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Aussi disponible en français

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ABSTRACT

Child poverty is high on the government's agenda. In order to reduce the rate of low-income among children, one has to either reduce the number of children flowing into low-income, or increase the number flowing out. But what is behind such movement? Most analysts would immediately think of job loss among the parents, but obviously divorce and remarriage can also play a role. In order to favourably alter the flows, one has to have some understanding of what is driving them. This paper asks to what extent this movement of children is determined by (1) changes in family status of the parents of children, or (2) changes in the parent's labour market conditions (i.e. job loss and gain, changes in hours of work or wages). We find that for an individual child, a divorce or marriage can have a tremendous influence on the likelihood of entering or exiting low-income. At the level of the individual, changes in family composition (when they occur) are more important than changes in jobs held by parents. However, changes in family status are relatively infrequent compared to labour market changes. Parents are much more likely to lose or find jobs, and experience changes in hours worked or wages, than they are to marry or divorce. When this is accounted for we find that, in the aggregate, flows of children into and out of low income are associated roughly equally with family compositional changes and changes in wages and hours worked.

Keywords: poverty, longitudinal, family composition

I. Introduction

Low income among children is near the top of the current federal government's policy issues, and is a perennial topic of concern. Low income among children has risen during the mid to late 1990s, after a decade or more of little change, other than the normal cyclical variation (Statistics Canada, 1997; Picot, Myles and Pyper, 1998). Tracking the low-income rate is one thing, understanding it is another. This paper uses new longitudinal data to ask whether the movement of children into and out of low-income is associated primarily with changes in the labour market status of the parents, or their marital status. This is an important question. In order to develop policies to help prevent low income or to encourage movement out of it, it is necessary to know something about the determinants of the flows and duration of low-income.

This study focuses exclusively on the *flows of children* into and out of low income. The relative importance of demographic and labour market events as determinants of low-income flows for children has never been considered in Canada, to the best of our knowledge. In order to influence these flows, either increasing outflows or reducing inflows, through policy changes, some knowledge of the factors associated with them is necessary.

The paper essentially addresses two questions:

(1) For a particular child, to what extent is the probability of the movement into or out of low income associated with changes in their families' composition (primarily marriage or separation) and changes in the labour market experience of the parents (i.e., working more or fewer weeks per year or changes in weekly wages)? And,

(2) Among all children who move into or out of low-income, what role do changes in family composition and changing labour market experiences of the parents play?

The first longitudinal data from the Survey of Labour and Income Dynamics (SLID) for 1993 and 1994 allow us to address these issues.

We find that changes in family composition, notably marriage (or common-law union) and separation, were strongly associated with the probability that an individual child entered or exited the low-income state between 1993 and 1994. Family changes were more strongly associated with changing risk levels than were changes in the labour market circumstances of the parents, such as increases in weeks worked or weekly earnings. Labour market changes were also found to be important, but they did not alter the risk of making a transition as much as marriage or separation. When these family-related events occur, they dramatically alter the probability of low-income entry or exit.

However, family compositional changes are relatively rare events compared to changes in weeks worked or weekly earnings. Hence, in the aggregate, when both family compositional change and changing labour market circumstances had an opportunity to contribute to a transition, they appeared to do so equally. For example, the income gains associated with the exit of children in lone-parent families from low income were equally due to improving labour market conditions of

the parent, and marriage. Similarly, the entry into low-income of children in two-parent families "near" the low-income line can be ascribed equally to changing family composition and deteriorating employment conditions among the parents.

2. Review of the Literature

American researchers in particular have posed questions similar to those addressed here. Duncan (1984) looked at the 1970s, Ruggles (1987) examined the early 1980s and both found that labour force events such as job gain and loss were much more important for shaping flows into and out of poverty than family compositional events.[1] For example, between 1983 and 1984, 40% of those becoming poor in any given month had a family member find a job, while 47% of those leaving poverty had a family member find a job. Both authors argue that movements into and out of poverty are much less likely to be associated with marriage or divorce because these demographic events are low probability events. One exception to this rule is made for single moms. Duncan found marriage among single women to be important: Two-fifths of low-income single moms in 1971 married by 1978, thereby substantially improving their economic position.

What is the impact on the likelihood of moving into or out of poverty for a particular individual who has experienced an economic or demographic event? This is a very different question to that asked above, and leads to a different answer --- i.e., marriage and divorce play an important role. For example, Ruggles found that almost one-quarter of persons in a family that experienced a marital break-up entered poverty in the same month, compared to 17% of those in a family that experienced a job loss. Among persons in female-headed families, the corresponding numbers were 31% and 26%. Regarding movement out of poverty, job gain was marginally more highly correlated with such a move than was marriage, for both people in general, and those in single-parent families. However, the author may have underestimated the impact of marriage and divorce, as she only considered events occurring in the same month as the flow. There may be a lag associated with the impact of some demographic events on poverty dynamics. Her general conclusion is that job loss and gain is more often associated with poverty flows than is marriage or divorce, primarily because these labour market events are much more frequent. For individuals having experienced an event, however, marital break-up and marriage are at least as likely to lead to a flow into or out of poverty as are job gain or loss.

The Economic Council of Canada (1992), in a review of low income in Canada, briefly addressed the issue of low-income transitions among families. Together with Statistics Canada, the Council created a longitudinal data file based on taxation and social assistance records for the period 1982 to 1986. In one section the report focuses on the impact of a labour market or demographic change on an individual that experienced such an event, and found that the effect of a marriage or divorce on low-income flows was dramatic. Between 1982 and 1986, among the non-poor with children, the proportion entering low-income was 3.1% for the population as a whole, but jumped to 37.6% (rising by a factor of 12) among those who experienced a family

[1] Duncan (1984) used the Panel Study of Income Dynamics, the oldest longitudinal data set in the U.S., to ask questions about the role of the family and labour market change in the movement into and out of poverty. Ruggles (1987) used a more recent longitudinal survey, the Survey of Income and Program Participation, to examine these same questions.

break-up. The loss of an earner in a one-earner family also had a significant, but somewhat less dramatic effect. The proportion entering low-income, at 4.6% for this population as a whole, rose to around 26% (rising by a factor of about 6) among those in families that experienced a job loss.

The relative effects on persons moving out of low income were similar; marriage increased significantly the proportion of people moving out, somewhat more so than did job gain. Thus, for an individual, marriage and divorce appeared to have more of an impact on moving into or out of low income than did the loss or gain of a job, although both factors significantly affected low-income flows. However, as noted earlier, job loss and gain is much more common than marriage and separation, and in any given year more of the movement could be associated with labour market events than marital instability. The Council did not address this. Furthermore, this work did not control for factors such as education or age of persons put at risk of such moves. This could change the results considerably.

Much of the more recent U.S. poverty dynamics research has focused on the question of the persistence of poverty (Bane and Ellwood, (1986); Huff-Stevens, (1994)). The central issue in this work is the question of whether there is a large underclass of people who enter poverty and remain there over long periods, or whether most poverty is transitory. This has important policy consequences, as it is persistent poverty that has important longer-term consequences, not transitory poverty. To examine such issues requires longitudinal data over a number of years, and this is not yet available in Canada, because SLID is not yet sufficiently mature. Some researchers have turned to taxation data to address these issues.

Laroche (1997) focuses on the persistence of low-income spells in Canada using longitudinal taxation data. She uses a duration analysis that estimates the likelihood of entering and exiting low-income taking into account multiple spells, as well as unobserved heterogeneity in personal characteristics. She finds that about 60% of the people in low income (excluding seniors) are characterized by high exit rates, and low re-entry. The remaining 40% are more likely to be characterized by more persistent low-income spells. Members of lone-parent families or unattached individuals were more likely to be in the latter group than were people in husband-wife families. More pertinent to our study, children living in a single-parent family had a high probability of having persistent spells of low-income. For example, a child living with a divorced mother and a sibling had more than a 50% chance of spending six years or more of their childhood in the low-income state. She also found that social transfers tended to have only a marginal impact on the probability of exiting or entering a low-income spell.

The Economic Council of Canada, in their 1992 report, used five years of taxation-based longitudinal data to study low-income dynamics, and noted that the flows are significant. Between 1982 and 1986, about one-quarter of Canadians who were poor in one year were not poor the next. Those who recently entered low income were more likely to leave than those who had been in the state for some time. Roughly an equal number of persons enter low income in any given year. There were, however, many multiple spells over the five-year period. For example, among those who left low income in 1983, almost 40% re-entered within the next three years. The low-income state is a very dynamic place for many. These findings were substantiated by a Statistics Canada (1997) report based on the first two years of SLID data. Focusing on the

flows between 1993 and 1994, the report also showed that about one-quarter of the people who are in low income in one year had left the next. The Economic Council study briefly addressed the issue of the role of family events on low-income flows as well, and concluded that they play a significant role.

3. The Probability of a Child Moving Into and Out of Low Income

Family income can change because of an addition or loss of a family member (through birth, death, marriage/common law union, marital separations, or other entry and exits), or because of the changing economic circumstances of continuing family members (people in the family in both years). Since we want to isolate the effects of changes to the family composition on the risk of low income, we consider all income changes associated with persons joining or leaving a family to be due to changing family composition. That is, if the employment earnings of the family falls because one of the earners leaves, we consider that to be due to a change in family composition. Changes in income due to changing economic circumstances of continuing family members can also be associated with changes in the probability of entering or leaving low income. Thus, labour market changes such as changes in weeks worked or weekly earnings *refer only to family members who are in the family in both periods.* By altering a family's total income these events shape the probability of exiting or entering low income for children within the family.

With the use of a logistic regression framework, the effects of changes in weeks worked, weekly wages, and family composition in shaping the low-income transition probabilities for children are examined between 1993 and 1994. We do not attempt to account for the interaction between family compositional events, such as divorce, and employment events, such as a family member losing a job. In that sense the results cannot be interpreted in a causal manner. We determine the association between the probability that a child will enter or leave low income, and changing labour market status of family members and family composition, whatever the root cause of these events.

3.1 Data and Regression Method

Throughout the paper, the unit of analysis is the individual child and the family characteristics (e.g., age of the family head, income, earnings) are associated with each child. The universe includes all children under 17 in 1993. Statistics Canada's Survey of Labour and Income Dynamics is the longitudinal data source used to track these children and the developments occurring within their families between 1993 and 1994.

The low-income measure used in this work is the LIM, defined as 50% of the 1993 median adult-equivalent adjusted family income.[2] The LIM is updated by changes in the consumer price index

[2] Adult equivalent adjusted family income is in essence a "per capita" income measure that adjusts for family size. It accounts for the economies of scale that are introduced as families increase in size. To arrive at the "per capita" income, total family income is divided by "adjusted" family size. Adjusted family size is determined by counting

resulting in an absolute low-income measure. Since inflation was very low between 1993 and 1994, this has very little effect. A low-income family is defined as one that has an adult equivalent adjusted total family income (post-transfer, pre-tax) below 50% of median adjusted family income.[3] Children in a low-income family are considered to be low-income children. Separate regressions are developed for children in three types of families --- female lone-parent families, two-parent families, and all other families (for completeness) with children in 1993. Regressions results for the first two family types are the focus in the text since these populations are considerably more homogenous than the last type of family. Children in lone-parent and two-parent families accounted for 89.9% of all children under 17 in 1993.

A logistic framework is used to determine the probability of entry into and exit from low income of the children. Determining the probability of entering low income is conceptually the same as determining exit probabilities. Crossing the low-income threshold from below is an exit, and crossing the threshold from above is an entry into low income. However, the conceptual simplicity behind entry probabilities is somewhat more complicated in practice. There is a lower bound on the income an individual and, hence, a family, can possess and it is determined by the level of government transfer receipt (e.g. social assistance receipt). The distribution to the right of the low-income threshold is not bounded. Families located in this area of the income distribution can possess annual income spanning from the low-income threshold to millions of dollars. In other words, the population above the low-income threshold is much more heterogeneous in terms of income than the population below the threshold. Calculating entry probabilities using the entire population to the right of the low-income threshold is somewhat misleading since this estimate would include a large portion of the population subject to minimal risk of falling below the low-income threshold.

What is the population at risk of entering low income? Theoretically, all children in families with income greater than the LIM are at risk of falling into low income. For example, all employed individuals are at some risk of losing their jobs, primary earners can become injured and lose their ability to function in the labour market, or families can split up. However, children in families with income in excess of 1.5 times the LIM in 1993 faced a low risk of falling below the LIM in the following year. Only 2.3% of children in two-parent families and 3.8% of children in female lone parent families had incomes that fell from more than 1.5 times the LIM to below the LIM over the period. In contrast, 13.5% of children in two-parent families and 11.3% of children in lone-parent families with income between the LIM and 1.5 times the LIM (i.e., 'just above the LIM') in 1993 found themselves in families with income below the LIM in 1994. The average (absolute) difference between adjusted family income and the low-income threshold for families below the LIM and those with incomes just above the LIM were roughly equivalent in 1993 (Table 1).

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the first adult in the family as one person, and each additional adult as 0.4 of a person, and each child under 16 as 0.3 of a person. The sum of these weights represents the adjusted family size. There are a number of weighting scales in use, and the particular set of weights used here represent the "medium" scale. Others give more or less weight to each additional person in the family (see Wolfson and Evans). Since we also divide families by type (two parent and single parent) in this analysis, the effect of the adjustment on the results is diminished. The adjustment in essence applies only within family types in this paper, not between types.

[3] All income variables are expressed in constant (1994) dollars.

Table 1: Population Size and the Gap* Between Family Income and the LIM

	Population Estimates (' 000)	1993 $Gap (per capita, adult equivalent adjusted)
Income<LIM, 1993: children with:		
Two parents (exited low-income)	135	-$2,077
Two-parents (did not exit)	236	- 2,892
Female lone parents (exit)	66	- 2,150
Female lone parents (did not exit)	174	- 2,674
Other families (exit)	59	- 1,551
Other families (did not exit)	50	- 4,446
LIM<=Income<=1.5*LIM, 1993: children with:		
Two parents (entered low-income)	93	$1,857
Two parents (did not enter)	597	3,244
Female lone parents (enter)	15	1,497
Female lone parents (did not enter)	119	2,834
Other families (enter)	32	2,866
Other families (did not enter)	78	3,188
Income>1.5*LIM, 1993: children with:		
Two parents (entered low income)	62	$12,756
Two parents (did not enter)	2601	15,634
Female lone parents (enter)	5	12,047
Female lone parents (did not enter)	125	11,416
Other families (enter)	17	12,203
Other families (did not enter)	239	14,313

* Gap is calculated as the average difference between total adjusted family income and the LIM. A gap<0 means that the family possesses income that is less than the LIM.

In light of the above considerations, logistic regressions are estimated only for children in families with incomes between the LIM and 1.5 times the LIM. Children in families with incomes well above the LIM are at minimal risk of entering low income.[4]

The dependent variable in all regressions takes the value of either 1 or 0. Among children in low income in 1993, if their income rose above the LIM in 1994, the dependent variable takes the value of 1 (i.e., the child exited low income). It takes the value 0 otherwise. Among children with an adult equivalent adjusted income of between 1.0 and 1.5 of the LIM in 1993, the dependent variable takes the value 1 if their 1994 income was below the LIM, 0 otherwise. Separate regressions are run for

[4] Any partition of the income distribution into sections based on income levels embodies subjective choices. However, populations facing significant risk of falling into low income should be focused on when determining entry probabilities. By sectioning the income distribution beyond the low-income threshold into two sections and examining each population separately, we feel that we have captured this to a large extent.

children in two-parent families, and lone-parent families. Sample population weights were used in the regressions and all regression results are presented in the appendix. Estimated probabilities of entry and exit are incorporated in the text tables.

3.1.1 Explanatory Variables

Exogenous variables incorporated into the logistic framework are defined as follows:

- Change in Weekly Earnings – composite weekly earnings change (1994 dollars) for members of the family that were in the family in both 1993 and 1994. It is calculated as the weighted average weekly earnings change with the weights being the number of annual hours an individual in the family worked as a proportion of total annual hours of labour supplied by the family[5];

- Change in Weeks Worked – change in the total annual weeks of paid employment supplied by all family members who were in the family in both 1993 and 1994;

- Disability – takes the value of 1 if the head of the family has a long term disability, and takes the value of 0 otherwise[6];

- Visible Minority - takes the value of 1 if the head of the family is a visible minority, and 0 otherwise;

- Age of Head – the age of the head of the family in 1993, which was separated into three distinct groups: less than 24, 25-34 and greater than 35;

- Education – the highest level of education achieved by the head of the family in 1993 and takes the value of 1 if the head of the family has achieved an education level greater than high school graduation, and 0 otherwise;

- Marriage - takes the value of 1 if there was a marriage or common law union in the family between 1993 and 1994, and 0 otherwise;

- Divorce - takes the value of 1 if there was a divorce or separation in the family between 1993 and 1994, and 0 otherwise.

- Joiners – takes the value of 1 if there was someone new who entered the family between 1993 and 1994, and 0 otherwise (note: this variable does not include an addition due to a marriage or common-law union);

[5] Hours are calculated only for those individuals who were present in the family for both years.

[6] Heads of families are individuals in the family with the greatest earnings in 1993. In the absence of earnings, the head is the oldest member in the family.

- Leavers - takes the value of 1 if there was someone who left the family between 1993 and 1994, and 0 otherwise (note: this variable does not include persons leaving the family due to a marital separation);

- Gap93 - represents the income gap (measured in terms of "per capita" adult-equivalent adjusted family income) between the family's income and the LIM (our low-income cut-off) in 1993. For persons below the low-income cut off, this gap is represented as a negative number. That is, if family income is $2000 below the LIM, then it is entered as -$2000 (hence, affecting the manner in which one interprets the regression coefficients). Families above the LIM are assigned a positive gap value.

- Interaction between Gap93 and 1) change in weekly earnings, 2) change in weeks worked. These interaction terms are included because the association between, say, a change in weekly earnings and the probability of exiting low income clearly depends upon how far one is from the low-income cut-off. Relatively small changes in weekly earnings might significantly effect the probability if Gap93 is small, but not if Gap93 is large. Introducing the interaction term allows us to evaluate the association between the three interacted variables and the probability for different values of Gap93 (i.e., for children who are close to or far from the low-income cut-off).

Not all regressions include all of the family composition variables described above because some of these variables do not make sense in certain family contexts. For example, female lone parents cannot undergo a separation or divorce over the period and married couples will not get married. [7] The probability of exit (or entry) may also depend upon the duration in the low-income state (or in the non-low income state). Unfortunately, SLID is not sufficiently mature to calculate such spell durations, and hence this variable could not be included in the analysis.[8]

3.2 The Probability of Exiting Low Income

This section focuses on the factors associated with the probability of exiting low-income for children in the two family types of interest here, two-parent and lone-parent families.

3.2.1 Children in Two-Parent Families

Between 1993 and 1994, 37.5% of low-income children in two-parent families exited the low-income state (Table 2). The raw data show substantial variation across many of the variables. A greater proportion of children in families where the head had some or a completed post-secondary education exited (44.5%) than did those where the head had lesser education (31.6%). This is no

[7] An unemployment variable indicating the change in the total weeks of unemployment in the family was also included, but it was insignificant in all regressions, and hence dropped. It is likely that any variation associated with such a variable is being captured by the employment variables.

[8] American (Stevens, 1994; Bane and Ellwood, 1986) and recent Canadian studies (Laroche, 1997) have shown that spells of low income exhibit duration dependence. That is, the longer individuals remain in a low-income state the less likely they are to exit that state in the following year.

doubt related to better economic opportunities for the more highly educated. As expected, among children in families where there was an increase in weekly earnings or weeks worked, a greater proportion moved out of low income (46.9% and 40.7%) than in families where no such increase was observed (33.4% and 36.1%). Regarding changing family composition, if there was a marital separation, the chances of exiting low income were extremely low (only 2.3% did so), as compared to where there was not a separation (38.9% exited). The likelihood of a child exiting low income was extremely small if a separation occurred, at least for the year of the separation. Thus, both changing economic conditions and changing family composition seem to influence the likelihood of exiting low-income in the raw data, although the impact of the family compositional change appeared to be more significant.

Logistic regression results presented in Appendix Table 1 confirm what was shown in the raw data, and generally conform with our *ex ante* expectations: the probability of exiting is positively associated with the education level of the family head, changes in transfer payments, weeks worked, and weekly earnings. Exit probabilities are negatively related to the income gap between the family's adjusted income and the LIM (i.e., the "poverty gap") and divorce. However, someone leaving the family (other than a spouse or common-law partner) increased the probability of exiting low income. This is probably because the leaver was most likely not a breadwinner, and their departure increased the amount of per-capita resources available to remaining members of the family. The importance of a change in a labour market variable on the probability depends on how far the family is away from the low-income cut-off; the smaller the "poverty gap", the greater the effect a change in a labour market variable has on the probability of exit.

What is really important here is the relative magnitude of these results. Just how much effect does a change in a family's labour market circumstances have on the probability of exit relative to, say, a separation of the spouses? Unfortunately, it is very difficult to assess such relative magnitudes based on the logistic regression coefficients alone. To overcome this problem, the expected probability of exit is computed for each variable at the mean value, and again at one standard deviation (plus and minus) from the mean. In this way one can assess the degree of association between a change in the variable value and the exit probability. Furthermore, by choosing one standard deviation, the change in the value of the variable over which the effect is computed is dependent upon the magnitude of the change actually observed in the data. This makes comparisons among variables more meaningful (i.e., when the continuous variables are all evaluated at one standard deviation).

Table 2: Children Exiting Low-Income, 1993-94

Children in families with:	Two parent families		Single parent families	
	Number (thousands)	Proportion Exiting	Number (thousands)	Proportion exiting
≤ high school graduation	221.4	0.316	121.9	0.262
Some / completed post-secondary	189.6	0.446	122.8	0.267
Increase in weekly earnings*	128.3	0.469	58.6	0.358
Decrease in weekly earnings (or no change)	282.7	0.334	186.1	0.235
Increase in weeks worked*	133.6	0.407	60.9	0.368
Decrease in weeks worked (or no change)	277.4	0.361	183.8	0.231
A joiner to family (other than spouse)	20.6	0.395	13.9	0.316
No joiner	390.4	0.375	230.7	0.262
A leaver from family (other than spouse)	5.2	0.599	10.7	0.544
No leaver	405.7	0.373	234.0	0.252
Divorce or separation	14.7	0.023	---	---
No divorce	396.3	0.389	---	---
Marriage or common-law union	---	---	16.2	0.993
No marriage	---	---	228.4	0.213
Visible minority	76.3	0.433	12.6	0.340
No visible minority	334.7	0.362	232.1	0.261
Age of head**				
< 24	11.4	0.247	24.8	0.359
25 – 34	142.7	0.466	133.7	0.157
35+	256.8	0.332	86.2	0.405
In all families	410.2	0.375	244.7	0.265

* Among family members in family during both years.
** Parent with highest labour market earnings.

The results are shown in Table 3. Regarding the relative effects of changes in labour market circumstances of family members and family decomposition effects, the latter appear to be more significant when they occur. The probability of exit falls from 34.5% to a mere 1.3% if a separation occurs in the family (evaluated at the mean value of all other variables). Children in low-income two-parent families have virtually no chance of escaping during the year that a separation occurs. Changes in weekly earning and weeks worked do not have such a dramatic effect. For example, a change equivalent to one standard deviation of weeks worked (i.e., total weeks worked in the family increases by 32, quite a large increase in labour supplied) increases the likelihood of exit from 31.6% to 33.4% (evaluated at the mean of all other variables, including the "depth of poverty" in which the family finds itself -- i.e., Gap93). And, an increase in the weekly composite family earnings of $213, a substantial rise in earnings (one standard deviation), increases the probability of exit from 31.6% to 35.7%. Thus, family events appear to be more significant. However, their

occurrence is relatively rare. Only 3.6% of low-income children were in a family that experienced a separation.

Other factors are important. Being in a more highly educated family substantially influences the likelihood of escaping low income. The probability rises from 27.4% for children in families where the highest earner has a high school education or less, to 36.8% among those where there is a post-secondary education. And of course, the "depth of poverty" also matters. All other things being equal, the probability of exiting low-income is 31.6% for children in families with average depth of poverty (i.e. $2628 below the LIM), but increases to 50.4% if this income gap shrinks by one standard deviation to $415, and falls to 15.2% for children in families with an income gap of $4841(one standard deviation below the mean gap value).

3.2.2 Children in Single Parent Families

A smaller proportion of children in single-parent families exited low income between 1993 and 1994 than their counterparts in two-parent families (27% compared to 38%, table 2). The raw data suggest that marriage had a dramatic effect on the proportions. Virtually all children with single parents that married exited low income (99%), compared to 21% of those in families where there was no marriage or common-law union between 1993 and 1994. A person leaving the family (other than the spouse) also had a significant effect, as the proportion of children exiting rose from 25% if there was not a leaver, to 54% if there was. Changes in the labour market variables did not have such an impact. As before, however, these family events are relatively rare. Only 6.7% of children were in families that experienced a marriage, and 5.7% were in families where there was another leaver.

Table 3: The Probability of Exiting from Low-Income, Based on the Logistic Regression Model: Children in Two-Parent Families

Variable	Mean	Standard Deviation	Probability (at mean value of other variables)	Relative probability
Age				
≤ 24	0.028	---	30.8%	1.00
25-34	0.347	---	44.1%	1.43
35+	0.625	---	25.6%	0.83
Education				
≤ High school	0.539	---	27.4%	1.00
Post-secondary	0.461	---	36.8%	1.34
Change in weekly earnings				
a) Evaluated at mean value of "poverty-gap" (i.e. GAP93)				
Mean of Δ weekly	$10	--	31.6%	1.00
Mean + 1std. dev. Δ weekly	$222	$213	35.7%	1.13
Mean – 1 std. dev. Δ weekly	-$203	$213	26.1%	0.83
b) Evaluated at mean + 1 std. dev. of "poverty-gap"				
Mean of Δ weekly	$10	---	50.4%	1.00
Mean + 1 std. dev. of Δ weekly	$222	$213	66.5%	1.32
Mean – 1 std. dev. of Δ weekly	-$203	$213	34.2%	0.67
c) Evaluated at mean – 1 std. dev. of "poverty-gap"				
Mean of Δ weekly	$10	---	15.2%	1.00
Mean + 1 std. dev. of Δ weekly	$222	$213	18.2%	1.19
Mean – 1 std. dev. of Δ weekly	-$203	$213	12.6%	0.82
Change in weeks worked				
a) Evaluated at mean value of "poverty-gap (i.e. GAP93)				
Mean of weeks worked	5.7	--	31.6%	1.00
Mean + 1 std. dev.	37.7	32	33.4%	1.06
Mean – 1 std. dev.	-26.3	32	29.0%	0.92
b) Evaluated at mean value + 1 std. Dev. of "poverty-gap"				
Mean of weeks worked	5.7	--	50.4%	1.00
Mean + 1 std. dev.	37.7	32	61.3%	1.22
Mean – 1 std. dev.	-26.3	32	39.5%	0.78
c) Evaluated at mean value - 1 std. Dev. of "poverty-gap"				
Mean of Δ weeks worked	5.7	---	15.2%	1.00
Mean + 1 std. dev.	37.7	32	25.4%	1.67
Mean – 1 std. dev.	-26.3	32	8.6%	0.56
Income gap between family income and LIM				
Mean value	-$2628*	---	31.7%	1.00
Mean + 1 std. dev.	-$415	2213*	50.4%	1.59
Mean – 1 std. dev.	-$4841	2213*	15.2%	0.48
Divorce				
Yes	0.036	---	1.3%	1.00
No	0.964	---	34.5%	26.5
Leavers				
Yes	0.013	---	85.4%	2.76
No	0.987	---	30.9%	1.00

* Adult equivalent adjusted.

Table 4: The Probability of Exiting from Low-Income, Based on Logistic Regression Model: Children in Lone – Parent Families

Variable	Mean	Standard Deviation	Probability (at mean value of other variables)	Relative probability
Age				
≤ 24	0.102	---	7.4%	1.00
25-34	0.546	---	13.3%	1.80
35+	0.352	---	49.4%	6.68
Education				
≤ High school	0.498	---	13.6%	1.00
Post-secondary	0.502	---	32.4%	2.38
Change in weekly earnings Evaluated at mean value of "poverty-gap" (i.e. GAP93)				
Mean of Δ weekly earnings	$19	---	21.6%	1.00
Mean + 1 std. dev. Δ weekly	$136	$117	46.0%	2.13
Mean – 1 std. dev. Δ weekly	-$98	$117	8.2%	0.38
Change in weeks worked				
Mean of Δ weeks worked	$5	---	21.6%	1.00
Mean + 1 std. dev. of Δ weeks worked	$22	$17	25.6%	1.19
Mean – 1 std. dev.	-$12	$17	17.7%	0.82
Income gap between family income &LIM*				
Mean value	-$2534	---	21.6%	1.00
Mean value + 1 std. dev.	-$633	$1901	39.9%	1.85
Mean value – 1 std. dev.	-$4435	$1901	17.9%	0.83
Leavers				
Yes	0.044	---	86.3%	4.47
No	0.956	---	19.3%	1.00
Marriage				
Yes	0.067	---	100.0%	12.50
No	0.933	---	8.0%	1.00

* Adult equivalent adjusted.

After controlling for other characteristics, the regression results confirm what is seen in the raw data (Table 4). The probability of exit was virtually 100% among children with lone parents that married. Even so, changes in labour market circumstances are more important in improving the chance of exiting low income for a child in a single-parent family than in a two-parent family. For example, a one standard deviation change in weekly earnings (an increase of $117) more than doubled the exit probability (from 22% to 46%). Changes in the number of weeks worked had less of an effect, perhaps because much of the work may have been part-time. Education is a more significant variable for single-parent heads than for heads of two-parent families. The exit probability was 13.6% among children where the head had a high school education or less, more than doubling to 32% among those with a post-secondary education.

In general, the probability of a child in a single-parent family exiting low income was lower than for his/her counterpart in a two-parent family. Evaluated at the mean value of the variables, the exit probabilities were 22% and 32% respectively. And this was not because of a greater "depth of

poverty" among lone-parent families. The mean income gap (below the LIM) was $2500 for children in lone-parent families, and $2600 for those in two-parent families (these are "per capita" adult equivalent adjusted poverty gaps, so that family size is accounted for). Changes in family composition have a very dramatic effect on the likelihood of exiting low income for children in single-parent families. When they occur, they appear to overwhelm the labour market events. But, changes in labour market circumstances have a significant impact on the probabilities, greater than among two-parent families. Educational background was also a very important factor.

3.3 The Probability of Entering Low Income

In this section, results are presented for the logistic regressions used to estimate the probability of a child exiting low-income. These conditional probabilities are presented for children in two-parent and lone-parent families.

3.3.1 Among Children in Two-Parent Families

The raw numbers of children entering low-income with "per capita" (adult equivalent adjusted) family incomes of between 1.0 and 1.5 the LIM in 1993 are given in Table 5. About 15% of children made such a transition between 1993 and 1994. As before, the raw data suggest that family compositional change was very important. The proportion of children entering was 13.1% if there was no separation, increasing almost five-fold to 61% if there was. In this case, having a leaver (other than the spouse) also increased the proportion of children entering low-income, from 14% to 52%. Such leavers must have been significant breadwinners (perhaps the death of a spouse).

Controlling for other factors, the logistic regression confirms that family compositional events, when they occur, have a more dramatic effect than changes in labour market circumstances (Table 6). Evaluated at the mean gap between the LIM and family income (an adult-equivalent adjusted +$3000), a fall in weekly earnings of $239 (one standard deviation) had a small impact on the probability of entry, increasing it from 6.3% to 7.0%. A one standard deviation fall in the number of weeks worked (31 for the family as a whole) resulted in a 1.7 percentage point increase in the probability of entry to 8.0%. However, if a separation occurred between the two years, the probability of entering low-income rose from 5.7% (where there was no separation) to 67.5% (where there was). As before, however, these are relatively rare demographic events compared to changes in labour market circumstances. Separations affected only 3.2% of children, while more than one-third were in a family that experienced a decline in weekly earnings and almost one-half of families saw their weeks worked fall. Having a leaver or a joiner both increased the likelihood of entering low income.[9]

[9] While we have not investigated this further, it must relate to the labour market experiences of leavers as compared to joiners.

Table 5: Children Entering Low-Income, from between 1.0 and 1.5 times the LIM, 1993 to 1994

Children in families with:	Two parent families		Single parent families	
	Number (thousands)	Proportion Entering	Number (thousands)	Proportion Entering
≤ high school graduation	325.1	0.204	64.0	0.127
Some / completed post-secondary	421.4	0.098	87.8	0.097
Increase in weekly earnings*	452.3	0.140	82.8	0.046
Decrease in weekly earnings (or no change)	321.2	0.155	69.0	0.185
Increase in weeks worked	312.2	0.163	57.6	0.044
Decrease in weeks worked (or no change)	461.4	0.135	94.2	0.150
A joiner to family (other than spouse)	38.6	0.307	15.0	0.229
No joiner	734.9	0.138	136.7	0.097
A leaver from family (other than spouse)	19.2	0.515	9.4	0.418
No leaver	754.3	0.137	142.4	0.089
Divorce or separation	24.8	0.610	---	---
No divorce	748.6	0.131	---	---
Marriage or common-law union	---	---	25.1	0.031
No marriage	---	---	126.7	0.125
Visible minority	60.3	0.349	---	---
No visible minority	713.2	0.129	---	---
Age of head**				
< 24	18.3	0.081	15.8	0.429
25 – 34	306.5	0.089	41.1	0.131
35+	448.7	0.187	94.8	0.048
In all families	773.5	0.146	151.8	0.109

* Among family members in the family during both 1993 and 1994.
** Parent with highest labour market earnings.

3.3.2 Among Children in Single-Parent Families

The raw data in Table 5 once again indicate the importance of family compositional changes. Among children living in families where there was a marriage or common-law union, only 3.1% entered low income, as compared to 12.5% if there was no such marriage. In this case, a marriage virtually ruled out the possibility of the child entering the low-income state in that year at least. But changes in labour market circumstances are also very important, and as before appear to have more impact on the probabilities among lone-parent families than two-parent families. For example, among lone-parent families, the difference in the share of children entering low income between those with increasing weekly earnings (4.6% entered) and those with decreasing or stable weekly earnings (18.5% entered) was quite significant. It varied by a factor of more than three. Among two

parent-families, the difference was much smaller (14.0% vs. 15.5%). The same trend is observed for the change in weeks worked -- it is more significant for lone-parent than two-parent families.

Unfortunately, the small sample size (213 records) for this population of children entering low-income prevented the computation of useful regression results for this transition. Hence, results controlling for other variables are not available.

4. Decomposing Changes in Income into Components Associated with Labour Market and Family Composition Changes

Logistic regression techniques were used to estimate the probability of an *individual* child entering or exiting low income conditional on the occurrence of various events and background. However, as noted, while an event may be important for an individual when it occurs, for the population of children as a whole it may hold little significance if it rarely occurs. This section shifts from the focus on the individual to the focus on the group as a whole. It asks to what extent the flows into or out of low income were associated with changes in labour market conditions or with family compositional events. This is accomplished by focusing on the change in family income among families making the transitions. The total change in family income is decomposed into its component parts: A portion related to labour market events (as reflected in changes in labour market earnings), and another portion related to family compositional change (as reflected in the income brought to the family by people entering, or the income taken away by people leaving the family between the two years).

Table 6: The Probability of Entering from Low-Income, Based on Logistic Regression Model: Children in Two Parent Families between 1.0 and 1.5 times LIM in 1993

Variable	Mean	Standard Deviation	Probability (at mean value of other variables)	Relative probability
Age				
≤ 24	0.024	---	1.8%	1.00
25-34	0.396	---	3.3%	1.83
35+	0.580	---	10.0%	5.56
Education				
≤ High school	0.455	---	9.7%	1.00
Post-secondary	0.545	---	4.3%	0.44
Change in weekly earnings Evaluated at mean value of "poverty-gap" (i.e. GAP93)				
Mean of Δ weekly earnings	$37	---	6.3%	1.00
Mean + 1std. dev. Δ weekly	$276	$239	5.8%	0.92
Mean – 1 std. dev. Δ weekly	-$202	$239	7.0%	1.11
Change in weeks worked				
Mean of Δ weeks worked	$7	---	6.3%	1.00
Mean + 1 std. dev. of Δ weeks worked	$38	$31	5.0%	0.79
Mean – 1 std. dev.	-$24	$31	8.0%	1.27
Income gap between family income &LIM*				
Mean value	$3001	---	6.3%	1.00
Mean value + 1 std. dev.	$4530	$1529	2.1%	0.33
Mean value – 1 std. dev.	$1472	$1529	18.0%	2.86
Joiners				
Yes	0.050	---	27.1%	4.67
No	0.950	---	5.8%	1.00
Leavers				
Yes	0.025	---	27.9%	4.65
No	0.975	---	6.0%	1.00
Separation				
Yes	0.032	---	67.5%	1.84
No	0.968	---	5.7%	1.00

* Adult equivalent adjusted.

More specifically, the total change in adult-equivalent adjusted (i.e., "per capita") income of each family is decomposed into three main components: (1) Change in income due to labour market events affecting continuing family members. This is measured as the change in employment earnings between 1993 and 1994 of members in the family in both years. (2) Change in income due to changes in non-labour income among continuing family members (e.g., investment income, transfer income, etc.). And, (3) change in income due to changes in family composition. The third factor is measured as the total income changes in the family associated with the entry or exit of family members. This factor would include the change in employment earnings associated with a family member's entry or exit through marriage or separation, the change in "other income" due to the same events, and the change in income associated with someone other than a spouse entering or

exiting the family between 1993 and 1994. After these factors are determined for each child, average values for all children who, for example, exited low income between the two years are computed. In this way, the aggregate change in income associated with all such transitions is decomposed into the three components.

This is a strictly accounting approach. If someone enters the family between 1993 and 1994, and has a total income (employment earnings plus other income) of $20,000, then this amount is added to total family income in 1994. An adult equivalent family income is determined, and that share of the total that stems from the additional is $20,000 is then associated with the addition of a family member. Similarly, if the employment earnings of a person who is a family member in both years increases by $10,000, then that amount is said to be due to changing labour market circumstances of the family. This accounting framework does not capture behavioural interactions among various events. For example, if both spouses were working and then a divorce occurred where the female cut back on work hours to look after the child, the methodology cannot associate the reduction in female working time (seen as a labour market change) to the divorce (a change in family composition).

4.1 Income Changes of the Potential Exit Population

The potential exit population is comprised of all children in families with income less than the LIM in 1993. This population is divided into children in families that subsequently exited low income over the year and children in families with income remaining below the LIM in both years. For each sub-population, the total change in income is decomposed into changes in earnings and changes in other income associated with labour market and family compositional change (Table 7).

We begin with *two-parent families.* As in all cases where a transition occurred, the average income change (per capita adult-equivalent adjusted) was significant (Table 7A). Among children exiting low income, the average change in family income was $5,642. Keeping in mind that this is a change in adult-equivalent adjusted income, it represents a substantial change. For example, our equivalence scale assigns a value of 1.0 to the first adult, 0.4 units to the second adult, and 0.3 units to each additional person in the family. Thus, for an average two-parent family with two children, the "per capita" change represents a change in income for this four member family of $11,284 (i.e., $5,642 x (1.0+0.4+0.3+0.3)). Increasing labour market earnings of family members in the family for both years contributed all of the income gain necessary for children in two-parent families to exit low income (Table 7A). Changes in wages or hours of these family members accounted for an increase of $6,140 of labour market earnings representing more than 100% of the total increase in adjusted family income for all children exiting low income. Changing family composition accounted for little (2.7%) of the overall change in this populations' total income. Among children remaining in low income, their per capita family income fell $534. Little improvement in hours or wages (-$58), decreases in other income going to family members in the family for both years (-$228), and separation or divorce (-$249) were the primary reasons for holding two-parent families below the LIM in both years (Table 7A). Thus, separation played a significant role in keeping children in low-income.

Table 7: Decomposition of Average Income Changes** between 1993 and 1994

A. Children in Low-income Families (1993), by type of family --- Income<LIM

			Due to change in income of family members in both years:						Due to change in family composition:						
Child's family type:	**Total change in income**		due to change in labour market earnings*		due to change in other income		**Total: due to change in income**		due to change in income related with marriage		due to change in income related with separation		due to change in income related with joiners or leavers		**Total: due in comp**
Two parents (exited)	5642	100.0%	6140	108.8%	-648	-11.5%	5492	97.3%	72	1.3%	-9	-0.2%	87	1.5%	150
Two parents (not exit)	-534	100.0%	-58	10.9%	-228	42.7%	-286	53.6%	0	0.0%	-249	46.6%	1	-0.2%	-248
Lone parents (exited)	5166	100.0%	2194	42.5%	268	5.2%	2462	47.7%	2458	47.6%	0	0.0%	246	4.8%	2704
Lone parents (not exit)	215	100.0%	288	134.0%	-30	-14.0%	258	120.0%	4	1.9%	0	0.0%	-47	-21.9%	-43

B. Children in Low-income Families (1993) where LIM<=Income<=1.5*LIM

			Due to change in income of family members in both years:						Due to change family composition:						
Child's family type:	**Total change in income**		due to change in labour market earnings*		due to change in other income		**Total: due to change in income**		due to change in income related with marriage		due to change in income related with separation		due to change in income related with joiners or leavers		**Total: due in comp**
Two parents (entered)	-4603	100.0%	-2229	48.4%	-316	6.9%	-2545	55.3%	28	-0.6%	-1169	25.4%	-917	19.9%	-2058
Two parents (not enter)	1564	100.0%	2458	157.2%	-844	-54.0%	1614	103.2%	16	1.0%	-78	-5.0%	12	0.8%	-50
Lone parents (enter)	-3875	100.0%	-1996	51.5%	-697	18.0%	-2693	69.5%	270	-7.0%	0	0.0%	-1452	37.5%	-1182
Lone parents (not enter)	2093	100.0%	914	43.7%	-844	-40.3%	70	3.3%	2177	104.0%	0	0.0%	-154	-7.4%	2023

* change in employment earnings of family members who are in family in both periods
** adult equivalent adjusted "per capita" family income of the child in 1994 dollars

Turning to *lone-parent families*, favourable family compositional change and increasing hours or wages of existing family members were equally important in lifting the children in female lone-parent families above the LIM (Table 7A). Per capita family income among children exiting rose a substantial $5,166. Changes in earnings attributed to the labour market were $2,194 with marriage being equally important as it contributed $2,458 extra income on average for these transitional families. Favourable labour market or family compositional changes were largely absent from lone-parent families who failed to rise above the LIM (Table 7A).

4.2 Income Changes of the Potential Entrants into Low Income

This section examines whether the same forces that accounted for lifting children and their families above the threshold are working in the opposite direction to push some potential entrants into low income. We focus on children in families with incomes between 1.0 and 1.5 times the LIM in 1993.

For *two-parent families* entering low-income, the average drop in income was $4,603 (Table 7B). This decline was equally accounted for by loss of employment earnings for members in the family in both years (contributing 48% of the fall), and family compositional changes (contributing 45%). The income loss attributable to compositional change can be closely split between the income loss associated with the separation of a spouse (-$1,169), and other persons leaving the family (-$889). Increasing labour market earnings accounted for more than 100% of the increase in total income experienced by two-parent families avoiding entry into low income.

The average drop in income among *lone-parent families* with children falling into low-income was also significant, at -$3,875. Changes in family composition and declines in earnings of family members in the family in both years contributed to this fall below the LIM (Table 7B). Adverse labour market conditions accounted for 52% of the income decline, while persons leaving the family over the period accounted for 30%. The remainder was associated with declines in "other" income among continuing family members. Positive income effects associated with marriage helped ensure that children in lone-parent families above the low-income threshold in 1993 remained there in 1994. Of the $2,093 average "per capita" increase in family income registered by children who were in a lone parent family in 1993, more than 100% of it was due to income gains associated with marriage. Gains in labour market earnings among this population were offset by loses in "other" income.

5. Summary and Conclusion

Consistent with earlier work, we find that changes in family composition are strongly associated with the movement of children into and out of low-income. At the level of the individual child, marriage for a low-income single parent almost certainly resulted in the movement of the children out of low-income between 1993 and 1994. As well, a separation in a two-parent family "near" the low-income cut off increased eleven-fold the likelihood of a child entering low income. Even among those who do not make the transition, a marriage (by a lone parent) substantially decreased the risk of a transition by a child into low-income. And a separation in a

two-parent low-income family decreased the likelihood of an escape for children in that family to almost zero for that year at least.

Changes in labour market circumstances appear to have less of an impact when they occur. Obviously changes in weekly earnings or weeks worked influence the probability of entry and exit. However, one standard deviation changes, which were often statistically significant, were not associated with anywhere near the same magnitude of change in the probability of making the transition as were changes in family composition.

Family compositional changes are relatively rare events compared to changes in labour market circumstances. Hence, in the aggregate it appears that where both factors have an opportunity to contribute, family compositional changes and changing labour market circumstances contribute almost equally to the income shifts that move children across the low-income line. For example, among children in single-parent families that exited low income, marriage and improving labour market circumstances of the single parent contributed almost equally to the rise in income needed to push children across the line. Similarly, among children in two-parent families that fell into low income, declining employment earnings among the parents, and separation of the parents or exits from the family for other reasons contributed almost equally to the income decline that resulted in the move into low-income.

There were some family situations where the transition was dominated by changing employment conditions of the parents. For example, among children in two-parent families exiting low-income, almost all of the income gain resulting in the transition was derived from improved labour market circumstances of the parents. This is almost by definition, however, as they cannot "add" another spouse. However, separations among two-parent families that failed to exit contributed about one-half of the income loss registered by this group. Again, when family composition has an opportunity to contribute, it appears to be associated with about one-half of the income gains registered, the remaining one-half are ascribed to labour market changes.

Appendix Table 1: The Probability of Exiting Low-Income, Children in Two Parent Families

Y = {1 if exit between 1993 and 1994 , 0 otherwise}

VARIABLE	PARAMETER ESTIMATE	STANDARD ERROR	T STAT
INTERCPT	-0.315	0.2122	
DISABLED	-0.1616	0.2748	-0.588
MINORITY	0.2725	0.2506	1.087
<24	0.2595	0.6524	0.398
25-34	0.8331	0.2080	4.005
POST-SECONDARY EDUCTION	0.4333	0.1948	2.224
Δ WEEKLY EARNING	0.00354	0.0008	4.556
Δ WEEKS WORKED	0.017	0.0057	3.009
GAP93	0.000336	5.900E-05	5.695
GAP93* Δ WEEKLY EARNING	9.42E-07	3.425E-07	2.751
GAP93* Δ WEEKS WORKED	7.68E-06	2.540E-06	3.023
JOINERS	-0.1698	0.4402	-0.386
LEAVERS	2.5691	0.9585	2.680
SEPARATION	-3.6879	1.5839	-2.328

Sample size: 636

Appendix Table 2: The Probability of Exiting Low-Income; Children in Lone Parent Families

Y = {1 if exit between 1993 and 1994 , 0 otherwise}

VARIABLE	PARAMETER ESTIMATE	STANDARD ERROR	T STAT
INTERCPT	-0.9293	0.4566	-2.035
DISABLED	-2.1116	0.6229	-3.390
MINORITY	2.146	0.6985	3.072
<24	-2.5006	1.0808	-2.314
25-34	-1.8503	0.3760	-4.921
POST-SECONDARY EDUCTION	1.1112	0.4038	2.752
Δ WEEKLY EARNING	0.0106	0.0045	2.361
Δ WEEKS WORKED	0.072	0.0302	2.384
GAP93	0.000198	1.240E-04	1.597
GAP93* Δ WEEKLY EARNING	3.73E-07	1.674E-06	0.223
GAP93* Δ WEEKS WORKED	2.30E-05	1.000E-05	2.300
JOINERS	0.219	1.0782	0.203
LEAVERS	3.2749	1.1754	2.786
MARRIAGE	17.3249	3.7313	4.643

Sample size: 372

Appendix Table 3: The Probability of Entering Low-Income; Children in Two Parent Families Between 1.0 and 1.5 LIM in 1993

Y = {1 if exit between 1993 and 1994 , 0 otherwise}

VARIABLE	PARAMETER ESTIMATE	STANDARD ERROR	T STAT
INTERCPT	0.0276	0.2104	
DISABLED	0.1487	0.3785	0.393
MINORITY	1.0375	0.2981	3.480
<24	-1.8073	0.8099	-2.232
25-34	-1.1753	0.2241	-5.245
POST-SECONDARY EDUCTION	-0.8682	0.2067	-4.200
Δ WEEKLY EARNING	-0.00123	0.0008	-1.456
Δ WEEKS WORKED	0.015	0.0061	2.443
GAP93	-0.0007	7.800E-05	-8.974
GAP93* Δ WEEKLY EARNING	2.71E-07	3.510E-07	0.772
GAP93* Δ WEEKS WORKED	-7.71E-06	2.540E-06	-3.035
JOINERS	1.8023	0.3572	5.046
LEAVERS	1.7963	0.4254	4.223
SEPARATION	3.5437	0.4252	8.334

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