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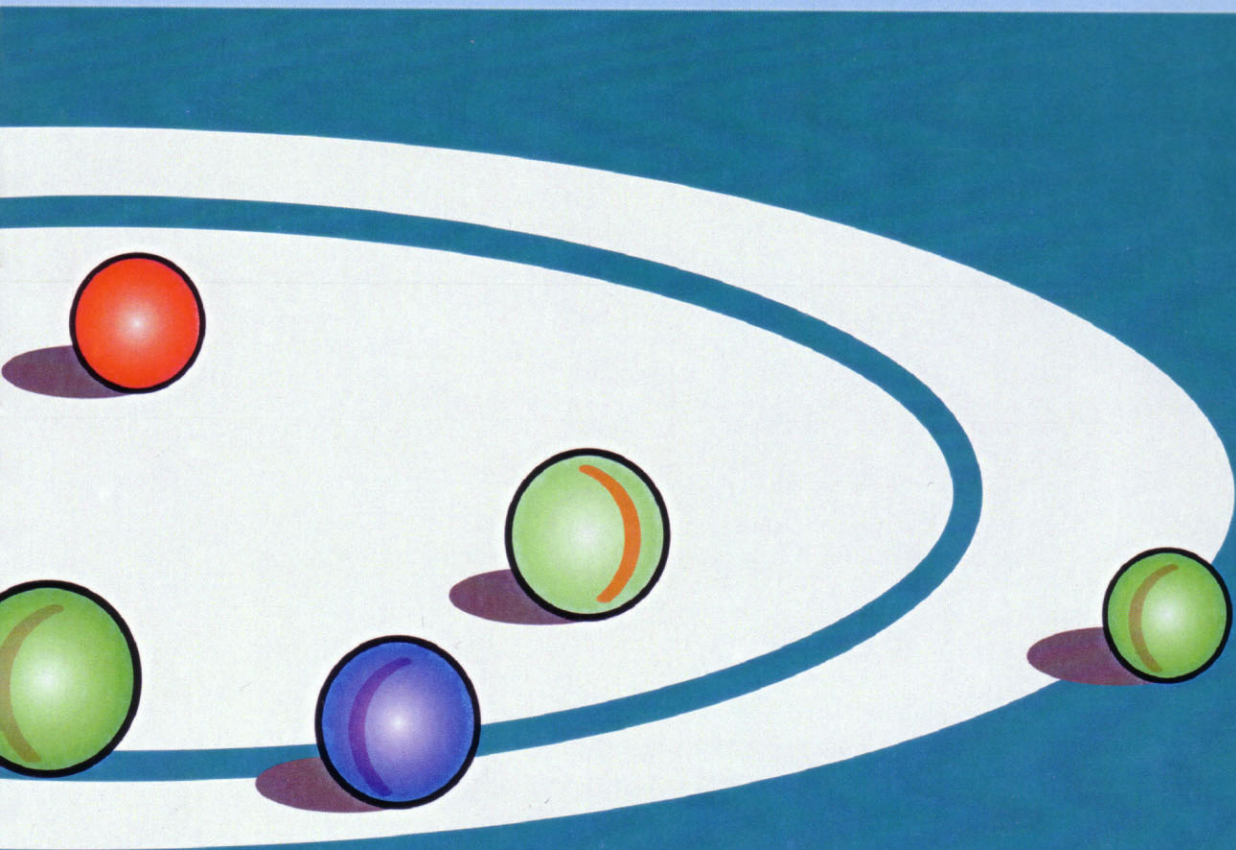
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# Familieendring, helse og trygd

Fire longitudinelle  
studier

MORTEN BLEKESAUNE  
EINAR ØVERBYE  
(RED.)



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Norsk institutt for forskning om  
oppvekst, velferd og aldring  
NOVA Rapport 22/2003

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# Forord

Prosjektet «Familieendring og uførepensjonering – en studie av betydningen av samlivsbrudd for mottak av helserelaterte trygdeytelser» analyserer særlig sammenhengen mellom skilsmisse og overgang til uførepensjon. Prosjektet har blitt finansiert av Norges forskningsråd og Sosialdepartementet for årene 2001–2003. Einar Øverbye har vært prosjektleder og Morten Blekesaune og Tor Inge Romøren har vært medarbeidere. Mesteparten av arbeidet har blitt utført av Morten Blekesaune.

Prosjektet har anvendt administrative data om (endringer i) sivilstand og mottak av helserelaterte trygdeytelser. To av arbeidene som presenteres i denne sluttrapporten, analyserer data vi har fått overført fra Forløpsdatabasen (FD) Trygd fra Statistisk sentralbyrå via Norsk samfunnsvitenskapelig datatjeneste. De to andre arbeidene analyserer data vi har fått koplet gjennom samarbeid med Rikstrygdeverket, Statistisk sentralbyrå og Norsk samfunnsvitenskapelig datatjeneste. Rikstrygdeverket har dessuten bistått med faglige råd og diskusjoner om hvordan prosjektets målsettinger best kan belyses. Takk for hyggelig samarbeid og gode råd! Verken Rikstrygdeverket, Statistisk sentralbyrå eller Norsk samfunnsvitenskapelig datatjeneste er ansvarlige for resultatene i denne rapporten.

I tillegg til de fire vitenskapelige arbeidene som presenteres i denne sluttrapporten, har vi publisert to populærvitenskapelige arbeider: «Helsemessig seleksjon inn og ut av ekteskapet: helsesvake partnere mindre populære» (Samfunnsspeilet 2003) og «Arbeidsmiljø og tilbaketrekning fra arbeidslivet» (Søkelys på arbeidsmarkedet 2003). Disse er noe forkortede og populariserte versjoner av det andre og det fjerde arbeidet i denne sluttrapporten.

Tor Inge Romøren har lest og kommentert rapporten. Torhild Sager har tilrettelagt rapporten for trykking. Takk til begge!

*Oslo, november 2003*

Morten Blekesaune

Einar Øverbye



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# Innledning

Trygdesystemet skal sikre folk en inntekt hvis helsesvikt medfører at de ikke kan forsørge seg gjennom eget arbeid. De aktuelle ytelsene er sykepenger, attføringspenger, rehabiliteringspenger og uførepensjon. Antall personer som mottar en eller flere av disse ytelsene har økt gjennom flere tiår. Økningen har vært spesielt sterk i uførepensjonering, og det har vært en langsiktig tendens til at folk blir pensjonert i stadig yngre alder. Dette er bekymringsfullt ettersom de aller fleste uførepensjonistene forblir pensjonister livet ut. Uførepensjoneringen har økt mer blant kvinner enn blant menn.

Ingen kan med sikkerhet si hvorfor langt flere blir uførepensjonert i dag enn for noen tiår siden. Det har ikke vært noen endringer i reglene som skulle tilsi at flere blir uførepensjonert. Folkehelsen synes heller ikke å ha blitt dårligere, i det minste om dette måles med objektive mål som dødelighet eller forventet levealder. Foruten virkninger av en aldrende befolkning har norsk trygdeforskning tradisjonelt fokusert på to forklaringer på økt uførepensjonering. Den ene er om arbeidslivet kan ha endret seg slik at det har blitt vanskeligere for folk med helsesvikt å jobbe. Den andre er om det kan ha blitt mer fordelaktig å være pensjonist. Kort fortalt knytter det seg betydelig usikkerhet ved begge disse forklaringene. Det er mulig at arbeidslivet stiller høyere krav til innsats i dag enn tidligere. Men det er vanskelig å måle dette. Pensjonene har blitt gunstigere, men sammenhengene mellom pensjoner og pensjoneringsatferd synes å være svake, spesielt for uførepensjonen som har strenge tildelingskriterier (arbeidsevnen skal være redusert med minst halvparten på grunn av helsesvikt for å motta uførepensjon).

Prosjektet «Familieendring og uførepensjonering» undersøker om endringer i familien, og da spesielt flere skilsmisser, kan bidra til å forklare økt uførepensjonering. Allerede i 1982 hevdet Kari Wærness at endringer i familiesituasjonen snarere enn endringer i arbeidsmarkedet er den utløsende faktor særlig bak kvinners rekruttering til uførepensjon. Men så langt har få empiriske studier undersøkt om endringer i familien kan forklare økningen i uførepensjonering. Hansen (1996) viser at skilte langt oftere enn gifte er uførepensjonister. Eriksen, Natvig og Bruusgaard (1999) finner en sammenheng mellom skilsmisse og uførepensjonering i en studie fra Ullensaker kommune. Men disse studiene viser ikke hva som er årsak og virkning:



Fører uførepensjonering til skilsmisse, eller fører skilsmisse til uførepensjonering?

Den første studien, «Marital dissolution and work disability: a longitudinal study of administrative data from Norway», analyserer hva som kommer først av mottak av helserelaterte trygdeytelser og separasjon som senere leder til skilsmisse. Dette undersøkes med data fra Forløpsdatabasen (FD) Trygd. Analysen viser at sykefraværet øker i forbindelse med separasjon. Men nivået på mottak av helserelaterte trygdeytelser faller senere til et nivå som ikke er vesentlig høyere enn det som kan registreres mer enn ett år før separasjonen, når man justerer for alder og historiske endringer i mottak av disse ytelsene blant gifte. De som blir skilt, har vesentlig høyere mottak av helserelaterte ytelser enn de som forblir gift. Dette tyder på at helsemessig seleksjon mot skilsmisse, det vil si at de som har dårlig helse, har større risiko for å bli skilt, er langt viktigere enn de helseskadelige virkningene av selve skilsmissen. Den andre studien, «Health selection in marital transitions: evidence from administrative data», følger opp det første arbeidet ved å analysere sammenhenger mellom helsesvikt målt som mottak av helserelaterte trygdeytelser i forhold til både inngåelse og oppløsning av ekteskap. Foruten arbeidsuførhet undersøkes også virkninger av å ha behov for hjelp i hjemmet (målt som hjelpestønad). Dårlig helse reduserer sannsynligheten for å bli gift, og det øker sannsynligheten for å bli skilt. Generelt er disse effektene sterkere for menn enn for kvinner.

Selv om helsesvikten som hovedregel inntreffer før skilsmissen, kan det forhold at flere skiller seg, likevel bidra til å forklare den historiske økningen i uførepensjonering. Forskningslitteraturen har antatt at skilsmisse kan bidra til å forklare dårligere helse blant skilte personer på to vis. Det ene er at skilsmisse representerer en krise som medfører at helsen svikter både på kort og lang sikt. Vår første studie antyder at helsen svikter hos noen, men kun på kort sikt. Den andre forklaringen på den dårligere helsen blant skilte er at ekteskapet bidrar til å beskytte individenes helse. Dette kan skje på flere vis. Ektefolk kontrollerer hverandres atferd slik at uheldig atferd unngås og gunstigere atferd stimuleres; de støtter og oppmuntrer hverandre moralsk og økonomisk; de kan være viktige for å opprettholde sosiale relasjoner med andre. De som er skilt, nyter ikke lenger godt av den beskyttelse som ekteskapet gir. De kan dermed bli mer sårbare for belastninger generelt, herunder belastninger i arbeidslivet. Hvis dette er riktig, kan flere skilte bidra til å forklare noe av økningen i uførepensjonering.

Den tredje studien, «Familietilknypning og uførepensjon: kan flere skilte forklare økningen i uførepensjonering?», undersøker mulige sammen-

henger mellom endringer i antallet skilte og uførepensjonering i årene 1972 til 2000. Dette analyseres med administrative data om sivilstand og uførepensjonering, som er koplet på individnivå for hvert av disse årene. Økningen i antall skilte kan forklare om lag tretti prosent av økningen i uførepensjonering hos menn og om lag ti prosent hos kvinner. Effekten av flere skilte er omtrent den samme hos menn og kvinner, men kvinner har økt sin uførepensjonering langt sterkere enn menn. Følgelig kan flere skilte forklare en mindre andel av (den sterkere) økningen hos kvinner enn hos menn.

Sett i sammenheng tyder de tre første studiene på at flere skilsmisser har bidratt til økningen i uførepensjoneringen. Denne virkningen skyldes ikke at skilsmisse utløser en krise som individene ikke kommer over. Det er snarere slik at skilsmisse øker individets utsatthet for seinere påkjenninger, herunder fra arbeidslivet, nesten uansett hvor lenge de har vært skilt. Helsemessig seleksjon er likevel mye viktigere for å forklare høyere mottak av uførepensjon blant skilte enn blant gifte.

Den fjerde studien, «Working conditions and early retirement: a prospective study of retirement behavior», fokuserer direkte på arbeidslivets betydning for pensjoneringsatferden, herunder uførepensjonering. Tilbaketrekning fra arbeidslivet defineres som en reduksjon i arbeidsrelatert (pensjonsgivende) inntekt, og det skilles mellom to hovedtyper av tilbaketreking: uførepensjonering og annen tilbaketreking. Uførepensjonering er først og fremst knyttet til yrker med fysisk belastende arbeid. Menn som i liten grad bestemmer hvordan arbeidet skal utføres, gjør ofte bruk av alle typer tidligpensjonering, herunder uførepensjon. Yrker med stor arbeidsbelastning og stress har derimot en lav avgang til førtidspensjonering.

For å oppsummere – de viktigste funnene fra prosjektet er:

1. Skilte personer har høyere forbruk av helserelaterte trygdeytelser enn de som er gift.
2. Dette skyldes at de som har dårlig helse har større sannsynlighet for å bli skilt enn de som har god helse.
3. De med dårlig helse har dessuten mindre sannsynlighet for å bli gift.
4. Skilte har også større sannsynlighet for å bli uførepensjonert enn de som forblir gift.
5. Det forhold at flere har blitt skilt kan i noen grad bidra til å forklare hvorfor flere har blitt uførepensjonert.
6. Også dårlig arbeidsmiljø bidrar til uførepensjonering.



# Marital dissolution and work disability: A longitudinal study of administrative data from Norway

*Morten Blekesaune & Anne Barrett*

## Abstract

This study uses Norwegian administrative data in an analysis of sick leaves and receipt of health-related benefits over a period of four years surrounding marital dissolution. Expanding the literature on the poorer health of divorced compared with married individuals, it examines previously unexplored indicators of poor health and employs data on marital dissolution and health problems collected at more frequent intervals than most prior studies, which permits better tests of the social selection and causation hypotheses. Results indicate that the selection of the less healthy into the divorced status is far more important than health problems that result from marital dissolution itself; moreover, the latter effect is relatively short-lived. These results vary, however, by age, gender, and the presence of children. Results are compared with the results from other studies utilizing more conventional measures of health from survey data.

## Introduction

Research consistently finds that married individuals enjoy better mental and physical health than their divorced peers. This pattern has been found across a range of measures including psychological distress (Pearlin and Johnson 1977; Gove, Hughes and Style 1983), self-rated health (Idler and Angel 1990), morbidity (Feinstein 1993), chronic health conditions (Wyke and Ford 1992), and mortality (Hu and Goldman 1990). The explanations focus on two processes, selection and causation.

The social causation perspective posits that one's marital status influences health. Regarding the worse health of the divorced, there are two relevant causation arguments. First, divorce is a stressful event that may lead to declines in health, particularly among those for whom the event was unexpected or undesired. Divorce could lead to adverse health outcomes in the short-term with limited effects in the long-term (i.e., the crisis model of divorce), or it could have persistent negative effects on health (i.e., the

chronic strain model of divorce). A second causation argument centers on the health-protective effect of being married, rather than the negative effects of divorce. Marriage appears to confer health benefits on individuals through a variety of mechanisms, including the early detection of illness and assistance in recovery (Joung et al. 1998), the encouragement of healthy behaviors (Umberson 1992), the enhancement of both social integration (Trovato and Lauris 1989) and perceived social support (Turner and Marino 1994), and the reduction of economic strains (Pearlin and Johnson 1977).

The social selection hypothesis argues the reverse direction of causality: Health influences one's marital status. According to this perspective, divorced individuals have worse health than the married because they had mental or physical health problems that led to the dissolution of their marriages. Support for this perspective is found in research indicating that poor physical (Joung et al. 1998; Waldron, Hughes, and Brooks 1996) as well as mental health (Hope, Rodgers, and Power 1999; Johnson and Wu 2002) increases the risk of marital dissolution. Declines in the health of one or both spouses may elevate the risk of divorce through reductions in income (either a result of diminished work effort or increased medical expenses), shifts in the negotiated division of paid and unpaid labor, diminished time spent in shared activities, or increases in emotional problems (Booth and Johnson 1994).

Is poor health among the divorced an effect of divorce or is it the reason the marriages dissolved in the first place? Apparently, this question could be settled by investigating what comes first: marital dissolution or poor health. However, determining this is complicated by the nature of the marital dissolution process which begins some time before the legal separation or divorce actually occurs. Similarly, the precise timing of the onset of health declines can be difficult to pinpoint. Further complicating the determination of causal order is our limited understanding of the timing of the effects of health declines on dissolution, as well as the impact of dissolution on health. Thinking about this issue from the social selection perspective, how long does it take for poor health in one or both spouses to adversely impact the marriage and, perhaps, set in motion the dissolution process? From the social causation perspective, for how long prior to the legal separation or divorce does the disintegration of the relationship exert negative effects on spouses' health? Clearly, these processes may overlap and may be hard to distinguish even for the individuals involved.

Assessing the role of each of these processes (health selection, marriage protection, and divorce as a crisis or chronic strain) requires longitudinal data collected over a length of time adequate to capture measures of

health prior to separation and divorce and measures of marital status prior to health declines. Ideally, the measurement intervals are narrow allowing the timing of events to be better identified. Unfortunately, studies employing such data are rare. This paper reviews previous studies that come close to meeting these requirements and presents an empirical approach to the study of marital disruption and health that differs from that of prior work. In contrast with previous research that has tended to examine self-reported health collected at intervals of several years, this study utilizes administrative data on both marital disruption and the receipt of health-related benefits of nearly continuous time observations.

## **Prior research on marital dissolution and health**

Because the selection and causation issues can only be sorted out through the use of longitudinal data, this review is limited to such studies. In short, the existing literature suggests that both social selection and causation play roles in producing the observed worse health of the divorced; however, studies vary in their conclusions regarding the relative magnitude of each process. This inconsistency is generated, in part, by study designs that differ in the number of waves of data and the intervals at which they are collected. Further, some designs are primarily designed to test only one of the hypotheses. The inconsistency may also reflect the use of a range of health measures (e.g., mental distress, self-rated health, chronic health conditions); it is plausible that the role of selection and causation varies, for example, for mental and physical health and health-related behaviors.

Support for the selection hypothesis is found across indicators of physical and mental health. In an examination of the effect of physical health on the risk of divorce using three waves collected over ten years, Waldron and colleagues (1996) found that having more functional disabilities and psychosomatic symptoms increases the risk of divorce between the first two waves; however, this relationship was not observed in the later waves, nor did it hold among women who were employed full-time. Using a sample of over 10,000 collected in the Netherlands over a period of approximately 4½ years, Joung and associates (1998) examined the effect of self-rated health, subjective health complaints, and chronic conditions on the risk of divorce. They found that, particularly for men, chronic conditions increase the probability of divorce; the impact of subjective health was less clear. In contrast with these studies, Fu and Goldman (2000), using the National

Longitudinal Survey of Youth (1979-1993), reported that health conditions that limit work are not associated with the risk of separation and divorce.

Studies examining mental health, most commonly measured by psychological distress, also provide some evidence of the selection of the less healthy out of marriage. Using administrative data collected on a sample of over 39,000 Norwegians, Mastekaasa (1994) found a strong relationship between poor psychological well-being, as indicated by a scale of overall life satisfaction and happiness, and risk of marital dissolution over a two to four year period. The relationship was particularly strong in the short-term; however, the author argued that this could reflect the stress of the marital dissolution process, rather than social selection. Work by Hope and associates (1999) examining psychological distress also provided some support for selection; women divorcing between the ages of 23 and 33 had higher levels of distress than women remaining married. The authors argued, however, that this is perhaps more aptly described as anticipation rather than true selection, as the difference was largely confined to those who were soon to separate. In a study reporting similar results, but focusing on mothers, Wade and Cairney (2000) observed that mothers becoming divorced over the two years of the study had higher levels of depression than those who did not become single-parents. The authors interpreted this as evidence of selection into divorce; however, given the narrow timeframe of the study, it is plausible that the results also reflect the negative effect of the dissolution process on one's mental health. Using four waves of data covering a longer span of time (twelve years), Johnson and Wu (2002) found some evidence of selection effects; psychological distress was somewhat elevated five years prior to disruption.

Indirect support for the selection hypothesis is found in research reporting that poor physical and mental health is associated with declines in perceived marital quality and stability. A meta-analysis of longitudinal studies of marriages by Karney and Bradbury (1995) located numerous studies conducted over the past fifty years examining the effect of psychological health on marital quality and stability (e.g., Burgess and Wallin 1953; Beach and O'Leary 1993; Doherty, Su, and Needle 1989; Fincham and Bradbury 1993; Kelly and Conley 1987; Menaghan 1985; Ulrich-Jakubowski, Russell, and O'Hara 1988). They concluded that neuroticism in husbands or wives is among the strongest predictors of perceptions of marital relationships; the association between depression and marital stability or satisfaction is somewhat more modest. Worse ratings of global self-assessed health also have been associated with more negative perceptions of

marital relationships. In a study following approximately 1,300 married individuals over a three-year period, Booth and Johnson (1994) reported that declines in health, particularly spouse's health, decrease marital happiness and perceived stability.

Considerable evidence also has been found for social causation arguments, with some studies supporting the crisis model of divorce and others revealing longer-term effects. Supporting the crisis model, Hope and associates (1999) used data from the 1958 British birth cohort study collected when cohort members were 23 and 33 years of age and observed detrimental impacts of the divorce process, particularly shortly after dissolution. Divorce was associated with elevated levels of psychological distress, especially for mothers who experienced downward social mobility. Also lending support to the crisis model, a study by Gähler (1999) using two waves of Swedish data that spanned ten years reported high levels of distress among recently divorced women, but not among women divorced for several years. Among men, on the other hand, no similar reduction in distress was found in the years after divorce. Booth and Amato (1991) also reported short-term effects of divorce on distress. Using three waves of data collected between 1980 and 1988, they found evidence of increased psychological distress for a period of two years after divorce; after this period, psychological distress of the divorced was comparable with that of the continuously married.

In an extension of the Booth and Amato (1991) study, Johnson and Wu (2002) used four waves of data spanning twelve years and reported that the effect of divorce on psychological distress does not appear to diminish with time, thus supporting the chronic strain rather than the crisis model of divorce. However, some support for the latter was found for persons with relatively high levels of pre-disruption marital quality; psychological distress declined over time in this group but not among those leaving troubled relationships. In work using three waves of data collected in Norway, Mastekaasa (1995) also reported stronger support for the chronic strain than crisis model of divorce; the effects of divorce were similar in the short and long-term (i.e., 0-4 years, compared with 4-8 years after divorce). This study also found an increase in psychological distress shortly before marital dissolution, but no evidence of health selection when measuring distress years before the divorce process.

Determining whether any long-term, negative health effects of divorce result from lingering negative consequences of divorce or the absence of marriage protection is difficult given the relatively short spans of time that typically are examined following divorce and the limited attention given to remarriage. The studies incorporating a consideration of remarriage indicate



that re-entering the married status does not appear to return individuals to the levels of mental health enjoyed by the continuously married (Kitson and Holmes 1992; Spanier and Furstenburg 1982), thus providing more support for the chronic strain model of divorce than the marriage protection argument. A similar pattern is reported in work examining marital status and mortality; Hemström (1996) found excess mortality among divorced persons, including those who had remarried.

Other panel studies do not permit tests of short versus long-term negative health effects over the years following divorce; however, they do provide general support for the negative health effects of divorce. For example, using a two-wave study of married couples collected between 1985 and 1988, Aseltine and Kessler (1993) reported that respondents experiencing separation or divorce, particularly women, reported more depressive symptoms than those remaining married. Similarly, a study by Horwitz and colleagues (1996) using two waves of data (1985-87 and 1992-94) revealed that marital dissolution is associated with more depressive symptoms and alcohol problems. Numerous other studies also provides support for the causation hypothesis (e.g., Doherty, Su, and Needle 1989; Menaghan 1985; Wu and Hart 2002).

Much of the literature focusing on causation processes examines mental health; however, some research also indicates that divorce is associated with declines in physical health, increased receipt of disability benefits, and higher rates of mortality. For example, Wu and Hart (2002) examined data from the 1994-1997 National Population Health Survey collected in Canada and found that marital dissolution is associated with worse functional health and self-rated health. In a four-year community-based follow-up study in Norway, Eriksen and colleagues (1999) reported an association between divorce and receipt of disability benefits. Because the relationship held after controlling for initial health problems, the authors argued that it probably reflects health problems caused by the process of marital disruption or reduced ability to cope with health problems. Several studies have reported higher mortality rates among divorced compared with married individuals (Ebrahim et al. 1995; Hemström 1996; Johnson and colleagues 2000). Although the marital status differences in mortality rates suggest support for the causation hypothesis, it is noted that the results do not tell us whether they reflect the chronic strain of divorce, marriage protection, or the selection of the less healthy out of marriage.

In sum, the existing literature suggests that both selection and causation processes play a role in explaining the worse physical and mental health of

the currently divorced; however, conclusions about the relative importance of each process vary considerably. We argue that this results, in part, from study designs that do not provide rigorous tests of selection versus causation effects. In particular, several studies use only two waves of data (e.g., Aseltine and Kessler 1993; Hope et al. 1999; Horwitz et al. 1996; Wade and Cairney 2000), and most use data collected at intervals of several years (e.g., Aseltine and Kessler 1993; Booth and Amato 1991; Horwitz et al. 1996; Johnson and Wu 2002; Mastekaasa 1995; Wade and Cairney 2000). As a result, relatively little is known about the precise timing of the effects of health on divorce and the effects of divorce on health.

Further, limited attention has been given to the possibility that selection and causation effects operate differently across dimensions of health, including mental and physical health and health-related behaviors. It is plausible that marital dissolution has more immediate effects on psychological distress than on mortality. Effects of divorce on physical health and mortality are likely to unfold over a longer span of time, perhaps stemming from initial declines in mental health. However, studies of such causal pathways are rare. One exception is Lillard and Panis (1996) who found that higher mortality among divorced compared with married men can be explained by their poorer health status measured with a simple global health item. However, this finding is not very surprisingly, particularly given the relatively short observation period of six years. The existing literature has also tended to rely on self-reported indicators of health. The possibility that the stress of divorce may lead to more negative perceptions of one's health highlights the need for research employing more objective indicators of health and functional ability.

## Methods

Ideally, an examination of selection and causation would use longitudinal data that captures the onset and duration of any health problems and the course of marital dissolution. Given the reliance on self-reported health in much of the existing literature, it is of interest to consider whether similar patterns are found using objective measures of health, such as those based on medical examinations. In addition, the measures of health used in prior work typically have not indexed the extent to which health problems affect one's ability to perform expected social roles (e.g., work), a noteworthy limitation given that this appears to be an implicit assumption underlying selection arguments. This paper addresses these issues by using administra-

tive data on the receipt of health-related benefits, in particular sick leaves and work disability. The causal relationship between marital dissolution and health is studied by combining Norwegian administrative data on separation and divorce with administrative data on sickness and disability benefits. Norway is a good case for such studies because its National Social Insurance is a major source of sickness benefit and it operates several disability benefits that cover the entire population. Twelve percent of the population between 20 and 67 years (labeled «occupationally active age») receives a disability benefit, and approximately six percent of the working population receives sickness benefit. Further, like other Scandinavian countries divorce rates are high compared with most countries; nearly half of all marriages will end in divorce if present trends should continue (Statistics Norway 2002).

### *Data and variables*

The data is a 20 percent sample of the Norwegian population between 25 and 67 years of age based on the FD-Trygd database in Statistics Norway. FD-Trygd was established for event history analyses of social insurance and social security benefits by linking administrative information from the National Social Insurance Administration, Statistics Norway, and the Directorate of Labor. Data collection began in 1992 and has, at present, data through 1999 for most of the topics covered, which include education, income, and marital status. From the main sample, two sub-samples were selected, one comprised those who separated and divorced during the nine-year observation period and another that included those who remained married throughout this period (1992-1999).

Two dependent variables were constructed, both dichotomous. The first indicated *receipt of sickness benefit* (for one's own illness) from the National Social Insurance. This benefit normally follows a two-week period of sick pay by the employer (exceptions made for repeated sick leaves or chronic diseases) and can be received for no more than one year. The sickness benefit covers both mental and physical health problems. Unfortunately, because diagnoses typically cannot be identified for sick leaves shorter than 12 weeks, benefits resulting from mental and physical health conditions are not examined separately. The second dependent variable, *receipt of any health-related benefit*, indicates the receipt of either the sickness benefit or any of three disability benefits also provided by National Social Insurance that may follow a year of receiving sickness benefits. These include rehabilitation benefits (for cases that require more than one year of medical treatment and rehabilitation), occupational rehabilitation benefits

(for those undergoing occupational rehabilitation evaluation or implementation including re-education), and disability pension. In Norway, more people are entitled to disability benefits than sickness benefit, as disability benefits make no requirements for participation in paid work. In this study, the analysis of sickness benefit was limited to those who had incomes from work corresponding to 97,000 NOK (2 G) in 1999 (12,500 USD) and somewhat less in the previous years due to inflation. Those working for the government also were excluded from the analysis of sickness benefits as their sick leaves were unknown.

The primary explanatory variable was marital status, and its attributes were being married or separated/divorced, where the separated included only separations leading to a divorce. In Norway, most people who divorce do so after one year of separation. Exceptions are those who have lived apart for two or more years without a legal separation, and cases of abuse or threats of abuse. These exceptions were excluded from the analysis. Either party may seek a separation and file for divorce after one year of separation. In the analyses, marital status was treated as a time-dependent variable measured as time before and after legal separation in three-month intervals.

Several individual and family-level factors that could affect health and the risk of divorce were included in the analyses including education, gender, age, and the presence of children. Education, which is associated with better health (Williams and Collins 1995) and a lower risk of divorce (Lyngstad 2003), was measured as the typical number of years it takes to acquire each level. As some prior work reports gender differences in the relationship between marital status and health (e.g., Gähler 1999), separate analyses were conducted for men and women, and gender differences were displayed or calculated throughout the analysis. Age was included because the risk of divorce is higher in younger than older ages and cohorts (Kravdal 1994), whereas poor health and the receipt of health-related benefits increase with age. Moreover, age is relevant because it influences the likelihood of remarriage. We hypothesized that divorce would affect health more severely in situations where the likelihood of establishing a new or alternative relationship is poor. Because women face a more steeply declining probability of marriage than men as they age, we anticipate that aging has stronger effects on divorced women's health. In contrast with the sex ratio among the elderly, there is a male surplus among the never married in younger age groups. Hence, we hypothesize that aging has different impacts on the health of divorced men and women, with the most severe effects found among young men and older women.

The presence of children also may moderate the effect of marital dissolution on health. The effect could be negative for parents who share custody or visiting rights, as they will face higher housing expenses and experience the potential stress of negotiating care and supervision of their children. Children could, on the other hand, have health-protective effects for their parents similar to those that are expected to result from being married (i.e., they may encourage healthy behaviors and enhance social integration). Hence, a two-tailed test was chosen. Presence of children, but not custody of children, was examined as an explanatory variable. In Norway, mothers hold the vast majority of custodies; cases of paternal custody are likely to reflect situations where the mother is unable to care for or support her child/children (i.e., situations that are likely to be confounded with the dependent variables in these analyses). We anticipate that children will have different effects on the post-divorce health of mothers and father; in particular, stronger negative effects are expected for fathers experiencing divorce because they normally have less contact with their children. The child variable was measured as (the square root of) the number of children below 18 years living in the household (from 0 to 3 or more, i.e. 0, 1, 1.41 and 1.73). For those who divorced, the child variable was held constant from before separation through the end of the observation period (2½ years later), as this variable otherwise would indicate children in the household.

### *Statistical analysis*

The life-path of each person was studied through an observation window of up to four years, from 1½ years before separation to 2½ years after separation (which is up to 1½ years after divorce) with observation intervals of three months. The observation interval was a compromise between the desire to provide a detailed description of the data and the limitations imposed by the number of observations a personal computer can handle. Although a longer observation window would be ideal in order to clearly distinguish among selection effects (of poor health on marital dissolution) and the short and long-term effects of divorce on health, the four-year timeframe permits the same individuals to be examined at both the beginning and the end of the observation window.

Some observations were treated as censored. Obviously, this is the case for individuals who died or entered or left the country on a more permanent basis. Ages younger than 25 and older than 67 were treated as left and right censored, respectively, as we had limited information for those under 25 (due to the sampling procedure), and at 67 most of the benefits studied could

no longer be received as old age pension would be granted instead. Calendar years of little or no work-related income, or working for the state, also led to censored observations in the analysis of sickness benefit.

Using logistic regression, the first analysis investigated changes in the receipt of sickness benefits, as well as receipt of any health-related benefit, within the four year observation window from 1½ years prior to and 2½ years following separation. Because changes in the receipt of these benefits could also reflect aging within the life paths of the individuals studied or historical changes in the use of these benefits in the observation period (1992–1999), statistical controls were added for age and historical changes in the use of the benefits as observed among those remaining married throughout the observation period. This involved statistical control for two overlapping time dimensions, the aging of the individuals (i.e.,  $\text{age} + \text{age}^2 + \text{age}^3$  in continuous time) and historical changes in the use of the benefits studied (i.e., dummy variables for each three-month interval). Changes in the probability of receipt of health-related benefits among those who divorced (expected to be higher than among the married) were estimated by interaction terms calculated using the dummy variable indicating divorce and 17 dummy variables for time, measured at three-month intervals covering 1½ years before and 2½ years after separation.

The second analysis investigated which groups (defined by age, gender, and the presence of children in the family) were at particularly high risk of receipt of health-related benefits at each of three stages of the dissolution process. The first stage consisted of two observations early in the process (i.e., at 1½ and 1¼ years before separation); the second stage was the single observation at time of separation; the third stage was the two last observations (i.e., at 2¼ and 2½ years after separation). Comparisons were made across the stages. Because the individuals were studied with multiple observations, sandwich (Huber/White) estimators of the standard errors were applied in place of classical statistical test theory. This estimator assumes that the individuals, but not necessarily the observations for each individual, are statistically independent.

## Results

Figure 1 is based on the logistic regression analyses with statistical control for age, education level, and historical changes in sick leaves observed among married men and women. Those who remained married throughout the observation period are indicated by the 0-line on the y-axis in the figures.

Figure 1 indicates that, compared with the continuously married, those who divorced had more sick leaves both before and after separation. However, both men and women increased their use of sick leaves around separation, marked by time 0 on the x-axis. The difference between the separated and continuously married is particularly large in the period immediately before separation through approximately half a year post-separation. Clearly, separation is a stressful event leaving some individuals unable to carry out their ordinary duties at work.

Figure 1: Receipt of sickness benefit before and after separation by gender.<sup>1</sup>



Divorced men are in a particularly vulnerable position at and around separation as their likelihood of sick leave is far higher than that of married men; the difference is larger than for the similar comparison made between separated and married women. In addition, the increase in sick leaves before separation is steeper for men than women. Among men, sick leaves rise throughout the 1½ year period before separation. Among women, a similar increase in sick leaves starts later, no earlier than half a year before separation. The earlier onset of steady increases in the receipt of benefits for men may reflect health selection toward divorce, particularly in the early stage

<sup>1</sup> The reference group (0 on the y-scale) is the continuously married. Changes/ differences are measured with logit coefficients with statistical control for age and education. The divorced samples include 8,258 men and 7,253 women. The married samples are considerable larger.

(i.e., more than one year before separation). The later increases occurring more proximate to actual separation may reflect not only selection but also the health consequences of stress related to marital dissolution. Taken together, the sick leave data indicate that there is a stronger element of health selection among men than among women.

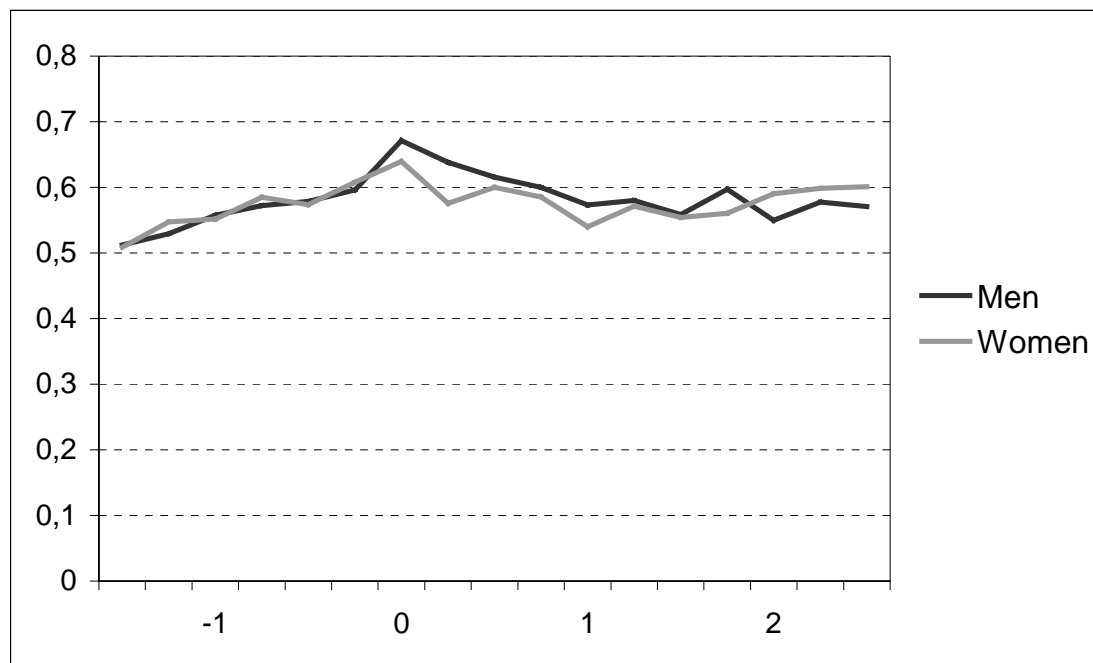
Among men and women, sick leaves decrease from separation to approximately one year afterwards. One year after separation, the use of sick leaves is at the same level as one year before separation for both genders. The explanation could be that the sickness benefit, unlike other health-related benefits, can only be received for one year. If this feature of the benefits is influencing the results, we would expect to find a much smaller drop in the models analyzing the receipt of any health-related benefit, compared with the sickness benefit alone. An alternative explanation hinges on psychosocial adjustment to marital dissolution. One year after separation is normally the time of divorce, the final legal arrangement ending the marriage. With the legal aspects of the divorce process over, it is plausible that some individuals are better able to carry on with their lives and resume work.

Interestingly, sick leaves appear to rise again at the end of the observation period, particularly among women. This could reflect greater vulnerability that follows the loss of marriage protection. It may also reflect the possibility that more women participate in income work after divorce when they face higher expenses and the loss of their partner's income. If so, more women would be eligible for sickness benefits.

Figure 2 describes the receipt of any health-related benefit (for work disability). This includes the sickness benefit (in Figure 1) plus any of three disability benefits. Both men and women who divorced were much more likely than their married peers to receive a benefit for work disability both before and after marital dissolution. Work disability, measured with health-related benefits, peaks at the time of separation which clearly reflects the high incidence of sick leaves at this period of the dissolution process. At about one year post-separation, the receipt of health-related benefits decreases to approximately the same level as that observed one year before separation. No major changes in the receipt of health-related benefits can be observed beyond one year post-separation.



Figure 2: Receipt of any health-related benefit before and after separation by gender.<sup>2</sup>



Similar to the findings for sickness benefits, the increased receipt of any health-related benefits as early as 1½ years before separation provides evidence of the selection of the less healthy into the divorced status. However, in contrast with the analyses of sick leaves only (Figure 1), the models predicting any health-related benefit indicate that selection operates similarly for men and women. The difference between the two figures may indicate that men are subject to a stronger element of health selection from repeated work disability, whereas women are more subject to health selection from long-lasting work disabilities. Although beyond the scope of these analyses, an alternative explanation involves possible gender differences in the impact of health problems on withdrawal from the paid labor force. It is possible, for example, that men facing health problems attempt to fulfill the breadwinner role as long as possible, whereas women with health conditions may be more likely to replace paid work with caring for the family while receiving a disability benefit.

Also in contrast with the findings for sickness benefits, a strong increase in receipt of any health-related benefits is not observed at the end of the observation window. The difference reflects a decrease in the receipt of disability benefits in this phase following divorce. The explanation could be that some women who are no longer able to support themselves (and their families, if they are parents) solely on disability benefits after divorce must

<sup>2</sup> See note 1. The divorced samples include 10,242 men and 10,412 women.

take on paid work, with the associated eligibility for (the higher) sickness benefit. This possible change in paid work status does not increase the receipt of health-related benefits more generally (as illustrated in Figure 2); it merely changes the composition of these benefits from disability benefits to sick leaves.

Approximately 18 percent of divorced men and 14 percent of divorced women remarried during the observation period of 2½ years after separation. In similar analyses conducted on a sub sample including only the remarried, we find no peak in sick leaves at the time of separation, contrary to the results for the full sample. Apparently, separation itself is less stressful for those who eventually will remarry than for those who will not. Those who remarried, however, were doing no better than those who did not remarry, in terms of sick leaves one to two years after separation (figures not shown). Neither before nor after separation did women who remarried distinguish themselves from other divorced women in terms of receipt of any health-related benefit, apart from the lower level of sick leaves at separation. Men who remarried had a slightly lower receipt of health-related benefits both before and after separation than men who did not remarry, but not nearly as low as men who stayed married throughout the observation period. Taken together, the results suggest that even if those who eventually will remarry are indeed doing better at the time of separation (compared with their peers who will remain divorced) there is no indication that remarrying eases the health-related impact of experiencing marital dissolution.

Table 1: Changes in the receipt of sickness benefit before and after separation by gender. Separate models for each gender and interaction estimated.<sup>3</sup>

	Men		Women		Gender difference	
	Coeff.	St.er.	Coeff.	St.er.	Coeff.	St.er.
At separation vs. before	.299**	(.062)	.138*	(.062)	.161*	(.088)
at separation * age	-.135*	(.073)	.136*	(.072)	-.271**	(.101)
at separation* children	.219**	(.091)	.237*	(.100)	-.017	(.136)
After divorce vs. before	.037	(.060)	.139**	(.056)	-.102	(.082)
after divorce * age	-.105	(.074)	.158*	(.073)	-.263**	(.104)
after divorce * children	.136	(.094)	.110	(.084)	.026	(.126)

\* p<.05 and \*\* p<.01 in one-tailed tests (two-tailed tests for children)

Tables 1 and 2 present numerical estimates of the higher probability of the divorced to receive health-related benefits at the time of separation and in

<sup>3</sup> The reference group is the continuously married. Changes are measured with logit coefficients with statistical control for age, education and children.

the subsequent years compared with before separation, using the married sample for comparison. Potential variation by age, gender, and presence of children also is examined. The first line in Table 1 indicates that sick leaves increased from the beginning of the observation period until separation, and they increased more steeply for men than for women (as illustrated in Figure 1). This rise in sick leaves at separation was particularly high among young men and older women, as indicated by the interactions between time of separation (compared with before separation) and age (in the second line in Table 1). The presence of children also increases sick leaves at separation for both men and women.

As indicated in the fourth line of Table 1, only women increase their receipt of sickness benefits significantly from the beginning until the end of the observation period (as illustrated in Figure 1). Again, increased sick leaves during the entire observation period (in this case, nearly four years) were particularly high among young men and older women. Although the interaction with age does not reach significance in the sample of men, the difference in this age effect between men and women is clearly significant. The higher probability of sick leaves among divorced parents, compared with non-parents, is weaker and no longer significant at the end of the observation period (in contrast with the earlier stage of dissolution described at the top of Table 1).

Table 2: Changes in the receipt any health-related benefit before and after separation by gender. Separate models for each gender and interaction estimated.

	<b>Men</b>		<b>Women</b>		<b>Gender difference</b>	
	Coeff.	St.er.	Coeff.	St.er.	Coeff.	St.er.
At separation vs. before	.109**	(.026)	.074**	(.022)	.036	(.034)
at separation * age	-.062*	(.037)	-.025	(.036)	-.037	(.052)
at separation* children	.077	(.052)	.151**	(.046)	-.074	(.069)
After divorce vs. before	.017	(.026)	.027	(.021)	-.011	(.033)
after divorce * age	-.120**	(.038)	.039	(.037)	-.159**	(.053)
after divorce * children	.100	(.052)	.108*	(.044)	-.008	(.068)

\* p<.05 and \*\* p<.01 in one-tailed tests (two-tailed tests for children)

Not all the results found for sick leaves are replicated in models predicting the receipt of any health-related benefit (Table 2). The receipt of these benefits increases at separation for women and men; however, unlike the results for sick leaves only, neither the higher increase among men in the early stage of dissolution, nor the increased receipt among women over the entire observation period, reaches significance.

The analysis of sick leaves in Table 1 indicates that marital dissolution has particularly strong health effects for young men and older women. The analysis of the receipt of any health-related benefit in Table 2 reproduces this result regarding young men, but not older women. As indicated in the fifth line of Table 2, the different age effect for men and women remains significant, however, at the end of the observation period compared with the beginning. The apparently weaker negative health effects of divorce among older women in the analysis of any health-related benefits, compared with sickness benefits, could stem from the economic strain faced by many women after divorce which may require that they take up paid work instead of receiving disability benefits.

The analysis of sick leaves indicates that marital dissolution is particularly distressing for parents, at least at the time of separation. This is also the case when studying the receipt of any health-related benefit in Table 2, although it remains significant only for women. The deleterious effects for mothers also continue through the end of the observation period. However, the absence of a significant gender difference suggests that there is virtually no difference between mothers and fathers. Hence, we may interpret this result for parents jointly: Compared with non-parents, parents significantly increase their receipt of health-related benefits during the years surrounding marital dissolution. One possible explanation centers on the stress of organizing custody and visitation arrangements that typically follow a marital dissolution in families with children, as this may involve difficult negotiations between the parents, rivalry, or frustrations.

## Discussion

Numerous studies have demonstrated that the divorced experience worse health than the married. The explanations hinge on two processes, selection and causation. The selection argument posits that the least healthy face an elevated risk of experiencing divorce. The issue of social causation is more complicated. One causation argument is that divorce is a stressful event which may affect health negatively in the short-term (i.e., the crisis model of divorce), perhaps also over a longer period following marital dissolution (i.e., the chronic strain model of divorce). Another causation argument is that those who have divorced no longer enjoy the health protective effect of being married. With prior studies finding support for each mechanism, there is considerable debate regarding their relative importance in explaining the worse health of the divorced. We argue that this stems, in part, from the

tendency to use long measurement intervals (typically years) that make it difficult to distinguish between these processes. Our empirical analysis addresses this issue by focusing on the receipt of health-related benefits within a four-year period surrounding marital disruption, measured at intervals of three months. Within this relatively short timeframe, it is difficult to test the marriage protection argument, perhaps with one exception, by comparing those who remarried within the 2½ years following separation with those who did not. The results revealed no differences between these two groups in the receipt of health-related benefits after marital dissolution; both groups face considerably higher odds of receiving benefits compared with those who remained married. Hence, to the extent that it can be examined in these data, the marriage protection argument is not supported.

The other social causation argument, that divorce is a stressful event negatively affecting health, receives support in this study. Sick leaves increase in the months just prior to separation and peak at separation. In short, separation appears to be *the* stressful event in a process of marital dissolution. Both sick leaves and the receipt of any health-related benefit decline to pre-separation levels following this event. Thus, the crisis rather than chronic strain model of divorce is supported. Apparently, separations that lead to a divorce are stressful events with negative health outcomes for many of those involved, but eventually these individuals learn to live with their new situations and return to paid work, perhaps motivated by the fewer resources available from disability benefits. Although long-term effects cannot be detected in receipt of health-related benefits, a minor change in the composition of these benefits can be detected among women (i.e., a shift from the receipt of disability benefits to more sick leaves).

The higher receipt of health-related benefits among the divorced, compared with those remaining married, is already well-established at the beginning of our observation window, 1½ years before separation. Further, the changes in these rates that follow in the years surrounding the marital separation are comparatively minor. Taken together, the results point toward health selection is more important than social causation in explaining the worse health of the divorced. Moreover, the social causation effects found (i.e., increased sick leaves around separation) are relatively short-lived.

Apparently, our results are at odds with findings from the psychological distress literature revealing long-term negative effects of marital dissolution (e.g., Johnson and Wu 2002). One explanation for this inconsistency could be that, although marital dissolution is likely to lead to distress, this impact is typically not sufficiently severe to limit participation in paid

work, as measured by long-term sick leaves and receipt of disability benefits. Even if distress following divorce does, in fact, impair one's ability to work, this may be counteracted by the need of the divorced individual, no longer pooling resources with a spouse, to be economically self-sufficient. Facing these higher expenses, some individuals may not be able to support themselves on public benefits available to the disabled and may, therefore, seek paid work. Moreover, particularly divorced parents have incentives to avoid health-related benefits because poor health, work incapability, and uncertain income streams could influence child custody decisions. Finally, the stronger evidence of the negative impact of divorce on psychological distress than receipt of health-related benefits could, in fact, reflect the potentially new and stressful requirement of economic self-sufficiency experienced by many divorced individuals.

In contrast with the work on psychological distress that relies on self-reports, the health benefits examined in this study require medical examinations and certificates issued by physicians. Results from this study could thus reflect physicians' role as gatekeepers. It is possible that physicians may deem the distress involved not sufficiently severe to justify long sick leaves. Further, physicians could be more reluctant to accept problems of social origin (i.e., strains following marital dissolution) than of medical origin as justifications for writing sick notes. As a result, they may write sick notes in the stressful event of a marital dissolution, but are reluctant to permit such sick leaves to become long-lasting or lead to disability benefits.

A gender difference revealed in this study involves health selection toward divorce. Among men, there is stronger evidence of selection in models predicting sick leaves, as the likelihood of receipt increases considerably over the one and a half years prior to separation. Among women, there is stronger evidence of selection in models predicting receipt of disability benefits. The element of health selection is, however, similar for men and women in models predicting receipt any health related benefit. These findings may indicate that health selection operate at different phases in the development of health problems among men and women. This gender difference could reflect (traditional) gender roles in that husbands', on average, provide a higher share of total household income whereas wives' contribute with more household work. However, further work is needed to illuminate gender differences in the causation and selection processes, with particular attention given to gender role orientations of husbands and wives and the influence of gender on both the nature of illnesses experienced and withdrawal from the paid labor force.

In addition to gender differences, there is evidence of variation by age and parental status. The effects of marital disruption on receipt of sickness or disability benefits were generally found to be stronger among younger men and older women than other age and gender groups. As hypothesized, this may reflect their more limited prospects of establishing new or alternative relationships. Regarding the presence of children, our data indicate that the negative health consequences by far outweigh any positive effects. Compared with non-parents, parents increase their sick leaves at a faster rate at separation and increase their receipt of health-related benefits over the entire observation window. A similar result was reported by Hope and associates (1999) in that parental responsibility appears to have a detrimental effect on the mother's health after divorce; however, the difference between men and women appear for the most part to be non-significant. Our study confirms the association between parental responsibility and poorer health after divorce, as suggested by Hope and associates, but not the impression that these effects are gender specific.

This study contributes to the extensive literature on marital status and health by employing a more objective measure of health and narrower measurement intervals than has typically been the case; however, it is limited in several ways raising many questions for future examinations of selection and causation processes. For example, we were unable to distinguish between sickness or disability benefits stemming from mental versus physical illness. The divergence of our results from the findings of studies of psychological distress underscores the importance of examining multiple dimensions of health.

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# Health selection in marital transitions: Evidence from administrative data

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## Abstract

This study is an analysis of health selection in and out of marriage using Norwegian administrative data on the receipt of health related benefits for work disability and home assistance. It expands the health selection literature by introducing previously unexplored indicators of poor health. Event history data from nearly 400,000 individuals for the period 1993–1999 provide strong evidence for the expected health selection effects, also when alternative explanatory variables are controlled for. Poor health reduces the probability for marrying and increases the probability for divorcing. Selection effects are generally stronger for men than for women. Results are compared with results from other studies utilizing more conventional health measures from survey data.

## Introduction

Several studies have demonstrated a connection between marital status and health. Typically, those who are married have better health than those who are divorced, while people who have never married are in between. This pattern has been found to obtain for mortality (Hu & Goldman, 1990), morbidity (Feinstein, 1993) and mental health (Pearlin & Johnson, 1977; Gove, Huges & Style, 1983). This article investigates the question of whether health selection produces these correlations. To do this, we rely on a 20 percent sample of the adult Norwegian population. This sample is followed each year from 1993 through 1999. The data combines information from various administrative registers on marital transitions and take-up of health-related social insurance benefits, as well as other individual and household characteristics.

The reasons why those who are married enjoy better health than those who are not can be of two types: health selection and social causation. The health selection perspective assumes that health influences marital status. Health selection may accompany transitions into as well as out of marriage. Health selection into marriage means that people in good health are more

likely to marry. Health might be a criterion when people search for partners, or it might be correlated with other selection criteria such as beauty, socio-economic status, or low consumption of alcohol and drugs (Goldman, 1993). Health selection out of marriage means that those in poor health are more likely to divorce. Health problems can make marital break-up more likely because it is less desirable to live with someone in poor health, or indirectly since poor health may imply lower income, lower activity levels or depressions. All of the above can be labelled selection mechanisms.

The social causation perspective argues the other way around, that marital status influences health. There are two social causation arguments. One argument is that marriage may protect partners in ways that are beneficial to health, firstly through social control related to health behaviour (partners exert control on each other's nutrition and alcohol consumption), through social support, or by maintaining social relations. Second, marriage improves consumption levels through joint consumption (housing) and household production (food). Marriage may further act as a buffer against stressful events such as loss of health (care), unemployment (economic support), or the loss of a family member (moral support). These mechanisms can jointly be described as marriage protection (Fu & Goldman, 1996; Waite & Gallagher, 2000). The other social causation argument is that marital transitions may be stressful events in themselves, and this may impact on health. Loss of a partner, separation and divorce may affect mental health in particular.

It is not easy to test marriage selection hypotheses related to health and marital transitions. A major problem is that of establishing the sequence of events. Preferably we need longitudinal data on the development of both health problems and marital problems (Goldman, 1993), but such data have seldom been available. Most previous studies have had to settle for cross-sectional data, retrospective data and – more seldom – data with some panel structure. Unfortunately, assumptions about sequences of events are not testable when evidence is based in cross-sectional data. Retrospective questions may be of some help, but are far from fully satisfactory. Firstly, retrospective measures often include failures of recollection. Secondly, respondents may reconstruct previous experiences from whatever has followed. Only prospective data are fully satisfactory. In contrast to previous studies that tend to focus on self-reported health, this study utilizes administrative data on both marital disruption and the receipt of health-related benefits. The empirical findings are then compared to findings using more conventional methodologies.

## Previous prospective studies on health selection

Most prospective studies on health selection in marital transitions make use of self-reported health measures from survey questionnaires, and study the subsequent probability of marital transitions either from later waves of panel data or through administrative records. Mastekaasa (1992, 1994) combined survey questionnaires with Norwegian administrative records in two studies of health and marital transitions. His first paper (1992) focused on the probability for marrying among 13,000 young (never married) adults (20–39 years). Three measures of health were applied: if the respondent reported any disease which restricted his/her daily activity, a self-assessed global health item («poor» or «not quite good» health compared with other answers), and psychological well-being as indicated by a scale of overall life-satisfaction and happiness. The probability for marrying was correlated with life-satisfaction, but not significantly with the other two measures of health. In the second paper (1994), Mastekaasa focused on psychological well-being only and the probability of divorcing among 39,000 married individuals. The probability of divorcing was correlated with poor psychological well-being. The relationship was particularly strong in the short-term; however, the author argues that this could also reflect the stress of the marital dissolution process. Taken together, these studies support the health selection hypothesis both in and out of marriage, but only when measured as psychological well-being.

Studies of psychological distress provide some evidence of health selection in both marriage formation and divorce. Hope, Rodgers and Power (1999) studied psychological distress (indicated by the Malaise Inventory scale) during a ten year follow-up study among 9,000 young British adults from 23 to 33 years of age. They found some evidence of health selection in the status transition from single to married. More psychological distress at age 23 was found among those who remained single than among those who married afterwards in both sexes. The difference was more pronounced in men. More limited evidence of health selection was found in the transition from married to divorced (or remarried), as levels of distress were higher among those who later divorced. The authors argue, however, that this is perhaps more aptly described as anticipation rather than true selection, as the difference was largely confined to those who were soon to separate. Johnson and Wu (2002) studied the relationship between psychological distress and divorce using four waves of panel data spanning 12 years for 1,600 American adults. Some evidence of health selection was found, as psycho-

logical distress was somewhat elevated five years before marital disruption for those who divorced. The magnitude of the selection effect was smaller than the effect of divorce on psychological distress. Psychological distress also increased in a five year period prior to marital disruption. The authors seem to argue, however, that this increase in psychological distress prior to marital dissolution should not be interpreted as health selection.

Waldron, Hughes and Brooks (1996) applied a 17 item health scale for mostly physical health problems in three waves of panel data spanning 10 years for 10,000 American women. They found evidence of health selection both with regard to marriage formation and divorce. However, these effects were not found in the later waves, nor did it hold among women who were employed full-time. The authors argue that the absence of a health selection effect among women in full-time employment could reflect that health problems have only minor effects on their functional capacity and therefore have limited effects on marriage prospects.

Two studies applied multiple indicators of health in studies of health selection in marital transitions. Both provide some evidence of health selection. Cheng and Sloggett (1998) studied marriage formation among young unmarried British adults between 23 and 33 years of age (N=3,422), applying (at least) three (binominal) indicators of poor health. Among men, a long standing illness reduces the probability for marrying. Among women, low self-rated health («poor» or «fair» compared with other answers), as well as high levels of malaise, reduce the probability for marrying. Joung, van de Mheen, Stronks, van Poppel and Mackenbach (1998) studied how self-reported health affects the probability of marital transitions for 10,000 individuals during a 4 ½ year follow-up period in the Netherlands. Three measures of health were applied: self-rated health («good» versus other answers), subjective health complaints, and chronic health conditions (both classified into three categories). Significant correlations between health and marital transitions were found for the probability of divorce, but not for entering marriage. Chronic conditions increase the probability of divorce, at least among men. The impact of subjective health was less conclusive.

Taken together, the findings in earlier prospective studies do provide some evidence of health selection in marital transitions. In all the published studies, at least some forms of health seem to reduce the probability for marrying, or increase the probability of divorce. Results are not fully consistent, however, regarding the effects of the different forms or measures of health. The studies indicate that even when we do have prospective data, the sequence of events is not always clear. This is exemplified by the strong

short-term correlation between psychological well being and marital dissolution found by Mastekassa (1994). As the author argues, this may reflect that mental distress increases the risk of divorce, but also the stress following a process leading to marital dissolution. In contrast, Joung et al. (1996) found similar effects of chronic health conditions on divorce when using different time-lags (i.e. 0–4 years and 2–4 years).

Inconsistent findings may result from the tendency to include multiple indicators of poor health in the same statistical models. As researchers we would like to know what kind of health problems affect the probability for marriage or divorce. However, regression models will yield less than predictable results when the effect of poor health on marital transitions is reflected by two or more health indicators, for instance when subjective and more objective measures of health are used simultaneously. This problem is known as colinearity.

A common problem with previous prospective studies is that they only rely on self-reported measures of health, and (probably more important) the subjective nature of many of the health measures applied. Subjective measures of health require the respondents to compare themselves to some reference group or ideal. These comparisons may vary by health status and age. Kaplan and Baron-Epel (2003) find that young adults in poor health tend to avoid comparing themselves with the predominantly healthy peers of their own age when making subjective health assessments, contrary to old people in poor health and other young adults. The authors argue that this is done in order to not feel worse off. Marital transitions are most frequent during young adulthood. Thus, measurement bias in the assessment of subjective health could contribute to inconsistent findings.

## **Alternative measures of health**

Waldron et al. (1996) argue that the absence of health selection among women in full-time employment could reflect that the health problems have only minor effects on their functional capacity and therefore have limited effects on marriage prospects. Not all kinds of health problems will affect the probability for marrying or divorcing. But, health problems that give rise to functional problems may affect marital prospects. If so, we should not search for general measures of health, but rather measures of health problems that lead to limitations in people's functional capacity.

Modern welfare states make various benefits available for those who do not function well due to health problems. In Norway, there are two benefits

intended for individuals with limited functional capacity. Firstly, there are disability benefits for those who cannot support themselves through work because of poor health. Secondly, there are benefits for those who need care or assistance at home. Both sets of benefits require medical examinations and documentation. These are the measures of health used in this article. Our data include administrative records about receipt of these health related social insurance benefits, as well as administrative records on marital transitions (marriage, separation and divorce). Norwegian data are particularly well suited to the investigation of health selection effects since most Norwegian social insurance schemes encompass the entire population, including home-workers (those conducting unpaid work at home).

## Data and variables

Data represent a 20 percent sample of all Norwegians between 25 and 67 years of age in 1993. The sample is drawn from the FD-Trygd database in Statistics Norway. FD-Trygd links individual-level administrative information from the National Social Insurance Administration, Statistics Norway, and the Directorate of Labour. Data have been collected from 1992 through 1999. In addition to social insurance benefits, the data provides information about education, income, the presence of children and marital status for all legal Norwegian residents. By limiting the analysis to those above 25 years of age we can also provide estimates of education level for those still under education (school) age by «counting backwards» from later registrations.

The dependent variables are two marital transitions. First, marital formation is defined as entering marriage. Second, marital dissolution is defined as a legal separation leading to divorce. In Norway both marriage partners may seek legal separation; they are not asked to give particular reasons. As a main rule, separation for one year is mandatory. After one year, both parties can file for divorce. Most of those who divorce do so shortly after one year of separation. There are some exceptions from the one-year separation rule, i.e. if the marriage partners have been apart for more than two years without being legally separated, and in cases of ill treatment or threats of violence. These exceptions were excluded from the analysis.

The primary explanatory variables are work disability and home assistance, both measured as receipt of social insurance benefits, i.e. receiving disability benefits and home assistance. Disability benefits include sick pay (that may be paid for a maximum of one year), rehabilitation benefits for prolonged (more than one year) medical treatment or participation in



occupational rehabilitation programs (including waiting periods before and after such participation), and disability pension (typically granted in this order). Sick pay is the only benefit which covers the working population only.<sup>4</sup> The home assistance benefit requires that the health problem involved is long lasting (at least 2–3 years of duration).

Individual and family-level factors may contribute toward explaining statistical associations between health related social insurance benefits and marital transitions. These factors include age, sex, education level, income and the presence of children. Age was included in the analysis because both formation and dissolution of marriages are most frequent in young adulthood, whereas poor health and receipt of health related benefits increases with age. Separate analyses were made for men and women, and gender differences were estimated. The receipt of social insurance benefits may also depend on other individual resources than health. Education is a key variable as more education leads to better jobs, to higher job security, and to the availability of more jobs (Becker, 1993; Doeringer & Piore, 1971). Education level was measured as the normal number of years it takes to accomplish the kind of education a person has. Income may help to explain why work disability affects marital prospects, as income is strongly influenced by work disability. As a non-independent variable, income was only specified in follow-up analyses. The relationship between health, children and marital transitions is complex. Poor health may influence the decision to have children as well as marital transitions. Furthermore, children may stabilize marriages. For these reasons, the empirical analyses were specified both with and without the presence of children.

## Statistical analyses

We first present descriptive statistics for the variables. The probabilities of marital formation and marital dissolution are then studied using Cox proportional hazard (duration) models. The impact of work disability and home assistance were studied as binominal variables with time lags of one and two years before the calendar years marital transitions could occur. Individuals were classified with work disability if they received a (social insurance) benefit compensating for work disability in at least two out of four evenly time-spaced observations within each calendar year, and they

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<sup>4</sup> Normally, it doesn't include the two first weeks of a sick leave when the employer is responsible for this payment; however, exceptions are made for chronic health conditions and repeated sick leaves.

were classified with home assistance if they received a benefit compensating for home assistance in the summer.<sup>5</sup> Those receiving health related benefits one year before marital transitions is studied would typically also receive similar benefits two years before. This problem of colinearity was solved by estimating the impact of disability one and two years before in separate models. As other estimates were virtually unchanged, they were presented from the models for the year before only, and only the estimates for the health related benefit were presented from the time lag models for the two years before. In order to facilitate comparisons between the two time lags, regression results comprise the same observation period, i.e. from early 1994 to late 1999.

Some variables were treated as time-dependent: age, the number of children below 18 years, as well as work disability and home assistance in previous years. These variables were registered or calculated for each calendar year. In some analyses income from previous years was also included for statistical control. Time-dependent explanatory variables may give less than accurate test-statistics. For this reason a sandwich estimator of the standard errors was used, which assumes that the persons are independent, but not necessarily the observations for each person. However, with either choice the test-statistics remain virtually the same.

Some observations were treated as right censored. This included death and leaving the country. Age 67 was also treated as right censored, as most of the benefits studied could not be received after age 67. Widowhood was also treated as right censored in the study of marital dissolution. Governmental employees were excluded, since we had no information about sickness benefits for this group. Also the mentally retarded (identified by ICD-9 or ICD-10 codes for health related social insurance benefits) were excluded since very few in this group marry.

## Descriptive statistics

Table 1 and 2 present descriptive statistics. Time-dependent variables are calculated as an average of the years 1992–1999. The «marital status change» variable tells us that 20 percent of the not previously married did marry within the observation period of seven years. A much higher proportion of widowers (eight percent) than widows (two percent) remarried. Also, divorced men remarried somewhat more often than divorced women (17 and

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<sup>5</sup> The difference is due to the fact that sick leaves in particular can change several times during a calendar year, whereas the home assistance payment is more permanent.

14 percent respectively). Only about five percent of the married sample divorced in the period.

Table 1: Descriptive statistics for men. Percentages or means (and standard deviations).

	<b>Never married</b>	<b>Divorced</b>	<b>Widowed</b>	<b>Married</b>
Duration 1.1.93 (years)		8 (5)	7 (5)	17 (8)
Status change	20 %	17 %	8 %	5 %
Age (1.1.93)	36 (9)	48 (9)	58 (8)	47 (10)
Education in years	11 (3)	11 (3)	10 (3)	11 (3)
One child	13 %	9 %	7 %	17 %
More than one child	14 %	8 %	5 %	33 %
Work disability 1 y.be.	12.6 %	22.7 %	32.2 %	12.3 %
Home assistance 1 y.b.	1.4 %	1.4 %	2.2 %	0.4 %
Work disability 2 y.be.	12.1 %	21.6 %	30.7 %	11.4 %
Home assistance 2 y.b.	1.4 %	1.4 %	2.1 %	0.4 %
Number of individuals	55,296	14,718	1,659	128,039

The numbers (in the bottom line) show a male surplus among never married and a somewhat smaller female surplus among those married. In both cases gender differences are found primarily among young adults (25–30 years), i.e. more young women are married compared to men since husbands tend to be older than their wives. Furthermore, there is a huge female surplus among the widowed. This is due to higher mortality among men compared women, in addition to the fact that widowers remarry more often than widows. Finally, there is also a (somewhat smaller) female surplus among the divorced. This may reflect the higher propensity for remarriage among divorced men than divorced women.

Table 2: Descriptive statistics for women. Percentages or means (and standard deviations).

	<b>Never married</b>	<b>Divorced</b>	<b>Widowed</b>	<b>Married</b>
Duration 1.1.93 (years)		9 (6)	9 (6)	18 (8)
Status change	20 %	14 %	2 %	4 %
Age (1.1.93)	36 (9)	47 (9)	58 (8)	46 (11)
Education in years	12 (3)	11 (3)	9 (3)	11 (3)
One child	24 %	18 %	5 %	16 %
More than one child	22 %	14 %	3 %	31 %
Work disability 1 y.be.	13.4 %	29.7 %	33.5 %	15.7 %
Home assistance 1 y.b.	1.8 %	4.1 %	6.3 %	1.7 %
Work disability 2 y.be.	12.7 %	28.4 %	32.2 %	14.6 %
Home assistance 2 y.b.	1.8 %	4.1 %	6.2 %	1.6 %
Number of individuals	34,874	18,091	7,735	135,787

Far more people received a benefit for work disability than for home assistance. Among men the ratio between these two proportions vary from about nine (never married) to about 30 (married). Among women similar ratios vary from about five (widowed) to ten (married). The small numbers of home assistance beneficiaries makes it much more difficult to obtain good estimates of the effect of the functional limitations associated with home assistance than for those of work disability on marital prospects.

## Regression results

Table 3 and 4 present coefficients from Cox regression analyses of marital transitions for men and women respectively. In the first model we control for age, education level, and duration of the marital status (except for the never married). In the second model we also control for the presence of children in the household.

Table 3: Cox regression of marital transitions. Coefficients with standard errors (in parentheses). Men.

<i>Model 1:</i>	<b>Transitions into marriage</b>			<b>out of marriage</b>	
	<i>Never married</i>	<i>Divorced</i>	<i>Widowed</i>	<i>Married</i>	
Duration 1.1.93 (years)		.01 (.01)	-.05 (.01)	.03 (.00)	
Age (+40/10)	-.95 (.03)	-.65 (.04)	-.48 (.24)	-.30 (.03)	
Age <sup>2</sup>	-.14 (.02)	.10 (.05)	-.25 (.26)	-.02 (.03)	
Age <sup>3</sup>	.09 (.02)	-.04 (.02)	.05 (.09)	-.08 (.02)	
Education (years +10)	.09 (.00)	.08 (.01)	.14 (.03)	-.03 (.01)	
Work disability 1 y.b.	-.74 (.05)	-.47 (.07)	-.18 (.26)	.38 (.05)	
Home assistance 1 y.b.	-1.27 (.26)	-.48 (.31)	*	-.37 (.27)	
Work disability 2 y.b.	-.68 (.05)	-.57 (.07)	-.12 (.27)	.39 (.05)	
Home assistance 2 y.b.	-1.35 (.26)	-.40 (.31)	*	-.48 (.29)	
<i>Model 2:</i>					
Duration 1.1.93 (years)		.01 (.00)	-.05 (.01)	-.04 (.00)	
Age (+40/10)	-.76 (.03)	-.39 (.05)	-.41 (.27)	-1.15 (.04)	
Age <sup>2</sup>	.02 (.02)	.31 (.06)	-.15 (.27)	-.69 (.03)	
Age <sup>3</sup>	.03 (.02)	-.12 (.02)	.01 (.09)	.24 (.02)	
Education (years +10)	.10 (.00)	.05 (.01)	.14 (.03)	.02 (.01)	
One child	1.30 (.02)	1.32 (.06)	.01 (.27)	-1.85 (.04)	
More than one child	1.28 (.02)	1.54 (.06)	.43 (.30)	-3.36 (.05)	
Work disability 1 y.b.	-.55 (.05)	-.34 (.07)	-.16 (.26)	.22 (.05)	
Home assistance 1 y.b.	-1.03 (.26)	-.41 (.31)	*	-.75 (.28)	
Work disability 2 y.b.	-.49 (.05)	-.44 (.08)	-.10 (.27)	.23 (.05)	
Home assistance 2 y.b.	-1.12 (.26)	-.35 (.32)	*	-.86 (.30)	

\* Cannot be estimated because of small numbers.

### *Transitions from never married to married*

Being a recipient of a benefit for work disability dramatically reduces the probability that a not previously married man will marry (Table 3, first column, model 1). Proportional hazard models let us estimate such differences as ratios between probabilities (hazard rates), or (as in Table 3 and 4) as logarithms of these probability ratios (coefficients). Unmarried men who are work disabled are less than half as likely ( $\exp(-0.74) = 0.48$ ) to marry compared to other unmarried men, when age and education level are controlled for. Unmarried women who are work disabled are also less likely to marry than other unmarried women (Table 4). However, work disability makes less difference for the marital prospects of unmarried women than for unmarried men. Education level explains some of the difference for men with work disability, but not for women.

For both genders the drop in marital prospects associated with work disability is somewhat smaller when work disability was observed two years before, than one year before, marital transitions could occur. This is indicated by the difference between the two time-lags in the Tables. More precisely, the onset of work disability one to two years before may reduce the probability for marrying slightly, but for the most part it is work disability which has lasted more than two years that reduces the probability that unmarried men, and to a lesser extent unmarried women, will marry.

Those receiving home assistance benefits are even less likely to marry. The vast majority of this group receive a benefit for work disability in addition to home assistance. The estimates indicate that home assistance, even more than work disability, rule out one's marital prospects. Unmarried men receiving both benefits have less than one seventh of the probability for marrying than their able-bodied peers ( $\exp(-0.74-1.27) = 0.13$ ). For unmarried women the receipt of home assistance also reduces marital prospects, but not quite to the same extent as for men. (The gender difference is significant with the two-year, but not with the one-year, time-lag.) Women receiving both benefits have just over one third of the probability for marrying compared to their able-bodied peers ( $\exp(-0.33-0.67) = 0.37$ ).

Table 4: Cox regression of marital transitions. Coefficients with standard errors (in parentheses). Women.

<i>Model 1:</i>	Transitions into marriage			out of marriage	
	<i>Never married</i>	<i>Divorced</i>	<i>Widowed</i>	<i>Married</i>	
Duration 1.1.93 (years)		.03 (.00)	-.08 (.01)	-.03	(.00)
Age (+40/10)	-1.15 (.05)	-.92 (.04)	-.83 (.18)	-.26	(.04)
Age <sup>2</sup>	.01 (.03)	.08 (.05)	-.55 (.22)	-.13	(.03)
Age <sup>3</sup>	.04 (.02)	-.06 (.02)	.16 (.08)	-.09	(.02)
Education (years +10)	.08 (.00)	.02 (.01)	.08 (.03)	-.00	(.01)
Work disability 1 y.b.	-.33 (.06)	-.18 (.06)	.41 (.22)	.41	(.04)
Home assistance 1 y.b.	-.67 (.20)	-.05 (.15)	-.19 (.47)	.09	(.12)
Work disability 2 y.b.	-.26 (.06)	-.22 (.06)	.63 (.21)	.40	(.05)
Home assistance 2 y.b.	-.70 (.20)	-.02 (.15)	-.33 (.47)	-.10	(.12)
<i>Model 2:</i>					
Duration 1.1.93 (years)		.03 (.00)	-.08 (.01)	-.04	(.00)
Age (+40/10)	-.99 (.05)	-.80 (.05)	-.89 (.19)	-.88	(.04)
Age <sup>2</sup>	.10 (.03)	.09 (.05)	-.57 (.22)	-.42	(.03)
Age <sup>3</sup>	-.01 (.02)	-.08 (.02)	.17 (.08)	.10	(.02)
Education (years +10)	.10 (.01)	.03 (.01)	.09 (.03)	.02	(.01)
One child	.40 (.03)	-.11 (.06)	-.12 (.25)	-.70	(.04)
More than one child	.62 (.03)	.35 (.06)	-.20 (.27)	-1.50	(.04)
Work disability 1 y.b.	-.22 (.06)	-.16 (.06)	.39 (.22)	.31	(.04)
Home assistance 1 y.b.	-.66 (.19)	-.06 (.15)	-.17 (.47)	.05	(.12)
Work disability 2 y.b.	-.16 (.06)	-.19 (.06)	.61 (.22)	.30	(.05)
Home assistance 2 y.b.	-.60 (.20)	-.03 (.15)	-.32 (.47)	.07	(.12)

Why does the receipt of health related benefits lower the marital prospects for unmarried men more than for unmarried women? One explanation could be that disabled men have lower preferences for marrying than disabled women. Another explanation is that functional problems disqualify men more than women as potential marital partners. The reason could be found in demographic factors such as the number of available partners with and without full working capability. The never married tend to be young, and this is an age group with a surplus of unmarried men over unmarried women. Also, in age groups below 60 there are more women than men receiving health related benefits. (Both of these differences are indicated by comparing Table 1 and 2.) As a result of these demographic factors, never married women can afford to discriminate against potential marital partners with work disability more than never married men can.

The different impact of work disability on marriage prospects of unmarried men and women can also be explained by traditional gender roles.

These roles imply that men hold the role of breadwinners whereas women may alternatively do household work and care for the family rather than paid work. This traditional division of labour is strengthened when having children, as women spend more time taking care of children than men do, which implies that the male breadwinner roles becomes more important (Coltrane 2000, Blekesaune 2000). As a result, women may to a greater extent than men seek partners who can demonstrate the ability to provide for a family. On the other hand, traditional gender roles can not explain why home assistance reduces the marital prospects of unmarried men more than for unmarried women. Care for family members has also been a traditional female task. Traditional gender roles thus imply that men more than women would avoid marital partners in need of home assistance, which is contrary to our finding. Hence, the demographic explanation is best supported by the data.

### *Transitions from divorced/widowed to married*

Divorced men with work disability are less likely to remarry than healthier men (Table 3, second column). Divorced women with work disability are also less likely to remarry than other women (Table 4, second column). However, work disability makes less difference for the marital prospects of divorced women than divorced men. By comparing the two time-lags for work disability, there is no tendency for recent (1–2 years old) onsets of health problems to reduce the marital prospects of divorced men and women. Apparently, it is the receipt of health related benefits over periods of several years that tend to reduce the marital prospects of divorced men and (to a lesser extent) divorced women.

The number of widowed persons is much smaller than for the other groups studied, particularly among men. For this reason we obtain only inaccurate estimates on the propensity of remarriage for widowers, and we are not able to estimate the effect of home assistance. Still, work disability seemingly makes less difference for the marital prospects for widowers than for other unmarried men. Widows with work disability are actually more likely to marry than their healthier peers, at least when the health problem is studied with a time lag of two years (the effect is not significant with the shorter time-lag). This finding is the opposite from those for the other marital statuses.

Taken together, the analysis indicate that receiving health related benefits makes less difference for the marital prospects of the widowed and the divorced than for the never married. One possible reason could be the

increase of older age groups. On average, the never married were 36 years at the beginning of the observation period, whereas the divorced were 48 and the widowed were 58 years of age. In higher age groups it is increasingly common to receive health related benefits, and thus less deviant, and these groups comprise an increasing proportion of available marital prospects. Furthermore, many of the older recipients of health related benefits have a working career behind them from which they could have made life investments in housing and other commodities. However, similar estimates from joint models (with interactions between marital status and receipt of health related benefits) reproduce those in Table 3. Thus, ageing as such can not explain why work disability reduces the marital prospects of unmarried men more than for divorced and widowed men. Neither can previous income (see below) explain why we find different effects of the receipt of health related benefits on the marital prospects among the never married, the divorced, and the widowed.

### *Transitions from marriage to divorce*

For those who are married, work disability increases their probability for divorce (Last column in Table 3 and 4). This effect is similar for men and women, and it makes no difference if the work disability is measured with time-lags of one or two years. Long lasting work disabilities increase the risk of marital dissolution for both men and women. Home assistance, on the other hand, does not increase the probability for divorce. In fact, among men, it actually reduces this risk, at least when the presence of children is controlled for (Table 3, model 2, last column). The gender difference (as regards the effect of home assistance) is also significant when children are controlled for.

Why does home assistance reduce the risk of divorce among men, but not among women? One reason could be that it is (perceived as) easier for women to take care of their husbands, at least when it is compensated by a benefit, than it is for men to take care of their wives. This could be explained by traditional gender roles where men are supposed to be breadwinners whereas women are supposed to take care of their family members.

Secondly, why does work disability, but not home assistance, increase the risk of divorce? One reason could be that it is not the health problem as such, nor reduced functional capacity, that increases the risk of divorce, but rather the reduction in income associated with receiving health related benefits. Work disability is associated with a drop in income since the benefit is much smaller than alternative incomes from work. Home assistance, on



the other hand, is not equally associated with less income since the work involved is compensated by a benefit.

### *The mediating effect of income*

Several of the interpretations above assume that income could be a factor contributing to why work disability is typically, but not always, associated with reduced marital prospects. Testing this hypothesis is not straightforward since anticipated future incomes are probably more important than previous incomes. However, we may still investigate the extent to which previous incomes mediate the effect of work disability on marital formation and marital dissolution.

About one fifth of the lower probability for unmarried men to marry in cases of work disability is mediated by their low (previous) income. Similarly, about one quarter of the lower probability of divorced men for marrying when receiving a benefit for work disability is mediated by their low income (tables not shown). Nowhere does low income explain the lower marital prospects for women in poor health compared with healthy women. Neither can income explain why widows are actually more likely to remarry in cases of work disability. Taken together, low income appears to be only a minor part of the reason why work disability reduces the marital prospects of unmarried and divorced men. It is less likely that low income affects the marital prospects of disabled women.

### *The role of children*

In Norway about half of all children are born out of wedlock (Statistics Norway, 2002). For many young families, having a first child is a more important step in family formation than getting married. As expected, children increase the probability for marrying. Furthermore, receiving health related benefits (or rather the functional limitations involved) reduces the probability of having children (tables not shown). Controlling for the presence of children (in model 2) means that we are controlling for another aspects of the process of family formation (than marrying) when investigating the impact of work disability on marital prospects. However, within similar stages of the family formation process (measured by having children), we find only moderately smaller effects of functional limitations compared to those mentioned (in model 1). Separate estimates for those with and without children indicate that work disability is followed by a reduction in marital prospects in all groups except for unmarried mothers.

Unmarried men are (in the data) registered with their own children only (not with their partners children). Hence, the difference in marital prospects between unmarried fathers and mothers associated with work disability is a puzzle. It does not seem likely that parents should have lower preferences for marrying because they receive a benefit for work disability. However, work disability could make them appear as less attractive marital prospects in the eyes of partners. If so, some mothers may choose not to marry the fathers of their children when his ability to provide for the family is reduced. Fathers, on the other hand, seem to have fewer reservations about marrying the mother of their children even when she has a work disability. One reason for the difference could be found in traditional gender roles, between male breadwinners versus female care providers. Work disability clearly reduces the ability to act as a breadwinner, but may not (to the same degree) reduce the ability to care for children and the family. Another reason could be that lone mothers can receive special (social insurance) benefits that provide them with a source of support. This could be more attractive if the support they can get from the father of the child/children is inadequate. By not marrying their men, they can more easily switch between these two sources of support. This alternative could also provide them with more negotiating power within the family.

## Discussion

This study provides extensive evidence for health selection in marital transitions. Poor health, as measured by the receipt of benefits for work disability, reduces the probability for marriage or remarriage, and increases the likelihood for divorce. Receiving home assistance reduces the probability for marrying primarily among the never-married. These selection effects are generally stronger for men than for women. The evidence of health selection is more conclusive, and the effects are generally stronger, than those found in previous studies (Mastekaasa 1992, 1994; Waldron et al. 1996; Joung et al. 1998).

Why do we find more conclusive evidence for health selection? The reason could be that our indicators measure functional and objective aspects of poor health, whereas previous studies have relied on self-reported health from questionnaires. Self-reported measures of health may be less reliable than those based on medical examinations as part of applications for social insurance benefits. Low reliability could result from unclear concepts of health applied in the questionnaires (i.e. global health ratings) or from using

scales with uncertain clinical implications (i.e. mental distress). Secondly, self-reported measures of health may capture health problems that are not as severe as those leading to work disability and the need for home assistance. Many health problems do not necessarily affect one's ability to be self-supported, or to function without help at home. Receiving social insurance benefits signifies a more severe situation than the situations indicated by using subjective health scales. A similar interpretation was also presented by Waldron et al. (1996) as regards their findings that health selection seemingly affected the marital prospects of non-working women only.

Why does work disability and home assistance reduce the marital prospects of unmarried men more than for unmarried women? A demographic explanation is that unmarried women can afford to discriminate against disabled men as marital partners, since they have more able-bodied candidates to choose from than unmarried men have. Alternatively, a gender role explanation presupposes that men, more than women, are expected to support a family. Both explanations have some merit. The fact that both education level and (previous) income explain some of the differences among men, but not among women, indicates that men's inability to provide for a family does indeed reduce their marital prospects. On the other hand, the fact that home assistance also reduces the marital prospects for unmarried men more than for unmarried women can not be explained by traditional gender roles since family care is traditionally a female task.

In this article, we have implicitly assumed that low marriage prospects following functional limitations can be explained by the lower demand for people in poor health as marriage partners, i.e. the interest (preference) for marrying or to stay married is assumed to be constant. Contrary to this assumption, Lillard and Panis (1996) argue that if marriage protects individuals from poor health, then those in poor health should gain more from marriage than those in better health. An anticipation of more gain from marriages for those in poor health (labelled adverse selection into marriage), or expected larger disruption from divorcing, should be contrary to the health selection effects estimated in our analysis. If the claim of Lillard and Panis is correct, the health selection effects are underestimated. They should be seen as the net effect of health selection (that the most healthy are most likely to marry and least likely to divorce) minus the adverse selection effect (that the least healthy have a stronger incentive to marry and to stay married).

One may also argue that those in poor health are less interested in marrying, or to stay married, than those in good health. One reason could be that many people marry in order to have children, particularly when

marrying at young age. People in poor health may be less interested in having children since they may not feel capable of taking care of and raising children, as they may have problems enough taking care of themselves. As a result, they may also be less interested in marrying or staying married. Lower preferences for marriage could explain why work disability and home assistance primarily reduce the marital prospects of the never married, but not those widowed. The empirical support for this hypothesis is low, however, as ageing can not explain the different impacts of functional problems on the marital prospects of the never married compared with the divorced and the widowed.

For one group, widows, the higher preference for marrying can probably explain the association between work disability and the probability for remarriage. This is the only group in which work disability actually increases the likelihood of marriage. It is difficult to tell why widows should make better marital prospects when receiving a benefit for work disability than when presumably having full working capability. However, for the widows themselves, work disability could make remarriage more attractive as it would provide them with friendship and someone to care for as well as having someone to care for them, which they are to some extent deprived of as non-participants in income work. An extra source of income may also contribute to the higher inclination to marry, but the analysis of (previous) income gives no support to this hypothesis. It appears to be the absence of income work, or perhaps of co-workers and customers, that provide widows with a stronger inclination to remarry in cases of work disability.

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# Familietilknytning og uførepensjon: Kan flere skilte forklare økningen i uførepensjonering?

*Morten Blekesaune & Einar Øverbye*

## Sammendrag

Hvorfor har uførepensjoneringen økt så kraftig fra 1970-tallet fram til i dag? Endringer på arbeidsmarkedet og i stønadssystemet har hittil vært de vanligste forklaringene. Vi trekker inn en tredje forklaring: endringer i familien, med særlig vekt på at flere har blitt skilt. Datamaterialet dekker perioden 1973–2000. Analysen viser at økningen i andelen skilte kan forklare om lag 30 prosent av den historiske økningen i uførepensjon hos menn, og om lag 10 prosent av økningen hos kvinner. Effekten av flere skilte er omtrent den samme hos menn og kvinner, men kvinner har økt sin uførepensjonering langt sterkere enn menn. Derfor forklarer flere skilte en mindre andel av (den sterkere) økningen hos kvinner.

## Innføring

Antallet uførepensjonister har økt gjennom flere tiår, og økningen har vært sterkere blant kvinner enn blant menn. Blant kvinner økte andelen av befolkningen mellom 50 og 60 år som var uførepensjonister fra 10 prosent i 1975 til 22 prosent i 2000. Blant menn økte andelen uførepensjonister noe mindre, fra 10 til 14 prosent i perioden. Økningen har vært spesielt sterk fra midten av 1990-tallet. Den sterkere økningen blant kvinner enn menn har det vært vanlig å se i sammenheng med økt yrkesaktivitet blant kvinner. Ellers har særlig to typer forklaringer dominert den akademiske og politiske debatten om årsakene til at flere har blitt uførepensjonister. Det ene er at endringer i arbeidslivet kan forklare økningen ved at det har blitt vanskeligere for de med helsesvikt å jobbe fram til 67 års alder (NOU 2000:27). Det andre er at gunstigere pensjoner har medført at flere har fått råd til å pensjonere seg før de fyller 67 år (Hernæs, Røed og Strøm 2002). Men det knytter seg usikkerhet til begge forklaringene. Denne artikkelen undersøker i hvilken grad en tredje faktor også kan bidra til å forklare økt uførepensjonering: om svakere familietilknytning generelt, og at flere er skilt spesielt, kan forklare hvorfor flere har blitt uførepensjonert. Skilsmisser har økt gjennom de tre siste tiårene. Estimerte andeler av ekteskapene som vil ende med skilsmisse (gitt at

skilsmisseratene skulle holde seg) økte fra 13 prosent i 1970 til 48 prosent i 2001 (SSBs skilsmissestatistikk 2002).

Det er flere grunner til å forvente at skilsmisser øker sannsynligheten for uførepensjonering. For det første representerer samlivsbrudd en stressfylt livshending som kan føre til betydelige tap, ikke ulikt effekten av oppsigelse eller arbeidsledighet. Slike livshendinger kan utløse en latent helsesvikt, eller forsterke eksisterende helseproblemer. For det andre virker ekteskapet beskyttende på helsen og på individenes muligheter til å ta vare på seg selv. Når ekteskapet bryter sammen, forsvinner denne bufferen. Resultatet kan bli dårligere økonomi og svekket mestringssevne i forhold til arbeidslivets krav.

Også tidligere har det blitt hevdet at endringer i familien, herunder at flere er skilt, kan forklare i det minste deler av økningen i uførepensjonering (Lindén 1970, Wærness 1982, Vaage 2001). Men tidligere har det ikke foreligget data som har gjort det mulig å analysere disse sammenhengene empirisk. Vi har fått tilrettelagt et datasett som gjør det mulig å analysere sammenhenger mellom historiske endringer i sivilstand og uførepensjonering over en 28 år lang periode fra 1973 til 2000. Innledningsvis gir vi en kort oversikt over de tre hovedforklaringene på økningen i uførepensjonering (endringer i arbeidslivet, gunstigere pensjoner, familieendring). Deretter presenteres dataene og metodene vi skal anvende. Vi vil så vise hvordan både uførepensjonering og andelen skilte har endret seg i perioden 1973–2000, før vi ved hjelp av modellbaserte analyser undersøker i hvilken grad flere skilte kan forklare økt uførepensjonering i perioden.

## Endringer i arbeidslivet

Uførepensjon kan tilstås hvis helsesvikt gjør det vanskelig å forsørge seg gjennom eget arbeid. En økning i uførepensjonering kan derfor skyldes at flere opplever helsesvikt eller at det har blitt vanskeligere for de med helsesvikt å forsørge seg gjennom eget arbeid. Objektive mål på helsesvikt som dødelighet og forventet levealder antyder imidlertid at folkehelsen har blitt bedre snarere enn verre de seneste tiårene (SSBs befolkningsstatistikk 2002). Det er derfor usikkert om dårligere folkehelse kan forklare økt uførepensjonering. Men det kan ha blitt vanskeligere for de som har helsesvikt å forsørge seg gjennom eget arbeid. I Norge har dette vært en dominerende forklaring på uførepensjonering siden 1970-tallet.

I de seneste årene har arbeidslivets betydning for uførepensjoneringen blitt framhevet av et offentlig utvalg ledet av Matz Sandman (NOU 2000:27). Utvalget skulle vurdere både årsakene til økt uførepensjonering og

virkemidler for å begrense uførepensjoneringen. Utvalget fant det sannsynlig at endringer i arbeidsmarkedet og i arbeidsmiljøet kan forklare økt uførepensjonering. Året etter at utvalget la fram sin innstilling inngikk myndighetene sammen med partene i arbeidslivet en intensjonsavtale om et «inkluderende arbeidsliv».

Ifølge Sandmanutvalget stiller «det nye arbeidslivet» krav til raske omstillinger og stor innsats hos den enkelte med påfølgende risiko for utbrenthet og uførepensjonering. Andersen (1998) finner en økning i andelen som rapporterer stor arbeidsmengde og at arbeidstempoet blir styrt av tidsfrister, rutiner eller kunder mellom 1989 og 1996. Det er derimot ikke påvist sammenhenger mellom stressende arbeid og uførepensjonering. Blekesaune (2003) finner tvert om at yrker med høyt arbeidstempo og mye stress har lav uførepensjonering, også når man tar hensyn til utdanning og inntekt. Tilsvarende funn har også blitt gjort av Kolberg (1991) samt Solem og Mykletun (1996).

## Høyere pensjoner

Den viktigste alternative forklaringen på økt uførepensjonering er at det har blitt mer fordelaktig å pensjonere seg ved at pensjonene har blitt høyere i forhold til den inntekten man kan få ved å jobbe lenger. Pensjonssystemet ble endret i 1967 ved at vi også fikk en tilleggspensjon som beregnes ut fra antall pensjonsår (år en har hatt pensjongivende inntekt) og pensjonspoeng (inntekten i disse årene). Maksimalt antall pensjonsår er 40. Uførepensjonister får godskrevet pensjonsår (og pensjonspoeng) fram til de fyller 67 år. Dette medførte at det var først de som ble født i 1940 (som fyller 67 år i 2007, 40 år etter 1967) som fikk full opptjening i tilleggspensjonen. Yngre generasjoner får derfor høyere pensjon enn tidligere og kan leve bedre som pensjonister. Samtidig har en økende andel av de yrkesaktive fått tjenestepensjon, som kommer i tillegg til folketrygden. Alle som jobber i offentlig sektor har tjenestepensjon, og i takt med økende andel offentlig ansatte (særlig kommuneansatte) har en større andel av arbeidsstyrken opptjening i offentlige tjenestepensjonsordninger. I tillegg har cirka halvparten av de som jobber i privat sektor tjenestepensjon (Pedersen 2001).

Det forhold at pensjonen har blitt mer sjenerøs tilsier at flere ønsker å pensjonere seg. Men det knytter seg usikkerhet til hvor sterk sammenhengen er mellom pensjonsopptjening og pensjoneringsatferd. Analyser basert på komparative data, og i mindre grad historiske endringer i kompensasjonsgraden i pensjonssystemene, antyder relativt svake sammenhenger mellom



kompensasjonsgrad og pensjoneringsatferd (Bratberg m.fl. 2001, Hernæs m.fl. 2002) Når det gjelder uførepensjonering, medfører trolig avgrensningskriteriet, at arbeids/inntektsevnen skal være redusert med minst halvparten på grunn av helsesvikt, at disse sammenhengene er svake. Det er således tvilsomt om bedre pensjoner kan forklare mye av økningen i uførepensjonering.

## Familieendring

En rekke undersøkelser har påvist helseforskjeller mellom gifte og andre grupper. Et typisk mønster er at gifte har best helse, skilte dårligere helse, mens ugifte er et sted imellom. Slike forskjeller har blitt påvist i dødelighet (Hu og Goldman 1990), sykelighet (Feinstein 1993), mental helse (Mastekaasa 1995) og i mottak av uførepensjon (Hansen 1998). Disse forskjellene i helse kan skyldes to ting. For det første kan helsen påvirker sannsynligheten for at man blir gift eller skiller seg, gjerne kalt seleksjon. For det andre kan det forhold at man er gift, ugift eller skilt påvirke helsen og evnen til egen forsørgelse.

Hvis skilsmisse påvirker risikoen for uførepensjonering kan det (som nevnt ovenfor) skje på to måter. For det første kan skilsmissen fremkalle en livskrise som individet ikke kommer over. Det kan utløse en latent helsesvikt eller forsterke eksisterende helseproblemer. For det andre mister skilte den beskyttelse som ligger i å være gift. I et ekteskap gjør den gjensidige sosiale kontrollen det lettere å opprettholde daglige rutiner med hensyn til ernæring og moderat alkoholforbruk. Ekteskap kan være viktig for å opprettholde sosiale relasjoner utad, og partnerne kan støtte hverandre i tilfeller av helsesvikt eller problemer i arbeidslivet. Ekteskap gir dessuten bedre økonomi ved at man kan dele på utgiftene til blant annet bolig. Ved oppløsning av ekteskapet kan individene stå svakere, med dårligere økonomi, mindre sosial kontroll/støtte, og færre sosiale relasjoner. Dermed kan det bli vanskeligere å mestre de problemene en må hanske med, herunder de kravene som arbeidet stiller. Det er rimelig å anta at den første effekten (skilsmisse utløser en krise som fører til helsesvikt) inntreffer forholdsvis raskt, mens den andre (skilsmisse gjør at en ikke lenger beskyttes av ekteskapet) manifesterer seg flere år etter en skilsmisse.

Empiriske undersøkelser som har anvendt paneldata viser at skilsmisse øker risikoen for helsesvikt målt som psykiske plager, men resultatene varierer med hensyn til hvor lenge helseproblemene varer etter skilsmissen. Booth og Amato (1991) studerte amerikanske paneldata med tre undersøkelsestidspunkt over åtte år. De fant økte psykiske plager i en periode på to år etter skilsmissen, hvoretter skilte var på samme nivå som gifte. Johnsen og

Wu (2002) analyserte de samme dataene, men med et fjerde undersøkelsestidspunkt lagt til (12 års observasjonslengde). De fant derimot at psykiske plager vedvarte i årene etter skilsmissen. I paneldelen til de norske levekårsundersøkelsene (tre observasjonstidspunkt) fant Mastekaasa (1995) redusert subjektiv velvære etter en skilsmisse, og effekten var den samme både på kort og lang sikt (dvs. 0–4 sammenlignet med 4–8 år etter skilsmissen). Gähler (1999) fant i svenske levekårsundersøkelser (to undersøkelsestidspunkt over 10 år) flere psykiske plager blant kvinner som hadde vært skilt kort tid enn blant kvinner som hadde vært skilt i flere år. Blant menn fant han imidlertid ingen tilsvarende reduksjon i psykiske plager i årene etter skilsmissen.

Longitudinelle sammenhenger mellom skilsmisse og uførepensjonering er mindre studert. I en fireårig oppfølgingsundersøkelse fra Ullensaker fant Eriksen, Natvig og Bruusgaard (1999) en sammenheng mellom skilsmisse og uførepensjonering. Fordi sammenhengen bestod også etter kontroll for helseproblemer ved det første undersøkelsestidspunktet, mente forfatterne at dette enten reflekterer helseproblemer forårsaket av skilsmissen eller redusert evne til å leve med helsesvikt etter en skilsmisse.

## Data og metoder

Vi er interessert i finne ut i hvilken grad flere skilte kan forklare den historiske økningen i uførepensjonering. Dette forutsetter longitudinelle data der vi kan følge individene over tid, og at vi kan undersøke når hendelsene skilsmisse og uførepensjonering inntreffer i forhold til hverandre. Vårt datamateriale gir mulighet til å undersøke denne sammenhengen fra 1973 fram til 2000. Vi skal undersøke i hvilken grad sivilstandsendringer, målt som andelen skilte, kan forklare den historiske økningen i uførepensjonering i perioden. Det som da forblir uforklart må forklares med andre forhold. Det siste inkluderer endringer i arbeidslivet og i arbeidsmiljøet samt økt pensjonsopptjening, men også forhold som vi så langt ikke har nevnt, herunder en mulig mer liberal tildeling av uførepensjon eller endrete sosiale normer og holdninger.

Dataene består av to typer individopplysninger. Opplysninger om sivilstand ble hentet fra det sentrale personregisteret i Statistisk sentralbyrå målt ved utgangen av hvert år fra 1973 til 1999. Opplysninger om uførepensjon ble hentet fra pensjonsdatabasen i Rikstrygdeverket målt ved utgangen av hvert år fra 1973 til 2000. Utgangspunktet for datakoplingen var den såkalte folketellingsdatabanken, som er et 8,33 prosents utvalg av landets befolk-

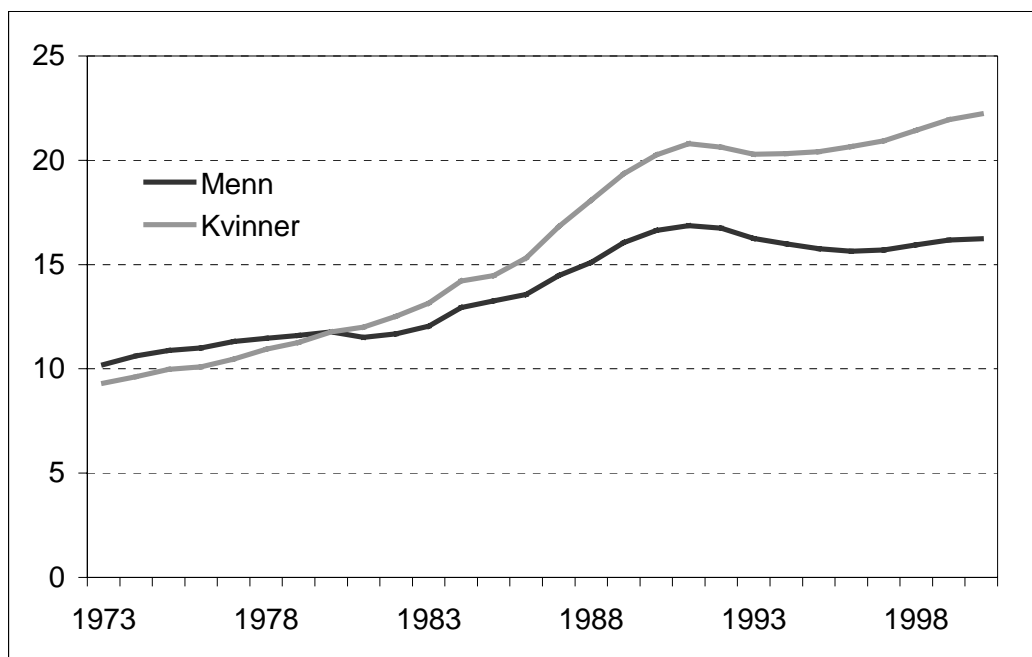
ning både i 1970, 1980 og 1990. Opplysninger om kjønn og fødselsår (alder) ble hentet fra folketellingene. Analysene avgrenses til de mellom 40 og 67 år. Før fylte 40 år er det i stor grad såkalte fødte uføre samt mindre grupper med alvorlig sinnslidelser som schizofreni som får uførepensjon. Disse gruppene er av mindre interesse for analyser av sammenhenger mellom sivilstand og uførepensjonering. Uførepensjonen kan ikke mottas etter fylte 67 år.

En forholdsvis triviell grunn til at det har blitt flere uførepensjonister er at det har blitt flere personer i aldersgrupper der mange blir uførepensjonister. I denne artikkelen beskrives utviklingen, ikke i antallet uførepensjonister, men i andelen av befolkningen som blir eller er uførepensjonister, og vi beskriver dette med kontroll for endringer i befolkningens størrelse og alderssammensetning. Vi ser således bort fra rent demografiske endringer som årsak til økt uførepensjonering.

## Historisk utvikling

Historiske endringer i uførepensjonering kan beskrives som endringer i andelen av befolkningene som er uførepensjonister (prevalens) eller som andeler som hvert år blir uførepensjonert (insidens). Figur 1 viser den historiske utviklingen i andelen i aldersgruppen 40–66 år som var uførepensjonister (prevalens) i perioden 1973 til 2000. Figuren er standardisert

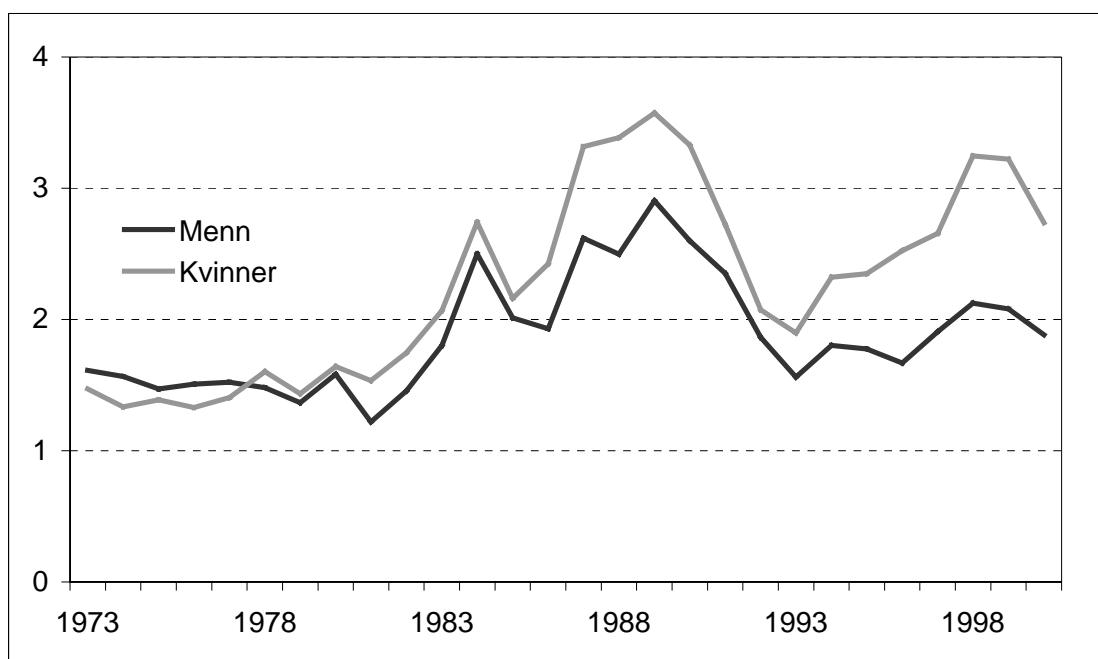
Figur 1: Endring i aldersstandardiserte andeler uførepensjonister mellom 40 og 66 år hos menn og kvinner i 1973 til 2000.



for alder (direkte metode med inntil 5 års aldersgrupper)<sup>6</sup>. Disse andelene økte fra cirka 10 prosent for begge kjønn til 16 prosent blant menn og 22 prosent blant kvinner. Med unntak av en periode først på 1990-tallet økte andelen uførepensjonister i nesten hele perioden.

Figur 2 viser andelen av de ikke-uførepensjonerte som ble uførepensjonert hvert år (i alderen 40–66 år) i samme periode. Insidensratene er kontrollert for endringer i alderssammensetningen ved hjelp av statistisk kontroll for alder innenfor logit-modeller. Estimatenes i figuren er ved 60 års alder. Disse alderskorrigerte insidensratene viser at det ikke har vært noen jevn økning i uførepensjoneringen i perioden. På 1980-tallet økte uførepensjoneringen dramatisk. Fra 1990 til 1993 gikk den tilbake, for senere å øke igjen. Disse svingningene reflekterer i stor grad endringer i politikken, det vil si i hvilken grad myndighetene har tatt sikte på å redusere uførepensjonering. I noen grad reflekterer endringene i uførepensjonering også forskyvninger mellom uførepensjon og mer kortvarige ytelser, som attførings- og rehabiliteringspenger, samt administrative endringer i når uførepensjoneringen registreres.

Figur 2: Endringer i uførepensjonering estimert ved 55 års alder hos menn og kvinner 1973 til 2000.

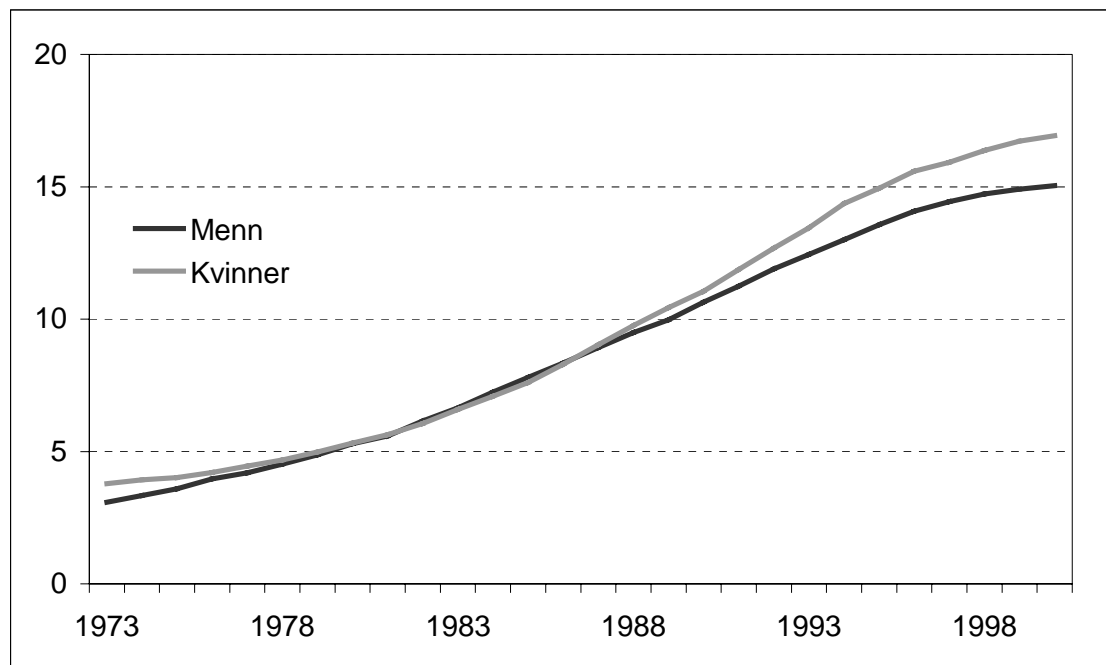


<sup>6</sup> Direkte metode betyr at man tar utgangspunkt i aldersspesifikke uførerater og beregner hvor stor andel som var uførepensjonister (i hele aldersgruppen 40-66 år) gitt en spesifisert aldersfordeling (alderspyramide). I dette tilfellet antok vi at det var like mange i hver aldersgruppe (en rett alderspyramide).

Andelene som ble uførepensjonert hvert år (figur 2) ser noe annerledes ut enn andelen som til enhver tid er uførepensjonister (figur 1). Figur 1 viste en økning i andelen uførepensjonister i hele observasjonsperioden 1973 til 2000, med unntak av noen få år først på 1990-tallet. Figur 2 viser at uførepensjoneringen likevel ikke var så mye høyere mot slutten enn i begynnelsen av observasjonsperioden. Forskjellen skyldes at andelen som ble uførepensjonert nesten hele tiden har vært høy nok til å sikre en økning i andelen som mottok uførepensjon. For vårt analyseformål er det mest interessant å se på endringene i uførepensjonering (insidensrater). En slik analyse viser når pensjoneringen finner sted. Andelene som ble uførepensjonert økte fra 1,5 prosent per år hos begge kjønn først i perioden til 2 prosent hos menn og 3 prosent hos kvinner mot slutten av perioden (figur 2).

Gjennomgående blir kvinner uførepensjonert tidligere enn menn. Økningen i kvinnelig uførepensjonering har vært spesielt sterk i relativt ung alder (før fylte 50 år). En sammenligning mellom menn og kvinner blir derfor følsom for ved hvilken alder beregningen gjøres. Hvis ratene i figur 2 hadde blitt estimert ved lavere alder enn 55 år ville forskjellen mellom menn og kvinner blitt større, ved høyere alder ville de ha blitt mindre.

Figur 3: Endringer i andelen skilte og separerte 1973 til 2000, menn og kvinner.



Figur 3 viser andelen av befolkningen (40–66 år) som var separert eller skilt hvert år i perioden 1973 til 2000. Også disse andelene er standardisert for alder (med inntil 5 års aldersgrupper etter den direkte metoden). Blant menn økte andelen fra 3 til 15 prosent i perioden. Blant kvinner økte den fra knapt

4 til 17 prosent. Kurvenes form viser at observasjonsperioden på 28 år fanger opp nesten hele den historiske økningen i andelen skilte/separerte ved at andelen skilte tok av omkring 1980 og flatet ut fram mot tusenårsskiftet. Tidsserien er altså lang nok til å fange opp en eventuell effekt av den historiske økningen i skilsmisser.

## Hvor mye forklarer økningen i skilsmisser?

Vi skal nå undersøke i hvilken grad det forhold at flere har blitt skilt/separert (figur 3) kan bidra til å forklare økningen i uførepensjonering (figur 2). Dette analyseres ved hjelp av en forløpsanalyse på individnivå. Først beskrives de historiske endringene i uførepensjonering uten statistisk kontroll for om personene er skilt eller ikke. Dernest beskrives de samme endringene med statistisk kontroll for om personene er skilt eller ikke. Forskjellen mellom de to analysene viser i hvilken grad flere skilte kan forklare de historiske endringene i uførepensjonering.

Både årlig variasjon og økningen fra første til siste del av perioden analyseres som årlige insidensrater. Det vil si sannsynligheten for at de som ikke var uførepensjonister ble uførepensjonister. Datamatriksen består av en observasjon (rad/record) for hver person for hvert år. En person kan således observeres i for eksempel 20 år, fra 1973 til 1992, da vedkommende enten blir uførepensjonert, når 67 års alder eller dør/emigrerer (høyresensurert).<sup>7</sup> Alder (fortsatt avgrenset til 40–66 år) endres hvert år, og sivilstand og status som uførepensjonist (uførepensjonering) kan endres hvert år.

Tabell 1 beskriver tre trekk ved endringene i uførepensjoneringen i perioden 1973–2000, alle målt som logit-koeffisienter. Første linje (årlig variasjon) beskriver variasjonen mellom de 28 observasjonsårene målt som standardavviket mellom de 28 observasjonsårene (koeffisientene som representerer årene). Dernest har vi delt inn de 28 observasjonsårene i sju fireårsperioder: 1973–1976, 1977–1980, 1981–1984, 1985–1988, 1989–1992, 1993–1996 og 1997–2000. Andre linje (4-årig variasjon) beskriver variasjonen mellom disse sju fireårsperiodene, også målt som standardavvik (mellom koeffisienter). Nederste linjen (første–siste 4-årsperiode) beskriver den historiske endringen fra første (1973–1976) til siste fireårsperiode (1997–2000).

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<sup>7</sup> Ettersom det er svært få som går fra uførepensjon til jobb, har vi sett bort fra at en person kan bli uførepensjonert flere ganger.

Tabell 1: Hva kan flere skilte forklare av historiske endringer i uførepensjonering?

	Menn		Kvinner	
	<i>uten skilte/andre</i>	<i>med skilte/andre</i> <sup>8</sup>	<i>uten skilte/andre</i>	<i>med skilte/andre</i>
Årlig variasjon (st.avvik)	,227	,217	,336	,312
sivilstand forklarer		,010		,025
i prosent		4,3		7,3
4-årlig variasjon (st.avvik)	,192	,180	,307	,292
sivilstand forklarer		,012		,015
i prosent		6,3		4,8
Første til siste 4-års periode	,265	,185	,746	,673
sivilstand forklarer		,081		,074
i prosent		30,4		9,9

Venstre kolonne (uten skilte/andre) viser de historiske endringene i uførepensjonering med statistisk kontroll for kun alder. Høyre kolonne (med skilte/andre) viser tilsvarende endringer med statistisk kontroll også for andelen som var skilt/separert. Tabellen viser i hvilken grad målene på (årlig eller fireårig) variasjon samt historisk endring i uførepensjonering (fra første til siste fireårsperiode) endres med statistisk kontroll for andelen av befolkningen som var skilt i perioden.

Den årlige variasjonen i uførepensjonering er større blant kvinner (0,336) enn blant menn (0,227). Den fireårige variasjonen i uførepensjonering er også større blant kvinner (0,307) enn menn (0,192). I hovedsak skyldes dette en sterkere økning i uførepensjonering blant kvinner enn blant menn. Den historiske økningen i uførepensjonering i hele perioden framgår av linjen «første til siste 4-års periode». Blant kvinner økte uførepensjonering tre ganger mer enn blant menn i perioden 1973–76 til 1997–2000 sett under ett (logit-koeffisienter på 0,746 hos kvinner versus 0,265 hos menn).

Tabell 1 viser i hvilken grad økningen i andelen skilte kan bidra til å forklare økt uførepensjonering. Når vi tar hensyn til om personene var skilt/separert (og de hadde ikke giftet seg på nytt), blir den historiske økningen i uførepensjonering mindre. Hos menn reduseres den historiske økningen i uførepensjonering fra 0,265 (uten kontroll for skilt/separert) til 0,185 (med kontroll for om individene er skilt/separert). Forskjellen mellom disse to økningene (0,081) kan følgelig forklares med at flere har blitt skilt i perioden. Hos menn betyr dette at 30 prosent av økningen i uførepensjonering (0,081 av 0,265) kan forklares med at flere menn har blitt skilt.

<sup>8</sup> Andre inkluderer gifte, aldri gifte samt enker/enkemenn.

Hos kvinner økte uførepensjoneringen tre ganger mer enn blant menn (logit-koeffisienter på 0,746 versus 0,265). I absolutt forstand kan den økte andelen skilte forklare omtrent like mye av den historiske økningen i uførepensjonering blant kvinner (0,074) som blant menn (0,081). Men i relativ forstand kan den økte andelen skilte forklare en mindre andel av økningen i uførepensjonering blant kvinner enn blant menn. Dette fordi uførepensjoneringen har økt langt mer blant kvinner (0,746) enn blant menn (0,265). Blant kvinner kan den økte andelen skilte/separerte forklare 10 prosent av økningen i uførepensjonering mellom første og siste fireårsperioden (0,074 av 0,764).

En økning i skilsmisser er ikke den eneste endringen i den norske familien i de seneste tiårene. Om vi ser på endringer i sivilstand har det vært en enda mer dramatisk endring i andelen som er gift. Mesteparten av reduksjonen i andelen gifte kan forklares med at flere lever i samboerskap<sup>9</sup>, men det har også blitt flere som lever alene (SSBs Samboerstatistikk 2002). Det siste skyldes blant annet flere skilsmisser (Figur 3). Vi har undersøkt om reduksjonen i andelen som er gift kan forklare noe av økningen i uførepensjonering i perioden 1973–76 til 1997–2000 ut over det som kan forklares med flere skilte (i tabell 1). Men svaret er nei (ikke vist i tabeller). I den grad sivilstandsendringer kan forklare økningen i uførepensjonering så skyldes dette ene og alene økningen i andelen som har blitt skilt.

## Livskrise eller beskyttende buffer?

Så langt har vi vist at flere skilsmisser kan forklare en ikke ubetydelig del av økningen i uførepensjonering. Men vi har ikke forklart hvorfor skilte personer har større sannsynlighet for å bli uførepensjonert, og dermed bidra til økt uførepensjonering. Som nevnt kan vi skille mellom to hovedforklaringen på dette. Før det første representerer skilsmisse en krise som noen ikke kommer over, og med økt risiko for uførepensjonering som resultat. For det andre virker ekteskapet beskyttende på helsen og på individenes muligheter til å ta vare på seg selv. Når ekteskapet bryter sammen, forsvinner denne bufferen. Kriseforklaringen impliserer økt uførepensjonering spesielt de første årene etter en skilsmisse. Bufferforklaringen impliserer at skilte har høyere uførepensjonering uansett hvor lenge de har vært skilt. Det er mulig å

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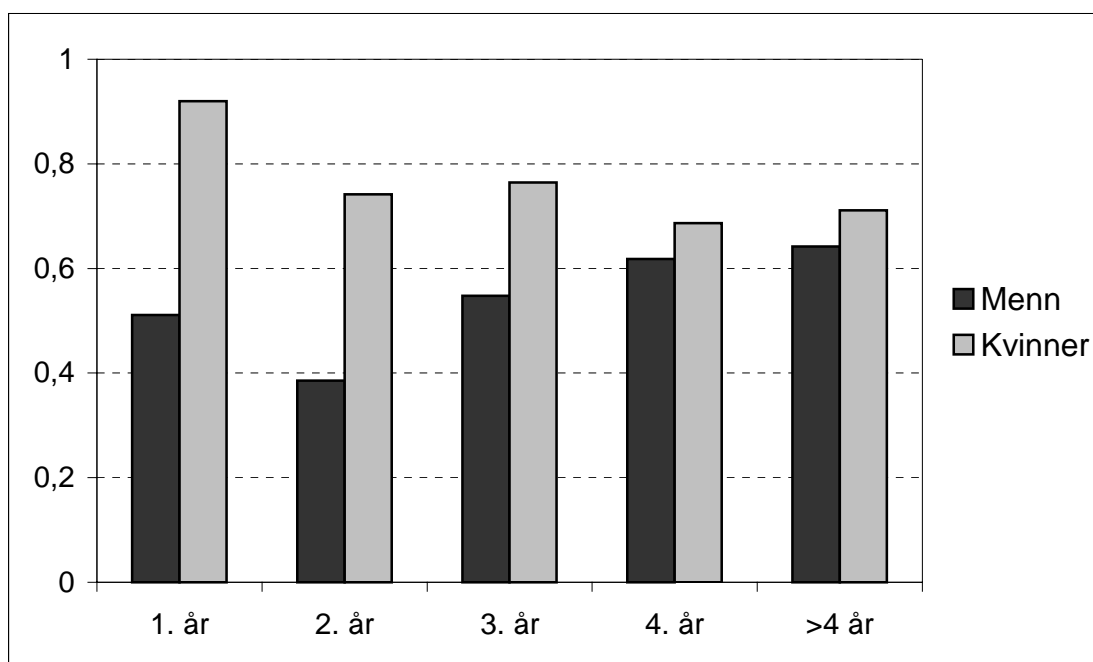
<sup>9</sup> Det er usikkert hvordan flere samboerer virker inn sammenhengene som beskrives i denne artikkelen. Noen skilte lever i samboerskap, noe som kan gi dem en beskyttelse som svarer til det å være gift. Samboerskap kan derimot være mindre stabile enn ekteskap, noe som kan medføre at individene blir mer sårbare.



skille mellom disse to forklaringene ved å undersøke om uførepensjoneringen er høyere de første årene etter en skilsmisse enn i senere faser etter skilsmissen.

Figur 3 viser at skilte personer har større sannsynlighet for å bli uførepensjonert enn gifte, som her angis som null på y-aksen. Dette endres litt, om enn ikke mye, i årene etter en separasjon/skilsmisse. Ettersom skilte og separerte behandles som én tilstand, betyr dette vanligvis i årene etter en separasjon som fører til skilsmisse. De første årene etter skilsmissen har kvinner noe sterkere økning i risikoen for å bli uførepensjonert enn menn, men fra og med det fjerde året er det små forskjeller mellom menn og kvinner. Ettersom det tar noe tid, gjerne et par år eller mer, fra helsen svikter til en får uførepensjon, er det uklart hva som er årsak og virkning i relasjonen mellom samlivsbrudd og helsesvikt i de første årene etter en skilsmisse. Økt uførepensjonering de første årene etter en skilsmisse hos kvinner kan reflektere en krise som følger av selve samlivsbruddet. Men det kan også reflektere at de som har dårlig helse har større risiko for å bli skilt (Blekesaune 2003).

Figur 3: Skiltes sannsynlighet for å bli uførepensjonert i årene etter en separasjon/skilsmisse sammenlignet med giftes, angitt som logit-koeffisienter.



Menn har lavere risiko for å bli uførepensjonert de første par årene etter en skilsmisse enn senere (fra og med det fjerde året). Hos menn er det således bufferforklaringen som er grunnen til at flere skilte kan bidra til å forklare en historisk økning i uførepensjonering. Hos kvinner er det også i all hovedsak

bufferforklaringen som er grunnen til flere skilte kan bidra til å forklare økt uførepensjonering. I tillegg synes kriseforklaringen, eventuelt i kombinasjon med helsemessig seleksjon, å være en marginal tilleggsforklaring til at flere skilte har ført til økt uførepensjonering blant kvinner.

Vi har supplert anslagene i tabell 1 ved å legge inn en tidsforskyvning mellom observasjonen av sivilstand (det som forklarer) og eventuell uførepensjonering (det som blir forklart). Dermed kan vi rendyrke bufferforklaringen, samtidig som vi kan være rimelig sikre på at skilsmisene (det som forklarer) er uavhengig av uførepensjonering (det som blir forklart). Ettersom vi ikke har data om sivilstand før 1973 betyr dette at de første årene fra og med 1973 ikke kan inngå i denne analysen. Analysen avgrenses derfor til perioden fra og med andre (1977–1980) til siste fireårsperiode (1997–2000). Ved å legge inn en tidsforskyvning på fire år mellom observasjonen av skilsmisse (sivilstand) og eventuell uførepensjonering, reduseres skilsmisenes betydning for økt uførepensjonering bare med vel en prosent hos kvinner, og med knapt en prosent hos menn (tabell ikke vist). Kortere tidsforskyvninger betyr enda mindre endringer i disse estimatene. Dette støtter bufferforklaringen. I tillegg viser det at effekten av det å være skilt (det som forklarer) i tabell 1 er uavhengig uførepensjoneringene (det som forklares).

## Diskusjon

Norsk trygdeforskning har presentert flere mulige forklaringer på økningen i uførepensjonering de seneste tiårene. Det har blitt pekt på at (mulige) endringer i folkehelsen, arbeidsmiljøet, stønadssystemet, og familien kan ha bidratt til økt uførepensjonering. Mange av disse forklaringene har helt sikkert atskillig relevans for å forklare økt uførepensjonering. Men med få unntak er disse sammenhengene dårlig dokumentert i norsk forskning. Estimaten i denne artikkelen antyder at flere skilte kan forklare en ikke ubetydelig del av den økte uførepensjoneringen både hos menn og kvinner. Selv om det knytter seg usikkerhet også ved disse anslagene, er sammenhengen mellom det forhold at flere har blitt skilt og økt uførepensjonering blant de bedre dokumenterte sammenhengene bak den økte uførepensjoneringen.

Sammenhengen mellom skilsmisestatus og uførepensjonering er ikke (vesentlig) sterkere de første årene etter en skilsmisse enn senere. Det tyder på at det er varige trekk ved statusen som skilt som gir denne gruppen høyere sannsynlighet for å bli uførepensjonert. Trolig reflekterer dette at

skilte ikke lenger nyter godt av den beskyttelsen som ekteskapet gir. Hvilke trekk ved ekteskapet som beskytter mot helsesvikt og tapt evne til egen forsørgelse kan ikke denne studien bestemme. Vi har antydnet at sosial kontroll og gunstigere helseatferd, bedre økonomi, bedre sosiale relasjoner samt omsorg og støtte kan alle være trekk ved ekteskapet som beskytter individene. Det forhold at det er empiriske sammenhenger mellom skilsmisse og uførepensjonering, tilsier at mulige mekanismer bør undersøkes nærmere.

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# Working conditions and early retirement: A prospective study of retirement behavior

*Morten Blekesaune & Per Erik Solem*

## Abstract

This paper investigates the impact of working conditions on individual retirement for 270 occupations. It combines survey data for estimates of job strains, census data for occupations, and income and social insurance/security data, for the transition from work to retirement for 18,847 Norwegian employees between the ages of 60 and 67. Retirement was identified by a drop in work-related income and studied both jointly and separately for disability and non-disability retirement. Data were analyzed using logistic regression (competing risk) «duration» models. Findings indicate that disability retirement is related to physical job strains. Among men, both pathways of early retirement are related to low autonomy in job tasks. Furthermore, psychological job stress may reduce non-disability retirement. The findings are discussed in relation to (a) the prospect of reducing early retirement by changing working conditions and (b) the distributional impacts of actuarial principles in pension systems.

## Introduction

Extensive early retirement has occurred over the last few decades in OECD countries (Bløndal and Scarpetta 1998). After a period of public policies stimulating early exit in the 1970s and 1980s, the 1990s was a period of reconsidering early exit policies. In the first decade of the new century, the changing demographics have increasingly forced governments to seek to reduce early retirement and the costs of pension schemes (Esping-Andersen et al. 2002, Taylor 2002, Van Dalen and Henkens 2002). More people will be retiring during the first part of the 21st century, as the baby-boom generation reaches retirement age. Simultaneously, relatively smaller cohorts born toward the end of the 20th century will be in ages of occupational work. Thus, the typical pay-as-you-go pension programs found in most OECD countries are running into financial problems.

If retirement could be delayed, the financial soundness of retirement programs would improve, as more people would contribute and fewer would receive pensions. The timing of the retirement transition depends on a

number of factors: 1) the match or mismatch between work ability and job requirements (push factors), 2) the compensation level in the pension plan compared with incomes from work (pull factors), and 3) the nonmonetary utilities/disutilities from continuing work, such as job strains versus the attractiveness of increased leisure time (jump factors). This paper examines the timing of exit from work as a function of occupational characteristics such as working conditions or job strains among Norwegian employees between the ages of 60 and 67. If improvements in working conditions lead to later retirement, social security programs could realize considerable savings. Employers would gain through reduced contributions to occupational retirement programs and on-the-job training of new employees, and it would provide advantages for the elderly workers themselves. How strong is the timing of retirement related to working conditions? What kinds of working conditions are important? What kinds of retirement programs are affected? This paper attempts to answer these questions.

## **The context of the retirement transition**

The Norwegian National Social Security comprises all Norwegian residents. It includes old age pension, available for all residents beginning at age 67; early retirement is defined as retirement that occurs before that age. The main options are a disability pension and occupational early retirement pensions (AFP: a negotiated early pension scheme). The eligibility age within the AFP has been reduced from 66 years in 1989 to 62 years in 1998. AFP covers about 50 % of employees in the private sector and all public sector workers. Overall, approximately 60 % of the labor force is covered by AFP. In some professions, public sector employees may also retire at 62 under conditions of seniority outside the AFP system.<sup>10</sup> This paper examines two pathways of early retirement: the disability pension and any other type of early retirement, which is primarily AFP.

Retirement typically includes two transitions. One is to leave occupational work; the other is to begin accessing a retirement pension. These events often coincide, as when a worker leaves work and begins drawing an old age pension simultaneously. But there are exceptions. Disability retirement typically involves a period of sickness benefits between leaving the job

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<sup>10</sup> For elderly workers, the unemployment benefit may also be regarded as an early retirement program. However, this benefit is not often utilized as a retirement program, and there are no obvious reasons why becoming unemployed should be related to working conditions in previous employment.

and being granted a pension. The application for a disability pension may also involve medical screenings and evaluations of occupational rehabilitation prospects. Bridging jobs can also create a gap between leaving work and drawing a pension. Access to a Norwegian disability pension requires at least a 50 % reduction in the ability to work. Hence, some people combine a partial disability pension with some income from work. The occupational early retirement (AFP) pension may also be combined with work income.

Early retirement is sometimes a free choice for elderly workers, but it may also be imposed upon them if they are not able or not given the opportunity to continue their work. Reduced health may create a discrepancy between job requirements and working capabilities, which may, in turn, lead to early retirement, usually in form of a disability pension. We expect that this situation is most likely to occur where work entails hard physical tasks and is stressful. Early retirement may also result from a perception by elderly workers that they are better off retired than working. The economic literature on retirement assumes that elderly workers would prefer to have both income and leisure, but that they are likely to trade some income for leisure when the opportunity presents itself (Quinn 1977, Leonosio 1996). How likely they are to make this trade may vary as a function of their job characteristics (Quinn 1978, Filer and Petri 1988). We hypothesize that elderly workers with unpleasant jobs are more likely than those with attractive occupations to trade income from continued occupational work for increased leisure.

## Previous studies

The following literature review is limited to studies of retirement behavior that include measures of working conditions as explanatory variables. To the extent possible we have utilized studies with longitudinal data that include measures of job strains, and findings are surveyed with various statistical controls. For the purpose of this paper, covariates for age, education, income, and health have been examined since these variables may explain why job characteristics are correlated with retirement behavior. Working conditions are sometimes measured at the occupational level and sometimes at the individual level. At the occupational level, job characteristics can be estimated from other data sources such as survey data, when the sample merely provides information about occupations. These estimates are likely to be less influenced by the preferences between work and leisure than are those reported by the individual workers for whom retirement behavior is studied. Thus, policy implications should be more apparent for occupational-level than for

individual-level job strains. If job characteristics vary within occupations, occupational-level characteristics will, however, be less than accurate.

Quinn (1978) used seven binary job characteristics based on the Dictionary of Occupational Titles (DOT) to investigate the proportion of white males that had retired between the ages of 58 and 63 within each occupation (using 3-digit census codes) in the 1969 wave of the US Retirement History Study (N = 4,845). He found correlations between job strains and early retirement to be in the expected direction. Those with repetitive jobs, physical demands, and low job autonomy were more likely to be retired. Those involved in the entire job process were less likely to retire than were those less involved. Hayward and Grady (1986) also made use of the DOT occupational-level estimates of job characteristics, from which they developed four multi-item scales labeled substantive complexity (i.e. extensive training and ability to control the nature and pace of the work), physical demands (i.e. strength, climbing, kneeling), manipulative skill (i.e. coordination and dexterity), and social skill (i.e. dealing/communicating with people). Yearly transition rates into and out of 246 occupations, as well as exit from the labor force, were estimated from the US March Current Occupation Survey for the years 1968-1970. They found that early exit from the labor force was associated with low degree of substantive complexity and high physical demands. Occupations characterized by extensive training, low physical demands, and workers' ability to control the nature and pace of their work (substantive complexity) reduced the likelihood of retirement. A limitation of both these studies was failure to control for such individual characteristics as education and income.

Hayward (1986) did control for individual characteristics in an analysis of the same four occupational level characteristics (substantive complexity, physical demands, manipulative skill, and social skill) on retirement behavior among male employees. He used panel data from the National Longitudinal Survey of Older Men, spanning interview waves from 1973 to 1981. Social skill increased the probability of retirement before 62 years of age, whereas manipulative skill (coordination and dexterity) reduced the probability of retirement before age 62 (N = 697). An association between substantive complexity and retirement between 62 and 64 was no longer significant when controlling for (hourly) wage (N = 440). Using US census data (March, 1984, CPS sample), Filer and Petri (1988) investigated 27 binary DOT job characteristics and compared average retirement ages among men from 334 occupations (in 1975-1979) controlling for income (at occupation level). They found earlier than normal retirement in occupations with heavy physical demands, stress, and repetitive jobs.



Hayward et al. (1989) investigated the effect of the four DOT occupational characteristics (substantive complexity, physical demands, manipulative skill, and social skill) on retirement behavior among male employees from the National Longitudinal Survey of Older Men (NLS), spanning interview waves from 1966 to 1981 (N = 2,816). Early retirement was associated with occupations being low in substantive complexity and high in physical demands. These effects persisted after the researchers controlled for education, income, and health. Chiricos and Nestel (1991) also made use of the 1966–1981 panel data from the NSL (N = 3,038). Contrary to the previous studies reviewed, they also utilized three binary occupational characteristics at the level of the participating individuals in the NSL: physically active jobs; demanding, repetitive jobs; and sedentary, white-color jobs. Those with physically active jobs were more likely to retire with a disability pension than were those with sedentary, white-color jobs. In Norway, Solem and Mykletun (1997) studied the relationships among seven self-reported working condition variables and early retirement between two waves of the national Level of Living survey spanning 11 years (1980–1991, N = 206). Early exit (at ages 55–67 in 1991) was associated with non-stressful work, little variation in job tasks, poor climatic conditions at work, and either rare and very frequent cooperation with colleagues on the job. These associations remained after the researchers controlled for health, income, and professional training.

There are several studies that address only disability retirement, and some of them include occupational characteristics like job strains as explanatory variables. Kolberg (1991) estimated physical and stressful job strains for 32 occupations from three survey studies from Statistics Norway. An analysis of disability retirement was then made on the accessing of a disability pension in the 1970s (N = 18,440) and the 1980s (N = 20,929) by combining census data from 1970 and 1980 and administrative data from the Norwegian Social Insurance Administration. Disability retirement was associated with physical job strains. A similar finding was made by Mykletun (2000), who estimated three types of job strain (physical strains, stressful work, and low variation in job tasks) for 32 businesses and trades from survey data (the Norwegian Level of Living Survey, 1987). An analysis of disability retirement from the KIRUT database<sup>11</sup> for employed Norwegians (N = 44,911) for the years 1989 through 1994 indicated that

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<sup>11</sup> The KIRUT database comprises administrative data for studies of individual careers inside, outside, and within the Norwegian social insurance/security system. It comprises 10% of the national population.

only physical strains were associated with disability retirement when two of our variables of interest – income and education – were controlled.

Krause et al. (1997) studied the relationship between disability retirement and a large number of self-reported physical and organizational aspects of the work environment among 1038 Finnish men who were surveyed over a 4-to-5-year period. After statistically controlling for age, income, and health, significant associations remained between disability retirement and hard physical work, uncomfortable working positions, and exposure to noise. Holte, Krogstad and Magnus (2000) studied the impact of three self-reported work characteristics on disability retirement during an 11-year observation period in Norway (N = 47,000). After controlling for age and a binominal measure of health, disability retirement was significantly associated with hard physical work, low job autonomy, and both high and low (as opposed to moderate) levels of stress on the job.

Taken together, these studies provide ample evidence that hard physical work increases the risk of early retirement (Quinn 1978, Hayward and Grady 1986, Filer and Petri 1988, Hayward et al. 1989) and, more specifically, the risk of disability retirement (Chiricos and Nestel 1991, Kolberg 1991, Krause et al. 1997, Mykletun 2000, Holte et al. 2000). There is also some evidence that repetitive jobs (Quinn 1978, Filer and Petri 1988, Solem and Mykletun 1997) and low autonomy jobs (Quinn 1978, Holte et al. 2000) are associated with early retirement. These findings have been made, however, with limited control for individual-level resource variables like education and income. Hence, it is not clear whether the associations reflect the fact that repetitive and low autonomy jobs are so unpleasant that early retirement (leisure) becomes comparatively more attractive, or if those who hold these jobs are easy to replace and in low demand by employers. The role of job stress is even less clear. Filer and Petri (1988) find greater incidents of early retirement within stressful occupations; whereas Solem and Mykletun (1997) find less early retirement among those reporting high levels of job stress; and two Scandinavian studies indicate that job stress represents no risk for disability retirement (Kolberg 1991, Mykletun 2000).

We do not know if job strains affect the retirement behavior of men and women differently,<sup>12</sup> as several of these reported studies include only men. When women are included, gender differences have typically been ignored. Even when men and women have been compared, the emphasis has typically been on spouses' coordination of their retirement behavior

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<sup>12</sup> Weaver (1994) finds no such studies in a literature review from the USA.

(Pozzebbon and Mitchell 1989, Gustman and Steinmeier 2000, Dahl, Nilsen and Waage 2003) rather than on differences between the genders, per se.

## Data and methods

The present empirical analysis combined four sources of data: The sample studied was an 8.33% sample of the 1990 Norwegian population from the Census Databank (Norwegian Social Science Data Services and Statistics Norway). The census data provided information about individual and household characteristics, including occupations. Administrative data from Statistics Norway and the National Social Insurance Administration provided annual information about marital status, work-related incomes, and receipt of disability pension. Survey data from Statistics Norway provided estimates of working conditions for each occupation.

The timing of retirement was identified in this study according to two income thresholds: work-related incomes above 12,000 USD in two subsequent years followed by one year below 9,000 USD (1995 figures, price adjusted for other years). Work-related incomes include (besides incomes from work) a few benefits like sick pay and unemployment payment, but do not include pensions or incomes from savings/assets or benefits obtained during participation in rehabilitation programs after one year of sick leave/pay. If the individual had been granted a disability pension by the end of the year following an income drop below 9,000 USD, the retirement transition was classified as disability retirement; otherwise it was deemed to be a non-disability retirement. In any case, the retirement transition was set to the end of the year before a drop in work-related incomes was observed (on an annual basis). Individuals with a less clear drop in work-related incomes were removed from the analysis. Retirement could be measured with end-of-the-year observations from 1991 to 1999 for those between 60 and 67 years of age. As the analysis included those between 60 and 67, new cohorts of 60-year-olds substituted old cohorts of 67-year-olds for each subsequent year. Death, emigration, and age of 67 were treated as right censored, i.e. situations in which early retirement was no longer possible. The remote possibility that some of those who had retired might resume occupational work was not considered.

Estimates of working conditions were based on three Norwegian Level of Living surveys from 1987, 1991, and 1995 for 270 Nordic occupational codes (NYK) for workers between 40 and 67 years of age. Three types of work strains were estimated: physical strains, stressful work, and low

autonomy in the job. The three types of job strains are based on indexes with two or three items.<sup>13</sup> The construction of the three job strains is presented in the Appendix.<sup>14</sup> Job strains were calculated as simple means for each of the 270 occupations for men and women separately, based on the assumption that men and women may experience different job strains in each occupation. The analysis was restricted to employees, as identified in the 1990 census. Occupations with earlier than normal retirement age (police or fire department work, military services, or employment in aviation) were excluded from the analysis.

The data matrix was organized with yearly observations/records from 1991 to 1999. First, any early retirement was analyzed by (binominal) logistic regression within each year conditional on whether one was still working the year before. Next, the two pathways of early retirement (disability and non-disability retirement) were analyzed by multinomial logistic regression. Here, disability and non-disability retirement were treated as competing risks (Allison 1984), i.e. one pathway excluded the other, which is usually the case in real life, and both pathways were compared with the probability of still working. Age, education, marital status, and previous income were used for statistical control. Calendar years were represented by dummy variables (not presented in the tables). Separate models were estimated for men and women, and gender differences were calculated. Age and marital status in the previous year were treated as time-dependent explanatory variables, and occupational characteristics (job strains) based on the 1990 census-recorded occupation served as time-invariant explanatory variables, as did the status of cohabitation, which was known from the 1990 census data only.<sup>15</sup> Sandwich (Huber/White) estimators of the standard errors accounted for the non-independence of the multiple observations for each person.

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<sup>13</sup> These items comprise nearly all job characteristics in the level of living data. The further items included exposure to dangerous substances/machines and individual responses to working conditions.

<sup>14</sup> We were not able to make estimates for all 310 occupational codes found in our 1990 census data. The occupational codes had a hierarchical structure of three digits. The merging process applied the highest number of digit codes possible. (If possible, we used the 3-digit code; if not, the 2 first digits; alternatively the first digit only.)

<sup>15</sup> Changes in occupations or cohabitation status in the observation period was not known. The majority of those cohabiting were previously married (separated, divorced, or widowed); only 14% had never been married.

## Descriptive analysis

Table 1: Descriptive statistics for the sample. 10,927 men and 7,920 women. Mean values for the observational years. Individuals with equal weights.

Variables:	Men			Women			Low	High
	Mean	S.D.	%	Mean	S.D.	%		
Years observed	3.2	2.0		3.2	2.0		1	7
Retired per year			15			14	0	1
Disability retirement			4			4	0	1
Non-disability retirement			11			11	0	1
Age	62.4	2.1		62.4	2.1		60	66
Never married			6			6	0	1
Married			83			71	0	1
Widowed			3			13	0	1
Separated/divorced			8			10	0	1
Cohabiting (1990)			2			2	0	1
Education	10.4	3.2		9.7	2.5		7	18
Income 1985	6.5	1.9		3.8	1.8		0	10
Physical strains	1.2	0.8		1.1	0.7		0	4
Job stress	1.3	0.4		1.2	0.4		0	4
Low autonomy	1.3	0.7		1.6	0.7		0	4

Table 1 presents descriptive statistics. Men and women were observed, on average, for 3.2 years, up until a possible retirement within the observational window defined by both historical (1991–1999) and individual (60–66 years) time. Within each observational year, about 15 % of elderly workers retired, about two-thirds with a non-disability retirement. The proportion who retired increased somewhat with age (see Table 2 below). A higher proportion of men than women were (still) married, whereas widowhood was far more typical for women. The income variable was measured as early as 1985, in order to be independent of the retirement processes studied in the 1990s. Income was given a ceiling of (approximately) 60,000 USD, in order to avoid deviant observations in the analysis. Men had, on average, much higher incomes than did women. The three occupational strain variables were constructed with values that could range from 0 to 4 (see Appendix). Men worked more often in occupations with physical strains and in stressful work than women did; whereas women were much more likely to have low autonomy jobs.

## Regression results

The regression results are presented in Table 2 (any retirement) and Table 3 (disability and non-disability retirement). Within the marital status variable, «married» is reference category, set to zero. Dummy variables for calendar year and constant terms are not presented. Statistically significant coefficients (at 5% level in two-tailed tests) are spaced out.

Table 2: Logistic regression of early retirement by characteristics of the individuals, their families, and occupations. Logit coefficients with sandwich (Huber) standard errors (in parentheses).

	Men		Women		Gender difference	
Age (+65)	<b>.29</b>	(.01)	<b>.32</b>	(.01)	<b>-.04</b>	(.01)
Never married	.06	(.07)	-.14	(.08)	.20	(.11)
Widowed	.10	(.09)	<b>-.20</b>	(.06)	<b>.31</b>	(.11)
Separated/divorced	.00	(.07)	<b>-.21</b>	(.07)	<b>.21</b>	(.10)
Cohabiting	.14	(.13)	.10	(.16)	.04	(.21)
Education (+10)	<b>-.08</b>	(.01)	<b>-.04</b>	(.01)	<b>-.04</b>	(.01)
Income 1985 (+5)	<b>.04</b>	(.02)	.02	(.02)	.02	(.02)
Income 1985 squared	<b>-.02</b>	(.00)	<b>-.03</b>	(.00)	.00	(.01)
Physical strains	.02	(.02)	<b>.09</b>	(.03)	-.07	(.04)
Job stress	-.03	(.04)	-.09	(.06)	.06	(.07)
Low autonomy	<b>.17</b>	(.02)	.00	(.03)	<b>.17</b>	(.04)

Hard physical work is associated with disability retirement among both men and women (see Table 3). Previous studies (Chiricos and Nestel 1991, Kolberg 1991, Krause et al. 1997, Holte et al. 2000, Mykletun 2000) have also found an association between hard physical work and disability retirement, which could reflect one or more of two processes: 1) It is more difficult to perform a job that entails hard physical work than one that requires only non-physical work when one's physical capabilities are reduced by poor health. 2) Jobs entailing hard physical work may, in themselves, contribute to poor health and reduced working capability.

Hard physical work may affect the probability of non-disability retirement of men and women differently (see the comparison of men and women in Table 3). Thus hard physical work is not generally associated with early retirement among men, as opposed to women (see Table 2). It is difficult to explain the different findings for men and women. One reason could be that men in such jobs can acquire a disability pension so easily that this option actually reduces their likelihood of accessing a voluntary retirement (AFP) pension (which typically provides slightly lower compensation). Another

reason could be that men who work in these jobs are typically in such private sector jobs as construction, where many are not entitled to a voluntary early retirement (AFP) scheme. Women whose jobs entail hard physical work tend, in contrast, to work in the public sector (which in Norway includes hospitals and nursing homes), where voluntary early retirement is available.<sup>16</sup>

Table 3: Multinomial logistic regression of disability and non-disability retirement by characteristics of the individuals, their families, and occupations. Logit coefficients with sandwich (Huber) standard errors (in parentheses).

	Men		Women		Gender difference	
<i>Disability retirement</i>						
Age (+65)	<b>.12</b>	(.01)	<b>.15</b>	(.02)	-.02	(.02)
Never married	-.22	(.13)	-.23	(.17)	.00	(.21)
Widowed	.07	(.16)	-.01	(.10)	.08	(.19)
Separated/divorced	.02	(.12)	.18	(.12)	-.17	(.16)
Cohabiting	<b>.66</b>	(.19)	-.27	(.31)	<b>.93</b>	(.36)
Education (+10)	<b>-.10</b>	(.01)	<b>-.10</b>	(.02)	.00	(.02)
Income 1985 (+5)	.00	(.03)	<b>.07</b>	(.03)	-.07	(.04)
Income squared	<b>-.02</b>	(.01)	<b>-.02</b>	(.01)	.00	(.01)
Physical strains	<b>.18</b>	(.04)	<b>.17</b>	(.06)	.01	(.07)
Job stress	.10	(.07)	-.06	(.11)	.16	(.13)
Low autonomy	<b>.11</b>	(.04)	-.09	(.05)	<b>.20</b>	(.06)
<i>Non-disab. retirement</i>						
Age (+65)	<b>.35</b>	(.01)	<b>.39</b>	(.01)	<b>-.04</b>	(.01)
Never married	<b>.18</b>	(.08)	-.11	(.09)	<b>.29</b>	(.12)
Widowed	.11	(.10)	<b>-.28</b>	(.06)	<b>.39</b>	(.12)
Separated/divorced	-.01	(.07)	<b>-.39</b>	(.08)	<b>.39</b>	(.11)
Cohabiting	-.19	(.15)	.25	(.18)	-.44	(.23)
Education (+10)	<b>-.07</b>	(.01)	-.02	(.01)	<b>-.05</b>	(.01)
Income 1985 (+5)	<b>.06</b>	(.02)	.00	(.02)	.06	(.03)
Income squared	<b>-.02</b>	(.00)	-.03	(.01)	.01	(.01)
Physical strains	-.05	(.03)	.06	(.04)	<b>-.11</b>	(.05)
Job stress	-.08	(.05)	-.10	(.06)	.02	(.08)
Low autonomy	<b>.19</b>	(.03)	.03	(.03)	<b>.16</b>	(.04)

Stressful work may reduce the probability of non-disability retirement. This result is not significant for men or women, but since the coefficients are

<sup>16</sup> Because the banking, insurance, and engineering industries have been in the forefront in developing early retirement schemes in Norway, this interpretation does not seem to be very strong.

similar for the two genders, the result could be interpreted for men and women jointly which would make this finding significant. Stressful jobs do not necessarily mean bad jobs. In fact, a stressful job may very well be a stimulating job. The association between stressful jobs and non-disability (typically voluntary) retirement (see Table 4) could reflect a preference for stressful stimuli among employees. It could also reflect a selection effect, in that the most ambitious workers choose the most challenging jobs – jobs that may involve some stress. If the most ambitious workers also have a preference for work over leisure (through early retirement), this could lead to an association between job stress and late retirement. A third possible explanation is that men working in physically strained and stressful jobs are in better health than are men in less strained jobs. This hypothesis was tested by controlling for health – in this case controlling for earlier sick leaves (in 1989, compensated by the National Social Insurance). But because this analysis does not change any of the unexpected findings, it appears that we cannot turn to health selection for an explanation.

In a study of disability retirement, Holte et al. (2000) found a curvilinear relationship between job stress and retirement behavior. In the present study, a test of curvilinearity is also significant for disability retirement of women, but not for men (not shown in tables). The lowest probabilities of disability retirement are found for occupations with moderate (average) levels of job stress, whereas both low and high levels of stress are associated with increased risks of disability retirement.

Jobs with low individual autonomy lead to early retirement among men, but not among women (see Table 2). This gender difference holds for both pathways of early retirement – for disability as well as for non-disability retirement (see Tables 3). The result is as expected for men, but not for women. If we cannot exercise much autonomy in work, one would assume that the job would be less attractive and retirement (leisure) more appealing. But why does workplace autonomy affect men's and women's retirement behavior differently? Three reasons come to mind: gender differences in the importance of workplace autonomy, gender differences in life cycles, and gender differences in health.

First, it may be more important for men than for women to exercise some individual autonomy in their work. The fact that men more often than women work in jobs with some individual autonomy (see Table 1) could reflect a gender difference in preferences for autonomy. Perhaps women have other arenas for individual development and fulfillment than men do. Time use studies indicate that men spend more time in their jobs, whereas



women spend more time with friends and family (Shelton 1992, Blekesaune 2000). Second, it could be that many working class men (with low autonomy jobs) have worked since early adulthood and have likely accumulated a decent pension by their early 60s. Many women, on the other hand, have spent part of their adult life caring for their families, which would give them a stronger economic incentive to continue in paid work. Third, it is possible that low job autonomy is associated with, and may even contribute to, poor health among men. Poor health could thus explain why men in low autonomy jobs tend to retire more frequently with a disability pension. Bosma et al. (1997) found that low job autonomy increases the risk of coronary heart disease, even when occupational status is controlled. A preference for a few healthy years after retirement could also explain why men in low autonomy jobs tend to have more (voluntary) non-disability retirements. This hypothesis was tested by controlling for health – in this case, for earlier sick leaves (in 1989). But this analysis does not change the effect of low autonomy jobs on men's retirement behavior or the differential effect of job autonomy between men and women. Poor health does not appear to be the reason why men retire early from low autonomy jobs.

Let us finally consider the other explanatory variables. Although marital status is a predictor of retirement for women, it makes little difference in the retirement behavior of men. Married and cohabiting women are more likely to retire than are those who have divorced or become widows. This gender difference could reflect the fact that husbands and wives coordinate their retirement behavior, and that husbands are, on average, a few years older than their wives are. American studies have found that husband's retirement increases the probability of wife's retirement (Pozzebond and Mitchell 1989), and that husbands tend to delay their retirement until their wives can retire (Gustman and Steinmeier 2000). If that is the case, married women should retire earlier than other women and married men should retire later than other men. Traditional gender roles within a family could also contribute, i.e. men hold the role of breadwinners, whereas women may alternatively do household work and care for the family rather than paid work. As a result, the loss of status associated with retirement could be greater for married men than for married women.

Higher education is a predictor of later retirement, even when certain job characteristics are controlled, primarily because education reduces disability retirement. One reason is that poor health typically affects the capability to perform manual work more than it affects the performance of non-manual work, which normally requires some education. The education

effect is stronger for men than for women, because education reduces non-disability retirement among men, but not among women. This could reflect the possibility that well educated men have a stronger preference for work than do well educated women. Alternatively, well educated women are more likely to work in the public sector, where most employees are entitled to voluntary early retirement. Well educated men, on the other hand, are more likely to work in the private sector.

Retirement behavior is strongly related to income, even when education and certain job characteristics are controlled. People with high incomes are much less likely to retire than are people with medium and low incomes, perhaps because the Norwegian pension (social security) system compensates low- and medium-income groups better than it compensates high-income groups. As a result, high-income groups have stronger income incentives to work longer before retirement. High-income groups may also have stronger preferences for work over leisure, given that their high incomes may have been the result of their strong interest in work.

## Discussion

Initially, we expected that job strains would lead to earlier retirement. By and large, the empirical analysis supports this idea. Those who engage in hard physical work retire earlier than do those with few physical strains in their jobs, typically through a disability pension. The correlation between hard physical work and disability retirement is well documented in previous research (Hayward and Grady 1986, Chiricos and Nestel 1991, Kolberg 1991, Krause et al. 1997, Holte et al. 2000, Mykletun 2000), and likely reflects a mismatch between the older workers' physical capabilities and the requirements of the job (Hayward and Grady 1986). This state of affairs, which has been labeled a push factor in the retirement literature, represents a way of exiting from work that the elderly worker has limited ability to change or control.

Second, men in low-autonomy jobs retire earlier than do men who have greater ability to decide how their work should be conducted. Their retirement is typically accomplished through non-disability retirement schemes (AFP), but includes disability pension as well. A correlation between low autonomy and disability retirement has also been found in some previous research (Quinn 1978, Holte et al. 2000), even with limited control for individual resource variables such as income and education. Most likely, these findings reflect the fact that men find low autonomy jobs so

unattractive that they are more likely than men with more autonomous jobs to choose early retirement. This phenomenon has been labeled «jump» in the retirement literature – a voluntary exit that occurs when leisure is deemed to be more attractive than the job. Earlier retirement among men in low autonomy jobs may also reflect a different life cycle. Many working class men have worked for 40 years or more when they enter their 60s, and may feel entitled to a well earned leisure, particularly if the job is seen as unattractive or if they have accumulated savings or pension plans that can provide them with a comfortable retirement. Unfortunately, we are unable to test these hypotheses.

A third finding is, however, contrary to our expectation that job strains lead to earlier retirement. Those working in stressful jobs delay non-disability retirement compared with those working in less stressful occupations. This finding, which is supported by Solem and Mykletun's (1997) research, suggests that stressful jobs are, in fact, often attractive jobs. With reference to the stress concept of Hans Selye (1974), they reasoned that job stress may reflect a degree of inclusion and appreciation that may stimulate elderly workers to delay their retirement. If so, the present study shows that stimulating job stress is not only an individual experience (that could reflect a preference for work stressors or work in place of leisure). There are, in fact, occupations characterized by more or less stimulating stress that influence when their members retire. The findings indicate, however, that job stress is not always a positive experience. At least among women, both too much and too little occupational stress is associated with an enhanced risk of disability retirement.

Policy makers in several OECD countries are looking for ways to stimulate elderly workers to postpone their retirement. A popular suggestion is to introduce or strengthen actuarial principles in pension systems (Esping-Andersen et al. 2002), the implication being that those who retire late will gain, while those who retire early will receive lower pensions. Unfortunately, adverse distributional outcomes of this policy proposal are difficult to avoid. Those with pleasant jobs may take advantage of the gain associated with later retirement, whereas those with unpleasant jobs may be penalized, for many people are still likely to take early retirement. Distributional outcomes may, however, vary with job characteristics and pension programs. If the actuarial principles do not affect disability pension programs, workers who experience a mismatch between their physical capabilities and job requirements would not lose if they opted for a disability pension. Those with stimulating jobs that involve at least some level of job stress would

gain, as they tend to retire late in any case. They may exit even later if they are stimulated by higher future pension rewards. Men in low autonomy jobs, on the other hand, would probably lose, as many are likely to retire as early as possible, and those who continue will have to endure a less attractive job for more years before they can enjoy their leisure.

It must be emphasized, however, that job strains can change over time. If heavy job tasks can be reduced, savings could be made for disability pension programs. Both governmental budgets and labor supply would improve, particularly because disability retirement, compared with other retirement schemes, usually occurs early. If elderly male workers were able to exercise greater autonomy in the performance of their jobs, the financial soundness of early retirement programs and social security programs might improve. Finally, stimulating elderly workers to retire later by changing their working conditions does not necessarily mean that they should work less or with less intensity. Given that job stress is associated with later retirement, in fact, it is likely that many elderly workers favor work with a certain level of job stress. The types of stressors that elderly workers find stimulating and the types of stressors that should be reduced are issues for future research.

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## Appendix

*Three kinds of work strains were estimated:*

Physical strains:

- (i) Do you have to work daily in bent or otherwise strained working postures? (values = 0 and 1)
- (ii) Does your work require many repeated motions? (values = 0 and 1)
- (iii) Do you have to lift more than 20 kg daily in your work, and if so, how often [1–4 times, 5–19 times, more than 20 times]? (values = 0, 1, 1.5, and 2, respectively)

*Job stress:*

- (i) Do you have so much to do that you are being stressed, and if so, how often? (values = 0 [usually or never], 1, 1.5, and 2 [daily, more than half the time])
- (ii) Do you experience your work as stressful on a daily basis? (values = 0 [no answer], 1, and 2 [to a high degree])

*Low autonomy:*

- (i) To what extent can you decide your own working speed? Do you decide for yourself....(values = 0 [to a high degree], 1 [to some degree], and 2 [to a small degree])?
- (ii) To what extent can you decide the sequence or pace of your work? Can you decide for yourself....(values = 0 [to a high degree], 1 [to some degree], and 2 [to a small degree])?



# Summary

The number of disability pensioners in Norway has increased for decades. The reasons behind this increase represent a puzzle. Public health has improved over the years, at least if measured as life expectancy. So far, Norwegian scholars have primarily focused on working conditions and income incentives when trying to explain the rise in disability recipients, but empirical support remains indecisive. The project «Family change and disability pensions: How does marriage break-up influence receipt of health related social security benefits?» explores a third possibility: Rising disability rates may be connected to a more unstable household structure. Changes in the household structure during the last decades have been at least as dramatic as changes in the labor market, and may have effects on receipt of health-related social security benefits. More specifically, the project examines possible links between marriage breakdown and utilization of health related social insurance benefits, including disability pensions. The project has run from 2001 till 2003 and has been financed by the Norwegian Research Council and the Department of Social Affairs. This report includes four papers from this project. These papers all utilize longitudinal data linking administrative records from several sources, including marital status and receipt of health related benefits. The first two papers analyze data from the «FD-trygd» data base which has been constructed by Statistics Norway, and transferred to the project with the help of Norwegian Social Science Data Services (NSD). The last two papers analyze data that have been linked by the project in collaboration with Statistics Norway, the Norwegian Social Insurance Administration and the Norwegian Social Science Data Services. None of these institutions are, however, responsible for the results in this report.

This first paper is titled «Marital dissolution and work disability: a longitudinal study of administrative data from Norway». In this paper, we analyze sick leaves and receipt of health-related benefits over a period of four years before, during and after marital dissolution. Previous studies indicate that divorcees have poorer health than married persons, reflecting two processes: (1) health problems increase the risk of marital dissolution and (2) marital dissolution increases the risk of developing health problems. Our results indicate that the selection of the less healthy into the divorced



status (explanation 1) is more important than health problems that result from marital dissolution itself (explanation 2). Besides, to the limited extent that marital dissolution triggers health problems, the effect is relatively short lived. These results vary, however, by age, gender, and the presence of children.

The second paper, «Health selection in marital transitions: evidence from administrative data», analyses health selection effects in and out of marriage. We use two indicators of health problems: receipt of health related benefits for work disability, and receipt of home assistance. Results provide strong evidence for health selection effects, also when alternative explanatory variables are controlled for. Poor health reduces the probability of marriage and increases the probability of divorce. Selection effects are generally stronger for men than for women.

Previous studies suggest that divorce may increase take-up of health-related social security benefits in two ways. First, divorce may represent a crisis which triggers health problems. The first paper indicates that direct health consequences of divorce are short lived, hence this hypothesis gains little support in our study. Second, being married may protect health and enhance coping abilities. Married individuals can influence each others' behavior and stimulate healthy conducts. Further, they may support each other during periods of stress and crisis, and make it easier to maintain supportive social networks. If so, divorce may result in lower coping abilities when confronted with future challenges (in the work place and other life settings), and hence a possible long-run increased risk of ending out on disability benefits. This «lack of marriage protection» hypothesis is studied in the third paper. To test this hypothesis we use a data set providing individual-level information on take-up of disability pensions for the years 1973–2000. Among men, more divorces can account for about 30 percent of the rise in disability beneficiaries during this period. Among women, divorce can explain about 10 percent of rising disability rates. It must be emphasized that the rise in female disability rates between 1973 and 2000 was three times higher than among males. Thus, although divorces can explain less of the relative rise in female disability rates, divorces can account for a similar absolute increase in disability rates for men and women.

The fourth paper is titled «Working conditions and early retirement: a prospective study of retirement behavior». Here, the focus is on a more traditional explanation of rising disability rates: the possible impact of working conditions on early retirement. Retirement was identified by a drop in work-related income and studied both jointly and separately for disability

and non-disability-related retirement. Findings indicate that disability retirement is related to physical job strains. Among men, low workplace autonomy increases both types of early retirement. Finally, psychological job stress actually seems to reduce non-disability retirement. The last finding suggests that job stress is not always negative. Job stress may reflect a degree of inclusion and appreciation that may stimulate elderly workers to delay their retirement.