

The Constituencies of Adult Education Programs: Similarities and Differences Among Age Groups and Other Components of the Population*

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Our multivariate regression analysis of 1984 Adult Education Survey data identified significant influences on the propensity of individuals aged 25 and over to take courses and on types of courses they choose. Among such influences are age, education of self and parents, labour force characteristics, marital status, relationship to head, place of birth, language, and place of residence.

Notre analyse par régression à plusieurs variables des données du Sondage de 1984 sur l'éducation aux adultes a permis d'identifier des facteurs exerçant une nette influence sur la propension des personnes âgées de 25 ans et plus à suivre des cours et sur le type de cours qu'elles choisissent. Parmi ces facteurs, citons l'âge, le niveau de scolarité de la personne et celui de ses parents, les caractéristiques de la main-d'oeuvre, l'état civil, la relation avec le chef de famille, le lieu de naissance, la langue parlée et le lieu de résidence.

A full evaluation of educational resources requires, among other things, knowledge of the amounts and types of adult education. Yet data on adult education are not easily obtained; even in the relatively straightforward case of enrolment in regular institutions, as reported by those institutions, variations in definitions and modes of reporting present serious problems (Campbell, 1984). Part-time credit work at universities is the most fully documented part of the story (see Bélanger, Lynd, & Mouelhi, 1982, and Campbell, 1984), but accounts for only a small fraction of the whole, as Roberts (1982) shows for the provinces of Alberta and Quebec.

Because the provision of adult education in Canada is decentralized, a

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comprehensive picture is hard to form. Surveys of households or individuals are a potential source of information; researchers see them as particularly important (see, for example, Campbell, 1984, p. 14, and CAAE, 1985, p. 15). However, only large surveys are adequate, for only a small proportion of the population will take courses of a given type in any one year. The Adult Education Survey, a recent and very large sample survey carried out by the Canadian government, provides a special opportunity. Although this national survey resembles earlier regional ones (for example, Davie, 1986, and Waniewicz, 1976), there are obvious advantages in having comparable information for the entire country. And since all respondents answered identical questions, the survey usefully supplements reports from institutions using various incompatible classification systems and concepts. The survey is large enough to permit analysis of some of the less frequent types of adult education and to make possible comparisons of participation rates of various sub-groups within the population.

We present in this paper the results of multivariate regression analyses of data from the Adult Education Survey. The paper differs from earlier reports that considered factors one at a time (e.g., Deveraux, 1984; CAAE, 1985). The distinction is important because only by simultaneously assessing the effects of all relevant variables can we confidently assess the impact of any one.

In order to identify significant influences on the propensity of individuals to take courses, we considered as broad a range of variables as the data permitted. We considered separately each of the five types of adult education courses—academic, job skills, hobby, language training, and “other”—for which data are available. Thus the perspective is broader than that adopted in our earlier work (Denton, Pineo, & Spencer, 1988); we here consider all age groups (not just the older population) and a wider range of potential influences. We want to know how far distinctions among types of courses are important in understanding factors that determine participation in adult education.

DATA AND VARIABLES USED IN THE ANALYSIS

The data source is a national sample of Canadians, aged 17 and over, collected by Statistics Canada and based on a one-page supplement to the January, 1984, Labour Force Survey questionnaire. The sample is very large—more than 90,000. Details of the sampling design and field procedures are available in Statistics Canada publications that describe the Labour Force Survey. The additional questions on adult education and further details of the survey are presented in Deveraux (1984). Responses to the adult education questionnaire and to regular Labour Force Survey

questions are accessible on microdata tape.

Members of each sample household answered questions on participation in adult education during 1983. The following phrases from the questionnaire indicate definitions of five types of courses or training programs identified separately:

- any course to upgrade academic qualifications;
- any instruction or training to upgrade job skills, including courses taken at work;
- any class or course for personal interest or to develop practical knowledge such as an art or craft class;
- any other kind of course, class or program of instruction;
- a course to learn a second language.

Respondents were to ignore all courses in a full-time program of study. The inventory included only part-time instruction.

Table 1 shows the frequency with which participation in each type of course was reported, separately for males and females, and further broken down into six age groups. In this case, and throughout the paper, respondents under 25 years of age have been omitted from consideration in order to reduce the effect of delayed formal schooling. The overall frequency, that for "any course," is calculated by combining the responses to the individual questions. As those who reported participation in more than one type of course were counted only once for this purpose, the overall rate is somewhat less than the sum of individual course-type rates.

Women participate more frequently than men in most kinds of continuing education, and this is true of almost all age groups. Their rates are higher for academic, "other" courses, language training, and especially hobby courses. Courses on job skills and training are the only exception. Were the rate of labour force participation of women equal to that of men, some of the difference for skills courses would no doubt disappear, but not all of it. Members of the labour force are more inclined to take other types of courses as well, and one would expect that increases in rates of labour force participation would therefore increase male-female differences in the other categories. In light of male-female differences, our analysis considers the educational participation of men and women separately.

What personal characteristics are systematically linked to enrolment? The potential explanatory variables provided by the Adult Education Survey cover a broad range, and most of those that deal specifically with the characteristics of individual adults (as opposed to household characteristics) have been included in the present analysis. In addition to age, we consider education of self and parents, marital status, relationship to head, various labour force characteristics, place of birth, language, and place of residence. The full list of variables appears in Table 2.

TABLE I
Percentage Enrolment in Adult Education, by Sex, Age, and Type of Course

<i>Type of Course</i>	<i>Males</i>						<i>Females</i>					
	25-34	35-44	45-54	55-64	65-69	70+	25-34	35-44	45-54	55-64	65-69	70+
Any course	26.4	23.0	13.7	8.3	3.5	1.7	31.3	27.8	16.6	11.4	6.3	3.8
Academic course	6.0	3.6	1.3	0.4	0.0	0.1	6.3	5.8	2.1	0.9	0.1	0.1
Job skills course	15.3	15.0	8.8	4.4	0.9	0.1	10.7	10.1	5.9	2.9	0.3	0.1
Hobby course	5.3	5.3	2.6	2.5	2.2	1.0	13.5	12.8	7.9	6.1	4.8	3.0
"Other" course	4.5	3.3	2.0	1.1	0.4	0.4	7.5	5.0	2.8	2.1	1.1	0.8
Language course	1.6	1.6	0.7	0.7	0.4	0.1	1.9	2.4	1.4	1.1	0.6	0.1

Source: Tabulations by the authors, based on the public-use microdata tape from the Adult Education Survey.

TABLE 2
Determinants of Participation in Adult Education: Regression Equations for Individual Course Types, by Sex

<i>Independent Variables</i>	<i>Any Course</i>		<i>Academic Course</i>		<i>Job Skills Course</i>		<i>Hobby Course</i>		<i>"Other" Course</i>		<i>Language Course</i>	
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
<i>Age</i>												
25-34	0.037	0.014	0.028	0.009	0.006	0.002	0.001	-0.009	0.012	0.018	0.000	-0.006
35-44	-	-	-	-	-	-	-	-	-	-	-	-
45-54	-0.061	-0.073	-0.016	-0.029	-0.043	-0.026	-0.021	-0.031	-0.010	-0.014	-0.006	-0.008
55-64	-0.088	-0.100	-0.022	-0.033	-0.069	-0.036	-0.015	-0.044	-0.016	-0.018	-0.005	-0.009
65-69	-0.098	-0.128	-0.022	-0.036	-0.077	-0.043	-0.010	-0.055	-0.023	-0.026	-0.006	-0.012
70+	-0.086	-0.145	-0.020	-0.039	-0.067	-0.046	-0.011	-0.065	-0.018	-0.028	-0.008	-0.018
<i>Education</i>												
None or elementary	-0.028	-0.040	0.004	0.003	-0.012	0.002	-0.009	-0.030	-0.005	-0.006	-0.002	-0.006
Secondary, some or completed	-	-	-	-	-	-	-	-	-	-	-	-
Some post-secondary	0.093	0.130	0.022	0.041	0.061	0.049	0.016	0.044	0.020	0.019	-0.001	0.009
Post-sec. cert./diploma	0.122	0.130	0.032	0.032	0.092	0.056	0.014	0.055	0.013	0.022	0.007	0.012
University completed	0.148	0.165	0.044	0.056	0.085	0.065	0.040	0.083	0.024	0.031	0.016	0.023
Full-time student	-0.049	-0.001	0.010	0.065	-0.067	-0.006	-0.013	-0.053	0.007	0.015	0.008	0.038
<i>Relationship to head</i>												
Self	-	-	-	-	-	-	-	-	-	-	-	-
Spouse	0.008	-0.024	0.014	-0.011	-0.009	-0.020	0.005	-0.003	-0.012	0.003	0.002	-0.005
Son or daughter	-0.079	-0.102	-0.020	-0.029	-0.068	-0.041	-0.022	-0.056	-0.012	-0.028	-0.005	-0.025
Other	-0.029	-0.021	-0.003	0.004	-0.008	-0.004	-0.012	-0.010	-0.006	-0.002	-0.010	-0.013

TABLE 2 (Continued)

Independent Variables	Any Course		Academic Course		Job Skills Course		Hobby Course		"Other" Course		Language Course	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<i>Marital status</i>												
Married	0.007	-0.031	-0.007	-0.010	0.007	-0.012	-0.011	-0.022	0.009	-0.009	-0.007	-0.009
Single	-	-	-	-	-	-	-	-	-	-	-	-
Other	-0.005	-0.016	-0.009	-0.007	-0.003	0.000	-0.013	-0.020	0.008	0.000	-0.003	-0.011
Have pre-school children	-0.003	-0.019	-0.008	-0.029	0.007	-0.024	-0.013	0.010	-0.002	0.008	0.000	-0.00
In labour force	0.055	0.046	0.001	0.019	0.048	0.063	0.010	-0.014	-0.002	0.001	0.001	0.001
<i>Occupation</i>												
Teacher	0.070	0.135	0.108	0.091	-0.029	0.071	0.047	0.036	0.024	0.022	0.007	-0.001
Other upper white collar	0.064	0.115	0.018	0.040	0.046	0.113	0.012	0.015	0.001	0.010	0.006	-0.004
Lower white collar	0.008	0.050	0.006	0.008	0.003	0.025	0.002	0.016	0.001	0.010	0.001	-0.002
Primary	0.008	0.037	0.000	-0.002	0.003	0.010	-0.003	0.021	0.008	0.006	0.002	-0.003
Blue collar	-	-	-	-	-	-	-	-	-	-	-	-
No occupation	0.015	0.046	0.008	0.017	0.021	0.030	-0.004	0.012	-0.002	0.009	0.003	0.000
<i>Type of Employment</i>												
Paid, private sector	-	-	-	-	-	-	-	-	-	-	-	-
Paid, government	0.075	0.044	0.013	0.016	0.065	0.026	0.016	0.019	0.003	0.009	0.006	-0.002
Self-employed	-0.036	-0.012	-0.001	0.002	-0.022	-0.013	-0.003	0.010	-0.004	-0.007	0.001	-0.003
Born outside Canada	-0.016	-0.013	0.006	0.002	-0.023	-0.001	0.001	-0.014	-0.001	-0.002	0.002	-0.001
Recent immigrant	0.050	0.057	-0.023	-0.012	-0.021	-0.002	-0.013	-0.020	0.031	-0.012	0.096	0.099
<i>Language of home</i>												
English	-	-	-	-	-	-	-	-	-	-	-	-
French	0.003	0.021	-0.008	0.001	0.001	0.001	0.011	0.017	0.001	0.014	-0.002	0.004
Other	-0.029	-0.049	-0.010	-0.009	-0.013	-0.021	-0.011	-0.030	-0.012	-0.018	0.007	0.021

TABLE 2 (Continued)

Independent Variables	Any Course		Academic Course		Job Skills Course		Hobby Course		"Other" Course		Language Course	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<i>Education of mother</i>												
None or elementary	-0.027	-0.022	0.001	-0.005	-0.020	-0.019	-0.006	-0.014	0.000	0.001	0.001	0.000
Secondary,												
some or completed	-	-	-	-	-	-	-	-	-	-	-	-
Some college or university	0.003	0.006	0.000	0.009	-0.004	-0.003	0.002	0.000	0.009	0.013	-0.005	0.005
College completed	0.008	0.019	0.024	0.004	0.028	-0.001	-0.008	0.006	-0.008	0.018	-0.001	-0.003
University completed	0.037	0.050	-0.018	0.018	0.020	0.013	0.006	0.027	0.014	0.016	0.012	0.010
Not stated	-0.027	-0.060	-0.010	-0.007	-0.011	-0.021	-0.011	-0.043	0.002	-0.021	-0.007	0.004
<i>Education of father</i>												
None or elementary	-0.003	-0.014	-0.005	0.001	0.001	0.007	-0.004	-0.010	-0.003	-0.009	-0.002	-0.003
Secondary,												
some or completed	-	-	-	-	-	-	-	-	-	-	-	-
Some college or university	0.010	0.041	0.021	0.022	-0.004	-0.005	-0.006	0.008	0.006	0.023	0.000	0.013
College completed	0.039	0.020	0.003	0.017	0.036	0.011	0.012	-0.005	-0.006	-0.002	0.001	0.010
University completed	-0.003	0.029	0.002	0.006	-0.008	0.014	0.014	0.020	-0.007	-0.004	-0.003	0.002
Not stated	-0.027	-0.013	-0.001	0.001	-0.018	-0.004	-0.010	-0.002	-0.011	0.002	0.004	-0.009
<i>Region of residence</i>												
Atlantic	-0.049	-0.072	-0.011	-0.015	-0.040	-0.028	-0.009	-0.043	-0.006	-0.009	0.000	-0.001
Quebec	-0.014	-0.013	-0.000	-0.003	-0.026	-0.019	0.000	0.002	-0.008	-0.016	0.008	0.006
Ontario	-	-	-	-	-	-	-	-	-	-	-	-
Prairies	0.019	0.011	-0.002	-0.002	0.014	0.010	0.008	0.015	0.004	0.007	0.001	-0.003
British Columbia	0.007	0.002	-0.014	-0.012	0.001	0.008	0.012	-0.004	0.004	0.015	0.000	-0.001
Metro	-0.019	-0.011	0.002	-0.001	-0.020	-0.017	-0.002	-0.002	-0.001	0.001	0.001	0.002
Intercept	0.138	0.225	0.023	0.035	0.086	0.048	0.047	0.145	0.025	0.040	0.010	0.030
R ²	0.135	0.156	0.053	0.074	0.091	0.112	0.029	0.049	0.017	0.029	0.026	0.028

Note: Reference categories for dummy variable sets are indicated by dashes (-).

The survey data provide more detailed information for the post-secondary range than for the lower levels of education. A code was assigned for those with completed elementary education or less, and another code for those with some or completed high school education. A third code identifies those whose highest attainment was at the post-secondary level but without completion, including both university and other post-secondary instruction. The final two codes denote completion of post-secondary non-university education and the attainment of a university degree. An additional classification indicates whether the respondent was a full-time student, although few aged over 25 were full-time students. We expected that full-time students would rarely participate simultaneously in part-time instruction.

Respondents were also classified according to their relationship with the head of the household. While most are either heads or spouses of the head, secondary family members were also distinguished; they were classified as either sons or daughters of the head, or "other," which includes parents of the head. Marital status is represented by three categories: married, single, and other. Several measures of the number and ages of children in the home were provided; in this analysis only one is used, identifying those individuals whose families included pre-school children. We expected that the presence of very young children would reduce the adult education participation rates of their parents, particularly mothers'.

A number of variables pertain to occupation and work status. A labour force status variable distinguishes whether a person was employed or unemployed, on the one hand, or not in the labour force, on the other. Occupation is classified according to a detailed code, reorganized for this analysis. Teachers are singled out presuming their adult education participation would be of a special kind, often required by their occupation. Beyond this, the categories are as follows: "other upper white collar" occupations (predominantly managerial and professional); "lower white collar" (mainly clerical and sales); "primary industries" (such as farming and fishing); "blue collar" (mostly factory and other manual workers); and a final "no occupation" category including those who had never worked, who had worked but not within the last five years, or who were classified as permanently unable to work. Individuals were also classified by type of employment—in particular, by whether they were paid workers in government, paid workers in other sectors, or self-employed. The data on work-related variables were drawn from the Labour Force Survey itself, rather than the supplementary questionnaire; they refer to the week immediately preceding the January 1984 interview, not to 1983, the year in which adult education courses were taken. (A lone exception is the question about work in the last five years.) This is unfortunate, but no alternative measures were available.

We treated birthplace as a dichotomous variable, distinguishing Cana-

dian- from foreign-born, and consider recent immigrants—those arriving after 1979—as a special group that might show higher rates of language training or of skill training to improve or to adapt skills acquired abroad. Further, we classified respondents according to whether they most often spoke English, French or “other” (including not stated) languages at home. Information about parents’ education offered a chance to see if adult education provides compensatory opportunities for those from less well educated family backgrounds.

The survey recorded province of current residence according to a five-region categorization and provided a rough measure of community size, classifying respondents either as living in one of 23 metropolitan areas or residing elsewhere. We expected that large and dense metropolitan areas would offer more abundant adult education opportunities, and thus higher participation rates.

WEIGHTING AND ESTIMATION PROCEDURES¹

We estimated separate linear regression equations for men and women, for all courses combined, and for each of the five types of courses. The explanatory variables are all binary dummy variables. In those categories represented by more than one dummy variable (occupation, for example, which has six), one of the category variables was dropped in order to avoid a well known problem of indeterminacy in regression analysis. The omitted categories (indicated by dashes in Table 2) may be regarded as reference categories. A hypothetical individual having all of the reference characteristics is 35–44 years of age, has some or completed high school education, is single, a household head, a paid employee in the private sector, and a blue collar worker. The individual’s parents were both educated at the high school level, and he or she speaks English in the home and lives in Ontario. The intercept terms in the regression equations are estimates of participation rates for individuals with reference characteristics; the coefficients of other variables are estimates of the extent to which those characteristics would raise or lower the rates from the reference levels.

Because the dependent variable in this analysis is dichotomous (representing those who did and did not report participation in any adult education course during 1983), the method of ordinary least squares has a number of disadvantages. One is that the error distributions are nonnormal and heteroscedastic; a second is that the method does not constrain predicted values to lie in the interval 0 to 1, as they should if they are to be interpreted as probabilities. Aside from costs, logit and probit methods are preferable. However, in the present study the huge sample size and the large numbers of independent variables made logit or probit estimation extremely expensive, and ordinary least squares was therefore used. The

failure to allow for heteroscedasticity in our estimation is probably not serious given the size of sample. Nor do predicted probabilities less than 0 or greater than 1 pose a serious problem, given some cautious interpretation. In our earlier study of this same survey, concerned only with the older population, estimated probabilities were found to be similar whether calculated from least-squares, probit, or logit equations (see Denton, Pineo, & Spencer, 1988).

The data come with weighting factors which may be used to compensate for differences in sampling ratios. It is contentious whether weights of this kind should or should not be used. However, Dumouchel and Duncan's (1983) tests provide guidance. We concluded that weighting was appropriate. Accordingly, sample data in our analysis are weighted by Statistics Canada factors, modified by a scale adjustment to produce a reported case base equivalent to the actual number of cases in the sample.

RESULTS: ALL COURSES COMBINED

The first two columns of Table 2 present estimated regression equations for men and women with participation in any adult education program as the dependent variable. Table 3 provides information on the levels of statistical significance (probabilities of Type I error) achieved by the various blocks that constitute the independent variables. (For convenience in exposition we refer to "statistical significance" as if the underlying tests were exact; however, the reader should keep in mind that they are approximations, given the caveats of the previous section.) With the large sample size, it is not surprising that nearly all of the variables achieve statistical significance at the 5 percent level or better, even though in some cases the regression coefficients are quite small. (The coefficients should be interpreted as differences from corresponding coefficients of the omitted or reference categories.) The intercept terms in the equations represent the estimated rates of participation for the reference individuals described in the previous section. The difference between male and female intercepts mirror the difference in the participation rates shown in Table 1. The overall explanatory power of the regression equation is somewhat higher for women than for men, as evidenced by the R^2 values in Table 2. In most cases the coefficients of the individual variables in the equation are also larger for women than for men.

The results show strong patterns across the life span of the kind evident also in Table 1, even after taking the other influences into account. Those for the youngest age group (25–34) indicate rates of participation somewhat higher than the rates in the omitted group (35–44). For older ages there is a decline in rates—an abrupt decline for men, and a continuous and stronger one for women.

Education also has a major influence. For both men and women, rates of

TABLE 3
Tests of Statistical Significance: Categories of Probabilities of Type I Errors Based on Equations Reported in Table 2

	Any Course		Academic Course		Job Skills Course		Hobby Course		"Other" Course		Language Course	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Age	a	a	a	a	a	a	a	a	a	a	b	a
Education	a	a	a	a	a	a	a	a	a	a	a	a
Full-time student	a	x	d	a	a	x	d	a	x	d	c	a
Marital status	x	c	d	x	x	x	b	b	c	x	a	a
Relation to head	a	a	a	a	a	a	a	a	b	b	c	a
Have pre-school children	x	b	b	a	x	a	a	c	x	c	x	a
Occupation	a	a	a	a	a	a	a	c	c	x	c	x
Type of employment	a	a	a	a	a	a	a	b	x	b	a	x
In labour force	a	a	x	a	a	a	b	b	x	x	x	x
Born outside Canada	b	c	c	x	a	x	x	b	x	x	x	x
Recent immigrant	b	a	b	x	x	x	x	x	a	x	a	a
Language of home	a	a	b	d	x	a	a	a	b	a	b	a
Education of mother	a	a	a	b	a	a	x	a	c	a	a	d
Education of father	b	a	b	b	b	d	b	c	x	a	x	a
Region of residence	a	a	a	a	a	a	a	a	b	a	b	d
Metro	a	b	x	x	a	a	x	x	x	x	x	x

Note: The letters indicate maximum probabilities, as follows: a=0.1%; b=1.0%; c=5.0%; d=10.0%. The letter x indicates that the probability exceeds 10.0%.

participation are extremely low among those with no high school education, and low also among those reporting some or completed high school. In contrast, the three levels of education beyond high school show much higher rates, those for "university completed" being the highest and those for "some post-secondary" and "post-secondary certificate or diploma" being somewhat lower. Although one can imagine a system that would operate in a compensatory manner, so that higher participation was found among those who failed to achieve as much in their years of formal schooling, our system does not. Instead, some success in formal schooling is a prerequisite for the disposition to take courses in adulthood. Full-time male students showed significantly low rates of participation, but women did not.

Sons or daughters living in the parental home have sharply lower rates of participation than household heads, regardless of whether the heads are male or female. "Proxy interviewing" may produce this effect, since those in complex households would be less likely to be interviewed directly; under-reporting of their participation might thus be more common. Marital status shows a weak tendency for single females (but not males) to participate more than those who are married. This, too, could be a consequence of proxy interviewing. In any case, our expectations that rates would be high among single people are not borne out. The presence of pre-school children in the home significantly depresses mothers' participation. The difference between women and men in this regard is quite strong—there is no effect of any significance for men.

To be in the labour force usually implies significantly higher rates of enrolment among men and women. Teachers show rates much higher than those in other occupations, with the exception of "other upper white collar." Rates of participation descend with "socioeconomic status"; rates continue to decline through the categories of lower white collar and primary workers, and are at their lowest among blue collar workers.

Government employees show much higher rates of participation than private-sector employees or the self-employed. The relationship is stronger for men than for women, an exception to the general pattern of male-female differences. The key may lie in differing propensities to take job-related and skill courses.

Language and immigration variables show a consistent pattern. For both men and women, enrolment rates are lower among those speaking a language other than English or French in the home. Although statistically significant, rates for the foreign-born are only modestly lower than those for the native born, and for recent immigrants the rates are actually considerably higher. This is largely a consequence of language courses. Among women, participation rates are higher for French-speaking than for English-speaking persons.

The measures of parental education allow a further test for compensation effects. Those coming from less advantaged backgrounds could make up for early disadvantages by taking courses. However, the pattern is just the reverse, and the effects are statistically significant. Those with low levels of parental education (on either the mother's or the father's side) show rates significantly lower than those of others. The general pattern is for rates to increase with higher levels of parents' education, but the relationships are irregular, a consequence of high correlation between the education levels of the two parents, and of each with the respondent's own level of education.

The Atlantic Region shows low rates of participation for both men and women, and rates are highest in the Prairies. Finally, and contrary to expectation, there is no evidence of higher rates among metropolitan residents. Rather the tendency is the reverse, with significantly lower rates in metropolitan areas, after taking other factors into account.

RESULTS: ACADEMIC AND JOB-SKILL COURSES

Columns three through six of Tables 2 and 3 present the results of regression analysis with participation in academic courses and in courses relating to job skills as the dependent variables. The R^2 statistics are again higher for women. The reference-case probabilities for men, as represented by the intercepts, are higher in the case of job-skill courses, as expected on the basis of Table 1 evidence, and lower in the case of academic courses.

Both sexes and both types of courses show strong links with age. The highest rates of participation are to be found in the youngest age groups. The fall-off with age is more abrupt for men than for women. This pattern is general in the regression results. The relatively high rates among young adults in job-skill courses further suggest that this form of training is mainly a supplement to formal schooling, especially for men, and does not show appreciable amounts of retraining of more mature workers.

The relationships with education are again very strong, with participation rates markedly higher for those with at least some post-secondary education. The strong influence of education on propensity to take academic courses is unsurprising, but the comparatively well educated also take job-skill courses more frequently. Occupation shows the same pattern: participation in further academic training or in job-skill courses occurs most frequently among those with high "socioeconomic status." The occupational results also reveal the expected distinctive pattern for teachers, who show strong participation in academic courses but much weaker participation than other upper white collar workers in job-skill courses. This is to some degree a matter of definition, since academic courses provide the job-skill material teachers require.

Being a full-time student is associated with a greater likelihood of taking an (extra) academic course and a lesser likelihood of taking one to acquire job skills.

Participation rates are lower for sons and daughters still living in the parental home. Marital status is so weak a factor that statistical significance is not achieved. The presence of pre-schoolers in the family is associated with lower rates of participation in both academic and skill programs for mothers but has little effect on fathers' rates.

As expected, labour force status is a big factor in rates of participation in job-skill courses, especially for women, but plays a much weaker role with regard to academic courses. Government employees, especially males, more frequently participate in skill-enhancing courses than do private-sector employees. Rates for the self-employed are lower. Government employees also show higher enrolment in academic courses. Rates of participation of men in academic courses are influenced to some extent by birthplace and language, but all other coefficients within this block are very small and rarely significant. Recent immigrants and those whose home language is neither English nor French generally show low participation. Participation rates are usually lower among those whose parents had less than high school training, or for whom no response was given. Beyond that, the estimates show small fluctuations rather than any clear pattern, although in all four equations the parental education categories are statistically significant, at least at the 10 percent level, and in all but one case at the 5 percent or 1 percent level.

Regional differences are complex. The rates for academic courses are lower in British Columbia and the Atlantic Region than elsewhere, but the differences are modest. For skill courses the rates are relatively low in Quebec, and lower still in the Atlantic Region. Prairie skill-training rates are highest, while Ontario rates are highest for academic courses. Finally, metropolitan residence shows no influence upon rates of participation in academic programs for either sex but is a negative factor in the case of job-skill courses. Low propensity to take skill courses in the metropolitan environment produced overall lower rates of participation in those areas.

RESULTS: HOBBY, "OTHER," AND LANGUAGE COURSES

The remaining columns of Tables 2 and 3 complete the picture by reporting the regression results for the other three types of course. The results for language courses, the last of the three, are perhaps the easiest to interpret. The taking of a language course is dominated by a single factor, namely recency of immigration. Those reporting recent immigration, coupled with the speaking of a language other than English or French, show rates of participation 10 or 11 percentage points above the reference level. This is

the main pocket of users for such courses, and overall use is low, as shown in Table 1. There is evidence of higher participation among female full-time students, among women generally, and to a lesser extent among men who have university degrees. Other factors are significant, but their effects very small; the regression coefficients rarely exceed .01. The net effects of all influences combined, including relatively weak age relationships, are such as to produce an extremely modest overall explanation of variance ($R^2=.026$ for men, .028 for women). In sum, language programs seem to be effectively targetted; they reach the population of recent immigrants without much interference from other factors.

Regression results for "other" courses are again characterized by a relatively low explanation of variance ($R^2=.017$ for men, .029 for women), as might be expected for the typically heterogeneous mixture to be found in a residual category. There are few strong relationships. Age and education effects are weaker than has been found earlier, but remain statistically significant. Full-time students do not differ significantly from others. The effects of family status, including marital status, relationship to head, and the presence of pre-school children, are all very small, although often statistically significant. Any tilt toward high occupation levels is modest. Government employment leads to somewhat higher rates of participation for women; being in the labour force has no effect.

Birthplace has little or no importance. Recent male immigrants show moderately higher rates and rates for the "other" language group are low relative to both English and French. Parental education shows the now familiar pattern, with "not stated" and "none or elementary" having relatively low rates and erratic coefficients for other categories. Finally, the Atlantic rates are on the low side, and so too are those for Quebec in this case. Metropolitan residence is not a significant factor. In all, the relationships for the "other" group seem weaker examples of those found in our analysis of the academic and job-skill courses.

The remaining category of courses is the "hobby" category—or more correctly, courses taken "for personal interest or to develop practical knowledge." These courses show special patterns. Above all, the rates are much higher for women than for men, as evident from Table 1. Also, the proportion of variance explained and the strength of most of the relationships are greater for women. Age relationships are considerably stronger for women; rates of participation decline in an orderly manner over the life course for women but not for men. Education is a rather strong influence, again especially for women, while full-time students tend to have low rates. Those who are single are more likely to enrol, and secondary family members again have relatively very low rates. The effect of the presence of pre-schoolers is statistically significant for women, but very small.

White collar workers, and especially teachers, again have the highest rates, but the relationships are much weaker than for academic and skill courses. Again too, government employees have higher rates than others.

Birthplace and recency of immigration play little role. The French-speaking population participates at a somewhat higher rate for both sexes, and those speaking "other languages" participate at a lower rate, especially women. Parental education shows the familiar pattern. The regional patterns remain complex, but again with the Prairies high and the Atlantic Region low, especially in the case of the female population. Metropolitan residence once again appears to have no important effect.

CONCLUSIONS

We now have a picture of the typical participant in adult education programs. She or he is young, single, well educated, and high in occupational status. The participant is active in the labour force, often is a teacher or holds a government job, and comes from an advantaged background as measured by parental education. Residence is most likely to be outside Atlantic Canada. In all, this is a picture of someone already favourably situated. Thus Humphreys and Porter's (1978) charge of class bias in adult education programs still holds not just in academic programs but outside as well.

Against this evidence of further privilege for those already advantaged one should note some exceptions. Those living outside metropolitan areas are as well served as those within when other factors are taken into account. So also, there is no hint that those who speak French lack opportunities. There is no hint that the foreign-born or recent immigrants are being excluded. Except in job-skill training, women's participation is greater than men's. In this institutional area, women do not suffer exclusion. Those desiring further social change in sex roles might consider the greater use of adult education programs to communicate their ideas.

The constituencies do vary from one program to another. As noted, women are less frequently found in job-skill programs, an outcome of low rates of lifetime upward mobility (see Goyder, 1985). Academic and skill programs are largely the province of the young, often completing formal schooling delayed for some reason. Evidence of retraining of mature workers is all but absent. In general, one might be disappointed at the overall extent to which this type of adult education reaches any but young adults.

In contrast, women are more likely than men to take personal interest courses and one sees less evidence of age and education as factors affecting participation in such courses. If adult education programs can be evaluated

according to the success with which they avoid socioeconomic bias and the extent to which they serve a wider age range, rather than just the young, the leisure courses could be called more successful than the academic and skill programs.

The language courses are exemplary as one kind of adult education program. They are well targetted, serve a needy category, namely recent immigrants from non-English or non-French areas. The service is delivered with relatively little age or socioeconomic status bias, and is free of major interference from other social factors. One might defend the bias of other programs by suggesting that the classroom setting may be irreversibly abhorrent to those who have not done well in their years of formal schooling, but the successful delivery of language programs to a broader spectrum suggests that perhaps this need not be so.

There are strong similarities among types of participants in the various programs, but there are also important differences. Future analysts of this or of other data sets would do well to consider the various kinds of programs separately. Job-skill and academic courses might be combined for some analytical purposes, but hobby courses seem to serve a quite distinctive constituency. The category of "other courses" seems too heterogeneous to merit much further attention. On the other hand, the pattern for language courses is so distinctive as to merit separate study.

NOTE

- ¹ Definitions of technical terms used in this section and elsewhere are provided in Appendix A.

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APPENDIX A

Definitions of Technical Terms

Binary dummy variable—a variable that has only two possible values: 1 if some condition is present (e.g., a respondent lives in a metropolitan area) and 0 if it is not (the respondent does not live in a metropolitan area).

Block—as used here, a subset of the independent variables (the block of variables representing education, the block representing relationship to head of household, etc.).

Dependent variable—see “regression.”

Dichotomous variable—synonymous with “binary dummy variable.”

Heteroscedasticity—as used here, a property of the errors in a regression equation such that the variance of the errors is not constant (see “variance”).

Independent variable—see “regression.”

Indeterminacy—as used here, a situation in which a regression equation cannot be determined because two or more of the independent variables are perfectly correlated and their separate effects on the dependent variable therefore cannot be distinguished.

Intercept term—a constant in a regression equation (i.e., a term not associated with any of the independent variables).

Least squares—a method of calculating a regression equation such that the sum of squared errors (differences between actual and predicted values of the dependent variable) is minimized; the basic method is sometimes referred to as “ordinary least squares” to distinguish it from variants of the method that are designed to cope with special statistical problems.

Logit—a statistical equation or analysis that allows specifically for the fact that the values of the dependent variable must lie between 0 and 1; it is

applicable in particular when the values of the dependent variable are to be interpreted as probabilities; probit refers to an alternative type of statistical equation or analysis designed for use in similar situations.

Microdata—data or observations relating to individual units, as opposed to aggregates or averages; the data used in the present study are referred to as microdata because they relate to individual people in the surveyed population.

Nonnormal errors—errors that do not conform with the normal distribution, as defined in statistics; in the present context, the term is used to refer to nonnormality of errors in a regression equation.

Predicted value—a value of the dependent variable predicted by a regression equation, as opposed to the actual observed value for some member of the population; the difference between actual and predicted is the regression error.

Probit—see “logit.”

Proxy interviewing—a form of survey interviewing in which one person may respond on behalf of others as well as himself or herself (e.g., one member of a household may respond on behalf of other members).

R-squared (R^2)—a statistic representing the proportion of variation of the dependent variable that is explained by a regression equation.

Regression—a statistical equation or analysis in which the changes in one variable (the “dependent” variable) are “explained” by changes in other variables (the “independent” variables); linear regression implies that the equation is of a linear form; multivariate regression implies that the relationships among several variables are being analyzed; the coefficients of the independent variables are referred to as “regression coefficients.”

Sampling ratio—the proportion of a population that is sampled; in a random sample, this is also the probability of selection.

Significance—as used here in a technical sense, the term refers to the testing of hypotheses about the coefficients of a regression equation (in particular, whether the coefficients are “significantly” different from 0; i.e., whether calculated nonzero values of the coefficients could be merely the result of chance variations in the data).

Type I error—the error that is made in a test of statistical significance when the null hypothesis is correct but is rejected.

Variance—a statistical measure of the extent of variation of a variable.

Weights—numbers attached to individuals or other units in a sample in order to reflect differences in sampling ratios for different groups in the population; weighting factor and weight variable, as used here, are synonymous with weight.