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## Exploring the labor market consequences of psychiatric disorders: An event study approach

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*Henri Salokangas*  
**Exploring the labor market  
consequences of psychiatric  
disorders: An event study approach**

**Aboa Centre for Economics**

Discussion paper No. 148

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**ABSTRACT**

Vast literature documents a negative association between mental disorders and labor market performance but it is challenging to find a research design that could provide an reliable estimate for an effect. This paper provides new evidence on the immediate labor market consequences following the first psychiatric admission using the event study framework. To reduce selection bias, I exploit variation in the timing of the first psychiatric admission to estimate the effect of the first psychiatric treatment on labor market performance. Using Finnish administrative data, I find that the first psychiatric admission leads to loss in earned income of about € 1700 (10%). However, but to a large extent the empirical analyses demonstrate decreasing pre-trends in labor market outcomes before the event year, thus signaling problems related to endogeneity. Anxiety disorders provide a notable exception by exhibiting pre-event labor market trajectories for which parallel trends assumption cannot be ruled out. This study provides evidence that research designs that use timing variation in the first health may produce very modest pre-trends also in relationships typically considered endogenous.

JEL Classification: I10, J21, J31

Keywords: Mental disorders, Employment, Wage differentials

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# 1 Introduction

Health is a well-established determinant of labor market performance (cf. Bartel and Taubman, 1979; Currie and Madrian, 1999). To understand both individual and the societal repercussions of severe negative health events, it is vital to provide monetary estimates of immediate financial consequences following the manifestation of an illness. Recent evidence has shown that negative health shocks may have substantial labor market consequences for both the affected individuals (García-Gómez et al., 2013; Jeon, 2017; Dobkin et al., 2018; Jones et al., 2019; Vaalavuo, 2021) and their family members (García-Gómez et al., 2013; Costa-Ramon, 2020; Jeon and Pohl, 2017). Primarily the strategy in these studies has been to focus on plausibly surprising negative health events in which selection bias plays a mitigated role and causal impacts of the health events can be identified.

As important as carefully chosen research designs can be in providing an unbiased estimate for an effect, to some extent this is counterbalanced by limits to external validity. To some questions it is challenging or even practically impossible to find a research design that provides an unbiased estimate for an effect. Such is the case in mental health. However, the need for these financial evaluations is becoming greater as the societal burden related to mental health is becoming ever more obvious. Mental disorders are the most common reason for disability for ages below 35 and the share of disability adjusted life years (DALY) attributable to mental and substance use disorders is increasing (GHDx database, 2017). Although the role of mental disorders as the leading cause of the global disease burden is increasingly being recognized, it is not reflected in the health resources allocated to mental illnesses (Vigo et al., 2016).

Poor mental illness is a risk factor for multiple diseases (Prince et al., 2007) and a strong determinant of life satisfaction (Rissanen et al., 2011; Layard, 2013). There is clear evidence for mental disorders being associated with considerable deficits in employment (Smith and Smith, 2010; Greve and Nielsen, 2013; Frijters et al., 2014; Mousteri et al., 2019) and income (Ettner et al., 1997; Smith and Smith, 2010; Chatterji et al., 2007; Hakulinen et al., 2016; Banerjee et al., 2017; Hakulinen et al., 2019a). The previ-

ous studies on mental disorders and labor market outcomes have produced a very diverse set of estimates. These estimates are not comparable in a straightforward way mainly due to differences in the region of interest, attrition, the definition of mental disorders and the choice of the control group. Nevertheless, the main difficulty interpreting these results is related to the concerns arising from endogeneity. More specifically the problem is that mental disorders and considerable changes in mental health do not come as a sudden shock, but rather through long-term processes in which vulnerabilities related to pre- and perinatal conditions, the family history of mental disorders, temperament, personality traits and accumulated negative life events often unobservable for econometricians may play an important role. Instrumental variables approaches with instruments such as the parental history of mental disorders (Ettner et al., 1997; Marcotte et al., 2000) or the death of a close friend (Frijters et al., 2014) have aimed to tackle this problem but we are still left with concerns regarding the validity of the exclusion criterion or limited generalizability. Consequently, to the present day researchers have not found an airtight research design that allows identifying the impact of mental health on labor market outcomes. Regardless of the absence of a suitable randomized control trial, “natural experiment”, plausible unexpected shock or an instrumental variable that could solve the apparent problems related to endogeneity, finding plausible answers to policy-relevant questions should still be pursued.

This paper reevaluates mental disorders and labor market performance by exploiting the variation in the timing of first treatment contact in the event study framework. Using a long panel of Finnish administrative data that includes socio-economic and health information over a period extending from 1970 to 2018, I first start by examining pre-admission trends in the labor market performance of the affected and the unaffected individuals. These two groups already demonstrate divergence in labor market performance before the first psychiatric admission occurs which is line with prior evidence using register-based data on severe mental disorders and labor market outcomes (Greve and Nielsen, 2013; Hakulinen et al., 2019b). Once the first treatment contact takes place, labor market performance does not improve relative to the unaffected comparisons. The substantial

differences in the pre-admission trends mean that causal interpretations are questionable in the usual comparisons between affected and unaffected groups.

In order to reduce endogeneity, I proceed to compare the affected individuals with people who have similar background characteristics and experience a first psychiatric admission but a few years later. In effect, I estimate the immediate changes in labor market outcomes using a dynamic difference-in-differences framework that aims to provide the treatment group with a control group that exhibits close to parallel trends (or common trends) in outcomes before the admission. To interpret the estimates for labor supply responses as causal, we need to impose an assumption that the timing of the shocks within a short period of time is as good as random. I show that through a comparison of affected individuals who vary only with regard to the timing of psychiatric admission, it is possible to bring the labor market trajectories of these two groups closer to each other relative to the case-control comparisons. However, the tests for pre-trends show that parallel trends assumption does not still hold for the majority of the results. Anxiety and other stress-related disorders provide an exception by exhibiting a close to parallel pre-admission trends in labor market performance.

This study shows that a careful choice of the control group can substantially reduce divergence in labor market trajectories when analyzing the effects of mental ill health on labor market performance. This is especially true for anxiety disorders which tend to be of an acute nature relative to other psychiatric diagnoses. By comparing the extent of pre-event trends in different psychiatric diagnoses, this work sheds light on the role of endogeneity, whether due to predisposition or reverse causality, in labor market performance in years preceding the first psychiatric treatment contact.

## **2 Empirical framework**

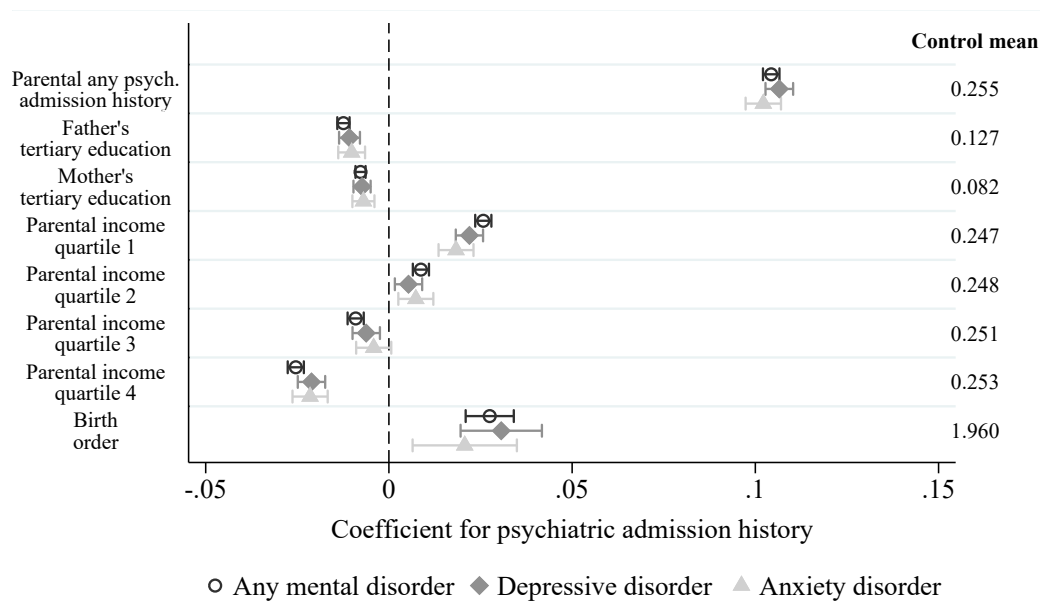
Assuming randomly assigned health shocks and the possibility to track both health and labor market outcomes over time, researchers would have the tools to examine the dynamic causal effects of health shocks on labor market outcomes. While health shocks



are never truly random, they can be considered unanticipated in certain environments. In such circumstances, the group of never-treated may provide valid counterfactuals for the treated. The treated individuals would then have similar expected future paths of labor market performance relative to the unaffected peers in the hypothetical case where the health shock would not occur. In other words, those treated would be expected to follow trends parallel to those of the non-treated in the absence of treatment.

Mental disorders are typically an outcome of a long process, and the first psychiatric contact may take years after the first symptoms of a psychiatric condition emerge. The duration of untreated illness could be a few years as regards schizophrenia but could even be decades in mental disorders of lesser severity (Wang et al., 2007). Thus, the first psychiatric admission is not a health shock but rather a signal of mental illness taking a more severe course. This may lead to a decline in the work capacity of the mentally ill even before the first treatment contact. However, the first psychiatric admission is “hard evidence” by providing a dating event, and together with information on the duration of untreated illness, would allow back-tracing of the onset of the first symptoms (de Girolamo et al., 2019). The duration of an untreated illness may be discovered after psychiatric interviews but may not always be reliable because the symptom thresholds are challenging to assess retrospectively (Murru and Carpinello, 2018). Therefore the first psychiatric contact is the only solid dating event of the manifestation of the psychiatric condition.

When the origin of the health event that sets seemingly identical groups of people on different expected labor market trajectories is unknown, constructing an appropriate counterfactual is challenging. In this study, I compare two types of research designs: case-control design and a design that constructs controls from later-treated cases. To examine the potential of the case-control setup, I first study differences in background characteristics between the individuals with any psychiatric admission and their peers without any personal psychiatric admission history. I focus on parental characteristics because a considerable portion of the first psychiatric admissions take place at a fairly young age, and thus many of the underlying differences that affect future outcomes may not emerge between the two groups at this stage.



**Fig. 1:** Differences in family background: Case-control comparison. Notes: The coefficients (and 95 % confidence intervals) represent point estimates of separate regressions of each parental indicator variable (except birth order) with respect to indicator of having been admitted to psychiatric treatment between 2001-2018 (conditional of no prior hospitalization during 1987-2000 and no psychiatric outpatient visits during 1998-2000). The results are presented for any mental disorders, depressive disorders and anxiety disorders separately. All specifications control for sex and birth year.

Figure 1 summarizes the differences in the observed parental background characteristics between individuals who were identified as being treated for psychiatric reasons relative to their comparisons with no personal psychiatric admission history. The parental psychiatric history is defined as an indicator that takes a value of 1 if either of the parents have any psychiatric admissions during the follow-up 1987 to 2018 and 0 if neither of the parents have any psychiatric admission history. Additionally, I examine differences in parents' education background, income when the study subjects were 5 to 8 years old; I use binary indicators for higher (tertiary or post-secondary) education and income quartiles measured at the subregion-level. I also study the differences in birth order. The differences in parental psychiatric admissions are substantial whether we consider patients

that have been diagnosed with any disorder, substance disorder or anxiety disorder. We observe that about 36 percent of those treated have a parent who has received psychiatric treatment whereas the non-treated are 10 pp. less likely to have either of their parents treated for psychiatric problems. The socio-economic inequality is also noticeable. The parents of the affected are less likely to finish tertiary education and less likely to belong to the highest income quartile compared with the parents of the unaffected. The substantial differences in observables give rise to concerns related to selection bias. While the differences in background characteristics can be controlled for, we are still left with potential confounders that could be related to differences in labor market trajectories. For the omitted variable bias to be removed completely, it would be necessary for the selection of unobservables to fully correspond to the selection of observables (Altonji et al., 2008). This is unlikely to be feasible.

To mitigate the role of selection bias, I proceed with an approach in which the affected individuals are constructed counterfactuals from individuals who are also affected but some years later. In this study, I consider people who have been treated for psychiatric causes 1-4 years later as the control subjects for the “treated”. The use of the later onset<sup>1</sup> control group aims to further reduce the confounding by comparing individuals separated only by a difference in the timing of the first admission,  $\Delta \in [1,2,3,4]$ . This approach is influenced by the empirical strategy used in two studies by Fadlon and Nielsen (2019, 2020) for cardiovascular health shocks. I depart from their approach of presenting results for only one value of  $\Delta$ , and use four different control groups that differ by the time lag of the first psychiatric treatment relative to the treatment group. Reporting the results for different values of  $\Delta$ , I aim for a transparent visual inspection of the pre-trends in labor market performance prior to treatment assignment in terms of the proximity of the first

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<sup>1</sup>The year of the first psychiatric admission does not correspond with year of onset of the mental disorders. However, here it is assumed that the order (rank) of the age of onset to a large extent correspond with ranks of age at first admission between individuals. I also assume that, on expectation, the timing differences in the onset and first admission are close to equal. For instance, if two representative individuals born in the same year experience similar psychiatric symptoms but two years apart, it is assumed that their first treatment contact occurs also approximately two years apart in the same order.

admissions.

The main sample consists of individuals who have been recorded with at least one psychiatric admission between 2001-2018. To assess the labor market outcomes following the first psychiatric admissions, I estimate the differences in outcomes between the treated and later-treated by normalizing the differences to the year preceding the index admission. The time relative to index admission,  $r^\Delta$ , takes values

$$r^\Delta = \begin{cases} r, & \text{if } D_i = 1 \\ r + \Delta, & \text{if } D_i = 0 \end{cases} \quad (1)$$

where  $r$  is the actual time relative to individuals' first psychiatric admission and  $D_i$  is the indicator for belonging to treatment group. In  $r^\Delta$  the control group now shares the relative time scale of the treatment group, and the index admission year works now as a "placebo" event year for the control group.

The main estimation equation is of the following form:

$$\begin{aligned} \mathbf{Y}_{i,t} = & \alpha + \beta D_i + \sum_{r^\Delta \neq -1, r^\Delta = -3}^3 \omega_{r^\Delta} \times I_{r^\Delta} + \sum_{r^\Delta \neq -1, r^\Delta = -3}^3 \delta_{r^\Delta} \times I_{r^\Delta} \\ & \times D_i + \sum_{t=1998}^{2018} \gamma_t \times I_t + \sum_{a=15}^{55} \theta_a \times I_a + \lambda \mathbf{X}_{i,\text{pre}} + \varepsilon_{i,t}. \end{aligned} \quad (2)$$

where  $\mathbf{Y}_{i,t}$  is the outcome of interest (earned income, annual income, employment and net income transfers) for individuals  $i$  at year  $t$ , which is regressed on event time indicators (time relative the index admission, i.e. the first admission of the treatment group),  $I_{r^\Delta}$ . The year fixed effects are denoted by  $I_t$ . I focus on individuals born 1963-1985 and who have their first psychiatric admission in 2001-2018 at ages 15-52. The pre-admission background characteristics are captured in  $\mathbf{X}_{i,\text{pre}}$  and include information on psychiatric admission history and the education background of both father and mother separately, the province of residence at age 5-8, parental income quartile at age 5-8, birth order and sex.

The interest lies in  $\delta_{r^\Delta}$  when  $r \geq 0$ , which exhibit differences in outcomes between the treatment and control group after the index admission relative to the pre-admission time

$r^\Delta = -1$ . These estimates represent the short and medium labor market effects of the first psychiatric admissions. The upper bound for the effect window is  $\Delta - 1$  years because the control group experience the first admission  $\Delta$  years later.

When the control group is constructed from the group of later treated, the researcher needs to decide which event years constitute the treatment group and which years form the control group. While e.g. Costa-Ramon (2020) and Vaalavuo (2021) rely on non-overlapping event timeline between the treatment and the control group, Fadlon and Nielsen (2019, 2020) and Druedahl and Martinello (2020) allow individuals to be included both in the treatment group and in the control group. I follow the latter approach as it increases precision (Druedahl and Martinello, 2020) and involves less discretion in treatment assignment along the event timeline. In practice, I expand the study sample so that all observations are duplicated with the rationale that all individuals could be part of both the treatment ( $D_i = 1$ , original observations) and the control group ( $D_i = 0$ , the duplicate). While the analysis sample consists of individuals with their first admissions between 2001-2018, those with the first admissions between years  $2001+\Delta$  and  $2018-\Delta$  enter to both the treatment group and control group.

The inclusion of the fixed effects in relative time, age and year in the estimating equation ensure that the identifying variation arises solely from the timing difference of  $\Delta$  years of the first psychiatric admission. Because the labor market performance of the control group is assessed on the relative time scale of the index admission and not on their actual first admission, the same individual never aligns to both sides of the pairwise comparisons in a given calendar year even if they are included in both the treatment and the control group.

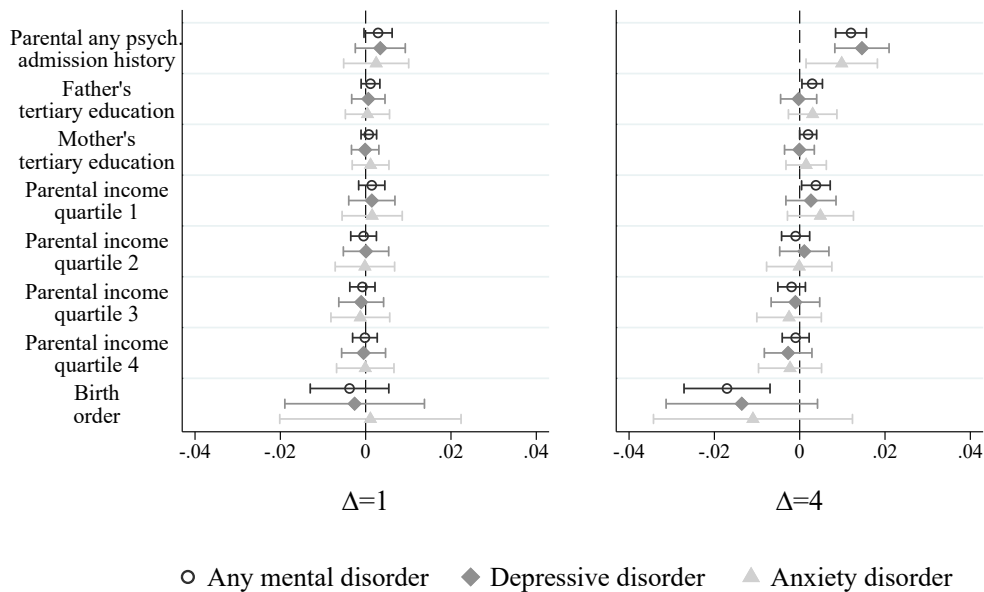
To draw causal implications between psychiatric admissions and labor market performance, we need to assume that the average outcomes of the treatment group ( $D = 1$ ) and control group ( $D = 0$ ) would follow parallel trends. Further conditioning on the background characteristics  $\mathbf{X}_{\text{pre}}$ , year  $t$ , age  $a$ , and the proximity of the first psychiatric admission  $\Delta$ , I impose a conditional parallel trends assumption:

$$E[Y_t(0) - Y_{t-1}(0)|\mathbf{X}_{\text{pre}}, \Delta, a, D = 1] = E[Y_t(0) - Y_{t-1}(0)|\mathbf{X}_{\text{pre}}, \Delta, a, D = 0] \quad (3)$$

where  $Y_t(0)$  is labor market performance at time  $t$  in the counterfactual world in which the psychiatric admission would not have occurred and  $D$  is the indicator for belonging to the treatment group with the timing distance of the first treatment of  $\Delta$  years. The identifying variation arises between individuals in the timing of the first psychiatric admission by  $\Delta$  years conditional other observable characteristics. As equation 3 suggests, the research design relies on the assumption that the labor market performance of these two groups would exhibit parallel trends were the admission never to take place. In such a case, the expected employment rates and earned income need not be on the same levels between the groups, the trends are just assumed to have the same slope.

In the presence of endogeneity, whether due to reverse causation or predisposition to mental disorders, the parallel trends assumption would not hold. To allow divergent trends between different groups of people to take place, assumptions should be placed upon the parametric form of the pre-event trends. Following the common approach of adjusting for the extrapolation of a linear trend (cf. Dobkin et al., 2018; Goodman-Bacon, 2018), I also report estimates from an estimating equation which includes a linear time trend and its interactions with  $D_i$  and  $I_{r,s}$  when  $r^\Delta \geq 0$  to examine the change in outcome following an index admission relative to any pre-existing linear relative time trend. However, to consider these estimates as causal, we need to assume that the linear extrapolation of the relative time trend between constitutes a valid counterfactual of labor market performance for the treatment group.

Because I impose variation in the timing of the first admission, one could doubt whether the timing of the first psychiatric admission is plausibly random. The concern increases as  $\Delta$  becomes larger. To examine to what extent the individuals' background characteristics in the treatment and the control group differ from each other, I examine the covariate balance between the treatment and control group, but this time using the later



**Fig. 2:** Differences in family background: Early vs. later onset. Notes: The coefficients (and 95 % confidence intervals) represent point estimates of separate regressions of each parental indicator variable (except birth order) with respect to indicator for individuals who have been admitted to psychiatric treatment (value 1) versus individuals who had their first psychiatric admission one or four years later (value 0). The results are presented for any mental disorders, depressive disorders and anxiety disorders separately. All specifications control for sex and index psychiatric admission year fixed effects.

onset control groups. Figure 2 plots the differences in parental characteristics using indicator variables on cumulative parental psychiatric admission history, household income (within subregion income quartiles) at age 5 to 8 and birth order as dependent variables while controlling for the modified year of the first psychiatric admission and sex. The coefficients describe differences in family background indicators and sibling birth order between the treatment group and control group who have their first psychiatric admission  $\Delta$  years later.

In terms of parental characteristics, the later onset control groups are to a large extent very similar to the treatment group. The covariate balance is the stronger the smaller the  $\Delta$ . Individuals whose first psychiatric admissions take place one year apart are not

substantially different from each other with regard to the parental background. However, differences emerge as  $\Delta$  increases. Most importantly there are statistically significant differences in parental psychiatric history at  $\Delta = 4$ . This observation is relevant because parental psychiatric history has been shown to have a negative correlation with age at first contact in schizophrenia (Byrne et al., 2002). Earlier timing of the first psychiatric admission is also associated with lower birth order. Although the differences in the background characteristics are still present, the use of “later onset” control group will decrease the selection bias to a proportion relative to the typical comparison between the affected and the unaffected individuals.

While selection bias in terms of family background is reduced, there are two major concerns for the validity of the research design. First, period shocks may act as a potential confounder between the timing of the first admission and labor market participation. If the follow-up includes a large economic downturn, there is a concern that the macroeconomic conditions cause the psychiatric admission or at least shift the timing of the first psychiatric admission relative to the counterfactual case of a stable economic growth. For instance, poor macroeconomic conditions during labor market entry have been shown lead to be linked with a worse labor market performance (Oreopoulos et al., 2012; Altonji et al., 2016) and high probability of criminal behavior (Bell et al., 2018) for college graduates relative to the graduates of better economic times. Maclean (2013) finds bad economic times to be connected to poor mental for male graduates but good mental health for female graduates. Thus, volatile macroeconomic conditions raise concerns for reverse causality e.g. due to mass layoffs that have shown to be linked with the deterioration of health mental health (Browning et al., 2006) and mortality (Gathmann et al., 2020). To mitigate the possibility of macroeconomic conditions affecting the interpretations, the results are also reported using a sample that consists of psychiatric admissions for a period of relatively stable economic growth, i.e. years 2001-2007. Because the control group consists of individuals who have their first treatment contact up to 4 years later, this restricted sample consists of index admission for years 2001-2003 only.

Second, as the research design imposes a timing difference of  $\Delta$  years in the first

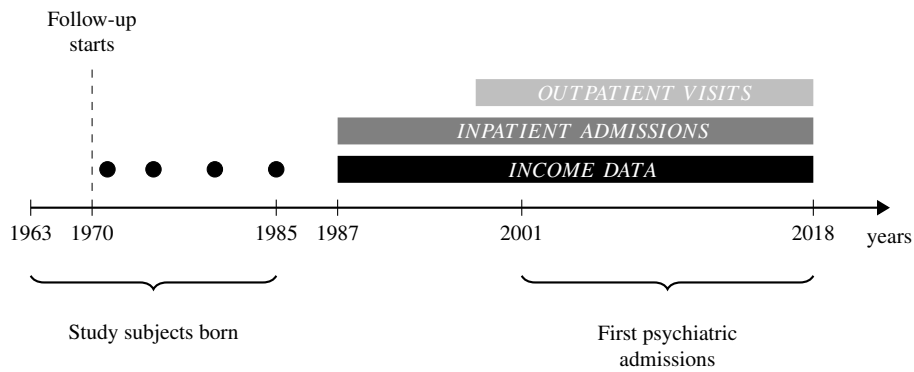


psychiatric treatment contact between the treatment and the control group, this condition makes these two groups different in terms of age at first admission and/or birth year. In the main empirical specification, I follow the common choice (e.g. Fadlon and Nielsen 2019) by including both age and calendar year fixed effects. Adjustments for age and year allows comparisons between individuals born in the same year and thus potentially leads to more concordance in the labor market pre-trends. However, the identifying assumption of the treatment assignment being random within  $\Delta$  year difference in the admission age may not hold. Alternatively one could condition on age at first admission instead of age. This allows comparisons between individuals with the same age at first treatment contact and thus potentially results in higher concordance in the age-income profiles. However, this restriction forces the comparison pairs to be of different birth cohorts and thus of different age at a given time  $t$ . Because labor market outcomes do not progress linearly by age, the slopes of the labor market performance may differ by age. Furthermore, the evidence regarding the timing of college graduation suggests that comparability of labor market performance between birth cohorts may be affected by macroeconomic conditions. Therefore the comparison with admission age restrictions may be more suitable for the first admission taking place at mature ages and at stable macroeconomic conditions. Because the related trade-offs of the decision to fix either birth year or admission age may vary by context, dataset and the period of choice; as a robustness check I report the results with any psychiatric diagnosis and anxiety diagnosis in the Appendix (Tables S44 to S51) using an econometric specification that allows the treatment assignment groups to vary freely along these dimensions.

### **3 Data**

Figure 3 describes the timeline of measurement. I use individual-level panel data that combines data gathered from several Finnish administrative registers including information income, labor market participation, education, family and psychiatric admissions.

Complete information on the psychiatric hospital admissions (The National Institute



**Fig. 3:** Timeline of measurement

of Health and Welfare, THL) covering the years 1987-2018 and psychiatric outpatient visits 1998-2018 are linked to the study population's socio-economic information using personal identifiers. For the purpose of event study analysis, I focus on individuals who experience their first psychiatric admission between the years 2001-2018 in order to have access to labor market performance and psychiatric inpatient and outpatient admission at least three years before and three years after the index admission year.

The socio-economic data are obtained from Statistics Finland and combines the Finnish longitudinal Census file from 1970-1985 (quinquennial) and annual Finnish Longitudinal Employer-Employee Data (FLEED-FOLK) from 1987-2018. This therefore culminates in data which includes information on income, education, employment and family background over a period extending from 1970 to 2018. These files also include information on family linkages which allows the identification of the socio-economic and psychiatric family background.

Starting from the universe of individuals born between 1963-1985, I focus on individuals who lived in the same household with both of their parents at age 5 to 8 in Finland and have their first psychiatric admission between the years 2001 and 2018. Besides analyzing the consequences of any psychiatric admission, I also examine the labor market responses of six broad diagnosis groups: psychotic disorders, mood disorders, anxiety dis-

orders (includes anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders), bipolar disorders and substance disorders (See Appendix Table S1 for ICD-codes).

The data has three major strengths. First, the scope of the data enables a very long follow-up without participation bias. Psychiatric morbidity is positively associated with non-participation (Haapea et al., 2008) which may affect inference in survey-based studies especially if non-participation is selective in terms of the severity of the psychiatric condition. The use of mental health services also may be greatly underreported in surveys (Drapeau et al., 2011) which make it more difficult to identify the first psychiatric treatment event. I follow individuals from early childhood to adulthood and identify all psychiatric hospitalizations and psychiatric outpatient visits in specialized health care recorded in Finland since 1998. This allows the identification of the first severe psychiatric condition and the related diagnosis.

Second, Finnish Longitudinal Employer-Employee Data (FLEED-FOLK) includes rich information on residence, family and the labor market. This study focuses on using labor market related information. Earned income and employment are used as the main outcomes and give the indication of workers' productivity<sup>2</sup>. Income information originates from the Finnish Tax Administration from which Statistics Finland routinely collects income data annually for every Finnish resident and then links these to population registry information. I use annual income and net income transfers as additional outcomes. Total annual income includes pension income and benefits that arise from the early pension scheme (e.g. disability pension) and from employment and other social benefits (sickness allowance, parental leave). Change in annual income serves as a proxy

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<sup>2</sup>There are some concerns in interpreting the decreases in labor market performance of the mentally ill as productivity costs or societal burden. First, early retirement or sickness absences of a mentally ill worker may fully be replaced by another worker. Therefore the measurement of the lost production a firm faces following from work absence should depend on the time the initial production level is restored, indicating so called "friction costs". In such cases, the true burden may be overestimated if a replacement in the same "category" is available. On the other hand, "presenteeism", i.e. working at a low productivity level while ill, may underestimate the productivity costs when the signal of productivity is based on earned income (Drummond et al., 2015).

for the immediate financial consequences of mental disorders for an individual living in a welfare state such as Finland. Net income transfers on other hand are indicative of changes in fiscal costs in the labor market. Individuals receive incomes transfers from the employment pension and the national pension, social security payments, rehabilitation, sickness benefits, unemployment benefits, maternal leaves and accident insurance. On the other hand, Finnish citizens have to pay direct taxes for social security contributions. Furthermore, compulsory pension contributions, unemployment insurance premiums and child maintenance increase the amount of paid income transfers.

Third, Statistics Finland provides information on parent-child linkages and residential information that allow the identification of families and co-habitation over time. This information allows the identification of parental socio-economic background and perhaps most importantly, parental psychiatric history. Because mental disorders are inherently endogenous and the first treatment may occur even decades after the first symptoms take place (Wang et al., 2007), individuals' own pre-admission characteristics may suffer from "bad control" problem. Therefore, family-related information forms the basis of the background information for the study subjects. To ensure relevant comparison between the treatment group and the control group, I use childhood background information measured when the study subjects are at age 5-8. All family background variables are measured before the psychiatric admission except for the psychiatric history of the parents. Because the delay between the age of onset and the first treatment contact, setting a time or age-based threshold may not provide an adequate description of the family risk of mental disorders. I therefore use an indicator that takes a value of 1 if either of the parents has ever been treated for psychiatric reasons between the years 1987-2018 to provide a measure of the family risk of mental disorders. By taking this approach, I assume that a children's mental illness will have a negligible impact on the probability of either of the parents seeking (first) psychiatric treatment.

The final sample is then trimmed to consist of individuals that are present and alive in the sample three years before and after the first observed psychiatric admission. The main sample consists of about 174,000 individuals; 95% of the study population speak

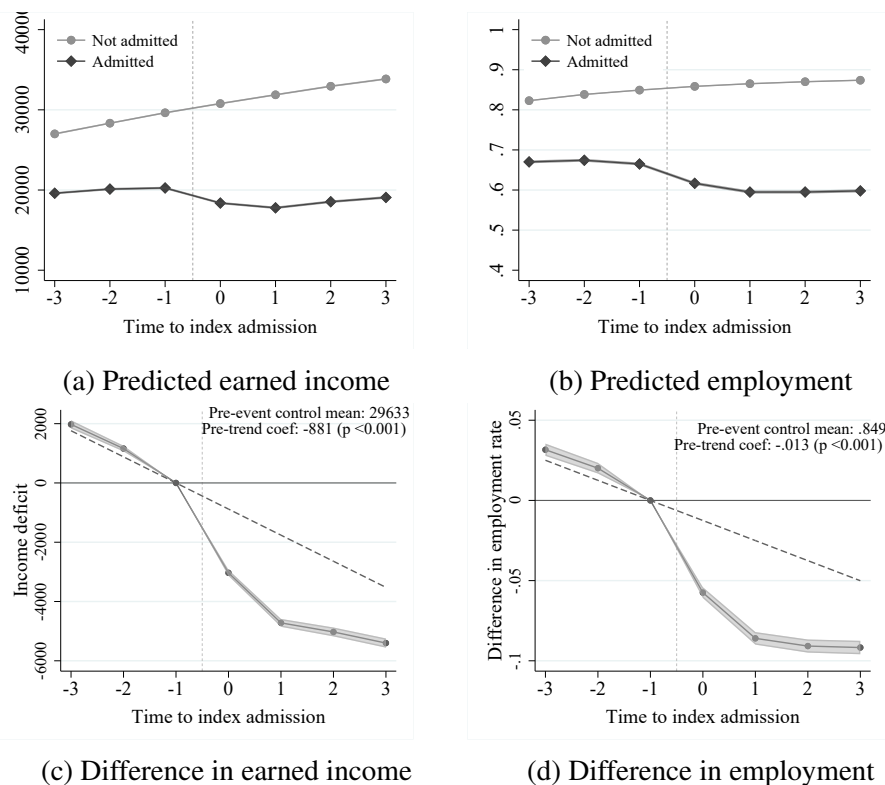
Finnish as their mother tongue (Appendix Table S2) and 54 % are female. On average, the individuals belonging to the treatment group had their first psychiatric admission at age 32. Psychotic disorders account for about 6 percent of the first admissions whereas mood disorders account for 34.5% and anxiety disorders around 19% of the first psychiatric admissions. About two thirds of the first admissions took place at ages before 25-44 and of these individuals only 28% are married one year prior to the first psychiatric admission. The age distributions of first admissions differ by psychiatric category. The first psychiatric treatment contract occurs relatively early in psychotic and anxiety disorders relative to other psychiatric diagnosis groups (Appendix Table S3).

## **4 Results**

In section 2, I demonstrated that the background characteristics of those with psychiatric admission history are very different from those with no psychiatric admission history. In this section, I first proceed to analyze the labor market trajectories of these two groups and discuss to what extent it is possible to consider changes in the labor market outcomes following the index admission solely attributable to the event of the first psychiatric admission. Then I move forward to examine how the results change when the “later onset” control group is used as counterfactuals for the labor market trajectories of the treatment group. Finally, I focus on anxiety disorders that have been considered to more reactive disorders relative to other psychiatric diagnosis and thus are less likely to exhibit decreasing work capacity related to predisposition. The results are compared with labor market responses to a cancer diagnosis, which works as an example of a plausibly exogenous physical condition.

### **4.1 Case-control comparison**

Figure 4 illustrates the adjusted predictions of earned income and employment (Panels A and B) and the differences in these outcomes (Panels C and D) between those who have been admitted to psychiatric treatment (cases) and their non-admitted comparisons



**Fig. 4:** Earned income and employment near the index admission: Case-control comparison. Notes: The sample consists of people who have recorded their first psychiatric admission (hospitalization or outpatient visit) between years 2001-2015 at age 15-52 (treatment group) and individuals who have not recorded any psychiatric hospitalizations between 1971-2018 nor psychiatric outpatient visits between 1998-2018 (control group). The first admission year is randomized for the control group to take place at age 15 to 52. Both adjusted predictions (A and B) and event study estimates (C and D) stem from a specification that includes fixed effects for sex, birth year, birth order (top-coded at 4), (placebo) first psychiatric admission year, province of residence in childhood, education level of mother and father, parental psychiatric history and parents' income quartile in childhood (at subregion-level). Shaded areas represent the 95% confidence intervals and dashed lines the linear extrapolation based on the pre-trend coefficient. See Appendix for the corresponding illustrations (Appendix Figures S1 to S6) on other diagnoses and result tables for all diagnoses (Appendix Tables S4 to S10).

(controls) relative to the year of the psychiatric admission. Two broad findings are worth noting. First, the differences in the labor market outcomes between the treatment group and the control group are already considerable before the event. Those who are treated for psychiatric problems earn one thirds less and are 15 percentage points less likely to be employed relative to their unaffected peers. Second, when contrasted with the pre-admission year (the difference in the outcomes is set to zero at  $r = -1$ ), the difference in labor market outcomes further increase after the year of index admission and do not appear to attenuate in subsequent years.

A closer look at the changes in the differences in labor market outcomes in the event year reveals that the differences in earned income increase by €3000 and in employment rate by 6pp. relative to the year preceding the event (Panel C, Figure 4). When taking account for the linear trend in labor market performance, the change in the labor market deficit amounts to €2300 in earned income the year of the first admission and is €2000 three years after the index admission. For annual income, the deficits are smaller (€1150 and €1450). The difference in the probability of employment is initially reduced by 4.9 pp. and is 4.6 pp. three years after the first admission (Appendix Table S4). The findings are broadly similar in all of the psychiatric subcategories (Appendix Figures S1 to S6). However, it is unclear how much these changes can be explained by the causal impact of deteriorating mental health and how much by confounding factors. The differences in the pre-admission levels point to substantial selection bias and the pre-trends indicate to possible endogeneity.

## 4.2 Early vs. later onset

Acknowledging the shortcomings of the case-control design, I proceed to use an approach used by Fadlon and Nielsen (2019, 2020), and construct counterfactuals for the treatment of individuals who experience their first psychiatric  $\Delta$  years later. This approach aims to frame the timing of a health event to occur in a quasi-random fashion: the expected trajectories of the treatment and control group are to a large extent similar, the groups just differ in terms of the timing of the health event which is considered as unanticipated within

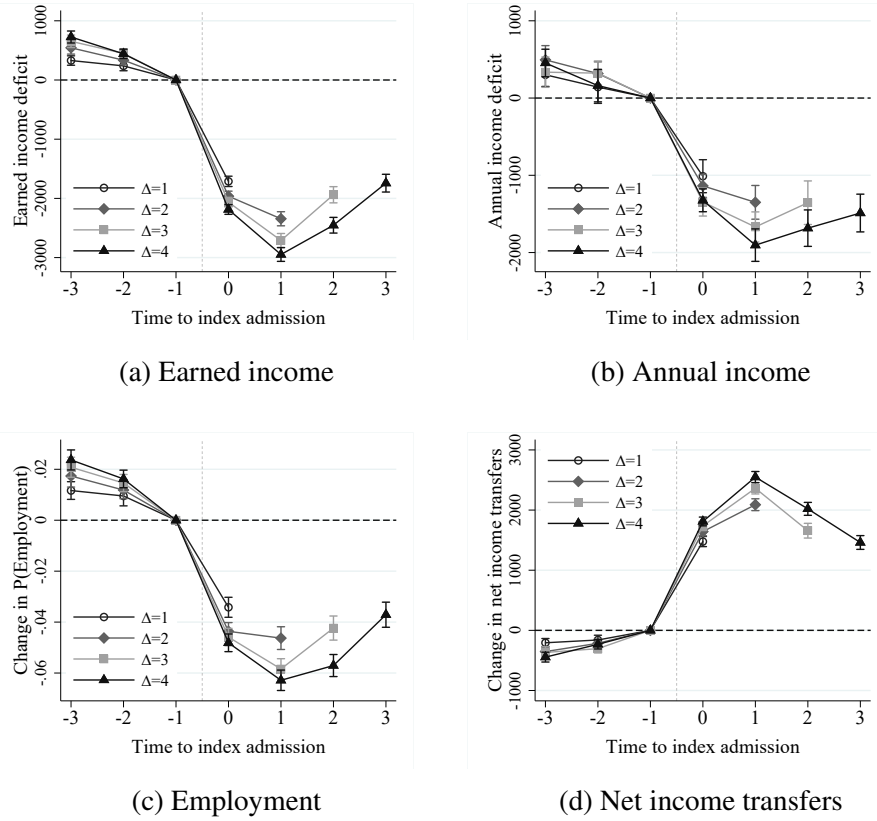
$\Delta$  year interval. However, as demonstrated in Figure 2, the timing of the first psychiatric admission is not fully random. Increasing  $\Delta$  will increase the covariate imbalance which suggests an increasing distance from a plausible counterfactual.

Acknowledging the trade-off between the proximity of the control group and the observation window, I report estimates using four different values of  $\Delta \in [1, 2, 3, 4]$  in (Figure 5) for earned income. It should be noticed that outcomes are not reported in Figure 5 for  $t \geq \Delta$ . During these periods both the treatment and control group have been admitted to psychiatric treatment and the estimates for  $t \geq \Delta$  do not reflect meaningful estimates for the impact of the manifestation of a mental illness.

Focusing on the non-parametric estimates, the results imply that income decrease by €1700 the year the first psychiatric contact occurs when  $\Delta = 1$ . This estimate is similar to the parametric estimate in the case-control comparison. The non-parametric point estimates for the event year increase in  $\Delta$  and the pre-admission trends are all negative and statistically significant. When the pre-trend test suggests a violation of the parallel trends assumption, it is common to impose an assumption that the true underlying pre-trend is linear. In some settings, this is a reasonable assumption and the linear extrapolation of the pre-trend would allow a reasonable estimate for the impact of the event in the short term. In the case of the first psychiatric disorders, this assumption is unlikely to hold true. Examination of the pre-admission trend coefficients brings the linear pre-trend assumption under doubt. These coefficients increase from -160 to -360 as  $\Delta$  increases from 1 to 4. This observation is due the pre-events trends in the control group which are the steeper the further the control group is from the future psychiatric admission (Appendix Figure S13). Besides the selection bias, the contrasts between treatment and control group therefore also exhibit pre-event trends with different degrees based on the timing variation ( $\Delta$ ) in the first treatment contact. The pre-event trends also lead to a large discrepancy between the non-parametric (€-1740) and the parametric point estimates (€-240) at time  $t=3$  when  $\Delta = 4$  (Appendix Table S11).

The story is similar in the other outcomes to a large extent. The endogenous relation between the timing of index admission and labor market performance leads to statistically





**Fig. 5:** The first (any) psychiatric admission and labor market deficit by value of  $\Delta$ . Notes: The point estimates (with 95 percent confidence intervals) refer to the difference in labor market outcomes relative to the year preceding the event year. Individuals who have recorded their first psychiatric admission (hospitalization or outpatient visit) between years 2001-2015 at age 15-52 (treatment group) are compared with individuals who recorded any psychiatric admission  $\Delta \in [1,2,3,4]$  years later (control group). All estimates stem from Equation 2 which adjust for fixed effects for age, year, sex, birth order (top-coded at 4), province of residence in childhood, education level of mother and father, parental psychiatric history and parents' income quartile in childhood (at subregion-level). Standard errors are clustered at the individual level. See Appendix Tables S11 to S14 for point estimates of the results. See Appendix Figures S7 to S12 for event study illustrations and Tables S15 to S34 for result tables of the results on different psychiatric subcategories. See also Appendix for for levels of outcomes by treatment group in any psychiatric diagnosis (Figures S13 to S16) and anxiety disorders (Figures S17 to S20).

significant pre-trend estimates that increase in  $\Delta$ . Although estimates would suggest to a detrimental impact of psychiatric disorder on labor market performance, it is challenging to extract an estimate that produces a valid causal interpretation. Pre-trends affect interpretation at both ends of the effect window. First, the decreasing labor market performance of the treatment group may overstate the immediate impact estimate in the non-parametric form. This could be due to reverse causation or a predisposition to mental disorders that affect labor market performance before the first treatment contact. At the other end of the effect window, the pre-trends of the control group leads to downward pressures in the point estimate because the labor market participation of the control group decreases just before their own event year (Appendix Figure S15). Results do not change much when using an alternative econometric specification where neither age nor first admission are controlled for (Appendix Tables S44-S51).

### **4.3 Pre-trends in different psychiatric diagnoses**

As demonstrated in Figure 1, background characteristics of those who have been admitted for psychiatric treatment can be different depending on the type of mental disorder. Mental disorders can be very heterogeneous in their causes. Endogenous psychiatric disorders are anticipated and do not require a stressful life event to manifest. Exogenous or reactive psychiatric disorder on other hand are caused by an unanticipated shock such as the loss of a friend or job loss. For instance, Brown and Harris (1978) have contended that life events have causal importance for the onset of depression also in the case of psychotic disorders which was for a long time considered to mainly originate from genetic tendencies.

The extent to which the different psychiatric diagnosis categories reflect acute reactions to negative or distressing life events relative to longer-term processes is unclear and difficult to assess without survey data. However, one way to investigate the degree of endogeneity in different psychiatric disorders is to compare the pre-trend coefficients in different values of  $\Delta$ . Figure 6 illustrates the pre-trend coefficients estimated for the different psychiatric diagnoses in earned income and employment using two different event timelines. Panels A and C represent pre-trend coefficients for earned income and employment

in the main sample, whereas Panels B and D illustrate pre-trends in a sample consisting of the first admission in 2001-2007. This time period of stable economic growth in Finland is used as an alternative exposure timeline to mitigate possible confounding arising from macroeconomic conditions.

Overall, overall the coefficients tend to decrease as  $\Delta$  increases, suggesting increasing concerns of endogeneity in  $\Delta$ . Second, there are notable differences in the pre-trend estimates between psychiatric diagnoses. Anxiety disorders especially stand out as having



**Fig. 6:** Pre-trend coefficients for earned income and employment for different psychiatric diagnoses by value of  $\Delta$ . Notes: Panels A and C represent pre-trend coefficients for earned income and employment in the main sample and Panels B and D in a sample consisting first admission in 2001-2007. Estimates refer to  $\phi$  in econometric specification  $\mathbf{Y}_{i,t} = \alpha' + \beta'D_i + \omega'r + \phi r \times D_i + \sum_{r=0}^3 \delta'_r \times I_{r\Delta} \times D_i + \sum_{t=1998}^{2018} \gamma'_t \times I_t + \sum_{a=15}^{55} \theta'_a \times I_a + \lambda' \mathbf{X}_{i,\text{pre}} + \varepsilon'_{i,t}$ , where  $\mathbf{Y}_{i,t}$  is the outcome of interest (here earned income or employment) for individuals  $i$  at year  $t$ ,  $D_i$  treatment group indicator,  $r$  continuous relative time variable,  $I_{r\Delta}$  event time indicators for a setting with psychiatric admission year/age difference of  $\Delta \in [1,2,3,4]$ ,  $I_t$  the year fixed effects,  $I_a$  age fixed effects and  $\mathbf{X}_{i,\text{pre}}$  the pre-admission background characteristics. Bipolar disorders are left out from the graph because of the highly imprecise estimates.

considerably lower pre-trends relative to other diagnoses. In the main sample, the pre-trend estimates for anxiety disorders are statistically significant (at 5% level) for  $\Delta = 4$  whereas in the recession-free sample none of the estimates are statistically significant. The latter sample suffers from imprecision but produces consistently lower point estimates especially for earned income.

Inspection of the pre-trends typically gives the direction to the interpretation of the point estimates. Inability to detect pre-trends may be taken as a reassuring evidence in favor of making causal interpretations, however, this condition is not sufficient. In many cases, low statistical power may fail to detect the violation of common trends assumption in the presence of modest pre-trends. For instance, would there be more observations with anxiety disorders, the pre-trend tests would potentially lead to statistically significant pre-trends even at the smallest values of  $\Delta$  in the main analytic sample. Overreliance on the p-values of the pre-trend estimates may thus lead to hasty conclusions on the exogeneity of the event. Psychotic disorders provide a warning signal of such improper conclusions. Contrary to the main sample, the subsample of 2001-2007 admissions do not produce statistically significant point estimates in employment for psychotic disorders even if the point estimates would at times suggest even higher degree of endogeneity. The comparisons within the group of those affected may just reduce the differences in pre-trends to a point where the residual confounding in small samples may not be enough to contribute to the rejection of the null hypothesis of parallel pre-trends at the usual thresholds.

Nevertheless, the comparisons of pre-trend estimates indicate that health events related to anxiety disorders exhibit less endogeneity concerns relative to other psychiatric disorders. While such an observation has not been documented previously in the context of labor market performance, psychiatric literature suggests that this impression may not be incorrect. In fact, it has been observed that panic attacks and phobias are spontaneous and often occur in an unanticipated manner (Sheehan, 1982). The broad definition of the anxiety disorders used in this study also includes diagnoses of acute stress disorder (ASD) and post-traumatic stress disorder (PTSD) which require the person to have experienced a traumatic event and to have a response that involves intense fear, helplessness, or horror.

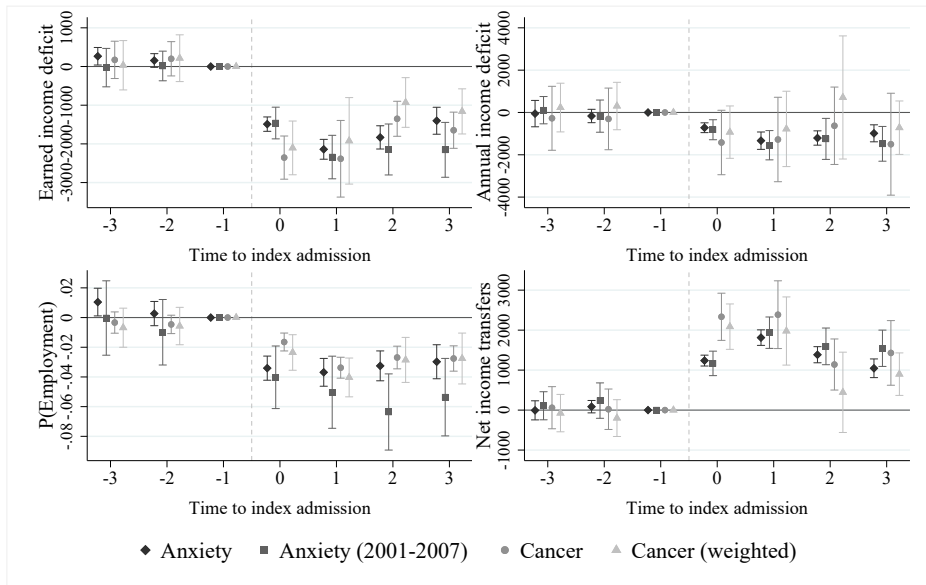
These two diagnoses are very much related. The difference arises from the duration of symptoms: ASD require 2 days to 1 month of post-trauma whereas PTSD requires at least 1 month of post-trauma.(Harvey and Bryant, 2002). Furthermore the definition of anxiety disorders also include obsessive-compulsive disorder, generalized anxiety disorders and other anxiety states disorders (incl. mixed anxiety and depressive disorder).

#### **4.4 Psychiatric events put into a perspective: Anxiety-related admissions vs. cancer diagnosis**

After observing the different degrees of pre-trends in “near vs. later onset” comparisons in psychiatric disorders, we shift focus on anxiety disorders effectively cutting the main sample to about one sixth of the main sample (N=32,597) and further to one twelfth with the event timeline of 2001-2007 (N=10,994). This restriction also results to subjects being approximately 4 years younger during their first treatment contact relative to main sample. While the choice of focusing on anxiety disorders is discretionary, the relatively modest pre-trends allow more plausible comparisons of labor impacts with other health events (shocks) commonly considered unanticipated.

To put the magnitudes of the results into perspective, Figure 7 illustrates the point estimates for anxiety disorders together with the point estimates for cancer diagnosis with  $\Delta = 4$ . The point estimates for anxiety disorders are reported for both the main sample and for the recession-free sample of 2001-2007. The cancer diagnoses was obtained from the same hospitalization and outpatient data used with psychiatric diagnoses. Cancers have been previously used as a source for a severe exogenous health shock (Jeon, 2017; Jeon and Pohl, 2017; Costa-Ramon, 2020; Vaalavuo, 2021). The impact estimates for cancer diagnosis are computed using the same empirical strategy but this time by setting the event to be the first cancer diagnosis.

Cancer produces deficits in earned income of similar magnitudes to those of anxiety disorder. The deficits caused by cancer are relatively more front-loaded. The first cancer diagnosis is followed by €2400 income deficits in the event year and following year. For



**Fig. 7:** Labor market deficit of anxiety disorders and cancer ( $\Delta = 4$ ). Notes: Each figure shows the point estimates of the event time dummies with the corresponding 95 percent confidence intervals. The effects for anxiety disorder as the primary diagnosis are estimated using the the main sample and the sample with 2001-2007 with index admissions taking place 2001-2003. These estimates are contrasted with impacts of cancer which are estimated for using empirical strategies without and with weighting over the age-year distribution of anxiety disorders. For the point estimates see Appendix Table S23-S26 (Anxiety disorder, main sample), Table S39-S42 (Anxiety disorder, 2001-2007 sample) and Table S43 (Cancer, main sample).

years 2 and 3 the deficits reduce to around €1400. The effects are smaller in employment: an initial decline of 2pp. is followed by 3 pp. deficits in the next three years. However, cancer diagnoses typically occur at a considerably older age relative to the first psychiatric contact. Accordingly, the impacts of cancer are also estimated with sample weights based on the year by admission-age distributions of the anxiety disorder sample. The weighted estimates result in more conservative estimates. The net income transfers dampen the income shock and therefore the point estimates for cancer and anxiety disorders do not substantially differ in total income.

The results for anxiety disorder using the sample indicate to initial deficits in earned

income of about €1500 in the year of admission and €2100, €1800 and €1800 in following years. The reduction in employment probability is relatively stable, about 3pp. during the event window.

The “recession-free” sample suggest larger deficits: loss in earned income are about €1400 in the year of admission and €2200 in the three following years. The negative immediate change in the probability of employment is 4 pp. and 5 pp. in the following years. In terms of net income transfers, anxiety disorders result in the individuals changing from being zero net receivers of income transfers to net income transfers of €1200 in the year of admission and €1600 in the next three years.

While the “recession-free” may be more appealing in terms of causal interpretations because of the absence of (no pre-trends), the main sample is more representative in terms of the admission age distribution. Whether relying on the evidence based on the main sample or the “recession-free” sample, the comparisons above suggest that medium term repercussions of anxiety disorder are broadly comparable to those of cancer. While modest pre-trends could induce the claims of an impact, it would be incautious to conclude that anxiety disorders as a whole would meet the assumption of strict exogeneity. The symptomatic phase of mental disorders generally affects labor market potential before the first treatment contact. However, evidence suggests that such anticipatory behavior is less of problem in anxiety disorders.

Finally, there is notable heterogeneity in the labor market responses within the broad definition of anxiety disorders. For acute stress disorders and post-traumatic stress disorders the effects are relatively large and persistent over the 3-year effect window whereas in phobic, panic, generalized anxiety disorders, obsessive-compulsive and other anxiety disorders the effects are generally more modest and short-lived (Appendix Figure S21).

## **5 Conclusions**

This paper explores the labor market consequences of mental disorders exploiting high quality Finnish administrative data and a recently popularized event study design that con-

structs counterfactuals based on the variation in the timing of the first treatment contact. I start by documenting that, in comparison to a case-control setup, this method can considerably improve the covariate balance between the treatment and the control group and therefore mitigate the role of selection bias. Because of the endogenous nature of mental disorders, we are still left with a bias which appears as noticeable pre-event trends. However, further scrutiny shows that by focusing on anxiety disorders it is possible to mitigate and occasionally even remove these pre-trends.

The paper adds to the literature on mental health and labor market performance by exploring the evolution of income, employment and net income transfers following the first psychiatric treatment contact. By focusing on this “hard” dating event, I can investigate the indirect repercussions of mental disorders using the event study design. The scope of the data allows a transparent documentation of the evolution of labor market performance surrounding the first treatment contact. The exploration of the pre-trends in different psychiatric subcategories reveals that first treatment contacts are not all alike in terms of their “expectedness”. Anxiety disorders exhibit the most modest pre-event trends behavior which is in line with prior findings in psychiatry.

The labor market consequences of anxiety disorders are comparable to those of cancer diagnosis. However, in cancers, the diagnosis is often unanticipated and sets a clear dating event. Also the mechanisms through which the negative labor impacts arise in cancers are well understood. Many cancer treatment options such as radiation therapy and chemotherapy are associated with a negative impact on work and mental capacity, which is reflected in reduced earned income (Jeon, 2017; Vaalavuo, 2021) and increased the probability of psychiatric treatment (Vaalavuo, 2021). Also workplace discrimination potentially affects the future labor market prospects of cancer survivors (Paraponaris et al., 2010). In mental disorders, the set of potential causes and mechanisms are generally more complex. When focusing on psychiatric dating event, reverse causal pathways are possible because the first treatment contact may be preceded by a long duration of untreated illness which may depend on the type of psychiatric symptoms and because changes in work conditions may impact mental health. The results based on this study suggest, that focusing on psychiatric



diagnosis that tend to be more exogenous in their causes may provide a more promising avenue for causal inference. Acute stress disorders and post-traumatic stress disorders (PTSD) are particularly exceptional in this regard because they have a clear point of onset, a traumatic event, which is often followed by a shorter duration of untreated illness among those seeking help.

For policy-makers the results provide information on the short- and medium term costs related the loss of productivity due to severe mental health problems. However, taking a step to a more policy-relevant direction would need economic evaluations of the long-term impacts of different psychiatric interventions. An important direction for future research would be to evaluate which type of psychiatric conditions are particularly responsive and cost-effective in the long-term to psychiatric interventions and whether the heterogeneity in the cost-effectiveness correlate with the general findings of the relative magnitudes of pre-trends in labor market performance preceding the first treatment contact.

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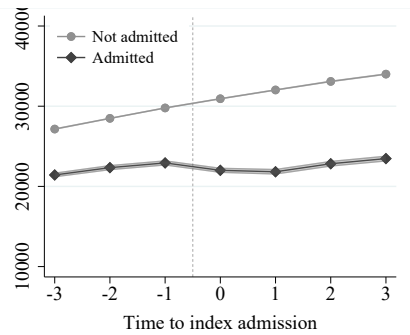
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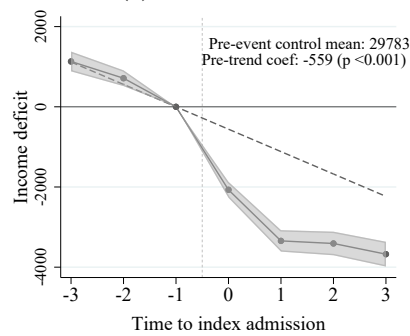
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# Supplementary Material

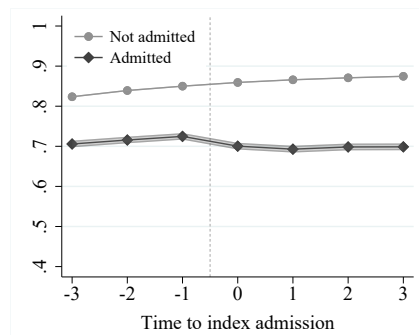
## Figures



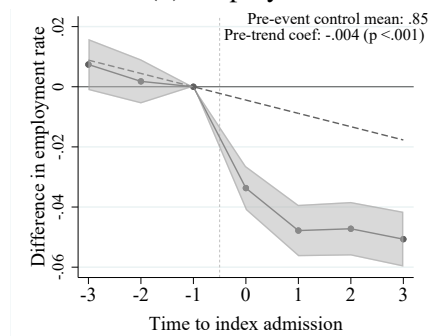
(a) Earned income



(c) Difference in earned income



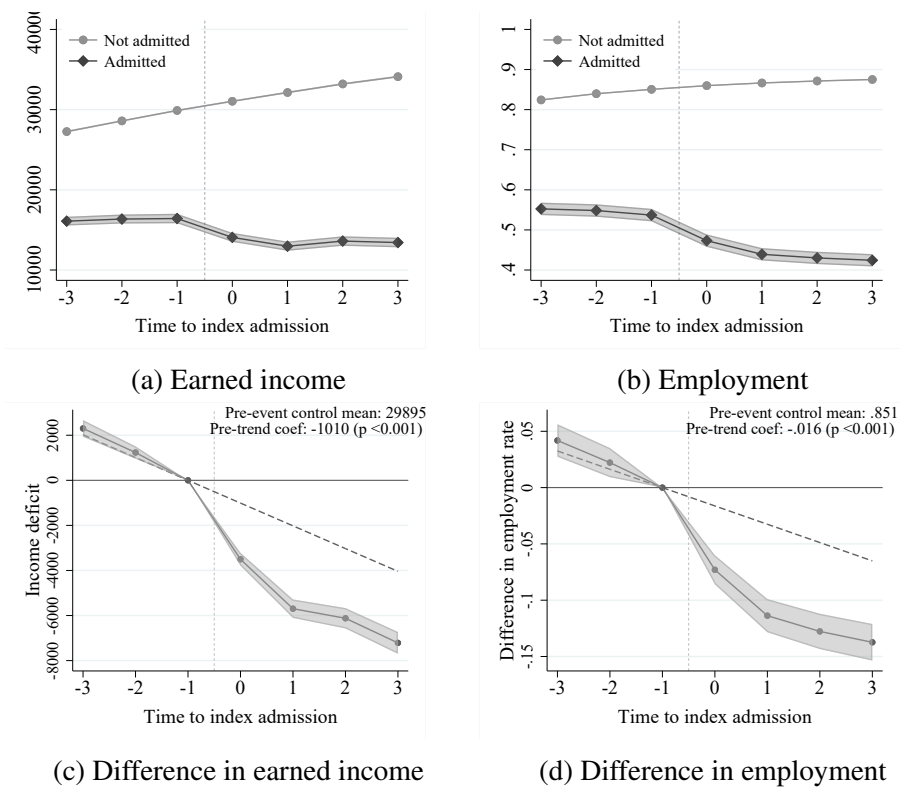
(b) Employment



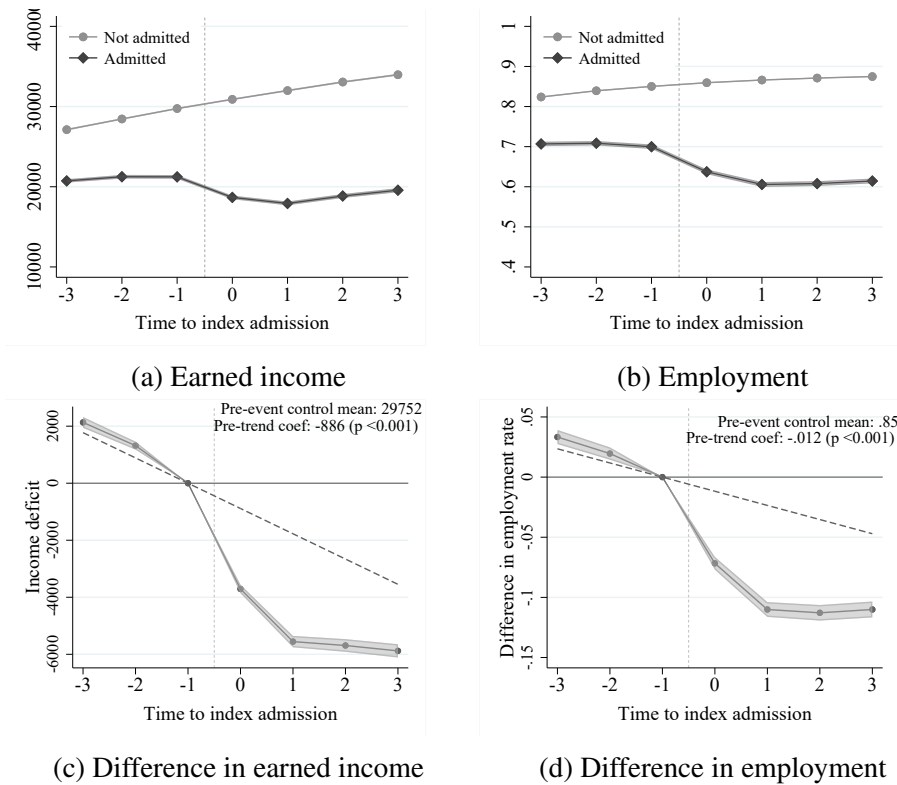
(d) Difference in employment

**Fig. S1:** Earned income and employment near the index admission with anxiety disorders as the primary diagnosis. Notes: See Figure 4 caption for details on the econometric specification and Table S5 for point estimates.

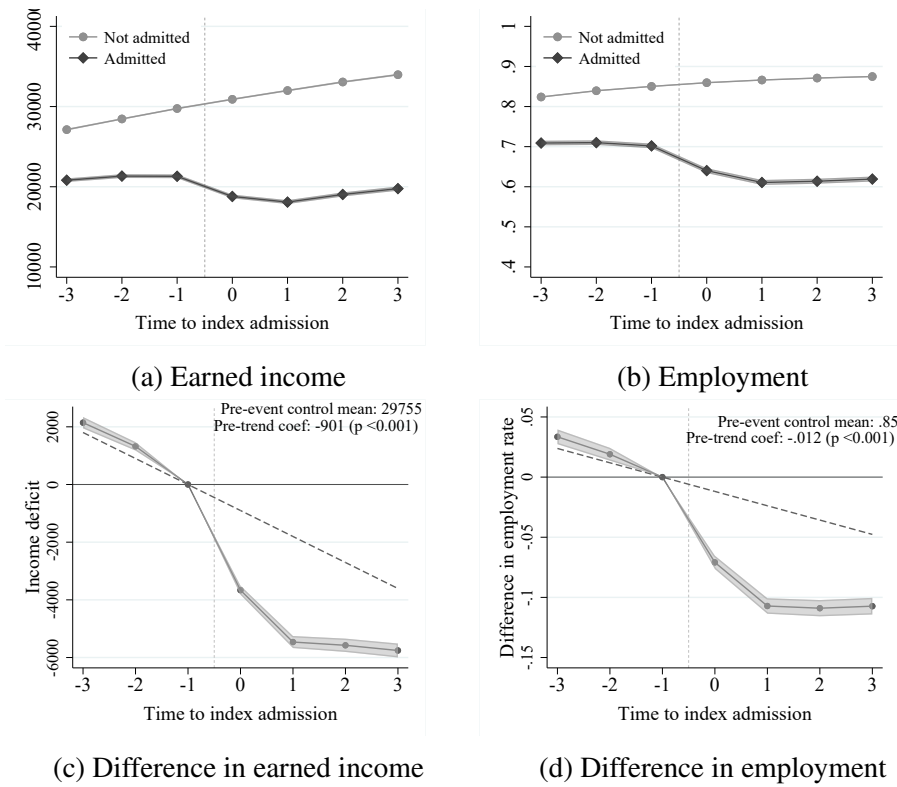




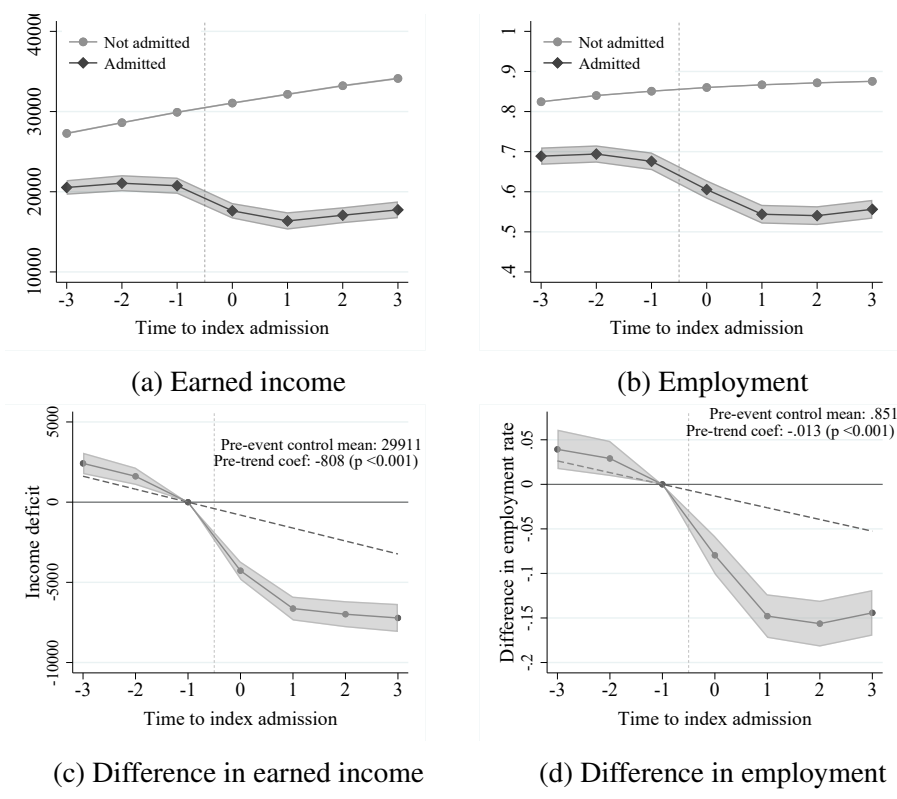
**Fig. S2:** Earned income and employment near the index admission with psychotic disorders as the primary diagnosis and non-admitted comparison relative to the year preceding the first (placebo) admission year in 11-year observational window. See Figure 4 caption for details on the econometric specification and Table S6 for point estimates.



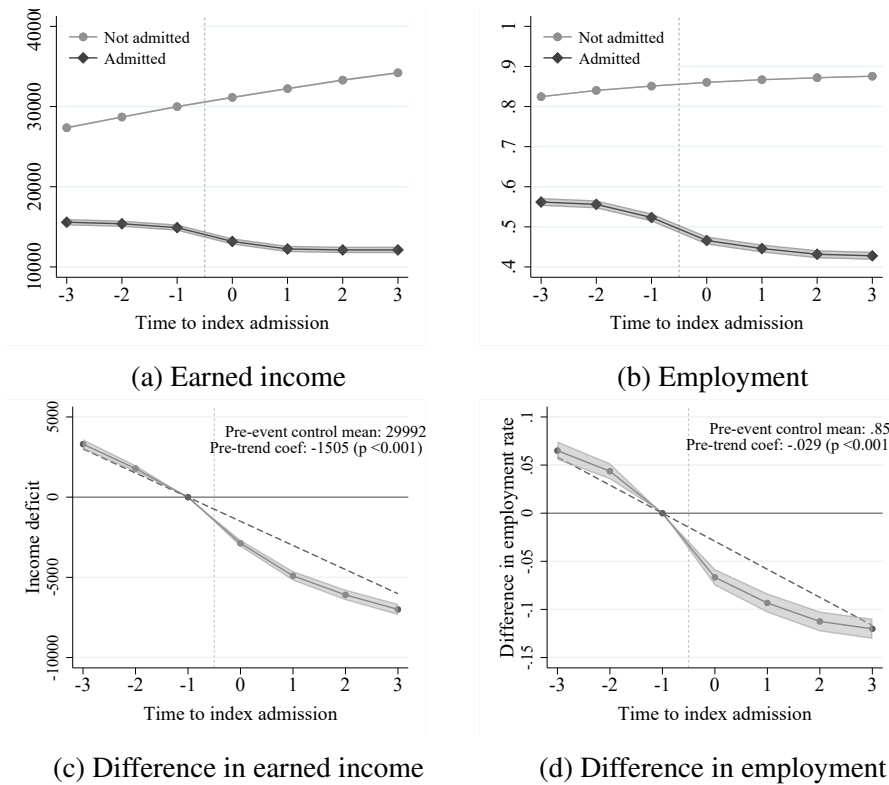
**Fig. S3:** Labor market performance among those admitted to psychiatric treatment with mood disorders as the primary diagnosis and non-admitted comparison relative to the year preceding the first (placebo) admission year in 11-year observational window. See Figure 4 caption for details on the econometric specification and Table S7 for point estimates.



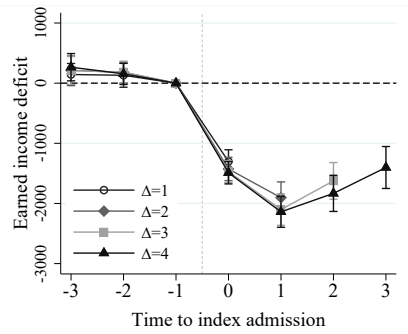
**Fig. S4:** Labor market performance among those admitted to psychiatric treatment with depressive disorders as the primary diagnosis and non-admitted comparison relative to the year preceding the first (placebo) admission year in 11-year observational window. See Figure 4 caption for details on the econometric specification and Table S8 for point estimates.



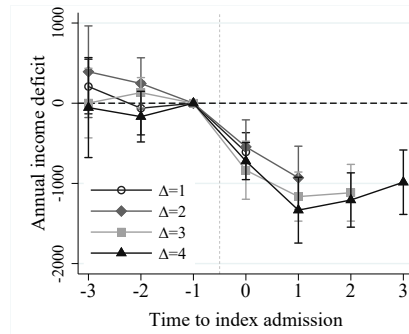
**Fig. S5:** Labor market performance among those admitted to psychiatric treatment with bipolar disorders as the primary diagnosis and non-admitted comparison relative to the year preceding the first (placebo) admission year in 11-year observational window. See Figure 4 caption for details on the econometric specification and Table S9 for point estimates.



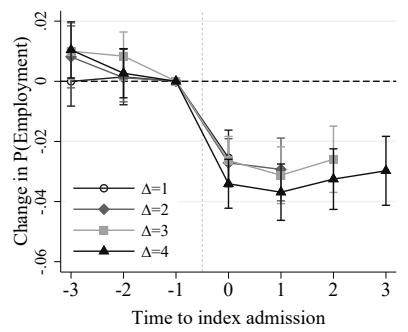
**Fig. S6:** Labor market performance among those admitted to psychiatric treatment with substance-use disorders as the primary diagnosis and non-admitted comparison relative to the year preceding the first (placebo) admission year in 11-year observational window. See Figure 4 caption for details on the econometric specification and Table S10 for point estimates.



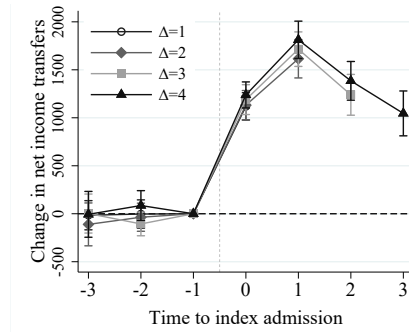
(a) Earned income



(b) Annual income

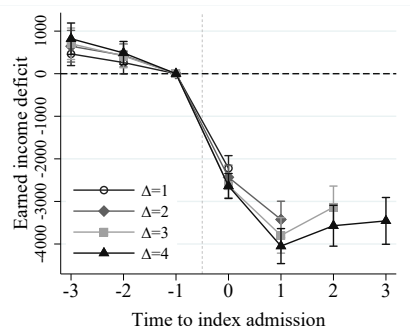


(c) Employment

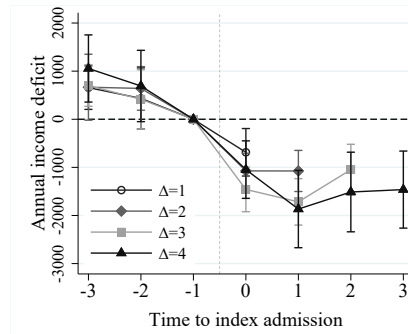


(d) Net income transfers

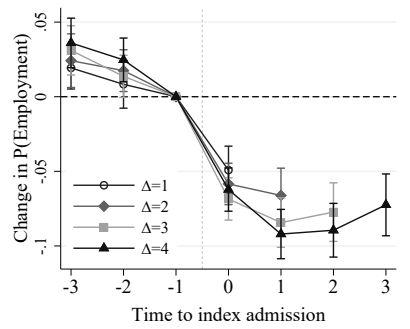
**Fig. S7:** The first anxiety admission and labor market deficit by value of  $\Delta$ . Notes: The sample consists of people who have recorded their first psychotic admission (hospitalization or outpatient visit) since 1998 between years 2001-2015 at age 15-52 (treatment group) and individuals who recorded psychotic psychiatric admission  $\Delta \in [1,2,3,4]$  years later (control group). For details of the econometric specification see Figure 5.



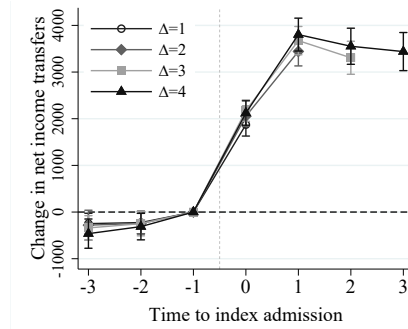
(a) Earned income



(b) Annual income

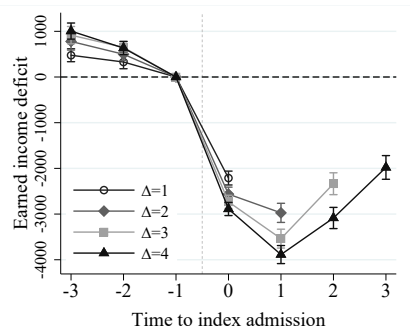


(c) Employment

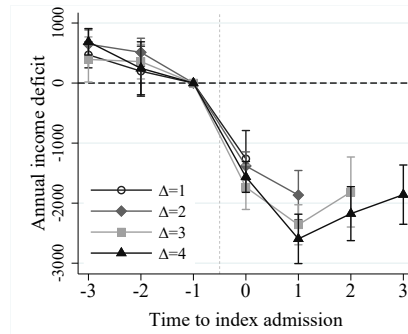


(d) Net income transfers

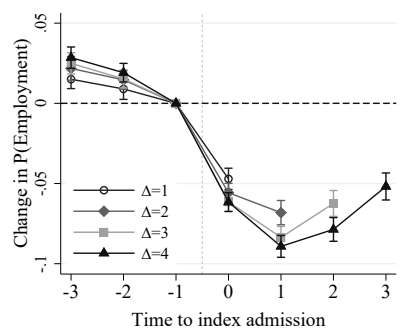
**Fig. S8:** The first psychotic admission and labor market deficit by value of  $\Delta$ . Notes: The sample consists of people who have recorded their first psychotic admission (hospitalization or outpatient visit) since 1998 between years 2001-2015 at age 15-52 (treatment group) and individuals who recorded psychotic psychiatric admission  $\Delta \in [1,2,3,4]$  years later (control group). For details of the econometric specification see Figure 5.



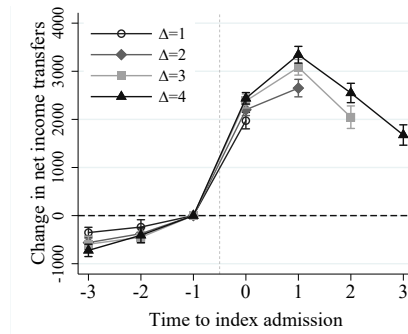
(a) Earned income



(b) Annual income



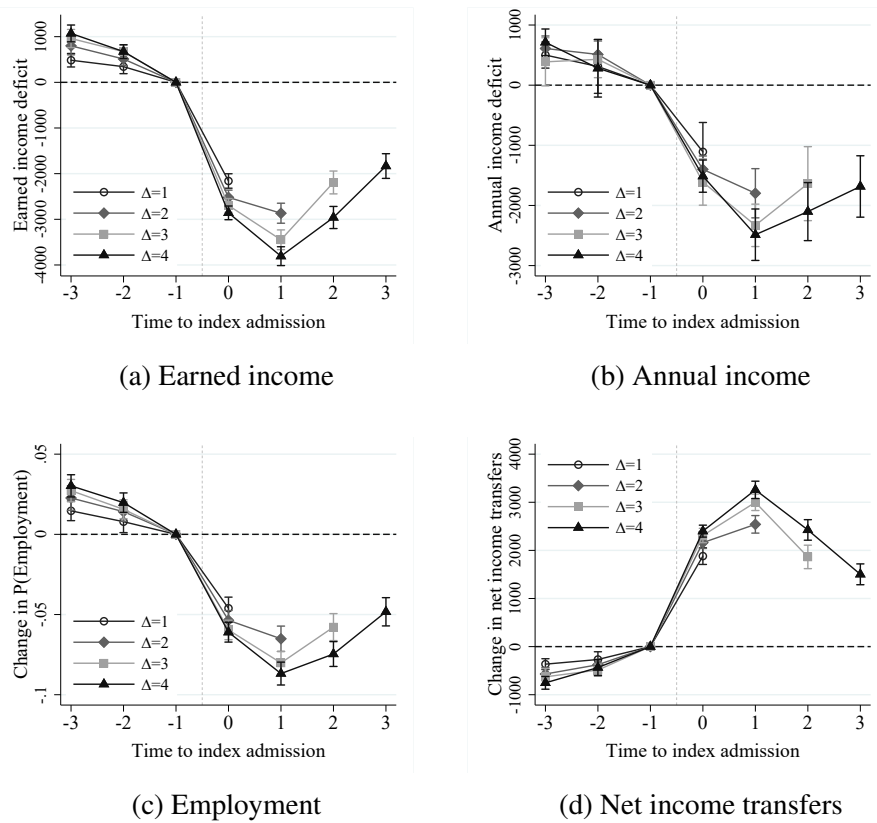
(c) Employment



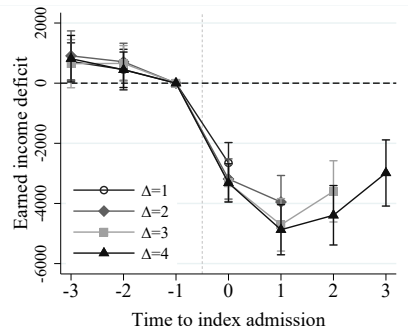
(d) Net income transfers

**Fig. S9:** The first mood admission and labor market deficit by value of  $\Delta$ . Notes: The sample consists of people who have recorded their first mood admission (hospitalization or outpatient visit) since 1998 between years 2001-2015 at age 15-52 (treatment group) and individuals who recorded mood psychiatric admission  $\Delta \in [1,2,3,4]$  years later (control group). For details of the econometric specification see Figure 5.

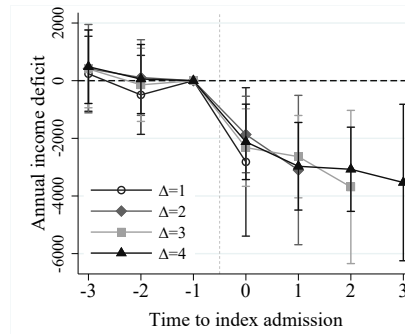




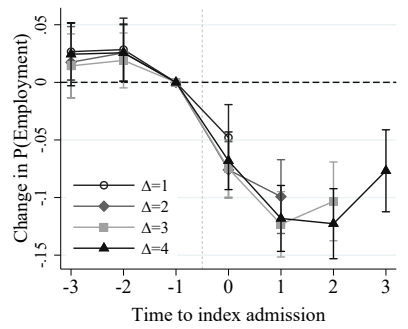
**Fig. S10:** The first depressive admission and labor market deficit by value of  $\Delta$ . Notes: The sample consists of people who have recorded their first depressive admission (hospitalization or outpatient visit) since 1998 between years 2001-2015 at age 15-52 (treatment group) and individuals who recorded depressive psychiatric admission  $\Delta \in [1,2,3,4]$  years later (control group). For details of the econometric specification see Figure 5.



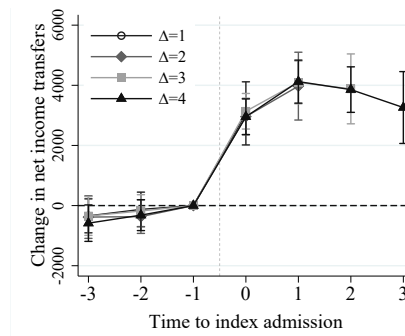
(a) Earned income



(b) Annual income

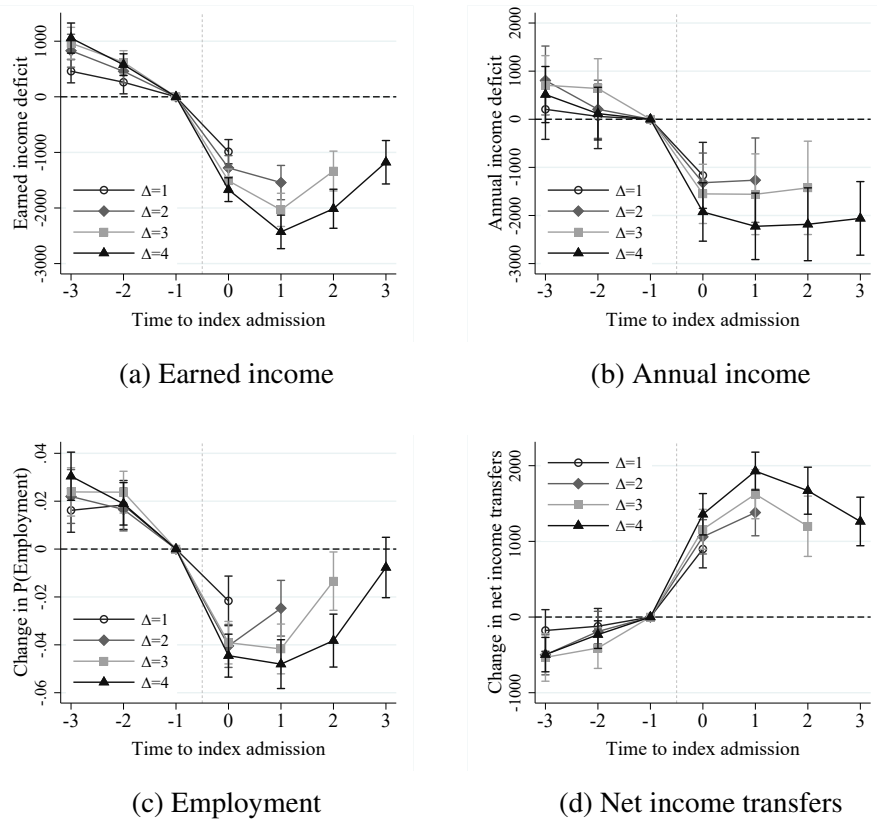


(c) Employment

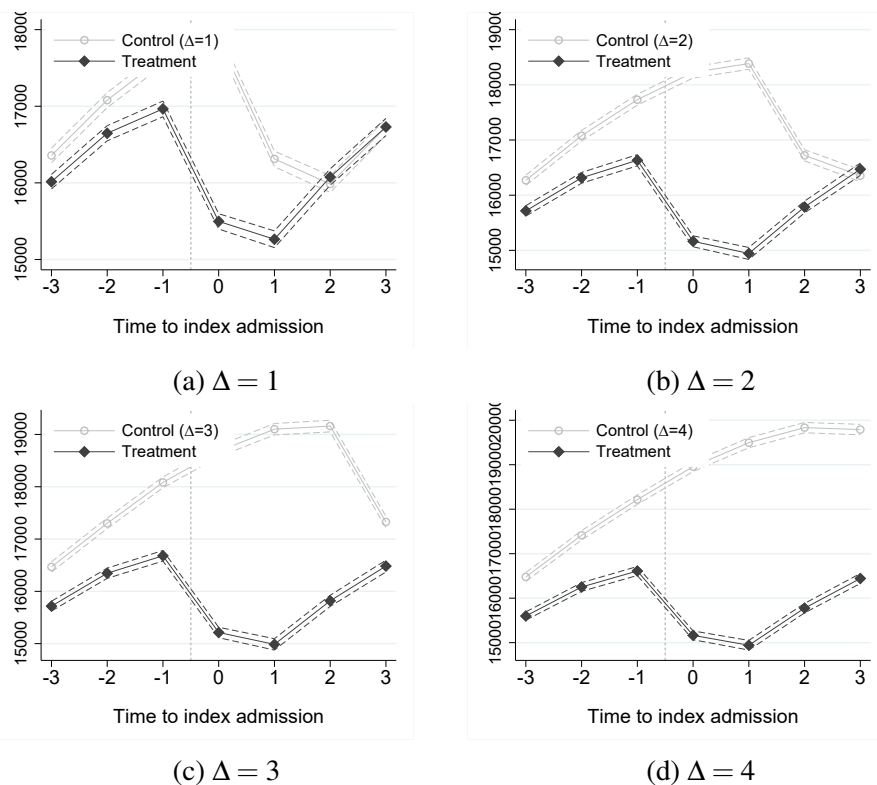


(d) Net income transfers

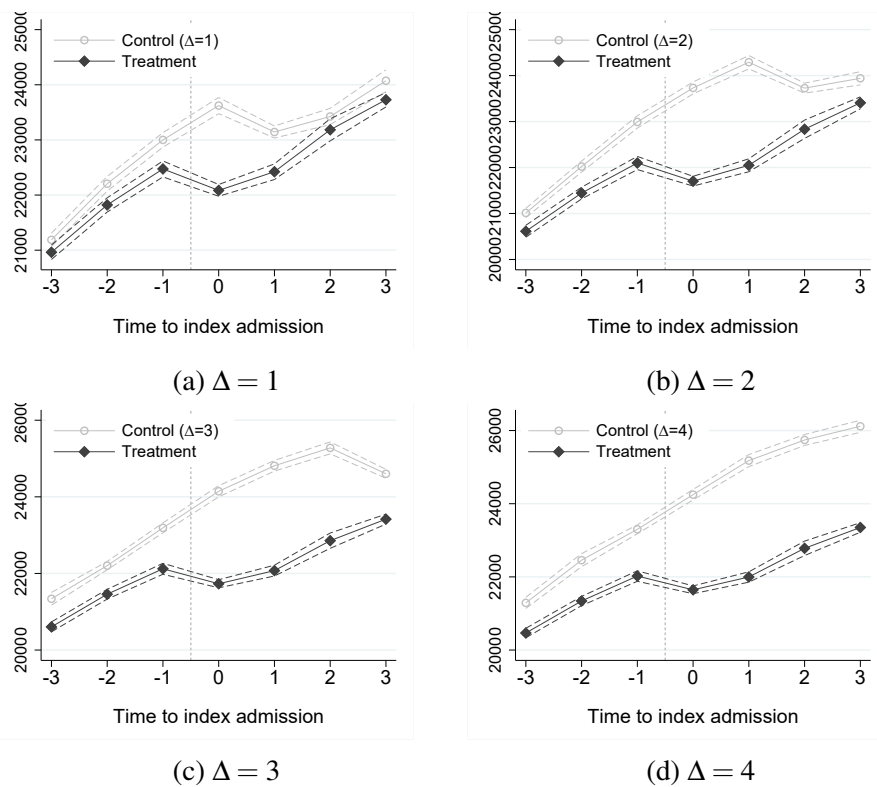
**Fig. S11:** The first bipolar admission and labor market deficit by value of  $\Delta$ . Notes: The sample consists of people who have recorded their first bipolar admission (hospitalization or outpatient visit) since 1998 between years 2001-2015 at age 15-52 (treatment group) and individuals who recorded bipolar psychiatric admission  $\Delta \in [1,2,3,4]$  years later (control group). For details of the econometric specification see Figure 5.



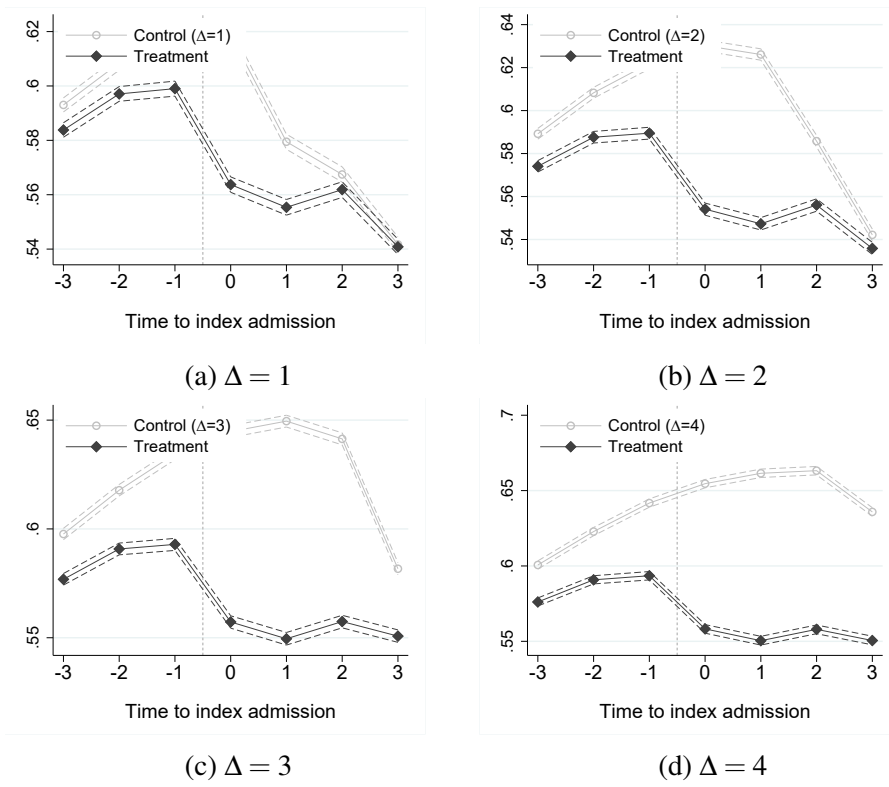
**Fig. S12:** The first substance admission and labor market deficit by value of  $\Delta$ . Notes: The sample consists of people who have recorded their first substance admission (hospitalization or outpatient visit) since 1998 between years 2001-2015 at age 15-52 (treatment group) and individuals who recorded substance psychiatric admission  $\Delta \in [1,2,3,4]$  years later (control group). For details of the econometric specification see Figure 5.



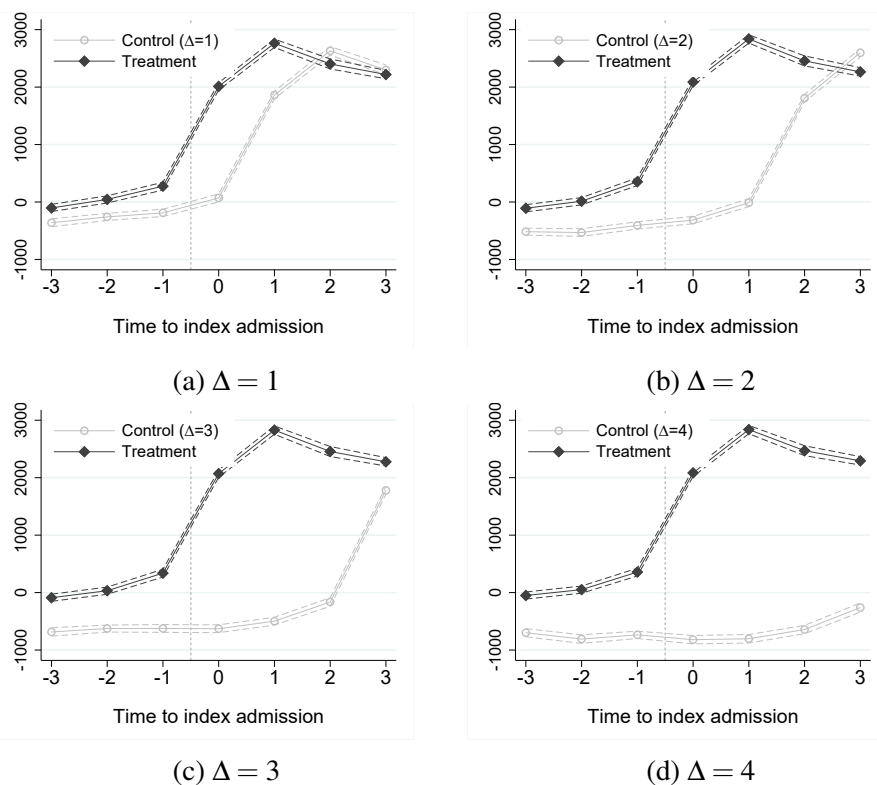
**Fig. S13:** Predicted earned income in years relative to the index admission by value of  $\Delta$ : The main sample. Notes: Adjusted predictions of earned income (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window. All estimates stem from specification that includes fixed effects for calendar year, birth year, sex, birth order (top-coded at 4), province of residence in childhood, highest education level for both mother and father, parental psychiatric history and parents' income quartile in childhood. Standard errors are clustered at the individual level.



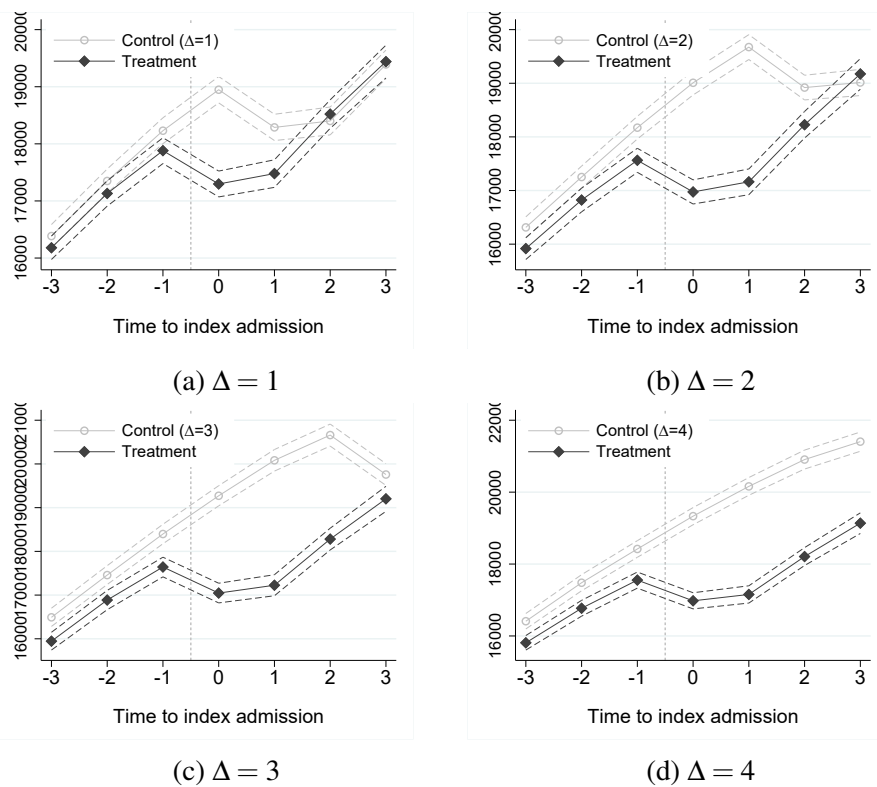
**Fig. S14:** Predicted annual income in years relative to the index admission by value of  $\Delta$ : The main sample. Notes: Adjusted predictions of annual income (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.



**Fig. S15:** Predicted employment probability in years relative to the index admission by value of  $\Delta$ : The main sample. Notes: Adjusted predictions of employment rates (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.

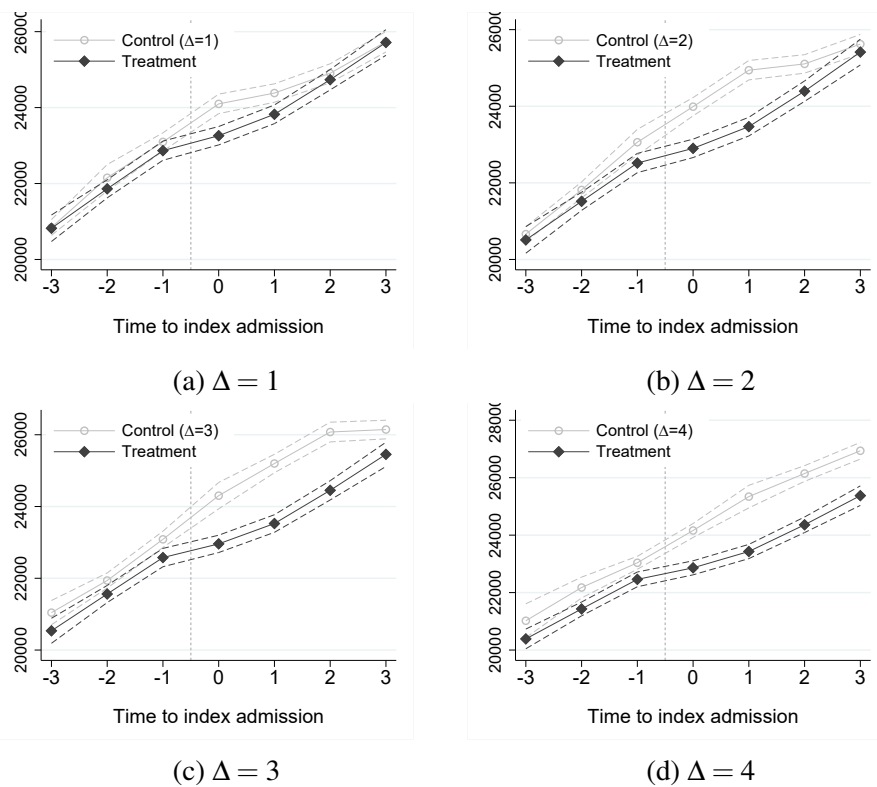


**Fig. S16:** Predicted net income transfers (income transfers gained - income transfers paid) in years relative to the index admission by value of  $\Delta$ : The main sample. Notes: Adjusted predictions of net income transfers (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.

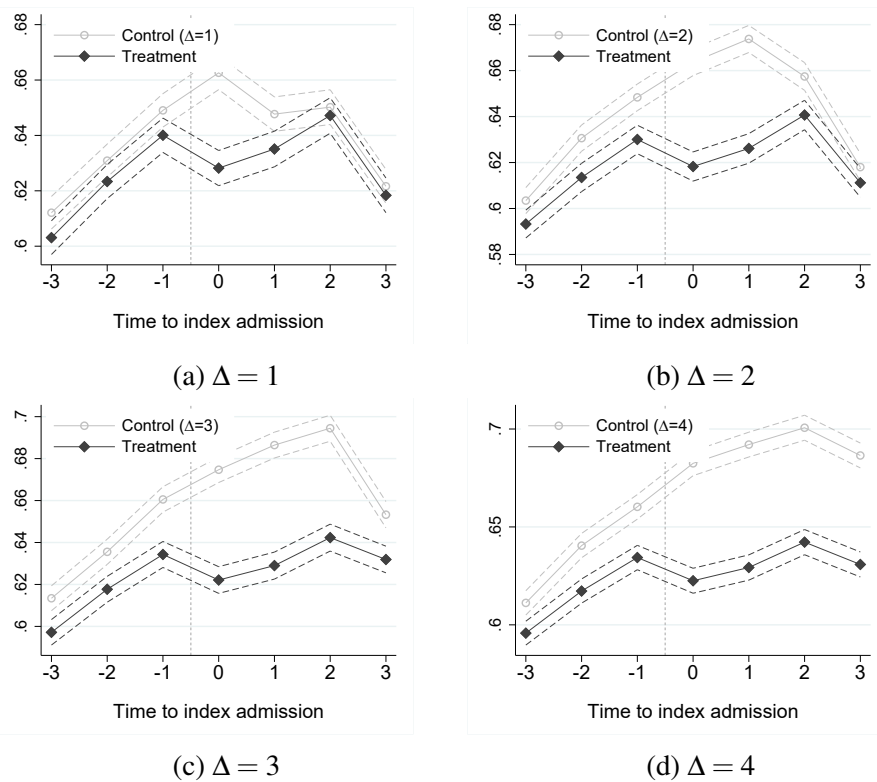


**Fig. S17:** Predicted earned income in years relative to the first anxiety disorder diagnosis by value of  $\Delta$ : The main sample. Notes: Adjusted predictions of earned income (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.

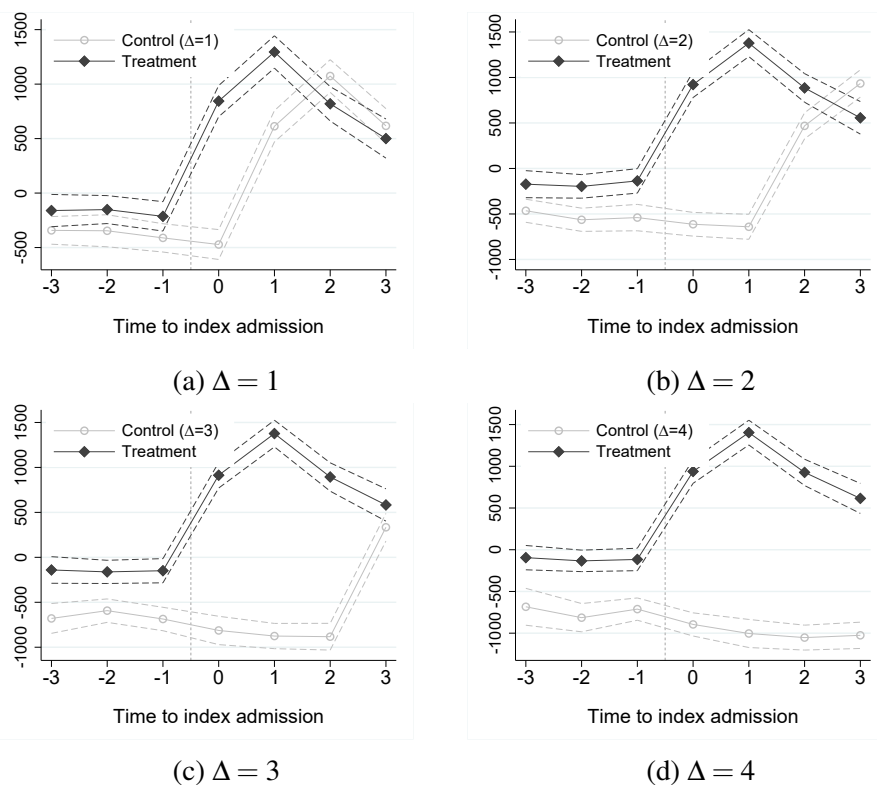




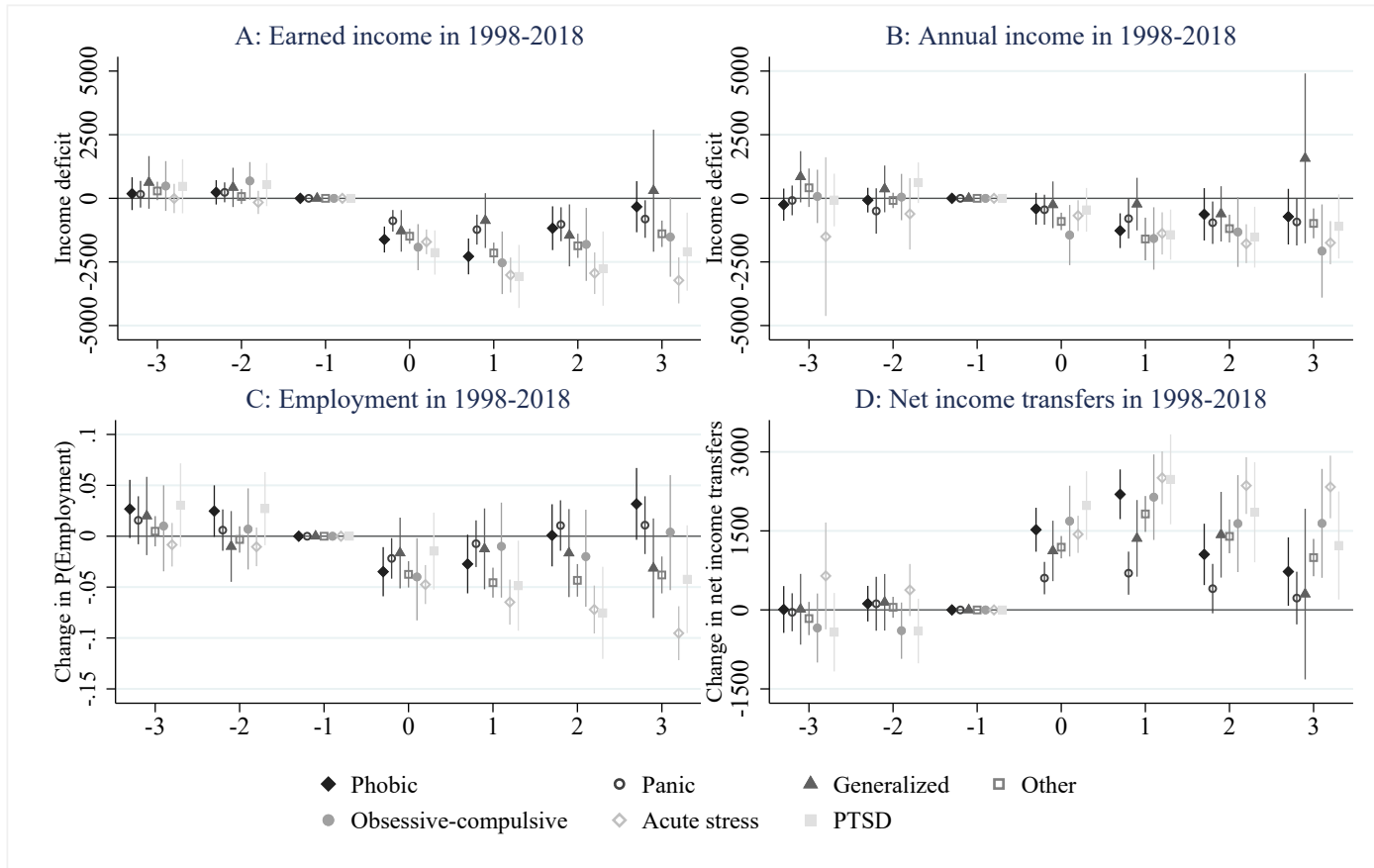
**Fig. S18:** Predicted annual income in years relative to the first anxiety disorder diagnosis by value of  $\Delta$ : The main sample. Notes: Adjusted predictions of annual income (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to index admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.



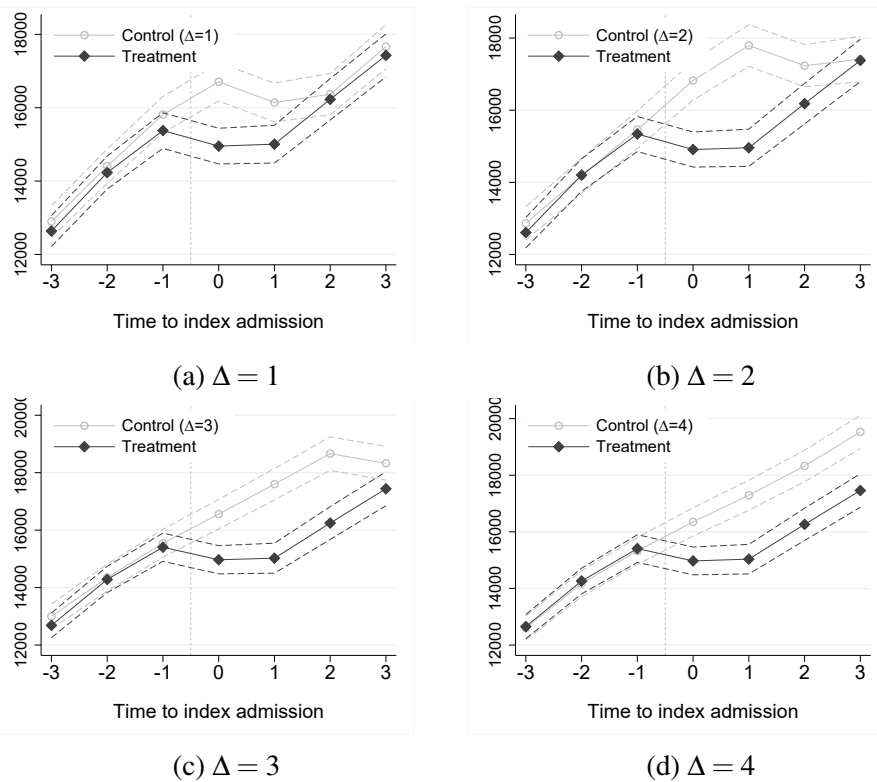
**Fig. S19:** Predicted employment probability in years relative to the first anxiety disorder diagnosis by value of  $\Delta$ : The main sample. Notes: Adjusted predictions of employment rates (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to index admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.



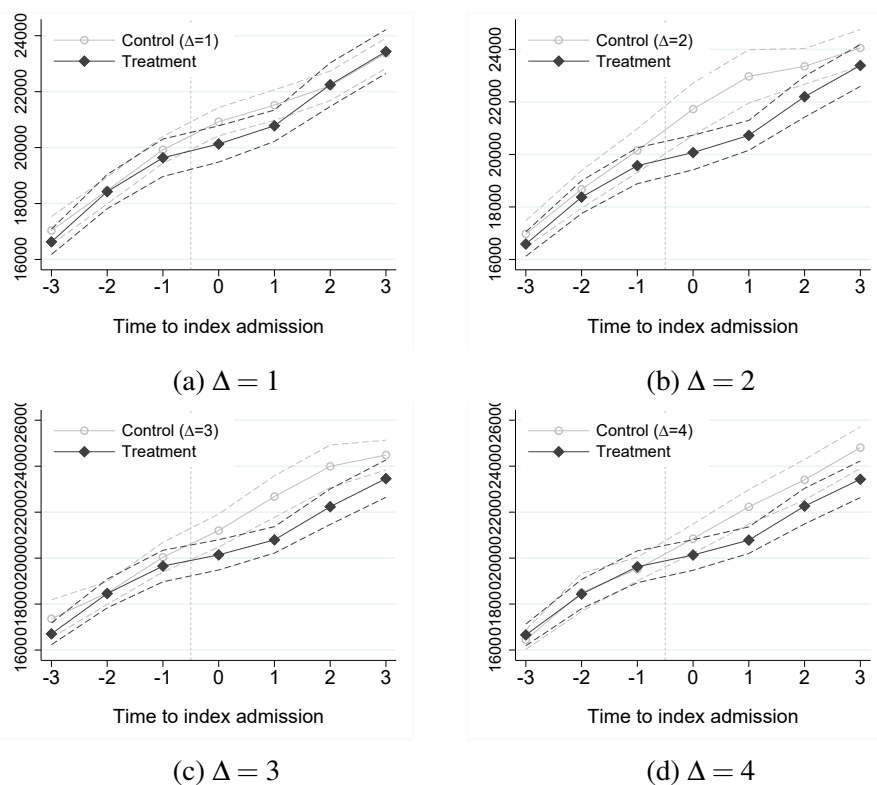
**Fig. S20:** Predicted net income transfers (income transfers gained - income transfers paid) in years relative to the first anxiety disorder diagnosis by value of  $\Delta$ : The main sample. Notes: Adjusted predictions of net income transfers (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the index admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.



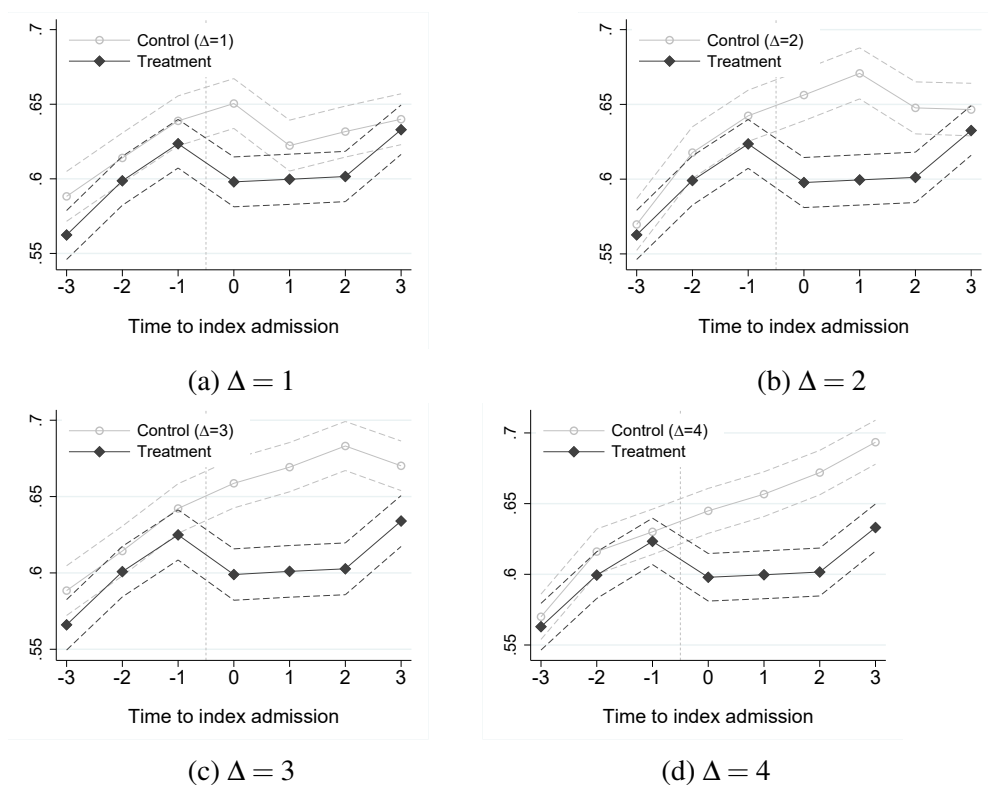
**Fig. S21:** Labor market deficit by the subcategories of anxiety disorders ( $\Delta = 4$ ). Notes: Anxiety disorders include acute stress disorder, post-traumatic stress disorder (PTSD), panic disorder, obsessive-compulsive disorder, generalized anxiety disorders and other anxiety states disorders (incl. mixed anxiety and depressive disorder). The point estimates for are estimated using the the main sample. See Figure 5 for the econometric specification.



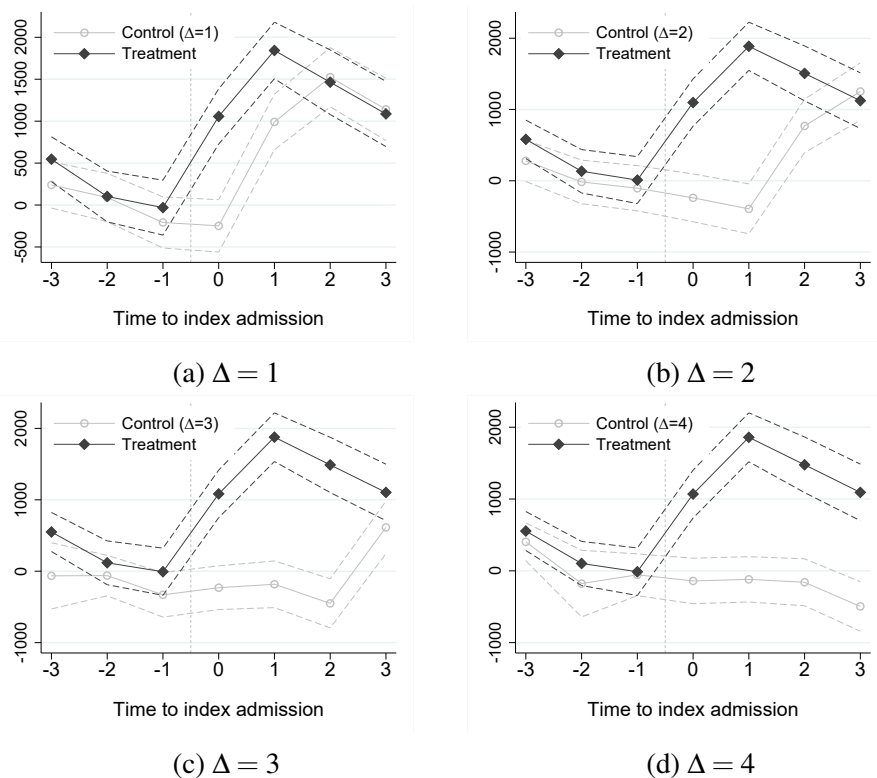
**Fig. S22:** Predicted earned income in years relative to the first anxiety disorder diagnosis by value of  $\Delta$ : Recession-free period. Notes: Adjusted predictions of earned income (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the index admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.



**Fig. S23:** Predicted annual income in years relative to the first anxiety disorder diagnosis by value of  $\Delta$ : Recession-free period. Notes: Adjusted predictions of annual income (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the index admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.



**Fig. S24:** Predicted employment probability in years relative to the first anxiety disorder diagnosis by value of  $\Delta$ : Recession-free period. Notes: Adjusted predictions of employment probability (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the index admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.



**Fig. S25:** Predicted net income transfers (income transfers gained - income transfers paid) in years relative to the first anxiety disorder diagnosis by value of  $\Delta$ : Recession-free period. Notes: Adjusted predictions of net income transfers (with 95% confidence intervals) of treatment and control group for values of  $\Delta$  relative to the index admission year in 7-year observational window. See Figure S13 for the econometric specification. Standard errors are clustered at the individual level.



## 6 Tables

**Table S1:** Diagnosis codes used to form the first psychiatric admission information

Outcomes	International Classification of Diseases, Revision	
	ICD-9	ICD-10
Any mental disorder	291*-316*	F04*-F69*, F80*-F99*
Substance-use disorders	291-292, 303-305	F10-F19
Psychotic disorder	295*, 297*-299*	F20*-F29*
Mood disorder	296,3004	F30*-F39
Bipolar disorders	2962-2967	F30,F31
Depressive disorders	2961, 3004A	F32-F33, F341
Anxiety disorder (incl. dissociative, stress-related, somatoform and other nonpsychotic mental disorders)	300*	F40*-F489

Notes: Diagnoses used to form the first psychiatric event times. ICD-9 and ICD-10 refer to International Statistical Classification of Diseases and Related Health Problems and its revision for years 1987-1995 and 1996 onwards. This study uses only ICD-10 for identifying the type of psychiatric disorder an individual is diagnosed with his/her first inpatient or outpatient visit for psychiatric causes. Years 1987-1995 (ICD-9) are used only to extract information on whether an individual has been diagnosed a psychiatric disorder during an inpatient visit prior to analysis period.

**Table S2:** Sample characteristics of the main sample

Background variable	Mean	SD	Min (1% P)	Max (99% P)	N
<b>Time invariant characteristics of the affected</b>					
Birth cohort	1974.590	6.928	1963	1985	174042
Female sex	0.542	0.498	0	1	174042
Finnish-speaker	0.950	0.220	0	1	174042
Birth order	1.980	1.338	1	19	174042
<b>Pre-admission characteristics of the affected</b>					
Earned income	16106	18452	0	70681	174042
Annual income	21302	24657	0	81215	174042
Employed	0.559	0.497	0	1	174042
Married	0.287	0.479	0	1	174042
<b>Parental psychiatric history</b>					
Any psychiatric admission	0.358	0.479	0	1	174042
<b>Socio-economic status in childhood (at age 5-8)</b>					
Household income	18296	22002	0	69082	174042
Income quartile 1	0.273	0.445	0	1	174042
Income quartile 2	0.257	0.437	0	1	174042
Income quartile 3	0.242	0.428	0	1	174042
Income quartile 4	0.228	0.419	0	1	174042
Mother's higher education	0.076	0.265	0	1	174042
Father's higher education	0.115	0.320	0	1	174042
<b>First admission characteristics</b>					
Any psychiatric admission	1.000	0.000	1	1	174042
Psychotic disorder	0.055	0.228	0	1	174042
Mood disorder	0.345	0.475	0	1	174042
Anxiety disorder	0.187	0.390	0	1	174042
Depressive disorder	0.160	0.464	0	1	174042
Bipolar disorder	0.020	0.140	0	1	174042
Substance disorder	0.143	0.350	0	1	174042
Age at the first admission (AAFA)	32.21	9.169	15	52	174042
AAFA $\leq$ 24	0.226	0.419	0	1	174042
25 $\leq$ AAFA $\leq$ 34	0.364	0.481	0	1	174042
35 $\leq$ AAFA $\leq$ 44	0.304	0.460	0	1	174042
45 $\leq$ AAFA $\leq$ 52	0.106	0.307	0	1	174042

Notes: The summary statistics of the study sample. First, it summarizes the pre-admission characteristics of the study sample the year before the first psychiatric admission. Third, parental psychiatric history during the whole psychiatric follow-up (not only before child's first admission), and total household income and mother's and father's education. Finally, it displays the incidence of the first admission by psychiatric subcategory and division by the age at the first admission.

**Table S3:** Age-distributions of first psychiatric admissions by psychiatric sub-category

Age group	Any	Psychotic	Mood	Anxiety	Bipolar	Depressive	Substance
15-19	0.086 14804	0.058 556	0.063 3748	0.073 2373	0.021 71	0.065 3563	0.07 1741
20-24	0.141 24313	0.16 1532	0.114 6817	0.151 4917	0.103 358	0.114 6221	0.126 3107
25-29	0.159 27470	0.209 2001	0.156 9374	0.177 5744	0.193 669	0.154 8381	0.144 3549
30-34	0.205 35380	0.223 2137	0.213 12789	0.225 7314	0.229 794	0.212 11574	0.177 4383
35-39	0.18 31136	0.179 1720	0.197 11810	0.179 5807	0.226 783	0.195 10650	0.181 4482
40-44	0.124 21400	0.099 949	0.142 8529	0.109 3555	0.137 473	0.143 7790	0.143 3526
45-49	0.076 13093	0.056 536	0.083 4979	0.061 1968	0.068 234	0.084 4595	0.111 2753
50-54	0.03 5132	0.017 159	0.031 1875	0.025 816	0.023 80	0.032 1745	0.048 1190
Total	1 172728	1 9590	1 59921	1 32494	1 3462	1 54519	1 24731

Notes: Age-distributions of first psychiatric admissions by psychiatric categories in percentages and frequency.

**Table S4:** First (any) psychiatric admission and labor market performance: affected vs. unaffected

Year relative to first psychiatric admission	Earned income		Annual income		Employment		Net income transfers	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-5	3553.92 (75.01)		3051.85 (122.61)		0.05 (0.002)		-2080.98 (53.4515)	
-4	2858.67 (70.58)		2336.58 (121.35)		0.044 (0.002)		-1710.85 (51.7411)	
-3	1975.81 (71.38)		1400.97 (150.47)		0.032 (0.002)		-1148.76 (58.6413)	
-2	1159.87 (49.7)		685.68 (159.05)		0.02 (0.002)		-662.732 (57.1225)	
0	-3032.5 (52.22)	-2300.16 (61.83)	-1982.22 (115.75)	-1150.86 (134.74)	-0.058 (0.002)	-0.049 (0.002)	2422.026 (45.8455)	1979.667 (54.5645)
1	-4720.31 (68.34)	-3107.31 (87.58)	-3327.09 (153.71)	-1720.27 (189.89)	-0.086 (0.002)	-0.065 (0.003)	3746.475 (59.3923)	2783.109 (74.9531)
2	-5026.85 (76.85)	-2533.18 (107.35)	-4126.33 (155.27)	-1744.05 (211.82)	-0.091 (0.002)	-0.058 (0.003)	3835.172 (62.6304)	2350.799 (86.5384)
3	-5401.76 (79.53)	-2027.42 (123.78)	-4605.89 (132.67)	-1448.15 (219.91)	-0.092 (0.002)	-0.046 (0.004)	3997.227 (59.6534)	1991.846 (95.1337)
4	-5828.28 (84.26)	-1573.27 (142.52)	-5289.62 (193.98)	-1356.41 (259.09)	-0.093 (0.002)	-0.035 (0.004)	4270.982 (76.9696)	1744.594 (110.7908)
5	-6242.39 (90.49)	-1106.72 (162.73)	-5322.32 (214.87)	-613.66 (308.57)	-0.069 (0.002)	0.002 (0.005)	4435.879 (81.8566)	1388.484 (130.7796)
Pre-admission trend	-880.67 (19.1)		-775.46 (30.32)		-0.013 (0.001)		521.0073 (13.56)	
Constant	29632.65 (53.3)		34877.22 (79.37)		0.849 (0.001)		-6181.71 (31.09)	
Obs (trimmed)	3483037		3483037		3483037		3483037	

Notes: Estimates of differences in labor outcomes and net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between individuals with and without psychiatric admissions normalized at year preceding the index admission (with index admission age for the non-affected randomized between age 15-52 and then computing the (placebo) admission year and time relative to index admission. Both non-parametric and parametric estimates with linear time trend are computed. All estimates stem from specification that includes fixed effects for calendar year, birth year, sex, birth order (top-coded at 4), province of residence in childhood, highest education level for both mother and father, parental psychiatric history and parents' income quartile in childhood.

**Table S5:** First anxiety admission and labor market performance: affected vs. unaffected

Year relative to first psychiatric admission	Earned income		Annual income		Employment		Net income transfers	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-5	2293.41 (145.01)		2016.84 (170.79)		0.014 (0.005)		-1400.83 (90.7984)	
-4	1711.58 (134.06)		1563.01 (166.45)		0.018 (0.005)		-1105.79 (88.0141)	
-3	1130.59 (126.18)		716.41 (176.44)		0.007 (0.004)		-585.076 (87.4392)	
-2	712.99 (100.38)		399.44 (166.61)		0.002 (0.004)		-336.637 (75.9015)	
0	-2070.31 (101.81)	-1564.4 (124.13)	-1179.68 (144.35)	-559.64 (181.21)	-0.034 (0.004)	-0.029 (0.004)	1700.154 (75.2812)	1314.578 (88.7111)
1	-3344.53 (136.92)	-2280.08 (175.73)	-2222.4 (177.18)	-1082.64 (240.32)	-0.048 (0.004)	-0.038 (0.006)	2698.109 (98.6957)	1955.453 (123.182)
2	-3408.97 (150.31)	-1785.98 (213.16)	-2702.4 (189.96)	-1042.91 (272.96)	-0.047 (0.005)	-0.033 (0.007)	2640.418 (108.2968)	1540.681 (146.2617)
3	-3675.44 (158.1)	-1493.91 (248.05)	-3011.93 (178.03)	-832.72 (301.73)	-0.051 (0.005)	-0.032 (0.008)	2779.439 (108.2421)	1322.622 (164.0574)
4	-3817.78 (165.55)	-1077.7 (282.7)	-3426.71 (237.26)	-727.77 (342.11)	-0.043 (0.005)	-0.021 (0.009)	2945.718 (125.1478)	1131.82 (189.5622)
5	-3958.09 (176.98)	-659.48 (324.26)	-2694.78 (946.18)	523.88 (872.99)	-0.029 (0.005)	-0.002 (0.01)	2802.61 (305.1677)	631.6321 (347.5033)
Pre-admission trend	-558.54 (37.31)		-519.73 (44.7)		-0.004 (0.001)		357.0804 (23.3)	
Constant	29783.16 (53.41)		35041.47 (79.75)		0.85 (0.001)		-6280.88 (31.15)	
Obs (trimmed)	2782785		2782785		2782785		2782785	

Notes: Estimates of differences in labor outcomes and net income transfers (with standard errors clustered at the individual level reported below the estimates in parentheses.) between individuals with anxiety disorders as the first psychiatric admission and without psychiatric admissions normalized at year preceding the index admission. For details on the econometric specification see Table S4.

**Table S6:** First psychotic admission and labor market performance: affected vs. unaffected

Year relative to first psychiatric admission	Earned income		Annual income		Employment		Net income transfers	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-5	4092.63 (233.02)		4281.42 (539.28)		0.067 (0.008)		-2329.27 (204.0395)	
-4	3145.01 (214.73)		2967.29 (233.49)		0.05 (0.008)		-1751.48 (136.9996)	
-3	2302.27 (189.7)		2092.05 (243.39)		0.042 (0.007)		-1230.21 (129.2851)	
-2	1233.07 (139.73)		1329 (327.12)		0.022 (0.007)		-707.034 (129.6999)	
0	-3503.49 (146.82)	-2628.93 (180.26)	-1993.66 (208.52)	-1067.27 (320.16)	-0.073 (0.007)	-0.061 (0.007)	2752.661 (119.7323)	2245.361 (153.0666)
1	-5696.17 (209.17)	-3811.89 (272.79)	-3287.43 (239.41)	-1340.93 (448.63)	-0.114 (0.008)	-0.085 (0.01)	4928.578 (156.7309)	3850.978 (218.1517)
2	-6121.75 (230.82)	-3227.75 (333.57)	-4089.25 (271.87)	-1122.63 (572.55)	-0.128 (0.008)	-0.083 (0.012)	5347.343 (174.6771)	3699.444 (267.3047)
3	-7214.25 (247.58)	-3310.53 (392.11)	-5303.21 (245.84)	-1316.48 (701.71)	-0.137 (0.008)	-0.076 (0.014)	6047.858 (173.1523)	3829.659 (308.9253)
4	-8120.8 (255.17)	-3207.36 (446.33)	-5912.93 (354.93)	-906.08 (835.34)	-0.144 (0.008)	-0.066 (0.015)	6430.176 (197.6439)	3641.677 (359.0129)
5	-8811.57 (262.46)	-2888.41 (500.79)	-6467.29 (260.12)	-440.33 (928.01)	-0.1 (0.009)	-0.006 (0.017)	6892.328 (183.3069)	3533.529 (395.9623)
Pre-admission trend	-1009.72 (59.14)		-1020.11 (125.26)		-0.016 (0.002)		570.2998 (48.61)	
Constant	29894.63 (53.77)		35169.84 (80.28)		0.851 (0.001)		-6360.48 (31.33)	
Obs (trimmed)	2685952		2685952		2685952		2685952	

Notes: Estimates of differences in labor outcomes and net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between individuals with psychotic disorders as the first psychiatric admission and without psychiatric admissions normalized at year preceding the index admission. Both non-parametric and parametric estimates with linear time trend are computed. For details on the econometric specification see Table S4.

**Table S7:** First mood disorder admission and labor market performance: affected vs. unaffected

Year relative to first psychiatric admission	Earned income		Annual income		Employment		Net income transfers	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-5	3607.63 (108.16)		2964.77 (206.35)		0.048 (0.003)		-2199.78 (84.7031)	
-4	2967.5 (102.77)		2234.7 (209.68)		0.041 (0.003)		-1855.1 (83.9531)	
-3	2131.64 (97.3)		1421.46 (174.11)		0.033 (0.003)		-1318.55 (75.4594)	
-2	1317.96 (72.04)		768.22 (227.92)		0.02 (0.003)		-789.91 (80.0248)	
0	-3708.5 (76.67)	-3054.01 (92.46)	-2314.12 (195.73)	-1573.15 (202.26)	-0.072 (0.003)	-0.065 (0.003)	3019.415 (74.8234)	2612.66 (83.2379)
1	-5555.03 (102.39)	-4014.06 (132.04)	-3931.04 (233.19)	-2450.46 (276.43)	-0.11 (0.003)	-0.091 (0.004)	4474.894 (93.1026)	3521.664 (113.7997)
2	-5691.65 (113.65)	-3264.19 (159.69)	-4639.66 (227.18)	-2419.48 (309.16)	-0.113 (0.003)	-0.082 (0.005)	4439.653 (93.4471)	2939.949 (128.9815)
3	-5880.11 (119.09)	-2566.17 (184.64)	-4956.14 (210.49)	-1996.36 (337.02)	-0.11 (0.003)	-0.068 (0.006)	4401.915 (91.0452)	2355.737 (143.6)
4	-6331.48 (123.79)	-2131.07 (209.63)	-5752.71 (258.56)	-2053.32 (394.01)	-0.112 (0.003)	-0.058 (0.006)	4620.308 (105.5719)	2027.656 (166.0999)
5	-6748.29 (130.64)	-1661.39 (237.61)	-5899.04 (225.98)	-1460.05 (431.37)	-0.09 (0.004)	-0.024 (0.007)	4784.231 (99.3159)	1645.105 (183.836)
Pre-admission trend	-886.48 (27.8)		-739.6 (46.87)		-0.012 (0.001)		546.4741 (20.7)	
Constant	29752.41 (53.43)		35010.06 (79.7)		0.85 (0.001)		-6239.25 (31.18)	
Obs (trimmed)	2966630		2966630		2966630		2966630	

Notes: Estimates of differences in labor outcomes and net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between individuals with mood disorders as the first psychiatric admission and without psychiatric admissions normalized at year preceding the index admission. For details on the econometric specification see Table S4.

**Table S8:** First depressive disorder admission and labor market performance: affected vs. unaffected

Year relative to first psychiatric admission	Earned income		Annual income		Employment		Net income transfers	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-5	3657.42 (112.44)		3021.96 (221.9)		0.048 (0.004)		-2229.48 (89.8412)	
-4	3022.28 (107.02)		2288.54 (225.66)		0.042 (0.003)		-1891.08 (89.2615)	
-3	2143.91 (100.81)		1432.9 (176.8)		0.033 (0.003)		-1328.46 (77.2603)	
-2	1322.73 (74.92)		798.95 (241.65)		0.019 (0.003)		-799.23 (84.1907)	
0	-3664.82 (79.61)	-2989.77 (96.1)	-2258.89 (210.5)	-1507.31 (215.4)	-0.071 (0.003)	-0.064 (0.003)	2971.125 (79.3969)	2555.534 (87.6392)
1	-5463.03 (106.72)	-3886.54 (137.62)	-3894.5 (249.28)	-2389.56 (294.09)	-0.107 (0.003)	-0.088 (0.004)	4411.229 (98.3423)	3440.556 (119.88)
2	-5575.71 (118.13)	-3097.78 (165.84)	-4569.03 (240.99)	-2310.73 (328.06)	-0.109 (0.003)	-0.078 (0.005)	4334.027 (97.8132)	2808.274 (135.3086)
3	-5755.81 (123.7)	-2376.45 (191.73)	-4884.72 (225.2)	-1873.08 (359.55)	-0.107 (0.004)	-0.064 (0.006)	4289.46 (95.5188)	2208.625 (150.9029)
4	-6195.28 (128.36)	-1914.47 (217.2)	-5646.1 (271.58)	-1881.1 (419.48)	-0.109 (0.004)	-0.054 (0.007)	4492.624 (109.9664)	1856.708 (174.7047)
5	-6541.89 (135.51)	-1359.64 (246.42)	-5770.74 (241.79)	-1252.39 (460.4)	-0.086 (0.004)	-0.019 (0.007)	4615.622 (104.1967)	1424.626 (193.3907)
Pre-admission trend	-901.44 (28.95)		-753.35 (50.01)		-0.012 (0.001)		555.0809 (21.85)	
Constant	29755.29 (53.43)		35013.82 (79.69)		0.85 (0.001)		-6242.83 (31.17)	
Obs (trimmed)	2934831		2934831		2934831		2934831	

Notes: Estimates of differences in labor outcomes and net income transfers (with cluster-robust Standard errors are clustered at the individual level reported below the estimates in parentheses.) between individuals with depressive disorders as the first psychiatric admission and without psychiatric admissions normalized at year preceding the index admission. For details on the economic specification see Table S4.



**Table S9:** First bipolar disorder admission and labor market performance: affected vs. unaffected

Year relative to first psychiatric admission	Earned income		Annual income		Employment		Net income transfers	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-5	3439.38 (403.23)		2535.54 (494.05)		0.057 (0.013)		-2090.36 (262.3311)	
-4	2813.03 (380.3)		2017.64 (462.46)		0.046 (0.012)		-1703.89 (249.5456)	
-3	2416.54 (341.77)		1381.41 (452.92)		0.039 (0.011)		-1297.4 (233.8248)	
-2	1613 (277.64)		938.89 (439.63)		0.029 (0.01)		-901.01 (205.7412)	
0	-4273.2 (294.84)	-3905.95 (358.41)	-2524.28 (425.84)	-2054.03 (430.11)	-0.08 (0.011)	-0.075 (0.012)	3528.713 (238.0952)	3232.165 (269.9735)
1	-6634.56 (381.41)	-5459.43 (492.06)	-3996 (555.75)	-2910.76 (620.9)	-0.148 (0.013)	-0.13 (0.016)	5121.573 (303.6269)	4326.664 (363.573)
2	-6987.66 (416.9)	-5004.66 (602.1)	-5229.56 (509.23)	-3529.34 (676.92)	-0.156 (0.013)	-0.125 (0.019)	5530.657 (318.5323)	4237.388 (422.2847)
3	-7221.43 (447.08)	-4430.55 (699.17)	-5513.26 (494.09)	-3198.06 (766.5)	-0.144 (0.013)	-0.1 (0.021)	5508.442 (318.6141)	3716.811 (474.3217)
4	-7821.44 (478.76)	-4222.67 (814.56)	-6690.36 (546.26)	-3760.17 (913.21)	-0.15 (0.013)	-0.092 (0.024)	5918.728 (339.2964)	3628.737 (536.4407)
5	-8689.26 (497.79)	-4282.62 (910.97)	-6951 (535.86)	-3405.83 (1015.19)	-0.134 (0.014)	-0.063 (0.027)	6248.978 (346.7144)	3460.627 (598.6845)
Pre-admission trend	-807.88 (102.78)		-614.98 (113.67)		-0.013 (0.003)		498.3607 (64.56)	
Constant	29911.13 (53.81)		35188.09 (80.33)		0.851 (0.001)		-6363.19 (31.35)	
Obs (trimmed)	2657850		2657850		2657850		2657850	

Notes: Estimates of differences in labor outcomes and net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between individuals with bipolar disorders as the first psychiatric admission and without psychiatric admissions normalized at year preceding the index admission. For details on the econometric specification see Table S4.

**Table S10:** First substance disorder admission and labor market performance: affected vs. unaffected

Year relative to first psychiatric admission	Earned income		Annual income		Employment		Net income transfers	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-5	5978.37 (162.46)		5123.47 (278.03)		0.119 (0.005)		-2812.12 (121.7412)	
-4	4872.72 (157.35)		4118.64 (277.63)		0.097 (0.005)		-2330.23 (119.6875)	
-3	3305.09 (154.62)		2747.89 (369.94)		0.065 (0.005)		-1570.66 (135.5349)	
-2	1779.92 (109.51)		1077.74 (269.65)		0.044 (0.004)		-824.693 (101.3881)	
0	-2875.57 (110.26)	-1547.93 (135.69)	-2702 (259.33)	-1329.2 (258.64)	-0.067 (0.004)	-0.044 (0.005)	1911.485 (100.3788)	1280.094 (111.5914)
1	-4905.41 (152.25)	-2072.82 (195.99)	-4198.93 (491.28)	-1497.34 (513.8)	-0.093 (0.005)	-0.042 (0.006)	3267.172 (145.0743)	1922.803 (171.1094)
2	-6093.23 (167.74)	-1755.68 (236.42)	-5892.23 (315.96)	-1861.85 (414.3)	-0.113 (0.005)	-0.032 (0.008)	3981.328 (137.5163)	1923.981 (185.2871)
3	-6998.09 (176.69)	-1155.58 (274.56)	-7112.23 (306.22)	-1753.07 (462.81)	-0.12 (0.005)	-0.01 (0.009)	4507.581 (136.4038)	1737.257 (208.1731)
4	-7609.18 (188.59)	-261.72 (314.12)	-7973.55 (335.2)	-1285.61 (525.03)	-0.126 (0.005)	0.013 (0.01)	4941.029 (146.8972)	1457.728 (237.6948)
5	-8448.15 (191.75)	404.27 (353.78)	-8293.32 (341.14)	-276.59 (588.11)	-0.097 (0.006)	0.071 (0.011)	5418.83 (151.389)	1222.551 (270.1009)
Pre-admission trend	-1504.96 (41.82)		-1328.78 (64.85)		-0.029 (0.001)		712.9773 (29.95)	
Constant	29992.46 (54.08)		35286.8 (80.52)		0.851 (0.001)		-6436.07 (31.44)	
Obs (trimmed)	2754296		2754296		2754296		2754296	

Notes: Estimates of differences in labor outcomes and net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between individuals with substance disorders as the first psychiatric admission and without psychiatric admissions normalized at year preceding the index admission. For details on the econometric specification see Table S4.

**Table S11:** The first psychiatric admission and deficit in earned income by value of  $\Delta$ 

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	328,83 (40,57)		544,01 (54,4)		653,67 (53,81)		726,36 (51,6)	
-2	238,59 (42,06)		334,67 (39,66)		448,69 (39,54)		442,42 (40,13)	
0	-1712,24 (44,44)	-1573,52 (56,82)	-1962,91 (43,37)	-1704,61 (63,13)	-2063,95 (41,66)	-1776,17 (53,11)	-2187,39 (41,87)	-1839,48 (53,41)
1	-377,7 (46,64)	-47,9 (74,04)	-2344,27 (60,77)	-1783,44 (102,05)	-2710,95 (60,23)	-2073,63 (95,66)	-2948,02 (59,13)	-2214,12 (83,63)
2	762,51 (46,97)	1278,33 (94,53)	162,45 (56,91)	1045,16 (124,87)	-1938,78 (69,77)	-929,11 (132,23)	-2453,31 (67,62)	-1322,3 (121,68)
3	671,23 (41,93)	1355,96 (109,8)	1214,3 (58,17)	2392,98 (151,71)	560,22 (65,92)	1909,57 (154,61)	-1742,73 (76,53)	-235,12 (158,2)
Pre-event trend		-161,73 (20,8)		-270,42 (28,14)		-324,66 (28,06)		-360,59 (26,95)
Pre-event control mean	17636,73		17730,34		18083,15		18215,61	
Obs	5865887		6023326		5779428		5599107	
Obs (trimmed)	1623370		1668345		1601523		1551529	
N	119082		125696		126601		127173	

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first admission year in 7-year observational window. Parametric estimates that adjust for extrapolation of linear time trend are reported next to the non-parametric estimates. Shaded areas refer to estimates for years in which both the treatment and control group have already had their first psychiatric admission. All estimates stem from a specification that includes fixed effects for calendar year, birth year, sex, birth order (top-coded at 4), province of residence in childhood, highest education level for both mother and father, parental psychiatric history and parents' income quartile in childhood.

**Table S12:** First psychiatric admission and annual income by value of  $\Delta$ 

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	301,07 (77)		494,47 (93,96)		335,2 (100,2)		453,99 (90,94)	
-2	141,81 (107,49)		316,85 (77,47)		322,38 (80,63)		160,78 (107,24)	
0	-1011,64 (108,99)	-858,61 (122,6)	-1136,82 (75,87)	-906,88 (117,32)	-1345,91 (92,64)	-1244,92 (114,03)	-1323,8 (75,47)	-1089,31 (94,51)
1	-193,93 (82,73)	119,6 (131,96)	-1349,91 (111,37)	-863,56 (182,32)	-1668,92 (99,55)	-1413,02 (176,67)	-1904,08 (107,18)	-1461,68 (145,89)
2	284,87 (118,22)	769,43 (185,35)	-1,21 (108,58)	760,11 (216,97)	-1354,92 (143,85)	-893,04 (255,92)	-1684,13 (120,34)	-998,27 (204,84)
3	181,35 (105,88)	818,84 (220,72)	358,91 (92,44)	1376,05 (256,52)	-116,07 (89,96)	500,11 (263,26)	-1488,42 (124,67)	-558,7 (264,24)
Pre-event trend		-152,17 (39,28)		-248,06 (48,41)		-156,16 (52,48)		-216,07 (47,94)
Pre-event control mean	23000,07		22991,87		23190,42		23300,63	
Obs	5865887		6023326		5779428		5599107	
Obs (trimmed)	1623370		1668345		1601523		1551529	
N	119082		125696		126601		127173	

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S13:** First psychiatric admission and employment by value of  $\Delta$ 

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0.0117 (0.0018)		0.0174 (0.0022)		0.0208 (0.002)		0.0237 (0.002)	
-2	0.0095 (0.002)		0.0118 (0.0017)		0.0146 (0.0017)		0.0162 (0.0018)	
0	-0.0342 (0.002)	-0.0301 (0.0025)	-0.0436 (0.0017)	-0.0363 (0.0026)	-0.0459 (0.0018)	-0.0368 (0.0021)	-0.0481 (0.0018)	-0.0374 (0.0023)
1	-0.0032 (0.0018)	0.007 (0.0031)	-0.0463 (0.0023)	-0.0302 (0.0041)	-0.0584 (0.0021)	-0.0387 (0.0035)	-0.0628 (0.002)	-0.04 (0.0032)
2	0.0153 (0.0017)	0.0316 (0.0038)	0.0028 (0.002)	0.028 (0.0049)	-0.0423 (0.0024)	-0.0116 (0.0048)	-0.0571 (0.0022)	-0.0218 (0.0045)
3	0.02 (0.0017)	0.0421 (0.0046)	0.0262 (0.0019)	0.0602 (0.0059)	0.0106 (0.0022)	0.0532 (0.0056)	-0.0371 (0.0025)	0.0113 (0.0058)
Pre-event trend		-0.0055 (0.0009)		-0.0081 (0.0011)		-0.0103 (0.001)		-0.0118 (0.001)
Pre-event control mean		0.6199		0.622		0.6345		0.6417
Obs		5865887		6023326		5779428		5599107
Obs (trimmed)		1623370		1668345		1601523		1551529
N		119082		125696		126601		127173

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S14:** First psychiatric admission and net income transfers by value of  $\Delta$ 

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-206.3 (36,17)		-352.65 (43,5)		-366.99 (47,61)		-444.87 (41,69)	
-2	-160.05 (40,34)		-215.06 (35,79)		-304.29 (36,28)		-231.92 (39,65)	
0	1476.87 (43,01)	1372.35 (51,33)	1642.25 (35,51)	1447.91 (52,5)	1737.13 (39,76)	1561.91 (51,2)	1810.78 (37,1)	1562.72 (45,91)
1	437.93 (37,66)	187.32 (61,15)	2089.14 (50,17)	1661.84 (83,16)	2362.68 (48,16)	1963.94 (82,9)	2548.41 (47,41)	2036.94 (66,4)
2	-692.37 (45,87)	-1082.58 (81,53)	-112.37 (49,44)	-788.43 (100,8)	1657.07 (62,41)	1007.37 (116,73)	2020.2 (54,75)	1232.57 (94,85)
3	-544.66 (42,54)	-1056.14 (97,34)	-1093.48 (44,09)	-1993.41 (119,11)	-466.39 (49,51)	-1342.48 (129,31)	1460.94 (58,31)	409.49 (122,13)
Pre-event trend		119.45 (18,03)		205.76 (22,2)		209.42 (24,18)		244.37 (21,13)
Pre-event control mean		-188.71		-407.54		-624.13		-735.14
Obs		5865887		6023326		5779428		5599107
Obs (trimmed)		1623370		1668345		1601523		1551529
N		119082		125696		126601		127173

Notes: Estimates of differences in net income transfers (with standard errors clustered at the family level) between treatment and control group for values of  $\Delta$  relative to the first admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S15:** The first psychotic admission and deficit in earned income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	464,68 (139,8)		645,16 (189,37)		703,36 (188,46)		821,69 (187,93)	
-2	261,87 (135,96)		430,35 (137,76)		414,96 (140,41)		487,51 (137,46)	
0	-2220,69 (151,05)	-2001,9 (194,21)	-2432,62 (144,84)	-2131,57 (213,05)	-2627,09 (144,98)	-2317,79 (184,67)	-2637,93 (149,36)	-2196,44 (192,68)
1	-992,73 (161,33)	-537,95 (259,91)	-3424,7 (219,48)	-2802,19 (364,01)	-3797,77 (212,81)	-3143,58 (340,17)	-4049,02 (209,68)	-3179,18 (308,97)
2	662,39 (140,56)	1328,14 (306,11)	-544,4 (203,86)	393,85 (437,72)	-3135,46 (253,1)	-2150,65 (470,58)	-3571,04 (244,69)	-2281,58 (442,52)
3	66,94 (139,33)	938,47 (375,8)	523,32 (185,19)	1741,63 (515,25)	-777,21 (235,96)	523,82 (547,6)	-3457 (280,18)	-1763,68 (577,01)
Pre-event trend		-219,36 (71,1)		-311 (97,29)		-335,48 (98,19)		-424,91 (99,42)
Pre-event control mean		13545,43		13655,32		13918,74		14132,47
Obs		353168		357495		342606		329760
Obs (trimmed)		96775		98091		94094		90629
N		7029		7234		7291		7333

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first psychotic admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S16:** First psychotic admission and annual income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	657,34 (230,78)		665,98 (349,73)		701,57 (220,6)		1055,11 (355,97)	
-2	433,7 (323,24)		641,06 (231,21)		414,49 (313,41)		691,56 (378,16)	
0	-686,3 (251,77)	-389,2 (298,68)	-1073,33 (187,25)	-842,43 (324,99)	-1458,77 (236,51)	-1170,33 (300,78)	-1046,74 (304,73)	-536,77 (411,52)
1	-4,17 (226,26)	618,16 (380,01)	-1074,75 (217,86)	-514,7 (503,21)	-1717,07 (246,2)	-1084,74 (422,13)	-1866,42 (409,92)	-813,59 (657,62)
2	634,2 (239,54)	1586,07 (503,85)	106,18 (252,72)	982,39 (694,97)	-1048,29 (269,47)	-118,02 (531,66)	-1512,02 (422,1)	75,43 (856,94)
3	-60,69 (225,22)	1184,71 (602,18)	174,42 (189,76)	1355,5 (843,99)	-548,5 (274,2)	703,3 (644,08)	-1461,86 (408,45)	651,44 (1046,83)
Pre-event trend		-325,12 (119,29)		-326,8 (186,15)		-338,83 (114,68)		-558,03 (185,83)
Pre-event control mean		18734,1		18707,45		18841,53		19192,16
Obs		353168		357495		342606		329760
Obs (trimmed)		96775		98091		94094		90629
N		7029		7234		7291		7333

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychotic admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S17:** First psychotic admission and employment by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0.0193 (0.0072)		0.0241 (0.0092)		0.031 (0.0084)		0.036 (0.0085)	
-2	0.0083 (0.0082)		0.0175 (0.0071)		0.0136 (0.0072)		0.0247 (0.0075)	
0	-0.0492 (0.0082)	-0.0391 (0.0103)	-0.0585 (0.0071)	-0.0464 (0.0108)	-0.0685 (0.0072)	-0.0521 (0.0089)	-0.0622 (0.0074)	-0.0459 (0.0097)
1	-0.0101 (0.0073)	0.0091 (0.0125)	-0.0662 (0.0093)	-0.0425 (0.0168)	-0.0844 (0.0085)	-0.0541 (0.0147)	-0.092 (0.0084)	-0.06 (0.0133)
2	0.0067 (0.0069)	0.0341 (0.0155)	-0.0123 (0.0082)	0.0221 (0.02)	-0.0773 (0.01)	-0.0336 (0.0203)	-0.0895 (0.0092)	-0.0419 (0.019)
3	0.0199 (0.0068)	0.0564 (0.0189)	0.0205 (0.0077)	0.0668 (0.0241)	-0.0093 (0.009)	0.0508 (0.0232)	-0.0725 (0.0106)	-0.0063 (0.0247)
Pre-event trend	-0.0089 (0.0037)		-0.0117 (0.0047)		-0.0147 (0.0043)		-0.017 (0.0044)	
Pre-event control mean	0.4869		0.4958		0.5061		0.5188	
Obs	353168		357495		342606		329760	
Obs (trimmed)	96775		98091		94094		90629	
N	7029		7234		7291		7333	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychotic admission year in 7-year observational window. For details on the econometric specification see Table S11

**Table S18:** First psychotic admission and net income transfers by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-247.87 (113,11)		-280.19 (162,87)		-339.83 (133,75)		-462.33 (159,83)	
-2	-224.9 (124,04)		-244.66 (112,05)		-248.51 (133,1)		-311.59 (144,83)	
0	1872.94 (124,67)	1758.26 (155,25)	2054.01 (110,07)	1900.88 (164,41)	2173.47 (117,01)	2004.07 (148,59)	2122.37 (133,28)	1900.23 (177,97)
1	1354.44 (128,17)	1094.06 (204,28)	3441.94 (158,31)	3111.68 (273,88)	3673.6 (154,73)	3315.88 (243,66)	3802.62 (179,72)	3337.69 (279,5)
2	-402.28 (122,01)	-800.25 (249,97)	1216.02 (155,98)	718.25 (342,48)	3306.23 (180,48)	2780.12 (329,94)	3552.9 (197,32)	2850.03 (376,23)
3	-117.64 (114,7)	-634.65 (298,05)	-315.82 (132,42)	-969.18 (403,07)	1294.14 (168,45)	559 (379,45)	3438.7 (208,31)	2486.33 (474,75)
Pre-event trend	132.33 (56,82)		162.2 (80,8)		186.06 (67,27)		244.89 (82,13)	
Pre-event control mean	832.6		664.03		440.39		245.22	
Obs	353168		357495		342606		329760	
Obs (trimmed)	96775		98091		94094		90629	
N	7029		7234		7291		7333	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychotic admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S19:** The first mood admission and deficit in earned income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	476,37 (72,06)		778,62 (96)		916,29 (96,68)		1005,11 (90,02)	
-2	328,35 (75,09)		497,74 (69,96)		648,73 (69,24)		633,82 (72,5)	
0	-2211,56 (77,36)	-1996,29 (98,8)	-2563,49 (77,86)	-2200,57 (112,19)	-2732,63 (73,67)	-2327,45 (94,27)	-2888,91 (73,47)	-2392,94 (93,24)
1	-422,55 (78,8)	44,48 (128,95)	-2973,58 (106,82)	-2196,36 (179,86)	-3537,6 (105,32)	-2667,05 (170,52)	-3886,67 (100,72)	-2852,98 (145,04)
2	1188,18 (73,91)	1905,81 (160,02)	472,16 (100,75)	1668,35 (219,21)	-2335,9 (122,06)	-955,37 (233,34)	-3085,85 (118,34)	-1514,33 (211,93)
3	1066,62 (71,48)	2013,03 (193,15)	1958,54 (95,87)	3556,71 (262,54)	1069 (115,28)	2922,49 (274,6)	-1979,37 (132,16)	121,77 (274,49)
Pre-event trend		-231,36 (36,69)		-383,2 (49,07)		-451,58 (49,76)		-501,53 (46,36)
Pre-event control mean		19101,41		19200,36		19377,05		19313,8
Obs		2116050		2173495		2110969		2062589
Obs (trimmed)		576156		592116		575246		562156
N		42257		44624		44834		44996

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first mood admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S20:** First mood admission and annual income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	470,56 (110,72)		648,24 (120,99)		393,39 (191,5)		687,38 (112,34)	
-2	197,88 (212,48)		511,41 (119,94)		357,24 (147,19)		246,13 (225,17)	
0	-1260,99 (240,04)	-999,68 (233,73)	-1380,76 (119,8)	-1116,41 (159,96)	-1734,34 (189,13)	-1596,84 (237,34)	-1562,94 (131,18)	-1175,25 (141,31)
1	-459,62 (159,72)	29,29 (210,65)	-1865,57 (208,79)	-1269,45 (268,08)	-2360,25 (170,1)	-2062,39 (320,29)	-2595,14 (209,88)	-1883,99 (245,8)
2	458,27 (236,74)	1188,51 (297,44)	-9,62 (210,85)	908,55 (308,02)	-1814,47 (297,51)	-1253,32 (497,55)	-2174,85 (229,16)	-1099,59 (281,52)
3	348,91 (224,35)	1301,18 (368,06)	657,77 (142,66)	1885,83 (338,4)	-171,85 (156,01)	571,68 (491,61)	-1858,1 (251,8)	-381,45 (394,24)
Pre-event trend		-234,28 (56,48)		-318,86 (61,94)		-188,57 (98,8)		-346,82 (57,23)
Pre-event control mean		24673,13		24658,51		24553,39		24511,21
Obs		2116050		2173495		2110969		2062589
Obs (trimmed)		576156		592116		575246		562156
N		42257		44624		44834		44996

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first mood admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S21:** First mood admission and employment by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0.015		0.0218		0.0249		0.0285	
-3	(0.003)		(0.0038)		(0.0034)		(0.0034)	
-2	0.009		0.0146		0.0152		0.0191	
-2	(0.0033)		(0.0029)		(0.0029)		(0.003)	
0	-0.0471	-0.0404	-0.0557	-0.0466	-0.0615	-0.05	-0.0616	-0.0481
0	(0.0034)	(0.0042)	(0.003)	(0.0044)	(0.003)	(0.0036)	(0.003)	(0.0039)
1	-0.0132	0.0012	-0.0681	-0.0483	-0.0836	-0.0596	-0.0892	-0.0609
1	(0.0031)	(0.0052)	(0.0039)	(0.0068)	(0.0035)	(0.0059)	(0.0035)	(0.0053)
2	0.0202	0.0422	-0.0016	0.0292	-0.0624	-0.0253	-0.0786	-0.035
2	(0.0029)	(0.0064)	(0.0035)	(0.0082)	(0.0041)	(0.0081)	(0.0038)	(0.0076)
3	0.0263	0.0553	0.0361	0.0774	0.0095	0.0592	-0.0518	0.006
3	(0.0029)	(0.0078)	(0.0033)	(0.0099)	(0.0037)	(0.0093)	(0.0043)	(0.0098)
Pre-event trend	-0.0072		-0.0103		-0.0125		-0.0147	
Pre-event trend	(0.0015)		(0.0019)		(0.0017)		(0.0017)	
Pre-event control mean	0.6753		0.6787		0.6852		0.6887	
Obs	2116050		2173495		2110969		2062589	
Obs (trimmed)	576156		592116		575246		562156	
N	42257		44624		44834		44996	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first mood admission year in 7-year observational window. For details on the econometric specification see Table S11

**Table S22:** First mood admission and net income transfers by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-352.71		-561.7		-594.36		-722.7	
-3	(56,16)		(70,94)		(82,54)		(65,45)	
-2	-237.6		-375.13		-449.85		-408.25	
-2	(77,49)		(57)		(61,27)		(78,89)	
0	1973.48	1793.61	2200.22	1921.09	2382.16	2100.38	2437.47	2053.42
0	(87,02)	(93,74)	(61,61)	(85,6)	(73,6)	(91,11)	(61,08)	(72,13)
1	425.13	37.49	2650.33	2040.02	3082.9	2484.22	3344.02	2564.91
1	(69,74)	(103,51)	(92,77)	(139,36)	(82,99)	(139,84)	(88,51)	(115,05)
2	-1029.06	-1617.88	-430.49	-1372.71	2045.56	1080.64	2548.82	1362.02
2	(90,38)	(137,01)	(95,36)	(169,39)	(119,4)	(203,7)	(102,68)	(154,47)
3	-899.05	-1674	-1718.15	-2971.86	-947.17	-2244.03	1675.21	73.61
3	(84,26)	(164,1)	(74,86)	(193,61)	(83,89)	(217,02)	(108)	(202,52)
Pre-event trend	188,51		303,79		313,39		373,25	
Pre-event trend	(28,21)		(35,84)		(40,94)		(32,81)	
Pre-event control mean	-352,77		-608,55		-765,49		-827,8	
Obs	2116050		2173495		2110969		2062589	
Obs (trimmed)	576156		592116		575246		562156	
N	42257		44624		44834		44996	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first mood admission year in 7-year observational window. For details on the econometric specification see Table S11.



**Table S23:** The first anxiety admission and deficit in earned income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	144,11 (93,67)		213,69 (121,96)		209,26 (118,86)		265,37 (115,67)	
-2	130,87 (101,18)		180,34 (91,5)		183,76 (91,22)		155,31 (90,5)	
0	-1301,79 (99,29)	-1248,17 (127,98)	-1426,66 (98,98)	-1342,39 (144,28)	-1471,04 (92,83)	-1429 (120,45)	-1489,33 (94,7)	-1373,31 (122,18)
1	-459,78 (105,74)	-299,79 (170,66)	-1903,95 (133,61)	-1672,47 (228,32)	-2102,7 (133,07)	-1928,31 (213,35)	-2139,83 (130,92)	-1865,98 (189,68)
2	469,32 (97,95)	736,63 (211,04)	-84,11 (128,84)	316,01 (281,63)	-1624,84 (155,42)	-1281,35 (295,21)	-1832,55 (153,23)	-1315,1 (275,81)
3	398,84 (108,86)	729,37 (258,78)	768,42 (134,81)	1314,41 (342,07)	199,2 (155,93)	676,2 (345,14)	-1402,13 (177,82)	-715,26 (358,59)
Pre-event trend		-75,17 (48,33)		-111,78 (63,61)		-97,32 (62,39)		-130,63 (60,91)
Pre-event control mean		18230,01		18172,23		18397,13		18419,13
Obs		1082397		1115615		1060448		1024552
Obs (trimmed)		294497		303632		288617		278887
N		21625		22958		23045		23096

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S24:** First anxiety admission and annual income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	208,15 (173,69)		392,5 (291,51)		1,71 (221,47)		-54,55 (317,99)	
-2	-62,01 (169,8)		246,12 (163,49)		132,11 (95,62)		-167,33 (161,11)	
0	-608,73 (123,13)	-448,97 (209,88)	-544,18 (171,84)	-359,29 (313,73)	-835,54 (184,76)	-921,07 (170,37)	-721,66 (117,9)	-758,12 (220,73)
1	-329,88 (112,86)	-44,21 (284,34)	-929,63 (200,83)	-535,24 (481,4)	-1164,47 (156,17)	-1231,06 (324,73)	-1333,45 (209,49)	-1413,27 (346,29)
2	60,42 (115,02)	463,39 (369,56)	-167,67 (190,61)	451,75 (625,01)	-1116,63 (180,5)	-1167,12 (452,13)	-1207,24 (172,77)	-1277,62 (553,77)
3	209,87 (146,76)	701,9 (461,48)	335,19 (198,03)	1169,1 (769,33)	-183,57 (170,12)	-261,35 (548,75)	-985,12 (204,99)	-1135,17 (735,34)
Pre-event trend		-107,32 (89,08)		-199,95 (152,58)		18,35 (117,42)		68,61 (169,49)
Pre-event control mean		23095,57		23061,13		23085,54		23037,92
Obs		1082397		1115615		1060448		1024552
Obs (trimmed)		294497		303632		288617		278887
N		21625		22958		23045		23096

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S25:** First anxiety admission and employment by value of  $\Delta$ 

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0 (0.0042)		0.0081 (0.0053)		0.01 (0.0048)		0.0104 (0.0048)	
-2	0.0014 (0.0047)		0.0012 (0.0041)		0.0084 (0.0041)		0.0027 (0.0042)	
0	-0.0254 (0.0047)	-0.0275 (0.0059)	-0.0271 (0.0041)	-0.0224 (0.0062)	-0.0264 (0.0041)	-0.0224 (0.005)	-0.0341 (0.0041)	-0.0277 (0.0055)
1	-0.0036 (0.0042)	-0.006 (0.0072)	-0.0293 (0.0053)	-0.0212 (0.0096)	-0.0312 (0.0048)	-0.0227 (0.0083)	-0.0369 (0.0048)	-0.025 (0.0075)
2	0.006 (0.004)	0.0034 (0.009)	0.0016 (0.0047)	0.0139 (0.0115)	-0.0259 (0.0056)	-0.0113 (0.0114)	-0.0325 (0.0051)	-0.0136 (0.0107)
3	0.0057 (0.004)	0.0019 (0.0109)	0.0115 (0.0045)	0.0278 (0.0139)	0.0049 (0.0051)	0.0248 (0.0131)	-0.0298 (0.0058)	-0.0047 (0.0138)
Pre-event trend	0,0007 (0,0021)		-0,0036 (0,0027)		-0,0049 (0,0025)		-0,0054 (0,0025)	
Pre-event control mean	0,649		0,6484		0,6605		0,6603	
Obs	1082397		1115615		1060448		1024552	
Obs (trimmed)	294497		303632		288617		278887	
N	21625		22958		23045		23096	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. For details on the econometric specification see Table S11

**Table S26:** First anxiety admission and net income transfers by value of  $\Delta$ 

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-15,62 (77,58)		-110,86 (113,98)		2,06 (103,66)		-6,13 (121,83)	
-2	-2,98 (75,33)		-36,22 (74,74)		-105,98 (63,05)		85,57 (79,1)	
0	1118,91 (72,6)	1081,81 (100,58)	1131,71 (77,74)	1043,2 (126,07)	1189,36 (79,39)	1207,85 (92,11)	1238,18 (69,2)	1183,78 (99,02)
1	484,38 (73,27)	383,57 (133,3)	1615,18 (102,02)	1405,79 (199,07)	1715,16 (91,75)	1676,27 (163,07)	1812,55 (99,2)	1694,91 (151,24)
2	-452,39 (69,43)	-605,76 (166,74)	13,55 (98,21)	-331,16 (251,4)	1239,42 (108,46)	1129,36 (227,36)	1384,95 (102,88)	1173,4 (227,52)
3	-314,09 (76,29)	-484,58 (204,06)	-780,3 (98,55)	-1229,49 (304,81)	-288,85 (105,68)	-440,9 (268,52)	1045,72 (119,29)	799,06 (298,58)
Pre-event trend	31,43 (38,76)		89,03 (58,73)		26,37 (52,31)		27,17 (60,09)	
Pre-event control mean	-411,15		-539,72		-685,92		-711,38	
Obs	1082397		1115615		1060448		1024552	
Obs (trimmed)	294497		303632		288617		278887	
N	21625		22958		23045		23096	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S27:** The first depressive admission and deficit in earned income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	484,23 (75,41)		799,17 (100,19)		959,93 (101,37)		1070,99 (93,89)	
-2	343,36 (78,33)		511,26 (73,09)		672,48 (72,29)		673,82 (76,32)	
0	-2160,48 (80,65)	-1947,57 (103,14)	-2520,11 (81,39)	-2150,06 (117,22)	-2696,49 (77,1)	-2263,66 (98,91)	-2858,72 (76,6)	-2324,04 (97,34)
1	-361,72 (82,43)	106,84 (135,07)	-2866,4 (111,78)	-2071,17 (188,04)	-3448,13 (110,35)	-2525,83 (178,94)	-3807,19 (105,29)	-2692,66 (151,67)
2	1243,92 (76,64)	1966,83 (166,88)	586,98 (105,08)	1813,21 (228,74)	-2193,04 (127,57)	-728,09 (244,48)	-2960,14 (123,59)	-1263,04 (221,34)
3	1088,6 (74,53)	2042,84 (202,19)	2030,97 (99,67)	3668,2 (273,89)	1194,67 (120,53)	3161,46 (287,88)	-1833,45 (137,98)	442,6 (286,52)
Pre-event trend		-232,81 (38,44)		-390,87 (51,26)		-475,35 (52,24)		-537,59 (48,41)
Pre-event control mean		19050,35		19167,07		19369,6		19315,41
Obs		1926325		1979313		1920382		1875334
Obs (trimmed)		524370		539077		523159		511000
N		38467		40648		40837		40984

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first depressive admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S28:** First depressive admission and annual income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	500,77 (110,84)		610,22 (105,99)		388,01 (204,2)		712,73 (112,92)	
-2	310,46 (227,85)		511 (113,54)		429,96 (155,68)		281,29 (244,36)	
0	-1108,4 (248,89)	-861,96 (235,18)	-1399,56 (113,3)	-1156,39 (145,95)	-1611,09 (196,14)	-1500,5 (251,77)	-1512,3 (136,68)	-1108,81 (143,1)
1	-402,48 (168,97)	82,67 (214,72)	-1797,22 (208,69)	-1242,29 (248,88)	-2330,81 (179,92)	-2073,28 (342,7)	-2486,5 (218,24)	-1762,32 (257,07)
2	562,95 (255,45)	1304,32 (306,18)	20,3 (221,26)	875,19 (288,03)	-1637,49 (313,86)	-1119,42 (528,83)	-2102,32 (246,17)	-1005,94 (291,12)
3	412,26 (241,9)	1394,22 (379,19)	669,81 (139,5)	1816,02 (298,34)	-81,6 (163,9)	611,74 (525,21)	-1684,37 (260,44)	-166,6 (402,82)
Pre-event trend		-248,53 (56,64)		-298,48 (54,34)		-182,09 (105,84)		-357,66 (58,36)
Pre-event control mean		24619,15		24529,07		24507,38		24474
Obs		1926325		1979313		1920382		1875334
Obs (trimmed)		524370		539077		523159		511000
N		38467		40648		40837		40984

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first depressive admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S29:** First depressive admission and employment by value of  $\Delta$ 

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0.0147 (0.0031)		0.0227 (0.0039)		0.0273 (0.0036)		0.0302 (0.0035)	
-2	0.0079 (0.0035)		0.0141 (0.0031)		0.0156 (0.003)		0.0198 (0.0031)	
0	-0.0461 (0.0035)	-0.0397 (0.0044)	-0.0536 (0.0031)	-0.044 (0.0046)	-0.0596 (0.0031)	-0.0469 (0.0038)	-0.061 (0.0031)	-0.0467 (0.0041)
1	-0.0123 (0.0032)	0.0018 (0.0054)	-0.0651 (0.004)	-0.0443 (0.0072)	-0.0802 (0.0037)	-0.0536 (0.0062)	-0.0868 (0.0036)	-0.0566 (0.0056)
2	0.0213 (0.0031)	0.0428 (0.0067)	0.0015 (0.0036)	0.034 (0.0086)	-0.0578 (0.0043)	-0.0166 (0.0085)	-0.0746 (0.0039)	-0.0277 (0.0079)
3	0.0254 (0.003)	0.0535 (0.0082)	0.0374 (0.0035)	0.0805 (0.0104)	0.0129 (0.0039)	0.0676 (0.0098)	-0.0483 (0.0045)	0.0136 (0.0103)
Pre-event trend	-0.0069 (0.0016)		-0.0106 (0.002)		-0.0136 (0.0018)		-0.0155 (0.0018)	
Pre-event control mean	0.6756		0.6799		0.6873		0.6904	
Obs	1926325		1979313		1920382		1875334	
Obs (trimmed)	524370		539077		523159		511000	
N	38467		40648		40837		40984	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first depressive admission year in 7-year observational window. For details on the econometric specification see Table S11

**Table S30:** First depressive admission and net income transfers by value of  $\Delta$ 

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-364.66 (57.51)		-569.14 (70.1)		-627.44 (87.11)		-753.06 (67.44)	
-2	-267.92 (82.06)		-376.6 (56.94)		-487.59 (64.32)		-435.46 (84.71)	
0	1880.94 (88.38)	1702.85 (93.65)	2160.83 (61.67)	1876 (84.71)	2309.48 (76)	2016.09 (95.74)	2400.1 (63.35)	1999.23 (73.98)
1	374.78 (73.05)	-17.25 (106.42)	2541.12 (92.92)	1920.24 (137.37)	2999.07 (87.11)	2376.05 (147.67)	3258.25 (91.81)	2449.89 (120.05)
2	-1102.52 (96.69)	-1702.74 (141.86)	-526.57 (99.83)	-1484.61 (169.45)	1864.09 (124.33)	855.41 (213.69)	2425.12 (108.88)	1193.14 (160.46)
3	-925.37 (90.08)	-1720.13 (169.64)	-1782.16 (76.13)	-3058.38 (191.02)	-1067.34 (87.81)	-2431.03 (228.56)	1502.58 (110.45)	-170.8 (208.24)
Pre-event trend	194.35 (28.91)		307.72 (35.34)		328.77 (43.25)		387.11 (33.96)	
Pre-event control mean	-298.28		-547.27		-735.67		-791.38	
Obs	1926325		1979313		1920382		1875334	
Obs (trimmed)	524370		539077		523159		511000	
N	38467		40648		40837		40984	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first depressive admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S31:** The first substance admission and deficit in earned income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	460,17 (106,61)		828,89 (151,08)		963,58 (145,77)		1055,91 (138,28)	
-2	262,39 (106,6)		458,93 (105,26)		620,5 (106,59)		577,67 (99,61)	
0	-987,29 (111,31)	-783,38 (144,46)	-1278,42 (112,43)	-866,5 (165,56)	-1510,39 (107,81)	-1064,2 (134,31)	-1670,04 (109,16)	-1154,58 (137,79)
1	-221,67 (114,89)	220,8 (191,34)	-1542,65 (157,19)	-703,68 (272,57)	-2033,67 (152,25)	-1092,09 (246,89)	-2429,84 (153,9)	-1385,49 (215,89)
2	698,66 (113,65)	1366,01 (241,07)	167,12 (150,57)	1437,29 (339,43)	-1335,15 (182,6)	88,07 (348,84)	-2013,54 (179,09)	-457,38 (320,86)
3	818,73 (106,77)	1717,86 (288,26)	1260,14 (147,27)	2940,67 (412,68)	525,98 (172,44)	2408,74 (412,68)	-1177,13 (199,24)	843,9 (417,69)
Pre-event trend		-220,61 (54,5)		-410,02 (77,73)		-471,58 (75,83)		-499,89 (72,39)
Pre-event control mean		16098,78		16779,3		17436,45		17932,62
Obs		853351		881275		855539		830243
Obs (trimmed)		238322		246750		240016		232869
N		17643		18865		19220		19368

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first substance admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S32:** First substance admission and annual income by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	206,6 (318,7)		806,24 (364,96)		707,3 (313,74)		513,39 (297,54)	
-2	58,96 (341,18)		207,06 (308,3)		639,11 (316,05)		117,07 (279,06)	
0	-1166,35 (350,03)	-1043,39 (444,31)	-1318,78 (314,37)	-824,72 (486,69)	-1551,21 (314,04)	-1295,83 (373,9)	-1926,73 (309,76)	-1642,66 (362,56)
1	50,63 (292,65)	264,99 (514,57)	-1266,18 (447,41)	-357,81 (746,31)	-1559,01 (428,17)	-964,5 (658,79)	-2225,53 (352,36)	-1737,15 (499,15)
2	103,79 (417,66)	424,64 (732,54)	-10,86 (353,47)	1299,31 (817,34)	-1425,93 (494,92)	-461,15 (864,03)	-2182,94 (386,24)	-1468,31 (731,54)
3	-0,79 (314,09)	428,5 (840,02)	159,27 (374,93)	1876,5 (995,88)	-175,4 (324,82)	1125,84 (854,56)	-2060,46 (390,14)	-1105,56 (917,02)
Pre-event trend		-101,74 (162,58)		-408,96 (182,46)		-337,62 (159,25)		-214,23 (156,09)
Pre-event control mean		22168,33		22687,24		23274,72		23445,51
Obs		853351		881275		855539		830243
Obs (trimmed)		238322		246750		240016		232869
N		17643		18865		19220		19368

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first substance admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S33:** First substance admission and employment by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0.0162 (0.0047)		0.022 (0.0057)		0.0239 (0.0051)		0.0304 (0.0051)	
-2	0.0184 (0.0052)		0.0166 (0.0046)		0.0238 (0.0045)		0.0189 (0.0045)	
0	-0.0216 (0.0053)	-0.0171 (0.0066)	-0.0405 (0.0046)	-0.0315 (0.0068)	-0.0391 (0.0045)	-0.031 (0.0055)	-0.0445 (0.0046)	-0.0311 (0.006)
1	0.0159 (0.0047)	0.0287 (0.008)	-0.0247 (0.0059)	-0.0043 (0.0105)	-0.0417 (0.0053)	-0.0217 (0.0091)	-0.0481 (0.0052)	-0.0198 (0.0081)
2	0.0269 (0.0045)	0.0479 (0.0101)	0.025 (0.0053)	0.0567 (0.0126)	-0.0134 (0.0062)	0.0182 (0.0124)	-0.0382 (0.0056)	0.0038 (0.0116)
3	0.0336 (0.0045)	0.0632 (0.0122)	0.0411 (0.005)	0.0845 (0.0152)	0.0375 (0.0056)	0.0841 (0.0142)	-0.0077 (0.0064)	0.0515 (0.015)
Pre-event trend	-0.0079 (0.0024)		-0.0107 (0.0029)		-0.0114 (0.0026)		-0.0141 (0.0027)	
Pre-event control mean	0,5226		0,535		0,5582		0,5745	
Obs	853351		881275		855539		830243	
Obs (trimmed)	238322		246750		240016		232869	
N	17643		18865		19220		19368	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first substance admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S34:** First substance admission and net income transfers by value of  $\Delta$

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-177,59 (140,44)		-498,85 (135,12)		-532,92 (160,68)		-496,21 (115,92)	
-2	-121,65 (119,96)		-191,23 (136,17)		-409,52 (137,36)		-232,24 (93,07)	
0	898,62 (126,96)	822,92 (165,62)	1060,01 (115,54)	791,13 (176,44)	1159,38 (134,42)	931,74 (187,78)	1358,29 (139,44)	1088,02 (163,7)
1	318,44 (103,97)	152,08 (202,57)	1381,11 (156,76)	856,4 (270,71)	1623,76 (165,63)	1127,28 (301,4)	1928,38 (127,81)	1398,92 (190,4)
2	-399,35 (136,56)	-662,42 (283,25)	78 (142,2)	-703 (313,11)	1199,49 (203,23)	425,25 (413,99)	1669,5 (158,51)	884,63 (287,09)
3	-345,57 (119,72)	-702,89 (344,82)	-667,86 (131,59)	-1702,42 (373,06)	-92,77 (160,82)	-1132,06 (459,74)	1263,15 (163,66)	234,29 (362,36)
Pre-event trend	85,76 (69,25)		243,72 (68,81)		262,84 (84,69)		250,03 (61,14)	
Pre-event control mean	-65,93		-513,15		-946,79		-1162,17	
Obs	853351		881275		855539		830243	
Obs (trimmed)	238322		246750		240016		232869	
N	17643		18865		19220		19368	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first substance admission year in 7-year observational window. For details on the econometric specification see Table S11.

**Table S35:** The first psychiatric admission and deficit in earned income by value of  $\Delta$ : Recession-free period 2001-2007

Year relative to first psychiatric admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	204.21 (96.82)		360.68 (117.34)		324.4 (110.49)		363.28 (109.32)	
-2	188.7 (88.64)		261.85 (88.09)		373.38 (83.68)		298.8 (82.53)	
0	-1550.6 (92.28)	-1476.56 (118.63)	-1707.44 (93.87)	-1552.59 (127.03)	-1763.57 (89.59)	-1669.9 (116.07)	-1875.81 (86.83)	-1734.95 (113.06)
1	-517.02 (106.95)	-337.36 (168.69)	-2361.49 (128.83)	-2022.48 (203.08)	-2564.86 (122.42)	-2306.38 (184.73)	-2701.39 (119.62)	-2373.81 (181.29)
2	608.88 (113.65)	892.82 (214.28)	-76.97 (140.48)	446.74 (260.86)	-2143.52 (141.45)	-1714.21 (243.15)	-2374.96 (138.44)	-1865.16 (240.14)
3	400.24 (117.42)	789.35 (259.65)	1047.19 (152.03)	1747.34 (318.88)	0.54 (154.08)	573.07 (300.11)	-2042.28 (152.11)	-1346.12 (295.81)
Pre-event trend		-105 (48.38)		-184.79 (58.67)		-167.17 (55.27)		-186.02 (54.75)
Pre-event control mean	14989.97		15307.55		15354.17		15403.28	
Obs	890464		873003		913801		943853	
Obs (trimmed)	245035		240359		251608		259791	
N	23402		28845		35943		37112	

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window during 1998-2007 in a sample where first psychiatric admission take place in 2001-2007. For details on the econometric specification see Table S11.

**Table S36:** First psychiatric admission and annual income by value of  $\Delta$ : Recession-free period 2001-2007

Year relative to first psychiatric admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	237.49 (131.81)		338.62 (142.41)		201.69 (191.41)		445.71 (163.42)	
-2	309.01 (143.85)		305.68 (123.79)		439.04 (115.85)		297.36 (193.89)	
0	-792.06 (147.84)	-736.19 (182.73)	-1031.84 (117.08)	-909.35 (157.64)	-1114.09 (172.74)	-1125.14 (254.01)	-1037.19 (135.79)	-849.24 (188.82)
1	-237.93 (145.05)	-60.29 (233.01)	-1280.88 (152.03)	-985.31 (245.99)	-1493.85 (153.48)	-1405.61 (277.09)	-1722.23 (213.73)	-1307.64 (285.97)
2	334.92 (159.46)	629.1 (299.26)	-135.64 (163.82)	327.94 (320.08)	-1649.39 (286.61)	-1452.57 (531.66)	-1471.96 (196.97)	-842.45 (364.96)
3	276.69 (156.13)	688.42 (350.8)	429.48 (167.3)	1053.55 (378.69)	-353.55 (174.16)	-92.1 (466.5)	-1727.03 (293.1)	-887.24 (462.01)
Pre-event trend		-120.27 (66.01)		-171.04 (71.06)		-103.02 (95.74)		-220.92 (81.57)
Pre-event control mean	19502.8		19831.73		19860.46		20002.69	
Obs	890464		873003		913801		943853	
Obs (trimmed)	245035		240359		251608		259791	
N	23402		28845		35943		37112	

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window during 1998-2007 in a sample where first psychiatric admission take place in 2001-2007. For details on the econometric specification see Table S11.

**Table S37:** First psychiatric admission and employment by value of  $\Delta$ :  
Recession-free period 2001-2007

Year relative to first psychiatric admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0,0089 (0,0051)		0,0177 (0,0058)		0,0188 (0,0053)		0,0219 (0,0052)	
-2	0,0073 (0,0053)		0,0124 (0,0049)		0,016 (0,0047)		0,0144 (0,0046)	
0	-0,0439 (0,0052)	-0,0403 (0,0066)	-0,0437 (0,0048)	-0,0359 (0,0066)	-0,0493 (0,0047)	-0,0419 (0,0061)	-0,0518 (0,0045)	-0,0417 (0,006)
1	-0,0088 (0,0051)	-0,0006 (0,0085)	-0,058 (0,0057)	-0,0412 (0,0098)	-0,0661 (0,0052)	-0,0491 (0,0088)	-0,0709 (0,0051)	-0,0495 (0,0087)
2	0,0115 (0,005)	0,0242 (0,0108)	0,0009 (0,0056)	0,0266 (0,0123)	-0,0599 (0,0055)	-0,0334 (0,0113)	-0,066 (0,0054)	-0,0334 (0,0111)
3	0,0202 (0,005)	0,0375 (0,0132)	0,0311 (0,0056)	0,0656 (0,0149)	0,0074 (0,0057)	0,0434 (0,0138)	-0,0475 (0,0055)	-0,0037 (0,0136)
Pre-event trend	-0.0045 (0.0025)		-0.0088 (0.0029)		-0.0095 (0.0027)		-0.0112 (0.0026)	
Pre-event control mean	0.5995		0.6152		0.6197		0.6247	
Obs	890464		873003		913801		943853	
Obs (trimmed)	245035		240359		251608		259791	
N	23402		28845		35943		37112	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window during 1998-2007 in a sample where first psychiatric admission take place in 2001-2007. For details on the econometric specification see Table S11.

**Table S38:** First psychiatric admission and net income transfers by value of  $\Delta$ :  
Recession-free period 2001-2007

Year relative to first psychiatric admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-144.07 (72.07)		-236.16 (82.63)		-159.88 (90.42)		-285.94 (81.28)	
-2	-146.86 (70.57)		-173.11 (65.95)		-269.68 (62.99)		-150.02 (80.14)	
0	1335.96 (75.45)	1288.69 (94.65)	1436.92 (70.46)	1336.24 (93.77)	1515.66 (78.44)	1497.56 (107.87)	1553.2 (70.39)	1413.94 (92.97)
1	509.29 (84.41)	387.17 (130.67)	2037.31 (94.91)	1815.54 (148.42)	2173.13 (90.37)	2073.98 (147.3)	2339.04 (99.13)	2050.95 (143.71)
2	-592.83 (88.01)	-788.32 (163.41)	27.22 (102.64)	-315.82 (188.87)	1844.34 (120.4)	1655.98 (218.96)	1855.82 (101.69)	1423.18 (184.43)
3	-420.61 (88.31)	-687.92 (195.33)	-1032.41 (107.83)	-1490.53 (226.99)	-184.02 (109.53)	-433.24 (237.58)	1600.36 (124.38)	1023.63 (225.77)
Pre-event trend	73.6 (36.05)		120.89 (41.32)		83.72 (45.22)		146.85 (40.67)	
Pre-event control mean	206.9		-25.5		-38.57		-142.7	
Obs	890464		873003		913801		943853	
Obs (trimmed)	245035		240359		251608		259791	
N	23402		28845		35943		37112	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window during 1998-2007 in a sample where first psychiatric admission take place in 2001-2007. For details on the econometric specification see Table S11.



**Table S39:** The first anxiety admission and deficit in earned income by value of  $\Delta$ : Recession-free period 2001-2007

Year relative to first psychiatric admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	122.65 (231.92)		-170.35 (287.27)		-258.79 (256.52)		-46.66 (255.18)	
-2	230.04 (206.91)		133.46 (216.79)		5.55 (204.05)		5.49 (199.03)	
0	-1344.28 (218.64)	-1342.59 (281.31)	-1747.48 (224.76)	-1905.62 (303.79)	-1450.87 (215.97)	-1625.43 (278.08)	-1431.74 (213.51)	-1465.76 (273.57)
1	-700.79 (247.66)	-640.19 (399.79)	-2674.46 (314.5)	-2922.51 (496.04)	-2387.31 (293.93)	-2693.89 (436.52)	-2362.33 (290.6)	-2419.99 (434.68)
2	258.35 (268.82)	377.8 (511.22)	-906.75 (338.13)	-1241.9 (634.29)	-2300.33 (341.61)	-2741.15 (575.3)	-2191.56 (338.69)	-2276.34 (575.32)
3	226.03 (267.99)	410.76 (611.07)	159.22 (361.1)	-257.52 (768.35)	-681.96 (360.7)	-1244.92 (692.62)	-2194.62 (363.88)	-2299.72 (697.57)
Pre-event trend	-59.59 (116.03)		86.46 (143.79)		130.17 (128.4)		23.45 (127.71)	
Pre-event control mean	15874.24		15560.18		15687.21		15389.08	
Obs	156443		151202		160754		165191	
Obs (trimmed)	43099		41643		44240		45444	
N	4120		5011		6319		6491	

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window during 1998-2007 in a sample where first psychiatric admission take place in 2001-2007. For details on the econometric specification see Table S11.

**Table S40:** First anxiety admission and annual income by value of  $\Delta$ : Recession-free period 2001-2007

Year relative to first psychiatric admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-159.38 (364.27)		135.73 (447.46)		-414.09 (517.41)		-8.47 (334.69)	
-2	225.13 (269.43)		276.16 (315.63)		324.6 (257.32)		-208.25 (408.42)	
0	-532.96 (263.44)	-717.64 (398.8)	-1047.51 (288.47)	-1050.62 (413.08)	-683.4 (255.28)	-1068.47 (434.77)	-836.51 (252.98)	-773.51 (358.85)
1	-451.32 (320.48)	-717.66 (615.5)	-1655.98 (398.28)	-1595.71 (708.95)	-1439.24 (382.78)	-2035.83 (754.86)	-1595.53 (356.49)	-1538.44 (594.61)
2	290.44 (435.6)	-57.04 (854.33)	-597.04 (502.12)	-469.33 (1035)	-1344.98 (501.42)	-2153.43 (1052.72)	-1327.42 (516.8)	-1277.69 (838.22)
3	393.77 (276.89)	-31.09 (862.04)	-53.68 (382.78)	143.3 (1112.81)	-589.6 (377.91)	-1599.81 (1205.62)	-1525.49 (429.45)	-1476.94 (832.66)
Pre-event trend	81.28 (182.35)		-66.54 (224.11)		208.49 (259.16)		4.57 (167.53)	
Pre-event control mean	19995.37		20252.73		20203.32		19588.27	
Obs	156443		151202		160754		165191	
Obs (trimmed)	43099		41643		44240		45444	
N	4120		5011		6319		6491	

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window during 1998-2007 in a sample where first psychiatric admission take place in 2001-2007. For details on the econometric specification see Table S11.

**Table S41:** First anxiety admission and employment by value of  $\Delta$ :  
Recession-free period 2001-2007

Year relative to first psychiatric admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-0,0106 (0,0123)		0,0118 (0,014)		-0,0051 (0,0127)		-0,0003 (0,0128)	
-2	0 (0,0128)		0,0001 (0,0119)		0,0038 (0,0113)		-0,0099 (0,0113)	
0	-0,0372 (0,0123)	-0,0446 (0,0158)	-0,0397 (0,0114)	-0,0317 (0,0158)	-0,0425 (0,0109)	-0,0469 (0,0144)	-0,0402 (0,0108)	-0,0362 (0,0143)
1	-0,0073 (0,012)	-0,0196 (0,0206)	-0,0525 (0,0136)	-0,0386 (0,0237)	-0,051 (0,0126)	-0,0581 (0,0211)	-0,0503 (0,0124)	-0,0461 (0,0211)
2	-0,0148 (0,012)	-0,0322 (0,0261)	-0,0277 (0,0134)	-0,0072 (0,0298)	-0,0632 (0,0131)	-0,0717 (0,0272)	-0,0636 (0,0131)	-0,0583 (0,0273)
3	0,0083 (0,0118)	-0,0146 (0,0319)	0,0048 (0,0137)	0,0307 (0,0363)	-0,0189 (0,0135)	-0,0326 (0,0332)	-0,0536 (0,0133)	-0,0483 (0,0335)
Pre-event trend	0,0058 (0,0062)		-0,005 (0,007)		0,0053 (0,0063)		0,0014 (0,0064)	
Pre-event control mean	0,6385		0,6423		0,6433		0,6291	
Obs	156443		151202		160754		165191	
Obs (trimmed)	43099		41643		44240		45444	
N	4120		5011		6319		6491	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window during 1998-2007 in a sample where first psychiatric admission take place in 2001-2007. For details on the econometric specification see Table S11.

**Table S42:** First anxiety admission and net income transfers by value of  $\Delta$ :  
Recession-free period 2001-2007

Year relative to first psychiatric admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	149.94 (178.54)		220.8 (204.65)		351.7 (277.99)		147.31 (180.43)	
-2	-163.03 (150.6)		56.89 (157.24)		-126.6 (148.52)		274.61 (235.89)	
0	1120.06 (159.86)	1274.36 (214.74)	1213.28 (159.83)	1341.52 (220.09)	978.06 (160.28)	1254.72 (251.09)	1171.61 (156.21)	1178.28 (211.53)
1	668.46 (187.55)	897.73 (314.82)	2152.56 (224.54)	2391.2 (364.75)	1709.37 (211.28)	2161.88 (408.5)	1932.88 (200.69)	2013.2 (323.16)
2	-238.61 (208.86)	65.63 (405.88)	617.76 (251.01)	966.79 (469.64)	1612.93 (245.83)	2241.29 (556.91)	1604.05 (235.79)	1758.03 (422.85)
3	-236.28 (187.46)	142.93 (464.23)	-241.66 (242.35)	217.77 (542)	175.02 (247.05)	979.23 (677.39)	1565.71 (230.57)	1793.34 (485.06)
Pre-event trend	-74.97 (89.31)		-110.4 (102.37)		-175.85 (139.05)		-73.65 (90.25)	
Pre-event control mean	-202.82		-99.25		-354.42		-48.69	
Obs	156443		151202		160754		165191	
Obs (trimmed)	43099		41643		44240		45444	
N	4120		5011		6319		6491	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window during 1998-2007 in a sample where first psychiatric admission take place in 2001-2007. For details on the econometric specification see Table S11.

**Table S43:** First cancer admission and labor market performance ( $\Delta = 4$ )

Year relative to index admission	Earned income		Annual income		Employment		Net income transfers	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	171.87 (245.97)		-275.16 (771.16)		-0.003 (0.004)		59.32 (268.69)	
-2	199.83 (226.15)		-305.27 (743.35)		-0.005 (0.003)		21.16 (258.04)	
0	-2354.46 (284.71)	-2308.5 (355.73)	-1419.19 (777.07)	-1529.74 (1036.2)	-0.016 (0.003)	-0.018 (0.004)	2333.94 (300.92)	2396.01 (387.06)
1	-2384.78 (505.42)	-2223.31 (688.49)	-1277.8 (1018.44)	-1510.94 (1625.52)	-0.034 (0.004)	-0.037 (0.006)	2385.99 (432.3)	2472.95 (632.43)
2	-1350.88 (230.77)	-1073.06 (535.82)	-628.31 (933.12)	-929.77 (1925.62)	-0.027 (0.004)	-0.032 (0.008)	1139.96 (325.9)	1223.31 (660.59)
3	-1646.96 (238.52)	-1253.89 (623.55)	-1500.59 (1228.78)	-2032.89 (2617.13)	-0.028 (0.004)	-0.034 (0.01)	1430.19 (412.34)	1551.63 (881.99)
Pre-event trend	-100.7 (127.33)		153.28 (386.56)		0.002 (0.002)		-41.75 (135.36)	
Pre-event control mean	31753.69		32993.83		0.79		-4609.76	
Obs	1041281		1041281		1041281		1041281	
Obs (trimmed)	293419		313535		316980		316904	
N	22357		25315		26445		27142	

Notes: Point estimates for the impact of cancer diagnosis on labor market performance (with robust standard errors clustered at the individual level reported below the estimates in parentheses) relative to index cancer admission year in 7-year observational window with  $\Delta = 4$ . For details on the econometric specification see Table S11.

**Table S44:** The first psychiatric admission and deficit in earned income by value of  $\Delta$ : An alternative specification (no age FE's)

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	280.54 (40.97)		338.94 (54.94)		509.77 (54.63)		707.34 (52.49)	
-2	236.48 (42.54)		282.96 (40.06)		431.16 (40.05)		457.29 (40.75)	
0	-1778.85 (44.97)	-1664.36 (56.77)	-2028.59 (43.78)	-1871.51 (62.8)	-2121.62 (42.12)	-1886.23 (52.79)	-2299.6 (42.44)	-1951.32 (53.24)
1	-460.34 (46.97)	-199.19 (73.32)	-2492.26 (61.27)	-2143.35 (100.79)	-2842.21 (60.76)	-2318.04 (94.48)	-3134.57 (59.79)	-2402.22 (82.67)
2	639.69 (47.13)	1047.68 (93.08)	-38.27 (57.22)	504.9 (122.5)	-2151.81 (70.45)	-1338.29 (130.5)	-2727.39 (68.38)	-1610.82 (119.93)
3	480.41 (42.54)	1031.99 (108.76)	907.96 (58.84)	1642.4 (149.09)	316.27 (66.57)	1418.07 (151.15)	-2104.54 (77.55)	-606.46 (155.34)
Pre-event trend		-146.24 (20.48)		-193.27 (27.47)		-289.95 (27.28)		-384.48 (26.22)
Pre-event control mean		17581.47		17520.73		17985.88		18137.62
Obs		5865887		6023326		5779428		5599107
Obs (trimmed)		1623370		125696		126601		127173
N		119082		125696		126601		127173

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level) between treatment and control group for the values of  $\Delta$  relative to the first psychiatric admission year. Parametric estimates that adjust for extrapolation of linear time trend are reported next to the non-parametric estimates. Shaded areas refer to estimates for years in which both the treatment and control group have already had their first psychiatric admission. All estimates stem from a specification that includes fixed effects for sex, birth order (top-coded at 4), index psychiatric admission year, province of residence in childhood, education level of mother and father, parental psychiatric history and parents' income quartile in childhood.

**Table S45:** First psychiatric admission and annual income by value of  $\Delta$ : An alternative specification (no age FE's)

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	225.52 (77.13)		251.8 (93.88)		116.45 (101.28)		345.94 (91.9)	
-2	123.68 (108.15)		238.11 (77.62)		266.67 (81.51)		113.8 (108.46)	
0	-1075.93 (110.43)	-959.57 (122.35)	-1184.53 (77.1)	-1067.97 (115.59)	-1388.5 (94.35)	-1358.17 (114.01)	-1411.77 (76.67)	-1189.38 (93.53)
1	-248.86 (83.18)	-12.39 (130.03)	-1453.32 (112.41)	-1186.32 (178.48)	-1761.2 (100.79)	-1637.06 (171.51)	-2043.82 (108.51)	-1617.53 (141.12)
2	191.73 (119.29)	548.81 (184.09)	-130.25 (109.74)	290.11 (211.89)	-1525.67 (145.98)	-1306.95 (251.81)	-1908.09 (124.72)	-1277.5 (204.56)
3	9.29 (107.21)	482.6 (217.83)	113.73 (92.94)	683.81 (249.59)	-331.12 (90.96)	-19.66 (256.6)	-1834.21 (127.65)	-1002.9 (257.76)
Pre-event trend		-119.73 (38.54)		-152.27 (46.96)		-95.33 (50.55)		-204.75 (45.9)
Pre-event control mean		22964.94		22815.4		23114.04		23220.88
Obs		5865887		6023326		5779428		5599107
Obs (trimmed)		1623370		125696		126601		127173
N		119082		125696		126601		127173

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window. For details on the econometric specification see Table S44.

**Table S46:** First psychiatric admission and employment by value of  $\Delta$ : An alternative specification (no age FE's)

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0.0114 (0.0018)		0.0175 (0.0022)		0.0222 (0.002)		0.0279 (0.002)	
-2	0.0094 (0.002)		0.0116 (0.0017)		0.0147 (0.0017)		0.0176 (0.0018)	
0	-0.0372 (0.002)	-0.0327 (0.0025)	-0.0464 (0.0017)	-0.0386 (0.0026)	-0.0482 (0.0018)	-0.0384 (0.0021)	-0.0513 (0.0018)	-0.0386 (0.0023)
1	-0.0106 (0.0018)	-0.0004 (0.003)	-0.0563 (0.0023)	-0.0397 (0.004)	-0.0664 (0.0021)	-0.0455 (0.0035)	-0.0717 (0.002)	-0.045 (0.0031)
2	0.0056 (0.0017)	0.0214 (0.0038)	-0.0138 (0.002)	0.0115 (0.0048)	-0.0555 (0.0024)	-0.0235 (0.0047)	-0.0705 (0.0022)	-0.0299 (0.0044)
3	0.0058 (0.0018)	0.0273 (0.0046)	0.0037 (0.002)	0.0377 (0.0058)	-0.0354 (0.0022)	0.0077 (0.0054)	-0.083 (0.0025)	-0.0284 (0.0057)
Pre-event trend	-0.0057 (0.0009)		-0.0087 (0.0011)		-0.0111 (0.001)		-0.0139 (0.001)	
Pre-event control mean	0.6136		0.61		0.6262		0.6354	
Obs	5865887		6023326		5779428		5599107	
Obs (trimmed)	1623370		125696		126601		127173	
N	119082		125696		126601		127173	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window. For details on the econometric specification see Table S44.

**Table S47:** First psychiatric admission and net income transfers by value of  $\Delta$ : An alternative specification (no age FE's)

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	-51.29 (36.73)		-63.41 (44.41)		-111.95 (48.48)		-239.59 (42.66)	
-2	-163.08 (40.26)		-59.84 (36.28)		-178.94 (36.68)		-114.76 (40.13)	
0	1478.03 (43.08)	1452.4 (50.69)	1646.22 (35.61)	1553.06 (51.65)	1747.12 (39.97)	1634.21 (50.82)	1832.9 (37.12)	1613.89 (45.29)
1	482.5 (37.49)	396.86 (60.3)	2137.75 (50.13)	1936.45 (81.21)	2404.75 (48.18)	2138.6 (81.17)	2611.28 (47.46)	2167.52 (65.11)
2	-634.91 (45.73)	-780.54 (80.7)	-9.34 (49.37)	-318.78 (98.81)	1736.43 (62.53)	1317.04 (115.1)	2110.98 (55.53)	1442.47 (94.84)
3	-442 (42.46)	-647.64 (95.87)	-933.47 (43.96)	-1351.05 (116.98)	-352.01 (49.38)	-924.64 (127.16)	1582.78 (58.57)	689.53 (120.11)
Pre-event trend	60		108.14		153.24		224.75	
Pre-event control mean	-141.22		-307.69		-559.98		-688.76	
Obs	5865887		6023326		5779428		5599107	
Obs (trimmed)	1623370		125696		126601		127173	
N	119082		125696		126601		127173	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first psychiatric admission year in 7-year observational window. For details on the econometric specification see Table S44.

**Table S48:** The first anxiety admission and earned income deficit by value of  $\Delta$ : An alternative specification (no age FE's)

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	79.09 (94.13)		-16.71 (122.8)		-1.69 (120.24)		180.9 (117.23)	
-2	97.88 (101.7)		113.44 (91.97)		137.89 (92.11)		117.28 (91.7)	
0	-1360.69 (100.16)	-1336.07 (127.15)	-1448.3 (99.47)	-1475.94 (142.69)	-1494.35 (93.6)	-1501.72 (118.49)	-1550.98 (95.65)	-1440.14 (120.57)
1	-542.47 (106.05)	-473.1 (167.36)	-2003.32 (134.18)	-2021.89 (223.72)	-2161.51 (133.88)	-2136.18 (209.73)	-2250.91 (131.53)	-2019.15 (185.58)
2	336.43 (98.38)	451.19 (206.71)	-246.56 (129.15)	-252.44 (274.02)	-1782.79 (156.35)	-1724.71 (288.78)	-2013.6 (153.98)	-1659.91 (269.26)
3	243.21 (109.61)	401.14 (253.22)	535.44 (135.31)	540.13 (332.22)	49.03 (156.79)	141.36 (333.8)	-1647.89 (179.05)	-1173.51 (348)
Pre-event trend	-44.29 (47.08)		-10.95 (61.4)		-33.48 (60.01)		-121.91 (58.53)	
Pre-event control mean	18145.33		17946.74		18211.91		18202.58	
Obs	1082397		1115615		1060448		1024552	
Obs (trimmed)	294497		303632		288617		278887	
N	21625		22958		23045		23096	

Notes: Estimates for differences in earned income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for the values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. For details on the econometric specification see Table S44.

**Table S49:** First anxiety admission and annual income by value of  $\Delta$ : An alternative specification (no age FE's)

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	129.97 (173.37)		164.47 (291.05)		-256.94 (222.86)		-214.35 (323.16)	
-2	-108.14 (170.44)		167.87 (163.3)		74.01 (96.67)		-259.76 (163.03)	
0	-667.89 (124.48)	-540.63 (205.45)	-551.31 (172.49)	-475.25 (303.93)	-857.64 (184.12)	-1011.5 (168.21)	-781.78 (120.9)	-806.79 (221.52)
1	-396.35 (113.23)	-198.32 (275.97)	-998.91 (202.21)	-822.23 (462.07)	-1215.54 (156.29)	-1462.57 (314.52)	-1448.74 (210.4)	-1548.66 (331.38)
2	-83.49 (113.79)	185.76 (358.65)	-306.55 (191.43)	-25.3 (597.74)	-1298.28 (179.66)	-1638.25 (436.42)	-1430.59 (172.78)	-1604.14 (539.68)
3	58.78 (146.82)	396.77 (450.3)	116.93 (198.37)	500.37 (738.44)	-379.68 (169.85)	-811.06 (525.59)	-1314.01 (205.47)	-1562.91 (708.82)
Pre-event trend	-70.12 (86.68)		-102.74 (145.71)		92.06 (111.25)		73.56 (161.28)	
Pre-event control mean	23019.03		22857.37		22900.48		22775.8	
Obs	1082397		1115615		1060448		1024552	
Obs (trimmed)	294497		303632		288617		278887	
N	21625		22958		23045		23096	

Notes: Estimates of differences in annual income (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. For details on the econometric specification see Table S44.

**Table S50:** First anxiety admission and employment by value of  $\Delta$ : An alternative specification (no age FE's)

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	0.0001 (0.0042)		0.0079 (0.0052)		0.0104 (0.0048)		0.0139 (0.0048)	
-2	0.0018 (0.0047)		0.0012 (0.0041)		0.0085 (0.0041)		0.0039 (0.0042)	
0	-0.0273 (0.0047)	-0.0278 (0.0059)	-0.0291 (0.0041)	-0.0243 (0.0061)	-0.0276 (0.0041)	-0.0235 (0.005)	-0.0361 (0.0041)	-0.0281 (0.0054)
1	-0.0104 (0.0042)	-0.0108 (0.0072)	-0.0379 (0.0053)	-0.0291 (0.0094)	-0.0375 (0.0048)	-0.0281 (0.0082)	-0.0438 (0.0048)	-0.0288 (0.0073)
2	-0.0035 (0.004)	-0.0039 (0.0089)	-0.0143 (0.0047)	-0.0015 (0.0113)	-0.0373 (0.0056)	-0.0228 (0.0112)	-0.044 (0.0051)	-0.0221 (0.0104)
3	-0.0087 (0.0043)	-0.0091 (0.011)	-0.0079 (0.0048)	0.0088 (0.0137)	-0.0482 (0.0052)	-0.0284 (0.0128)	-0.0824 (0.0059)	-0.0535 (0.0135)
Pre-event trend	-0.0001 (0.0021)		-0.004 (0.0026)		-0.0052 (0.0024)		-0.007 (0.0024)	
Pre-event control mean	0.6423		0.6351		0.6498		0.6509	
Obs	1082397		1115615		1060448		1024552	
Obs (trimmed)	294497		303632		288617		278887	
N	21625		22958		23045		23096	

Notes: Estimates of differences in probability of employment (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. For details on the econometric specification see Table S44.

**Table S51:** First anxiety admission and net income transfers by value of  $\Delta$ : An alternative specification (no age FE's)

Year relative to index admission	$\Delta = 1$		$\Delta = 2$		$\Delta = 3$		$\Delta = 4$	
	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)	Non-parametric	Parametric (lin. trend)
-3	94.26 (79.25)		133.73 (115.69)		272.9 (105.89)		236.43 (124.78)	
-2	-2.64 (75.07)		80.17 (76.35)		11.15 (64.08)		226.76 (80.7)	
0	1108.64 (72.3)	1136.2 (98.81)	1120.96 (77.46)	1111.07 (123.28)	1170.52 (79.02)	1241.77 (90.83)	1234.25 (68.85)	1221.88 (100.25)
1	508.42 (72.92)	555.99 (130.27)	1628.6 (101.58)	1612.27 (193.96)	1706.28 (91.45)	1810.36 (161.36)	1814.5 (98.51)	1816.91 (152.22)
2	-411.06 (68.85)	-343.48 (162.63)	75.36 (97.75)	52.57 (244.32)	1262.61 (107.94)	1399.52 (224.38)	1407.39 (102.12)	1424.57 (230.88)
3	-233.9 (76.06)	-146.31 (199.96)	-663.02 (98.19)	-692.27 (297.19)	-241.54 (105.32)	-71.81 (265.53)	1094.15 (118.52)	1126.11 (300.66)
Pre-event trend	-20.01 (38.05)		6.45 (57.56)		-32.83 (52.1)		-14.78 (61.37)	
Pre-event control mean	-381.88		-461.42		-599.88		-608.37	
Obs	1082397		1115615		1060448		1024552	
Obs (trimmed)	294497		303632		288617		278887	
N	21625		22958		23045		23096	

Notes: Estimates of differences in net income transfers (with robust standard errors clustered at the individual level reported below the estimates in parentheses) between treatment and control group for values of  $\Delta$  relative to the first anxiety admission year in 7-year observational window. For details on the econometric specification see Table S44.

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