

June 2010



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

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CSLS Research Report 2010-05
June 2010

Prepared for the Human Resources and Skills Development Canada project "The Production, Use and Impacts of Labour Market Information: The State of Knowledge."

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

Abstract

This report provides a critical examination of the international literature on the role and impact of labour market information (LMI). The purpose of this exercise, as outlined in the Request for Proposals, is to assess the current state of knowledge on the role and impact of LMI and to identify gaps in our knowledge.

The report finds that we know very little about the impact of LMI *per se* on labour market outcomes. What knowledge we do possess must be inferred from evaluations of labour market programs or technologies that are related to LMI, such as job-search assistance programs, career counseling, and internet-based LMI. The literature on each of these topics reveals some beneficial impacts on labour market outcomes, but the precise role of LMI in driving these relationships is never specified.

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

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

Executive Summary

This report provides a critical examination of the international literature on the role and impact of labour market information (LMI). The purpose of this exercise, as outlined in the Request for Proposals, is to answer the following questions:

1. What is the current state of knowledge on the role and impact of LMI, at both the macroeconomic and individual levels, as revealed by the international (that is, non-Canadian) literature?
2. What are the major gaps in our knowledge with respect to the impact of LMI? Where is further evidence needed?

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

A key finding of this literature review is that we know very little about the impact of LMI on labour market outcomes. In part, this reflects the fact that there has been little desire in many countries to conduct rigorous evaluations of LMI or even of LMI-related programs such as career guidance and job-search assistance. It also reflects the difficulty of attributing observable effects to the information itself.

What knowledge we do possess must be inferred from evaluations of labour market programs or technologies that are related to LMI. In particular, we focus on three research subjects: job-search assistance programs, career counseling, and the internet.

Key findings of the report in each of these areas are:

i. Job-search Assistance

- The balance of the evidence suggests that job-search assistance programs have a positive impact on participants' labour market outcomes (e.g. reemployment probability, earnings) in the short run, but that these effects do not persist beyond one or two years.
- Job-search assistance programs are cost-effective because they are relatively inexpensive and have positive effects.

ii. Career Counseling

- The balance of the evidence suggests that career counseling services have a positive impact on labour market outcomes, but it is unclear how much of this is impact can be attributed to the LMI-related element of career counseling.

iii. Internet-based LMI

- There is a 'digital divide' such that people with low employability are less likely to use the internet for job search.
- The intensive use of large online job sites by firms suggests that firms find the internet useful as a tool for finding workers. The ease of reaching a large number of potential workers through one channel is probably part of the explanation, and the fact that job sites often contain contact information for already-employed (and therefore highly desirable) workers is another benefit for firms.
- It is very likely that the internet is beneficial to jobseekers, but it has not been demonstrated empirically. The absence of statistical evidence for this is mainly due to self-selection bias in the population samples used. Controlled experiments could solve this problem.

C. Conclusions

The main conclusions of the report are summarized as follows:

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

Conclusion 2: *Job-search assistance programs have positive but modest short-run effects on jobseekers' employment prospects, even among young and unskilled unemployed persons. These policies are cost-effective because they are cheap relative to other active labour market policies.*

Conclusion 3: *Internet-based information is effective for firms looking for workers. As a job-search strategy for individuals the internet is evidently useful (since it is becoming the dominant platform for job search), but its effectiveness has yet to be quantified.*

Conclusion 4: *Intensive career counseling services have positive short-term impacts on job-finding, participation in training programs, and 'learning outcomes' such as attitudes, decision-making skills, and self-awareness. The role of information as opposed to other aspects of counseling is not clear.*

The report highlights the following key gaps in our knowledge:

- What are the direct effects of information *per se*?
- What is the role of LMI within job-search assistance and career counseling? How does LMI contribute to the effectiveness of these programs?
- What are the macro-level effects of LMI policies? Can they be measured?
- What is the impact of internet-based LMI on jobseekers' employment outcomes *accounting for sample selection problems*?

These gaps can be filled as follows:

- Research should focus on LMI itself. The existing evidence on LMI is mainly from the program evaluation literature and it does not isolate the informational component of the programs under examination. Future LMI research should:
 - explicitly address the direct impact of LMI on labour market outcomes
 - explicitly address the role and impact of LMI within job-search assistance and career counseling.
- Research on the labour market effects of the internet should:
 - distinguish between the use of web sites, online databases, and e-mail
 - use a randomized experimental design to prevent self-selection bias from distorting the results.
- Questions of macroeconomic impacts may be amenable to analysis using natural experiments exploiting differences in LMI availability or LMI-related policy across otherwise similar jurisdictions.

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

I. Introduction

This report provides a critical examination of the international literature on the role and impact of labour market information (LMI). The purpose of this exercise, as outlined in the Request for Proposals, is to answer the following questions:

1. What is the current state of knowledge on the role and impact of LMI, at both the macroeconomic and individual levels, as revealed by the international (that is, non-Canadian) literature?
2. What are the major gaps in our knowledge with respect to the impact of LMI? Where is further evidence needed?

These are important questions 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. 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 It is also consistent with the definitions used in the international literature on LMI, which always stress statistical indicators of labour market trends.³ The first type of information can be used by individuals, businesses and policymakers in order to form reasonable expectations about future

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."

³ See Jones (1980), ODA (1996), and expert Edwin L. Herr quoted in O'Reilly (2001).

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. Such plans inform policymaking, career and training decisions, investment decisions, etc. The second and third types are used by individual jobseekers and employers in order to facilitate worker-employer matching at the microeconomic level.⁴

A key finding of this literature review is that we know very little about the impact of LMI on labour market outcomes. In part, this reflects the fact that there has been little desire in many countries to conduct rigorous evaluations of LMI or even of LMI-related programs such as career guidance and job-search assistance.⁵ It also reflects the difficulty of attributing observable effects to the information itself.⁶ We know of no studies that show, for example, that better (i.e. more accurate or timely) GDP statistics cause countries to experience improved economic outcomes relative to countries with poor GDP information.⁷ It is therefore unsurprising that the effects of LMI have not been evaluated.

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. There is a substantial literature on program evaluation, and 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.

- 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?

⁴ 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 above, 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.

⁵ In summarizing the results from the Fourth International Symposium on Career Development and Public Policy (ISCDPP) in 2007, Watts *et al.* (2007:15) observe:

Most of the evidence reported was of an indirect nature: the provision and existence of career development services attests to their value, indicates that there is a need for such services, and demonstrates that they do useful work. It is an argument based on blind faith without any perceived need for supporting evidence.

⁶ In response to our inquiries about studies of the impact of LMI, Heikki Raisanen, Research Director at the Ministry of Employment and the Economy in Finland, told us that the impact of LMI is “a really complicated matter. The effectiveness of information itself is a difficult research task.” He was able to provide references to studies of labour market matching and program evaluation, but none that evaluated the impact of information itself.

⁷ Such a relationship might be expected, since better macroeconomic information would allow for better implementation of fiscal and monetary policy.

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.⁸

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.⁹

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.

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. Nearly all of the studies we review in this survey fall under the third category, which is the furthest removed from LMI itself.

Thus, the state of knowledge on the role and impact of LMI is rather poor. What knowledge we do possess must be inferred from evaluations of labour market programs or

⁸ 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.

⁹ 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.

technologies that are related to LMI. In particular, we focus on three research subjects: job-search assistance programs, career counseling, and the internet. We refer to these as *LMI delivery mechanisms*, since they are all ways in which LMI may be communicated to end users. However, it is important to note that each of these mechanisms involves factors that may influence labour market outcomes but that are not directly related to LMI. In most empirical studies, the role of LMI is not isolated and we must interpret the results with caution.

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. The literature review begins in section III, which discusses the impact of job-search assistance programs on labour market outcomes. Section IV addresses the impact of career counseling, and section V discusses the internet as an LMI delivery mechanism. Section VI covers a few remaining studies that did not fit in any of the preceding sections. Section VII summarizes the results and concludes the review.

II. Literature Search Strategy

As noted in the introduction, our review of the international literature on LMI did not uncover research on the impact of LMI *per se*. Based on the international literature, we know very little about the direct impact of LMI on labour market outcomes.

As a result of this, we expanded the scope of the review to include the impacts of various LMI delivery mechanisms that, while not conceptually *equivalent* to LMI, are *related* to LMI. We maintained a focus on empirical evaluations of impacts on labour market outcomes and included studies on job-search assistance programs, career counseling, and the internet as an LMI-delivery mechanism. Most labour market programs use multiple approaches simultaneously (e.g. LMI provision combined with job-search assistance and career counseling) and it is often impossible to disentangle the effects of different interventions in empirical analyses. In our review, we focused on studies that attempt to isolate the impact of a particular mechanism.

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

- Search engines: Google, Bing, AltaVista, Yahoo!
- Google Scholar
- EconLit
- RePEc
- Social Science Research Network.

In addition, we searched the web sites of various organizations including:

- OECD
- ILO
- The labour market ministries of OECD countries
- Several research organizations
 - Institute for the Study of Labor (Germany)
 - Government Institute for Economic Research (Finland)
 - Research Institute of the Finnish Economy (Finland)
 - Labour Institute for Economic Research (Finland).

We also contacted several experts on labour market policy and requested assistance in finding important references.

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:

- impact
- evaluation
- study
- experiment
- measurement

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 vast majority of studies we found during our search were non-evaluative and therefore ineligible for inclusion in this review. Among the empirical studies we found, the majority addressed labour market outcomes (typically reemployment probabilities over some time period). Studies varied in terms of the quality of their research designs, especially in terms of how well the impact of a particular LMI delivery mechanism was isolated from confounding influences on labour market outcomes. We sought to include studies that succeeded in this respect.

III. Job-search Assistance

Several studies evaluate the impact of job-search assistance programs. Until recent years, nearly all such evaluations were conducted in the United States or the United Kingdom.¹⁰ Strictly speaking, these studies do not isolate the impact of LMI because job-search assistance involves other factors (e.g. guidance counseling or job-search monitoring) that affect labour market outcomes. In general, job-search assistance programs offer help in accessing, understanding, and using LMI, as well as assistance in compiling resumes, preparing for job interviews, etc. Since LMI is almost always bundled with other services and we know of no studies that solve this problem, we assume that LMI provision is an important component of job-search assistance from employment offices.

A. Literature from the United Kingdom

The British studies we review below address the New Deal for 18-24 Year Olds (ND18-24), an employment assistance program introduced in 1998. It provided unemployed young adults with enhanced job-search assistance, followed if necessary by mandatory entry into one of four options: skills training, temporary subsidized employment, a job with the Environment Task Force, or work in the voluntary sector.

From an LMI perspective, the ND18-24 program is important because it includes a period of job-search assistance without other policies such as skills training. Under ND18-24, young adults who have been unemployed and receiving unemployment insurance benefits for six months must enter the ‘Gateway’ program that involves one-on-one job-search assistance from a personal advisor. In principle, this lasts for at most four months; in fact, it lasts longer in 20 per cent of cases (McVicar and Podivinsky, 2003). Since participants do not need to undergo skills training, enter subsidized employment, or participate in any other labour market program during the Gateway period, analysts can examine the impact of the enhanced job-search assistance. Summary Table 1 outlines the studies of this program and their results.

i. Van Reenen (2003)

Van Reenen (2003) provides a careful analysis of the impact of the Gateway-stage job-search assistance. The outcome of interest in the study is the flow of unemployed young adults into employment over the four-month Gateway period. The author uses two main research designs, both based on difference-in-difference estimation. The first approach exploits the fact that the program was implemented four months earlier in some areas than in others. Young adults in the early-implementation regions are assigned to the treatment group, while those in the rest of the country are the control group. The second approach assigns all eligible young adults to the treatment group and uses as the control group the population of 25-30 year olds who have

¹⁰ Bjorklund and Regner (1996) note that the lack of social experimentation on active labour market policies (of which LMI policy is an example) in Europe is surprising, given that expenditures on such policies are much higher in Europe than in the United States.

Summary Table 1: Job-search Assistance Studies from the United Kingdom

Study	Method	Outcome Measure	Policy Measure	Result
Van Reenen (2003)	Difference-in-differences	Probability of reemployment during four-month period	Dummy for policy treatment	Significant positive impact
Blundell <i>et al.</i> (2001)	Difference-in-differences	Probability of reemployment during four-month period	Dummy for policy treatment	Significant positive impact
Riley and Young (2001)	Matching model	Monthly rate of outflow from unemployment	Dummy and policy intensity measure	Significant negative impact, but not robust
Anderton <i>et al.</i> (1999)	Matching model	Monthly rate of outflow from unemployment	Proportion of target pop. enrolled in program	Significant positive impact on long-term unemployed but with substitution effects harming other groups
McVicar and Podivinsky (2003)	Hazard model	Probability of reemployment	Dummy for policy treatment	Significant positive impact

been unemployed for six months. In both cases, the treatment is the four-month Gateway program, which we take as a program of LMI provision.¹¹

The difference-in-difference regressions are estimated using data from the Joint Unemployment and Vacancies Operating System (JUVOS), a longitudinal sample of five per cent of Jobseeker's Allowance benefit claimants. The number of observations varies across specifications.

The results suggest that the impact of the program on the probability of reemployment is both statistically and economically significant. When young adults in early-implementation regions are compared to those in other regions, the estimated treatment effect on the probability of reemployment is 11.0 percentage points. When 25-30 year olds in early-implementation regions are used as the control group, the estimated impact is nearly the same at 10.4 percentage points. Since 5.7 per cent of Gateway participants opted for subsidized employment during the four-month pilot period, the estimated lower-bound on the impact of job-search assistance is 4.7-5.3 percentage points. Given that the probability of reemployment over a four month period prior

¹¹ Since some members of the treatment group opted for the subsidized employment option before the end of the four-month job-search assistance program, the treatment also includes the effects of the employment subsidy. The author accounts for this flaw by subtracting the proportion of participants who entered subsidized employment from the estimated treatment effect. The final results therefore represent a lower bound on the effect of the job-search assistance program (since some of those who took subsidized jobs would likely have obtained non-subsidized employment had they remained in the Gateway program a bit longer).

to the ND18-24 program was about 25 per cent,¹² the estimated lower-bound treatment impact corresponds to an increase of about 20 per cent in the reemployment probability.

Using these estimates in conjunction with assumptions about the average starting wages, the cost of the ND18-24 program, and the deadweight loss from taxation, the author estimates that the program delivers net benefits of £57 million per year to society. Assuming that the employment impact is one standard deviation below the actual estimate lowers the net benefits to £25 million per year, still positive.

For our purposes, the major strength of the Van Reenen (2003) study is that it isolates the impact of the job-search aspect of the program. Van Reenen also does better than most analysts in dealing with the problem of macro-level substitution effects. In program evaluation studies, it is possible that the measured benefits of a program capture a redistribution of benefits to the treatment group from another group (i.e. perhaps the jobs gained by the young adults in the Gateway program would otherwise have gone to 25-30 year olds in the control group, who now do not get jobs at all). The assumption of ‘no substitution’ is necessary for both the econometric validity of the difference-in-difference estimator and the economic interpretation of the results as net benefits to society. Van Reenen addresses the issue by showing that the results are robust to the use of multiple control groups, and by demonstrating that the reemployment probability of 25-30 year olds is statistically identical between the early-implementation regions and other regions. (In the presence of substitution effects, one would expect the reemployment probability to be lower for this group in regions where the program was implemented.)

A weakness of the study is the use of non-random sampling. The author offers no explanation of the criteria by which some regions were selected as early-implementation regions while others were not. If the selection criteria are correlated with the labour market outcomes across regions, then the results are biased. In addition, Van Reenen does not control for local labour market trends. Another key assumption underlying the difference-in-difference estimation strategy is that these underlying trends do not affect the treatment and control groups differently, but the author provides no evidence on this matter. Finally, the main results of the study are based on data for males only. There is a good reason for this – the treatment and control groups for women are not statistically similar – but the effects on women are important, given that unemployed women are often an economically vulnerable group.

ii. Blundell *et al.* (2001)

A closely related study is Blundell *et al.* (2001). The authors provide a variety of estimates of the impact of the Gateway program. One set of results use an approach identical to that of Van Reenen (2003) and show a significant positive impact of four to five percentage points on the probability of reemployment. (As in Van Reenen’s study, this result is adjusted to account for the outflow of unemployed persons to the subsidized employment option in the ND18-24 program.) Blundell *et al.* (2001) show that this result is robust to the use of alternative estimators in addition to the difference-in-difference linear probability model, but only when the young adults living in non-pilot areas are used as the control group.

¹² This is the observed probability of reemployment among young adults who entered their sixth month of unemployment during the four-month period one year prior to the four-month pilot period analyzed in the study.

Blundell *et al.* (2001) also report results for women. The impact of the ND18-24 program is never statistically significant under any specification, but this probably reflects the fact that the sample sizes are much smaller for women than for men. Sample sizes for these results range from 400 to 1,592.

iii. Riley and Young (2001)

Riley and Young (2001) analyze the same policy using a log-linear labour market matching equation, in which outflows from unemployment are modeled as a function of a lagged dependent variable, the ratio of vacancies to unemployment, a measure of the ND18-24 policy, and various other variables (e.g. seasonal dummy variables and a time trend). The authors construct a panel of 95 New Deal delivery regions and 59 months between April 1995 and February 2000. Since the study is not restricted to the pilot period, the policy treatment does not isolate the effect of the Gateway job-search assistance program. However, the use of detailed administrative data from the UK Benefit Agency and the New Deal Evaluation Database allows the authors to produce estimates in which the dependent variable is outflows from unemployment *to unsubsidized work*, which partly offsets the possible influence of the employment subsidy option. In addition, the authors provide estimates for various durations of unemployment. Since people enter the Gateway program after six months of unemployment and are intended to stay there for at most four months, the estimates for persons with 6-9 month unemployment durations should capture mostly the impact of the Gateway program. We therefore focus on these estimates in our discussion below.

An advantage of the study is that it uses two variables to measure the ND18-24 policy. One is a simple dummy variable that takes a value of one in a given region when the policy is in force and zero when it is not. This is consistent with Van Reenen (2003) and Blundell *et al.* (2001). The second measure is the share of ND18-24 clients in total young-adult unemployment, multiplied by the average interview intensity in the region (the average number of days in which a client gets a job-search assistance interview as a share of total days spent in the program). This gives a measure of the intensity of the job-search aspect of the program, which is useful from the perspective of LMI.

The results are not fully consistent with those of the other studies discussed so far. Riley and Young (2001) show that after the ND18-24 implementation in January 1998, the rate of net outflows from unemployment among 18-24 year olds increased substantially (at the five per cent statistical significance level) relative to projected rates based on 1995-1998 trends. This was not true for other age groups. However, the increase in outflows from unemployment among young adults does not occur until the third quarter of 1998, when the employment subsidy and the other options started to become more widely available to program participants.

When the results are broken down by outflow destination, it is clear that the results are driven by the impact of the post-Gateway options. The ND18-24 policy has a positive impact of 5.2 per cent on the outflow rate from unemployment to work for young adults unemployed for 6-9 months, but the impact on outflows to *unsubsidized work* is actually *negative* at -4 to -6 per cent for the same population. While we must be careful in interpreting these results as

representing the impact of the Gateway job-search assistance program, they certainly give a different impression from the results found in other studies. The authors also note that the results are highly sensitive to whether unobserved changes over time are accounted for by a time trend or by time dummies. The negative results lose their significance if time dummies are used, which suggests that the ND18-24 policy measures are capturing some unobserved factor in addition to the impact of the policy.

iv. Anderton *et al.* (1999)

Anderton *et al.* (1999) use the matching-function approach to estimate the independent impacts of the Gateway job-search program and the post-Gateway options. The authors construct a panel of 10 regions (the ND18-24 early-implementation regions) and 140 months from March 1986 to December 1998. They measure the ND18-24 policy using two variables: an ‘options’ variable that measures the proportion of the target population enrolled in one of the post-Gateway options (subsidized employment, skills training, or volunteerism), and a ‘gateway’ variable that measures the proportion enrolled in the Gateway job-search assistance program.

The study finds that among those aged 18-24, the gateway variable has a significant negative impact on the monthly reemployment rate of the short-term unemployed, no significant impact on the rate for those unemployed 6-12 months, and a significant positive impact on the rate for those unemployed for more than 12 months. It is no surprise that the Gateway program does not benefit the short-term unemployed, since it is not available to them. The fact that the estimated impact is negative suggests that there may be a substitution effect; the longer-term unemployed who receive job-search assistance may obtain jobs that otherwise would have gone to the short-term unemployed. The same regressions run for non-target age groups (25-29 year olds and those 30 and over) also produce several negative and significant impacts, which also suggest substitution.

The authors then compare the ten early-implementation regions with ten comparison regions selected on the basis of geographic proximity and statistical similarity in terms of unemployment rates, vacancies, etc. Since the data for the ‘options’ and ‘gateway’ variables are unavailable for the comparison regions, the policy variable is reduced to a dummy that takes a value of one when the policy is in force and zero otherwise. According to the results, the policy has a positive and significant impact on the reemployment rate of 18-24 year olds unemployed for more than six months, as one would expect.

The negative impact for other age groups persists. The authors suggest that this is because of the lack of time dummies in these regressions, and indeed, a differences regression (which eliminates any unobserved month-specific effects) eliminates the negative impact for non-target groups. However, these results indicate some *positive* and significant results for non-target groups, which are perhaps even more confusing because they cannot be explained by substitution effects.

From an LMI perspective, the first set of results in Anderton *et al.* (1999) – those based on only the early-implementation regions – are more useful than the second set based on regional comparisons. The first results measure the impact of the Gateway program directly, whereas in

the second results the policy measure captures both the Gateway program and the post-Gateway options. In our view, Anderton *et al.* provide sound evidence that the Gateway job-search assistance program delivers benefits to its target population, and weaker but nonetheless important evidence that those benefits come at the expense of non-target groups.

v. McVicar and Podivinsky (2003)

McVicar and Podivinsky (2003) analyze the impact of the ND18-24 program in Northern Ireland. Using a sample of 86,965 unemployment spells, they estimate hazard functions, which illustrate the probability of finding a job in the next two weeks as a function of the duration of unemployment. The results show that ND18-24 is associated with a spike in the reemployment probability for 18-24 year olds between the sixth and twelfth months of unemployment. This increase is not observed for unemployment spells that occurred before the program was implemented, nor is it present in the control group of 25-29 year olds. For males, the reemployment probability increases by up to 40 per cent as a result of the policy; for females, the increase is about 20 per cent.

It is important to note that the treatment in this evaluation accounts for both the Gateway program and the post-Gateway options. The timing of the reemployment probability increase at the sixth month of unemployment suggests that the Gateway program accounts for part of the impact, since participants usually receive the job-search assistance for a few months before moving on to one of the options. However, we cannot attribute the impact entirely to job-search assistance.

B. Literature from the United States

Controlled experiments have been conducted to assess the impacts of job-search assistance programs in various states across the United States.

i. Corson *et al.* (1989)

Corson *et al.* (1989) present results from a policy experiment conducted in New Jersey in 1986-1987. A sample of 8,675 unemployment insurance (UI) claimants were randomly assigned to one of three treatment groups. The three treatments were enhanced job-search assistance only, job-search assistance combined with training (classroom or on-the-job) or relocation assistance, and job-search assistance combined with a cash reemployment bonus. Enhanced job-search assistance involved the creation of special job resource centres at employment centres, where participants could access job vacancy listings and information about how to engage in effective job-search. An additional 2,385 UI claimants were chosen as a control group. They received existing services; they could seek job-search assistance if they wanted, but they were not invited to participate in the policy treatments.

The results suggest that job-search assistance is effective in promoting reemployment, although the effects were small in magnitude. The first treatment (job-search assistance alone) led to a three per cent reduction in annual UI receipts, a 0.47-week reduction in annual weeks

Summary Table 2: Job-search Assistance Studies from the United States

Study	Method	Outcome Measure	Policy Measure	Result
Corson <i>et al.</i> (1989)	Randomized experiment	Annual UI receipts	Dummy for JSA program	Significant short-run decrease
		Proportion of year employed		Significant short-run positive impact
		Annual earnings		Significant short-run positive impact
Corson and Haimson (1996)	Randomized experiment	Annual UI receipts	Dummy for JSA program	No long-run impact (i.e. beyond first two years)
		Proportion of year employed		No long-run impact (i.e. over six-year follow-up)
		Annual earnings		No long-run impact (i.e. over six-year follow-up)
Meyer (1995)	Randomized experiments	Annual UI receipts	Dummy for increased JSA	Significant short-run decrease (0.5 weeks)
		Annual UI receipts	Dummy for decreased JSA	Significant short-run increase (3.3 weeks)
Dyke <i>et al.</i> (2005)	OLS and fixed-effects regressions	Quarterly earnings	Dummy for JSA program	Negative short-run impact; inconclusive results beyond two quarters
Decker <i>et al.</i> (2000)	Randomized experiment	Annual UI receipts	Dummy for JSA program	Modest short-run decrease; no long-run impact
		Employment earnings		Inconclusive results

spent on UI, and a greater proportion of the subsequent year spent employed. Effects were slightly larger when the cash bonus was offered, but the authors point out that:

[The] timing of these impacts indicate that the rate at which individuals exited from the unemployment system increased primarily during the early part of their claim spells. This was during the period in which intensive job-search assistance was provided. . . . [Beneficial effects] appear to have arisen primarily because the treatments promoted early reemployment through job-search assistance. (Corson *et al.*, 1989: pp. xi)

ii. Corson and Haimson (1996)

In a follow-up study, Corson and Haimson (1996) examine the outcomes of the program participants over the six-year period following the experiment. They find that the enhanced job-

search assistance reduced UI receipts only in the first two years following the intervention. Over the full six-year follow-up period, there was no statistically significant difference between the treatment and control groups in UI receipts (either in dollars or in weeks of receipts). In addition, the treatment had no statistically significant impact on earnings, weeks worked, or the probability of working over the six-year follow-up period.

iii. Meyer (1995) and citations therein

Meyer (1995) summarizes the results of the New Jersey experiment along with four other experiments conducted in South Carolina, Nevada, Washington and Wisconsin in the 1970s and 1980s. The experiments vary in terms of the quality of their design, but in each case the treatment involved job-search assistance services for the unemployed at local employment centres. The results were generally consistent with those of the New Jersey study in that they found positive but small effects. The job-search assistance treatment reduced participants' average weeks of UI receipts by about 0.5 weeks, although the effect was not statistically significant in all cases.

Two results are quite different from the rest. First, one of the treatments in the Washington study involved a *reduction* in job-search assistance, rather than an increase. UI claimants who were members of this treatment group were instructed to inform the state employment service when they had found a job, and no assistance or monitoring was offered to them. This treatment resulted in a statistically significant 3.34-week increase in weeks of UI receipts, much larger in magnitude than the 0.5-week reductions associated with increased job-search assistance (Johnson and Klepinger, 1991). One possible interpretation of this result is that the existing job-search assistance services deliver substantial benefits to users while the return to further enhancements in those services are relatively low. However, it is difficult in this case to separate the impact of the services themselves from the impact of monitoring; it is possible that the large increase in weeks of UI receipts was caused not by reduced services but by reduced monitoring by authorities.

The second unusual result is that the treatment in the Nevada study led to a significant decrease of 3.90 weeks in UI receipts. This may also be attributable to the monitoring issue, since the treatment in the Nevada study involved weekly interviews at job centres. Meyer (1995) points out that the results from the Nevada study were not thoroughly evaluated.

iv. Dyke *et al.* (2005)

Dyke *et al.* (2005) study the effects of welfare-to-work programs on women in Missouri and North Carolina using econometric rather than experimental methods. The welfare-to-work systems in these states involved several programs, which the authors classify into three categories: assessment, job-search and job readiness, and intensive training. Using administrative data on women who entered welfare between April 1997 and December 1999, the authors are able to separately estimate the effects of each of these policy interventions on participants' quarterly earnings over the 16 quarters following their program participation.

The authors use four regression specifications that control for different variables. All four show a significant negative impact of between \$200 and \$400 on quarterly earnings during the first few quarters of program participation. All three of the programs show a negative initial impact. This may indicate that participants reduce their job-search efforts while they are participating in programs.

The key results are for the impact of the program after two or three quarters. Here, the results are inconclusive because the different regression specifications produce different results. The most reliable specification controls for individual fixed effects (any unobserved characteristics of individual program participants that remain constant over time), and it shows that the impact of job-search assistance remains negative through 16 quarters after initial program participation. Other specifications, which control for participants' observable characteristics but not for individual fixed effects, show the impact turning positive after about 9 quarters. These mixed results do not provide clear evidence on the effects of job-search assistance on earnings.

v. Decker *et al.* (2000)

Decker *et al.* (2000) report the results of a controlled policy experiment implemented in 1986 in the District of Columbia (DC) and Florida. A sample of UI recipients (8,071 in DC and 12,042 in Florida) were divided into three treatment groups and one control group. The control group received regular services. Three job search assistance treatments were designed:

1. Structured Job Search Assistance (SJSA) – an orientation session, testing, a job search workshop (the same for all SJSA participants), and a one-on-one interview with a counselor;
2. Individualized Job Search Assistance (IJSA) – an orientation session, a one-on-one assessment meeting, and a set of additional services (e.g. testing, a job search workshop, career counseling) designed to address the needs identified during the assessment; and
3. Individualized Job Search Assistance with Training (IJSA+) – the same as IJSA, except that efforts were made at every stage to inform participants about training opportunities and to enroll them in training programs.

The authors report mixed results. All three treatments led to reductions in UI receipts by participants. During the first year after the experiment, the UI receipts were about half a week lower for treatment group members than for control group members. (The exception was the SJSA treatment in DC; in that case, the treatment reduced UI receipts by slightly more than one week.) All treatments reduced the proportion of claimants who exhausted their UI benefits in the year after the experiment. Estimates of the magnitude of this effect ranged from 1.8 to 4.8 percentage points. These effects did not persist beyond the first year of the ten-quarter follow-up period. In subsequent quarters, the outcomes of the treatment groups did not differ from those of the control group.

All three treatments led to increased employment earnings in the DC experiment, but had no statistically significant impact in the Florida experiment. (The point estimates in the Florida estimate were actually negative, but not significantly different from zero.) It is not clear what explains this difference between the results in the two locations. The treatments led to more intense job search activity in both locations. There is no evidence that the treatments led to participants accepting jobs of lower quality than they otherwise would have acquired.

C. Literature from Continental Europe

It is frequently noted that labour market policy evaluation is significantly less common in Europe than in the United States, Canada and the United Kingdom (Björklund and Regnér, 1996; Heckman *et al.*, 1999; Maguire and Killeen, 2003). Nevertheless, a few relevant studies do exist.

i. Graversen and Ours (2006)

Graversen and Ours (2006) report results from a randomized policy experiment in Denmark. Between November 2005 and March 2006, 50 per cent of those who became unemployed in two Danish counties were assigned to a treatment group. Within 5-6 weeks of becoming unemployed, these people were required to attend a two-week job-search assistance program. If they remained unemployed after four months, they were required to attend more intensive training courses. The control group (the other 50 per cent of newly-unemployed persons) received standard unemployment services, which were much less intensive and in most cases involved participation in mandatory programs only after a full year of unemployment.

Because of the sequential timing of the implementation of the different programs, the authors are able to differentiate to some extent between the effects of the job-search assistance program and those of the later intensive programs. They find that completing the job-search program increases the rate of reemployment by about 35 per cent. This effect is observed only after the completion of the program; while participants are in the two-week program, it has no significant impact on the reemployment rate.

ii. Fougère *et al.* (2005)

Fougère *et al.* (2005) provide an econometric study of the impact of job-search assistance using data from France. They construct a theoretical model of job search to illustrate that a high rate of job offers from an employment agency has an indeterminate effect on the probability of reemployment. More job offers are helpful, but they also cause individuals to reduce their personal job-search efforts.

To determine the net effect of these two forces, the authors use a sample of 5,988 persons who were unemployed in France in November 1986. In four surveys, conducted between November 1986 and May 1988, these persons were asked about the job-search strategies they used while unemployed. In particular, the survey results contained information about job offers

Summary Table 3: Job-search Assistance Studies from Europe

Study	Method	Outcome Measure	Policy Measure	Result
Graversen and Ours (2006)	Randomized experiment, hazard functions	Rate of outflow from unemployment to employment	Dummy for JSA program	Significant positive impact
Fougère <i>et al.</i> (2005)	Estimation of theoretical model parameters by maximum likelihood	Rate of outflow from unemployment to employment	Receipts of job opening information from employment service	Significant positive impact for low-income, low-skill workers
Weber and Hofer (2004)	Hazard functions	Rate of outflow from unemployment to employment		JSA most effective for those unemployed 5-6 months; effect insignificant for long-term unemployed
Koning (2006)	GLS regressions	Probability of reemployment	Public employment service workers per client	Significant positive impact
Delander <i>et al.</i> (2007)	Randomized experiment; difference-in-difference regression	Rate of reemployment Probability of being employed after 18 months	Dummy for private agency JSA services	No significant impact Enhanced public service significantly more effective than private service.
Hämäläinen <i>et al.</i> (2006)	Randomized experiments	Monthly employment rate	Dummy for JSA program	No statistically significant impact

obtained through public employment agencies. Using these data, the authors show that more LMI from public employment agencies is associated with a higher rate of exit from unemployment. The effect is strongest for low-skill workers with little education. These groups face high job-search costs relative to skilled workers because they have lower access to informal search mechanisms such as personal contacts. LMI from public employment agencies is especially helpful in such cases because the search costs are absorbed by the agencies. This is less beneficial for educated workers with strong informal search mechanisms at their disposal.

iii. Weber and Hofer (2004)

Weber and Hofer (2004) provide evidence on the impact of a job-search assistance program in Austria. The Austrian program involves mandatory job-search assistance for all unemployed persons before the fourth month of unemployment. When the program was being implemented in the late 1990s, however, it admitted many people who had been unemployed for longer time periods. This allows the authors to explore how the impact of the program changes with respect to participants' unemployment durations.

The study uses a sample of 1,820 persons who became unemployed between March and August 1999 and entered the job-search assistance program at some time during their unemployment spells. Using hazard models, the authors find that the size of the program's impact on the rate of reemployment is 'hump shaped' with respect to the duration of unemployment. The program is most effective for persons who had been unemployed for 5-6 months before participating in the program. For that group, job-search assistance increases the rate of reemployment by about 33 per cent. The average duration of unemployment *after* participation in the program falls from 114 days to 76 days due to the job-search assistance. The impact quickly diminishes to zero for longer unemployment durations, indicating that job-search assistance is less effective for the long-term unemployed.

iv. Koning (2006)

Koning (2006) exploits variation in the number of employment service workers per client at job centres in the Netherlands to study the impact of employment service worker intensity on client outcomes. The study draws administrative data from the public employment service benchmarking system for the year 2004. The database contains monthly data on client characteristics, and client outcomes, and the number of workers for 124 employment offices.

The results show that the number of workers per client has a positive and statistically significant impact on the reemployment rate over the six months following program participation, but only among short-term unemployed (that is, those who have been unemployed for less than six months) and unemployment insurance recipients. Among long-term unemployed or those receiving social assistance, the policy has no significant impact. Even the significant effects are modest in magnitude, however. A one per cent increase in job centre worker per client is associated with an increase of about 0.03 per cent in the reemployment rate. By comparison, the impact of local labour market tightness (measured as vacancies divided by the unemployed population) is about four times larger than the policy effect.

v. Delander *et al.* (2007)

Of particular relevance from a policymaking perspective is the study by Delander *et al.* (2007), which compares the impact of job-matching services from private and public employment agencies in Sweden. The evaluation uses data from a controlled experiment. Three Swedish cities with similar labour market conditions were selected, and about 100 unemployed immigrants from each city were selected for the study. In one city, participants received job-search assistance from a private agency. In the second city, they received enhanced services from a public employment agency (i.e. the office was given extra money to spend on "intensified placement services"). In the third city, the participants received normal services from a public employment agency.

These participants were followed for 18 months after the beginning of the programs. Their labour market outcomes were compared to those experienced by three other groups of unemployed immigrants (one from each city) over the 18 months preceding the beginning of the programs. The study uses a difference-in-difference approach to measure the relative impacts of

the private and public programs, controlling for the individual characteristics of the participants (education, experience, home country prior to immigration, etc.).

The authors find that the impacts of the three programs on the average duration of employment are not statistically different from one another. The estimates of the impact of the private services relative to both the enhanced and regular public services are negative, but never statistically significant.

In terms of the probability of being employed at the end of the 18-month follow-up period, however, the private service has a significant negative impact relative to the enhanced public services (but not the regular public services). The private agency service is associated with a 20 percentage-point lower employment probability than the enhanced public agency.

vi. Hämäläinen *et al.* (2006)

Hämäläinen *et al.* (2006) analyze data from two controlled experiments on job-search assistance in Finland. In the first experiment (conducted in 1997), 1,261 participants who volunteered to participate in the program were randomly divided half-and-half into treatment and control groups. The treatment group received a course of five half-day job-search assistance sessions, while the control group received no such assistance. In the second experiment (conducted in 1999), 1,017 participants were selected for participation by case workers at unemployment offices. About two thirds of the participants were assigned to the treatment group, which received job-search assistance sessions. For the control group, the sessions were delayed by seven months. In both experiments, participants were surveyed after six months and two years and were matched to administrative data allowing for follow-up periods of six and four years for the first and second experiments, respectively.

The results from both experiments show no statistically significant difference between the monthly employment rates of the treatment and control groups over the four- and six-year follow-up periods. The lack of significant long-run effects is consistent with findings from the US literature, but Hämäläinen *et al.* find no statistical significance even in the short run.

D. Synthesis of Results

From our perspective as analysts interested in LMI, a weakness of all the studies reviewed in this section is that they discuss neither the direct impact of LMI on labour market outcomes nor the role of LMI within job-search assistance programs. Of course we cannot be critical of the authors of these studies, since they did not set out to study LMI. We merely wish to point out, as we did earlier in the report, that the international literature does not really address the issues in which we are interested.

The five evaluations of the New Deal for 18-24 Year Olds differ in the degree to which they isolate the impact of the Gateway job-search assistance program, but we can draw several conclusions with varying degrees of certainty.

First, the Gateway job-search assistance program does have a substantial positive impact on reemployment among 18-24 year olds. The results from Riley and Young (2001) are at odds with this conclusion, but their sampling methodology is not as effective as that of Van Reenen (2003) and Blundell *et al.* (2001) in disentangling the impact of job-search assistance from that of the post-Gateway options. By restricting the evaluation to the pilot period and using the early-implementation regions as a treatment group, the latter two studies come closest to meeting the standards of experimental analysis.

Second, the evidence on the substitution effect of job-search assistance is mixed. The existence of substitution effects may or may not be important from a policy perspective; for example, policymakers may aim to help one group and may not care if the benefits are redistributed from another group. However, substitution effects are important for estimating the overall net impact of a policy on society. More research is required on this issue.

Third, estimates of the impact of the program are sensitive to the type of estimator used and to the manner in which aggregate time-specific shocks are controlled for. In econometric studies, the policy measure may capture the impact of some unobserved macroeconomic changes. This is one argument in favour of using small-scale randomized policy experiments rather than large-scale econometric studies.

Two main results can be drawn from the experiments in the United States. First, job-search assistance has small but statistically significant positive effects on jobseekers' reemployment probabilities and earnings in the short run. Second, the effects do not persist into the long run. The long-term follow-up component of the New Jersey study (Corson and Haimson, 1996) is a particularly important contribution, since most of the literature addresses only short-run impacts.

The European results are largely consistent with those from the United States and the United Kingdom in that job-search assistance is typically shown to have a positive impact on persons' reemployment prospects in the short run. A major exception is the study by Hämäläinen *et al.* (2006), in which job-search assistance has no significant impact on employment rates in the short run or the long run. It is not clear what drives these unusual results. A possible explanation lies in the sampling methods used in the two experiments described by Hämäläinen *et al.* Rather than selecting participants at random from the unemployed population, one experiment used volunteers and the other used persons selected by employment service case workers. It is possible that these non-random approaches resulted in samples of people who were unlikely to benefit from job-search assistance.

A strength of the European studies is that they explore the heterogeneity of policy treatment effects with respect to other factors. Fougère *et al.* (2005) show that job-search assistance is particularly helpful to people with little education and low income, and less beneficial for relatively skilled unemployed persons. Weber and Hofer (2004) demonstrate that job-search assistance is most effective for the short-term unemployed and that the policy impact diminishes quickly beyond unemployment durations of five to six months. These findings suggest that job-search assistance programs are an effective way to target disadvantaged

members of the unemployed, but that early intervention must be a key component of such programs.

The results of Delander *et al.* (2007) suggest that public employment agencies can be substantially more effective than private agencies in helping hard-to-place unemployed people (e.g. unemployed immigrants) find jobs. The authors suggest that private agencies are likely to be concerned about the interests of firms rather than the unemployed, since their relationships with employers depend on consistently supplying them with good employees. This conflict of interest may be less important for public agencies, which can focus more intently on the interests of their unemployed clients.

This finding has potential policy implications, especially given that some countries (e.g. Australia) have in recent years shifted their LMI systems toward public-private partnerships (Sharpe and Qiao, 2006). However, since the Delander *et al.* (2007) analysis does not address the question of whether the role of LMI differs between public and private employment services, we cannot conclude that LMI systems based on public information provision are more effective than those based on private provision. A weakness of the Delander *et al.* (2007) analysis is that the groups are determined based on geography rather than random assignment. If unobserved macroeconomic shocks affected the three Swedish cities differently during the period of analysis, the difference-in-difference results would be compromised. More and better research is needed on this topic to determine whether or not the results can be generalized.

IV. Career Counseling and Guidance

LMI is often provided in conjunction with career counseling. In addition to providing information, counseling involves aiding clients with self-assessment activities, improving motivation and self-confidence, and providing direct advice on job-search strategies and career decisions. These activities are much further removed from LMI *per se* than job-search assistance, which we discussed in the previous section. While job-search assistance and the internet can be viewed as mechanisms for the direct provision or interpretation of information, counseling involves services with effects that are independent of the information being used. For example, the role of a career counselor in increasing the motivation and self-esteem of jobseekers has nothing to do with LMI (i.e. increased motivation is not itself LMI and it is not a mechanism for LMI delivery; it is conceptually separate from LMI), but it may have a direct impact on labour market outcomes.

Summary Table 4: Summary of Career Counseling Studies

Study	Method	Outcome Measure	Policy Measure	Result
De Koning (2005)	Literature survey	Probability of finding a job	Various	Significant positive impact in 14 of 22 estimates surveyed
Hughes <i>et al.</i> (2002)	Literature survey	Various	Various	Significant positive impacts on successful job-finding, participation in training programs, and ‘learning outcomes’ such as attitudes, decision-making skills, and self-awareness
Dolton and O’Neill (1997)	Hazard functions	Duration of unemployment Unemployment rate	Dummy for counseling program	Significant reduction Significant long-run reduction
OECD (1993)	Literature survey	Probability of reemployment	Dummy for counseling	Significant positive impact among long-term unemployed, possibly at expense of short-term unemployed
Van den Berg and van der Klaauw (2006)	Randomized experiment	Rate of reemployment	Dummy for private agency JSA services	No significant impact
Brimrose <i>et al.</i> (2008)	Case studies	Various; based on clients’ subjective assessments	Not applicable	Most participants believed guidance treatment was useful

In spite of these complications, it is appropriate to touch upon career counseling in this literature review because LMI provision and interpretation constitute an element of career counseling. In order to avoid going too far beyond the scope of this review, however, our discussion of counseling will be brief and will focus on studies that assess the impact of counseling on labour market outcomes.

It is worth noting that while counseling and job-search assistance are not synonymous, there is substantial overlap between the two concepts and it can be difficult to distinguish between them in empirical analysis. Some of the studies we discussed in section III on job-search assistance could be considered studies of counseling, and vice versa.

A. Literature

Rigorous statistical evaluations of the labour market impact of career counseling are uncommon (Watts *et al.*, 2007). A literature review by De Koning (2005) identifies 22 estimates of the impact of counseling on the probability of finding a job (not necessarily from 22 separate studies).¹³ Among these 22 estimates, 11 of 13 experimental estimates and 3 of 9 non-experimental estimates imply that counseling has a significant positive impact on the probability of employment. The author provides no details regarding the quality of the methods used to derive these estimates.

A comprehensive review of the literature on the effects of career counseling is provided by Hughes *et al.* (2002). They conclude that intensive, multi-method counseling services do have significant short-term impacts on successful job-finding, participation in training programs, and ‘learning outcomes’ such as attitudes, decision-making skills, and self-awareness.

Several studies evaluate the impact of the Restart program, a counseling and employment assistance program implemented in the United Kingdom in April 1987. Under the program, persons who have been unemployed for six months are required to attend an interview with a counselor at an employment office. The interview involves information provision and employability assessment activities.

In 1989, a random sample of 8,925 individuals who were approaching their sixth month of unemployment was chosen to take part in a policy experiment to evaluate the impact of Restart. Out of this group, a random sub-sample of 582 people was selected as the control group. The implementation of the Restart program was delayed by six months for these people; upon reaching their sixth month of unemployment, they were not asked to attend a Restart interview. The remaining people constituted the treatment group. Note that the treatment is not the counseling interview itself, but a call to an interview. Members of the control group could still receive the counseling if they requested it without being called. OECD (1993) suggests that as much as 25 per cent of members of the control group may have done this, so results from this experiment should be treated with caution.

¹³ De Koning (2005) does not specify the number of studies from which the 22 estimates are drawn, but he does indicate that multiple estimates from the same study enter separately into his literature review. Based on the bibliography of De Koning (2005), it is likely that many of the estimates are from studies that were not published in English or French and are therefore unavailable to us for closer review.

i. Dolton and O’Neill (1997)

Using the data from the experiment, Dolton and O’Neill (1997) use hazard models to estimate the effect of the Restart program on the rate of exit from unemployment and the average duration of time spent out of unemployment after having been through the program. They find that the program reduced the duration of unemployment. The median duration of unemployment was 11 months for the treatment group and 13 months for the control group. Over the six month period in which members of the control group were excluded from the program, they were only 70-80 per cent as likely as members of the treatment group to exit unemployment. The unemployment rate among members of the treatment group fell 10 percentage points below that of the members of the control group.

Among people who escaped unemployment, Restart had no significant impact on the average duration of time spent out of unemployment. The authors interpret this as evidence that the program does not simply move people into unsuitable jobs in order to remove them from the unemployment rolls. An alternative interpretation is that the program does not match participants with jobs that are ‘a better fit’ than those they would have found otherwise.

The authors then examine the long-run impact of the program over the five years following the experiment. They find that the long-run average unemployment rate among members of the treatment group was statistically significantly lower than that of the treatment group for men, but not for women. Since the control group did eventually enter the Restart program – the treatment was merely a six-month delay – it is not clear why the long-term outcomes of the treatment and control groups would differ. The authors show that members of the control group who exited unemployment were more likely to exit the labour force (as opposed to getting a job) relative to the treatment group. This could explain why the long-term outcomes of the control group were so poor, but it also calls into question the randomization of the group formation and the independence of the groups.

ii. OECD (1993) and citations therein

OECD (1993) makes reference to two additional evaluations of the Restart program. White and Lakey (1992) use the same experimental data as Dolton and O’Neill (1997) and find that the Restart program improved the likelihood of finding work. Jackman and Lehmann (1990) conduct a non-experimental econometric analysis using national data on unemployment inflows and outflows over the 1979-1988 period. They find that the program achieved its aim of increasing the probability of reemployment among the long-term unemployed, but that some of these gains came at the expense of the short-term unemployed population. The experimental studies could not examine this substitution effect because both the treatment and control groups consisted of people who had been unemployed for more than six months.

iii. Van den Berg and van der Klaauw (2006)

Van den Berg and van der Klaauw (2006) provide evidence on the impact of counseling from a controlled experiment in the Netherlands. In the Netherlands, unemployment insurance (UI) recipients must attend monthly meetings with a career counselor who provides information, evaluates the participants' job-search activities, and helps formulate plans for further job-search. The experiment follows all eligible UI recipients who began collecting benefits between August and December, 1998, at two local employment offices in large cities. The sample comprised 394 individuals. About 50 per cent of them were randomly assigned to the treatment group and received the counseling services. Members of the control group were not allowed to participate in the program. Both groups were followed until February 1999 using administrative data and follow-up surveys.

The authors find that the program had no statistically significant impact on the rate of reemployment. This is true both for estimates of the average impact across all workers and for 'heterogeneous treatment effect' estimates that allow the impact to vary with respect to individual participants' characteristics. Counseling causes a shift from informal to formal methods of job-search, with no net effect on the reemployment rate.

iv. Brimrose et al. (2008)

Many studies of the effects of career counseling focus not on statistical impact analysis but on the self-reported satisfaction of participants with respect to their experiences with counseling. Brimrose *et al.* (2008) report results from a five-year case study in England. In 2004, 50 individuals (with a variety of characteristics and labour market histories) underwent an intensive interview with a career counselor. They were contacted for follow-up interviews once per year until 2008. In the initial follow-up interview, 98 per cent of the participants (49 of 50) reported that they had found the guidance useful immediately after the counseling session.¹⁴ By the end of the five-year period, this proportion had fallen to 66 per cent (19 of 29 participants, accounting for sample attrition over the period). The unemployment rate among the participants declined from 34 per cent to 3 per cent over the same period.

The Government of Finland (2006a) reports that 85 per cent of respondents to a client survey considered Finland's telephone-based educational counseling service to be useful for educational planning.

B. Synthesis of Results

The balance of the evidence suggests that career counseling services have a positive impact on labour market outcomes, but it is unclear how much of this impact can be attributed to the LMI-related element of career counseling.

¹⁴ The authors define 'useful' guidance as "supporting positive outcomes for the client; providing access to expert knowledge, information, and networks; promoting constructive change in the client; and, overall, providing the client with a positive experience" (Brimrose *et al.*, 2008).

The evaluations of the Restart program provide experimental results, but they are compromised to some degree by the fact that up to 25 per cent of the control group was given the policy treatment after requesting it (OECD, 1993). A major problem for policy experiments is that it is often considered unethical to deny a person access to a program because he or she has been randomly assigned to a control group in an experiment (Maguire and Killeen, 2003). Nevertheless, the evaluations provide some evidence that the program had a positive, albeit small, impact on the reemployment probability of the unemployed.

Experimental methods seem to produce statistically significant results more consistently than non-experimental methods (De Koning, 2005). This may reflect the fact that experiments usually capture the short-run impact of policy treatments, while long-term follow-up analysis is not conducted. As we know from the literature on job-search assistance, there is evidence to suggest that the effects of such interventions do not persist over the long run.

V. Internet-based LMI

The internet is an increasingly important LMI delivery mechanism. Several recent papers have examined the impact of the internet on the labour market. Two key questions have been addressed in the literature so far. First, what groups of people use the internet to look for LMI? From a policymaking perspective, it is important to know who can be reached using internet-based LMI. Second, how effective is the internet as a method of job-search (for workers) or employee-search (for employers)? Answers to this question would help in setting priorities in LMI system development. To what extent should resources be devoted to online LMI dissemination as opposed to job centres or other LMI sources?

The studies discussed in this section mainly deal with the second and third types of LMI outlined in the definition of LMI at the beginning of this report: information on specific jobs and specific workers. No studies address the impact of information about general labour market trends (e.g. if Statistics Canada made the data in the CANSIM database freely available, would it affect the Canadian labour market?)

It is also important to note that the internet comprises several distinct concepts that can be used in job-search, including web sites, online databases, and e-mail. Web sites and databases are most relevant for LMI, since their function in most cases is simply to present information. E-mail mainly influences labour markets by dramatically lowering the cost (in money, time and effort) of communicating with employers, submitting resumes and CVs, and so on. As such, its influence is not directly attributable to information *per se*. Studies typically do not distinguish between these alternative functions of the internet (pure information provision versus pure cost savings) in job-search.

A. Literature

i. Kuhn and Skuterud (2004)

A seminal contribution to this literature is Kuhn and Skuterud (2004). The authors use data from the December 1998 and August 2000 Computer and Internet Use Supplements to the Current Population Survey (CPS) in the United States. In order to track the labour market outcomes of respondents, the observations are matched with the same persons in the ten subsequent monthly CPS surveys in which many of the same individuals were interviewed. The final sample consisted of 4,139 respondents who were unemployed at the time of the December 1999 or August 2000 surveys.

The study addresses both of the key questions noted above. The authors find that relative to the non-internet using unemployed, internet jobseekers are more likely to be well-educated, entering unemployment from work, entering the labour force from school, and experienced in occupations with low unemployment rates. These are all characteristics associated with shorter unemployment duration. Black and Hispanic people are less likely to use the internet for job search than people of other races, but this is because of inequalities in access to the internet rather than different preferences for job-seeking strategies. There is a “digital divide” in job-seeking methods.

Summary Table 5: Summary of Studies of Internet and LMI

Study	Method	Outcome Measure	Internet Use Measure	Result
Kuhn and Skuterud (2004)	Probit and discrete-time hazard models	Probability of reemployment	Dummy for using internet in job search	No significant impact
		Duration of unemployment		Significant increase
Stevenson (2009)	IV regressions; probit models	Number of job-search methods used	State-level internet penetration	Significant positive impact
		Job-switching by employed	Dummy for internet use	Significant positive impact
Bagues and Labini (2009)	Natural experiment; difference-in-difference regression	Probability of unemployment	Dummy for inclusion in online database	Significant reduction
		Regional mobility		Significant increase
		Monthly earnings		Significant increase
Nakamura <i>et al.</i> (2009)	Data inspection; survey	Not applicable	Not applicable	Uses of job sites (in order of popularity): checking job listings, uploading resumes for employers to find, and finding wage information. Internet useful to more people than personal contacts.

The key results of the paper address the second key question. After controlling for other observable factors, including the use of other job-search methods such as direct contact with employers and visiting an employment agency, the use of the internet as a job search tool has no statistically significant impact on the probability that an unemployed person will become reemployed within one year of his or her initial survey response (i.e. December 1999 or August 2000). When they examine the duration of unemployment spells, the authors find that using the internet as a job search tool actually has a statistically significant *negative* impact on the reemployment hazard rate. This means that people who use the internet to search for jobs take longer to become reemployed than those who do not, after controlling for observable worker characteristics.

A possible explanation for this counterintuitive result is that internet job-seekers are negatively selected on unobserved characteristics. People who use the internet may do so because they lack the personal contacts and network relationships that would otherwise aid their job search. People who use a large number of search methods, including the internet, may do so as a response to private information about their poor reemployment prospects. In particular,

internet searchers may be more likely to have health or disability limitations. They may also be more likely to apply and qualify for unemployment insurance. Since internet searching is a method with a very low marginal cost in terms of effort, it may attract unmotivated job-seekers who are less interested in finding a job quickly than those who use alternative search methods. These factors could dominate any beneficial impact of the internet as an information source, and they are *unobserved* in the sense that they cannot easily be measured and statistically controlled for.

ii. Stevenson (2009)

Stevenson (2009) analyzes the impact of the internet on the job-search strategies used by the unemployed. She notes that the internet should increase job-search activity by lowering the costs of job-search in terms of time and effort. Using CPS data in conjunction with data on internet use from Forrester Research, Stevenson uses regression analysis to examine how state-level internet penetration affected the usage rates of various job-search methods by unemployed job-seekers over the 1992-2002 period. The results show that internet access has a significant positive impact on the use of all the methods listed in the CPS, such as looking at job ads, sending out resumes, contacting an employment agency, and contacting an employer. The use of instrumental variables techniques provides evidence that internet penetration is not merely correlated with greater usage rates for the job-search strategies, it *causes* them.¹⁵

An interpretation of these results from an LMI perspective is that the internet makes LMI cheaper in terms of time and effort costs. If the internet makes it easier to find job ads, one would expect job-seekers to look at more job ads and contact more employers. This could reduce frictional unemployment.

The results presented so far deal with job-search by the unemployed, but Stevenson (2009) also shows that the vast majority of online job-seekers are employed persons. Among the 88.7 per cent of employed CPS respondents who reported *not* having searched for a job online over the previous month, only 2.7 per cent had changed jobs a month later. Among the 11.3 per cent who had searched for a job online, 4.5 per cent had changed jobs. Among employed persons who searched for jobs using traditional off-line methods, 9.1 per cent switched jobs.

These results provide further evidence that the internet is a low-cost source of information for people who want to find a job; people turn to the internet first, and only resort to more traditional methods as their need or desire to find a new job increases. The results do not provide evidence that easier access to LMI causes increased job changing (which might be the case if, for example, LMI allowed people to find jobs that are a ‘better fit’ for their skills and interests). If that were the case, one would expect online job-seeking to be associated with more job changes than traditional sources.

¹⁵ Stevenson (2009) instruments for internet penetration using the interaction of time dummy variables and the state-level adoption rates of telephones and washing machines in 1960.

iii. Bagues and Labini (2009)

Online LMI databases can also influence labour markets by providing information to employers. Bagues and Labini (2009) use a difference-in-difference approach to study the impact of *AlmaLaurea*, an Italian database that provides employers with resumes and official educational information on university graduates. Only a subset of Italy's universities were part of *AlmaLaurea* when it was created in the mid-1990s, so the authors are able to identify the impact of the database by comparing the outcomes of graduates from participating universities with those of non-participating ones.

Based on survey data from 1998 (for 1995 graduates) and 2001 (for 1998 graduates), Bagues and Labini (2009) estimate that the *AlmaLaurea* system decreased university graduates' probability of unemployment by between 1.6 and 2.1 percentage points. The overall unemployment rates in 2001 were 9.4 per cent for graduates of *AlmaLaurea* universities and 10.7 per cent for graduates of non-participating universities, so a decline of about two percentage points is substantial.

The *AlmaLaurea* database also increases interregional labour mobility (as measured by the probability that a graduate lives in a region different from the one in which they attended university) by between 2.3 and 2.8 percentage points. Graduates from participating universities earn about three per cent (or €35) more per month than graduates from non-participating universities. Finally, the database increased graduates' satisfaction with the knowledge gained at university and their self-perceived job stability.

iv. Nakamura *et al.* (2009)

Nakamura *et al.* (2009) muster survey data from various sources to examine the usage of e-recruiting web sites by firms and individuals. Privately operated web sites such as Monster.com and CareerBuilder.com allow individuals to post resumes and contact information, and then firms can pay to post job openings or access the jobseeker database. Citing a March 2007 survey by the Society for Human Resource Management (SHRM, 2007), Nakamura *et al.* note that private and public sector organizations in the United States attributed 44 per cent of new hires over the previous year to e-recruiting.

A key feature of e-recruiting web sites from the perspective of employers is that they facilitate the search for employed workers. This is a key point in light of the findings of Kuhn and Skuterud (2004), discussed above. The jobseeker databases often include the contact information of currently employed persons who have used the system in the past or who have engaged in passive job search. Nakamura *et al.* (2009) report:

Auren Hoffman, founder of the referrals company KarmaOne, [states] "A vast percentage of the people who are looking aren't the people you want. . . . It's extremely hard to get to the people who aren't actively looking, and generally, that pool is much better." This is a candid statement of what we feel is a ubiquitous subtext in the trade literature on recruiting. (pp. 9)

This evidence indicates that active online job search sends a negative signal to potential employers about a jobseeker's quality. This would explain why Kuhn and Skuterud (2004) find that the use of the internet is associated with longer unemployment spells rather than shorter ones.

To investigate the kinds of jobseekers who can be reached via the internet, Nakamura *et al.* (2009) examine the responses to an online survey conducted by Richard Freeman (one of the paper's authors) between February and April 2007. The survey was administered through Google advertisements and asked questions about personal characteristics, employment history, and job-search strategies. A total of 1,717 respondents self-selected into the sample, although not everyone answered every question.

The results show that more than half of respondents were from Africa or Asia. This suggests that the internet can be used to reach workers in low-income countries. The vast majority of respondents were employed, and most had some university or college education. This is consistent with the results from other studies. Over 80 per cent of respondents reported having used a job site, and the most popular use of the internet in job search was to check job postings (as opposed to finding salary or wage information, uploading resumes, etc.). The number of respondents who considered online job search to be useful was greater than the number who considered personal contacts to be useful, which could be interpreted as evidence that the internet is used mainly by people who do not have good personal contacts.

B. Synthesis of Results

We know the following with a strong degree of confidence. There is a 'digital divide' such that people with low employability are less likely to use the internet for job search. Within America, the internet is used in job-search mainly by people who are well-educated, non-black and non-Hispanic, entering unemployment from work or school, and experienced in low-unemployment occupations. Controlling for these characteristics, however, unemployed jobseekers who use the internet are slower to find jobs than those who do not.

We know much more about who can be reached via the internet than about the effectiveness of the internet as a delivery mechanism for LMI. The main reason for this is that most studies use datasets in which persons self-selected into internet job-search. If self-selection is based on persons' unobservable characteristics that are themselves correlated with labour market outcomes (as Kuhn and Skuterud [2004] conjecture), then it is difficult to measure the direct impact of the internet using econometric methods. The study that comes closest to addressing this problem is the evaluation of the Italian *AlmaLaurea* database by Bagues and Labini (2009). Since selection into the program occurred at the university level and over 90 per cent of individual students had their information included in the database, the authors argue that self-selection on the basis of employability was unlikely. That study found that the database had a significant positive impact on labour market outcomes.

Randomized experiments could solve the self-selection problem, but it would be difficult to use experiments to examine the impact of the internet on actual employment outcomes. Even if researchers gave LMI to a treatment group using the internet while administering the same

information to a control group using another method (e.g. pamphlets), there would be nothing to stop members of the control group from searching for jobs online on their own time. However, experiments could be used to answer narrower questions. For instance, is LMI retention better when the information is communicated online rather than through printed material or a counselor?

The policy implications of the studies are not obvious. Employers find large online databases of information in potential employees to be useful, but they also seem to believe that unemployed online jobseekers are of low average quality. It is not clear how a state-administered database could solve this problem. However, it is still possible that the internet is a helpful job-search mechanism for people who have poor unobservable characteristics (e.g. health problems, few personal contacts with employers, etc.).

From the job-seeking perspective, most individuals use the internet to search for job postings, and most of that LMI comes from private sources. In this sense, the internet is much like the classifieds section of a newspaper (and indeed, online advertising is increasingly replacing newspaper-based advertising). One potential role for the state is to ensure that online LMI is of high quality by offering a trustworthy state source to compete with private sources.¹⁶ It is also clear that reputation is important. If policymakers desire to create an online database that can compete with the private e-recruiting sites (perhaps for the benefit of low-income or low-employability jobseekers), they should devote resources to a publicity campaign (just as the private job web sites do) to let jobseekers know about the opportunity.¹⁷

¹⁶ Lee (2009) demonstrates that the rise of public employment agencies in the United States in the early 1900s was a direct response to the provision of misinformation by the private employment agencies of the day. By providing information that unsophisticated jobseekers knew they could trust, the public employment agencies eliminated the opportunity for private agencies to mislead and exploit people.

¹⁷ Sharpe and Qiao (2006) discuss the successful use of a multi-media publicity campaign to promote the use of *learnirect*, an LMI program in the United Kingdom.

VI. Other Studies

In this subsection, we discuss three studies that are related to LMI but that did not fit into any of the previous sections.¹⁸

A. Bortnick and Ports (1992)

Using data from the Current Population Surveys for January 1991 to January 1992 in the United States, Bortnick and Ports (1992) construct a database of over 32,000 observations, where each observation represents a one-month job-search effort.¹⁹ Using these data, the authors compare the distribution of job-search efforts across four outcomes (employment, continued job search, on-layoff status, and exit of the labour force), as well as by job-search method (public employment agency, private employment agency, direct contact with employers, contact with friends or relatives, placing or answering ads, and ‘other search methods’), sex, age, and race.

According to the study, the job-search method that yielded the greatest proportion of successful efforts was contacting a private employment agency. This strategy led to employment 24.8 per cent of the time. Contacting a public employment agency was the least successful approach, leading to employment 21.6 per cent of the time. Note, however, that the study does not statistically control for the characteristics of the unemployed people. It is well known that private employment agencies are likely to be used by job-seekers with relatively high employability. Nevertheless, the difference between the most successful and least successful approaches was small.

Seeking LMI at a private or public employment agency was not among the most common job-search strategies. Three of the four most popular strategies involved directly contacting potential employers (sometimes in combination with another method), and placing and answering ads was also common. People who did utilize an employment agency – either public or private – were particularly unlikely to leave the labour force. The results provided in this study do not allow us to determine whether this is because particularly motivated people are more likely to contact employment agencies or because the services of employment agencies cause job-seekers to be more motivated and persistent.

From an LMI perspective, the study is interesting for several reasons. First, it suggests that providing unemployed people with listings of employers to contact would be an LMI approach that they would find useful.²⁰ Second, people may find employment centres inconvenient or inaccessible relative to advertisements and direct contact with employers. Alternatively, there may be a lack of awareness about the information available at job centres, or

¹⁸ A fourth study, Neumark (1999), examines the impact of ‘labour market information’ on sex- and race-based wage inequality. We exclude it from discussion because it uses the term ‘labour market information’ with reference to firms’ specific knowledge of the qualifications of the workers it hires, rather than with reference to a collection of public information about the characteristics of workers.

¹⁹ For example, a single individual who is unemployed in January and February and then finds a job in March enters the data set as two observations: an unsuccessful job-search effort between January and February and a successful effort between February and March.

²⁰ This was also one of the recommendations of Sharpe and Qiao (2006).

the unemployed may not perceive much value added in employment centres relative to the LMI that is available through private advertising.

B. Department of Employment and Learning (2008)

A study by the Northern Ireland Department of Employment and Learning (2008) discusses the availability of LMI in Northern Ireland and in other countries and outlines the ways in which LMI is used. As part of their study, the authors briefly examine a pilot project in which staff in two job centres were given “a range of core local LMI” through the job centres’ intranet systems and asked to consider its usefulness in dealing with customers. Most staff members felt that the LMI was of little use to them, and that they had a sufficient understanding of local labour market conditions through other means (advertising, contact with employers, etc.). The use of LMI by Northern Ireland’s job centres is informal and depends mostly on the accumulated knowledge of staff members.

The results have several plausible interpretations. The LMI provided to the job centre staff may in fact have added no value above and beyond the staff members’ accumulated knowledge and established information sources. It is possible that different information would have been more useful. Alternatively, the staff members may have been incapable of making use of the new LMI. The authors note that job centre staff members in Northern Ireland have little experience and no formal training in the use of LMI. From a policymaking perspective, this highlights the importance of ensuring that LMI intermediaries are capable of processing and using LMI.

LMI (especially on aggregate labour market trends) is also used by policymakers. We found no formal evaluations of the direct impacts of LMI on policymaking, but Department of Employment and Learning (2008) notes several examples Northern Ireland. According to their document review, government departments responsible for skills development use LMI to predict future areas of skill shortage so that they can focus their efforts there. Other government departments use LMI as evidence in their requests for funding increases to address skill needs. LMI is often provided to potential investors in the local economy, and local universities use LMI in marketing their courses.

C. European Training Foundation (1999)

European Training Foundation (1999) summarizes the results of a survey of twelve members of the European Training Foundation’s advisory forum (one member from each of twelve European countries). Respondents report that policymakers in Europe draw LMI from a variety of sources: state institutions, vocational training institutions, employers, occupational groups, unions, and regulators. State-provided LMI is perceived as the most high-quality source in most countries. As labour markets have become more flexible in recent decades, policymakers have responded to rapid changes in LMI signals by focusing on broad ‘occupational families’ rather than narrow jobs; focusing on core skills; and implementing flexible standards for training programs. Nearly all of the twelve country representatives report that their countries’ training systems are highly responsive to LMI trends.

D. Parnes and Kohen (1975)

Although it is now several decades old, the work of Parnes and Kohen (1975) is relevant to the issue of the impact of LMI. The authors analyze data on 5,000 American males aged 14 to 24 who were interviewed once in 1966 and again in 1968. As part of the first interview, the participants completed a test of occupational knowledge. The test measured participants' knowledge of the duties, educational requirements and wages associated with ten occupations.²¹ Parnes and Kohen use regression analysis to measure the effect of the participants' 1966 test scores on their 1968 employment earnings, controlling for other factors (IQ scores, quality of the high school attended, years of work experience, etc.).

The results indicate that occupational knowledge has a small but statistically significant positive impact on earnings. A five-point increase in the occupational knowledge test score (less than one standard deviation) is associated with annual earnings increases of \$140 among young white men and \$290 among young black men.

There are two important issues to bear in mind when interpreting these results. First, the knowledge test measured knowledge that the participants possessed without any intervention. It does not address the ways in which that knowledge was acquired. The fact that greater occupational knowledge is associated with higher earnings does not imply that any particular policy intervention designed to improve labour market knowledge would lead to higher earnings.

Second, the results are based on standard ordinary least squares (OLS) regression and are likely subject to omitted variable bias. Unobservable factors such as innate ability or intelligence (which may or may not be captured by the IQ scores used in the regression) may drive both knowledge test scores and employment earnings. Thus, we cannot conclude that greater occupational knowledge causes increased employment earnings.

²¹ The occupations were hospital orderly, machinist, acetylene welder, stationary engineer, statistical clerk, fork lift operator, economist, medical illustrator, draftsman, and social worker.

VII. Summary of Results and Conclusion

The aim of this literature review is to answer two questions:

1. What is the current state of knowledge on the role and impact of LMI, at both the macroeconomic and individual levels, as revealed by the international (that is, non-Canadian) literature?
2. What are the major gaps in our knowledge with respect to the impact of LMI? Where is further evidence needed?

Based on the international literature, our conclusion is that the state of our knowledge is poor.

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

As we discussed in section I, we were not able to find any evaluative studies that measure the impact of LMI on labour market outcomes. The international literature does not tell us anything about whether or not increases in the quantity or quality of LMI would affect labour market outcomes (employment, wages, productivity, etc.) at the micro- or macroeconomic levels.

In light of the lack of evidence on LMI *per se*, we focused on LMI delivery mechanisms: job-search assistance programs, the internet, and career counseling.

Conclusion 2: *Job-search assistance programs have positive but modest short-run effects on jobseekers' employment prospects, even among young and unskilled unemployed persons. These policies are cost-effective because they are cheap relative to other active labour market policies.*

Conclusion 3: *Internet-based information is effective for firms looking for workers. As a job-search strategy for individuals the internet is evidently useful (since it is becoming the dominant platform for job search), but its effectiveness has yet to be quantified.*

Conclusion 4: *Intensive career counseling services have positive short-term impacts on job-finding, participation in training programs, and 'learning outcomes' such as attitudes, decision-making skills, and self-awareness. The role of information as opposed to other aspects of counseling is not clear.*

Job-search assistance programs have been studied using both experimental and non-experimental methods and the balance of the evidence suggests that they are effective. However, many of the results are from studies of small-scale programs that were only tested for a short time period. This makes it difficult to study important issues such as long-run effects and substitution effects (i.e. the benefits to the program participants come at the expense of unobserved non-participants). In addition, it is very difficult to distinguish the impact of a policy treatment from confounding factors such as the threat effect (i.e. the mere threat of having to participate in a job-search program changes the behaviour of the jobseeker) or the effects of

other policies implemented in conjunction with the job-search assistance. The impact of job-search assistance may not be entirely attributable to LMI. And finally, results may be sensitive to the econometric estimation techniques used (Heckman *et al.*, 1999; Hämäläinen *et al.*, 2006).²²

Conclusions about the internet must be even more tentative because the impact of internet-based LMI on labour market outcomes has not been tested experimentally and there appear to be strong sample selection effects driving the results of non-experimental studies. The intensive use of large online job sites by firms suggests that firms find the internet useful as a tool for finding workers. The ease of reaching a large number of potential workers through one channel is probably part of the explanation, and the fact that job sites often contain contact information for already-employed (and therefore highly desirable) workers is another benefit for firms.

From the jobseeker perspective, the direct impact of the internet on individual' labour market outcomes has yet to be measured. It is very likely that the internet is beneficial to jobseekers and that the absence of statistical evidence for this is mainly due to sample selection effects. A randomized experimental approach could solve this problem. We also suspect that econometric studies using more up-to-date data (rather than data from the 1990s and early 2000s, as is used in the existing literature) might find a positive relationship between internet job-search and labour market success. Since the internet is increasingly dominant as a job-search platform, self-selection biases are probably less likely to be an issue today.

In addition, the existing literature does not distinguish between the impact of web sites, which contain information, and e-mail, which significantly lowers the cost (in terms of time and effort) of applying to jobs. Both might be expected to improve labour market outcomes, but only the former is directly related to LMI. More research is required to account for these issues, preferably with an experimental research design.

Career counseling seems to be effective in the sense that it affects participants' behaviour and improves outcomes along various personal dimensions, but the role of information *per se* in counseling is not clearly specified in program evaluations. We do not know whether a given counselor could bring about better outcomes for clients if he or she had access to better LMI, nor do we know what aspects of counseling are important in improving the impact of a given set of LMI.

Thus, there are many significant gaps in our knowledge. These include:

- What are the direct effects of information *per se*?
- What is the role of LMI within job-search assistance and career counseling?
- What are the macro-level effects of LMI policies? Can they be measured?
- What is the impact of internet-based LMI on jobseekers' employment outcomes *accounting for sample selection problems*?

²² On the other hand, Card *et al.* (2009) show that experimental and non-experimental methods tend to give similar results in assessments of active labour market policies, after controlling for the outcome measure used and the type of program and participants. This suggests that recent non-experimental evaluations have been unbiased (under the assumption that experimental studies give reliable results).

These gaps can be filled as follows:

- Research should focus on LMI itself. The existing evidence on LMI is mainly from the program evaluation literature and it does not isolate the informational component of the programs under examination. Future LMI research should:
 - explicitly address the direct impact of LMI on labour market outcomes
 - explicitly address the role and impact of LMI within job-search assistance and career counseling.

- Research on the labour market effects of the internet should:
 - distinguish between the use of web sites, online databases, and e-mail
 - use a randomized experimental design to prevent self-selection bias from distorting the results.

- Questions of macroeconomic impacts may be amenable to analysis using natural experiments exploiting differences in LMI availability or LMI-related policy across otherwise similar jurisdictions.

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Appendix: Summary Table of International Studies on the Impact of LMI

Study and Year	Setting and Time Period	Methodology and Data	Main Findings
<u>Evaluative Empirical Studies</u>			
Anderton, Riley and Young (1999)	United Kingdom; March 1986 to October 1998.	<p><i>Methods:</i> Estimation of generalized matching function.</p> <p><i>Data:</i> Sources not clearly identified.</p> <p><i>Sample:</i> Panel of 20 UK regions and 140 months (March 1986 to December 1998).</p>	<p>Gateway job-search program: negative impact of reemployment rate of short-term unemployed in target population, positive impact on long-term unemployed.</p> <p>Negative impact for non-target populations, but this is likely capturing unobserved trends rather than substitution effects of policy.</p>
Bagues and Labini (2009)	Italy; 1995-2001	<p><i>Methods:</i> Difference-in-differences regression. Treatment: graduation from a university enrolled in <i>AlmaLaurea</i>, a database of information on graduates for use by employers.</p> <p><i>Data:</i> Pseudo-panel constructed from ISTAT Survey on University-to-Work Transition, 1998 (for 1995 graduates) and 2001 (for 1998 graduates).</p> <p><i>Sample:</i> 33,463 obs.</p>	<p>Controlling for other factors, the <i>AlmaLaurea</i> database decreased graduates' probability of unemployment by 1.6 percentage points (most conservative estimate).</p> <p>It also increased regional mobility (i.e. proportion of graduates who moved to a new region of Italy) by 2.4 percentage points, and increased graduates' monthly wages by about 3 percent. It increased graduates' satisfaction with the knowledge gained at university and their self-perceived job stability.</p>
Bortnick and Ports (1992)	United States; January 1991 to January 1992.	<p><i>Methods:</i> Comparison of job-search efforts by outcomes, search method, and worker characteristics (sex, age, and race).</p> <p><i>Data:</i> CPS, 1991.</p>	<p>Most common job search method: direct employer contact (used in 30.4 per cent of search efforts).</p> <p>Most successful method: private employment agency; least successful method: public employment agency.</p>

		<i>Sample:</i> 'Over 32,000' observations; observational unit is a one-month job-search effort.	Results suggest listings of potential employers to contact would be useful form of LMI. People may believe job centres are costly, inaccessible, or useless relative to advertisements and direct contact.
Corson <i>et al.</i> (1989)	New Jersey, United States; 1986-1987.	<i>Methods:</i> Randomized policy experiment; regression analysis. <i>Data:</i> Data from experiment matched with administrative data from Unemployment Insurance Service; a subsample of participants were also interviewed after the experiment. <i>Sample:</i> 11,060 UI claimants; 2,385 in control group received usual services.	Increased job-search assistance led to: - 3 per cent lower annual UI receipts - 0.47 fewer weeks of UI receipts - greater proportion of the subsequent year spent employed - greater earnings (about \$400) over the first two quarters after the treatment Effects were slightly larger for job-search assistance combined with a cash bonus for reemployment. Increased job-search assistance delivers net benefits to society because of its positive effects and its low per-recipient cost.
Corson and Haimson (1996)	New Jersey, United States; 1986-1993.	<i>Methods:</i> Randomized policy experiment; regression analysis. <i>Data:</i> Data from experiment matched with administrative data from Unemployment Insurance Service. <i>Sample:</i> 11,060 UI claimants; 2,385 in control group received usual services.	Increased job-search assistance reduced UI receipts only in the first two years following the intervention; the total change in UI receipts (in dollars and in weeks of receipts) over the six-year follow-up period is statistically insignificant. The treatment had no statistically significant impact on earnings, weeks worked, or the probability of working over the six-year follow-up period.
Decker <i>et al.</i> (2000)	United States (District of Columbia and Florida); 1995-1996.	<i>Methods:</i> Randomized experiment. <i>Data:</i> Data generated by the experiment. <i>Sample:</i> Unemployed UI	Job search assistance programs reduced UI receipts by about 0.5 weeks in the year after participation but had no long-run impacts. Results on the impact of the programs on employment earnings are inconclusive.

		claimants (8,071 in DC, 12,042 in Florida).	
Delander <i>et al.</i> (2007)	Sweden; 1999 to 2002	<p><i>Methods:</i> Controlled experiment; difference-in-difference regression.</p> <p><i>Data:</i> Data from experiment; National Labour Market Board jobseeker database.</p> <p><i>Sample:</i> 565 unemployed immigrants, divided approximately evenly into three groups: private employment agency, enhanced public employment agency, and normal public employment agency (control group).</p>	<p>Impact on rate of reemployment: Estimated impact of services from private agency always negative relative to both enhanced and regular public agency services, but difference never statistically significant.</p> <p>Impact on probability of being employed after 18 months: Private agency service associated with 20 percentage-point lower probability than enhanced public agency. No significant impact relative to regular public agency.</p>
Dolton and O'Neill (1997)	United Kingdom, 1982-1994	<p><i>Methods:</i> Randomized policy experiment; hazard models.</p> <p><i>Data:</i> Data from the experiment matched with Joint Unemployment and Vacancies Operating System data and National Online Manpower Information System data.</p> <p><i>Sample:</i> Random sample of 8,925 individuals who were approaching their sixth month of unemployment; 582 people selected as control group.</p>	<p>Restart (a job counseling program) reduced unemployment duration in short run; median unemployment duration was 11 months for treatment group, 13 months for control group.</p> <p>Long-run impact: statistically significant 6 percentage-point reduction in unemployment rate for men; no effect for women.</p>
Dyke <i>et al.</i> (2005)	United States (Missouri and	<i>Methods:</i> OLS and fixed effects regression.	Inconclusive results for impact of job-search assistance. During first 1-2 quarters of participation, impact is negative

	North Carolina); April 1997 to December 2003.	<i>Data:</i> Panel of administrative data from state welfare administrations. <i>Sample:</i> Female single parents aged 18-65 who were welfare recipients between April 1997 and December 1999. Sample size not clearly specified.	\$200 to \$400 in quarterly earnings. In subsequent quarters, different regression specifications give conflicting results. - Fixed effects model: negative impact on quarterly earnings over 16 quarters. - OLS and first-difference models: small positive effects in later quarters.
Fougère <i>et al.</i> (2005)	France; November 1986 to May 1988.	<i>Methods:</i> Construction of job-search model; estimation of model parameters via maximum likelihood methods. <i>Data:</i> “Suivi des Chomeurs” surveys by INSEE, November 1986, May 1987, November 1987 and May 1988. <i>Sample:</i> 5,988 individuals unemployed in November 1986.	Theoretical result: impact of job-search assistance on reemployment probability indeterminate; assistance has positive direct effect, but also lowers intensity of private job search efforts. Empirical result: positive effect dominates. LMI raises rate of exit from unemployment to employment. Effect is strongest for low-income, low-skill workers because private job search is more costly for them than for high-income, well-educated workers with better informal contacts.
Graversen and Ours (2006)	Denmark; November 2005 to September 2006.	<i>Methods:</i> Randomized experiment; estimation of hazard functions for probability of reemployment. <i>Data:</i> Administrative data from employment service; Danish National Labor Market Authority DREAM Database. <i>Sample:</i> 4,520 individuals who became unemployed between November 2005 and February 2006.	Completing job-search assistance program raises reemployment hazard (i.e. rate of reemployment) by 35 per cent.
Hämäläinen <i>et al.</i> (2006)	Finland; 1997-2004	<i>Methods:</i> Randomized experiments. <i>Data:</i> Data from experiments;	Job-search assistance had no statistically significant impact on monthly employment rates in the short run or the long run.

		<p>follow-up surveys; administrative data from employment service.</p> <p><i>Samples:</i> 1,261 unemployed volunteers in first experiment; 1,017 unemployed participants selected by employment centre case workers in second experiment.</p>	
Koning (2006)	The Netherlands; 2004.	<p><i>Methods:</i> GLS regression analysis.</p> <p><i>Data:</i> Dutch Public Employment Service Benchmarking system.</p> <p><i>Sample:</i> Panel of 124 employment offices and 12 months.</p>	Number of workers per client has a positive and statistically significant impact on the reemployment rate over the six months following program participation, but only among short-term unemployed.
Kuhn and Skuterud (2004)	United States, December 1999 to November 2001	<p><i>Methods:</i> Probit and discrete-time hazard models.</p> <p><i>Data:</i> Computer and Internet Use Supplements to the Current Population Survey.</p> <p><i>Sample:</i> 4,139 respondents who were unemployed at the time of the December 1999 or August 2000 surveys.</p>	<p>Internet job-seekers are more likely to be young, educated, non-black and non-Hispanic, entering unemployment from work or school, and experienced in low-unemployment occupations.</p> <p>Use of the internet has no impact on probability of finding a job within one year. Also, people who use the internet to search for jobs take longer to become reemployed than those who do not, all else being equal.</p>
McVicar and Podivinsky (2003)	Northern Ireland; January 1995 to July 2001.	<p><i>Methods:</i> Estimation of hazard functions for probability of reemployment.</p> <p><i>Data:</i> 20 per cent sample from Northern Ireland unemployment register records.</p> <p><i>Sample:</i> 86,965 unemployment</p>	Significant spike in reemployment probability after implementation of the New Deal policy for both men and women.

		spells, 1995-2001.	
Meyer (1995)	United States (South Carolina, Nevada, New Jersey, Washington and Wisconsin); 1977-1987.	<i>Methods:</i> Survey and synthesis of results from five randomized policy experiments. Treatments involved increased services (including LMI provision) from local job centres.	Increased services at job centres reduce participants' average weeks of UI receipts by about 0.5 weeks. The effect was not always statistically significant. No impact on earnings. South Carolina experiment: extra services had significant impact only when they included job-search information session; suggests information is important aspect of services.
Neumark (1999)	Four US cities: Atlanta, Boston, Detroit, and Los Angeles; June 1992 to May 1994.	<i>Methods:</i> Regression analysis (OLS and IV). <i>Data:</i> Multi-city Study of Urban Inequality – firm-level data on characteristics of most recent worker hired; limited to jobs not requiring college degree. <i>Sample:</i> 1,291 firms.	Statistical link between starting wage and actual employer-assessed worker productivity is weaker for women than men, while link between starting wage and <i>expected</i> productivity (based on worker characteristics) is the same for men and women. This suggests employers have worse LMI for women than men and cannot form accurate expectations. Better LMI regarding women and ethnic minority groups could reduce sex- and race-based inequality in starting wages.
Parnes and Kohen (1975)	United States; 1966 and 1968	<i>Methods:</i> OLS regression. <i>Data:</i> Data from interviews conducted in 1966 and 1968 with males aged 14-24. <i>Sample:</i> About 5,000 males aged 14-24.	A five-point increase in occupational knowledge test score (less than one standard deviation) is associated with increases in annual employment earnings of \$140 for white men and \$290 for black men.
Riley and Young (2001a)	United Kingdom; April 1995 to February 2000	<i>Methods:</i> Estimation of generalized matching function. <i>Data:</i> New Deal Evaluation Database and Benefit Agency administrative data. <i>Sample:</i> Panel of 95 New Deal United of Delivery and 59 months.	Suggests impact of 'Gateway' job-search program has <i>negative</i> impact on unsubsidized reemployment, but results not trustworthy.

Stevenson (2009)	United States; 1992-2002	<p><i>Methods:</i> Panel regression and probit analysis.</p> <p><i>Data:</i> CPS, 1994-2003; Forrester Research data, 1994-2002; CPS Computer and Internet Use Supplements, 1998, 2001, 2003.</p>	<p>Most online job-searchers find internet useful, but fewer than for newspaper ads and personal referrals. Vast majority of online job-seekers are employed.</p> <p>Income, education predict internet access, but not internet job-search conditional on access.</p> <p>State-level internet penetration associated with more job-search methods used by unemployed. Use of internet associated with job-switching by employed, but use of traditional job-search methods is stronger predictor.</p>
Weber and Hofer (2004)	Austria; time period begins in March 1999; end year not clearly specified, but must be earlier than March 2004.	<p><i>Methods:</i> Estimation of hazard functions for probability of reemployment.</p> <p><i>Data:</i> Administrative data from Austrian employment service.</p> <p><i>Sample:</i> 1,820 individuals who became unemployed between March and August 1999 and entered the job-search assistance program at some time during their unemployment spells.</p>	<p>‘Hump shaped’ relationship between impact of job-search assistance policy and duration of unemployment spell prior to program participation:</p> <ul style="list-style-type: none"> - Program is most effective for persons who had been unemployed for 5-6 months; job-search assistance increases the rate of reemployment by about 33 per cent. - Estimate of program impact smaller for very short-term unemployed, but difference from maximum not statistically significant. - Impact quickly diminishes to zero for unemployment durations longer than 6 months. <p>Main point: program effective for short-term unemployed, not for long-term unemployed.</p>
Van den Berg and van der Klaauw (2006)	The Netherlands; August 1998 to February 1999.	<p><i>Methods:</i> Randomized experiment.</p> <p><i>Data:</i> Data from experiments; follow-up surveys; administrative data from employment service.</p> <p><i>Sample:</i> 394 individual UI</p>	<p>Counseling program had no statistically significant impact on the rate of reemployment. This is true both for estimates of the average impact across all workers and for ‘heterogeneous treatment effect’ estimates that allow the impact to vary with respect to individual participants’ characteristics.</p>

		recipients.	
Van Reenen (2003)	United Kingdom; 1997-1998	<i>Methods:</i> Difference-in-difference regression. <i>Data:</i> JUVOS longitudinal sample, 5% of job seekers allowance claimants. <i>Sample:</i> Multiple samples; range from 1,096 to 17,433 individuals. Treatment and control groups defined by location and age.	'Gateway' job-search assistance program for 18-24-year-olds raises probability of reemployment by at least 5.3 per cent (lower bound on impact). Cost-benefit analysis: net benefits of at least £25.7 million.
<u>Conceptual or Theoretical Studies</u>			
Autor (2009)	Not applicable.	<i>Methods:</i> Provides conceptual framework for analyzing the role of labour market intermediaries, especially with respect to LMI provision.	Two information-related market failures addressed by labour market intermediaries: 1. LMI is costly and undersupplied in atomistic markets. - economies of scale in LMI collection and dissemination 2. Asymmetric LMI - Role of public employment services in ensuring high quality of available LMI, preventing misinformation - prevent adverse selection in labour markets (both employees and firms)
Capacity Building International, Germany (2004)	Not applicable.	<i>Methods:</i> Conceptual overview of the functions, forms and impacts of LMI systems, with reference to examples from various countries.	Main benefits of LMI system: - facilitate matching between employers and employees, improving labour allocation across sectors and regions - reduce frictional and structural unemployment
<u>Other Studies</u>			
Brimrose <i>et al.</i> (2008)	United Kingdom; 2004 to 2008.	<i>Methods:</i> Case studies. <i>Data:</i> Questionnaire results and telephone interviews with persons who underwent career	Most participants regarded counseling as useful - initial follow-up: 98 per cent favourable - four-year follow-up: 66 per cent favourable

		counseling. <i>Sample:</i> 50 participants.	
De Koning, Jaap (2005)	Europe; no particular time period.	<i>Methods:</i> Literature survey.	11 of 13 experimental estimates and 3 of 9 non-experimental estimates find positive, significant effect of career counseling on probability of finding a job.
European Training Foundation (1999)	Twelve European countries; no particular time period.	<i>Methods:</i> Review of literature; survey of members of European Training Foundation's Advisory Forum <i>Data:</i> Survey data from questionnaires on sources of LMI and impact of LMI on training standards. <i>Sample:</i> 12 members of ETF Advisory Forum.	Policymakers in Europe draw LMI from a variety of sources: state institutions, vocational training institutions, employers, occupational groups, unions, and regulators. State-provided LMI is perceived as highest quality in most countries. Training systems have adapted to rapid changes in LMI signals by: focusing on broad 'occupational families' rather than narrow jobs; focusing on core skills; implementing flexible standards and qualifications design. Nearly all of the 12 country representatives reported that their countries' training systems are highly responsive to LMI trends.
Government of Finland (2006a)	Finland; no specific time period.	<i>Methods:</i> Summary of conclusions of Ministry of Labour working group on LMI and adult education.	Importance of LMI to lifelong learning strategy is not sufficiently appreciated by policymakers. Much adult education is based on little planning or information on likely outcomes. Improved ICT skills making people more able to find LMI they need. Additional aspects of LMI system (e.g. guidance) will focus on target groups needing more assistance.
Government of Finland (2006b)	Finland; 2000-2009.	<i>Methods:</i> Summary of recent developments in Finland's vocational training services, including LMI.	Finland's focus is on using LMI to identify vocational training priorities and conveying that information to individuals making training decisions. Use of personal educational advising declining due to strong labour market and rise of online self-service LMI sources. In 2005, 63 per cent of clients formed educational or work-related plans with help from counseling.

			85 per cent of client survey respondents viewed Finland's telephone LMI service as useful in educational planning.
Hughes <i>et al.</i> (2002)	No particular place or time period.	<i>Methods:</i> Literature survey.	Career counseling has significant positive impacts on successful job-finding, participation in training programs, and 'learning outcomes' such as attitudes, decision-making skills, and self-awareness.
Martin and Grubb (2001)	Not applicable.	<i>Methods:</i> Provides overview of approaches to labour market policy evaluation and summarizes literature on effectiveness of active labour market policies.	Main evaluation approaches: randomized experiment and regression analysis. Vast majority of studies address United States or Canada; evaluation is rare elsewhere. Studies typically evaluate short-run impact of small-scale programs in early stage of development. Little evidence on long-run impacts, indirect effects on program non-participants, interaction between different types of policies.
Nakamura <i>et al.</i> (2009)	The world, with emphasis on the United States; February-April 2007	<i>Methods:</i> Analysis of data on e-recruiting web sites (internet traffic, market share, etc.); survey of internet job-seekers <i>Data:</i> Online job-search survey conducted by Richard Freeman. <i>Sample:</i> 1,717 respondents (self-selected) from various countries.	More than half of respondents from Asia and Africa; suggests internet can reach workers in low-income countries. Most online job seekers are employed. Uses of job sites (in order of popularity): checking job listings, uploading resumes for employers to find, and finding wage information. Internet useful to more people than personal contacts.
Northern Ireland Department of Employment and Learning (2008)	Northern Ireland; no particular time period.	<i>Methods:</i> Description of LMI systems in Northern Ireland and other countries; one small experiment analyzing the usefulness of LMI as perceived by job centre workers.	LMI used effectively by policymakers (e.g. predicting skills shortages for training policy). Use of LMI in job centres is informal, based on staff members' accumulated knowledge of local labour markets through advertisements, contact with firms, etc. When given a range of additional LMI to use, most staff members felt it was of little use in dealing with customers.

OECD (1993)	No particular place or time period.	<i>Methods:</i> Literature survey.	Counseling has a significant positive impact on probability of reemployment among long-term unemployed, possibly at expense of short-term unemployed.
Sharpe and Qiao (2006)	Five OECD Countries: Australia, Canada, Germany, the United Kingdom, and the United States; No specific time period	<i>Methods:</i> Literature survey, cross-country comparisons.	<p>Most common forms of LMI: advertisements, direct worker-employer communication, personal contacts. Publically-provided LMI likely useful to people without good contacts.</p> <p>Private vs. public LMI provision: - private sector can deliver efficiency gains - risk of greater transactions costs, strategic behaviour, lack of transparency.</p> <p>Most commonly used source of LMI is private advertisement. Public LMI system most useful to workers during economic recessions when jobs are scarce.</p> <p>No one mode of LMI delivery is ‘good enough’ by itself; best LMI systems use multiple forms of LMI, multiple media for dissemination.</p>