Econometrics Assignment 2b

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1)

Figure 1: Histogram of number of weeks worked

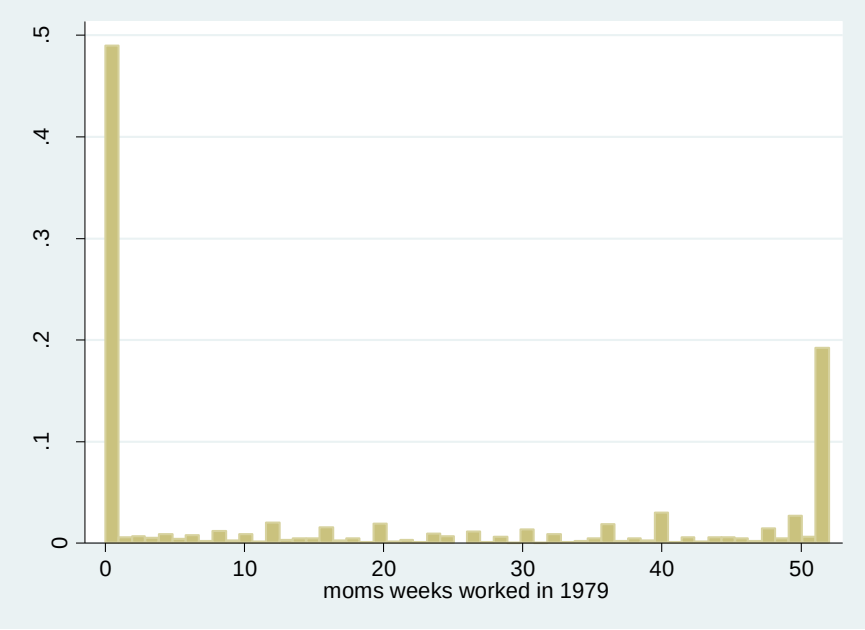


Figure 2: Bar chart of weeks worked by morekids

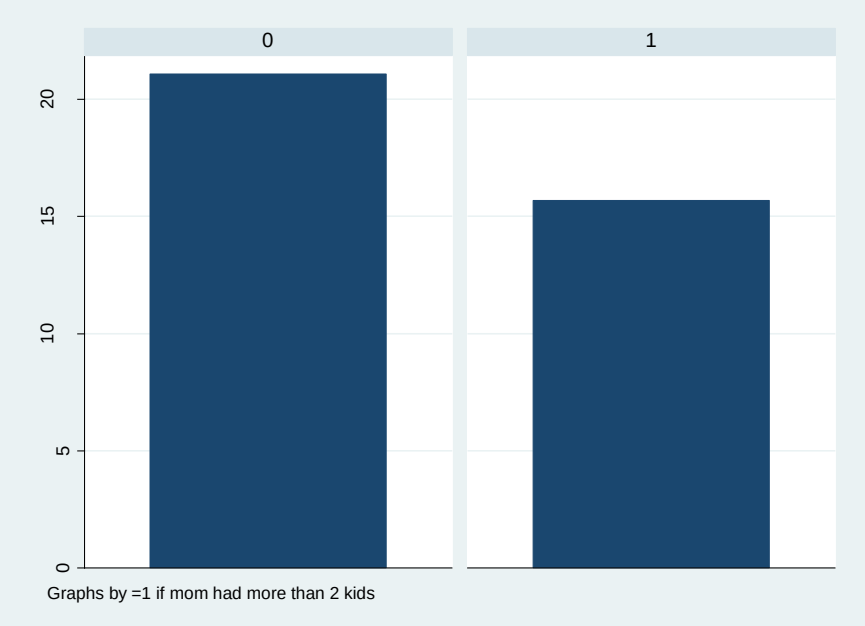
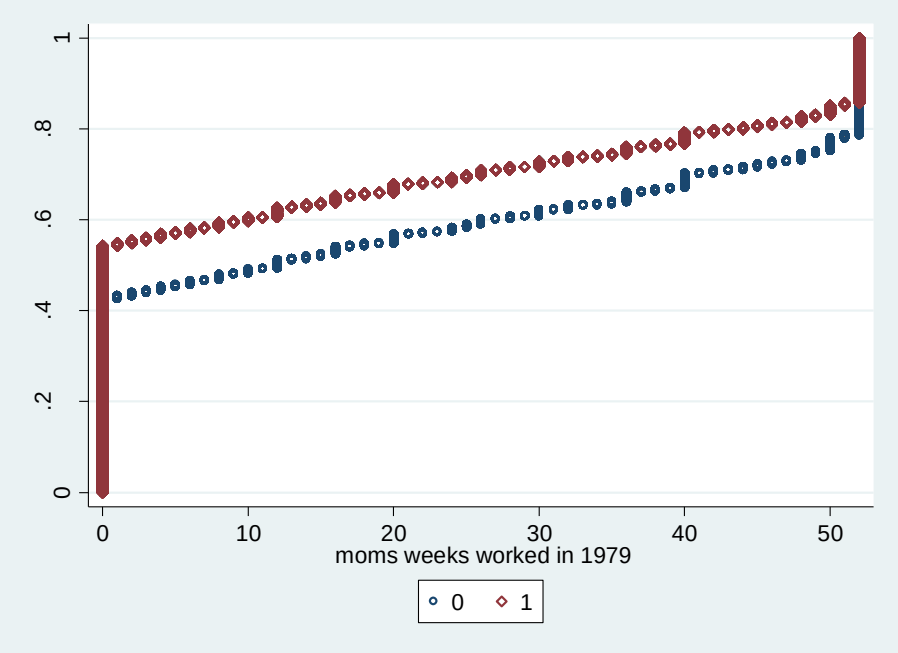


Figure 3: Cumulative Distribution Function



The graph above shows the cumulative distribution function of number of weeks worked for moms that have 2 kids or less (blue) or more than two kids (red).

2) We find that the coefficient has a value of -5.3870, and is statistically significant. This suggests that if a mother has had more than two kids, she will on average work ~ 5.4 weeks less compared to a mother who has had two kids or less.
3) One possible explanation of an omitted variable could be the labor supply of dads. This labor supply could be related to both the treatment as well as the outcome variable. The labor supply of dads could relate to the number of children by the way of the "need to feed" their children. Furthermore, the labor supply of dads is likely to be related to the labor supply of moms. As it might be necessary for one of the parents to be home to look after their children, labor supply of moms and dads may be substitutes. Therefore we conclude that the OLS regression estimated above is inappropriate for estimating the causal effect of fertility on women's labor supply as there might be an omitted variable bias caused by the omitted variable that is father's labor supply.

4)

Source	SS	df	MS	Number of obs	=	254,654
				F(1, 254652)	=	1237.22
Model	290.247937	1	290.247937	Prob > F	=	0.0000
Residual	59740.5888	254,652	.234596975	R-squared	=	0.0048
				Adj R-squared	=	0.0048
Total	60030.8368	254,653	.235735832	Root MSE	=	.48435

morekids	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
samesex	.0675253	.0019197	35.17	0.000	.0637626	.0712879
_cons	.3464248	.001365	253.79	0.000	.3437494	.3491002

We regress *samesex* on *morekids* to see if there is a significant result for being more likely to have a third kid if the first two kids were of the same sex. We find that the coefficient is positive and equal to 0.0675, significant at the 1%-level. Dividing the coefficient with the mean of *morekids* gives us a size of 0.1774. We think that this effect is large, an increase of $\sim 17\%$ in the likeliness of having another child if the first two children are of the same sex is quite substantial.

5) The independence assumption states that the instrumental variable should be more or less randomly assigned, we believe that this is the case: you cannot influence the sex of your child. Therefore *samesex* should be randomly assigned to the treatment variable.
The exclusion restriction states that the instrument should not be related to the outcome variable in any other way than via the treatment variable. We believe that at least in the United States this should indeed not be the case, the only reason we find for *samesex* to have an effect on *weeksm1* is through *morekids*.

6) The fertility effect on women's labor supply is equal to -6.3137, this effect is statistically significant at the 1% level. Women's labor supply declines by 33.2% following from having either 2 or more children or less.

7) The estimation results do change, the estimated fertility effect on women's labor supply now equals -5.8211 and is significant at the 1% level. The decline in treatment effect has now fallen from 33.2% to 30.6%.
This change follows from the additional explained variation of the outcome variable by the added covariates. The estimated effect was thus underestimated in the regression without these covariates.
These covariates might be able to account for some social differences, for example: African Americans might not be able to afford quitting their job when they have to raise children.

Copy of our Do-File

```
use "C:\Users\u1266283\Downloads\ca2b.dta"

* (1)
histogram weeksm1
graph bar weeksm1, by(morekids)
ssc install distplot
distplot scatter weeksm1, by(morekids)

* (2)
reg weeksm1 morekids

* (4)
reg morekids samesex
* Is the effect large?
sum morekids
display .0675253/.3805634

* (6)
ivregress 2sls weeksm1 (morekids=samesex)
* Is the effect large?
sum weeksm1
display -6.313685/19.01833

* (7)
ivregress 2sls weeksm1 agem1 black hispan othrace (morekids=samesex)
display -5.821051/19.01833
```