



## Young Author's Prize 2015

For this first edition of the Young Author's prize, set to become an annual event, the jury was chaired by Marianne Kempeneers (Université de Montréal). Its other members were Nico Kielman (University of Oslo), Emmanuelle Cambois (INED, Paris), Bruno Schoumaker (Université catholique de Louvain), and Olivia Samuel (Université de Versailles Saint-Quentin-en-Yvelines).

*The journal editors would like to dedicate the 2015 prize to Valeria Solesin, a PhD student in demography at Université Paris 1 Panthéon-Sorbonne, hosted at INED, who lost her life in the Paris terrorist attacks on 13 November 2015.*

## A word from the jury president

A total of 26 papers entered this year's competition for the Young Author's Prize organized by *Population*. The submitted texts were very varied and of excellent quality, reflecting the dynamism and future promise of a new international generation of demographers. Their authors came from 11 countries on four continents – Europe, Africa, Asia and North America – and 11 articles were in English and 15 in French. Many of the research topics concerned the traditional themes of demography (fertility, nuptiality, mortality and migration) and applied a variety of approaches and methods, sometimes based on a combination of both quantitative and qualitative data. But the fields of interest were very broad, with some articles focusing on social, gender and ethnic inequalities linked to education, employment or housing. Given the diversity and quality of the competition entries, it was difficult to make a final choice. Alongside the winner, 13 other authors were invited to submit a revised version of their paper to the *Population* Editorial Board.

This first edition of the Young Author's Prize was organized as follows. Out of the 26 papers received, four were eliminated in a preliminary selection process because they were outside the scope of the journal or of inadequate scientific quality. Each of the remaining 22 articles was anonymized and sent to two external reviewers. The jury members then examined all the papers and reviewers' reports (on a totally anonymous basis). The winner was selected at a final meeting on 9 February 2016. As mentioned above, the discussions

concerned not only the prizewinner, but also the selection of authors who would be invited to resubmit their revised paper to the *Population* Editorial Board.

We wish to congratulate the winner, Emanuela Struffolino, for her article entitled “Self-reported health among lone mothers: do employment and education matter?” co-authored by Laura Bernardi and Marieke Voorpostel. Emanuela Struffolino currently holds a postdoctoral position at the WZB Berlin Social Science Center. Her article examines the health of lone mothers in Switzerland, a country where policies to favour the work-life balance are limited. It compares the self-reported health of these mothers with that of women in a couple, taking account of possible interactions with employment status and educational level, two other factors that also affect health. This article, which draws upon data from the Swiss Household Panel over the period 1999-2011, makes an original contribution to the field of family and women’s employment and, more especially, to the debate on the links between lone parenthood, socioeconomic status and health.

In view of the competition’s success, *Population* has decided to organize a new competition in 2016, and warmly welcomes entries from young authors working on demographic research questions. I hope you will enjoy reading this article by the 2015 prizewinner.

MARIANNE KEMPENEERS



Emanuela STRUFFOLINO,\* Laura BERNARDI,\*\*  
Marieke VOORPOSTEL<sup>°</sup>

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## Self-reported Health among Lone Mothers in Switzerland: Do Employment and Education Matter?

*Lone mothers may have several difficulties taking up employment, especially if they live in a country where parents receive little support to reconcile work and family life. Under such circumstances, is it better to work in order to raise one's income, even if life is more stressful, or to withdraw from the labour force? What is the association between employment and health? This is the question raised by Emanuela STRUFFOLINO, Laura BERNARDI and Marieke VOORPOSTEL in the particular context of Switzerland, where mothers of young children, whatever their conjugal status, are not encouraged by the government to work full-time. Using data from the Swiss Household Panel, the authors analyse the relationship between self-reported health and full-time or part-time working for lone mothers relative to mothers in couples, by level of education. They highlight the higher risk of poor self-reported health for lone mothers compared with mothers in a couple, especially for those in small part-time jobs.*

Research in different fields shows health to be unevenly distributed across social groups. Differentials in health outcomes have been attributed to a number of individual-level, family-level, and society-level characteristics (Dannefer, 2003; Fritzell et al., 2007; Weitoft Ringbäck et al., 2002; Whitehead et al., 2000). At the individual level, characteristics associated with better health outcomes include being employed and living with a partner (Cullati, 2014; Huber et al., 2011). Employment status and partnership status have separately received much attention as determinants of health, but in a life-course perspective (Elder et al., 2003), knowing about how these three life domains interact can shed light on the characteristics of a potentially vulnerable population. This

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is particularly relevant in times of rapidly changing family arrangements due to increasing separation and divorce rates: lone parenthood is becoming a common experience in different social groups and this fosters increasing differentiation among individuals who are lone parents for a period in their lives (Bernardi and Mortelmans, 2016; Eidoux and Letablier, 2007).

Being a working lone mother has been proven to be associated with poorer health in the US (Bianchi and Milkie, 2010), demonstrating unexpected associations between employment and health. The few existing studies on the relationship between paid work and health for lone parents offer mixed empirical evidence (Friedland and Price, 2003; Macran et al., 1994). Some studies find a negative relationship between paid work and lone parents' health: compared to partnered mothers, employed lone mothers do not profit from the potential health benefits of employment (Avison et al., 2007; Burström et al., 2010; Dziaket et al., 2010). This may be partly attributable to the additional stresses associated with their multiple roles, i.e. difficulties in work-family reconciliation (Okechukwu et al., 2011; Sabbath et al., 2011). Studies that compare employed to unemployed lone mothers show that the former display better physical and psychological health (e.g., Hewitt et al. 2006). Yet in most cases, differences are largely explained by higher income levels of employed mothers (Conger and Elder, 1994; Hope et al., 1999; Wickrama et al., 2006). Some evidence does exist, however, for the positive effects of employment for lone mothers, even adjusting for the increase in income (Ross and Bird, 1994). Finally, welfare state and social policies are important determinants of health and inequalities in health (Beckfield and Krieger, 2009; Berkman et al., 2015).

We contribute to the existing literature by considering the association between family arrangements, health, and employment in Switzerland, where low levels of welfare support for parents (OFS, 2015) coexist with a highly gendered division of labour, high prevalence of part-time employment among women, and a wide gender pay gap (Bütler and Ruesch, 2007; Stutz and Knupfer, 2012). This national context potentially exposes mothers who care for their children alone to a considerable amount of stress; while family care is framed as a private matter (Armingeon, 2001; Ballestri and Bonoli, 2003; Valarino and Bernardi, 2010), income returns from labour market participation are particularly disadvantageous for women.

In Switzerland, as in many other European countries, the socio-demographic characteristics of the population living in single-parent households have become more heterogeneous in the recent cohorts. More precisely, the age range at which women experience the transition to lone motherhood has become wider and the distribution of lone mothers across educational levels has increased. As a consequence, the picture of lone mothers' engagement in paid work has become more diverse (Struffolino and Bernardi, 2016).

We use data from the Swiss Household Panel and look at differences in self-reported health between employed and jobless lone mothers and mothers

living with a partner. We focus on two factors related to employment that we expect to mediate the association between lone parents' paid work and their health: education and the number of working hours.

## I. Lone mothers in Switzerland

In Switzerland, official statistics define lone parents as parents aged 15-54 years living without a partner with at least one child below age 18:<sup>(1)</sup> they represent 6% of the total population in this age group, and the large majority of them are women (Struffolino and Bernardi, 2016).

The combination of limited work-family reconciliation policies (Monnier, 2006) and substantial and increasing gender pay gaps, which are particularly high among the less educated in Switzerland, result in low full-time employment rates for women (Bühlmann et al., 2012; OFS, 2013). Expensive public childcare, short parental leave, and marriage-based taxation are key components of the one-and-a-half-earner model (Bütler and Ruesch, 2007) in which men work full-time while new mothers move to part-time working in order to fulfil their care obligations (Giraud and Lucas, 2009).

Among the most important weaknesses of work-family reconciliation policies is the insufficient coverage for children under age 3 and the high cost of public childcare (Thoenen, 2010). The level of public spending for early childhood care in Switzerland is minimal – the country ranks lowest in OECD comparisons (Thévenon, 2011) – with parents being required to bear more than 80% of costs, even for public childcare.

Along with a gender-biased labour market and inadequate work-family reconciliation policies, welfare schemes to alleviate poverty are relatively widespread and universal in Switzerland compared to many other European countries (Armingeon et al., 2004; Bertozzi et al., 2005). Policies to alleviate poverty can have two consequences for lone mothers: they may either act as a buffer against immediate and urgent economic needs, or they may discourage lone mothers from taking on paid work with unfavourable labour market prospects. In particular, it is very difficult for lone mothers in a low-paying job to find full-time paid day care for their children, either because places are scarce or because the cost is too high. For less-educated lone mothers especially, relying on social assistance may appear to be a good strategy for optimizing scarce economic and time resources in the short run. However, staying out of the labour market may have negative long-term consequences, including the depreciation of both social capital and skills which, in turn, undermines future employability prospects. Against this scenario, it is not surprising that – as in many other Western

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(1) A lively debate exists in academic research about whether 18 or 25 is the best threshold to define dependent children. Most frequently, age 18 is adopted, especially for comparative purposes across countries (Bernardi and Mortelmans, forthcoming 2016).

countries – households headed by lone mothers are overrepresented among those at risk of poverty and reliant on welfare assistance (OFS, 2013). Lone mothers are also more likely to be unemployed or to hold less stable and worse paid jobs, and are thus further penalized (Stutz and Knupfer, 2012).

## II. Theoretical background

### *The relationship between lone parenthood and health*

Empirical evidence has consistently shown that individuals in couples experience better physical and psychological health and longer life expectancy than individuals without a partner, whether widowed, divorced, or never-married (Cairney et al., 2003; Mirowsky and Ross, 2003; Schumacher and Vilpert, 2011; Wickrama et al., 2006). An important mechanism driving this association is that partnered individuals benefit from additional emotional support, which in turn fosters better health. After separation and divorce, mothers are usually the ones who have custody rights on their children: for them, negative health outcomes also reflect the added strains of becoming both the main breadwinner and sole/main caregiver in the household (Benzeval, 1998; Okechukwu et al., 2011; Sabbath et al., 2011), and the perceived loss of emotional support (Cairney et al., 2003).

Whereas in the past, out-of-wedlock childbearing was the prevalent pathway into lone parenthood (Kiernan et al., 1998), an increasingly common way is through union disruption. Separation and divorce have a negative impact on health since they are generally a stressful process. Even though the dissolution of a conflict-ridden partnership might foster improvements in women's health and wellbeing (Andress and Bröckel, 2007; Baranowska-Rataj et al., 2013), there is evidence of negative consequences on psychological health around the time of divorce, and physical health effects longer after divorce (Lorenz et al. 2006). In addition, the transition to lone parenthood implies a change in the division of roles that may be accompanied by a proliferation of stressors, such as a drop in economic resources and increased financial problems (Avellar and Smock, 2005; de Regt et al., 2013; Manting and Bouman, 2006), greater parental strains, and more social isolation (Targosz et al., 2003; Smith, 1980), which in turn have a detrimental effect on both physical (Pearlin et al., 2005) and psychological (Okechukwu et al., 2012) health outcomes. Such negative effects of experiencing lone parenthood in early and mid life are found to be associated with poorer health and higher risk of disability in later life (Berkman et al., 2015).

However, the causality behind the association between health and union/divorce also goes in the other direction: healthy individuals are more likely to enter a union (Koball et al., 2010) and less likely to divorce (Joung et al., 1998). Moreover, jointly shaped processes and reverse causality are pervasive in many

studies involving subjective assessments of life satisfaction, well-being, and levels of happiness (Adams et al., 2003; Headey and Muffels, 2014).

We do not focus here on the causal direction of the association but rather on the association itself. We expect that in Switzerland also, lone mothers will report poorer health than mothers living in a couple (Hypothesis 1).

### *Relationship between lone parenthood, employment, and health*

The positive association between employment and various health outcomes has also been widely assessed (Huber et al., 2011). In most cases, a positive association has been found irrespective of working hours or job quality (Bardasi and Francesconi, 2004; Cai, 2010; Caroli and Godard, 2014; Hewitt et al., 2006; Ross and Mirowsky, 1995).

The association of employment with health results from both causation and selection processes. Labour market participation improves health because it eases economic hardship and drives social support (Bird and Fremont, 1991; Ross and Mirowsky, 1995). Although paid work is not always the most effective path out of poverty, it is often a necessary condition for improving psychological and physical health (Ross and Bird, 1994). The selection mechanism implies that healthy individuals are also more likely to be part of the active working population in the first place (Cai and Kalb, 2006; Goldman, 2006).

The association between employment and health may further differ by parental status. Performing the role of parent and worker might represent an enriching experience, as diversifying one's investment in different social spheres (such as family and work) has a positive effect on individual health and well-being (Greenhaus and Powell, 2006; Sieber, 1974). Multiple roles provide a means to mobilize greater economic and noneconomic resources, but also to offset failures in one life domain with successes in others. But in most countries, mothers are more likely overall to experience weaker labour market attachment and less continuous working histories than both childless men and women, which may limit the health benefits of paid work. Moreover, multiple roles are hard to fulfil and can also result in stress, which may have serious and lasting negative consequences on health (Barrett and Turner, 2005). Systematic reviews of health determinants and their changes over time show that employment has a positive effect on women with few family burdens (typically childless women or mothers with older children) and a negative effect when combined with other stress factors, such as heavy work and care loads (Cullati et al., 2014).

For lone mothers in particular, the combination of employment with parenthood may be stressful. Some findings suggest that the burden of multiple roles prevents them from profiting from the positive association between paid work and health (Avison et al., 2007; Baker et al., 1999; Burström et al., 1999; Dziak et al., 2010), although other studies find that employed lone mothers enjoy better physical health than those without jobs, either because they have older children that involve less work-family conflict and strain (Hewitt et al.,

2006) or because they dispose of a higher income (Benzeval, 1998). Other studies have found that the positive association between employment and health for lone mothers persists even after controlling for socio-economic status and income (Rodriguez, 2002).

It is important to note that the extent to which parenthood matters for the relationship between employment and health varies across countries, due to both differences in labour market structures and welfare regimes. Wide cross-national variation also exists in lone mothers' engagement in paid work compared to mothers in couples: their labour market attachment is stronger in countries that promote more flexible and family-friendly work policies (Plantenga et al., 2010). Furthermore, even when employed, women who live with a partner are often secondary earners (Blossfeld and Drobnic, 2001). These elements compromise women's ability to devote more time to childcare and earn more income in case of separation or divorce (Friedland and Price, 2003).

Given the characteristics of the Swiss context, where work-life balance policies are limited, the benefits of paid work for health may be smaller compared to other European countries. Nonetheless, in line with the majority of research findings, we expect paid employment to be positively associated with health for mothers in general, but this association should be weaker for lone mothers compared with mothers living with a partner (Hypothesis 2a). Moreover, because the availability of strategies to cope with the dual burden faced by lone mothers, such as outsourcing childcare, is highly dependent on income, we expect the differences in health between lone mothers (jobless or employed) and mothers living with a partner to be largely explained by income (Hypothesis 2b).

### *The role of education and working hours*

The role of employment for health outcomes of lone mothers is likely to vary according to their education and working hours. The positive association between education and health is well established in the literature (Huber et al., 2011; Ross and Mirowsky, 2010). This association holds even after adjusting for socio-economic status and income (Rodriguez, 2002) and numerous studies have found it to be causal (Grossman, 2004).

Highly educated women show a stronger labour force attachment (DiPrete and Buchmann, 2013) and have access to better-paying jobs, more stable contracts and better working conditions (Barbieri, 2009; Kalleberg, 2000). Low-paid and temporary jobs, much like unemployment, are associated with worse health (Caroli and Godard, 2014; Pirani and Salvini, 2015; Schaffner and Ehlert, 2011). Less-educated mothers are more likely to be unemployed and to hold low-paid or temporary jobs compared to their higher educated peers; as a consequence, they also rely on welfare more frequently (Ross and Mirowsky, 2010).

The increasing number of individuals experiencing lone parenthood as a consequence of divorce or separation, combined with educational expansion, have opened the path to a narrowing of differences in educational attainment

between lone mothers and mothers living with a partner (Avison et al., 2007). This applies in the Swiss case as well, where newer cohorts of lone mothers are more likely to hold a tertiary degree compared to those of older cohorts (Struffolino and Bernardi, 2016). Higher educated lone mothers yield higher returns – financial and otherwise – from paid work, which may lighten their dual burden as they can outsource part of their domestic and parental work. Low-educated lone mothers, on the other hand, may find themselves in an especially precarious labour market situation, where combining work and childcare may be especially stressful and detrimental to their health. Therefore, we expect employment to be positively associated with health for highly educated lone mothers but less positively or even negatively for lower educated ones (Hypothesis 3).

A second factor that may make a difference in how employment correlates with lone mothers' health is whether women work part-time or full-time. If differences in income drive the positive association between employment and health, then lone mothers holding part-time jobs will not benefit from working as much as full-time working lone mothers. If, on the contrary, the effect of part-time work is mainly to reduce stress linked to their dual role as mother and earner, then we may observe better health outcomes for mothers holding part-time jobs. So far, empirical evidence on the net effect of part-time or full-time work on lone mothers' health is mixed. Some studies find that compared to part-time and unemployment, full-time and stable employment is associated with better health for lone mothers (Hewitt et al., 2006), and that it improves poor single mothers' mental health (Zabkiewicz, 2010). Other research finds that working (especially full-time) has a stronger negative effect on lone mothers' health than on that of mothers living in couples (Burström et al., 1999; Macran et al., 1996).

In Switzerland, being in paid-work prevents lone mothers from accessing most of the welfare measures that target poor households, yet the income from part-time employment is typically not sufficient for the sole earner of a family with children. Whereas part-time work may make it easier to combine work and childcare responsibilities for mothers living with a partner (who in most cases holds a full-time job), for lone mothers this advantage may be cancelled out by financial difficulties. Thus, we expect a positive association between part-time work and health for mothers with a partner but a less positive or negative association for lone mothers (Hypothesis 4).

### III. Data and methods

#### *Data and sample*

The Swiss Household Panel (SHP) is a nationally representative survey that has followed a random sample of households on an annual basis since 1999. All household members older than 14 are interviewed by telephone. We

use all 13 waves available (1999–2011),<sup>(2)</sup> selecting a subsample of women aged 19–54<sup>(3)</sup> who lived in households with at least one biological child younger than 18. Given the panel structure of the data, each individual can be observed multiple times: our final sample consists of 10,598 annual observations nested in 2,114 persons.

### *Dependent variable*

Health status is operationalized as self-reported health, which effectively captures multiple dimensions of health. It is considered as a good proxy for an overall evaluation of health status and as a reliable predictor of mortality, above and beyond objective indicators of health (Idler and Benyamini, 1997; Jylhä, 2009; WHO, 2013). In our case, self-reported health is measured by using the question “Talking about your health, how do you feel right now?” The accuracy of self-reported health is not undermined if respondents are asked about “health in general,” “during the last year,” “right now” (Idler and Benyamini, 1997).<sup>(4)</sup>

As we aim to identify mothers self-reporting poor health, we are more interested in good versus poor health, which is where a lot of variation lies, rather than the distinction between very good and good health. We therefore dichotomized the answers by collapsing the response categories “very well” and “well” to indicate good health, and “so-so (average)”, “not very well”, and “not well at all” to reflect poor health.<sup>(5)</sup> This choice is supported by previous research (Cullati et al., 2014; Hewitt et al., 2006) showing that when five options are available, the intermediate choice (usually “good” or “average”) is much closer to the negative options than the positive ones. Furthermore, considering the category “so-so” as good health would have left us with a highly unbalanced dependent variable, as only 1.6% of the observations would have been coded as “poor health”. The skewed distribution of self-reported health on the highest level of the scale is congruent with previous findings in different contexts (Liu and Hummer, 2008). In 12% of the instances in our sample, respondents reported poor health.

(2) In 2011, the SHP consisted of two samples: the 1999 sample (5,074 households and 7,799 household members in 1999) and the 2004 refreshment sample (2,538 households and 3,654 household members in 2004). Overall, non-response bias in the SHP is small and comparable to other panel studies (Lipps, 2009). Although those in poorer health are somewhat more likely to drop out, there is no major concern about selectivity in the population who remained in the panel according to a number of relevant characteristics (Voorpostel, 2010).

(3) There were very few instances of lone motherhood among women younger than 19 in our sample (11). We therefore decided to restrict the analyses to the 19–54 age group, assuming that lone motherhood at a very young age probably interferes with school attendance rather than employment, especially in Switzerland which has one of the lowest rates of pregnancy among 15–19 year-olds (Sedgh et al., 2015).

(4) Note, however, that self-reports of specific ailments and chronic diseases vary in their performance and reliability (Baker et al., 2004; Kuhn et al., 2006; Martikainen et al., 1999).

(5) We ran the same models using different subjective measures of health, such as depression, optimism, and life satisfaction. The results (available upon request) are in the same direction and have the same significance as those obtained by using self-reported health.

### *Independent variables*

Our main independent variable is family arrangement operationalized as being a lone mother or a mother living with a partner. Lone mothers are defined as women who live with their child without a partner present in the household (though they may have a non-resident partner): 14% of the person-year observations concerned lone mothers. Since no retrospective information on family status was collected in wave 1, the length of lone parenthood is known only in cases where the episode as lone parent started in one of the following survey waves,<sup>(6)</sup> so it cannot be taken into account. Here we always compare lone mothers with mothers currently in couples. Mothers living in couples are defined as women who are either married or cohabiting with a partner (who may or may not be the father of the resident children); 86% of the person-year observations refer to mothers in couples.

Finally, the data do not include information on whether lone mothers share custody with the biological father<sup>(7)</sup> (or if children spend time at the father's household) or whether or not he pays alimony.

Besides family arrangements, the other key explanatory factors are employment status, education, and working hours. Due to the longitudinal structure of the data, all three factors are time-varying, meaning that the situation of the individuals can change on these variables (although education is relatively stable over time given the age of the women in the sample). Employment status has two categories: holding a paid job or not. Unemployed and inactive individuals were grouped together in the “jobless” group.<sup>(8)</sup> Of the total sample, 73% of the person-year observations were in paid employment. Education was measured as the highest level of education achieved at the time of the last interview and was coded in three categories: lower secondary education, upper secondary education, and tertiary education.<sup>(9)</sup> Finally, for the subsample of working mothers, working hours were coded in three categories: part-time less than 50% (of the full-time 40-hour week), part-time 50-80%, and full-time 81-100%. For analyses that include this variable, we restricted our sample to working episodes only (1,815 individuals and 7,689 observations, 17% of which concerned lone mothers). The majority of the working episodes concern part-time jobs (64% in less than 50% part-time jobs and 23% in 50-80%

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(6) Considering only those cases would have reduced the sample size too drastically.

(7) In 2007, custody was granted to mothers in 60% of cases, and to fathers in just 5%. Joint custody was granted in 34% of cases (OFS, 2008).

(8) From a labour market participation perspective it would have been interesting to distinguish between inactivity and unemployment. However, the sample of jobless lone mothers was too small to account for that, so unemployment and inactivity episodes are grouped together. Moreover, some claim that the distinction between the two statuses is vague and strictly dependent on the institutional setting defined by the policies (Atkinson and Micklewright, 1991); whether individuals are defined as unemployed or out of the labour force depends on the level of benefits available and the eligibility criteria (Autor and Duggan, 2003; Black et al., 2002; Bratsberg et al., 2010; Rege et al., 2009).

(9) The distribution of the education variable in the sample shown in Table 1 does not change when computed in terms of episodes or of persons. The same is true for the estimates shown in Table 2.

part-time jobs), and only 12% concern 81-100% full-time jobs. In line with our research questions, each one of these variables will be included in the models in interaction with the family arrangement.

### *Control variables*

All models control for survey year and respondent's age as well as for household characteristics that may represent barriers to labour market participation and signal higher care loads: number of children below 18 and age of the youngest child in the household (Baker et al., 1999; Hewitt et al., 2006) were therefore included in the models as continuous variables.<sup>(10)</sup>

As discussed above, lone mothers are more likely to have lower income, which has been found to be associated with worse health, above and beyond education. However, differences in health between working and non-working lone mothers have been found to be mediated by the increase in income associated with being employed. Therefore, because we are interested in the effect of the independent variables controlled for income, we included it as the log of annual total disposable income (in Swiss Francs), which includes public transfers net of taxes and private transfers. Table 1 gives the descriptive statistics for all variables in our models.

### *Method*

Our sample consists of multiple observations of the same individuals over time. Hence our data structure consists of observations nested in individuals. As multiple observations of the same individual tend to be correlated, the assumption behind regular regression models of independent observations is violated. To address the clustering of our data we estimate multilevel mixed-effects logistic regression models for binary outcomes with clustered robust standard errors. Mixed-effects models estimate a separate individual-specific effect to control for factors that generate correlations between consecutive observations (Brüderl, 2010; Halaby, 2004). The log odds of the outcome (reporting good health) for each individual at each point in time observed is modelled as a linear combination of the independent and control variables (fixed effects) and an individual random effect that accounts for time-invariant unobserved individual characteristics that can influence the individuals' responses on the outcome. These random effects are assumed to be uncorrelated with the independent variables.

In a first set of models, we assess the self-reported health of lone mothers compared to mothers living with a partner. Then, we test the interaction between family structure and employment status, adjusting for the potentially

(10) In additional models, we controlled for practical help and emotional support potentially available from family and social networks (Cairney et al., 2003; Osborne et al., 2012) as well as use of paid help with housework or childcare ("yes" or "no"), but since the interaction with family arrangement was not significant, we opted for more parsimonious model specifications due to the sample size of the episodes coded as years spent as lone mothers.

**Table 1. Distribution of the dependent variable and independent variables: percentages, mean and standard deviations**

	Full sample			Only working episodes		
	%	Mean	SD	%	Mean	SD
<b>Self-reported health</b>						
Bad	11.9			11.3		
Good	88.1			88.7		
<b>Family arrangement</b>						
Mothers living in couple	85.9			82.8		
Lone mothers	14.1			17.2		
<b>Working status</b>						
Employed	73.1			-		
Jobless	26.9			-		
<b>Education</b>						
Lower secondary or less	12.2			11.1		
Upper secondary	74.2			74.0		
Tertiary	13.6			14.9		
Mother's age (19-54)		39.6	6.1		40.0	6.0
Age of youngest child in the household (0-18)		7.5	4.9		8.1	4.9
Number of children below age 18 in the household (1-8)		2.0	0.8		1.9	0.8
Total disposable income (log, 0-15.2)		10.1	3.5		10.4	3.2
<b>Working arrangement</b>						
Part-time less than 50%	-			63.7		
Part-time 50%-80%	-			23.6		
Full-time 81%-100%	-			11.9		
Number of observations per individual (0-12)		5.4	3.6		5.8	3.6
Number of observations		10,598			7,689	
Number of individuals		2,114			1,815	
<i>Source:</i> Swiss Household Panel (SHP), waves 1999-2011.						

confounding factors mentioned above. Finally, we consider if, and to what extent, heterogeneities exist according to educational level. A second set of models scrutinizes the association between family structure and SHR only for working episodes and by different work-hour arrangements. Results are presented as average marginal effects (AME) and, in the case of the interactions, as predicted probabilities to ease the comparison between each and every combination of the interaction terms. Both AME and predicted probabilities are estimated from the fixed-effect portion of the models (Jaccard and Turrissi, 2003; Long and Freese, 2014).

## IV. Results

Table 2 displays the distribution of self-reported health of mothers living with a partner and lone mothers by working status, educational level,

**Table 2. Self-reported health by employment status, education, and working hours for episodes spent as lone mothers and mothers in couples**

	Lone mothers (Self-reported health)				Mothers in couples (Self-reported health)			
	Bad	Good	Total	<i>N</i>	Bad	Good	Total	<i>N</i>
<b>Full sample</b>								
<b>Employment status</b>								
Jobless	33.9	66.1	100	162	12.4	87.7	100	2,688
Employed	14.3	85.7	100	1,337	10.6	89.4	100	6,411
<b>Education</b>								
Lower secondary or below	21.5	78.5	100	149	15.4	84.6	100	1,143
Upper secondary	15.1	84.9	100	1,130	10.2	89.8	100	6,737
Tertiary	19.6	80.4	100	220	12.2	87.8	100	1,219
<b>Total</b>	<b>16.4</b>	<b>83.6</b>	<b>100</b>	<b>1,499</b>	<b>11.1</b>	<b>88.9</b>	<b>100</b>	<b>9,099</b>
<b>Working episodes only</b>								
<b>Working hours</b>								
Part-time < 50%	17.0	83.0	100	448	10.2	89.8	100	4,495
Part-time 50-80%	11.7	88.3	100	555	9.8	90.2	100	1,280
Full-time 81-100%	14.6	85.4	100	328	15.3	84.7	100	583
<b>Total</b>	<b>14.2</b>	<b>85.8</b>	<b>100</b>	<b>1,331</b>	<b>10.6</b>	<b>89.4</b>	<b>100</b>	<b>6,358</b>

*Source:* Swiss Household Panel (SHP). waves 1999–2011.

and working hours. The majority of respondents report good health and, overall, partnered mothers are more likely to report good health than lone mothers (89% versus 84%). Mothers who are employed are more often in good health than jobless mothers; employed mothers living with a partner score higher than the overall percentage (89.4%), while only 66% of jobless lone mothers in our sample report being in good health (34%). Regarding education, these descriptive statistics indicate that it is not the mothers with the highest level of education who are most likely to report good health, but rather the middle group with upper secondary education. In our sample, women with upper secondary education reported being in good health in 90% of the episodes spent as mothers living in a couple and in 85% of episodes as lone mothers, compared with 85% and 79%, respectively, for the lowest educated group. Finally, lone mothers or mothers living in couples who hold a 50-80% part-time job are most likely to report good health (88% and 90%, respectively).

Models 1 to 5 in Table 3 show results from the first set of mixed-effects regressions estimating the association between family arrangement and self-reported health. Consistent with Hypothesis 1, compared to mothers living with a partner, lone mothers have a significantly lower probability of reporting good self-reported health (a difference of about 2 percentage points, Model 1) after controlling for differences in background characteristics between the two groups. The effect persists even when we control for working status (Model 2). In line with previous findings on the association of work with health, being

employed versus not working is itself associated with a small but significantly higher probability of being in good health. These results for family and working status hold when additional controls for the interaction between employment status and family structure (Model 3) and the log of annual total disposable income (Model 4) are included.

Figure 1 displays the predicted probabilities of being in good health by family structure and working status (Figure 1a; model 4 in Table 3). We test our second hypothesis (2a and 2b) stating that the association between work and health is weaker for lone mothers compared to mothers living with a partner. Our findings show that only jobless lone mothers have a lower probability of reporting good self-reported health (0.84), even though the differences are significant only when compared to employed or jobless mothers living with a partner, not when compared to employed lone mothers. As expected, work does not have a significantly beneficial effect on health for lone mothers, however, we could not identify the hypothesized positive effect of work on health for the mothers with a partner either. Hence, we do not find support for Hypothesis 2a. It is worth mentioning that before adjusting for total disposable income (Model 3 in Table 3), we did find that jobless lone mothers, especially, are worse off in terms of health, compared to mothers with a partner; whereas, employed lone mothers do not fare significantly worse than partnered mothers. This significant difference between lone mothers and mothers in couples holds after adjusting for income (Figure 1a; Model 4 in Table 3), so we do not find support for Hypothesis 2b. Because of our relatively small sample of lone mothers, with most of them in paid work, the sample of jobless lone mothers is rather small, producing relatively large confidence intervals.

We further hypothesized that paid work would yield more health benefits for higher educated lone mothers compared to lower educated ones (Hypothesis 3). We already saw in Table 2 that mothers with upper secondary education were most likely to report good health. Looking at the direct effect of education, estimates from all models displayed in Table 3 show that a secondary level of education is associated with better health than a primary level and this difference holds after adjusting for the control variables. However, the self-reported health of mothers with a higher level of education does not differ significantly from that of mothers with a lower level. Model 5 includes the interaction between working status, family arrangement, and education. The predicted probabilities for good health are displayed in Figures 1b, 1c and 1d. Contrary to our expectation (Hypothesis 3), we found no significant difference in the relationship between employment and health based on the level of education for lone mothers or for mothers living in couples. However, one group stands out, namely jobless lone mothers with an upper secondary education. Whereas the jobless lone mothers score lower on health compared to working lone mothers for all three levels of education, the

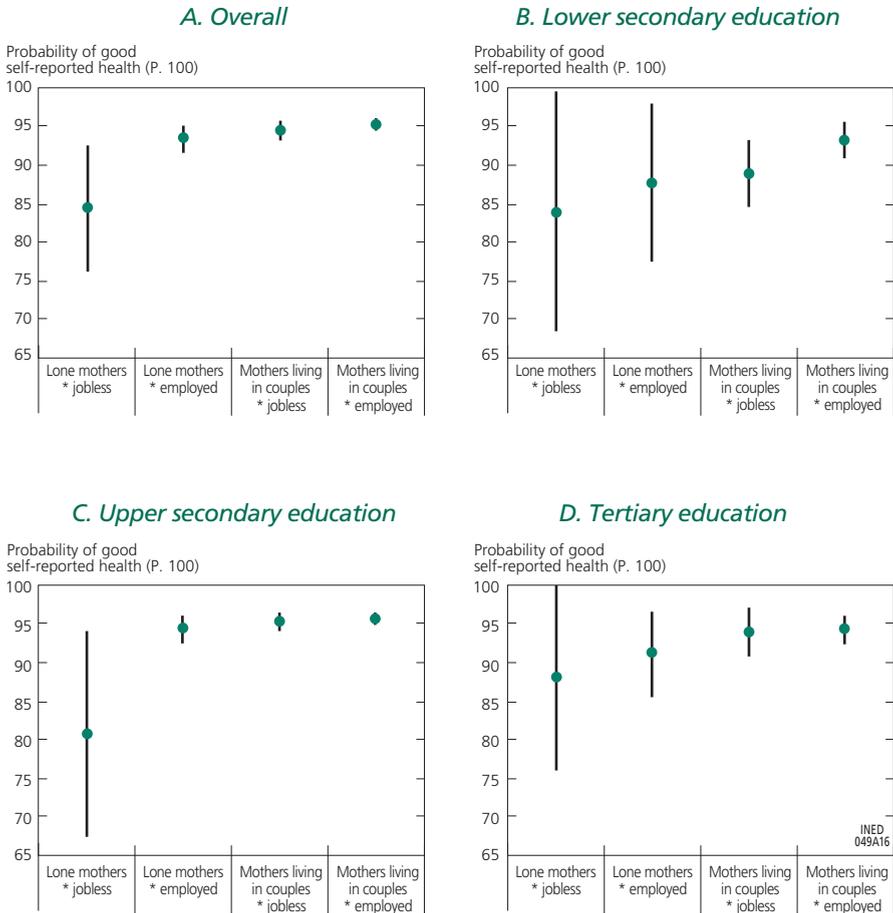
Table 3. Mixed effects logistic regression model predicting the probability of good self-reported health. Average marginal effects (AME) and predicted probabilities for the interaction effects (displayed in Figure 1)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	AME	[CI min.; max.]								
<b>Family arrangement</b>										
Mothers living in couples (Ref.)	0	-	0	-	0	-	0	-	0	-
Lone mothers	-0.026	[-0.046; -0.006]	-0.028	[-0.049; -0.007]	-0.040	[-0.067; -0.013]	-0.039	[-0.066; -0.012]	-0.046	[-0.078; -0.014]
<b>Working status</b>										
Jobless (Ref.)	0	-	0	-	0	-	0	-	0	-
Employed	0.014	[0.002; 0.026]	0.021	[0.005; 0.037]	0.021	[0.005; 0.037]	0.021	[0.005; 0.037]	0.024	[0.006; 0.043]
<b>Education</b>										
Lower secondary or below (Ref.)	0	-	0	-	0	-	0	-	0	-
Upper secondary	0.040	[0.015; 0.065]	0.015	[0.013; 0.063]	0.037	[0.012; 0.062]	0.037	[0.012; 0.062]	0.038	[0.011; 0.064]
Tertiary	0.027	[-0.003; 0.056]	0.027	[-0.006; 0.053]	0.023	[-0.006; 0.052]	0.023	[-0.006; 0.052]	0.024	[-0.006; 0.055]
<b>Total disposable income (log)</b>										
Age	-0.002	[-0.003; 0.000]	-0.002	[-0.003; 0.000]	-0.002	[-0.003; 0.000]	-0.002	[-0.003; 0.000]	-0.002	[-0.003; 0.000]
Age of youngest child in the household	0	[-0.001; 0.002]	0	[-0.002; 0.002]	0	[-0.002; 0.002]	0	[-0.002; 0.002]	0	[-0.001; 0.002]
Number of children below age 18 in household	0.013	[0.006; 0.019]	0.013	[0.006; 0.020]	0.013	[0.006; 0.020]	0.013	[0.006; 0.020]	0.013	[0.006; 0.020]
<b>Family arrangement*working status</b>										
Lone mothers*jobless			0.843	[0.760; 0.925]	0.844	[0.762; 0.925]	0.844	[0.762; 0.925]		
Lone mothers*employed			0.934	[0.915; 0.952]	0.934	[0.915; 0.952]	0.934	[0.915; 0.952]		
Mothers living in couples*jobless			0.944	[0.931; 0.956]	0.943	[0.931; 0.956]	0.943	[0.931; 0.956]		
Mothers living in couples*employed			0.952	[0.943; 0.960]	0.952	[0.943; 0.960]	0.952	[0.943; 0.960]		

Table 3 (cont'd). Mixed effects logistic regression model predicting the probability of good self-reported health. Average marginal effects (AME) and predicted probabilities for the interaction effects (displayed in Figure 1)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	AME	[CI min.; max.]								
<b>Education*family arrangement*working status</b>										
Lower secondary education*										
Lone mothers*jobless									0.840	[0.684; 0.997]
Lone mothers*employed									0.878	[0.775; 0.982]
Mothers living in couples*jobless									0.890	[0.848; 0.933]
Mothers living in couples*employed									0.933	[0.908; 0.958]
Upper secondary education*										
Lone mothers*jobless									0.807	[0.675; 0.939]
Lone mothers*employed									0.944	[0.926; 0.962]
Mothers living in couples*jobless									0.952	[0.940; 0.965]
Mothers living in couples*employed									0.956	[0.947; 0.964]
Tertiary education*										
Lone mothers*jobless									0.893	[0.760; 1.000]
Lone mothers*employed									0.912	[0.856; 0.968]
Mothers living in couples*jobless									0.940	[0.907; 0.973]
Mothers living in couples*employed									0.944	[0.926; 0.962]
Year of survey	Yes		Yes		Yes		Yes		Yes	Yes
N		10,598		10,598		10,598		10,598		10,598
<b>Source:</b> Swiss Household Panel (SHP), waves 1999–2011.										

**Figure 1. Predicted probabilities of good self-reported health.** Results from mixed effects logistic regression models according to (A) family arrangement and working status (Model 4 in Table 3), and (B, C, D) according to education, family arrangement and working status (Model 5 in Table 3)

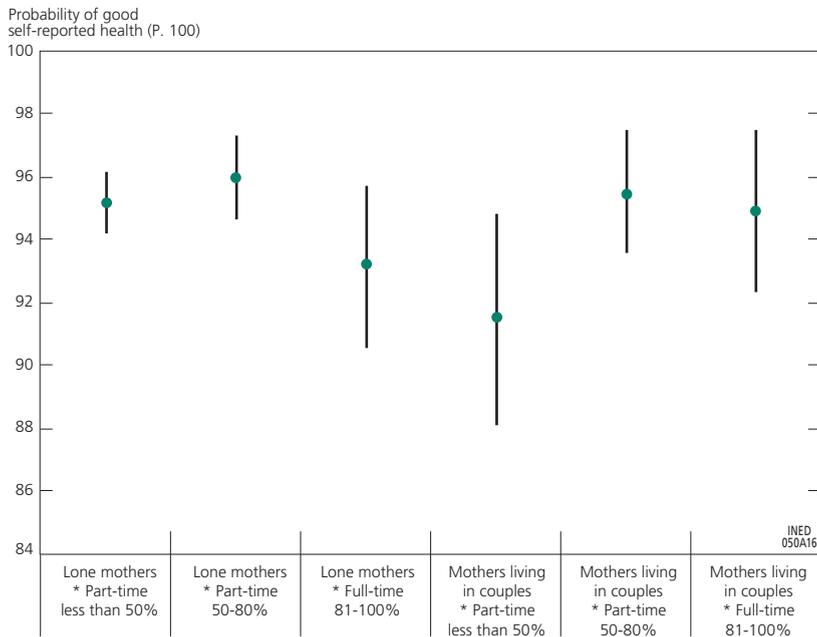


Source: Swiss Household Panel (SHP), waves 1999–2011.

likelihood of reporting good health is especially low for those with an upper secondary education. Although the difference is not significant, the finding is interesting because an upper secondary education is associated with better health for all other groups (working and non-working partnered mothers as well as working lone mothers).

Finally, Figure 2 shows the results from the second set of analyses, estimating the probability of good self-reported health on the subsample of working episodes. Here we test our fourth hypothesis, which stated that part-time compared to full-time work would be more beneficial to health outcomes of mothers living with a partner, but not of lone mothers, and may even be associated with poorer health than in the group of full-time working lone

**Figure 2. Predicted probabilities of good self-reported health. Results from mixed effects logistic regression models according to family and working hours arrangement (Model 2 in Table 4)**



Source: Swiss Household Panel (SHP), waves 1999–2011, working episodes only.

mothers. Before we move to our interaction of interest, we have to acknowledge that – as expected given the results we just presented – there is no significant difference in health between working lone mothers and working mothers living with a partner (Models 1 and 2 in Table 4).

Figure 2 shows the estimates for the interaction between family arrangement and working-hour arrangements. The predicted probabilities are quite similar for all combinations, with the exception of working lone mothers in a less than 50% part-time job (0.92). However, the differences fail to reach statistical significance of 95%; hence, we do not find support for Hypothesis 4.

## V. Discussion and concluding remarks

In line with the life course perspective that underlines the importance of interdependencies in the life course domains (Elder et al., 2003), the aim of this paper was to contribute to the literature on the interrelation between family arrangements, health, and employment. Previous research led to mixed empirical evidence for the ways in which these three domains interact, arguably for two main reasons. First, such evidence often comes from different contexts, and the corresponding studies do not consider the extent to which work-family

**Table 4. Mixed effects logistic regression model predicting the probability of good self-reported health. Average marginal effects (AME) and predicted probabilities for the interaction effects (displayed in Figure 2)**

	Model 1		Model 2	
	AME	[CI min.; max.]	AME	[CI min.; max.]
<b>Family arrangement</b>				
Mothers living in couples ( <i>Ref.</i> )	0	–	0	–
Lone mothers	–0.013	[–0.032; 0.005]	–0.022	[–0.045; 0.001]
<b>Education</b>				
Lower secondary or below ( <i>Ref.</i> )	0	–	0	–
Upper secondary	0.024	[–0.001; 0.050]	0.024	[–0.002; 0.049]
Tertiary	0.005	[–0.026; 0.036]	0.005	[–0.026; 0.036]
<b>Working hours</b>				
Part-time less than 50% ( <i>Ref.</i> )	0	–	0	–
Part-time 50–80%	0.012	[0.001; 0.024]	0.014	[0.002; 0.027]
Full-time 81–100%	–0.006	[–0.025; 0.013]	–0.008	[–0.029; 0.012]
Total disposable income (log)	0.001	[–0.001; 0.002]	0.001	[–0.001; 0.002]
Age	–0.001	[–0.003; 0.000]	–0.001	[–0.003; 0.000]
Age of the youngest child in the household	–0.001	[–0.002; 0.001]	–0.001	[–0.002; 0.001]
Number of children below 18 in the household	0.014	[0.006; 0.023]	0.015	[0.006; 0.023]
			<b>Pred. Prob.</b>	<b>[CI min.; max.]</b>
<b>Family arrangement *working hours</b>				
Lone mothers*Part-time less than 50%			0.915	[0.881; 0.948]
Lone mothers*Part-time 50–80%			0.955	[0.936; 0.975]
Lone mothers*Full-time 81–100%			0.949	[0.923; 0.957]
Mothers living in couples*Part-time less than 50%			0.952	[0.942; 0.962]
Mothers living in couples*Part-time 50–80%			0.960	[0.947; 0.973]
Mothers living in couples*Full-time 81–100%			0.932	[0.906; 0.957]
Year of the survey		Yes		Yes
N		7,689		7,689

*Source:* Swiss Household Panel (SHP), waves 1999–2011, working episodes only.

reconciliation policies may buffer the negative effects of lone parenthood on health by reducing the strain on mothers in this situation (with the exception of Burström and colleagues, 2010). Second, employment characteristics – like the number of hours in paid work – are rarely considered in conjunction with educational level (i.e., proxy for skills and bargaining power on the labour market) when analysing the association between family arrangements and health.

We drew on data from Switzerland, a country characterized by generous welfare protection against poverty but poor work-family reconciliation policies, a rather conservative gender division of labour, and a gender-biased pay gap unfavourable to women. This political and social context discourages Swiss women from participating on equal terms with men in the labour market, and it also encourages them to take up the role of secondary earners when they become mothers. We expected that when working in such conditions, lone

mothers would report worse health than mothers in couples – even more so when working full-time – because of their dual role as main earner and primary/sole caregiver. Our findings show that in the Swiss context lone mothers, especially those who do not work, have poorer health than partnered mothers. This association does not seem to be explained by their tendency to have a lower income. We were unable to discern clear mediation effects of education and employment characteristics, but the effects are suggested by the fact that lone mothers with secondary education and with small part-time jobs are more likely to report poor health. We argue that because these mothers have invested in acquiring a higher level of human capital compared to women with less education, they might be less likely to disengage from paid work and rely on social assistance. However, their health may be negatively affected by the greater time and economic constraints they experience in contexts where outsourcing of childcare is expensive.

Our analyses cannot reveal the causal relationship between family arrangement, employment, and health. In a dynamic perspective, the mechanisms involved in the co-appearance of disadvantages are likely to be associated because of double-causation mechanisms and interdependency of life domains. However, jointly shaped processes and reverse causality are pervasive in many studies involving subjective assessments of life satisfaction, well-being, and levels of happiness, so that factors we regularly see associated with self-reported health might also be consequences of it. We cannot exclude the possibility that a two-way-selection process might affect our empirical results, given the simultaneity of events which can only be disentangled through time-lagged models over an extended period (Headey and Muffels, 2014). The small initial sample size of lone mothers – and the consequently relatively small number of observations available in each wave for this subpopulation – made it difficult to apply time lagged models. Future research will be able to exploit bigger sample sizes as the panel progresses and should be able to address and disentangle causal paths.

The simultaneous associations we found between employment, family, and health conditions of lone mothers are still valid and valuable in and of themselves. They indeed hint at specific interactions between different life course domains, which are likely to result in multiple disadvantages and health inequalities. Such situations might result in a general disadvantage that may produce further vulnerability, particularly when welfare policies are based on a normative understanding of the family (a couple with a main earner and secondary earner/primary caregiver) and labour market participation (full-time employment for the main earner and part-time employment for the secondary earner).

Evidence on the intergenerational transmission of disadvantages from parents to children depending on parents' living arrangements exists, but these processes are found to be mediated by parental socio-economic status and the related parenting style and social closure (Martin, 2012). To understand the

reproduction of social inequalities, it is important to detect under which conditions education and employment bundle together with health deterioration, which in turn negatively affects children's outcomes, such as educational achievement (Bratti and Mendola, 2011).

In sum, our results suggest that in Switzerland, while financial support is provided to the most economically disadvantaged mothers heading a single-parent household, those who are less likely to rely on welfare support and at the same time have a low level of bargaining power on the labour market (signalled by their part-time participation and poor qualifications) represent a potentially vulnerable group with specific health disadvantages. Future research will explore the extent to which such effects are driven by the institutional, financial, social, and time resources available to lone parents to fulfil their double role and by the uncertain prospects in the labour market. A second emerging theme concerns lone fathers. The share of men who experience lone parenthood – especially in contexts where joint custody is preferred – is likely to increase in Switzerland as well as in other European countries. Since parental and work experience are strongly gender specific, it would be extremely interesting to test whether gender-based (dis)advantages exist, also within the association of lone parenthood to education, employment, and health.

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**Emanuela STRUFFOLINO, Laura BERNARDI, Marieke VOORPOSTEL • SELF-REPORTED HEALTH AMONG LONE MOTHERS IN SWITZERLAND: DO EMPLOYMENT AND EDUCATION MATTER?**

Lone mothers are more likely to be unemployed and in poverty, which are both factors associated with a risk of poor health. In Switzerland, weak work-family reconciliation policies and taxation that favours married couples adopting the traditional male breadwinner model translate into low labour market participation rate for mothers. In the case of lone mothers, employment can be associated with better health because it eases the potential economic hardship associated with being the sole earner. However, working can represent an additional stress factor due to lone mothers' responsibility as the main caregiver. We investigate how family arrangements and employment status are associated with self-reported health in Switzerland. Our analyses on the Swiss Household Panel (waves 1999-2011) suggest that lone mothers who are out of the labour market have a higher probability of reporting poor health, especially those with an upper secondary level of education. Lone mothers reported being in better health when working full-time versus part-time, whereas the opposite applied to mothers living with a partner.

**Emanuela STRUFFOLINO, Laura BERNARDI, Marieke VOORPOSTEL • LA SANTÉ PERÇUE DES MÈRES DE FAMILLES MONOPARENTALES EN SUISSE: LE RÔLE DE L'ACTIVITÉ PROFESSIONNELLE ET DE L'ÉDUCATION**

Les mères sans conjoint et avec des enfants à charge sont plus susceptibles d'être sans emploi et pauvres, deux facteurs qui augmentent les risques d'être en mauvaise santé. En Suisse, l'insuffisance des politiques de conciliation entre travail et famille et une fiscalité qui avantage les couples mariés adoptant une division traditionnelle du travail se traduisent par de faibles taux de participation des mères au marché du travail. Pour le cas particulier des mères seules vivant avec leurs enfants, l'emploi peut être associé à une meilleure santé parce qu'il atténue les difficultés économiques liées au fait d'être le seul pourvoyeur de ressources du foyer. Cependant, le travail peut représenter un facteur de stress supplémentaire étant donné que les mères assument désormais seules la majeure partie des soins aux enfants. Comment l'état de santé auto-déclaré est-il associé à la situation familiale et le statut d'activité en Suisse? Les analyses du Panel suisse de ménages (vagues 1999-2011) montrent que les mères seules qui sont hors du marché du travail présentent plus de risques de déclarer un mauvais état de santé, en particulier si elles disposent d'un diplôme du secondaire supérieur. En revanche, les mères seules se déclarent en meilleure santé si elles travaillent à temps plein plutôt qu'à temps partiel, alors que c'est l'inverse pour les mères en couple.

**Emanuela STRUFFOLINO, Laura BERNARDI, Marieke VOORPOSTEL • LA SALUD PERCIBIDA DE LAS MADRES DE FAMILIAS MONOPARENTALES EN SUIZA: LA INFLUENCIA DE LA ACTIVIDAD PROFESIONAL Y DE LA EDUCACIÓN**

Las madres sin conyugue y con niños a cargo corren un mayor riesgo de desempleo y de ser más pobres que las otras madres, y además estos factores aumentan el riesgo de tener una mala salud. En Suiza, la insuficiencia de las políticas de conciliación entre trabajo y familia, y una fiscalidad que favorece a las parejas casadas que adoptan una división tradicional del trabajo, se traducen por una débil participación de las mujeres al mercado laboral. En el caso particular de las madres que viven solas, el tener un empleo puede estar asociado a una mejor salud ya que atenúa las dificultades económicas. Sin embargo, el trabajo puede representar también un factor de estrés suplementario puesto que la madre asegura sola la mayor parte de los cuidados prodigados a los hijos ¿cómo está asociado en Suiza el estado de salud declarado a la situación familiar y al estatuto de actividad? Los análisis del Panel suizo de hogares (olas 1999-2011) muestran que las madres solas que están fuera del mercado de trabajo declaran más frecuentemente tener una salud deficiente, particularmente cuando poseen un diploma de la enseñanza media o superior. Las mujeres solas se declaran en mejor salud si trabajan a tiempo completo que si lo hacen a tiempo parcial, mientras que es lo contrario en las madres con pareja.

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**Keywords:** Lone mothers, self-reported health, employment, education, working hours, life course, Switzerland.