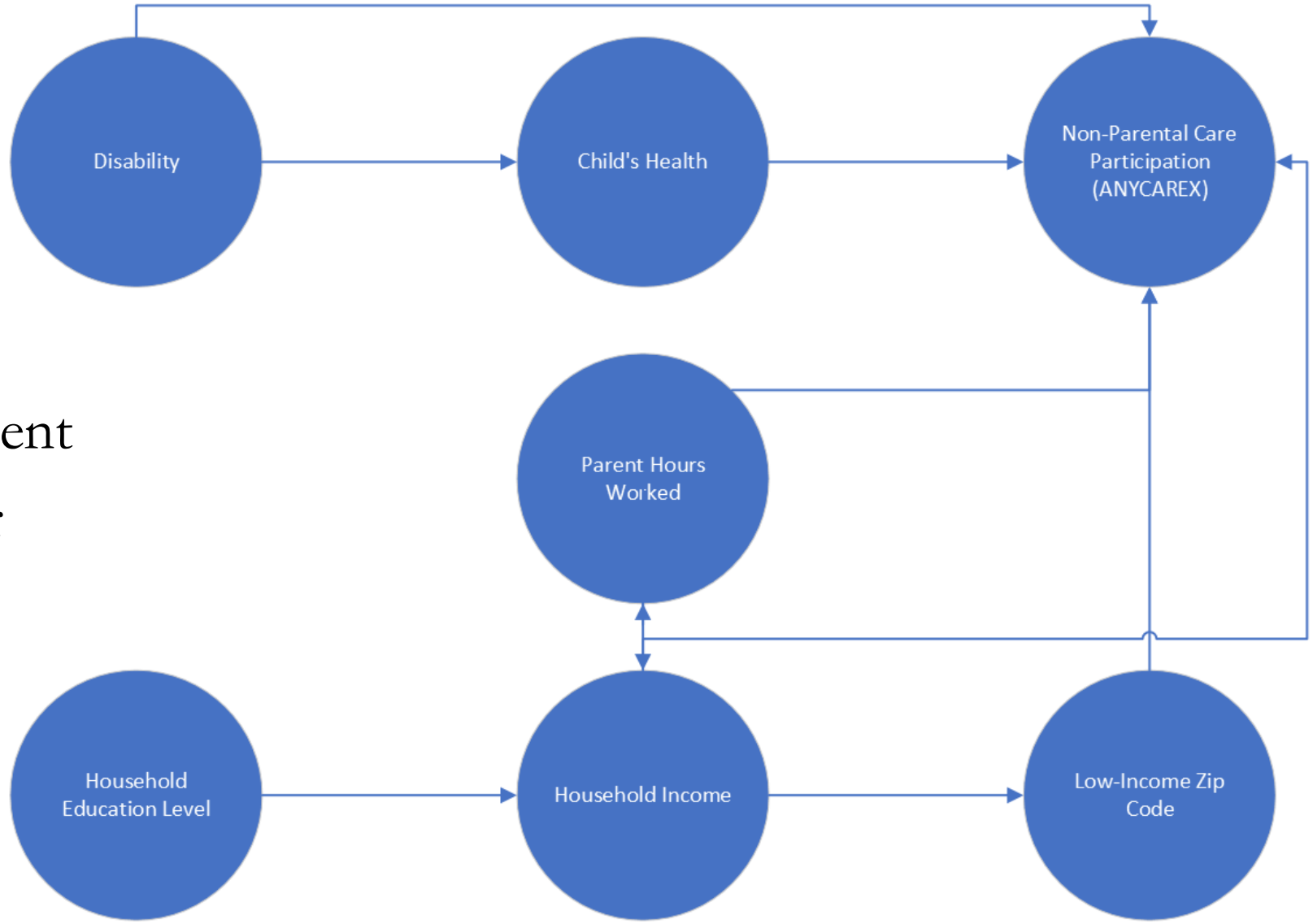
Variables Include:

- Children's disability status
- participation in non-parental care or program arrangements
- Demographic
- Socio-Economic

The Data!

DSBLTY: Child has Disability (0,1)
TTLHHINC: Total Household Income.
AGE2018: Child's Age
FHRSWK: Family Hours Worked per week. Combination of two parent work variables.
HDHEALTH: Child's Health (1-5, excellent-poor)
ZIPLOCL: Location Type (Rural, Suburban, City)
FFSTGN: Family immigrant status, combination of two parent immigrant variables.
ZIP18PO2: % of households below the poverty line in the zip code
ZIPBLHI2: % of minority population in zip code
FEDUC: Family Education. Combination of Parent Education Levels
ANYCAREX: Child attends non-parental care (0,1)
CAREHOURX: Hours per week in non-parental care

DAG



Things to Note:

- Not All Variables Present
- Child Health Mediator
- Confounders

Variables

"Treatment" Variable: DSBLTY

Control: TTLHHINC + AGE2018 + FHRSWK + HDHEALTH + ZIPLOCL + FFSTGN + ZIP18PO2 + ZIPBLHI2 + FEDUC

Outcome Variables: ANYCAREX, CAREHOURX

Goal: To attempt to establish causality between a child having a reported disability and the child participating in any non-parental care or program arrangements.

Data Management

FHRSWK: Family Hours Worked per week. Combination of two parent work variables.

Family Hours Worked Per Week

```r
{r}
# edit variables with -1 values (P1HRS,P2HRS per week, ANYCAREX), turn all -1
values to 0.
# Create new hours worked variable, FHRSWK, combining both parents worked hours per
week.
NHES_sub$P1HRSWK[NHES_sub$P1HRSWK == -1] = 0
NHES_sub$P2HRSWK[NHES_sub$P2HRSWK == -1] = 0
NHES_sub$FHRSWK  = NHES_sub$P1HRSWK + NHES_sub$P2HRSWK
```

Data Management, Cont.

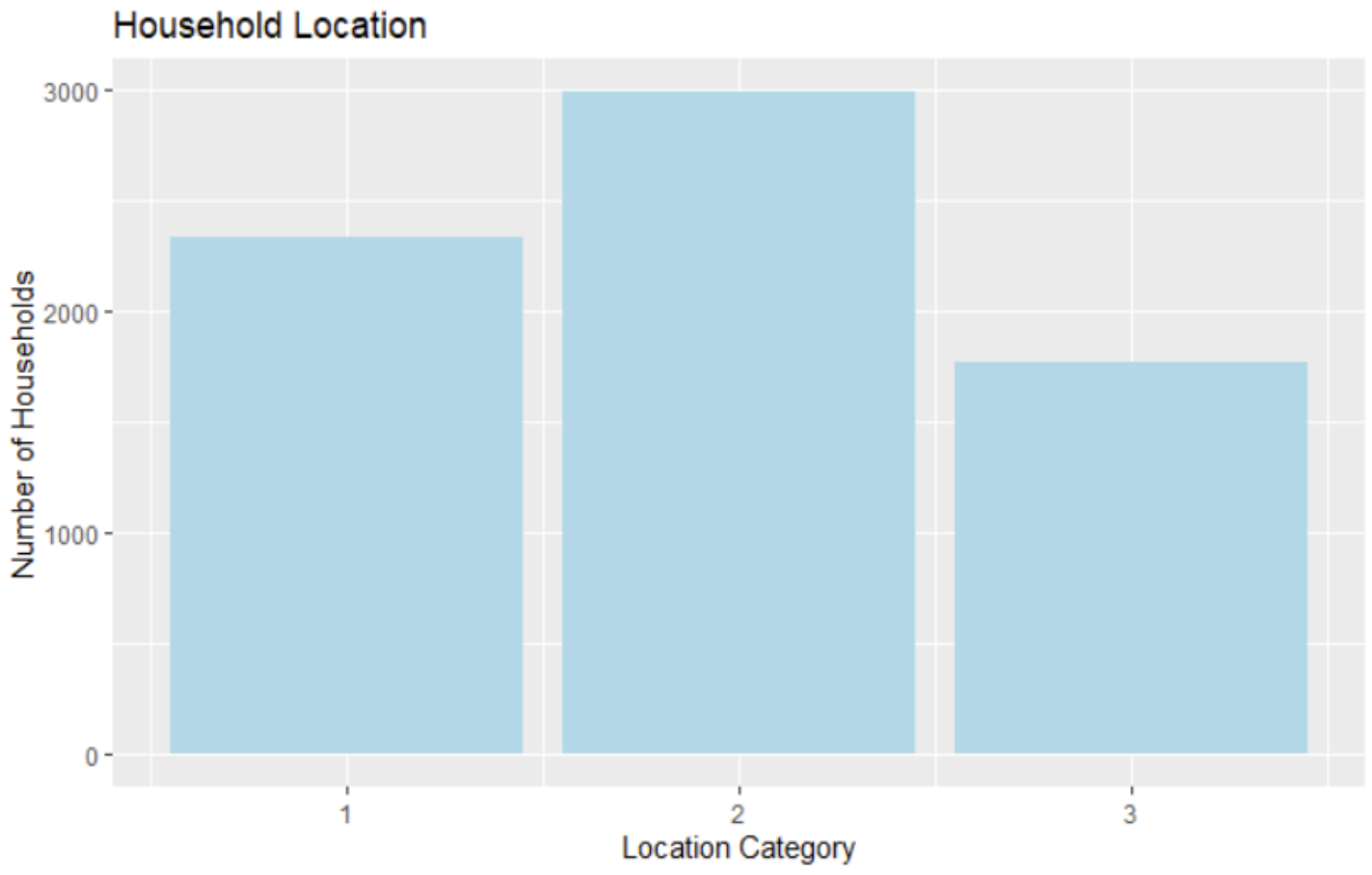
ZIPLOCL: Location Type (Rural, Suburban, City)

- Location was originally split into 12 different categories
- Using sub-setting to re-assign variables the result is a categorical variable with 3 values.

1: City

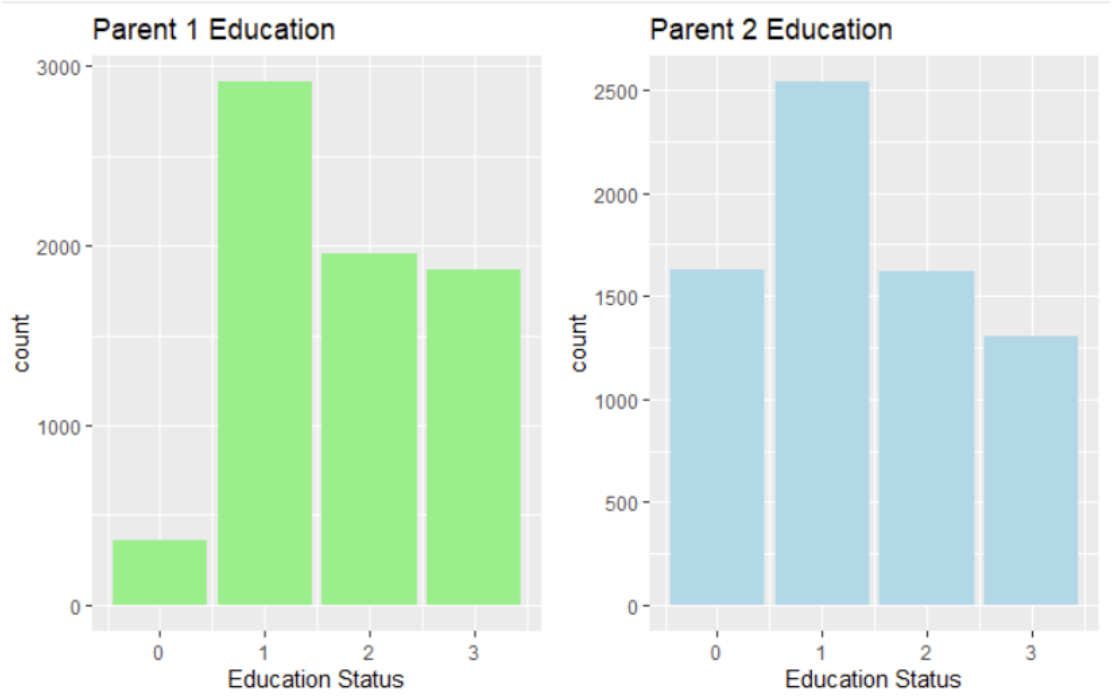
2: Suburban

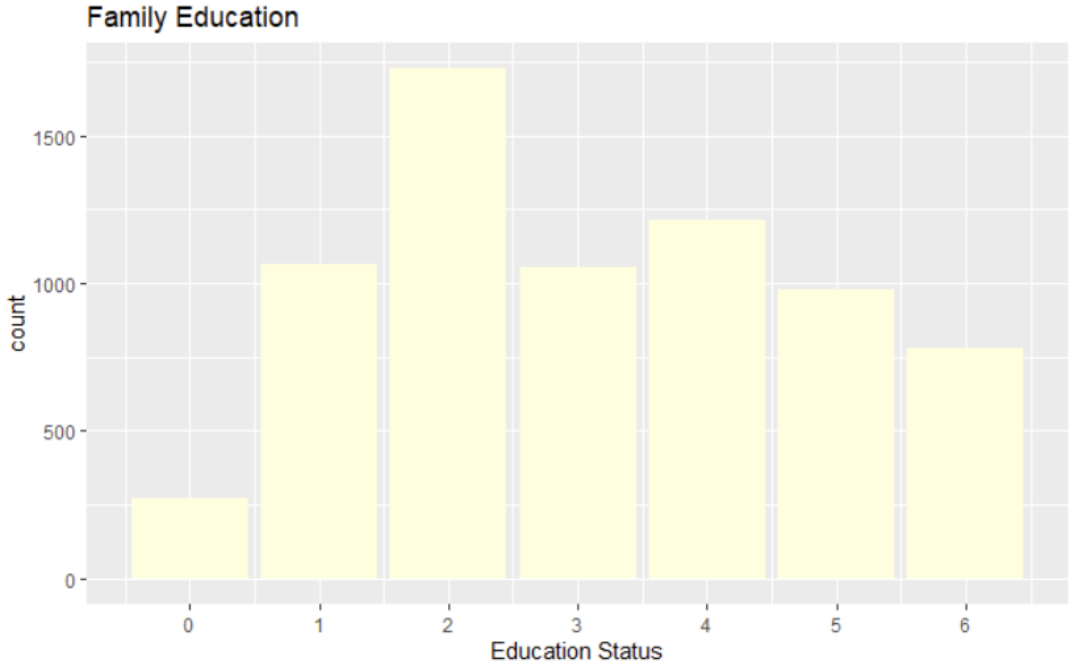
3: Urban



Data Management, Cont.

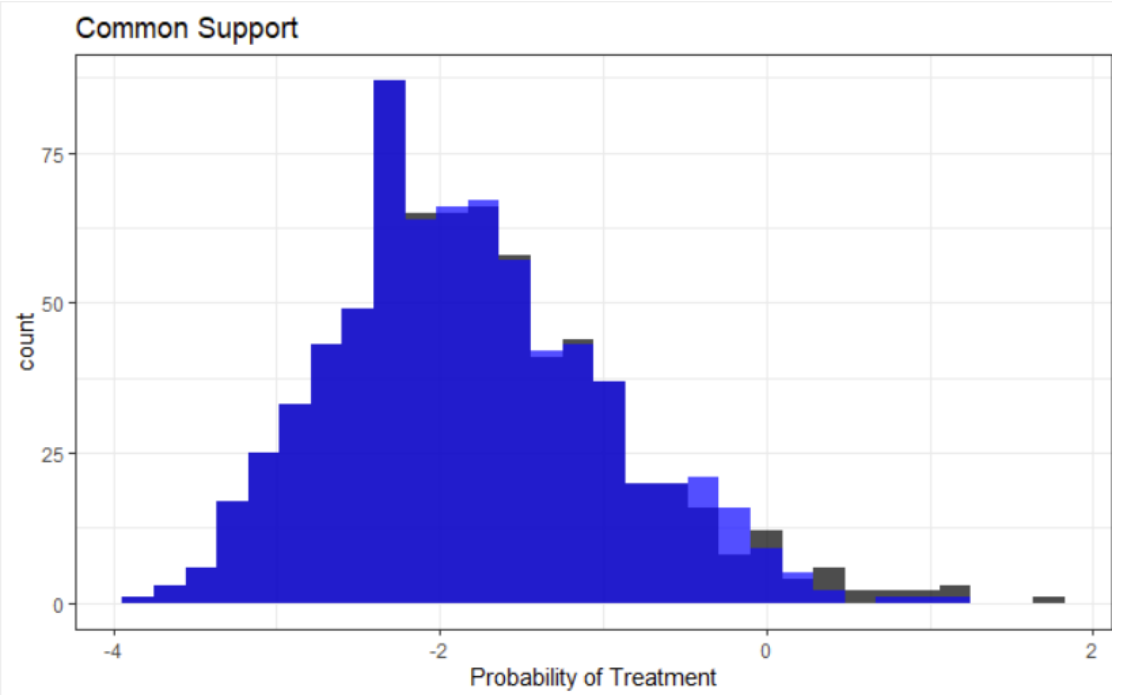
- **FEDUC**: Family Education. Combination of Parent Education Levels
- Original Variable: Too many levels, better to combine into less categories.
- The family variable aggregates the two levels of parent education into 1 "score".
- The score ranges from 0-6
  - 0 = neither parent has a high school diploma
  - 6 = both parents have post-graduate degrees.





PSM

- Significant difference in Aftercare participation for families with children who have a disability.
- Interestingly, there is no observable difference when examining the effect of a child having a disability on the numbers of hours they spend in a program.



Effects w/PSM

	Effects (Aftercare)	Effects (Aftercare) + Controls	Effects (Aftercare Weekly Hours)	Effects (Aftercare Weekly Hours) + Controls
(Intercept)	0.700***	0.193*	21.216***	5.259
	(0.016)	(0.076)	(0.789)	(3.836)
DSBLTY	0.069**	0.074***	0.931	1.023
	(0.023)	(0.021)	(1.116)	(1.069)
TTLHHINC		0.017***		0.479+

Entropy Balancing

- There is a strong positive correlation between a child having a disability and them spending time in non-parental care programs.
- Adding the entropy balancing weights to the model slightly lessens the effect of the "treatment" variable (DSBLTY) but still results in a model with a high positive correlation between children with disabilities and participation in after school programs.

Effect Estimates

	Aftercare Attendance - No Weight	Aftercare Weekly Hours - No Weight	Aftercare Attendance - Weighted	Aftercare Weekly Hours - Weighted
(Intercept)	0.665***	19.929***	0.694***	20.652***
	(0.006)	(0.265)	(0.007)	(0.358)
DSBLTY	0.104***	2.218**	0.075***	1.495**
	(0.018)	(0.823)	(0.010)	(0.507)

Conclusions

- Goal of PSM and EB: Create treatment and control groups which are similar, the only difference being the treatment variable. **Increasing Internal Validity.**
- There is a strong positive correlation between a child having a disability and their participation in a non-parental care activity.

HOWEVER:

While there is a strong correlation, we cannot definitively say that having a disability guarantees greater rates of participation in these activities.

There may be multiple reasons for participation, such as after school programs having additional or more specialized resources for children with disabilities.

Limitations

- **Survey** – Internal Validity Issues
- **Size of Sample** – External Validity Issues
  - This survey attempts to cover the entirety of the united states, with four different census regions (Northeast, South, Midwest, West).
  - Since there are only 7000 rows of data in this data set (7000 households), it may be **difficult to extrapolate** or apply this data on a national scale.

Future Improvements

- Greater focus made on **examining data for specific regions**, for example, sub-setting into 4 data sets, one for each region.
- In this data set there are also more **specific variables** available for many different types of disability (Speech/Language impairments, Physical disabilities, etc).

It may be worthwhile to examine the effects of different types of disabilities on participation in programs.