Does Social Assistance Participation lead to lower Self-Reported Health?

by

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Abstract

Recent evidence indicates individuals in poor health may be being selected into unemployment rather than unemployment 'causing' poor health. This study examines whether this may also be true in the social assistance (SA) and health relationship. Using a first order Markov process and Canadian longitudinal data, health transition probabilities are estimated for SA states (never on, sometimes on, and always on) controlling for recognized 'determinants of health'. Descriptive results indicate that women who receive SA the entire period are the least healthy followed by those who are sometimes on and then those who are never on SA – confirming the negative relationship found in the cross-section. Transition probabilities indicate that health is most likely to be unchanged in the next period for all SA states; probability patterns are similar across SA states. Particularly high probabilities of poor health in both periods are observed for women always on SA. Finally, there is a high likelihood of moving from on SA and in poor health in period t to Off SA and poor health in t+1 in an 8 state multinomial models. The cumulative evidence offers support that there may be selection of poorer health individuals into SA rather than SA 'causing' poor health.

Key Words:

social assistance participation; self-reported health status, transitions in health status.

JEL code: I12 I38 J18

Introduction

Many countries have instituted reforms to their social assistance (SA) (or welfare) systems with the stated goals of increasing labour force participation, particularly of lone mothers; reducing poverty, particularly of children; reducing the consequences of 'welfare-dependency'; and implicitly, saving government resources. On the whole, evidence seems to be pointing out the success of the reforms in many countries; welfare rolls are shrinking, the labour force participation rates of single mothers are increasing and there are claims that child poverty is on the decline. However, is that the entire story? To date, many of the evaluations focus on the labour force participation consequences of SA reforms. Despite the limited research on the economic, social, health and/or family outcomes resulting from the reduction of SA benefits or increased female labour supply, there is an implicit assumption, yet to be tested, that increased labour force participation is itself a desirable outcome (McDowell, 2005 presents an in depth discussion of the issue) and that SA participation leads to poor outcomes including poor health.

Much of the research into the relationship between SA participation and health has either focused on the relationship between socio-economic status (SES) and the health of lone mothers (see for example Fritzell, Weitoft, & Burström, 2007; Worth & McMillan, 2004)) or the health of children whose parents (typically lone mothers) receive SA (see for example Weitofta, Hjerna, Batljanc, & Vinnerljung, 2008). Cross-sectional studies offer information on the association between SA and health but sample selection is always an issue (are those participating in SA less healthy to begin with?).

The available research on the causal impact of social assistance on health is much more limited. Curtis and Pennock (2006) explore the reasons for the dearth of research in this area and conclude that large scale longitudinal population health surveys usually do not include sufficient samples of social assistance recipients to provide reasonable analyses of those receiving SA or are not frequent enough to examine the changes over time. It is difficult to determine causality in the SA-Health relationship even with longitudinal data as most data collect information on a yearly or biennial basis. The long lapse in time allows for changes in both SA status and health status to occur leaving the question – which caused which. This study fills the gap in research on SA and health in two ways. First, it utilizes a first order Markov process to estimate the dynamics of health status across women who were always and were never on SA during the study period to indicate health status dynamics are different across SA states. Secondly, it uses the same process to examine the dynamics in SA/health states given initial SA/health states to indicate whether changes in health states are different across initial SA states.

The paper proceeds as follows: the next section presents a literature review, section three presents a discussion of the data and methodology, section four the results and section 5 the conclusions and relevant policy discussion.

Literature Review

Blundell (2004) purports that welfare reform is often in support, to differing degrees, of the following goals: increasing the standards of living of low-income families; increasing labour force attachment and self-sufficiency (or decreasing welfare-dependency (Page, 2004)); and cost-reductions for governments. Much of the evaluation of recent welfare reform indicates that,

for at least the second goal, increasing labour force participation, the reforms in most countries have been successful (see for example, Blundell, 2001; Meyer and Rosenbaum, 2001; Doiron, 2004; Milligan and Stabile, 2008). However, the lack of consensus in the literature on the effects of female labour force participation and hours of work on their well-being and that of their families[1] should lead researchers to question the impact of the reforms on the well-being of the women, particularly mothers and their families (Moffit and Winder, 2005; McDowell, 2005; Dunifon et al., 2002; Williamson and Fast, 1998).

There is a vast literature indicating that higher levels of socio-economic status (SES) are associated with better childhood and adult outcomes (e.g., in the Canadian context see for example, Currie and Stabile, 2003; Curtis and Phipps, 2004; Curtis, Dooley and Phipps, 2004; Dooley and Stewart, 2004; Curtis, 2001, Dooley et al., 1998) but the literature on the health effects of being on SA is more limited. Historically, much of the economic literature on SA (welfare) receipt and family well-being focuses on the outcomes of the children as they enter adulthood. Studies tend to examine whether children exposed to SA are more likely to: have lower educational attainment; receive SA themselves; and/or become teen mothers[2].

The literature on focusing on SA and women's health tends to focus on the relationship between socio-economic status (SES) and the health of lone mothers (see for example Fritzell, Weitoft, & Burström, 2007; Worth & McMillan, 2004) or the health of children whose parents (typically lone mothers) receive SA (see for example Weitofta, Hjerna, Batljanc, & Vinnerljung, 2008). Very few studies have examined the association between women's work and/or SA participation and their well-being. Wolfe and Haverman (1983) find that while work itself does not decrease, and may even slightly increase, women's health, the time demands of child care, domestic duties and work does. Curtis (2001) finds that unemployed mothers (i.e., by definition healthy enough to be able and ready to return to work) report higher levels of health than those who are employed; perhaps an indication of fewer time constraints and lower work stress.

Research from multiple disciplines indicates that exiting from SA (and increasing LFP) does not always lead to increases in characteristics associated with higher levels of health. Social work literature (see for example Dunifon et al., 2002) concludes that leaving welfare rolls alone will not lead to better outcomes; families must escape poverty. However, former welfare recipients often have low levels of human capital and few job skills which often lead them into low-paying, part-time jobs that do not offer benefit coverage (Curtis, 2009; Johnson and Corcoran, 2002). Card (2005) points out that the majority of women who were able to move from SA to work in the Self Sufficiency Project[3] earned incomes similar to what they were

[1] Gagne, 2005 presents a review of the literature on parental work and child well-being. Many studies examine the effects of labour supply or welfare reform on child health and well-being (see for example: Cleveland and Hyatt (2003) studies child care, welfare reform and lone mothers; Powell (1997) examines costs of child care and mother's LS; and Lefebvre and Merrigan (2002) examines the effects of child care and early education on the outcomes of children. In an international context see Andren (2003)). Few examine the association between maternal work or SA participation and her own health.

[2] see Levine and Zimmerman, 2005 for a brief description of the literature to date.

[3] see for example Michalopoulos et al., 2000, 2002 for a description of the experiment and Card and Hyslop, 2005; Card and Robins, 2004; for research results. Briefly, for adults, the experiment indicated that generous supplements (doubling the income of many low-wage workers (before taxes and employment expenses)) resulted in: increased full-time employment (doubled full-time employment with an average income increase of $2,700 or 30% over 3 years; reduced use of SA payments but increased use of cash transfers (supplement); and reduced poverty due to increased earned income and cash transfers.

earning on SA[4]. Moreover, involuntary part-time positions and multiple jobs are not typically related to wage growth (Green and Ferber, 2005) and individuals living in poor-working families (no health insurance) may be less likely than those living on SA (have health benefits) to obtain necessary medical treatment leading to poorer health outcomes (Williamson and Fast, 1998).

In complimentary studies, Milligan and Stabile (2007, 2008, 2009), find somewhat conflicting results regarding women's SA participation and health outcomes. The first of the studies showed that increasing the National Child Tax Benefit supplement, which was available to all poor families with children but could be deducted from SA benefits, led to decreases in social assistance participation and improved test scores and decreased aggression for children, decreased maternal depression, and a reduction in hunger. However, the 2009 study found that removing the 'claw back' of the child tax benefit supplement from SA benefits increased SA participation and the health of mothers.

Studies that examine the association between lone mothers' health and SA participation often cannot comment on causality (see Curtis and Pennock, 2006 for a discussion) and thus, have been plagued with similar issues as the research into the relationship between unemployment and health. The overwhelming consensus is that unemployment is bad for your health (see for example, Dooley, Fielding, and Levi, 1996). However a recent study by Bockerman and Ilmakunnas (2009) brings that consensus into question. Using longitudinal data from Finland, between 1996 and 2001, they find that the cross-sectional negative relationship between unemployment and self-assessed health does not hold. Their results indicate that becoming unemployed is associated with lower self reported health status. However, the health status of the unemployed is lower than that of those who were never unemployed. They conclude that persons who have poor health are being selected into the pool of unemployed; explaining why previous research (typically cross-sectional) finds a negative association between unemployment and self-reported health.

Like the unemployment-health relationship, there are several hypotheses regarding the relationship between social assistance and health (Baland, Birch, and Stoddart, 2002; Bartley, 1994). Two pathways are hypothesized in much of the economic literature: first, those exposed to SA are less stigmatized by future participation and second, they know the system thus, transactions costs of participation are lower. This may lead to lower investments in human capital and higher likelihood of SA participation in the future. However, Gruber (2000) argues that SA can help smooth fluctuations in consumption leading to better overall outcomes for families. Other hypotheses have also been proposed. Social assistance may simply be a proxy for lower socio-economic standing (SES). As stated previously, the positive relationship between SES and health is well accepted in the health literature. If SA is simply a proxy for low SES then adequately measuring socio-economic status when estimating the relationship between social assistance and health should negate significance in the relationship but this is often difficult to test due to colinearity of SES variables.

[4] to obtain the transfers women had to find employment within a limited timeframe, and due to the possibility of transfers may have been willing to take poorly paying positions. However, this may also be the case if time limits are applied to SA receipt.

There may be social stigma attached to, or loss of self esteem associated with, being on social assistance that leads to a negative relationship with health independent of low levels of SES. Moving onto social assistance may also lead to a loss of social support, loss of social networks or change in health behaviours (increase in negative or a decrease in positive) which may in turn lead to diminishing health. Longer-term social assistance participation may lead to diminishing social (as well as human) capital which may lead to decreases in health. Finally, it may be that individuals move onto social assistance because they are in poor health and cannot work or need health benefits tied to social assistance receipt. In this case, it is the individual's initial health status that pushes them onto social assistance and may lead to prolonged receipt.

This study is not capable of testing the hypotheses regarding the individual pathways running from social assistance receipt to health (or visa versa). It will use longitudinal data to examine transitions between health states across different SA states and examine whether the health transitions provide any further insight into the SA-health relationship.

Brief description of Social Assistance in Canada

Since 1966, social assistance (SA) funding in Canada has been cost-shared between the federal and provincial governments (and sometimes municipalities). Recent policy changes supported by previously stated goals have seen large cuts to SA benefits since 1996. The National Council of Welfare (2005) documents that welfare incomes for lone parents with one child decreased, from their peaks by 14.5% to 71.2%, depending on the province. In addition, since 1998, the National Child Benefit (NCB)[5] increased differences between work income and SA across the provinces. Provinces were able to reduce their SA payments by the amount of the NCB supplement if they agreed to re-invest the savings in initiatives designed to benefit low-income families with children. Integrating the NCB supplemental benefits into SA payments was hypothesized to produce strong incentives to work (Curtis, 2010; Milligan and Stabile, 2007; see Meyer 2002 for a similar discussion in the US[6]).

SA policies regarding work requirements for those with children at home, benefits received while on SA and those received once the individual exited SA were also amended over this time frame. All provinces offer drug and dental coverage to families on SA (some provinces require co-pays). For those who exit SA: some health coverage is offered depending on the province; coverage ranges from supplementary coverage for all low-income families, coverage for children in low-income families, coverage for 6 months or 12 months after leaving SA or coverage for families whose incomes are seriously affected by prescription medical expenditures. All analyses control for province.

Data and Estimation

This study utilizes the Statistics Canada's Survey of Labour and Income Dynamics (SLID)[7]. SLID offers excellent longitudinal labour force participation, job characteristics and income information (including SA receipt). The target population for SLID is individuals living

[5] See the National Child Benefit Progress Report: 2007 at http//:www.nationalchildbenefit.ca

[6] Meyer, 2002 finds that incentives affecting single mothers with children work through the extensive margin (participation) and that weeks/hours worked (intensive margin) changes little with Earned Income Tax Credits. Curtis (2010) finds the same for Canada.

[7] For more information see
http://www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3889&lang=en&db=IMDB&dbg=f&adm=8&dis=2

in Canada. Exclusions include residents: in institutions, on Indian Reserves, of the Yukon, the Northwest Territories, and of Nunavut. SLID is composed of several panels, each panel is surveyed for a period of six years and a new panel is introduced every three years, thus two panels always overlap. This study uses 4 panels of data covering the years 1996 to 2006 as 1996 was the first year that health information was included in SLID and 2006 is the most recent wave available to date. Utilizing multiple panels increases sample size substantially addressing sample size difficulties found in previous studies of the relationship between SA and health. Only observations with no missing data are included to provide balanced panels. Three years of data are available from the first panel, 6 years from the next two panels and 5 years of data are available in the final panel[8].

Data are collected via both survey questionnaire and from administrative files. Labour surveys, collected in January, include respondents' labour market experiences, educational activity and family relationships during the previous year. The income information is collected in May, just after income tax season, information on the previous year's income is collected from the households in the sample (over 80% of the respondents give Statistics Canada permission to use their administrative tax information). SLID also offers limited information on health; it includes a health a self-reported health status (SRHS) question. The question is "In general, how would you describe your state of health? Would you say it is . . . 1. Excellent?; 2. Very good?; 3. Good?; 4. Fair?; 5. Poor? Health in period t equals 1 if the respondent reported their health as fair or poor, 2 if the respondent reported their health as good, 3 if they reported health as very good and 5 if they reported excellent health.

SLID offers information on individuals who received different types of 'compensation' during the past year. Following Hansen, Lofstrom, Zhang (2006), any receipt of SA in the last year was recorded as having received SA. Concerns have been raised regarding the systematic underreporting of SA incomes received in SLID (see for example, Kapsalis, 2001). In this study SA receipt is measured as yes/no in the year therefore, the underreporting of actual benefits received is not likely to be an issue in this study as long as the individual reported the receipt of any beneift. Hansen, Lofstrom, Zhang (2006) report that the social assistance participation rates obtained in SLID using any receipt in the last year were slightly higher than those reported in the official statistics. From 1999 onward all SA benefits within a household were recorded as going to the female spouse in coupled households thus the household is assigned as having SA if either spouse received SA prior to 1999 or the female spouse was recorded as receiving SA in 1999 or later. To ensure that the household SA benefits are being collected by the individual respondent (or their spouse), the sample is limited to individuals in single person households, couple only households or individuals in households with one economic family containing parents and children under the age of 16 only (families where children receive SA are excluded). Full-time students are excluded. SA equals one in period t if the person's household reported receiving SA benefits in that period and zero otherwise.

Control variables include socio-demographic variables known to be associated with health and which may also be associated with the likelihood of receiving SA. They include age and age squared, education, marital status, rural status, presence of pre-school and school aged children, number of children and province of residence. The control variables are measured in

[8] A dummy for panel was originally included in each model but was never statistically significant so it was dropped.

period t. Unfortunately, SLID contains no information on health behaviours however, education and income are highly correlated with most health behaviours and are included as controls.

Permanent income (measure of long-term income status) is a better measure of overall economic status than any individual year's income. For example, an individual just graduating from university may have a current yearly income that is quite low but has expectations of much higher income in the years to come; their behavior can be expected to be quite different from another individual with the same current income with no expectations of increases over time. Thus, the panel average income is added as a control. Appendix one provides descriptive characteristics for control variables for the analyses. The focus of the study is females between the ages of 19 and 55.

Estimation

The approach used to study health dynamics conditional on SA status follows Kuhn and Schuetze (2001) and Skuterud and Su (2010). The health state is assumed to follow a first-order Markov process for three groups in SLID: women who never receive SA in the study period, women who receive SA every year in the study period, and women who receive SA in some years but not others. The first-order Markov process assumes that the probability of being in $state_j$ in period t+1 depends only on the state observed in period t.

The study begins by examining transition probabilities for the three groups of women separately. SRHS is an ordered categorical variable thus the first analyses estimate, *for each group*, the probability of being in health $state_j$ (excellent, very good, good, fair/poor) in year t+1 given being in health $state_i$ in year t using four separate ordered logits *for each group*; each one restricting the sample to observations who reported being in a particular *i* health state in year t (either unconditionally or conditional on the mean characteristics of each subgroup - listed in Appendix 1). For each group, P*ij* is the probability of being in health state *j* in the second period given being health state *i* in the first period. For example, P_{11} is the probability of being in excellent health in the second period given being in excellent health in the first period, P_{34} is the probability of being in good health in the second period given being in fair/poor health in the first period, and so on.

The second set of analyses repeats the process but pools the groups. Estimates, from the pooled regressions, of the probability of being in health $state_j$ in year t+1 given being in health $state_i$ in year t are obtained using four separate ordered logits including dummy variables for Always on SA and Sometimes on SA (Never on SA is the omitted group); each one restricting the sample to observations who reported being in one of the *i* health states in year t (conditional on the mean characteristics of stated subgroups - listed in Appendix 1).

Finally, transition probabilities are estimated for 8 possible SA/health states for the pooled sample: no SA, excellent health; no SA, very good health; no SA, good health; no SA, fair/poor health; SA, excellent health; SA, very good health; SA, good health; and SA, fair/poor health. Although some states would be clearly preferred to others (No SA, excellent health is preferred to No SA, poor health) there is no clear ordering of all states (No SA, good health may not be preferred to SA, very good health or SA, excellent health may be preferred to No SA, good health) thus, the transition probabilities are estimated by eight multinomial logit models,

estimating SA/health state$_{t+1}$ restricting the sample to observations who reported being in given SA/health state$_t$ (either unconditionally or conditional on the mean characteristics of the full sample listed in Appendix 1). The entire sample must be utilized to obtain a large enough sample size to estimate the multinomial models by original SA/health state.

As stated previously, the first-order Markov process assumes that outcomes in period t+1 depend only on the outcomes observed in period t. Thus, the estimation of the probabilities requires information on the same individual across two time periods only. The first panel of SLID offers 3 two-year pairings (1996-1997, 1997-1998 and 1998-1999), the second and third panels offer 6 two year pairs and the fourth panel offers 5 two year pairings. Assuming a first-order Markov process allows the circumvention of one of the major problems when attempting to disaggregate samples by SA participation – sample size. Using female's two-year pairings provides a total of 55,563 observations; 47,757 female pairing never on SA, 2,916 observations always on SA and 4,890 observations on SA some years and off others.

Results

Descriptive Analysis

Table 1 provides a first look at the variability in SA and health status recorded in SLID. The last row of table 1 reports the proportion of women in the SA participation groups. The vast majority women do not report SA benefits in any of the years available in the data (over 85% of women), about 9% of women report receiving SA at some point in the survey period and 6% report receiving SA in all years surveyed. The first panel indicates health status by SA participation in period t and the second repeats the statistics for period t+1. For all groups, self-reported health status (SRHS) falls slightly across the two periods. SRHS is substantially higher for women never on SA followed by those with some SA participation and long-term SA recipients report the lowest health status. Of particular note is that the proportion of women in fair/poor health at least doubles each time SA status changes in both time periods (from about 8% for No SA to 22% for some SA and 45% for Always SA). The proportion of women in good health is fairly similar across the three groups. Excellent health falls by 30%, on average, when women move from No SA to Some SA and another 55% when moving to Always SA. The proportion of women reporting Very Good health falls slightly less with a 25% fall from No SA to Some SA and a further 37% fall for women who are always on SA. The conclusion is clear – unconditionally, women receiving SA in some years have significantly lower SRHS than those who do not receive SA and those on long-term SA have the worst SRHS.

Appendix 1 presents the descriptive statistics for the sample of women by SA status. The proportion of women with children (preschool or school-aged) is similar across No SA and Some SA but substantially fewer women Always on SA have children in either age group and thus, household size is smaller for this group. Those Always on SA are slightly older. The largest differences between the three groups are seen in education, marital status and averaged income. Women in the No SA group are substantially more educated, more likely to be married, have higher averaged household incomes and are less likely to live in rural areas than those Sometimes on SA and this group is in turn substantially better educated, more likely to be married, has higher averaged household incomes and is less likely to live in rural areas than women who are Always on SA. These characteristics are associated with health status and with SA participation thus, they are used as controls in the estimation of the transition probabilities.

Table 1	All Females	NO SA	SOME SA	ALWAYS SA
		Health T0		
Excellent	0.273 (0.002)	0.293 (0.002)	0.192 (0.006)	0.087 (0.005)
Very Good	0.383 (0.002)	0.405 (0.002)	0.300 (0.007)	0.188 (0.007)
Good	0.233 (0.002)	0.224 (0.002)	0.288 (0.007)	0.280 (0.008)
Poor	0.111 (0.001)	0.078 (0.001)	0.221 (0.006)	0.444 (0.009)
		Health T+1		
Excellent	0.259 (0.002)	0.279 (0.002)	0.185 (0.006)	0.078 (0.005)
Very Good	0.385 (0.002)	0.408 (0.002)	0.290 (0.007)	0.185 (0.007)
Good	0.241 (0.002)	0.232 (0.002)	0.295 (0.007)	0.277 (0.008)
Poor	0.116 (0.001)	0.081 (0.001)	0.230 (0.006)	0.461 (0.009)
SA type	0.855	0.088	0.057	

Transition Probabilities

The first set of transition probabilities appears in table 2. The left-hand panel contains the unconditional and the right-hand the conditional transition probabilities. The top panel contains the transition probabilities for women who were never on SA, middle for those sometimes on SA and bottom for those always on SA. The conditional predicted probabilities are obtained by using the sub-sample means of the control variables. The discussion will focus on the conditional transition probabilities as the patterns (if not absolute values) of the probabilities are fairy similar to the unconditional probabilities. The most likely outcome in period t+1, given outcome in period t, is highlighted red, the second is highlighted yellow and the third is highlighted green. For all original health states, except excellent health for those always on SA, the most likely occurrence is the same health state in t+1. The second highest transition probability is a fall by one health state if the original health state was excellent or very good and an increase by one health state in period t+1 if the original health state was good or fair/poor. Again, the exception is for the Always on SA group where there is an increase (fall) in health state for those who were in excellent (good) in the original period. For the original state of poor health, the third highest transition probabilities are for an increase in two health states between period t and t+1. For those who were in good health in period t, the third most likely occurrence in period t+1 is a fall in two health states and for those in very good health it is an increase to excellent health status. The most notable difference in the transition probabilities across SA status is the very high probability of remaining in poor health for females who experience SA sometimes (0.65) or who are always on SA (0.76) – recall these groups have substantially higher proportions of women in the worst health state in period t as well.

Table 3 presents the transition probabilities for women in different SA states conditioned on the highest (never on SA) and the lowest (always on SA) mean characteristics in period t. The results are surprisingly robust to the substantial change in mean characteristics (Appendix One, table 1).

Table 2

	Unconditional T0				Conditional T0			
T+1	Excellent	Very Good	Good	Fair/Poor	Excellent	Very Good	Good	Fair/Poor
Female Never on SA								
Excellent	0.537	0.096	0.029	0.015	0.550	0.205	0.102	0.043
Very Good	0.299	0.453	0.213	0.094	0.340	0.555	0.363	0.152
Good	0.128	0.346	0.538	0.323	0.094	0.209	0.441	0.344
Fair/Poor	0.037	0.106	0.220	0.568	0.015	0.031	0.093	0.460
Female Sometimes on SA								
Excellent	0.626	0.116	0.034	0.018	0.442	0.159	0.096	0.022
Very Good	0.250	0.459	0.220	0.099	0.352	0.499	0.251	0.081
Good	0.094	0.323	0.531	0.324	0.166	0.288	0.492	0.248
Fair/Poor	0.030	0.102	0.215	0.560	0.040	0.054	0.161	0.649
Female Always on SA								
Excellent	0.800	0.281	0.110	0.101	0.317	0.100	0.045	0.019
Very Good	0.152	0.472	0.314	0.186	0.455	0.447	0.161	0.036
Good	0.031	0.178	0.433	0.374	0.152	0.348	0.520	0.181
Fair/Poor	0.017	0.069	0.143	0.339	0.076	0.104	0.275	0.764

Steady State for Conditional probabilities	**Not on SA**	**Sometimes on SA**	**Always on SA**
Excellent Health	0.256	0.152	0.058
Very Good Health	0.422	0.306	0.169
Good Health	0.247	0.328	0.314
Fair/Poor Health	0.075	0.215	0.459

Note: Unconditional transition probabilities are predicted from separate ordered logit regressions for each original state. Conditional transition probabilities are obtained in a similar manner but controls are added for the age, age^2, household size, marital status, education, average income, presence of preschool and/or school aged children, rural and province in period t at the subpopulation mean.
First, second, third highest probability

Table 3 **Not SA Characteristics** **Always on SA Characteristics**

	T0				T0			
T+1	Excellent	Very Good	Good	Fair/Poor	Excellent	Very Good	Good	Fair/Poor
Female Never on SA								
Excellent	0.554	0.211	0.110	0.049	0.511	0.183	0.087	0.036
Very Good	0.335	0.552	0.362	0.158	0.359	0.546	0.322	0.123
Good	0.095	0.205	0.433	0.346	0.110	0.233	0.472	0.313
Fair/Poor	0.017	0.032	0.095	0.448	0.020	0.038	0.119	0.528
Female Sometimes on SA								
Excellent	0.488	0.154	0.074	0.026	0.446	0.132	0.058	0.019
Very Good	0.371	0.532	0.292	0.093	0.392	0.514	0.251	0.070
Good	0.118	0.268	0.494	0.271	0.136	0.299	0.518	0.227
Fair/Poor	0.022	0.046	0.139	0.611	0.026	0.055	0.173	0.684
Female Always on SA								
Excellent	0.316	0.110	0.047	0.017	0.280	0.094	0.036	0.012
Very Good	0.432	0.488	0.214	0.062	0.434	0.461	0.178	0.046
Good	0.208	0.335	0.529	0.210	0.234	0.367	0.530	0.169
Fair/Poor	0.045	0.066	0.210	0.711	0.053	0.078	0.255	0.772

Steady State for Conditional probabilities	**Not on SA**	**Sometimes on SA**	**Always on SA**
Excellent Health	0.207	0.116	0.048
Very Good Health	0.396	0.302	0.184
Good Health	0.285	0.336	0.326
Fair/Poor Health	0.112	0.246	0.442

Note: Conditional transition probabilities are predicted from separate ordered logit regressions for each original state. Each regression contains dummy variables for SA Always and SA sometimes (SA Never is the omitted category) controls are added for age, age^2, household size, marital status, education, average income, presence of preschool and/or school aged children, rural and province in period t. Panel one sets controls at the mean characteristics of the sample who are never on SA and panel two sets controls at the mean characteristics of the sample who are always on SA.
First, second, third highest probability

Table 4 ALL Females Multinomial Logit

T1	T0 nsaex	nsavgh	nsagh	nsaph	saexh	savgh	sagh	saph
Unconditional								
nsaexh	0.416	0.146	0.074	0.017	0.279	0.097	0.069	0.002
nsavgh	0.243	0.385	0.187	0.052	0.121	0.216	0.095	0.024
nsagh	0.125	0.186	0.401	0.164	0.063	0.109	0.208	0.082
nsaph	0.018	0.046	0.105	0.503	0.012	0.020	0.073	0.259
saexh	0.094	0.029	0.017	0.004	0.235	0.085	0.044	0.014
savgh	0.064	0.105	0.067	0.025	0.182	0.263	0.145	0.036
sagh	0.029	0.087	0.086	0.029	0.076	0.182	0.257	0.135
saph	0.011	0.016	0.064	0.205	0.032	0.027	0.109	0.449
Conditional								
nsaexh	0.551	0.200	0.097	0.035	0.152	0.048	0.000	0.000
nsavgh	0.338	0.555	0.358	0.147	0.091	0.161	0.005	0.000
nsagh	0.096	0.211	0.447	0.322	0.004	0.100	0.182	0.159
nsaph	0.013	0.030	0.094	0.495	0.000	0.000	0.045	0.383
saexh	0.003	0.003	0.000	0.000	0.434	0.111	0.024	0.000
savgh	0.000	0.002	0.001	0.000	0.310	0.283	0.263	0.080
sagh	0.000	0.001	0.003	0.000	0.009	0.283	0.378	0.165
saph	0.000	0.000	0.000	0.001	0.000	0.014	0.102	0.214

Note: nsa=No SA, sa=On SA; exh=excellent health, vgh=very good health, gdh=good health and Prh=fair/poor health.
The zeroes in the conditional panel are actually positive figures but appear to be zero when rounded to three decimal places.
Unconditional transition probabilities are predicted from separate ordered logit regressions for each original state.
Conditional transition probabilities are obtained in a similar manner but controls are added for the age, age^2, household size, marital status, education, average income, presence of preschool and/or school aged children, rural and province in period t at the population mean.
First, second, third highest probability

Steady State for Conditional probabilities nsaexh 0.247; nsavgh 0.415; nsagh 0.248; nsaph 0.077; saexh 0.005; savgh 0.005; sagh 0.004; saph 0.000

Finally, table 4 presents the predicted transition probabilities for the 8 SA/health states. The highest probabilities are again, associated with remaining in the same health state in period t+1 as the origin health state. The conditional probability of moving on to SA from not being on SA in period one is very small for all health states. The transition patterns for those not on SA in period one are similar to the subsample of Women not on SA (not surprising given that 85% of the women are never on SA). The picture is somewhat different for those on SA in the original time period. The women are much less likely to remain the same health state in the second period although it is still the highest probability for all but those in the worst health state. Women on SA and in excellent health period one are the most likely to remain in that state. Women on SA and in poor health in period one are most likely to stay in poor health but exit SA. The next likely transition for this group is no change and the third is remaining on SA with an increase in one

health state. For women on SA but in one of the top two health states in period one, the second highest likelihood is to fall one health state in period two and for those in good health it is to increase one health state. The third most likely transition for these three groups is to stay in the same health state but exit SA.

Summary and Discussion

The results of this study clearly indicate that there is strong persistence in health status across time no matter the SA status. Those who never receive SA have the highest health status and health status tends to remain the same or improve from period one to period two. Women who receive SA the entire study period are much more likely to be in the poorest health states and to remain there than women in the other two groups. The average health status of women who change SA states within the study period lies between that of the other two groups and they are most likely to remain in the same health state the following period with very high probabilities of remaining in poor health. The next most likely event is to increase a health state if in good health and fall a health state if they are in the better health states. The most notable result in the multinomial model of the 8 SA/health states is the high probability of women in poor health to move off SA while remaining in that health state.

The logit models estimating transition probabilities separately for each SA group offer similar transition patterns across SA participation types. This is an indication that SA participation is not associated with worsening health status. The particularly high probabilities of poor health in period t and t+1 for women who are always on SA offers some evidence that, like the unemployment-health relationship, women in poorer health may be being selected in SA. The high probability of exiting SA while remaining in poor health offers some evidence that SA participation is not driving poor health.

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Appendix One

Table 1	MEAN CONTROLS TIME T0(st err)			
	All Females	NO SA	SOME SA	ALWAYS SA
Preschool children	0.390 (0.003)	0.397 (0.003)	0.398 (0.010)	0.287 (0.012)
School age children	0.602 (0.004)	0.601 (0.004)	0.658 (0.013)	0.549 (0.016)
Household size	2.924 (0.006)	2.938 (0.006)	3.032 (0.021)	2.588 (0.028)
Age	41.44 (0.045)	41.53 (0.048)	39.57 (0.165)	42.78 (0.203)
Age squared	1773 (3.873)	1777 (4.120)	1631 (13.81)	1892 (17.39)
Less High school	0.178 (0.002)	0.143 (0.002)	0.306 (0.007)	0.506 (0.009)
High school	0.200 (0.002)	0.200 (0.002)	0.215 (0.006)	0.186 (0.007)
Some Post Secondary	0.109 (0.001)	0.105 (0.001)	0.145 (0.005)	0.117 (0.006)
Post Secondary	0.343 (0.002)	0.361 (0.002)	0.276 (0.007)	0.162 (0.007)
University	0.170 (0.002)	0.191 (0.001)	0.058 (0.007)	0.029 (0.007)
Single	0.130 (0.001)	0.109 (0.001)	0.199 (0.006)	0.347 (0.009)
Previously Married	0.116 (0.001)	0.089 (0.001)	0.216 (0.006)	0.346 (0.009)
Married	0.754 (0.001)	0.802 (0.001)	0.585 (0.006)	0.307 (0.009)
Average Income	52608 (180.3)	56529 (199.8)	34511 (327.6)	21903 (392.7)
Rural	0.213 (0.002)	0.217 (0.002)	0.202 (0.006)	0.169 (0.007)
PEI	0.007 (0.000)	0.007 (0.000)	0.008 (0.001)	0.006 (0.001)
NFLD	0.018 (0.001)	0.016 (0.001)	0.028 (0.002)	0.028 (0.003)
NS	0.036 (0.001)	0.035 (0.001)	0.040 (0.003)	0.040 (0.004)
NB	0.027 (0.001)	0.026 (0.001)	0.034 (0.003)	0.033 (0.003)
QUE	0.263 (0.002)	0.255 (0.002)	0.253 (0.006)	0.382 (0.009)
ONT	0.360 (0.002)	0.366 (0.002)	0.356 (0.006)	0.298 (0.009)
MAN	0.038 (0.001)	0.040 (0.001)	0.029 (0.002)	0.024 (0.003)
SASK	0.032 (0.001)	0.032 (0.001)	0.033 (0.003)	0.034 (0.003)
ALB	0.099 (0.001)	0.101 (0.001)	0.093 (0.004)	0.077 (0.005)
BC	0.120 (0.001)	0.123 (0.002)	0.126 (0.005)	0.078 (0.005)

Table 2 | MEAN CHARACTERISTICS TIME T1(st err)

	All Females	NO SA	SOME SA	ALWAYS SA
Preschool children	0.361 (0.003)	0.368 (0.003	0.372 (0.010)	0.248 (0.011)
School age children	0.671 (0.004)	0.672 (0.004	0.723 (0.014)	0.596 (0.017)
Household size	2.947 (0.006)	2.966 (0.006	3.027 (0.021)	2.583 (0.029)
Age aget	42.44 (0.045)	42.53 (0.048	40.57 (0.165)	43.78 (0.203)
Age squared	1827 (3.95)	1833 (4.197	1678 (14.08)	1948 (17.72)
Less High school	0.177 (0.002)	0.143 (0.002	0.305 (0.007)	0.504 (0.009)
High school	0.200 (0.002)	0.199 (0.002	0.214 (0.006)	0.188 (0.007)
Some Post Secondary	0.109 (0.001)	0.105 (0.001	0.144 (0.005)	0.115 (0.006)
Post Secondary	0.344 (0.002)	0.362 (0.002	0.279 (0.007)	0.164 (0.007)
University	0.170 (0.002)	0.191 (0.002	0.058 (0.007)	0.029 (0.007)
Single	0.122 (0.001)	0.102 (0.001	0.183 (0.006)	0.339 (0.009)
Previously Married	0.126 (0.001)	0.098 (0.001	0.237 (0.006)	0.360 (0.009)
Married	0.752 (0.001)	0.800 (0.001	0.580 (0.006)	0.301 (0.009)
Average Income	52608 (180.3)	56529 (199.8	34511 (327.6)	21903 (392.7)
Rural	0.215 (0.002)	0.220 (0.002	0.200 (0.006)	0.168 (0.007)
PEI	0.007 (0.000)	0.007 (0.000	0.008 (0.001)	0.006 (0.001)
NFLD	0.018 (0.001)	0.016 (0.001	0.028 (0.002)	0.028 (0.003)
NS	0.036 (0.001)	0.035 (0.001	0.040 (0.003)	0.040 (0.004)
NB	0.027 (0.001)	0.026 (0.001	0.033 (0.003)	0.032 (0.003)
QUE	0.262 (0.002)	0.255 (0.002	0.252 (0.006)	0.382 (0.009)
ONT	0.361 (0.002)	0.365 (0.002	0.360 (0.006)	0.297 (0.009)
MAN	0.038 (0.001)	0.040 (0.001	0.028 (0.002)	0.025 (0.003)
SASK	0.032 (0.001)	0.032 (0.001	0.033 (0.003)	0.034 (0.003)
ALB	0.099 (0.001)	0.101 (0.001	0.093 (0.004)	0.077 (0.005)
BC	0.120 (0.001)	0.123 (0.002	0.125 (0.005)	0.079 (0.005)