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## Social Transfers and the Health Status and Health-Care Utilization of Mothers in Norway and Canada

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# **Luxembourg Income Study Working Paper Series**

**Working Paper No. 313**

**Social Transfers and Health Status and Health-Care  
Utilization of Mothers in Norway and Canada**

**Lori Curtis and Shelley Phipps**

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Social Transfers and the Health Status and Health-Care Utilization  
of Mothers in Norway and Canada

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Marriage is a healthy state. The single individual is more likely to be wrecked on [his] voyage than the lives joined together in matrimony" (Farr, W., 1859).

The goal of this paper is to investigate the health status and health care utilization consequences of social transfers for the health of mothers, in particular lone mothers, in Canada and Norway. Studies from Europe and the US (e.g., Benzeval, 1998; MacIntyre, 1992) and a recent Canadian work (Trovato and Lauris, 1989) suggest, as argued by Farr above, that married individuals are likely to be healthier than single or divorced individuals. Studies that focus specifically on the health status of mothers (Anson, 1989; Avison, 1996; Benzeval, 1998; Curtis, 2001; Lipman et al., 1997; Macran et al., 1996; Weissman et al., 1987; Wolfe and Hill, 1992) suggest that the unconditional health status of lone mothers is worse than that of married mothers (e.g., Wolfe and Hill, 1992). However, lone mothers, on average, have lower socio-economic status as well. Since socioeconomic status is an important determinant of health (e.g., Evans, Barer and Marmor, 1994; Smith, Bartley and Blane, 1990), the health status difference between married mothers and lone mothers often disappears in multivariate analysis which appropriately controls for socioeconomic status.

According to microdata from the 1994 National Population Health Survey, in Canada the unconditional health status of lone mothers is significantly lower and rates of health care utilization are significantly higher than is true for married mothers. However, microdata from the 1995 Statistics Norway Health Survey indicate that this same health status/health care utilization difference between married and lone mothers is not apparent. It is also true that in Canada, lone mothers are dramatically more likely to be poor than married mothers, but the same is not true for Norway. Since the literature suggests that socioeconomic status is an important reason for differences in health status, and since social transfers appear to play a

central role in alleviating the poverty of lone mothers in Norway, this paper examines the hypothesis that one reason the health status of lone mothers in Norway is relatively better than the health status of lone mothers in Canada is that the state provides more support in the form of transfers in Norway.

Note that by employing international comparisons we can learn more about the associations which exist between health status and policy than would be possible if we focussed exclusively upon data for a single country. To date, large longitudinal data sets, with good health, health care utilization and socio-economic information covering a time span long enough to analyse the consequences of policy changes in Canada are not available to researchers<sup>2</sup>. However, by comparing Canada and Norway, two countries with similar over-all levels of affluence and health care systems, but rather different social transfer programmes, we have more variation in both programmes and associated outcomes.

Why is Norway an interesting country to compare with Canada? The two countries are very similar in terms, for example, of Gross Domestic Product (GDP) per capita (just over \$19,000 US, adjusted for purchasing power parity, 1993). GDP per capita provides a good measure of resources available, or what a country can 'afford'. Both countries have experienced similar trends in terms of increased female labour-force participation, reduced family size, and increased incidence of divorce over the past 30 years. Health care systems are fairly similar with both countries offering programmes, funded through general taxation, to provide health care. Canada offers public health insurance with the private provision of health care; most physicians

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<sup>2</sup>The National Population Health Survey is a national longitudinal survey but, as of now, there are only three waves available covering a time span of six years. This is a relatively short time span when investigating health consequences which tend to have very long lag times.

are paid on a fee-for-service basis. Norway offers publically provided health care. The 1993 health care expenditures are comparable at 9.9 percent and 9.2 percent of GDP for Canada and Norway respectively. Both systems have provided high quality universal health care coverage at close to the same expenditure as a percent of GDP (van den Noord et al. 1998, Statistics Canada)<sup>3</sup>

But, there are also some very significant differences between the countries, particularly in terms of policies likely to affect the health of mothers. The basic similarities between the countries, taken together with significant policy variation makes a comparison of the two potentially extremely rich and informative. To summarize before providing additional detail: 1) Norway offers much more extensive income support for families with children, particularly lone-parent families with children; 2) income transfers have a strongly universalistic flavour -- they are generally available for all families with children or for all lone-parent families with children, regardless of income; 3) transfers in Norway may thus not have the same level of 'stigma' as, for example, Canadian 'welfare;' 4) Norway offers more than Canada in the way of support for parents working outside the home (e.g., maternity leave, parental leave, days off for sick children, publically supported daycare).

The plan of the paper is as follows: 1) we provide a comparative over-view of the social transfer and health care programmes available for mothers in Canada and Norway; 2) we assess the different implications of transfer programmes for the relative socioeconomic status of

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<sup>3</sup> There are also, of course, some important underlying differences between the countries. For example, Norway has a much smaller and more homogeneous population (4 million for Norway versus 29 million for Canada and 4.8 percent immigrants for Norway versus 19 percent for Canada).

mothers in the two countries using microdata drawn from the Luxembourg Income Study; 3) we provide a brief survey of the existing literature assessing the links between lone-parenthood, socioeconomic status and health; 4) we use multivariate analysis to conduct our own analysis of the links which exist between socioeconomic status, family structure and the health status and health care utilization of mothers in Canada and Norway using the Statistics Canada National Population Health Survey for 1994 and the Statistics Norway Health Survey for 1995; 5) we simulate the health status and health care utilization consequences of ‘giving Canadian mothers the social transfers available in Norway.’

## 2. A Comparison of Social Transfer and Health Policies in Canada and Norway

### 2a Social Transfers

The following section provides a brief summary of some of the social transfer programmes available in Norway versus Canada during our study period (i.e., 1994/95).<sup>4</sup> Note that we focus upon programmes available in the mid-1990's since that is the period for which we have comparable micro-data on health. (Programmes implemented more recently could obviously not have affected health status or utilization in 1994/1995.)

#### Child Benefits<sup>5</sup>

Both Canada and Norway provided cash child benefits in 1994/95. Key differences

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<sup>4</sup> Much of the material on social transfer systems is drawn from Phipps, 1999, a comparative analysis of the health of young children in Canada and Norway (as well as the Netherlands, the UK and the UK).

<sup>5</sup> Baker and Phipps, 1997 provides an historical overview of family policy in Canada. Phipps, 1993 and 1995a and b focus specifically on child benefits, with international comparisons.

between the countries were: 1) the level of benefits provided was higher in Norway; 2) child benefits were universal in Norway but income tested in Canada; 3) lone mothers received double the usual benefit for their first child; 4) per child benefits increased significantly as family size increased in Norway and children aged 13 to 35 months received a supplement.

### Child Support

Child support payments can be an important source of income for lone-mother families though in Canada, only 16 percent of lone mothers report receipt of support payments (Phipps, 1999). In Norway, 73 percent of children in lone-mother families receive child support payments because the state provides 'advance maintenance payments' if the non-custodial parent does not make payments.

### Lone Parent Benefits

A special set of benefits was available to lone parents in Norway. First, a 'transition benefit,' was intended to provide subsistence if a lone parent is unable to support himself/herself as a result of child care responsibilities. The transitional benefit was sizable (about \$12,500 Cdn annually) and is available until the youngest child reaches the age of ten years (Phipps, 1999). The transitional benefit can be received when the lone parent is in the labour force, but at a reduced amount. It can also be collected while a lone parent attends school. Special educational benefits also help to cover expenses. As well, lone parents may receive child care benefits if they are either in the labour force or attending school. Finally, a woman on her own who gives birth to a child is entitled to a birth grant (about \$2000 Cdn) which is in addition to other regular



maternity benefits to which she may be entitled.

In Canada, lone parents are granted the tax advantage of claiming the 'equivalent to married' credit for a first child.

### Social Assistance

In Canada, social assistance ('welfare') can be a very important form of income support for poor families with children, especially poor lone-mother families. About 80 percent of poor lone-mother families received social assistance in Canada. In Norway, social assistance was less important (only 30 percent of poor lone mothers received social assistance) both because rates of labour-force participation were higher for lone mothers in Norway and because lone mothers received many other forms of support. In fact, in Norway, more children in poor married-couple families received social assistance (about 40 percent -- see Phipps, 1999).

An additional important point to notice is that in Norway, a lone mother could receive special benefits until her child was aged 10 years, but a lone mother with a 6-month old baby in Alberta was deemed employable and hence ineligible for and hence ineligible for special support via the social assistance programme (versus 12 years in BC -- National Council of Welfare, 1994).

### Maternity/Parental Benefits<sup>6</sup>

In 1994, Canadian mothers were entitled to 15 weeks of maternity benefits and 10 weeks

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<sup>6</sup> See also Phipps, 1994.

of parental benefits<sup>7</sup> at a 55 percent replacement rate.<sup>8</sup> Self-employed workers were not eligible.

Maternity benefits were more generous in Norway, where a woman could choose either 42 weeks at 100 percent wage replacement or 52 weeks at 80 percent replacement. It was also possible to choose to return to work part-time and to use remaining maternity benefits to ‘top-up salary’ (for a period of up to 2 years). Self-employed workers were eligible.<sup>9</sup> Women not eligible for regular maternity benefits received a lump-sum maternity grant.

## 2b. Health Care Systems

The Canadian Health Care system offers public health insurance, administered by the provinces, and privately provided health care. From 1977 to 1996 the federal government provided block transfers in the form of cash and tax points to the provinces for health and education. The transfers were unrelated to health care costs within the provinces. (Provincial and Territorial First Minister’s of Health, 2000).

The provinces use the transfer payments to provide funding for health care services including ambulatory and in-hospital care. In general, hospitals receive funding from the provinces and municipalities, most physicians receive fee-for-service payments from the provinces for covered services. Physician fees are arrived at through negotiations between the

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<sup>7</sup> Parental benefits can be divided in any fashion between mother and father (though in fact 98 percent of parental benefits claimants are mothers, Statistics Canada, 1995).

<sup>8</sup> Higher-income women effectively receive a much lower replacement rate since there is a ceiling on benefits payable.

<sup>9</sup> Parents could choose to split the period of paid leave, though the mother must take the 3 weeks prior to the birth and the 6 weeks following the birth. Four weeks of the total allotment are, in general, reserved for the father.

provinces and the provincial medical associations. According to the Canada Health Act, all medically necessary services must be covered by public health insurance with no added charges to the patients. Services that are not medically necessary, for example a private room in a hospital, must be paid for by the patient. There are differences across provinces in what services are deemed medically necessary and thus, must be paid for by the patient. Health insurance is portable between provinces but due to differences in provincial health insurance plans may not cover all out of province costs. Private health insurance is available for non-medically necessary services like private hospital rooms, prescription drugs, dental services and travel out of province and country.

The Norwegian Health Care system offers tax-financed publicly provided health care. The central government provides grants to the 19 counties, the 19 counties are amalgamated into 5 regional health councils which co-ordinate the hospital sector. The municipalities receive grants from the central government to fund primary care (physician sector). The state-run National Health Insurance Scheme (NIS) provides public health insurance against medical expenses from ambulatory and hospital care. (van den Noord et al., 1998)

Although Norway offers public health care, similar to the UK, private delivery also exists. Over 50% of Norway's physicians are in private practice. The private physicians receive payments through contracts with municipalities and/or consumer payments. Consumer payments are reimbursed by the NIS. Norway's system does allow for user fees but they are capped Nkr 1,290 per year (approximately \$220 Canadian dollars at the current exchange rate) including pharmaceuticals and dental. Seniors are entitled to reductions in payments and no user fees are allowed for children under the age of seven. As a result of the extensive coverage there is

literally no private health insurance in Norway. (van den Noord et al., 1998)

In sum, the Norwegian and Canadian health care systems are fairly similar. Three levels of government participate in the bulk of funding and provision of services in both systems (federal, provincial and municipal in Canada and state, county and municipal in Norway). The federal or state governments main role is providing funding and maintaining over-all quality of health care. The intermediate level of government provides, along with transfer payments from the state, the bulk of health care through taxation. The biggest differences in the two systems is that 40% of physicians in Norway are employed by the municipality and 60% are privately employed, funded through contracts (50%) with the municipality or private payments (10%) from patients. In Canada the vast majority of physicians are in private practice and receive fee-for-service payments, they are not entitled to receive reimbursement from patients for covered services. Many Canadians carry private health insurance which covers non-essential services, pharmaceuticals and dental. Private insurance is unnecessary in Norway as coverage of services is much broader and includes pharmaceuticals and dental.

### 3. Implications of Social Transfers for the Relative Socioeconomic Status of Mothers in Canada and Norway

#### 3a. Data

To study the consequences of alternative social transfer systems for the relative socioeconomic status of mothers in the two countries, we use the excellent income and social transfer information which is available in the Luxembourg Income Study. (Neither health survey provides such rich income or transfer information.) The Luxembourg Income Study (LIS) is a

collection of microdata sets which have been re-coded to enhance comparability (e.g., of total transfers received). These data are housed in Luxembourg, but can be accessed using programmes submitted by e-mail. For Canada, the LIS data set is the 1995 Survey of Consumer Finance (Household File) with a total sample size of 39,039 households. For Norway, the LIS data file is the 1995 Statistics Norway Income Distribution Survey with 26,305 respondents. For both countries, we select for our analysis a sample of mothers with children aged less than 18 years (13, 579 observations for Canada and 3349 observations for Norway).

### 3b. Descriptive Analysis of the Relative Socioeconomic Status of Mothers using LIS data

As indicated in Figure 1, in Canada in 1994, 9.8 percent of married mothers with children aged less than 18 were poor after taxes and transfers; 33.0 percent of lone parents were poor.<sup>10</sup> By contrast, only 2.9 percent of married mothers in Norway were poor; 9.2 percent of lone mothers were poor. Note that the incidence of poverty among lone parents in Norway is less than the incidence of poverty among married mothers in Canada! Note also that there is a 23.2 percentage point gap between the rate of poverty experienced by lone and married mothers in Canada while there is only a 6.3 percentage point gap in Norway.

It is also evident in Figure 1 that social transfers are a key reason for the differences in poverty across the two countries. Pre-transfer poverty rates for lone mothers are fairly similar in the two countries (56.7 percent in Canada versus 50.1 percent in Norway). After-taxes and transfers, poverty falls to 9.2 in Norway but only to 33.0 percent in Canada. Social transfers also

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<sup>10</sup> Poverty is defined as 50 percent of median after tax and transfer income using an OECD equivalence scale.

reduce the incidence of poverty among married mothers, but they are particularly important for lone mothers.

While much of the literature concerned with the socioeconomic status of lone mothers focuses upon their relative experience of poverty, it is also informative to consider where they fit into the over-all income distribution of the country. Figures 2A and 2B illustrate how many married versus lone mothers fall into each after-tax equivalent income decile for Canada and Norway, respectively.<sup>11</sup> In Canada, the modal frequency (32.8 percent of lone mothers) is clearly for lone mothers to be in the bottom decile of the country income distribution (with mean after-tax equivalent income of \$6068). The second most common position in the country income distribution (21.4 percent) is for the lone mothers to be in the second decile (with mean after-tax equivalent income of \$9700); the third most likely case (9.4 percent) is for lone mothers to have incomes in the third income decile. In Norway, by contrast, the modal frequency is the second decile (18.8 percent), with the second most likely position being the third decile (16.2 percent), followed by the bottom decile (14.4 percent). And, over 10 percent have incomes in each of the fourth, fifth and sixth deciles. Thus, while Norwegian lone mothers are clearly located in the bottom part of the Norwegian income distribution, more of them are in the ‘bottom middle’ than is the case in Canada.

Figure 3 indicates that virtually all mothers in Norway receive transfer income; this is also true for lone mothers in Canada (98.9 percent receive transfers). Married mothers in Canada are somewhat less likely to receive transfers (88.7 percent), presumably as a result of the

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<sup>11</sup> The income deciles are calculated for the entire population and not just the population of mothers.

household income tests. Figure 4 indicates the average value of social transfers received, for those receiving them (which, again, is virtually all Norwegian mothers and Canadian lone mothers). On average, Canadian lone mothers receive \$8852 while Norwegian lone mothers receive \$9866 (1994 Canadian dollars) which is a difference of \$955. On average, Canadian married mothers who receive transfers receive \$5517 while Norwegian married mothers receive \$6115 which is a difference of \$598.<sup>12</sup>

Finally, Figures 5a and 5b illustrate the degree to which social transfers are targeted to family income in the two countries. Figure 5b for Norway reinforces the point that social transfers are universal in Norway. In Canada, transfers are received by all mothers in the bottom half of the income distribution. Income testing means that transfer receipt begins to fall off for married mothers in the sixth decile and for lone mothers in the ninth decile.<sup>13</sup>

### 3c. Multivariate Analysis of Transfer Receipt by Mothers in Canada and Norway

This section of the paper reports upon multivariate estimates of the probability of receiving transfers for Canadian mothers, and upon the level of transfers received for those who do receive them for both Canada and Norway.<sup>14</sup> We again employ the 1994/1995 LIS data. This is basically just a more formal ‘descriptive’ exercise (i.e., we do not have any behavioural model in mind) which is interesting in its own right, but which is also required to facilitate our analysis

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<sup>12</sup> It is also, however, interesting to consider the *distribution* of transfer income. Do all mothers receive roughly the same or do some receive very little while others receive a lot? This has yet to be done for both countries.

<sup>13</sup> High-income mothers would be eligible for maternity benefits, for example.

<sup>14</sup> So few mothers do not receive transfers in Norway that it is impossible to estimate a model of the probability of receiving transfers.

of the links between socioeconomic status and mother's health and health care utilization (because the health data we use, particularly the NPHS, have limited information about either income or social transfers received) and our simulations of the consequences of 'giving Canadian mothers Norwegian transfers.'

Table 1 reports the results of a probit model of the probability of Canadian mothers receiving any social transfers (1994). The model is estimated using a sample of households with a mother present and with children aged less than 18 present. Explanatory variables are chosen on two grounds: 1) we have reason to believe they should be associated with the probability of receiving transfers; 2) the variables are available in both the LIS data sets and the health data sets to be used later in the paper. Thus, our explanatory variables include total household income before tax and its square<sup>15</sup>; mother's age; dummies for age of child (distinguishing pre-school and school-aged children); total number of children less than 18 present; a series of dummy variables to distinguish marital and family earnings status (i.e., the base case is a married couple with two earners and we distinguish single-earner married couples, lone mothers not in the labour force and lone mothers in the labour force); and a set of regional dummies (with Ontario as the base).

Results reported in Table 1 appear generally reasonable in light of our knowledge of the Canadian welfare state. The probability of receiving any transfers falls at an increasing rate as household income climbs. The probability of transfer receipt is higher if the youngest child is a pre-school aged (e.g., perhaps because of maternity/parental benefits); lower if the youngest

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<sup>15</sup> It would have been preferable to use a measure of market income, but this is not available in the health data sets.



child is school-aged. The probability of receiving transfers increases with the total number of children in the family. Compared to the base case of married couples with two earners and controlling for household income, mothers in married-couple/single-earner and especially married-couple/zero-earner families are more likely to receive transfers; lone mothers who are single earners are more likely to receive transfers; and lone mothers who are not in the labour force are particularly likely to receive transfers. In terms of regional associations, mothers residing in Quebec are more likely than those living in Ontario to receive transfers; mothers residing in Alberta or BC are less likely.

Table 2 reports OLS regressions for the level of social transfers, for those receiving transfers (i.e., basically everyone in Norway). Explanatory variables are the same as those described for the probit estimation above. (Norwegian currency variables have been converted to 1994 Canadian dollars.) Note, first, that the intercept in Norway is \$5186 while the intercept in Canada is \$3404 (i.e., a basic difference of \$1782). In both countries, the level of transfers received falls at an increasing rate as income increases.<sup>16</sup>

If the youngest child is aged less than six, then, other things equal, transfer income in Canada is likely to be \$768 higher (there is no significant association with child's age in Norway). Transfers increase by \$890 per child in Canada and by \$1614 per child in Norway. Married couples with one earner receive, other things equal, \$789 more than couples with two earners; married couples with zero earners receive \$5912 more. If the mother is a lone mother who works in the paid labour force then her transfer income is estimated to be \$774 higher than

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<sup>16</sup> Inflection points are at very high income levels for both countries (\$128,113 for Canada and \$330,000 for Norway).

an otherwise similar mother in a two-earner married couple family in Canada, but \$2143 higher in Norway. Finally, a lone mother who is not in the labour force is estimated to receive \$7211 more than the base in Canada, but \$8446 more than the base in Norway. Thus, not only are base transfer levels higher in Norway, but the extra dollars received by lone mothers is also more.

### 3c. Simulating the consequences of ‘giving Canadian mothers Norwegian transfers’

We make use of the regressions reported above to predict for each Canadian mother the transfers she would receive, given her own characteristics (e.g., family structure, number of children, labour force participation, etc.), but predicting transfers using the estimated Norwegian transfer level equation.<sup>17</sup> If Canadian mothers were ‘given Norwegian transfers’, the average level of transfers is predicted to increase by \$1997.<sup>18</sup> This is slightly larger than the actual difference in levels of transfers received between the two countries because the characteristics of mothers in the two countries is somewhat different. For married mothers, there is an average increase of \$1881; for lone mothers, there is an average increase of \$2555.

Finally, it is important to point out that the impact of this simulated change in social transfers is not the same for everyone regardless of her position in the income distribution. For

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<sup>17</sup> Notice that we make no effort to model possible labour supply consequences of ‘giving Canadian mothers Norwegian transfers.’ However, since labour force participation rates are actually higher in Norway than in Canada, it seems likely that any estimated adjustments would be to increase participation of Canadian mothers.

<sup>18</sup> We include zeroes in these averages so that they are for all mothers, not just mothers receiving transfers. When simulating Norwegian transfers for Canadian mothers, we predict the ‘Norwegian level’ of transfers for *all* Canadian mothers. For a few (27) mothers in the top decile, we actually predicted negative transfer values. In these cases, we set the predicted value equal to zero.

example, mothers at the very bottom benefit more than others (a predicted increase of \$7019, or 121 percent). But, those in the middle of the income distribution also benefit, because under the income-tested Canadian system transfers fall off rapidly whereas under the universal Norwegian system, they remain much the same for middle and higher-income families (see Figure 6).<sup>19</sup>

#### 4. Review of Existing Empirical Literature on the Links Between Marital Status and Health

As noted in the introduction, considerable past research has studied the link between health and marital status, in general and for mothers in particular.<sup>20</sup> Wolfe and Hill (1992) used the US Current Population Survey (CPS, March, 1989). Controlling for age, education, income, the number and age of children, race, and geographic area, they find that both lone mothers and single females without children had a higher probability of self-reported disability or health problems that limited work than married females without children. However, Anson (1989), also using US data, found that, after controlling for age, income, the number of children and the presence of a proximate adult (social support), there was no statistically significant difference in self-reported health status between married and separated or divorced female parents but those who were never-married had significantly lower self-reported health status.

Using data collected as part of the National Institute of Mental Health Epidemiologic Catchment Area in the United States, Weissman et al. (1987) found that lone-female parents were less likely to report good or excellent self-reported over-all and mental health status than

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<sup>19</sup> Women's place in the income distribution is determined according to their actual income and the actual country income distribution. We then keep the same women in each decile and calculate by how much their transfers would change.

<sup>20</sup> See Curtis (2001) and Benzeval (1998) for more detailed reviews of the literature.

married mothers however, only self-reported mental health status remained significantly different after controlling for race. However, there was no significant difference between the six-month prevalence of major psychiatric disorders<sup>21</sup>; six-month prevalence rates of chronic or mild depression were twice as high for lone parents, on the other hand, the rate for compulsive-obsessive disorder was significantly greater for married mothers after controlling for race.

After controlling for income, occupational status and age but not education, occupational status may be a rough proxy for education, Macran et al. (1996) found the most consistent result was that mothers, including lone mothers, who reside with dependent children were relatively healthier than those without children. Lone mothers had significantly less long-term disease and disability than couples without children. However, lone mothers fared poorly on psycho-social well-being. They had significantly lower mental health status than all other women.

Lipman et al. (1997) utilized the Ontario Health Survey Supplement to investigate the socio-demographic, physical and self-reported mental health characteristics of mothers. There were no significant differences in the prevalence of physical health problems between lone and married mothers but lone-female parents did have significantly more mental health problems after controlling for income, education, the presence of young children and maternal age. Lone mothers also suffer from more stressful lives, and as a result suffer from more depression and substance abuse (Avison, 1996).

A study conducted by Curtis (2001) with the Canadian National Population Health Survey (NPHS) indicates that unconditionally lone mothers have significantly lower self-reported health status, diagnosed disease, self-reported mental health and over-all health related

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<sup>21</sup>such as major depression, bipolar disorder, phobias, alcohol or drug abuse

quality of life than married mothers. Lone mothers are also, on average, younger, poorer, less educated, and smoke more. Once controls are added for socio-economic status, lifestyle and health behaviours the differences in health status are no longer significant for measures except for self-reported health status. Moreover, lone mothers actually have higher self-reported health status than married mothers. This is interpreted as an indication that the lower health status of lone mothers is associated with lower socio-economic status and the lifestyles and health behaviours associated with it.

## 5. Multivariate Analysis of the Links Between Socioeconomic Status, Family Structure and the Health Status and Health Care Utilization of Mothers

This section reports upon our multivariate analysis of the determinants of the health status and health care utilization of mothers in Canada and Norway.

### 5a. Data

The analysis of the links which exist between health and socioeconomic status is carried out using data from the master files of the Statistics Canada National Population Health Survey (NPHS), 1994-5, and the Norwegian Health Survey (NHS), 1995. The 1994 NPHS includes household residents 12 years of age and older in the ten Canadian provinces, and excludes individuals living on First Nations reserves, Canadian Forces Bases, and in some remote northern areas of Ontario and Quebec. The Labour Force Survey was used as the sampling frame to draw a representative sample of approximately 19,600 households. The NPHS is a two-stage stratified survey of households (with weights available). Summary information was collected on all members of the household, and then one member of the household was randomly

selected for an in-depth interview. The full sample size is 17,276 respondents, with over 3,000 respondents who are mothers with dependent children living within the household (Statistics Canada, 1995).

The NHS includes household residents of any age. The NHS is also a stratified sample of the population with weights available. Approximately 4,000 households were interviewed. Information on all individuals in the household was reported by the survey respondent. Survey responses were obtained by phone interviews and personal interviews (Statistics Norway, 1995).

The National Population Health Survey includes both self-reported health status and health care utilization information. (In this paper, we focus upon total physician visits as a measure of health care utilization.) As well, the survey includes information on personal and family characteristics, socioeconomic status, health behaviours and labour force participation. The Norwegian Health Survey contains all of the same information, thus enabling the comparative research reported here.

Our analysis is focused upon mothers, under the age of 60, with dependent children aged 1 to 17 living within the household. We exclude mothers with infants aged less than one year, since their patterns of health care utilization, in particular, are rather different from those reported by other mothers as a result of the pregnancy and post-partum check-ups. By focusing entirely upon mothers (rather than all women), we are able to avoid confounding factors associated with fertility issues (i.e., women may be childless for health reasons and not by choice).<sup>22</sup> These exclusions result in a final sample size of 2,258 observations in Canada and

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<sup>22</sup> We also exclude individuals who are 'permanently unable to work' in an effort to limit the problem of endogeneity of income to health status. However, our sample of mothers with children living at home, this involved only a very small number of observations (e.g., 15 for

1003 observations in Norway.

#### 5b. Econometric Analysis

In this section of the paper we first use the NPHS and NHS to determine whether lone mothers have lower unconditional health status<sup>23</sup> in both Canada and Norway. Second, we estimate identically specified models of health status and health care utilization of mothers in Canada and Norway, controlling for ‘health behaviors.’ Third, we add controls for income, transfer receipt and labour market participation -- variables influenced by the social transfers which are the focus of our study. Finally, and very informally, we consider the potential health consequences of ‘giving Canadian mothers Norwegian transfers.’

##### 5.b.1 Unconditional Differences in Self-Reported Health Status and Physician Visits

Health status is measured as the respondent’s self-reported general health, a measure which has been shown to correlate closely with other measures of an individual’s health status including diagnosed disease and mortality (Davies and Ware,1981; Kaplan and Camacho,1983; and Nagi 1976)). Notice that there are slight differences in wording across the countries, and of course, we have a translation of the Norwegian question.<sup>24</sup> Thus, we do not emphasize cross country comparisons in terms of levels of health status, but focus instead upon relative standings

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Norway).

<sup>23</sup>Unconditional indicates that we are simply testing the differences between lone and married mothers’ health status with no additional controls.

<sup>24</sup> It would also be true that some Canadian would be interviewed in languages other than English!

of married and lone mothers within countries.

Self-reported health services utilization, the dimension of health care utilization studied here is a zero/one variable indicating that the mother had any contact with any physician in the last year.

To determine whether the unconditional health status of lone mothers is lower than that of married mothers, we run an ordered probit<sup>25</sup> model with a dummy = 1 if the mother is a lone mother as the single explanatory variable. The key conclusion from this procedure is that the ‘lone mother’ dummy is negative and significant in Canada, but statistically insignificant in Norway<sup>26</sup>. That is, the unconditional health status of lone mothers is worse in Canada, but *not* worse in Norway, before we have controlled for health behaviors or socioeconomic status. The top portion of Table 3 presents probabilities for each health status category predicted from the estimated ordered probit model for lone versus married mothers in both countries. Similarly, a probit model of the probability of visiting any physician which includes only the ‘lone mother’

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<sup>25</sup> The dependent variable in an ordered probit regression is a categorical variable, in which the categories are in some sense ‘ordered.’ For example, the categories ‘excellent’ versus ‘very good’ health are ordered, hence it is reasonable to presume that they are determined by the same underlying process. It is important to note that ordered probit results cannot be interpreted in the same way as OLS results can be. A positive coefficient means the distribution of answers shifts to the right. From this, we know that the probability of being in the lowest category decreases and the probability of being in the highest category increases. It is not possible to discern the changes in the distribution of the middle categories from ‘eyeballing’ the coefficients. Thus, rather than discuss the sizes of the coefficients themselves, we present calculated ‘marginal effects.’ That is, to better interpret our findings, we use the estimated parameters of the ordered probit model to calculate changes in the probability of each health status category.

<sup>26</sup>In Canada, the health status and health care utilization of married and lone mothers are statistically different, ( $p=0.0001$  for self-reported health status and  $p=0.0207$  for health care utilization); in Norway they are not ( $p= 0.1739$  for self-reported health status and  $p=0.4741$  for health care utilization).



dummy indicates a statistically different probability of health care utilization for lone versus married mothers in Canada. (Lone mothers are more likely to visit a doctor than married mothers.) There is no statistically significant difference in Norway.

### 5.b.2 Multivariate Specification

We next proceed to multivariate analysis. For this, we consider two classifications of independent variables, all of which would be regarded as broad determinants of population health (Evans and Stoddart, 1990). The first classification includes those variables directly linked to the social transfer programmes which are our main focus. These are level of household income, and percent of income which is received in the form of transfers, though we also control for employment status.<sup>27</sup> As argued above using LIS data, social transfers can have a major impact on level of household income, and this can be an important determinant of health status (e.g., Anson, 1989; Berkman, 1984; House et al., 1988; Koskenvuo et al., 1980; McLanahan, 1983; Wolfson et al., 1991)..

We also include a variable indicating the percent of household income received in the form of transfers<sup>28</sup> because cross-sectional evidence for Canada indicates that individuals, on

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<sup>27</sup> While not the focus of this paper, other work (Phipps, 1999) argues that programmes available in Norway which help to support/facilitate the employment of mothers (e.g., daycare, days off for sick children, long and flexible maternity/parental leaves) may be extremely important in reducing stress and hence improving health. We do not emphasize results concerning employment status here because we recognize that employment status is likely endogenous to health status, even though we have eliminated mothers who are permanently unable to work from the sample.

<sup>28</sup> We know nothing about the level of transfer income received in the NPHS data. Hence, we use the equations estimated using LIS data for probability of transfer receipt and level of transfers expected for those who receive them (see Tables 1 and 2) to predict transfers for each

average, who receive social assistance are in poorer health than those that do not and the relationship is particularly strong for mothers, even after controlling for income (Curtis, 1998b; Williamson and Fast, 1998). However, as explained in the policy review section, Norwegian social transfers are characterized by a more universal strategy (and lone mothers are not particularly likely to receive ‘social assistance’). This may well be less stigmatizing and so we might not expect to see the same negative health consequences associated with having a high percentage of income coming from transfers in Norway as in Canada.

The second classification includes variables that are proxies for recognized determinants of health other than those directly associated with the policies in which we are interested, but which would be classified as confounding factors. These variables include: marital status, age of mother and children, number of children in family, maternal education, and health behaviours such as smoking and exercise (see Slater et.al., 1985).

Lifestyle and health behaviours require special consideration, in that they are implicated in the causal pathway between socio-economic status and health. It is well documented that there is a social gradient for many behavioral factors (e.g., higher-income women are likely to exercise more and smoke less), and that there is also a social gradient for health outcomes (Curtis, 2001). However, there is likely more than a single pathway through which socio-economic status influences health behaviours, and in turn health status, as indicated by the independent associations of socio-economic status documented after controlling for lifestyle variables (Curtis, 2001; Marcan, 1996; Benzeval, 1998). Therefore, in the present study, where we are interested in

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Canadian mother. We use the same procedure for Norway, except that we simply use the transfer level equation for each mother.

assessing the impact of social transfers on health, lifestyle variables will be considered as confounders in the analysis. It is reasonable to assume that policies that increase socio-economic status and thus health status of individuals would also have a positive impact on life-style and health behaviours due to the social gradient across these variables. Thus, it is expected that including health behaviours as confounding factors and not as directly affected by socio-economic status will tend to bias our results downwards.

Means for all explanatory variables are presented in Appendix Table 1. Note, first, that a much higher proportion of mothers are lone mothers in Norway than in Canada (31 versus 17 percent). This point may be quite relevant for our analysis. First, it is possible that lone mothers are more accepted in Norwegian society leading to more generous social transfer programmes;<sup>29</sup> alternatively, more generous transfers may be a response to a large number of lone mothers.<sup>30</sup>

As noted above, an unfortunate limitation of the NPHS data is that income is only reported in categories. After converting the NHS income information to match these Canadian categories, we find that more households are in the ‘tails’ of the income distribution in Canada than in Norway (i.e., have incomes less than \$15,000 or greater than \$80,000). This is consistent with the LIS results reported earlier. We have also created a variable which indicates that more than 50 percent of household income comes from social transfers. This is true for 11.8 percent

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<sup>29</sup>In fact, data from the 1990 World Values Study analysed by Phipps, 1999 suggests that Norwegian are actually *less* accepting of lone mothers than Canadians (e.g., 46.3 percent of Norwegian women (40.2 percent of men) ‘disapprove’ of a single woman having a child versus only 40.0 percent of Canadian women (43.7 percent of men)). But, Norwegians are much more likely to be concerned about people living in need because of social injustice than Canadians. See Phipps, 1999 or 2001.

<sup>30</sup> Or, there may be more lone mothers because it is less financially devastating to leave your husband in Norway?

of Canadian mothers; for 10.1 percent of Norwegian mothers. Finally, rates of labour force participation are higher for Norwegian mothers (87.4 versus 73.4 percent).

In terms of the ‘non-policy’ variables, Appendix Table 1 indicates differences across educational categories, which may reflect differences in the educational systems of the two countries. More Canadian mothers have finished university (37.6 versus 30.7 percent), for example, but more also have less than a high-school diploma (16.5 versus 10.0).<sup>31</sup> In terms of ‘health behaviors’ mothers appear to be less active in Canada (only 6.7 exercise versus 12.5 percent of Norwegian mothers; 20.8 percent of Canadian mothers smoke more than 10 cigarettes per day versus 18.3 percent of Norwegian mothers).

We proceed with our multivariate analysis in two stages: 1) we include only the basic demographic and ‘health behaviors’ variables; 2) we add the income, percent of income coming from transfers and employment status variables. (Thus, the second set of regressions effectively nest the first.)

### 5.b.3 Results for Self-Reported Health Status

Tables 4 and 5 present the regression results for self-reported health status and any visits to a medical practitioner, estimated using ordered probits and probit techniques, respectively. In each table the first section presents Canadian results and the second, Norwegian results. For each country the first column presents the results with lone-mother status and controls added for

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<sup>31</sup> For example, finishing what Canadians label ‘grade 10’ appears to be a watershed for Norwegians students which is similar to finishing ‘high-school’ for us. Thus, individuals who have passed this point in Norway are placed in the category ‘has secondary school diploma.’ school.’

‘determinants’ of health not related to policies of interest (i.e., maternal age and education, number in household, age of children, smoking and activity status), and the second column presents the regression controlling for lone-mother status, specified ‘determinants’ of health and the socioeconomic variables.

The key point to take from the more basic health status regressions (i.e., those which do not control for socioeconomic status) is that the lone mother dummy variable remains negative and statistically significant at the 1 percent level in Canada even after we have controlled for basic demographics and for ‘health behaviors.’ The lone mother variable remains statistically insignificant in the Norwegian regression for health status. The magnitude of this association for Canada is illustrated in Table 6 which presents predicted probabilities for self-reported health status for lone- versus married mothers after controlling for ‘health determinants’ but not ‘policy variables.’ While there is no significant difference in Norway, in Canada, even after we have controlled for ‘health behaviours,’ married mothers have a 26.4 percent chance of have excellent health, for example, while lone mothers have only a 21.2 percent chance.

Results for control variables are consistent with the literature. In Canada, being older, having less than high school education, and smoking, are related to lower levels of self-reported health status. Having younger children or having a university education are related to higher health status. Results for these variables are fairly similar for Norway (see column 3). Differences are that less than high school education and the age of children are not statistically related to health and lack of activity is negatively related to health status in Norway.

When the socioeconomic variables are added to the models, we find, for Canada, that the negative coefficient on ‘lone mother’ finally disappears (see Table 4, column 2). That is,

controlling for income level, percent of income received in the form of transfers, and participation in paid work, lone mothers are not less healthy than married mothers. This seems consistent with our central hypothesis that lone mothers are less healthy in Canada because their socioeconomic status is so low. (The lone mother variable remains insignificant for Norway.)

It is also striking that we find a ‘steeper income gradient’ for mothers in Canada than in Norway. That is, in Canada, higher income is associated with higher health status and lower income is associated with lower health status, and the relationship appears to be rather non-linear. In Norway, (see Table 4, column 4), only the lowest levels of income are significantly (and negatively) related to health status. While there does appear to be an income gradient it is not significant at higher income levels. Thus, there appears to be a ‘flatter gradient’ in Norway, a country with a more equal distribution of income.

Having more than 50% of income in the form of transfers is not significantly related to health status in Canada, but has a positive association in Norway.<sup>32</sup> Norwegian mothers with any earnings have higher self-reported health status than those with no earnings, significant at 10% (though as noted earlier, there is a clear endogeneity issue here).

#### 5.b.4 Results for Health Care Utilization

Table 5 presents results for health care utilization. The key point to notice in the more basic models (i.e., those without the policy variables) is that lone-mother status is insignificant after controlling for ‘health determinants’ in both countries. Thus, while unconditionally, lone

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<sup>32</sup> We put little emphasis on these results, since this variable has been constructed using estimates obtained with the LIS data. Essentially, it is just a function of a set of variables, most of which are also themselves contained in the health status regression.

mothers are more likely to visit the doctor, this association disappears once we have controlled for basic demographics, health behaviors and health status. Otherwise, for Canada, the only variables significantly associated with visiting a health practitioner in the last 12 months is the number of people in the household (a negative relationship), education (a positive relationship), and ‘no exercise’ (a positive relationship). It seems surprising that the mother’s own health status is insignificant. Basic Norwegian results are reported in column 3. Again, results are similar except that health status is the most important determinant of visiting the doctor and education is not significant.

When we add the socioeconomic variables to the health care utilization models (see Table 5, columns 2 and 4) lone-mother status remains insignificant. Table 5 indicates that for both Norway and Canada lower income is associated with a lower probability of visiting any doctor, after controlling for health status. This is consistent with health literature indicating barriers to access for those in lower socio-economic strata (see Curtis, Kingston-Riechers and Phipps, 2001 for a review of this literature).

#### 5.b.5 Potential Health Status and Health Care Utilization Consequences of ‘Giving Canadian Mothers Norwegian Transfers’

Finally, Table 7 (see also figure 7) presents the marginal results of moving individuals from the lowest income category into the second lowest category. The LIS data indicate that if Canadian mothers were to receive the same transfers as Norwegian mothers their incomes would increase, on average, by \$1997, but by \$7019 (or 121 percent) for women at the bottom of the income distribution. This would move 97 percent of the mothers in the lowest-income category

(household income of <\$10,000) to the next higher income category (i.e., household income between \$10,000 and \$15,000) with the predicted result that their health status would increase significantly. The likelihood of excellent health would increase from 9.6 percent to 13.2 percent, a 37.5 percent increase, and the probability of very good health would increase from 30.3 percent to 34.1 percent, a 12.5 percent increase. The likelihood of good health would decrease from 40.8 percent to 38.2 percent (a 6.4 percent reduction), and finally, the proportion of mothers with fair or poor health would decrease from 19.3 percent to 14.6 percent, a 24.4 percent reduction. The probability of visiting any doctor would increase from 60.6 percent to 76.0 percent (a 25.4 percent increase). Some may be concerned that health care utilization increases but other studies have shown that the poorest individuals do not participate in preventative medical visits. In the long run, increasing the utilization of preventative medicine is likely to decrease overall health expenditures.

## 6. Conclusions

The goal of this paper is to investigate the health status and health care utilization consequences of social transfers for mothers, particularly lone mothers, living in Canada and Norway. The literature indicates that the unconditional health status of lone mothers is worse than that of married mothers in Canada. But, lone mothers also have lower socio-economic status, and socioeconomic status is known to be an important ‘determinant of health.’ In many studies, the health status difference between married and lone mothers disappears in multivariate analysis which appropriately controls for socioeconomic status.

Our results, using the 1994 Statistics Canada National Population Health Survey confirm



that Canadian lone mothers have lower unconditional health status and higher rates of health care utilization than married. However, analysis using a comparable Norwegian microdata survey, the 1994 Statistics Norway Health Survey, indicates that the same is not true for Norway. We also demonstrate, using microdata from the Luxembourg Income Study, that lone mothers are financially much better off than Canadian lone mothers, and that social transfers are a major reason for the difference in their relative socioeconomic status. The central hypothesis of this paper is thus that differences in social transfer programmes across the countries may help to explain the differences in health status and utilization noted above.

We investigate this hypothesis using data from LIS which enable us to predict the change in socioeconomic status to be expected for Canadian mothers if they ‘were given Norwegian transfers.’ We find a significant increase in income on average, and especially for mothers at the very bottom of the income distribution. We also conduct multivariate analysis of the links which exist between socioeconomic status and mother’s health. We conclude that if we were to ‘give Canadian mothers Norwegian transfers,’ their health status would very likely improve significantly.

Table 1 Probability of Receiving Social Transfers, Probit Regression Results Canada	
variable	coefficient (standard error in parentheses)
Intercept	2.923* (0.166)
Total Household Income Before Tax	-0.00005* (0.0000018)
Total Household Income Before Tax - Squared	1.2E-10* (7.57E-12)
Mother's Age	0.011* (0.0034)
Dummy=1 if Age of Youngest Child 0-5 Years of Age	0.130** (0.059)
Dummy=1 if Age of Youngest Child 6-11 Years of Age	-0.280* (0.053)
Total Number of Kids < 18 in Household	0.240* (0.027)
Dummy=1 if Married and Only One Earner in Household	0.347* (0.050)
Dummy=1 if Married and Zero Earners in Household	0.411* (0.141)
Dummy=1 if Lone Mom Household with Single Earner	0.430* (0.109)
Dummy=1 if Lone Mom Household and No Earner	0.932* (0.316)
Dummy=1 if Province is Newfoundland	-0.040 (0.144)
Dummy=1 if Province is Nova Scotia	-0.153 (0.111)
Dummy=1 if Province is Prince Edward Island	0.080 (0.314)
Dummy=1 if Province is New Brunswick	-0.066 (0.127)
Dummy=1 if Province is Quebec	0.462* (0.058)
Dummy=if Province is Manitoba	-0.111 (0.102)

Dummy=if Province is Saskatchewan	-0.150 (0.109)
Dummy=if Province is Alberta	-0.277* (0.061)
Dummy=if Province is British Columbia	-0.306* (0.055)
* significant with 99% confidence ** significant with 95 % confidence *** significant with 90% confidence	

Table 2  
OLS Regression Results, The Level of Social Transfers Received (where positive)  
Canada and Norway

	Canada	Norway
variable	coefficient (standard error in parentheses)	coefficient (standard error in parentheses)
Intercept	3404.54* (406.22)	5185.86* (751.74)
Total Household Income Before Tax	-0.0512* (0.0051)	-0.053* (0.0057)
Total Household Income Before Tax - Squared	1.7E-7* (3.0E-8)	7.71E-8* (1.0E-8)
Mother's Age	48.26* (8.61)	-1.348 (17.37)
Dummy=1 if Age of Youngest Child 0-5 Years of Age	767.77* (169.86)	271.08 (329.07)
Dummy=1 if Age of Youngest Child 6-11 Years of Age	-187.42 (161.71)	263.21 (289.12)
Total Number of Kids < 18 in Household	889.98* (63.88)	1614.43* (121.10)
Dummy=1 if Married and Only One Earner in Household	788.67* (133.83)	2165.17* (258.85)
Dummy=1 if Married and Zero Earners in Household	5911.56* (244.72)	8012.00* (614.22)
Dummy=1 if Lone Mom Household with Single Earner	773.73* (196.96)	2143.30* (305.17)
Dummy=1 if Lone Mom Household and No Earner	7210.60* (239.48)	8445.66* (486.59)
Dummy=1 if Province is Newfoundland	2283.23* (367.50)	--
Dummy=1 if Province is Nova Scotia	98.13 (305.91)	--
Dummy=1 if Province is Prince Edward Island	2334.51* (758.00)	--
Dummy=1 if Province is New Brunswick	849.69** (334.85)	--
Dummy=1 if Province is Quebec	-42.70 (137.29)	--
Dummy=if Province is Manitoba	-1225.13* (292.80)	--

Dummy=if Province is Saskatchewan	-1680.43* (298.98)	--
Dummy=if Province is Alberta	-1733.39* (197.94)	--
Dummy=if Province is British Columbia	-706.97* (180.23)	--

Table 3  
 Predicted Probabilities of Health Status for Canada and Norway  
 Unconditional

	Canada		Norway <sup>1</sup>	
	Married Mother	Lone Mother	Married Mother	Lone Mother
Self-Reported Health Status				
Excellent	0.295	0.219 <sup>2</sup>	0.461	0.419 <sup>3</sup>
Very good	0.377	0.363	0.444	0.466
Good	0.262	0.315	0.061	0.071
Fair/Poor	0.066	0.103	0.035	0.044
Visit Physician	0.879	0.919 <sup>4</sup>	0.821	0.839 <sup>5</sup>

<sup>1</sup> The Norwegian data terms are very good, good, neither good nor bad, and poor/very poor

<sup>2</sup> The distributions are significantly different p=0.0001

<sup>3</sup> The distributions are not significantly different p=0.1739

<sup>4</sup> The distributions are significantly different p=0.0207

<sup>5</sup> Not significantly different p=0.4741

Table 4  
 Probit Regression of Overall Self-Reported Health  
 (standard errors in parentheses)

	Canada		Norway	
	with health behaviours	full specification	with health behaviours	full specification
Dummy=1 if Lone Mom	-0.169** (0.070)	0.083 (0.080)	-0.064 (0.096)	-0.040 (0.100)
Dummy=1 if Age is < 25 Years	-0.133 (0.132)	0.019** (0.135)	0.413*** (0.222)	0.460** (0.227)
Dummy=1 if Age is 25-29 Years	-0.123 (0.081)	-0.061 (0.082)	-0.203*** (0.112)	-0.181 (0.114)
Dummy=1 if Age is 40-49 Years	-0.104*** (0.062)	-0.165* (0.063)	-0.097 (0.100)	-0.115 (0.102)
Dummy=1 if Age is 50-59 Years	-0.400** (0.168)	-0.404** (0.170)	-0.472*** (0.253)	-0.437*** (0.256)
Total Number of Individuals in the Household	-0.027 (0.027)	-0.022 (0.028)	0.005 (0.046)	0.00065 (0.050)
Mother has Less than Secondary School Diploma	-0.382* (0.077)	-0.289* (0.078)	0.079 (0.133)	0.092 (0.134)
Mother has Non-University Credentials	-0.022 (0.068)	-0.037 (0.069)	0.081 (0.096)	0.068 (0.097)
Mother has University Credentials	0.219* (0.065)	0.125*** (0.066)	0.329* (0.097)	0.242** (0.102)
Mother Smokes More than Ten Cigarettes Daily	-0.257* (0.058)	-0.219* (0.059)	-0.245** (0.096)	-0.247** (0.097)
Age of the Youngest Child is 1-5 Years	0.261* (0.075)	0.274* (0.076)	0.113 (0.125)	0.147 (0.126)
Age of the Youngest Child is 6-11 Years	0.137** (0.067)	0.128*** (0.067)	-0.093 (0.116)	-0.064 (0.118)
Mother Does Not Participate in Activities for Exercise	-0.085 (0.094)	-0.039 (0.094)	-0.247** (0.109)	-0.234** (0.110)
Dummy=1 if Household Income < 10,000 (1994 Can. \$)	--	-0.594* (0.204)	--	-0.394 (0.365)
Dummy=1 if Household Income 10,000-15,000 (1994 Can. \$)	--	-0.405* (0.147)	--	-0.395 (0.324)
Dummy=1 if Household Income 15,000-20,000 (1994 Can. \$)	--	-0.312* (0.109)	--	-0.150 (0.220)
Dummy=1 if Household Income 20,000-30,000 (1994 Can. \$)	--	-0.173** (0.086)	--	-0.172 (0.137)

Dummy=1 if Household Income 30,000-40,000 (1994 Can. \$)	--	-0.107 (0.074)	--	-0.134 (0.110)
Dummy=1 if Household Income 60,000-80,000 (1994 Can. \$)	--	0.111 (0.072)	--	0.015 (0.117)
Dummy=1 if Household Income >= 80,000 (1994 Can. \$)	--	0.441* (0.081)	--	0.124 (0.143)
Mother Had Some Earnings in the Past Year	--	0.097 (0.059)	--	0.503* (0.122)
The Ratio of Social Assistance to Household Income is > 0.50	--	0.019 (0.141)	--	0.409*** (0.233)
Intercept 1	-0.522* (0.134)	-0.624* (0.151)	-0.164 (0.215)	-0.580** (0.266)
Intercept 2	0.504* (0.134)	0.424* (0.151)	1.288* (0.218)	0.895* (0.267)
Intercept 3	1.605* (0.138)	1.547* (0.154)	1.814* (0.224)	1.442* (0.272)
<p>Overall health categories for Canada: excellent, very good, good and fair/poor  Overall health categories for Norway: very good, good, neither good nor bad (average) and poor/very poor  * significant with 99% confidence  ** significant with 95 % confidence  *** significant with 90% confidence</p>				



Table 5  
 Probit Regression of Visiting a Physician in the Past Twelve Months  
 (standard errors in parentheses)

	Canada		Norway	
	with health behaviours	full specification	with health behaviours	full specification
Dummy=1 if Lone Mom	-0.014 (0.115)	0.134 (0.134)	-0.105 (0.129)	-0.013 (0.137)
Dummy=1 if Age is < 25 Years	0.028 (0.213)	0.112 (0.216)	0.211 (0.300)	0.229 (0.309)
Dummy=1 if Age is 25-29 Years	0.122 (0.133)	0.161 (0.134)	0.076 (0.157)	0.146 (0.162)
Dummy=1 if Age is 40-49 Years	0.091 (0.098)	0.087 (0.100)	-0.191 (0.131)	-0.250*** (0.134)
Dummy=1 if Age is 50-59 Years	-0.105 (0.258)	-0.029 (0.262)	-0.520 (0.327)	-0.513 (0.334)
Total Number of Individuals in the Household	-0.182* (0.040)	-0.182* (0.041)	-0.123** (0.061)	-0.206* (0.066)
Mother has Less than Secondary School Diploma	-0.057 (0.109)	-0.026 (0.112)	0.116 (0.188)	0.179 (0.192)
Mother has Non-University Credentials	0.304* (0.103)	0.281* (0.104)	-0.147 (0.131)	-0.200 (0.133)
Mother has University Credentials	0.429* (0.099)	0.397* (0.101)	-0.046 (0.130)	-0.119 (0.138)
Mother Smokes More than Ten Cigarettes Daily	0.047 (0.093)	0.047 (0.094)	-0.133 (0.130)	-0.110 (0.133)
Age of the Youngest Child is 1-5 Years	-0.004 (0.118)	0.019 (0.119)	0.076 (0.162)	0.141 (0.165)
Age of the Youngest Child is 6-11 Years	-0.006 (0.107)	0.010 (0.108)	0.097 (0.153)	0.186 (0.156)
Mother Does Not Participate in Activities for Exercise	0.272*** (0.160)	0.297*** (0.163)	-0.412* (0.139)	-0.427* (0.142)
Dummy=1 if Self-Reported Health is Excellent	-0.150 (0.098)	-0.177*** (0.100)	-1.128* (0.297)	-1.096* (0.299)
Dummy=1 if Self-Reported Health is Very Good	-0.036 (0.091)	-0.046 (0.092)	-0.775* (0.297)	-0.720** (0.299)
Dummy=1 if Self-Reported Health is Fair/Poor	0.156 (0.163)	0.203 (0.166)	-0.056 (0.469)	0.035 (0.479)
Dummy=1 if Household Income < 10,000 (1994 Can. \$)	--	-0.591** (0.299)	--	-1.235* (0.470)

Dummy=1 if Household Income 10,000-15,000 (1994 Can. \$)	--	-0.153 (0.229)	--	-0.427 (0.454)
Dummy=1 if Household Income 15,000-20,000 (1994 Can. \$)	--	-0.025 (0.167)	--	-0.612** (0.301)
Dummy=1 if Household Income 20,000-30,000 (1994 Can. \$)	--	0.0008 (0.133)	--	-0.270 (0.183)
Dummy=1 if Household Income 30,000-40,000 (1994 Can. \$)	--	0.268** (0.120)	--	0.075 (0.155)
Dummy=1 if Household Income 60,000-80,000 (1994 Can. \$)	--	0.201*** (0.116)	--	0.088 (0.151)
Dummy=1 if Household Income >= 80,000 (1994 Can. \$)	--	0.195 (0.128)	--	0.441** (0.198)
Mother Had Some Earnings in the Past Year	--	0.041 (0.088)	--	-0.087 (0.178)
The Ratio of Social Assistance to Household Income is > 0.50	--	0.053 (0.218)	--	0.126 (0.322)
Intercept	1.708* (0.211)	1.587* (0.235)	2.452* (0.403)	2.788* (0.456)
<p>Overall health categories for Canada: excellent, very good, good and fair/poor  Overall health categories for Norway: very good, good, neither good nor bad (average) and poor/very poor  * significant with 99% confidence  ** significant with 95 % confidence  *** significant with 90% confidence</p>				

Table 6  
 Predicted Probabilities of Health Status for Canada and Norway  
 With Health Behaviours

	Canada		Norway <sup>1</sup>	
	Married Mother	Lone Mother	Married Mother	Lone Mother
Self-Reported Health Status				
Excellent	0.264	0.212 <sup>2</sup>	0.443	0.418 <sup>3</sup>
Very good	0.390	0.378	0.462	0.475
Good	0.279	0.318	0.062	0.068
Fair/Poor	0.067	0.092	0.033	0.038
Visit Physician	0.836	0.833 <sup>4</sup>	0.975	0.968 <sup>5</sup>

<sup>1</sup> The Norwegian data terms are very good, good, neither good nor bad, and poor/very poor

<sup>2</sup> The distributions are significantly different p=0.0154

<sup>3</sup> The distributions are not significantly different p=0.5100

<sup>4</sup> Not significantly different p=0.9035

<sup>5</sup> Not significantly different p=0.4167

Table 7  
 Predicted Probabilities of Health Status for Canada  
 for Mothers Changing Income Status

	Canada		
	Income < \$10,000	Income \$10,000 - \$15,000	Percent Change
Self-Reported Health Status			
Excellent	0.096 <sup>1</sup>	0.132 <sup>2</sup>	37.5
Very good	0.303	0.341	12.5
Good	0.408	0.382	-6.4
Fair/Poor	0.193	0.146	-24.4
Visit Physician	0.606 <sup>3</sup>	0.760 <sup>4</sup>	25.4

<sup>1</sup> The distributions are significantly different p=0.0035

<sup>2</sup> The distributions are significantly different p=0.0058

<sup>3</sup> The distributions are significantly different p=0.0483

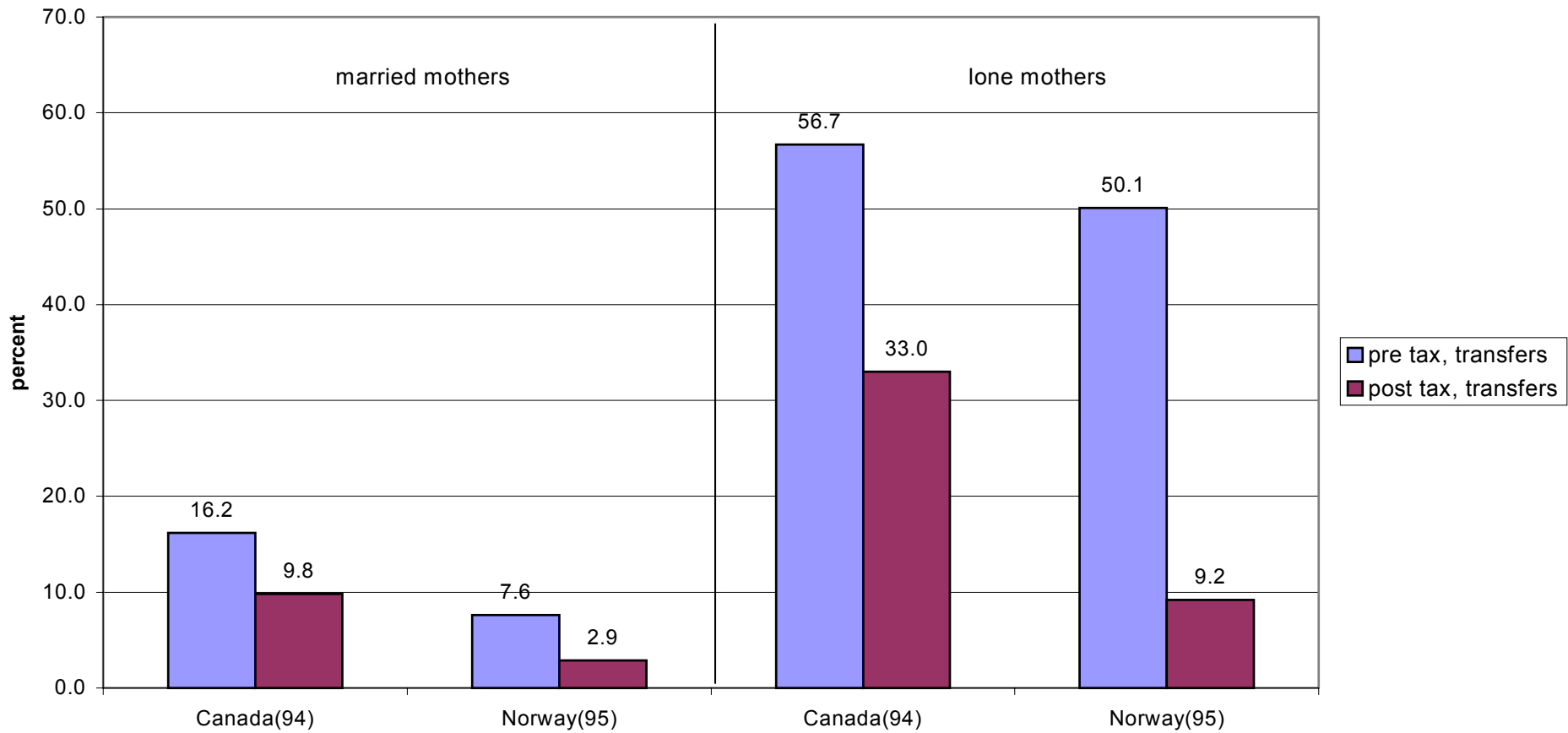
<sup>4</sup> The distributions are not significantly different p=0.5047

Appendix Table  
Means Independent Variables  
Married, Lone and All Mothers  
Households with a Mother Present and at Least One Child 1-17 Years of Age

	Canada			Norway		
	married	lone	all	married	lone	all
Lone Mom Household	--	--	17.4%	--	--	30.9%
Dummy=1 if Household Income < 10,000 (1994 Can. \$)	1.0%	9.7%	2.5%	0.95%	3.8%	1.8%
Dummy=1 if Household Income 10,000-15,000 (1994 Can. \$)	3.7%	28.9%	8.1%	1.0%	9.2%	3.6%
Dummy=1 if Household Income 15,000-20,000 (1994 Can. \$)	4.9%	14.9%	6.6%	1.6%	14.7%	5.7%
Dummy=1 if Household Income 20,000-30,000 (1994 Can. \$)	8.5%	18.0%	10.2%	6.2%	23.4%	11.5%
Dummy=1 if Household Income 30,000-40,000 (1994 Can. \$)	14.7%	14.4%	14.7%	14.8%	19.3%	16.2%
Dummy=1 if Household Income 40,000-60,000 (1994 Can. \$)	33.4%	10.0%	29.3%	43.6%	23.0%	37.3%
Dummy=1 if Household Income 60,000-80,000 (1994 Can. \$)	18.8%	3.6%	16.2%	19.7%	3.9%	14.8%
Dummy=1 if Household Income >= 80,000 (1994 Can. \$)	15.0%	0.5%	12.5%	12.0%	2.7%	9.1%
Mom is Less than 25 Years Old	2.6%	7.4%	3.5%	1.5%	7.9%	3.5%
Mom is 25-29 Years Old	10.5%	12.4%	10.9%	10.4%	27.7%	15.8%
Mom is 30-39 Years Old	51.8%	53.3%	52.1%	49.4%	43.8%	47.7%
Mom is 40-49 Years Old	33.2%	23.6%	31.5%	36.3%	18.3%	30.8%
Mom is 50-59 Years Old	1.8%	3.3%	2.1%	2.3%	2.3%	2.3%
Total Number of Individuals in the Household	4.06	2.80	3.84	4.00	2.87	3.66
Mother has Less than Secondary School Diploma	14.9%	24.4%	16.5%	9.2%	11.7%	10.0%
Mother has Secondary School Diploma	21.1	13.8%	19.8%	27.6%	29.4%	28.2%
Mother has Non-University Credentials	25.6%	28.4%	26.1%	30.2%	33.2%	31.1%
Mother has University Credentials	38.5%	33.4%	37.6%	33.0%	25.7%	30.7%

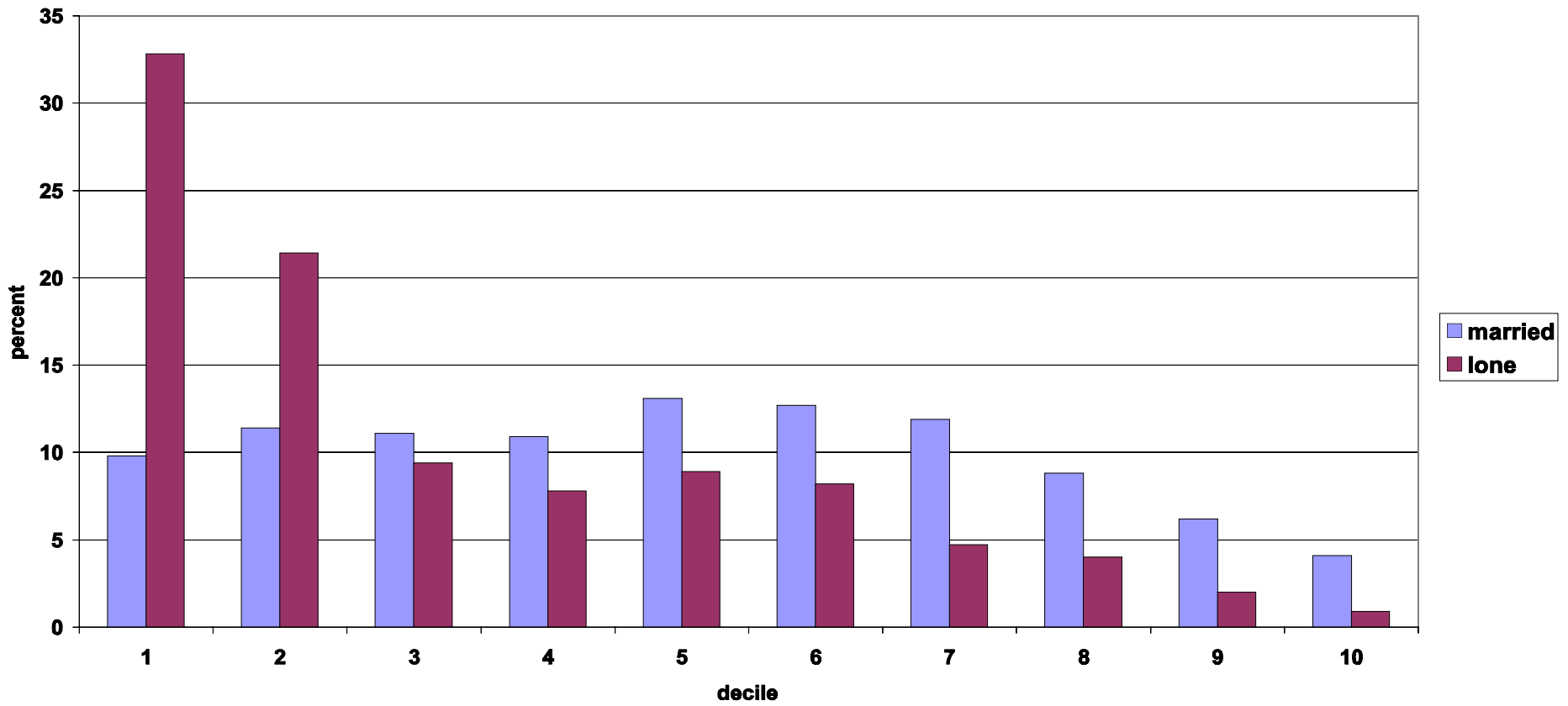
Mother Smokes More than Ten Cigarettes Daily	17.2%	37.8%	20.8%	14.2%	27.3%	18.3%
Age of the Youngest Child is 1-5 Years	43.1%	39.2%	42.5%	44.5%	58.1%	48.7%
Age of the Youngest Child is 6-11 Years	31.0%	33.4%	31.4%	30.4%	27.2%	29.4%
Age of the Youngest Child is 12-17 Years	25.8%	27.4%	26.1%	25.0%	14.7%	21.9%
Mother Does Not Participate in Activities for Exercise	5.9%	8.8%	6.4%	10.7%	16.6%	12.5%
Mother Had Some Earnings in the Past Year	76.0%	62.5%	73.4%	88.5%	84.9%	87.4%
The Ratio of Social Assistance to Household Income is > 0.50	4.7%	45.3%	11.8%	4.2%	23.5%	10.1%
Mother Reports Own Health as Excellent	29.1%	23.5%	28.2%	44.9%	44.5%	44.8%
Mother Reports Own Health as Very Good	37.8%	36.1%	37.5%	46.1%	42.8%	45.0%
Mother Reports Own Health as Good	27.1%	27.1%	27.1%	6.9%	5.3%	6.4%
Mother Report Owns Health as Fair/Poor	6.0%	13.3%	7.3%	2.1%	7.5%	3.8%

**Figure 1**  
**Poverty Among Mothers With Children < 18 in Household**  
**Before-Tax, Before-Transfer and After-Tax, After-Transfer Income**  
**Married and Lone Mothers**



note: The poverty line is calculated using 1/2 the median equivalent after-tax income (OECD scale).  
 Source: Authors' calculations using the Luxembourg Income Study.

**Figure 2a**  
**Mothers' Place in the Income Distribution**  
**After Tax Equivalent<sup>1</sup> Income**  
**Canada**

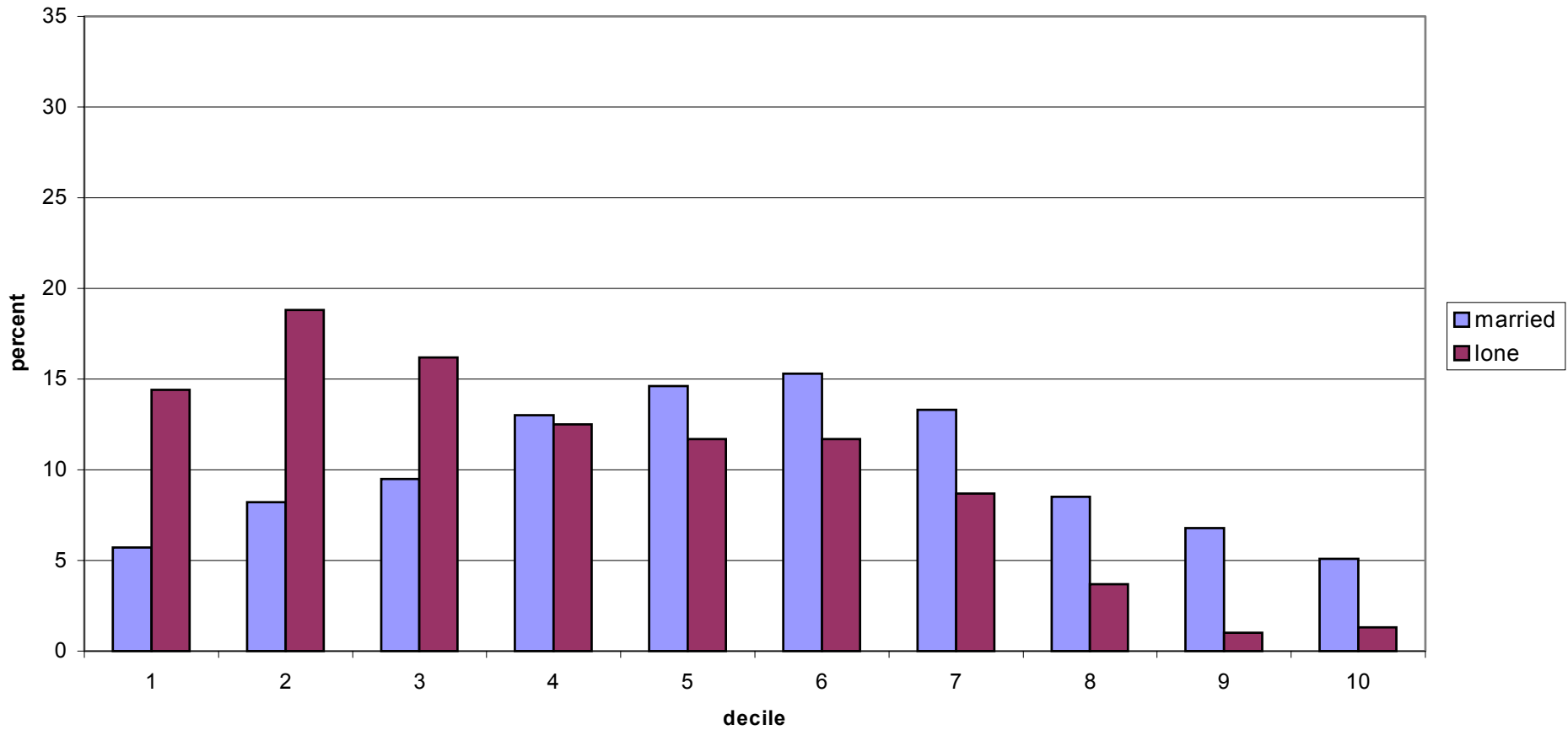


<sup>1</sup> OECD equivalence scale.

Source: Authors' calculations using the Luxembourg Income Study.



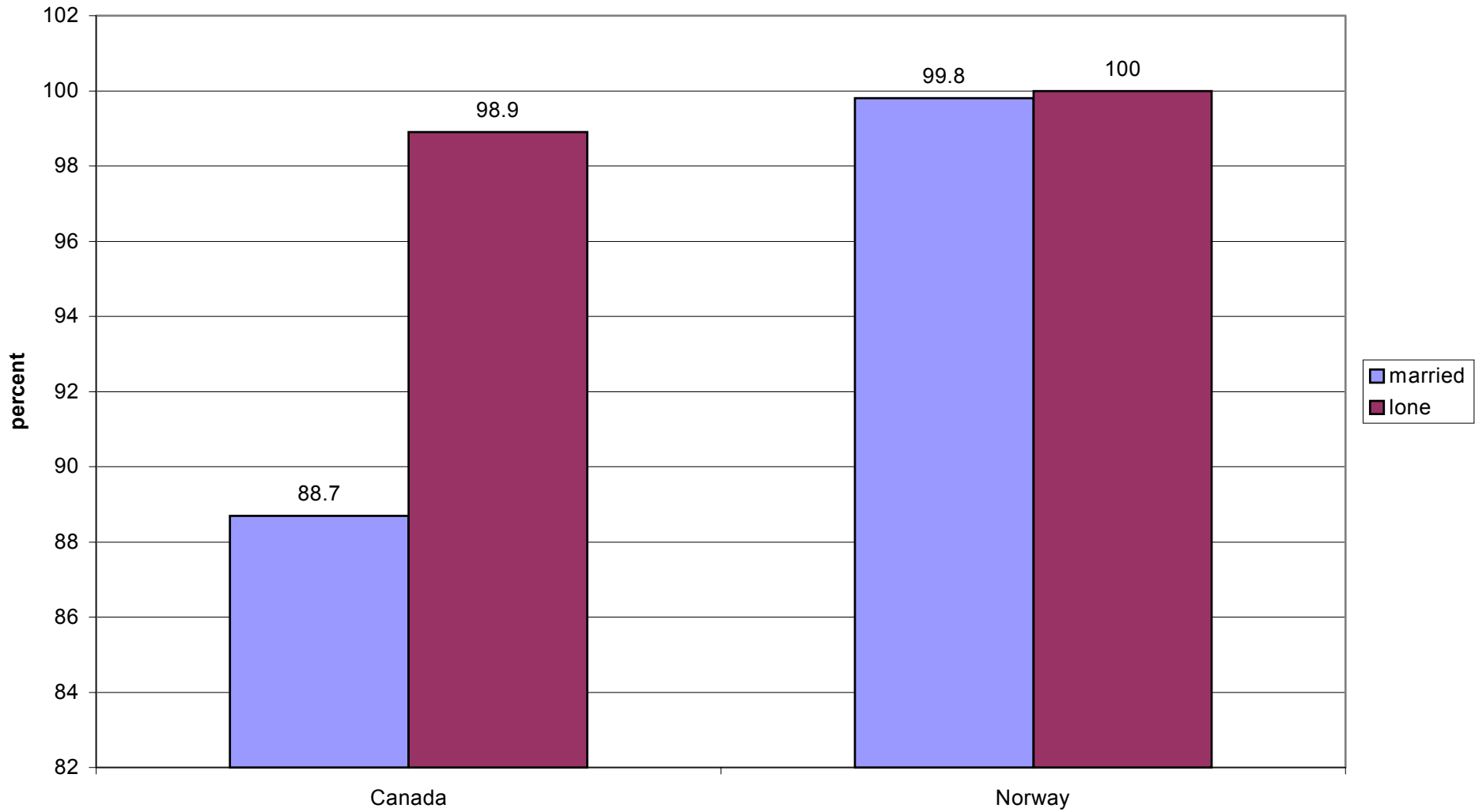
**Figure 2b**  
**Mothers' Place in the Income Distribution**  
**After Tax Equivalent<sup>1</sup> Income**  
**Norway**



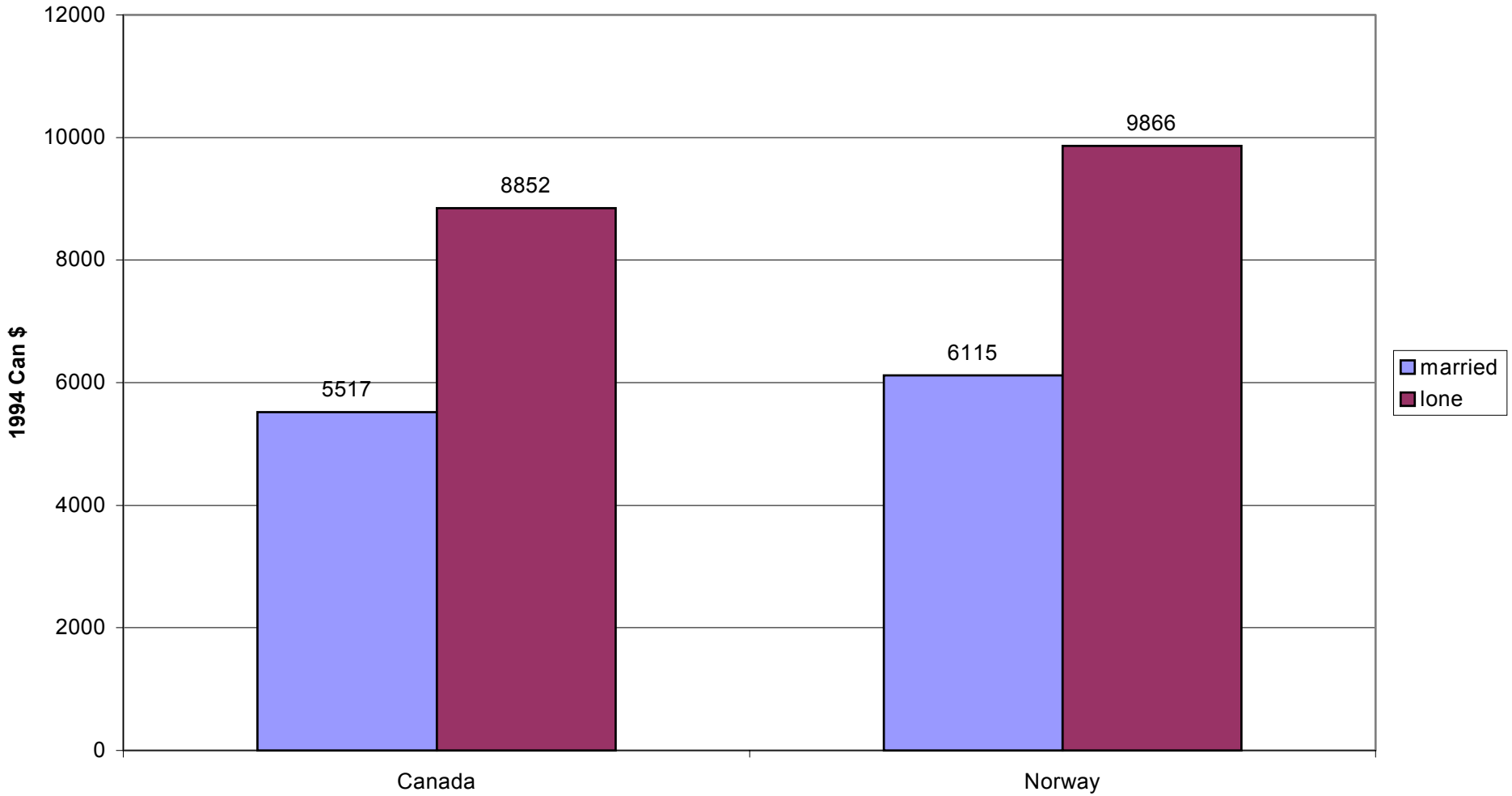
<sup>1</sup> OECD equivalence scale.

Source: Authors' calculations using the Luxembourg Income Study.

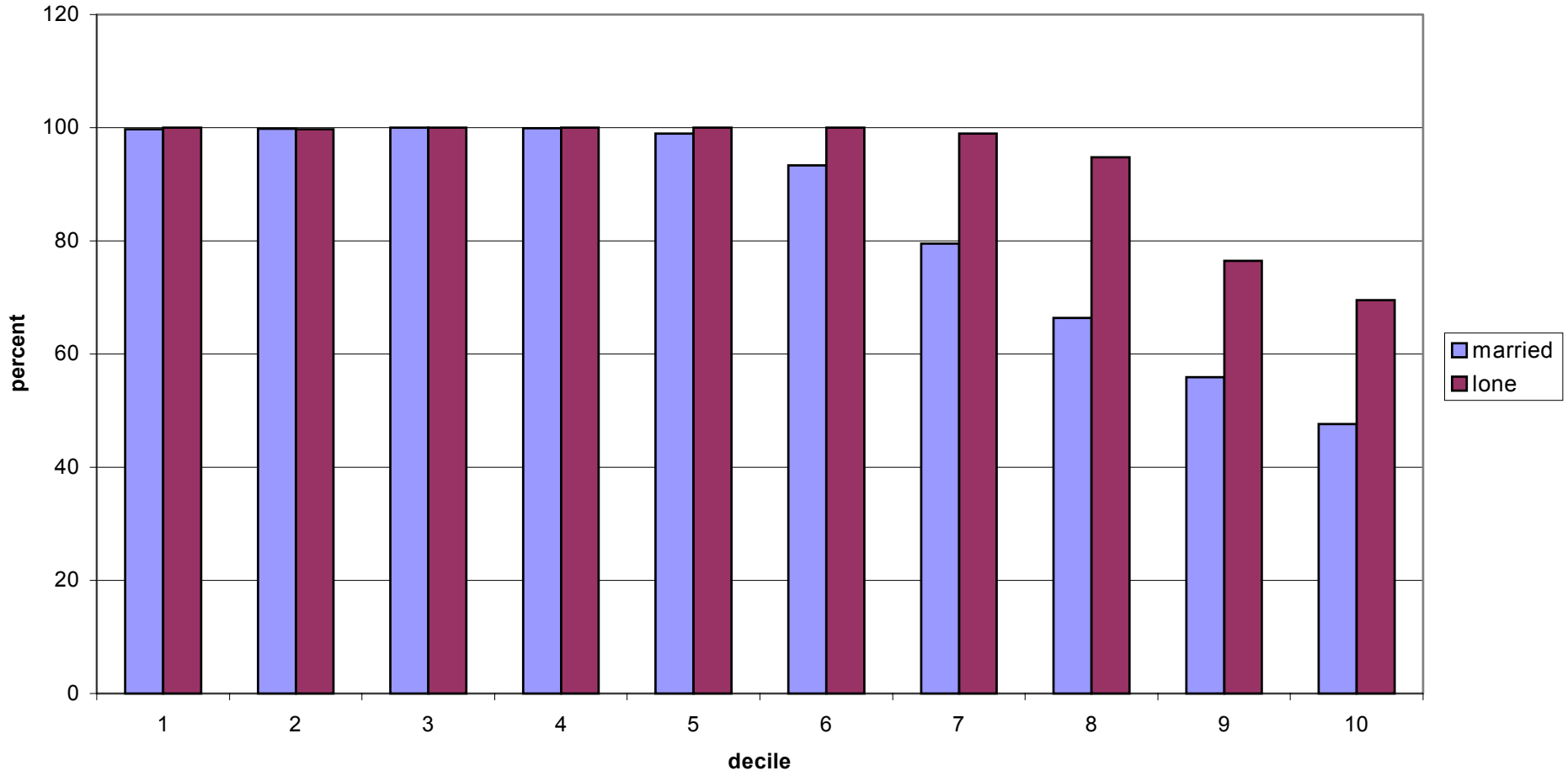
**Figure 3**  
**Percentage of Married/Lone Mothers Receiving Social Transfers Canada and Norway**



**Figure 4**  
**Mean Level of Social Transfers (where positive) for Married/Lone Mothers**  
**Canada and Norway**

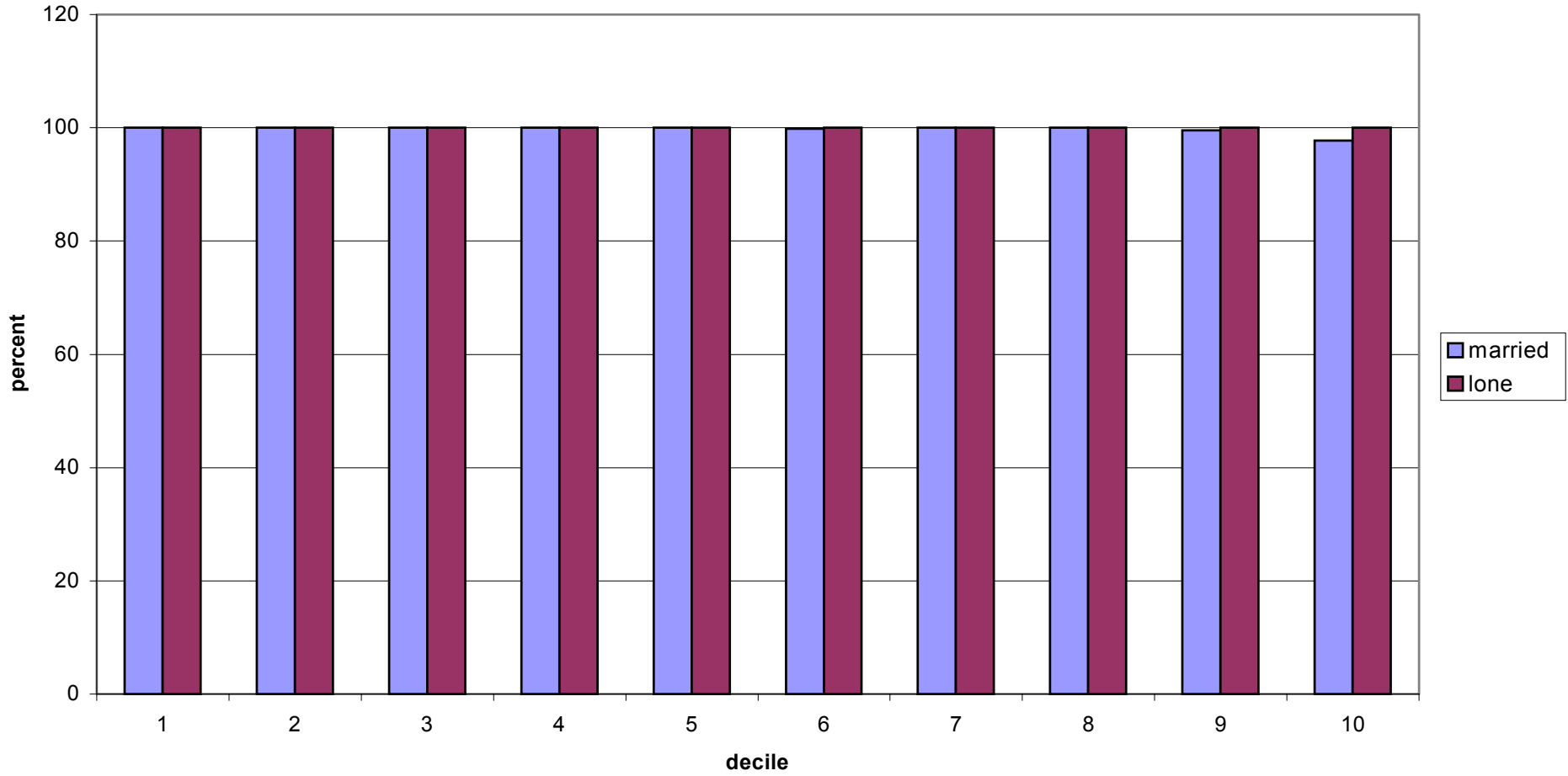


**Figure 5a**  
**Percentage of Married/Lone Mothers Receiving Social Transfers by Decile<sup>1</sup>**  
**Canada**



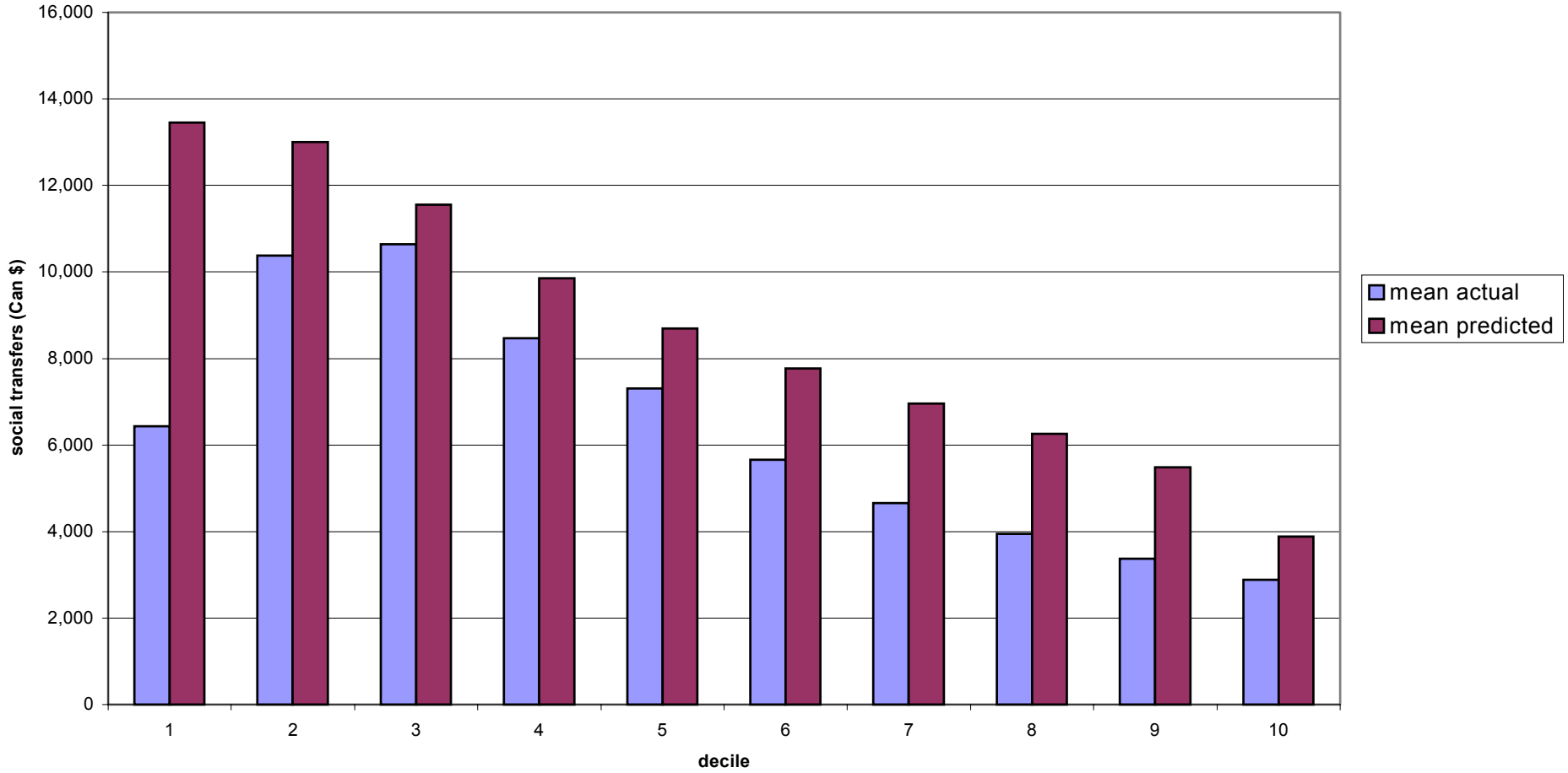
<sup>1</sup> Deciles are based on after-tax equivalent income (OECD equivalence scale).

**Figure 5b**  
**Percentage of Married/Lone Mothers Receiving Social Transfers by Decile**  
**Norway**



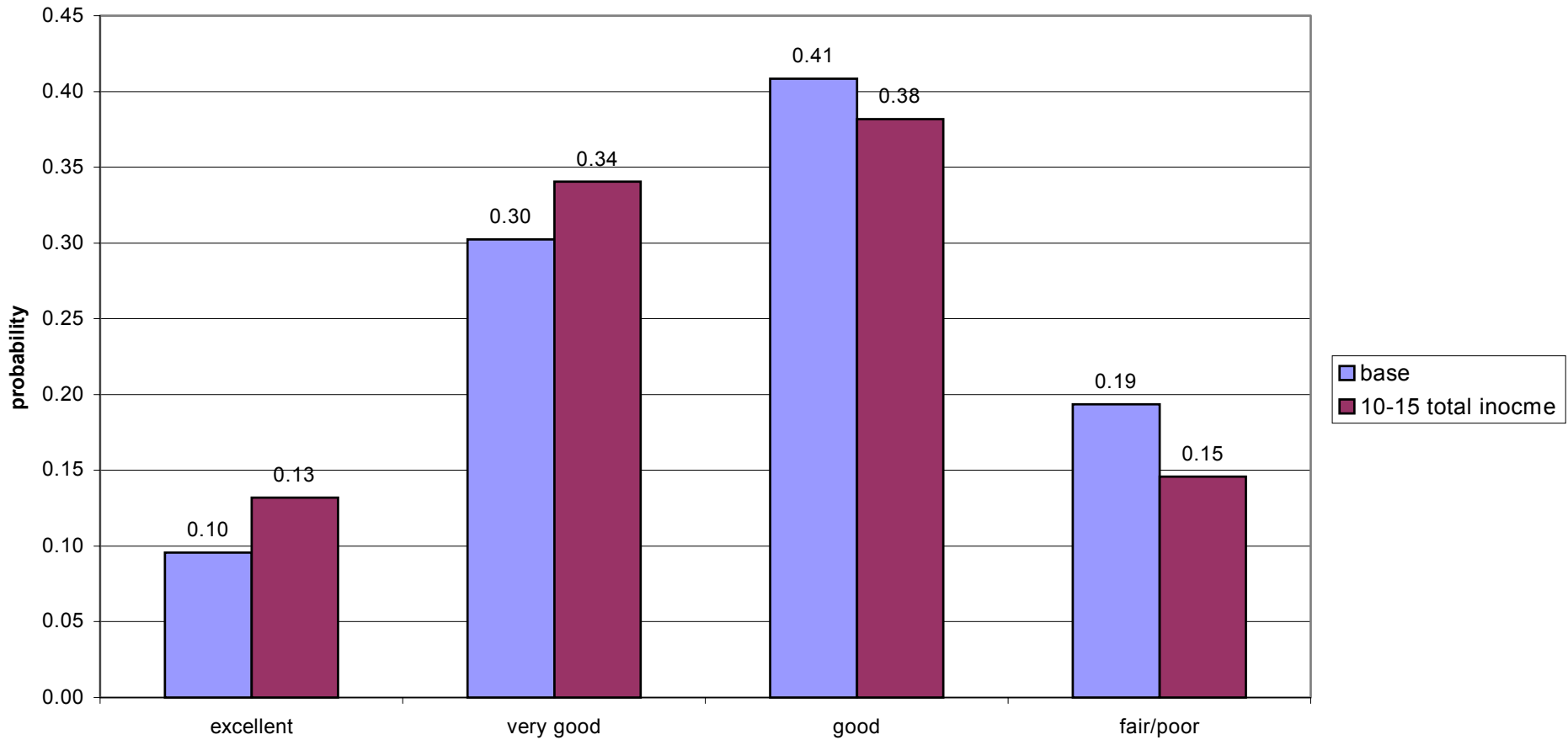
<sup>1</sup> Deciles are based on after-tax equivalent income (OECD equivalence scale).

**Figure 6**  
**Mean Social Transfers by Income Decile**  
**Actual and Predicted<sup>1</sup> Social Transfers**  
**Canada**



<sup>1</sup> Social transfers are predicted using Norwegian coefficients.  
Source: Authors' calculations using the Luxembourg Income Study.

**Figure 7**  
**Marginal Effect on Overall Health of**  
**Moving From < 10,000 Income to Having 10,000-15,000**



note: The base case is a married mother with household income < \$10,000, aged 30-39 with four people in the house. She has a high school education, doesn't smoke and her youngest child is 12-17 years. She had no earnings in the past year

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