The effects of early childhood intervention on maternal employment, education, fertility and childcare use. Evidence from a randomized experiment.

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Abstract

Despite promising results of early childhood intervention programs for children, little is known about the outcomes of these programs for parents. Therefore, we use an interdisciplinary randomized experiment to investigate the effects of a home visiting program *Pro Kind* on maternal life course. Disadvantaged first-time mothers, n=755, were randomly assigned to a treatment and control group in three German federal states. The treatment causes no significant effects on maternal employment, education and fertility, except some changes in self-reported attitude towards work. However, there is a strong but not significant difference in the use of institutional child care. The presented results are preliminary since the data collection has not been completed yet.

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1 Introduction

In recent years the outcomes of early childhood intervention programs have gained much attention in economic literature. Evidence from randomized experiments suggests that these programs improve cognitive and socioemotional abilities as well as the health of disadvantaged children (see Almond and Currie, 2010, for a review of the literature). According to the theory of skill formation, early investment in children can reduce later inequality and can cause high cost-benefit ratios in the long run (Cunha and Heckman, 2007; Heckman and Masterov, 2007).

Despite these promising results for children, economists have so far neglected the impact of early childhood interventions on certain dimensions of maternal life course, such as maternal employment, education, fertility and childcare use. This neglect is surprising as many interventions focus mainly on the mother. Home visiting programs are the most prominent example in this respect, because in these programs nurses directly address disadvantaged mothers under the belief that parents mediate changes for their children. Accordingly, home visiting tries to enhance parental skills such as self-efficacy, attachment behavior and problem-solving abilities. This enhancement leads to better parental practices and the proven benefits for children. These improved parental skills can also have effects on the life course of the mother. Apart from improving parental skills, many home visiting programs directly try to increase women's personal strengths. For example, nurses encourage women to clarify plans for completing their education, returning to work and bearing additional children.

This paper presents the first randomized experiment in Germany to evaluate the impact of one such home visiting program, the *Pro Kind* Project, on maternal life course. The intervention starts during pregnancy and continues until the second birthday of the child. Exclusively mothers on social welfare or with low income are enrolled. Additional inclusion criteria are, e.g. being under age, poor education, substance abuse and own experiences of violence or neglect. We expect first effects on maternal life course 24 months after birth and therefore short term fiscal impact of the intervention. Hence, home visiting programs could be more appealing for politicians who are assumed to reject many beneficial early intervention programs, because their returns occur too far in the future.

We find that so far the *Pro Kind* Project has significantly changed some attitudes towards employment in the intervention group. The program effects on subsequent pregnancy and birth, employment, school attending or childcare use are not statistically significant. However, tendency is strong that the intervention group uses institutional childcare more frequently. The presented results are preliminary, since the data collection has not been completed yet.

The remainder of the paper is organized as follows. The next chapter gives some background on home visiting programs and their potential for altering maternal

life course. Chapter III reviews the existing literature about the effects of home visiting on maternal life course. Chapter IV describes the *Pro Kind* Project and its implementation. Chapter V introduces the randomized experiment and the data collection process. Chapter VI describes the estimation method to identify causal effects of the intervention. Chapter VII presents results while chapter VIII provides concluding remarks.

2   Home visiting

Home visiting is an umbrella term that describes a strategy for delivering a service, rather than a type of intervention per se. Programs vary for example in frequency, duration, visitor's profession or starting point. Despite these differences all programs are linked by their method of delivery service at the family's own home, their goal of helping children by helping the parents and their focus on infants and toddlers (Sweet and Appelbaum, 2004). Home visiting has been popular for delivering family services in the US for many years. In Europe and especially in Germany home visiting programs have less tradition (Wasik and Bryant, 2001). One reason for this could be the developed system of compulsive gestational and postpartum check-ups in Germany. Nevertheless, German federal government founded the *Nationales Zentrum Früher Hilfen* after a series of child abuse and neglect cases in 2006. This initiative establishes early intervention programs in Germany. Among the launched programs are mainly home visiting programs like the *Pro Kind* Project. Nationales Zentrum frühe Hilfen (2008) gives an overview of the promoted projects.

As this paper concentrates on maternal life course, one question is why home visiting should work in this area, whereas a large literature concludes that many qualification or school graduation programs for disadvantaged adolescents fail or have small returns (Heckman and Jacobs, 2010; Heckman et al., 1999; Calmfors et al., 2001). The main answer is that the nurses who deliver home visiting programs develop relationships with the mothers during their pregnancies and their children's early years. The strongest activator for inducing and deepening this relationship is the new born child. Olds et al. (2010) state that through this relationship nurses could help parents gradually gain a sense of mastery in overcoming challenges and position themselves to create the kind of life they want. Furthermore, mothers with newborns are often open-minded about guidance during this fundamental life transition, as they make important choices that shape the subsequent trajectories of their life and those of their children. Thus, building up relationships and meeting open minded clients are the strongest advantages of home visiting compared to other qualification programs and can lead to changes in maternal life.

Another question is the fiscal relevance of possible changes in maternal life course in Western European welfare states. In Germany 11.1 percent of all transfer households include children aged below three and 21.5 percent of all households with

children aged below three receive social benefit transfers. 75 percent of single parents are eligible to transfer at least one month in the first three years after birth. Overall, households with children under age three receive around 4.7 Billion Euro of social benefits per annum (Bundesagentur für Arbeit, 2009; Statistisches Bundesamt, 2009; BMFSFJ, 2009). These figures show that reducing welfare dependency of households with children could bring short time fiscal effects. Therefore, home visiting programs could become more interesting for politicians, because improved child outcomes get fiscally relevant just in the long run. A lack of fiscal short-term effects, enhance the danger that the supply of home visiting, although fiscally efficient in the long run, will be too little, because of politicians' high discounting rates. The importance of maternal life course in fiscal respect is underlined by two studies of the Nurse Family Partnership program, where just changes in maternal life course achieve a positive cost-benefit ratio (Olds et al., 1993, 2010). We will go into detail later in the text, but in both studies enhanced maternal labor market participation is the main reason for government savings.

3   Previous literature

A large body of literature discusses outcomes of home visiting programs. Mainly medical scientists and psychologists contribute to this topic. To present an overview how the literature considers maternal life course and which effects it finds, this chapter initially explains meta-analyses concerning home visiting programs. Afterwards we take a closer look at the effects of the Nurse-Family-Partnership (NFP) program, which is the prototype of the Pro Kind intervention.

Gomby (2005) examines twelve meta-analyses regarding home visiting in a very comprehensive review. Just four of the twelve meta-analyses investigate the life course of the mother as a potential outcome. Three of these four (Geeraert et al., 2004; Layzer et al., 2001; Sweet and Appelbaum, 2004) find significant positive effects at least in one domain of maternal life course. In one study (Elkan et al., 2000) the results concerning maternal life course are inconclusive. The studies, which do not include any outcome of maternal life course, focus mainly on children's cognitive development or abuse and neglect. The following paragraphs explain the four meta-analyses, which include maternal life course as an outcome in more detail.

For their meta-analysis Elkan et al. (2000) identify 1218 early childhood intervention studies from all over the world and eventually include 102 studies that meet requirements for methodological rigor. The requirements are randomized experiments or quasi-experiments. As 86 of these 102 studies are home visiting programs, the meta-analysis is focused on home visiting. The study states that evidence is insufficient to draw conclusions regarding mothers' return to education, participation in the workforce, use of public assistance, family size and number of subsequent pregnancies.

Geeraert et al. (2004) include studies focused on the prevention of child maltreatment in families identified as at-risk for child maltreatment but where no physical abuse or neglect has yet been identified or substantiated. Studies from 1975 to September 2002, which used any pretest-posttest design or independent groups design are considered. 40 studies are identified, 17 of which are of Healthy Families America, a well known United States home visiting program. Most of the included programs appear to be home visiting programs. 36 of 40 programs are from the United States. The study evaluates outcomes, which are associated with risk reduction for child maltreatment. In the domain "maternal life course" Geeraert et al. consider material situation and material network as associated with maltreatment risk. Risk by material situation, which includes finances and housing, is reduced significantly with an effect size of .38. Risk by network including informal social contacts and use of community services is reduced significantly with an effect size of .25.

In the meta-analysis of Layzer et al. (2001) early childhood interventions conducted since 1965 are included. The authors code 665 studies and eventually include the most methodologically rigorous of those studies in the meta-analysis. That results in two databases: (1) an end-of-treatment database of 351 randomized or quasi-experimental studies and (2) a follow-up database of 158 randomized or quasi-experimental studies. Approximately half of these programs consider home visiting services as the primary mode of service delivery, and another 12 percent use home visits to deliver some services. The analyses cover the short-term and long-term effects of the programs. In respect to maternal life course, family's economic self-sufficiency is included in the meta-analysis. As a result the authors find statistically significant but very small and perhaps functionally meaningless benefits in this domain. Home visiting strategies show the weakest effects when delivered by paraprofessional staff, with non-targeted services.

Sweet and Appelbaum (2004) include in their meta-analysis exclusively 60 home visiting programs conducted in the United States since 1965. All included studies are experiments or quasi experiments. Mothers' education since the child was born or since program inception, mothers' employment, and mothers' reliance on public assistance categories define maternal life course outcomes. As a result home visiting has a significant impact on maternal education with a weighted mean standardized effect size of .134 and with the largest effect on teenage mothers. Sweet and Appelbaum find no significant effect on employment or reliance on public assistance. Only five of the 60 studies included in the meta-analysis present results on maternal education, seven on employment and three on public assistance. In contrast 41 studies investigate child cognitive development and 37 studies search for effects on parenting child rearing.

A recent meta-analysis (Nievar et al., 2010), not included in the Gomby review, with 35 studies, of which 22 are located in the United States, regards exclusively

home visiting programs for at-risk mothers. The focus of the study lays on maternal behavior whereas maternal life course is again not considered. The authors conclude that on average home visiting seems to produce improvement in maternal behavior, especially with frequent home visitation.

In summary, most studies, and therefore meta-analyses, of home visiting focus dominantly on the outcomes for children. Studies located in the United States dominate the literature. A lot of these studies are randomized experiments, which enable to draw causal conclusions on the impact of the programs. Although the existing meta-analyses show overall an impact on maternal life course, the impact seems to be small in size. One reason for small or missing effects could be that life course is given too little attention and therefore relevant outcomes are not measured. This hypothesis is supported by the fact that studies are mainly conducted by medical scientists and psychologists for whom maternal life course may not lay in their core interest. Meta-Analyses and reviews on early childhood interventions by economists (Nores and Barnett, 2010; Baker-Henningham and Lopez Boo, 2010; Barnett, 2006) are just at the beginning and they neither focus on home visiting nor on maternal life course.

Gomby (2005) concludes in her review: *"Evidence is insufficient for effects of home visiting on maternal life course. The exception is the Nurse-Family-Partnership Program, which has the largest effects when included in the presented meta-analysis."* As the Pro Kind Project is conceptually similar to NFP, this subsection presents a closer look at NFP and its results. NFP is a program of prenatal and infancy home visiting for low income, first-time mothers and their families. The nurses start visiting families as early as possible during pregnancy and continue the visits until the child's second birthday. NFP is evaluated in three different trials by randomized experiments. The first evaluation was conducted in Elmira, New York, starting 1980 with mainly white first-time mothers participating. The next evaluation started in Memphis, Tennessee, in 1990 enrolling mainly black, low income, single, first-time mothers. In 1995 the third evaluation was initiated in Denver, Colorado. Participants were mainly Hispanic low income, single, first-time mothers. In all three trials maternal life course was always of core interest beside child outcomes. Depending on the start of the trial, outcomes for different endpoints are available. Follow up data is available between 4 years in Memphis and 15 years in Elmira. Table 1 to 3 show results concerning maternal life course for the three trials.

Overall, the literature shows that NFP reduces the rates of subsequent pregnancies and births and increases the intervals between first and second pregnancies and births in all three trials within the first four years. In two trials an increase in maternal employment is found. Women's use of welfare is reduced in all three trials. Mainly more stable partnerships and reduced subsequent births explain these effects. Long-term follow-ups show that effects on maternal life course do not fade out over the years. The intervention does not affect school graduation in any trial,

6 months	4 years	15 years
More school enrollment of school dropouts	More employment (15.54 months vs. 8.64 months)	By trend more employment (95 months vs. 80 months)
	Fewer subsequent pregnancies (0.58 vs. 1.02)	Fewer subsequent births (1.3 vs. 1.6)
		Longer interval between first and subsequent birth (65 months vs. 37 months)
		Less months eligible to transfer (60 months vs. 90 months)

Table 1: Results of NFP, Elmira (Olds et al., 1988, 1997).

2 years	6 years	9 years	12 years
Fewer subsequent pregnancies (0.36 vs. 0.47)	Fewer subsequent pregnancies (1.16 vs. 1.38)	Fewer cumulative subsequent births per year (0.81 vs 0.93)	Greater sense of mastery (101.04 vs. 99.60)
	Less months eligible to transfer per year (7.21 months vs. 8.96 months)	Less months eligible to transfer per year (5.21 months vs. 5.92 months)	By trend more employment (p<0.1)
	By trend more employment (p<0.1)	By trend more employment (p<0.1)	

Table 2: Results of NFP, Memphis (Kitzman et al., 1997; Olds et al., 2004, 2007, 2010).

2 years	4 years
Fewer subsequent births (0.12 vs. 0.19)	Longer interval between first and subsequent birth (24.51 months vs. 20.39 months)
More employment (6.83 months vs. 5.65 months)	More employment (15.13 months vs. 13.38 months)

Table 3: Results of NFP, Denver (Olds et al., 2002, 2004).

although higher school attendance is recognized in Elmira.

In the Elmira and the Memphis trial NFP reaches the fiscal break even point through the presented changes in maternal life course. In Elmira the program cost of $3.133 face discounted savings of $3.246 expressed in 1980 US-Dollars by child age four. Higher maternal employment, shown in table 1, is the main reason for savings. In Memphis the NFP causes $12.300 in discounted savings compared with a program cost of $11.511, both expressed in 2006 US-Dollars by child age twelve. Higher maternal employment and less government spending on food stamps, Medicaid, and Aid to Families with Dependent Children and Temporary Assistance for Needy Families, shown in table 2, generate the savings.

Additionally, a recent study (Rubin et al., 2010) on NFP examines in a quasi experimental research design the effects on time to second pregnancy within 2 years of the first infant's birth. The investigation takes place after statewide NFP implementation in the Commonwealth of Pennsylvania. Therefore, it is possible to examine whether the benefits of earlier trials of NFP sustain after dissemination in state level. Rubin et al. find that the program effects on pregnancy planning emerge after an implementation period of 3 years and the effects are particularly strong among younger mothers.

In sum the literature presents no conclusive results on the effects of home visiting on maternal life course. Therefore, more studies are necessary, especially because examination is still missing in Germany.

4 The *Pro Kind* Project

In this article research focuses on the German *Pro Kind* Project, which is an adaption of the NFP, discussed preliminary. The *Pro Kind* Project is a home visitation program for disadvantaged first-time mothers and their families. Intervention starts during pregnancy and ends at the second birthday of the child. The concept bases upon the interaction of three psychological theories, the ecologic theory, the attachment theory and the self-efficacy theory (Bronfenbrenner, 1992; Bowlby, 1969; Bandura, 1982, 1997). In consideration of these theories detailed guidelines for the home visits are developed. These guidelines follow and reflect major challenges concerning pregnancy and the early years of the child's life. The three major goals are: (1) improvement of birth outcomes by changing health behavior, (2) improvement of child's subsequent health and development with avoidance of child abuse and neglect as well as (3) improvement of families' economic self-sufficiency by helping parents to develop a vision for their future and make appropriate decisions about planning future pregnancies, finishing their education and finding work. *Pro Kind* registers low income, first-time mothers, who participate voluntarily as soon as possible in their pregnancy (12th-28th week of gestation). Additional target group criteria include, e.g. being under age, poor education, substance abuse and own experiences

	Pro Kind Average	NFP-Average	Recommended average by NFP
Average Time Devoted to Content Domains during Pregnancy			
Life Course Development	16%	13%	10%-15%
Family and Friends	15%	16%	10%-15%
Social and Health Services	12%	-	-
$\sum$	**43%**	**29%**	**20%-30%**
Average Time Devoted to Content Domains during Infancy			
Life Course Development	17%	15%	10%-15%
Family and Friends	14%	15%	10%-15%
Social and Health Services	11%	-	-
$\sum$	**42%**	**30%**	**20%-30%**
Average Time Devoted to Content Domains during Toddlerhood			
Life Course Development	21%	17%	18%-20%
Family and Friends	14%	15%	10%-15%
Social and Health Services	10%	-	-
$\sum$	**45%**	**32%**	**28%-35%**

Table 4: Average time devoted to domains related to maternal life course (Brand and Jungmann, 2010; NCCFC, 2005)

of violence or neglect. *Pro Kind* is conducted in 13 communities in three German federal states, two of them in West and one in East Germany. The program started in 2006 and the last participating mother was affiliated in 2009. Trained midwifes, nurses or social pedagogues carry out the home visits (see Jungmann et al., 2008, for details). The home visits cover six domains: *Personal Health*, *Environmental Health*, *Life Course Development*, *Maternal Role*, *Family and Friends* as well as *Social and Health Services*. Whereas the last domain is not part of the NFP, it is exclusively added to *Pro Kind*. After every visit the home visitor fills in detailed visit-by-visit protocols. Thereby, implementation research can access which domains are treated during the home visits. Table 4 shows the average time devoted to *Life Course Development*, *Family and Friends* and *Social and Health Services*, since these domains are most strongly related to maternal life course.

At all developmental stages the home visitors spent 40 percent of the time in the family for domains related to maternal life course. Additionally, *Pro Kind* has got higher rates in these domains than the NFP average and the recommended average of NFP. These figures show that life course is a fundamental part in the implementation of the Pro Kind Project, which requires investigation.

5   Experimental Design and Data Collection

The primary focus of the evaluation in this paper is a multisite, longitudinal follow-up study incorporating a randomized controlled evaluation of the Pro Kind Project. Randomization was on the basis of an efron baised coin design, which allocates

participants to either the intervention or control group stratified by community, age and migration (Efron, 1971). The intervention group gets the home visits described above. The control group is entitled to all benefits of the German social state. Additionally, traveling costs for screening examination are refunded and results of the development tests are announced to participants of both groups.

Since assignment to treatment is random, unbiased treatment effects can be obtained by comparing the means in the control and treatment groups. This is illustrated in the potential outcome framework introduced by Rubin (1974). Let Y_i denote the outcome of mother i. We would like to compare outcomes for the same mother if she is exposed to treatment (as denoted by Y_i^1) and if she is not exposed to treatment (as denoted by Y_i^0). But for every mother only one of these potential outcomes is investigated. Therefore, we can not get the true treatment effect for a certain mother. However, it is possible to get an estimate of the average impact of the intervention. The average treatment effect (ATE) is defined as the difference in outcomes under treatment and no treatment for an individual randomly drawn from the population: $E\left[Y^1 - Y^0\right]$. In non-experimental frameworks individuals who receive treatment are different from individuals without treatment not only with regard to their treatment status, but also in other covariates that affect outcomes. Then a simple comparison of outcomes between treated and non-treated individuals would result in selection bias. In an randomized experiment, however, the selection bias is removed because of the random assignment mechanism. Since assignment is uncorrelated with the attributes of the individual, on average individuals in the treatment group are similar to individuals in the control group. In other words, random assignment ensures that treatment and control groups have the same distribution of characteristics.

In total 755 participants were assigned to the randomization process from November 2006 to December 2009. Appendix A shows the enrollment results and enrollment periods for each federal state and each community. All participants fill in a profile questionnaire, which collects detailed information on mother's demographics, mental condition and risk factors at baseline. To prove if the randomization process provides equally balanced distributions between the treatment group and the control group we use the following basic model:

$$Y_i = \alpha + \beta_1 T_i + \epsilon_i \tag{1}$$

where Y_i is a risk factor or characteristic at baseline for mother i and T_i is an indicator variable for whether the mother received the home visiting program. Hence, the estimate of the coefficient β_1 indicates the differences between treatment and control mothers. Additionally, we include a community fixed effect estimator in equitation 1 because the results in Appendix A show that treatment and control group are not equally distributed in all communities. If the randomization process worked well

no coefficients of β_i would be significant in any model specification. Column 1 in appendix B contains the average characteristics for the control group. Columns 2 and 3 present the estimated differences between the treatment and control groups. The results in column 2 do not include any controls, while those in column 3 control for community fixed effects. The results indicate that only the share of women with psychic risk is significantly different between treatment and control group. A woman is categorized with psychic risk if answers in a psychological scale are below a certain threshold. In the control group 18.8 percent obtain this risk respectively to 10.9 percent in the treatment group. On the other hand the coefficients of 22 factors are not significantly different. Thus, overall, the randomization appears to have been successful in creating comparable treatment and control groups. Appendix C uses data during pregnancy to describe more demographic factors of the *Pro Kind* sample in comparison with GSOEP first time mothers. These factors are also disturbed equally between the two groups. Additionally, the *Pro Kind* population seems highly disadvantaged in many domains in comparison to GSOEP first time mothers, who are composed of a representative population sample. Lutz and Sandner (2010), Jungmann et al. (2010) and Jungmann et al. (2009) describe more baseline characteristics of the *Pro Kind* sample.

After enrollment telephone interviews are conducted starting during pregnancy and then every six months until the third birthday. The interviews are computer assisted and contain questions about household, income, employment, childcare use, family planning as well as questions about service utilization by child and mother. The questionnaire includes all questions, which are recommended when using GSOEP as a reference data set (Siedler et al., 2009). Furthermore, we include the GSOEP activity calendar to learn about the employment status of the participants in a monthly base. Other sources of the questionnaires are the Panel for Labour Market and Social Security (PASS), The German Health Interview and Examination Survey for Children and Adolescents (KiGGS), the "Deutsches Jugend Institut" (DJI) family survey and the World Value Survey. Most variables in the Pro Kind questionnaire measure time durations in monthly intervals. In addition to the telephone interviews, a developmental psychology research team examines the cognitive and motoric development of the child using a set of clinically approved instruments. Jungmann et al. (2010) and Kurtz et al. (2010) present preliminary results for child outcomes.

Figure 1 shows the sample composition for the already conducted telephone interviews. Since data collection continues until summer 2012, the data set is not complete yet. Participation in the telephone interviews is slightly higher in the treatment group, but the difference is not significant at any interview. Despite the same participation rates selective attrition could bias the comparison between treatment and control group. We use the basic model from equitation 1 to prove if there is any selective attrition between the two groups. In appendix D column

	Eligible invited to participate		1157	
	Active refusals		263	
	Passive refusals		139	
	Randomized		755	

Treatment Group	Control	Homevisited	Total
Allocated to treatment	361	394	755
Research refusals[1]	31	30	61
Fetal demises	8	2	10
Completed 34-wk interviews	312 (86.4%)	350 (88.8%)	662
Infant deaths	2	2	4
Completed 3-mo interviews	265 (73.4%)	298 (75.6%)	563
Completed 9-mo interviews	228 (63.2%)	254 (64.5%)	482
Completed 15-mo interviews	191 (52.9%)	221 (56.1%)	412
Completed 21-mo interviews	131 (36.3%)	162 (41.1%)	293
Completed 27-mo interviews	84 (23.3%)	101 (25.6%)	185

[1] Active or passive refusals without any contact. Point of date: 1th August 2011.

Figure 1: Sample Composition

1 to 6 show the differences between treatment and control group for each interview. The baseline difference in psychic risk stays significantly until the 21 month interview. Additionally, the risk factor aggression becomes significantly different starting with the three month interview. Another source of bias could be selective attrition compared to the baseline population. Therefore, we combine the baseline population with the participant at each interview. Afterwards we use the model in equation 1 to estimate the difference between the characteristics at baseline and the characteristics of the participants. As seen in appendix E some risk factors and characteristics are different between the baseline population and the participants in the follow up interviews. Mainly the participants are older and have less cumulated risk factors. Other factors are not significantly different but almost all coefficients have negative signs. Therefore, it is likely that more risk factors and characteristics become significantly different while the sample size increases.

Overall we conclude that the comparability of the control and treatment groups is sustained throughout the follow up interviews, but selective attrition compared to the baseline sample is an issue. As it seems younger and higher deprivated women are less compliant with the research. But a final statement can not be made before summer 2012 when the data collection process is clompleted.

6   Estimation method

The objective of this paper is to shed light on the impact of *Pro Kind* on maternal life course. Initially, analysis starts with comparisons of means between intervention and control group. The means result from questions concerning attitudes to employment at the 21 months interview. As discussed above, significant differences in the means

between treatment and control group are causal to the intervention.

Next, we want to examine the mothers' probability of "surviving" beyond a certain point of time t, where t is measured in months since birth of the intervention child. In context of maternal life course "surviving" means not bearing a second child, not starting work or school after birth or not using institutional childcare. Since the comparison of means is not appropriate for survival data, we apply statistical methods within a hazard rate framework (Kleinbaum and Klein, 2005; Cleves, 2010). Such techniques have the huge advantages of accounting for censoring and of taking into account the precise duration until the event, which causes "failing", occurs . Surviving is reported by the survivor function $S(t)$ [Equation (2)], with $0 \leq S(t) \leq 1$ and with T as a non-negative random variable that denotes the time of the event. Survivor functions account for right-censoring, because some observations may not experience the event of "failing" within the observation period. In our analysis we choose 24 months as the endpoint of the observation period, because this is the time span, in which first effects of NFP occur. It is important to note that we have not collected data up to this point for all participants yet. As $S(t)$ is estimated by the nonparametric Kaplan-Meier estimator [Equation (3)], where n_j is the number of participants at risk at time t_j and d_j the number of events at t_j there is no matter at which point of time censoring occurs.

$$S(t) = 1 - F(t) = P(T > t) \tag{2}$$

$$\widehat{S}(t) = \prod_{j|t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right) \tag{3}$$

Therefore, we can test the equality of survivor functions in intervention and control group. If the test of equality is rejected, an impact of the intervention can be assumed.

In a next step we use Cox proportional hazards regression model for covariate analysis. The Cox regression asserts that the hazard rate for the jth subject in the data is

$$h(t|x_j) = h_0(t)exp(\beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k) \tag{4}$$

where the regression coefficients, β_x are to be estimated from the data. The hazard rate $h(t)$ can be calculated by the hazard function

$$h(t) = lim_{\Delta t \to 0} \frac{P(t + \Delta t > T > t | T > t)}{\Delta t} \tag{5}$$

The baseline hazard $h_0(t)$ in Equation (4) is given no particular parameterization and, in fact, can be left unestimated. Since the effect of the treatment may increase or diminish with the level of another factor, like teenage pregnancy, we use interaction terms as covariates to estimate joined effects.

7 Results

We start our analysis with mean comparisons of questions from the interview 21 months after child's birth. The questions consider attitudes towards work and originate from the world value survey. As visible in table 5 treatment group mothers agree more strongly to all statements than control group mothers. In two statements the agreement is significantly stronger at a less than 5 percent level.

	Mean TG n=107	Mean CG n=90	Difference	p-Value
Talent	2.04	2.51	-.473	.013
Humiliating	1.64	2.28	-.633	.002
Lazy	1.79	1.98	-.193	.353
Duty	1.93	2.01	-.086	.638
Come first	2.38	2.5	-.117	.574

Five point likert scale, 1 = Strongly agree...5 = Strongly disagree; Talent = To fully develop your talents, you need to have a job; Humiliating = It is humiliating to receive money without having to work for it; Lazy = People who don't work turn lazy; Duty = Work is a duty towards society; Come first = Work should always come first, even if it means less spare time.

Table 5: Attitude towards work 21 months after birth.

The results of table 5 show that statements about attitudes towards work seem to be influenced by the intervention. However, the subjective rating by the participants and social desirability motives may influence the answers. Therefore, we prove the influence of the intervention on maternal life course with an objective and fiscal relevant measure in a next step. We investigate labor market participation, school attendance, fertility as well as childcare use with survival analysis. Data for childcare use is collected in each interview beginning at the 9 months interview. Participants are asked whether their child attends institutional childcare and if so, they are asked for the starting month. If the participant states that her child attends institutional childcare but does not know the exact starting point, the date of the interview is used as starting point. For subsequent pregnancy and birth we follow the same procedure unless mothers are asked for fertility at the 15 months interview the first time. Employment and school attendance are surveyed in each interview on the base of a monthly activity calendar. We only consider the first status switch after birth as a fail so it is not recognized how long the participants stay in this status. For example, in the case of school enrollment, analysis considers if a participant starts school but not if she continues school a month later. Figure 2 graphs the Kaplan-Meier failure function of treatment and control group. Log rank tests do not reject equality of functions in any domain, although institutional childcare use

is close to rejection.
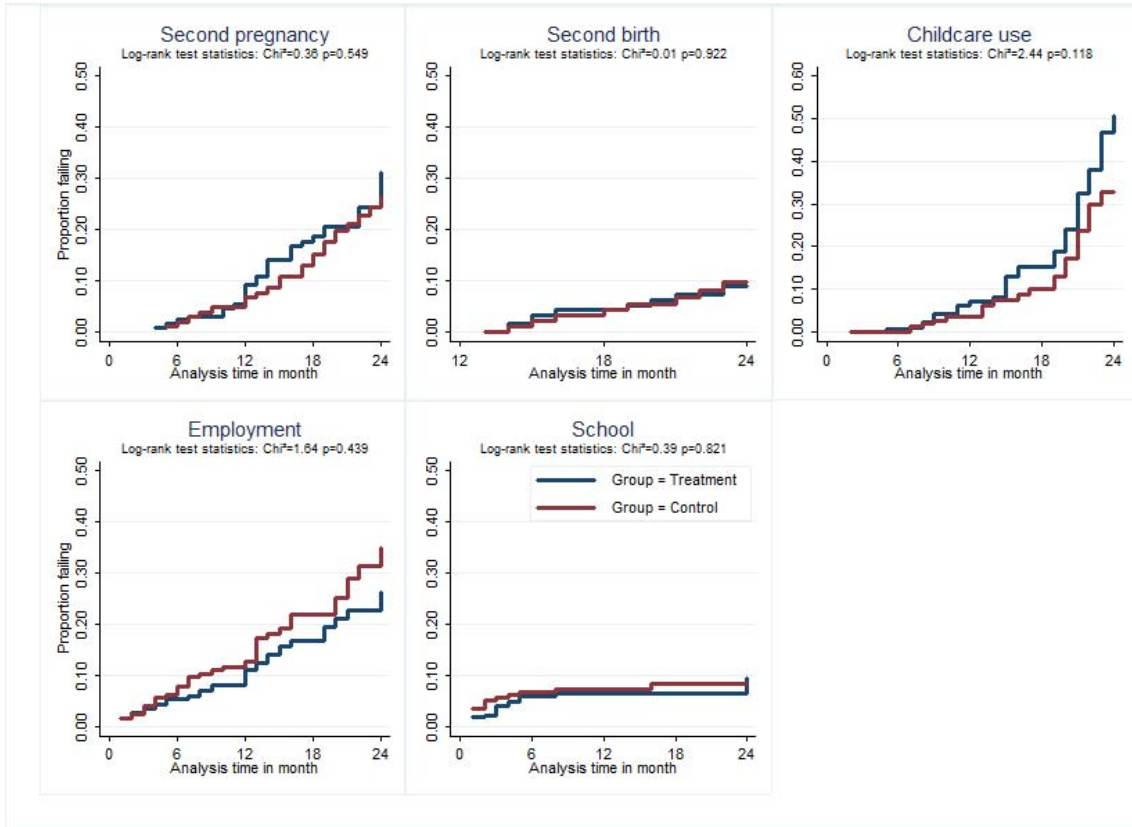
Figure 2: Kaplan-Meier failure graphs

We can classify the results by comparing them with reference populations. However, comparison is difficult, because there is no German sample, which exclusively concentrates on disadvantaged first-time mothers. Therefore, average population or transfer households with children under age three are considered for comparison.

21 percent of German households eligible to transfer with children under age three use institutional childcare (BMFSFJ, 2009). Considering all families with children under age three, 12 percent in Lower Saxony, 13.8 percent in Bremen and 40 percent in Saxony use institutional childcare (Statistisches Bundesamt, 2009). Mothers of *Pro Kind* treatment (51 percent) and control group (33 percent) have higher rates of childcare use, although the observation ends at age two. These high rates show that mothers in both groups are well connected to community services. However, the result could also be influenced by the age structure of the *Pro Kind* sample where young mothers may have a larger proportion than in the reference populations. Furthermore, the data of the BMFSFJ is two years old. During these two years government has enforced extension of institutional childcare for children younger than three.

23.5 percent of single mothers with children under age three are employed in Germany (13.2 percent part-time employed; 10.3 percent full-time employed). In two-parent households with children under age three the rate is 30.6 percent (21.8 percent part-time employed; 8.9 percent full-time) (Microzensus, 2007). Although

the quantitative proportions are similar in the *Pro Kind* sample (23 percent employed in treatment group and 32 percent in control group at child's second birthday), the quality of occupation differs to the reference population. Appendix F describes the quality of employment for the *Pro Kind* sample in more detail. Full-time and part-time employment together have just a share of 16 percent in control and 9 percent in treatment group. Not surprisingly, a great share of occupations are marginal, irregular or training jobs. The fiscal relevance of these jobs and how they are affected by the intervention needs further investigation.

Next, we examine if treatment interacts with other variables. Results for second pregnancy, childcare use and employment are presented in Appendix G to L. Because of the small failure rate for school and second birth no estimates are pictured. We use the following interaction terms: Teenage pregnancy, emigration status of the mother, mother lives in partnership with biological father during pregnancy and the three federal states in which *Pro Kind* is conducted. In summary, no interaction effects on the hazard rates are found. This is interesting, because larger effects occur in the United States at least in the subgroup teenage mothers. Mother lives in partnership with biological father is the only covariate, which is significantly correlated to a dependent variable. Surprisingly the covariate is negatively correlated with subsequent pregnancy. This means that the hazard of getting pregnant for mothers in a partnership is lower than for mothers without a partner. Investigation is necessary if this correlation persists within a larger sample.

8 Conclusion

This paper exploits the effects of an early intervention, namely a home visiting program, on maternal life course for the first time in Germany. Overall, analysis show no effects on maternal life course so far besides some changes in maternal attitudes to work. Thus, the intervention has no fiscal impact yet.

The main explanation for the results could be that data collection has not been completed yet. The investigation horizon in this paper is 24 months after birth, however just 18 percent of participants' children have reached this age. This small sample size leads to a loss of power in the analysis and therefore greater effect sizes are necessary to get significant results. Lack of data validity could be another reason why effects are not detected. This reason is crucial, since our analysis bases on self-reported data. Literature describes validity errors in self-reported data, mainly when respondents give information about metric values like income or debt (List, 1995). In the *Pro Kind* study participants answer simple binary questions, furthermore intervals between the interviews are short. Therefore, biased results, which are caused by lack of memory or wrong valuation, are implausible. In addition, failed implementation or inclusion of participants who are not in focus of the intervention could lead to missing effects. *Pro Kind* implementation research (Brand and

Jungmann, 2010) and comparisons of the sample with the enrollment criteria show that both possibilities are ruled out. Finally, the results could be explained by the developed German welfare state where home visiting programs are more likely to be on top of many other services than in the United States. Thus, the marginal effect of the intervention may be small.

In further research we will issue the question why effects differ from those found in the United States. Therefore, investigation will mainly concentrate on the quality and quantity of services, which the women in treatment and control group use additionally to *Pro Kind*. Furthermore, we will examine whether attrition biases the randomization process. Possibly strongly disadvantaged mothers in the control group refuse research participation because of little commitment. At the same time especially these mothers stay available for research in the treatment group because they do not want to lose the intervention. Additionally, we are going to examine the use of institutional child care as a possible effect of the intervention in more detail. Quality and quantity in hours per week of childcare use will be investigated. Finally, we will include more covariates like maternal psychological characteristics to get an impression which factors influence the life course of disadvantaged mothers beyond the *Pro Kind* intervention. As little is known about this special population in Germany, results could be interesting for several purposes.

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A   Randomization Results

Federal State	Community	TG	CG	Enrollment Period
Lower Saxony	Braunschweig	32	26	
	Celle	25	15	
	Garbsen	12	10	1.11.2006
	Göttingen	13	12	-
	Laatzen	4	4	30.4.2009
	Wolfsburg	15	11	
	Hannover	52	54	
Bremen	Bremen	83	77	15.4.2007
	Bremerhaven	29	31	- 15.3.2009
Saxony	Leipzig	44	36	
	Plauen	18	13	1.1.2008
	Muldentalkreis	12	16	-
	Dresden	43	46	31.12.2009
	Vogtlandkreis	12	10	
$\sum$		394	361	

TG=Treatment Group, CG= Control Group

B Baseline Comparisons

	Control Mean	Treatment Difference No Controls		Treatment Difference Community Fixed Effects	
Age in years	21.53	-0.263	(0.316)	-0.266	(0.311)
Underaged	0.177	0.033	(0.029)	0.035	(0.028)
Education risk	0.748	0.054	(0.038)	0.055	(0.038)
Income risk	0.809	0.011	(0.028)	0.012	(0.028)
Employment risk	0.856	-0.036	(0.027)	-0.040	(0.027)
Unwanted preg.	0.166	0.014	(0.028)	0.012	(0.028)
Alcohol risk	0.005	-0.005	(0.004)	-0.006	(0.004)
Drug risk	0.025	-0.007	(0.011)	-0.007	(0.011)
No partner	0.283	0.009	(0.033)	0.004	(0.033)
Isolation	0.080	-0.019	(0.019)	-0.020	(0.019)
Foster care exper.	0.194	0.039	(0.030)	0.041	(0.030)
Neglect experience	0.385	-0.009	(0.035)	-0.012	(0.036)
Lost experience	0.539	-0.045	(0.036)	-0.048	(0.036)
Violence during pr.	0.091	-0.013	(0.020)	-0.015	(0.020)
Psychic risk	0.188	**-0.079****	**(0.026)**	**-0.079****	**(0.026)**
Violence ever	0.551	0.002	(0.036)	-0.001	(0.037)
Depression	0.133	-0.031	(0.023)	-0.031	(0.023)
Anxiety	0.177	-0.007	(0.028)	-0.008	(0.028)
Stress	0.288	0.027	(0.034)	0.028	(0.034)
Aggression	0.186	-0.041	(0.027)	-0.039	(0.027)
Sum risk facors	5.864	-0.131	(0.178)	0.035	(0.028)
Observations	361	755		755	

Standard errors shown in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C Comparision Pro Kind and SOEP First Time Mothers

	TG		CG		SOEP	
	n	**%**	**n**	**%**	**n**	**%**
Economic sitituation during pregnancy:						
- Alg II-Transfer	246	74,8%	223	74,6%		
- Alg-Transfer	8	2,4%	6	2,0%	68[1]	10,2%
- HLU-Transfer	16	4,9%	11	3,7%		
- Overindebtedness	5	1,5%	6	2,0%	9	1,3%
- Little income	22	6,7%	18	6,0%	14	1,8%
- Participant in training	18	5,5%	26	8,7%	34	5,1%
- No economic risk factor noticed	14	4,3%	9	3,0%	553	81,4%
- **Total**	**329**		**299**		**664**	
Age:						
- in years, at start of the intervention	21,48 (4,36)		21,57 (4,39)		28,3 (5,50)	
- **Total**	**343**		**314**		**662**	
Country of birth						
- Germany	307	89,5%	261	83,1%	568	88,8%
- Turkey	4	1,2%	2	0,6%	13	2,0%
- East-Europe	12	4,1%	23	7,3%	41	6,5%
- Others	20	5,2%	28	9,0%	18	2,7%
- **Total**	**343**		**314**		**640**	
Living situation within the first 15 years of life						
- With both parents	131	38,4%	130	41,8%	333	81,0%
- At least one year with just one parent	160	46,9%	142	45,7%	67	16,3%
- At least one year in foster care or with foster parents	50	14,7%	39	12,5%	11	2,7%
- **Total**	**341**		**311**		**411**	
Family status						
- Unmarried	294	85,7%	273	87,5%	179	33,9%
- Married	41	12,0%	33	10,6%	329	62,3%
- Divorced/widowed	8	2,3%	6	1,9%	20	3,8%
- **Total**	**343**		**312**		**528**	
School graduation in the year of pregnancy						
- Upper-track secondary qualifying for university entry (Fachhochschulreife/Abitur)	19	7,5%	23	10,3%	238	42,2%
- Intermediate-track secondary (Realschule)	79	31,2%	63	28,1%	217	38,7%
- Lower-track secondary (Hauptschule)	94	37,2%	88	39,3%	66	11,8%
- School for special needs/ other graduation	15	5,9%	9	4,0%	14	2,5%
- Left school without graduating	26	10,3%	20	8,9%	3	0,5%
- Graduation in a foreign country	10	4,0%	11	4,9%	22	3,9%
- Still attending school	10	4,0%	10	4,5%	2	0,4%
- **Total**	**253**		**224**		**561**	

TG=Treatment group, CG= Control group

D Selective Sample Attrition

| | Treatment Difference | | | | | |
	34-week pregnancy	3 months interview	9 months interview	15 months interview	21 months interview	27months interview
Age in years	-0.0640	0.153	0.111	0.0955	0.397	0.137
	(-0.19)	(0.40)	(0.26)	(0.21)	(0.72)	(0.19)
Underaged	0.0294	0.0166	0.00925	0.0215	0.0226	0.0203
	(0.96)	(0.50)	(0.27)	(0.60)	(0.57)	(0.42)
Education risk	0.0489	0.0374	0.0546	0.0756	0.0873	0.166
	(1.16)	(0.79)	(1.00)	(1.24)	(1.12)	(1.45)
Income risk	0.0198	0.0112	0.0172	0.0270	-0.0193	-0.0066
	(0.64)	(0.33)	(0.46)	(0.66)	(-0.40)	(-0.10)
Employment risk	-0.0344	-0.0351	-0.0393	-0.0364	-0.0804	-0.0965
	(-1.16)	(-1.08)	(-1.08)	(-0.89)	(-1.65)	(-1.54)
Unwanted preg.	0.0223	0.0326	0.0281	-0.00120	0.0239	0.00823
	(0.75)	(1.02)	(0.86)	(-0.03)	(0.61)	(0.17)
Alcohol risk	-0.0064	-0.0076	-0.00893	-0.0105	-0.0150	-0.0241
	(-1.50)	(-1.51)	(-1.51)	(-1.53)	(-1.56)	(-1.57)
Drug risk	0.0011	0.00163	0.00688	0.00311	0.00490	0
	(0.11)	(0.15)	(0.67)	(0.29)	(0.42)	(.)
No partner	0.0186	0.0297	0.0499	0.0361	0.00262	-0.0175
	(0.53)	(0.78)	(1.21)	(0.80)	(0.05)	(-0.27)
Isolation	-0.0194	-0.0183	-0.0127	-0.0108	-0.0069	0.0190
	(-1.02)	(-0.89)	(-0.54)	(-0.42)	(-0.23)	(0.50)
Foster care exper.	0.0441	0.0485	0.0448	0.0632	0.0448	0.0358
	(1.42)	(1.47)	(1.26)	(1.70)	(1.04)	(0.67)
Neglect experience	-0.0061	-0.0037	-0.00244	0.0117	0.0180	0.122
	(-0.16)	(-0.09)	(-0.06)	(0.25)	(0.32)	(1.71)
Lost experience	-0.0351	-0.0697	-0.0612	-0.0378	-0.0846	-0.0923
	(-0.90)	(-1.65)	(-1.34)	(-0.76)	(-1.45)	(-1.25)
Violence during pr.	-0.0080	-0.0116	-0.0200	-0.0199	-0.0144	-0.0051
	(-0.40)	(-0.55)	(-0.91)	(-0.79)	(-0.47)	(-0.13)
Psychic risk	**-0.071****	**-0.0757***	**-0.0773***	**-0.0766***	-0.0412	-0.006
	(-2.61)	**(-2.50)**	**(-2.36)**	**(-2.15)**	(-1.00)	(-0.11)
Violence ever	0.0162	-0.0128	-0.0176	-0.0524	-0.0598	-0.0777
	(0.42)	(-0.30)	(-0.38)	(-1.06)	(-1.03)	(-1.05)
Depression	-0.0154	0.00511	0.0169	0.0203	0.0141	-0.0215
	(-0.64)	(0.20)	(0.61)	(0.70)	(0.39)	(-0.46)
Anxiety	-0.0067	0.00620	0.0108	0.00335	-0.0363	-0.0520
	(-0.23)	(0.20)	(0.33)	(0.10)	(-0.86)	(-0.97)
Stress	0.0326	0.0284	0.0271	0.0309	0.00621	-0.0438
	(0.92)	(0.74)	(0.65)	(0.69)	(0.12)	(-0.66)
Aggression	-0.0548	**-0.0614***	**-0.0689***	**-0.0849***	**-0.0974***	**-0.121****
	(-1.92)	**(-2.02)**	**(-2.10)**	**(-2.46)**	**(-2.34)**	**(-2.61)**
Sum risk facors	-0.0523	-0.115	-0.0877	-0.0890	-0.283	-0.284
	(-0.28)	(-0.59)	(-0.41)	(-0.39)	(-1.06)	(-0.84)
Observations	662	562	477	410	294	184

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

E Selective Attrition to Baseline

| | Compliance Difference | | | | | |
	34-week pregnancy	3 months interview	9 months interview	15 months interview	21 months interview	27months interview
Age in years	0.113	0.246	**0.662**[*]	**0.785**[**]	**0.959**[**]	**1.198**[**]
	(0.49)	(1.01)	**(2.54)**	**(2.89)**	**(3.14)**	**(3.28)**
Underaged	-0.00286	-0.00787	-0.0291	-0.0410	**-0.0620**[*]	**-0.0751**[*]
	(-0.14)	(-0.36)	(-1.28)	(-1.74)	**(-2.37)**	**(-2.38)**
Education risk	-0.0163	-0.0253	-0.0508	-0.0566	-0.0517	-0.0588
	(-0.58)	(-0.84)	(-1.58)	(-1.66)	(-1.33)	(-1.24)
Income risk	-0.0125	-0.0245	-0.0242	-0.0316	-0.0357	-0.0591
	(-0.59)	(-1.11)	(-1.04)	(-1.30)	(-1.31)	(-1.81)
Employment risk	-0.0123	-0.0186	-0.0321	**-0.0566**[*]	**-0.0616**[*]	**-0.0708**[*]
	(-0.62)	(-0.89)	(-1.44)	**(-2.39)**	**(-2.33)**	**(-2.26)**
Unwanted preg.	0.00172	-0.000912	-0.0247	-0.0320	-0.0477	-0.0485
	(0.08)	(-0.04)	(-1.14)	(-1.42)	(-1.89)	(-1.59)
Alcohol risk	0.000372	0.000910	0.00154	0.00223	0.00415	0.00822
	(0.13)	(0.30)	(0.46)	(0.62)	(0.98)	(1.54)
Drug risk	-0.00458	-0.00518	-0.00861	-0.00900	-0.0110	**-0.0212**[*]
	(-0.63)	(-0.68)	(-1.11)	(-1.10)	(-1.20)	**(-1.99)**
No partner	-0.00192	-0.00272	-0.00649	0.000388	-0.0153	-0.0320
	(-0.08)	(-0.11)	(-0.25)	(0.01)	(-0.49)	(-0.86)
Isolation	-0.00675	-0.00792	-0.00102	0.00297	0.00123	0.000453
	(-0.51)	(-0.57)	(-0.07)	(0.19)	(0.07)	(0.02)
Foster care exper.	-0.0182	-0.0260	-0.0301	-0.0438	**-0.0547**[*]	-0.0624
	(-0.84)	(-1.16)	(-1.28)	(-1.79)	**(-1.99)**	(-1.89)
Neglect experience	-0.0116	-0.0260	-0.0154	-0.0265	-0.00938	0.000302
	(-0.45)	(-0.97)	(-0.54)	(-0.89)	(-0.28)	(0.01)
Lost experience	0.00605	0.00645	-0.00523	-0.0169	-0.0307	-0.0488
	(0.23)	(0.23)	(-0.18)	(-0.55)	(-0.89)	(-1.19)
Violence during pr.	-0.0153	-0.0189	-0.0240	-0.0165	-0.00994	-0.00325
	(-1.07)	(-1.28)	(-1.55)	(-1.00)	(-0.53)	(-0.14)
Psychic risk	-0.00200	0.00601	0.00392	0.00664	-0.00416	-0.00572
	(-0.11)	(0.30)	(0.19)	(0.30)	(-0.17)	(-0.20)
Violence ever	-0.00851	-0.00605	0.00533	0.00378	0.00891	0.00746
	(-0.32)	(-0.22)	(0.18)	(0.12)	(0.26)	(0.18)
Depression	-0.00931	-0.0116	-0.0138	-0.0214	-0.0111	-0.00786
	(-0.55)	(-0.66)	(-0.75)	(-1.12)	(-0.51)	(-0.30)
Anxiety	-0.0104	-0.0187	-0.0205	-0.0296	-0.0204	-0.0213
	(-0.52)	(-0.90)	(-0.94)	(-1.31)	(-0.80)	(-0.69)
Stress	-0.00591	-0.00661	-0.00639	-0.0117	-0.0129	-0.0248
	(-0.24)	(-0.26)	(-0.24)	(-0.42)	(-0.41)	(-0.66)
Aggression	-0.00412	-0.0112	-0.0133	-0.0203	-0.0146	-0.0501
	(-0.21)	(-0.55)	(-0.62)	(-0.91)	(-0.58)	(-1.69)
Sum risk facors	-0.131	-0.202	**-0.284**[*]	**-0.391**[**]	**-0.432**[**]	**-0.579**[**]
	(-1.03)	(-1.52)	**(-2.04)**	**(-2.67)**	**(-2.62)**	**(-2.92)**
Observations	1417	1317	1232	1165	1049	939

t statistics in parentheses
[*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

F Kaplan-Maier Failure Graphs for different Kinds of Employment
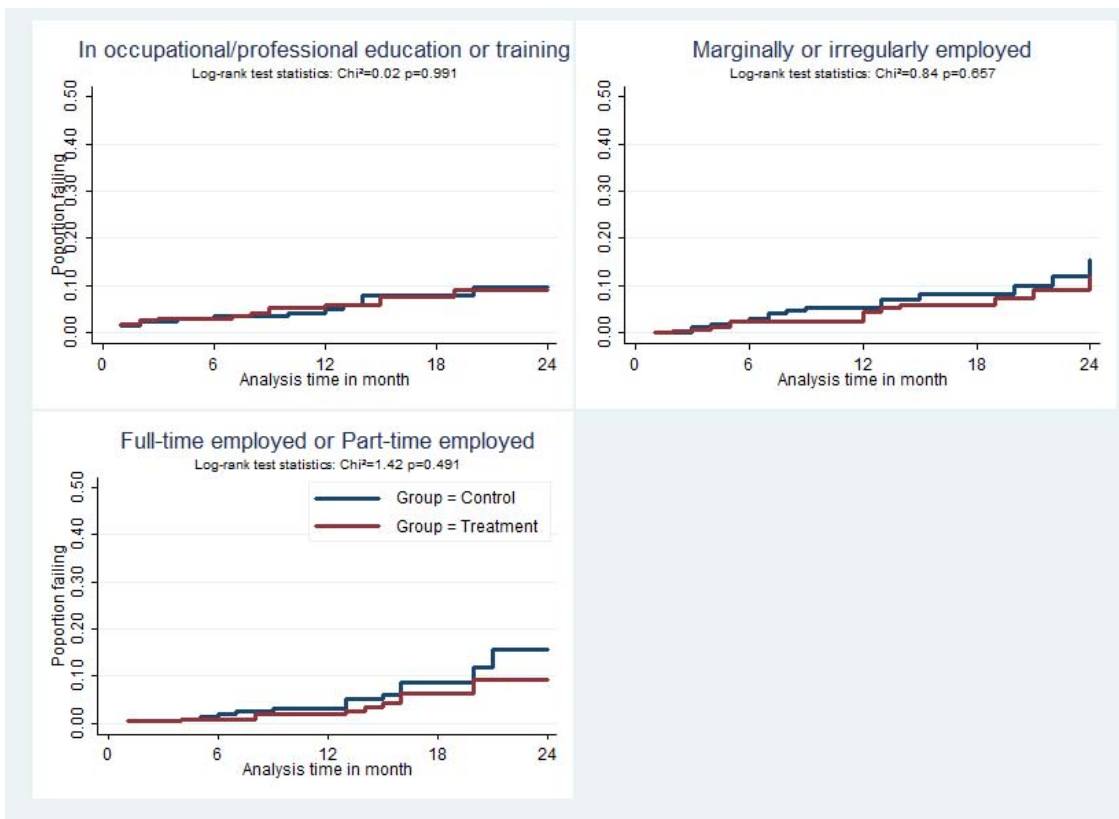
G   Interaction teenage Mother

	(1)	(2)	(3)
	Second pregnancy	Childcare	Employment
Group	0.154	0.459	-0.489
	(0.47)	(1.51)	(-1.70)
Teen	0.144	-0.294	-0.243
	(0.32)	(-0.62)	(-0.68)
Interteen	0.0268	-0.288	0.584
	(0.05)	(-0.45)	(1.17)
N	234	350	526

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

H   Interaction emigrant Mother

	(1)	(2)	(3)
	Second pregnancy	Childcare	Employment
Group	0.292	0.315	-0.262
	(0.93)	(1.03)	(-1.02)
Emig	0.374	0.111	0.139
	(0.82)	(0.23)	(0.37)
Interemig	-0.592	0.614	-0.182
	(-0.84)	(0.99)	(-0.28)
N	234	350	526

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

I   Interaction Mother in Partnership with biological Father

	(1) Second pregnancy	(2) Childcare	(3) Employment
Group	-0.0972	0.134	-0.481
	(-0.33)	(0.43)	(-1.62)
Part	-2.223*	-0.441	0.0567
	(-2.17)	(-0.80)	(0.16)
Interpart	2.068	0.959	0.473
	(1.89)	(1.49)	(0.95)
N	234	350	524

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

J   Interaction Mother lives in Lower Saxony

	(1) Second pregnancy	(2) Childcare	(3) Employment
Group	0.401	0.614	-0.333
	(0.95)	(1.87)	(-1.05)
Nds	0.596	-0.638	-0.0627
	(1.39)	(-1.48)	(-0.19)
Internds	-0.439	-0.666	0.0800
	(-0.79)	(-1.16)	(0.17)
N	234	350	525

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

K   Interaction Mother lives in Bremen

	(1) Second pregnancy	(2) Childcare	(3) Employment
Group	0.281	0.0957	-0.160
	(0.82)	(0.28)	(-0.57)
Bremen	0.334	0.0830	0.227
	(0.78)	(0.18)	(0.68)
Interbremen	-0.337	0.802	-0.443
	(-0.59)	(1.43)	(-0.87)
N	234	350	526

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

L   Interaction Mother lives in Saxony

	(1) Second pregnancy	(2) Childcare	(3) Employment
Group		0.467	-0.398
		(1.48)	(-1.48)
Saxony		0.771	-0.206
		(1.69)	(-0.51)
intersaxony		-0.237	0.433
		(-0.40)	(0.78)
N		350	526

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$