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The relationship between single motherhood, employment and poverty

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The Relationship Between Single Motherhood, Employment and Poverty

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THE RELATIONSHIP BETWEEN SINGLE MOTHERHOOD, EMPLOYMENT AND POVERTY¹

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Brady Finnigan and Hübgen (2017, henceforth BFH) develop a framework for analyzing the four major risks of poverty (single motherhood, unemployment, low education, and young household headship). BFH decompose risks into prevalences and penalties. Prevalences are the share of the population in a risk category. Penalties are the increased probability of poverty associated with a risk. Several of BFH's conclusions are central to this exchange. First, BFH find penalties for single motherhood vary cross-nationally more than the prevalences. Poverty is explained more by how much countries choose to penalize single mothers rather than how many single mothers there are. Second, BFH contend that penalties should be estimated conditional of other risks. This guards against conflating the single motherhood penalty with other risks. Third, BFH show that reductions in the prevalence of single motherhood would not substantially reduce poverty in the U.S. The U.S. does not have high poverty because it has a high prevalence of single motherhood, and single mother households are a modest share of the population.

Moulin and Harkness (henceforth MH) argue for a problematic definition of single-mother households and estimate single motherhood penalties while omitting the most important

¹ We are grateful to LIS staff members Jorg Neugschwender and Teresa Munzi for confirming how to correctly use LIS weights and for explaining how the South Korea datasets have changed. We also thank Pablo Geraldo Bastías, Felix Elwert and Kevin Esterling for guidance on DAGs, and Thomas Biegert, Kevin Esterling, Joscha Legewie, Bruce Link, Zach Parolin and Tom VanHeuvelen for helpful comments.

predictors of poverty (i.e. employment). Our reply first corrects many errors and inaccuracies in MH. Second, we demonstrate problems with MH's definition of single motherhood and affirm BFH's definition. We also show MH's definition does not result in substantially different prevalences. Third, we clarify causal models of poverty. This highlights the strong and unjustified assumptions needed for MH's regression models. Fourth, the results mostly confirm BFH's conclusions. Even with MH's definition and model specifications, the U.S. would still have very high poverty if single motherhood was dramatically reduced or eliminated. Throughout, we use MH's sample of country-years and mimic MH's and BFH's analyses (e.g., sample, specification, measurement). Appendix IV provides our replication code.

Before proceeding, we thank MH for engaging with the prevalence and penalties framework. We also appreciate MH replicating some analyses using our publicly available code and making their code available. We completely concur with MH that: (1) the prevalence and penalty of single motherhood reflect gender inequalities in institutions and labor markets; (2) single motherhood is: "at the intersection of parenthood and partnership status with gender" (p.10); and (3) part of the single mother penalty results from the lack of social policies to facilitate employment. All these points are entirely compatible with BFH, which is clear given we measure single *motherhood* not single *parenthood*. BFH argues that countries make political choices about which risks will be protected and which will be penalized. Prevalences and penalties are malleable with social policies and institutions, and social policies and institutions are certainly shaped by gender.

ERRORS AND INACCURACIES

For replication to be productive: (1) the replicator should represent the original study accurately; and (2) the replication itself should be replicable.² Unfortunately, MH do not accurately represent BFH.³ In addition, even after extensive corrections to MH's code, we are unable to replicate their results.⁴

MH confuse the unit of analysis, writing, "BFH measure single mother households as a proportion of all working-age (under-65) households. This departs from most analyses of poverty that weights households by individuals." This is incorrect. BFH's unit of analysis is the individual, and the prevalence includes all individuals in single-mother households. BFH clearly state: "To measure prevalences, we estimate the proportion of the population with a given risk (with sample weights)" (p.748).

MH incorrectly apply LIS weights. MH multiply the household (henceforth HH) weights by the number of people in the HH, which is a shortcut for population estimates when only using HH-level data. However, MH mistakenly apply this adjustment to individual-level data, which meaningfully distorts their estimates (see below).

² AJS's sole half-page review of MH focused on whether decompositions can be used to make causal claims. Unfortunately, the review did not assess MH's analyses or code, or comment on whether MH accurately represented BFH.

³ In addition to the major inaccuracies, MH claim BFH: "assume [prevalences] do not reflect institutional or policy differences between countries." There is no basis for this claim and we certainly do not. MH also write: "BFH conclude that single motherhood is, in most countries, an unimportant risk." BFH clearly states that single motherhood is one of four "major" and "most important" risks. BFH write: "single motherhood may be the least important risk" (p.773) of the four "most commonly studied risks. . .[which] are empirically associated with the greatest penalties" (p.743).

⁴ MH's unaltered code is inoperable in LIS. In Appendix IV, we consider potential reasons. Our replication of MH is based on several weeks correcting MH's code.

MH obfuscate how BFH’s penalties compare single mother households to reference groups. For instance, MH (pp. 5; 7; emphases in original) write: “This restricts the comparison to *single-earner couples* and working single fathers;” and “This compares all employed single mother households to *single-earner couples with children*.” Actually, BFH estimate the penalty for single motherhood with models comparing single-mother HHs to married-couple or single-father-headed HHs within *all* employment categories: zero, one, and multiple earners. Rather than being estimated solely among single-earner HHs, the penalty for single motherhood is the greater risk of poverty relative to married-couple or single-father-head HHs with the same number of earners. We believe this understanding of comparison groups in linear regression is standard. Therefore, MH’s criticisms that BFH “never clearly stat[e] their comparison,” and that “The resulting penalties speak to only a subset of the population of interest and are not readily interpreted as single motherhood penalties” are false.

Further, MH inaccurately describe employment differences between single-mother and other HHs. Single-mother HHs frequently have multiple earners, contrary to MH’s claims: “Single mother households, as defined, cannot be dual-earner households;” and “households headed by a single mother almost always have just one potential earner.” For BFH’s and MH’s definition of single motherhood (details below), Table 1 reports employment patterns for single mother HHs across 28 countries and the U.S. in 2010. About 30% of people in single mother HHs have multiple earners with BFH’s definition, and 33-38% with MH’s definition. The mean number of earners in single mother HHs is 1.2–1.5. In four countries, the typical single mother HH has multiple earners.

[TABLE 1 ABOUT HERE]

DEFINITIONS OF SINGLE MOTHERHOOD AND PREVALENCES

This section demonstrates problems with MH's definition of single motherhood and affirms BFH's definition. In the process, we show MH's definition does not result in substantially different prevalences. BFH define single-mother HHs as HHs with: (a) female heads who are (b) single (i.e. not married/coupled), (c) residing with her own children, and (d) under 54 years old. This definition follows LIS practice and prior research (e.g. Brady and Burroway 2012; Destro and Brady 2011; Rainwater and Smeeding 2004) and can be applied across almost all LIS datasets and countries.

MH measure single-mother families *within* HHs. This defines the entire HH as a single-mother HH if it *contains* a single mother – regardless of the sex, age or couple status of the head. MH define single-mother HHs as HHs containing: (a) female individuals who are (b) single, (c) residing with her own children, and (d) 17–53 years old. MH's "hidden" single-mother HH's can be male-headed or even couple-headed. MH appear aware of this as their models control for co-residence in some countries. However, this does not solve the problem that the non-mother adults in that HH are still coded as in single mother HHs. In the U.S. 2010 sample, for example, about 36% of people in MH's "hidden" single mother HHs are other adults besides the mother (see Table 2). As well, almost half of people in MH's "hidden" single mother HHs are in married/couple-headed HHs and fully 40% of are in male-headed HHs. Coding entire male-headed households containing single mothers as "single mother HH's" contradicts MH's own focus on gender. For these reasons, we contend BFH's original definition is more valid. Also, MH concede their definition cannot be calculated in LIS data for 12 of 28 countries (we find it cannot be calculated in 11). But, this means MH just use BFH's definition in those countries. Hence, BFH's definition is also more reliable.

Table 2 reports the prevalences of single motherhood with: (i) BFH's definition, (ii) MH's definition with correct LIS weights, (iii) MH's definition with incorrect LIS weights, (iv) MH's definition but omitting male-headed HH's, (v) MH's definition but omitting couple-headed HHs, and (vi) MH's definition but omitting non-mother adults. Unfortunately, we cannot replicate MH's Figure 1 and Table 1 (our code in Appendix IV replicates Table 2).⁵ For instance, with their definition, MH report mean prevalences of 4.9-5.1 (and coefficients of variation [CVs] of 0.44-0.47). By contrast, Table 2 reports mean prevalences of 6.5-6.9 (and CVs of 0.5-0.52).

[TABLE 2 ABOUT HERE]

First, MH's incorrect weighting exaggerates the prevalences of single motherhood. Second, prevalences with BFH's definition very strongly correlate with any variant of MH's definition. With correct weighting, the prevalences correlate 0.98–0.99. Third, the cross-national variation in prevalences (i.e. CVs) is similar with BFH's or MH's definition. Fourth, prevalences with BFH's definition correlate slightly more strongly with poverty than with MH's definition.

Fifth, MH's definition yields slightly higher prevalences than BFH's definition largely because MH include male-headed and couple-headed HH's, and non-mother adults. If we omit non-mother adults from MH's definition, the mean prevalence only increases to 6.71 from BFH's prevalence of 6.47. Thus, about one-third of MH's increased prevalence is non-mother adults. Even with MH's full definition (and correct weights), the cross-national mean prevalence is 6.90, only 0.45 percentage points higher than BFH. As the final column shows, the difference

⁵ MH's code includes two separate commands for calculating prevalences, and we cannot replicate either. Unfortunately, one command uses the wrong weights and the other command uses the wrong sample (i.e., people under 65 years old not BFH's people in households with heads under 65 years old).

is trivial in most of the 17 countries where MH's definition is not identical to BFH's definition. Only two countries yield substantially higher prevalences with MH's versus BFH's definition.

In conclusion, we contend BFH's definition is more valid and reliable. We also show MH's definition does not result in substantially different prevalences.

CAUSAL MODELS OF POVERTY

To clarify the debate between BFH and MH, it may be helpful to draw directed acyclic graphs (DAG) of how risks cause poverty. Doing so reveals the strong and unjustified assumptions needed for MH's preferred regression models.

BFH implies a simple DAG, which we display in panel A of Figure 1. The four risks each predict poverty independently and directly. This follows BFH's claim that penalties should be conditional on the other risks and controls. We presume the risks are interrelated, and this is why BFH use regression not raw mean differences. As displayed in panel A, one way of thinking about this is to assume that there is common cause confounding. For example, all four risks are likely caused by unobserved childhood disadvantage.

[FIGURE 1 ABOUT HERE]

MH raise a good point that the DAG in panel A ignores indirect effects. MH argue we should care about the total effect (i.e., indirect + direct effects) of single motherhood. MH claim adjusting for multiple earner and unemployed HHs will block the causal path between single motherhood and poverty and conceal some of the single motherhood penalty. This is the problem of posttreatment control (Elwert and Winship 2014). We believe Panel B fairly and faithfully displays the DAG implied by MH. In panel B, single motherhood causes employment (i.e.

multiple earner and unemployed HHs). To avoid posttreatment control, MH estimate regression models that omit the employment variables as a way to estimate single motherhood's total effect.

However, we believe MH would agree that employment causes poverty. In fact, employment is well-established as the *most important* predictor of poverty (Baker 2015; Brady 2019; BFH; Brady and Burton 2016; Rainwater and Smeeding 2004). A DAG is supposed to represent the actual causal theory. Hence, their DAG in panel B should still include the arrows from the two employment variables to poverty even if their regression models omit those effects.

While the DAG in panel B addresses posttreatment control, it reveals a problem of unobserved confounding. Multiple-earner and unemployed HH status block some of the backdoor causal paths from unobserved confounders (e.g., childhood disadvantage). Therefore, omitting the employment variables changes the single motherhood penalty for one of two reasons. In the best case, the single motherhood penalty would now capture the total effect and not just the direct effect. However, it is equally plausible that the single motherhood penalty now includes greater bias from unobserved confounding. Unfortunately, MH's regression models cannot distinguish between these two. With panel A's DAG, BFH's regression models can identify the direct effect of single motherhood. Under panel B's DAG however, MH's regression models cannot identify any effects (Park and Esterling Forthcoming). For MH's regression models to identify single motherhood's effect, their DAG needs to remove the causal arrows from employment to poverty. Such a DAG is not justified given employment is the most important predictor of poverty. In sum, panels A and B illustrate a tradeoff between avoiding posttreatment control and confounding with unobserved variables. Even if MH prefer to focus on total rather than direct effects, their regression models cannot estimate total effects accurately.

Although it is worthwhile to debate defining penalties as total effects, there are at least three reasons to focus on direct effects. First, we conjecture single motherhood's total effects are unlikely to be substantially larger than its direct effects. The indirect effect of single motherhood that operates through employment is not substantively large – especially considering the many other factors like education causing employment. MH imply an almost deterministic relationship between single motherhood and employment that is not realistic. Returning to Table 1, 81-86% of people in single mother HH's are in employed HH's cross-nationally and in the U.S.⁶ Contrary to MH, employment is overwhelmingly the norm for single mother HHs (Baker 2015; Destro and Brady 2011). About one-third of single mother HHs have multiple earners and the mean single mother HH has 1.2-1.5 earners.

Second, direct effects focus on where social policies should be concentrated. Because unemployment has – by far – the largest penalty of the four risks, social policy should concentrate on reducing the penalty and prevalence of unemployment. Even if lower single motherhood would ripple indirectly through unemployment, it is far more efficient to simply focus on unemployment. Indeed, since the 1990s, the U.S. reduced the prevalence of unemployment among single mothers without reducing the prevalence of single motherhood. Because unemployment has such a large penalty, poverty declined more than would have occurred if the distal upstream risk of single motherhood had declined. This is the case even though reduced single motherhood might have had led to some modest reduction in unemployment (and some modest indirect reduction of poverty). Further, if one does not

⁶ MH's selection of 2010 U.S. data amplifies employment differences between single-mother and non-single-mother households compared to BFH, who used 2013 U.S. data. The 2010 data were in the Great Recession, when single-mother households were 10.6 percentage points more likely than non-single-mother households (16.2% vs 5.6%) to have no earner. By 2013, this difference shrank to 8.0 percentage points (13.4% vs 5.4%).

consider unemployment, one would be baffled by the decline in the single motherhood penalty since the 1990s (Baker 2015). The reason is not that social policies for single mothers improved since the 1990s – which is unclear – but because the prevalence of unemployment among single mother HHs declined considerably.

Third, if we are going to disentangle indirect causal pathways and estimate total effects, there is no justification for doing this solely for single motherhood. Following McLanahan's (2004) "diverging destinies" hypothesis, education and employment differentially sort people into single motherhood. Low education probably causes single motherhood. Also, rather than just MH's claim that single motherhood unidirectionally causes unemployment, single motherhood and unemployment probably reciprocally cause each other. Indeed, MH's assumption that single motherhood has a unidirectional causal effect on unemployment is *equally* as strong as BFH's assumption that single motherhood is not mediated by other risks (Park and Esterling Forthcoming). Further, low education probably causes both employment variables.

The DAG in Panel C of Figure 1 incorporates these additional indirect causal pathways. If panel C is the correct causal model, this suggests directions for future research. One could test this model with path analyses or structural equation models with reciprocal causation, ideally using longitudinal data. However, there is no justification for solely focusing on single motherhood's potential indirect causal pathways as in Panel B. As Panel C reveals, single motherhood is just as likely to mediate the other risks as much as those risks mediate single motherhood.

MODEL SPECIFICATIONS, PENALTIES, AND SIMULATIONS

Given the tradeoffs revealed by Figure 1, perhaps the best way forward is to bound the estimates of single motherhood penalties with alternative model specifications. Even when using MH's definition of single motherhood and model specifications, the results mostly confirm BFH's conclusions.

Table 3 summarizes the penalties for the four risks across 224 models (8 models for each of 28 countries).⁷ We show the median penalties across the 28 countries as well as the U.S. penalties. We estimate the same models with both BFH's and MH's definitions of single motherhood, even though we prefer BFH's definition. With MH's definition, we include their controls for single fatherhood and co-residence. We note that MH's model specifications differ across countries because their co-residence control cannot be estimated in 11 countries. Like BFH but unlike MH, the models with BFH's definition are standardized across countries, which is essential for comparing penalties across countries. Like BFH but unlike MH, we report the penalties for the 3-4 other risks, which is essential for assessing the relative importance of single motherhood. Like BFH but unlike MH, we conduct counterfactual simulations, which are essential for assessing how much reductions in the prevalence of single motherhood would reduce poverty.

Table 3 also reports the CVs in the penalties across models. The CV in single motherhood penalties ranges from 0.58 to 1.20, which differs from MH's reported CVs (0.44 to 1.27). The variation in the single motherhood penalty declines when we omit multiple earners or unemployed. Nevertheless, comparing Tables 2-3, the CV in penalties is always larger than the

⁷ The coefficients for all four risks for all 224 models of the 28 countries will be available at Brady's website. MH report mean penalties, but we prefer median penalties given there are unusually high and low penalties.

CV in prevalences. This confirms BFH's conclusion that the cross-national variation in penalties is greater than in prevalences.

The first models remain our preferred models. The first models confirm BFH. First, the single motherhood penalty is the smallest penalty of the four risks. This is the case for the cross-national median (although the difference with low education is negligible), in the U.S. and in 8-9 countries.⁸ Second, the single motherhood penalty is not statistically significantly positive in the majority (i.e. 16-17) of the 28 countries.

Third, unemployment has much larger penalties than other risks. At the cross-national median and in the U.S., the unemployment penalty is more than twice as large as the penalty for any other risk and 4-5 times as large as the single motherhood penalty. Indeed, the unemployment penalty is statistically significant in 27 of 28 countries and is the largest penalty in 22-23 of 28 countries. Because the unemployment penalty is so large, omitting unemployment – as MH do –surely results in omitted variable bias.

The second models omit multiple earner and the third models omit unemployment. In both, the single motherhood penalty increases. In the second models, unemployment's penalties remain dramatically larger than single motherhood's penalties. In the U.S., single motherhood remains the smallest penalty in the second models. However, in the second models, the cross-national median penalty for single motherhood is slightly larger than the low education and young headship penalties. In the third models, the single motherhood penalty remains the smallest penalty in the U.S. However, the cross-national median penalties for single motherhood, low education and young headship are basically similar. Hence, by omitting one of two

⁸ In the 2018 U.S. LIS sample, as a robustness check, we confirmed the single motherhood penalty is the smallest penalty of the four risks (results available upon request).

employment variables – which are always the paramount predictors of poverty – single motherhood’s penalty increases relative to low education and young headship, but remains the smallest penalty in the U.S.

The fourth model omits both multiple earner and unemployed HH. This model makes the strong assumption that both unemployed and multiple earner HH’s do not cause poverty (see panel B of Figure 1). In the fourth models, we do see an appreciable increase in the single motherhood penalty. Again, we cannot replicate MH’s results. Our estimates of single motherhood penalties in these fourth models are considerably smaller than MH’s estimates.⁹ Still, omitting both employment variables produces a considerably larger penalty for single motherhood. Again, we argue against this model as it omits the most important predictors of poverty (i.e. unemployment and multiple earners) and conceals any indirect effect of low education through single motherhood (see panel C of Figure 1). Further, even in this model, low education still has a slightly larger penalty than single motherhood in the U.S.

Finally, BFH conclude the U.S. could not substantially reduce poverty by reducing the prevalence of single motherhood. Instead, reducing penalties (e.g., through social policies) would reduce poverty far more than reducing prevalences. MH could challenge this conclusion if larger single motherhood penalties would result in greater poverty reduction from reduced prevalences. As Table 3 shows, the 2010 U.S. sample has a poverty rate of 15.4%. This is the second highest poverty rate of the 28 rich democracies (only below Israel). Table 3 displays two counterfactual

⁹ This is also the case with the cross-national mean instead of the median. Our cross-national means with both definitions would be 0.13 (about 80% of MH).

simulations that would reduce the prevalence of single motherhood from its actual level of 10.42% to the cross-national median prevalence (6.26%) or a prevalence of zero.¹⁰

Regardless of BFH or MH's definitions, model specifications, or the size of the single motherhood penalty, the U.S. cannot substantially reduce poverty by dramatically reducing or eliminating single motherhood. With BFH's definition, the U.S. would continue to have the second or third highest poverty rate with the cross-national median or a zero prevalence of single motherhood. In seven of eight simulations with MH's definition, the U.S. would have the third highest poverty rate. In all these, the U.S. would only fall below Spain's poverty rate of 14.7%. In the fourth model with MH's definition and a prevalence of zero single motherhood, the U.S. would also fall below Greece's poverty rate (13.1%) and have the fourth highest rate in the 28 rich democracies. In all simulations, the U.S. would still have a high poverty rate, considerably above the cross-national mean poverty rate of 9.4%.

CONCLUSION

We appreciate MH engaging the prevalences and penalties framework. We also concur with MH that gender inequalities in institutions and labor markets shape single motherhood prevalences and penalties. Unfortunately, this exchange is hindered because MH's piece contains many errors, does not accurately present BFH, and is not replicable.

Substantively, we present several new results supporting BFH's original conclusions. Contrary to MH, we demonstrate that employment is overwhelmingly the norm in single mother HHs. Rather than MH's unusual and problematic definition of single motherhood, we affirm

¹⁰ Like BFH, we simulated the poverty rates with 1970 U.S. prevalence and one cross-national standard deviation less prevalence. However, those simulations would be more conservative (e.g. the 1970 prevalence [7.4%] is higher than the cross-national median).

BFH's definition of single mother HHs because it is more valid and reliable. We also use this opportunity to clarify causal models of poverty with DAGs. Doing so reveals the strong and unjustified assumptions needed by MH to omit employment variables from regression models. By addressing posttreatment bias by omitting employment, MH trigger omitted variable bias and ignore other posttreatment biases.

We also confirm BFH's conclusions. There is more cross-national variation in single motherhood penalties than prevalences. In reasonable models and for most countries and especially the U.S., single motherhood remains the least important of the four major risks of poverty. Further, reducing the prevalence of single motherhood would not substantially reduce poverty in the U.S.

REFERENCES

- Baker, Regina S. 2015. "The Changing Association Among Marriage, Work, and Child Poverty in the United States, 1974-2010." *Journal of Marriage and Family* 77: 1166-1178.
- Brady, David. 2019. "Theories of the Causes of Poverty." *Annual Review of Sociology* 45: 155-175.
- Brady, David, and Rebekah Burroway. 2012. "Targeting, Universalism, and Single Mother Poverty: A Multilevel Analysis across 18 Affluent Democracies." *Demography* 49: 719-46.
- Brady, David and Linda M. Burton. 2016. *The Oxford Handbook of the Social Science of Poverty*. New York: Oxford University Press.
- Brady, David, Ryan Finnigan, and Sabine Hübgen. 2017. "Rethinking the Risks of Poverty: A Framework for Analyzing Prevalences and Penalties." *American Journal of Sociology* 123: 740-786.
- Destro, Lane and David Brady. 2011. "Does European-Style Welfare Generosity Discourage Single Mother Employment?" *Comparing European Workers Part B: Policies and Institutions, Research in the Sociology of Work* 22B: 53-82.
- Elwert, Felix and Christopher Winship. 2014. "Endogenous Selection Bias: The Problem of Conditioning on a Collider Variable." *Annual Review of Sociology* 40: 31-53.
- Luxembourg Income Study (LIS) Database, <http://www.lisdatacenter.org> (multiple countries; October-December 2020). Luxembourg: LIS.
- McLanahan, Sara. 2004. "Diverging Destinies: How Children Are Faring under the Second Demographic Transition." *Demography* 41: 607-27.
- Park, Soojin and Kevin M. Esterling. Forthcoming. "Sensitivity Analysis for Pretreatment Confounding With Multiple Mediators." *Journal of Educational and Behavioral Statistics* Online First.
- Rainwater, Lee, and Timothy M. Smeeding. 2004. *Poor Kids in a Rich Country*. New York: Russell Sage.

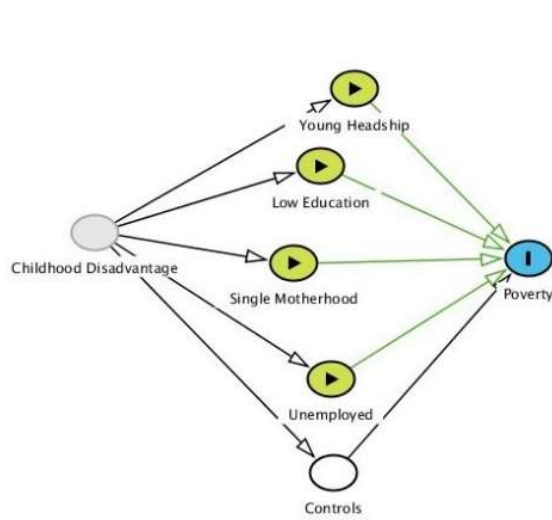
Table 1. Patterns in Employment Across BFH and M&H Definitions of Single Mother HHs.

	BFH Single Mother HHs			MH Single Mother HHs		
	<i>Proportion Employed</i>	<i>Proportion Multiple Earners</i>	<i>Mean # of Earners</i>	<i>Proportion Employed</i>	<i>Proportion Multiple Earners</i>	<i>Mean # of Earners</i>
Mean Across 28 Countries	0.81	0.31	1.18	0.82	0.33	1.23
Median Across 28 Countries	0.83	0.29	1.21	0.84	0.35	1.24
U.S. 2010	0.84	0.29	1.21	0.86	0.38	1.45
Countries with Median of One	All 28	4 (Austria, Finland, Iceland, Norway)	24 (Median 2 in Austria, Finland, Iceland & Norway)	All 28	4 (Austria, Finland, Iceland, Norway)	24 (Median 2 in Austria, Finland, Iceland & Norway)

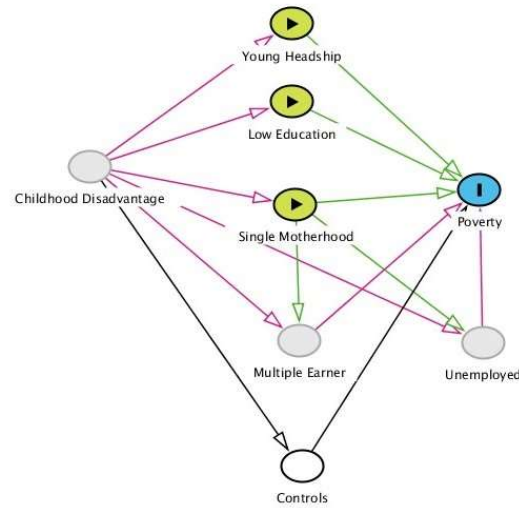
Table 2. Prevalences of Single Motherhood With BFH and MH Definitions of Single Motherhood and Correct and Incorrect Weighting.

	<i>BFH Definition</i>	<i>MH Definition, Correct Weight</i>	<i>MH Definition, Incorrect Weight</i>	<i>MH Definition Omitting Male- Headed HHs</i>	<i>MH Definition Omitting Married/Coupled HHs</i>	<i>MH Definition Omitting Non- Mother Adults</i>	<i>% of Sample in MH “Hidden” Single Mother HHs</i>
Cross- National Mean	6.47	6.90	7.23	6.65	6.69	6.71	0.45%
CV	0.50	0.52	0.57	0.51	0.51	0.51	
Corr. w/ Poverty	-0.21	-0.12	-0.09	-0.16	-0.16	-0.15	
Corr. w/ BFH Prevalence		0.98	0.94	0.99	0.99	0.99	
11 Countries Not Listed Have Identical Prevalences with BFH and MH Definitions with Correct Weights (see Appendix I)							
AT	7.06	7.40	7.96	7.25	7.15	7.24	0.19%
CA	5.11	5.75	5.67	5.39	5.66	5.49	0.47%
CZ	4.26	4.59	4.48	4.32	4.44	4.47	0.22%
EE	8.88	11.68	14.16	10.01	10.37	10.37	3.41%
FI	6.67	6.72	7.39	6.69	6.72	6.69	0.06%
FR	9.97	10.13	10.79	9.98	10.10	10.07	0.92%
DE	7.63	7.90	8.55	7.74	7.70	7.76	0.12%
GR	1.29	1.30	1.18	1.29	1.30	1.30	0.03%
IS	11.78	12.14	12.28	11.88	11.94	12.00	0.42%
IE	13.23	13.38	13.21	13.23	13.26	13.35	0.08%
LU	6.24	7.67	8.55	6.80	6.73	7.03	1.43%
PL	4.08	5.10	5.57	4.39	4.80	4.64	0.72%
SK	2.88	3.03	2.99	2.97	2.98	2.96	0.10%
ES	2.52	2.89	2.84	2.70	2.78	2.74	0.30%
CH	5.14	5.23	5.40	5.14	5.20	5.19	0.09%
UK	11.82	12.50	13.40	12.16	12.15	12.20	0.51%
U.S.	10.42	13.51	16.09	12.16	11.87	12.28	3.41%

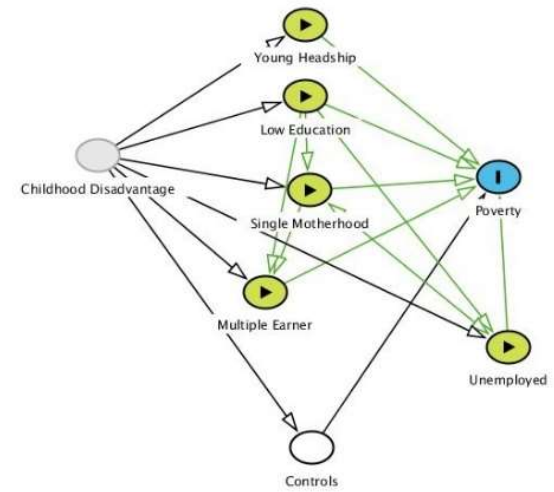
Note: For all countries and further details, see Appendix I. All columns except fourth use correct LIS weight. “CV” is the coefficient of variation, the standard deviation across countries divided by the mean.



Panel A. BFH Model



Panel B. MH Model



Panel C. Model including (a) indirect pathways for both low single motherhood and low education, and (b) reciprocal relationship between unemployed and single motherhood.

Figure 1. Directed Acyclic Graphs of Relationship Between Four Major Risks and Poverty.

Notes: Included variables are green with arrows or are hollow for controls, unobserved variables are shaded gray. Causal paths are green, biasing paths are purple. See Appendix III for code.

Table 3. Estimates of Penalties for Risks Poverty Across 28 Rich Democracies and U.S. 2010 and Predicted Probabilities of Poverty with Counterfactual Prevalences: Alternative Definitions of Single Mother HHs & Alternative Model Specifications.

	BFH Definition					MH Definition			
	<i>BFH Model</i>	<i>Omit Mult. Earner</i>	<i>Omit Unemp.</i>	<i>Omit Mult. Earner & Unemp.</i>		<i>BFH Model</i>	<i>Omit Mult. Earner</i>	<i>Omit Unemp.</i>	<i>Omit Mult. Earner & Unemp.</i>
Median Penalties (CV of Single Motherhood Penalties)									
Single Motherhood	0.060 (1.041)	0.086 (0.755)	0.087 (0.907)	0.120 (0.577)		0.055 (1.198)	0.086 (0.776)	0.087 (0.910)	0.129 (0.578)
Unemployed	0.293	0.331	--	--		0.290	0.330	--	
Low Education	0.061	0.063	0.083	0.090		0.061	0.063	0.082	0.086
Young Headship	0.112	0.079	0.088	0.083		0.113	0.079	0.088	0.063
# Countries Single Motherhood is Not Significantly Positive	17	10	13	2		16	9	13	2
# Countries Single Motherhood is Smallest Penalty	8	4	7	4		9	4	8	4
U.S. 2010 Penalties									
Single Motherhood	0.107	0.151	0.142	0.217		0.110	0.155	0.146	0.221
Unemployed	0.447	0.518	--	--		0.446	0.518	--	--
Low Education	0.182	0.189	0.206	0.224		0.181	0.189	0.206	0.223
Young Headship	0.192	0.191	0.180	0.174		0.190	0.188	0.177	0.171
Probability of U.S. 2010 Poverty (Actual 0.154) with Counterfactual Single Motherhood Prevalences (Actual 0.104)									
Median Prevalence (6.26)	0.150, 2nd	0.148, 2nd	0.148, 2nd	0.145, 3rd		0.146, 3rd	0.143, 3rd	0.144, 3rd	0.138, 3rd
Zero Prevalence	0.143, 3rd	0.138, 3rd	0.139, 3rd	0.132, 3rd		0.139, 3rd	0.133, 3rd	0.134, 3rd	0.124, 4th

Note: “CV” is the coefficient of variation, the standard deviation across countries divided by the mean. All penalties are statistically significant in the U.S. models. Models with MH definition also control for single father household and whether respondent coresides with a parent (although coresidence is automatically omitted from 11 countries). This table summarizes four coefficients from 224 models (those four coefficients from all models are available at <https://bradydave.wordpress.com/code-data/>). The models include all controls in BFH and MH.

Appendix I. Comparison of Prevalences of Single Motherhood With Different Definitions of Single Motherhood and Correct and Incorrect Weighting.

	Poverty Rate, Correct Weight	BFH Definition, Correct Weight	M&H Definition, Correct Weight	M&H Definition, Incorrect Weight	M&H Definition Omitting Male- Headed HHs	M&H Definition Omitting Married/Coupled HHs	M&H Definition Omitting Non-Mother Adults	# in M&H “Hidden Single Mother HHs	% of Sample in M&H “Hidden” Single Mother HHs
AU	10.56	7.42	7.42	7.69	7.42	7.42	7.42	0	0%
AT	8.18	7.06	7.40	7.96	7.25	7.15	7.24	22	0.2%
BE	6.36	6.27	6.27	5.60	6.27	6.27	6.27	0	0%
CA	12.57	5.11	5.75	5.67	5.39	5.66	5.49	238	0.5%
CZ	6.65	4.26	4.59	4.48	4.32	4.44	4.47	37	0.2%
DK	5.85	6.00	6.00	5.82	6.00	6.00	6.00	0	0%
EE	11.87	8.88	11.68	14.16	10.01	10.37	10.37	398	3.4%
FI	6.61	6.67	6.72	7.39	6.69	6.72	6.69	13	0.1%
FR	9.75	9.97	10.13	10.79	9.98	10.10	10.07	327	0.9%
DE	8.31	7.63	7.90	8.55	7.74	7.70	7.76	47	0.1%
GR	13.06	1.29	1.30	1.18	1.29	1.30	1.30	3	0.03%
HU	7.83	4.48	4.48	4.00	4.48	4.48	4.48	0	0%
IS	6.16	11.78	12.14	12.28	11.88	11.94	12.00	34	0.4%
IE	9.22	13.23	13.38	13.21	13.23	13.26	13.35	7	0.1%
IL	19.16	5.18	5.18	4.49	5.18	5.18	5.18	0	0%
IT	12.33	3.07	3.07	2.70	3.07	3.07	3.07	0	0%
JP	11.43	1.52	1.52	1.37	1.52	1.52	1.52	0	0%
LU	7.41	6.24	7.67	8.55	6.80	6.73	7.03	189	1.4%
NL	5.70	6.28	6.28	6.80	6.28	6.28	6.28	0	0%
NO	6.93	9.56	9.56	10.09	9.56	9.56	9.56	0	0%
PL	9.39	4.08	5.10	5.57	4.39	4.80	4.64	670	0.7%
SI	7.69	2.50	2.50	2.29	2.50	2.50	2.50	0	0%
SK	8.33	2.88	3.03	2.99	2.97	2.98	2.96	14	0.1%
ES	14.69	2.52	2.89	2.84	2.70	2.78	2.74	84	0.3%
SE	5.24	9.94	9.94	11.17	9.94	9.94	9.94	0	0%
CH	6.81	5.14	5.23	5.40	5.14	5.20	5.19	13	0.1%
UK	9.43	11.82	12.50	13.40	12.16	12.15	12.20	241	0.5%
U.S.	15.41	10.42	13.51	16.09	12.16	11.87	12.28	6203	3.4%

Note: Bolded values are identical across BFH and MH Definitions with Correct Weights.

Appendix II. Patterns in Employment Across BFH and M&H Definitions of Single Mother HHs for ALL 28 Countries.

Appendix H: Patterns in Employment Across BFH and MH Definitions of Single Motherhoods for ALL 28 Countries.

BFH Definition of Single Motherhood			MH Definition of Single Motherhood			
	Proportion Employed	Proportion Multiple Earners	Mean # of Earners	Proportion Employed	Proportion Multiple Earners	Mean # of Earners
AU	0.60	0.19	0.87	0.60	0.19	0.87
AT	0.94	0.51	1.60	0.94	0.53	1.64
BE	0.69	0.23	0.92	0.69	0.23	0.92
CA	0.83	0.30	1.21	0.84	0.36	1.38
CZ	0.74	0.11	0.87	0.73	0.14	0.89
DK	0.81	0.28	1.20	0.81	0.28	1.20
EE	0.87	0.34	1.27	0.90	0.40	1.46
FI	0.91	0.51	1.54	0.91	0.51	1.54
FR	0.84	0.33	1.18	0.84	0.33	1.20
DE	0.83	0.33	1.23	0.83	0.35	1.28
GR	0.72	0.11	0.83	0.73	0.11	0.83
HU	0.70	0.15	0.85	0.70	0.15	0.85
IS	0.91	0.50	1.56	0.91	0.52	1.60
IE	0.61	0.18	0.81	0.62	0.19	0.84
IL	0.77	0.29	1.14	0.77	0.29	1.14
IT	0.82	0.20	1.03	0.82	0.20	1.03
JP	0.80	0.18	0.97	0.80	0.18	0.97
LU	0.94	0.40	1.42	0.94	0.45	1.54
NL	0.84	0.45	1.38	0.84	0.45	1.38
NO	0.92	0.52	1.59	0.92	0.52	1.59
PL	0.77	0.17	0.98	0.80	0.26	1.18
SI	0.90	0.36	1.34	0.90	0.36	1.34
SK	0.88	0.37	1.36	0.88	0.39	1.41
ES	0.82	0.22	1.06	0.82	0.26	1.13
SE	0.87	0.42	1.40	0.87	0.42	1.40

CH	0.90	0.39	1.38	0.91	0.40	1.40
UK	0.61	0.20	0.85	0.63	0.22	0.90
U.S.	0.84	0.29	1.21	0.86	0.38	1.45

Note: Bolded values are identical across BFH and MH Definitions with Correct Weights.

Appendix III. Code for Directed Acyclic Graphs in Figure 1 (using: <http://www.dagitty.net/dags.html#>).

Panel A BFH

```
dag {
bb="-1.995,-1.634,1.527,1.956"
"Childhood Disadvantage" [latent,pos="-1.518,-0.534"]
"Low Education" [exposure,pos="-0.642,-0.898"]
"Single Motherhood" [exposure,pos="-0.747,-0.364"]
"Young Headship" [exposure,pos="-0.511,-1.326"]
Controls [adjusted,pos="-0.593,0.793"]
Poverty [outcome,pos="0.165,-0.389"]
Unemployed [exposure,pos="-0.602,0.277"]
"Childhood Disadvantage" -> "Low Education"
"Childhood Disadvantage" -> "Single Motherhood"
"Childhood Disadvantage" -> "Young Headship"
"Childhood Disadvantage" -> Controls
"Childhood Disadvantage" -> Unemployed
"Low Education" -> Poverty
"Single Motherhood" -> Poverty
"Young Headship" -> Poverty
Controls -> Poverty
Unemployed -> Poverty
}
```

Panel B MH

```
dag {
bb="-1.995,-1.634,1.527,1.956"
"Childhood Disadvantage" [latent,pos="-1.518,-0.534"]
"Low Education" [exposure,pos="-0.647,-0.929"]
"Multiple Earner" [latent,pos="-0.611,0.536"]
"Single Motherhood" [exposure,pos="-0.629,-0.301"]
"Young Headship" [exposure,pos="-0.647,-1.408"]
Controls [adjusted,pos="-0.620,1.419"]
Poverty [outcome,pos="0.165,-0.389"]
Unemployed [latent,pos="0.179,0.548"]
"Childhood Disadvantage" -> "Low Education"
"Childhood Disadvantage" -> "Multiple Earner"
"Childhood Disadvantage" -> "Single Motherhood"
"Childhood Disadvantage" -> "Young Headship"
"Childhood Disadvantage" -> Controls
"Childhood Disadvantage" -> Unemployed
}
```

```
"Low Education" -> Poverty
"Multiple Earner" -> Poverty
"Single Motherhood" -> "Multiple Earner"
"Single Motherhood" -> Poverty
"Single Motherhood" -> Unemployed
"Young Headship" -> Poverty
Controls -> Poverty
Unemployed -> Poverty
}
```

Panel C Adding Reasonable Extensions to MH

```
dag {
bb="-1.995,-1.634,1.527,1.956"
"Childhood Disadvantage" [latent,pos="-1.518,-0.534"]
"Low Education" [exposure,pos="-0.647,-0.929"]
"Multiple Earner" [exposure,pos="-0.815,0.381"]
"Single Motherhood" [exposure,pos="-0.629,-0.301"]
"Young Headship" [exposure,pos="-0.647,-1.408"]
Controls [adjusted,pos="-0.620,1.419"]
Poverty [outcome,pos="0.165,-0.389"]
Unemployed [exposure,pos="0.206,0.746"]
"Childhood Disadvantage" -> "Low Education"
"Childhood Disadvantage" -> "Multiple Earner"
"Childhood Disadvantage" -> "Single Motherhood"
"Childhood Disadvantage" -> "Young Headship"
"Childhood Disadvantage" -> Controls
"Childhood Disadvantage" -> Unemployed
"Low Education" -> "Multiple Earner"
"Low Education" -> "Single Motherhood"
"Low Education" -> Poverty
"Low Education" -> Unemployed
"Multiple Earner" -> Poverty
"Single Motherhood" -> "Multiple Earner"
"Single Motherhood" -> Poverty
"Single Motherhood" <-> Unemployed
"Young Headship" -> Poverty
Controls -> Poverty
Unemployed -> Poverty
}
```

Appendix IV. Replication Attempts with MH's Code and Code for Current Analyses using the Luxembourg Income Study.

When submitting MH's unaltered code to LIS, several errors occur and results do not get returned. We are sympathetic as the LIS routinely revises datasets and underwent a substantial revision in 2019. It could be that MH submitted code and analyzed LIS data prior to the 2019 revision. For this reason, LIS recommends reporting the date of analyses. Unfortunately, MH do not report the dates when they accessed the data and conducted analyses. Further, LIS enables one to analyze the datasets (i.e. the "pre" datasets) in the form they existed prior to 2019. Even when accessing the older "pre" LIS datasets, their code remains inoperable and we cannot replicate their results. Further, even after spending enormous time inspecting MH's code, we cannot identify all of the exact reasons their code is inoperable. As a result, we spent several weeks correcting and revising their code to enable us to conduct the empirical tests that MH say they are doing. We comment on some of the errors below.

Replication is important and should be feasible with the LIS. However, the 2019 major LIS revision means that our publicly available code from our 2017 article no longer works. Therefore, we now provide an updated version of our 2017 code for the 2019 datasets. The code is available on Brady's website: www.bradydave.wordpress.com.

MH correctly note that South Korea cannot be included. In the 4-6 years since BFH's analysis, the LIS received new versions of the South Korea datasets from the provider, and revised the datasets that were previously available. For instance, we noticed the number of cases changed, the key variable for the number of earners became unavailable, and there are zero single heads in any of the four South Korea datasets. We contacted the LIS staff members Jorg Neugschwender and Teresa Munzi to inquire about these changes. Neugschwender confirmed in an email on December 13, 2020 that the South Korean datasets had actually been changed substantially since our analyses in 2014-2016. Specifically, Neugschwender informed us that LIS initially received a simplified version of the South-Korean data in 2016 that had sampling frame differences for the urban and rural samples. The new versions provided to LIS integrated both subsamples. He writes, "Unfortunately, this meant that we no longer have individual level income, and no information of number of household earners. The situation is like this since the end of 2016 (<http://www.lisdatacenter.org/news-and-events/new-korean-datasets-added-to-the-lis-database/>). . . All single mothers are classified married. . . When we compared their new version against the old, we noted a change, but we could not get further insights why. Living with partner is constructed for head and spouses only." Altogether, this explains why Brady et al. 2017 could include South Korea but that dataset cannot be used to analyze single motherhood now.

REPLICATION CODE:

**The analyses reported in our comment were conducted on the LIS in October-December of 2020. The LIS is available at www.lisproject.org. Both Brady and Finnigan separately ran the code to ensure the accuracy of reported results.

*See also replication package for Brady, Finnigan and Huebgen (henceforth BFH), available here: <https://bradydave.files.wordpress.com/2017/03/demriskreplication2.pdf>.

*AND updated version of BFH's code that works on updated LIS datasets (after 2019 LIS revision): https://bradydave.files.wordpress.com/2020/12/bfh-code-updated-12_10_20.pdf.

*The code below also include the US 2013 & 2018 Datasets for robustness checks.

*Because no analyses are reported in MH, we drop the parts of their code about market income, 60% of median dpi poverty threshold, and samples of children.

*We also moved and consolidated several MH code sections for simplicity.

*We have made every possible attempt to faithfully and fairly test the models and arguments in MH.

** Similar to BFH Code

*** Loop for create the country files and put them together

*** except Switzerland (nearn) & Hungary (educ)

```
global c "au10 at10 be00 ca10 cz10 dk10 ee10 fi10 fr10 de10 gr10 ie10 il10 it10 is10 jp08 lu10 nl10 no10  
pl10 sk10 si10 es10 se05 uk10 us10 us13 us18"
```

```
foreach x of global c {
```

```
*HH file
```

```
use `$x'h, clear
```

*Drop missing and zero dhi

```
drop if dhi==.
```

```
drop if dhi==0
```

```
drop if hwgt==.
```

*Equivalentize disposable HH income as square root of household member

```
generate ey=(dhi/(nhhmem^0.5))
```

* create person weight as hwgt times number of household member

```
generate wt=hwgt*nhhmem
```

*Top- and bottom-code EY

```
quietly sum ey [w=wt]
```

```
generate botlin=0.01*_result(3)
```

```
replace ey=botlin if ey<botlin
```

```
quietly sum ey [w=wt], de
```

```
generate toplin=10*_result(10)
```

```
replace ey=(toplin/(nhhmem^0.5)) if ey>toplin
```

*Poverty threshold as <50% of median EY

```
quietly sum ey [w=wt], de
```

```
quietly generate povl=_result(10)*.5
```

*Define POOR

```
gen poor5=.
```

```
replace poor5=0 if ey>=povl & ey!=.
```

```
replace poor5=1 if ey<povl
```

*Other HH-level variables

```
gen multearn=.
```

```
replace multearn=0 if nearn==0 | nearn==1
```

```
replace multearn=1 if nearn>1 & nearn!=.
```

```
gen unemphh=.
```

```
replace unemphh=0 if nearn>0 & nearn!=.
```

```
replace unemphh=1 if nearn==0
```

```
sort hid
```

```
keep did year hid hwgt iso2 poor5 povl nhhmem hhtype nhhmem65 nhhmem17 hi* dhi hpartner nearn  
unemphh multearn
```

```

save $mydata/`x'hajsc, replace

*Person File
use $`x'p, clear

gen head=.
replace head=1 if relation==1000
replace head=0 if relation>1000 & relation!=.
gen spouse=.
replace spouse=1 if relation>=2000&relation<=3000
replace spouse=0 if (relation<2000|relation>3000) & relation!=.

recode sex (1=0)(2=1)(.=), gen(female)
recode sex (1=1)(2=0)(.=), gen(male)

sort hid
keep hid pid did year relation partner nchildren ageyoch parents age sex ethnic_c educ emp pi* pilabour
gross1 educ_c marital head spouse male female

save $mydata/`x'pajsc, replace

merge m:1 hid using $mydata/`x'hajsc, keep(match) nogen

*create variable for lead earner*
recode pilabour (.=0)
egen maxinc=max(pilabour), by(did hid)
gen lead=pilabour==maxinc
egen maxage=max(age) if lead, by(did hid)
replace lead=0 if age~=maxage
egen numlead = sum(lead), by(did hid)
gen rlead = runiform()
egen maxrlead = max(rlead) if lead, by(did hid)
replace lead = 0 if numlead>1 & rlead<maxrlead
*create variables for education*
gen leaeduc_a=educ*lead
egen leaeduc=max(leaeduc_a), by(hid)
recode leaeduc (3=1) (nonmiss=0), gen(highed)
recode leaeduc (1=1)(nonmiss=0), gen(lowed)
gen agelead_a=age*lead
egen agelead=max(agelead_a), by(hid)
gen ageleadsq=agelead^2
*create family structure variables*
gen married=.
replace married=0 if marital>=200 & marital!=.
replace married=1 if marital<200 | partner==110
gen marriedhh_a=married*head
egen marriedhh=max(marriedhh_a), by(hid)
recode marriedhh (1=0)(0=1)(.=), gen(single)
*** singmom (based on nchildren & ageyoch)
recode nchildren 2/17=1, gen(nchild)
replace nchild=0 if ageyoch>17 & ageyoch!=.
gen sing_mom_a=head*female
gen sing_mom_b=sing_mom_a*single
gen sing_mom_c=sing_mom_b*nchild
replace sing_mom_c=0 if age>54

```

```

egen singmom=max(sing_mom_c), by(hid)
replace singmom=1 if singmom>1 & singmom!=.
gen sing_dad_a=head*male
gen sing_dad_b=sing_dad_a*single
gen sing_dad_c=sing_dad_b*nchild
egen singdad =max(sing_dad_c), by(hid)
replace singdad=1 if singdad>1 & singdad!=.
gen fhmk_a=0
replace fhmk_a=1 if sing_mom_b ==1 & nhhmem17==0
egen fhmk=max(fhmk_a), by(hid)
gen mhnk_a=0
replace mhnk_a=1 if sing_dad_b ==1 & nhhmem17==0
egen mhnk=max(mhnk_a), by(hid)

// generate employed couple with kids, 1 earner
g c_k=head*married*nchild
egen ck1=max(c_k), by(hid)
drop c_k
g ck_onearner=ck1==1 & nearn==1
g ck_multearn=ck1==1&multearn==1
g ck_noear=ck1==1&unemph==1

*** lead age groups
gen leadu25=0 if agelead!=.
replace leadu25=1 if agelead<25 & agelead~=.
gen lead2534=0 if agelead!=.
replace lead2534=1 if agelead>24 & agelead<35
gen lead3554=0 if agelead!=.
replace lead3554=1 if agelead>34 & agelead<55
gen leado54=0 if agelead!=.
replace leado54=1 if agelead>54 & agelead~=.

*****
**MH Alternative Single Motherhood Variables
**We create several versions to test each difference from BFH
**This means we add variables and change some variable names
*****
*BFH definition of married & single is based on head
*MH rename this as singleHH
rename single singlehh

*MH identify single INDIVIDUALS
recode married (0=1) (1=0), g(single)

**MH include the first the following note and line of code, but never use kidshh
//note Brady definition of NCHILD is for individual (based nchildren and ageyoch)
gen kidshh=nhhmem17>0 if nhhmem17<.

***BFH single mother HH variable is singmom
**H&M identify non-head and non-spouse individuals
gen noheadspou=head==0&spouse==0

*Condensed Version of MH Code to Identify Hidden Single Mothers
gen smhidden1=noheadspou*female*single*nchild
replace smhidden1=0 if singmom==1 | age>54 | age<17

```

```
egen singmomhidden1=max(smhidden1), by(did hid)
replace singmomhidden1=1 if singmomhidden1>1 & singmomhidden1!=.
```

```
*Alternative versions of Hidden Single Mothers
*Single mother HH Cannot Be Male-Headed HH
gen headmale=head*male
egen malehead=max(headmale), by(did hid)
gen singmomhidden2= singmomhidden1
replace singmomhidden2=0 if malehead==1
```

```
*Single mother HH Cannot Be Couple HH
gen singmomhidden3= singmomhidden1
replace singmomhidden3=0 if marriedhh==1
```

```
*Non-Mother Adults in HH Cannot Be in Single Mother HHs Even If Single Mother Kids in that HH are
coded single mother HH*
gen singmomhidden4= singmomhidden1
replace singmomhidden4=0 if male==1 & age>17
replace singmomhidden4=0 if nchild==0 & age>17
```

```
gen singmomall1=singmom
replace singmomall1=1 if singmomhidden1==1
gen singmomall2=singmom
replace singmomall2=1 if singmomhidden2==1
gen singmomall3=singmom
replace singmomall3=1 if singmomhidden3==1
gen singmomall4=singmom
replace singmomall4=1 if singmomhidden4==1
```

```
*MH code for identifying hidden single fathers
gen sing_dad_hidden1=noheadspou*male
gen sing_dad_hidden2=sing_dad_hidden1*single
gen sing_dad_hidden3=sing_dad_hidden1*single*nchild
egen sing_dad_hidden=max(sing_dad_hidden3), by(did hid)
replace sing_dad_hidden=0 if singdad==1
replace sing_dad_hidden=0 if age<17
egen singdadhidden=max(sing_dad_hidden), by(did hid)
replace singdadhidden=1 if singdadhidden>1 & singdadhidden!=.
```

```
gen singdadall=singdad
replace singdadall=1 if singdadhidden==1
```

// OTHER FAMILY STRUCTURE VARIABLES

```
// note married is married or living with partner
g nochild=nchild==0
g c_k=nchild*married
egen ck2=max(c_k), by(did hid)
g c_nk=nochild*married
egen cnk=max(c_nk), by(did hid)
g s_k=nchild*single
egen sk=max(s_k), by(did hid)
g s_nk=nochild*single
egen snk=max(s_nk), by(did hid)
```

```
*Note MH Code Defines Co-Residence to under-18 children too
g coreside=0
```

```

replace coreside=1 if singmomall1==1 & singmom==0
replace coreside=1 if singmom==1 & parents ==1

save $mydata/'x'ajsc, replace
}

*** build the Swiss file ***
use $ch10h, clear

*Drop missing and zero dhi
drop if dhi==.
drop if dhi==0
drop if hwgt==.

*Equivalize disposable HH income as square root of household member
generate ey=(dhi/(nhhmem^0.5))

* create person weight as hwgt times number of household member
generate wt=hwgt*nhhmem

*Top- and bottom-code EY
quietly sum ey [w=wt]
generate botlin=0.01*_result(3)
replace ey=botlin if ey<botlin
quietly sum ey [w=wt], de
generate toplin=10*_result(10)
replace ey=(toplin/(nhhmem^0.5)) if ey>toplin

*Poverty threshold as <50% of median EY
quietly sum ey [w=wt], de
quietly generate povl=_result(10)*.5

*Define POOR
gen poor5=.
replace poor5=0 if ey>=povl & ey!=.
replace poor5=1 if ey<povl

sort hid
keep did year hid hwgt iso2 poor5 povl nhhmem hhtype nhhmem65 nhhmem17 hi* dhi hpartner nearn

save $mydata/ch10hajsc, replace

*Person File
use $ch10p, clear
gen head=. // take head as the lead
replace head=1 if relation==1000
replace head=0 if relation>1000 & relation !=.
gen spouse=.
replace spouse=1 if relation>=2000&relation<=3000
replace spouse=0 if (relation<2000|relation>3000) & relation!=.

recode sex (1=0)(2=1)(.=), gen(female)
recode sex (1=1)(2=0)(.=), gen(male)
sort hid
keep hid pid did year relation partner parents nchildren ageyoch age sex ethnic_c educ emp pi* pilabour
gross1 educ_c marital head spouse male female

```



```

save $mydata/ch10pajsc, replace

merge m:1 hid using $mydata/ch10hajsc, keep(match) nogen

egen numemp=sum(emp), by(hid)
replace nearn=numemp
gen multearn=.
replace multearn=0 if nearn==0 | nearn==1
replace multearn=1 if nearn>1 & nearn!=.
gen unemphh=.
replace unemphh=0 if nearn>0 & nearn!=.
replace unemphh=1 if nearn==0

*create variables for education*
gen leadeeduc_a=educ*head
egen leadeeduc=max(leadeeduc_a), by(hid)
recode leadeeduc (3=1) (nonmiss=0), gen(highed)
recode leadeeduc (1=1)(nonmiss=0), gen(lowed)
gen agelead_a=age*head
egen agelead=max(agelead_a), by(hid)
gen ageleadsq=agelead^2

*create family structure variables*
gen married=.
replace married=0 if marital>=200 & marital!=.
replace married=1 if marital<200 | partner==110
gen marriedhh_a=married*head
egen marriedhh=max(marriedhh_a), by(hid)
recode marriedhh (1=0)(0=1)(.=), gen(single)
*** singmom (based on nchildren & ageyoch)
recode nchildren 2/17=1, gen(nchild)
replace nchild=0 if ageyoch>17 & ageyoch!=.
gen sing_mom_a=head*female
gen sing_mom_b=sing_mom_a*single
gen sing_mom_c=sing_mom_b*nchild
replace sing_mom_c=0 if age>54
egen singmom=max(sing_mom_c), by(hid)
replace singmom=1 if singmom>1 & singmom!=.
gen sing_dad_a=head*male
gen sing_dad_b=sing_dad_a*single
gen sing_dad_c=sing_dad_b*nhhmem17
egen singdad =max(sing_dad_c), by(hid)
replace singdad=1 if singdad>1
gen fhmk_a=0 if female!=. & head!=. & nhhmem17!=.
replace fhmk_a=1 if sing_mom_b ==1 & nhhmem17==0
egen fhmk=max(fhmk_a), by(hid)
gen mhnk_a=0 if female!=. & head!=. & nhhmem17!=.
replace mhnk_a=1 if sing_dad_b ==1 & nhhmem17==0
egen mhnk=max(mhnk_a), by(hid)

// generate employed couple with kids, 1 earner
g c_k=head*married*nchild
egen ck1=max(c_k), by(hid)
drop c_k
g ck_onearner=ck1==1 & nearn==1
g ck_multearn=ck1==1 & multearn==1

```

```
g ck_noear=ck1==1 & unemphh==1
```

```
*** lead age groups
gen leadu25=0 if agelead!=.
replace leadu25=1 if agelead<25 & agelead~=.
gen lead2534=0 if agelead!=.
replace lead2534=1 if agelead>24 & agelead<35
gen lead3554=0 if agelead!=.
replace lead3554=1 if agelead>34 & agelead<55
gen leado54=0 if agelead!=.
replace leado54=1 if agelead>54 & agelead~=.
```

```
*****
```

```
**MH Alternative Single Motherhood Variables
**We create several versions to test each difference from BFH
**This means we add variables and change some variable names
*****
```

```
*BFH definition of married & single is based on head
*MH rename this as singleHH
rename single singlehh
```

```
*MH identify single INDIVIDUALS
recode married (0=1) (1=0), g(single)
```

```
**MH include the first the following note and line of code, but never use kidshh
//note Brady definition of NCHILD is for individual (based nchildren and ageyoch)
gen kidshh=nhhmem17>0 if nhhmem17<.
```

```
***BFH single mother HH variable is singmom
**H&M identify non-head and non-spouse individuals
gen noheadspou=head==0&spouse==0
```

```
*Condensed Version of MH Code to Identify Hidden Single Mothers
gen smhidden1=noheadspou*female*single*nchild
replace smhidden1=0 if singmom==1 | age>54 | age<17
```

```
egen singmomhidden1=max(smhidden1), by(did hid)
replace singmomhidden1=1 if singmomhidden1>1 & singmomhidden1!=.
```

```
*Alternative versions of Hidden Single Mothers
*Single mother HH Cannot Be Male-Headed HH
gen headmale=head*male
egen malehead=max(headmale), by(did hid)
gen singmomhidden2= singmomhidden1
replace singmomhidden2=0 if malehead==1
```

```
*Single mother HH Cannot Be Couple HH
gen singmomhidden3= singmomhidden1
replace singmomhidden3=0 if marriedhh==1
```

```
*Non-Mother Adults in HH Cannot Be in Single Mother HHs Even If Single Mother Kids in that HH are
coded single mother HH*
gen singmomhidden4= singmomhidden1
replace singmomhidden4=0 if male==1 & age>17
replace singmomhidden4=0 if nchild==0 & age>17
```

```

gen singmomall1=singmom
replace singmomall1=1 if singmomhidden1==1
gen singmomall2=singmom
replace singmomall2=1 if singmomhidden2==1
gen singmomall3=singmom
replace singmomall3=1 if singmomhidden3==1
gen singmomall4=singmom
replace singmomall4=1 if singmomhidden4==1

*MH code for identifying hidden single fathers
gen sing_dad_hidden1=noheadspou*male
gen sing_dad_hidden2=sing_dad_hidden1*single
gen sing_dad_hidden3=sing_dad_hidden1*single*nchild
egen sing_dad_hidden=max(sing_dad_hidden3), by(did hid)
replace sing_dad_hidden=0 if singdad==1
replace sing_dad_hidden=0 if age<17
egen singdadhhidden=max(sing_dad_hidden), by(did hid)
replace singdadhhidden=1 if singdadhhidden>1 & singdadhhidden!=.

gen singdadall=singdad
replace singdadall=1 if singdadhhidden==1

// OTHER FAMILY STRUCTURE VARIABLES
// note married is married or living with partner
g nochild=nchild==0
g c_k=nchild*married
egen ck2=max(c_k), by(did hid)
g c_nk=nochild*married
egen cnk=max(c_nk), by(did hid)
g s_k=nchild*single
egen sk=max(s_k), by(did hid)
g s_nk=nochild*single
egen snk=max(s_nk), by(did hid)

*Note MH Code Defines Co-Residence to under-18 children too
g coreside=0
replace coreside=1 if singmomall1==1 & singmom==0
replace coreside=1 if singmom==1 & parents ==1

save $mydata/ch10ajsc, replace

***** HUNGARY *****
use $hu09h, clear

*Drop missing and zero dhi
drop if dhi==.
drop if dhi==0
drop if hwgt==.

*Equivalentize disposable HH income as square root of household member
generate ey=(dhi/(nhhmem^0.5))

* create person weight as hwgt times number of household member
generate wt=hwgt*nhhmem

```

```

*Top- and bottom-code EY
quietly sum ey [w=wt]
generate botlin=0.01*_result(3)
replace ey=botlin if ey<botlin
quietly sum ey [w=wt], de
generate toplin=10*_result(10)
replace ey=(toplin/(nhhmem^0.5)) if ey>toplin

*Poverty threshold as <50% of median EY
quietly sum ey [w=wt], de
quietly generate povl=_result(10)*.5

*Define POOR
gen poor5=.
replace poor5=0 if ey>=povl & ey!=.
replace poor5=1 if ey<povl

*Other HH-level variables
gen multearn=.
replace multearn=0 if nearn==0 | nearn==1
replace multearn=1 if nearn>1 & nearn!=.
gen unemphh=.
replace unemphh=0 if nearn>0 & nearn!=.
replace unemphh=1 if nearn==0

sort hid
keep did year hid hwgt iso2 poor5 povl nhhmem hhtype nhhmem65 nhhmem17 hi* dhi hpartner nearn
unemphh multearn

save $mydata/hu09hajsc, replace
*Person File
use $hu09p, clear

gen head=. // take head as the lead
replace head=1 if relation==1000
replace head=0 if relation>1000 & relation !=.
gen spouse=.
replace spouse=1 if relation>=2000&relation<=3000
replace spouse=0 if (relation<2000|relation>3000) & relation!=.

recode sex (1=0)(2=1)(.=), gen(female)
recode sex (1=1)(2=0)(.=), gen(male)

sort hid
keep hid pid did year relation parents partner nchildren ageyoch age sex ethnic_c educ emp pi* pilabour
gross1 educ_c marital head spouse male female

save $mydata/hu09pajsc, replace

merge m:1 hid using $mydata/hu09hajsc, keep(match) nogen

*create variables for education*
recode educ 9=2, gen(edu)
tab edu educ,m
gen leadeduc_a=edu*head
egen leadeduc=max(leadeduc_a), by(hid)

```

```

recode leadeduc (3=1) (nonmiss=0), gen(highed)
recode leadeduc (1=1)(nonmiss=0), gen(lowed)
gen agelead_a=age*head
egen agelead=max(agelead_a), by(hid)
gen ageleadsq=agelead^2
*create family structure variables*
gen married=.
replace married=0 if marital>=200 & marital!=.
replace married=1 if marital<200 | partner==110
gen marriedhh_a=married*head
egen marriedhh=max(marriedhh_a), by(hid)
recode marriedhh (1=0)(0=1)(.=.), gen(single)

*** singmom (based on nchildren & ageyoch)
recode nchildren 2/17=1, gen(nchild)
replace nchild=0 if ageyoch>17 & ageyoch!=.
gen sing_mom_a=head*female
gen sing_mom_b=sing_mom_a*single
gen sing_mom_c=sing_mom_b*nchild
replace sing_mom_c=0 if age>54
egen singmom=max(sing_mom_c), by(hid)
replace singmom=1 if singmom>1 & singmom!=.
gen sing_dad_a=head*male
gen sing_dad_b=sing_dad_a*single
gen sing_dad_c=sing_dad_b*nhhmem17
egen singdad =max(sing_dad_c), by(hid)
replace singdad=1 if singdad>1
gen fhmk_a=0 if female!=. & head!=. & nhhm17!=.
replace fhmk_a=1 if sing_mom_b ==1 & nhhm17==0
egen fhmk=max(fhmk_a), by(hid)
gen mhnk_a=0 if female!=. & head!=. & nhhm17!=.
replace mhnk_a=1 if sing_dad_b ==1 & nhhm17==0
egen mhnk=max(mhnk_a), by(hid)

// generate employed couple with kids, 1 earner
g c_k=head*married*nchild
egen ck1=max(c_k), by(hid)
drop c_k
g ck_onearner=ck1==1 & nearn==1
g ck_multearner=ck1==1 & multearner==1
g ck_noear=ck1==1 & unemphh==1

*** lead age groups
gen leadu25=0 if agelead!=.
replace leadu25=1 if agelead<25 & agelead~=.
gen lead2534=0 if agelead!=.
replace lead2534=1 if agelead>24 & agelead<35
gen lead3554=0 if agelead!=.
replace lead3554=1 if agelead>34 & agelead<55
gen leado54=0 if agelead!=.
replace leado54=1 if agelead>54 & agelead~=.

*****
**MH Alternative Single Motherhood Variables
**We create several versions to test each difference from BFH
**This means we add variables and change some variable names

```

*BFH definition of married & single is based on head

*MH rename this as singleHH

rename single singlehh

*MH identify single INDIVIDUALS

recode married (0=1) (1=0), g(single)

**MH include the first the following note and line of code, but never use kidshh

//note Brady definition of NCHILD is for individual (based nchildren and ageyoch)

gen kidshh=nhhmem17>0 if nhhmem17<.

***BFH single mother HH variable is singmom

**H&M identify non-head and non-spouse individuals

gen noheadspou=head==0&spouse==0

*Condensed Version of MH Code to Identify Hidden Single Mothers

gen smhidden1=noheadspou*female*single*nchild

replace smhidden1=0 if singmom==1 | age>54 | age<17

egen singmomhidden1=max(smhidden1), by(did hid)

replace singmomhidden1=1 if singmomhidden1>1 & singmomhidden1!=.

*Alternative versions of Hidden Single Mothers

*Single mother HH Cannot Be Male-Headed HH

gen headmale=head*male

egen malehead=max(headmale), by(did hid)

gen singmomhidden2= singmomhidden1

replace singmomhidden2=0 if malehead==1

*Single mother HH Cannot Be Couple HH

gen singmomhidden3= singmomhidden1

replace singmomhidden3=0 if marriedhh==1

Non-Mother Adults in HH Cannot Be in Single Mother HHs Even If Single Mother Kids in that HH are coded single mother HH

gen singmomhidden4= singmomhidden1

replace singmomhidden4=0 if male==1 & age>17

replace singmomhidden4=0 if nchild==0 & age>17

gen singmomall1=singmom

replace singmomall1=1 if singmomhidden1==1

gen singmomall2=singmom

replace singmomall2=1 if singmomhidden2==1

gen singmomall3=singmom

replace singmomall3=1 if singmomhidden3==1

gen singmomall4=singmom

replace singmomall4=1 if singmomhidden4==1

*MH code for identifying hidden single fathers

gen sing_dad_hidden1=noheadspou*male

gen sing_dad_hidden2=sing_dad_hidden1*single

gen sing_dad_hidden3=sing_dad_hidden1*single*nchild

egen sing_dad_hidden=max(sing_dad_hidden3), by(did hid)

replace sing_dad_hidden=0 if singdad==1

```

replace sing_dad_hidden=0 if age<17
egen singdadhhidden=max(sing_dad_hidden), by(did hid)
replace singdadhhidden=1 if singdadhhidden>1 & singdadhhidden!=.

gen singdadall=singdad
replace singdadall=1 if singdadhhidden==1

// OTHER FAMILY STRUCTURE VARIABLES
// note married is married or living with partner
g nochild=nchild==0
g c_k=nchild*married
egen ck2=max(c_k), by(did hid)
g c_nk=nochild*married
egen cnk=max(c_nk), by(did hid)
g s_k=nchild*single
egen sk=max(s_k), by(did hid)
g s_nk=nochild*single
egen snk=max(s_nk), by(did hid)

*Note MH Code Defines Co-Residence to under-18 children too
g coreside=0
replace coreside=1 if singmomall1==1 & singmom==0
replace coreside=1 if singmom==1 & parents ==1

save $mydata/hu09ajsc, replace

***** append country files *****
global d "at10ajsc be00ajsc ca10ajsc ch10ajsc cz10ajsc dk10ajsc ee10ajsc fi10ajsc fr10ajsc de10ajsc
gr10ajsc hu09ajsc ie10ajsc il10ajsc it10ajsc is10ajsc jp08ajsc lu10ajsc nl10ajsc no10ajsc pl10ajsc
sk10ajsc si10ajsc es10ajsc se05ajsc uk10ajsc us10ajsc us13ajsc us18ajsc "

use $mydata/au10ajsc, clear

foreach x of global d {
  append using "$mydata/`x'"
}

**DEFINE SAMPLE AS CROSS-SECTION OF COUNTRIES ~2010
**Code US13 and US18 as NOT Part of Static Cross-Section
gen static=1
replace static=0 if did==300
replace static=0 if did==510

save $mydata/prevpen_AJS_MHajsc, replace

**We fixed a MH code error labeling both US 2010 and US 2013 as US10, but it does not appear they
had actually pulled us13 dataset (did=300) so this error was probably inconsequential

**Note we include US10, US13 and US18 and omit South Korea
label define did 140 "BE00" 190 "SE05" 208 "CH10" 209 "HUN09" 210 "AT10" 229 "US10" 235 "IT10"
237 "ES10" 240 "UK10" 241 "GR10" 245 "JPN08" 247 "AU10" 251 "SK10" 252 "DE10" 253 "IE10" 255
"FI10" 256 "LU10" 259 "IL10" 261 "SI10" 265 "NL10" 267 "NO10" 269 "PL10" 271 "EE10" 273 "AT10" 274
"CA10" 278 "DK10" 287 "IS10" 289 "CZE10" 293 "HU09" 295 "FRA10" 361 "ch10" 300 "US13" 510
"US18"
label values did did
tab did

```

```
save $mydata/prevpen_AJS_MHajsc, replace
*/
```

```
replace static=0 if did==300
```

```
u $mydata/prevpen_AJS_MHajsc, replace
```

```
*****
```

**** PREVALENCE**

```
*****
```

*Unlike BFH, MH appear to not use casewise deletion when estimating prevalences

*Rather than MH <table> command to get prevalences, we use BFH code

**H&M incorrectly label the corollary command as for households. As the analysis uses individual-level data, it is not. Like BFH, this is for individuals

*Prevalences estimated with BFH Code & Definition of Single Mother HH's

```
tabstat poor5 singmom leadu25 lowed unemphh lead2534 leado54 fnhk mhnk nhmmem17 nhmmem65  
highed multearn [aw=hwgt] if static==1 & agelead<65, by(did) stats (mean sd n) case
```

*Prevalences estimated with MH Definition of Single Mother HH's

```
tabstat poor5 singmomall1 leadu25 lowed unemphh lead2534 leado54 fnhk mhnk nhmmem17 nhmmem65  
highed multearn [aw=hwgt] if static==1 & agelead<65, by(did) stats (mean sd n) case
```

*For comparison, we replicate the corollary command from H&M that incorrectly labels this command as for individuals. As H&M incorrectly apply the weight wt (defined **above as hwgt*nhmmem). They are mistakenly multiplying the number of people in the household by the **household weight. Like BFH, this is for individuals but it "double-counts" them

```
generate wt=hwgt*nhmmem
```

*Prevalences estimated with MH Definition of Single Mother HH's

```
tabstat poor5 singmomall1 leadu25 lowed unemphh lead2534 leado54 fnhk mhnk nhmmem17 nhmmem65  
highed multearn [aw=wt] if static==1 & agelead<65, by(did) stats (mean sd n) case
```

*Prevalences estimated with No Male-Headed HH & MH Definition of Single Mother HH's

```
tabstat poor5 singmomall2 leadu25 lowed unemphh lead2534 leado54 fnhk mhnk nhmmem17 nhmmem65  
highed multearn [aw=hwgt] if static==1 & agelead<65, by(did) stats (mean sd n) case
```

*Prevalences estimated with No Couple-Headed HH & MH Definition of Single Mother HH's

```
tabstat poor5 singmomall3 leadu25 lowed unemphh lead2534 leado54 fnhk mhnk nhmmem17 nhmmem65  
highed multearn [aw=hwgt] if static==1 & agelead<65, by(did) stats (mean sd n) case
```

*Prevalences estimated with Non-Mother Adults in Single Mother & MH Definition of Single Mother HH's

```
tabstat poor5 singmomall4 leadu25 lowed unemphh lead2534 leado54 fnhk mhnk nhmmem17 nhmmem65  
highed multearn [aw=hwgt] if static==1 & agelead<65, by(did) stats (mean sd n) case
```

```
*****
```

****Employment Patterns Among Various Definitions of Single Mother HHs**

```
*****
```

```
gen emphh=0 if nearn!=.
```

```
replace emphh=1 if nearn>0 & nearn!=.
```

```
tabstat emphh multearn nearn if poor5!=. & leadu25!=. & lead2534!=. & leado54!=. & lowed!=. & highed!=.  
& unemphh!=. & nhmmem17!=. & nhmmem65!=. & singmom==1 & static==1 & agelead<65 [aw=hwgt],  
by(did) stats (mean p50 n) case
```



```
tabstat emphh multearn nearn if poor5!=. & leadu25!=. & lead2534!=. & leado54!=. & lowed!=. & highed!=.
& unemphh!=. & nhhmem17!=. & nhhmem65!=. & singmomall1==1 & static==1 & agelead<65 [aw=hwgt],
by(did) stats (mean p50 n) case
```

```
tabstat emphh multearn nearn if poor5!=. & leadu25!=. & lead2534!=. & leado54!=. & lowed!=. & highed!=.
& unemphh!=. & nhhmem17!=. & nhhmem65!=. & singmomall4==1 & static==1 & agelead<65 [aw=hwgt],
by(did) stats (mean p50 n) case
```

```
*****
```

```
** PENALTIES **
```

```
*****
```

```
levelsof did, local(countries)
```

```
foreach i of local countries {
```

```
// replicate BFH model BFH Definition of Single Mothers
```

```
di "did = `i'"
```

```
regress poor5 singmom unemphh lowed leadu25 lead2534 leado54 fhmk mhnk nhhmem17 nhhmem65
highed multearn [pw=hwgt] if agelead<65 & did==`i' , cluster(hid)
```

```
// replicate BFH model MH Definition of Single Mothers
```

```
di "did = `i'"
```

```
regress poor5 singmomall1 unemphh lowed leadu25 lead2534 leado54 fhmk mhnk nhhmem17
nhhmem65 highed multearn singdadall coreside [pw=hwgt] if agelead<65 & did==`i' , cluster(hid)
```

```
// BFH definition omitting unemployedhh
```

```
di "did = `i'"
```

```
regress poor5 singmom lowed leadu25 lead2534 leado54 fhmk mhnk nhhmem17 nhhmem65 highed
multearn [pw=hwgt] if agelead<65 & did==`i' , cluster(hid)
```

```
// MH definition omitting unemployedhh
```

```
di "did = `i'"
```

```
regress poor5 singmomall1 lowed leadu25 lead2534 leado54 fhmk mhnk nhhmem17 nhhmem65 highed
multearn singdadall coreside [pw=hwgt] if agelead<65 & did==`i' , cluster(hid)
```

```
// BFH definition omitting multiple earner control
```

```
di "did = `i'"
```

```
regress poor5 singmom unemphh lowed leadu25 lead2534 leado54 fhmk mhnk nhhmem17 nhhmem65
highed [pw=hwgt] if agelead<65 & did==`i' , cluster(hid)
```

```
// MH definition omitting multiple earner control
```

```
di "did = `i'"
```

```
regress poor5 singmomall1 unemphh lowed leadu25 lead2534 leado54 fhmk mhnk nhhmem17
nhhmem65 highed singdadall coreside [pw=hwgt] if agelead<65 & did==`i' , cluster(hid)
```

```
// BFH definition omitting unemployedhh & multearn
```

```
di "did = `i'"
```

```
regress poor5 singmom lowed leadu25 lead2534 leado54 fhmk mhnk nhhmem17 nhhmem65 highed
[pw=hwgt] if agelead<65 & did==`i' , cluster(hid)
```

```
// MH definition omitting unemployedhh & multearn
```

```
di "did = `i'"
```

```
regress poor5 singmomall1 lowed leadu25 lead2534 leado54 fhmk mhnk nhhmem17 nhhmem65 highed
singdadall coreside [pw=hwgt] if agelead<65 & did==`i' , cluster(hid)
```

```
}
```

*Simulations of Counterfactual Prevalences with US 2010

**median prevalence BFH .06255

**median prevalence MH .06275

**Zero prevalence 0.0

// replicate BFH model BFH Definition of Single Mothers

regress poor5 singmom unemphh lowed leadu25 lead2534 leado54 fhmk mhnk nhmmem17 nhmmem65
highed multearn [pw=hwt] if agelead<65 & did==229, cluster(hid)

margins

*Median prevalence

margins, at(singmom=(.06255))

*Zero prevalence

margins, at(singmom=(0))

// BFH definition omitting multiple earner control

regress poor5 singmom unemphh lowed leadu25 lead2534 leado54 fhmk mhnk nhmmem17 nhmmem65
highed [pw=hwt] if agelead<65 & did==229, cluster(hid)

margins

*Median prevalence

margins, at(singmom=(.06255))

*Zero prevalence

margins, at(singmom=(0))

// BFH definition omitting unemployedhh

regress poor5 singmom lowed leadu25 lead2534 leado54 fhmk mhnk nhmmem17 nhmmem65 highed
multearn [pw=hwt] if agelead<65 & did==229, cluster(hid)

margins

*Median prevalence

margins, at(singmom=(.06255))

*Zero prevalence

margins, at(singmom=(0))

// BFH definition omitting unemployedhh & multearn

regress poor5 singmom lowed leadu25 lead2534 leado54 fhmk mhnk nhmmem17 nhmmem65 highed
[pw=hwt] if agelead<65 & did==229, cluster(hid)

margins

*Median prevalence

margins, at(singmom=(.06255))

*Zero prevalence

margins, at(singmom=(0))

// replicate BFH model MH Definition of Single Mothers

regress poor5 singmomall1 unemphh lowed leadu25 lead2534 leado54 fhmk mhnk nhmmem17
nhmmem65 highed multearn singdadall coreside [pw=hwt] if agelead<65 & did==229, cluster(hid)

margins

*Median prevalence

margins, at(singmomall1=(.06275))

*Zero prevalence

margins, at(singmomall1=(0))

// MH definition omitting multiple earner control

regress poor5 singmomall1 unemphh lowed leadu25 lead2534 leado54 fhmk mhnk nhmmem17
nhmmem65 highed singdadall coreside [pw=hwt] if agelead<65 & did==229, cluster(hid)

margins

*Median prevalence

```
margins, at(singmomall1=(.06275))
```

```
*Zero prevalence
```

```
margins, at(singmomall1=(0))
```

```
// MH definition omitting unemployedhh
```

```
regress poor5 singmomall1 lowed leadu25 lead2534 leado54 fhmk mhnk nhmmem17 nhmmem65 highed
```

```
multearn singdadall coreside [pw=hwgt] if agelead<65 & did==229, cluster(hid)
```

```
margins
```

```
*Median prevalence
```

```
margins, at(singmomall1=(.06275))
```

```
*Zero prevalence
```

```
margins, at(singmomall1=(0))
```

```
// MH definition omitting unemployedhh & multearn
```

```
regress poor5 singmomall1 lowed leadu25 lead2534 leado54 fhmk mhnk nhmmem17 nhmmem65 highed
```

```
singdadall coreside [pw=hwgt] if agelead<65 & did==229, cluster(hid)
```

```
margins
```

```
*Median prevalence
```

```
margins, at(singmomall1=(.06275))
```

```
*Zero prevalence
```

```
margins, at(singmomall1=(0))
```