Final Results:Intergenerational Childcare and Maternal Wages

Spring 2022

Purpose

This r markdown file (also rendered as R and md files) includes **finalized** linear regression work exploring relative-provided childcare, relative avaialability within the US, and the differential impact relative-provided childcare would have on working mothers. Refer to NLSY97_Preprocessing_2.R for inference work code and refer to the data_exploration section for some basic visualizations.

Hypotheses

- *Hypothesis 1*: Working mothers using relative-provided childcare as a primary childcare option will be more likely to experience lower wage disparities over time compared to working mothers using other forms of childcare.

- *Hypothesis 2*: Working mothers using relative-provided childcare as a primary childcare option will be more likely to change from part time to full time compared to working mothers using other forms of childcare.
- *Hypothesis 2*: Working mothers with relatives in closer proximity will be more likely to experience lower wage disparities over time compared to working mothers without relatives in closer proximity.

Data and Variables

As noted in the final report, a majority of our models (unless otherwise stated) are run on data of mothers with a high school education and part-time income-generating work. Mothers are filtered for thise with a child(/children) under 6 year of age. Our main models are run only on women with only one child.

Dependent Variables

- INCOME - Income generated by respondent (Mother)
- FULL-TIME - Whether the respondent is working full time (32 hours +)

Independent Variables

- FAMILY_CARE - Childcare from Relative, Family Daycare (i.e., dropping child off with family), Sibling Care
- Relative_within_15_minutes - Does a relative live within 15 minutes of the respondent?

Control Variables

- BA+
- N_CHILDREN - Number of children in household total (control variable only applicable when we are looking at multiple children).
- MARRIED_OR_COHABITATING - Wheher the respondent is married / cohabitating with a spouse or partner.
- MOTHER_AGE_FIRST_CHILD - The age of a woman when their first child is born
- MATERNAL_AGE - The age of a woman after their first child is born (E.g., if child is born when they are 25, in the regression the values would be 25,26,27,28...)
- SPOUSAL_INCOME_LOG - Used as a proxy for alternative income within the family and to provide more control for the socioeconomic status of respondent (which is often captured by household income and education level) (Calculated by taking the log of **spousal income + 1**)

```
# Childcare Variables here are averaged across children (YCCAL), looking at ANY child of respondent und
load("~/QMSS/Intergenerational_Childcare_Maternal_Wage_Gap/data/NLSY_imputed.RData")
NLSY_Valid_Childcare_Part_Time_2 <- Valid_Childcare_Income(NLSY_imputed,FALSE) # Part Time and Above
NLSY_Valid_Childcare_Income_2 <- Valid_Childcare(NLSY_imputed,FALSE) %>% subset(INCOME > 0) # Any Incom
NLSY_Valid_Childcare_Part_Time_2 <- NLSY_Valid_Childcare_Part_Time_2[!is.na(NLSY_Valid_Childcare_Part_Ti

# Childcare Variables here are averaged across children (YCCAL), looking at respondents while their fir
load("~/QMSS/Intergenerational_Childcare_Maternal_Wage_Gap/data/NLSY_imputed_first_child.RData")
NLSY_Valid_Childcare_Part_Time_1 <- Valid_Childcare_Income(NLSY_imputed,TRUE)
NLSY_Valid_Childcare_Part_Time_1 <- NLSY_Valid_Childcare_Part_Time_1[!is.na(NLSY_Valid_Childcare_Part_Ti

NLSY_Valid_Childcare_Income_1 <- Valid_Childcare(NLSY_imputed,TRUE) %>% subset(INCOME > 0)

# Only looking at parent having one child (first child) - while their first child is under 6 years old
NLSY_Valid_Childcare_Part_Time_One_Child <- NLSY_Valid_Childcare_Part_Time_1 %>% subset(N_CHILDREN==1)
NLSY_Valid_Childcare_Income_One_Child <- NLSY_Valid_Childcare_Income_1 %>% subset(N_CHILDREN==1)
```

Models

Hypothesis 1: Basic Models (`INCOME_LOG ~ FAMILY_CARE`, Net of `YEAR`)

As noted above, for the primary models presented for my thesis, I will be looking for mothers working at least PART TIME with FIRST child and ONE child only. This is meant to remove the need to control for many of the factors that we may need to consider if including women with multiple children (e.g., sibling care, additional costs for formal care / any difference in avaialability of informal and relative-based care, mother's experience level).Note that for this mode of filtering, our sample size is relatively smaller, and thus a pooled model may be better given this consideration.

Fixed Effects

```
fe.basic_part_time <- plm(INCOME_LOG ~ FAMILY_CARE + as.factor(YEAR),
               index = c("PUBID_1997", "YEAR"), # id & time variables
               model = "within",
               data = NLSY_Valid_Childcare_Part_Time_One_Child)
summary(fe.basic_part_time)
```

```
Oneway (individual) effect Within Model

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_One_Chi
    model = "within", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1201, T = 1-6, N = 2520

Residuals:
     Min.   1st Qu.    Median   3rd Qu.      Max.
-4.220404 -0.078439  0.000000  0.103755  2.126767

Coefficients:
                   Estimate Std. Error t-value  Pr(>|t|)
FAMILY_CARE         0.047697   0.036254  1.3156  0.188533
as.factor(YEAR)2006 0.158812   0.054344  2.9224  0.003534 **
as.factor(YEAR)2007 0.319572   0.056365  5.6697 1.758e-08 ***
as.factor(YEAR)2008 0.524850   0.059508  8.8199 < 2.2e-16 ***
as.factor(YEAR)2009 0.571085   0.064869  8.8037 < 2.2e-16 ***
as.factor(YEAR)2010 0.632927   0.068121  9.2913 < 2.2e-16 ***
as.factor(YEAR)2011 0.725152   0.073998  9.7997 < 2.2e-16 ***
as.factor(YEAR)2013 0.877608   0.087081 10.0781 < 2.2e-16 ***
as.factor(YEAR)2015 0.893666   0.109918  8.1303 9.841e-16 ***
as.factor(YEAR)2017 1.179283   0.129676  9.0941 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    357.47
Residual Sum of Squares: 319.24
R-Squared:      0.10695
Adj. R-Squared: -0.71856
F-statistic: 15.6766 on 10 and 1309 DF, p-value: < 2.22e-16
```

- *Fixed Effects Interpretation*: For working women (part time and above) with one child, changing to family childcare as the primary type of childcare (e.g., from formal childcare systems), there is a 4.7% increase in income net of person across the years that this study is conducted. This finding is not statistically significant; further, the adjusted R2 is negative, indicating that this model does not account for the variation in the dependent variable (wages logged).
  - Commonly, a negative adjusted R2 occurs when Residual Sum of Squares (RSS) approaches the total Sum of Squares (TSS), indicating that explanation is very low, particularly due to a smaller sample size.

Random Effects

```
re.basic_part_time  <- plm(INCOME_LOG ~ FAMILY_CARE + as.factor(YEAR), # model formula
               index = c("PUBID_1997", "YEAR"),
               model = "random",
               data = NLSY_Valid_Childcare_Part_Time_One_Child)
summary(re.basic_part_time)
```

```
Oneway (individual) effect Random Effect Model
```

```
   (Swamy-Arora's transformation)

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_One_Chi
    model = "random", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1201, T = 1-6, N = 2520

Effects:
                 var std.dev share
idiosyncratic 0.2439  0.4938 0.373
individual    0.4097  0.6401 0.627
theta:
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 0.3891  0.5211  0.5931  0.5535  0.6401  0.6996

Residuals:
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
-4.4315 -0.1521  0.0976  0.0072  0.2936  1.9798

Coefficients:
                      Estimate Std. Error  z-value  Pr(>|z|)
(Intercept)          9.4190599  0.0515089 182.8628 < 2.2e-16 ***
FAMILY_CARE         -0.0007503  0.0302850  -0.0248   0.98023
as.factor(YEAR)2006  0.1253421  0.0514739   2.4351   0.01489 *
as.factor(YEAR)2007  0.2991349  0.0523480   5.7144 1.101e-08 ***
as.factor(YEAR)2008  0.5048749  0.0535537   9.4274 < 2.2e-16 ***
as.factor(YEAR)2009  0.5709019  0.0568490  10.0424 < 2.2e-16 ***
as.factor(YEAR)2010  0.6478569  0.0578027  11.2081 < 2.2e-16 ***
as.factor(YEAR)2011  0.7973342  0.0600580  13.2761 < 2.2e-16 ***
as.factor(YEAR)2013  0.9802073  0.0645616  15.1825 < 2.2e-16 ***
as.factor(YEAR)2015  1.0604284  0.0717002  14.7898 < 2.2e-16 ***
as.factor(YEAR)2017  1.3461035  0.0761488  17.6773 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    3229.6
Residual Sum of Squares: 650.86
R-Squared:      0.79925
Adj. R-Squared: 0.79845
Chisq: 487.149 on 10 DF, p-value: < 2.22e-16
```

- *Random Effects Interpretation*: For working women (part time and above) with one child changing to family childcare as the primary type of childcare (e.g., from formal childcare systems), there is a 0.1% decrease in income net of person across the years that this study is conducted, net of time and adjusting for the fact that the same person is answering the same survey. This finding is not statistically significant.

Pooled Model

```
pooled.basic_part_time <- plm(INCOME_LOG ~ FAMILY_CARE + as.factor(YEAR),
               index = c("PUBID_1997", "YEAR"),
```

```
              model = "pooling",
              data = NLSY_Valid_Childcare_Part_Time_One_Child) ## this is equivalent to above OLS ##
summary(pooled.basic_part_time)
```

```
Pooling Model

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_One_Chi
    model = "pooling", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1201, T = 1-6, N = 2520

Residuals:
    Min.  1st Qu.   Median  3rd Qu.     Max.
-4.77143 -0.31210  0.15826  0.50101  1.92192

Coefficients:
                     Estimate Std. Error  t-value  Pr(>|t|)
(Intercept)          9.537844   0.057467 165.9699 < 2.2e-16 ***
FAMILY_CARE         -0.086688   0.033415  -2.5943 0.0095343 **
as.factor(YEAR)2006  0.070907   0.071738   0.9884 0.3230406
as.factor(YEAR)2007  0.255107   0.070893   3.5985 0.0003263 ***
as.factor(YEAR)2008  0.452126   0.069970   6.4617 1.239e-10 ***
as.factor(YEAR)2009  0.566757   0.072156   7.8546 5.896e-15 ***
as.factor(YEAR)2010  0.602023   0.071541   8.4150 < 2.2e-16 ***
as.factor(YEAR)2011  0.799469   0.072004  11.1032 < 2.2e-16 ***
as.factor(YEAR)2013  0.936027   0.075257  12.4377 < 2.2e-16 ***
as.factor(YEAR)2015  1.005025   0.081126  12.3884 < 2.2e-16 ***
as.factor(YEAR)2017  1.268669   0.083171  15.2537 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    2003
Residual Sum of Squares: 1647.8
R-Squared:      0.17734
Adj. R-Squared: 0.17406
F-statistic: 54.0873 on 10 and 2509 DF, p-value: < 2.22e-16
```

- *Pooled Model*: For every working woman (part time and above) with one child changing to family childcare (from non-family childcare), there is a 8.7% negative change in income on average net of time. This finding is **statistically significant.**

Summary Table

```
stargazer(fe.basic_part_time, re.basic_part_time, pooled.basic_part_time,
          title="Regression Results",
          align=TRUE,
          dep.var.labels=c("Income"),
          no.space=TRUE,
          column.labels=c("Fixed Effects", "Random Effects", "Pooled"),
          dep.var.caption="",
```

```
          model.numbers=FALSE,
          #type = "latex",
          type = "text",
          omit = "Constant")
```

```
Regression Results
================================================================================================
                                                  Income
                              Fixed Effects   Random Effects          Pooled
------------------------------------------------------------------------------------------------
FAMILY_CARE                       0.048           -0.001           -0.087***
                                 (0.036)         (0.030)           (0.033)
as.factor(YEAR)2006              0.159***        0.125**            0.071
                                 (0.054)         (0.051)           (0.072)
as.factor(YEAR)2007              0.320***        0.299***         0.255***
                                 (0.056)         (0.052)           (0.071)
as.factor(YEAR)2008              0.525***        0.505***         0.452***
                                 (0.060)         (0.054)           (0.070)
as.factor(YEAR)2009              0.571***        0.571***         0.567***
                                 (0.065)         (0.057)           (0.072)
as.factor(YEAR)2010              0.633***        0.648***         0.602***
                                 (0.068)         (0.058)           (0.072)
as.factor(YEAR)2011              0.725***        0.797***         0.799***
                                 (0.074)         (0.060)           (0.072)
as.factor(YEAR)2013              0.878***        0.980***         0.936***
                                 (0.087)         (0.065)           (0.075)
as.factor(YEAR)2015              0.894***        1.060***         1.005***
                                 (0.110)         (0.072)           (0.081)
as.factor(YEAR)2017              1.179***        1.346***         1.269***
                                 (0.130)         (0.076)           (0.083)
------------------------------------------------------------------------------------------------
Observations                       2,520           2,520             2,520
R2                                 0.107           0.799             0.177
Adjusted R2                       -0.719           0.798             0.174
F Statistic          15.677*** (df = 10; 1309)   487.149***   54.087*** (df = 10; 2509)
================================================================================================
Note:                                                        *p<0.1; **p<0.05; ***p<0.01
```

- Overall, the results **do not** support my initial Hypothesis 1, that women using family-based childcare options as their primary childcare source would comparatively have better wage outcomes comparatively over time.

- Of all these models, the only models showing any statistically significant results is the pooled model, which may be in part due to sample size constraints.
- Results seem to indicate that **for panels of women with their first child under 6 who are working at least part time, the use of relative-provided childcare (e.g. rather than other childcare options) corresponds with relatively statistically insignificant or negative impact on wage over time.**

Our next step is to add our control variables. As alluded to in the Independent and Dependent Variables sections of this report, we will be controlling for socioeconomic status, education (BA+ / not), marital status, and age of mother with first child.

Hypothesis 1: Model with Controls (Socioeconomic Indicator - Spousal Income, Control for Maternal Age)

CX: Do we need maternal age controlled for in my pooled model? I know you mentioned random effects. Also, should I include the mothers age as it changes over time or the mothers age when first having a child?

Now, our dataset includes all women with at least part-time (20+ hours) income-generating work, with their FIRST child only. I only include first child here to control for variables that may arise with additional children once more. The models (all with `_part_time_full`) include the control variables listed in the **Data and Variables** portion of this report.

Fixed Effects

```
fe.part_time_full <- plm(INCOME_LOG ~ FAMILY_CARE + MARRIED_OR_COHABITATING + BA_ABOVE + SPOUSAL_INCOME_
               index = c("PUBID_1997", "YEAR"), # id & time variables
               model = "within",
               data = NLSY_Valid_Childcare_Part_Time_One_Child)

NLSY_Valid_Childcare_Part_Time_One_Child %>% select(FAMILY_CARE,RELATIVE_CARE,INCOME_LOG)
```

```
# A tibble: 2,520 x 3
   FAMILY_CARE RELATIVE_CARE INCOME_LOG
         <dbl>         <dbl>      <dbl>
 1           1             1       8.19
 2           0             0      10.2
 3           1             1       8.70
 4           1             1      10.1
 5           0             0      10.1
 6           1             1      10.1
 7           0             0       9.90
 8           1             1      10.1
 9           1             1       9.85
10           0             0       9.90
# ... with 2,510 more rows
```

```
summary(fe.part_time_full)
```

```
Oneway (individual) effect Within Model

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + MARRIED_OR_COHABITATING +
    BA_ABOVE + SPOUSAL_INCOME_LOG + as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_One_Child,
    model = "within", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1196, T = 1-6, N = 2511

Residuals:
     Min.   1st Qu.    Median   3rd Qu.      Max.
-4.209560 -0.082978  0.000000  0.103959  2.105397

Coefficients:
```

```
                         Estimate Std. Error t-value  Pr(>|t|)
FAMILY_CARE              0.0555820  0.0364466  1.5250  0.127495
MARRIED_OR_COHABITATING 0.0960710  0.0492740  1.9497  0.051422 .
BA_ABOVE                 0.0387951  0.1071224  0.3622  0.717294
SPOUSAL_INCOME_LOG       0.0032673  0.0043857  0.7450  0.456406
as.factor(YEAR)2006      0.1480012  0.0545594  2.7127  0.006762 **
as.factor(YEAR)2007      0.3021545  0.0571079  5.2909 1.426e-07 ***
as.factor(YEAR)2008      0.5106394  0.0605126  8.4386 < 2.2e-16 ***
as.factor(YEAR)2009      0.5571301  0.0657855  8.4689 < 2.2e-16 ***
as.factor(YEAR)2010      0.6216846  0.0690930  8.9978 < 2.2e-16 ***
as.factor(YEAR)2011      0.7157195  0.0747183  9.5789 < 2.2e-16 ***
as.factor(YEAR)2013      0.8688328  0.0880546  9.8670 < 2.2e-16 ***
as.factor(YEAR)2015      0.8840943  0.1116293  7.9199 5.059e-15 ***
as.factor(YEAR)2017      1.1700291  0.1320020  8.8637 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    356.92
Residual Sum of Squares: 317.48
R-Squared:      0.11048
Adj. R-Squared: -0.71482
F-statistic: 12.4393 on 13 and 1302 DF, p-value: < 2.22e-16
```

- *Fixed Effects Interpretation*: For working women (part time and above) with one child changing to family childcare as the primary type of childcare (e.g., from formal childcare systems), there is a 3.86% increase in income net of person, net of socioeconomic, education, and marital status factors, across the years that this study is conducted. This finding is **statistically insignificant**.

- The adjusted R square is negative as it was before, indicating the lack of explanatory power in this model.

Random Effects

```r
re.part_time_full  <- plm(INCOME_LOG ~ FAMILY_CARE + MARRIED_OR_COHABITATING + BA_ABOVE + SPOUSAL_INCOM
                         MOTHER_AGE_FIRST_CHILD + as.factor(YEAR),
                       index = c("PUBID_1997", "YEAR"),
                       model = "random",
                       data = NLSY_Valid_Childcare_Part_Time_One_Child)
summary(re.part_time_full)
```

```
Oneway (individual) effect Random Effect Model
   (Swamy-Arora's transformation)

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + MARRIED_OR_COHABITATING +
    BA_ABOVE + SPOUSAL_INCOME_LOG + MOTHER_AGE_FIRST_CHILD +
    as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_One_Child,
    model = "random", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1196, T = 1-6, N = 2511

Effects:
```

```
                 var std.dev share
idiosyncratic 0.2439  0.4939 0.424
individual    0.3313  0.5756 0.576
theta:
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 0.3488  0.4813  0.5561  0.5164  0.6057  0.6694

Residuals:
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
-4.4839 -0.1438  0.1023  0.0111  0.2909  1.9214

Coefficients:
                          Estimate Std. Error z-value  Pr(>|z|)
(Intercept)              8.4056607  0.1842828 45.6128 < 2.2e-16 ***
FAMILY_CARE              0.0028525  0.0299298  0.0953 0.9240715
MARRIED_OR_COHABITATING  0.1208079  0.0401347  3.0101 0.0026119 **
BA_ABOVE                 0.3671912  0.0456017  8.0521 8.136e-16 ***
SPOUSAL_INCOME_LOG       0.0115505  0.0035948  3.2131 0.0013130 **
MOTHER_AGE_FIRST_CHILD  -0.0373340  0.0082608 -4.5194 6.202e-06 ***
as.factor(YEAR)2006      0.0779165  0.0512853  1.5193 0.1286930
as.factor(YEAR)2007      0.1922663  0.0525685  3.6574 0.0002547 ***
as.factor(YEAR)2008      0.3491051  0.0544458  6.4120 1.436e-10 ***
as.factor(YEAR)2009      0.3682701  0.0589965  6.2422 4.314e-10 ***
as.factor(YEAR)2010      0.4018063  0.0615011  6.5333 6.433e-11 ***
as.factor(YEAR)2011      0.5133182  0.0660323  7.7737 7.620e-15 ***
as.factor(YEAR)2013      0.5738522  0.0765175  7.4996 6.400e-14 ***
as.factor(YEAR)2015      0.5302479  0.0923289  5.7430 9.299e-09 ***
as.factor(YEAR)2017      0.7246332  0.1046744  6.9227 4.430e-12 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    3426.6
Residual Sum of Squares: 650.57
R-Squared:      0.81196
Adj. R-Squared: 0.81091
Chisq: 732.479 on 14 DF, p-value: < 2.22e-16
```

- *Random Effects Interpretation*: For working women (part time and above) with one child changing to family childcare as the primary type of childcare (e.g., from formal childcare systems), there is a 0.1% decrease in income net of person across the years that this study is conducted, net of socioeconomic, education, and marital status factors, and adjusting for the fact that the same person is answering the same survey. This finding is **not statistically significant**.

Pooled Model

```
pooled.part_time_full <- plm(INCOME_LOG ~ FAMILY_CARE + MARRIED_OR_COHABITATING + BA_ABOVE + MOTHER_AGE_
               index = c("PUBID_1997", "YEAR"),
               model = "pooling",
               data = NLSY_Valid_Childcare_Part_Time_One_Child) ## this is equivalent to above OLS ##
summary(pooled.part_time_full)
```

```
Pooling Model
```

```
Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + MARRIED_OR_COHABITATING +
    BA_ABOVE + MOTHER_AGE_FIRST_CHILD + SPOUSAL_INCOME_LOG +
    as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_One_Child,
    model = "pooling", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1196, T = 1-6, N = 2511

Residuals:
    Min.  1st Qu.   Median  3rd Qu.     Max.
-4.83400 -0.26719  0.13071  0.47025  1.90269

Coefficients:
                          Estimate Std. Error t-value  Pr(>|t|)
(Intercept)              8.2619187  0.1717452 48.1057 < 2.2e-16 ***
FAMILY_CARE             -0.0655802  0.0319998 -2.0494 0.0405276 *
MARRIED_OR_COHABITATING  0.1000953  0.0435040  2.3008 0.0214833 *
BA_ABOVE                 0.3478169  0.0364903  9.5318 < 2.2e-16 ***
MOTHER_AGE_FIRST_CHILD  -0.0519219  0.0079455 -6.5348 7.697e-11 ***
SPOUSAL_INCOME_LOG       0.0175389  0.0039924  4.3931 1.164e-05 ***
as.factor(YEAR)2006      0.0158176  0.0678425  0.2332 0.8156623
as.factor(YEAR)2007      0.1206316  0.0677023  1.7818 0.0749044 .
as.factor(YEAR)2008      0.2271919  0.0681177  3.3353 0.0008646 ***
as.factor(YEAR)2009      0.2421832  0.0727792  3.3276 0.0008886 ***
as.factor(YEAR)2010      0.2058817  0.0748156  2.7519 0.0059687 **
as.factor(YEAR)2011      0.3318703  0.0788751  4.2075 2.673e-05 ***
as.factor(YEAR)2013      0.3075271  0.0894840  3.4367 0.0005985 ***
as.factor(YEAR)2015      0.2341073  0.1043642  2.2432 0.0249729 *
as.factor(YEAR)2017      0.3701555  0.1163964  3.1801 0.0014901 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    1999.7
Residual Sum of Squares: 1458.5
R-Squared:      0.27061
Adj. R-Squared: 0.26652
F-statistic: 66.1459 on 14 and 2496 DF, p-value: < 2.22e-16
```

- *Pooled Model*: For working women (part time and above) with one child changing to family childcare (from non-family childcare), net of marital status, college education, maternal age, and household socioeconomic status, there is a 6.1% negative change in income on average net of time. This finding is statistically significant.

```
stargazer(fe.part_time_full, re.part_time_full,pooled.part_time_full,
          title="Regression Results",
          align=TRUE,
          dep.var.labels=c("Income"),
          no.space=TRUE,
          column.labels=c("Fixed Effects", "Random Effects", "Pooled"),
          dep.var.caption="",
```

```
          model.numbers=FALSE,
          type = "latex",
          #type = "text",
          omit = "Constant")
```

Summary Table

```
% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard
% Date and time: Sat, Apr 30, 2022 - 15:17:25
% Requires LaTeX packages: dcolumn
\begin{table}[!htbp] \centering
  \caption{Regression Results}
  \label{}
\begin{tabular}{@{\extracolsep{5pt}}lD{.}{.}{-3} D{.}{.}{-3} D{.}{.}{-3} }
\\[-1.8ex]\hline
\hline \\[-1.8ex]
\\[-1.8ex] & \multicolumn{3}{c}{Income} \\
 & \multicolumn{1}{c}{Fixed Effects} & \multicolumn{1}{c}{Random Effects} & \multicolumn{1}{c}{Pooled} \
\hline \\[-1.8ex]
 FAMILY\_CARE & 0.056 & 0.003 & -0.066^{**} \\
  & (0.036) & (0.030) & (0.032) \\
  MARRIED\_OR\_COHABITATING & 0.096^{*} & 0.121^{***} & 0.100^{**} \\
  & (0.049) & (0.040) & (0.044) \\
  BA\_ABOVE & 0.039 & 0.367^{***} & 0.348^{***} \\
  & (0.107) & (0.046) & (0.036) \\
  SPOUSAL\_INCOME\_LOG & 0.003 & 0.012^{***} & 0.018^{***} \\
  & (0.004) & (0.004) & (0.004) \\
  MOTHER\_AGE\_FIRST\_CHILD &  & -0.037^{***} & -0.052^{***} \\
  &  & (0.008) & (0.008) \\
  as.factor(YEAR)2006 & 0.148^{***} & 0.078 & 0.016 \\
  & (0.055) & (0.051) & (0.068) \\
  as.factor(YEAR)2007 & 0.302^{***} & 0.192^{***} & 0.121^{*} \\
  & (0.057) & (0.053) & (0.068) \\
  as.factor(YEAR)2008 & 0.511^{***} & 0.349^{***} & 0.227^{***} \\
  & (0.061) & (0.054) & (0.068) \\
  as.factor(YEAR)2009 & 0.557^{***} & 0.368^{***} & 0.242^{***} \\
  & (0.066) & (0.059) & (0.073) \\
  as.factor(YEAR)2010 & 0.622^{***} & 0.402^{***} & 0.206^{***} \\
  & (0.069) & (0.062) & (0.075) \\
  as.factor(YEAR)2011 & 0.716^{***} & 0.513^{***} & 0.332^{***} \\
  & (0.075) & (0.066) & (0.079) \\
  as.factor(YEAR)2013 & 0.869^{***} & 0.574^{***} & 0.308^{***} \\
  & (0.088) & (0.077) & (0.089) \\
  as.factor(YEAR)2015 & 0.884^{***} & 0.530^{***} & 0.234^{**} \\
  & (0.112) & (0.092) & (0.104) \\
  as.factor(YEAR)2017 & 1.170^{***} & 0.725^{***} & 0.370^{***} \\
  & (0.132) & (0.105) & (0.116) \\
 \hline \\[-1.8ex]
Observations & \multicolumn{1}{c}{2,511} & \multicolumn{1}{c}{2,511} & \multicolumn{1}{c}{2,511} \\
R$^{2}$ & \multicolumn{1}{c}{0.110} & \multicolumn{1}{c}{0.812} & \multicolumn{1}{c}{0.271} \\
Adjusted R$^{2}$ & \multicolumn{1}{c}{-0.715} & \multicolumn{1}{c}{0.811} & \multicolumn{1}{c}{0.267} \\
F Statistic & \multicolumn{1}{c}{12.439$^{***}$ (df = 13; 1302)} & \multicolumn{1}{c}{732.479$^{***}$} &
\hline
\hline \\[-1.8ex]
```

```
\textit{Note:}  & \multicolumn{3}{r}{$^{*}$p$<$0.1; $^{**}$p$<$0.05; $^{***}$p$<$0.01} \\
\end{tabular}
\end{table}
```

- Model with control variable results (controlling for spousal income rather than socioeconomic status) seem to indicate that mothers switching to childcare from relatives as the primary option tend to exhibit lower/insignificant wage growth over time (net of other factors) on average.

Hypothesis 1: Do Formal Childcare options yield more meaningful positive results?

These models may be added to the appendix, but they are meant to examine whether formal childcare options such as daycare, preschool, etc. (e.g., a change from no childcare to formal or a change from informal/relative provided to formal childcare) yield any positive results for part-time working mothers.

Our dataset here includes all women with at least part-time (20+ hours) income-generating work, with their FIRST child only. The models (all with `_formal`) include the control variable slisted above, with family income (household income) as a control for socioeconomic status.

Summary Table

```
fe.part_time_1_formal <- plm(INCOME_LOG ~ FORMAL_CHILDCARE + MARRIED_OR_COHABITATING + BA_ABOVE + as.fa
               index = c("PUBID_1997", "YEAR"), # id & time variables
               model = "within",
               data = NLSY_Valid_Childcare_Part_Time_One_Child)

re.part_time_1_formal  <- plm(INCOME_LOG ~ FORMAL_CHILDCARE + MARRIED_OR_COHABITATING + BA_ABOVE + SPOU
               index = c("PUBID_1997", "YEAR"),
               model = "random",
               data = NLSY_Valid_Childcare_Part_Time_One_Child)

pooled.part_time_1_formal <- plm(INCOME_LOG ~ FORMAL_CHILDCARE + MARRIED_OR_COHABITATING + BA_ABOVE + S
               index = c("PUBID_1997", "YEAR"),
               model = "pooling",
               data = NLSY_Valid_Childcare_Part_Time_One_Child)

stargazer(fe.part_time_1_formal, re.part_time_1_formal, pooled.part_time_1_formal,
          title="Regression Results",
          align=TRUE,
          dep.var.labels=c("Income"),
          no.space=TRUE,
          column.labels=c("Fixed Effects", "Random Effects", "Pooled"),
          dep.var.caption="",
          model.numbers=FALSE,
          #type = "latex",
          type = "text",
          omit = "Constant")
```

```
Regression Results
================================================================================================
                                                    Income
```

	Fixed Effects	Random Effects	Pooled
FORMAL_CHILDCARE	-0.077**	-0.023	0.034
	(0.038)	(0.031)	(0.033)
MARRIED_OR_COHABITATING	0.087*	0.119***	0.106**
	(0.049)	(0.040)	(0.044)
BA_ABOVE	0.024	0.368***	0.353***
	(0.107)	(0.046)	(0.036)
as.factor(YEAR)2006	0.153***	0.080	0.017
	(0.055)	(0.051)	(0.068)
as.factor(YEAR)2007	0.315***	0.196***	0.120*
	(0.058)	(0.053)	(0.068)
as.factor(YEAR)2008	0.527***	0.355***	0.226***
	(0.061)	(0.055)	(0.068)
as.factor(YEAR)2009	0.581***	0.377***	0.237***
	(0.067)	(0.060)	(0.073)
as.factor(YEAR)2010	0.652***	0.413***	0.203***
	(0.072)	(0.063)	(0.076)
as.factor(YEAR)2011	0.754***	0.527***	0.332***
	(0.079)	(0.068)	(0.080)
as.factor(YEAR)2013	0.922***	0.594***	0.307***
	(0.095)	(0.080)	(0.092)
as.factor(YEAR)2015	0.952***	0.554***	0.235**
	(0.120)	(0.097)	(0.107)
as.factor(YEAR)2017	1.255***	0.753***	0.369***
	(0.142)	(0.111)	(0.120)
SPOUSAL_INCOME_LOG	0.003	0.012***	0.018***
	(0.004)	(0.004)	(0.004)
MOTHER_AGE_FIRST_CHILD		-0.036***	-0.052***
		(0.009)	(0.008)
Observations	2,511	2,511	2,511
R2	0.112	0.812	0.270
Adjusted R2	-0.712	0.811	0.266
F Statistic	12.592*** (df = 13; 1302)	732.158***	65.840*** (df = 14; 2496)
Note:			*p<0.1; **p<0.05; ***p<0.01

- Here, the results seem indicate that **for panels of women working at least part-time with ONE child under 6, the use of FORMALLY-provided childcare option (e.g. rather than other childcare options) also corresponds with NEGATIVE/INSIGNIFICANT impact on wage over time.**
- If we once more shift from looking at the fixed effects model to looking at the pooled model, it does look like on average and net of time, mothers shifting to formally provided childcare options as their primary option tended to exhibit a 3% positive change in income; however, this relationship was not statistically significant.

Hypothesis 2: Pooled Logit

Family Care vs Full time

```
pooled_logit_1 <- glm(FULL_TIME ~ FAMILY_CARE +
                        MARRIED_OR_COHABITATING + BA_ABOVE + SPOUSAL_INCOME_LOG + MATERNAL_AGE + as.fac
                      data = NLSY_Valid_Childcare_Part_Time_One_Child,family="binomial")
summary(pooled_logit_1)
```

```
Call:
glm(formula = FULL_TIME ~ FAMILY_CARE + MARRIED_OR_COHABITATING +
    BA_ABOVE + SPOUSAL_INCOME_LOG + MATERNAL_AGE + as.factor(YEAR),
    family = "binomial", data = NLSY_Valid_Childcare_Part_Time_One_Child)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.4371   0.3995   0.4821   0.5602   0.7936

Coefficients:
                        Estimate Std. Error z value Pr(>|z|)
(Intercept)             -0.32879    1.06195  -0.310   0.7569
FAMILY_CARE             -0.14023    0.12851  -1.091   0.2752
MARRIED_OR_COHABITATING -0.18166    0.17635  -1.030   0.3029
BA_ABOVE                 0.31075    0.14736   2.109   0.0350 *
SPOUSAL_INCOME_LOG      -0.02149    0.01617  -1.329   0.1839
MATERNAL_AGE             0.10284    0.04520   2.275   0.0229 *
as.factor(YEAR)2006      0.02276    0.26053   0.087   0.9304
as.factor(YEAR)2007      0.12675    0.27731   0.457   0.6476
as.factor(YEAR)2008     -0.58379    0.26653  -2.190   0.0285 *
as.factor(YEAR)2009     -0.34080    0.30958  -1.101   0.2710
as.factor(YEAR)2010     -0.55799    0.32905  -1.696   0.0899 .
as.factor(YEAR)2011     -0.17464    0.37422  -0.467   0.6407
as.factor(YEAR)2013     -0.18991    0.46038  -0.413   0.6800
as.factor(YEAR)2015     -0.85720    0.51690  -1.658   0.0973 .
as.factor(YEAR)2017     -0.45860    0.62465  -0.734   0.4628
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 1888.7  on 2510  degrees of freedom
Residual deviance: 1846.0  on 2496  degrees of freedom
  (9 observations deleted due to missingness)
AIC: 1876

Number of Fisher Scoring iterations: 5
```

- The results indicate that relative to other options selected, net of time and maternal age, the use of relative-provided care does not have a statistically significant relationship to a change from part-time (20 hours) to full time (>34 hours) work.

Comparison - Formal

CX: It appears that the statistical significance and direction of the relationship between formal childcare and wages has changed to negative now; previously, I used CV-INCOME for the family income control variable which resulted in collinearity. I believe these results are more accurate.

```
pooled_logit_formal <- glm(FULL_TIME ~ FORMAL_CHILDCARE +
                         MARRIED_OR_COHABITATING + BA_ABOVE +SPOUSAL_INCOME_LOG + MATERNAL_AGE + as.facto
                       data = NLSY_Valid_Childcare_Part_Time_One_Child,family="binomial")
summary(pooled_logit_formal)
```

```
Call:
glm(formula = FULL_TIME ~ FORMAL_CHILDCARE + MARRIED_OR_COHABITATING +
    BA_ABOVE + SPOUSAL_INCOME_LOG + MATERNAL_AGE + as.factor(YEAR),
    family = "binomial", data = NLSY_Valid_Childcare_Part_Time_One_Child)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5015   0.3725   0.4706   0.5665   0.8302

Coefficients:
                        Estimate Std. Error z value Pr(>|z|)
(Intercept)             -0.60390    1.06006  -0.570   0.5689
FORMAL_CHILDCARE         0.53870    0.13250   4.066 4.79e-05 ***
MARRIED_OR_COHABITATING -0.12703    0.17707  -0.717   0.4731
BA_ABOVE                 0.32465    0.14802   2.193   0.0283 *
SPOUSAL_INCOME_LOG      -0.02025    0.01622  -1.249   0.2118
MATERNAL_AGE             0.10229    0.04533   2.257   0.0240 *
as.factor(YEAR)2006      0.01988    0.26140   0.076   0.9394
as.factor(YEAR)2007      0.09862    0.27840   0.354   0.7232
as.factor(YEAR)2008     -0.60997    0.26790  -2.277   0.0228 *
as.factor(YEAR)2009     -0.38959    0.31110  -1.252   0.2105
as.factor(YEAR)2010     -0.61709    0.33067  -1.866   0.0620 .
as.factor(YEAR)2011     -0.24861    0.37586  -0.661   0.5083
as.factor(YEAR)2013     -0.32548    0.46268  -0.703   0.4818
as.factor(YEAR)2015     -0.99200    0.51965  -1.909   0.0563 .
as.factor(YEAR)2017     -0.61031    0.62675  -0.974   0.3302
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 1888.7  on 2510  degrees of freedom
Residual deviance: 1830.0  on 2496  degrees of freedom
  (9 observations deleted due to missingness)
AIC: 1860

Number of Fisher Scoring iterations: 5
```

- The results indicate that relative to other options selected, net of time and maternal age, the use of formally-provided childcare **does** have a statistically significant relationship to a change from part-time (20 hours) to full time (>34 hours) work.
- Based on these results, I also cannot accept my Hypothesis 2.

Hypothesis 3: Modelling Relatives' Closeness (15 Mins) and Wages

This model looks at the availability of relatives living within 15 Minutes and whether there is a relationship with working mothers' income. Due to sample size constraints (this question is only asked on a small subset of recipients), this model is only run in a pooled model.

```
NLSY_Relative_Avaialability <- NLSY_Valid_Childcare_Part_Time_One_Child[!is.na(NLSY_Valid_Childcare_Par

pooled.relative <- plm(INCOME_LOG ~ Relative_within_15_minutes + MARRIED_OR_COHABITATING + BA_ABOVE + MA
               index = c("PUBID_1997", "YEAR"),
               model = "pooling",
               data = NLSY_Relative_Avaialability)
summary(pooled.relative)
```

```
Pooling Model

Call:
plm(formula = INCOME_LOG ~ Relative_within_15_minutes + MARRIED_OR_COHABITATING +
    BA_ABOVE + MATERNAL_AGE + SPOUSAL_INCOME_LOG + as.factor(YEAR),
    data = NLSY_Relative_Avaialability, model = "pooling", index = c("PUBID_1997",
        "YEAR"))

Unbalanced Panel: n = 268, T = 1-2, N = 308

Residuals:
    Min.  1st Qu.   Median  3rd Qu.     Max.
-3.21902 -0.31966  0.11244  0.50980  1.81608

Coefficients:
                                 Estimate Std. Error t-value Pr(>|t|)
(Intercept)                     5.4686830  1.9836373  2.7569 0.006194 **
Relative_within_15_minutes - Yes -0.0049155  0.1003110 -0.0490 0.960950
MARRIED_OR_COHABITATING          0.2817196  0.1228780  2.2927 0.022561 *
BA_ABOVE                         0.1432595  0.1168418  1.2261 0.221126
MATERNAL_AGE                     0.1648744  0.0911559  1.8087 0.071501 .
SPOUSAL_INCOME_LOG               0.0164777  0.0118339  1.3924 0.164831
as.factor(YEAR)2008              0.0804704  0.2811949  0.2862 0.774944
as.factor(YEAR)2011             -0.3331736  0.5537381 -0.6017 0.547842
as.factor(YEAR)2015             -0.4307636  0.8998024 -0.4787 0.632480
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    265.45
Residual Sum of Squares: 183.35
R-Squared:      0.3093
Adj. R-Squared: 0.29082
F-statistic: 16.7371 on 8 and 299 DF, p-value: < 2.22e-16
```

- *Pooled Model*: For working women (part time and above), change from no relatives within 15 minutes to them to having relatives within 15 minutes, net of marital status, college education, maternal age, household socioeconomic status, and time, there is a 0.5% negative change in income on average net of time. This finding is NOT statistically significant.

- Thus I cannot support my Hypothesis 3 that when there are more relatives located close to the respondent, their mere availability can indicate a higher income.

Conclusions

Generally, what we seem to be looking at is the wage impact over time of part-time working mothers. I have run number of panel models (fixed effect, random effect, and pooled) looking at the relationship between relative-provided childcare and wages over time, as well as models looking at the relationship between relative-provided care and likelihood of full time vs part time work. (*CX: Add to Appendix instead?*) I also compared my results to models looking at formal childcare systems use as primary childcare method.

- Overall, it appears that relative-provided childcare (rather than other childcare sources) is consistently found to be *negatively* or *insignificantly* related with womens' wages when they are consistently working without their child (part time status or up). The fixed effects model now shows a statistically insignificant negative relationship whilst the pooled model reflects a statistically significant negative relationship.
- We do not find any statistically significant relationship between the use of relative-provided childcare and full-vs part-time work in mothers.
- We do not find any statistically significant relationship between the availability of relatives within 15 minutes and wages over time.
- Interestingly, it also appears that relative-provided childcare (rather than other childcare sources) is consistently found to be *negatively* or *insignificantly* related with womens' wages when they are consistently working without their child (part time status or up); however, the fixed effects model now shows a more statistically significant negative relationship whilst the pooled model reflects an insignificant positive relationship.

Limitations and other areas of exploration

CX: Feedback welcome here as well * One major limitation is the flow of the survey questions in the NLSY - questions such as 'Does a relative live within 15 minutes of you?' are predicated on the respondent being place into a specific subgroup (i.e., only respondents issued the long-form version of their questionnaires). * The research within currently only looks at short-term impact (i.e., within the first 6 years of the child's life), and stops asking about such questions when the child turns either 6 or 13 (depending on whether we are using the long form or regular version of this survey question). * Given the nature of the hours worked and education (without child), it is slightly difficult to proxy stay at home mothers working at least part-time for comparison.

Appendix

This section includes models that were run experimentally and will not be discussed in as much detail within my results, but will be added in the Appendix section of my paper.

Relative-Provided Care (with Controls) - ANY children under 6

Here, our data-set includes all women with at least part-time (20+ hours) income-generating work, ANY children under 6 years of age. the purpose of this additional work was to look into whether our findings

would be any different if we are looking at women with multiple children and their childcare options. For these models, I note that there is a larger sample size and wanted to see if the results were substantially different

Fixed Effects

```
fe.part_time_all <- plm(INCOME_LOG ~ FAMILY_CARE + N_CHILDREN + MARRIED_OR_COHABITATING + BA_ABOVE + SP
               index = c("PUBID_1997", "YEAR"), # id & time variables
               model = "within",
               data = NLSY_Valid_Childcare_Part_Time_2)
summary(fe.part_time_all)
```

```
Oneway (individual) effect Within Model

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + N_CHILDREN + MARRIED_OR_COHABITATING +
    BA_ABOVE + SPOUSAL_INCOME_LOG + as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_2,
    model = "within", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1556, T = 1-7, N = 3918

Residuals:
     Min.   1st Qu.    Median   3rd Qu.      Max.
-4.229787 -0.097206  0.000000  0.131313  3.383081

Coefficients:
                        Estimate Std. Error t-value  Pr(>|t|)
FAMILY_CARE            -0.0176336  0.0279699 -0.6304 0.5284618
N_CHILDREN             -0.1019071  0.0301069 -3.3848 0.0007239 ***
MARRIED_OR_COHABITATING  0.0737271  0.0419460  1.7577 0.0789345 .
BA_ABOVE                 0.0603667  0.0811969  0.7435 0.4572768
SPOUSAL_INCOME_LOG       0.0024562  0.0034237  0.7174 0.4732033
as.factor(YEAR)2006      0.1374880  0.0443618  3.0992 0.0019631 **
as.factor(YEAR)2007      0.2756158  0.0464694  5.9311 3.453e-09 ***
as.factor(YEAR)2008      0.4664674  0.0485396  9.6100 < 2.2e-16 ***
as.factor(YEAR)2009      0.5848074  0.0520008 11.2461 < 2.2e-16 ***
as.factor(YEAR)2010      0.6172851  0.0552526 11.1721 < 2.2e-16 ***
as.factor(YEAR)2011      0.6946885  0.0595726 11.6612 < 2.2e-16 ***
as.factor(YEAR)2013      0.7998571  0.0705103 11.3438 < 2.2e-16 ***
as.factor(YEAR)2015      0.8721437  0.0868556 10.0413 < 2.2e-16 ***
as.factor(YEAR)2017      1.1622245  0.1028762 11.2973 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    674.46
Residual Sum of Squares: 605.1
R-Squared:      0.10283
Adj. R-Squared: -0.49668
F-statistic: 19.2234 on 14 and 2348 DF, p-value: < 2.22e-16
```

- *Fixed Effects Interpretation*: For working women (part time and above) with **any** child changing to family childcare as the primary type of childcare (e.g., from formal childcare systems), there is a 1.3%

decrease in income net of person, net of socioeconomic, education, and marital status factors, across the years that this study is conducted. This finding is **statistically insignificant**.

- The adjusted R square is negative as it was before, indicating the lack of explanatory power in this model.

Random Effects

```
re.part_time_all  <- plm(INCOME_LOG ~ FAMILY_CARE + N_CHILDREN + MARRIED_OR_COHABITATING + BA_ABOVE + SI
                         MOTHER_AGE_FIRST_CHILD + as.factor(YEAR),
                        index = c("PUBID_1997", "YEAR"),
                        model = "random",
                        data = NLSY_Valid_Childcare_Part_Time_2)
summary(re.part_time_all)
```

```
Oneway (individual) effect Random Effect Model
   (Swamy-Arora's transformation)

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + N_CHILDREN + MARRIED_OR_COHABITATING +
    BA_ABOVE + SPOUSAL_INCOME_LOG + MOTHER_AGE_FIRST_CHILD +
    as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_2,
    model = "random", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1556, T = 1-7, N = 3918

Effects:
                 var std.dev share
idiosyncratic 0.2577  0.5077 0.439
individual    0.3296  0.5741 0.561
theta:
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 0.3376  0.4699  0.5453  0.5383  0.5956  0.6830

Residuals:
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
-4.7997 -0.1402  0.1113  0.0153  0.3021  2.0227

Coefficients:
                         Estimate Std. Error z-value  Pr(>|z|)
(Intercept)             8.8628518  0.1580351 56.0815 < 2.2e-16 ***
FAMILY_CARE            -0.0391163  0.0241640 -1.6188 0.1054943
N_CHILDREN             -0.0882678  0.0210098 -4.2013 2.654e-05 ***
MARRIED_OR_COHABITATING  0.1209202  0.0341831  3.5374 0.0004040 ***
BA_ABOVE                 0.3535202  0.0389905  9.0668 < 2.2e-16 ***
SPOUSAL_INCOME_LOG       0.0094818  0.0029347  3.2309 0.0012339 **
MOTHER_AGE_FIRST_CHILD  -0.0227237  0.0067399 -3.3715 0.0007476 ***
as.factor(YEAR)2006      0.0693952  0.0429528  1.6156 0.1061775
as.factor(YEAR)2007      0.1750313  0.0442516  3.9554 7.642e-05 ***
as.factor(YEAR)2008      0.3184627  0.0454037  7.0140 2.316e-12 ***
as.factor(YEAR)2009      0.4308321  0.0485869  8.8673 < 2.2e-16 ***
as.factor(YEAR)2010      0.4402933  0.0510471  8.6252 < 2.2e-16 ***
```

```
as.factor(YEAR)2011      0.5426972  0.0547248  9.9168 < 2.2e-16 ***
as.factor(YEAR)2013      0.6166562  0.0630661  9.7779 < 2.2e-16 ***
as.factor(YEAR)2015      0.6627203  0.0738380  8.9753 < 2.2e-16 ***
as.factor(YEAR)2017      0.9005703  0.0847839 10.6219 < 2.2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    4705.1
Residual Sum of Squares: 1076.9
R-Squared:      0.77521
Adj. R-Squared: 0.77435
Chisq: 1019.53 on 15 DF, p-value: < 2.22e-16
```

- *Random Effects Interpretation*: For working women (part time and above) with any child changing to family childcare as the primary type of childcare (e.g., from formal childcare systems), there is a 3% decrease in income net of person across the years that this study is conducted, net of socioeconomic, education, and marital status factors, and adjusting for the fact that the same person is answering the same survey. This finding is **not statistically significant**.

Pooled Model

```
pooled.part_time_all <- plm(INCOME_LOG ~ FAMILY_CARE + N_CHILDREN +  MARRIED_OR_COHABITATING + BA_ABOVE
               index = c("PUBID_1997", "YEAR"),
               model = "pooling",
               data = NLSY_Valid_Childcare_Part_Time_2) ## this is equivalent to above OLS ##
summary(pooled.part_time_all)
```

```
Pooling Model

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + N_CHILDREN + MARRIED_OR_COHABITATING +
    BA_ABOVE + MOTHER_AGE_FIRST_CHILD + SPOUSAL_INCOME_LOG +
    as.factor(YEAR), data = NLSY_Valid_Childcare_Part_Time_2,
    model = "pooling", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1556, T = 1-7, N = 3918

Residuals:
    Min.  1st Qu.   Median  3rd Qu.     Max.
-6.17579 -0.28637  0.12844  0.47588  1.93832

Coefficients:
                         Estimate Std. Error t-value  Pr(>|t|)
(Intercept)             8.6299579  0.1445608 59.6978 < 2.2e-16 ***
FAMILY_CARE            -0.0715795  0.0256411 -2.7916 0.0052704 **
N_CHILDREN             -0.0715297  0.0194182 -3.6836 0.0002330 ***
MARRIED_OR_COHABITATING  0.1251676  0.0357374  3.5024 0.0004662 ***
BA_ABOVE                 0.3736588  0.0295961 12.6253 < 2.2e-16 ***
MOTHER_AGE_FIRST_CHILD  -0.0386661  0.0063378 -6.1009 1.158e-09 ***
SPOUSAL_INCOME_LOG       0.0139895  0.0032178  4.3475 1.412e-05 ***
as.factor(YEAR)2006      0.0092222  0.0573763  0.1607 0.8723132
as.factor(YEAR)2007      0.0946750  0.0575040  1.6464 0.0997607 .
```

```
as.factor(YEAR)2008      0.1839299  0.0574999  3.1988 0.0013911 **
as.factor(YEAR)2009      0.2933122  0.0605894  4.8410 1.342e-06 ***
as.factor(YEAR)2010      0.2630793  0.0620235  4.2416 2.271e-05 ***
as.factor(YEAR)2011      0.3933399  0.0655064  6.0046 2.093e-09 ***
as.factor(YEAR)2013      0.4089113  0.0736322  5.5534 2.988e-08 ***
as.factor(YEAR)2015      0.3986789  0.0830253  4.8019 1.631e-06 ***
as.factor(YEAR)2017      0.5498515  0.0939367  5.8534 5.212e-09 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    3200.7
Residual Sum of Squares: 2325.2
R-Squared:      0.27352
Adj. R-Squared: 0.27073
F-statistic: 97.9428 on 15 and 3902 DF, p-value: < 2.22e-16
```

- *Pooled Model*: For working women (part time and above) with children changing to family childcare (from non-family childcare), net of marital status, college education, maternal age, and household socioeconomic status, there is a 7.3% negative change in income on average net of time. This finding is statistically significant.

```
stargazer(fe.part_time_all, re.part_time_all, pooled.part_time_all,
          title="Regression Results",
          align=TRUE,
          dep.var.labels=c("Income"),
          no.space=TRUE,
          column.labels=c("Fixed Effects", "Random Effects", "Pooled"),
          dep.var.caption="",
          model.numbers=FALSE,
          #type = "latex",
          type = "text",
          omit = "Constant")
```

Summary Table

```
Regression Results
================================================================================================
                                                Income
                                Fixed Effects       Random Effects          Pooled
------------------------------------------------------------------------------------------------
FAMILY_CARE                        -0.018              -0.039             -0.072***
                                   (0.028)             (0.024)             (0.026)
N_CHILDREN                        -0.102***           -0.088***          -0.072***
                                   (0.030)             (0.021)             (0.019)
MARRIED_OR_COHABITATING            0.074*              0.121***           0.125***
                                   (0.042)             (0.034)             (0.036)
BA_ABOVE                           0.060               0.354***           0.374***
                                   (0.081)             (0.039)             (0.030)
SPOUSAL_INCOME_LOG                 0.002               0.009***           0.014***
                                   (0.003)             (0.003)             (0.003)
MOTHER_AGE_FIRST_CHILD                                 -0.023***          -0.039***
```

```
                                                (0.007)             (0.006)
as.factor(YEAR)2006                0.137***      0.069               0.009
                                    (0.044)     (0.043)             (0.057)
as.factor(YEAR)2007                0.276***     0.175***            0.095*
                                    (0.046)     (0.044)             (0.058)
as.factor(YEAR)2008                0.466***     0.318***           0.184***
                                    (0.049)     (0.045)             (0.057)
as.factor(YEAR)2009                0.585***     0.431***           0.293***
                                    (0.052)     (0.049)             (0.061)
as.factor(YEAR)2010                0.617***     0.440***           0.263***
                                    (0.055)     (0.051)             (0.062)
as.factor(YEAR)2011                0.695***     0.543***           0.393***
                                    (0.060)     (0.055)             (0.066)
as.factor(YEAR)2013                0.800***     0.617***           0.409***
                                    (0.071)     (0.063)             (0.074)
as.factor(YEAR)2015                0.872***     0.663***           0.399***
                                    (0.087)     (0.074)             (0.083)
as.factor(YEAR)2017                1.162***     0.901***           0.550***
                                    (0.103)     (0.085)             (0.094)
-------------------------------------------------------------------------------------
Observations                         3,918       3,918               3,918
R2                                   0.103       0.775               0.274
Adjusted R2                         -0.497       0.774               0.271
F Statistic             19.223*** (df = 14; 2348)  1,019.530***  97.943*** (df = 15; 3902)
=====================================================================================
Note:                                                          *p<0.1; **p<0.05; ***p<0.01
```

- Model with control variable results (controlling for spousal income rather than socioeconomic status) seem to indicate that mothers switching to childcare from relatives as the primary option tend to exhibit lower/insignificant wage growth over time (net of other factors).
- This is virtually the same as the results displayed above with one child only.
- The Adjusted R2 is improved in the fixed effects model; however it is still negative indicating that our variables are not capturing variation in our dependent variable very well within this model.

Formally Provided Childcare - Part Time Women with ANY children under 6

Again, our dataset here includes women with at least part-time (20+ hours) income-generating work, with their ANY child under 6 years of age.

```
fe.part_time_all_formal <- plm(INCOME_LOG ~ FORMAL_CHILDCARE + N_CHILDREN + MARRIED_OR_COHABITATING + BA
                                SPOUSAL_INCOME_LOG +
                               as.factor(YEAR),
               index = c("PUBID_1997", "YEAR"), # id & time variables
               model = "within",
               data = NLSY_Valid_Childcare_Part_Time_2)

re.part_time_all_formal  <- plm(INCOME_LOG ~ FORMAL_CHILDCARE + N_CHILDREN + MARRIED_OR_COHABITATING + M
                                 SPOUSAL_INCOME_LOG +
                                MOTHER_AGE_FIRST_CHILD +
                               as.factor(YEAR), # model formula
```

```
                index = c("PUBID_1997", "YEAR"),
                model = "random",
                data = NLSY_Valid_Childcare_Part_Time_2)

pooled.part_time_all_formal <- plm(INCOME_LOG ~ FORMAL_CHILDCARE +N_CHILDREN+ MARRIED_OR_COHABITATING +
                                     SPOUSAL_INCOME_LOG + MOTHER_AGE_FIRST_CHILD +
                                   as.factor(YEAR),
                index = c("PUBID_1997", "YEAR"),
                model = "pooling",
                data = NLSY_Valid_Childcare_Part_Time_2)

stargazer(fe.part_time_all_formal, re.part_time_all_formal, pooled.part_time_all_formal,
          title="Regression Results",
          align=TRUE,
          dep.var.labels=c("Income"),
          no.space=TRUE,
          column.labels=c("Fixed Effects", "Random Effects", "Pooled"),
          dep.var.caption="",
          model.numbers=FALSE,
          #type = "latex",
          type = "text",
          omit = "Constant")
```

Summary Table

```
Regression Results
================================================================================================
                                                Income
                                Fixed Effects       Random Effects          Pooled
------------------------------------------------------------------------------------------------
FORMAL_CHILDCARE                   -0.044              -0.006               0.047*
                                   (0.028)             (0.024)              (0.026)
N_CHILDREN                        -0.105***           -0.089***            -0.072***
                                   (0.030)             (0.021)              (0.019)
MARRIED_OR_COHABITATING            0.073*              0.123***             0.132***
                                   (0.042)             (0.034)              (0.036)
BA_ABOVE                            0.059              0.357***             0.377***
                                   (0.081)             (0.039)              (0.030)
SPOUSAL_INCOME_LOG                  0.003              0.010***             0.014***
                                   (0.003)             (0.003)              (0.003)
MOTHER_AGE_FIRST_CHILD                                -0.021***            -0.040***
                                                      (0.007)              (0.006)
as.factor(YEAR)2006               0.143***             0.072*               0.009
                                   (0.044)             (0.043)              (0.057)
as.factor(YEAR)2007               0.286***            0.179***              0.090
                                   (0.047)             (0.045)              (0.058)
as.factor(YEAR)2008               0.481***            0.323***             0.179***
                                   (0.049)             (0.046)              (0.058)
as.factor(YEAR)2009               0.603***            0.437***             0.285***
                                   (0.053)             (0.049)              (0.061)
as.factor(YEAR)2010               0.643***            0.450***             0.254***
                                   (0.057)             (0.052)              (0.063)
as.factor(YEAR)2011               0.731***            0.558***             0.388***
```

```
                                (0.062)             (0.056)             (0.066)
as.factor(YEAR)2013            0.847***            0.636***            0.401***
                                (0.074)             (0.066)             (0.075)
as.factor(YEAR)2015            0.933***            0.686***            0.390***
                                (0.092)             (0.077)             (0.085)
as.factor(YEAR)2017            1.234***            0.927***            0.537***
                                (0.109)             (0.089)             (0.097)
-------------------------------------------------------------------------------------------
Observations                     3,918               3,918               3,918
R2                               0.104               0.775               0.273
Adjusted R2                     -0.495               0.774               0.270
F Statistic            19.396*** (df = 14; 2348)  1,015.556***  97.520*** (df = 15; 3902)
===========================================================================================
Note:                                                          *p<0.1; **p<0.05; ***p<0.01
```

- Results are once more showing similar relationships with the formally provided childcare models in the main body of this report; however, in this case, the positive relationship in the pooled model is now statistically significant, indicating the use of formal care overall seems to correspond on average with higher income.

Relative-Provided Care (with Controls) - ANY children under 6

Here, our data-set includes all women with at least part-time (20+ hours) income-generating work, ANY children under 6 years of age. the purpose of this additional work was to look into whether our findings would be any different if we are looking at women with multiple children and their childcare options. For these models, I note that there is a larger sample size and wanted to see if the results were substantially different

Fixed Effects

```
fe.all <- plm(INCOME_LOG ~ FAMILY_CARE + N_CHILDREN + MARRIED_OR_COHABITATING + BA_ABOVE + SPOUSAL_INCOM
              index = c("PUBID_1997", "YEAR"), # id & time variables
              model = "within",
              data = NLSY_Valid_Childcare_Income_One_Child)
summary(fe.all)
```

```
Oneway (individual) effect Within Model

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + N_CHILDREN + MARRIED_OR_COHABITATING +
    BA_ABOVE + SPOUSAL_INCOME_LOG + as.factor(YEAR), data = NLSY_Valid_Childcare_Income_One_Child,
    model = "within", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1470, T = 1-6, N = 3207

Residuals:
     Min.   1st Qu.    Median   3rd Qu.      Max.
-4.209519 -0.087461  0.000000  0.116027  2.933281

Coefficients:
                         Estimate Std. Error t-value  Pr(>|t|)
```

```
FAMILY_CARE             -0.0052007  0.0351230 -0.1481   0.88231
MARRIED_OR_COHABITATING  0.0686032  0.0511675  1.3408   0.18018
BA_ABOVE                 0.0045684  0.1133957  0.0403   0.96787
SPOUSAL_INCOME_LOG       0.0017520  0.0045663  0.3837   0.70126
as.factor(YEAR)2006      0.1356810  0.0569558  2.3822   0.01732 *
as.factor(YEAR)2007      0.2362330  0.0600918  3.9312 8.787e-05 ***
as.factor(YEAR)2008      0.3902346  0.0627728  6.2166 6.358e-10 ***
as.factor(YEAR)2009      0.4525747  0.0677790  6.6772 3.274e-11 ***
as.factor(YEAR)2010      0.4583497  0.0712686  6.4313 1.634e-10 ***
as.factor(YEAR)2011      0.5342552  0.0765956  6.9750 4.343e-12 ***
as.factor(YEAR)2013      0.6867914  0.0903108  7.6048 4.663e-14 ***
as.factor(YEAR)2015      0.6784723  0.1139778  5.9527 3.189e-09 ***
as.factor(YEAR)2017      0.9555205  0.1368022  6.9847 4.062e-12 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    663.68
Residual Sum of Squares: 629.98
R-Squared:      0.050782
Adj. R-Squared: -0.76519
F-statistic: 7.09482 on 13 and 1724 DF, p-value: 1.3167e-13
```

- *Fixed Effects Interpretation*: For working women (part time and above) with **any** child changing to family childcare as the primary type of childcare (e.g., from formal childcare systems), there is a 0.6% decrease in income net of person, net of socioeconomic, education, and marital status factors, across the years that this study is conducted. This finding is **statistically insignificant**.

- The adjusted R square is negative as it was before, indicating the lack of explanatory power in this model.

Pooled Model

```
pooled.all <- plm(INCOME_LOG ~ FAMILY_CARE + N_CHILDREN +  MARRIED_OR_COHABITATING + BA_ABOVE + MOTHER_A
               index = c("PUBID_1997", "YEAR"),
               model = "pooling",
               data = NLSY_Valid_Childcare_Income_One_Child) ## this is equivalent to above OLS ##
summary(pooled.all)
```

```
Pooling Model

Call:
plm(formula = INCOME_LOG ~ FAMILY_CARE + N_CHILDREN + MARRIED_OR_COHABITATING +
    BA_ABOVE + MOTHER_AGE_FIRST_CHILD + SPOUSAL_INCOME_LOG +
    as.factor(YEAR), data = NLSY_Valid_Childcare_Income_One_Child,
    model = "pooling", index = c("PUBID_1997", "YEAR"))

Unbalanced Panel: n = 1470, T = 1-6, N = 3207

Residuals:
    Min.  1st Qu.   Median  3rd Qu.     Max.
-5.98980 -0.28231  0.19632  0.54706  2.11818
```

```
Coefficients:
                          Estimate Std. Error t-value  Pr(>|t|)
(Intercept)              8.1509767  0.1803490 45.1956 < 2.2e-16 ***
FAMILY_CARE              0.1182372  0.0327625  3.6089 0.0003122 ***
MARRIED_OR_COHABITATING  0.0238426  0.0451631  0.5279 0.5975904
BA_ABOVE                 0.3577718  0.0383877  9.3200 < 2.2e-16 ***
MOTHER_AGE_FIRST_CHILD  -0.0438830  0.0082090 -5.3457 9.639e-08 ***
SPOUSAL_INCOME_LOG       0.0196832  0.0040636  4.8438 1.334e-06 ***
as.factor(YEAR)2006      0.1177916  0.0703068  1.6754 0.0939551 .
as.factor(YEAR)2007      0.2215993  0.0709453  3.1235 0.0018030 **
as.factor(YEAR)2008      0.3035953  0.0711340  4.2679 2.030e-05 ***
as.factor(YEAR)2009      0.3758458  0.0756809  4.9662 7.187e-07 ***
as.factor(YEAR)2010      0.3560035  0.0777685  4.5777 4.880e-06 ***
as.factor(YEAR)2011      0.4560617  0.0821209  5.5535 3.029e-08 ***
as.factor(YEAR)2013      0.4975476  0.0927601  5.3638 8.729e-08 ***
as.factor(YEAR)2015      0.4378311  0.1078839  4.0584 5.060e-05 ***
as.factor(YEAR)2017      0.6525503  0.1207114  5.4059 6.924e-08 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    3351.5
Residual Sum of Squares: 2655.6
R-Squared:      0.20765
Adj. R-Squared: 0.20418
F-statistic: 59.7522 on 14 and 3192 DF, p-value: < 2.22e-16
```

- *Pooled Model*: For all working women with children changing to family childcare (from non-family childcare), net of marital status, college education, maternal age, and household socioeconomic status, there is a 11.7% positive change in income on average net of time. This finding is statistically significant.

```
stargazer(fe.all, pooled.all,
          title="Regression Results",
          align=TRUE,
          dep.var.labels=c("Income"),
          no.space=TRUE,
          column.labels=c("Fixed Effects","Pooled"),
          dep.var.caption="",
          model.numbers=FALSE,
          #type = "latex",
          type = "text",
          omit = "Constant")
```

```
##
## Regression Results
## ================================================================================
##                                              Income
##                                Fixed Effects                Pooled
## --------------------------------------------------------------------------------
## FAMILY_CARE                        -0.005                   0.118***
##                                   (0.035)                   (0.033)
## MARRIED_OR_COHABITATING            0.069                     0.024
##                                   (0.051)                   (0.045)
## BA_ABOVE                           0.005                    0.358***
```

```
##                                 (0.113)                  (0.038)
## MOTHER_AGE_FIRST_CHILD                                  -0.044***
##                                                          (0.008)
## SPOUSAL_INCOME_LOG               0.002                  0.020***
##                                 (0.005)                  (0.004)
## as.factor(YEAR)2006            0.136**                   0.118*
##                                 (0.057)                  (0.070)
## as.factor(YEAR)2007            0.236***                 0.222***
##                                 (0.060)                  (0.071)
## as.factor(YEAR)2008            0.390***                 0.304***
##                                 (0.063)                  (0.071)
## as.factor(YEAR)2009            0.453***                 0.376***
##                                 (0.068)                  (0.076)
## as.factor(YEAR)2010            0.458***                 0.356***
##                                 (0.071)                  (0.078)
## as.factor(YEAR)2011            0.534***                 0.456***
##                                 (0.077)                  (0.082)
## as.factor(YEAR)2013            0.687***                 0.498***
##                                 (0.090)                  (0.093)
## as.factor(YEAR)2015            0.678***                 0.438***
##                                 (0.114)                  (0.108)
## as.factor(YEAR)2017            0.956***                 0.653***
##                                 (0.137)                  (0.121)
## ------------------------------------------------------------------------
## Observations                     3,207                    3,207
## R2                               0.051                    0.208
## Adjusted R2                      -0.765                   0.204
## F Statistic            7.095*** (df = 13; 1724) 59.752*** (df = 14; 3192)
## ========================================================================
## Note:                                        *p<0.1; **p<0.05; ***p<0.01
```

```
NLSY_Valid_Childcare_Income_One_Child <-  NLSY_Valid_Childcare_Income_One_Child %>% arrange(PUBID_1997,Y
  mutate(changed_to_relative = ifelse(lag(FAMILY_CARE) == 0 & FAMILY_CARE == 1, 1, 0)) %>% mutate(ever_

NLSY_Valid_Childcare_Part_Time_One_Child <- NLSY_Valid_Childcare_Part_Time_One_Child %>% arrange(PUBID_
  mutate(changed_to_relative = ifelse(lag(FAMILY_CARE) == 0 & FAMILY_CARE == 1, 1, 0)) %>% mutate(ever_

describe(NLSY_Valid_Childcare_Part_Time_One_Child %>% select(PUBID_1997,MATERNAL_AGE,CV_HGC_EVER_EDT,CV
```

```
##                           vars   n     mean       sd median  trimmed      mad
## PUBID_1997                   1 254  5280.62  2297.62   5482  5402.15  2813.97
## MATERNAL_AGE                 2 254    26.59     3.11     26    26.36     2.97
## CV_HGC_EVER_EDT              3 254    14.15     2.10     14    13.92     2.97
## CV_INCOME_FAMILY             4 213 61993.62 48422.92  54000 55489.71 37361.52
## WORK_EDU_HRS                 5 254    44.67    16.66     40    42.50     7.41
## ever_changed_to_relative     6 254     1.00     0.00      1     1.00     0.00
##                            min    max  range  skew kurtosis      se
## PUBID_1997                  50   9015   8965 -0.37    -0.70  144.17
## MATERNAL_AGE                21     37     16  0.70     0.53    0.19
## CV_HGC_EVER_EDT             12     20      8  0.61    -0.73    0.13
## CV_INCOME_FAMILY          1800 329331 327531  2.20     7.64 3317.88
## WORK_EDU_HRS                20    160    140  3.84    20.59    1.05
## ever_changed_to_relative     1      1      0   NaN      NaN    0.00
```

```
describe(NLSY_Valid_Childcare_Part_Time_One_Child  %>% select(PUBID_1997,MATERNAL_AGE,CV_HGC_EVER_EDT,C
```

```
##                           vars   n     mean       sd median  trimmed      mad
## PUBID_1997                   1 642  4331.38  2450.36   4175  4290.45  2962.23
## MATERNAL_AGE                 2 642    28.89     3.91     29    28.85     4.45
## CV_HGC_EVER_EDT              3 642    15.42     2.53     16    15.32     2.97
## CV_INCOME_FAMILY             4 574 91936.92 68650.49  78329 82395.12 52749.43
## WORK_EDU_HRS                 5 642    43.78    20.73     40    41.41     5.19
## ever_changed_to_relative     6 642     0.00     0.00      0     0.00     0.00
##                            min    max  range skew kurtosis      se
## PUBID_1997                  47   8975   8928 0.10    -1.14   96.71
## MATERNAL_AGE                21     37     16 0.06    -0.99    0.15
## CV_HGC_EVER_EDT             12     20      8 0.12    -1.12    0.10
## CV_INCOME_FAMILY          2250 469576 467326 1.93     5.82 2865.42
## WORK_EDU_HRS                20    240    220 5.63    40.45    0.82
## ever_changed_to_relative     0      0      0  NaN      NaN    0.00
```

```
describe(NLSY_Valid_Childcare_Part_Time_One_Child %>% select(PUBID_1997,MATERNAL_AGE,CV_HGC_EVER_EDT,CV_
```

```
##                           vars   n     mean       sd median  trimmed      mad  min
## PUBID_1997                   1 863  4859.99  2566.15   5068  4951.34  3199.45    4
## MATERNAL_AGE                 2 863    27.24     3.20     27    27.04     2.97   21
## CV_HGC_EVER_EDT              3 863    14.31     2.17     14    14.05     2.97   12
## CV_INCOME_FAMILY             4 773 71569.46 53992.79  61200 63528.13 40697.37 2400
## WORK_EDU_HRS                 5 863    44.82    19.55     40    42.41     7.41   20
## ever_changed_to_formal       6 863     1.00     0.00      1     1.00     0.00    1
##                            max  range  skew kurtosis      se
## PUBID_1997                8991   8987 -0.24    -1.07   87.35
## MATERNAL_AGE                37     16  0.56     0.02    0.11
## CV_HGC_EVER_EDT             20      8  0.71    -0.45    0.07
## CV_INCOME_FAMILY        329331 326931  2.20     6.72 1941.99
## WORK_EDU_HRS               240    220  5.47    40.43    0.67
## ever_changed_to_formal       1      0   NaN      NaN    0.00
```

```
describe(NLSY_Valid_Childcare_Part_Time_One_Child  %>% select(PUBID_1997,MATERNAL_AGE,CV_HGC_EVER_EDT,C
```

```
##                           vars   n     mean       sd median  trimmed      mad
## PUBID_1997                   1 122  3674.05  2132.51   3815  3562.83  2208.33
## MATERNAL_AGE                 2 122    29.25     3.57     29    29.28     2.97
## CV_HGC_EVER_EDT              3 122    16.14     2.67     16    16.17     2.97
## CV_INCOME_FAMILY             4 112 97917.56 81253.43  77750 83569.38 54957.76
## WORK_EDU_HRS                 5 122    44.59    22.36     40    41.50    10.38
## ever_changed_to_formal       6 122     0.00     0.00      0     0.00     0.00
## ever_changed_to_relative     7 122     0.00     0.00      0     0.00     0.00
##                            min    max  range  skew kurtosis      se
## PUBID_1997                 198   8850   8652  0.30    -0.78  193.07
## MATERNAL_AGE                22     37     15  0.02    -0.60    0.32
## CV_HGC_EVER_EDT             12     20      8 -0.15    -1.25    0.24
## CV_INCOME_FAMILY          9065 469576 460511  2.42     7.24 7677.73
## WORK_EDU_HRS                20    160    140  3.12    12.20    2.02
## ever_changed_to_formal       0      0      0   NaN      NaN    0.00
## ever_changed_to_relative     0      0      0   NaN      NaN    0.00
```