



Time use and rurality – Canada 2005

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Abstract

This paper provides a preliminary assessment of rurality as a factor affecting where and how people use their time, in a North American context. Rurality is a complex concept, but two key aspects are the degree of urban influence, and economic dependence on resource industries (farming and fishing particularly). Using dichotomous variables from the 2005 Canadian time use survey, we find that rural residence and resource employment both strongly influence time use and travel behaviour. Responding to fewer and more distant opportunities, people with rural residence participate less than urbanites in paid work, education, and shopping, and thus on average spend less time in these activities. Differences in time use between resource and non-resource workers are generally less marked than those related to urban versus rural workers. However, resource workers spend significantly less time in care-giving and sports, and more time in shopping and education. Participation in many activities is lower for resource workers, but those who participate spend significantly more time in paid work, domestic work, shopping, and education. Rural residents were found to spend considerably less time in travel than urban dwellers. On average, they take fewer trips per day, of shorter average duration, and spend less time in travel. Resource workers take significantly fewer trips than non-resource workers, spend less total time in travel, and have trips of lower average duration.

JEL-Codes: Q00, R11, R12, Z10

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1 Introduction

Theoretical and empirical work on time use has largely focused on the behaviour of urban or suburban actors, so that there is only a modest body of literature on rural time use. Much of this, moreover, relates to the developing world. There has been very little work on rural time use in the modern (and postmodern) countryside, or on rural-urban contrasts in time use or space-time behaviour. This paper is intended to help remedy this lack. It provides a Canada-wide perspective on rural-urban contrasts, using two dichotomous indicators of rurality contained in the 2005 Canadian General Social Survey on Time Use (GSS-TU). One indicator focuses on the residence location of respondents, and assigns ‘urban’ and ‘rural’ designations to localities based on commuting flows to cities and larger towns. A second indicator relates to employment in the traditional rural resource-based industries, most notably farming, but also fishing, forestry, and mining. The paper assesses how these two aspects of rurality, separately and in combination, affect time use. Given lower population densities in rural areas, and longer distances between activity opportunities, much of the focus will necessarily be on the time aspects of travel behaviour.

Following a discussion of expectations regarding rural-urban contrasts in time use, the core of the paper is an empirical analysis of data from time use information collected in 2005 in Cycle 19 of the General Social Survey. Using both participation rates and daily time budgets, we first examine how rural residence and resource employment affect time allocations for ten major activity categories, and use non-parametric tests to assess the significance of between-group differences. We then consider how rural residence and resource employment affect a range of travel behaviour measures, and again gauge the significance of between-group differences. Identified differences are related to our initial expectations, and we attempt to explain unexpected results. The paper concludes by suggesting the need to employ more nuanced measures of rurality, drawing on the work of rural geographers and sociologists.

Traditionally, rural and urban ways of life were quite distinct, with country folk engaged in resource-based primary production, and town dwellers employed in the manufacturing or service sectors. Both groups lived close to their workplaces. Widespread use of automobiles, however (say, after 1950 in Canada), led to ‘time-space convergence’ (Janelle, 1969; Knowles, 2006) which extended urban commuting fields (a.k.a. ‘daily urban systems’ or labor market areas) well beyond the built-up area, and greatly altered socio-economic characteristics within this ‘urban field’ (Friedmann and Miller, 1965; Russwurm, 1976; Plane, 1981; Stabler and Olfert, 1996). Lewis and Maund (1976) modeled the impacts in terms of migration flows: rural dwellers within commuting range of the city are no longer forced to out-migrate for employment, while concurrently many urbanites move into the countryside. The limit of this commuter zone is typically suggested as around one hour’s drive from major urban employment nodes, which underlines the importance of time use in the structure of modern rural areas. Commuting and housing development can significantly alter the

landscape, economy, and social character of the more intensively exurbanized portions of the commuter belt (Lamb, 1983; Dahms, 1998; Millward, 2000).

Pryor (1968), Robinson (1990, particularly ch. 2), Bell (1992), and Bryant et al. (1982), all provide useful discussions of the urban impact on the countryside and on rural ways of life. They agree with Pahl (1966) that there exists a 'rural-urban continuum', such that a simple urban/rural dichotomy is seldom useful or appropriate. They see utility in defining differing degrees of rurality based on social, economic, demographic, and land use criteria (Clope, 1977; Harrington and Donoghue, 1998). However, others advise caution in the use of statistically-based indices (Halfacree, 1993), and view rurality as a socially-defined construct, such that 'objective' measures are neither possible nor desirable. The terms 'countryside' and 'rural' are no longer easy to define, and in many seemingly rural areas, the traditional 'productivist' resource-based industries provide little more than scenic amenity. However, while the terms 'post-productive' (Ilbery and Bowler, 1998) and 'post-rural' (Hoggart, 1990; Murdoch and Pratt, 1993) have some applicability within commuter belts (and densely settled countries like England or Germany are composed almost entirely of overlapping commuter belts), we should bear in mind that thinly-settled countries like Canada and Australia contain vast rural territories lying outside urban fields, which continue to be highly dependent on resource industries (Smailes et al., 2002; Millward, 2005).

Time use research with a specific rural focus has been typically concerned with agricultural and village life in subsistence economies. Anthropologists in particular have theorized on varying perceptions of time, work, and leisure, and conducted empirical work on time inputs for 'work' in a variety of hunting, gathering, and farming communities (e.g. Minge-Klevana, 1980; Grossman, 1984; Skoufias, 1993). Of particular interest here are the detailed stopwatch observations made by Blaikie (1971) to estimate time outlays for agricultural operations in north India. Other studies have focused on age and gender differences in rural time use, since such differences are often quite marked in traditional societies (Whitehead, 1999; Robson, 2004; Biran et al., 2004; Su et al., 2006). Age and gender effects in developed countries have also received some attention (Meiners and Olson, 1987; Beach, 1987; Davidson, 1989; Gordon and Caltabiano, 1996; Droogleever Fortuijn, 1999).

Rural-urban contrasts are seldom considered as an explanation for inter-personal, inter-settlement, or inter-regional differences in time use, primarily because major time use surveys are either urban-only, or national samples lacking rural-urban coding of respondents (e.g. Gershuny, 2000; Pentland et al., 1999; Robinson and Godbey, 1999). Artemov's (1981) comparison of athletic activity for urban and rural residents is a rare exception, and another is Atkinson's (1994) urban-rural comparison of time in child care. Perhaps more important is work by Harvey (1994), whose affiliation with Statistics Canada allowed access to geographical coding of the 1986 GSS-TU not available to the public. He divided survey respondents into three categories labelled metropolitan areas, larger towns, and rural/small town, and tabulated those against time in major activities. Though he did not test for statistical significance, he shows that more time is allocated to paid work and less to domestic work in metropolitan areas, whereas travel time to work is longer both in metropolitan and rural areas.

Time geography is a distinct sub-discipline, concerned with location, movement, and activity in space-time (Parkes and Thrift, 1975; Thrift and Pred, 1981; May and Thrift, 2001). Like other time use researchers, time geographers have given very little attention to rural areas or small towns. There are a few studies of time-use and travel distance schedules in traditional resource-based rural communities (e.g. Blaikie, 1971; Grossman, 1984), while Hagerstrand (1996) employs space-time imagery to great effect in tracing activity patterns in a small rural area of Sweden undergoing modernization (and co-incidentally traces his own childhood). Nutley (1985) discussed time-space constraints in the context of rural mobility research, and Tillberg Mattsson (2002) has operationalized these ideas in a study of rural-urban differences in children's leisure time, and parental chauffeuring activities. This paucity of studies reflects the lack of time diaries for rural areas, and particularly of those with geo-referenced activity data.

There is evidence that ubiquitous processes of modernization and globalization (Featherstone, 1990; Tomlinson, 1999; Gradstein and Justman, 2002) are leading to greater similarities in lifestyles. Differences in age, gender, income, social rank, and nationality impose fewer constraints than previously, leading to convergence in values, mores, and behaviour (Baumol, 1986), and reduced differentials in time use and travel (Fisher et al., 2007; Nowotny, 1994; Peters, 2006). It is reasonable to suppose that rural and urban modes of life, at least in developed economies, are also converging, fostered in particular by time-space convergence (Janelle, 1969; Knowles, 2006), which has allowed urbanites and ruralites to enjoy the advantages of each other's milieux, and indeed to move daily along the rural-urban continuum.

Significant differences, however, are likely to remain. In remote rural areas beyond the urban field, for example, there is likely to be more participation in household work, owing to traditional male/female division of labour, and to fewer opportunities for paid work. Residents of remote rural areas are also likely to spend less time overall in paid work. Such areas are typically heavily dependent on resource industries (and particularly agriculture), which are restructuring to become less labour-intensive (Healey and Ilbery, 1985; Troughton, 1986; Marsden et al., 1990; Bowler, 1992). They thus exhibit higher levels of unemployment (Gilg, 1983; Wimberley, 1993), and lower participation in the workforce. They are also typically in demographic decline (Pacione, 1982; Feser and Sweeney, 2003; Millward, 2005; Malenfant et al., 2007), leading to a higher dependency ratio, and (again) lower workforce participation (Robinson, 1990, 59-92; Furuseth, 1998; Smailes et al., 2002; Feser and Sweeney, 2003). Harvey's (1994) tabulations from Canada's 1986 national time survey show rural areas have less participation in paid work, and rural participants work fewer hours than urban ones. Commuter belts in the rural-urban fringe, however, often have lower unemployment rates and higher workforce participation than either remote rural areas or the inner city.

Geographers and transport planners are particularly interested in space-time activity, rather than simply time-use, and this leads us to consider both activity settings and travel between settings. The longest journeys are typically journeys-to-work, and we might expect rural residents to drive further to work, on average, than urbanites. However, in traditional (i.e.

more remote) rural areas, resource-based employment in farming and fishing is often still important, and much of this activity takes place at or near home, with little or no commute required. Also, at-home self-employment in a variety of home businesses is important in rural areas, as a means to supplement household income, and as a response to a lack of conventional paid employment (du Plessis and Cooke-Reynolds, 2005). Finally, employees in small towns and larger villages often live very close to their work. For these reasons, the average person's journey-to-work may take no more time in the country than in the city, though the average participant's may be somewhat longer. Harvey's (1994) tabulations for 1986 accord with these expectations, though differences were not tested for significance.

For journeys to shop and socialize, much activity in rural areas may remain highly localized, focused on the village unit. But declining populations and increased mobility (near-universal car ownership) have greatly altered threshold and range conditions for most rural goods and services, so that many smaller villages now lack even basic facilities such as a school, church, general store, or gas station. The increasingly sparse and dispersed nature of rural opportunities (Furuseth, 1998), particularly for 'higher-order' goods and services, may be reflected in longer journey distances than in the city.

2 Contrasts in time use by rural-urban residency

Although work by Cloke and others (e.g. Cloke, 1977; Harrington and Donoghue, 1998) suggests a wide range of variables related to 'rurality', key ones relate to population density, location relative to a major urban centre, and a resource-based economy. Prior to 2005, the Canadian national time use survey, like other such surveys, provided information only on the latter, by specifying employment type for workforce respondents (grouped for this study into 'resource' versus 'non-resource' employment). The 2005 GSS-TU survey provides a complementary binary indicator of respondent rurality, by specifying residence location according to the degree of urban commuter influence ('urban' versus 'rural' districts). This variable distinguishes between those living in either census metropolitan areas (CMA's) or census agglomerations (CA's) (= 'urban') and those living elsewhere, in rural areas or small towns (= 'rural' or RST). The categorization is crude and somewhat misleading, since CMA's and CA's are labour-market (commuter-shed) areas that often include broad swathes of countryside, within which much farming may occur. Conversely, non-CMA/CA areas may contain towns up to 10,000 population, and may also have commuting to nearby cities, though at a lower level than within a CMA (less than 50% of labour force working in the central urban core). A more nuanced definition of rural residence has been developed by Statistics Canada, which further subdivides RST areas by the degree of metropolitan influence (Malenfant et al., 2007), but unfortunately it was not employed in the 2005 time use survey. The survey also excludes Prince Edward Island from rural-urban categorization, owing to privacy concerns related to its small sample size.

With Prince Edward Island excluded, the sample has 19,004 respondents, of which 22.6% are RST. The sampling design employed a complicated mix of random and stratified sampling, but most sub-samples (e.g. rural women in Ontario) are proportionally accurate. In this paper, we chose not to estimate population parameters using person-weights, but to investigate only the parameters of the sample and sub-samples. This allowed us to compute non-parametric significance of rural-urban differences, using the Mann-Whitney test. Non-parametric (difference-of-ranks) testing is much preferable to t-testing, since most variables are highly positively skewed. However, Mann-Whitney cannot be performed on population estimates, owing to the overwhelming proportion of tied ranks. Two-tailed significance is reported, since this is more stringent than 1-tailed testing.

Table 1 shows daily time budgets, in average minutes per day, for ten activity categories, for all respondents in both rural and urban residence sub-samples. These values include travel time related to each activity. Rural-urban differences may at first sight appear rather small, since only two of them (employed work and domestic work) exceed 15 minutes. All but one of the differences, however, are significant at the 0.01 level. In other words, such differences would occur by chance in random samples less than 1% of the time, and we are therefore 99% confident that they are not produced randomly. Since sample sizes are smaller, rural-urban differences are less significant when calculated only for those in the workforce (Table 1, right side), but even so seven of the ten activity categories show differences at the 0.05 significance level.

Table 1
Mean activity schedules (mins/day), all respondents 2005;
population aged 15 and over (unweighted sample data)

Activity category (incl. related travel)	All respondents			Workforce respondents		
	Rural	Urban	Rural-urban diffs. signif. ¹ (2-tailed)	Rural	Urban	rural-urban diffs. signif. ¹ (2-tailed)
0 Employed work	206	229	.00 –	312	326	.02 –
1 Domestic work	148	117	.00 +	134	102	.00 +
2 Care-giving	24	28	.00 –	28	31	.05 –
3 Shopping / Services	42	47	.00 –	39	44	.00 –
4 Personal Care	647	640	.01 +	614	611	.11 +
5 Education	19	31	.00 –	19	31	.00 –
6 Organizational	26	23	.01 +	22	20	.07 +
7 Entertainment events	90	85	.00 +	87	84	.03 +
8 Sports/Hobbies	65	67	.00 –	55	59	.00 –
9 Media/Communication	172	171	.94 +	129	131	.14 –
N	4,289	14,715		2,730	9,773	

¹ Mann-Whitney difference-of-ranks tests. Bold figures are significant at <.05. Signs show rural mean minus urban mean.

Source: Calculated from main file, GSS 2005 Time Use Survey, and averaged over a 7-day week.

As expected, respondents in the rural residence category spend significantly less time in paid work, and more time in domestic work. Also as expected, the large all-sample difference for

paid work (-23 minutes) is entirely attributable to lower participation; in contrast to Harvey's (1994) finding, rural respondents working on the sample day actually worked slightly longer than their urban counterparts (Table 2). Rural and urban areas show similar participation in domestic work, so that rural participants (even when restricted to those with paid employment) worked significantly longer.

Table 2
Mean activity schedules (mins/day), for participants¹ only;
workforce respondents, population aged 15 and over, 2005 (unweighted sample data)

Activity category (incl. related travel)	All workforce			Employed on sample day		
	Rural	Urban	Rural-urban diffs. signif. ² (2-tailed)	Rural	Urban	rural-urban diffs. signif. ² (2-tailed)
0 Employed work	530	528	.74 +	541	534	.41 +
1 Domestic work	181	151	.00 +	171	135	.00 +
2 Care-giving	129	134	.70 –	122	126	.79 –
3 Shopping / Services	117	120	.00 –	111	114	.00 –
4 Personal Care	647	640	.01 +	614	611	.18 +
5 Education	364	359	.68 +	336	339	.89 –
6 Organizational	164	162	.40 +	157	153	.36 +
7 Entertainment events	188	189	.64 –	184	187	.95 –
8 Sports/Hobbies	149	144	.62 +	139	136	.67 +
9 Media/Communication	206	204	.26 +	163	162	.89 +

¹ Those reporting participation in the activity, on the day of the survey. Sample sizes vary by activity.

² Mann-Whitney difference-of-ranks tests. Bold figures are significant at <.05. Signs show rural mean minus urban mean.

Source: Calculated from main file, GSS 2005 Time Use Survey, and averaged over a 7-day week.

Against expectations, shopping (including travel-to-shop) takes up significantly less time in rural areas, both on average and per participant. This suggests a rational accommodation to the lack of nearby shopping opportunities, and particularly the lack of shopping choice: trips may be longer, but they are made less frequently. Another activity category showing significant differences for participants is personal care: on average, rural respondents spend seven minutes/day more on sleep, meals, etc., which is indicative of a somewhat more relaxed pace. Again, this result is related to lower participation in the paid workforce, in that the rural employed spend only three extra minutes per day, which is not significantly different.

Significant all-sample differences exist for several other activity categories, but their participant differences are not significant. Rural areas show less time in education (including travel-to-education) for all respondents, but more time for participants. This result accords with our expectations, in that rural school children have longer distance journeys-to-school, whereas there are few participants in further education. More time is spent in organizational activity, both on average and by doers, perhaps reflecting the importance of church, voluntary fire-hall, and community centre in rural life. On average, more time is spent on entertainment events, too, but time per participant is similar in urban and rural areas, because rural areas

have a higher proportion of participants (and perhaps events are shorter). Sports and hobbies take up significantly less time in rural areas, but this reflects lower participation: for doers, the average time is greater, though not significantly so. Time spent in media and communication activities is remarkably similar in rural and urban areas, as is the participation rate.

3 Resource / non-resource contrasts in time use

An alternative indicator of rurality available in the 2005 GSS-TU, at least for those in the paid workforce, is employment in resource-based primary industries of farming, fishing, forestry, and mining. Most respondents with such employment are farmers or farmworkers, but in certain regions of Canada (e.g. Newfoundland, the Maritime Provinces, the 'Near-North', and British Columbia) forestry, fisheries, and even mining often employ more people, and indeed agriculture is entirely absent in certain districts. The broader notion of 'resource' employment is therefore more widely applicable than a narrow 'farm' category. By separating resource workers from other workers, both in 'urban' and 'rural' residence areas, we can assess the importance of traditional rural employment as a factor affecting time use.

Tables 3 and 4 show mean time budgets for four sub-samples in the workforce. Recall that 'urban' residence areas comprise not only the built-up areas of larger cities, but extensive commuter zones around them, sometimes up to 100 km from the city centre. This explains why almost 40% of resource workers in the sample (245 of 611) are located in these CMA and CA zones. However, resource workers comprise only 2.5% of the sample in urban areas, but 13.4% of the sample in rural and small-town (RST) areas. Even in the latter, though, they are definitely a minority.

The resource rural group stands out as spending most time in employed (paid) work activities (Table 3), and this is particularly true for participants (Table 4). Time spent in paid employment is equally low for non-resource participants in both urban and rural areas. The right-hand column in Table 4 shows the resource / non-resource difference for paid work to be highly significant, whereas the final column in Table 2 shows the rural-urban difference to be insignificant. Thus, for participants in this activity, type of employment seems more influential than location of residence.

Workforce respondents in rural areas spend more time in unpaid domestic work than those in urban areas, irrespective of employment type. The resource / non-resource difference is significant for participants (Table 4), but the rural-urban difference is even more significant, both for all respondents and for participants only (Tables 1 and 2). Domestic work occupies more time in rural areas in part because a smaller proportion of the workforce has paid work (unemployment levels are higher), allowing housework to take up the 'slack'. Somewhat paradoxically, however, the rural resource group of respondents shows very little time in household care-giving activities (e.g. childcare). Presumably, such care is largely undertaken by non-workforce respondents (i.e. unpaid mothers in farm households).

Table 3
Mean activity schedules (mins/day) by Location & Employment;
workforce respondents, population aged 15 and over, 2005 (unweighted sample data)

Activity category (incl. related travel)	Resource employment rural	Resource employment urban	Non- resource employment rural	Non- resource employment urban	Res-nonres emplt diffs signif ¹ (2-tailed)
0 Employed work	337	302	308	326	.92 –
1 Domestic work	132	107	134	102	.43 +
2 Care-giving	13	29	30	31	.00 –
3 Shopping / Services	38	46	40	44	.00 +
4 Personal Care	609	607	614	611	.66 –
5 Education	10	45	21	31	.01 +
6 Organizational	26	17	22	20	.82 +
7 Entertainment events	88	87	86	84	.20 +
8 Sports/Hobbies	52	56	56	60	.05 –
9 Media/Communication	135	143	128	131	.38 +
N	366	245	2,364	9,528	

¹ Mann-Whitney difference-of-ranks tests. Bold figures are significant at <.05. Signs show resource mean minus non-resource mean.

Source: Calculated from main file, GSS 2005 Time Use Survey, and averaged over a 7-day week.

Table 4
Mean activity schedules (mins/day) by location & employment, participants¹;
workforce respondents, population aged 15 and over, 2005 (unweighted sample data)

Activity category (incl. related travel)	Resource employment rural	Resource employment urban	Non-resource employment rural	Non-resource employment urban	Res-nonres emplt diffs signif ² (2-tailed)
0 Employed work	588	556	533	533	.00 +
1 Domestic work	189	145	168	135	.04 +
2 Care-giving	97	133	125	126	.50 –
3 Shopping / Services	128	135	109	114	.05 +
4 Personal Care	609	609	614	611	.70 –
5 Education	360	475	335	335	.02 +
6 Organizational	189	156	152	153	.60 +
7 Entertainment events	183	185	184	187	.71 –
8 Sports/Hobbies	139	139	139	136	.60 +
9 Media/Communication	171	171	162	162	.22 +

¹ Those reporting participation in the activity, on the day of the survey. Sample sizes vary by activity.

² Mann-Whitney difference-of-ranks tests. Bold figures are significant at <.05. Signs show resource mean minus non-resource mean.

Source: Calculated from main file, GSS 2005 Time Use Survey, and averaged over a 7-day week.

Shopping and education are two other activity categories showing significant resource / non-resource differences. Resource workers in both urban and rural settings spend more time shopping than non-resource workers, and the time differential is particularly large for

participants (Table 4). Perhaps this reflects the fact that farmers and fishers typically live in isolated households, or in small communities lacking shops, and must spend more time in shopping travel. However, the rural-urban difference is somewhat more significant than the resource / non-resource difference (Table 2 versus Table 4), in part owing to the number of resource workers in so-called urban areas.

Time spent in education is very low overall for the rural resource group (Table 3), but much higher when computed for participants only (Table 4). The urban resource group has very high levels, whether computed for all workforce or participants only. These figures can be understood in the context of very low participation in education activities among the workforce generally, and in the rural resource workforce particularly. For participants, a comparison of the right-hand columns shows that resource / non-resource differences are highly significant (Table 4), but rural-urban differences are insignificant (Table 2).

4 Contrasts in travel behaviour by rural-urban residency

Travel behaviour is overtly geographical, since it concerns shifts in location between activity settings and sites. Travel occurs because of a demand to participate in out-of-home activities, and may be viewed at aggregate levels (such as the spatial separation of people and jobs: see Hamilton, 1982; Ma and Banister, 2007), or at the level of individual behaviour (e.g. trade-offs between costs and benefits of travel, spatial constraints, etc.) (see Jones et al., 1983; Peters, 2006). The GSS-TU 2005 contains detailed episode data for travel activities, including purpose, timing, duration, and mode of travel. It does not, however, report on distances traveled for these episodes.

4.1 Total travel

Tables 5 and 6 show aggregate data on mean daily number of trips, total daily travel time, and mean trip duration. Table 5 shows means for all respondents, and Table 6 for participants only. Although our expectation was for similar total amounts of travel, both Tables show daily travel for rural (RST) residents to be considerably and significantly less than daily travel for city (CMA/CA) residents. The average rural dweller (Table 5, left half) takes fewer trips per day (confirming findings by Pucher and Renne, 2005), the trips are slightly shorter in duration, and overall travel time is 8.4 minutes (or 12%) less. In part, this reflects lower participation in travel, with more people at home all day. For participants (Table 6, left half), the mean number of trips is more similar (though still significantly different at the 95% confidence level), and the difference in total travel time is reduced to 5.2 minutes.

Looking only at those in the workforce (i.e., excluding homemakers, retirees, incapacitated, and full-time students), rural-urban differences are similar in direction and significance, but reduced somewhat in amounts (right side of Tables 5 and 6). As we might expect, workforce

members take more trips than the population as a whole, and spend more time on travelling. Rural workforce members, on average, spend 2.1 minutes less per day in travel than urban counterparts, but for ‘doers’ the value is only 1.0 minute less.

Table 5
Rural-urban differences in daily travel, all respondents;
population aged 15 and over, 2005

Travel variable	All respondents			Workforce respondents		
	Rural means	Urban means	Rural-urban diffs. signif. ¹ (2-tailed)	Rural means	Urban means	Rural-urban diffs. signif. ¹ (2-tailed)
Number of trips (per day)	3.0	3.2	.00 –	3.3	3.6	.03 –
Total travel time (mins/day)	61.7	70.1	.00 –	72.8	80.5	.00 –
Average trip duration (mins/day)	23.5	25.0	.00 –	21.8	23.9	.00 –
Travel time by trip purpose (mins/day)						
Paid work (to / from)	15.8	20.2	.00 –	24.0	28.6	.00 –
Child care	3.2	4.8	.00 –	3.7	5.4	.01 –
Shopping	17.5	18.9	.00 –	17.1	18.2	.10 –
Education	1.9	2.7	.00 –	1.9	2.7	.75 –
Organizational	4.2	3.8	.55 +	3.7	3.7	.23 +
Entertainment events	11.6	11.4	.00 +	14.3	13.0	.00 +
Sports & hobbies	3.9	5.1	.00 –	4.0	5.4	.01 –

1. Mann-Whitney difference-of-ranks test. Bold figures are significant at <.05. Signs show rural mean minus urban mean.

Source: Calculated from Episode and Main files, GSS 2005 Time Use Survey, and averaged over a 7-day week.

4.2 Travel duration

Travel may be categorized as obligatory (e.g. journey-to-work), discretionary or leisure-related (such as journey-to-socialize), or intermediate (journeys for shopping and childcare). Our expectations were for somewhat longer duration journeys to work, school, and shopping for rural participants, but possibly shorter durations for discretionary trips. These expectations are only partially met. Table 5 shows travel for non-leisure activities to be of significantly lower duration in rural areas, although average time differences per person per day seem slight for childcare, shopping, and education. The situation is different, however, when we compute durations for those who participated in a particular travel type on the day of the survey. For such ‘doers’, mean travel times per activity are much longer (Table 6), and the rural-minus-urban difference changes its sign for shopping and education. For example, workforce ‘doers’ (right side) spend significantly more time in travel for these activities. The sign-shift is related to lower participation in education and shopping in rural areas, which is surely partly reflective of fewer, smaller, and more widely-spaced schools and shops. The activity centres themselves tend to be less attractive and, in addition, participants must invest more travel time and expense to reach them.

Table 6
Rural-urban differences in participant¹ daily travel;
population aged 15 and over, 2005

Travel variable	All participants			Workforce participants		
	Rural means	Urban means	Rural-urban diffs. signif. ¹ (2-tailed)	Rural means	Urban means	rural-urban diffs. signif. ¹ (2-tailed)
Number of trips (per day)	3.7	3.8	.03 –	3.8	3.9	.00 –
Total travel time (mins/day)	76.8	82.0	.00 –	83.4	87.2	.00 –
Average trip duration (mins/day)	23.5	25.0	.00 –	24.9	25.9	.00 –
Travel time by trip purpose (mins/day)						
Paid work (to / from)	47.7	52.6	.00 –	48.3	52.6	.00 –
Child care	42.1	47.3	.00 –	40.9	45.0	.00 –
Shopping	43.8	42.3	.07 +	43.5	40.9	.00 +
Education	53.5	48.0	.77 +	52.5	47.3	.00 +
Organizational	49.3	46.8	.18 +	49.1	49.5	.84 –
Entertainment events	44.1	49.2	.00 –	50.8	53.3	.00 –
Sports & hobbies	43.1	46.1	.00 –	46.6	47.0	.00 –

¹ Those reporting participation in the activity, on the day of the survey. Sample sizes vary by activity.

² Mann-Whitney difference-of-ranks tests. Bold figures are significant at <.05. Signs show rural mean minus urban mean.

Source: Calculated from main file, GSS 2005 Time Use Survey, and averaged over a 7-day week.

Travel to entertainment, and for sports and hobbies, also shows significant rural-urban differences, whether computed for all respondents (Table 5) or for participants only (Table 6). Proportionally, the means for all respondents are much lower in rural areas for travel to sports and hobbies (Table 5), but this partly reflects lower participation rates. For participants, means are proportionally more similar, particularly for those in the workforce (Table 6), though still significantly different. Perhaps surprisingly, though indicative of a sense of community, rural areas have somewhat higher participation in entertainment and organizational activities than do urban areas. Travel to organizational events (often churches and service clubs) is of marginally longer duration in rural areas, but not significantly so (and shorter for workforce participants). Travel to entertainment events (including social visiting) is of significantly longer duration for all respondents (Table 5), but is significantly shorter for participants (Table 6). These findings suggest that social life in rural areas is village centered and fairly localized, whereas in urban areas people often gravitate to the city centre for social activities.

5 Resource / non-resource contrasts in travel behaviour

This section examines differences in travel behaviour between resource and non-resource workforce groups.

5.1 Total travel

Tables 7 and 8 report mean travel behaviour for the four rurality categories, plus levels of significance for differences between resource and non-resource workforce groups. Table 7 shows that resource workers take significantly fewer trips than non-resource workers, spend significantly less total time in travel, and have trips of lower average duration. Rural resource workers have particularly few trips and low overall travel time, whereas urban resource workers have characteristics similar to rural non-resource employees. Urban non-resource workers (by far the largest group) have the most trips and longest travel durations.

Table 7
Location and employment differences in daily travel, workforce respondents;
population aged 15 and over, 2005

Travel variable	Resource employment rural	Resource employment urban	Non-resource employment rural	Non-resource employment urban	Res-nonres empl't diffs signif ¹
Number of trips (per day)	2.8	3.4	3.4	3.6	.00 –
Total travel time (mins/day)	63.0	78.6	74.3	80.6	.00 –
Average trip duration (mins/day)	19.5	22.7	22.1	24.0	.00 –
Travel time by trip purpose (mins/day)					
Paid work (to / from)	19.5	23.2	28.7	24.7	.00 –
Child care	1.4	3.6	5.4	4.1	.00 –
Shopping	16.8	20.9	18.1	17.2	.00 +
Education	0.5	2.5	2.7	2.1	.02 –
Organizational	2.6	4.3	3.7	3.9	.94 –
Entertainment events	12.9	15.0	12.9	14.5	.08 +
Sports & hobbies	4.7	3.0	5.4	4.0	.10 –
N	366	245	2,364	9,528	

¹ Mann-Whitney difference-of-ranks test. Bold figures are significant at <.05. Signs show resource mean minus non-resource mean.

Source: Calculated from Episode and Main files, GSS 2005 Time Use Survey, and averaged over a 7-day week.

There is lower participation in travel among the rural resource group, which was expected. Travel differences are less apparent when we consider only those respondents with trips on the survey day (Table 8). For these ‘doers’, number of trips and average trip duration are similar for all four groups, and only total travel time is significantly lower for resource workers. A comparison of the right-hand columns in Tables 6 and 8 shows that rural-urban differences are more significant than resource / non-resource contrasts.

5.2 Travel duration

Viewing averages for all workforce respondents (Table 7), we see that resource workers spend significantly less time in journeys to/from work, for child care, and for education, but significantly more time in journeys to shop. These differences, however, are largely

accounted for by different rates of participation in the travel types, with the rural resource group having particularly low propensity to travel for any of these purposes. When we consider participants only (Table 8), resource workers travel longer for paid work (though not significantly so), and differences for child care and education are also no longer significant. Only journeys-to-shop show significant differences, with the two resource groups travelling almost 10 minutes further per day, on average.

Table 8
Location and employment differences in participant¹ travel, workforce;
respondents in workforce, population aged 15 and over, 2005

Travel variable	Resource employment rural	Resource employment urban	Non-resource employment rural	Non-resource employment urban	Res-nonres emplt diffs signif ²
Number of trips (per day)	3.6	4.0	3.9	3.9	.21 –
Total travel time (mins / day)	80.4	93.0	87.0	83.8	.04 –
Average trip duration (mins / day)	24.9	26.9	25.9	25.0	.17 +
Travel time by trip purpose (mins/day)					
Paid work (to / from)	55.9	57.5	47.5	52.5	.26 +
Child care	35.1	38.4	41.3	45.1	.42 –
Shopping	51.6	51.2	42.4	40.7	.01 +
Education	26.7	46.9	54.4	47.3	.41 –
Organizational	35.4	58.6	51.2	49.3	.74 –
Entertainment events	45.9	53.4	51.6	53.3	.97 –
Sports & hobbies	53.5	33.6	45.5	47.2	.26 –

¹ Those reporting participation in the activity, on the day of the survey. Sample sizes vary by activity.

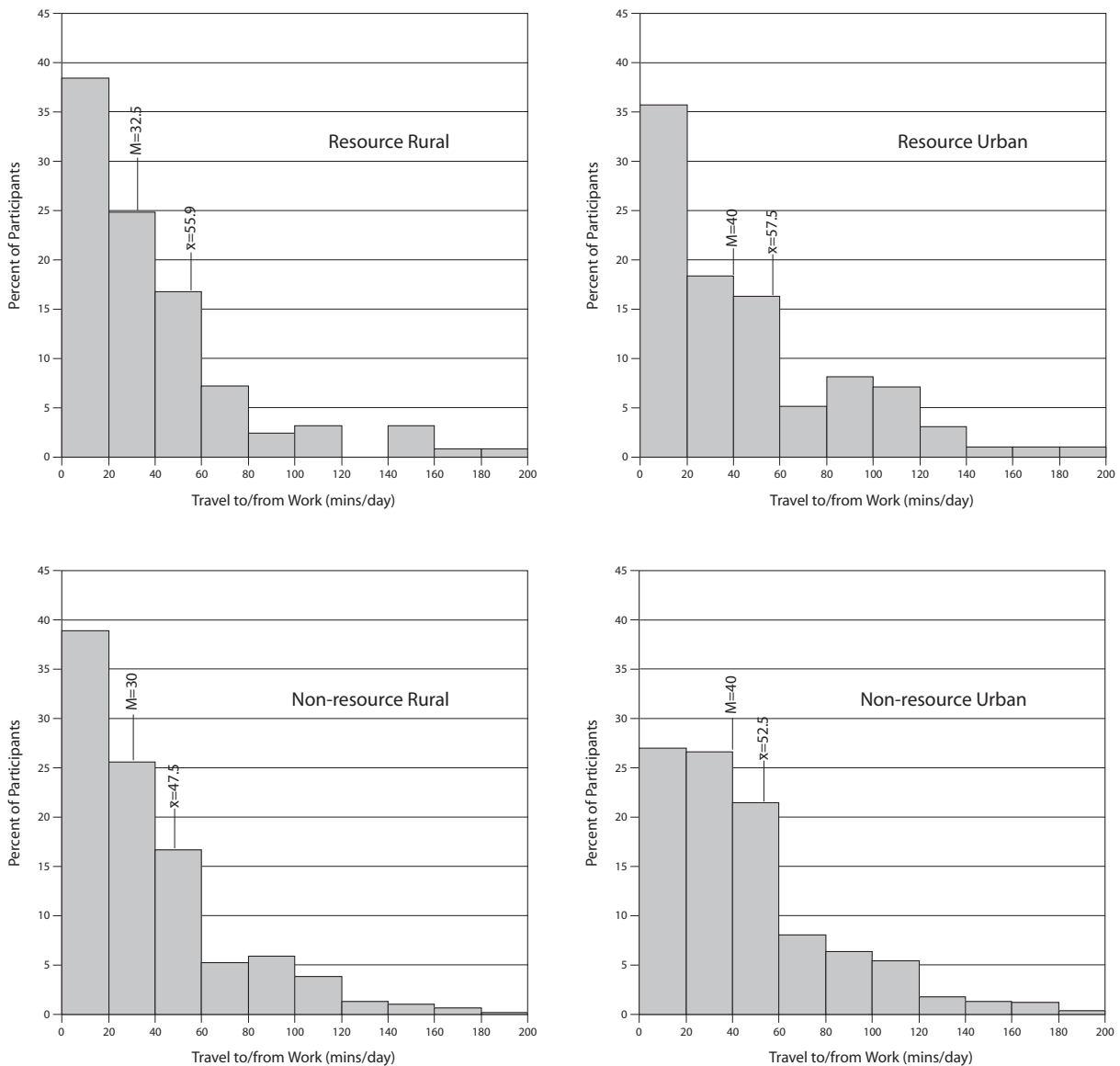
² Mann-Whitney difference-of-ranks tests. Bold figures are significant at <.05. Signs show resource mean minus non-resource mean.

Source: Calculated from main file, GSS 2005 Time Use Survey, and averaged over a 7-day week.

But our focus on mean values provides a crude and somewhat misleading view of travel behaviour. All travel duration variables are highly positively skewed, so that mean values poorly reflect typical values, and differences in means are often not indicative of differences in medians, or differences in ranked values. Distributional shapes are illustrated in Figure 1, which shows daily travel to paid work for those engaging in such travel (participants) in the four rurality groups. Although all four groups show positive skew, with medians less than means, there are some noteworthy differences. Both rural groups have similar distributions; they show high percentages with duration below 20 minutes/day, suggesting much travel either within or to small towns and villages. The non-resource/urban group has a distinctly different distribution, with a much lower percentage below 20 minutes/day. In this latter group, which is by far the largest, there are comparatively few short-duration daily commutes, and more in the medium range (40-60). However, research elsewhere suggests that commuter times in smaller Canadian CMA's and CA's are very similar to RST times, and only in million-plus cities are times noticeably longer (Clark, 2000, 20; Turcotte, 2006, 15).

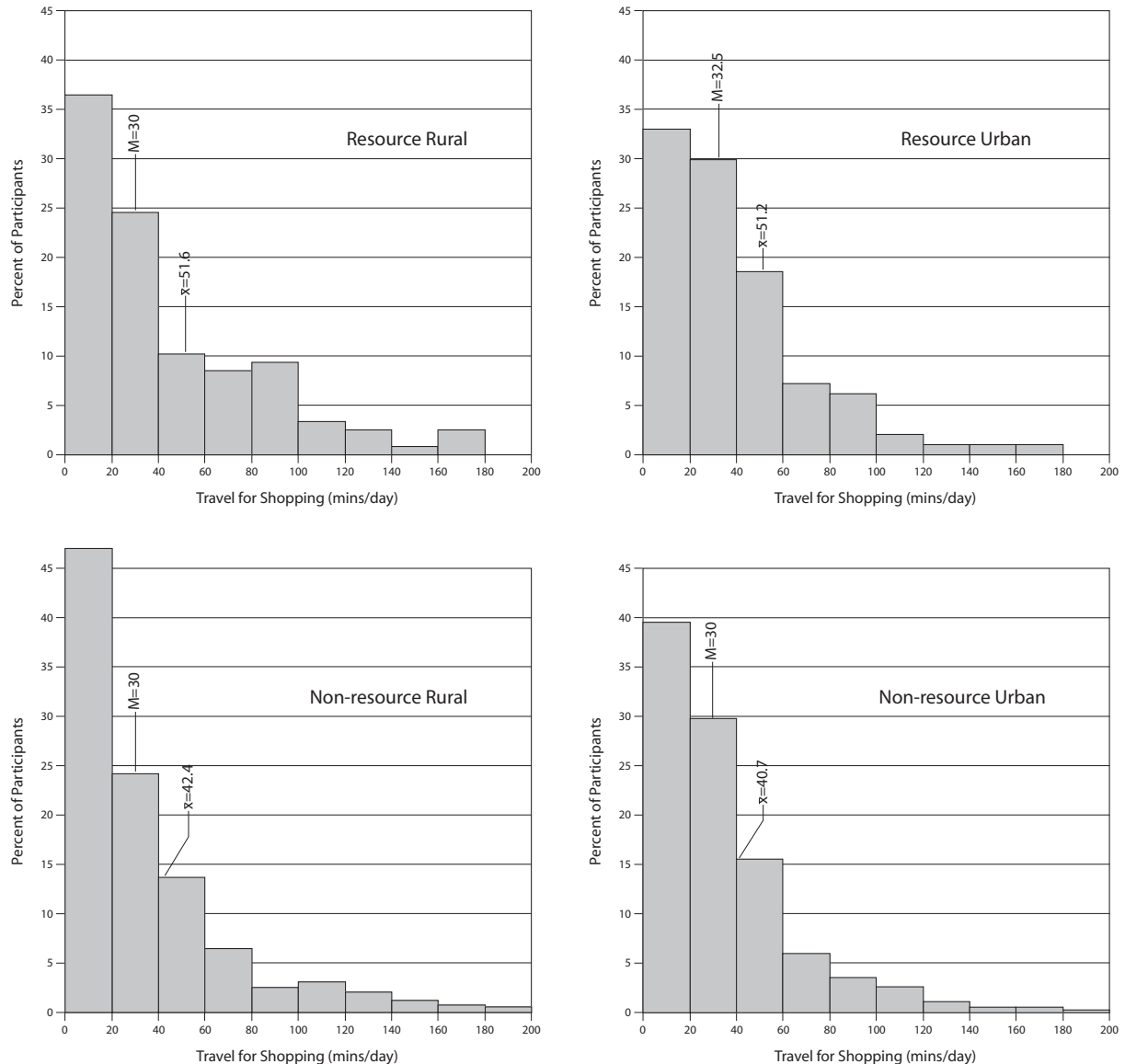
Figure 2 shows histograms of shopping travel for participants, for the four rurality groups. In general, few people travel more than 60 minutes per day for shopping, and even fewer more than 100 minutes. Median values are similar for all groups, and three of the four distributions show the expected negative exponential time decay. The resource/urban shape is somewhat different, however, in that the 0-20 minute bar is truncated. This suggests that farmers in the orbit of cities or larger towns by-pass local village shops (if they exist) to reach larger stores in the suburbs. In comparison, farmers living far from cities (the resource rural group) are presumably travelling to the nearest village having the necessary type of store, since alternative city stores are too distant to be attractive. Similarly, those in the non-resource/rural group, who mainly reside in villages and small towns, are often able to shop directly in their own community; this accounts for their exceptionally high percentage of travel under 20 minutes (47%).

Figure 1
Histograms of travel duration for journeys to/from paid work, for four rurality groups



Source: Own illustration based on the GSS 2005 Time Use Survey and averaged over a 7-day week.

Figure 2
Histograms of travel duration for journeys to/from shopping, for four rurality groups



Source: Own illustration based on the GSS 2005 Time Use Survey, and averaged over a 7-day week.

6 Summary and further work

This paper employed data from the 2005 Canadian national time use survey to investigate how rurality affects time-use and travel behaviour. We used two dichotomous variables as complementary indicators of respondent rurality. One specifies residence location according to the degree of urban commuter influence ('urban' versus 'rural' districts) and the second specifies employment type for workforce respondents ('resource' versus 'non-resource' employment). We are aware that the residence categorization is unsatisfactory, since both categories can include urbanized areas and rural landscapes. It should be thought of as distinguishing between 'metropolitan-influenced' areas and the rest (rural and small town

areas). The employment indicator is a more direct and unequivocal measure of rurality, since it shows whether or not the respondent's livelihood is related to the traditional 'productivist' industries of the rural economy (most typically farming, but also fishing, forestry, and mining).

Perhaps the most important finding in this study is that, for time use and travel times, rurality still matters. Despite debate in the literature regarding the declining importance of rural-urban differentiation, and even whether the term rural has continuing validity, we find that in almost all ways rurality significantly affects mean time use. This is particularly true when we look at time use for all respondents, and somewhat less true for 'doers' (those participating in a given activity or trip type), indicating that rurality affects time use to a large extent through its impact on participation rates. Responding to fewer and more distant opportunities, rural people participate less in paid work, education, and shopping, and thus on average spend less time in these activities.

We expected both residence location and employment to influence time use and travel behaviour, but had no prior expectations as to which would prove more important. Regarding location, we expected rural areas and small towns to maintain a more traditional way of life, with fewer job opportunities, less participation and time in paid work, more time in domestic work, and less participation and time in education. These expectations were largely met, but there were a few surprises when looking at participant behaviour: rural 'doers' spend significantly more time in paid work, and less time in shopping.

Differences in time use between resource and non-resource workers are generally less marked than those between urban and rural workers. As a group, resource workers spend significantly less time in care-giving and sports, and more time in shopping and education, but there are considerable differences between urban and rural resource workers. Participation in many activities is lower for resource workers, but resource participants spend significantly more time in paid work, domestic work, shopping, and education.

Rural-urban differences in travel times have not been considered by previous researchers, in Canada or elsewhere, and are thus an important component of this study. Remote rural areas often lack nearby opportunities for employment, shopping, education, socializing, and recreation, but in contrast smaller towns or large villages may provide a wide range of such opportunities within a small area. Given the crude nature of the GSS-TU rural/urban binary variable, our expectations regarding travel behaviour were therefore ambivalent and uncertain. Somewhat surprisingly, rural residents were found to spend considerably less time in travel, overall, than urban dwellers. On average, they take fewer trips per day, of shorter average duration, and spend 12% less time in travel. Participation in travel is lower in rural areas, however, so that differences for participants are much reduced. Rural residents spend significantly less time in travel to/from work, childcare, shopping, and education, but participants spend significantly more time in travel for shopping and education activities.

Another important component of this study is the difference between resource and non-resource workers. Resource workers take significantly fewer trips than non-resource workers,

spend less total time in travel, and have trips of lower average duration. Rural resource workers have particularly few trips and low overall travel time, even for participants, while the urban resource group has travel behaviour more akin to that of urban non-resource workers. In general, resource / non-resource differences are smaller and less significant than urban-rural location differences.

Clearly, the two major aspects of rurality included in this paper – rural location and resource-based employment – appear to have strong influences on time use and travel behaviour. Of the two, whether people reside inside or outside the commuter orbit of a city or large town has a larger impact, in aggregate. As a next step, it would be useful to gauge the importance of the two rurality factors relative to other major causes of difference, notably age, sex, and the main activity of the respondent (paid worker, student, homemaker, retiree, etc.). To date, time use researchers have focused almost exclusively on these other factors, and largely ignored locational or geographical ones (Robinson and Godbey, 1999, 17).

However, the simple rural-urban locational split currently employed in the GSS-TU can only take us so far, and this paper's findings strongly indicate the need for a more nuanced rural location index, which will allow us to separate remote rural areas from small towns and urban-oriented commuter-shed areas. Such a categorization has already been developed by Statistics Canada (metropolitan-influence zones, described in Malenfant et al., 2007), but it needs to be included in the GSS-TU data files. Perhaps even more useful would be data files that code respondents by small geographic areas, such as census tracts, postcode districts, or census dissemination areas. Researchers would then be free to construct rurality categories of their own.

Although this paper reports on rurality and time use in only one country, we feel it has much broader significance. Canada is, after all, a large and modern nation, with a full range of rurality conditions. In the highly urbanized corridor between Windsor and Quebec City, for example, the countryside lies mostly within commuting range of cities, and is experiencing many of the pressures and changes common to other crowded regions. In contrast, in the Prairies and the Maritimes cities are few and far between, and most areas may be regarded as 'extreme rural' (Cloke, 1977) or 'remote rural'. An obvious extension to the present work would be to investigate whether there are regional differences in the impacts of rurality. A more difficult and longer-range project would be to compare the Canadian results with those in other countries and regions. However, there are great barriers to such international comparison: despite considerable harmonization between national time use surveys (Gershuny, 2000), few surveys contain data on rurality indicators, even at the crude level reported by the Canadian survey.

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