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THE STATE OF KNOWLEDGE ON THE ROLE AND IMPACT
OF LABOUR MARKET INFORMATION: A SURVEY OF THE
CANADIAN EVIDENCE

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The State of Knowledge on the Role and Impact of Labour Market Information: A Survey of the Canadian Evidence

Abstract

This report provides a critical assessment of recent Canadian efforts to measure and evaluate the impacts of labour market information (LMI). The purpose of this exercise is to provide a summary of the current state of knowledge on the role and impact of LMI in Canada, to assess the contribution of recent research to that knowledge, and to outline areas in which further research is required.

The report finds that we know very little about the impact of LMI *per se* on labour market outcomes. The Canadian LMI literature does demonstrate that employers and individuals consider LMI to be useful in decision-making, and that LMI and LMI-related programs can have a positive impact on individuals' labour market knowledge and career decision-making.

The State of Knowledge on the Role and Impact of Labour Market Information: A Survey of the Canadian Evidence

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The State of Knowledge on the Role and Impact of Labour Market Information: A Survey of the Canadian Evidence

Executive Summary

This report provides a critical assessment of recent Canadian efforts to measure and evaluate the impacts of labour market information (LMI). The purpose of this exercise is to provide a summary of the current state of knowledge on the role and impact of LMI in Canada, to assess the contribution of recent research to that knowledge, and to outline areas in which further research is required.

A. Definition of LMI

The term ‘labour market information’ refers to three types of information:

1. Information about labour market trends (including projected future trends), both at the aggregate level and by region, sector, industry, and occupation;
2. Information about specific job openings; and
3. Information about the skills and other characteristics of individual workers.

The first type of information can be used by individuals, businesses and policymakers in order to form reasonable expectations about future labour market developments such as relative skill surpluses and shortages, regional differences in labour market performance, the characteristics of occupations (e.g. skill requirements), etc. The second and third types are used by individual jobseekers and employers in order to facilitate worker-employer matching at the microeconomic level and to make career and training decisions.

B. Key Findings

It is generally acknowledged that the primary policy objective in producing and disseminating LMI is to improve labour market outcomes at the macro- and microeconomic levels. However, a key finding of our review of the Canadian literature is that there is little evidence that LMI actually has these effects. This reflects the difficulty of attributing observed labour market outcomes to information itself, as well as the fact that the impact of information is dependent on the ability of users to access, understand and apply the information.

What knowledge we do possess must be drawn from surveys of LMI uses and needs, as well as evaluations of the impact of LMI and LMI-related programs on individuals' learning outcomes and decision-making.

The key findings of the literature review are:

i. LMI Uses and Needs

- Employers in Canada make substantial use of LMI and consider LMI useful in human-resources decision-making. LMI is particularly useful to employers during times of labour market tightness, when unemployment is low and finding workers is difficult.
- Employers' expressed LMI difficulties are driven not only by the unavailability of some information, but also by the lack of clarity about what information is available and the difficulty of locating information.
- Both employers and individual LMI users expressed a need for more locally-based LMI, information on wages and benefits, and greater ease in finding and accessing LMI.
- Most employers preferred to access LMI via the internet. For individuals, the most popular LMI distribution channels were newspapers, printed material sent to users' homes, and the internet.
- The Construction Sector Council's LMI system is extensively used by industry stakeholders. Anecdotal evidence shows that the LMI has directly influenced a number of major construction-related projects.

ii. Impacts of LMI on Labour Market Outcomes

- HRSDC LMI products appear to reduce unemployment durations in the short run.
- Canadian evidence on job-search assistance and career counseling programs is limited and gives mixed results, but on balance it suggests that the programs can decrease short-run unemployment durations. We found no evidence on long-run impacts.

iii. Impacts of LMI on Individual Learning Outcomes

- Experiments have demonstrated that LMI can improve people's knowledge of the labour market and influence their decisions with respect to investments in education and training.

- The balance of the evidence suggests that career counseling can promote continued education and training, reduce school drop-outs, promote positive attitudes toward career choices, and help people incorporate LMI into decision-making.

C. Conclusions

The main conclusions of the report are summarized as follows:

Conclusion 1: *There is no evidence on the impact of LMI per se on labour market outcomes.*

Conclusion 2: *There is an abundance of survey-based evidence on the characteristics of LMI users. This evidence reveals that individuals and employers do use LMI in decision-making and consider it useful.*

Conclusion 3: *LMI per se has a positive impact on users' labour market knowledge and on decisions pertaining to investment in education.*

Conclusion 4: *LMI-related programs such as career counseling and career development services appear to have positive impacts on a variety of learning and attitudinal outcomes, but a stronger evidence base is needed.*

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The State of Knowledge on the Role and Impact of Labour Market Information: A Survey of the Canadian Evidence¹

I. Introduction

This report provides a critical assessment of recent Canadian efforts to measure and evaluate the impacts of labour market information (LMI). The purpose of this exercise is to provide a summary of the current state of knowledge on the role and impact of LMI in Canada, to assess the contribution of recent research to that knowledge, and to outline areas in which further research is required.

These are important matters because there is increasing interest in improving the stock of LMI in Canada. For example, the Advisory Panel on Labour Market Information, which reported to Canada's Forum of Labour Market Ministers in July 2009, made recommendations for enhanced LMI production and dissemination that would cost the Canadian government almost \$50 million per year (Drummond *et al.*, 2009). Without measures of the impact of such information, we cannot know whether or not these expenditures would be a good investment of public funds.

The term 'labour market information' refers to three types of information:

1. Information about labour market trends (including projected future trends), both at the aggregate level and by region, sector, industry, and occupation;
2. Information about specific job openings; and
3. Information about the skills and other characteristics of individual workers.

This definition was used by the Advisory Panel on Labour Market Information.² The first type of information can be used by individuals, businesses and policymakers in order to form reasonable expectations about future labour market developments such as relative skill surpluses and shortages, regional differences in labour market performance, etc. Such plans inform policymaking, career and training decisions, investment decisions,

¹ The author is an Economist at the Centre for the Study of Living Standards (CSLS). This report was written under the supervision of CSLS Executive Director Andrew Sharpe. The author thanks Sandra Franke and Sultan Ahmed of Human Resources and Skills Development Canada for support and useful comments on this project. E-mail: alex.murray@csls.ca.

² See Drummond *et al.* (2009). The report states: "Labour Market Information is knowledge, facts, data, and relevant institutional information on the supply and demand of the various different types of labour services (employment), including prices such as wages and other forms of compensation as well as quantities, both at the detailed and aggregate levels, that is used for analysis and decision-making."

etc. The second and third types are used by individual jobseekers and employers in order to facilitate worker-employer matching at the microeconomic level.³

LMI is also used by labour market intermediaries, “entities or institutions that interpose themselves between workers and firms to facilitate, inform, or regulate how workers are matched to firms, how work is accomplished, and how conflicts are resolved” (Autor, 2009). Intermediaries compile LMI, interpret it, and provide it to employers and individuals who need it. Autor (2009) observes that the labour market is not a spot market in which labour can be bought and sold instantaneously under perfect information.⁴ In real labour markets, the information-provision activities of intermediaries address three main market failures:

1. **Costly information.** The acquisition of LMI involves costs in terms of money, time and effort. Since information is in large part a public good, it is likely to be undersupplied under *laissez faire* conditions.
2. **Adverse Selection.** Asymmetric information in labour markets can lead the highest quality workers and employers to exit the market, leaving only the low-quality participants.⁵
3. **Collective Action Problems.** Actions that are optimal for each individual acting alone may not lead to positive outcomes if every individual takes those actions simultaneously.

Exhibit 1, drawn from Autor (2009), provides several examples of labour market intermediaries and indicates the primary market failure that each one addresses. The costly information and adverse selection issues are the most relevant of the three for our purposes, since they are treatable by information *per se*. This framework provides a way of thinking about the benefits that LMI – particularly LMI provided through government investments – is supposed to deliver.

It is generally acknowledged that the primary policy objective in producing and disseminating LMI is to improve labour market outcomes (Vincent and Voyer, 2007). At the macroeconomic level, it is hoped that LMI can improve the efficiency of labour allocation across sectors and regions by facilitating worker-employer matching. LMI should reduce frictional unemployment (and thereby raise aggregate output), and it may improve labour productivity if it helps workers find jobs that better match their interests,

³ The definition of LMI we have adopted is quite narrow. It encompasses information *per se*, not the various ways in which the information can be used to aid jobseekers. As we explain below, there is almost no evidence on the direct impact of LMI *per se* on labour market outcomes. As such, much of the literature we discuss in this report examines the impacts of *programs that use LMI* (e.g. job search assistance programs or counselling programs) rather than the impact of the LMI itself. See the discussion beginning on page 3 below.

⁴ See Diamond (1982), Mortensen (1982) and Pissarides (1986) for examples of formal economic theory in which job search under imperfect information leads to labour market equilibria with both unemployed workers and unfilled jobs.

⁵ See Akerlof (1970) for the classic exposition of this idea. The idea is as follows: if the quality of a product in the market is uncertain, buyers will offer to pay a price below the price that would be acceptable to sellers of high-quality merchandise. The high-quality sellers exit the market, which leads the buyers to lower their offers even further. As a result of this process, the market eventually contains only low-quality products. This principle can easily be applied to markets for labour, or even markets for information.

Exhibit 1: Categorizing Labour Market Intermediaries by Market Function

	Information Provision/ Search Costs	Worker-Side Adverse Selection	Firm-Side Adverse Selection	Collective Action
Traditional job boards	✓			
Comprehensive job boards (e.g. <i>AlmaLaurea</i>)		✓		
Criminal records providers		✓		
Public employment offices			✓	
Labour standards regulations			✓	
Centralized medical job match				✓
Labour unions				✓
Temporary help agencies	✓			

Source: Autor, 2009.

talents and skills. At the microeconomic level, LMI should help jobseekers find employment and help employers find workers.

There is little evidence that LMI actually has these effects.⁶ This reflects the difficulty of attributing observed labour market outcomes to information itself, as well as the fact that the impact of information is dependent on the ability of users to access, understand and apply the information (Vincent and Voyer, 2007).

Since we were unable to find evaluations of the impact of LMI itself, we expanded the scope of the literature survey to include evaluations of various LMI-related programs. While LMI is not itself a program or a policy, some programs involve the use of LMI. As a framework for thinking about the approach we take in this literature review, consider three types of evaluations that could be conducted in order to gain information about LMI:

1. Impact of LMI, *narrowly defined*, on labour market outcomes at the macroeconomic and individual levels.

⁶ Strictly speaking, we are referring to the impacts of *marginal* increases in LMI quantity or quality. If we lived in a world in which no one had any information at all about the labour market, it is obvious that LMI provision would improve labour market outcomes. In the real world, there is already a large amount of LMI available. Investments by policymakers may result in marginal improvements in LMI, and we are interested in the impacts of such improvements.

- Does better information on job vacancies lead to more effective targeting of fiscal policy at sectors with excess labour supply?
- Does better information on job vacancies lead to lower individual unemployment durations and better job-worker matching?
- Does better career information smooth the school-to-work transition by helping graduates find jobs faster?

These questions focus on the impact of LMI *per se*, as we defined it earlier. In principle, they could be addressed using natural experiments that exploit cross-jurisdictional variation in LMI quantity, quality, accessibility, etc.⁷

2. Role of LMI within labour market programs such as job-search assistance and career counseling.

- Does the quality of LMI available at employment offices affect the effectiveness of job-search assistance?

This category of questions focuses not on the impact of LMI *per se*, but on the role of LMI in labour market programs that themselves impact labour market outcomes. Such questions could be examined using randomized controlled experiments. For instance, a researcher could send one group of participants to an employment centre with standard LMI and another group to a centre with new experimental LMI but otherwise equivalent services, and see which group experiences better labour market outcomes.⁸

3. Effectiveness of labour market programs that use LMI, but without reference to the role of LMI.

- What is the impact of a job-search assistance or counseling program on individual unemployment durations? On wages?
- What is the impact of such programs on aggregate unemployment?

These questions focus on the impact of programs. The programs may use LMI, but this approach to evaluation does not involve an attempt to isolate the role of LMI within the collection of factors that constitute the program. Such evaluations can be conducted using the standard methods of program evaluation, including natural experiments and randomized controlled experiments.

⁷ There is a vast literature on the use of natural experiments to analyze economic phenomena. See, for example, Card and Krueger (1994) on the unemployment implications of cross-state differences in the minimum wage, or Oreopoulos (2006) on the labour market implications of cross-provincial differences in compulsory schooling laws.

⁸ One problem with this approach is that it is often considered unethical to experiment on people in this way (Maguire and Killeen, 2003). Making participation voluntary can lead to sample selection problems that undermine the validity of the results. Of course, it could also be considered unethical for governments to implement costly programs with no evidence of their effectiveness.

In our literature search, we initially searched for evaluations that would fall under the first category above. After we were unable to find any, we expanded the scope of our search in the hope of finding evaluations belonging to the second category. There, too, we found almost nothing. Most evaluations of the impact of LMI on labour market outcomes fall under the third category, which is the furthest removed from LMI itself.

We also broadened the scope of the survey to include studies that relate LMI to outcomes other than narrow labour market outcomes. Due to the difficulties associated with evaluating the impact of LMI on labour market outcomes, researchers in Canada have pursued alternative lines of inquiry. First, researchers have used surveys to assess the ways in which individuals and firms use LMI and to identify unmet LMI needs. Second, they have sought to identify the impact of LMI on individual-level “learning outcomes” such as labour market knowledge, attitudes toward work, and job-search competence. In this literature review, we address both of these lines of research.

The report is structured as follows. In section II, we provide a brief description of the search procedure we used to find references for our literature survey. In section III, we address survey-based evidence on the ways in which individuals and employers use LMI and assess unmet LMI needs. Section IV discusses the Canadian evidence on the impacts of LMI on labour market outcomes and learning outcomes. This discussion includes studies of the direct impact of LMI *per se*, as well as evaluations of LMI-related programs (job-search assistance and career counseling) and delivery mechanisms. Section V summarizes and concludes.

II. Literature Survey Strategy

Our review of the Canadian literature on LMI did not uncover research on the impact of LMI *per se* on labour market outcomes. As a result of this, we expanded the search to include survey-based assessments of LMI uses and needs, as well as studies of the impacts of LMI-related policies such as job-search assistance and career counseling. We also expanded the scope of the outcomes variables to include individual level outcomes such as labour market knowledge, educational choices, and career decidedness. These expanded search parameters reflect the characteristics of the references that were required for inclusion in the literature review under the terms of the Request for Proposals.

We conducted our literature search using internet-based academic and non-academic databases. Sources include:

- Google
- Google Scholar
- EconLit
- RePEc
- Social Science Research Network
- Canadian Journal of Counselling.

We also searched the web sites of the following organizations:

- Social Research and Demonstration Corporation
- Conference Board of Canada
- Institute for Research on Public Policy
- Canadian Policy Research Networks
- Canadian Career Development Foundation
- HRSDC
- OECD

The primary search terms used in our internet-based search were:

- “labour market information”
- “career information”
- “vocational information”
- “occupational information”

Although these terms are not synonymous, their meanings are similar. We combined each of them with secondary search terms such as:

- Canada
- impact

- evaluation
- study
- experiment
- measurement
- “needs assessment”
- survey

These terms reflect our focus on empirical analyses of the impact of LMI.

We also searched for literature on the particular LMI delivery mechanisms we address this report. We used search terms such as:

- “job-search assistance”
- “employment services”
- “career counseling”
- “occupational counseling”
- “career guidance”
- “occupational guidance”
- internet information
- “job sites”
- “active labour market policy”

These terms were used in conjunction with the secondary search terms listed above, which again reflects our focus on empirical evaluations.

The body of empirical literature on LMI in Canada is growing but is not yet large. The lack of evidence on the impact of LMI is acknowledged in the literature, and in recent years many conceptual studies have been written which outline research approaches that could be used to evaluate the impacts of LMI. These did not warrant a full treatment in this literature review because they are not empirical, but they indicate that the evidence base for Canadian LMI and LMI-related programs may grow in the coming years.

III. LMI Uses and Needs

Much of the research on LMI in Canada has taken the form of survey-based needs assessments. LMI users are asked about the types of LMI they seek, the sources from which they seek it, the uses they make of it, and the information gaps they perceive in the existing LMI system. In this subsection, we report results from studies of LMI use among both employers and individual workers, including LMI intermediaries such as human resources workers and career counselors. We also devote a subsection to the use of LMI in the Canadian construction industry, since the industry has its own LMI system and a major assessment of LMI use by firms and workers in the industry has recently been carried out.

A. Employers

LMI use by Canadian employers is summarized in two recent reports by Ekos Research Associates, Inc. The first examines LMI use in a sample of 2,204 small to medium sized firms with between five and 100 employees (Ekos, 2007). The second investigates LMI use among a sample of 1,321 medium to large sized firms with more than 100 employees (Ekos, 2008). The small to medium sized firms are predominantly from the retail and services sectors, while the medium to large firms are mainly from manufacturing, retail and services. All the regions of Canada are represented in both samples. There are some sectoral differences in the distribution of firms across regions. For example, construction firms are particularly likely to be located in Alberta.

Both reports focus on LMI use in human resources (HR) management, particularly in recruitment and hiring, training and development, and workforce retention.⁹ These are areas in which LMI is likely to be particularly useful to employers. Unsurprisingly, large and small employers differ in the degree to which they engage in these activities on a regular basis. Almost all large employers (i.e. over 95 per cent for each) reported having been engaged in recruiting or training activities during the previous year, and 81 per cent reported having made decisions in all three HR management areas. Among smaller employers, only about 40 per cent had been engaged in all three activities. Regular and intensive engagement in HR activities for small employers was largely dependent upon local macroeconomic conditions, with firms in low-unemployment Alberta reporting much more HR activity than their counterparts in Quebec. LMI may therefore be most useful to small employers during periods of general economic boom. The reports found no relationship between HR activity and macroeconomic conditions for large employers.

Among large employers, about 70 per cent reported using LMI to inform their decisions in each of the three HR activities. In contrast, the proportion of small employers who reported using LMI from outside their organization to inform decision-making was highest for training and development, at 47 per cent, and lowest for recruitment and

⁹ Employers use LMI of the first and third types described in the introduction: information about overall labour market trends, and information about the skills and other characteristics of individual workers.

hiring, at 37 per cent. This is somewhat puzzling, since Ekos (2007) notes that recruitment is the HR activity most commonly engaged in by small employers and in which many small employers reported experiencing challenges.

Among both types of firms, however, the most common recruitment method is word of mouth, followed by advertising (especially on the internet). Three quarters of large employers reported that they use the Job Bank web site to seek employees, and over 50 per cent use private sector job sites.

Small employers were more likely than large ones to be unable to find all the LMI they desired. For both groups, however, some employers were unable to find information that other employers did find and use. This suggests that employers' expressed LMI difficulties are driven not only by the unavailability of some information, but also by the lack of clarity about what information is available and the difficulty of locating information. It also suggests that employers differ in their capacity to locate LMI. The fact that large employers were less likely to report being unable to find the information they needed may indicate that they are more sophisticated LMI users than smaller employers.

Among both large and small employers, the most frequently cited difficulty was the inability to find information on wages and benefits. Firms need this information for their recruitment and worker retention; they need to know what other firms are offering in order to make competitive offers.

The federal and provincial governments are the most common sources of LMI for small employers. Large employers also make use of these sources, but are more likely to acquire LMI from sources internal to their own organization. Both large and small firms seek mainly locally-based LMI, although LMI of a regional or national scope is also used.

The vast majority of employers, both small and large, indicated that they considered LMI to be somewhat or very useful in decision-making.¹⁰ In each of the three HR management areas (recruitment, training, and retention), LMI was considered somewhat or very useful by over 80 per cent of small firms and over 90 per cent of large firms. The most common complaint was the lack of specificity and detail in the available information. This may partly reflect the importance of locally-based LMI.

About 30 per cent of employers sought assistance in finding or interpreting LMI. Assistance was most commonly received from HR consultants, followed by government web sites. Among small employers, about 40 per cent reported that they would have benefited from assistance in finding LMI. However, employers who did obtain assistance were no more positive about the usefulness of LMI than those who did not.

¹⁰ For each of the three HR management areas (recruitment, training, and retention), firms were asked to assess the usefulness of the LMI they used. For example, the recruitment question was "Overall, how useful did you find the information, tools or service you USED in helping your organization to make decisions in the area of recruitment?" The five alternative options were 'Not at all useful,' 'Not very useful,' 'Somewhat useful,' 'Very useful,' and 'Don't know or no response.'

Most employers preferred to obtain LMI on the internet as opposed to in print, over the telephone, or in person. Among large employers, over 80 per cent obtained their LMI online. Internet-based LMI is less popular among small employers, but it is still more widely used than other sources. About half preferred the internet to the alternatives. Most employers were able to obtain LMI in their preferred formats, but those that preferred receiving LMI in person or in printed material had more trouble than those that preferred the internet.

Overall, the Ekos surveys reveal that employers in Canada make substantial use of LMI and that they consider LMI useful in decision-making. LMI is particularly useful to employers during times of labour market tightness, when unemployment is low and finding workers is difficult.

Two key LMI needs are currently unmet. Employers want more detailed, locally-based information, and they require greater ease of access to LMI. These are consistent with the findings of Drummond *et al.* (2009: iii), which finds:

People expressed their dissatisfaction with the bewildering array of LMI that is available and the difficulty of sorting through it all to find the information they need. Even sophisticated companies and organizations told us that they shy away from primary data sources.

These survey results cannot tell us much about the measurable impacts of LMI. Employers find LMI useful for their HR decisions, but this does not tell us whether those decisions would be ‘better’ or ‘worse’ in the absence of any particular type of LMI. Research of a different nature would be necessary to determine the ways in which LMI actually affects decision-making by employers. In addition, these results do not tell us whether better LMI for firms would reduce unemployment, lead to more job vacancies being filled, or have any other important labour market effects.

B. Individuals

Among individual Canadians, LMI is used mainly by two groups: jobseekers and labour market intermediaries. The latter group includes individuals, such as HR consultants and career development counselors, who use LMI to help other people achieve their HR management or career development goals.

i. Jobseekers and other labour force participants

Ipsos-Reid (2001) reports the results of a telephone survey in which 2,500 Canadians who were in the labour force were asked about their views of LMI. The plurality of respondents could not identify a type of information that would be most useful to them when planning a career or searching for a job. Among those who could provide a response, the most commonly mentioned type of LMI was lists of local job openings, followed by information on available jobs given their skills, about education

and training options, and about salaries and benefits. When given options to choose from, respondents cited information about potential employers looking for workers with their qualifications as the most useful form of LMI.

Most respondents had positive views about the usefulness of LMI in general. About half said that they would like more information about potential employers and about job opportunities in their field or in their locality.¹¹ The desire for LMI was associated with demographic characteristics, with young people, low-income earners, and the less educated being particularly likely to want LMI. Two groups had particularly great interest in LMI: those with high job-satisfaction and a keen interest in promotion, and those with high job-related stress and an interest in obtaining a more secure job.

Demographic characteristics also affected preferences for LMI distribution channels. Low-income, low-education users were more likely to prefer to receive LMI through printed material such as brochures and pamphlets, while those with higher incomes and more education preferred the internet. Overall, the most popular LMI distribution channels were newspapers, printed material sent to users' homes, and the internet.¹²

Fifty-six per cent of respondents said they were aware that the federal government collects and distributes LMI. About 40 per cent reported having used LMI in job-related decision-making, with newspapers, government employment offices, and government web sites being the most popular sources. Among the 60 per cent who had not used LMI, about 70 per cent said that they would have used it if they had known about its existence. This suggests that awareness of LMI is a key challenge.

HRSDC (2005) profiles users of HRSDC LMI products and services. HRSDC provides a range of LMI products, including Job Bank, employment centre job postings, the Electronic Labour Exchange (an online worker-employer matching system), and information products (books, pamphlets, etc.); and LMI-related services, including job-search assistance and career counseling.

The study finds that the use of LMI is more common among well-educated people and those with experience in clerical or sales occupations, and less common among blue-collar workers with unstable work histories. This is not necessarily inconsistent with the Ipsos-Reid (2001) findings – LMI use can be associated with low education in the labour force as a whole but with high education within the subsample of unemployed people – but it is inconsistent with findings from other countries.

¹¹ Respondents were asked the following: "Please tell me whether you agree or disagree with each of the following statements using a scale from 0 to 10, where 0 means you strongly disagree and 10 means you strongly agree." They were then read a series of statements. Ratings between 7 and 10 (inclusive) were categorized as agreement with the statement. Fifty-four per cent agreed with "I would like to have more information about work opportunities in my field," while 53 per cent agreed with "I would like to have more information about potential employers" and 51 per cent agreed with "I would like to have more information about work opportunities in the area I live."

¹² 'The internet' probably refers mostly to web sites, as opposed to e-mail or other online communication tools. This is not clearly specified.

Almost 70 per cent of employment insurance (EI) recipients reported using at least one type of LMI during their job-search efforts. Job Bank was the most commonly-used LMI product; it was used by 60 per cent of EI recipients. Ninety-seven per cent of respondents were aware of at least one HRSDC LMI product, but awareness of some particular LMI products and services (e.g. Electronic Labour Exchange and Community Information) were well below 50 per cent. Lack of awareness was the most common reason for not having used a particular LMI product, and most respondents said that they would have used the products had they known about them.

Some of the results seem inconsistent with those of the Ipsos-Reid survey, but there are two important differences between the two studies. First, Ipsos-Reid (2001) surveyed members of the labour force, including employed persons, while the sample in HRSDC (2005) contains only unemployed people. Second, Ipsos-Reid (2001) mostly asked respondents about their views toward LMI, whereas HRSDC (2005) asked about actual experiences with LMI.

Les Études de Marché Créatec+ (2003) report the results of a survey of LMI use by 1,089 Canadians aged 16 and over who had undergone at least one work or educational transition during the previous three years.¹³ Eighty-four per cent of respondents report having sought LMI to aid them during a work transition, and 68 per cent considered LMI to be useful in such transitions. (Respondents are more likely to seek information, and more likely to find it useful, for educational transitions than for work transitions.)

Respondents do not cite a lack of information as a challenge to work transitions. The most common challenges are financial barriers (cited by 28 per cent of respondents) and family situation (15 per cent). Only 39 per cent of respondents report having received assistance in finding and using LMI for a work transition. When assistance is sought, friends and relatives are the most common sources.¹⁴

Like the employer surveys, these surveys of individual LMI use do not provide evidence about the impacts of LMI on either labour market outcomes or individual learning outcomes. Nevertheless, it is useful to know who uses the LMI that is currently available and what gaps they perceive in that LMI, as well as what populations can be

¹³ The definition of LMI used in the survey – “any information that they might use to plan a career, decide what type of work they want to do, find a job, find out requirements for jobs, find a training program, or find an educational program, etc.” – is much broader than the definition we use in this report. In particular, information on educational opportunities (university programs, training programs, etc.) is considered LMI. Fortunately, the study provides information on LMI use by people in ‘work transitions’ and ‘educational transitions’ separately. A work transition is a change in work-related circumstances (e.g. from unemployment to employment, from one job to another) while an educational transition is a change in education-related circumstances (e.g. from employment to school).

¹⁴ Using the data collected for Les Études de Marché Créatec+ (2003), Environics Research Group (2004) divides the sample into six groups using cluster analysis (a method that generates the groups based on the statistical similarity or dissimilarity of individuals). The six groups are defined as trades, transport and construction workers; low-education sales or service workers; high-education sales or service workers; students; mid-career workers looking to advance their careers; and older workers. In five of the six groups, information on employers and on job prospects are the most common types of LMI sought and most people do not seek assistance in finding LMI. Students are the exceptions; they prefer information on skill requirements for jobs, and most of them do receive assistance in finding and using information.

reached via different LMI delivery channels. Like employers, individuals are most interested in locally-based information. There is evidence that greater awareness of LMI would increase LMI use. It is not clear why the patterns of LMI use with respect to the individual characteristics of unemployed persons (education, employment history, age, etc.) are different in Canada than in other countries, as noted in HRSDC (2005). This is an important area for future research, since those characteristics are also associated with the LMI types and delivery channels that individuals prefer.

ii. Intermediaries

Labour market intermediaries comprise all entities and institutions that facilitate the flow of information between parties in the labour market. This can include employment centers and web sites, for example (Autor, 2009). It also includes particular people. In conjunction with their survey of employers, Ekos (2008) surveyed career development counselors and HR consultants, labour market intermediaries “who assist individuals and organizations to address their human resources and career development needs.” Career development counselors deal with people in need of career development advice, such as jobseekers, students, and immigrants. They work mostly in employment assistance organizations (33 per cent of the sample), educational institutions (24 per cent), and government (23 per cent). HR consultants deal mostly with the managers of firms. The vast majority of them work in HR departments within specific organizations (72 per cent), with government (9 per cent) and private HR consulting firms (5 per cent) well behind.

Although they were well-educated, most intermediaries had no formal training in how to find, interpret, and apply LMI. Career counselors used government web sites as their main source of LMI, while HR professionals also used personal contacts and conferences. The vast majority of intermediaries preferred the internet as an LMI delivery channel.

HR consultants primarily used LMI to address issues related to labour shortages and the need to compete with other firms in terms of wages and benefits. This is consistent with the findings from the employer survey showing that information on other employers’ wage and benefit offers was an important LMI need (Ekos 2007, 2008).

Most intermediaries reported that their need for LMI was increasing over time. The main areas of increasing need for information were competitive wages and benefits, labour shortages, the hiring of foreign workers, and trades-related occupations.

Intermediaries claimed that they had had difficulties in finding the LMI they needed during the past year. Both career counselors and HR consultants experienced difficulty in finding LMI on local wages and benefits and on skill shortages.

In principle, labour market intermediaries are important for improving the efficiency of labour market outcomes because they facilitate and inform the matching of workers and employers by providing and interpreting LMI for both parties to labour

market transactions (Autor, 2009). If the LMI needs of career counselors and HR professionals are not being met, it suggests that they cannot effectively perform their functions as labour market intermediaries and ‘grease the gears’ of the labour market. Based on these survey results, we cannot know whether or not better LMI for intermediaries would lead to improved labour market outcomes (i.e. lower unemployment, job vacancies being filled more quickly, etc.).

As we have stressed, the results of these needs-assessment surveys do not provide direct evidence about the impact of LMI on either labour market outcomes or individual-level learning outcomes. However, such surveys are important because they provide information about the degree to which available LMI does or does not meet the needs of various users. LMI can only affect the labour market if participants in the labour market have access to the LMI they require. It is noteworthy that employers, jobseekers and intermediaries all identify locally-based LMI and information on wages and benefits as key LMI needs that are not currently being met. This is consistent with the findings of Drummond *et al.* (2009), which also identified these data gaps.

C. LMI in the Construction Industry

The Construction Sector Council (CSC) has created an LMI system, *Construction Looking Forward*, to provide stakeholders in the Canadian construction industry with forecasts of labour market trends upon which to base their business plans. To our knowledge, no other sector in the Canadian economy has so well-developed a system of LMI tailored to the needs of industry stakeholders. The CSC has commissioned two studies in the past five years (Conference Board, 2005; 2007) to provide information about the use and impact of this LMI.

The Conference Board (2005) notes that the CSC has largely succeeded in avoiding several common pitfalls in the design and operation of LMI systems, including:

- limited capacity to bring together LMI from a variety of sources;
- limited capacity to process and deliver credible LMI in a timely fashion;
- a lack of coordination among LMI producers;
- an inability of users to specify LMI needs; and
- a lack of assessment of the usefulness of the available LMI to users.

The report provides examples, based on stakeholder interviews, of cases in which LMI has contributed to good business decision-making in the sector. For example, oil companies in Alberta have used labour supply data from the CSC LMI system to recruit workers from rural areas who are likely to be better suited to working at rural or remote job sites. The claim is that this approach increased worker retention rates and labour productivity.

Another example occurred in 2003, when several large Alberta construction projects finished at the same time and demand for skilled tradesmen declined. LMI projections showed that this downturn was only temporary, since many new projects were in development. As a result, many workers decided to stay in Alberta in anticipation of the upcoming projects. In this case, LMI helped ameliorate a potential labour shortage.

Most of the evidence on the impact of the CSC LMI system is of an informal or anecdotal nature. Companies do not formally measure the financial return to using LMI in decision-making; indeed, this would be nearly impossible to do. Nevertheless, they all consider LMI to be a crucial part of their decision-making process (Conference Board, 2005).

The Conference Board (2007) conducted a survey of 350 construction industry stakeholders to assess the use and impact of CSC LMI in the industry. Among the respondents, 53 per cent were aware of the CSC LMI system. The rate of awareness was 84 per cent among respondents from construction industry associations and 40 per cent among government respondents (who accounted for 39 per cent of the sample, the largest of any category of respondents). Among those who were aware of the CSC LMI, 72 per cent said that they used the *Construction Looking Forward* forecasts. Only eight per cent of respondents reported that the forecasts were the only source of LMI they consulted.

When asked to rate the usefulness of the CSC's LMI from 1 to 5 (with 5 being best), 66 per cent of respondents gave it a rating of 4 or 5 (and 96 per cent rated it 3 or better). The most common reasons given for using the LMI were for policy and project decision-making (61 per cent) and for training and apprenticeship (59 per cent). Among the types of LMI included in the *Construction Looking Forward* national reports, the demand and supply of labour was rated as 'very important' by the largest proportion of respondents (60 per cent), followed by detailed trades information (53 per cent) and information on apprenticeships (50 per cent). The same three types of information were rated as most useful in the provincial reports.

The most common reasons for using CSC LMI were to identify and evaluate human resources challenges (78 per cent) and for 'general information' (69 per cent). Fifty-six per cent of respondents reported deriving 'significant benefits' from CSC LMI in making decisions about training, while 43 per cent said that the information significantly benefitted them in policy-making decisions.

While the Conference Board (2007) does not quantify the magnitude of the impact that the CSC's LMI system has had in the construction industry and in the economy as a whole, it does provide examples of cases in which the information had a significant impact on major projects. For example, the report cites the Dean of a School of Transportation and Building Trades at an Ontario college who said that the CSC's labour market forecasts helped secure \$66 million in funding for a new building devoted to the construction trades.

These studies are useful because they supply information about the uses of LMI by participants in a major Canadian industry. They provide some evidence that LMI can influence significant decisions in the construction sector. Since the studies do not have control groups, we cannot gauge the industry's outcomes relative to what they would be without the CSC's LMI. It is important to know that users consider the information to be useful, but the case for LMI provision as a matter of public policy requires more careful and robust analysis. Unfortunately, as the next section will illustrate, not much analysis of this sort has yet been done.

IV. Impacts of LMI

Our survey of the Canadian literature did not uncover any empirical studies that evaluate the impact of LMI *per se* on labour market outcomes. Vincent and Voyer (2007) note that such research has yet to be done and would be very difficult to carry out. There is also a dearth of rigorous Canadian evaluations of LMI-related policies such as job-search assistance and career counseling. Canada has a strong tradition of program evaluation, relative to most other countries,¹⁵ but that strength has not extended to LMI or LMI-related programs (Smith and Sweetman, 2001; Lalande and Magnusson, 2007).

In 2000, Wong and Hanson (2000) noted that “there have been virtually no attempts to look at impacts of government provided LMI on the job search process at the Canadian federal level since the late 1980s.” Magnusson and Roest (2004) and Bell and Bezanson (2006) later made a similar point with respect to career-development policies more broadly; research to link LMI and LMI-related policies to labour market outcomes became less common throughout the 1990s and 2000s. Brisbois *et al.* (2008) note that there is no evidence on the use or impact of the Canadian Occupational Projection System (COPS), a particularly important source of LMI projections.

In this section, we review the few studies that do evaluate Canadian LMI and LMI-related programs. The studies that address labour market outcomes do not use the best possible research design (namely, randomized policy experimentation), but they do provide some information. There are, however, a few somewhat better studies of the impact of LMI on individual learning outcomes.

A. Impact on Labour Market Outcomes

i. LMI Products and Services

The key piece of recent research on the impact of LMI in Canada is the summative evaluation of HRSDC LMI products and services, conducted in 2005. HRSDC provides a range of LMI products, including Job Bank, employment centre job postings, the Electronic Labour Exchange (an online worker-employer matching system), and information products (books, pamphlets, etc.); and LMI-related services, including job-search assistance and career counseling. Using survey data and administrative data from the EI system, HRSDC (2005) examined three questions:

1. Does HRSDC LMI reduce the duration of unemployment in the short run?
2. Does HRSDC LMI reduce job search duration, and how does it impact the intensity of job search and the number of methods used by jobseekers?

¹⁵ The best-known example of a Canadian policy experiment is the Self-Sufficiency Project (Michalopoulos *et al.*, 2000).

Summary Table 1: Impact of LMI on Labour Market Outcomes in Canada

Study	Methods	Results
<u>Impact of LMI Products and Services</u>		
HRSDC (2005)	Regression analysis using survey and administrative data	- Inconclusive results on impact of LMI on unemployment duration - Some evidence that assistance increases beneficial effects of LMI
View Stats Research (2004)	Survey of Job Bank users	- Job Bank users consider Job Bank very useful - Results likely subject to significant sample selection bias
Abt Associates of Canada (1987)	Survey of National Employment Service users (firms and jobseekers)	- No evidence that job centres improve job matches - No evidence that job centres reduce time needed for firms to fill vacancy - No evidence that job centres reduce unemployment duration
<u>Impact of Job-Search Assistance and Career Counseling</u>		
HRSDC (2005)	Duration analysis using survey and administrative data	- Counseling reduces duration of unemployment by 75 per cent during week in which intervention occurs; effect diminishes over time
Fay (1996)	Literature survey	- Canada/New Brunswick Youth Strategy raised educational attainment but not employment or earnings - Canadian Industrial Adjustment Services program increased unemployment durations while delivering no measurable benefits to participants
Wong and Henson (2000)	Duration analysis using survey and administrative data	- Job referrals increase probability of reemployment for jobseekers unemployed 1-26 weeks - Some evidence that counseling reduces reemployment probability during week in which it takes place, but raises it in subsequent weeks
Cahill (1990)	Duration analysis using survey of job centre clients	- First counseling interview significantly raises reemployment probability; subsequent interviews have smaller effects

3. What is the use and impact of assistance in the use of LMI products and services from HRSDC professionals?

The study found inconclusive results regarding the impact of LMI on unemployment duration in the short run. After self-selection into LMI use is controlled for using instrumental variables techniques,¹⁶ LMI use appears to be associated with shorter unemployment durations over the six-month survey period. However, the magnitude of the effect is “not within the expected range suggested in the literature” and it varies significantly across different econometric specifications (HRSDC, 2005). The study therefore does not provide estimates of the impact of LMI on unemployment duration or on EI benefit receipts. Nevertheless, the results suggest that LMI products and services reduce unemployment durations. The analysis does not distinguish between different types of LMI (e.g. Job Bank versus job-search assistance).

To address the second of the three research questions, the study uses the number of visits to career centres as a proxy for job-search intensity and compares the job-search activities of LMI users and non-users. The results show that users of LMI made three times as many visits to career centres as non-users. Ninety-two per cent of users visited a career centre at least once, and almost 30 per cent reported having made at least six visits. By comparison, only about 75 per cent of non-users visited a career centre, and 8 per cent of non-users made at least six visits.¹⁷

In addition, users of HRSDC LMI were significantly more likely than non-users to use almost all other job search methods, including looking at newspaper ads, calling potential employers, searching web sites and submitting resumes online, and registering with job placement agencies. These results probably reflect the likelihood that LMI is used by highly motivated people who are likely to use other job search strategies as well. Once again, self-selection on the basis of unobserved characteristics is a key challenge in evaluating the impacts of LMI.

Finally, the study provides limited evidence that assistance can increase the beneficial effects of LMI. Forty-eight per cent of LMI users received assistance in accessing or using LMI products. Thirty-two per cent of assisted users applied for their current or most recent job after using LMI, compared to 26 per cent of unassisted users. A higher proportion of assisted users applied for jobs they found on Job Bank (62 per cent, versus 52 per cent of unassisted users), but there was no significant difference between assisted and unassisted users in terms of actually obtaining jobs from Job Bank. Assistance seems to lead to more active use of LMI products and services, but not necessarily to improved outcomes in the labour market.

¹⁶ The study uses the distance of respondents' homes from the nearest employment centre as an instrument for LMI use. This approach is valid as long as distance from an employment centre is not correlated with the unobserved individual characteristics that determine self-selection into LMI use.

¹⁷ It is to be expected that LMI users would visit career centres more often than non-users, since career centres are a major source of LMI for users. In addition, it is not clear what the LMI non-users did during their visits to career centres if not obtain LMI. For the purpose of drawing comparisons between LMI users and non-users, the number of visits to career centres may not be a good proxy for job search intensity.

View Stats Research (2004) presents survey evidence on about 500 users of the federal government's Job Bank web site. Relative to other job sites, Job Bank receives excellent reviews. Survey respondents gave Job Bank a rating of 88 per cent; among other job sites, the next highest rating is 36 per cent for Workopolis. Strong majorities of respondents preferred Job Bank to other job sites in one-on-one comparisons. Ninety per cent of users were 'very highly satisfied' or 'highly satisfied' with Job Bank.

These results are almost certainly driven by sample selection bias. The sample of respondents is drawn from the population of Job Bank users, and we would expect that Job Bank users self-select onto Job Bank (as opposed to other sites) on the basis of their preference for it relative to other sites. It is unlikely that a survey of users of Workopolis or Monster.com would reveal similarly strong preferences for Job Bank.

Nevertheless, the results provide information about the reasons that many people prefer Job Bank to other job sites. Users cite the ease of using Job Bank and the trustworthiness of the information as key reasons for their preference. Thirty per cent of respondents assert that Job Bank has no problems. Job Bank generally delivers good job matches, in the sense that the jobs users find coincide with the kinds of jobs they were seeking.

An older study by Abt Associates of Canada (1987) examines the use of National Employment Services (NES) by firms and jobseekers. A key point made by the study is that the utility of job centres to jobseekers depends to a large degree on the decision by firms to post job vacancies. Only 21 per cent of firms listed job vacancies with a job centre between July and December of 1986. Firms were more likely to post full-time and low-wage, low-skill vacancies, as opposed to part-time and high-wage vacancies.

Among firms that hired a worker during the six-month study period, 11 per cent found the worker through a job centre. While this is not a large number, job centres were the second most commonly used method of searching for workers (behind personal contacts and word of mouth, which were by far the most common).

The NES did not lead to better or more efficient job matching from firms' perspective, relative to other methods. When asked to rate the productivity of their most recent hire (where an 'experienced worker' is given a rating of 100), firms that found the worker through a job centre reported an average score of 66 per cent, compared to 69 per cent for firms that found the worker via other search methods. The study found no evidence that job centres had a statistically significant impact on the time needed to fill a vacancy.

From the perspective of jobseekers, Abt Associates of Canada (1987) provide no evidence that job centres reduced the duration of job search during the six-month period. Regression estimates find no statistically significant relationship between the duration of

job search and the use of job centres.¹⁸ When the job centre services are broken into separate categories, the results show that job referrals significantly reduce job-search durations while the receipt of LMI (i.e. self-service job boards and other information) has no significant impact. Finally, workers who find jobs through a job centre are less satisfied with the jobs than workers who find them through other search methods.

ii. Job-Search Assistance and Career Counseling

The impact of job-search assistance and career counseling programs on labour market outcomes, and specifically the role of LMI in this process, has not received extensive empirical analysis in Canada. The results from HRSDC (2005), reported above, may pertain to job-search assistance because such services are included in the ‘LMI products and services’ that the study examines. However, the study does not disentangle the impact of job-search assistance from the effects of the other LMI products.

HRSDC (2005) does include a separate set of results for career counseling, however. Individual career counseling is analyzed separately using unemployment duration hazard models. The results show that individual counseling (which HRSDC [2005] considers to be an LMI service) significantly reduces the duration of unemployment. The effect is largest during the week in which the counseling intervention takes place; in the first week, counseling is associated with a 75 per cent reduction in the probability of remaining unemployed. The effect diminishes after the first week, but remains large and statistically significant after ten 10 weeks. This estimated impact is strikingly large in magnitude. Intuitively, it seems implausible that a single counseling intervention would reduce the probability of remaining unemployed by 75 per cent. It is possible that these large estimates reflect the failure to control for self-selection into career counseling.

In a comprehensive overview of active labour market policy evaluations in OECD countries, Fay (1996) identifies only two studies that evaluate the impact of Canadian programs involving job-search assistance. The Canada/New Brunswick Youth Strategy provided services to help the disadvantaged students during the transition from school to work between 1989 and 1992. An evaluation of the program suggests that while it did increase the educational attainment of participants, it did not lead to greater earnings or a higher probability of employment (Norpark Research Consultants, 1994).

The second study identified by Fay also found negative results. The Canadian Industrial Adjustment Services program offered job-search assistance and career development counseling to individuals in communities undergoing industrial restructuring. This program actually made participants worse off; individuals who received more services through the program had longer unemployment durations, since they delayed their job-search efforts while receiving the services, and the program

¹⁸ The point estimate on the dummy variable for job centre use is positive, indicating that job centres – if they had any impact at all – were associated with greater job search durations among jobseekers in the last half of 1986. This may reflect jobseeker self-selection into the use of job centres on the basis of unobserved factors associated with low employability. The regressions reported by Abt Associates of Canada (1987) use statistical techniques that attempt to control for this problem, but such measures are not foolproof.

delivered no offsetting benefits (Ekos, 1993). The negative results from the Canadian evaluations are inconsistent with most findings from other countries, but Fay notes that the effectiveness of any particular program is dependent upon the program details and the population being served.

Wong and Henson (2000) use data from the Canadian Out of Employment Panel (COEP) survey and HRDC administrative data to study the impact of public employment services on the probability of reemployment among program participants who have lost their jobs. Two programs in particular are examined: job referrals, a form of job-search assistance that directs jobseekers to particular job openings, and employment counseling. The analysis is broken down by the duration of the unemployment spell prior to the policy intervention. The authors note that some people find new jobs without experiencing a spell of unemployment, so the first set of results address the impact of the public employment services on the probability of becoming reemployed without unemployment. Subsequent results examine the impact of the programs after 1 to 26 weeks of unemployment.

The study finds that job referrals have no impact on the probability of becoming reemployed without a spell of unemployment. This is true whether the intervention takes place during the same week as the job loss or during the five preceding weeks. Employment counseling has a significant negative impact during the week in which the job loss occurs, and no impact if it occurs earlier. The negative effect of counseling in the same week as job loss makes sense if participants tend to delay their job search efforts while undergoing counseling. The fact that the programs have no impacts even when they are implemented in the weeks preceding job loss suggest that they do not play a significant role in determining whether or not a person finds reemployment without an unemployment spell.

For jobseekers with 1 to 26 weeks of unemployment, duration analysis shows that the job referrals program has a significant positive impact on the reemployment probability over the five weeks after the program intervention occurs, but no impact during the same week in which the intervention occurs.¹⁹ There is also some evidence that the career counseling program reduces the reemployment probability during the week of the intervention and raises it in the subsequent five weeks, but these results are not as robust as those for the job referrals program.

Cahill (1990) finds similar results using data from a survey of job centre clients in August 1986 and January 1987 (with follow-up surveys at two, six, 12 and 24 months after the initial survey). The estimated impact of career counseling on unemployment duration is inconsistent across regression models. Duration analysis shows that the probability of reemployment significantly increases immediately after the first counseling interview, while subsequent interviews have smaller effects. A standard linear regression

¹⁹ An important technical note: Wong and Henson (2000) use a sample that includes only persons who actually participated in one of these programs during their first 26 weeks of unemployment. This avoids the self-selection problem that plagues most evaluations of this sort, but it also means that the analysis relies only on variation over time in persons' program participation. There is no variation between participants and non-participants to exploit.

finds that counseling increases unemployment durations (even after accounting for sample selection bias using a Heckman correction procedure), but Cahill argues that the duration analysis is likely to be more reliable. In addition, he finds that counseling has a positive impact on jobseekers' future employment stability and job satisfaction.

Overall, the studies provide some evidence that LMI-related programs can have a positive impact on labour market outcomes. The benefits are most likely to follow in the weeks subsequent to program participation, while the impacts in the week of the intervention are insignificant or even negative. This may reflect delayed job-search effort by program participants, or simply delays in the process of connecting with employers, becoming hired, and then officially beginning work.

It is noteworthy that the results from Wong and Henson (2000) conflict with those of HRSDC (2005), which find that the impact of career counseling on the reemployment probability is greatest during the week of the intervention and declines over time thereafter. Results in non-experimental policy evaluations can be highly sensitive to the econometric methods being used. In order to understand the impacts of job-search assistance and career counseling programs in Canada, it is imperative that randomized experimental research methods be brought to bear on the problem in the future.

B. Impacts of LMI on Individual Learning Outcomes

i. Individual knowledge of the labour market

Currie *et al.* (2008) conducted an experiment to examine two questions:

1. How does the extent and distribution of labour market knowledge among young Canadians vary with respect to literacy levels?
2. What is the impact of a short LMI intervention on labour market knowledge?

Six hundred and seven volunteers between the ages of 18 and 30 were randomly assigned (approximately half-and-half) to treatment and control groups. Members of the control group wrote a literacy test and a labour market knowledge survey. Members of the treatment group viewed a 15-minute computer-based slide show on labour market information prior to writing the same literacy test and labour market knowledge survey. The slide show provided national, provincial, and local LMI in the form of 'quick facts,' current trends, and four demonstrations of particular uses of LMI.

The results reveal a statistically significant positive relationship between literacy and labour market knowledge. Participants who scored at level 3+ on all three components of the literacy test scored 7.1 per cent higher on average on the labour

Summary Table 2: Impact of LMI on Individual Learning Outcomes in Canada

Study	Methods	Results
	<u>Impact of LMI on Labour Market Knowledge</u>	
Currie <i>et al.</i> (2008)	Randomized experiment	<ul style="list-style-type: none"> - Participants with higher literacy test scores are more knowledgeable about the labour market - A 15-minute LMI slide show causes a small but statistically significant increase in labour market knowledge test scores
	<u>Impact of LMI on Choices and Decision-Making</u>	
Johnson <i>et al.</i> (2003)	Randomized experiment	<ul style="list-style-type: none"> - Among people with initially low levels of labour market knowledge, a 90-minute LMI session increases the probability that young participants (i.e. under age 25) will choose an education/training subsidy over a cash payment
Maola and Kane (1976)	Randomized experiment	<ul style="list-style-type: none"> - Weekly use of the CVIS computer-based LMI system raises students' Assessment of Career Development - Effect of CVIS exceeds effect of in-person counseling
Pinder and Fitzgerald (1984)	Randomized experiment	<ul style="list-style-type: none"> - CHOICES computer-based LMI system increases students' commitment in terms of career decision-making
Eveland <i>et al.</i> (1998)	Randomized experiment	<ul style="list-style-type: none"> - DISCOVER computerized LMI system increases students' career decidedness - Effect is larger if use of DISCOVER is aided by a counselor
Thompson and LaRochelle (1985)	Survey of students and counselors who used the CIDS computer-based LMI program	<ul style="list-style-type: none"> - 96 per cent of respondents consider CIDS useful in forming career plans - Only 60 per cent intend to use CIDS again
Oliver and Spokane (1988)	Meta-analysis of studies of LMI provision with and without aid from counselor	<ul style="list-style-type: none"> - Interventions with a counselor have a positive impact on "the career decision-making process" - Interventions without a counselor have virtually no impact

Summary Table 2 (Continued)

Study	Methods	Results
Whiston <i>et al.</i> (1998)	Meta-analysis of studies of LMI provision with and without aid from counselor	<ul style="list-style-type: none"> - Interventions with a counselor have a positive impact on “the career decision-making process” - Interventions without a counselor have virtually no impact
Bell and Bezanson (2006)	Literature review	<ul style="list-style-type: none"> - Evidence on effects of career counseling is weak - Existing evidence suggests that counseling can help people incorporate LMI into decision-making, promote educational attainment, and increase career certainty
Sokal <i>et al.</i> (2005)	Interviews and questionnaires administered to 33 <i>CareerTrek</i> program participants and ten non-participants	- <i>CareerTrek</i> participant students experienced increased academic motivation but reduced school satisfaction
SRDC (2009)	Randomized experiment	- <i>Future to Discover</i> program has increased proportion of high school students who plan for the future and who expect to acquire post-secondary education
Frize <i>et al.</i> (1998)	Survey of female Grade 10 students who participated in a Nortel event on career opportunities in science	<ul style="list-style-type: none"> - Respondents reported that the event increased their knowledge of career opportunities in science - A high proportion of the girls went on to take advanced science courses in Grade 11

market knowledge test than those who did not.²⁰ Literacy is a significant predictor of labour market knowledge even after controlling for age, education, and immigrant status.

It is unsurprising that literacy is positively associated with labour market knowledge; if anything, the effect is surprisingly small. It is plausible that literacy contributes to greater knowledge of the labour market, since literacy is necessary in order to read written LMI on web sites, in books, etc. It is equally plausible that both literacy and labour market knowledge are positively associated with some unobserved individual characteristics (e.g. innate intelligence or capacity for dealing with information) that itself

²⁰ Literacy was tested using the Canadian Literacy Evaluation, which tests literacy along three dimensions: prose, document, and quantitative (i.e. numeracy). Scores were expressed as levels 1, 2, or 3+ for each dimension, where 3+ implies an adequate level of literacy.

drives the relationship. We cannot conclude, therefore, that literacy promotion would necessarily lead to greater labour market knowledge (though again, it is plausible that it could).

Of greater relevance to us is the second research question addressed by Currie *et al.* (2008), namely the impact of an LMI slide show on labour market knowledge. The 15-minute LMI slide show had a positive and statistically significant impact on participants' labour market knowledge scores in three of the four dimension of knowledge being considered.²¹ The largest impact was along the competencies dimension, in which the LMI slide show increased the average score by 1.4 points from 19.5 to 20.9. The effects are small, but this is not a surprise given that the intervention was merely a 15-minute slide show presentation.

The authors show that the LMI intervention was more likely to benefit participants with high literacy than those with low literacy. The slide show delivered statistically significant benefits along the knowledge, competencies, and perceptions dimensions of labour market knowledge for high literacy participants, but only along the competencies dimension for low literacy participants. This provides further evidence for the importance of literacy in understanding LMI, although it must still be interpreted with caution because of the unobserved variable issue discussed above.²²

The results from Currie *et al.* (2008) establish that LMI can deliver statistically significant improvements in persons' understanding of the labour market. The study is an important contribution to the literature on the impact of LMI for several reasons. First, it uses a randomized experiment to control for sample selection issues. Second, it comes very close to addressing the impact of information *per se* on measurable outcomes, rather than the impact of some mix of LMI and LMI-related services (as in the case of evaluations of job-search assistance and career counseling programs). The LMI slide show is a pure information-based intervention. This is a promising approach that should be put to greater use in future research on the impact of LMI, although the range of impacts that can be analyzed in this way may be limited. Third, the study investigates how the impact of LMI depends on an important individual characteristic; namely, literacy. It would be useful to conduct a follow-up experiment with a longitudinal structure, which would allow for the elimination of the unobserved individual characteristics.

²¹ The labour market knowledge test measured participants' knowledge along four dimensions: knowledge of facts; competencies in finding and interpreting LMI; perceptions regarding education and the labour market; and attitudes regarding labour market knowledge.

²² The high- and low-literacy groups may differ not only in terms of literacy scores but also in terms of unobserved characteristics such as innate intelligence or capacity for dealing with information. It is possible that these factors help explain the differential impact of the LMI slide show across the two literacy groups. The randomization process should ensure that the treatment and control groups are identical in terms of unobservables, but it does not ensure that the high- and low-literacy groups are likewise identical.

ii. Individual choices and decision-making

Johnson *et al.* (2003) use an experiment to show that LMI can influence the decision to invest in learning activities. As part of a broader experiment, participants completed a survey that revealed the level of their labour market knowledge, especially with respect to the links between education and labour market outcomes. The survey also allowed people to choose between educational subsidies and cash payments. Participants who scored poorly on labour market knowledge and who did not receive educational subsidies were assembled into a subsample and used in an LMI impact-assessment experiment. These participants were randomly divided into treatment and control groups. Five months after the initial survey, members of the control group were offered a 90-minute LMI session in which they were provided with information on locally-available training and employment opportunities and on the labour market outcomes associated with various fields of education.

One month later, both the treatment and control groups were invited to rewrite the section of the original survey on labour market knowledge and to choose between educational subsidies and cash payments. The results reveal that the LMI treatment increased the probability that participants would choose to take more education, but only among participants below the age of 25. Young people between 18 and 24 who received the LMI treatment had a probability of 57.1 per cent of choosing further education over the cash payment; among the control group, the probability was 42.9 per cent – 14.2 percentage points lower.

These results support the idea that LMI can influence educational decision-making, at least among the young. As in the case of Currie *et al.* (2008), the study effectively isolates the impact of information *per se* rather than LMI-related programs that include factors other than information. This is a major strength of the experimental approach. A weakness of the study is that the sample size for the probit regressions is only 156; replication with a larger sample could increase the robustness of the result. In addition, the sample included only people with low initial levels of labour market knowledge. This is an important target group for LMI, but it would be good to know whether or not the results can be generalized to broader populations of young people.

Savard *et al.* (2005) review the literature on the impacts of various LMI delivery mechanisms on career decision-making. In particular, the study focuses on computer-assisted LMI programs and the impact of LMI with and without counseling.

There are several computer-based career decision-making programs, including CHOICES (Computerized Heuristic Occupational Information and Career Exploration System), DISCOVER, CIDS (Computer Information Delivery System), and CVIS (Computerized Vocational Information System). These programs provide information about occupations and the labour market, but they perform additional functions (such as matching users' psychological profiles to particular jobs) that do not qualify as LMI. Thus, they are 'LMI-related programs' similar to career counseling.

The authors identify several evaluations of these programs, mostly dating from the 1980s. The outcome variables in these studies are typically measures of career decidedness, measured using tests such as the Career Decision Scale and the Assessment of Career Decision Making. Findings include:

- Students who made weekly use of the CVIS program scored highly on the Assessment of Career Development, relative to students who received in-person career counseling and a control group that received nothing (Maola and Kane, 1976).
- The CHOICES program significantly increases users' commitment in terms of career decision-making, as measured by both the Career Decision Scale and the Assessment of Career Decision Making (Pinder and Fitzgerald, 1984).
- The DISCOVER program significantly increases career decidedness. The impact is especially strong when the use of the program is supervised and aided by a human counselor, but even the DISCOVER program alone has a positive impact (Eveland *et al.*, 1998).
- In a survey of users of the CIDS program (both counselors and students), 96 per cent of respondents reported that the program was useful in forming educational and career plans. Only 60 per cent reported that they planned to use the program again in the future (Thompson and LaRoche, 1985).

In terms of assessing the impact of LMI, these studies have several major limitations. As Savard *et al.* note, the study by Maola and Kane (1976) is the only one that has a specific focus on information. The CVIS program mainly involves information provision, while the other computer-based programs involve additional services that do not qualify as LMI as such.

In addition, several studies focus on 'decidedness' or 'commitment to career decisions' as outcomes variables. Ideally, the focus would be on the *quality* of the decisions that are made. Of course, this is difficult to measure using a test because the quality of a decision has many dimensions. The studies would ideally focus on the actual labour market outcomes of participants, since those are the relevant outcomes from the perspective of policymakers considering public investments in LMI. However, this would be difficult considering that the studies use convenience samples of university students.

Savard *et al.* move on to discuss the provision of LMI with and without assistance from a counselor. The authors review meta-analyses of evaluations of career development interventions with and without a counselor. It is assumed that 'interventions without a counselor' involve LMI. The outcomes variables in most of the evaluations are associated with career decision-making, but since Savard *et al.* (2005) note that few of the studies are actually concerned with the same outcomes, it is difficult to be precise about what outcome is being analyzed.

In any case, the meta-analyses suggest that interventions with a counselor have a positive impact on “the career decision-making process” while interventions without a counselor have virtually no impact (Oliver and Spokane, 1988; Whiston *et al.*, 1998).

Bell and Bezanson (2006) provide a review of the Canadian and international evidence on career counseling. They note that the evidence base on the impact of career counseling on learning outcomes is weak, and they cite the lack of evidence on out-of-school youth and sex- and race-based differences as particularly glaring research gaps. Their summary of the existing evidence suggests that career development services:

- Assist people in incorporating LMI into decision-making.
- Promote continued education after high school and increase students’ engagement with learning. Young people who attend schools with career development programs report that their schooling was more relevant to their futures.
- Reduce drop-outs from secondary and post-secondary schools by helping students appreciate the connection between school and future career opportunities.
- Increase career certainty and the congruence between careers and personal interests.
- Reduce attitudinal barriers that limit career choices, particularly for girls.

The authors point to a number of Canadian career development programs that have delivered some positive outcomes for school-aged children. The *CareerTrek* program in Manitoba provides services to at-risk students and provides information about the connection between education and future career opportunities. According to teachers, participants in the program (40 per cent of whom are Aboriginal) have experienced improved confidence and are more focused on education. Survey evidence suggests that the program increases academic motivation but reduces school satisfaction (Sokal *et al.*, 2005). Participants attend post-secondary education at rates above the provincial average.

Another example is the *Future to Discover* program being evaluated at high schools in Manitoba and New Brunswick between 2004 and 2011. The program offers enhanced career planning services and information about the costs and benefits of post-secondary education. The preliminary results currently available suggest that the program increases the proportion of students who plan for their futures and who express a desire to pursue post-secondary education (SRDC, 2009).

Finally, Frize *et al.* (1998) report on a special event at Nortel for female students in Grade 10. The event included science-based games and presentations in addition to a presentation on career opportunities in science. A survey of the participants revealed that the majority intended to take advanced-level science courses in Grade 11, and indeed, 89

per cent of them did. (There was no control group to compare this outcome against, but 89 per cent is a large proportion and it seems improbable that it occurred by chance.) Eighty-eight per cent of participants reported that the event increased their knowledge of career opportunities in the sciences. There was no follow-up to see whether or not an unusually high proportion of the girls pursued careers in science.

All of these programs involve many elements other than the provision of strictly-defined labour market information, but they do involve LMI as a component. The long-run impacts of LMI provision to students in high school (or even earlier) is an under-researched area.

IV. Summary and Conclusion

This literature survey was conducted in order to provide a summary of the current state of knowledge on the role and impact of LMI in Canada, to assess the contribution of recent research to that knowledge, and to outline areas in which further research is required. On the basis of the existing literature, our conclusion is that the state of knowledge is rather poor.

Conclusion 1: *There is no evidence on the impact of LMI per se on labour market outcomes.*

The case for public investment in the production and improvement of LMI rests upon the proposition that such investments will lead to improved labour market outcomes at the macroeconomic and individual levels. The empirical literature does not offer support for this proposition. We were able to find no studies that examined the link between LMI itself and labour market outcomes.

However, we can draw a number of more positive conclusions.

Conclusion 2: *There is an abundance of survey-based evidence on the characteristics of LMI users. This evidence reveals that individuals and employers do use LMI in decision-making and consider it useful.*

Conclusion 3: *LMI per se has a positive impact on users' labour market knowledge and on decisions pertaining to investment in education and training.*

Conclusion 4: *LMI-related programs such as career counseling and career development services appear to have positive impacts on a variety of learning and attitudinal outcomes, but a stronger evidence base is needed.*

In Canada, we possess much information about the ways in which LMI users use information and the LMI needs that are currently unmet. Surveys by Ekos (2007, 2008) reveal that employers in Canada make substantial use of LMI and that they consider LMI useful in decision-making. LMI is particularly useful to employers during times of labour market tightness, when unemployment is low and finding workers is difficult. Individuals use LMI in job-search, and there is evidence that greater awareness of LMI would increase LMI use (Ipsos-Reid, 2001; HRSDC, 2005). Both employers and individual users cite locally-based LMI and information on wages and benefits as particularly important LMI needs that are not being met by the current LMI system in Canada.

Studies by Currie *et al.* (2008) and Johnson *et al.* (2003) demonstrate that controlled experiments can isolate the impact of information *per se* on outcomes and show that LMI does affect individual decision-making. It would be of great benefit if experimental methods could be used to study the impact of LMI on labour market outcomes themselves.

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