

# Effects of Early Childhood Intervention on Maternal Employment, Fertility and Well-Being: Evidence from a Randomized Controlled Trial

*Preliminary and Incomplete*

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## **Abstract**

This paper presents the results of a randomized study of a home visiting program implemented in Germany for low income first-time mothers. A major goal of the program is to improve the participants' economic self-sufficiency and family planning. I use administrative data from the German Federal Employment Agency and detailed telephone surveys to examine the effects of the intervention on maternal welfare benefits, employment, and household composition. The use of administrative data minimizes sample attrition which is often prevalent in field experiments investigating low income populations. The findings of the study reveal that the intervention unintentionally decreased maternal employment and increased subsequent births. The program's effect on fertility can be explained by higher maternal life satisfaction and well-being in the treatment group which led to fewer abortions compared with the control group. These results are in contrast to those of previous studies from the United States, where home visiting programs increased employment and decreased fertility.

JEL-Classification: J13, J12, I21, H52

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# 1 Introduction

The outcomes of early childhood intervention programs have gained much attention in the economic literature in recent years. Evidence from experimental studies suggests that these programs improve the cognitive and socioemotional abilities and the health of disadvantaged children (see Almond and Currie, 2011; Karoly et al., 2005, for a review of the literature). Because of the dynamic processes of skill formation, these early investments in children can reduce future inequality and yield high cost-benefit ratios in the long run (Cunha and Heckman, 2007; Heckman et al., 2013; Belfield, 2006).

Despite these promising results for children, so far there has been little research on the impact of early childhood interventions on certain dimensions of the maternal life course, such as maternal well-being, employment, education, fertility, and child-care use although some interventions primarily focus on these topics. The neglect is surprising because changes in birth spacing (Buckles and Munnich, 2012; Black et al., 2010) or maternal employment and related childcare arrangement (Bernal and Keane, 2011) influence child development and can therefore provide channels why and how programs affect child development. The intervention with the strongest maternal focus are home visiting programs, in which nurses consult with disadvantaged mothers for a longer period after birth. These programs try to enhance parental skills such as attachment behavior, interactions, and teaching skills and directly target women's personal strengths, including self-efficacy, problem-solving abilities, self-esteem, and the ability to create and maintain social networks.

It is likely that the improved parental skills and personal strengths influence the maternal life course. However, the direction and size of their effects are unclear. On the one hand, the intervention could lead to higher maternal participation in the workforce or education by improving mothers' awareness of their personal strengths. On the other hand, the intervention could increase women's satisfaction with the maternal role by improving their parenting skills. However, greater maternal satisfaction and well-being could positively influence fertility decisions and, consequently, lead to longer absences from the workforce. The only evidence from randomized field

experiments regarding which of the two effects predominates comes from the United States, where home visits decreased fertility and increased maternal employment (Olds et al., 2007, 1997; Brooks-Gunn et al., 1994).

This paper reports the effects of the *Pro Kind* Project, the first randomized experiment of one such home visiting program in a European context on the maternal life course. The intervention aims to improve maternal economic self-sufficiency, family planning and parental competencies to improve child development and health. The *Pro Kind* sample consists of 755 first-time mothers on welfare in three German states. The mothers, who are randomly assigned to either the treatment group which received home visits during pregnancy and for the following two years, or to the control group.

My analysis draws on administrative data from the Federal Employment Agency containing information about employment, wage, welfare benefits and household composition and biannual telephone interviews. The administrative data is available for over 90% of the sample over the first three year after birth of the first child. They are objectively measured and should not be biased by the treatment and control groups differentially reporting outcomes. The survey data allow examination of a much richer set of outcomes, like fertility planning, childcare use, and subjective statements about well-being and life satisfaction, allowing to identify channels for potential findings. However, with a declining effective response rate over time, the data is subject to potential nonresponse bias. My available evidence on this issue is limited but reasonably reassuring. The obtained data are unique because they offer a particularly close look at the life outcomes of disadvantaged first-time mothers in the first three years after the birth of their first child.

I find that the *Pro Kind* Project significantly increased the probability of a second birth among the intervention group by 36 percent relative to the mean in the control group. Consequently the intervention decreased the months employed and increased the months on welfare after birth. The effect on fertility is mainly explained by the lower number of abortions among the women in that group. I do not have evidence that mothers in the treatment group were more likely to welcome subsequent births because of more favorable family environments like more stable

partnerships compared with the control group. However, the intervention positively influenced subjective maternal well-being and life satisfaction, which might have influenced fertility decisions.

The results of the *Pro Kind* study substantially differ from the results of previous home visiting studies which also included samples of low income first-time mothers conducted in the United States. One possible reason for the different results is the arrangement of the German welfare state. This welfare state is characterized by generous social assistance rules that guarantee a fixed welfare amount per child and unconstrained social assistance until the child's third birthday. It is likely that in a welfare state environment in which mothers with small children have no work obligations and their incomes increase with subsequent births, the interventions' impacts on maternal skills and life satisfaction might lead to subsequent births. In contrast, in the United States, the incentives for having another child are low because of the maternal budget constraints induced by stricter welfare regulations, especially in the time since the mid-1990s.<sup>1</sup> Therefore, in the United States, home visiting might lead to increased maternal workforce participation instead of increased fertility. These effects on the mother can be a major explanation why early childhood interventions are more or less effective for child development in different settings.

The remainder of the paper is organized as follows: Section 2 reviews the existing literature about the effects of home visiting on the maternal life course. Section 3 gives a description of the *Pro Kind Project* and the experimental design, the baseline sample and the data used in this study. Section 4 presents the results, and section 5 provides concluding remarks.

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<sup>1</sup>In 1996, the Temporary Assistance to Needy Families (TANF) program eliminated the legal entitlement to cash welfare by imposing a 60-month lifetime limit on benefits and requiring individuals to leave welfare for work after two years. Furthermore, three of the four stated goals of the TANF program involved reducing non-marital births and encouraging marriage (Blank, 2002). However, even Aid to Families with Dependent Children (AFDC), the program that preceded TANF, was stricter than the welfare system in Germany today. Under AFDC, only single mothers were eligible for cash benefits, which were rather low (the monthly benefits for a single-parent family with two children and no income ranged from \$120 in Mississippi to \$597 in Vermont). Additionally, AFDC primarily used in-kind transfers, such as food stamps, and included significant work obligations (Moffitt, 1998; Gebhardt and Jacobs, 1997).

## 2 Related Literature

There are only a few studies in the literature examining the impact of early childhood programs, and of home visiting programs in particular, on parents. For example, in the famous Perry Preschool Program, although home visits were part of the intervention, none of the 715 evaluated outcomes focused on parents (Heckman et al., 2010). However, the effects on parents might be one undetected link for the success of the program. The only program in which effects on parents were systematically evaluated is the research on the Nurse Family Partnership Program (NFP). This program is conceptually similar to the *Pro Kind Project*, and like the *Pro Kind Project*, it aims to increase maternal economic self-sufficiency. The NFP was evaluated in three different randomized controlled trials. The first evaluation took place in Elmira, New York beginning in 1980, with mainly white first-time mothers participating (Olds et al., 1997). The next evaluation began in 1990 in Memphis, Tennessee, enrolling single, black, low-income first-time mothers (Olds et al., 2010). The third evaluation began in 1995 in Denver, Colorado (Olds et al., 2004), with participants who were mainly single, low-income Hispanic first-time mothers. In all three trials, both the maternal life course and child outcomes were of prime interest. The availability of follow-up outcome data varies among the trials and ranges from four years of data for the Memphis trial to 15 years for the Elmira trial.

The NFP literature shows a reduction in the rates of subsequent pregnancies and births and an increase in the intervals between first and second pregnancies and births in all three trials for the first four years after mothers enter the program. In all three trials, the intervention reduced women's use of welfare, and in two of the three trials, the intervention increased maternal employment. Generally, more stable partnerships and a reduction in subsequent births can explain these effects. Long-term follow-up revealed that the impacts on the maternal life course did not diminish over the years. However, the intervention did not affect the mothers' school graduation rates in any of the trials, although higher school attendance was recognized in the Elmira trial. Appendix Table A1 summarizes the three trials'

results regarding maternal life course. Only one study in addition to the NFP analyzed the effects of home visiting on the maternal life course using a randomized experiment (Brooks-Gunn et al., 1994). In that study, home visiting significantly decreased unemployment.

Cost/benefit analyses of the Elmira and Memphis trials indicate that the NFP reaches the fiscal break-even point via its effects on the maternal life course, even before considering effects on the children. In Elmira the program cost of \$3,133 face discounted savings of \$3,246 expressed in 1980 US-\$ by child age four. The main reason for these savings was increased maternal employment (Olds et al., 1993). In Memphis, the NFP resulted in \$12,300 in discounted savings per intervention compared with the program's cost of \$11,511 (both expressed in 2006 US dollars) by child age twelve. Higher maternal employment and lower government spending on food stamps, Medicaid, AFDC, and TANF generated these savings (Olds et al., 2010). These results show that home visiting programs, and the NFP in particular, have strong effects on the maternal life course and great fiscal relevance. However, it remains an open question whether these results are transferable to Germany, a state with comparably generous regulations for mothers on welfare.

### **3 The *Pro Kind Project*: A Social Experiment**

#### **3.1 Background**

*Pro Kind* is an adaptation of the previously described Nurse Family Partnership (NFP) program, which provides instructions for home visit frequency, employee selection, teaching material, and guidebooks (see Jungmann et al., 2009; Olds, 2006, for more information about the *Pro Kind* project and NFP). The intervention starts between the 12th and 28th weeks of pregnancy and ends at the child's second birthday. Midwives conduct the home visits either continuously or in a tandem model with social pedagogues and a pediatric nurse (Brand and Jungmann, 2012). The frequency of the home visits varies according to the NFP model prescription between weekly, biweekly, and monthly visits, with the highest visit frequency directly before and after birth.

Overall, 52 home visits with an average duration of 90 minutes are scheduled between pregnancy and the child's second birthday. Teaching materials and visit-by-visit guidelines structure the theme and aim of each home visit. Nevertheless, home visitors have the flexibility to adapt the contents to maternal needs and the familial situation. All home visitors regularly receive feedback, encouragement, reflection, and support from nurse supervisors.

The *Pro Kind Project* only registers first-time mothers between their 12th and 28th weeks of gestation. All participants must receive social welfare or unemployment benefits, have an income qualifies them for social welfare benefits or have excessive debt. Additionally, all participants must have one of the following social risk factors: a low educational level, teenage pregnancy, isolation, health problems, or having been a victim of violence. Project partners, like gynecologists, job centers, pregnancy information centers, and youth welfare offices, referred about 75% of the participants to Pro Kind, and about 25% self-registered in the program.

The *Pro Kind* project was implemented in three German federal states in 13 implementation sites between 2006 and 2012 (see Appendix Table A1 and Figure A1). Although the chosen sites are not fully representative of Germany, the communities cover both rural and urban regions as well as regions in both Eastern and Western Germany. This mixture of sites ensures that the program is implemented under varying regional conditions in terms of availability of childcare, healthcare provision, and labor market conditions.

A major goal of the *Pro Kind* Program is to improve families' economic self-sufficiency by helping parents develop a perspective for their future and make appropriate decisions about planning future pregnancies, finishing their education, and finding employment. A legitimate question is why home visiting in general, and *Pro Kind* in particular, would produce effects in these domains. This question especially crucial because the German welfare state offers generous benefits to the mothers of infants and toddlers. For example, there are no work obligations or welfare cuts as long as a mother lacks childcare arrangements. As a result, there are few incentives for mothers to participate in the labor market. Furthermore, in addition to the *Pro Kind* Program, various services offer help and support, especially for mothers (e.g.,

the labor agency provides special programs for unemployed people who are younger than 25 years and for single mothers).

The main answer why the *Pro Kind* program can have additional effects on maternal life course and employment can be explained by the relationships that the home visitors develop with the mothers during their pregnancies and their children's early years. The strongest factor that initiates and deepens this relationship is the mother's first experience with a newborn child. Olds et al. (2010) state that through this relationship, nurses can help parents gradually gain a sense of mastery for overcoming challenges and position themselves to create the kind of life they want. Furthermore, mothers with newborns are often open-minded to guidance during this fundamental life transition, during which they make important choices that shape the trajectories of their lives and those of their children. Thus, their ability to build relationships and meet clients at their most open-minded are home visiting programs' greatest advantages compared with other interventions.

### **3.2 Randomization Process and Sample Description**

The causal effects of the *Pro Kind* intervention are evaluated using a randomized controlled trial. At the beginning of the randomization process, all women answered a short screening questionnaire to check if the affiliation criteria were fulfilled, usually by telephone. If these criteria were met, the supervisor visited the mother at her home. At this visit, participants or, if they were underage, their parents, signed an informed consent form for participating in the study. Afterwards, participants answered a baseline questionnaire to assess demographic and psychological characteristics, as well as risk factors. Up to this point, the mothers only received information about the research study and as little information as possible about the home visits in order to minimize the "John Henry" effect for mothers in the control group.<sup>2</sup> After answering the baseline questionnaire, women received the results of the randomization that assigned them either to the home visit or to the control group. The final sample for the *Pro Kind* experiment consists of 755 mothers, where

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<sup>2</sup>The "John Henry" effect explains an unexpected outcome of an experiment caused by the control group's knowledge of its role in the experiment. This knowledge encourages the group to perform differently and often better than they would have otherwise, eliminating the effect of the experimental manipulation (Salkind, 2010).



394 mothers were assigned to the treatment group and 361 to the control group.

After randomization, mothers in both research groups had access to the regular German welfare state services. They received an address list with support services in their communities and monetary incentives for participating in the study.<sup>3</sup> Therefore, families in the control group also received more support than the average first-time low-income family in Germany. However, only women in the treatment group received the *Pro Kind* home visits.

Table 1 reports the means and the differences in means according to treatment status for the baseline variables. Sample means or values from a multivariate imputation procedure are used in the case of missing values for baseline variables. However, complete data is available for most variables, and missing values are equally distributed between the control and treatment groups (see Appendix Tables A4 and A5). The results only hardly change when the missing values are used instead of the sample means or imputed values.

Differences in the average characteristics of the control and treatment groups are small and generally not statistically significant. Migrant status, defined among the mothers as not having German citizenship or not having been born in Germany, is the only demographic characteristic that is significantly different; the control group having a higher proportion of immigrants compared with the treatment group. None of the differences in psychological or physical risk characteristics are statistically significant. Furthermore, I conduct a test of joint significance of all the baseline characteristics. The F-statistic is 1.19; thus, the possibility that the characteristics of the treatment and control groups are the same could not be rejected. Hence, overall, the randomization appears to have successfully created comparable treatment and control groups.

An analysis of the demographic and psychological characteristics of the participants reveals that the women in both groups are young and highly disadvantaged. Most of the mothers are unemployed at the time of the baseline interview and have never been regularly employed. The low employment levels seem to be a consequence of the fact that a high percentage of the mothers (approximately 75%) have less than

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<sup>3</sup>The monetary incentive was €15 for the interview during pregnancy and at 6 months, €20 for the interview at 12 months, and €25 for the interview at 24 months.

Table 1: Descriptive Statistics

	Control Group Means (1)	Treatment Group Means (2)	Treatment vs. Control (3)
<i>Demographic Characteristics</i>			
Age in Years	21.53	21.27	-0.27 (0.31)
Week in Pregnancy	20.30	19.76	-0.53 (0.42)
Underage	0.18	0.21	0.04 (0.03)
Migration Background	0.18	0.12	-0.05* (0.03)
HH-Income per Month (€)	916.62	937.28	17.54 (40.60)
Debt Over €3,000	0.17	0.19	0.02 (0.03)
No Graduation	0.75	0.78	0.06 (0.04)
Low Income	0.81	0.82	0.01 (0.03)
No Employment	0.86	0.82	-0.04 (0.03)
No Partner	0.28	0.29	0.01 (0.03)
Living with Parents	0.27	0.28	0.01 (0.03)
Persons in HH	2.45	2.55	0.09 (0.12)
<i>Selected Psychological and Physical Characteristics</i>			
Unwanted Pregnancy	0.17	0.18	0.01 (0.03)
Daily Smoking	0.34	0.34	-0.01 (0.03)
Social Isolation	0.08	0.06	-0.02 (0.02)
Foster Care Experience	0.19	0.23	0.04 (0.03)
Experience of Neglect	0.39	0.38	-0.01 (0.04)
Experience of Loss	0.54	0.49	-0.05 (0.04)
Experience of Violence, ever	0.09	0.08	-0.01 (0.04)
Depression	0.13	0.10	-0.03 (0.02)
Anxiety	0.18	0.17	-0.01 (0.03)
Stress	0.29	0.31	0.03 (0.03)
Aggression	0.19	0.14	-0.04 (0.03)
Med. Indicated Risk Preg.	0.11	0.11	-0.01 (0.02)
Body Mass Index (BMI)	25.31	25.22	0.16 (0.39)
Sum Risk Factors	5.86	5.73	0.04 (0.03)
Observations	361	394	755

Notes: Robust standard errors are reported in parentheses in column 3. Column 3 presents the coefficient on the treatment dummy from a regression model with the treatment dummy plus community dummies. See Appendix Tables A2 and A3 for variable definitions.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

eleven years of schooling; many of them have dropped out of school. Furthermore, the average monthly household income is €928.60. Considering the mean household size of 2.49 persons, the participants' average income is below the poverty line in Germany. These figures indicate that *Pro Kind* was successful in recruiting families on welfare and those with low education levels, who were the target population of this intervention.

### 3.3 Utilization of the *Pro Kind* Home Visiting

To monitor the *Pro Kind* program fidelity and service utilization, the home visitors documented each visit (e.g., duration, covered topics, maternal interest).<sup>4</sup> Alto-

<sup>4</sup>See Brand and Jungmann (2014) for further description of program design and implementation.

gether, 12,894 home visits with an average duration of 82 minutes were conducted. The families in the treatment group received 32.7 home visits on average (SD = 19, range: 0-94). Only 9 of the 394 mothers in the treatment group received no home visit. Therefore, almost all families who participated in the developmental tests received at least some treatment. Because participation in the *Pro Kind* project is voluntary, 166 (42.2%) mothers decided to leave the program before the child's second birthday (main reasons: no further interest [n = 68], not reachable [n = 37], and moving away from a *Pro Kind* community [n = 28]). Considering only families who received the *Pro Kind* home visits until the child's second birthday increases the average number of home visits to 45.3 (SD = 10.7, range: 11-94) showing that the intervention was well implemented for families who stayed in the program until the child's second birthday. The costs for an average intervention of 32.7 home visits amounted to €8,705, or approximately \$ 11,752 in 2007. (Maier-Pfeiffer et al., 2013)

Maternal life course issues and economic self-sufficiency are fundamental topics of the *Pro Kind* Program. This is illustrated by the amount of time the home visitors spent on these topics. The home visiting documentation demonstrates that, at all developmental stages, home visitors invested 40% of their time with the family to addressing issues related to the maternal life course and employment (Appendix Table A3). Additionally, the *Pro Kind* Program devoted more time to these domains than the NFP did, on average, and it exceeded the average recommended in the NFP guidelines. Overall, the implementation and the included participants were very similar in the NFP and *Pro Kind*. Therefore, the *Pro Kind* research team expected similar outcomes of the intervention than in the US.

## 4 Data

### 4.1 Administrative Data

I obtained individual-level data of the integrated labour market biographies of the Federal Employment Agency. The data contains information about maternal employment, kind of employment, wage, welfare benefit use, job search, age, residence

community and household composition. Studies that have also used these Federal Employment Agency data are, for example, Schmieder et al. (2012) or Card et al. (2013). The Record Linkage Center of the Federal Employment Agency used the full name, full address, and date of birth to match the treatment indicator and quarter of affiliation of 740 participants to their labour market biographies.<sup>5</sup> The Agency was able to track 703 participants. For all tracked participants data is available from affiliation into the project until 36 months after birth of the treatment child. My primary outcomes of employment and welfare use thus have an effective post-randomization “attrition rate” of 7%. Only household composition which I use as measure for fertility has a slightly higher “attrition rate” of 11% because the information is only available if the mother was either on job search, or received welfare benefits.<sup>6</sup>

## 4.2 Telephone Survey Data

In addition to the administrative data, I use data of biannual telephone interviews with the mothers. The telephone interviews start during pregnancy and continue at six-month intervals until the child’s third birthday. The interviews are computer-assisted and contain all of the questions that are recommended when using the German Socioeconomic Panel (SOEP) as a reference data set including questions about the participants’ household, income, employment, childcare use, family planning and partnership and maternal well-being, and life satisfaction (Siedler et al., 2009). Furthermore, the interviews contain the SOEP activity calendar to record the participants’ employment status on a monthly basis, and the SOEP mother-child questionnaire to record maternal attitudes toward each new born child of the mother (Anger et al., 2009).

The telephone interviewers attempted to contact all of the mothers at each time point, except in cases of miscarriage or infant death. To guarantee a high participation rate, the interviewer attempted to contact the participant four times within two months near the interview date. If no contact could be made during this time

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<sup>5</sup>15 participants of the 755 participants in the baseline sample refused participation in the informed content and were not used for the merging process.

<sup>6</sup>Information about age and residence community is only available if the mother was either employed, on job search, or received welfare benefits.

span, the interviewer attempted to contact the mother for the next scheduled interview four months later. If contact could be made for this interview, a combined interview regarding the time span for the two interviews was conducted. However, no interview covered a period longer than 12 months to avoid recall bias. Therefore, some participants missed one or two telephone interviews and continued to participate in subsequent telephone interviews. The main reasons for missed interviews were switching telephone numbers or refusing to participate. Overall almost 80% (n=602) of the mothers were interviewed at least once after pregnancy and for 71% (n=539) of the mothers data is available for a least 12 months after birth. 39% (n=296) participated in all interviews without missing data for any months after birth.

## 5 Validity of the Experimental Design

Table 2: Sample Composition Telephone Interviews

	Control Mean (std. dev.) for Full Sample (1)	Difference Between TG and CG (2)
<b>Panel A: Administrative Data</b>		
Compliant to Merging	0.986 (0.117)	-0.012 (0.010) [0.257]
Merged	0.945 (0.229)	-0.026 (0.018) [0.162]
<b>Panel B: Telephone Survey Data</b>		
At Least One Interview After Birth	0.784 (0.412)	0.026 (0.029) [0.381]
Data Available for 12 Months After Birth	0.698 (0.460)	0.030 (0.033) [0.357]
Data Available for 24 Months After Birth	0.557 (0.497)	0.045 (0.036) [0.214]
Complete Data from Birth Until Third Birthday	0.380 (0.486)	0.024 (0.036) [0.500]
<i>Observations</i>	<i>755</i>	<i>394</i>

Notes: Robust standard errors in parentheses and p-values in brackets. Administrative data in Panel A is available for 36 months after birth of treatment child. TG = Treatment Group; CG = Control Group.

Differences in attrition or in the prerandomization characteristics of the treat-

ment and control analysis samples would raise concerns about the validity of the experiment to identify causal inference. Therefore, Table 2 summarizes the sample composition from the administrative (Panel A, Column 1) and the survey data (Panel B, Column 1) and analysis the treatment-control balance (Column 2). The results in Column 2 indicate no significant differences between treatment and control groups in the response rates either for the merged administrative data or the survey data.

Table 3 presents the differences in the baseline demographic characteristics between the treatment and control groups for the administrative data (Column 1) and the survey data grouped by the availability of data (Column 2-5). Appendix Table A6 shows the differences in psychological characteristics. The results reveal that the equal distribution of the baseline characteristics is only slightly reduced by attrition. Only the difference in the proportion of mothers with migrant backgrounds, which is already significant at baseline, remains significant for almost all of the interviews.<sup>7</sup>

## 6 Estimation Strategy

To analyse the effects of the intervention on maternal employment, fertility, childcare use, and partnership stability, I estimate the intent-to-treat (ITT) effects of the *Pro Kind* intervention using the multivariate model in Equation 1:

$$Y_{ic} = \beta_0 + \beta_1 HV_{ic} + \beta_2 h_{ic} + \alpha_c + \epsilon_{ic}, \quad (1)$$

where  $Y_{ic}$  denotes an outcome variable for mother  $i$  from community  $c$ .  $HV_{ic}$  is a dummy variable that takes a value of one if the mother receives the home visits.  $h_{ic}$  is a vector of demographic and psychological family characteristics at baseline;  $\alpha_c$  are community dummies; and  $\epsilon_{ic}$  is the error term.  $\beta_1$  measures the difference in outcome  $Y$  between the treatment and control groups.

I estimate the extensive and intensive margin of employment and welfare benefits with linear models. The results are not sensitive for estimating nonlinear models for

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<sup>7</sup>Appendix Tables A7 shows, some characteristics and risk factors differ between those who dropped out and those who participated in the follow-up interviews. Generally, the participating mothers are older and have fewer cumulative risk factors. The only differences between the participants who are merged and those who are not merged to the administrative data is migration status. This likely because migrants less often participate in the labour market and less often are eligible to welfare benefits.

Table 3: Selective Attrition between TG and CG Demographic Characteristics - Administrative and Survey Data

	Difference TG/CG for:				Complete data from Birth Until Third Birthday (5)
	Merged (1)	At Least One Interview After Birth (2)	Data Available for 12 Months After Birth (3)	Data Available for 24 Months After Birth (4)	
<i>Demographic Characteristics</i>					
Age in Years	-0.314 (0.329)	-0.0637 (0.364)	0.0411 (0.393)	0.0872 (0.445)	0.313 (0.578)
Week in Pregnancy	-0.423 (0.433)	-0.623 (0.466)	-0.429 (0.495)	-0.164 (0.548)	0.0986 (0.665)
Migration	-0.0594** (0.0259)	-0.0592** (0.0298)	-0.0546* (0.0317)	-0.0548 (0.0355)	-0.0701 (0.0462)
Underage	0.0371 (0.0296)	0.0243 (0.0318)	0.0150 (0.0325)	0.0344 (0.0346)	0.0342 (0.0399)
Mon. HH-Inc. in €	18.24 (43.69)	33.60 (48.27)	5.046 (48.63)	-3.292 (54.22)	31.79 (67.26)
Debt over 3000 €	0.0259 (0.0294)	0.0275 (0.0319)	0.0230 (0.0342)	0.0319 (0.0381)	0.0565 (0.0478)
Education Risk	0.0310 (0.0319)	0.0213 (0.0359)	0.0214 (0.0387)	0.0223 (0.0441)	0.0505 (0.0552)
Income Risk	0.0193 (0.0291)	0.00392 (0.0327)	0.0117 (0.0349)	0.0229 (0.0399)	0.0102 (0.0506)
Employment Risk	-0.0272 (0.0279)	-0.0353 (0.0312)	-0.0429 (0.0336)	-0.0495 (0.0384)	-0.0734 (0.0495)
No Partner	0.0163 (0.0346)	0.0324 (0.0369)	0.0422 (0.0386)	0.0351 (0.0435)	0.0268 (0.0546)
Living with Parents	0.00674 (0.0336)	0.0104 (0.0365)	-0.00503 (0.0383)	-0.0155 (0.0422)	-0.0311 (0.0508)
Persons in HH	0.0508 (0.126)	0.148 (0.136)	0.0897 (0.136)	0.0316 (0.148)	-0.0784 (0.181)
Lower Saxony	0.0319 (0.0365)	0.0189 (0.0395)	0.0346 (0.0416)	0.0238 (0.0460)	0.00308 (0.0570)
Bremen	-0.0234 (0.0345)	-0.00335 (0.0377)	-0.0178 (0.0399)	-0.00195 (0.0447)	0.0247 (0.0552)
Saxony	-0.00851 (0.0356)	-0.0155 (0.0383)	-0.0167 (0.0406)	-0.0219 (0.0451)	-0.0278 (0.0523)
	703	602	539	438	296

Notes: Robust standard errors are shown in parentheses. Dependent variables shown in the first column. The treatment indicator has the value one if the mother is in the treatment group. Column (1) contains estimates of the average difference in characteristics between mothers in the control and treatment group including community fixed effects for the participants merged with the administrative data. Column (2)-(5) contain these estimates for the survey data. See Appendix Tables A4 and A5 for variable definitions. TG = Treatment Group; CG = Control Group.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

the binary outcomes instead. In a first step, I estimate models without  $h_{ic}$  and  $\alpha_c$  than I include  $h_{ic}$  and  $\alpha_c$ . In the estimations with the administrative data the only available baseline characteristic is maternal age whereas in the survey data several baseline characteristics can be included to give more precision to the estimates.

## 7 Results

### 7.1 Administrative Data

Table 4 examines the effects of *Pro Kind* on occupations, public assistance and household composition using administrative data from the Federal Employment Agency. Column 1 in the first row presents the percentage of mothers who were at least one month employed. The next three rows separate employment into part/full time employment, apprenticeship or marginal employment. Each of the four variables take the value one if the mother worked at least one month after birth of the treatment child in one of the three types of occupation.<sup>8</sup> Column 4 shows the mean of the total months in one of the occupations in the first three years after birth of the treatment child.

The number of months employed is low (6.39) among the mothers in the control group in the first 36 months after birth. This is not surprising as the employment incentives are small for low earning new mothers in Germany. In contrast, the percentage of mothers who began work in any occupation (52% in the CG) is relatively high compared with the average number of months that they spent working. This result indicates a high amount of job fluctuation and short employment periods in the sample. Participants are most often employed in marginal employment, but also apprenticeship plays a larger role, in particular when total months employed are considered. The prevalence of apprenticeship documents that many participants have not completed their vocational training before birth and that they are oriented towards completing it after birth.

Analyzing the impact of the treatment on employment reveals that home visiting reduces the percentage of mothers with any employment and the number of months employed. These effects are large and significant. The rate of employed mothers is reduced by 8.7 percent points to a rate of 43.4 percent points; the months employed are reduced by 1.5 months to 4.87 months which is a decrease by 23.8 percent of the time worked by the mean of the mothers in the control group. When analyzing the different types of employment, the effect is strongest for parttime/fulltime employ-

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<sup>8</sup>Throughout this chapter, the treatment child indicates the first child of the mother who was in focus of the intervention.



Table 4: Maternal Life Course Outcomes 36 Months after Birth of the Treatment Child - Administrative Data

	Extensive Margin (any)			Total Months		
	Control Mean	Diff. TG/CG	p-values	Control Mean	Diff. TG/CG	p-values
	(1)	(2)	(3)	(4)	(5)	(6)
Any Occupation	0.521 [0.479]	-0.088** (0.038)	0.019	6.392 [9.086]	-1.550** (0.652)	0.018
Parttime/Fulltime Employed	0.191 [0.393]	-0.052* (0.028)	0.061	1.642 [4.826]	-0.645** (0.319)	0.043
Apprenticeship	0.202 [0.402]	-0.012 (0.030)	0.696	2.369 [5.999]	-0.223 (0.449)	0.620
Marginal Employment	0.305 [0.461]	-0.054 (0.034)	0.114	2.299 [5.071]	-0.664* (0.345)	0.055
Welfare	0.964 [0.295]	0.030** (0.013)	0.023	31.92 [12.71]	1.840** (0.904)	0.042
<i>Observations</i>	<i>341</i>	<i>703</i>		<i>341</i>	<i>703</i>	
Second Child in HH	0.183 [0.363]	0.066** (0.032)	0.037			
<i>Observations</i>	<i>323</i>	<i>677</i>				

Notes: Standard deviations in square brackets; robust standard errors in parentheses. Columns (2) and (5) report the coefficient and standard error on Home Visiting (HV) from estimating equation (1) by OLS. Data is available on a monthly base from affiliation to 36 months after birth. TG = Treatment Group; CG = Control Group; HH=Household.

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

ment. The extensive margin is reduced by 27.2 percent in comparison to the mean of the control group and the intensive margin by 39.3 percent in comparison to the mean of the control group. Only apprenticeship is not significantly reduced by the treatment.

The fourth row “welfare” indicates whether and how many months in average a mother lived in a household that received public assistance. The figure in column 1 shows, corresponding with the affiliation criteria, that 96.4 percent of the mothers in the control group received public assistance at least one months in the first 36 months after birth. Also the total months (31.92) indicate that the participants’ households received welfare 88.6 percent of the time in the 36 months after birth. In line with the reduction of employment the treatment significantly increased the share of participants households on welfare and the number of months on welfare.

Next, I turn to the outcome fertility. “Second Child in HH” is a binary variable that takes 1 if two or more children are living in the household and 0 if one or no child is living in the household.<sup>9</sup> Because data on household composition is only recorded

<sup>9</sup>There can be no children in the household in case of a miscarriage of the first pregnancy or in case of an adaption

for households which receive welfare benefits or were job seeking the number of observations are slightly reduced. While in the control group 18.3 percent of the participants live in a household with two or more children within the timespan of 36 months after birth of the treatment child, this rate is 6.5 percent points higher in the treatment group, leading to 24.8 percent of households with more than one child.

All results from the administrative data also hold and get even slightly larger if community controls and age of the mother are included in the models as controls (Appendix A7). The results could not be caused by the selective attrition or reporting bias because employment data and public assistance is available for all mothers for 36 months after birth of the treatment child. Only household composition is not available for all participants. However, a bias is unlikely because most households with a second child will receive welfare benefits and are included in the administrative data.

Overall, the results from the administrative data indicate unintended effects of the intervention. Instead of an intended higher level of employment and economic self-sufficiency and a lower rate of second births the opposite is true. The negative effects on employment and welfare are likely caused by the increased maternal fertility. In the next section, I use survey data to examine if the increased fertility can be explained by a lasting preference change for a larger family and more favorable family environments or because of spontaneous or disregardful decisions. Which of the two alternatives is true might have strong implications on the development of the treatment child and on the overall assessment of the results on the maternal life course.

## 7.2 Survey Data

Table 5 presents results of the telephone survey including the 296 mothers who participated in all interviews until the third birthday of the treatment child. The first six rows of Table 5 include the same outcomes as Table 4. Only the variable “Second Child in Household” is labeled as “Second Birth” because the survey directly

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of the treatment child.

asks for second births and not only for household composition.

In the survey data, the rate of employment in the control group is quite similar to the rate in the administrative data (Table 5, Column 1). However, in the different types of employment greater differences between the two data sources occur. The largest difference in comparison to the administrative data is the self-stated rate of parttime/fulltime employment with a ten percentage points higher share in the survey data in contrast to the administrative data. Additionally, in all categories the mother state more total months employed than in the administrative data. The differences between treatment and control group in employment are smaller than in the administrative data and statistically not significant. However, the sign of the coefficients are in the same direction as in the administrative data with months of apprenticeship as the only exception. The differences in level of employment and size of the effects might be caused by less risk characteristics of the survey sample than in the administrative data sample (see Appendix A7).

In line with the results from the administrative data the mothers state to receive less welfare. However, in this category the effect of the treatment corresponds in size and significance to the administrative data. In the survey data, the rate of second birth in the control group is comparable to the administrative data. The difference between treatment and control group is with 10.2 percent points even higher in the survey data than in the administrative data.

The last four rows in Table 5 contain information which is only measured through the telephone surveys including occurrence of a second pregnancy, constant partnership, child care use, and school attendance. These four outcomes can help to explain why the intervention has the observed unintended effects on employment, welfare use and fertility.

Analyzing the rate of second pregnancies reveals that they do not differ between treatment and control group in contrast to the rate of second births. Therefore, a difference in the pregnancy outcomes must be present at least to some extent. The next row examines partner stability which can be a first indicator whether it is an improved family situation which lead to more births. However, the rate of mothers who are over the 36 months in a constant partnership does not differ between the

Table 5: Maternal Life Course Outcomes 36 Months after Birth of the Treatment Child - Survey Data

	Extensive Margin (any)			Total Months		
	Control	Diff.	p-values	Control	Diff.	p-values
	Mean	TG/CG		Mean	TG/CG	
	(1)	(2)	(3)	(4)	(5)	(6)
Any Occupation	0.555 [0.499]	-0.008 (-0.13)	0.896	7.569 [9.231]	-0.752 (-0.70)	0.481
Parttime/Fulltime Employed	0.299 [0.460]	-0.010 (-0.19)	0.852	2.365 [5.087]	-0.522 (-0.96)	0.339
Apprenticeship	0.255 [0.438]	-0.035 (-0.71)	0.479	2.672 [5.810]	0.442 (0.59)	0.554
Marginal employment	0.248 [0.434]	-0.015 (-0.31)	0.757	2.533 [5.705]	-0.671 (-1.10)	0.272
Welfare	0.912 [0.284]	0.050* (1.73)	0.084	26.511 [11.017]	1.274 (1.04)	0.301
Second Birth	0.175 [0.382]	0.102** (2.10)	0.036			
Second Pregnancy	0.321 [0.469]	0.031 (0.56)	0.574			
Constant Partnership	0.401 [0.491]	-0.005 (0.057)	0.927			
Childcare	0.584 [0.495]	0.083 (1.46)	0.144	7.175 [8.571]	1.894* (1.81)	0.071
School	0.102 [0.304]	-0.014 (-0.41)	0.681	0.934 [3.877]	0.072 (0.15)	0.879
<i>Observations</i>	<i>137</i>	<i>296</i>		<i>137</i>	<i>296</i>	

Notes: Standard deviations in parentheses; standard errors in square brackets. Columns (2) and (5) report the coefficient and standard error on Home Visiting (HV) from estimating equation (1) by OLS. Data is available on a monthly base from affiliation to 36 months after birth. TG = Treatment Group; CG = Control Group; HH=Household.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

groups.

Another channel why home visiting effects fertility might be easier access to child care for the treated mothers and that this improved child care situation influences the mothers' fertility decision.<sup>10</sup> On the other hand home visitors might give the advise that children should not sent to childcare to early. Than child care utilization must be lower in the treatment group which might influence employment take up. However, childcare attendance is slightly positive influenced by the intervention, but not strong enough to explain the fertility effects. Finally it might be that a reason for the lower employment apart from more births might be more school attendance which would be in line with the goals of the intervention. However, the survey data reveals no higher school attendance for the mothers in the treatment group.

<sup>10</sup>Child care is a broad measure whether a child attends childcare or not. It does not include hours or quality of childcare. Child care for low income mothers is usually financed completely by the state in Germany.

The next two sections examine two channels (pregnancy outcomes and maternal life satisfaction) which can explain why fertility is affected by the intervention in more detail.

## 7.3 Channels

### 7.3.1 Family planning

I start the analysis why the intervention had the unintended effects with investigating why more pregnancies lead to life birth in the treatment group. Table 6, Panel A investigates whether more pregnancies occurred in the treatment group than in control group for all mothers who participated in at least one interview after birth. The rate of second pregnancies is 5.5 percent points higher in the treatment group but the difference is statically not significant at a ten percent level confirming the results from the surveys of those mothers who participated in all interviews (Table 5).

Table 6: Second Pregnancy Outcomes in Treatment and Control Groups

<b>Panel A: Second Pregnancy Occurred</b>			
	Control Mean	Diff. TG/ CG	p-value
Pregnancy after First Birth	0.261	0.055	0.136
	[0.440]	(0.037)	
<i>Obs.</i>	283	602	
<b>Panel B: Second Pregnancy Outcome</b>			
	Control Mean	Treatment Mean	Overall Mean
Life Birth	0.527	0.634	0.589
Abortion	0.243	0.149	0.189
Misscarriage	0.135	0.089	0.109
Not Observed	0.095	0.129	0.114
<i>Obs.</i>	74	101	175
<b>Panel C: Multinomial Logit</b>			
	Birth vs. Abortion	Birth vs. Miscarriage	Birth vs. Not Observed
Home Visiting	-0.677*	-0.600	0.123
	(0.405)	(0.503)	(0.512)
<i>Obs.</i>	175	175	175

Notes: Standard errors in parentheses; Standard deviations in square brackets. All mothers with at least one interview after birth are included. In Panel B all pregnancies from Panel A. Panel C is a multinomial logit estimation with Life Birth as baseline category. TG = Treatment Group; CG = Control Group;

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

Panel B investigates the outcomes of all the 175 first stated pregnancies after birth of the treatment child. The pregnancy outcome can be live birth, abortion, miscarriage and outcome not observed. Along with the results of the previous sec-

tions, the results of Panel B reveal that the percentage of pregnancies that led to a live birth is higher in the treatment group. Additionally, the table demonstrates that abortions and miscarriages were more common in the control group than in the treatment group. However, the percentage of pregnant women who were lost to follow-up was only slightly higher in the treatment group. Overall, I can observe 103 births from first pregnancy after birth of the treatment child.

Panel C uses a multinomial logit function to examine the differences in the pregnancies outcomes in more detail. I am interested whether the treatment influences the probability of a live birth in comparison to the other three outcomes. The comparison between treatment and control group reveals that in the treatment group the probability is significantly lower that a pregnancy ended in an abortion instead in a live birth than in the control group. For miscarriage the coefficient is in the same direction and around the same size but not significant. Finally, the probability is only slightly higher in the treatment group that the outcome of the pregnancy is not observed instead of a live birth. These findings confirm that the differences in fertility between the two groups were not caused by selective attrition; rather, they were the result of a reduced number of abortions and miscarriages in the treatment group.

The goal of the *Pro Kind* Program is not to decrease or increase fertility but to support appropriate decisions about fertility. In this context, appropriate decisions mean that only mothers who want a second child and who are able to deal with the challenges of another child get pregnant. Despite the finding that a lower percentage of pregnancies in the treatment group ended in an abortion, it is still unclear whether this is the result of appropriate family planning decisions. To investigate this question, I analyze the life situations and attitudes towards second pregnancies of the mothers who gave birth to a second child or became pregnant a second time.

Table 7 includes the mothers who gave birth to a second child. Data is available for 97 of the 103 second children out of a first pregnancy after birth. The first two rows present answers to questions about whether the child was unplanned or whether the mother had a partner. These questions were asked after the birth of the second child. If the mothers had made appropriate decisions about family planning, one

Table 7: Life Situations of Mothers who Gave Birth to a Second Child

	Control		Treatment		P-value Diff. C-T
	n	%	n	%	
<i>After Birth of sec. Child</i>					
Unplanned Preg.	35	0.57	62	0.61	0.689
Father Does not Live In HH	35	0.29	60	0.40	0.262
No Other Care Apart From Mother	35	0.31	62	0.48	0.104
Mother has no Partner	33	0.06	58	0.17	0.130
Age of the Sec. Child in Mo.	32	8.41	62	6.49	0.352
Age of the Moth. at Births in Years	35	23.4	62	23.9	0.594

Notes: P-values base on z-statistic of a two-group test of proportions. The presented data contains all second children for who data is available. C=Control Group; T=Treatment Group.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

would expect that unplanned pregnancies and pregnancies among women without partners would be uncommon among second-time mothers. However, 61% of the mothers in the treatment group stated that their second child was unplanned. In the control group, this rate was 57%. Furthermore, the other characteristics, such as "no partner" or "father does not live in the household," occurred more often in the treatment group. The difference in results for "no other caregiver apart from the mother" between the groups is statistically significant.

These results may indicate that mothers in the treatment group with fewer resources got pregnant and that these mothers were less responsible about family planning compared with the mothers in the control group. However, these group differences are difficult to interpret because more mothers in the control group aborted their pregnancies. An analysis of the mothers who aborted their pregnancies revealed that two-thirds of the mothers had no partner and that these mothers often described the possibility of future pregnancies as "catastrophic" before they became pregnant again. Therefore, the higher rate of abortions in the control group suggests that attitudes toward subsequent pregnancy were more positive among the mothers in the treatment group compared with those in the control group.

Overall, fewer abortions and fewer miscarriages are the main effects that the *Pro Kind Project* has on fertility. One reason that the *Pro Kind Project* increased the number of mothers who wanted a second child might be greater maternal satisfaction. This satisfaction might have resulted from more positive experiences with their first child and a greater awareness of their personal strengths. Another reason that more mothers in the control group chose an abortion might have been

increased depression and a lower sense of well-being. Both conditions are strongly correlated with abortion (Suri et al., 2004; Aavitsland, 2009). These mental health problems might have been reduced by the intervention. If these explanations are valid, they must be confirmed with subjective measures of maternal life satisfaction and well-being, which discussed in the next section.

### 7.3.2 Life Satisfaction and Well-Being

This section investigates whether the *Pro Kind* intervention influences reports of maternal life satisfaction and well-being. These outcomes were obtained at the interview 27 months after the birth of the treatment child. Maternal life satisfaction and well-being is of great interest because it can give a hint why less abortions in the treatment group occur. An additional aspect of maternal life satisfaction and well-being is that it can positively influence child outcomes (Berger and Spiess, 2011).

Appendix Table A10 provides a descriptive overview of the treatment and control groups' outcomes and the SOEP data for first-time mothers. On eight of the nine satisfaction dimensions, the mothers in the treatment group reported being more satisfied than the mothers in the control group were. The results are similar for the four questions regarding well-being. The mothers in the treatment group reported feeling sad, angry, or worried less often and happy more often. Compared with the mothers in the *Pro Kind* treatment group, the first-time mothers from the SOEP sample were sad less often, happy more often and more satisfied in most categories. The only category in which the *Pro Kind* mothers were more satisfied was housework, possibly because they have fewer opportunities in the labor market and consequently derive greater satisfaction from their work within the home production. Table 9 shows that the differences between the control and treatment groups are significant at a 10% level for the well-being index, which captures satisfaction with life in a variety of specific areas and in general.<sup>11</sup> The standardized effect sizes are meaningful, with values near 0.15 SD.

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<sup>11</sup>Well-being is based on an index indicating how often one is happy versus sad, angry, or worried. Life satisfaction in different areas is based on an index of eight questions related to satisfaction with health, housework, household income, personal income, place of dwelling, free time, childcare availability and family life.



Table 8: Well-Being and Satisfaction with Life

	(1)	(2)	(3)	(4)	(5)	(6)
	Index of Well-Being		Index of Life Satisfaction in Different Areas		Satisfaction with Life in General	
Home Visiting	0.189*** (0.069)	0.167*** (0.043)	0.118* (0.061)	0.106* (0.051)	0.155* (0.097)	0.147** (0.062)
Household Controls	No	Yes	No	Yes	No	Yes
<i>N</i>	434	429	430	425	432	427
<i>R</i> <sup>2</sup>	0.02	0.18	0.01	0.26	0.01	0.18

Notes: Standard errors (in parentheses). Well-Being is an index of less often sad, angry, worried and more often happy. Life Satisfaction in Different Areas is an index of eight questions concerning satisfaction with health, housework, household income, personal income, place of dwelling, free time, child care availability and family life. All dependent variables are standardized with mean of zero. Controls include extended baseline variables, community fixed effects and age of the treatment child. Measurement is in average at 28 months after birth of the treatment child. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

After showing that the *Pro Kind* Program increased maternal life satisfaction and well-being, the investigation sought to determine whether these subjective measures are related to fertility decisions. In line with the literature showing that unhappier women are more likely to have an abortion, mothers who abort their pregnancy in the *Pro Kind* sample have a general satisfaction value of 5.74. Although it is unclear whether low life satisfaction caused the abortions or the abortions led to low life satisfaction, this association provides a first indication that low life satisfaction is correlated with abortions. Further evidence that the greater life satisfaction in the treatment group is related to fertility comes from comparing the mothers who gave birth to a second child in the treatment group with those in the control group. Their life satisfaction levels differed significantly, with a value of 7.61 in the treatment group and 6.42 in the control group ( $T=-3.06$ ;  $nTG=60$ ;  $nCG=33$ ). It is possible that the birth of the second child caused this increase in happiness. However, it is likely that greater life satisfaction was also influenced by better experiences with the first child and that, as a result, the mothers were already happier before they became pregnant a second time. If this is the case, this higher level of happiness could be an explanation for the lower rate of abortions in the treatment group.

## 8 Conclusion

Home visiting programs are a popular type of early childhood intervention for supporting disadvantaged families. While many studies have investigated how these

programs affect child outcomes, this study uses a randomized experiment to answer the much less thoroughly investigated question of how home visiting programs affect the maternal life course. The few previous studies that investigated this topic found that home visiting programs had positive effects on maternal employment and reductions in fertility. In contrast, this analysis of the *Pro Kind Project* reveals that the intervention had negative effects on employment and increase in fertility. The effects on fertility are mainly driven by the lower number of abortions in the treatment group. Furthermore, the *Pro Kind* Program increased the life satisfaction and well-being of the participating mothers.

A randomized experiment is used to evaluate the effects of *Pro Kind* on the maternal life course. Therefore, the effects can be causally linked to the intervention. For the main analysis, I use administrative data which is not in danger of missing data or reporting error. For the analysis of the channels which lead to the unintended outcomes, I rely on survey data which was victim of survey non-response. Nevertheless, a comparison of the baseline characteristics for the treatment and control groups indicates that this attrition was not selective. Therefore, it is unlikely that the sample attrition resulted in problems with the validity of the results.

Previous studies that examined the effect of home visiting on the maternal life course were performed in the United States, whereas the *Pro Kind* Program is located in Germany. Therefore, the differences in the two countries' welfare state systems might explain much of the variation in outcomes between the previous studies and the *Pro Kind* study. In the US welfare state, mothers who receive welfare have fewer incentives to give birth to a second child compared with mothers in Germany. In this European country, each additional child increases the amount of welfare a mother receives, and there are no work obligations or benefit cuts until the child's third birthday. Therefore, the increased maternal skills and life satisfaction that result from the intervention could lead to more births in Germany, whereas in the United States, these improved skills might be directed toward increased labor market participation instead.

The results of this study can increase our understanding of the mechanisms through which early childhood interventions work. On the one hand it is likely

that improved maternal life satisfaction and well-being can partly explain why these programs improve various child outcomes. On the other hand the shorter space between births can have a negative effect on child development which counteracts the other positive effects. It seem that the second effect is predominant because the *Pro Kind* effects on child development are positive but rather small and they are larger at 6 and 12 months and diminish at age 24 months when first unintended effects on fertility occur (Sandner and Jungmann, 2015). It is to worry that effects on child development will decrease further with increasing fertility in the treatment group.

Furthermore, the results provide new insights into how welfare systems influence fertility. Although the literature presents inconclusive findings, if welfare itself affects fertility (Moffitt, 1998; Kearney and Levine, 2012) , the results could be different than those that occur if the welfare system interacts with an early childhood intervention. A consideration of these results might be helpful when considering other policies from the United States that may be implemented in Europe in the future.

## References

- Aavitsland, P. (2009). Abortion and Depression: Cause or Confounding? *Scandinavian Journal of Public Health* 37, 327–328.
- Almond, D. and J. Currie (2011). Human Capital Development before Age Five. In Orley Ashenfelter and David Card (Ed.), *Handbook of Labor Economics*, pp. 1315–1486. Elsevier.
- Anger, S., J. R. Frick, J. Goebel, M. M. Grabka, O. Groh-Samberg, H. Haas, E. Holst, P. Krause, M. Kroh, H. Lohmann, J. Schupp, I. Sieber, T. Siedler, C. Schmitt, C. K. Spiess, I. Tucci, and G. G. Wagner (2009). Developing SOEP-survey and SOEPservice - The (Near) Future of the German Socio-Economic Panel Study (SOEP). *SOEPpapers* 155, 1–35.
- Belfield, C. R. (2006). The High/Scope Perry Preschool Program: Cost-Benefit Analysis Using Data from the Age-40 Followup. *Journal of Human Resources* 41(1), 162–190.
- Berger, E. M. and C. K. Spiess (2011). Maternal Life Satisfaction and Child Outcomes: Are They Related? *Journal of Economic Psychology* 32(1), 142–158.
- Bernal, R. and M. P. Keane (2011). Child Care Choices and Children’s Cognitive Achievement: The Case of Single Mothers. *Journal of Labor Economics* 29(3), 459–512.
- Black, S., P. J. Devereux, and K. G. Salvanes (2010). Small Family, Smart Family? Family Size and the IQ Scores of Young Men. 45(1), 33–58.
- Blank, R. M. (2002). Evaluating Welfare Reform in the United States. *Journal of Economic Literature* 40(4), 1105–1166.
- Brand, T. and T. Jungmann (2012). Implementation differences of two staffing models in the German home visiting program Pro Kind. *Journal of Community Psychology* 40(8), 891–905.

- Brand, T. and T. Jungmann (2014). Participant Characteristics and Process Variables Predict Attrition from a Home-Based Early Intervention Program. *Early Childhood Research Quarterly* 29(2), 155–167.
- Brooks-Gunn, J., M. McCormick, S. Shapiro, A. A. Benasich, and G. Black (1994). The Effects of Early Education Intervention on Maternal Employment, Public Assistance, and Health Insurance: The Infant Health and Development Program. *American Journal of Public Health* (84), 924–931.
- Buckles, K. and E. Munnich (2012). Birth Spacing and Sibling Outcomes. *Journal of Human Resources* 47(3), 613–643.
- Card, D., J. Heining, and P. Kline (2013). Workplace Heterogeneity and the Rise of West German Wage Inequality. *The Quarterly Journal of Economics* 128(3), 967–1015.
- Cunha, F. and J. Heckman (2007). The Technology of Skill Formation. *American Economic Review* 97(2), 31–47.
- Gebhardt, T. and H. Jacobs (1997). American Conditions? - Social Assistance in the USA and Germany : a Comparison From a Historical, Institutional and Legal Perspective. *Zeitschrift für Sozialreform* 43(8), 597–634.
- Heckman, J., S. H. Moon, R. Pinto, P. Savelyev, and A. Yavitz (2010). Analyzing social experiments as implemented: A reexamination of the evidence from the HighScope Perry Preschool Program. *Quantitative Economics* 1(1), 1–46.
- Heckman, J., R. Pinto, and P. Savelyev (2013). Understanding the Mechanisms Through Which an Influential Early Childhood Program Boosted Adult Outcomes. *The American Economic Review* 103(6), 2052–2086.
- Jungmann, T., Y. Ziert, V. Kurtz, and T. Brand (2009). Preventing Adverse Developmental Outcomes and Early Onset Conduct Problems through Prenatal and Infancy Home Visitation: The German Pilot Project Pro Kind. *European Journal of Developmental Science* 3(3), 292–298.

- Karoly, L., M. R. Kilburn, and J. Cannon (2005). *Early Childhood Interventions: Proven Results, Future Promise*. Labor and Population. Santa Monica: RAND Corporation.
- Kearney, M. S. and P. B. Levine (2012). Why is the Teen Birth Rate in the United States So High and Why Does It Matter? *Journal of Economic Perspectives* 26(2), 141–166.
- Kitzman, H., D. Olds, C. Henderson, C. Hanks, R. Cole, R. Tantelbaum, and et al (1997). Effects of Prenatal and Infancy Home Visitation by Nurses on Pregnancy Outcomes, Childhood Injuries, and Repeated Childbearing: A Randomized Controlled Trial. *The Journal of the American Medical Association* (278), 644–652.
- Maier-Pfeiffer, A., S. Hartmann, K. Adamaszek, R. Schneider, G. Helm, M. Refle, S. Geisler, and T. Brand (2013). Auswahl der Fachkräfte. In T. Brand and T. Jungmann (Eds.), *Kinder schützen, Familien stärken*, pp. 61–69. Weinheim: Beltz Juventa.
- Moffitt, R. (1998). The Effect of Welfare on Marriage and Fertility: What Do we Know and What Do We Need to Know? In R. Moffitt (Ed.), *Welfare, the Family and Reproductive Behaviour: Research Perspectives*. Washington D.C.: National Academy Press.
- Olds, D., J. Eckenrode, C. Henderson, H. Kitman, J. Powers, R. Cole, and et al (1997). Long-Term Effects of Home Visitation on Maternal Life Course and Child Abuse and Neglect: 15-Year Follow-Up of a Randomized Trial. *The Journal of the American Medical Association* 278(8), 637–643.
- Olds, D., C. Henderson, C. Phelps, and et. al (1993). Effects of Prenatal and Infancy Nurse Home Visitation on Government Spending. *Med Care* (31), 155–174.
- Olds, D., C. Henderson, R. Tattelbaum, and R. Chamberlin (1988). Improving the Life-Course Development of Socially Disadvantaged Mothers: A Randomized Trial of Nurse Home Visitation. *American Journal of Public Health* 78(11), 1436–1445.
- Olds, D., H. Kitman, R. Cole, C. Hanks, and K. Arcoleo (2010). Enduring Effects of Prenatal and Infancy Home Visiting by Nurses on Maternal Life Course and

- Government Spending: Follow-up of a Randomized Trial Among Children at Age 12 Years. *Archives of Pediatrics and Adolescent Medicine* 164(5), 419–424.
- Olds, D., H. Kitzman, R. Cole, J. Robinson, K. Sidora, D. Luckey, and et al (2004). Effects of Nurse Home-Visiting on Maternal Life Course and Child Development: Age 6 Follow-Up Results of a Randomized Trial. *Pediatrics* 114(6), 1550–1559.
- Olds, D. L. (2002). Prenatal and Infancy Home Visiting by Nurses: From Randomized Trails to Community Replication. *Prevention Science* 3(3), 153–172.
- Olds, D. L. (2006). The Nurse–Family Partnership: An Evidence-Based Preventive Intervention. *Infant Mental Health Journal* 27(1), 5–25.
- Olds, D. L., H. Kitzman, C. Hanks, R. Cole, E. Anson, K. Sidora-Arcoleo, D. W. Luckey, C. R. Henderson, J. Holmberg, R. A. Tutt, A. J. Stevenson, and J. Bondy (2007). Effects of Nurse Home Visiting on Maternal and Child Functioning: Age-9 Follow-up of a Randomized Trial. *Pediatrics* 120(4), e832–e845.
- Salkind, N. J. (2010). *Encyclopedia of Research Design*. Thousand Oaks and CA: Sage.
- Sandner, M. and T. Jungmann (2015). Gender-Specific Effects of Early Childhood Intervention: Evidence from a Randomized Controlled Trial. *mimeo*.
- Schmieder, J. F., T. v. Wachter, and S. Bender (2012). The Effects of Extended Unemployment Insurance Over the Business Cycle: Evidence from Regression Discontinuity Estimates Over 20 Years. *The Quarterly Journal of Economics* 127(2), 701–752.
- Siedler, T., J. Schupp, C. K. Spiëß, and G. G. Wagner (2009). The German Socio-Economic Panel as Reference Data Set. *Schmollers Jahrbuch* 129(2), 367–374.
- Suri, R., L. Altshuler, and J. Mintz (2004). Depression and the Decision to Abort. *American Journal of Psychiatry* 161(8), 1502.
- The National Center for Children Families and Communities (2005). Sample NFP: Sample County Health Department - Sample Report IV Inition(August 1999) through December 31, 2003.

## Appendix A

See Tables A1-A10 and Figures A1-A2.



**Table A1: NFP Results Elmira, Memphis and Denver**

<b>NFP Results Elmira</b>			
<b>Outcome</b>	<b>Observation Period</b>		
	<b>6 Months</b>	<b>4 Years</b>	<b>15 Years</b>
<b>School:</b>	More School Enrollment of School Dropouts		
<b>Employ.:</b>		More Employment (15.54 Months vs. 8.64 Months)	By trend more Employment (95 months vs. 80 Months)
<b>Fertility:</b>		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)
<b>Transfer:</b>			Less Months Eligible to Transfer (60 Months vs. 90 Months)

<b>NFP Results Memphis</b>				
<b>Outcome</b>	<b>Observation Period</b>			
	<b>2 Years</b>	<b>6 Years</b>	<b>9 Years</b>	<b>12 Years</b>
<b>Employ.:</b>		By trend more Employment (p<0.1)	By trend more Employment (p<0.1)	By trend more Employment (p<0.1)
<b>Fertility:</b>	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)	
<b>Transfer:</b>		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)	

<b>NFP Results Denver</b>			
<b>Outcome</b>	<b>Observation Period</b>		
	<b>2 Years</b>		<b>4 Years</b>
<b>Employ.:</b>	More Employment (6.83 Months vs. 5.65 Months)		More Employment (15.13 Months vs. 13.38 Months)
<b>Fertility:</b>	Fewer Subsequent Births (0.12 vs. 0.19)		Longer Interval Between First and Subsequent Birth (24.51 Months vs. 20.39 Months)

Notes: If not indicated differently, all treatment effects are significant at a five % level. Employ. = Employment. Source: NFP Results Elmira (Olds et al., 1988, 1997), Memphis (Kitzman et al., 1997; Olds et al., 2004, 2007, 2010), Denver (Olds, 2002; Olds et al., 2004) \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

**Table A2: Randomization Outcomes per Municipality**

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

**Table A3: Topical Focus of the Home Visits in NFP and *Pro Kind***

	<i>Pro Kind</i> Average	NFP-Average	Recommended Average by NFP
<b>During Pregnancy</b>			
Maternal Health	28%	37%	35%-40%
Maternal and Parental Role	19%	23%	23%-25%
Environmental Health	10%	11%	5%-7%
Life Course Development	16%	13%	10%-15%
Family and Friends	15%	16%	10%-15%
Social and Health Services	12%	-	-
<b>During Infancy</b>			
Maternal Health	16%	20%	14%-20%
Maternal and Parental Role	30%	36%	45%-50%
Environmental Health	11%	14%	7%-10%
Life Course Development	17%	15%	10%-15%
Family and Friends	14%	15%	10%-15%
Social and Health Services	11%	-	-
<b>During Toddlerhood</b>			
Maternal Health	13%	17%	10%-15%
Maternal Role	30%	37%	40%-45%
Environmental Health	10%	14%	7%-10%
Life Course Development	22%	17%	18%-20%
Family and Friends	14%	15%	10%-15%
Social and Health Services	11%	-	-

Notes: The percentage rates give the share of the total time in the family, which the home visitors spent for a certain topic. The data is collected by a documentation system, in which the home visitors note the duration and the covered topic for each home visit. Source: Jungmann et al. (2009); The National Center for Children Families and Communities (2005)

**Table A4: Baseline Variable Definitions - Demographic Characteristics**

<b>Variable</b>	<b>Type</b>	<b>Description</b>	<b>n</b>
Age in Years	Metric	Participants' Age in Years at Baseline	755
Week in Pregnancy	Metric	Week in Pregnancy at Randomization	755
Underage	Binary	1 if Participant is Younger than 18 Years	755
Migration	Binary	1 if Participant is not Born in Germany or has no German Nationality	755
Monthly HH-Income in €	Metric	Monthly Net-Income in Participants' Household	647
Debt over € 3000	Binary	1 if Debt is over € 3000 in Participants' Household	728
Education Risk	Binary	1 if Participant has less than 11 Years of Schooling	755
Income Risk	Binary	1 if Net-Income is below €1250 in Participants' Household	647
Employment Risk	Binary	1 if Participant has no Regular Employment	755
No Partner	Binary	1 if Participant is in a Partnership	755
Living with Parents	Binary	1 if Participant Lives in her Parents Household	751
Persons in HH	Metric	Number of Persons in Participants' Household at Baseline	737

**Table A5: Baseline Variable Definitions - Psychological and Physical Characteristics**

<b>Variable</b>	<b>Type</b>	<b>Description</b>	<b>n</b>
Unwanted Pregnancy	Binary	1 if Participant States that Pregnancy was Unwanted	747
Daily Smoking	Binary	1 if Participant Smokes Daily	755
Isolation	Binary	1 if Participant has Infrequently Contact to Friends or Relatives	747
Foster Care Experience	Binary	1 if Participant Lived at Least Once in a Foster Family or Foster Care	735
Neglect Experience	Binary	1 if Indication of Neglect Experience during Childhood	730
Lost Experience	Binary	1 if Participant Lost an Attachment Figure due to Death or Divorce	736
Violence Experience	Binary	1 if Participant ever Experienced Violence in her Life	751
Depression	Binary	1 if Value higher 20 for Depression on the Depression Anxiety Stress Scale (DASS)	749
Anxiety	Binary	1 if Value higher 15 on Anxiety on the DASS	744
Stress	Binary	1 if Value higher 25 on Stress on the DASS	749
Aggression	Binary	1 if Value higher 10 on the <i>Fragebogen zur Erfassung von Aggressivitätsfaktoren (FAF)</i>	743
Medically Indicated Risk Preg.	Binary	1 if participant has physical problems or if participant is older than 35	724
Body-Mass-Index	Metric	Participants' <i>Weight/Height<sup>2</sup></i> (Weight Before Pregnancy)	750
Sum Risk Factors	Metric	Sum of Risk Factors	755

**Table A6: Selective Attrition between TG and CG Psychological Characteristics - Administrative and Survey Data**

	Difference TG/CG for:				
	Merged (1)	At Least One Interview After Birth (2)	Data Available for 12 Months After Birth (3)	Data Available for 24 Months After Birth (4)	Complete data from Birth Until Third Birthday (5)
Unwanted Pregnancy	0.0122 (0.0288)	0.0224 (0.0310)	0.0318 (0.0313)	0.0183 (0.0333)	-0.00863 (0.0416)
Daily Smoking	0.00186 (0.0360)	0.000532 (0.0384)	-0.0133 (0.0407)	-0.00888 (0.0442)	-0.0256 (0.0540)
Isolation	-0.00685 (0.0189)	-0.0146 (0.0204)	-0.00474 (0.0213)	-0.00712 (0.0246)	0.0151 (0.0319)
Foster Care Exper.	0.0409 (0.0313)	0.0471 (0.0321)	0.0424 (0.0338)	0.0548 (0.0359)	0.0573 (0.0430)
Neglect Experience	0.00810 (0.0368)	-0.00346 (0.0393)	-0.0136 (0.0416)	-0.00800 (0.0460)	0.0396 (0.0565)
Lost Experience	-0.0474 (0.0377)	-0.0679* (0.0408)	-0.0667 (0.0431)	-0.0485 (0.0480)	0.000505 (0.0585)
Violence Ever	-0.00510 (0.0211)	-0.00210 (0.0213)	-0.0127 (0.0219)	-0.0247 (0.0239)	-0.0393 (0.0318)
Depression	-0.0154 (0.0241)	-0.00256 (0.0250)	0.00532 (0.0262)	0.0110 (0.0289)	0.0173 (0.0368)
Anxiety	-0.00761 (0.0287)	0.00400 (0.0301)	0.00552 (0.0315)	0.00189 (0.0348)	0.00193 (0.0438)
Stress	0.0329 (0.0348)	0.0277 (0.0374)	0.0214 (0.0394)	0.0202 (0.0438)	0.00161 (0.0540)
Aggression	-0.0328 (0.0282)	-0.0450 (0.0294)	-0.0462 (0.0312)	-0.0652* (0.0336)	-0.0819** (0.0401)
Body-Mass-Index	-0.0154 (0.401)	-0.265 (0.445)	-0.114 (0.477)	-0.170 (0.519)	0.391 (0.652)
Medic. Indic. Risk Preg.	0.00459 (0.0240)	0.0135 (0.0255)	0.0113 (0.0274)	-0.0132 (0.0297)	-0.00358 (0.0373)
Sum Risk Factors	-0.0336 (0.184)	-0.120 (0.192)	-0.140 (0.200)	-0.121 (0.217)	-0.0928 (0.271)
	703	602	539	438	296

Notes: Robust standard errors are shown in parentheses. Dependent variables shown in column (1). The treatment indicator has the value one if the mother is in the treatment group. Column (2) contains estimates of the average difference in characteristics between mothers in the control and treatment group including community fixed effects for the participants merged with the administrative data. Column (3)-(6) contain these estimates for the survey data. See Appendix Tables A4 and A5 for variable definitions.

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

**Table A7: Selective Attrition between Compliers and Non-Compliers**

	Difference Compliers/ Non-Compliers for:				
	Merged (1)	At Least One Interview After Birth (2)	Data Available for 12 Months After Birth (3)	Data Available for 24 Months After Birth (4)	Complete data from Birth Until Third Birthday (5)
Age in Years	0.801 (0.623)	1.261** (0.390)	1.679*** (0.344)	1.858*** (0.313)	2.180*** (0.313)
Week in Pregnancy	-0.480 (0.829)	1.404** (0.520)	1.162* (0.463)	0.808 (0.424)	1.060* (0.428)
Migration	-0.190*** (0.0509)	0.0484 (0.0323)	0.0410 (0.0287)	0.0350 (0.0263)	0.0761** (0.0265)
Underage	-0.0800 (0.0569)	-0.0427 (0.0359)	-0.0839** (0.0318)	-0.0994*** (0.0290)	-0.0980*** (0.0293)
Mon. HH-Inc. in €	-61.91 (85.35)	194.9*** (53.59)	111.0* (47.53)	135.3** (42.64)	158.7*** (42.55)
Debt over 3000 €	0.0902 (0.0552)	0.0374 (0.0348)	0.0513 (0.0309)	0.0386 (0.0283)	0.0538 (0.0286)
Education Risk	0.0167 (0.0610)	-0.130*** (0.0381)	-0.153*** (0.0337)	-0.159*** (0.0307)	-0.170*** (0.0310)
Income Risk	0.0693 (0.0559)	-0.0686 (0.0351)	-0.0652* (0.0312)	-0.0858** (0.0285)	-0.106*** (0.0288)
Employment Risk	-0.00974 (0.0531)	-0.0732* (0.0334)	-0.0790** (0.0296)	-0.0905*** (0.0271)	-0.121*** (0.0272)
No Partner	0.164* (0.0648)	-0.00840 (0.0410)	-0.0384 (0.0365)	0.000605 (0.0334)	0.0552 (0.0337)
Living with Parents	-0.0840 (0.0648)	-0.00294 (0.0410)	-0.0267 (0.0363)	-0.0346 (0.0331)	-0.0352 (0.0334)
Persons in HH	-0.312 (0.234)	-0.0562 (0.151)	-0.195 (0.133)	-0.194 (0.122)	-0.163 (0.124)
Unwanted Pregnancy	0.0418 (0.0545)	0.00448 (0.0343)	-0.0617* (0.0305)	-0.0816** (0.0278)	-0.0409 (0.0282)
Daily Smoking	0.158* (0.0679)	-0.0502 (0.0429)	-0.0309 (0.0382)	-0.0844* (0.0348)	-0.0520 (0.0353)
Isolation	-0.0485 (0.0367)	-0.0185 (0.0232)	-0.0184 (0.0206)	0.00138 (0.0189)	0.0179 (0.0191)
Foster Care Exper.	0.0859 (0.0590)	-0.116** (0.0370)	-0.0885** (0.0329)	-0.109*** (0.0301)	-0.0862** (0.0305)
Neglect Experience	0.119 (0.0697)	-0.0889* (0.0439)	-0.0641 (0.0391)	-0.0625 (0.0358)	-0.0140 (0.0362)
Lost Experience	0.0587 (0.0718)	0.00802 (0.0453)	0.00973 (0.0403)	-0.0509 (0.0368)	-0.0322 (0.0373)
Violence Ever	0.00843 (0.0401)	-0.0576* (0.0252)	-0.0564* (0.0224)	-0.0442* (0.0205)	-0.00606 (0.0208)
Depression	-0.0194 (0.0462)	-0.0587* (0.0290)	-0.0507* (0.0258)	-0.0383 (0.0237)	-0.00834 (0.0240)
Anxiety	0.0211 (0.0545)	-0.0611 (0.0343)	-0.0553 (0.0305)	-0.0435 (0.0279)	-0.00755 (0.0283)
Stress	0.0765 (0.0660)	-0.0229 (0.0416)	-0.0309 (0.0370)	-0.0178 (0.0339)	0.00896 (0.0343)
Aggression	0.0525 (0.0533)	-0.0563 (0.0335)	-0.0358 (0.0298)	-0.0486 (0.0273)	-0.0423 (0.0276)
Body-Mass-Index	0.200 (0.766)	0.433 (0.483)	1.015* (0.428)	0.908* (0.392)	0.882* (0.396)
Medic. Indic. Risk Preg.	-0.00159 (0.0457)	-0.0211 (0.0288)	-0.00257 (0.0256)	-0.0157 (0.0235)	0.00158 (0.0237)
Sum Risk Factors	0.752* (0.349)	-0.772*** (0.219)	-0.837*** (0.194)	-0.879*** (0.177)	-0.587** (0.180)
Lower Saxony	-0.110 (0.0697)	-0.0413 (0.0440)	-0.0530 (0.0391)	-0.0539 (0.0358)	0.0160 (0.0362)
Bremen	0.0843 (0.0652)	0.0769 (0.0410)	0.0626 (0.0365)	0.0650 (0.0334)	0.0730* (0.0338)
Saxony	0.0252 (0.0677)	-0.0356 (0.0426)	-0.00958 (0.0379)	-0.0111 (0.0347)	-0.0890* (0.0350)
	755	755	755	755	755

Notes: Robust standard errors are shown in parentheses. Dependent variables shown in column (1). The treatment indicator has the value one if the mother is merged or participated in the interviews. Column (2) contains estimates of the average difference in characteristics between compliant and non-compliant mothers including community fixed effects for the participants merged with the administrative data. Column (3)-(6) contain these estimates for the survey data. See Appendix Tables A4 and A5 for variable definitions.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Table A8: Maternal Life Course Outcomes 36 Months after Birth of the Treatment Child - Administrative Data**

	Extensive Margin (any)			Total Months		
	Control Mean	Diff. TG/CG	p-values	Control Mean	Diff. TG/CG	p-values
	(1)	(2)	(3)	(4)	(5)	(6)
Any Occupation	0.528 [0.499]	-0.092*** (0.027)	0.008	6.526 [9.180]	-1.598*** (0.476)	0.007
Parttime/Fulltime Employed	0.194 [0.396]	-0.058** (0.023)	0.033	1.689 [4.902]	-0.636* (0.351)	0.099
Apprenticeship	0.207 [0.406]	-0.016 (0.030)	0.606	2.426 [6.078]	-0.294 (0.482)	0.555
Marginal employment	0.304 [0.461]	-0.054* (0.029)	0.093	2.328 [5.142]	-0.651** (0.289)	0.048
Welfare	0.964 [0.295]	0.013 (0.010)	0.235	32.78 [11.91]	1.223 (0.975)	0.238
<i>Observations</i>	<i>329</i>	<i>684</i>		<i>329</i>	<i>684</i>	
Second Child in HH	0.187 [0.363]	0.065** (0.026)	0.032			
<i>Observations</i>	<i>316</i>	<i>663</i>				

Notes: Robust standard errors in square brackets; Standard deviations in parentheses. Columns (2) and (5) report the coefficient and standard error on Home Visiting (HV) from estimating equation (1) by OLS. Data is available on a monthly base from affiliation to 36 months after birth. Estimations include community fixed effects and controls for age and being underaged. TG = Treatment Group; CG = Control Group; HH=Household.



**Table A9: Maternal Life Course Outcomes 36 Months after Birth of the Treatment Child - Survey Data**

	Extensive Margin (any)			Total Months		
	Control Mean	Diff. TG/CG	p-values	Control Mean	Diff. TG/CG	p-values
	(1)	(2)	(3)	(4)	(5)	(6)
Any Occupation	0.555 [0.499]	-0.018 (0.042)	0.681	7.569 [9.231]	-1.049 (-1.210)	0.403
Parttime/Fulltime Employed	0.299 [0.460]	-0.000 (0.060)	0.994	2.365 [5.087]	-0.380 (0.640)	0.564
Apprenticeship	0.255 [0.438]	-0.052 (0.042)	0.241	2.672 [5.810]	-0.135 (0.761)	0.862
Marginal employment	0.248 [0.434]	-0.017 (0.044)	0.700	2.533 [5.705]	-0.534 (0.555)	0.355
Welfare	0.912 [0.284]	0.053** (0.023)	0.043	26.511 [11.02]	1.622 (-1.001)	0.131
Second Birth	0.175 [0.382]	0.098*** (0.019)	0.000			
Second Pregnancy	0.321 [0.469]	0.025 (0.043)	0.567			
Constant Partnership	0.401 [0.491]	-0.005 (0.057)	0.927			
School	0.102 [0.304]	-0.009 (0.022)	0.682	0.934 [3.877]	0.206 (0.340)	0.555
Childcare	0.584 [0.495]	0.076 (0.054)	0.182	7.175 [8.571]	1.778 (-1.364)	0.217
<i>Observations</i>	137	296		137	296	

Notes: Robust standard errors in parentheses; Standard deviations in square brackets. Columns (2) and (5) report the coefficient and standard error on HOME VISITING (HV) from estimating equation (1) by OLS. Estimations include community fixed effects and *baseline controls*. TG = Treatment Group; CG = Control Group; HH=Household.

**Table A10: Descriptive Statistics for Well-Being and Life-Satisfaction**

	Control Group			Treatment Group			GSOEP		
	Mean	sd	n	Mean	sd	n	Mean	sd	n
<i>How Often or Seldom Have You Experienced this Feeling in the Last Four Weeks?</i>									
Angry	3.05	1.00	195	2.91	1.09	239	3.09	0.89	394
Worried	2.09	1.04	194	1.77	0.94	238	1.99	0.91	393
Happy	3.66	0.90	195	3.76	0.88	237	3.90	0.78	394
Sad	2.71	1.07	195	2.49	1.03	237	2.40	0.98	394
<i>How Satisfied are you Today with the Following Areas of Your Life?</i>									
Health	6.55	2.97	194	6.83	2.88	235	7.38	1.89	601
Housework	6.92	2.33	193	7.37	2.32	231	6.39	2.19	579
Household Income	4.92	2.70	193	5.58	2.89	235	5.47	2.77	578
Personal Income	4.14	2.90	191	4.57	3.05	233	6.42	2.82	582
Place of Dwelling	6.56	3.16	194	6.63	3.12	235	6.83	2.34	599
Free Time	5.67	2.91	195	6.23	2.87	234	6.77	2.51	563
Child Care Availability	6.73	3.01	192	6.68	3.33	228	7.36	2.18	590
Family Life	7.46	2.35	195	7.63	2.52	234	7.43	2.19	509
Life in General	7.13	2.10	195	7.44	1.91	237	7.41	1.56	601

Notes: For the outcomes in the first four rows the scale is: 1=Very Rarely, 2=Rarely, 3=Occasionally, 4=Often, 5=Very Often. For the other outcomes the scale is: 0=totally unhappy to 10=totally happy. GSOEP includes mothers whose first child has an age between two and three years. The average age of the first child in the *Pro Kind* sample is 30.06 months. sd=standard deviation.