Why has the proportion of older children in Norwegian institutional placement decreased?

An empirical analysis

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Preface

This thesis marks the completion of my Master's Degree in Economics from the University of Oslo. The past years have been enlightening, challenging and most of the time very joyful.

Any mistake, error or inaccuracy is of my own responsibility entirely.

Anastasia Fedorenkova
May 2023

Abstract

In this thesis I examine three possible explanations for the decline in Norwegian institutional placement among older children in order to see which explanation is consistent with the patterns we see in the data. The data used is derived from administrative data from a number of registers. It includes information on all children in Norway, as well as all children in Norway who got interventions from the Norwegian Child Welfare Authorities between 1994-2018.

In the first analysis, I examine whether light, early interventions lead to a reduction in later institutional placement. The hypothesis is tested by conducting a Difference-in-Difference analysis, estimated with Two-way Fixed effects. The results show a different picture: light, early interventions are associated with increasing the share requiring heavy interventions. However, it could also be explained in other ways such as if the increased use of early intervention reflected worsening childhood environments, then we would also expect that these worsened environments also raised the risk that children would need more extreme interventions later.

In the second analysis, I examine whether there was a composition change in the population that led to less institutional placement among older children. This hypothesis is tested by conducting Out of Sample prediction. It finds that the model predicts higher institutional placement among older children, and no downward trend. However, it may be that there are some compositional changes to the variables which were not taken into account in this thesis.

The last analysis examines whether Child Welfare Authorities conducted an intervention substitution towards a foster home placement rather than institutional placement. It is graphically tested by creating a Stacked Bar Chart, which showed that the reduction in institutional placement coincided with a corresponding increase in the use of foster homes. Thus, consistent with the data used in this thesis, it is likely the intervention substitution towards foster home placement which lies behind the declining numbers in institutional placement. However, there could still be other reasons for the decline in institutional placements we observe.

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1. Introduction

The aim of this thesis is to learn why the proportion of older children in Norwegian institutional placement has decreased. To answer this question, three hypotheses will be tested: (1) Early light Child Welfare Authority's interventions leads to reduction in institutional placement when children get older, (2) Composition change in the population lead to less institutional placement, (3) Child Welfare Authorities substitute more towards foster home placement rather than institutional placement.

Each year almost 50,000 children and young people in the risk group in Norway receive interventions from Child Welfare Authorities (henceforth CWA), within or outside the family. This amounts to approximately 3% of the population under the age of 18 (Hernæs et al., 2022). According to the Norwegian government (Ministry of Children and Families, 2012), it is important to ensure that everyone who needs help from CWA gets appropriate help at the right time, because children who receive help from CWA at an early stage have a greater chance of success later in life. They claim that early interventions help to prevent the development of problems later, and that a strengthened effort towards vulnerable children and young people is a good investment in the future. According to the Norwegian government, it is important because children and young people, well prepared to face a future adult life, have the potential to bring great economic benefits to Norwegian society (Ministry of Children and Families, 2012).

In 2020, Statistics Norway published an article regarding decline in institutional placement, as well as the amount of days children stayed in institutions. They found out that although the decrease was greater in private institutions, the proportion of days stayed remained relatively stable. They also mentioned that the biggest decline was observed in the east region of Norway. They explain this as a consequence of a decreasing number of unaccompanied minor asylum seekers and refugees arriving in the country. Nevertheless, the activity in Child Welfare Institutions has decreased from 553,900 days stayed in 2010 to 408,500 in 2019, which is a decline of 26 percent (Dyrhaug, 2020).

In 2021 the Norwegian newspaper Aftenposten published an article informing that the number of children who are placed by the CWA is constantly decreasing. The director of Bufdir (The Norwegian Directorate for Children, Youth and Family Affairs), Mari

Trommald, stated that this decrease could be due to early interventions, which then results in less need for care placement among children. She also mentioned that there has been a lot of attention from CWAs side to interfere earlier with interventions in recent years, especially after the Christoffer-case from 2005 - a case where an 8-year-old boy got abused until he died. The case was initially dropped, but his stepfather was convicted of abuse resulting in death in 2008. In 2012, the mother was also convicted of complicity in the abuse. According to Trommald, there was an increased focus on earlier interventions in families where children were exposed to abuse, in the years surrounding the Christoffer-case (Skogstrøm, 2021).

A few days after the article was published, Aftenposten shared an article related to decline in care placement. In this article, several CWAs from different Norwegian municipalities agreed that in several cases, it is best for the children to grow up in their own family, meaning that the threshold for placement is higher now than in the past. They also agreed that the preventive work has become better, which might be the reason for the decline in placement. According to Laila S. Østli, a head of the Sandefjord CWA, another reason for that might be the lack of foster homes, which in turn results in heavier interventions at home. She argued that there is no reason to believe that there is a new trend in the way CWA makes its assessments which is behind the decline in placements (Skogstrøm, 2021).

The aim of this thesis is to learn why the proportion of young people in institutional placement has decreased. This could also potentially raise more discussions around the decline discussed in the two Aftenposten articles. I will explore three possible hypotheses for the decline: (1) To find out whether it is light early intervention which lead to decreased institutional placement, I will use Difference-in-Difference approach estimated with Two-ways Fixed effects. The method of choice fits well in this case, because Difference-in-Difference (henceforth DiD) is a well-known method when we want to study policy changes with differential timing. (2) Another explanation for the decrease in institutional placement could be the characteristics of children's parents. While they predicted institutional placement in the past, they might have become less common over time. In order to learn whether there was a composition change in the population that led to less institutional placement, I will do an Out of Sample Prediction by conducting a simple Ordinary Least Squares (OLS) first. This can be done by dividing the given periods in two, then estimate the model in the first period and then predict it in the second period. (3) The last hypothesis, which is a substitution towards foster home placement rather than institutional placement will be tested graphically

by creating a Stacked Bar Chart. I will examine whether the change "disappears" when we look at broader categories of measures. More specifically: institutional placement and foster care are two alternative measures for children who cannot obtain adequate care at home. The goal is to examine whether the reduction in institutional placement coincided with a corresponding increase in the use of foster homes.

2. Background

In this section I will briefly explain the history of the CWA and what their main tasks are. I will further explain what an institution is, the institutional provision, and how it is conducted in Norway.

2.1 History and main tasks of the Norwegian CWA

The first "Child Welfare Act" in Norway was the "Act on the Treatment of Depraved and Neglected Children". The law came into force in 1900 and lasted for over 50 years before it was replaced by the Child Welfare Act in 1953. The purpose of the law was to ensure that children who lived in conditions that could damage their health and development would receive the necessary help at the right time. The purpose was to contribute to ensuring that children had safe conditions growing up. In 1992, the Child Welfare act was revised; the CWA were now able to implement interventions at an earlier time than under the law of 1953. The new act helped the CWA prevent issues early on, reducing the need to move children away from struggling homes. The new act also introduced the division of roles; the responsibility for solving the statutory child protection tasks was assigned to three different levels of administration: (1) the state, (2) the county municipalities and (3) the municipalities. Later in 2004, a reform had the state take over responsibility for the county Child Welfare- and Family Welfare Authorities (The Norwegian Directorate for Children, Youth and Family Affairs, n.d.).

The CWA's main task is to look after the most vulnerable children. They must protect children from neglect and ensure children's safety and development opportunities. If the CWA becomes aware of concerns about a child's care situation, or of children who show serious behavioral problems, they have a statutory duty to investigate how the child is doing and, if necessary, contribute with interventions. However, the CWA must not use more invasive interventions than necessary. In practice, this means that the CWA primarily provides help in the home, so that the parents themselves can master their caring responsibilities. This can be various support interventions, such as advice and guidance for the family, relief measures, support contacts and nursery places (The Norwegian Directorate for Children, Youth and Family Affairs, n.d.).

In all its decisions, the CWA must take what is in the best interests of the child as a starting point. In order to learn what is in the child's best interest, the CWA must, among other things, consider: (1) the child's opinion, in accordance with the child's age and maturity, (2) the child's need for care, protection and security and (3) the child's need to preserve the family environment and maintain relationships. If there is a conflict between the child's and the parents' interests, the CWA must make a decision. The CWA must place particular emphasis on consideration of the child's best interests (The Norwegian Directorate for Children, Youth and Family Affairs, n.d.).

When interventions at home are not sufficient to meet a child's needs, it might become necessary to move the child to a foster home or a child protection institution for some period. The consent of parents and children, if they are over 15 years of age, is sufficient grounds for moving. Only in cases where the CWA considers that a child is being exposed to serious neglect or shows serious behavioral difficulties, it may be appropriate to move the child out of the home without consent. In that case, it is the Child Welfare and Health Board, a court-like body, that can decide this. Care takeovers are initially temporary. Thus, the CWA works to ensure that the children return to their families (The Norwegian Directorate for Children, Youth and Family Affairs, n.d.).

2.1 Institutional provision in Norway

One of the heaviest interventions the CWA can offer is an institutional placement. Child welfare institutions take care of children and young people who do not live with their parents, or who struggle with serious behavioral problems or substance abuse. There are various reasons why some children cannot live at home. A reason could be that the child has behavioral challenges, struggles with substance abuse, lacks care at home or has parents who, for various reasons, are unable to provide sufficient care (The Norwegian Directorate for Children, Youth and Family Affairs, 2016). The purpose of an institutional placement is to establish stability, provide care and developmental support and form a basis for the child's further development. This requires that the municipality, together with the institution, sets concrete goals, makes good plans and makes arrangements for the child to receive and make use of services outside the Child Welfare System, such as education and health services (The Norwegian Directorate for Children, Youth and Family Affairs, 2021).

There are several types of institutions:

(1) Emergency institutions. They provide care and stabilization for children who find themselves in a crisis due to the care situation at home, or serious behavioral difficulties. The child is given a temporary place to live while the CWA investigate what is best for the child in the long term. Measured in terms of the number of placements, emergency institutions in Norway make up the second largest category of institutions.

(2) Care institutions. They provide services to children with care needs which are not covered if, for instance, there is a lack of care in the child's family that cannot be resolved through support interventions at home or at a foster home. The care institutions make up the largest part of the institutional provision.

(3) Treatment institutions (behavioral institutions). They provide care and treatment services to children with serious behavioral difficulties. To reduce the risk of children developing more serious behavioral- or drug-problems during their stay in the institution, the group composition in the treatment institutions is managed according to classification with the YLS/CMI (The Norwegian Directorate for Children, Youth and Family Affairs, 2021).[1]

The prerequisite for finding the best suitable institutional provision is that children are well assessed in connection with their placement in the institution. The needs will vary in scope and with regard to how acute they are. It is important to be aware that the child may need many types of help and that its needs may also change over time (Grünfeld et al., 2020).

When children and young people move into an institution, it will vary how much knowledge the CWA has about the child's needs. It often depends on how well the CWA knows the child from before, through previous history and interventions and how urgent the need is. The work that the various CWA have done in advance of the placement will be of great importance for how well the child's needs are mapped. It will also vary how the children express themselves. Key information may be provided at a later stage than before the decision on placement, and the situation may change over time. In any case, it is important to have the needs of children

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[1] Norwegian YSL/CMI stands for "Youth Level of Services/Case Management Inventory. It is an assessment tool commonly used to evaluate behavioral and emotional functioning of children and young people (12-17 years). For more information, see Jacobsen, R. & Kornør, H. (2017).

and families at the center and provide an offer that is adapted to the greatest extent possible so that it can provide effective help (Grünfeld et al., 2020).

Beyond an understanding of what the institutional provision as a whole should deliver, and what the child's needs are, it must also be clear what is to be achieved with institutional placement. To ensure predictability for children and their family, a clear purpose is important. In addition to this, safety and stability are crucial for children in institutions. In order to create security, children must understand why they are at the institution and what will happen in the future, in the short and long term. Furthermore, clear goals for the institutional stay have a lot to say about how the institutional stay is planned and what will happen after the institutional stay ends. If the goal is linked to the young person being able to cope later in life, and to be able to live in a dormitory after the stay, it may require a different effort throughout the institutional process than if the child is to return to the original care base or in a foster home (Grünfeld et al., 2020).
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3. Previous Studies

In this section I will briefly present some of the existing literature about the Norwegian CWA. Since we are examining the Norwegian CWA, and because the CWA policies may vary among countries, I will present only Norwegian studies. Some important work from the Frisch Centre will be presented here, as they use the same data as in this thesis, as well as provide us with some important insights about the relationship between Norwegian CWA and children and young people associated with them. Research from NOVA will also be presented, as they have examined outcomes for children who got interventions from the CWA. Lastly, I will present a study from NOVA and Fafo, as they studied institutional provision after the 2004 reform. All of the previous studies mentioned in this section should be viewed as further studies of this thesis, because they explore the relationship between the Norwegian CWA and children and young people in more detail. In addition to this, not all findings will be presented, only those relevant to this thesis.

Overall, the findings from these reports, among other things, clarifies how outcomes differ for children placed in institutions and foster homes, as well as the selection process and the reasons for heavier interventions. Thus, the understanding of the long-term outcomes, challenges, and differences in the basis for decision and selection process contributes with possible explanations of the decline in institutional placement among older children.

3.1 A longitudinal register study from the Frisch Centre about children associated with the Norwegian CWA

An extensive analysis of Norwegian longitudinal register data covering the period 1994-2018 examined, among other things, children who were associated with the CWA and how they fare in later life compared to children who did not experience interventions from the CWA. Although Hernæs et al., (2022) did find big differences between those two groups, they pointed out that both interventions in general, and the type of intervention are aimed at selected target groups (Hernæs et al., 2022).

Among the other things, Hernæs et al. (2022) compared children who got involved with the CWA at home and at foster care. The sample they used was children who had their first intervention between 1999 and 2016. These children were divided into three groups:

(1) Those who received their first intervention when they were 0-5 years old

(2) Those who received their first intervention when they were 6-11 years old

(3) Those who received their first intervention when they were 12-17 years old

Overall, comparisons of these groups finds that the basis for decision varies based on the age of the children when they receive their first CWA intervention. For the youngest children, the parents' lack of parenting skills is more common than reasons related to the child itself. For the young children, the home situation is the most important reason for interventions. Parents' lack of parenting skills is also a common reason, especially for children placed outside of the home. In the group of older children and young people, the reason for the interventions is more often related to circumstances with the child compared to those who are young at the first intervention. The situation at home is less often reported as a reason for the young people. The same applies to parents' lack of parenting skills, although this last reason more often results in a placement in a foster home (Hernæs et al., 2022).

For the children who received their first CWA interventions when they were 0-5 years old, the use of health services related to mental health in the year before the children received their first CWA intervention was the same for those who started with interventions at home and in foster homes. However, the increase in the use of health services as children get older was greater for those who lived in foster homes. 19 years after the first intervention, 20 percent received work assessment allowance or disability benefit among children and young people with the first CWA intervention at home. The numbers were somewhat lower for children who started in foster homes. Hernæs et al. (2022) also found that children who received CWA interventions early in foster homes have somewhat lower receival of social allowance. They also have a lower probability of not enrolling in education, finding employment, or training compared to those who received CWA interventions at home. In addition to this, they also found that those children in all age groups experienced major challenges at school (Hernæs et al., 2022).

Regarding children in the age group 6-11, Hernæs et al. (2022) found that for children who got their first CWA intervention at that age, there was a significant increase in psychiatric health treatment after the first intervention. Children who got their first CWA interventions in foster homes had a slightly lower probability of being recipients of disability benefits.

Children who started with CWA interventions in foster homes performed somewhat better on tests, and had a higher probability of completing upper secondary school compared to those who started at home. When studying indictment, receival of social allowance and not being in education, employment or training status, Hernæs et al. (2022) found that the difference between CWA interventions in foster homes was not big (Hernæs et al., 2022).

For the last age group, 12-17, Hernæs et al. (2022) found a significant increase in the use of health services for both groups, but a somewhat greater increase for those who were placed in foster homes. As the young people became older, the proportion receiving unemployment or disability benefits were the same for both groups. At school, the groups performed at the same level before and after the first intervention, but young people receiving their first intervention in a foster home at the age of 12-17 had a significantly higher completion rate at upper secondary school. Regarding crime, both those who got their first CWA interventions at home and in foster homes scored high when children were 12-17. Receival of social allowance was higher among those who got their first CWA intervention in foster homes compared to those who got it at home (Hernæs et al., 2022).

Further Hernæs et al. (2022) compared outcomes for children who received the CWA interventions in foster homes and institutions. The sample they studied were of young people over the age of 13, placed in either an institution or a foster home for the first time during the years 1995-2016. The main finding in this age group is that it is clear that the selection into institutional placement is stronger than the selection into other interventions outside of the home (foster homes). This is clearly expressed by the fact that the young people who are placed in foster homes compared to those institutionalized already differ before placement in terms of the characteristics such as school and health outcomes, crime, receipt of social assistance and social security benefits and income, as well as family background. Thus, a significant part of the long-term outcome differences is due to selection, and not effects of institutional rather than foster home placements (Hernæs et al., 2022).

Hernæs et al. (2022) observed that around three out of four young people received the CWA interventions at home in the same year as they moved. This applied regardless of age and whether they were placed in an institution or a foster home. They also observed that many received the CWA interventions at home for several years before placement. The pattern was quite similar for those living in foster homes and institutions. However, young people who

were placed in foster homes had somewhat higher receival of the CWA interventions before placement. For both foster homes and institutions, the stay outside of the home was relatively short for many of the young people; two years later, fewer than 50 percent were still placed outside the home (Hernæs et al., 2022).

Hernæs et al. (2022) found out that among young people in foster homes, the basis for decision is more often related to relationships with the parents and environment at home. On the other hand, for the young people living in an institution, the child's behavioral problems are the most widespread basis for decision. Thus, conditions at home are important for young people having institutional interventions (Hernæs et al., 2022).

Other interesting findings among young people over the age of 13 who were placed in either an institution or foster care for the first time in the years 1995-2016 was that the proportion with at least one immigrant parent is slightly higher among young people in institutions. Females were in majority among young people living in foster care. Parents of children in foster care had a lower income, less education and a higher proportion of disability benefits and social allowance earnings than parents with children in institutions (Hernæs et al., 2022).

Further research from Hernæs et al. (2022) shows that children who were placed in institutions for the first time between the ages of 13 and 18 had parents with higher socio-economic status compared to those who were placed in foster care. They also found that there was a significant increase in health care utilization around the time of placement for both groups. For example, over 60 percent of the young people had at least one consultation linked to a mental health problem in the year they moved away from home. Young people in institutions also had a higher receival of health care utilization before placement. Hernæs et al. (2022) found no clear patterns that would point in the direction of this difference changing particularly over time. These children also had a higher receival of disability benefits when they grew older (Hernæs et al., 2022).

Regarding education, Hernæs et al. (2022) found that children who were first placed in institutions scored lower than foster home children. These children also had a lower completion rate in upper secondary school compared to foster home children. Regarding criminal record, young people who were placed in institutions were more likely to be charged

with a crime. Those children were also more likely to receive welfare benefits, have zero income and do not receive education, employment or training status (Hernæs et al., 2022).

Finally, Hernæs et al. (2022) pointed out that there were clear differences in outcomes for young people who moved to an institution compared to those who moved into foster homes. However, there were also clear differences in the years before placement, both in the use of health services, school results and crime. This suggesting that a significant part of the long-term outcome differences was due to selection, and not effects of institutional placements rather than a foster home placement. Hernæs et al. (2022) emphasized that these differences in outcomes could be partly explained by the fact that young people who lived in institutions had characteristics which "led" to have worse outcomes than young people who lived in foster homes. When they controlled for such characteristics, they showed a reduction in differences in outcomes between young people living in institutions and in foster homes (Hernæs et al., 2022).

3.2 A longitudinal register study from NOVA about children associated with the Norwegian CWA

NOVA, the Norwegian Social Research, is another research institute which conducted a longitudinal register study about children associated with the Norwegian CWA. Similarly to the Frisch Centre, researchers from NOVA were interested in outcomes for children who got interventions from the CWA They were especially interested in whether those children made a good transition into adulthood in the form of education and work. In this section I am going to present relevant findings from their research.

In 2014 NOVA presented a longitudinal register study where all children associated with the CWA were studied between 1990 and 2010. Among other things, they examined children's outcomes in adulthood regarding education, income, employment and financial social assistance. The main finding in their study is that children transition well into adulthood, especially if they get extra time, although the outcomes are better for children without the CWA experience (Backe-Hansen et al., 2014).

Backe-Hansen et al. (2014) observed that there was a formidable increase in the number of foster children. At the end of 1987, under 3,200 children and young people were in foster

homes, while the number had increased to just over 9,600 at the end of 2012. In other words, a tripling had occurred. On the other side, there was a reduction in the use of institutions as a placement alternative. The reason for that, according to Backe-Hansen et al., (2014), was that the intention has been to increase the use of emergency homes and foster homes when placement outside the home occurs. From 2003 to 2012, the number of foster home placements at the end of the year increased by 44 percent, the number of placements in emergency homes by 67 percent, while the corresponding increase in the number of institutional placements was six percent (Backe-Hansen et al., 2014).

Regarding institutional placement, Backe-Hansen et al. (2014), found that those placed in institutions during the period 1993-2003, to a lesser extent achieved a good transition into adulthood compared to those placed in foster homes. In addition, findings from NOVA indicate that older children with immigrant background to a greater extent achieved good transitions into adulthood, which may be due to the fact that the basis for decision varies between children with Norwegian-born parents and children with an immigrant background (Backe-Hansen et al., 2014).

3.3 An analysis of the significance of the 2004 child welfare reform for institutional provision from NOVA and Fafo

In 2021, NOVA and Fafo, an independent social science research foundation, evaluated an institutional provision from the Norwegian CWA. This was a consequence of the 2004 reform where the state took over responsibility for the county's CWA. According to Backe-Hansen et al. (2011), the reform had ambitious objectives. The reform was supposed to lead to equal child protection, regardless of place of residence, good professional and financial management, strengthened cooperation between state and municipality, good quality and further professional development. An important goal of the CWA reform was a shift from institutional placements to increased use of support interventions and foster homes. The justification for this was partly academic, with reference to research on more negative outcomes for those who have been in institutions. In addition, the justification was economic, based on a continuing need to gain control over costs (Backe-Hansen et al., 2011).

Overall, professional guidance means that children and young people should preferably be placed in foster care rather than in an institution when placement outside the home becomes

necessary. Further, the goal of evaluation was to examine the quality of institutional provision, economic development linked to institutional provision and interaction linked to children and young people in institutions (Backe-Hansen et al., 2011).

Backe-Hansen et al. (2011) pointed out that the idea of institutional placement has changed since the 2004 reform. Structurally, institutional placements have become "the last resort", because the CWA requires that at-home interventions must be tried first. If children and young people must be placed outside the home, a foster home is the preferred alternative to an institution. Institutions become "the last resort" for some children and young people because they often are placed in institutions after repeated attempts at foster home placements have failed, or because they are considered so difficult to help that a foster home would not be able to care for them. In addition, there are economic concerns regarding institutional placements. Backe-Hansen et al. (2011) conducted a document analysis covering the period 1995-2010, which shows how economic considerations have been emphasized throughout the period. It also shows that these considerations have become more important over time, as institutional intervention is a very costly measure compared to both foster homes and at-home interventions. Thus, it can be thought that it is in the interaction with the need to gain control over costs that institutional placement is positioned as "the last resort" (Backe-Hansen et al., 2011).

Nevertheless, when Backe-Hansen et al. (2011) examined the quality of institutional provision, they found that there was a reduction in institutional placements since 2004, while the use of foster homes increased. They also found out that there seem to be fewer regional variations than before. Some of the same things that characterized the regions before the reform have also persisted afterwards. For example, both Region East and Region West used institutions more than the other regions before the reform, and still do so. Region North, which had the highest rate of institutionalized persons per 1,000 children and young people between the ages of 0 and 19 in 2004, had nearly halved in 2010. However, the difference between the regions has narrowed over time. Another interesting finding is that there has been an increase in the proportion of young people at institutions with behavioral difficulties and substance abuse. Thus, again confirming that institutional placement is "the last resort" (Backe-Hansen et al., 2011).

4. Data

In this section, I will briefly explain what kind of information the data contains and how it will be combined in order to answer the research question.

4.1 Description of data and variables

This thesis uses two different datasets compiled and prepared by Øystein M. Hernæs, a senior researcher at the Frisch Centre. The data drew on administrative data from a number of registers, on loan from Statistics Norway. The first dataset contains information on all children in Norway; (1) children's immigration background, (2) the year that the immigrant children moved to Norway, (3) years of observation, (4) sex, (5) age, (6) municipality/county residency, as well as information on children's parents; (1) whether parents are alive, (2) education level, (3) income, (4) whether mother or father of the child has a crime penalty, (5) whether mother or father of the child receives disability benefits or financial assistance, (6) parent's age and (7) classification of marital status for both parents. The observations took place between 1994 and 2018.

In order to find out why the proportion of older children in Norwegian institutional placement has decreased, only those born in Norway were observed. In this case, children who immigrated to Norway were not relevant to the research question. In order to estimate whether children who were in contact with the CWA in early age showed a reduction in institutional placement in later years, variables which were used are children's residency, children's age and year for observation. In order to predict whether there was a composition change in population which led to reduction in institutional placement, I used the same variables from the children's side, as well as all variables provided on the parent's side. For the third hypothesis, which is the CWA's substitution towards foster home placement rather than institutional placement, I used children's age, year of observation and residency. Since the information about children's age and years of observation were provided, a column for children's birth year was created as well in order to test all three hypotheses.

The second dataset contains information on all children in Norway who got interventions from the CWA. This means that some of the children from the first dataset are also included in this dataset. This dataset also contains observations which took place between the years 1994-2018. This dataset contains information on children's type of interventions, as well as

their year of observation, age and municipality/county residency. Also, for this dataset, a variable for birth year was created. The types of intervention are as follows:

(1) Institution

(2) Foster home

(3) Strengthening parenting skills

(4) Strengthening the development of the child

(5) Supervision and control

(6) Network cooperation/other services

(7) Examination and treatment

(8) Housing

(9) Whether the child got a CWA intervention

Since it is the reduction of institutional placement which is of interest here, institutional placement is the main variable of interest. In order to estimate whether it is early child interventions that lead to reduction in institutional placement, I merged (3)-(7) into a lighter type of interventions. Housing type of intervention will not be included in the analysis as a light, early intervention, because it is highly unlikely that 4-8-year-old children get financial help for their own dormitory.

4.2 Visualizing trends

Before conducting an analysis, it was necessary to learn and visualize whether there was a trend for decline in institutional placement, as well as to see which age groups showed most decline. In order to do so, I created a dataframe where all observed children in the data are included. Further, I added a column for institutional interventions to see whether the child got institutional placement in the observed years. I also added a column for foster home placements for comparison sake.

Figure 1: Variation in institutional and foster home placement among 12-17-year-olds

From Figure 1 we can see that there was a decline in institutional placement among older children, compared to foster home placement which showed an increase. Initially, 16-17-year-olds showed an increase in institutional placement. Then the trend went the opposite side and they became the ones showing "the most" decline. For that reason, 16- and 17- year-olds will be the children I further refer to as the "older children" and their age group will be the main focus in this thesis.

Similarly, I created another figure in order to illustrate the trend in the institutional placement among 16-17-year-olds, but on county level:
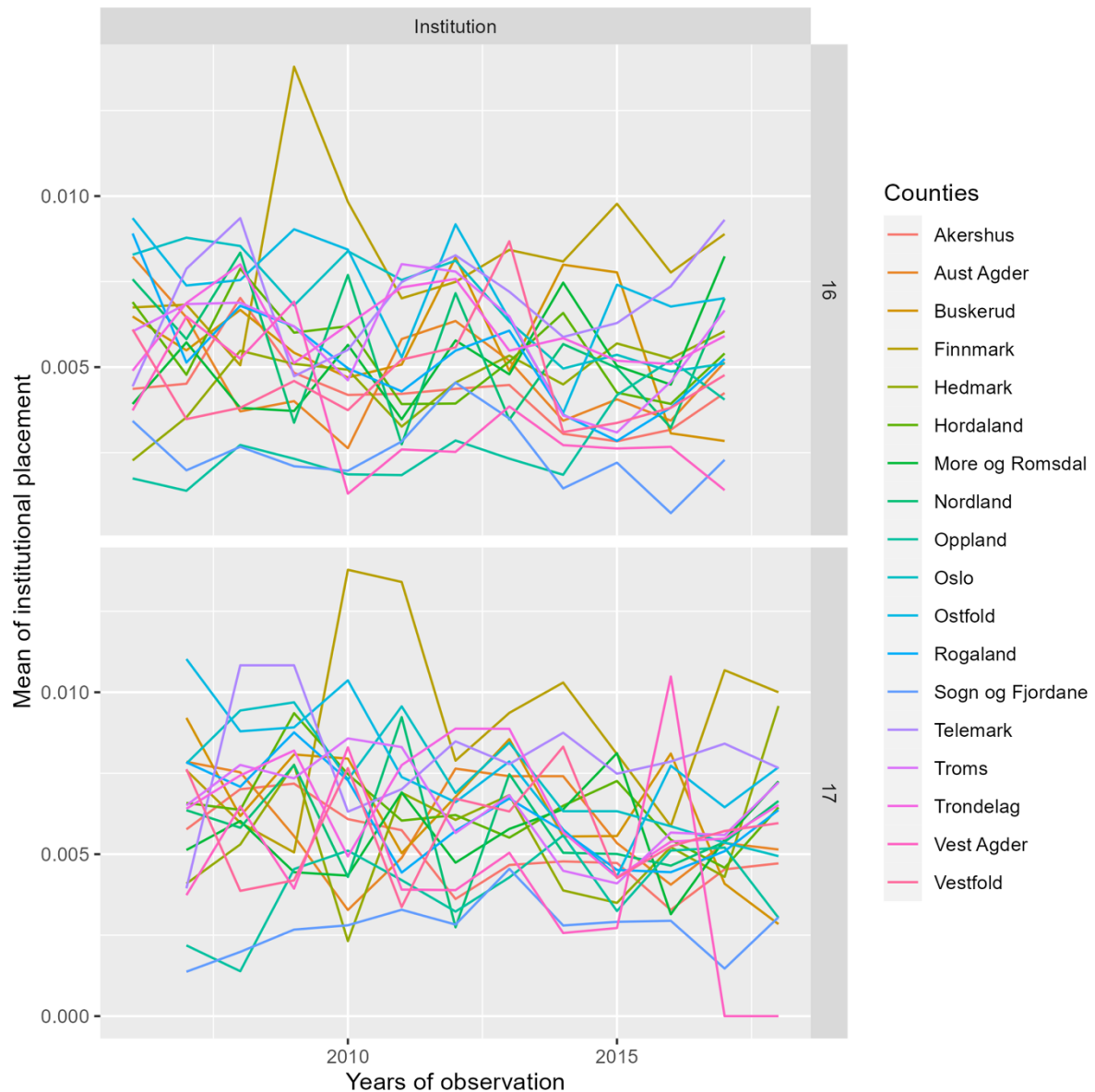
Figure 2: Variation in institutional placement among 16-17-year-olds on county level

As we can see from Figure 2, most of the counties showed a decline in institutional placement with a variation in timing. Østfold (Viken today) had very few observations and for that reason was removed from the analysis.

4.3 Data preparation

In order to learn why the proportion of older children has declined in institutional placement; I will conduct three analyses. All of the three analyses will use the data described above in various ways.

The first analysis is about finding out whether differences in regional cohort trends for early intervention predict differences in regional trend for late intervention of the same cohorts. To assess this, I created a new dataframe with birth year, county, light interventions when 4-8 years old and institutional intervention when 16-17 years old per person.[2] I further aggregated the dataframe to county-year level, since the hypothesis was that increasing the share of younger children treated earlier with light interventions in one birth cohort can influence the share in the birth cohort which needs institutional placement when they get older. In this dataframe, younger birth cohorts are not fully observed; for example those born in 2015 cannot be observed until they turn 8 and none of them can be observed with heavier interventions after they turn 13, since they are not that old yet. For this reason, I reduced observations; only those born in 1991 - 2001 were observed, since they are the ones that give us fully observed birth cohorts, 4-17 years.

The second analysis is about finding out whether family characteristics predicting institutional placement of older children became less common over time. To assess this, I created another dataframe with one observation per child. In order to change the dataframe into one observation per child, all the information on children's parents were observed when the child was 15 years old. Not all children were fully observed from the age of 4 until 17, and the children's backgrounds from a very young age was not necessary in order to do a prediction. Therefore, I reduced the sample to children who were fully observed between the ages 15-17 in order to increase birth cohort data for the analysis. Thus, it was the birth cohorts from 1979 to 2001 which were used in the analysis. Before the analysis was possible, a column for institutional intervention was added to the dataframe. This was done to observe whether 16-17-year-old children experienced institutional placement. In addition, some of the parent's income was missing in the data; these parents were assumed not to have any income.

Since there was an increase in foster home placement among young people, while institutional placement was reduced, the last analysis is about finding out whether there was a substitution towards foster home placement rather than institutional placement. In order to test this hypothesis, I created another dataframe with children's age, birth year, year of

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[2] Throughout this thesis, the county names used refer to the administrative divisions prior to the 2020 regional reform. From January 1st, 2020, Norway reduced the number of its counties from 18 to 11 counties.

observation, residency and whether the child was placed in an institution or a foster home when they were between 16-17 years old, as well as whether the child received light interventions at home between the ages of 16-17 years old. If the child experienced both institutional and foster home placements, they were given foster home intervention in the dataframe. Lastly, I aggregated this dataframe into birth cohorts where each intervention in each year counted shares of young people with each type of intervention.

5. Empirical Approach

In this section I will briefly present the methods I use in order to answer the research question, as well as the reasoning for the method of choice.

5.1. Identification

As mentioned, in order to learn why the proportion of older children in Norwegian institutional placement has decreased, three hypotheses will be tested. The first hypothesis is that light early child interventions lead to reduction in institutional placement in later years. This can be estimated with Difference-in-Difference estimated with Two-way Fixed effects. The method of choice fits well in this case, because we want to see whether regional trends in a potential causal factor (early intervention) predict regional trends in a delayed outcome (late intervention).

To estimate whether it was a composition change in the population that led to reduced institutional placement among older children, I will use Out of Sample prediction which can be done with Ordinary Least Squares (OLS). This method fits well in this case, because we can estimate how children's parents' characteristics predict institutional placement among older children and whether there has been a change in the parents characteristics over time that led to reduced institutional placement. This can be done by dividing the data in two periods, where the first period is used to estimate the model and then predict it in the second period.

The last hypothesis, which is the substitution towards foster home placement rather than institutional placement is going to be tested graphically by creating a Stacked Bar Chart. The chosen graph fits well in this case, because by looking at the shares of older children who received institutional intervention and foster home intervention, we can observe whether there was a pattern of reduction in institutional placement, while the foster home placement increased.

5.2. Difference-in-Difference estimated with Two-way Fixed effects

The Difference-in-Difference (DiD) is a well-known research design which is useful in order to study and estimate causal effects, especially regarding policy interventions and policy

changes that do not affect everybody the same way at the same time. The main idea of the DiD is to compute the causal effect of treatment which is the difference between the outcomes that would occur with and without treatment. In this design, the same unit cannot be both treated and non-treated. In that sense, we are interested in what would have happened if the treated unit remained untreated since the causal effect can only be estimated if we have a credible way of estimating the counterfactual outcome. The assumption here is that the treated unit - if left untreated - would have changed over time in the same way the never-treated unit changed over the same period - the "common trend" assumption (Lechner, 2010).

In its simplest 2x2 form, DiD design is based on comparing two units, treat and control, both observed before and after the treatment unit was exposed to treatment, pre- and post-treatment. In this design, time is crucial in order to differentiate the groups; post-treatment treated are those who received the treatment, pre-treatment treated are those who are treated prior to their treatment, pre-treatment nontreated are those who are not treated in the period prior to the treatment and post-treatment nontreated are those who are not treated after the treatment occurred. DiD design compares two groups, one that received treatment and one that did not, over a period of time. The goal is to see if the treatment had any effect on the group that received it. To make sure the comparison is reliable, the groups should have had similar experiences leading up to the treatment, and the treatment should not have had any noticeable effects before it was given. By using this method, we can account for other factors that could have influenced the outcomes, making the comparison more accurate (Lechner, 2010). Theoretically, DiD design can be noted as follows, where effect of the treatment is expressed by δ:

$$\delta = (\bar{Y}_{T,Post} - \bar{Y}_{T,Pre}) - (\bar{Y}_{C,Post} - \bar{Y}_{C,Pre})$$

In this design, δ is also the estimate for Average Treatment Effect on The Treated (ATT) for the treated group and $\bar{Y}$ is the sample mean for the particular group; control or treatment group in a particular time period; before or after the treatment. In this context it is important that the treatment is random, so that the common trend assumption is valid. δ would then be an expected and consistent estimator of the causal effect. This model can also be estimated with the following regression:

$$Y_{it} = \beta_{FE} D_{it} + \alpha_i + \lambda_t + \epsilon_{it}$$

This regression equation includes both time fixed effects and unit fixed effects. D_{it} is a treatment indicator variable for unit i in period t, and α_i and λ_t are unit and time dummies.

One of the crucial assumptions of the DiD design is a common trend assumption for λ_t which means that if left untreated, both groups should follow the same trend over time. That is, the differences in expected outcomes between people who receive treatment and those who do not receive treatment over time, based on certain factors, are not influenced by which group they are in after the treatment is given. If the group that received the treatment did not receive it, both the group that received the treatment and the group that did not receive the treatment would have experienced the same changes over time based on certain factors (Lechner, 2010).

However, Difference-in-Difference estimated with Two-way Fixed effects refers to a situation when, unlike the usual 2 x 2 model, we deal with a differential timing of treatment. That is, a simple DiD design requires that treatment units are treated at the same time, while in Two-way Fixed effects design the treatment units receive treatments at different points in time. This leads to the scenario where the adoption of some treatment is differentially timed across units (Cunningham, 2021). In this model, the regression equation is similar to simple 2 x 2 DiD:

$$\theta_{c,k}^{L} = \alpha_k + \lambda_c + \beta \theta_{c,k}^{E} + \epsilon_{c,k}$$

Here, $\theta_{c,k}^{L}$ is the share that received institutional intervention and $\theta_{c,k}^{E}$ is the share that received light, early interventions at home. λ_t is a cohort fixed effect and α_k is a county fixed effect which captures permanent county level differences in the relative use of early and late interventions. In other words, when the treatment occurs at different times, we can control for two-way fixed effects. This is done in order to control for time-invariant unobserved heterogeneity and other potential confounding factors.

In order to conduct DiD with Two-way Fixed effects it is convenient to use clustered standard errors. It is useful when some observations in the dataset are related, which is the

case in the dataset used for this thesis. Since we are dealing with county-level panels in this thesis, which means clustering at the county level, it allows for arbitrary serial correlation in errors within a county over time (Cunningham, 2021).

A crucial deviation from a usual 2x2 DiD design is that a common trend assumption is subtle in DiD estimated with Two-way Fixed effects when we want to study whether light, early interventions lead to less institutional placement. First of all, in order to interpret β as a causal parameter, we need to assume that there are no other causes for later, heavier CWA interventions. However, there might be other reasons for more frequent both early and late interventions. For instance, some local damages that hurt children's psychological well-being which would then require more early interventions. In that sense, it would not necessarily be early interventions at home that caused decline in institutional placement. Second, in this thesis, both control and treatment groups are treated with light, early CWA interventions with a variation in "dose", and there are no units that have never been treated. In that sense, the common trend assumption suggests that those districts who experienced the same trend in early interventions at home, should, on average, experience the same trend in later, heavier interventions. Further, Sant'Anna et. al (2023) refers to this as "forbidden" comparison between units who are both already treated. In that case, these "forbidden" comparisons can lead to negative weighting problems, because Two-way Fixed effects coefficients can often have the opposite sign of all individual-level treatment effects (Sant'Anna et al., 2023).

Nevertheless, the common trend assumption is subtle in a way that makes it challenging to interpret β. We are assuming that when light, early interventions at home increase, there is less institutional placement among these children in later years; this means that the average effect of increasing early, light interventions will depend on the "dose" of early intervention we use as a comparison. This "dose" is not the same among all groups and it changes over time which makes the comparison difficult. This highlights the issue that the causal effect is not the same for everyone and it can change over time. In order for β to be constant in different situations, the causal effects need to be the same for all individuals and not change over time (Sant'Anna et al., 2023). However, this is unlikely to be the case, and the estimated β from the Two-way Fixed effects model will thus be a mix of heterogeneous effects involved, which is not easily interpretable.

As the above discussion reveals, a rigorous and credible causal inference analysis can be challenging, but in this case the ambition is lower. As mentioned before in one of the Aftenposten articles, the director of Bufdir, Mari Trommald has suggested that the decline in institutional placement reflects investments in early interventions. The goal is to test an implication of this hypothesis by seeing whether the timing of "increased early intervention" across regions predicts variation in the timing of "reduced late intervention". We can observe the regions that first saw a decline in the use of institutions for children aged 16-17, and we want to know if these birth cohorts also saw an increased use of early age interventions relative to other regions.

5.3 Out of Sample Prediction

The second hypothesis is whether the decline reflects a change in the background traits of children. According to Hernæs et al. (2022), a number of family background variables predict CWA interventions. If children today grow up in a different mix of socioeconomic conditions, parental educational levels, etc., then these changes would in themselves predict a decline in CWA interventions. To test whether this hypothesis finds support in the given data, I will estimate a linear probability model using Ordinary Least Squares (OLS) using data from the first part of data period - and then use this model to predict the probability of the CWA institutional placement in the decline period to see if compositional change in itself would have predicted declining use of institutions.

In order to conduct an Out of Sample Prediction, it is necessary to first run a simple Linear Regression first. Since one of the hypotheses is that there was a composition change in the population, there are many variables that could affect institutional placement. We need predictors that distinguish between families with a high and low risk of institutional placement at age 16-17. We also want to have as many informative and good predictors as possible. It is therefore convenient to use Multiple Linear Regression (MLR). The regression equation for MLR looks as follow:

$$Y_i = \alpha + \sum_{k=1}^{K} \beta_k X_{i,k} + e_i$$

where Y is the predicted value of the dependent variable which is whether the child experienced institutional placement when 16-17 years old and $\beta_k X_{i,k} + e_i$ are the regression

coefficients of independent variables *X* and *e* is the model error which tells us how much variation there is in the estimated *Y*.

The independent variables used in this model are chosen based on a report from Hernæs et al.(2022). Firstly, Hernæs et al. (2022) emphasized that the selection into institutional placement is stronger than the selection into foster home placement among the children over the age of 13. One of the reasons for that is that older children differ before placement in terms of the family background. Thus, a significant part of the long-term outcome differences is due to selection, and not effects of institutional rather than foster home placements. Second, conditions at home are important for young people having institutional interventions. Parents of children in foster care had a lower income, less education and a higher proportion of disability benefits and social allowance earnings than parents with children in institutions. On the other hand, children who were placed in institutions for the first time between the ages of 13 and 18 had parents with higher socio-economic status compared to those who were placed in foster care. Hernæs et al. (2022) pointed out that these differences in outcomes could be partly explained by the fact that young people who lived in institutions had characteristics which "led" to have worse outcomes than young people who lived in foster homes (Hernæs et al., 2022). Thus, it is family background characteristics which are chosen as independent variables, because they are important predictors that have a strong and robust connection with children's likelihood of being associated with outside-of-home interventions.

Before running MLR, I add splines on mother's and father's age at birth, because adding a spline term can improve the fit of the model by capturing non-linear relationships between the dependent and independent variables. Regression Splines is a combination of linear and polynomial function. Using a simple Polynomial Regression can often result in overfitting. Splines can provide as much overfitting as polynomials. However, polynomials can become very sensitive and change a lot even if the data changes little - especially at the endpoints - because it's a big smooth curve that should go from the lowest to the highest values of the X variable we're looking at (mother's and father's age at birth). For instance, in a simple Polynomial Regression, altering the value of a dependent variable at one point in the training set can have an impact on the fitting of the polynomial for data points located at a significant distance. With splines, we can think of the continuous variable as divided into multiple bins (ranges) where we fit different non-linear functions to the different bins (Vyawahare, 2019). The regression equation with multiple splines looks as follow:

$$Y = \sum_{k=1}^{K_1} \beta_1 B_k(x_1) + \sum_{k=1}^{K_2} \gamma_k M_k(x_2) + e$$

After running a MLR model with two splines, the next step is Out of Sample prediction. Out of Sample Prediction is often used to test and refine machine learning models. The typical use is to take a random part of the data (the test sample) and leave this out of the data used for estimation (the training sample). When the model has been estimated, we can use it to predict the outcomes in the test sample to see if the model predictions are accurate and unbiased (James et al., 2021). It is usually a prediction made by a model on data which is not used during the "training" in order to predict the values based on the input data. However, in this thesis, the data is divided in two periods in order to estimate the model in the first period and then predict it in the second period. This method allows us to examine whether there was a composition change in population which led to reduction in institutional placement.

5.4 Stacked Bar Charts

The third hypothesis is whether the decline in institutional placement represents a shift in the type of out-of-home intervention preferred by the CWA. To examine this, the goal is to see whether the decline in institutional placement has been accompanied by a similarly sized increase in the use of foster homes so that the total count of children assigned to out-of-home interventions (institutional placement or foster homes) remains stable. In order to test this hypothesis, I will create a Stacked Bar Chart.

A Stacked bar chart is a form of bar chart which is typically used to visualize quantities or shares of some variables. It shows the composition and comparison over time. Usually, one bar represents the sum over multiple categories (Streit & Gehlenborg, 2014). For instance, in this thesis, each bar represents the share of older children who got institutional placement and a share of older children who got foster home placement in a given year. Stacked Bar Charts are usually used when we want to compare the amounts or the shares of different variables and also show how much each part contributes to the total. In other words, it allows us to visualize rankings that come from more than one factor (Streit & Gehlenborg, 2014).

In order to estimate substitution towards foster home placement rather than institutional placement quantitatively with Stacked Bar Charts, we can observe whether the share of young people who were placed in foster homes increased, while the share of young people who were placed in institutions declined. If that is the case, we would conclude that the observed data were consistent with an intervention substitution towards foster home placement.

6. Results and discussion

In this section I will present graphical evidence and regression results for each hypothesis based on the methodologies outlined above. Further I will discuss the implications of the findings.

6.1 Difference-in-Difference estimated with Two-way Fixed effects results

In order to estimate whether light early interventions lead to reduction in institutional placement when children get older, I estimated the following regression equation:

$$\theta_{c,k}^L = \alpha_k + \lambda_c + \beta\theta_{c,k}^E + \epsilon_{c,k}$$

Estimating this regression equation gave the following results:

Table 1. Difference-in-difference estimated with Two-way Fixed effect results.

Dependent Variable:	Mean of institutional placement
Mean of light interventions	0.0665* (0.0315)
Fixed-Effects:	- -
County	Yes
Birth Year	Yes
S.E. : Clustered	by: County
Observations	216
R2	0.57977
Within R2	0.02495
- - -	
Signif. codes: 0 ' *** ' 0.001 ' ** ' 0.01 ' * ' 0.05 ' . ' 0.1 ' ' 1	

As we can see from Table 1, the hypothesis that light early interventions are associated with a reduction in institutional placement as the birth cohort ages is rejected. The DiD coefficient β is estimated to be 0.0665; it is positive and significant. This is consistent with early intervention *increasing* the share requiring heavy intervention, but it could also be explained in other ways. If the increased use of early intervention reflected worsening childhood environments, we would then also expect that these worsened environments also raised the risk that children would need more extreme interventions later.

6.2 Out of Sample prediction results

In order to find out whether decline in institutional placement could be attributed to changes in family characteristics that could previously predict such placements, I estimate a Multiple Linear regression with splines. Share of children who got an institutional placement when 16-17-years-old is the dependent variable, while all family background characteristics are independent variables. Splines are added to the mother's and father's age at birth with 4 knots on each. The estimation produced the following results:

Table 2. Multiple Linear regression results.

	Dependent variable:
.	Institutional placement
bs(Mother's age at birth, knots = 4)1	0.064***
	(0.010)
bs(Mother's age at birth, knots = 4)2	0.017***
	(0.006)
bs(Mother's age at birth, knots = 4)3	0.074***
	(0.014)
bs(Mother's age at birth, knots = 4)4	
bs(Father's age at birth, knots = 4)1	0.011
	(0.011)
bs(Father's age at birth, knots = 4)2	-0.008
	(0.007)
bs(Father's age at birth, knots = 4)3	0.021
	(0.016)
bs(Father's age at birth, knots = 4)4	
Deceased mother	0.004
	(0.004)

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Deceased father	0.008***
	(0.002)
Mother completed high school	-0.002***
	(0.0003)
Mother completed university	-0.001***
	(0.0003)
Mother's work income	-0.002***
	(0.006)
Mother's total income	0.008
	(0.005)
Mother has a crime penalty	0.032***
	(0.001)
Mother receives work assessment allowance	0.006***
	(0.0004)
Mother's civil status	0.001***
	(0.0002)
Mother receives financial assistance	0.036***
	(0.001)
Father completed high school	-0.002***
	(0.0003)
Father completed university	-0.001***
	(0.0003)
Father's work income	-0.005*
	(0.003)
Father's total income	-0.002
	(0.003)
Father has a crime penalty	0.013***
	(0.001)

Father receives work assessment allowance	0.006***
	(0.0004)
Father's civil status	0.001***
	(0.0002)
Father receives financial assistance	0.024***
	(0.001)
Constant	-0.047***
	(0.012)

Observations	598,537
R2	0.024
Adjusted R2	0.024
Resdiual Std. Error	0.083 (df = 598512)
F Statistic	607.549*** (df = 24; 598512)

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Note:	*p<0.1; **p<0.05; ***p<0.01

The data was then divided in two periods in order to estimate the model in the first period and then predict it in the second period. Further, the following figure were created in order to illustrate whether the prediction is consistent with actual observation on institutional placement among 16-17-year-olds:
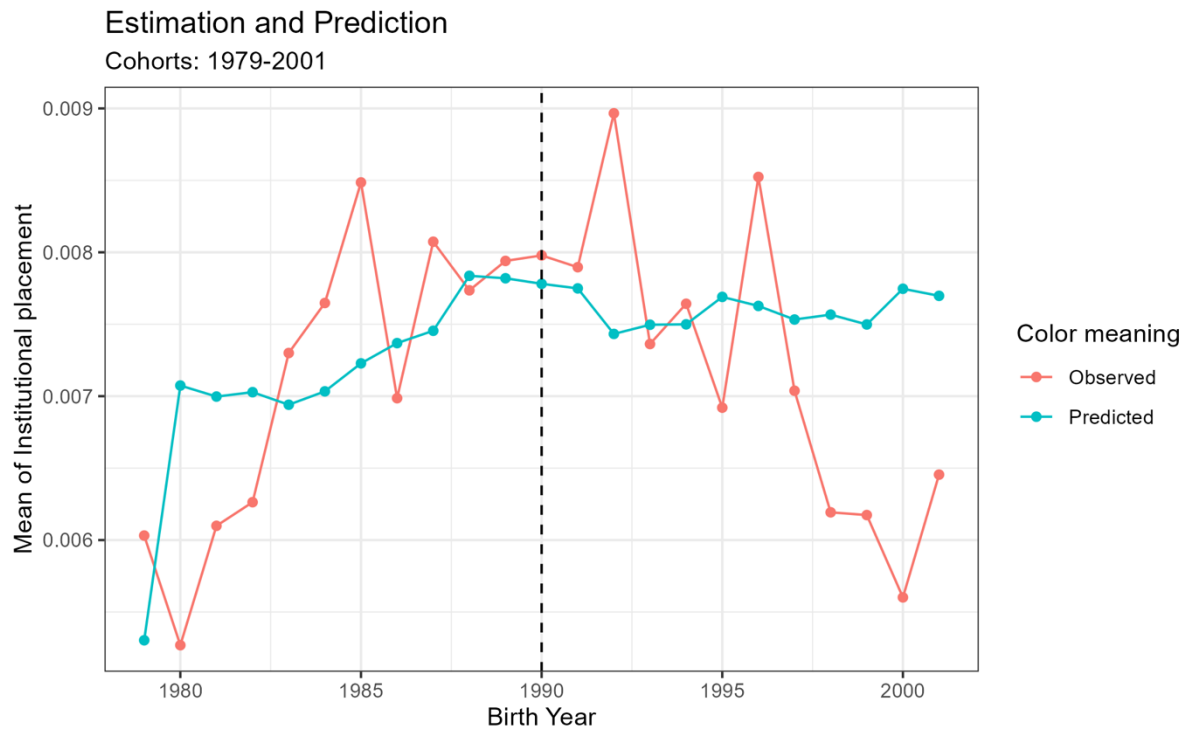
Figure 3: Institutional placement prediction based on parent's characteristics

Based on Figure 3, we can see that the model predicts higher institutional placement among 16-17-year-olds than it actually was and there is no sign of a downward trend. Thus, there were no composition change in the population which meant that later generations had lower risk factors that predicted institutional placement for older children. These results are consistent with the data and variables used in the analysis. However, it may be that there are some compositional changes to the variables which were not taken into account here, such as children's levels of mental well-being etc.

6.3 Stacked Bar Chart results

In order to see whether the CWA conducted intervention substitution towards foster home placement rather than institutional placement among older children, I examine whether the reduction in institutional placement coincided with a corresponding increase in the use of foster homes. We can look at the following figure:

Shares of birth cohort in out of home intervention
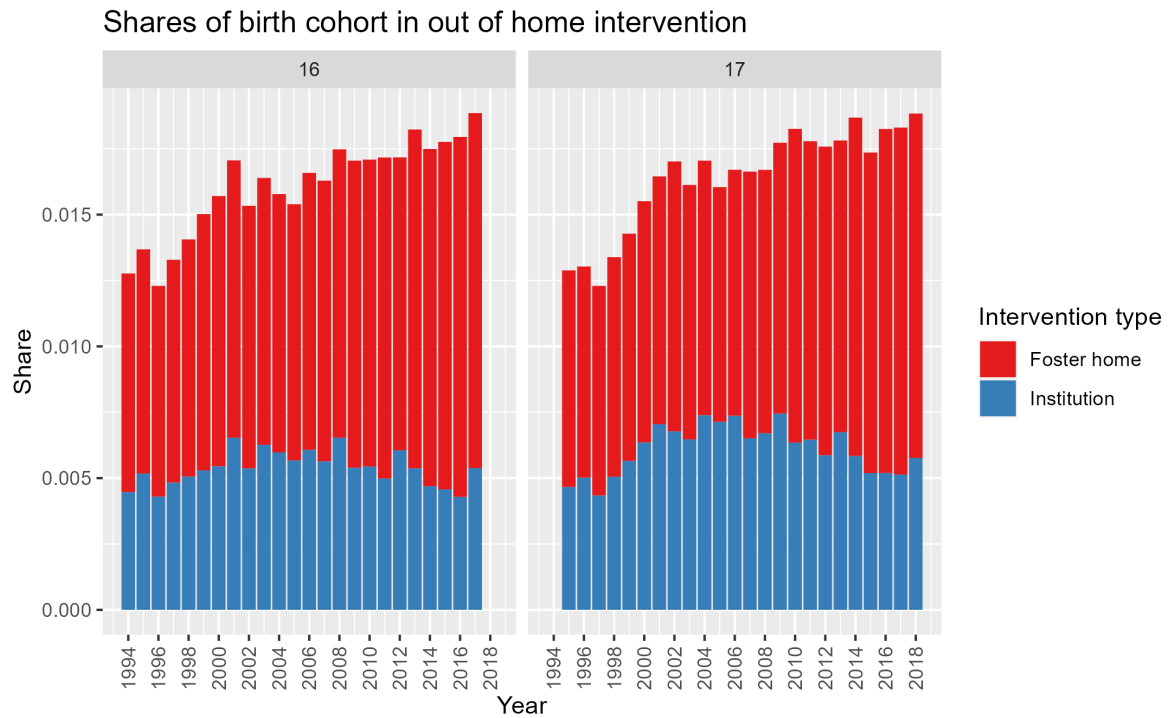
Figure 4: Shares of birth cohorts in institutions and foster homes

Figure 4 illustrates that there were more older children placed in foster homes than in institutions. We can also see that foster home placement kept increasing continuously, while institutional interventions initially increased before it decreased with later birth cohorts. Furthermore, in order to get more clarity, we can examine Figure 5:

Shares of birth cohort in out of home intervention
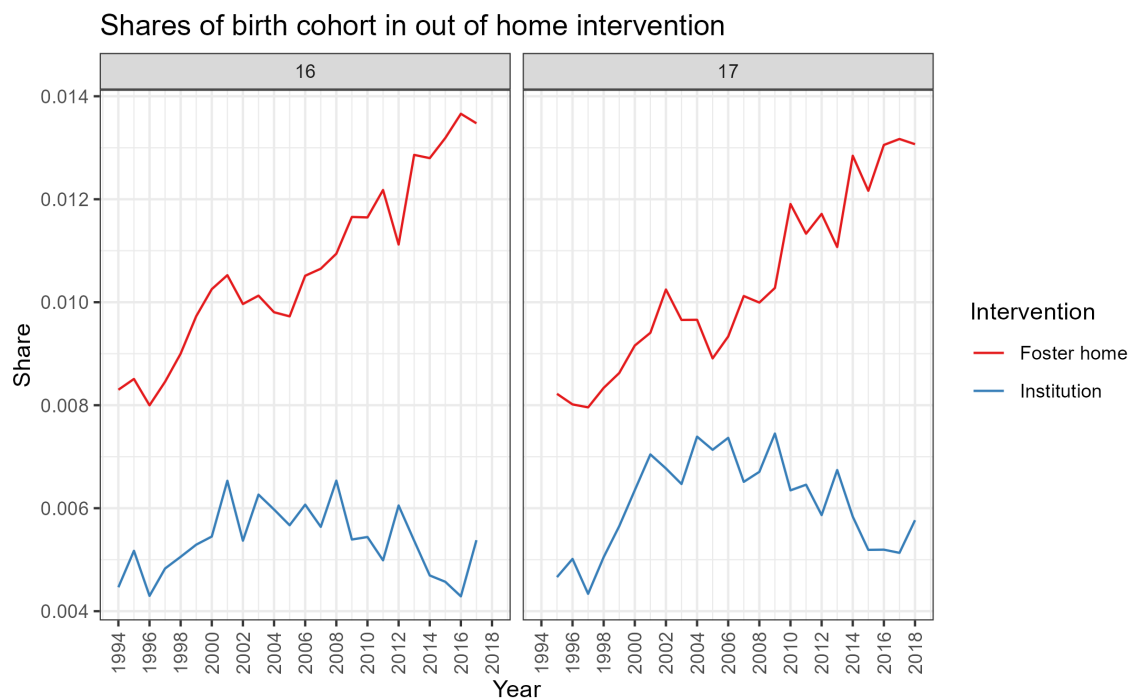
Figure 5: Trend for shares of birth cohorts in institutions and foster homes

Similarly to Figure 4, Figure 5 indicates that reduction in institutional placement coincided with a corresponding increase in the use of foster homes among 16-17-year-olds. Based on both figures and consistent with the data used in this thesis, we can to some degree conclude that there was an intervention substitution from CWA's side.

6.4 Discussion

In this thesis, I conducted three different analyses in order to learn why the proportion of older children (16- and 17-year-olds) in institutional placement has declined, as well as examined whether the findings are consistent with the data used for this thesis. The main finding in this thesis is that it is likely the intervention substitution towards foster home placement from CWA's side which could explain some decline in institutional placement among older children. Of the three hypotheses examined, this is the one that is most consistent with the data examined. This conclusion is also consistent with findings from Backe-Hansen et al. (2011). They emphasized that the intention has been to increase the use of emergency homes and foster homes when placement outside the home occurs. However, it does not necessarily mean that the intervention substitution is the only factor behind the downward trend in institutional placement. There could still be other reasons for the decline we observe.

The first hypothesis was that light early interventions at home could be beneficial in order to reduce institutional placement in later years. The early intervention hypothesis was initially put forward in the media; the decline is due to an increased focus on early intervention, which has resulted in a lower need for institutional placement as the children get older. The regression results showed the opposite; if children who were not associated with CWA and then got a light, early intervention in young age, they were associated with more institutional intervention in later years. However, this should be interpreted with caution. If these children would not receive early, light interventions at home first, they could end up with worse outcomes than just institutional placement. On the other hand, it might be other local damages that caused children getting involved with the CWA earlier. In that sense, it would not necessarily be early interventions at home that "caused" an increase in institutional placement. It could rather be the local shock leading children getting involved with the CWA in the first place that affects future institutional placement. For these reasons it is not

appropriate to conclude that there is a causal link between light, early interventions and institutional placement in later years.

In addition to this, the estimated β could suffer from negative weights due to "forbidden" comparisons which the model of choice, the Two-way Fixed effects allows. The model also suggests the treatment is the same for everyone which is not the case in this thesis. It could be that some children got several light interventions when they were between 4-8 years old, while some only got one. In addition to this, some light interventions may vary in "strength", for instance, strengthening parenting skills might be more "intense" than network cooperation, as well children could respond to light interventions differently. In that sense, the "dose" of early interventions is not the same for everyone and it could change over time. Since that is the case, the estimated β could also suffer from heterogeneous treatment effects which then results in an estimator that is unlikely to be directly policy relevant or easily interpretable.

An appropriate explanation could then be the composition change in population, which was the second hypothesis. Since we saw that institutional placement declined, we could expect that there are certain family characteristics which improved over time, which could in turn explain the decline in institutional placement. For instance, increased income among parents, parents having children later etc. In other words, the goal of examining this hypothesis was to find whether the characteristics that predicted institutional placement in the past become less common over time. In addition to this, findings from Hernæs et al. (2022) indicated that children who were placed in institutions for the first time between the ages of 13-18 had parents with higher socio-economic status compared to those who were placed in foster care. Thus, family background was considered as an important predictor of institutional placement in Hernæs et al. (2022). By looking at Figure 3 and based on the chosen independent variables, we can conclude that also this hypothesis is rejected, which means that it was not composition change in the population that led to less institutional placement among older children. However, it may be that there are some compositional changes to the variables which were not taken into account in this analysis.

The last hypothesis was the substitution towards foster home placement rather than institutional placement from CWA's side. The reason for that might be that it is better for the child to be placed in a family from the beginning, rather than in-and-out of institution. It

might also be that the environment for the child is considered better in the foster home than in an institution, because the children might get the opportunity to experience a more hospitable environment, especially if the foster home consists of close relatives. In addition, Backe-Hansen et al. (2014) found that those placed in institutions during the period 1993-2003, to a lesser extent achieved a good transition into adulthood compared to those placed in foster homes. One of the reasons for that could namely be the more hospitable environment for children placed in foster homes. Based on Figure 4 and Figure 5, we saw that reduction in institutional placement coincided with a corresponding increase in the use of foster homes. This results in a conclusion that the CWA is likely conducting an intervention substitution, which could be one of the reasons for decline in institutional placement.

Nevertheless, the early intervention hypothesis and the composition change hypothesis were rejected. Firstly, the sample used in this thesis are of only Norwegian-born children. A study from the Frisch Centre found significant differences between those born in Norway and those with immigration background. The proportion with at least one immigrant parent was slightly higher among young people in institutions (Hernæs et al., 2022). Children and young people with an immigrant background also had a somewhat higher tendency to be involved with the CWA (Hernæs et al., 2021). In addition to this, the declining numbers regarding institutional placement from Statistics Norway were also caused by the fact that the number of unaccompanied minor asylum seekers and refugees in Norway has decreased (Dyrhaug, 2020). On the other hand, Backe-Hansen et al. (2014) indicated that older children with immigrant background to greater extent achieved good transitions into adulthood, which may be due to the fact that the basis for decision varies between children with Norwegian-born parents and children with an immigrant background. Since the basis for decision varies for them, it also could indicate that the outcomes of institutional placement might be different for children with an immigrant background.

Another reason for the decline in institutional placement might be other interventions rather than the CWA's early interventions, such as health care or counseling. For instance, Hernæs et al. (2022) emphasized that mental health issues among children were also important predictors regarding care placement. Thus, there might be changes in the types of treatments offered, the availability of mental health care services for children, or the attitudes and beliefs of parents towards seeking treatment for psychological issues in both children and themselves. All these factors could lead to less institutional placement.

Furthermore, there might be other factors that caused an increase in early interventions at home. For instance, as mentioned before, there might be some local damages that affected children's psychological well-being which then required more interventions at home. It could also cause an increase in heavier interventions outside of the home. Nevertheless, either institutional placement increases or decreases, it is then the local damage that causes it, not light, early interventions or other factors such as composition change in population.

7. Conclusion

The aim of this thesis was to learn why the proportion of 16- and 17-year-olds in institutional placement has decreased. Three hypotheses were tested in order to find the answer which was consistent with the data. The first hypothesis was that early, light Child Welfare Authority's interventions lead to reduction in institutional placement when children get older. Early intervention hypothesis was initially put forward in the media; the decline is due to an increased focus on early intervention, which has resulted in a lower need for institutional placement as the children get older. The Difference-in-difference analysis estimated with Two-way Fixed Effects results showed the opposite; if children who were not associated with the CWA and then got a light, early intervention in young age, they were associated with more institutional interventions in later years. However, the results from this analysis should be interpreted with caution due to the method of choice.

The second hypothesis was that it is the composition change in population that led to less institutional placement among 16-17-year-olds. Since we observed that institutional placement declined, we could expect that there are certain family characteristics which improved over time, which could explain the decline in institutional placement. In other words, the goal was to see whether the characteristics that predicted institutional placement in the past become less common over time. This hypothesis got rejected, because the method of choice, Out of Sample Prediction, predicted increased institutional placement based on family's characteristics. However, it may be that there are some compositional changes to the variables which were not taken into account in this analysis.

The third hypothesis was tested graphically by creating a Stacked Bar Chart in order to examine whether Child Welfare Authorities substitute more towards foster homes rather than institutional placement. The Stacked Bar Chart showed that there was a reduction in institutional placement which coincided with a corresponding increase in the use of foster homes. Thus, consistent with the data, the conclusion is that it is likely an intervention substitution that could be one of the reasons for decline in institutional placement. This finding is also consistent with findings from Backe-Hansen et al. (2011) where they emphasized that the intention has been to increase the use of emergency homes and foster homes when placement outside the home becomes necessary, thus making the institutional placement "the last resort".

However, even if the hypothesis that Child Welfare Authorities substitute more towards foster home rather than institutional placement is accepted, it does not mean that is the only explanation behind the downward trend in institutional placement; there could still be other reasons for the decline we observe. Since only Norwegian born children were used as a sample, it would be further interesting to learn whether we would have similar results if those with immigration background were included in the analysis. In addition to this, it would be interesting to see whether other interventions rather than light, early intervention had an effect on future institutional placement. Lastly, since the first two hypotheses were rejected, it would be interesting to learn whether early interventions and/or composition change in the population had an effect on stay days in institutions. Thus, it could be that older children had shorter stay days in institutions as a result of early investment in at-home interventions or improved family characteristics.

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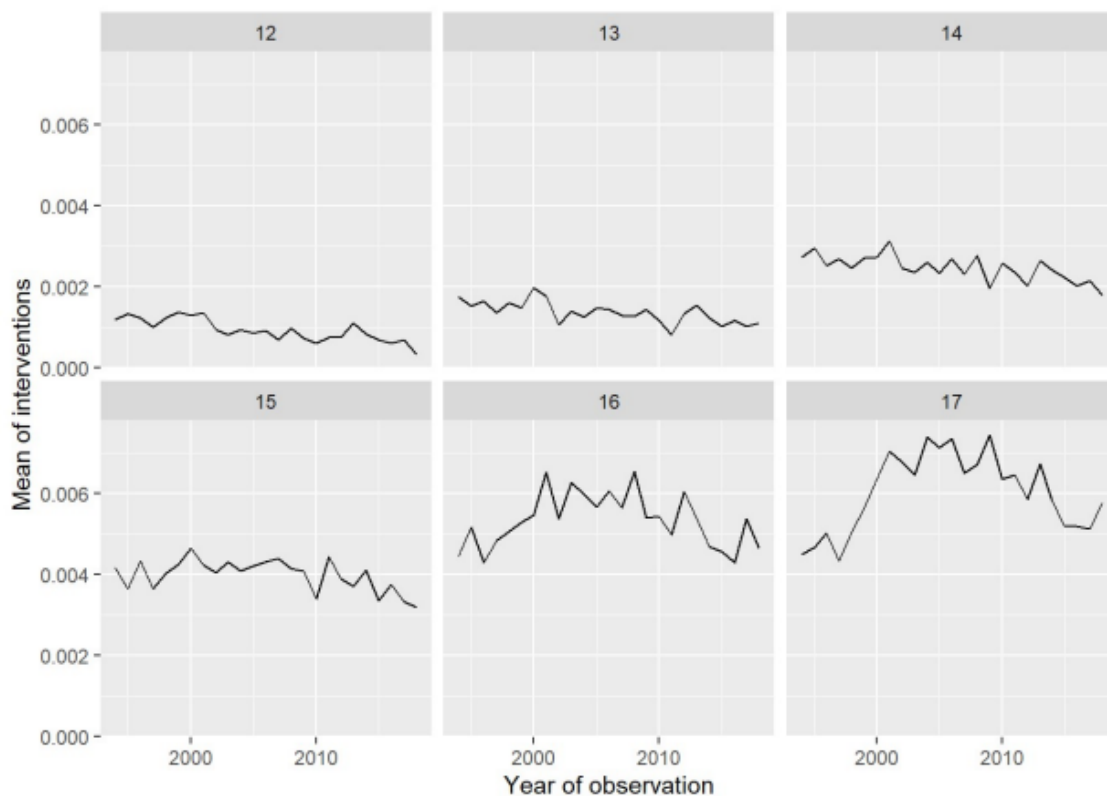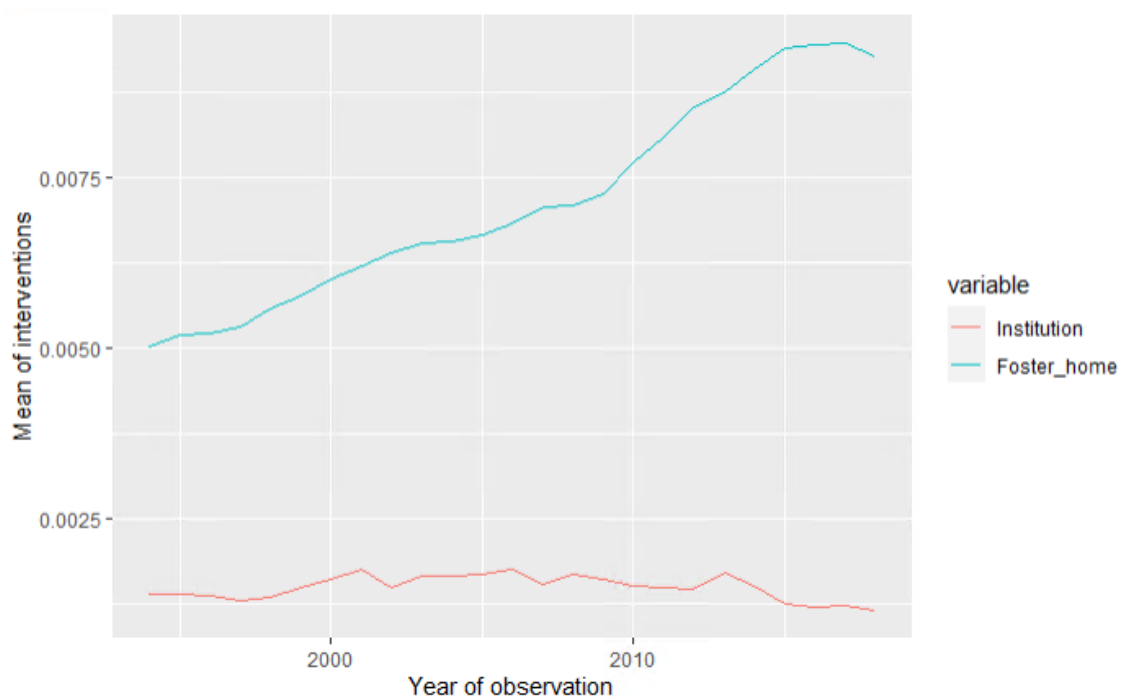
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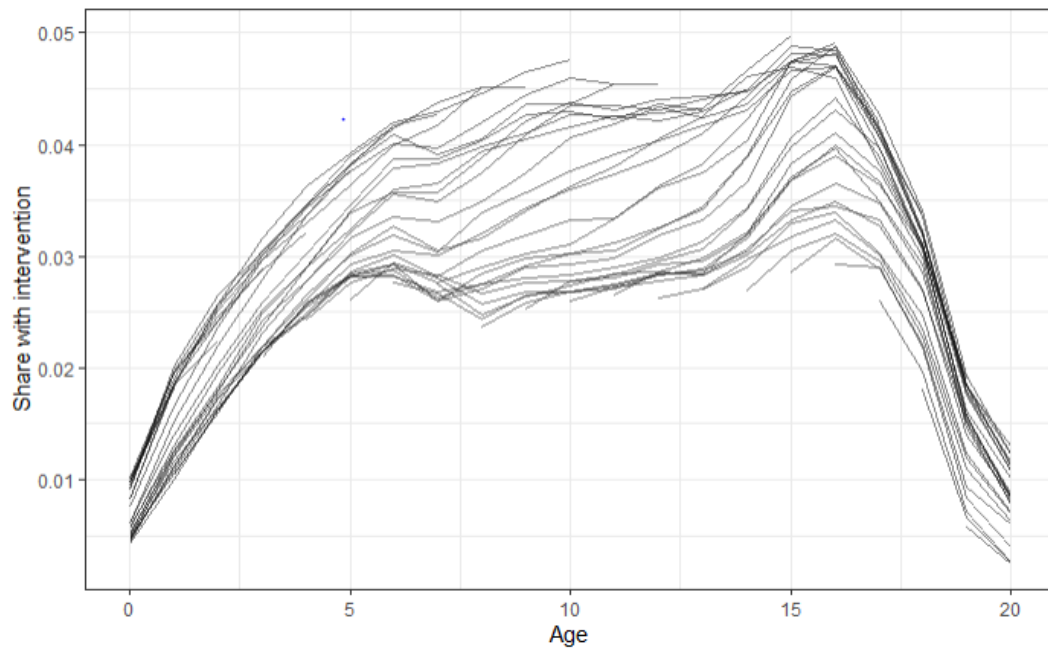
Figure 6: How the proportion with any intervention at different ages has varied across birth cohorts.
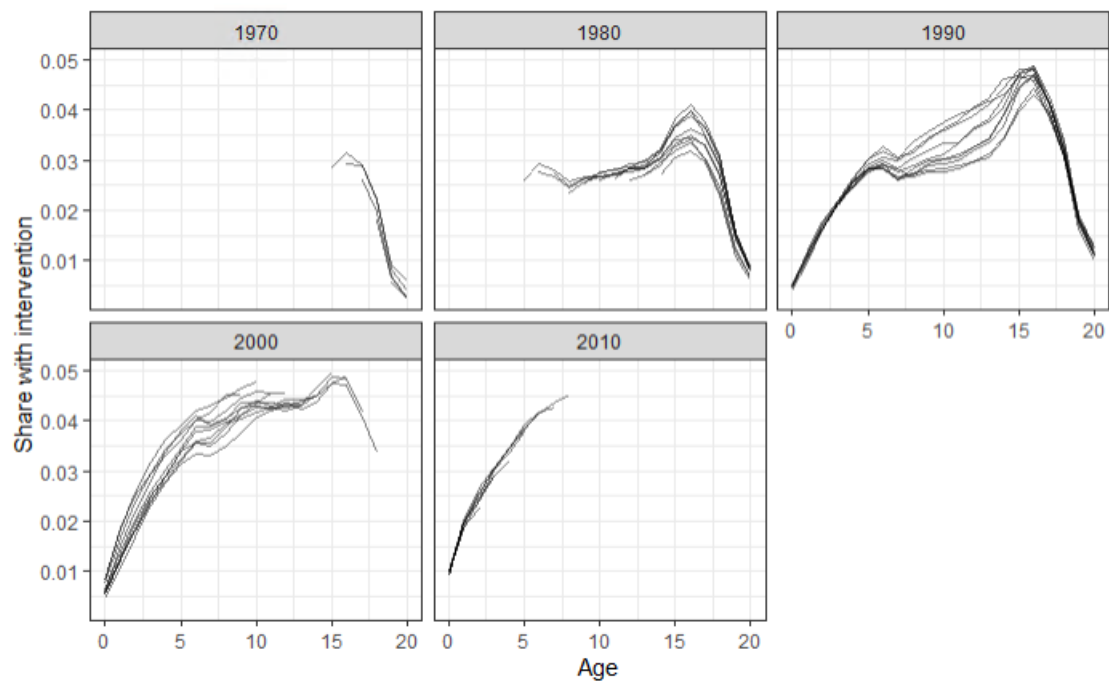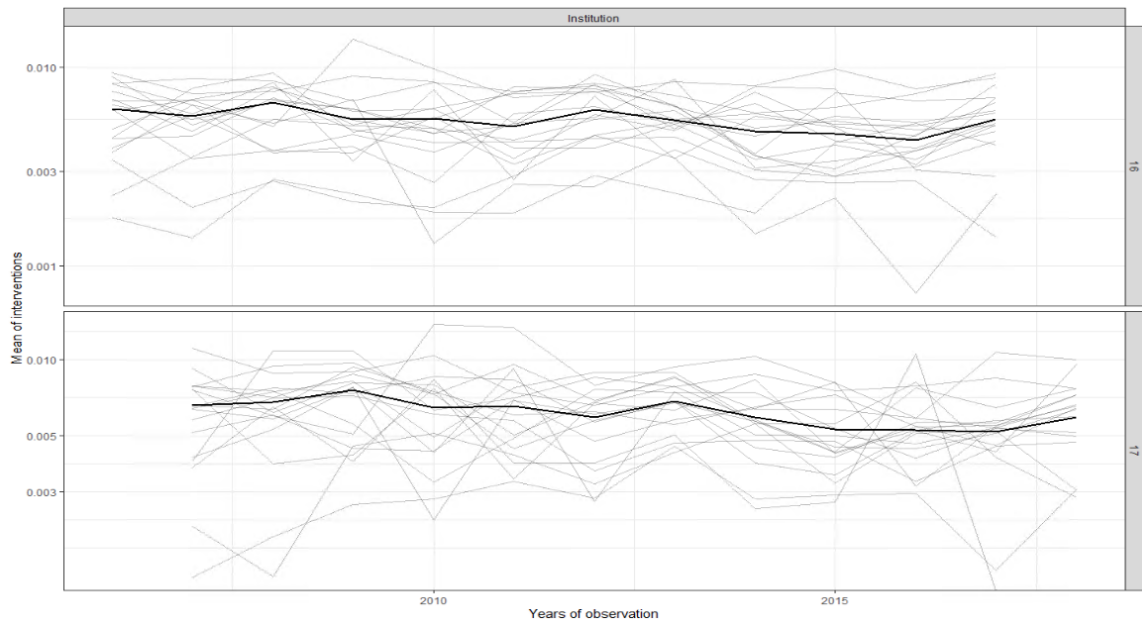

Figure 7: How the proportion with any intervention at different ages has varied across ten-year birth cohort groups.
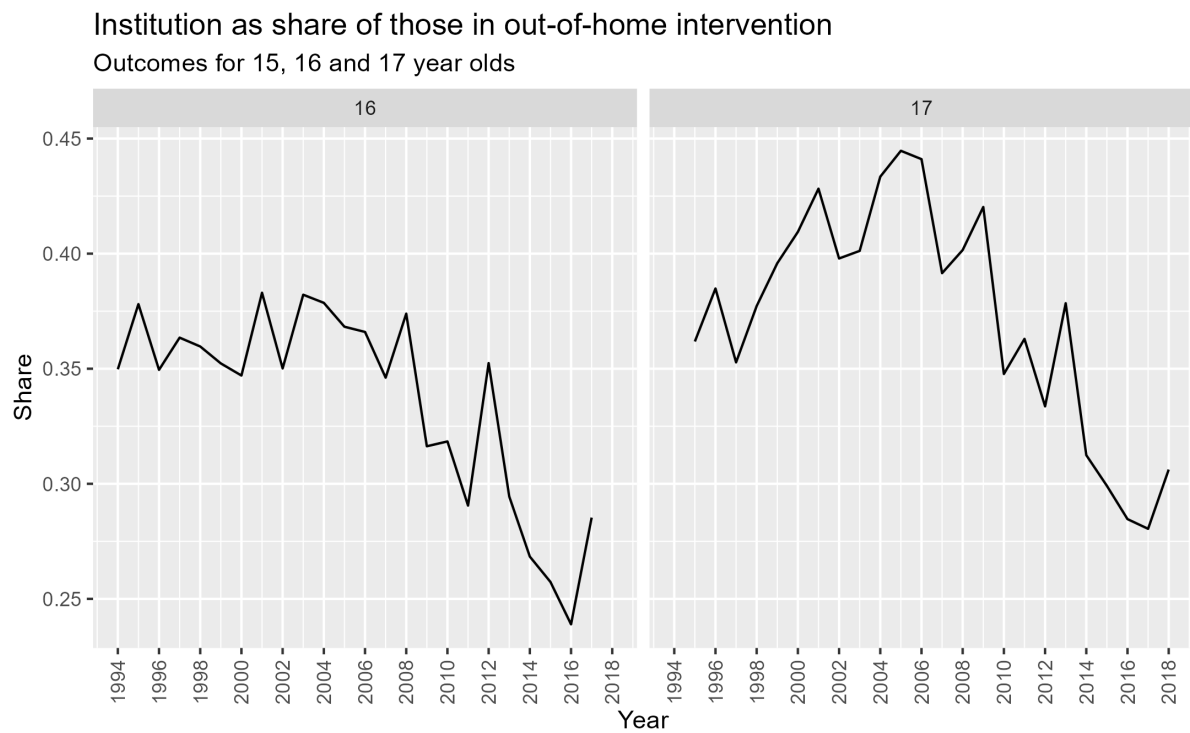
Figure 8: Variation in institutional placement among 12-17 year-olds

Figure 9: Variation in institutional and foster home placement

Figure 10: Variation in institutional placement on county level compared to the national average

Institution as share of those in out-of-home intervention
Outcomes for 15, 16 and 17 year olds

Figure 11: Institutional placement as share of those in out-of-home intervention among 16–17-year-olds