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- Bridge employment
- Rural commuting

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.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where a meaningful distinction exists between true zero and the value rounded
p	preliminary
r	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
E	use with caution
F	too unreliable to be published

Highlights

In this issue

Bridge employment

- Between 1999 and 2004, the proportion of persons age 50 to 69 in paid employment after retiring from a career job averaged 9%.
- The likelihood of leaving career employment for bridge employment was higher for those with an employer-sponsored pension plan, the university educated, and those with higher hourly earnings.
- Other factors that increased the likelihood of bridge employment included having a spouse/partner who was not working and living in a rural area.
- Retirees who returned to the labour market were most likely to do so in the first year following their retirement. And of those who returned to work, many were still working after four years.

Rural commuting

- Rural commuters are as dependent on rural-based jobs as they are on urban-based jobs.
- The rural labour pool is not a major supplier of workers to urban-based jobs—only 4% of urban jobs are filled by rural residents. However, these urban-based jobs take 16% of the rural workforce.
- Urban workers fill a small but sizeable share of rural-based jobs—about 7%. However, these rural-based jobs provide employment for only 1% of urban workers.

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Bridge employment

Benoît-Paul Hébert and May Luong

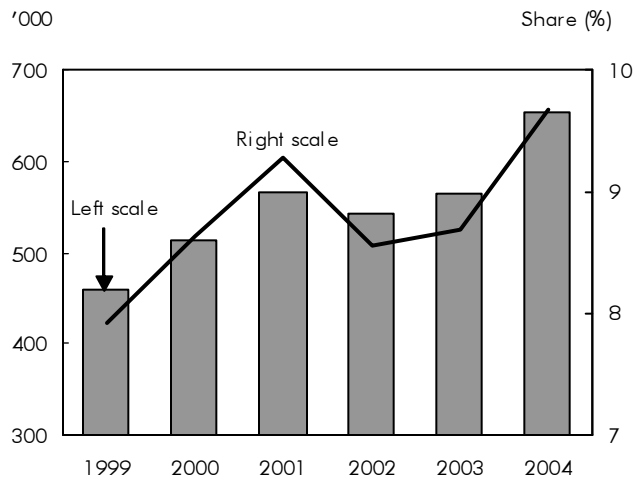
Several studies show that many Canadians who 'retire' from employment (often with a pension) subsequently return to the labour market (Singh and Verma 2001, Pyper and Giles 2002, Schellenberg et al. 2005, and Wannell 2007a and 2007b). If 'retirement' is the complete cessation of paid work, it is no longer clear when the process of retiring actually begins. The length of this process can also vary substantially, and may involve either a gradual reduction in time spent working or exiting from, and returning to, the labour force one or more times prior to the complete cessation of paid work.

What is bridge employment?

'Bridge employment' refers to any paid work after an individual retires or starts receiving a pension (Ruhm 1990). Bridge employment can provide extra income for those who do not have enough pension income or savings in their later years. It can also help older workers balance work and leisure time while remaining engaged in economically and socially productive activities. Bridge employment can therefore contribute to the well-being of individuals and their families. Many U.S. studies (for example, Quinn and Kozy 1995, Kim and Feldman 2000, and Cahill et al. 2005) have examined bridge employment and the transition to retirement, but the subject has not been extensively researched in Canada. Given population aging and reduced labour force growth, understanding the transition to retirement becomes even more important.

This study first presents cross-sectional analyses using the Survey of Labour and Income Dynamics to show the prevalence of bridge employment among Canadians age 50 to 69 between 1999 and 2004. Then, longitudinal examination of a group of older workers over the same period shows transitions into and out of bridge employment and retirement. The study examines when individuals are more likely to enter bridge employment, who is more likely to choose bridge employment over retirement and how long those individuals typically remain in bridge employment, and the likelihood of entering bridge employment for those who retired (see *Data source and definitions*).

Chart A Bridge employment increased more or less steadily from 1999 to 2004



Source: Statistics Canada, Survey of Labour and Income Dynamics, 1999 to 2004.

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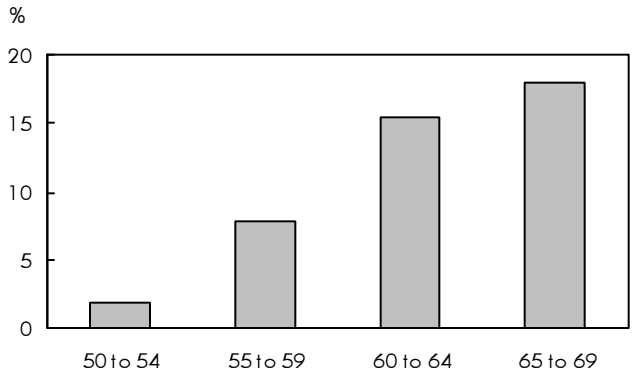
Chart B The prevalence of bridge employment doubles after age 60



Source: Statistics Canada, Survey of Labour and Income Dynamics, 2004.

How common is bridge employment?

The proportion of individuals age 50 to 69 in bridge employment averaged about 9% over the 1999 to 2004 period, going from 7.9% in 1999 to 9.7% in 2004 (Chart A). However, the numbers of those in bridge employment increased by more than 40% (from 461,000 to 654,000) over the period as the size of this age group increased due to aging of the baby-boom cohorts (the first boomers turned 50 in 1997). Not surprisingly, the prevalence of bridge employment varied greatly by age, ranging from a low of 2% among those 50 to 54 to a peak of 18% for those 65 to 69 in 2004 (Chart B).

From career employment...

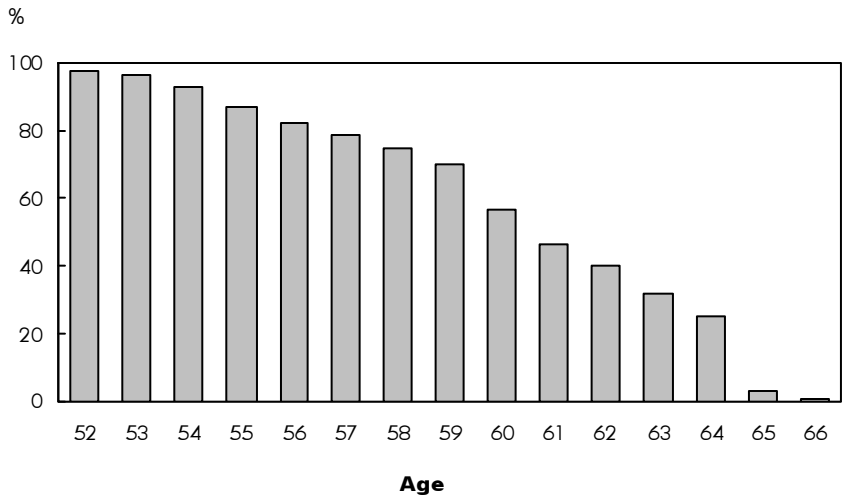
Longitudinal analysis shows that the probability of remaining in a career job declines steadily as age increases (Chart C). The estimated 'survival rate' (Kaplan-Meier estimate) between ages 52 and 66 for those in career employment at age 51 declined steadily up to age 59 with a sharper drop at age 60—the minimum age for early benefits under the Canada Pension Plan (CPP) and Quebec Pension Plan (QPP). The probability of remaining in career employment was about 70% at age 59 and dropped to 57% at age 60.[1] It then declined more steeply, with only 25% remaining in career employment at age 64. When workers reached 65—the age for full entitlement to CPP, QPP, Old Age Security (OAS) and the Guaranteed Income Supplement (GIS), as well as mandatory retirement in some jurisdictions—the probability of remaining in career employment was less than 3%.[2]

...to bridge employment or retirement

While the prevalence of bridge employment among persons age 50 to 69 was about 9%, the conditional probability (that is, the probability of a transition at a given age, conditional on not having had this transition previously) of experiencing an episode of bridge employment varied widely with age (Chart D).

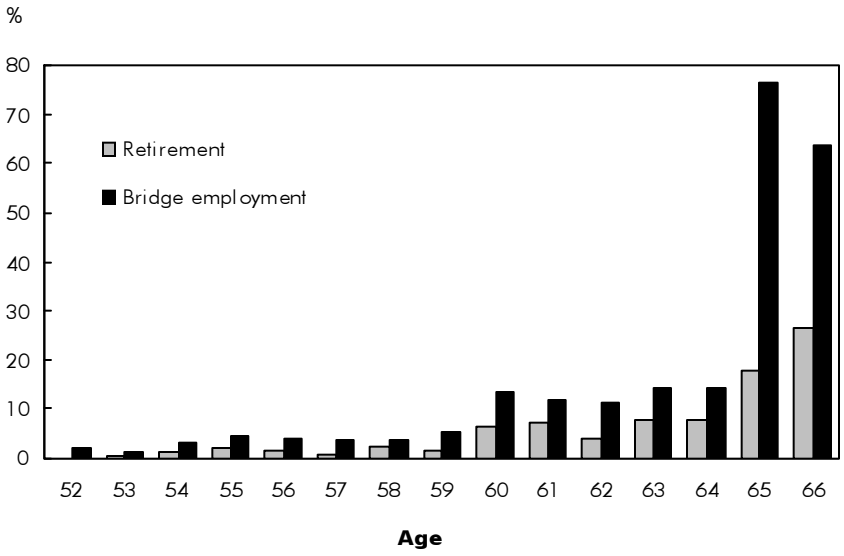
The conditional probability was higher for entering bridge employment than for entering retirement at each age (the reverse is likely true past age 66, but the SLID data do not allow verification). As could be expected in light of the survival rates, the conditional

Chart C The probability of remaining in career employment drops markedly at age 60, even more so at age 65



Source: Statistics Canada, Survey of Labour and Income Dynamics, panel 3, 1999.

Chart D The conditional probability of bridge employment consistently exceeds that of retirement



Source: Statistics Canada, Survey of Labour and Income Dynamics, panel 3, 1999.

probability of entering bridge employment or retirement was very low before age 55 and increased slightly between the ages of 55 and 59 (approximately 4% for bridge employment and 2% for retirement). Both probabilities increased at age 60. Between ages 60 and 64, the conditional probability of entering bridge employment ranged between 11% and 14%, while for retirement it varied between 4% and 8%. At age 65, the probability of moving to bridge employment rose dramatically to 76%, while the conditional probability of retirement increased to 18%. In other words, the relatively few individuals still in career employment when they reached age 65 were very likely to transition in that year. The probability of entering bridge employment decreased at age 66 but remained high, while the probability of retirement increased further to 26%. These results are roughly in line with the CPP/QPP take-up rates by age based on tax records (Wannell 2007b).[3]

Conditional probabilities indicate when transitions are more or less likely to occur overall, but they are not adjusted for individual characteristics that may affect the timing of such transitions. In order to assess how such characteristics influence the likelihood of transitioning to bridge employment or

Data source and definitions

The **Survey of Labour and Income Dynamics** (SLID) covers roughly 97% of the Canadian population, excluding those in the territories, in institutions, on First Nations reserves or in military barracks. Each panel of respondents, approximately 15,000 households or 30,000 adults, is surveyed for six consecutive years. A new panel is introduced every three years, so two panels always overlap. This study uses the third panel of the SLID, which followed respondents from 1999 to 2004. Cross-sectional respondents age 50 to 69 were categorized in career employment, bridge employment, or retirement for each year.

Career employment means having employment income or Employment Insurance (EI) benefits, no pension income and not reporting retirement as the major activity.

Bridge employment means having employment income or EI benefits, pension income or reporting retirement as the major activity, and not out of the labour force for more than six consecutive months at the end of the year.

Retirement means having pension income or self-identifying as retired with no employment income or EI benefits, or having pension income or self-identifying as retired with employment income or EI benefits, but out of the labour force for more than six consecutive months at the end of the year.

Individuals with no earnings or pension benefits and whose self-reported major activity was not working, looking for work or retired were categorized as **other**.

The examination of transitions into and out of bridge employment used a longitudinal sample of 3,000 respondents age 51 to 65 in a career job in 1999, assuming they had never retired or entered bridge employment previously. This age range was chosen because transitions occurring at earlier ages are rare (and most likely related to special situations), and because the assumption of continued career employment before 1999 appeared questionable for those over 65.

to retirement, a discrete-time event-history model was used. Bridge employment and retirement were treated as competing outcomes (see *Discrete-time event-history analysis*). The main findings from the final model may be summarized as follows (Table 1):

- Several studies suggest that the timing of retirement (as measured by the average age of retirement, for example) is different for women than men. However, among the group of older workers followed in this study, women and men had roughly equal probabilities of entering bridge employment or retirement after controlling for other factors.[4]
- Compared with singles and individuals with an employed spouse, older workers whose spouse was not working were more likely to leave career employment. For this group, the conditional probabilities of leaving career employment for bridge employment or retirement were 1.8 and 2.3 times higher respectively.
- Individuals with a university education were almost twice as likely as those with less than a high school education to enter bridge employment. However, the probability of entering retirement did not seem to vary by education.
- Health and functional limitations have previously been identified as important determinants of the transition to retirement.[5] In this study, however, after controlling for employment-related characteristics, the conditional probability of entering bridge employment or retirement did not vary significantly with self-reported health status or disability status.
- The number of hours worked in the previous year was related to the probability of transition at a given age, which suggests that individuals may prepare for their transition. Compared with those working 1,501 to 2,500 hours (corresponding to full-time, full-year employment), individuals who worked between 501 and 1,500 hours were twice as likely to enter bridge employment and those who worked 500 hours or less were seven times more likely to enter retirement.
- The likelihood of bridge employment increased with the previous year's hourly earnings. Results suggest a 3% increase in the conditional probability for each additional dollar in hourly earnings. Thus, workers with higher earnings appear more likely to leave their career job, activate pension benefits, and continue to work in bridge employment.
- Individuals with an employer-sponsored pension plan (in the job they held in the previous year) were more likely to leave career employment than those without such a plan, consistent with results from previous studies. The effect was more important for retirement (where the conditional probability more than tripled) than for bridge employment (where the probability did not quite double). This is likely because employer-sponsored pension plans usually require individuals to leave their position in order to start receiving pension benefits.
- Older workers in the bottom fifth of the income distribution (adjusted household income[6]) were over three times more likely than those in the middle 20% to leave career employment for retirement.
- Workers living in rural areas or small communities were almost twice as likely as those living in large urban centres to enter bridge employment.

From bridge employment to retirement, and vice versa

How long do individuals remain in bridge employment before entering retirement? And how likely are those who went from career employment to retirement to subsequently enter bridge employment? Analysis of these questions was limited for two reasons. First, the smaller samples (i.e. the subgroup of individuals who entered bridge employment or retirement during the survey period) allowed measuring transitions between bridge employment and retirement, but prevented a multivariate analysis of the characteristics affecting the likelihood of these transitions. Secondly, while it is possible that some individuals alternate more than once between bridge employment and retirement, sufficient information was available only for the first transition (follow-up data are available for a maximum of four years after a first transition and sample sizes decrease with the number of transitions). Hence, the following estimates pertain to a first episode of bridge employment or retirement, and they are not adjusted for individual characteristics.

On the whole, older workers were more likely to transition to bridge employment than to retirement, but bridge employment is a transitory state, not a permanent one. Regardless of their age, 66% of older workers entering bridge employment during the survey period were still there one year later, while the rest had retired. The proportion remaining in bridge employ-

Table 1 Factors affecting transition from career employment to bridge employment or retirement: Estimates from discrete-time competing-risks model

	Bridge employment		Retirement	
	Coefficient	Standard error	Coefficient	Standard error
Age	**0.364***	**0.108**	**0.535***	**0.165**
Age^2	-0.111*	0.030	-0.076	0.052
Age^3	-0.018	0.012	-0.045*	0.022
Age^4	0.006*	0.001	0.004*	0.002
Age^5	0.001*	0.000	0.002*	0.001
Women (ref. men)	0.322	0.177	0.059	0.307
Spouse/partner (ref. spouse/partner working)				
No spouse/partner	0.010	0.229	0.308	0.398
Spouse/partner not working	0.605*	0.166	0.822*	0.399
Health status (ref. very good)				
Excellent	-0.276	0.199	-0.756	0.404
Good	-0.178	0.188	-0.224	0.318
Fair or poor	0.099	0.265	0.235	0.380
Stress level (ref. somewhat stressful)				
Very stressful	0.185	0.208	0.696	0.438
Not very stressful	0.528*	0.165	0.593	0.378
Not at all/no opinion	0.160	0.272	0.581	0.454
Education (ref. less than high school)				
High school	0.341	0.220	0.028	0.424
Postsecondary certificate	0.270	0.196	-0.281	0.373
University degree	0.629*	0.225	0.135	0.554
Unknown	-0.156	1.243	0.187	8.126
Years (≥ 6 months) worked full-time (ref. 21 to 35)				
0 to 20	-0.318	0.235	-0.668	0.403
Over 35	-0.038	0.195	-0.399	0.419
Unknown	0.048	0.219	-0.929*	0.432
Annual work hours t-1 (ref. 1,501 to 2,500)				
1 to 500	0.516	0.454	1.942*	0.540
501 to 1,500	0.733*	0.186	0.592	0.418
Over 2,500	0.174	0.275	-0.368	3.107
Hourly wage rate	0.027*	0.007	0.003	0.015
Income quintile (ref. third)				
Lowest	0.009	0.379	1.206*	0.595
Second	0.380	0.232	0.204	0.566
Fourth	0.159	0.217	0.896	0.531
Highest	0.341	0.219	0.708	0.586
Employer pension plan (ref. no)	0.531*	0.159	1.200*	0.316
Urban area (ref. 500,000 and over)				
0 to 29,999	0.613*	0.233	-0.164	0.458
30,000 to 99,999	0.305	0.272	0.421	0.664
100,000 to 499,999	0.291	0.203	0.344	0.433
Rural area	0.661*	0.202	0.592	0.387
Constant	-4.300*	0.365	-5.238*	0.817

* significantly different from a reference group (ref.) or zero at the 0.05 level

Note: Age (centered on the mean) and its powers (Age^2 to Age^5) are used to model a linear and various non-linear relationships between age and the conditional probability of entering bridge employment or retirement (see *Data source and definitions*). Initial sample size was 2,985. Standard errors were estimated by the bootstrap method.

Source: Statistics Canada, Survey of Labour and Income Dynamics, panel 3, 1999 to 2004.

Discrete-time event-history analysis

Longitudinal respondents in the third panel of the SLID were surveyed annually over the period 1999 to 2004. For those age 51 to 65 and in career employment in 1999, the following variable was defined:

$$y_t \begin{cases} 0 & \text{in career employment (or censored) at age } t \\ 1 & \text{entered bridge employemnt at age } t \\ 2 & \text{entered retirement at age } t \end{cases}$$

Respondents who were in career employment in 1999 were assumed to have neither retired nor entered bridge employment previously, and were included in the group at risk of leaving career employment starting at the age they were in 2000. Because the categories career employment, bridge employment and retirement were defined on an annual basis, transitions could only be measured in one-year intervals.

The conditional probability (or risk/hazard) of leaving career employment for bridge employment at age t is the probability of entering bridge employment at t conditional on having been in career employment up to t-1:

$$h_B(t) = P(y_t = 1 \mid y_{t-1} = y_{t-2} = \ldots = y_{52} = 0)$$

Similarly, the risk of leaving career employment for retirement is:

$$h_R(t) = P(y_t = 2 \mid y_{t-1} = y_{t-2} = \ldots = y_{52} = 0)$$

This leaves 1-$h_B(t)$-$h_R(t)$ as the risk of remaining in career employment at age t. With the assumption of independent outcomes, $h_B(t)$ and $h_R(t)$ can be estimated via maximum likelihood in a standard multinomial logit model (Fahrmeir and Tutz 2001):

$$h_B(t) = \frac{\exp(f_B(t) + \boldsymbol{x}\boldsymbol{\beta}_B)}{1 + \exp(f_B(t) + \boldsymbol{x}\boldsymbol{\beta}_B) + \exp(f_R(t) + \boldsymbol{x}\boldsymbol{\beta}_R)}$$

$$h_R(t) = \frac{\exp(f_R(t) + \boldsymbol{x}\boldsymbol{\beta}_R)}{1 + \exp(f_B(t) + \boldsymbol{x}\boldsymbol{\beta}_B) + \exp(f_R(t) + \boldsymbol{x}\boldsymbol{\beta}_R)}$$

Two functions of age, $f_B(t)$ and $f_R(t)$, account for time-dependence, x is a set of personal, household and employment-related characteristics (either time-constant or time-varying), and β_B and β_R are sets of coefficients representing the effects of variables in x on $h_B(t)$ and $h_R(t)$ respectively.

It is usual in discrete-time event history analysis to model time-dependence with a set of binary indicators (one for each t, minus one). Estimated baseline risks obtained with such indicators are shown in Chart D. Some of the binary indicators were subject to multi-collinearity problems in specifications of the model that included other independent variables. For this reason, the whole set of indicators was replaced with a polynomial function of age of degree 5:

$$f_B(t) = \gamma_{B1} t + \sum_{i=2}^{5} \gamma_{Bi} (t - \bar{t})^i$$

A similarly defined $f_R(t)$ was also used. In the equation, the γ's are coefficients to be estimated. In contrast to other functions tested (e.g. polynomials of lower or higher degree, and linear spline functions), the aforementioned polynomial functions rendered a good approximation of the baseline risks obtained with the binary indicators. The estimates of β_B and β_R do not change much under these different parameterizations of $f_B(t)$ and $f_R(t)$.

The initial model specification included many personal, household and employment-related characteristics, a number of which were removed from subsequent specifications because they were not statistically significant. Personal and household characteristics were sex, presence of a spouse (and labour force status of that person), an interaction between sex and presence of a spouse, immigrant status, visible minority status, health status†, stress level†, disability status†, homeownership, household composition (living with children, living with parents/other relatives), adjusted household income quintile, education, size of area of residence, and region. Employment-related characteristics were occupation, industry, annual hours of work†, composite hourly earnings†, number of years worked full time for at least six months in a given year, type of job† (permanent, non-permanent or self-employed), an indicator for supervisory responsibilities†, indicators for employer-provided benefits† (dental, medical, or life/disability insurance), an indicator for employer-sponsored pension plan†, and a private/public sector indicator†. Binary indicators for survey year (to account for possible period effects) were also part of this initial specification. Variables marked with an obelisk (†) were lagged by one year to ensure that transitions and possible antecedents were ordered in time. All variables (except sex) could vary over time.

ment declined (at a decreasing rate) in the following years and, after four years, about 42% were still in bridge employment. A rough estimate of the median time in bridge employment is two to three years.[7]

The conditional probability of leaving bridge employment for retirement decreased as the time spent in bridge employment increased, going from about 35% in the first year to 8% in the fourth year. Longer-term trends could not be examined, but it is plausible that the probability increases after a few more years. Furthermore, these estimates were not adjusted for individual characteristics. In particular, the conditional probability likely evolves differently depending on the age of workers when they entered bridge employment—being higher for older individuals in the short term.

For those who entered retirement directly after career employment, the 'survival rate' in retirement was estimated at 61% after one year, which was lower than the probability of remaining in bridge employment for

a similar amount of time, but it declined less rapidly afterwards. After four years, 47% of those who left career employment for retirement remained in retirement.

The conditional probability of leaving retirement was highest in the first year, reaching almost 40%, and was 10% or less from the second year to the fourth year. Thus, consistent with other studies, retirees returning to the labour market appeared more likely to do so in the first year following their retirement. Past the first year, the likelihood of a return to work seemed much lower, at least up to the fourth year. Again, these estimates were not adjusted for individual characteristics—in the short term, younger retirees may have a higher return probability.

Conclusion

Overall, the results in this study support the notion of retirement as a process rather than a discrete event. Many older workers who start receiving a pension stay in the labour market in some capacity for roughly two to three years before they completely cease employment. As well, many of those who cease paid work at one point subsequently return to the labour market, especially in the first year following retirement. Therefore, it could be argued that conceiving of work and retirement as separate stages in the course of life does not accurately mirror reality for a substantial proportion of older adults.

Given some of the characteristics (higher earnings, university education and an employer-sponsored pension plan) associated with a greater probability of leaving career employment for bridge employment, it would appear that for individuals making this transition it may well be a choice rather than a necessity. Given the data limitations, it was not possible to assess whether this also held true for those who returned to the labour market after a period of retirement. However, a previous study found that financial issues were an important reason for retirees to return to the labour market, particularly for those who had retired because of downsizing, unemployment or health problems (Schellenberg et al. 2005).

Notes

1. In principle, the sample allowed an examination of transitions out of career employment occurring between ages 52 and 70, but no transitions were seen after age 66.
2. Because of small sample sizes, estimates pertaining to ages 65 and 66 should be used with caution.
3. Other studies that examine the timing of the transition to retirement or the timing of pension benefit take-up in Canada include Baker et al. (2001), Compton (2001), Waslander (2003) and Schirle (2007). Because of different definitions and samples, their results are not directly comparable to estimates presented here.
4. For this study, women and men were assumed at first to have different baseline conditional probabilities of entering bridge employment or retirement, but the preliminary results did not support that hypothesis.
5. See Campolieti (2002), Magee (2002), Au et al. (2005) and Schirle (2007).
6. The adjusted household income is the total household income adjusted for family size and composition based on the family equivalence scale, which is the sum of the equivalences for each family member. The oldest person in the household receives an equivalence of 1.0 and the second oldest person 0.4. Other family members age 16 and older receive an equivalence of 0.4 and those under 16 receive 0.3. This adjustment enables comparison of incomes for all families.
7. More specifically, this estimate is for the first episode of bridge employment.

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Rural commuting

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For most people, a commuter is someone who lives in the periphery, travels to work in the urban core, and travels back home at the end of the working day. Research on commuting in Canada's major cities indicates that although commuting remains common, the picture is becoming more complex with increasing periphery-to-periphery flows (Heisz and LaRochelle-Côté 2005).

Various studies have focused on rural commuting, (Schindegger and Krajasits 1997, Green and Meyer 1997, and Mitchell 2005), but, outside major agglomerations, the understanding of the multidirectional nature of commuting patterns is more limited. This article explores the multidirectional nature of commuting patterns in rural areas. It shows that these patterns are more complex than a simple core-periphery approach, typically depicted as a set of circles centred on an urban core, would suggest. A main finding is that, for rural and small town residents, rural-to-rural commuting is as important as rural-to-urban commuting. In other words, rural commuters are as dependent on rural labour markets as on urban labour markets—commuting flows out of communities tend to be multidirectional, not merely periphery-to-core.

This study presents baseline data on the pattern and size of rural commuting flows in 2001 and provides a better understanding of how rural communities are affected by both urban-bound commuters and rural-bound commuters. It also shows that Canada's Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs), which are delineated on the basis of commuting flows, essentially constitute self-contained labour markets. Overall, only 4% of the jobs in these urban areas are occupied by people commuting from rural areas.

The analysis used the 2001 Census of Population and its census subdivisions (CSDs) classified as part of either a larger urban centre (LUC) or a rural and small town (RST) area (see *Data source and definitions*). The methodological challenges caused by the multidirectional nature of commuting flows should be kept in mind. Although the use of different census geographies and different definitions of commuting would, to some extent, modify these results, the existing research on commuting flows within CMAs has also shown the increasing complexity of commuting flows within these urban delineations, as well as the rapid growth of periphery-to-periphery flows. Hence, the overall findings presented in this paper highlight trends that should be considered in future research on rural commuting and rural labour markets.

Where are the workers and where are the jobs?

In 2001, 2.8 million workers out of 14.7 million resided in rural and small town (RST) areas (Table 1). Of the 2.8 million, about 2.3 million also worked in an RST area, but not necessarily in the municipality where they were living and approximately 0.4 million commuted to a municipality in a larger urban centre (LUC).

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Data source and definitions

The analysis uses the 2001 **Census of Population** census subdivisions (CSD). Geographic location (coordinates of the geographic centre) and classification of CSDs according to type of area (MIZ code) are from Statistics Canada (2002b). For more details on place of work and place of residence, see Statistics Canada (2002a).

A **commuter** is an individual who reports a place of residence in one CSD and a place of work in a different CSD that is less than 250 km away. Since only one-fifth of households received the longer census form, confidentiality and reliability issues preclude the estimation of commuter flows of less than 20 commuters between any two CSDs (i.e. a sample of less than 4 commuters). The focus is on the nature of labour markets connected by daily commuting. For this reason, the definition of commuter was limited to anyone who worked within 250 km of their place of residence—specifically, only commuting flows between pairs of CSDs whose geographic centres were less than 250 km apart.

This distance threshold excluded only 0.7% of the total flows of commuters available. Individuals living and working in municipalities more than 250 km apart are a marginal group that might include those working at a temporary or seasonal worksite but still reporting their original place of residence or 'fly-in/fly-out' workers (for example, miners or construction workers on a worksite for 7 or 10 days and then home for several days).

The definition of commuting implies the crossing of CSD boundaries when travelling to work. Hence, it does not include those travelling relatively long distances to work within the boundaries of the same CSD. On the other hand, it includes individuals travelling a short distance but crossing a CSD boundary. The goal of this analysis is to account for multidirectional flows (*from-to*), which requires that a continuous space be broken into discrete geographic units, leading to some degree of approximation of real commuting flows.

A **census subdivision** (CSD) is a municipality (i.e. incorporated town, rural municipality, city, etc. determined by provincial legislation) or its equivalent (Indian reserves, Indian settlements, and unorganized territories). The 2001 Census of Population identified 5,600 CSDs (Statistics Canada 2002a). These can vary tremendously in population size—from just a few residents to over 2 million in Toronto. Also, geographic spread can vary widely—from less than 1 square kilometre for a small rural town to large geographic expanses of 'unorganized' territories in northern parts of many provinces. CSD-level data are aggregated into types of areas according to Statistics Canada's Statistical Area Classification.

Larger urban centres (LUCs) consist of CSDs classified as part of **census metropolitan areas** (CMAs) and **census agglomerations** (CAs). In 2001, CMAs had an urban core of 100,000 or more and included all neighbouring CSDs where 50% or more of the resident workforce commuted to the urban core. CAs had an urban core of 10,000 to 99,999 and also included neighbouring CSDs where 50% or more of the resident workforce commuted to the core.

- **Larger CMAs** have a total population of 500,000 or more. In 2001, this included Québec, Montréal, Ottawa-Gatineau, Toronto, Hamilton, Winnipeg, Calgary, Edmonton and Vancouver.
- **Smaller CMAs** have a population of 100,000 to 499,999.
- CAs have a population of 10,000 to 99,999.

Rural and small town (RST) areas comprise CSDs that are not part of a CMA or CA. RSTs are further classified into a **metropolitan-influence zone** (MIZ):

- **Strong MIZ**: 30% or more of the resident workforce commutes to a CMA or CA;
- **Moderate MIZ**: 5% to 29% of the resident workforce commutes to a CMA or CA;
- **Weak MIZ**: less than 5% of the resident workforce commutes to a CMA or CA; and
- **No MIZ**: none of the workforce commutes to a CMA or CA (or the workforce is less than 40 workers).

The definitions of LUC and RST are based on commuter activity into a CMA or CA. Thus, the amount of commuter activity into a CMA or CA and the type of MIZ to which a CSD is assigned are directly correlated. Similarly, some of the results simply confirm the commuting flows used to generate the classification. On the other hand, the MIZ classification does not assess the flows that occur between different MIZ categories or within the same MIZ category. This is where the analysis is most revealing. In this study, the CMA and CA classifications are based on total population of the agglomeration rather than the population in the urban core. Any agglomeration with total population greater than 100,000 is classified as a CMA; hence, smaller CMAs include 7 CAs with an urban core of less than 100,000 but a total population greater than 100,000. Also, for practical purposes, 16 non-CA CSDs in the territories, with small commuting flows to a CA in the territories, were assigned to the strong MIZ class. However, many of these were excluded because the commuting flow involved less than 20 people or the distance they travelled was 250 km or more.

The geography used has certain implications for the results. Alternative definitions of rural could generate different insights. For instance, an alternative definition is census rural, which refers to the population outside centres of 1,000 or more inhabitants and outside areas with a population density of 400 or more inhabitants per square kilometre (du Plessis et al. 2001). Each CSD may have some census rural areas and some census urban areas. Essentially, this is the countryside within each CSD. In the 1991 to 2006 period, more than one-third of census rural residents lived in a CSD delineated as part of a CMA or CA (Bollman and Clemenson 2008). Thus, census rural and census urban areas would capture multi-directional commuting flows within a CSD (rural-urban, rural-rural, etc.). Specifically, given the definition of rural used, the rural-to-rural commuting in this analysis includes flows between very small municipalities and towns with up to 10,000 inhabitants.

For details on the definitions outlined above see McNiven et al. (2000) and Statistics Canada (2002a).

Table 1 Workers by place of residence and place of work

	Place of work		
	All areas	Larger urban centres	Rural and small town areas
		'000	
Place of residence			
All areas	14,695	12,197	2,498
Larger urban centres	11,917	11,753	164
Rural and small town areas	2,778	444	2,334
		%	
All areas	100.0	83.0	17.0
Larger urban centres	100.0	98.6	1.4
Rural and small town areas	100.0	16.0	84.0
All areas	100.0	100.0	100.0
Larger urban centres	81.1	96.4	6.6
Rural and small town areas	18.9	3.6	93.4

Note: Includes all workers commuting between census subdivisions of the same type as well as those living and working in the same census subdivision.
Source: Statistics Canada, Census of Population, 2001.

Table 2 Commuters by place of residence and place of work

	Place of work		
	All areas	Larger urban centres	Rural and small town areas
		'000	
Place of residence			
All areas	4,820	4,210	611
Larger urban centres	3,930	3,766	164
Rural and small town areas	891	444	447
		%	
All areas	100.0	87.3	12.7
Larger urban centres	100.0	95.8	4.2
Rural and small town areas	100.0	49.8	50.2
All areas	100.0	100.0	100.0
Larger urban centres	81.5	89.5	26.8
Rural and small town areas	18.5	10.5	73.2

Note: Includes those commuting between census subdivisions of the same type.
Source: Statistics Canada, Census of Population, 2001.

Rural and small town workers were not major contributors to jobs in larger urban centres. About 96% of urban jobs were filled by LUC residents, either living in the same municipality or commuting from another LUC. Less than 4% of urban jobs were filled by commuting RST residents. However, because of the difference in the size of the population in LUC and RST areas, the 0.4 million rural commuters represented 16% of all workers residing in RST areas. At the same time, nearly 164,000 commuters were going from an LUC municipality to a municipality in an RST area. These workers represented only a little over 1% of the workers residing in LUCs, but they filled approximately 7% of the jobs in RST areas.

The big picture: Rural and urban commuters

In 2001, approximately 4.8 million individuals, or one-third of the Canadian workforce, crossed a municipal boundary in their travel to work (Table 2). Most commuted a relatively short distance—only 13% travelled more than 25 km to work, not including those who remained within the same municipality (Statistics Canada 2003).

With over 80% of the Canadian population living in LUCs in 2001 (Bollman and Clemenson 2008), it is not surprising that most of the commuting was concentrated in and around urban centres. About 3.8 million commuters travelled between urban jurisdictions. They represented 78% of all commuters in Canada. The remaining commuters represented all other regional flows (urban-to-rural, rural-to-urban or rural-to-rural).

Only about 164,000 people, or 4% of commuters who resided in an LUC, travelled to a municipality in an RST area for work. This vividly illustrates the extent to which LUCs represent self-contained labour markets.

Among commuters residing in RST areas, slightly over half (447,000) were going to another RST municipality. They, therefore, contributed to the economy of other rural areas. In comparison, approximately 444,000 workers commuted from a rural and small town area to a larger urban area. This suggests that rural-to-rural commuting accounted for a significant proportion of the labour supply in RST areas. These results indicate that when it comes to workers commuting from an RST area, rural jobs are just as important as urban jobs.

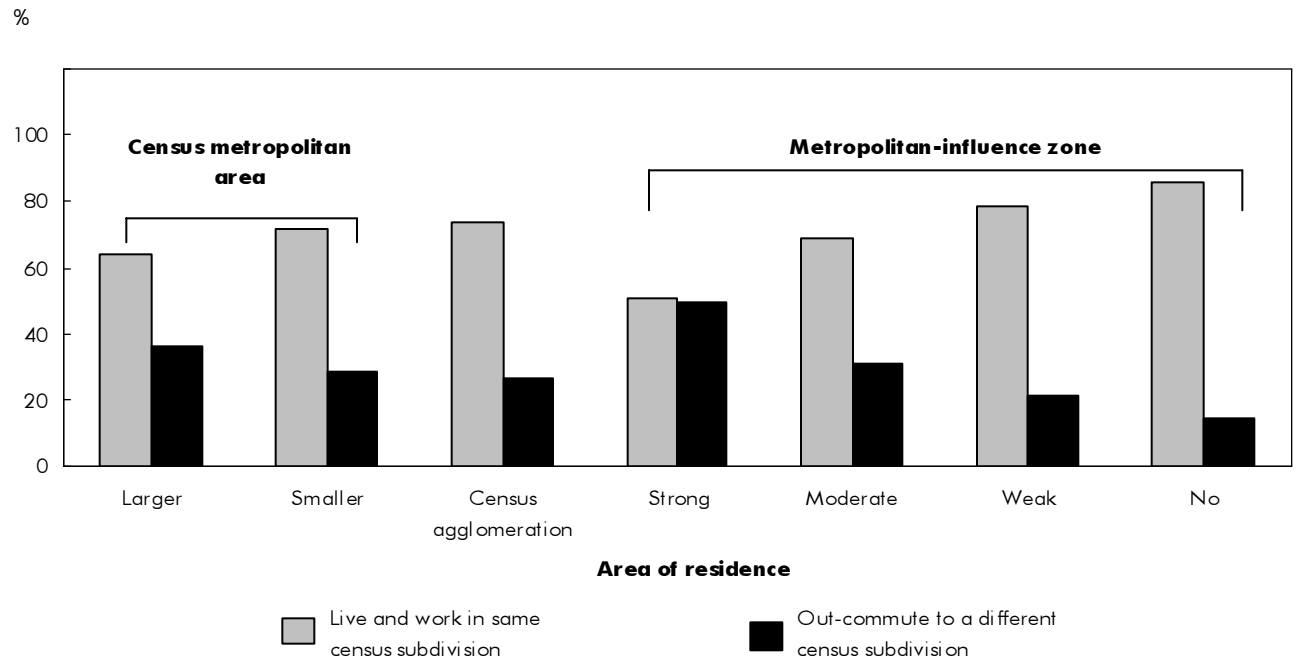
The commuting pattern that emerges from these results also seems to hold for alternative definitions of rural. In particular, research on commuting patterns within CMAs points to the increasing complexity of commuting patterns within metropolitan agglomerations. Between 1996 and 2001, the relative economic importance of inner cities declined as the number of jobs in the suburbs increased at more than four times the pace of those in the core urban areas (Heisz and LaRochelle-Côté 2005). As a result, more and more people commuted across town to these suburban areas. From 1981 to 2001, the number of workers travelling to the suburbs increased 74% to 1.8 million, while those commuting to the city core rose by only 28% to 1.3 million (Statistics Canada 2003). Of those who commuted to surrounding municipalities in 2001, about two-thirds came from another surrounding municipality and one-third from the core urban municipality. The 1.2 million workers commuting from one suburban municipality to another in 2001 represent a 91% increase from 1981 to 2001.

Because most childrearing and housekeeping responsibilities still seem to fall to women, it might be expected that fewer women would commute and that those who did would go smaller distances. In terms of commuting share, for almost all source/destination combinations, women and men differed by only a few percentage points from the overall commuter shares, although women's rates tended to be higher between CSDs in the same type of area. Approximately 400,000 more men than women commuted (2.6 million compared with 2.2 million). However, their overall patterns were similar.

Looking more closely: Commuting in different parts of rural and urban areas

To probe more deeply into commuting flows by type of area, metropolitan-influence zones (MIZ) were used to differentiate between various RST areas. In addition, cities were divided into larger CMAs, smaller CMAs, and CAs. Overall, the proportion of people

Chart A Except for strong metropolitan-influence zones, over 60% of workers were employed within their census subdivision of residence



Source: Statistics Canada, Census of Population, 2001.

commuting was similar for LUCs and RST areas. For each type of region, with the exception of strong MIZs, less than 40% of workers were employed in a CSD other than the one in which they lived (Chart A). Approximately 50% of workers residing in a strong MIZ commuted across a CSD boundary.

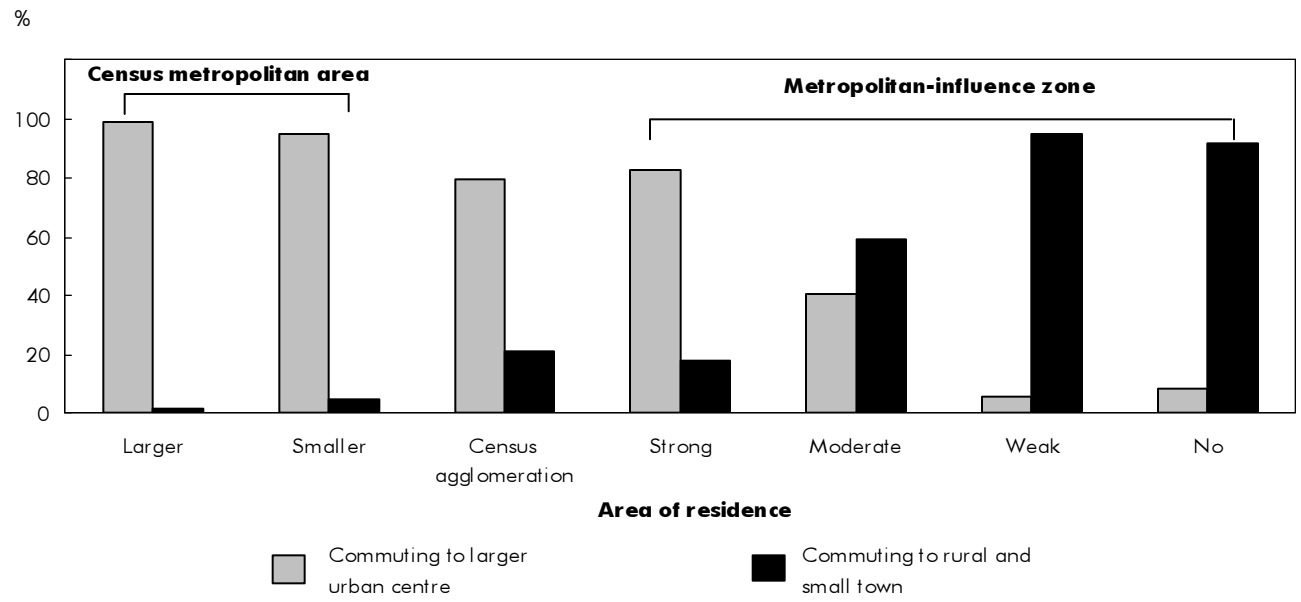
Rural workers commuting into urban areas were more likely to reside in municipalities in strong MIZs. Of the 4,605 municipalities in RST areas, 663 were in a strong MIZ. However, these municipalities accounted for almost 750,000 workers, or 27% of the total RST workforce.

Municipalities within larger CMAs had a higher proportion of commuters than municipalities within smaller CMAs, which in turn had a higher share than CAs. Larger CMAs typically contain many municipalities, relatively few of which have major employment sites. The remaining municipalities are mainly residential areas. RST areas also display a discernable pattern. Going from municipalities in a strong MIZ to those in a no MIZ, relatively fewer workers commute as the strength of the MIZ declines. Again, this points to the 'feeder' role of a strong MIZ, which, in an aggregate regional perspective, appears to reflect the idea of a 'bedroom community' more than any other type of region.

Out-commuting: Where are rural and urban commuters going?

In both larger and smaller CMAs, the proportion of out-commuters travelling to RST areas was insignificant (Chart B). In addition, the absolute number of commuters was relatively small. However, a much higher proportion (21%) of out-commuters in CAs travelled to a municipality in an RST area. Not surprisingly, municipalities in a strong MIZ were the most common destination for the out-commuters from an LUC area (Chart C). However, moderate MIZs were only a few percentage points behind (and even tied for commuting from larger CMAs).

Chart B In large urban centres, up to 20% of out-commuters travelled to a rural or small town area compared with about 60% in moderate metropolitan-influence zones

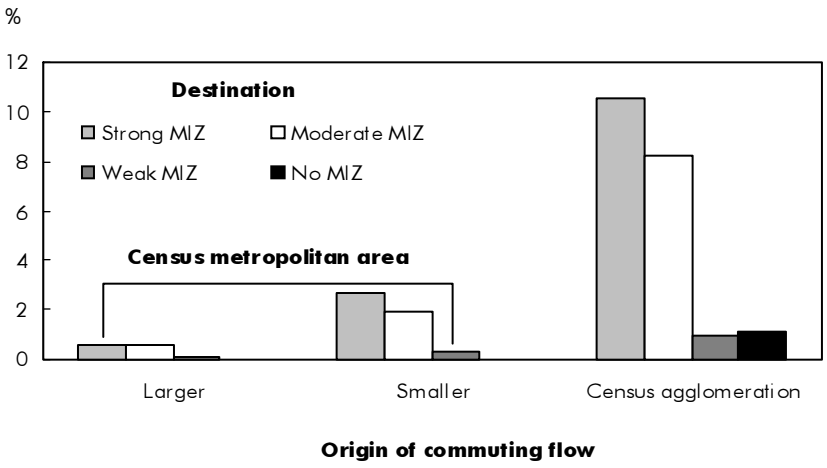


Source: Statistics Canada, Census of Population, 2001.

Among rural and small town areas, strong MIZ municipalities had the most prevalent out-bound commuting relationship with urban areas. More than 80% of out-commuters from a strong MIZ travelled to an LUC municipality. This finding is essentially due to the validity of the MIZ classification, which is based on urban-bound commuting.

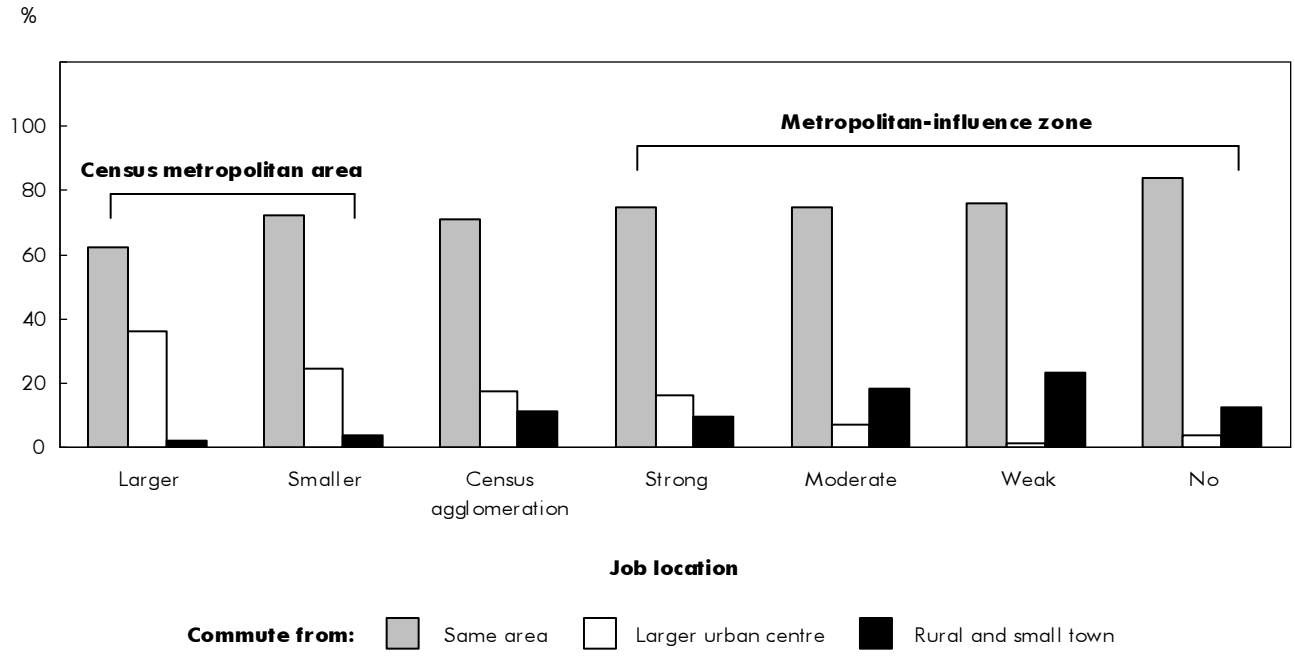
The picture is considerably different beyond strong MIZs. In municipalities in moderate MIZ areas, about 40% of out-commuters travelled to an LUC municipality for work, while 60% travelled to another RST municipality. Less than 10% of weak and no MIZ out-commuters travelled to an LUC municipality for work; the rest, to another RST municipality.

Chart C For each type of larger urban centre, the share of out-commuters to strong and moderate metropolitan-influence zones (MIZ) was similar



Source: Statistics Canada, Census of Population, 2001.

Chart D In rural and small town areas, three-quarters of the jobs in any census subdivision were filled by residents of the same subdivision



Source: Statistics Canada, Census of Population, 2001.

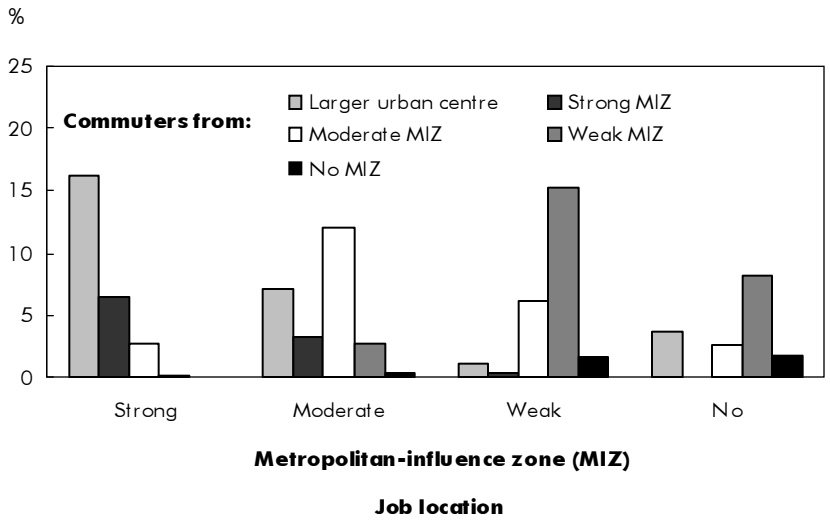
In-commuting: Who fills rural and urban jobs?

The share of local jobs filled by in-commuting is particularly high for larger CMAs (38%) and smaller CMAs and CAs (almost 30%), while it is close to 25% for strong MIZs, moderate MIZs and weak MIZs (Chart D). It is particularly low for no MIZs (about 16%). However, whether the in-commuters stem mainly from rural or urban areas depends on the type of area. Although some differences existed among LUCs, the share of rural in-commuting was generally low. Municipalities in CAs had a larger portion of jobs filled by in-commuters from RST areas, at about 11%. In contrast, only 4% of jobs in smaller CMAs and less than 2% in larger CMAs were filled by in-commuters from RST areas.

Within RST areas, the share of jobs taken by in-commuters was generally lower than in LUC municipalities. Furthermore, strong MIZs were the only rural and small town areas that had a majority of commuters coming from municipalities in LUCs. About 16% of the jobs in strong MIZ municipalities were filled by commuters from an LUC municipality compared with 9% by commuters from an RST CSD.

For other types of RST areas, the majority of in-commuting emanated from other municipalities within the same area. Once again, this reflects the strong rural-to-rural linkages that tend to be obscured by an analysis of commuting focusing primarily on urban-to-rural flows. Roughly 20% of the jobs in moderate and weak MIZ municipalities were filled by workers from another municipality in an RST area.

Chart E Over 10% of jobs in moderate metropolitan-influence zones were filled by in-commuters from other moderate metropolitan-influence zones



Source: Statistics Canada, Census of Population, 2001.

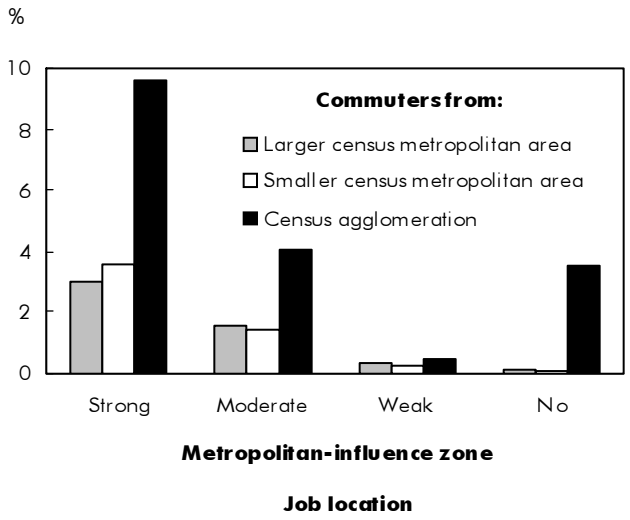
In strong MIZs, more jobs were taken by commuters from LUC municipalities than by commuters from any other type of area. In contrast, in moderate and weak MIZs more jobs were taken by commuters from a municipality of the same MIZ category than from any other type of area. The linkage between strong MIZ municipalities and other MIZ categories (even with other strong MIZ CSDs) was small compared with the linkage to LUC municipalities.

In strong MIZ municipalities, only about 3% of the jobs were filled by commuters from a moderate MIZ; similarly, within moderate MIZ municipalities, only about 3% of the jobs were filled from a strong MIZ (Chart E). Thus, moderate, weak and no MIZ municipalities not only had a low degree of integration with LUC municipalities, they were also relatively less integrated with strong MIZ municipalities.

Census agglomerations are the main departure point of LUC commuters travelling to RST areas (Chart F). With the exception of weak MIZs, a considerably larger proportion of workers in each type of rural and small town area travelled from a CA than from either a smaller or larger CMA. In general, it was the strong MIZ municipalities that were most affected by commuters from an LUC municipality.

More than 16% of the people working in strong MIZ municipalities travelled from an LUC munici-

Chart F In most types of rural census subdivisions, over half of the commuters from a larger urban centre were from a census agglomeration



Source: Statistics Canada, Census of Population, 2001.

pality—with well over half of them in-commuting from a CA. The equivalent proportion for moderate MIZs, the next closest regional type, was approximately 7%. (However, since MIZ classification is based on the size of commuting to any CMA or CA, such reverse commuting from a CMA or CA to strong MIZ municipalities may be expected.)

Conclusion

Commuting is, to a large extent, an urban phenomenon. Given the existing distribution of population and jobs, it is not surprising that close to 80% of commuting takes place between municipalities within larger urban centres. The existing research on commuting within CMAs indicates that, even in these areas, commuting patterns are becoming increasingly complex with growing core-to-periphery and periphery-to-periphery flows.

Rural commuting is also more complex than commonly believed. Any analysis of commuting that concentrates on the flows from the (rural) periphery to the (urban) core overlooks half of rural commuting, which is rural-to-rural. For commuters residing in rural and small town areas, rural-to-rural commuting is as large as rural-to-urban commuting. Moreover, rural jobs are more than twice as reliant on in-commuters from other rural areas as they are on in-commuters from urban areas. Rural-to-rural linkages appear particularly strong in RST areas beyond strong MIZs. Overlooking these rural-to-rural commuting flows limits understanding of the economic linkages between rural communities and the degree of integration in rural labour markets.

CMAs and CAs seem to successfully delineate self-contained labour markets. Only 4% of jobs in larger urban centres are filled by commuters from RST areas (these workers represent 16% of workers residing in RST areas). As well, RST areas classified as strong MIZs accurately constitute the dividing belt between LUCs and RST areas. The pattern of rural-to-rural commuting has been labelled the 'arena society' to emphasize that different functions—residence, recreation and work—are increasingly disjointed over space and may each involve a commute in a different direction (Persson et al. 1997).

At the regional level, the analysis of commuting flows is a pre-condition for the identification of functional areas that present strong economic linkages and share a common pool of labour. These areas form an important territorial unit of analysis as well as a focus for the delivery of policy. The research challenge is to provide a better delineation of rural labour markets that can complement the information captured by the prevailing MIZ classification. Clearly some rural areas are strongly connected to urban labour markets, but most of the rural communities and half of the rural commuters are dependent on other rural labour markets.

Perspectives

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