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Issues in the design of Canada's Adult Education and Training Survey

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Abstract

In this paper, we consider the use of the Canadian Adult Education and Training Survey (AETS) as a vehicle for studying participation in, and the impacts of education and training activities for adults. The paper builds on our experience in utilizing the 1998 AETS in precisely these ways, as reported in Hui and Smith (2003). We conclude that the AETS constitutes a useful tool for studying participation in adult education and training, although we suggest some modifications that would improve it on this dimension. In contrast, following Hui and Smith (2003), we conclude that as currently constituted the AETS lacks critical pieces of information that would allow its use as a base for evaluating the labour market impacts of adult education and training. This is not surprising, as it was not originally designed for this purpose. We detail the types of additional information required to allow a future version of the AETS to serve this purpose.

1. Introduction

This paper considers issues associated with using the Canadian Adult Education and Training Survey (AETS) to study participation in, and the impacts of, education and training. It is based on our experience in using these data to conduct both types of analysis, the results of which we report in Hui and Smith (2003).

Learning about adult education and training is important. While human capital accumulation in the form of college and university training or years of primary and secondary school is widely studied in economics, lack of good data has hampered careful study of the large amount of human capital accumulation that occurs after the end of high school or university. Human capital accumulation at all stages of life has important implications for economic growth as well as for earnings and status inequality later in life. In short, it is important to know how much human capital adults accumulate, what sorts of human capital they accumulate and where they obtain it, and what impacts, if any, it has on their earnings and employment.

The AETS aims to provide information on participation in adult education and training in Canada. It has also been utilized to estimate the impacts of such training on individual labour market outcomes. Based on our experience in trying to use the AETS to do such a study, and based on our reading of the broader literature on these topics, we feel the AETS has a number of limitations in this regard. This paper outlines these limitations, as well as our suggestions as to how the AETS can be redesigned to provide more useful information about adult education and training in Canada in the future.

The remainder of the paper consists of five sections. Section 2 describes the 1998 AETS, on which we focus, in more detail. Section 3 outlines issues in the AETS in regard to the measurement of training incidence and training duration. Section 4 outlines issues in the AETS in regard to a study of participation in public and private training. Section 5 outlines the many problems with the AETS in regard to using it for a study of the impacts of public and private training on labour market outcomes such as earnings or employment. Section 6 concludes.

2. Description of the AETS

The 1998 AETS was conducted by Statistics Canada with the financial support of Human Resources Development Canada. This survey was the third in a series of comparable surveys designed to measure participation in adult education and training, defined as education and training that occur after the conclusion of formal schooling. The objectives of the survey are to measure participation rates, determine the role of employers in adult education and training participation and provision, and to identify barriers to adult education and training.

The AETS is a supplement to the Labour Force Survey (LFS). The LFS has an overlapping panel design. Each month a new random sample of the LFS population—civilians aged 15 and over—is drawn. Each such sample is called a rotation group. Each rotation group is of roughly equal size, and each one remains in the LFS for six consecutive months, at which point it is no longer followed but instead replaced by a new rotation group. The AETS was administered to five of the six rotation groups in the January 1998 and March 1998 Labour Force Surveys.[1]

The 1998 AETS consists of five modules, designated A to E. The questions in Module A collect background information on the respondent. The module also asks whether the respondent received any training or education within the previous year. Respondents who indicate that they did not receive any education or training skip the following three modules, B, C and D, and proceed directly to module E.

The questions in Module B ask about the details of any training or education leading to formal certification of some sort. The AETS calls such education and training "training programs." The questions in Module C ask about the details of any education or training not leading to formal certification. The AETS calls such education and training "training courses." The questions in Module D concern courses taken for hobby, recreational or personal development reasons. They also cover residual training activities not reported in Module B or C. We omit the courses reported in Module D from our analysis due to our focus on training related to labour market outcomes. In each of Modules B, C, and D, the survey collects information on up to five different courses or programs. The information collected on each course or program includes the field of study, the location, the provider, the teaching medium, the duration, whether or not the training was completed, who paid for the training, and what employer support was provided (if any). The survey also collects information on respondents' reasons for taking the training, expectations regarding the training, and opinions of the training's usefulness. All of the questions in Modules B, C and D refer to education and training activities undertaken in 1997.

1. The data from March 1998 consists solely of respondents residing in Quebec. The survey could not take place in January in Quebec due to an ice storm.

All respondents complete Module E. This module collects information on labour market outcomes in 1997 for which data are not collected in the LFS. This includes information on the main job in 1997 if it differs from that at the time of the LFS completion in 1998. Module E also collects a variety of demographic information including characteristics of the respondents' parents and the respondents' immigration and disability statuses. To supplement the information collected in Module E, the labour force information collected in the LFS is attached to the record of each AETS respondent. In addition, Module E includes a series of questions that seek to determine why respondents were not able to participate in the training they wanted or needed to take during the reference year.

3. Measuring education and training

There is no question that measuring the participation in education and training, other than formal schooling, poses great difficulties. There is also no question that the 1998 AETS tries valiantly to do so. It succeeds to the extent that it provides a much richer picture than other data sources of the type and extent of education and training taken by Canadians after they finish their formal schooling. However, there remain a number of potential avenues for improvement, particularly if the AETS is to provide a foundation for more than just broad-brush descriptions of education and training activities.

Measuring who pays for education and training

The analyst faces a difficult choice in classifying training participants by source of financial support, but classification is necessary in evaluating the effectiveness of different types of training. Classification can be based on a number of different criteria, such as the relative amount of funding from each source. However, not all classification schemes can be implemented using the data currently available in the AETS; in modifying the AETS it would be useful to think about what information might be useful to classifying training that is supported by several sources.

The 1998 AETS does not collect information on the relative amount (e.g., most, some, partial) of support from each source. This information would be helpful not only in assigning training types to the primary funding source but also in a study of participation. In making the participation decision, individuals consider not just the availability of funding sources but also how much of the total cost of training each funding source can provide.

Respondents will likely have a good idea of the price of adult education and training they purchase themselves, but they may not have a good idea of the price of training that is purchased for them. This problem could be partly overcome by collecting matched information on college and university tuition by province or, if there is within-province variation, by educational institution and type of course or program.

Another limitation of survey responses in terms of funding relates to adult education and training whose price to the recipient already reflects government subsidies, or which is paid for by others, including other government programs. The former case will hold for most college and university courses and programs in Canada; the latter case will occur when a government training program buys a spot for someone in a college or university program or in a private school. In these cases, most respondents probably do not even realize they are being subsidized and, even if they do, they are unlikely to be able to provide a good estimate of the true social cost of the education and training they receive.

While the price faced by the recipient is the relevant quantity for an analysis of participation, as individuals presumably ignore social costs and benefits in their participation calculations, the full social cost is the relevant quantity in a social cost-benefit analysis of subsidies to adult education and training. Thus, it would be very helpful if information on federal and provincial subsidies could be collected and made available along with the AETS data in a way that would facilitate its use in cost-benefit calculations. Such data would be of broad general interest.

Measuring participation in education and training

In regard to impact studies, failure to measure participation in education and training means that participants will incorrectly be classified as non-participants, and then used, incorrectly, to construct counterfactuals. Put differently, comparison groups will be contaminated by persons who received training but did not report it. In addition to validating the AETS as described in the next section, experimentation with alternative question wordings for questions designed to measure participation in education and training would be a useful addition to future rounds of the AETS.

Smith and Whalley (2002) present troubling evidence regarding how well typical survey questions capture participation in government employment and training programs for the disadvantaged. Their data come from the U.S. National Job Training Partnership Act (JTPA) Study (NJS), an experimental evaluation of the JTPA program in the US. Their study compares administrative data on training receipt from the 16 JTPA program training centres that participated in the NJS with self-reported information on training receipt from surveys administered to the experimental treatment group members around 18 months after random assignment. The JTPA program was quite similar in terms of organization, clientele and types of services to programs operated in Canada. Consequently, the results of the Smith and Whalley (2002) study have great relevance to the Canadian case under consideration here.

One of the findings in Smith and Whalley (2002) is that the under-reporting varies substantially by the type of employment and training service provided. In particular, they find that the probability that classroom training, consisting either of remedial basic education or occupational skills training, gets reported is substantially higher than that for other types of training. The types of training that are poorly reported are job search assistance (which typically includes training in how to prepare a resume and how to interview with employers) and subsidized on-the-job training at private firms. Smith and Whalley (2002) conjecture that the former may not be salient because of the modest amount of time involved, while the latter may not be salient because it may not be clearly delimited from normal work activities.

Measuring participation in formal and informal training

Several important issues arise in attempting to get a better handle on training taken in private firms. They centre around how to measure formal and informal on-the-job training, where we distinguish these based on whether the training is planned in advance or occurs as a natural part of the process of individual workers attempting to complete the tasks assigned to them. Some researchers have argued that a substantial fraction of the total stock of human capital comes from on-the-job training. The classic reference here is Mincer (1974).

Validating the AETS

Several types of validation studies could usefully be conducted in regard to the AETS. Such studies would fill two roles. First, they would provide measures of the extent of both classical (random) and systematic measurement error in the AETS data. Knowing the extent of classical measurement error is important in interpreting estimates of the impact of training derived from the AETS, as such measurement error leads, in general, to bias towards zero. Knowing the extent of systematic measurement error would aid in interpreting aggregate statistics on education and training receipt based on the AETS.

One type of validation study, which applies primarily to government training and education, is to compare aggregate estimates of the type and extent of training based on the AETS with similar measures based on government statistics. This type of validation study indicates the extent of systematic measurement error; estimates of such measurement error could be used to adjust the aggregate statistics from the AETS.

A second type of validation study, which also applies primarily to government training and education, would link AETS survey information to individual administrative records from government training programs. This type of linkage allows for estimation of the extent of classical measurement error in the AETS data, as well as the study of measurement issues impossible to address in the aggregate statistics, such as the details about the timing and duration of the education and training. Smith and Whalley's (2002) study, discussed above, provides an example of this type of validation study.

An alternative way to accomplish the same thing would be to administer the AETS to a random sample of participants in government education and training programs in particular provinces. The one downside to surveying training participants is that no estimate of the extent of "false positives"—reports of government education and training receipt by persons who did not in fact receive it—is obtained. Both versions of this type of validation study rely heavily on the accuracy of the administrative records at the individual level.

The final type of validation study looks at education and training associated with a private firm. The model here is the Panel Study of Income Dynamics (PSID) validation study documented in, e.g., Duncan and Hill (1985) and Duncan and Mathiowetz (1985). In that study, which was primarily concerned with the accuracy of self-reports of information related to rates of pay, hours of work, and fringe benefits, the PSID survey instrument was administered to a large number of workers at a single (large) private firm. The survey responses were then compared to information from the firm's payroll and benefit records. The PSID validation study yielded a wealth of useful information regarding measurement error in surveys. Barron, Berger and Black (1997) report on a similar exercise comparing survey responses to administrative records for training in small businesses.

A similar study would repeat the design but use the AETS rather than the PSID survey instrument. The firm or firms used should be selected carefully; there is not much value to selecting a firm that does relatively little of the types of training measured by the AETS. Indeed, it might be worthwhile to select a few firms from different sectors. Detailed information on education and training for particular firms would also have substantive interest independently of its value for examining measurement issues. It would inform studies of inequality in education and training receipt within firms and of how the amount and type of education and training varies by position in the firm hierarchy and by other worker characteristics such as tenure at the firm and performance.

4. Studying determinants of participation in adult education and training

While the AETS currently does a reasonable job of measuring training incidence, several avenues for improvement remain to use it for examining the determinants of training incidence. This section details several such avenues in turn. Our suggestions consist mainly of additional types of information that would contribute to studies of training participation. Such information would also contribute indirectly to the quality of studies of the effect of adult education and training on labour market outcomes, as most commonly used econometric evaluation methods depend on knowledge of the process of participation (see, e.g., Heckman and Robb, 1985, and Heckman, LaLonde and Smith, 1999).

In our view, the most useful additional information that could be collected in the AETS would be information on the timing of training receipt within the year covered by the survey. Although the 1998 survey collects information on the duration of training, it does not ask when each course or program begins and ends. The only additional information that is provided is whether or not the course or program is still in progress at the time of the survey. This is useful, but far from enough to pin down a complete education and training timeline for the year covered by the survey.

Timing information is particularly useful for impact studies, so that outcomes can be related to time since the start of education or training episodes. Information on timing would also allow the study of sequences of adult education and training activities among those taking more than one program or course in a year, as well as allowing an analysis of the extent to which respondents undertake multiple courses or programs in parallel rather than in sequence.

An important complement to information on the timing of adult education and training receipt is information on the timing of labour market activity. At present, for persons who change jobs, there is no way in many cases to assign particular courses or programs to particular jobs. Doing so is important in determining the influence of factors such as industry, occupation and job tenure on training incidence. Furthermore, for respondents not continuously employed, it is often impossible to determine with the available information whether a course or program took place during a period when the respondent was employed, not employed, or some combination of the two. Given that the opportunity costs of training not related to a particular job are likely to be much lower when the respondent is not employed, correctly aligning employments spells with training spells is important.

The literature on participation in government training programs strongly indicates the importance of labour market dynamics at the level of quarters or months in determining participation. For example, Card and Sullivan (1988) find strong effects of employment at the quarter level on participation in the US Comprehensive Employment and Training Act program (the predecessor to the JTPA). Similarly,

Heckman and Smith (1999, 2002) find strong effects of labour force status dynamics measured at the monthly level on participation in the JTPA. In the former paper, the measure that proves the best predictor consists of the two most recent labour force statuses during the seven months up to and including the decision of whether or not to participate in the program. Heckman, Ichimura, Smith and Todd (1998) find that the use of this information in impact evaluation substantially reduces bias for adult males in the JTPA relative to the experimental benchmark. This evidence further indicates the potential value of information on the timing of training and of labour market activity in the AETS for both studies of participation and studies of impacts.

Rather than substantially lengthening the AETS, an alternative that would address some or all of these concerns about timing would be to attach the AETS to the Survey of Labour and Income Dynamics (SLID) instead of the LFS. The panel data collected in the SLID would provide much of the information on the timing of labour market activity that the literature finds of value. Combined with additional data collection in the AETS on the timing of training courses and programs, it would substantially improve the utility of the AETS for analyses of participation in, and the effects of, adult education and training.

Variables related to the family constitute another fruitful area for deeper data collection in the AETS. The AETS (or the LFS) currently collects information on marital status, spousal education and the number and ages of children. Two types of additional information would be helpful. The first is the timing of marital status changes. For example, we might expect that a recent divorce could lead to training for women who had been working primarily in the home. Heckman and Smith (2002) find differences in the probability of participation in the JTPA as a function of time since divorce for some groups. Thus, a modest amount of marital history information would have value.

The second type of family-related information that we suggest obtaining consists of information related to the labour market behaviour of other family members, particularly the spouse (if present), during the period when the decision to take training is made. At present, such information is available in the LFS, but only for the period after training. The motivation for collecting such information is that individuals with a spouse working may be able to take advantage of training opportunities in between jobs that single individuals, or individuals whose spouses were engaged in home production, could not. This information should cover both timing of employment over the year, and hours worked and hourly wages. This information would allow for the examination of the role of family labour market dynamics in determining adult education and training participation.

Heckman and Smith (2002) find that information in the form of program awareness plays a major role in determining participation in the JTPA program. Similar information on awareness of particular government training programs could be collected in the AETS and would likely prove equally valuable in elucidating patterns of participation in Canada. In addition, when respondents indicate awareness of a program, they could also be asked whether or not they think they are eligible for it. Heckman and Smith (2002) find that many individuals do not know that they are eligible for JTPA even though they are; such perceptions may play a role in deterring participation in Canadian programs as well. Both the awareness and self-

reported eligibility variables have obvious policy relevance for governments providing training services, in addition to their potential usefulness in broader analyses of participation in government training programs.

One final suggestion relates to sample definition. For some purposes, researchers will want to exclude from adult education and training the typical spell of college or university after high school. This traditional formal schooling represents a different phenomenon than training provided by firms or than government training for the unemployed, with different determinants and, most likely, different effects. The information in the 1998 AETS does not include student status in 1997. Given that the sample includes respondents aged 17 or above, full-time college or university students are also included in the sampling frame. The data include the variable from the 1998 LFS that measures student status at the time of the LFS interview. Even after excluding such students, however, the sample may still contain fresh graduates of colleges and universities, as well as students taking a semester off in the spring of 1998. The latter group will be small but the former may not be. As such, it would be useful to collect in the AETS sufficient information to allow the exclusion of adult education and training that represents the tail end of the respondent's initial formal schooling.

5. Estimating the impacts of adult education and training

Six main issues arise in regard to estimating the impacts of adult education and training using the data from the AETS. The first two concern information on the timing and intensity of training. The third concerns the availability of additional outcome information in the period after participation in adult education and training. The remaining three issues concern the collection of data that could be used to implement the three primary classes of econometric evaluation strategies: selection on observables, longitudinal (or panel) methods and methods that rely on instrumental variables or exclusion restrictions (which include the much abused Heckman method). This section discusses each of these issues in turn.

Timing

The issues regarding timing are the same as in those mentioned in Section 4. We mention them here again briefly only to highlight their importance. Clear data on the timing of training spells and of employment spells during the period covered by the data is crucial to the construction of reasonable impact analyses. Only with such data can we determine the intervals between the beginning and ending of training and the time at which the labour market outcome under consideration is measured. Knowledge of these intervals is required to analyze the time path of impacts.

Training intensity

Although the AETS collects some information on the intensity of adult education and training spells, this information could be somewhat improved. For programs, the survey collects information on the number of weeks the program was taken full-time and the number of weeks it was taken part-time, and the hours per week for each. This is fine coverage. In contrast, for courses, the survey asks if the course was ever taken for more than six hours per day. In the affirmative, the number of such days is collected. Then, if the course was ever taken for less than six hours per day, the number of total hours on such days was collected. This is less precise, as information on courses that consume more than six hours per day is essentially top-coded at six hours. We suggest removing this top-coding and changing the survey so that the information it collects can be used to construct the total hours spent on each program and each course. Also, in the public use file, we suggest reporting a constructed interval measure of total hours, which is not currently done. This would greatly facilitate aggregation.

Longer term outcome information

We often expect that training, particularly long-term formal training such as the training programs measured in the AETS, will have effects over a period of years rather than of months. At the end of a training activity, it may take weeks or months to find a new job, and then months or years to fully put the training to use. Unfortunately, the longest follow-up that the AETS data will allow is 15 months, for training that ends in January of the AETS reference year. Most of the training spells that end in the year prior to the LFS interview, and therefore are captured by the AETS as currently constructed, will have even shorter follow-up periods.

This is particularly unfortunate given how little we know about the long-term impacts of either public or private training. In the context of government training programs, we really only have three data points—three programs with credible long-term impact estimates. These are the U.S. National Supported Work Demonstration, in Couch (1992), the JTPA, in Gilby, LaLonde, Smith and Whalley (2002), and the California Greater Avenues to Independence Program (GAIN) in Hotz, Imbens and Klerman (2000). The insights they offer are tantalizing, yet none is Canadian and only one, the JTPA, is similar to programs provided currently or in the past in Canada.

The AETS could become a tool for estimating long-term impacts if it were matched to ex post administrative data as they became available, say from T4 records. Obviously, this would require a reasonably high rate of agreement (over 80 percent) from respondents to be useful.

Observing the unobservables

The most common econometric evaluation method assumes what Heckman and Robb (1985) call "selection on observables." This assumption holds that, conditional on some set of observed variables, participation in training is unrelated to outcomes in the absence of training. To see how this works, consider the following example. Suppose that persons with more years of schooling participate more in training than persons with fewer years of schooling. Suppose further, as the data suggest, that persons with more years of schooling earn more than persons with fewer years of schooling, even in the absence of training. However, suppose finally that conditional on years of schooling, individuals choose to take training for reasons unrelated to their expected outcome in the absence of training. Under these assumptions, there is selection into training based on education, but conditioning on education in estimating the impact of training will remove the resulting selection bias in the estimates.

There are two standard ways to implement selection on observables, through regression and through matching. These methods are discussed in standard sources such as Heckman, LaLonde and Smith (1999). The issue here is whether or not the AETS currently includes a sufficiently rich set of observable characteristics to obtain plausible estimates based on the assumption of selection on observables. What is wanted is data on variables that affect both participation in adult education and training and outcomes in the absence of training. Our estimates in Hui and Smith (2003) suggest that the AETS currently does not cover enough of the key variables in this class to remove the selection bias in estimates obtained using regression

methods or matching methods. We now offer suggestions of two types of variable that would help to fill this void.

The first type of variable it would be useful to collect is more detailed information on existing educational qualifications. This includes the major field of study for persons with college or university degrees or diplomas. It also includes any other types of vocational qualifications earned. These variables clearly affect both participation in training (through their effect on occupation and industry, as well as through other channels), and labour market outcomes in the absence of further training.

The second type of variable it would be useful to collect is some measure of ability. A number of major cross-sectional and panel data sets in the U.S. include measures of ability, usually in the form of some sort of test score. For example, the U.S. National Longitudinal Survey of Youth administered the Armed Services Vocational Aptitude Battery, the test used by the U.S. Armed Forces for admission and allocation purposes, to (almost) all its respondents. Adding a short ability test to the survey would substantially increase the value of the data.

Longitudinal data on outcomes

The second common class of econometric evaluation methods attempts to take account of selection on unobservables, in situations where the data lack the richness to make an assumption of selection on observables compelling. Most longitudinal methods assume that the unobservables determining selection remain constant over time, so that they can be differenced out when using repeated observations on labour market outcomes such as employment and earnings.

Although outcomes measured before and after training are partial substitutes in implementing longitudinal estimators, at least one period of outcome data prior to participation is required. Ideally, each outcome should be measured in the same way (i.e., from the same administrative data source or with the same survey question) at each time period. While two time periods suffice to identify some versions of the longitudinal evaluation estimator, additional periods allow for more sophisticated versions to be applied, such as the random growth estimator, as well as producing more precise estimates and allowing for some specification testing along the lines of Moffitt (1991) or Heckman and Hotz (1989). The easiest way to include such data with the AETS would be to obtain permission from AETS respondents to match their survey data to administrative records. Although administrative data are not a panacea (see, e.g., Hotz and Scholz, 2002), they do not suffer from the recall bias problems that plague attempts to assemble panel data based on retrospective questions about labour market outcomes (see the discussion in Bound, 2001).

Instruments

The final major class of econometric evaluation estimators that analysts use to estimate the labour market effects of training contains methods that rely on an instrument or exclusion restriction (hereafter just "instrument"). These methods aim to take account of selection on unobservables, in situations where the data do not make selection on observables a plausible assumption. Put simply, an instrument is a variable that affects participation in adult education and training but does not affect labour market

outcomes, other than through its effect on participation. Instruments are notoriously hard to come by, but plausible instruments can sometimes be obtained through clever data collection or by matching information to the data based on the respondent's location.

In terms of data collection, for example, the AETS could collect information from employed respondents on whether or not their employer offers a training subsidy and, if so, what sort of subsidy is offered. Because this variable represents an opportunity—in formal terms it affects the price of training—it can be used as an instrument. It complements the information already collected on actual receipt of training paid for in whole or in part by employers.

In terms of matching data from other sources, we offer two examples. One example is the distance to the nearest provider for particular types of training. In this scheme, whoever produces the AETS would use their data on the location of each respondent to calculate the distance, either in kilometres or in some measure of travel time, to the nearest provider, such as a community college. The idea is that distance affects the cost of taking adult education and training but otherwise has no effect on labour market outcomes. Card (1995) uses this strategy with distance to colleges and universities in order to estimate the returns to additional years of schooling.

Another potential instrument consists of policy variables at the local or provincial level. These include training subsidies, as well as the tuition levels at local colleges and universities (and perhaps major proprietary schools). Again, the intuition is that prices and subsidies will affect training incidence (this being precisely what they are designed to do) but not otherwise have an effect on labour market outcomes.

6. Conclusions

The 1998 AETS does a reasonable job of measuring the basic patterns of adult training participation in Canada. Using these data, analysts have looked at the determinants of participation in multivariate frameworks. In Hui and Smith (2003) we also attempted to use the 1998 AETS data to study the impacts of adult education and training participation on individual employment and earnings. Our findings lead us to conclude that the AETS currently lacks critical features required to produce credible impact estimates.

We view the recommendations made in this paper as improvements at the margin in regard to the use of AETS for studies of participation, but as very basic reforms in regard to the use of the AETS as a tool for studies of the impact of adult education and training. We provide below a recapitulation of these recommendations.

A first series of recommendations refer to changes in the AETS that would improve its usefulness for studies of both participation in adult education and training and of the labour market impacts of adult education and training:

- Collect detailed data on the timing of training started or completed during the reference period of the AETS.
- Collect detailed data on the timing of employment during the reference period of the AETS.
- Test alternative question wordings for public training programs. Such wordings may need to be program-specific.
- Conduct validation studies of the AETS data on participation. This could include comparing aggregation measures to aggregate statistics on public training provision. It could also include matching survey responses to public or private (firm) administrative data at the individual level.
- Collect information on plausible instrumental variables. These include tuitions for public colleges and universities as well as provincial training subsidies or taxes. It also includes variables such as distance to the nearest college or private training provider.

A second series of recommendations refer to changes in the AETS that would primarily improve its utility as a tool for studying participation in adult education and training:

- Collect enough information on enrolment in schooling to allow the complete exclusion of persons still finishing their initial formal schooling.
- Collect information on respondent awareness and self-reported eligibility for various government training programs.
- Collect information on the relative financial contributions of different sources when respondents report that their training was paid for from multiple sources.

Finally, the following recommendations refer to changes in the AETS that would primarily improve its utility as a tool for studying the labour market impacts of adult education and training:

- Collect better data on training intensity. This includes finer hours measures for training courses and some measure of usual hours per day for training programs.
- Collect data on additional observable variables that affect both participation and labour market outcomes in the absence of participation. Two important examples are more detailed information on existing educational qualifications and some sort of "ability" measure or test score.
- Match the survey data to long-term administrative data on labour market outcomes as it becomes available, subject to respondent permission. This would allow the estimation of long-term impacts of training. Such impacts are important to a complete benefit-cost analysis of public training and are largely absent from the existing literature, especially in Canada.
- Collect panel data on labour market outcomes in the period prior to the main AETS reference period. This would allow the implementation of longitudinal evaluation estimators. The outcomes should be measured consistently across periods. The data could be based on respondent recall (in which case it should not go back too far) or be matched from administrative records (assuming respondent permission).
- Collect data on the social cost (or at least the direct cost in terms of government funds) of publicly provided adult education and training. Such information is a critical input into social cost-benefit analyses of public expenditures on adult education and training.

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Culture, Tourism and the Centre for Education Statistics

Research Papers

Cumulative Index

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