Impact evaluation of labour market policies through the use of linked administrative data

Final report

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Executive Summary

Countries across the European Union (EU) and OECD use a variety of Labour Market Policies (LMP) to promote employment, improve job quality, prevent labour market exclusion, strengthen social protection and prepare for future opportunities and challenges in a rapidly changing labour market. Assessing the effectiveness of such policies in a timely manner is key to ensuring that only the most cost-effective ones are implemented, which is crucial when public resources are constrained. Given the current economic situation induced by the COVID-19 pandemic this is a particularly timely issue, as Governments seek to strengthen the effectiveness of measures to cushion the negative impact on people's jobs and incomes. Through providing guidelines for linking administrative data for evaluation purposes and providing an overview on current practices across the EU and OECD, this report strengthens the case to collect administrative data, link different sources and use it to evaluate the impact of labour market policies.

The first chapter of this report provides practical advice to policymakers and country authorities on how to use impact evaluations to assess their labour market policies, and illustrates this with several useful country examples and best practices. In particular, it aims at providing guidance on three main aspects:

1. How to drive evidence-based policy making with (counterfactual) impact evaluations?
2. What is needed to conduct counterfactual impact evaluations?
3. How to build analytical capacity and a culture of evidence based policymaking?

The first aspect requires taking a step back, to ask what is the rationale for evidence-based policymaking. Policymakers operate in complex environments, face tight budgets, pressure to show that they provide good value for money, and demanding citizens that put pressure on governments. Conducting timely evaluations to build evidence is key to respond to these pressures, identify the need to adapt or terminate inefficient policies, and to continue implementing those that work. Yet, not all evaluations are equally informative on the effectiveness of policies. This report advises policymakers to rely on counterfactual impact evaluations (CIEs), as they allow recovering the estimates of the impact of a policy, and form the basis to conduct full economic evaluations.

Conducting CIEs requires information about the outcomes of programme participants, which in turn warrant investments into data collection. Researchers and policy analysts can use several sources of data to conduct CIEs of their policies, but administrative data offer great advantages in most contexts, the most important one being their cost-effectiveness. Countries with more developed administrative data systems, which also allow linking data across registers and permit the utilisation of this data for policy analysis, are able to produce more regular and more timely evidence on the effectiveness of their policies.

The critical success factors to evaluate policies are leadership, building analytical capacity, and cooperation between all actors involved. It is also essential to proactively communicate with the public on what evidence-based policymaking means for the public and how it can help improve the efficient and effective use of public finances to ensure the highest possible economic and social return.

Institutions' analytical capacity is sometimes challenged when it comes to building sound evidence on what works through CIEs. Planning CIEs in advance can make a difference in the capacity of institutions to

conduct the analytical work. Reaching a minimum level of analytical skills across governmental institutions is crucial to conduct CIEs in house, but also to commission them to a third party. Public institutions may thus benefit by building strong links with the research community, by liberalising the access to administrative data, hiring academic profiles, and fostering close cooperation.

The second chapter zooms in the capacity of 34 OECD countries to conduct CIEs on their labour market policies (LMPs) by using linked administrative data. It provides an up-to-date mapping of the data availability, the barriers in accessing and linking them, and an assessment of the feasibility of impact evaluations of LMPs using linked administrative data. The methods used to drawing this mapping included i) an online survey to EU and OECD countries conducted in summer 2019; ii) expert consultations and creation of a network of experts; iii) desk-based research; and iv) an expert workshop organised by the European Commission and the OECD on "evaluating labour market policies through the use of linked administrative data" that took place in November 2019 in Brussels.

An important basis for monitoring and evaluation is the linking of administrative data from several sources to trace participants' labour market outcomes over time following participation in LMPs. Conducting comprehensive CIEs based on administrative data usually requires linking two or more registers in almost all countries. The number of registers that need to be linked depends on the nature of the research and some projects require less linking than others. In almost all countries, information on LMPs participation is recorded in administrative registers and can potentially be linked to the unemployment register. This is a key first step, as it implies that almost all countries can conduct CIEs on LMPs by using the unemployment register to construct a control group to participants in LMPs. The questionnaire responses also suggest that in most countries the unemployment register can be linked with the employment register, which means that, a priori, countries should be able to evaluate the labour market outcomes of participation in LMPs continuously and in the medium to long-term.

In contrast, most countries still need to make significant investments on linking data from registers containing information on income, social assistance and incapacity benefits. The same finding holds for linking administrative data with major individual- and household-level surveys.

More generally, the second chapter of this report finds that administrative data linking is facilitated when there are institutions responsible for linking the data across registers. About half of the countries reported the existence of such an authority. Such authorities may help to address typical issues when dealing with individual-level data such as data privacy and may have standardised procedures to deal with data requests. This relates to the need for political support to evaluate policies: a strong culture of evidence-based policymaking is conducive to the data investments needed and to building analytical capacity necessary to conduct impact evaluations.

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The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

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1.1. Introduction to "Guidelines for linking administrative data for impact evaluation of labour market policies"

1. European Union (EU) and OECD countries use a variety of Labour Market Policies (LMP) to promote employment, improve job quality, prevent labour market exclusion, strengthen social protection and prepare for future opportunities and challenges in a rapidly changing labour market. At the same time governments, faced by tight budgets, pressures to provide good value for money, and demanding citizens, are committed to improving the efficient and effective use of public finances to ensure that those funds are spent on activities that provide the greatest possible economic and social return. As set out in the *new OECD Jobs Strategy*, policies and programmes therefore need to be monitored and evaluated regularly and rigorously and inefficient ones need to be swiftly adjusted or terminated (OECD, 2018[1]). This set of **Guidelines for linking administrative data for impact evaluation of labour market policies** provides a detailed guide for policy makers, analysts and practitioners on the necessary steps that countries have to make in order to evaluate their labour market policies and programmes. The guidelines draw on countries' experiences with such evaluations as these are reflected in academic works (see (Card, Kluve and Weber, 2017[2]) for a recent summary),recent OECD work in this area (e.g. a 2019 evaluation of Latvia's ALMPs in OECD (2019[3])[1]), and the work of the EC (JRC) that supports EU countries with the evaluation of their LMPs using administrative data (e.g. JRC (Forthcoming[4])).

2. Monitoring and evaluation require comprehensive information on individuals who participated in policies and programmes, as well as those who did not, to establish the effectiveness of LMPs. These evaluations can take the form of **counterfactual impact evaluations**, which seek to compare the results of a policy or intervention for those who benefitted from it to a group not subject to the intervention. Carrying out such evaluations requires collecting data or using data that are already available, such as administrative data that are regularly collected by countries' labour market institutions. The focus here is on these **administrative data**, which offer the possibility to evaluate policies using information that is already available. Administrative data, however, are seldom collected for the pure purpose of monitoring and evaluation, but usually serve operational needs. Using administrative data for monitoring and evaluation in turn requires a significant initial investment to make the data useful for evaluation. For putting this into practice, it requires many different actors, which could be distinguished into:

- Policymakers, who develop policies based on evidence;

[1]OECD (2019[16]) provides a complete overview of the work that the Secretariat has undertaken recently.

- Analysts (within government or in independent research institutions), who carry out evaluations to provide evidence;
- Practitioners (e.g. in Public Employment Services), who implement the policies on the ground and often are the owners of administrative data; and
- Intermediaries (e.g. Statistics Bureau), who support the process of accessing and using administrative data in monitoring and evaluation.

3. These guidelines aim to be relevant to all types of actors, complementing other recent work in this area, including the EC's guidance on "Design and Commissioning of Counterfactual Impact Evaluations" (European Commission, 2013[5]). They also complement the recent efforts of the EC to review the EU countries' capacity to conduct CIEs of European Social Fund (ESF) measures[2] (EC, 2019[6]), and to offer guidance on how to design such evaluations and how to compile the necessary data (European Commission, 2019[7]; EC, 2018[8]).

4. Instead of offering detailed technical advice, these guidelines concentrate on addressing the questions:

1. How to drive evidence-based policy making with (counterfactual) impact evaluations?
2. What is needed to conduct counterfactual impact evaluations?
3. How to build analytical capacity and a culture of evidence based policymaking?

1.2. How to drive evidence-based policymaking with (counterfactual) impact evaluations?

5. Governments, faced by tight budgets, pressures to provide good value for money, and demanding citizens, are committed to improving the efficient and effective use of public finances to ensure that those funds are spent on activities that provide the highest possible economic and social return (Crato and Paruolo, 2019[9]). Policies and programmes therefore need to be monitored, evaluated regularly and rigorously and inefficient ones need to be swiftly adjusted or terminated. This section therefore makes a case for using evidence-based policymaking and making it a continuous process, with a focus on counterfactual impact evaluations.

1.2.1. What is the rationale for evidence-based policymaking?

6. **Policymakers operate in complex environments**. They face tight budgets, pressure to show that they provide good value for money and demanding citizens that put pressure on governments (OECD, 2008[10]). Moreover, the policy-making environment is changing and increasingly influenced by a sense of uncertainty about the future, populism, polarisation and the changed channels of communication (European Commission, 2019[11]).

7. **Evidence should play a critical role in the policymaking process**. Policies built on a strong evidence base help to improve the quality, responsiveness and accessibility of public services and should be an integral part of the policy-making cycle (OECD, 2019[12]). Building a strong evidence base requires performance information as well as high quality evaluations, conducted objectively and regularly (OECD,

2 The EC has made many efforts in recent years to build countries' capacity to monitor and evaluate their LMPs through the implementation of European Social Fund (ESF) programmes and with the support of the Centre for Research on Impact Evaluation (CRIE), which is part of the Competence Centre on Microeconomic Evaluation (CC-ME) of the European Commission's Joint Research Centre (JRC). The JRC has provided scientific expertise, advice and support on impact evaluation of policies, including measures funded by the ESF.

2015[13]; OECD, 2018[1]). The risk of not conducting evaluations is that policymakers are not aware if policies and programmes3 are ineffective, which could result in adverse and costly outcomes (HM Treasury, 2011[14]). Conducting evaluations is equally important to identify the need to adapt or terminate inefficient policies and programmes, and to continue implementing those that work.

8. **Monitoring and evaluation should provide timely information** allowing for timely resource allocation and re-prioritisation (OECD, 2015[13]). The starting point for evidence-based policymaking should be the evaluation of past policies and programmes to learn for the design and implementation of new policies and programmes. Preparing future policies based on ex-ante evaluations helps to set their outcome targets and to establish the data requirements for evaluation and monitoring while programmes are implemented, running and once completed (European Commission, 2018[15]). In order to influence decision-making it is, therefore, key to present results and guidance in a timely fashion.

9. **Legal mandates are a driver of evidence-based policymaking**. Recognising the importance of evidence-based policy-making, some countries have institutionalised impact evaluations through legal requirements (OECD, 2019[16]), which make the evaluation of policies and programmes an imperative. Such requirements may be embedded in specific laws (e.g. labour law) or result from overarching national (e.g. budgeting laws) or supranational legislation (see Box 1.1 for examples on legal requirements to evaluate labour market policies). However, not all countries that evaluate their labour market policies rigorously have a legal mandate to do so. Whether there is a case for introducing such legal requirements and at what level of government depends on many different factors such as country-specific traditions to policy-making, legal systems (common versus civil law systems), and devolution of responsibilities.

Box 1.1. Legal mandate to evaluate labour market policies

Two decades ago, rigorous evaluations of labour market programmes were concentrated in a couple of countries only. Fiscal constraints and pressure to achieve better value for public spending resulted in more countries undertaking rigorous evaluations of their active labour market programmes (Martin, 1998[17]). Indeed, looking at the number of programmes that have been evaluated, the number started to increase significantly in the 1990s and early 2000s, as reflected, for example, through studies included in recent meta evaluations such as Card, Kluve and Weber (2017[2]).

The availability of data and computer processing power are essential drivers of this increase. Moreover, there is a growing number of OECD countries with formal requirements for ex-post evaluation (OECD, 2018[18]). Requirements to evaluate labour (and social) market policies may result from:

- Government-wide requirements such as performance-based budgeting (e.g. introduced in New Zealand in 1989 (NZ Legislation, 1989[19]) and in Austria in 2012 (RIS, 2012[20])) and mandates to experiment (e.g. in 2016, the President of the Treasury Board in Canada issued a direction to devote a fixed percentage of programme funds to experimenting (Government of Canada, 2016[21]));
- Labour law: E.g. in Switzerland an evaluation requirement in the unemployment insurance act is in force since 2003 (Le Conseil fédéral, 2020[22]);
- Supranational regulations in the European Union, such as those guiding programmes financed by the European Social Fund (ESF), which also carries an evaluation requirement (EUR-Lex, 2013[23]).

3 The terms programmes and interventions are used interchangeably throughout the report. EC publications may more often refer to interventions, while the OECD uses the term programme more often.

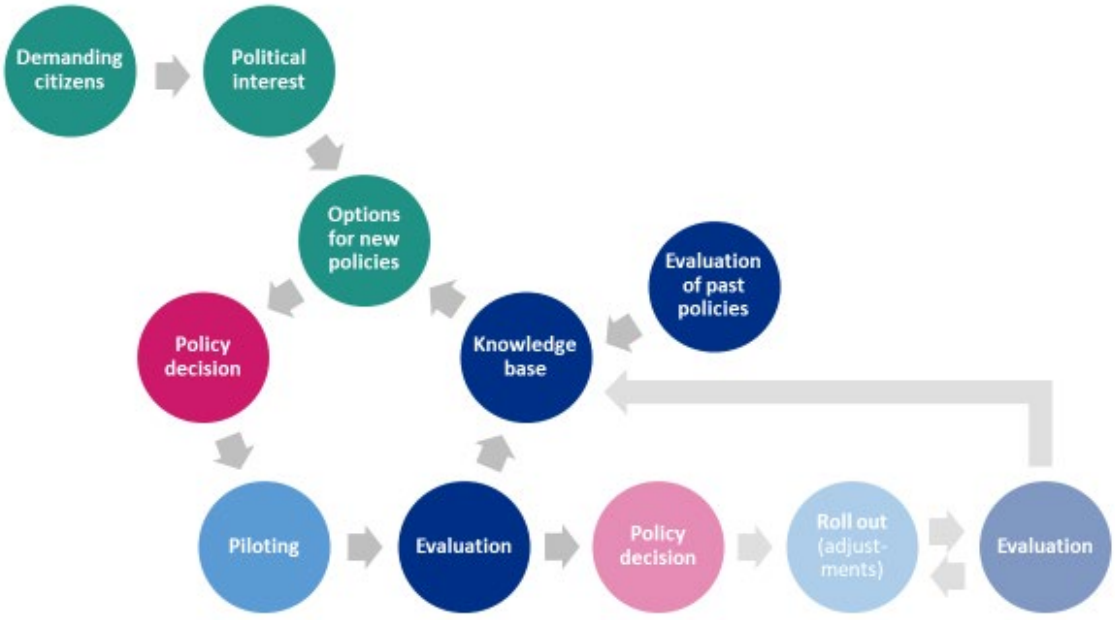
- Strong non-governmental organisations: In the United States and Canada, MDRC (e.g. Cummings and Bloom (2020[24])) and SRDC (e.g. SRDC (2019[25])) are credited with innovation, experimentation, and evaluation, of social, education, health and labour market policies, also having pioneered random experiments in these fields.

Among the countries responding to the OECD/EU questionnaire on "Impact evaluation of labour market policies through the use of linked administrative data" just under half (17 out of 35) reported legal obligations to conduct impact evaluations for labour market policies. The highest number of programme estimates reported in Card, Kluve and Weber (2017[2]) are from Germany, where a legal mandate exists. There the Institute for Employment Research (IAB) conducts research based on two statutory mandates both for unemployment insurance (Sozialgesetzbuch III, 1997[26]) and unemployment assistance (Sozialgesetzbuch II, 2003[27]). In New Zealand, more than 40% of all past and present labour market policies have been evaluated since 2000 (De Boer, 2019[28]). However, several countries that are well-known for their "evaluation culture" and their rigorous evaluation of labour market policies reported no specific legal mandate to do so (e.g. Denmark and Sweden).

1.2.2. Evidence-based policymaking as a continuous process

10. Figure 1.1 summarises the process of evidence-based policymaking. The starting point to changing existing labour market policies and developing new ones are often election cycles and citizens demanding change. This in turn creates a political interest and the development of options for new policies. The outcomes of evaluations of existing labour market policies feed back into this loop, driving policy change and the development of new policies. This section describes the development of new policies based on evidence.

Figure 1.1. Evidence-based policymaking: A continuous process



Source: Based on Nielsen (2019[29]).

11. **Using existing knowledge for policymaking is challenging in practice**. The basic principle of evidence-based policymaking is to ensure that information on what has worked, for whom, where and why is at policy-makers fingertips when they develop new policies and programmes. This is referred to as "institutional memory" of public institutions, which is an essential ingredient in evidence-based policymaking. However, having oversight of past evaluations and staying abreast with a plethora (and growing number) of evaluations of labour market and social policies available across the world poses a challenge for policymakers and those advising them, which requires a strong research community. A key question also is how institutional memory can continue to be captured, distributed and integrated into the policymaking cycle (Corbett et al., 2018[30]). In this respect, Figure 1.2 provides four examples of capturing and sharing information in the area of labour market policy evaluation.

Box 1.2. Knowledge databases: What has worked, for whom, where and why?

Having oversight of past evaluations and staying abreast with a plethora (and growing number) of evaluations of labour market and social policies available across the world is crucial for evidence based policymaking. Academic metadata studies and literature reviews thus provide invaluable information (e.g. Card, Kluve, Weber (2017[2])). Public administrations in some countries also have also undertaken encouraging approaches to capturing and sharing information in the area of labour market policy evaluation:

Jobeffekter.dk in Denmark

Jobeffekter.dk is a knowledge bank developed by the Danish Agency for Labour Market and Recruitment (STAR) in collaboration with independent researchers in 2013. It aims to provide a quick, accessible and up-to-date overview of what labour market policies and programmes had a positive effect through covering around 530 Danish and international research-based studies. New studies are regularly uploaded to staying abreast with the latest research and results are available for many target groups (e.g. short-term unemployed, long-term unemployed, unemployed with disabilities etc.). An important aspect is that each study uploaded to the knowledge bank undergoes an assessment by researchers (criteria include the researcher's quality assessment, analytical method, geography and publication in a scientific journal).

CLEAR: Clearinghouse for Labor Evaluation and Research in the United States

In the US, the Department of Labor's Chief Evaluation Office created the Clearinghouse for Labor Evaluation and Research (CLEAR), which aims to make labour market research more accessible to practitioners, policymakers, researchers, and the public more broadly. CLEAR identifies and summarises many types of research, including descriptive statistical studies and outcome analyses, implementation, and causal impact studies. CLEAR conducts a review for each study in the database, which covers information on the research question, intervention and setting, data and methods, and findings, and includes a link to the original publication. CLEAR also allows users to search its database by keywords, outcomes, target population, study type, year of publication, and more. For causal studies that estimate impact, CLEAR also provides causal evidence ratings of study quality and a more in-depth research profile. These types of studies, when they are of sufficient quality, can help practitioners and other decision-makers understand the effectiveness of the interventions examined.

Labour Market Policy Evaluation Online Search system in Austria

The Austrian Ministry for Labour, Family and Youth maintains a literature database containing more than 4 300 reports, studies, surveys, books and working papers on evaluation and monitoring of labour market policy instruments, measures, programmes and policies from 1995 onwards. Different from Jobeffekter.dk, the database covers not only impact evaluations, but also other research on labour

market policies. The database allows a full text search of all studies and all studies are categorised with key words (in German). The majority of studies do not undergo an assessment, however, for a small number of studies there are fact sheets available, which summarize the research with standardised criteria (including research question, theoretical background, data used, methods, results, assessment of the study/results and relevance for the Austrian labour market) and format.

The What Works Initiative in the UK

The What Works Initiative is a network made of 14 independent research centres. Public institutions, research centres and universities jointly run them. These centres build an evidence base on which policies work, by pooling and summarising impact evaluations and academic work in a way that is understandable for non-researchers. They also provide toolkits on how to evaluate policies and design guides to help policymakers make informed policy decisions.

Counterfactual Evaluation Archive (CEA): an EU initiative

The CEA is an online database, which collects published articles and working papers using counterfactual impact evaluation methods to assess the impact of active labour market policies and programmes. These include interventions funded by the European Social Fund as well as policies of similar type within Europe (updated up to December 2017).

Source: www.jobeffekter.dk/en/, https://clear.dol.gov/index.php, www.dnet.at/lmpeval/, www.gov.uk/guidance/what-works-network and https://crie.jrc.ec.europa.eu/CIE_database/cieDatabase.php.

1.2.3. How to evaluate policies with (counterfactual) impact evaluations

12. **Evidence-based policymaking should be informed by different evaluation methods.** Ideally, policymaking can be guided by three different types of evaluation (HM Treasury, 2011[14]). **Process evaluation** provides insights on whether a policy or programme is being implemented as intended. It helps to provide information on policy or programme improvement, modification and management through providing insights into what is working well and what is not. Different research methods may be used for process evaluation, such as interviews, focus groups, or surveys. **Counterfactual impact evaluations** (CIEs) seek to identify the causal effect of a policy or programme. CIEs, hence, aim to answer the question of what difference a policy or programme has made and to what extent its outcomes can be attributed to the policy or programme. Finally, **economic evaluation** compares the benefits of a policy or programme with its costs to assess whether it generated a net benefit, where the benefits outweighed the costs (HM Treasury, 2011[14]).[4] This can be achieved either through cost-effectiveness analysis (obtain the cost per unit of outcome) or cost-benefit analysis (answer the question of whether the benefits outweigh the costs).[5]

13. **The focus of these guidelines is on counterfactual impact evaluations.** CIE is a method of comparison which involves comparing the outcomes of interest of those having benefitted from a policy or programme (the “treated group”) with those of a group similar in all respects to the treatment group

[4] The counterfactual impact evaluation should quantify the outcomes of a policy or programme, but it will not on its own quantify whether the outcomes justified the policy (HM Treasury, 2011[14]).

[5] Cost-effectiveness analysis assesses the costs of rolling out a policy or programme and delivering it on an ongoing basis. The outcome is the cost per outcome unit (e.g. cost per additional individual placed in employment). Cost-benefit analysis goes further than cost-effectiveness analysis as it also assesses the benefits of a change in outcomes (e.g. the value of placing an additional individual in employment) and, hence, allows addressing the question on whether the benefits outweigh the costs. A full social cost-benefit analysis thereby aims to quantify all costs and benefits of a policy or programme, both for the individual and society as a whole taking into account impacts on health and the environment (HM Treasury, 2011[14]).

(the "comparison/control group"), the only difference being that the comparison/control group has not been exposed to the policy or programme. The comparison group provides information on "what would have happened to the members subject to the intervention had they not been exposed to it", the counterfactual case (EU Science Hub, 2016[31]).

14. **What are the benefits of CIEs?** When carried out correctly, CIEs provide estimates of **the impact of a policy** (positive or negative and statistical significance) (European Commission, 2013[5]). These estimates convey essential information to policymakers. They also provide the basis to conduct full economic evaluations either through cost-effectiveness or cost-benefit analyses. CIEs are advantageous over other quantitative evaluation methods that do not use a comparison group, as the later cannot credibly measure the impact of a policy. Likewise, qualitative evaluation methods alone, such as interviews to program participants, are too restrictive to allow making conclusions on whether a policy works or not. These methods convey, however, essential information on the potential mechanisms of a policy and enable an informed investigation of these using quantitative methods, and thus are an excellent complement to CIEs for a complete evaluation of a policy.

15. **Experimental and quasi-experimental CIEs.** The main distinction to be made when choosing the methodology to carry out CIEs is whether the design is experimental (randomized control trials, RCT) or quasi-experimental. Experimental approaches are often considered the "ideal" in evaluating the impact of a policy or programme, as they imply randomly assigning entities to the treatment and the control group. If the process of exposing entities to treatment is truly random, treatment and control groups are statistically equivalent at randomisation: any difference in results can be attributed to the intervention being evaluated (European Commission, 2013[5]). Quasi-experimental approaches essentially try to mimic the process of randomisation by constructing a control group that is as close as possible to the treatment group, so that ex-ante, they would be statistically equivalent.

16. **Sometimes CIEs are not feasible.** Indeed, there are situations when i) CIEs are not feasible due to lack of adequate data (poor data quality, or data that cover partially the population), or ii) the results of the CIEs are not robust due to confounding factors or inexistence of an adequate control group (De Boer, 2019[28]). The implication then is to choose alternative evaluation types (e.g. process evaluation) based on the specific context and objective, being open about its limitations, but not to discard evaluation altogether.

1.3. What is needed to conduct counterfactual impact evaluations?

17. Monitoring and evaluating policies and programmes to assess their impacts requires information about the outcomes of participants, which in turn warrants investments into data collection (OECD, 2018[1]). Different sources of data exists. These guidelines mainly apply to administrative data sources, but are also relevant for other types of data sources. This section discusses several important issues, such as i) which data to use in which contexts; ii) recognising that policy evaluation often requires more than one data source; iii) how different (administrative) data sources could be linked for evaluation purposes; and iv) using administrative data in a way that respects confidentiality.

1.3.1. Without data, no CIEs: What data to use?

18. **A variety of data sources can be used to carry out CIEs.** Figure 1.2 summarises the several sources of relevant data, and specifies some of their principal characteristics.

Figure 1.2. Potential data sources to carry out CIEs

Survey data		Other data	
Experimental data *e.g. follow-up surveys*	**Observational data** *e.g. social surveys*	**Administrative data** *e.g. records from public agencies*	**Other types of Big Data** *e.g. social media, supermarket transactions*
• Data are collected to investigate a fixed hypothesis • Usually relatively small in size • Known sample / population • Usually not complex to use for research.	• Data specifically designed for research, may be used to address multiple research questions. • Data may be large • Known sample / population • Usually not very complex to use for research.	• Data are not collected for research purposes. • Data may be very large • Usually a known sample / population • Can be complex to use for research and require extensive data management to clean and organise the data • Multidimensional (i.e., may involve multiple fragments of data that have to be linked together).	• Data are not collected for research purposes. • Data may be very large • Sample / population unknown • Complex to use for research and requires advanced techniques to make it usable • Multidimensional (i.e., may involve multiple fragments of data that have to be linked together).

Source: Based on Connelly et al. (2016[32]).

The strengths of administrative data.

- **Cost-effectiveness.** Administrative data offer the possibility to evaluate policies using information that is not routinely available from observational data, or that would be too costly to obtain from experimental data. Administrative data do not impose an additional data collection cost and spares citizens from the burden of having to actively report the information. In addition, administrative data can be reused, while experimental data rarely can, as it is often very specifically tailored to a fixed hypothesis.
- **Greater population coverage.** Because of the cost involved in collecting data, experimental and observational data have smaller sample sizes than administrative data, which (ideally) cover the entire relevant population. This is necessary, as the advanced econometric techniques often used in CIEs would otherwise face the issue of too small sizes.
- **Continuous recording of information.** The cost of collecting data also results in observational data being only collected at fixed periods, which do not make them suitable to analyse many policies and potentially longer term effects. Because administrative data are continuously recorded, it is possible to identify cohorts who experienced a particular policy change to study change over time, even if there was no survey data collection at the time (Connelly et al., 2016[32]).
- **Non-response, sample selection and non-random attrition.** The legal obligation to participate in administrative data programmes is a key advantage compared to the voluntary nature of responses to surveys, which limits the problem of non-response (UNECE, 2011[33]), as well as potential issues of sample selection and non-random attrition. Survey data may also suffer from other data quality issues, such as measurement error in responses due to misreporting and misunderstanding of questions. These issues, however, often affect administrative data too.

19. **Taking into account the context of the policy to be evaluated is crucial.** Indeed, some contexts and evaluation questions may make it difficult, and even suboptimal, to work with administrative data. For example, evaluating labour market policies in countries that have a high level of informality requires a particular consideration for the type of data used, as public sector administrative data may not cover the relevant groups. Also, administrative data may not record information on all outcomes that are relevant for the evaluation of a given policy or some of this information may not be available for research because of data protection issues. More generally, some further consideration before using administrative data for CIEs is necessary for contexts of informal economic activity, developing/emerging economies and policies where there may be little interaction between individuals and the public sector.

20. **Preparing the environment to work with administrative data.** Administrative data are a powerful resource as they allow generating evidence with a high level of applicability for policymaking (Harron et al., 2017[34]). Using administrative data for CIEs, however, requires a significant initial investment, including:

- **Modern data management systems.** Administrative data used for research purposes are usually drawn from the same IT systems that (public) institutions use to serve citizens. Because the data are not collected for research purposes, they have to be transformed or have to be linked with other data sources to be informative to the measurement of policy outcomes. The data processing can be directly done by the researcher, but it requires administrative data of good quality. In the ideal scenario, public organisations would invest in a modern data management system which includes data quality checks, a metadata management system, the proper use of code lists and classifications, etc. Modern management systems are not only essential to ensuring the timely preparation of administrative data for research, but also to the proper use of data for administrative/operational purposes.
- **Technical solutions to store administrative data.** Ideally, administrative records for data analysis should be stored in a data warehouse solution. A data warehouse solution facilitates accessing data for internal analysts and sharing data with external researchers, providing them with user-friendly data outputs to manage, as well as preventing overburdening the operational database. However, this solution requires a significant investment. Public administrations with resource constraints may opt to use a data warehouse solution only for these data that are routinely used for analysis and research, and work with queries to the operational databases to extract the data to be shared with researchers.
- **Privacy concerns need to be addressed.** The use of administrative data may raise concerns about the privacy of the information in the public domain, particularly when the records are linked across different sources and data are stored for long periods. Using administrative data for research, hence, requires establishing legal frameworks to ensure the protection of personal data, and develop sound guidelines around using and sharing this type of data.
- **Building a relationship across owners of administrative data.** To ensure making the best use of the data for CIEs of policies, liaison between the data owner (or provider in case of third parties taking the role of sharing data) and researchers using the data is essential. Relatedly, building metadata and documentation of the nature and quality of the administrative data is crucial when intending to work with these data. An ongoing exchange between data owners and researchers also allows developing a system to give feedback on any quality issues of the data, which can be of value to the data owner, supporting future improvements. It may even allow influencing the data collection process, in often quite subtle ways, making them more amenable to CIEs (Statistics Canada, 2019[35]).

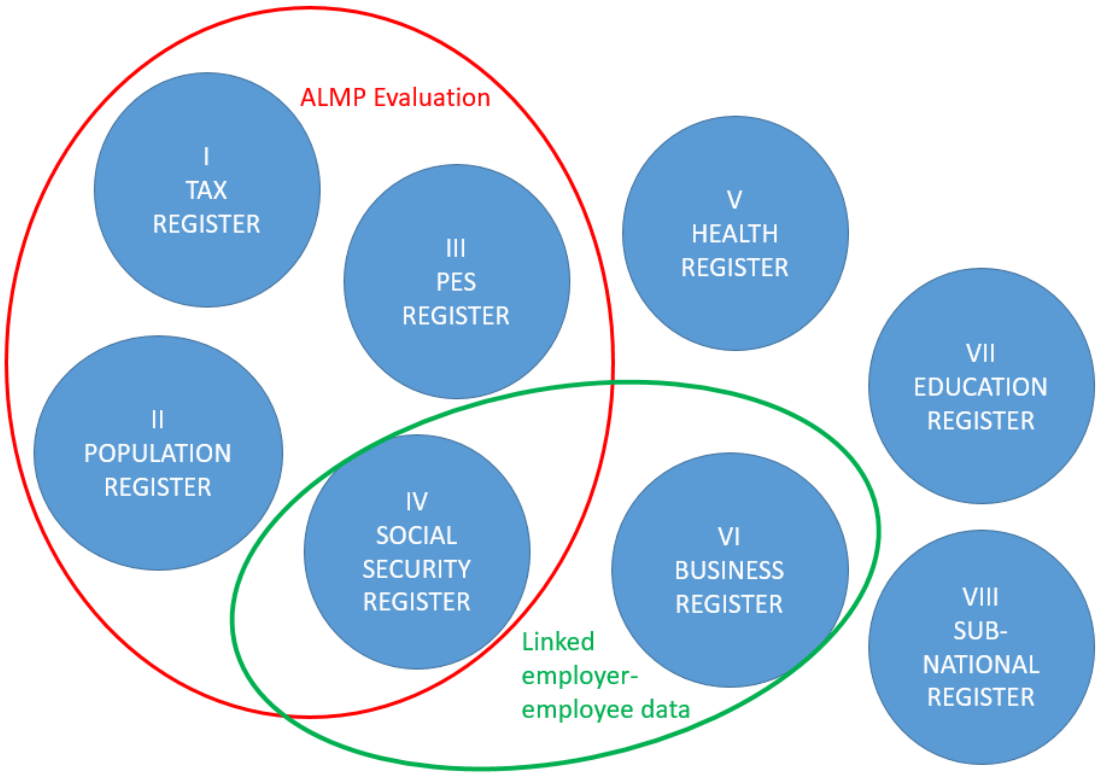
1.3.2. One data source is often not enough

21. **What determines the data needed.** The data needed to carry out a CIE depends on i) the policy or programme being evaluated; ii) the outcomes assessed; and iii) the methodology used. Information is required for both the treatment and the control group (European Commission, 2019[36]).

22. **Data needs define the number of registers required for CIEs.** Information on coverage of a given policy or participation in a programme is usually kept on one register (e.g. participation in ALMPs in register owned by PES). Information on outcomes (e.g. employment or income) is often kept on different registers (e.g. social security or tax records). Finally, information to select the control group, which is not part of the programme register, may create the need to use further registers (e.g. unemployment register, population register, education register, social assistance register, etc.).

23. **Linking across registers is necessary.** Figure 1.3 summarises some of the public sector administrative sources that can be of relevance for CIEs of labour market and social policies. It presents a hypothetical situation, where different types of information are kept on different registers that may be managed by central government institutions or also involve regional and local levels of government. Using data from regional or local registers may be an additional challenge, as data from sub-national entities has to be merged. A clear advantage is automatically integrated sub-national data and central data systems, especially for continuous monitoring and evaluation. Two examples are presented in Figure 1.3: the first one are the (potential) registers needed to conduct an ALMP evaluations, and the second one the registers needed to construct an employer-employee linked dataset. The registers needed to conduct an ALMP evaluation depend on the circumstances of the policy, but in this example, the researcher would need to link: i) PES data containing the ALMP program, as well as the PES register on the unemployed to construct a control group; ii) Population registers to characterise program participants and the control group; iii) Social security registers for information on employment spells; and iv) Tax data on labour earnings. To construct a linked employer-employee dataset, it is necessary to link employees from social security registers and firms from business registers.

Figure 1.3. Main types of public sector administrative sources



Note: Tax registers cover both direct (e.g. income tax) and indirect taxes (e.g. Valued-added tax, VAT), both for individuals and businesses. Social security registers (called the "employment register" in other parts of this document) may cover data on contributions, social protection benefits and pensions. PES data contains data on the registered unemployed and often information on labour market services and measures. Business registers contain information on companies and establishments. Health registers could include data on health insurance, but also hospital admissions etc. Population registers include civil registrations, addresses, and individual and household demographics. Education registers may comprise a large number of registers on different levels of education. The type of information kept in sub-national records differs between countries and depends on the degree of devolution of specific policy areas to the regional/federal/local level. For labour market and social policies this often concerns the regional or local administration of social assistance and labour market services and measures.
Source: Own elaboration based on (UNECE, 2011[33]).

1.3.3. Linking administrative data and storing linked administrative data

24. **Challenges to linking** administrative **records**. In cases where linking administrative data is necessary to carry out comprehensive CIEs, technical and data protection considerations must be taken into account.

25. **Technical challenges to linking administrative data.** From a technical point of view, it is not always straightforward to combine administrative records. Many EU/OECD countries have a personal identifier common to all registers (social security number, personal ID, etc.). This permits exact matching between registers. In some instances, however, the identifier may not be common to all registers, which forces analysts to consider alternative methodologies (see Box 1.3). Whatever the linking method, making administrative data useable for evaluations requires preparation of the data, which can be a lengthy process, if the data is not used on an ongoing basis for evaluation purposes.

Box 1.3. Potential linking methods

When there is a unique identifier, linking the data with exact matching is possible and this produces only a marginal error. In the absence of a unique identifier, researchers can use alternative matching techniques, such as deterministic or probabilistic matching.

Deterministic matching

Deterministic matching uses identifying characteristics (name, address, date of birth, gender etc.) to match the persons between two registers. The success of this technique relies entirely on having high quality data that is standardised in the same way across registers. In addition, the researcher has to think very carefully about how to select the identifying characteristics: as the number of elements to match increases, the matching rules may become more complex and the number of potential combinations of matches multiply.

Probabilistic matching

Probabilistic matching uses a statistical approach to determine whether an entry in two records represents the same individual. It uses a broader set of elements than deterministic matching, and uses weights to calculate match scores and thresholds to determine a match, non-match or possible match. Even though this strategy is more complex than exact matching on observed characteristics, it increases the pool of statistically relevant matches, which could be missed in the case of deterministic matching.

Source: European Commission (2013[37])

26. **Choosing a linking process that ensures the privacy of personal information.** Linking administrative data also entails legal considerations that ensure the privacy of the information. For data privacy purposes, countries should link data from registers using a trusted third party approach.

- **Project-specific person identifiers.** Once the records necessary for a particular project have been identified and access is granted, a third party may receive the data from the different organisations and replace the identifiable information (ID, name, address, and other identifiable details) by a person number that is specific to this project. The algorithm used to create the person number, also called “Linking Key”, can be stored to ensure that it can be reused, rather than being a one-off process. In many cases, however, data protection considerations require the deletion of the “Linking Key”.
- **Unique person identifiers.** An alternative is that the third party replaces the identifiable information by a person identifier that is common to all administrative records. Thus, there is a unique Linking Key, which is safeguarded by the third party.

Countries must develop an overarching strategy for building the capacity to use and link data.

- **Establishing a central authority.** An effective way to build capacity to link administrative data is to centralise the process of anonymising and sharing data. Countries may opt to designate an existing public institution, such as the national Statistics Bureau, or the institution leading e-government initiatives, as a central authority for anonymising and sharing data (see Box 1.4 for an example of the Netherlands). Legal agreements must be set up so that the central authority can receive (at least part of) the data from contributing government agencies. The central authority should have the capacity to extract, transform and load the data registers supplied, creating and safeguarding a unique Linking Key and (pseudo-)anonymising the data before sharing it with

researchers. Ideally, the central authority should have the legal right to store the registers from contributing agencies in a single data warehouse.

- **Linking data.** The central authority also can be used to routinely link data for improved service delivery and statistical production. When it comes to linking data for research purposes, it is more efficient to allow researchers linking data themselves, using the unique person identifier created by the central authority. This allows them to construct databases that respond to their needs while reducing the administration's burden of linking data.
- **Streamlining human resources and software needs.** By centralising the process of pseudononymising and sharing data, and allowing researchers to link them on their own, it is possible to better assess, minimise and address the potential shortages of data analysts, with fluent coding abilities, which are the main challenge in many countries. It also makes it easier to take into account the technical needs to share data, for example, by centralising the needs for IT developments and acquisition of software.

Box 1.4. The Secure Data Services at Statistics Netherlands: Storing and Exchanging Statistical Data and Metadata

Some countries have started taking initiatives to improve the public sector's capacity for storing and exchanging administrative data. In the Netherlands, for example, Statistics Netherlands is currently developing a platform, the Secure Data Services (SDS), which offers government organizations a central repository to archive the datasets as well to enable easy, secure and monitored exchange of data and metadata. Government agencies can analyse their data directly in the secure environment, and complement it with administrative data from Statistics Netherlands. This platform promises to streamline the process of working with and sharing administrative data from different government units, by tackling the legal challenges of the process. The SDS aims at stimulating a culture of data management in government agencies and to promote the cooperation within the public organisation and with external researchers.

Overcoming legal challenges of sharing microdata

The main legal challenge for the SDS is to store and share data accordingly with the data protection regulation (GDPR). The SDS does so by storing only pseudonymised data. The source input data received from institutions are deleted immediately after being pseudonymised, and cannot be recovered. Additionally, experts from Statistics Netherlands make sure that the confidentiality of the data is not violated by performing an output check on any data that is to be exported from the server.

Stimulating a data management culture

The SDS has the vision that if government agencies see the benefits of data management, they will consolidate their data management practices. Uploading data in the central repository poses an administrative burden for agencies, as they need to create comprehensive metadata for every data file they upload. To incentivize agencies to use the SDS, Statistics Netherlands provides tools and offers advice that helps government agencies produce statistical outputs. Users of the SDS can also have access to a "supercomputer" (a computer with a high level of performance as compared to a general-purpose computer).

Promoting cooperation

The project conceived several tools to manage metadata and data (for example a Metadata editor and a Catalogue). Statistics Netherlands helps setting up cooperation agreements between parties to share and receive data. This streamlines the authorization process and reduces the waiting times to access data. Data and metadata can easily be shared within the organisation, but also with external

researchers through the remote access facility.

Source: Presentation of John Kartopawiro, Statistics Netherlands.

1.3.4. Making administrative data accessible within and beyond the institutions owning the data

27. **Challenges to making administrative data available.** Sharing administrative data between institutions raises data protection concerns, particularly when the purpose of sharing data is to link these with registers owned by other institutions. At the EU level, the GDPR regulates the data protection in the Member States, yet leaves them the possibility to make data protection stricter by modifying or creating new regulations, as well as maintaining pre-GDPR legislation. Data protection regulation is thus country-specific, and so are the considerations needed to share administrative data. This will affect the conditions under which an organisation or person can use and link administrative data from different organisations. It will also affect the possibilities of countries to define the ways of accessing administrative data, and how they apply data protection in practice.

28. **Implementing transparent guidelines for sharing data for research uses.** The key step to making administrative data accessible across institutions (and with external researchers) is to set up a comprehensive approval and sharing process. These guidelines should be clearly stated and adopted by all the relevant bodies in order to reduce uncertainty and discretion in data delivery processes (European Commission, 2019[36]). The key questions to address are: i) Is there a legal basis for data access; and ii) are there appropriate security arrangements?

- **Legal basis for data access.** In the EU, a new framework for accessing and using personal data is provided through the General Data Protection Regulation (GDPR), which regulates processing of personal data for several different reasons. For research, there are two main legal bases on which personal data may be processed; because consent has been acquired or because it is in the public interest to do so.6 To ensure compliance with the law, researchers should sign terms of use explicitly stating their responsibility to use the data for the purpose that is approved (European Commission, 2019[38]). Non-EU countries have similar types of regulation and also in EU GDPR may set a minimum, with national regulation going beyond that.
- **Appropriate security arrangements for sharing and accessing data.** Sharing data across institutions and with external researchers requires appropriate security arrangements. Data has to, at least, be shared through secure file transfer systems. A more comprehensive solution is to use a secure online domain that provides secure access to the integrated data. The domain can provide access via remote login (e.g. Citrix) by using a secured Virtual Private Network (VPN) connection, both onsite and online.
    - Onsite access to the data permits having better control of the conditions in which researchers can access the data (securitised room, no access to the internet, computer with actualised anti-virus etc.). It is, however, less flexible for researchers to use the data, and is more costly for organisations to set up and maintain.
    - Online access to the data shifts the responsibility of having secure conditions to access the data on data users themselves. In these cases, the necessary conditions to access

6 A particular consideration is required when planning to merge administrative data and survey data. Survey data is often processed based on the respondents' consent, whereas administrative data is not. A way to deal with such privacy concerns is to inform survey respondents about the intention to merge survey and administrative data. One has to be careful, however, of the consent rates that may vary widely and bias survey participation.

the data must be laid out as requirements in the data access contract, with the corresponding penalisations.

- **Disclosure of research results**. As part of appropriate security arrangements, organisations must think about how to ensure that the output that is produced using administrative data does not violate data protection regulations. Data sharing organisations manually review the output that is produced by data users to ensure that no personal information is disclosed. However, in the process of research there are substantial intermediary outputs produced that are not to be disclosed. Spending time and resources to manually verify all intermediary outputs produced may not be an efficient option. Researcher could be given the responsibility to request which output needs to be manually checked, with the agreement that all outputs that will be shared with the wider public have to be checked before.

1.4. How to make it happen: Building analytical capacity and a culture of evidence-based policymaking

29. Making evidence-based policymaking the norm takes time and commitment and investment in different areas. This section argues that the critical success factors are leadership, building analytical capacity, and cooperation between all actors involved. Countries, however, are not alone in these struggles and there is a clear case for mutual learning. It is also essential to proactively communicate with the public on what evidence-based policymaking means for the public and how it can help improve the efficient and effective use of public finances to ensure the highest possible economic and social return.

1.4.1. Building the culture of evidence-based policymaking requires leadership

30. **Making evidence-based policymaking the (new) norm, where policy-makers and practitioners demand evidence and evaluation**. This is the ideal situation, when a robust evidence base of "what works" is the essence of policymaking and policy implementation. The key question then is on how to put it in practice and how to build this culture of evidence-based policymaking.

31. **Different paths could lead to the same outcome**. Countries that already integrate evaluation in their policymaking process have achieved that through different approaches. The path choice depends on many different factors, specific to a country's situation. Introducing evidence-based policymaking requires choices in different areas, including i) top-down or bottom up process (e.g. central government versus local levels of government); ii) whole-of-government versus partial application (e.g. performance-based budgeting versus individual government portfolios such as labour market policies); and iii) and incremental changes versus a "big bang" approach (OECD, 2008[10]; OECD, 2019[16]). Legal mandates may help in some countries, but do not seem to be necessary everywhere (see Box 1.1).

32. **Whatever paths countries choose, leadership in many different areas and levels of government is required**. The drive for evidence-based policymaking invariably demands leadership to overcome the barriers to reform (OECD, 2018[1]). These barriers are, for example, a lack of a culture of dialogue, the primacy of political priorities, weak long-term policy planning, inflexible and non-transparent policy processes, or a lack of trust between science and policymaking communities (OECD and EC, 2018[39]). The drive for evidence-based policymaking requires, on the one hand, strong leaders among policy makers who see the benefits for governments of using sound evidence on what works to achieve strategic objectives and spending efficiency (OECD, 2019[16]). On the other hand, it requires analysts with an understanding of policymaking to demonstrate how evidence can support policy debates.

33. **Learning from mistakes requires leadership**. Evaluations are often undertaken with the hope that new policies or programmes work like initially intended. However, all too often policies or programmes proof to have no or even a negative effect. Furthermore, the situation may be all but unambiguous, with

contradictory messages derived from different evaluations. Consequently, a culture of evidence-based policymaking also requires commitment towards communicating negative results, commitment to change and courage to the continued use of evidence.

1.4.2. Building public institutions' analytical capacity

34. **Lack of resources is a definite challenge for national administrations.** Institutions' analytical capacity is sometimes challenged when it comes to building sound evidence on what works through CIEs. Public administrations may lack the knowledge and resources to conduct, or even commission, CIEs. This shortage is more evident when CIEs are carried out ad hoc, with limited planning, and with no liaison with policymaking.

- **Prospective approach to evaluations.** Planning CIEs in advance can make a difference in the analytical capacity of institutions. Unplanned CIEs may be complex to carry out, as they may require very strong analytical skills to identify a suitable control group, and sometimes have to rely on whatever data happen to be available. By keeping in mind future CIEs, the implementation of policies can be modified in subtle ways that dramatically improve the feasibility of obtaining meaningful estimates of impact (HM Treasury, 2011[14]). Planning CIEs in advance is instrumental in ensuring that the necessary data are available. For instance, appropriate recordkeeping can be integrated into the delivery of programmes and interventions, and requisite data sources can be identified early enough to have time to be granted access (European Commission, 2013[5]).
- **Building with the necessary analytical skills**. Public institutions must ensure that they have civil servants with analytical skills and that these skills are well used in the process of carrying out CIEs. The mobilisation of analytical skills can take the form of an in-house analytical unit, or an analytical team dedicated to commissioning CIEs, or a combination of the two, depending on the skills needs of each institution.
    - **(Large) in-house analytical unit**. When a sufficient pool of staff with analytical skills exists, institutions may resort to creating an in-house analytical unit to carry out CIEs. Having the capacity in-house has the advantage of offering greater flexibility to mobilise researchers with a good knowledge of the policies and interventions implemented as well as the available data. Because sharing data across public organisations is easier than doing so with external parties, an in-house unit provides more opportunities for liaising with data owners, which may reduce the legal and technical burden of sharing data. Even if there is substantial in-house analytical capacity, however, public institutions may want to outsource some of their CIEs to ensure an independent (and thus objective) evaluation of their policies.

      Commissioning CIEs. Institutions may opt for having a smaller analytical unit in-house, charged with commissioning CIEs to third party researchers (consultancy firms and other private companies, think tanks, universities etc.). This is a flexible (and fast) alternative to hiring staff to reinforce the analytical capacity when it is needed. It also offers a solution to carry forward an evaluation agenda when government hiring is frozen. This solution can take the form of a collaboration between the academic community and public sector analysists. In such cases, academic researchers can leverage knowledge on state of the art econometric techniques to public sector employees' expertise on institutional characteristics and administrative data. This solution, however, requires greater planning of CIEs, as experts need to be approached in advance and data sharing agreements may take some time. Taking a prospective approach to evaluations becomes especially crucial in such cases.
- **Having a dedicated team assigned with the task to strategically plan CIEs.** Countries may have to invest in building a team in a public institution in charge with the coordination and

monitoring of CIEs of policies and interventions under the responsibility of that institution. The team should be dedicated to day-to-day managerial tasks, commissioning external evaluations or coordinating in-house analytical activities, advising researchers and reacting to issues that develop, including data linking and sharing (HM Treasury, 2011[14]).

1.4.3. Building/strengthening cooperation with the research community

35. **Facilitating cooperation with the academic community.** Reaching a minimum level of analytical skills across governmental institutions is crucial to carry out or commission CIEs to the academic community. Time and resource constraints often limit the ability of public institutions to carry out CIEs and highlight the need to develop a reliable supply of evaluation services by building and strengthening the cooperation with the academic community, which possesses the knowledge and skills to conduct CIEs. In countries where the cooperation between public institutions and universities is not well established, a greater initial investment may be required. For example, public institutions can core-fund the costs of dedicated research centres to CIE methods within universities (European Commission, 2013[5]).

36. **Subcontracting CIEs vs allowing researchers to access the data freely.** Public institutions can have direct control over the supply of evaluation services, by commissioning CIEs to external researchers. An alternative approach is to facilitate access to administrative data, thus allowing researchers to engage in activities that can overlap with the evaluation needs of governments (see Box 1.5 for country examples). This can represent a win-win situation for governments and the research community, as the empirical research activity on national public sector policies can grow, building the evidence base for policymaking for "free". To ensure that the focus of researchers is aligned with the needs for evidence of policymakers and allow for cross-fertilisation, however, the liberalised access to administrative data should be accompanied by greater collaboration and organic between the public sector and the research community. An option is to accompany open calls for evaluations that would involve policymakers and researchers co-defining research questions and setting up the layout of research papers, where civil servants leverage in their knowledge on policies and public programs.

37. **Hiring academic profiles in managerial positions at the public administration.** A good practice to promote a strong cooperation with the research community and ensures the proper evaluation of policies is to hire academics and researchers in the public administration for positions that require the supervision of the analytical activity of a public organisation (Baïz et al., 2019[40]).

Box 1.5. Approaches to liberalising administrative data access

New Zealand

Researchers in New Zealand can access administrative data through Stats NZ in approved facilities (Remote Data Labs). A number of criteria should be met: i) research is for a statistical purpose or the public good and conducted by a credible team with support from their organisation, suitable data are available; ii) Stats NZ can enforce an agreement; iii) research must be released publicly; and iv) researchers must have the skills needed to work with the data. Research projects that meet these criteria are granted access to the data. The process of approval takes about six weeks.

Researchers with approved projects must sign a contract and forms, go through a confidentiality training and setting up various access requirements in Stats NZ servers. The data can only be accessed in Remote Data Labs approved by Stats NZ. These labs must meet the requirements of physical, researcher and IT security, and be set up in research organisations. Stats NZ charges a one-off set up fee, a monthly storage fee, and a confidentiality checking fee every time output has to be exported from the server.

Germany

In Germany, access to administrative data for research on labour and social affairs is managed by the FDZ, the research data centre of the PES and the Institute for Employment Research (IAB). Data can be accessed off-site and on-site. Off-site, only aggregated data can be accessed and downloaded. Researchers can also execute their programs off-site, through a remote execution system (called Job Submission Application, *JoSuA*). On-site, researchers can access weakly anonymized data. On-site access is possible at the FDZ, or at Remote Access Centers in various locations in Germany, the EU and North America.

Access is granted based on a non-technical research proposal, and approved by the FDZ. If the project is approved, a user agreement is signed with the institution of the researcher. The process of approval takes about two weeks for off-site access, and six to eight weeks for on-site access. The FDZ does not charge fees for granting off-site access, nor charges lab fees to use on-site access.

Canada

Statistics Canada had four different modes of providing researchers with access to microdata, with varying degrees of flexibility and each serving different user communities and in some cases providing access to different datasets. The most flexible mode of access allows public use of microdata (Public Use of Microdata Files, *PUMFs*). PUMFs are anonymized microdata files of a sample of units, usually from a household survey, further anonymized by removing identifying variables and regrouping continuous variables. These datasets are readily available directly from the division which created the data or through a subscription-based service that provides access to the collection of PUMFs as well as support and training service. Access to the data requires that institutions subscribing to the PUMF services sign an institutional licence agreement.

A more restrictive mode is the direct access to anonymised microdata in secure centres (Research Data Centres, RDC). RDCs provide researchers with access, in a secure facilities located at either universities or government facilities, to microdata from population and household surveys as well as increasingly administrative data from social and health programs along with integrated data. RDCs are accessible only to researchers with approved projects who have been sworn in under the Statistics Act as “deemed employees” of Statistics Canada. RDCs offer physical and computer protection, as well as require personal responsibility and legal protection of each researcher. Data protection is ensured by checking all the outputs removed from the RDC. At present, RDCs require Statistics Canada staff to be present at all times when researchers are using the centres, giving researchers little flexibility of working hours. They are working on developments in the physical and computer protection that would increase the flexibility of researchers.

Source: https://www.stats.govt.nz/integrated-data/apply-to-use-microdata-for-research/ and Umkehrer, M. (2019), “Data and data access at the Research Data Centre of the German Federal Employment Agency at the Institute For Employment Research”, OECD/EC Workshop “Evaluating labour market policies through the use of linked administrative data”, 18 November, Brussels, http://www.oecd.org/employment/emp/S4.3.%20Umkehrer_DEU.pdf.

1.4.4. Learning from each other

38. **Sharing experiences.** Sharing experience on the application of evaluation methods is essential to improve countries' capacity to conduct CIEs and spread the use of CIE methods.

- **Using existing fora.** Existing forums of mutual learning should be used to share experiences on CIEs (European Commission, 2013[5]). Examples of such forums in the public employment sector are the EU PES Network and the World Association of Public Employment Services (WAPES) network.

- **Developing toolkits and knowledge banks.** To promote peer-learning, countries can develop toolkits or knowledge banks gathering and synthesising methods, data used and estimates of the impact of policies obtained through CIEs (Baïz et al., 2019[40]). This not only allows for better policymaking by learning what works across countries, but also provides examples of methods and data used to conduct CIEs (see the Danish *jobeffekter* knowledge bank in Box 1.2).
- **Exchanging knowledge among countries.** Institutions can benefit from international networks of experts to improve their analytical capacity, by sharing experiences and strategies on how to carry out CIEs successfully. These exchanges can take the form of workshops of international experts, and study visits abroad, but also of hands-on consultations by experts (see Box 1.6 for a summary of Statistics Denmark International Data Services Consultations). The ongoing project of the EC and the OECD aims at strengthening such exchanges between the countries in the form of workshops (e.g. Expert workshop organised in Brussels in November 2019) and other expert or policymakers events.

Box 1.6. The Danish International Data Services Consultations

Statistics Denmark provides its expertise internationally by supporting countries in building their statistical production capacity. The objective is to improve countries' capacity to produce reliable, comparable, timely and available statistics. Such projects have positive spillovers on the quality of administrative data generated and on the data sharing processes, both essential elements to building a basis to conduct evidence-based policy.

Source: https://www.dst.dk/en/consulting/

1.4.5. Proactive communication with the public

39. **Assessing and ensuring public concerns for data integration.** Understanding the public's attitudes and concerns to using and linking administrative data for research purposes is essential to ensure the continuity of trust in the public administration (Davison et al., 2015[41]). It is essential to maintain an open dialogue, where the concerns of the public are heard, and the public sector is transparent and reassuring about the approaches taken to address them.

40. **The interest of citizens in demonstrating the performance of public policies and interventions is growing**. Many policies involve trade-offs and thus are not supported by everyone in society, which is why governments need a critical mass of electoral and political support (OECD, 2018[1]). Governments can therefore use the evidence collected from CIEs to increase transparency and communication about the effectiveness of public spending.

References

Baïz, A. et al. (2019), "Évaluation d'impact des politiques publiques", *France Stratégie 2019*. [40]

Bollens, J. (2019), *"Impact evaluation using linked administrative data : the VDAB-case", OECD/EC Workshop "Evaluating labour market policies through the use of linked administrative data"*, http://www.oecd.org/employment/emp/S4.1.%20Bollens_VDAB.pdf. [48]

Bollens, J. and B. Cockx (2017), "Effectiveness of a job vacancy referral scheme", *IZA Journal of Labor Policy*, Vol. 6/1, http://dx.doi.org/10.1186/s40173-017-0094-0. [45]

Card, D., J. Kluve and A. Weber (2017), "What Works? A Meta Analysis of Recent Active Labor Market Program Evaluations", *Journal of the European Economic Association*, http://dx.doi.org/10.1093/jeea/jvx028. [2]

Connelly, R. et al. (2016), "The role of administrative data in the big data revolution in social science research", *Social Science Research*, Vol. 59, pp. 1-12, http://dx.doi.org/10.1016/j.ssresearch.2016.04.015. [32]

Corbett, J. et al. (2018), "Singular memory or institutional memories? Toward a dynamic approach", *Governance*, Vol. 31/3, pp. 555-573, http://dx.doi.org/10.1111/gove.12340. [30]

Crato, N. and P. Paruolo (eds.) (2019), *Data-Driven Policy Impact Evaluation*, Springer International Publishing, Cham, http://dx.doi.org/10.1007/978-3-319-78461-8. [9]

Cummings, D. and D. Bloom (2020), *Can Subsidized Employment Programs Help Disadvantaged Job Seekers? A Synthesis of Findings from Evaluations of 13 Programs*, MDRC, https://www.mdrc.org/publication/can-subsidized-employment-programs-help-disadvantaged-job-seekers. [24]

Davison, A. et al. (2015), "Public Attitudes to Data Integration", *Report prepared for Statistics New Zealand*, http://file:///C:/Users/Garcia-mandico_S/Downloads/public-attit-data-integr-2015.pdf. [41]

De Boer, M. (2019), "Monitoring ALMP effectiveness using linked data: The New Zealand experience", *OECD/EC Workshop "Evaluating labour market policies through the use of linked administrative data"*, 18 November 2019, Brussels, http://www.oecd.org/employment/emp/S3.3.%20De%20Boer_NZL.pdf. [28]

EC (2019), *Pilot and feasibility study on the sustainability and effectiveness of results for European Social Fund participants using counterfactual impact evaluations : final report.*. [6]

EC (2018), *Programming period 2014-2020 Monitoring and Evaluation of European Cohesion Policy European Social Fund Guidance document*. [8]

EU Science Hub (2016), . [31]

EUR-Lex (2013), *Regulation (EU) No 1304/2013 on the European Social Fund*, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2013.347.01.0470.01.ENG (accessed on 27 January 2020). [23]

European Commission (2019), "Advanced counterfactual evaluation methods Guidance document", http://dx.doi.org/10.2767/464242. [7]

European Commission (2019), *Pilot and feasibility study on the sustainability and effectiveness of results for European Social Fund participants using counterfactual impact evaluations*, Publications Office of the EU, Brussels, https://doi.org/10.2767/39339. [36]

European Commission (2019), *Understanding our political nature: How to put knowledge and reason at the heart of political decision-making*, Publications Office of the European Union, http://dx.doi.org/10.2760/374191. [11]

European Commission (2019), *Using Administrative Data for Research: 10 Legal and Ethical Issues to Consider*. [38]

European Commission (2018), *Programming period 2014-2020 Monitoring and Evaluation of European Cohesion Policy European Social Fund Guidance document*, European Commission, https://ec.europa.eu/sfc/en/system/files/ged/ESF%20monitoring%20and%20evaluation%20guidance.pdf (accessed on 27 January 2020). [15]

European Commission (2013), *Design and Commissioning of Counterfactual Impact Evaluations: a Practical Guidance for ESF Managing Authorities*, Publications Office of the European Union, http://dx.doi.org/10.2767/94454. [5]

European Commission (2013), "Statistical matching: a model based approach", *EUROSTAT: Methodologies and Working Papers*. [37]

Gingras, Y. et al. (2016), *Statistics Canada Symposium 2016, Growth in Statistical Information: Challenges and Benefits. A Case Study in Administrative Data Informing Policy Development.*. [50]

Gingras, Y. et al. (2017), "Making Evaluation More Responsive to Policy Needs: The Case of the Labour Market Development Agreements", *Canadian Journal of Program Evaluation*, Vol. 32/2, http://dx.doi.org/10.3138/cjpe.31119. [47]

Government of Canada (2016), *Experimentation direction for Deputy Heads - December 2016*, https://www.canada.ca/en/innovation-hub/services/reports-resources/experimentation-direction-deputy-heads.html (accessed on 11 May 2020). [21]

Handouyahia, A. et al. (2016), *Cost-Benefit Analysis of Employment Benefits and Support Measures*. [46]

Handouyahia, A. et al. (2014), *Effects of the timing of participation in employment assistance services*. [52]

Handouyahia, A. et al. (2016), *Statistics Canada Symposium 2016, Growth in Statistical Information: Challenges and Benefits. Estimating the Impact of Active Labour Market Programs using Administrative Data and Matching Methods.*. [51]

Harron, K. et al. (2017), "Challenges in administrative data linkage for research", *Big Data & Society*, Vol. 4/2, p. 205395171774567, http://dx.doi.org/10.1177/2053951717745678. [34]

HHS, O. (2011), *Tips and Recommendations for Successfully Pilot Testing Your Program A Guide for the Office of Adolescent Health and Administration on Children, Youth and Families Grantees*, https://www.hhs.gov/ash/oah/resources-and-training/tpp-and-paf-resources/program-planning-and-implementation/index.html (accessed on 29 January 2020). [49]

HM Treasury (2011), *The Magenta Book: Guidance for evaluation*, https://www.gov.uk/government/publications/the-magenta-book. [14]

JRC (Forthcoming), "Active Labour Market Policies in Flanders. Evaluation of the ESF "Work Experience for Young Persons" Programme", *JRC Technical Reports* JRC113899. [4]

Le Conseil fédéral (2020), *Loi fédérale du 25 juin 1982 sur l'assurance-chômage obligatoire et l'indemnité en cas d'insolvabilité (Loi sur l'assurance-chômage, LACI)*, https://www.admin.ch/opc/fr/classified-compilation/19820159/index.html (accessed on 27 January 2020). [22]

Martin, J. (1998), "What Works Among Active Labour Market Policies: Evidence from OECD Countries' Experiences", in Debelle, G. and J. Borland (eds.), *Unemployment and the Australian Labour Market*, Reserve Bank of Australia, https://www.rba.gov.au/publications/confs/1998/martin.html (accessed on 27 January 2020). [17]

Müller, D. and J. Möller (2019), "Giving the International Scientific Community Access to German Labor Market Data: A Success Story", in *Data-Driven Policy Impact Evaluation*, Springer International Publishing, http://dx.doi.org/10.1007/978-3-319-78461-8_7. [44]

Nielsen, C. (2019), "Denmark's approach in using linked administrative data to evaluate the impact of ALMPs and the Jobeffekter.dk knowledge bank"*, OECD/EC Workshop "Evaluating labour market policies through the use of linked administrative data"*, 18 November 2019, Brussels, http://www.oecd.org/employment/emp/S5.2.%20Nielsen_DNK.pdf. [29]

NZ Legislation (1989), *Public Finance Act*, http://www.legislation.govt.nz/act/public/1989/0044/latest/DLM160809.html (accessed on 27 January 2020). [19]

OECD (2019), *Evaluating Latvia's Active Labour Market Policies*, Connecting People with Jobs, OECD Publishing, Paris, https://doi.org/10.1787/6037200a-en. [3]

OECD (2019), *Evidence-informed policy making*, https://www.oecd.org/governance/evidence-informed-policy-making.htm (accessed on 16 January 2020). [12]

OECD (2019), *Strengthening Active Labour Market Policies in Italy*, Connecting People with Jobs, OECD Publishing, Paris, https://dx.doi.org/10.1787/160a3c28-en. [43]

OECD (2019), "Supporting impact assessments for policy learning"*, DELSA/ELSA(2019)*, No. 24, OECD, Paris. [16]

OECD (2018), *A framework description of OECD Labour Market Policy Data for Non-EU countries compared with data for EU countries: With five country fiches*, https://www.oecd.org/els/emp/2018-Framework%20Description%20Report%20Final2.pdf. [42]

OECD (2018), *Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264308817-en. [1]

OECD (2018), *OECD Regulatory Policy Outlook 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264303072-en. [18]

OECD (2015), *Recommendation of the Council on Budgetary Governance*, OECD Public Governance and Territorial Development Directorate, http://www.oecd.org/gov/budgeting/Recommendation-of-the-Council-on-Budgetary-Governance.pdf (accessed on 16 January 2020). [13]

OECD (2008), "Performance Budgeting: A Users' Guide"*, OECD Policy Brief*, No. March, OECD, Paris, http://www.oecd.org/gov/budgeting/Performance-Budgeting-Guide.pdf (accessed on 16 January 2020). [10]

OECD and EC (2018), *Building Capacity for Evidence Informed Policy Making: Towards a Baseline Skill Set*, http://www.oecd.org/gov/building-capacity-for-evidence-informed-policymaking.pdf. [39]

RIS (2012), *WFA-Grundsatz-Verordnung – WFA-GV*, https://www.ris.bka.gv.at/eli/bgbl/II/2012/489/20121221 (accessed on 27 January 2020). [20]

Sozialgesetzbuch II (2003), *Sozialgesetzbuch (SGB) Zweites Buch (II) - Grundsicherung für Arbeitsuchende*, https://www.gesetze-im-internet.de/sgb_2/ (accessed on 27 January 2020). [27]

Sozialgesetzbuch III (1997), *Sozialgesetzbuch (SGB) Drittes Buch (III) - Arbeitsförderung*, https://www.gesetze-im-internet.de/sgb_3/ (accessed on 27 January 2020). [26]

SRDC (2019), *Employment Navigator Pilot Project Final Report: Pathways to Employment*, SRDC, http://www.srdc.org/publications/Employment-Navigator-Pilot-Project-Final-Report-Pathways-to-Employment-details.aspx. [25]

Statistics Canada (2019), *Statistics Canada Quality Guidelines*, Authority of the Minister responsible for Statistics Canada. [35]

UNECE (2011), *Using Administrative and Secondary Sources for Official Statistics- A Handbook of Principles and Practices*, https://www.unece.org/fileadmin/DAM/stats/publications/Using_Administrative_Sources_Final_for_web.pdf (accessed on 28 January 2020). [33]

2 Using linked administrative data for impact evaluations of labour market policies: Mapping and feasibility study

41. Access to good quality and detailed microdata is the crucial first requirement for conducting CIE of LMPs. Whereas all countries collect the necessary data for operational purposes in their administrative registers, only some transform the data from these registers into data that can be used for analysis on a regular basis. This chapter presents the current situation in most EU and OECD countries. It provides a detailed mapping of the different registers that contain information on labour market programmes (referred to as LMP interventions by the EC) as well as all the different data sources that would be needed to conduct CIE of LMPs. In addition, it outlines the possibilities to link the different data sources with the main unemployment register.

42. The analysis in this chapter is based on the countries' responses to the OECD-EC questionnaire (see Box 2.1) as well as the information presented by the experts at the EC-OECD workshop that took place in November 2019 and follow-up consultations with selected countries. This section covers the following broad areas: i) LMP measures and services; ii) income replacement benefits; iii) employment outcomes; iv) individual and family characteristics; and v) firm-level data.

Box 2.1. An online survey to map data availability, identify challenges and best practices

This analysis in this project is based on an OECD-EC joint questionnaire which updates and completes the information collected in the 2013 and 2014 LMP written consultation conducted by the European Commission (DG Employment) on the availability of the relevant administrative data. The questionnaire covers the following aspects of LMP-related data:

- **Mapping of registers containing LMP interventions** (according to the DG-EMPL Labour Market Policy Statistics Methodology[a]) such as measures (e.g. training, employment incentives, direct job creation), services (e.g. individual counselling; job-search monitoring) and supports (e.g. unemployment insurance, unemployment assistance, redundancy compensation)[b]. In some countries, information on these three different types of LMP interventions are kept in one main register, usually referred to as the "unemployment register". However, in other countries, different types of LMP interventions are recorded in two or more different registers.
- **Mapping of registers that include information on LMP participants and non-participants.** It is crucial to collect information on non-participants as this is necessary to establish a relevant control group for the impact evaluation. This information should ideally include socio-demographic characteristics, social assistance and incapacity/disability benefits, labour market history and income. In some countries, (parts of) this information is recorded in the main unemployment register whereas in others, it needs to be derived from other registers and should then be linked with the main unemployment register.

- **Map whether and how the different registers required to conduct impact evaluations of LMPs can be linked with the main unemployment register.** Countries are asked about the technical and legal constraints they may be facing in linking these registers and report whether it is possible to overcome them. In some cases, linking registers is routine (although maybe not for research and analysis use, but rather for administrative and operational use), whereas in others a business case needs to be made to justify such linking.
- **Collect information on existing or ongoing impact evaluations of LMPs using linked administrative data.** Countries are encouraged to provide information on academic studies but also studies conducted or commissioned by the government, the Public Employment Service, and other public sector organisations.

The questionnaire was sent to all EU and most OECD countries in the summer of 2019 and was completed by the end of 2019. The institutions coordinating the countries' replies were mainly the Ministries of Labour, the Public Employment Services and the Statistics Bureau. However, inputs were also received from other institutions in some countries.

In total, 34 countries participated in the survey, 25 EU countries and nine non-EU OECD countries, including Norway and Switzerland. In the case of Belgium, responses were provided by the Federal level, as well as the three regions: Wallonia, Flanders and Brussels. The responses from Belgium and its three regions are reported and analysed separately in this report.

Note:
a. Source: https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8126&furtherPubs=yes
b. "Active" programmes are those in Categories 1 to 7. In Eurostat terminology, the interventions in Category 1 are called "services", Categories 2 to 7 are called "measures", and Categories 8 and 9 are called "supports". OECD reports may use the term "programme" instead of "intervention" (OECD, 2018[42]).

2.1. Availability of necessary data sources

43. This section covers all necessary data sources that may be needed for CIEs of different types of labour market and social policies.

2.1.1. LMP participation and registration with PES

44. As a first step, it is important to establish the current situation regarding available information in the main unemployment register. In particular, this section focuses on whether data on participation in active labour market programmes (ALMPs; referred to as LMP services and measures by the EC) are recorded directly in the unemployment register, or in another register that can be linked with the unemployment register.

Main unemployment register and unemployment benefits

45. The starting point of analysing ALMPs typically is the unemployment register, which refers to the register that records the list of registered unemployed people. The institution responsible for the main unemployment register is the PES. The second column of Table 2.1 reflects the differences in the institutional organisation of the PES (whether the PES is a separate body, or whether the PES responsibilities are in the ministries). In Italy, as part of the Jobs Act reform of 2015, the National Agency for Active Labour Market Policies (ANPAL) was created. This entity takes the role of a national employment agency but public employment services are still decentralised today and are the responsibility of the Italian regions (OECD, 2019[43]). Exceptions are the US and Mexico. In the United States, there is no national

unemployment register covering all unemployed workers. Each State or Territory maintains its own state administrative records for the state's unemployment insurance system. However, data exchanges between regional offices are frequent. Mexico does not have an unemployment insurance service at the federal level and hence it does not keep a main unemployment register.[7]

Table 2.1. Unemployment register and tracking of unemployment benefits

Country	Unemployment register (UR) name	Institution responsible for the unemployment register	First-tier unemployment benefit	Lower-tier unemployment benefit
	(1)	(2)	(3)	(4)
AUS	i) Newstart Allowance ii) Youth Allowance	Services Australia (PES)	UR	UR
AUT	Unemployment Register including participation of Training, Courses and unemployment benefits	Arbeitsmarktservice Österreich (PES)	UR	UR
BEL	Unemployment benefits (federal) register (RVAONEM)	ONEM (PES)	UR	UR
BE (BRU)	Datawarehouse d'Actiris	Actiris (PES)	UR	UR
BE (VLG)	Database of job seekers	Flemish service for labour market services and vocational training, VDAB (PES)	UR	UR
BE (WAL)	ERASME	Le Forem (PES)	UR	UR
BGR	National Data Base for Labour Market and European Social Fund	Employment Agency (PES)	UR	Not Applicable
CAN	Benefits and Overpayments	Department of Employment and Social Development	UR	ORL
CHE	Pulbic employment information system (AVAM/PLASTA)	State Secretariat for Economic Affairs	UR	UR
CHL	Unemployment Insurance dataset	Administradora de Fondos de Cesantía (PES)	UR	NA
CZE	Register of Job Seekers	Labour Office of the Czech Reublic (PES)	UR	NA
DEU	Statistics of the Federal Employment Agency	Federal Employment Agency, BA (PES)	UR	UR
DNK	Different unemployment insurance funds registers	Unemployment insurance funds	UR	Not Applicable
ESP	Public Employment Services Information System (SISPE)	Public Employment Service, SEPE (PES)	UR	UR
EST	persons registered as unemployed or job-seekers, and of the provision of labour	Estonian Unemployment Insurance Fund (PES)	ORL	UR

[7] The federal government has a Public Employment Service implemented through the National Employment Service. This institution gathers information of the people that request its services -which is only a fraction of the unemployed population. Mexico has partial unemployment records, corresponding only to people who resort to the benefits of the linkage programs of the National Employment Service Unit (SNE) and the Youth Building the Future Program (PJCF). Some local governments have implemented unemployment benefits programs, but they are not recorded in a centralized register.

Country	Unemployment register (UR) name	Institution responsible for the unemployment register	First-tier unemployment benefit	Lower-tier unemployment benefit
	(1)	(2)	(3)	(4)
	market services			
FIN	Employment Service Statistics (URA)	Ministry of Economic Affairs and Employment	ORL	ORL
FRA	Statistical Historical File (FHA)	Pôle emploi (PES)	ORL	ORL
GRC	Unemployment register (OAED)	Manpower employment organization, OAED (PES)	UR	UR
HRV	Register of unemployed persons and other job-seekers	Croatian employment service (PES)	UR	Not Applicable
HUN	Integrated System of Registered Jobseekers	National Employment Service (PES)	UR	Not Applicable
IRL	ISTS/BOMI 4	Department of Employment Affairs and Social Protection	UR	UR
ISR	Job Seekers Register	Israeli Employment Service (PES)	OR	OR
ITA	Declaration of immediate availability (DID)	National agency for actives labour market policies, ANPAL (PES)	UR	Not Applicable
LTU	Information system managed by the Employment Service	Employment Services under the Ministry of Social Security and Labour of the Republic of Lithuania (PES)	UR	Not Applicable
LUX	ADEM Datawarehouse	Agence pour le développement de l'emploi, ADEM (PES)	UR	Not Applicable
LVA	Unemployment records and registered vacancy information system (BURVIS)	The State Employment Agency of Latvia (PES)	ORL	Not Applicable
MEX	National Employment Service Unit (SNE) Youth Building the Future Program (PJCF)	National Employment Service	NA	Not Applicable
MLT	Part One/Two Register.	Jobsplus (PES)	ORL	ORL
NDL	Unemployment insurance (WW) or National assistance benefit (Bijstand).	Statistics Netherlands (CBS)	UR	ORL
NOR	Arena	Norwegian Labour and Welfare Administration, NAV (PES)	UR	Not Applicable
NZL	Benefit dynamics data	Ministry of Social Development	NA	UR
POL	IT System Syrius	Local/Poviat Labour Offices (PES)	UR	Not Applicable
PRT	Employment Information and Management System (SIGAE)	Institute of Employment and Vocational Training (PES)	UR	UR
SVK	Register of jobseekers	Central Office of Labour, Social Affairs and Family, COLSAF (PES)	ORL	Not Applicable
SVN	Records of unemployed persons	Employment service of Slovenia (PES)	UR	Not Applicable
SWE	The data warehouse (Datalagret)	The Swedish public employment service (PES)	UR	UR
USA	State-level unemployment insurance registers	States and Territories	UR	UR

Note: UR refers to the unemployment register. OR refers to other register(s) and ORL to other register(s) that can be linked with the main unemployment register. NA is countries for which the question is not applicable, as they do not have a first- or lower-tier unemployment program. First-tier unemployment benefits refer to the main unemployment benefit in a country, which is often an insurance benefit. Lower-tier unemployment benefits refer to additional benefits to the unemployed, which are usually means tested (such as unemployment assistance).
Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

46. Countries were asked to report in which register they track beneficiaries of their main unemployment benefit, referred to as "first-tier" unemployment benefit. In most countries, this is an insurance-based benefit. The third column in Table 2.1 summarises this information. Most countries collect information on first-tier unemployment benefit directly in the main unemployment register. Some countries, however, record information on benefit recipients in other registers, sometimes from other institutions, in which case the possibility of linking this information with the main unemployment register is not granted. This is the case in Israel and Malta.

47. Countries were also asked about the possibility to track information on lower-tier unemployment benefits for countries that have this type of benefit (typically either unemployment assistance or social assistance). A large share of countries (40%) do not have this type of program. As with the unemployment benefit, the unemployment assistance is very often recorded in the main unemployment register.

Tracking participation in employment services and LMP measures

48. Most countries track participation in labour market programmes separately for each programme in their monitoring registers. Nevertheless, this information is not sufficient for conducting impact evaluations of LMPs because these monitoring registers cover only programme participants and not the potential control group of unemployed persons not participating that would need to be identified for a CIE.

49. Therefore, countries were asked about their approaches to track participation in employment services (that is, LMP database category 1, e.g. completion of individual action plans, individual counselling, job-search monitoring, etc.) and LMP measures (that is, LMP database categories 2-7, e.g. training or employment incentives). In particular, they were asked whether participation is recorded in the main unemployment register or if it can be obtained from other sources that can be linked with the main unemployment register.

50. The first column of Table 2.2 refers to participation in LMP services (LMP-S) and reports whether this information is collected in the main unemployment register (UR), another register that can be linked with the main unemployment register (ORL) or simply another register (OR). The same information is reported for participation in LMP measures (LMP-M) in the second column of Table 2.2.

According to the information presented in Table 2.2, countries can be classified into three groups according to the degree of integration of information on ALMP participants. The first group of 16 countries records participation in employment services and LMP measures directly in the unemployment register. This situation is ideal as it simplifies the steps that countries have to take to get the baseline data necessary to evaluate LMPs. In these countries, LMP services and measures (training, employment incentives, supported employment, among others) are recorded in a database integrated with the register of job seekers. In these systems, individual life-courses can be followed from the time of registration to a program or service, to the outflow of it. This allows, for everyone in the UR, to form a complete picture of all the programs and services they have participated in.

Table 2.2. Tracking participation in LMP services and measures

Country	Register that records participation in LMP services (LMP database category 1)	Register that records participation in LMP measures (LMP database categories 2-7)
	(1)	(2)
AUS	ORL	ORL
AUT	UR	UR
BEL	ORL	UR + ORL
BE (BRU)	UR	UR
BE (VLG)	UR	UR + ORL
BE (WAL)	UR	UR + ORL
BGR	UR	UR
CAN	UR + ORL	UR + ORL
CHE	UR	UR
CHL	OR*	OR*
CZE	UR	UR
DEU	UR + ORL	UR + ORL
DNK	UR	UR
ESP	UR	UR
EST	UR	UR
FIN	UR	UR
FRA	UR + ORL	ORL
GRC	UR	UR
HRV	ORL	UR
HUN	UR	UR
IRL	UR + ORL	UR + ORL
ISR	UR + ORL	UR (some measures)- no information on OR
ITA	ORL	UR + OR (some measures)
LTU	UR	UR
LUX	UR	UR
LVA	UR	UR
MEX	OR	OR
MLT	UR + ORL	UR + ORL
NDL	UR	ORL
NOR	UR	UR
NZL	ORL	ORL
POL	UR	UR
PRT	UR	UR
SVK	UR	UR
SVN	UR	UR + ORL
SWE	UR	UR
USA	OR	OR

Note: UR refers to the unemployment register. OR refers to other register(s) and ORL to other register(s) that can be linked with the main unemployment register. When the specific register includes information only on some services or measures, this is reported next to UR or OR
* No linkage has taken place, but data are available and there are no technical constraints to linking the data.
Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

51. The second group of countries records only information for some of the existing LMP services and measures in the unemployment register, and thus need to complement this information with data from other registers. In some cases (e.g. Belgium (federal, Wallonia and Flanders), Canada, Germany, France,

Ireland, Israel, Malta) these data can be linked to the main unemployment register, allowing the identification of participants to services and measures from the pool of unemployed workers. Achieving this linkage is not necessarily difficult if the institutions owning the data to are the same. It requires a greater capacity to share and link datasets across institutions particularly if, as it is often the case, LMPs are managed locally or by different public institutions. In Israel, for example, the Statistics Bureau provides the structure to manage and link large datasets. The institutions managing the different LMPs share their records with the Statistics Bureau, which takes care of linking it across registers and with the unemployment register. In Italy, on the other hand, data for some LMP measures cannot be linked with the main unemployment register.

52. In some countries, it appears that recoding information of LMP services is more problematic than collecting information on measures. For example, Croatia does not record participation in services, although participation in measures is recorded in the main unemployment register. In contrast, in the Netherlands, information on services is available on the main unemployment register, while information on participation in measures is reported in another register that can be nevertheless linked with the unemployment register. In Wallonia and Flanders (Belgium) services are recorded on the main unemployment register but participation in measures is recorded on the main unemployment register and other registers that can be linked with that the unemployment register.

53. The third group of countries does not record LMP participation in the main unemployment register. Again, if linking data involves sharing data across institutions, countries in this group require more effort to obtain a complete picture of the participation in LMPs. In Australia and New Zealand, where this is the case, the linking is enabled by regular agreements of data sharing, or by the fact that a central authority manages the data. When this linking is not possible, evaluation of LMPs is limited to any follow-up surveys carried out on programme participants. In Chile, although the linking of administrative records containing LMP measures and services with the unemployment record has never taken place, country experts do not flag technical nor legal limitations for doing so.

54. Countries that can easily track participation in employment services and measures are able to provide sound evidence on the impact of programmes and cost-effectiveness analyses. In New Zealand, for example, the need for sound evidence on what works has been one of the motivating forces behind seeking the integration of various datasets. These efforts culminated in the creation of the Integrated Data Infrastructure (IDI) in 2013, maintained by Statistics New Zealand. Among others, IDI links data on education, LMPs services and measures, social security, population, and income and work data. This data warehouse allowed the Ministry of Social Development of New Zealand to develop a cost-effectiveness report that provides evidence on employment assistance programmes and services and case management services starting in 2011. The effectiveness of the interventions is evaluated on multiple outcomes, using econometric methods (for example, propensity score matching and differences-in-differences) to gauge the causal impact of interventions and contrast it with their costs. The result is an accurate impact evaluation of employment assistance and case management policies in New Zealand, which sets the ground for evidence-based policymaking.

55. In Canada, the Department of Employment and Social Development has constructed the Labour Market Program Data Platform (LMPDP) to support performance measurement and impact evaluation to inform policy and programme development. The Platform integrates income tax data files with data from multiple labour market programs. The LMPDP has been used to analyse the effectiveness and conduct counterfactual cost-benefit analyses of Canadian active labour markets programmes such as e.g.

Employment Benefits and Support Measures under the Labour Market Development Agreements (LMDAs), the Youth Employment Strategy, and the Aboriginal Skills and Employment Training Strategy.[8]

56. In Belgium, the central authority linking and storing the data (Banque Carrefour of Social Security) was also created to share data for better policies. In Flanders, there are numerous collaborations between the Banque Carrefour and universities. By allowing researchers to access linked administrative data on participation in employment and LMP services and measures, there is evidence built around what works based on evaluations of the regions' labour market policies.

57. In Estonia, because participation in labour market training is recorded directly in the main UR, the PES has carried out several evaluations of the training programs that have been put in place. These evaluations take advantage of the rich administrative data available in Estonia, which can be linked across registers. Between 2011 and 2018, the PES has produced three policy papers applying propensity score matching techniques to construct a control group from the pool of unemployed persons not participating in the training programs.

58. In Denmark, the availability of data and ease of linking across them results in widespread and comprehensive literature of impact evaluations conducted on Danish labour market policies using linked administrative data. This also the case in Sweden, where the Institute for Evaluation of Labour Market and Education Policy (IFAU) produces and publishes substantial work using Swedish linked administrative data.

2.1.2. Employment outcomes following participation in LMPs

59. A key requirement for assessing the effectiveness of LMPs is the availability of data on the outcomes of LMP participants during and following their participation in the programme, and at the end of their unemployment spell. Some countries record this information – even if partially – in their main unemployment registers as the reason for ending an unemployment spell. This would then allow countries to record the destination upon leaving LMP interventions in the LMP measures and services registers. However, very few countries report the destinations directly in these registers.

60. As indicated in Table 2.3 (column 1), almost all countries record the reason for leaving unemployment in the unemployment register. This information might not be reliable, as it is self-reported by jobseekers themselves. Some countries, such as Luxembourg, uses social security records to complement and contrast the information reported by jobseekers. In Belgium, Israel, and Norway, the destination after unemployment is directly obtained by tracking the outcomes for persons who exit unemployment in other registers that can be linked with the main unemployment register.

61. All countries but Canada record the transition from unemployment to employment or self-employment in the main unemployment register (See Annex Table A.1). Canada, instead, reports all the administrative reasons for leaving unemployment, such as termination of benefit entitlement period. Identifying people transitioning to employment involves linking the main UR register with data on employment.

[8] For more details on summative evaluations see: Labour Market Development Agreements (https://www.canada.ca/en/employment-social-development/corporate/reports/evaluations/labour-market-development-agreements.html), Horizontal Youth Employment Strategy (https://www.canada.ca/en/employment-social-development/corporate/reports/evaluations/horizontal-career-focus.html and https://www.canada.ca/en/employment-social-development/corporate/reports/evaluations/horizontal-skills-link.html), and Aboriginal Skills and Employment Training Strategy and the Skills and Partnership Fund (https://www.canada.ca/en/employment-social-development/corporate/reports/evaluations/aboriginal-skills-employment-training-strategy-skills-partnership-fund.html). For an example of an cost-benefit analysis see: https://www.canada.ca/en/employment-social-development/programs/ei/ei-list/reports/monitoring2015/chapter3.html

62. Although recording information on reasons for leaving unemployment in the unemployment register is the best way to keep track of the immediate outcomes of the unemployed and ALMP participants, this is not very useful when it comes to evaluating the impact of ALMPs, as it is often limited to 1-3 months following the end of the program. In contrast, information on outcomes 6, 12, 18 and more months after the end of program participation is necessary to monitor and evaluate the outcomes of ALMPs. The analysis of the information available to evaluate ESF programmes undertaken by the European Commission (2019[6]) finds that in the vast majority of countries, no information on labour market outcomes 12 and 18 months after the end of the unemployment spell is recorded in the unemployment register. An alternative, such as in Bulgaria, is to use surveys to track programme participants' outcomes, but this approach is rather costly and rigid. A more cost-efficient and sustainable solution, is to combine information from unemployment registers and LMP participation with data from the employment register. Not only this allows detecting flows in an out of employment, but it also can, in many cases, provide information about job duration and job-related characteristics, such as contract type, hours worked and potentially also wages.

Table 2.3. Tracking outcomes of former registered unemployed persons

Country	Reason for leaving the unemployment register (UR)	Institution managing the employment register (ER)	Can the ER be linked with the main UR?	Information reported in the ER			
				Employment spell	Wages	Occupation	Type of contract
	(1)	(2)	(3)	(4)			
AUS	UR	Social Security	Yes	Yes	Yes	Yes	No
AUT	UR	Statistics Bureau	Yes	Yes	Yes	No, other register linked to ER	No
BEL	ORL	Social Security	Yes	Yes	Yes	No	No
BE (BRU)	ORL	Social Security	Yes	Yes	Yes	Yes	No
BE (VLG)	UR	Social Security	Yes	Yes	Yes	?	Yes
BE (WAL)	UR	Social Security	Yes	Yes	No, other register linked to ER	Yes	No, other register linked to ER
BGR	UR	Tax authority	No, but no legal/tech limitations to do so	Yes	Yes	Yes	Yes
CAN	UR	Tax authority	Yes	No, other register linked to ER	Yes	Yes	No, other register linked to ER
CHE	UR	Social Security	Yes	Yes	Yes	No, other register linked to ER	Yes
CHL	UR	Social Security	Yes	Yes	No	No	Yes
CZE	UR	Social Security	Yes	Yes	Yes	No, other register linked to ER	Yes

Country	Reason for leaving the unemployment register (UR)	Institution managing the employment register (ER)	Can the ER be linked with the main UR?	Information reported in the ER			
				Employment spell	Wages	Occupation	Type of contract
DEU	UR	PES	Yes	Yes	Yes	Yes	Yes
DNK	ORL	Statistics Bureau	Yes	Yes	No, other register linked to ER	Yes	Yes
ESP	UR	Social Security	Yes	Yes	No, other register linked to ER	No, other register linked to ER	Yes
EST	UR	Tax authority	Yes	Yes	No, other register linked to ER	Yes	Yes
FIN	UR	Statistics Bureau	Yes	Yes	Yes	Yes	No
FRA	UR	Social Security/ Statistics Bureau	Yes	Yes	Yes	Yes	Yes
GRC	UR	Social Security	Yes	Yes	Yes	Yes	Yes
HRV	UR	Social Security	Yes	Yes	No	Yes	Yes
HUN	UR	Tax authority	Yes	Yes	Yes	Yes	Yes
IRL	UR	Tax authority	No, but no legal/tech limitations to do so	Yes	Yes	?	No
ISR	No	Statistics Bureau	Yes	Yes	Yes	No	No
ITA	UR	PES	Yes	Yes	Yes	Yes	Yes
LTU	UR	Social Security	Yes	Yes	Yes	Yes	Yes
LUX	UR	Tax authority	Yes	Yes	Yes	?	No
LVA	ORL	Social Security	Yes	Yes	Yes	?	Yes
MEX	NA	Social Security	Yes	Yes	Yes	No	Yes
MLT	UR	PES	Yes	Yes	No	Yes	Yes
NDL	UR	Statistics Bureau/ Social Security/ Tax authority	Yes	Yes	Yes	Yes	Yes
NOR	ORL	Tax Authority	Yes	Yes	Yes	Yes	Yes
NZL	UR	Tax authority	Yes	No, other register linked to ER	Yes	No	Yes
POL	UR	Social Security	Yes	Yes	No	No	Yes
PRT	UR	Social Security	Yes	Yes	Yes	Yes	Yes
SVK	UR	Social Security	Yes	Yes	Yes	?	No
SVN	UR	Social Security	Yes	Yes	Yes	Yes	Yes
SWE	UR	Tax authority	Yes	Yes, and from other register linked to ER	Yes	Yes	No, other register linked to ER
USA	NA	Tax authority	?	Yes	Yes	Yes	No

Note: The main employment register refers to the register used to track the employment history of salaried/dependent employed individuals in a country. UR refers to the main unemployment register. ER refers to the employment register. ORL refers to other register(s) that can be linked with the main unemployment register. Column 5 reports information available in the ER (Yes, No). It also specifies whether it can be obtained from another register that can be linked to the ER. NA is for countries where the question is not applicable. ? indicates that this information was not shared.

Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

63. All countries participating in the EC-OECD questionnaire have a main employment register, and over 75 percent of these countries link their data with the unemployment register (Table 2.3, columns 2 and 3). Countries in which tax authorities manage the main employment register appear to have more difficulties in linking their registers with the unemployment register. This is potentially the case because sharing data between the PES and tax authorities is difficult. Bulgaria and Ireland do not currently link the data from the main employment register to the main unemployment register. However, they do not report any limitations for doing so, implying that the linking is possible in theory.

64. For most impact evaluations of LMPs, it is necessary to have information on the employment spell start and end dates, as well as data on job characteristics, such as contract type, hours worked and wages. This information is important to evaluate the impact of LMPs not only on the likelihood of employment, but also on job stability and job quality. Past employment spells also provide valuable information on unobservable characteristics, such as skills and motivation, which can be used as controls in CIEs. The availability of this information in the employment register or in other registers that can be linked with the employment register is presented in the last columns of Table 2.3.

65. In 33 out of 36 countries/regions, the main employment register contains information on the duration of employment spells (start and end dates). New Zealand and Sweden collect information on the employment spell in separate registers, which can be linked to the main employment register.

66. Information on wages is also reasonably easy to find in most countries. 29 countries/regions state that wages are reported in the main employment register and an additional four countries/regions report that wages are recorded in a separate register (usually tax records) which can be linked with the main employment register. Croatia, Malta, and Poland record information on wages in tax registers, but these registers are not linked with the main employment and unemployment register. In Poland, linking this information across databases requires specifying a detailed legal basis, which makes it theoretically possible, but in practice very difficult.

67. Data on the type of contract are available in the main employment register in 24 countries/regions and in other registers that can be linked with the employment register in two more countries and Wallonia. Occupation is less widely available.

2.1.3. Other income-replacement benefits

68. Labour market policies can have spillovers to social assistance and incapacity benefits, for example, by reducing workers' dependency on other publicly provided support. Moreover, it is important to take into account interactions between LMPs and social assistance when estimating the impact of LMPs and examine how the effectiveness of LMPs may vary between social assistance beneficiaries and non-beneficiaries. Table 2.4 reports the availability of data on social assistance and incapacity benefits. About 75 percent of the countries record the information of its recipients in a centralised register. For countries that do not have a centralised register, social assistance is recorded at the regional level or recorded in registers owned by different institutions. An exception is Israel, where data on income support are not recorded in a centralised register due to legal limitations.

Table 2.4. Recording information on social assistance and incapacity benefits

	Is there a centralised Social Assistance register?	Is there a centralised register for incapacity benefits?
	(1)	(2)
AUS	Same register as main UR	Same register as main UR
AUT	Regional level	Yes, no information on linking
BEL	Yes, has been linked to UR	Yes, has been linked to UR
BE (BRU)	Yes, has been linked to UR	Yes, has been linked to UR
BE (VLG)	Yes, has been linked to UR	Yes, has been linked to UR
BE (WAL)	Yes, has been linked to UR	Yes, has been linked to UR
BGR	Yes, has been linked to UR	Yes, has been linked to UR
CAN	Regional level*	Yes, has been linked to UR
CHE	Yes, potentially possible	Yes, has been linked to UR
CHL	Registers owned by different institutions*	Registers owned by different institutions*
CZE	Yes, has been linked to UR	Yes, cannot be linked to UR
DEU	Regional level	Yes, no information on linking
DNK	Yes, has been linked to UR	Yes, has been linked to UR
ESP	Regional level	Yes, has been linked to UR
EST	Yes, has been linked to UR	Yes, has been linked to UR
FIN	Yes, has been linked to UR	Yes, has been linked to UR
FRA	Yes, potentially possible	Yes, potentially possible
GRC	Registers owned by different institutions	Registers owned by different institutions
HRV	Yes, has been linked to UR	Yes, has been linked to UR
HUN	Yes, cannot be linked to UR	Yes, cannot be linked to UR
IRL	Same register as main UR	Registers owned by different institutions
ISR	No, for privacy reasons	No, for privacy reasons
ITA	Yes, no information on linking	Yes, no information on linking
LTU	Yes, has been linked to UR	Yes, has been linked to UR
LUX	Yes, no information on linking	Yes, no information on linking
LVA	Regional level/ Registers owned by different institutions	Regional level/ Registers owned by different institutions
MEX	NA	Registers owned by different institutions
MLT	Yes, has been linked to UR	Yes, has been linked to UR
NDL	Yes, has been linked to UR	Yes, has been linked to UR
NOR	Regional level	Yes, has been linked to UR
NZL	Same register as main UR	Same register as main UR
POL	Yes, cannot be linked to UR	Yes, has been linked to UR
PRT	Yes, has been linked to UR	Yes, has been linked to UR
SVK	Yes, no information on linking	Yes, no information on linking
SVN	Yes, has been linked to UR	Yes, has been linked to UR
SWE	Yes, has been linked to UR	Yes, has been linked to UR
USA	Regional level	Regional level

Note: Table specifies the existence of a centralized register for means-tested social assistance and incapacity benefits (i.e., disability benefits, pensions paid due to occupational injury and disease, and paid sick leave), and whether this one can be linked or not with the main UR. If centralized register does not exist, the reason is listed (various registers exist at the regional level or owned by different institutions). Mexico has various social assistance programs falling under the jurisdiction of institutions not responding to the questionnaire. Information is thus not complete."Yes, has been linked to UR" indicates the existence of a SA or IB centralised register that has been linked to the main UR. "Yes, cannot be linked to UR" indicates that it has never been linked due to legal/technical limitations that cannot be overcome, whereas "Yes, potentially possible" indicates that it has never been linked but there are no legal/technical limitations for doing so.
* Although registers are owned by different institutions or collected at the regional level, the data could potentially be linked or has already been linked.

Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

69. In Ireland and New Zealand, the main unemployment register records receipt of social assistance benefits. In Belgium, Bulgaria, the Czech Republic, Germany, Finland, the Netherlands, Switzerland, Sweden and Wallonia (Belgium), the centralised social assistance register can be linked with the main unemployment register. In Poland, the two registers cannot be linked due to legal limitations.

70. Incapacity benefits are recorded in a centralised register in two-thirds of the countries that responded to the questionnaire. In Switzerland, Estonia, Spain, Finland, the Netherlands, Norway, Poland, Sweden, Wallonia (Belgium), it is possible to link this centralised register with the unemployment register. In New Zealand and Australia, the main unemployment register also records incapacity benefit receipt. In Chile and Ireland, both social assistance and incapacity benefits are recorded in registers owned by different institutions, whereas in Latvia, these are managed at the municipal level and every municipality has its own register for social assistance and incapacity benefits.

2.1.4. Personal and household characteristics

71. Detailed socio-demographic information on LMP participants is a key data requirement for any impact evaluation. First, many econometric techniques to carry out impact evaluations of a programme rely on the construction of a control group that is of comparable characteristics to the treatment group. In many cases, the construction of this control group is based on matching techniques, which require the use of individual socio-demographic information. Second, estimating the average effects of a policy may be of limited interest in many cases. Impact evaluations that provide effects for subgroups of age, gender, or other characteristics may reveal a more interesting picture of the effectiveness of policies for the most disadvantaged groups.

72. The first three columns of Table 2.5 report whether data on personal characteristics (including educational attainment, as well as family characteristics) are included in the unemployment register or are reported in other registers that can or cannot be linked with the unemployment register. Except for the Slovak Republic, all countries have individual-level information on their unemployed workers. Denmark, Latvia and Sweden record in the unemployment register some data on the sociodemographic characteristics of persons who are registered unemployed and can complement this information with other registers (population register in the case of Latvia), which can be linked to the main unemployment register.

73. Educational attainment is directly available in the vast majority of countries in the main unemployment register (Table 2.5, column 3). Canada, Denmark, and the Netherlands record this information in the education register, which can be linked to the main unemployment register.

Table 2.5. Data availability on individual and family characteristics and income from salaried employment

Country	Individual characteristics	Family characteristics	Educational attainment	Information on income from salaried employment	
				Institution responsible for register on income	Can the register be linked with the UR?
	(1)	(2)	(3)	(4)	(5)
AUS	UR	UR	UR	Statistics Bureau	Yes
AUT	UR	UR	UR	Social Security	Yes
BEL	UR	UR	UR	Tax authority	Yes
BE (BRU)	UR	ORL	UR	Social Security	Yes

Country	Individual characteristics	Family characteristics	Educational attainment	Information on income from salaried employment	
				Institution responsible for register on income	Can the register be linked with the UR?
BE (VLG)	UR	UR	UR	Social Security	Yes
BE (WAL)	UR	ORL	UR	Social Security	Yes
BGR	UR	UR	UR	Tax authority	Potentially possible
CAN	UR	ORL	ORL	Tax authority	Yes
CHE	UR	OR	UR	Social Security	Yes
CHL	UR	OR	UR	Social Security	Yes
CZE	UR	OR	UR	Tax authority	No
DEU	UR	UR	UR	Social Security	Yes
DNK	UR & ORL	ORL	ORL	Statistics Bureau	Potentially possible
ESP	UR	OR	UR	Tax authority	No
EST	UR	ORL	UR	Tax authority	Yes
FIN	UR	ORL	UR	Statistics Bureau	Yes
FRA	UR	UR	UR	Social Security	Yes
GRC	UR	UR	UR	Social Security	Yes
HRV	UR	UR	UR	Tax authority	No
HUN	UR	NA	UR	Tax authority	No
IRL	UR	UR	?	Tax authority	Yes
ISR	UR	UR	ORL	Tax authority	Yes
ITA	UR	OR?	UR	Social Security	Potentially possible
LTU	UR	UR	UR	Social Security	Yes
LUX	UR	ORL	UR	Social Security	Yes
LVA	ORL	ORL	UR	Tax authority	Yes
MEX	UR	NA	OR	Social Security	NA
MLT	UR	OR	UR	Tax authority	No information on linking
NDL	UR	UR	ORL	Statistics Bureau	Yes
NOR	UR	ORL	UR	Tax authority	Yes
NZL	UR	UR	UR	Tax authority	Yes
POL	UR	OR	UR	Tax authority	Potentially possible
PRT	UR	UR	UR	Social Security	Yes
SVK	OR?	OR?	UR	Social Security	Yes
SVN	UR	OR	UR	Social Security	No
SWE	UR & ORL	ORL	UR	Statistics Bureau	Yes
USA	UR	OR (and UR in some states)	OR	Statistics Bureau	No information on linking

Note: Individual characteristics include, for example, date of birth, place of residence, citizenship, gender, disability status, and marital status. Family characteristics include, for example, number of children, children's date of birth, and number of other dependents. UR refers to the unemployment register. OR refers to other register(s) and ORL to other register(s) that have been linked with the main unemployment register. Income information refers to income of salaried employment only. "Potentially possible" indicates that linking has never taken place but that there are no legal or technical challenges to linking that cannot be overcome. ? indicates that this information was not shared.
Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

74. Fewer countries can trace the family characteristics of their unemployed workers. Those that do, record it on the unemployment register (Austria, Australia, Belgium, Bulgaria, Germany, France, Greece, Croatia, Ireland, Israel, Lithuania, Netherlands and New Zealand and the region of Flanders in Belgium). Canada, Denmark, Estonia, Latvia, Sweden and the Brussels region of Belgium record the family-related information on other registers than can be linked to the unemployment register. In many cases, different institutions are in charge of the registers collecting individual characteristics and family characteristics, which adds an obstacle to linking the data. When family characteristics are recorded by the Statistics Bureau, however, countries are often able to link the data from this register to the unemployment register. An exception is Spain, where the UR owned by the ministry is not linked to the civil register recorded by the Statistics Bureau (PADRON), despite no apparent legal or technical constraints for doing so. In the United States, family characteristics are collected in the main unemployment register in only some States.

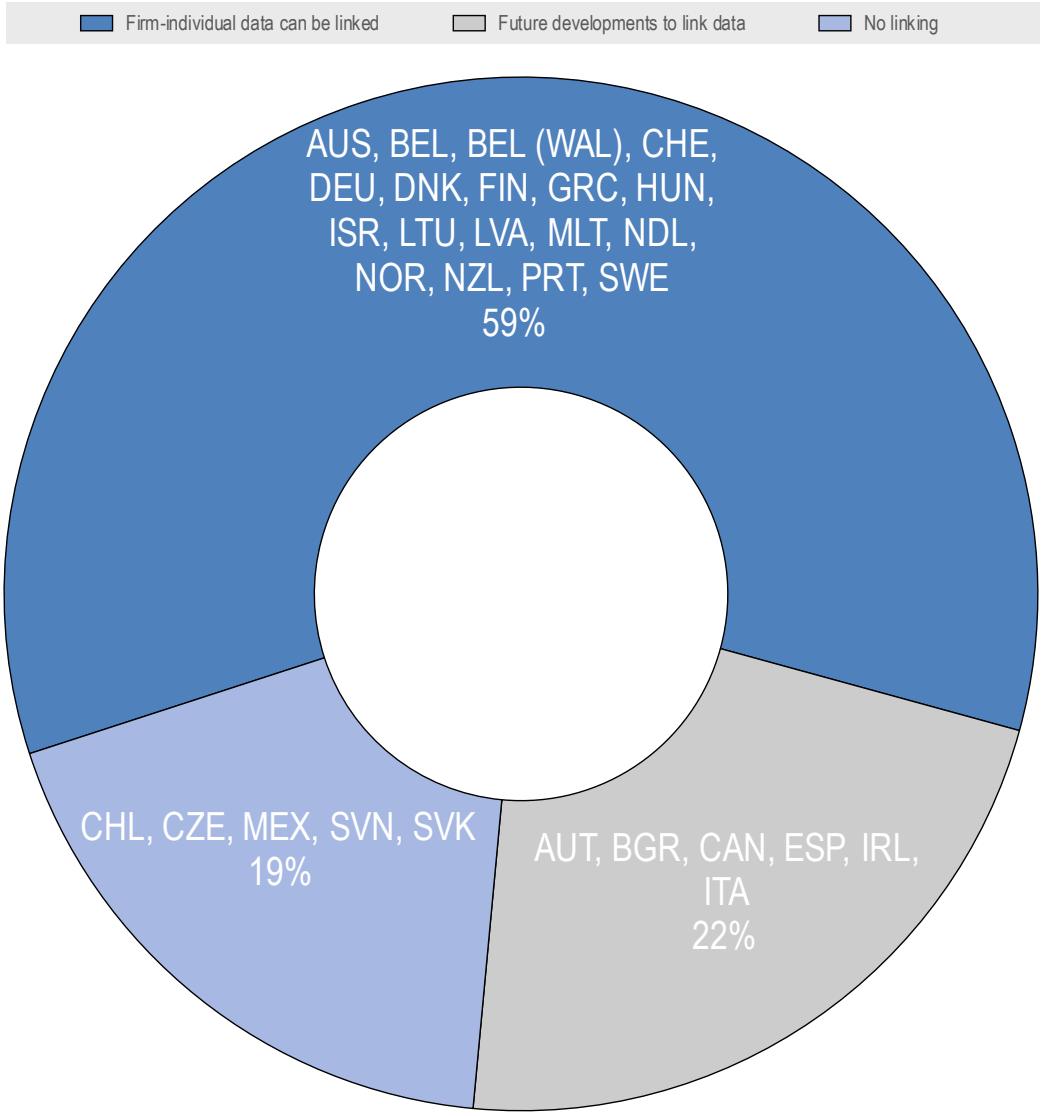
75. Another variable that is required for any impact evaluation is the income from salaried employment. Income information comes most often from tax authority registers or social security records. Linking income data with data from the UR seems to be more difficult when tax authorities are responsible for the income records. Both for Bulgaria and Poland, however, although the tax register has never been linked with the main unemployment register, there are no obstacles (legal or technical) for doing so.

2.1.5. Linking individual and firm-level data

76. The availability of linked firm-level and individual-level data opens up a key world of possibilities to examine issues related to labour productivity, job creation, the effects of policies on employees and firms, etc.[9] The last part of the OECD- EC questionnaire focuses on this aspect of administrative data and its results are reported in Figure 2.1. All countries participating in the survey, except the Czech Republic, record firm-level information. About 60% of these countries (including the Wallonia region of Belgium) already link firm-level with individual-level data. In addition, Austria, Bulgaria, Canada, Ireland, Italy and Finland are currently working on achieving this, and expect to be able to do so shortly. The remaining countries are not yet able to link the data, and there are no ongoing efforts to achieve this soon.

[9] For additional information, please refer to the OECD's LinkEED project: https://www.oecd.org/sdd/LinkEED%20project.pdf.

Figure 2.1. Linking individual and firm-level data



Note: Future developments indicates countries that do not yet have firm-employee linked data available, but that are working on it and expect to have it shortly. We do not have information on the Belgian regions of Brussels and Flanders, Estonia, France, Croatia, Luxembourg, and Poland.

Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

2.1.6. Summarising data availability

77. Most EU and OECD countries covered in this section have the necessary data for conducting CIE. In many countries, the unemployment register already includes a wealth of information about those persons who have been registered at least once with the Public Employment Service. In addition, in many cases it is possible to link the main unemployment register with the registers that record detailed employment data (to trace a person's employment history both before becoming unemployed and following his/her participation in LMPs. In addition, many countries have made progress in collecting the necessary data and linking the data for analysis and research purposes.

78. Data availability is overall more limited in decentralised governance of employment services (e.g. in the case of Italy, although great efforts have been made in recent years) and income-replacement benefits. Indeed, countries generally face serious limitations in collecting information on means-tested social assistance, which is under the responsibility of regional or local authorities or is often disaggregated into smaller programmes that are under the responsibility of many different public institutions. Another weaker aspect of the data concerns the information on occupation and job contract, which is less often available in the main employment register or is only partially recorded.

2.2. Linking registers: what it takes to make it happen

79. As has been argued before, CIEs are needed to establish the impact of ALMPs on labour market outcomes and therefore their effectiveness in securing sustainable and good quality employment for all jobseekers. Comprehensive CIEs usually require linking data from several different sources. The previous section already provided an overview of which type of information is either included in the countries' main unemployment registers or could be obtained through linking different registers. This section aims to give some practical insights into the feasibility of linking registers. Important questions in this respect are the number of registers that may need to be linked and whether it is feasible to link those registers. Such efforts are, of course, facilitated if data are already routinely linked and standardised procedures exist for those wishing to link different administrative registers or administrative data with survey data.

2.2.1. The number of registers that need to be linked and institutions to be involved

80. As discussed before, the first step in conducting CIEs is establishing the data required for the CIE and, hence, the registries that need to be drawn on. The questionnaire underlying this note implicitly assumes that the starting point for CIEs is a country's unemployment register. It then asks countries to provide information on the registers and responsible institutions that hold information on i) LMP services; ii) LMP measures; iii) unemployment benefits; iv) individual-level demographic information; v) family-level demographic information; vi) educational attainment; vii) social assistance benefits; viii) incapacity benefits; ix) employment history; and x) income information. Ideally, all the information can be combined either because it is included in the same register, or in different registers that are regularly linked. However, in many circumstances, different registers owned by different institutions need to be linked for producing a dataset that would be necessary for CIE.

81. The online Annex *Registers Mapping*[10] provides an overview of which registries should be used in each of the countries to obtain these different types of data, and the institutions that own the different registers. In many countries, the unemployment register already includes comprehensive information, often covering LMP services, LMP measures, unemployment benefits, individual-level demographic information and educational attainment. In 38% of countries (or regions) the unemployment register also contains information on family-level demographics and in Chile, even employment history. Often more than one register may be needed to be used to compile the same information, especially in circumstances when the counterfactual group is not included in the unemployment register.

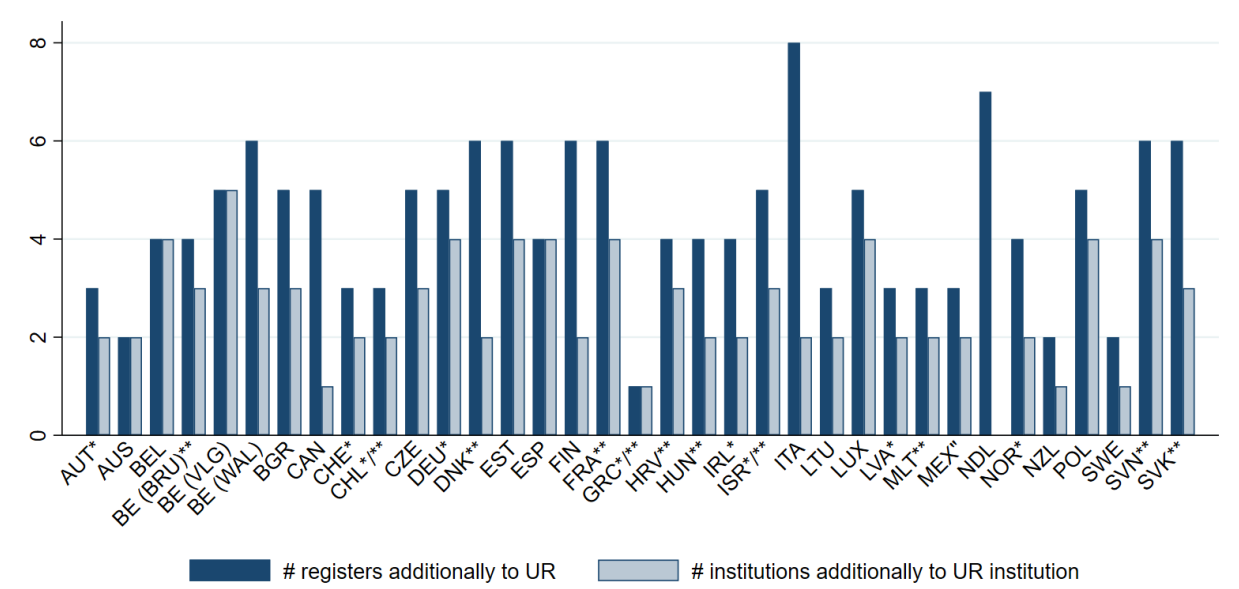
82. Figure 2.2 shows the potential maximum number of registers in addition to the main unemployment register that *may* need to be linked with it (dark blue bar) and institutions that need to cooperate for conducting CIEs (light blue bar). The Figure is based on a count of the registers and responsible institutions that countries reported in response to the questionnaire. The details underlying Figure 2.2 can be found in

10 Format and exact content to be defined at a later stage. File to be uploaded with the published version of this mapping and feasibility note or the final report.

the online Annex. Most countries require linking four to six registers in addition to the main unemployment register to obtain complete information on all aspects. The number of registers needed, however ranges from two to eight.[11]

Figure 2.2. Maximum necessary efforts for linking data for CIEs

Maximum number of registers that need to be linked and institutions to cooperate for creation of the complete linked dataset



Note: Bar in dark blue reports the number of registers that need to be linked to the UR register to obtain complete information on program participation, UB (first and/or lower tier), individual- and family-level demographic information, education, SA, DI, employment histories, and income from employment and other sources. The number of registers has been obtained as follows: (1) for labour market measures and services, the assumption is that one program is evaluated at the same time, and thus one register is counted unless the UR records information on all LMPs, (2) for UB, demographic information and education, one register is counted per each category if the UR does not contain any information on these aspects, (3) for SA, DI, employment and income, one register is counted if the register is different than the main UR.
Bar in light blue reports the number of institutions that need to be involved in addition to the institution responsible for the main UR in order to obtain complete information as described above. If an additional register is counted, an additional institution will be counted if this one is different from the institution responsible for the main UR.
* indicates that there is no central register for SA and/or DI. ** indicates that information on one or more registers/institutions is missing. " indicates that there is no main UR register. As such, calculations are made on the potential linking of LMP participation with other information.
Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

83. In addition, compiling the necessary data to conduct CIE usually requires dealing with more than one institution, which is important for planning CIEs. The largest number of institutions involved is five for the Belgian region of Flanders (in addition to the Flemish PES, VDAB), whereas in the Netherlands no cooperation between institutions is needed. In fact, in the Dutch case, obtaining a full set of information

11 In Greece, because the unemployment register is very comprehensive, only another register containing employment histories and income needs to be linked. However, social assistance and incapacity benefits are managed at the regional level, which implies that to obtain complete information one would need to link data from many disaggregated registers.

requires linking seven registers with the unemployment register, but they are all managed by Statistics Netherlands, and thus linking does not involve any external institution.

84. It is important to flag that not all research projects require data in all those different areas. Which data are required depends on the research question, but also the research methodology. Evaluations based on experimental techniques (e.g. randomised controlled trials) may often have leaner data requirements than research using non-experimental techniques, which may require more controls and, hence, potentially more registers to allow comparing the outcomes of participants before and after participation in ALMPs with those of non-participants. Hence, Figure 2.2 should be seen as a maximum and often fewer registers need to be linked and institutions are involved.

Table 2.6. Linked registers, routine linking and the purpose of linking

Country	Which data/register is included in UR or can be linked with UR?	Which data/register has not been linked with UR before?	Information missing (country did not respond on these registers)	Types of data routinely linked	Central authority responsible for linking	Purpose of linking
	(1)	(2)	(3)	(4)	(5)	(6)
AUS	UB-I, UB-II; LMS, ALMP; ER; IB; I-DEMO, F-DEMO, EDU; INC.			i) Health & INC & SS & DEMO ii) Employer-employee	Australian Bureau of Statistics	M S(tatistics) IE
AUT	UB-I, UB-II; LMS, ALMP; ER; I-DEMO, F-DEMO, EDU; INC.	SA (region)	IB.	UR & ER & INC	PES Austria, Federal Ministry of Labour, Social Affairs, Health, and Consumer Protection (BMASGK) regarding PES data linked with insurance Data. Statistic Austria	M(onitoring)
BEL	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			No details provided	Banque Carrefour de la Sécurité Sociale	M R(esearch)
BE (BRU)	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			UR & ER & INC	Banque Carrefour de la Sécurité Sociale	M

Country	Which data/register is included in UR or can be linked with UR?	Which data/register has not been linked with UR before?	Information missing (country did not respond on these registers)	Types of data routinely linked	Central authority responsible for linking	Purpose of linking
BE (VLG)	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			UR & LMP & EDU	Banque Carrefour de la Sécurité Sociale	A R
BE (WAL)	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			UR & LMP	NA	M R
BGR	UB-I, UB-II; LMS, ALMP; SA; IB; I-DEMO, F-DEMO, EDU.	ER; INC		NA		NA
CAN	UB-I; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			UR & ALMP & INC	Employment and Social Development Canada	IE R
CHE	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, EDU; INC.	F-DEMO.		i) UR & IB & SA ii) UR & ER & SS	Office Fédéral de la Statistique	IE R
CHL	UB-I; ER; I-DEMO, EDU; INC.	LMS, ALMP ; SA (instit.), IB (instit.) F-DEMO.		NA	NA	NA
CZE	UB-I; LMS, ALMP; SA; I-DEMO, EDU.	F-DEMO: No legal constraints; IB; INC.		NA	NA	NA
DEU	UB-I, UB-II; LMS, ALMP; ER; I-DEMO, F-DEMO, EDU; INC.	SA (regional).	IB	PES data	BA statistics department for BA data	IE R

Country	Which data/register is included in UR or can be linked with UR?	Which data/register has not been linked with UR before?	Information missing (country did not respond on these registers)	Types of data routinely linked	Central authority responsible for linking	Purpose of linking
DNK	UB-I; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU.	INC: No legal constraints.		i) UR & ER & EDU ii) UR & ER	NA	S
ESP	UB-I, UB-II; LMS, ALMP; ER; IB; I-DEMO, EDU; INC.	F-DEMO: No legal issues.		UR & ER & INC	NA	A(dministration) S
EST	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			No details provided	Eesti Statistikaamet (Statistics Estonia)	S
FIN	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			UR & ER & SS & INC	Tilastokeskus (Statistics Finland)	M S
FRA	UB-I, UB-II; LMS, ALMP; ER; I-DEMO, F-DEMO, EDU; INC.		SA, IB.	i) UR & ER & INC; ii) employee and employer data; iii) DEMO & INC	NA	S R
GRC	UB-I, UB-II; LMS, ALMP; ER; I-DEMO, F-DEMO, EDU; INC.		IB.	ER & EDU & INC & UR	NA	M
HRV	UB-I; LMS, ALMP; SA, IB; I-DEMO, F-DEMO, EDU.	INC.		NA	NA	NA

Country	Which data/register is included in UR or can be linked with UR?	Which data/register has not been linked with UR before?	Information missing (country did not respond on these registers)	Types of data routinely linked	Central authority responsible for linking	Purpose of linking
HUN	UB-I; LMS, ALMP; ER; I-DEMO, EDU.	SA, IB; INC.	.	i) ER & EDU & Health & INC ii) UR & ER & ALMP	NISZ National Infocommunications Service Company (NISZ)	M
IRL	UB-I, UB-II; LMS, ALMP; SA; I-DEMO, F-DEMO, EDU; INC.	ER: No legal issues. IB (instit.)		UR & LMS & ALMP & EDU & INC	NA	M R
ISR	LMS, ALMP; I-DEMO, F-DEMO, EDU; INC.		UB-I, UB-II; ALMP (some measures); SA, IB.	i) Employer-employee ii) INC & ER	Central Bureau of Statistics	S
ITA	UB-I; LMS, ALMP; I-DEMO, F-DEMO, EDU: INC	ALMP (some measures) no legal issues;	SA, IB.	UR & some LMS & some ALMP & INC	NA	M
LTU	UB-I; LMS, ALMP; ER; SA, IB: I-DEMO, F-DEMO, EDU; INC.			UR & ER & EDU & DEMO & SS & INC	NA	M
LUX	UB-I; LMS, ALMP; ER; I-DEMO, F-DEMO, EDU.		SA, IB; INC.	NA	NA	A
LVA	UB-I, UB-II; LMS, ALMP; ER; I-DEMO, F-DEMO, EDU; INC.	SA region), DI (region)		UR & ER & DEMO & INC	NA	No details provided
MEX				EDU & SS (upcoming)	NA	M
MLT	LMS, ALMP; ER; SA, IB; I-DEMO, EDU.	F-DEMO: No legal issues.	INC.	NA	NA	NA

Country	Which data/register is included in UR or can be linked with UR?	Which data/register has not been linked with UR before?	Information missing (country did not respond on these registers)	Types of data routinely linked	Central authority responsible for linking	Purpose of linking
NDL	UB-I, UB-II.; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			UR & ER & DEMO & INC	Statistics Netherlands (CBS)	S IE
NOR	UB-I; LMS, ALMP; ER; IB; I-DEMO, F-DEMO, EDU; INC.	SA (region)		UR & ER	Statistics Norway (SSB)	S IE
NZL	UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			i) Employer-employee ii) Health & SS & Justice & EDU & ER & INC & LMP	Statistics New Zealand	S IE R
POL	UB-I; LMS, ALMP; ER; IB; I-DEMO, EDU.	F-DEMO; SA; INC: No legal issues.		INC & SS	NA	IE R
PRT	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			UR and SS	Statistics Portugal	M
SVN	UB-I; LMS, ALMP; ER; SA, IB; I-DEMO, EDU.	F-DEMO; INC.		DEMO	NA	No details provided
SVK	UB-I; LMS, ALMP; ER; I-DEMO, EDU; INC.	IB.	SA; F-DEMO.	NA	NA	A

Country	Which data/register is included in UR or can be linked with UR?	Which data/register has not been linked with UR before?	Information missing (country did not respond on these registers)	Types of data routinely linked	Central authority responsible for linking	Purpose of linking
SWE	UB-I, UB-II; LMS, ALMP; ER; SA, IB; I-DEMO, F-DEMO, EDU; INC.			UR & ER & INC & DEMO	Statistics Sweden (SCB)	IE R
USA	UB-I; I-DEMO,	F-DEMO,	LMS, ALMP; ER; SA; IB; EDU; INC.	NA	NA	NA

Note: UB-I and UB-II refer to first and lower-tier unemployment benefits, respectively. LMP-S refers to labour market services, and LMP-M to labour market measures. ER to employment register, SA to social assistance and IB to incapacity benefits registers. I-DEMO and F-DEMO to individual and family demographics. EDU to education, and INC to income from salaried employment. The second column of the table reports whether SA and IB are recorded in various regional registers (region) or subdivided in various institutions registers (instit.). Column 4 reports the type of data that is being routinely linked. NA is given for countries not routinely linking their data. SS stands for social security data. Column 5 reports countries purpose for routinely linking the data. Responses have been coded into five categories: administration (A), monitoring (M), impact evaluation (IE), statistical production (S) and research (R).
Source: Author's own compilation based on countries responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

2.2.2. Overview of countries' capacity to link data across registers

85. While the last subsection discussed the number of registers that may need to be linked for CIEs, this subsection gives an overview of the registers that can be linked with a country's main unemployment register. The relevant information has been presented before in Table 2.1 to Table 2.5. The information in these tables is jointly presented for each country in Annex Table A A.2. Table 2.6 provides information about the process of linking data and its purpose. The first column of Table 2.6 provides a summary of the information that is either already included in the unemployment register or in another register that can be linked with the unemployment register. The second column reports the registers that have not been linked with the main unemployment register before; while the third column highlights currently missing information on the feasibility of linking.[12]

86. A first key message coming out of Table 2.6 is that in almost all countries the main unemployment register can (at least partially) be linked with the employment register. In Bulgaria and Ireland, linking both registers has never taken place, but the countries report no legal (nor technical) reasons for not doing so.

87. Most countries can (partially) link the unemployment register with participation in employment services and measures. However, the inability to link the whole range of LMPs limits the feasibility of comprehensive CIEs covering a country's activation strategy. This is the case for LMP measures in Italy and Poland. In these countries, participation in some LMP measures is recorded in the main unemployment register. The countries' interpretation of the new General Data Protection Regulation (GDPR) imposes limits to linking this register with other registers containing information on other measures. In Poland,

12 Further follow-up with the participating countries will be necessary to complete this table.

experts report that their interpretation of the GDPR is such that LMP measures data can be combined with other registers on the legal basis of a separate act of law.

88. Whereas individual and education information is often recorded in the main unemployment register, or can easily be obtained from another register and linked with the main unemployment register, family demographics are more often missing. This is the case for Chile, Spain, the Czech Republic and Malta. Only in Chile there are legal constraints to link the two registers: even though the data could be linked through a national ID, the institutions responsible for the unemployment register (PES) and family register (Ministry of Social Development and Family) face legal restrictions related to individuals' confidentiality. In the other three countries, no legal nor technical constraints are flagged, yet, the linking has never occurred.

89. Only partial conclusions can be drawn when considering the feasibility of linking the unemployment register with registers containing information on income, social assistance and incapacity benefits. In many countries, this information still needs to be completed (see Table 2.6 column 3). When it comes to income information, only the Czech Republic, Bulgaria and Poland have never linked their income-related register with the main unemployment register. In Bulgaria and Poland this may potentially be possible, as the countries flag no technical nor legal barriers that cannot be overcome, which is encouraging. In the Czech Republic, their current interpretation of the GDPR does not allow to link data from both registers.

90. Linking data from social assistance and incapacity benefits often comes with the additional complication that the registers are managed either at the regional/local level, or by different institutions. If a central register does not exist, linking the data on social assistance and incapacity benefits with the main unemployment register can be impossible.

91. With a few exceptions described above, the regulations imposed by the GDPR, or national data protection regulations, do not prevent from sharing and linking data across institutions for conducting CIEs. Most countries experience technical constraints, but in most cases they can be overcome. Austria, Canada, Estonia and Italy are in this situation: there are no technical constraints to linking the data, but there are some legal constraints that need to be overcome before being able to do so. Overall, linking data coming from the tax authorities appear to raise more legal and technical issues than linking data managed by Ministries or the Statistics Bureau. Yet, the technical and legal constraints vary significantly across countries.

2.2.3. Efforts to routinely link data

92. The previous subsection showed that in many countries registers can be linked and, indeed many countries already routinely link different registers either within the same or across different institutions. When asked about routine linking, the vast majority of countries (77%) reported regular linking of different registries, while the remaining countries reported no routine linking of registries. These countries are Bulgaria, Chile, the Czech Republic, Croatia, Luxembourg, Malta, Mexico and the Slovak Republic. Column 4 in Table 2.6 reports the type of data that is routinely linked. Routine linking often concerns: i) the unemployment and employment register; ii) sometimes together with the income register; and iii) employee-employer data.

93. Linking data across different registers is facilitated by the presence of an institution responsible for linking the data across registers. While this is not a necessary condition for linking to take place, it may simplify the process by building economies of scale on the technologies and human capital needed to manage and link large administrative registers. About half of the countries that participated in the EC-OECD survey reported a central authority that is responsible for linking and sharing data externally for

labour market purposes.[13] In many countries this authority is the Statistics Bureau (or Statistical Office). In some instances, countries' e-Governance initiatives have involved the establishment of an agency or specific secure infrastructure that is also responsible for sharing and linking data from various public institutions. In Hungary, the National Infocommunication Service Provider takes care of the entire process of data management for all public institutions: it conducts data anonymisation, links individual-level data from various registers, maintains the data warehouse for the central administration and delivers data services for researchers' needs. In Belgium, the Crossroads Bank for Social Security elaborates the e-Government strategy within the Belgian social sector, but also takes care of producing additional statistics and sharing data with researchers. In Austria, Canada and Germany the PES has the role of linking and sharing data in this research field.

94. Some initiatives of routinely linking data are worth mentioning. In Australia, the Multi-Agency Data Integration Project (MADIP) is a partnership among Australian Government agencies to develop a secure and enduring approach for combining information on healthcare, education, government payments, personal income tax, and population demographics (including the Census) to create a comprehensive picture of Australia over time. MADIP is a core component of the Australian Government's Data Integration Partnership for Australia (DIPA). There are six Commonwealth agencies working together on the project: the Australian Bureau of Statistics, the Australian Taxation Office, the Department of Education and Training, the Department of Health, the Department of Human Services, and the Department of Social Services. This initiative is only possible through the work of the Australian Statistics Bureau, which acts as a central authority for linking and managing the MADIP.

95. In Germany, the PES has a legal mandate to share anonymised data for labour market and employment research. Researchers receive comprehensive technical support in using the data and data are available for use worldwide (see Box 2.2 for details). Müller and Möller (2019[44]) describe the German approach to linking and sharing data for labour market research as a "win-win" situation for all stakeholders involved:

> *The German Federal Employment Agency [i.e. PES], the Ministry of Labor and Social Affairs, and other stakeholders of the Institute for Employment Research (Institut für Arbeitsmarkt- und Befrufsforschung, IAB) have benefited from improved evidence-based policy advice, the international scientific community from new opportunities to answer relevant labor market research questions with reliable and comprehensive data, and, last but not least, the IAB itself through a number of joint projects and collaboration with international researchers.*

96. In Mexico, labour market data are not yet systematically linked. However, data sharing agreements have now been established between the statistics bureau and relevant administrations to allow for evaluation of the Youth Building the Future Program.

Box 2.2. Data and data access to labour market data in Germany

Germany's PES, the *Bundesagentur für Arbeit*, has a legal mandate to monitor and analyse employment, the labour market and impacts of active labour market policies. Research on the impacts of active labour market policies has to be carried out by the PES research unit the Institute for Employment Research (*Institut für Arbeitsmarkt- und Befrufsforschung*, IAB). Furthermore, the PES also has a legal mandate to share anonymised data for labour market and employment research with research institutions. Within the IAB, the Research Data Centre (RDC) is responsible for sharing data.

13 The current project mainly covers labour market policies, which explains the focus on authorities that link labour market data. In some countries, many different authorities may exist depending on the specific focus of the analysis and therefore, the data required.

The RDC i) offers access to the IAB's confidential micro data, ii) prepares standardised data products and accompanying documentation; iii) advises on data selection and application; and iv) carries out research with the data.

Data products

The RDC offers micro-data covering individuals, household and firms. The offered datasets are generated through linking i) administrative data from the social security system's notification process, ii) administrative data from internal procedures of the PES, and iii) survey data, based on surveys conducted by the IAB. This results in 16 data products; the three most often used datasets are:

1. **Sample of Integrated Labor Market Biographies (SIAB),** which is a 2 percent random sample, containing more than 1.7 million individuals, from the Integrated Employment Biographies. The Integrated Employment Biographies are drawn upon social security notifications and process-generated data by the PES and has information on sociodemographic characteristics, employment, benefit receipts (unemployment insurance and assistance), job searches, location and firm-level information.
2. **IAB Establishment Panel (IABB),** which is an annual representative survey of around 16 000 firms in Germany. It covers various topics, including the development of employment, personnel structure, recruitments and dismissals, wages, working hours, training programmes, apprenticeship and vocational training, investments, innovations, and alternating annual topics.
3. **Linked Employer–Employee Data (LIAB),** which combines the IABB (i.e. survey data) with administrative data on employees from the Integrated Employment Biographies. It therefore allows for the simultaneous analysis of supply and demand on the German labour market.

Access to data

IAB data can be access through three different modes. **De facto anonymized microdata** are available for download research projects in the field of labour market research (but not for teaching or commercial research interests). **Weakly anonymized data** can be accessed through i) **remote execution** or ii) **on-site access**. Remote execution means that researchers prepare their programmes with artificial data and later send their programmes for execution with the original data. This implies that the researchers never view the original data and all results require review by RDC staff. Access is possible only via on-site workplaces within a secure computing environment. However, this on-site access is not restricted to the IAB's headquarter in Nuremberg. There are various other locations within Germany and even abroad, including UK, USA, France and Canada.

Source: Müller D., Möller J. (2019): "Giving the International Scientific Community Access to German Labor Market Data: A Success Story." in Crato N., Paruolo P. (eds.): Data-Driven Policy Impact Evaluation. Springer, Cham, https://doi.org/10.1007/978-3-319-78461-8_7 and Umkehrer, M. (2019), "Data and data access at the Research Data Centre of the German Federal Employment Agency at the Institute For Employment Research", OECD/EC Workshop "Evaluating labour market policies through the use of linked administrative data", 18 November, Brussels, http://www.oecd.org/employment/emp/S4.3.%20Umkehrer_DEU.pdf.

2.2.4. Purpose of linking administrative data

97. In countries where impact evaluations and research are already the drivers of routine linking of data, future CIEs may be easier to set up than in countries where linked data is currently only used for administrative purposes. Therefore, it is useful to know the purpose of any ongoing routine linking of registers in countries. Column 6 in Table 2.6 therefore reports the purpose for routinely linking data. Interestingly, countries link data for very different purposes. Eleven out of the 28 countries (or regions) that

provided detailed responses to this specific survey questions reported that routine linking is done for monitoring purposes, an additional one third routinely link data for impact evaluation while Austria reports both purposes. Spain is an interesting case, as there is substantial linking of data from various registers on a routine basis, but principally for administrative purposes. For example, the Ministry of Labour, Migration and Social Security carries out a survey on participants in active labour market policies, which is routinely linked with data from the main unemployment register. This linking only takes place as a quality check, to control the validity of the information on LMP participation collected by the PES register. The dataset of linked LMP participation and PES register is disposed of after the quality check has been executed. In addition, the information from the survey is not used for any other purpose.

98. In Flanders (Belgium), the research department of the PES uses both experimental and non-experimental CIEs to evaluate the (cost-)effectiveness of its employment services and programmes. One example of current research is the evaluation of the role of different types of vacancy referrals in facilitating the matching between unemployed workers and vacancies (Bollens and Cockx, 2017[45]). Another example is the forthcoming report by the JRC, which evaluates the “Work Experience for Young Persons" programme implemented in Flanders in June 2015 by the Flemish division of the European Social Fund (ESF) (JRC, Forthcoming[4]). In Canada, the Department of Employment and Social Development has used administrative data and robust econometric methods (e.g., propensity score matching combined with Difference-In-Differences estimation) to assess the impacts of labour market programs. In addition, these impact evaluations are accompanied by rigorous cost-benefit analyses (Handouyahia et al., 2016[46]) (Gingras et al., 2017[47]).

99. New Zealand has long-standing experience in using CIEs to evaluate the effectiveness of active labour market policies and programmes. However, it also took a long time to ensure that the evaluation results of past and current programmes and policies are embedded in the decision making process. Nowadays, results are used more regularly and policymakers also expect that future policies and programmes are evaluated through CIEs (seeBox 2.3).

Box 2.3. Using linked administrative data to evaluate the effectiveness of ALMPs in New Zealand

In New Zealand, the Ministry of Social Development (MSD) has a long-term project using linked administrative data to evaluate the effectiveness of its active labour market programmes (ALMPs) and policies in a standardised and efficient manner. The overall objective is a drive for evidence-based decision making to support decisions on the types of ALMPs and continuous improvement of those.

Long-standing experience in evaluating ALMPs within the Ministry of Social Development

The MSD project to evaluate the effectiveness of ALMPs dates back to the year 2000. Of the 275 past and present MSD programmes and policies, 116 have been evaluated using different evaluation approaches: 15 are based on randomised experiments, 12 are natural experiments, and 89 use propensity score matching. 159 ALMPs could not be evaluated, either because an evaluation would not have been feasible (e.g. no or poor data) or not robust (e.g. no counterfactual). An important aspect is the use of standardised evaluation methods to make results between programmes and over time comparable.

Furthermore, while up-to-date results are important to support decisionmaking of current programmes, the assessment of long-term effects also is important to provide estimates of the total impact of programmes. For long-standing programmes, the current follow-up period is 18 years. Of the rated (evaluated) programmes, over two-thirds (72%) have been rated “effective or promising”. For 20% of the rated programmes, the results suggested that they programmes made “no difference”, while for around 8% the programme effects are “negative”.

It takes time to build a culture of evidence-based decision making

Counterfactual impact evaluations are not necessarily intuitive for operational and policy staff, as they are not trained in these approaches. Hence, it took time to embed the evaluation results in decision-making. Nevertheless, over the last 15 years, more staff understand this type of evidence and appreciate the value it has. Quality and robustness of the evaluation results thereby is an important aspect, as it helped to overcome very strong resistance among operational staff, especially concerning randomised experiments. Nowadays, using the results of past impact evaluations has become a more regular part of the policy-making process. Furthermore, it raises the expectation that impact evaluations are also conducted for future programmes and policies.

Source: De Boer, M. (2019), "Monitoring ALMP effectiveness using linked data: The New Zealand experience", OECD/EC Workshop "Evaluating labour market policies through the use of linked administrative data", 18 November, Brussels, http://www.oecd.org/employment/emp/S3.3.%20De%20Boer_NZL.pdf.

2.2.5. Process feasibility of linking administrative data

100. Even when there are little or no legal or technical constraints on linking registers *per se*, there may be constraints associated with the actual 'process' of obtaining and linking registers. Countries were therefore asked to provide additional details around the main challenges to linking registers.

101. Table 2.7 summarises the countries' responses around some common themes. Certainly one of the most important aspects when working with linked administrative data containing individual-level information is **data privacy** issues. All EU and OECD countries have laws that aim at guaranteeing data protection; the EU data protection is currently regulated through the General Data Protection Regulation (GDPR).[14][15] Country-specific examples of how data privacy is addressed when compiling and sharing data can be found below:

- In Canada, a privacy and information security submission is required before each research or evaluation project, and is overseen by a data privacy committee. A data strategy, that is currently being developed, will streamline access in the future.
- In the Slovak Republic, the PES is able and authorised to use administrative data for analytical purposes, however, the data cannot be made available to third parties. All interconnections of information systems with other state institutions and health insurance companies are set by specific contracts and most operate based on one-off requests.
- In Estonia, obtaining data from other registers can be time-consuming, especially when the permission of the Data Protection Inspectorate is needed. Similarly, in Bulgaria and Israel, the process of obtaining approval of data privacy committees is extremely bureaucratic and can last several months, delaying access to data.
- In Australia, the Statistics Bureau undertakes a rigorous risk assessment and follows an approval process for all new projects requiring linked data. In addition, the separation principle is applied so that nobody is ever able to see all the information about a specific person together at any point in the integration process.

14 The GDPR regulation does not exclude Member State law that sets out the circumstances for specific processing situations, including determining more precisely the conditions under which the processing of personal data is lawful (Source: https://gdpr-info.eu/recitals/no-10/).

15 Before the adoption of GDPR in May 2018, data protection in the EU was regulated by Data Protection Directive.

102. Moreover, data privacy rules may stipulate that linked data sets have to be deleted after a project has been completed. This constraint, although necessary, poses problems for later reviews of the research, follow-up work with the same data and may also be a disincentive for researchers to engage in research using linked administrative data, if academic journals require researchers to keep hold of data. This issue could be addressed if a more sustainable solution for the regularly used data could be developed.

103. Some of these issues may be addressed through standardised **data request procedures**, which may help to streamline processes in obtaining (linked) administrative data for research purposes. Ideally there is also a centralised institution responsible for anonymising and routinely linking data across different institutions. This may sometimes be important also for practical reasons such as enabling secure data storage. In Ireland this poses a problem, as there is no central authority that is responsible for storing large datasets resulting from linking different registers. In Belgium, there is no standardised process to linking data, which makes it difficult to request data for research purposes and results in a high workload for staff processing the requests (Bollens, 2019[48]). Facing similar problems, Canada is currently developing a "data strategy", which aims at streamlining data access procedures. However, even when the process of requesting data is standardised, the process may take a long time. In Switzerland, the process of data linking has been standardised by the Federal Office of Statistics and data requirements have to be formulated in detail in advance. This process, which currently involves the approval of several offices on a case-by-case basis, could be streamlined if a central authority was involved in processing the requests. Even if the process of accessing data is streamlined, it may take time. In Sweden, researchers being granted data access have to go through an ethics review application, a confidentiality review at Statistics, then link and correct errors in the registers. One can expect delays before the data is available for use.

104. Delays in projects with linked data are therefore common and may be exaggerated through **time-lags in the release of administrative data** in the specific data infrastructures for researchers. In some instances, countries release the data with a lag that can be substantial, and result in limitations for timely evaluation of labour market policies. For instance, in Belgium there is over a two-year delay until data becomes available. The most recent data available in 2019 is 2016 data; data for 2017 is only partially available. Similarly, in Finland, the delay for obtaining data is about 18 months.

105. Some countries reported a **lack of financial and human resources** to linking administrative data and using it for impact evaluations of labour market policies. For example, Bulgaria mentioned a lack of trained specialists who could carry out the linking across institutions owning the registers. Hence, any work in this area is usually outsourced. However, this does not allow for ad hoc requests to linking administrative data. Hungary and Luxembourg reported a shortage of financial resources and human capital. In New Zealand, such shortages, together with little engagement by contributing agencies, result in an insufficient level of documentation and technical support available for the process of linking data. Many of the administrative registers supplied are often arcane in design and documentation may use institution-specific jargon.

Table 2.7. What challenges exist to linking data for evaluation purposes?

Issue	Description	Country examples[a]
Addressing data privacy issues	Data protection issues play an important role in research based on individual-level data and may pose challenges and possible constraints, especially if there are no standardised procedures on how to access and use data:	CAN, CHE, CHL, BGR, EST, GRC, ISR, LTV, MLT, NOR, PRT, SVK
	Legal advice may be required (e.g. demonstrating legitimacy of research).	
	Process of obtaining approval to use data may be complicated and take a long time.	
	Deletion of data used for research: (Linked) individual-level data used for	

Issue	Description	Country examples[a]
	research often must be destroyed at the end of a research project. This may pose problems for researchers, as they lose part of their investment in constructing datasets, cannot use the data for follow-up projects and cannot obtain reward (e.g. because academic journals require researchers to keep hold of the data).	
Data request procedures	Ideally, there are formalised data request procedures lead by a central authority. Nevertheless, even formalised procedures can result in long delays until data can be obtained.	BEL (all), BGR, CAN, CHE, ESP, FRA, NDL, SWE
	Without standardised procedures, using and linking administrative data for research purposes may be both costly and uncertain: i) It is costly for those who request the data and those who grant access, as the process is ad-hoc and a one-off basis. ii) It creates uncertainties both on the institutions who grant access (e.g. ensuring that the same rules are applied each time) and those obtain access (e.g. less clarity on whether data and which data can be obtained).	
Timeliness of evaluations due to data lags and complexity of data	Substantial time lags between the data generation in operational systems and (research) datasets becoming available limits the timeliness of evaluations.	BEL (Federal, BRU and VLG), FIN
Lack of financial/human resources	Missing culture of evidence-based policy making may result in no/too little human and financial resources devoted to (regularly) linking data within the organisations who produce data (e.g. PES) or develop policies (e.g. Ministry).	AUT, BGR, HUN, IRE, LUX, NZL, SWE
	When different institutions need to be involved, different levels of engagement across institutions may cause challenges.	
	Processing power and data storage solutions pose a challenge.	
	Difficulty of working with data and information that does not fall under one's competences	
	Working with different sources of data and interphases, incorporating changes in series due to regulatory changes	
Decentralised structure	Devolved administration of labour market or social policies may imply the absence of national registers and, hence, regional or even local, municipality level registers exist. Consequently, multiple institutions may need to involved in the process of obtaining data for research. This requires engagement in all institutions concerned, may pose additional legal challenges and often takes considerable time.	DEU, ITA, LVA, POL, SVN, USA
Lack of unique identifiers	Linking registries for research purposes is facilitated if unique identifiers (e.g. security number, personal identification number, fiscal code) for each person exist in all required registries.	FRA, MEX, NZL, SWE

Note: a. The list of countries may not be complete, as not all countries responded to the question or may not have responded to all possible issues. Some countries flagged some of these issues as challenges, but may at the same time have mentioned possible solutions.
Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

106. **Decentralised structures** due to devolved administrations (regional or local level) may also pose challenges for linking administrative data, especially when there are no centralised registers and each public institution is responsible for managing their information system and registers. This situation particularly applies to the management of social assistance benefits and labour market services and programmes. In Latvia, for example, each of the 119 municipalities is responsible for managing social assistance programmes. This implies that when intending to share and link data, it is necessary to sign an agreement with each of the municipalities and other numerous public institutions that own data. This can be time consuming, and adds a layer of complication to data linking.

107. In Germany and Poland, decentralised structures result in technical and organisational difficulties and, furthermore, in severe legal constraints. In Poland, to overcome these issues, an Integrated Analytical

Platform is being implemented, with the goal of integrating the data from employment and social security registers in a single platform. The expectation is that this will improve the work of the administration by overcoming the important legal and technical constraints that the country faces in sharing and linking data.

108. Finally, a **lack of unique identifiers** consistent across registers may impose challenges on linking administrative data. For employment and social security data, such unique identifiers are often the social security number, a personal identification number or the fiscal code. Some countries have extremely secure systems that minimise the potential mismatches. For instance, in Estonia, individuals are identified through a triple identification mechanism, using a unique ID-code, an ID-card, and the X-road infrastructure. Some countries report challenges in linking data across registers with a unique identifier. In Mexico, registers from the Social Security Institute contain a Single Population Registration Code, which uniquely identifies both residents and Mexican citizens. The country reports, however, that some administrative registers lack the unique identifier. New Zealand lacks a common person identifier. Therefore, linking is based on shared identifiers (for example, personal tax number for unemployment, employment and income registers) followed by a probabilistic matching based on the name and date of birth. In Sweden, recent immigrants that have not yet received a social security number lack a unique identifier, and thus their data cannot be directly linked.

2.2.6. Linking surveys to the main unemployment register

109. Survey data can provide invaluable information for impact evaluations carried out with linked administrative data. The last section of the questionnaire, evaluated the countries' capacity to link surveys to the main unemployment register. The focus was on the European Union Labour Force Survey (EU-LFS), the European Union Statistics on Income and Living Conditions (EU-SILC), the Programme for International Student Assessment (PISA), and the Programme for the International Assessment of Adult Competencies (PIAAC).

110. Administrative and survey data are linked quite regularly in some countries. For example, in Estonia it is a "pay-for" service offered by Statistics Estonia, but only for anonymised data. The linked administrative-survey data can only be processed in a secure workplace adapted for that purpose at Statistics Estonia or over a secure VPN connection. In several countries, however, linking is not possible due to a lack of common identifiers in survey and administrative data (e.g. Germany, Ireland, Greece, France, and Wallonia (Belgium)). The lack of a common identifier may be the result of legislation forbidding data linking.

EU-LFS and EU-SILC

111. More than half of the countries responding to this question (56%) experience legal constraints to linking both EU-LFS and EU-SILC surveys with the main unemployment register (see Table 2.8). In most cases, however, these constraints can be overcome, particularly when it comes to linking the EU-LFS with the main unemployment register. There are sizeable technical constraints when it comes to linking the main unemployment register and the LFS and SILC surveys, especially when compared with the technical constraints to linking administrative data. For most countries, the complication comes from the lack of a common unique identifier in the survey data and the administrative registers. This is for example the case in Ireland, and Poland.

112. In Greece, provided that Taxpayer Identification Number or Social Security numbers are collected, there would be no legal limitations to linking LFS and SILC data with the main unemployment register. However, while technically possible, the linked data cannot be used for research purposes. The Statistics Bureau is able to link the data, exclusively for statistical purposes (i.e. in order to reduce the burden on respondents and improve the quality of the results), but no other Agency can have access to these data.

Table 2.8. Countries capacity to link the unemployment register to the EU-LFS and EU-SILC surveys

	EU-LFS		EU-SILC	
	Legal constraints	Technical constraints	Legal constraints	Technical constraints
AUT	N	Y	N	Y
BEL	Y(O)	N	Y	N
BE (BRU)	Y(O)	N	Y	N
BE (VLG)	Y(O)	N	Y	N
BE (WAL)	Y	N	Y	N
BGR	Y(O)	Y	Y	Y
CHE	Y(O)	N	Y(O)	N
CZE	Y(O)	Y	Y(O)	Y
ESP	Y	N	Y(O)	N
EST	N	Y	N	Y
FIN	Y(O)	N	Y	N
FRA	?	?	?	?
FRV	N	N	N	N
GRC	N	Y	N	Y
HUN	Y	Y	Y(O)	Y
IRL	N	N	N	N
ISR	N	N	NA	NA
ITA	Y(O)	N	Y	N
LTU	N	N	N	N
LUX	Y	Y	Y(O)	Y
LVA	?	?	?	?
MLT	N	?	N	?
NDL	N	N	N	N
NOR	N	N	Y	N
POL	Y	N	Y	Y
PRT	Y	Y	Y	Y
SVK	N	N	N	N
SVN	Y(O)	Y	Y	N
SWE	Y	Y	Y	Y

Note: Y (yes) indicates countries experiencing technical/legal constraints to link the main unemployment register with the survey data. Y(O), indicates countries that experience legal constraints, but that can be overcome. N indicates no legal/technical constraints. A question mark indicates that that information was not shared.
Source: Author's own compilation based on countries responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

PISA and PIAAC

113. The situation is similar when assessing countries capacity to link the administrative unemployment record with the PISA and PIAAC surveys. Half of the countries experience technical and/or legal constraints in linking these surveys with the main unemployment record (Table 2.9).

114. In Malta, the Ministry for Education and Employment (MEDE) does not collect students' personal data when administering the PISA survey. It has been precluded from the Information and Data Protection Commissioner (IDPC). Thus, all PISA data is anonymised and cannot be linked to other registers.

Table 2.9. Countries capacity to link the unemployment register to the PISA and PIAAC surveys

	PISA		PIAAC	
	Legal constraints	Technical constraints	Legal constraints	Technical constraints
AUT	N	Y	N	Y
AUS	?	?	?	?
BEL	N	?	?	?
BE (BRU)	?	Y	?	Y
BGR	?	Y	NA	NA
CAN	N	N	N	N
CHE	Y(O)	N	Y(O)	N
CHL	Y(O)	Y	Y(O)	Y
CZE	Y(O)	Y	Y(O)	Y
DEU	Y(O)	N	Y	N
DNK	N	?	N	?
EST	N	Y	N	Y
ESP	Y(O)	N	Y(O)	N
FIN	Y	N	Y	N
HRV	N	N	N	N
HUN	Y(O)	Y	Y(O)	Y
IRL	N	N	N	N
ISR	NA	NA	N	N
ITA	Y	N	Y	N
LTU	N	Y	N	N
LUX	?	Y	NA	NA
LVA	?	?	?	?
MLT	Y(O)	Y	NA	NA
NOR	?	N	?	N
NZE	N	Y	N	Y
PRT	Y	Y	Y	Y
SVK	?	?	?	?
SVN	Y(O)	Y	Y(O)	Y
SWE	Y	Y	Y	Y
USA	?	?	?	?

Note: Y (yes) indicates countries experiencing technical/legal constraints to link the main unemployment register with the survey data. Y(O), indicates countries that experience legal constraints, but that can be overcome. N indicates no legal/technical constraints A question mark indicates that that information was not shared. The countries that are not reported in this Table are not concerned by this question
Source: Author's own compilation based on countries' responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

115. In Germany, linking survey data to administrative data requires informed consent by respondents. Of the surveys analysed, only PIAAC(-Longitudinal) asks for linkage consent. Rates of consent for linkage to PES data vary strongly across surveys, ranging from 70% to 90%. The need for consent may pose some issues. First, non-consent reduces the number of observations. Second, selective consent might introduce biased results when certain groups of respondents are under-/over-represented. More generally, because a unique identifier does not always exist, it is not always possible to link survey data with administrative

data. Record linkage with PES data usually uses name, address, sex, date of birth and, if available, name of birth of consenting respondents. Linkage rates range from about 85% to about 95%.

2.2.7. Summarising feasibility of linking registers

This Section has highlighted first that conducting comprehensive CIEs based on administrative data usually requires linking two or more registers in almost all countries, which is important for planning CIEs. The number of registers that need to be linked depends on the nature of the research and some projects require less linking than others. A second encouraging finding is that, in almost all countries that responded to the questionnaire, the unemployment register can (at least partially) be linked with the employment register. For registers containing information on income, social assistance and incapacity benefits the picture is more mixed and linking may not be easily achieved. The same finding holds for linking administrative data with major individual- and household-level surveys. Third, the Section has found that linking is facilitated when there are institutions responsible for linking the data across registers. About half of the countries reported the existence of such an authority. Such authorities may help to address typical issues when dealing with individual-level data such as data privacy and may have standardised procedures to deal with data requests. This relates to a fourth finding that a strong culture of evidence-based policymaking makes CIEs of existing policies and measures more likely and the evaluation of future policies can be more easily incorporated in their planning process.

References

Baïz, A. et al. (2019), "Évaluation d'impact des politiques publiques", *France Stratégie 2019*. [40]

Bollens, J. (2019), *"Impact evaluation using linked administrative data : the VDAB-case", OECD/EC Workshop "Evaluating labour market policies through the use of linked administrative data"*, http://www.oecd.org/employment/emp/S4.1.%20Bollens_VDAB.pdf. [48]

Bollens, J. and B. Cockx (2017), "Effectiveness of a job vacancy referral scheme", *IZA Journal of Labor Policy*, Vol. 6/1, http://dx.doi.org/10.1186/s40173-017-0094-0. [45]

Card, D., J. Kluve and A. Weber (2017), "What Works? A Meta Analysis of Recent Active Labor Market Program Evaluations", *Journal of the European Economic Association*, http://dx.doi.org/10.1093/jeea/jvx028. [2]

Connelly, R. et al. (2016), "The role of administrative data in the big data revolution in social science research", *Social Science Research*, Vol. 59, pp. 1-12, http://dx.doi.org/10.1016/j.ssresearch.2016.04.015. [32]

Corbett, J. et al. (2018), "Singular memory or institutional memories? Toward a dynamic approach", *Governance*, Vol. 31/3, pp. 555-573, http://dx.doi.org/10.1111/gove.12340. [30]

Crato, N. and P. Paruolo (eds.) (2019), *Data-Driven Policy Impact Evaluation*, Springer International Publishing, Cham, http://dx.doi.org/10.1007/978-3-319-78461-8. [9]

Cummings, D. and D. Bloom (2020), *Can Subsidized Employment Programs Help Disadvantaged Job Seekers? A Synthesis of Findings from Evaluations of 13 Programs*, MDRC, https://www.mdrc.org/publication/can-subsidized-employment-programs-help-disadvantaged-job-seekers. [24]

Davison, A. et al. (2015), "Public Attitudes to Data Integration", *Report prepared for Statistics New Zealand*, http://file:///C:/Users/Garcia-mandico_S/Downloads/public-attit-data-integr-2015.pdf. [41]

De Boer, M. (2019), "Monitoring ALMP effectiveness using linked data: The New Zealand experience", *OECD/EC Workshop "Evaluating labour market policies through the use of linked administrative data"*, 18 November 2019, Brussels, http://www.oecd.org/employment/emp/S3.3.%20De%20Boer_NZL.pdf. [28]

EC (2019), *Pilot and feasibility study on the sustainability and effectiveness of results for European Social Fund participants using counterfactual impact evaluations : final report.*. [6]

EC (2018), *Programming period 2014-2020 Monitoring and Evaluation of European Cohesion Policy European Social Fund Guidance document*. [8]

EU Science Hub (2016), . [31]

EUR-Lex (2013), *Regulation (EU) No 1304/2013 on the European Social Fund*, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2013.347.01.0470.01.ENG (accessed on 27 January 2020). [23]

European Commission (2019), "Advanced counterfactual evaluation methods Guidance document", http://dx.doi.org/10.2767/464242. [7]

European Commission (2019), *Pilot and feasibility study on the sustainability and effectiveness of results for European Social Fund participants using counterfactual impact evaluations*, Publications Office of the EU, Brussels, https://doi.org/10.2767/39339. [36]

European Commission (2019), *Understanding our political nature: How to put knowledge and reason at the heart of political decision-making*, Publications Office of the European Union, http://dx.doi.org/10.2760/374191. [11]

European Commission (2019), *Using Administrative Data for Research: 10 Legal and Ethical Issues to Consider*. [38]

European Commission (2018), *Programming period 2014-2020 Monitoring and Evaluation of European Cohesion Policy European Social Fund Guidance document*, European Commission, https://ec.europa.eu/sfc/en/system/files/ged/ESF%20monitoring%20and%20evaluation%20guidance.pdf (accessed on 27 January 2020). [15]

European Commission (2013), *Design and Commissioning of Counterfactual Impact Evaluations: a Practical Guidance for ESF Managing Authorities*, Publications Office of the European Union, http://dx.doi.org/10.2767/94454. [5]

European Commission (2013), "Statistical matching: a model based approach", *EUROSTAT: Methodologies and Working Papers*. [37]

Gingras, Y. et al. (2016), *Statistics Canada Symposium 2016, Growth in Statistical Information: Challenges and Benefits. A Case Study in Administrative Data Informing Policy Development.*. [50]

Gingras, Y. et al. (2017), "Making Evaluation More Responsive to Policy Needs: The Case of the Labour Market Development Agreements", *Canadian Journal of Program Evaluation*, Vol. 32/2, http://dx.doi.org/10.3138/cjpe.31119. [47]

Government of Canada (2016), *Experimentation direction for Deputy Heads - December 2016*, https://www.canada.ca/en/innovation-hub/services/reports-resources/experimentation-direction-deputy-heads.html (accessed on 11 May 2020). [21]

Handouyahia, A. et al. (2016), *Cost-Benefit Analysis of Employment Benefits and Support Measures*. [46]

Handouyahia, A. et al. (2014), *Effects of the timing of participation in employment assistance services*. [52]

Handouyahia, A. et al. (2016), *Statistics Canada Symposium 2016, Growth in Statistical Information: Challenges and Benefits. Estimating the Impact of Active Labour Market Programs using Administrative Data and Matching Methods.*. [51]

Harron, K. et al. (2017), "Challenges in administrative data linkage for research", *Big Data & Society*, Vol. 4/2, p. 205395171774567, http://dx.doi.org/10.1177/2053951717745678. [34]

HHS, O. (2011), *Tips and Recommendations for Successfully Pilot Testing Your Program A Guide for the Office of Adolescent Health and Administration on Children, Youth and Families Grantees*, https://www.hhs.gov/ash/oah/resources-and-training/tpp-and-paf-resources/program-planning-and-implementation/index.html (accessed on 29 January 2020). [49]

HM Treasury (2011), *The Magenta Book: Guidance for evaluation*, https://www.gov.uk/government/publications/the-magenta-book. [14]

JRC (Forthcoming), "Active Labour Market Policies in Flanders. Evaluation of the ESF "Work Experience for Young Persons" Programme", *JRC Technical Reports* JRC113899. [4]

Le Conseil fédéral (2020), *Loi fédérale du 25 juin 1982 sur l'assurance-chômage obligatoire et l'indemnité en cas d'insolvabilité (Loi sur l'assurance-chômage, LACI)*, https://www.admin.ch/opc/fr/classified-compilation/19820159/index.html (accessed on 27 January 2020). [22]

Martin, J. (1998), "What Works Among Active Labour Market Policies: Evidence from OECD Countries' Experiences", in Debelle, G. and J. Borland (eds.), *Unemployment and the Australian Labour Market*, Reserve Bank of Australia, https://www.rba.gov.au/publications/confs/1998/martin.html (accessed on 27 January 2020). [17]

Müller, D. and J. Möller (2019), "Giving the International Scientific Community Access to German Labor Market Data: A Success Story", in *Data-Driven Policy Impact Evaluation*, Springer International Publishing, http://dx.doi.org/10.1007/978-3-319-78461-8_7. [44]

Nielsen, C. (2019), "Denmark's approach in using linked administrative data to evaluate the impact of ALMPs and the Jobeffekter.dk knowledge bank"*, OECD/EC Workshop "Evaluating labour market policies through the use of linked administrative data"*, 18 November 2019, Brussels, http://www.oecd.org/employment/emp/S5.2.%20Nielsen_DNK.pdf. [29]

NZ Legislation (1989), *Public Finance Act*, http://www.legislation.govt.nz/act/public/1989/0044/latest/DLM160809.html (accessed on 27 January 2020). [19]

OECD (2019), *Evaluating Latvia's Active Labour Market Policies*, Connecting People with Jobs, OECD Publishing, Paris, https://doi.org/10.1787/6037200a-en. [3]

OECD (2019), *Evidence-informed policy making*, https://www.oecd.org/governance/evidence-informed-policy-making.htm (accessed on 16 January 2020). [12]

OECD (2019), *Strengthening Active Labour Market Policies in Italy*, Connecting People with Jobs, OECD Publishing, Paris, https://dx.doi.org/10.1787/160a3c28-en. [43]

OECD (2019), "Supporting impact assessments for policy learning"*, DELSA/ELSA(2019)*, No. 24, OECD, Paris. [16]

OECD (2018), *A framework description of OECD Labour Market Policy Data for Non-EU countries compared with data for EU countries: With five country fiches*, https://www.oecd.org/els/emp/2018-Framework%20Description%20Report%20Final2.pdf. [42]

OECD (2018), *Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264308817-en. [1]

OECD (2018), *OECD Regulatory Policy Outlook 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264303072-en. [18]

OECD (2015), *Recommendation of the Council on Budgetary Governance*, OECD Public Governance and Territorial Development Directorate, http://www.oecd.org/gov/budgeting/Recommendation-of-the-Council-on-Budgetary-Governance.pdf (accessed on 16 January 2020). [13]

OECD (2008), "Performance Budgeting: A Users' Guide"*, OECD Policy Brief*, No. March, OECD, Paris, http://www.oecd.org/gov/budgeting/Performance-Budgeting-Guide.pdf (accessed on 16 January 2020). [10]

OECD and EC (2018), *Building Capacity for Evidence Informed Policy Making: Towards a Baseline Skill Set*, http://www.oecd.org/gov/building-capacity-for-evidence-informed-policymaking.pdf. [39]

RIS (2012), *WFA-Grundsatz-Verordnung – WFA-GV*, https://www.ris.bka.gv.at/eli/bgbl/II/2012/489/20121221 (accessed on 27 January 2020). [20]

Sozialgesetzbuch II (2003), *Sozialgesetzbuch (SGB) Zweites Buch (II) - Grundsicherung für Arbeitsuchende*, https://www.gesetze-im-internet.de/sgb_2/ (accessed on 27 January 2020). [27]

Sozialgesetzbuch III (1997), *Sozialgesetzbuch (SGB) Drittes Buch (III) - Arbeitsförderung*, https://www.gesetze-im-internet.de/sgb_3/ (accessed on 27 January 2020). [26]

SRDC (2019), *Employment Navigator Pilot Project Final Report: Pathways to Employment*, SRDC, http://www.srdc.org/publications/Employment-Navigator-Pilot-Project-Final-Report-Pathways-to-Employment-details.aspx. [25]

Statistics Canada (2019), *Statistics Canada Quality Guidelines*, Authority of the Minister responsible for Statistics Canada. [35]

UNECE (2011), *Using Administrative and Secondary Sources for Official Statistics- A Handbook of Principles and Practices*, https://www.unece.org/fileadmin/DAM/stats/publications/Using_Administrative_Sources_Final_for_web.pdf (accessed on 28 January 2020). [33]

Annex A. Additional material

Table A A.1. Reason for leaving unemployment registered in the main UR

Country	Reason for leaving the unemployment register (UR)?	Outcomes registered in main UR
	(1)	(2)
AUS	Y	Incapacity, retirement, Death, emigration, and transition to other income support payments
AUT	Y	Employment, education, incapacity, retirement, death, Maternity Protection, rehabilitation
BEL	YL	NA
BE (BRU)	YL	(Self)-employment, education, incapacity, participation in LMP, sanctions (failure to implement action plan)
BE (VLG)	Y	(Self-)employment, education, incapacity, voluntary death, participation in some LMPs
BE (WAL)	Y	(Self-)employment, education, incapacity, retirement
BGR	Y	(Self)-employment, education, retirement, by own will, death, maternity, sanctions (declaring incorrect data; failure to implement the action plan; unreasonably leaving a training course; refusal of suitable vacancy etc.,)
CAN	Y	claimant stops reporting before entitlement is exhausted;
		-all entitlement weeks are used up,
		-claim is terminated by the EI Commission,
		-claimant is deceased, benefit period ends before entitlement exhausted
CHE	Y	Employment, incapacity, found job through mediation (public or private), renouncement of mediation, migration, abstained from obligation to comply with controls and other sanctions.
CHL	Y	Employment, incapacity, retirement
CZE	Y	(Self)-employment, death (or the declaration of death), imprisonment, custody, delivery of the job seeker's written application for the termination of the registration, jobseeker has lost his / her legal capacity, jobseeker has been removed for sanction due to reasons stipulated by the Employment Act (Act no. 435/2004 Coll)
DEU	Y	(Self-) employment, education, incapacity, retirement, missing availability/participation, special arrangements, ending the need for help.
DNK	?	
ESP	Y	Employment, LMP, job search in EU/EEA, training, withdrawal from labour force.
EST	Y	(Self-) employment, education, retirement, death, sanctions, compulsory military service
FIN	Y	Employment, Incapacity
FRA	Y	(Self-) employment, education, incapacity, retirement, failure to accept job, failure to renew unemployment card, enlistment, not available for job market, expiration work permit, primary insurance with OGA [Agricultural Insurance Organization] or NAT [Seamen's Pension Fund]
GRC	Y	(Self-) employment, education, incapacity, retirement, application for employment is not renewed, LMP.
HRV	Y	(Self-) employment, education, incapacity, retirement, death, emigration, caring responsibilities, sanctions, imprisonment, moving to another register, or enrolment in certain types of LMPs
HUN	Y	Employment, education, incapacity, retirement, death, voluntary withdrawal,

Country	Reason for leaving the unemployment register (UR)?	Outcomes registered in main UR
	(1)	(2)
		rehabilitation benefit
IRL	Y	(Self-) employment, education, incapacity, retirement, death, emigration, imprisonment.
ISL	N	NA
ITA	Y	Employment
LTU	Y	(Self-) employment, education, incapacity, retirement, death, emigration, sanctions, imprisonment
LUX	Y	(Self-) employment, education, incapacity, retirement
LVA	YL	NA
MEX	NA	NA
MLT	Y	(Self-)employment, incapacity, retirement, non-participation in measures, failure to seek job
NDL	Y	(Self-)employment, education, retirement, non-participation in measures, death, imprisonment, staing abroad too long, migration, sanctions that cause loss of UB
NOR	YL	NA
NZL	Y	Employment, education, incapacity, retirement, death, moving overseas, transfer to another income support benefit (recorded on the same register), exit to prison, sanctioned, ineligibility due to high income (eg re-partnering)
POL	Y	(Self-)employment, education, incapacity, retirement, voluntary withdrawal, refusal to accept suitable job or to participate in LM measures.
PRT	Y	(Self-)employment, education, incapacity, retirement, death, emigration, sanctions
SVK	Y	(Self-)employment, education, incapacity, retirement, death, voluntary withdrawal, sanctions, participation in some LMPs
SVN	Y	(Self-)employment, education, incapacity, retirement, voluntary withdrawal, sanctions, participation in some LMPs
SWE	Y	(Self-)employment, education, death, withdrawal
USA	NA	NA

Note: Y (yes) indicates that the reason for leaving the unemployment register is reported in the main unemployment register. YL (yes, linked) indicates that the reason for leaving the unemployment register is recorded in a different register that can be linked with the main unemployment register. N (No) indicates that the reason is not reported in the main unemployment register nor in any other register that can be linked with the unemployment register. NA refers to non-available. A question mark indicates that that information was not shared. Source: Author's own compilation based on countries responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies".

Table A A.2. Which information is included in the unemployment register or can be obtained through linking with other registers?

Country	UB-I	UB-II	LMP-S	LMP-M	ER	SA	IB	I-DEMO	F-DEMO	EDU	INC	INC
	First-tier unemployment benefit included in UR?	Lower-tier unemployment benefit included in UR?	Register that records participation in services	Register that records participation in measures	Can the ER be linked with the main UR?	Centralised Social Assistance register?	Centralised Incapacity Benefits register?	Individual characteristics	Family characteristics	Educational attainment	Institution responsible for register on incomes	Can the register be linked with the UR?
AUS	Y	Y	ORL	UR + OR (some measures)	Y	NA	Same register as main UR	UR	UR	UR	Statistics Bureau	YL
AUT	Y	Y	UR	UR	YL	Regional level	Yes	UR	UR	UR	Social Security	YL
BEL	Y	Y	ORL	UR + ORL	YL	YL	Yes	UR	UR	UR	Tax authority	YL
BEL (BRU)	Y	Y	UR	UR	YL	NA?	NA?	UR	ORL	UR	Social Security	YL
BEL (VLG)	Y	Y	UR	UR + ORL	YL	Yes	Yes	UR	UR	UR	Social Security	YL
BEL (WAL)	Y	Y	UR	UR + ORL	YL	YL	YL	UR	OR	UR	Social Security	YL
BGR	Y	NA	UR	UR	Y(P)	YL	YL	UR	UR	UR	Tax authority	Potentially possible
CAN	Y	NA	UR + ORL	UR + ORL	YL	Regional level	Yes	UR	ORL	ORL	Tax authority	YL
CHE	Y	Y	UR	UR	Y	YL	YL	UR	OR	UR	Social Security	No
CHL	Y	NA	No	OR	YL	Registers owned by different institutions	Registers owned by different institutions	UR	OR	UR	Social Security	YL
CZE	Y	NA	UR	UR	Y	YL	Yes	UR	OR	UR	Tax authority	No
DEU	Y	Y	UR + ORL	UR + ORL	YL	YL	Yes	UR	UR	UR	Social Security	YL

Country	UB-I	UB-II	LMP-S	LMP-M	ER	SA	IB	I-DEMO	F-DEMO	EDU	INC	INC
	First-tier unemployment benefit included in UR?	Lower-tier unemployment benefit included in UR?	Register that records participation in services	Register that records participation in measures	Can the ER be linked with the main UR?	Centralised Social Assistance register?	Centralised Incapacity Benefits register?	Individual characteristics	Family characteristics	Educational attainment	Institution responsible for register on incomes	Can the register be linked with the UR?
DNK	Y	?	UR	UR	YL	Yes	Yes	ORL	ORL	ORL	Statistics Bureau	YL
ESP	Y	Y	UR	UR	YL	Regional level	YL	UR	OR	UR	Tax authority	No
EST	YL	Y	UR	UR	YL	Yes	YL	UR	ORL	UR	Tax authority	YL
FIN	YL	YL	UR	UR	YL	YL	YL	UR	ORL	UR	Statistics Bureau	YL
FRA	YL	YL	UR + ORL	ORL	YL	NA?	NA?	UR	UR	UR	Social Security	YL
GRC	Y	Y	UR	UR	YL	Registers owned by different institutions	N?	UR	UR	UR	Social Security	YL
HRV	Y	NA	No	UR	Y	Yes	Yes	UR	UR	UR	Tax authority	No
HUN	Y	?	UR	UR	YL	Yes	Yes	UR	?	UR	Tax authority	YL
IRL	Y	Y	UR + ORL	UR + ORL	Y(P)	Same register as main UR	Registers owned by different institutions	UR	UR	?	Tax authority	YL
ISL	N	N	UR + ORL	UR (some measures)	YL	N?	N?	UR	UR	ORL	Tax authority	YL
ITA	N	NA	ORL	UR + OR (some measures)	YL	Yes	Yes	UR	OR	UR	Social Security	No
LTU	Y	NA	UR	UR	YL	Yes	Yes	UR	UR	UR	Social Security	YL
LUX	Y	NA	UR	UR	YL	Yes	NA?	ORL	ORL	UR	Social Security	YL
LVA	N	NA	UR	UR	YL	Regional level/ Registers	Regional level/ Registers	UR	UR	UR	Tax authority	Potentially possible

Country	UB-I	UB-II	LMP-S	LMP-M	ER	SA	IB	I-DEMO	F-DEMO	EDU	INC	INC
	First-tier unemployment benefit included in UR?	Lower-tier unemployment benefit included in UR?	Register that records participation in services	Register that records participation in measures	Can the ER be linked with the main UR?	Centralised Social Assistance register?	Centralised Incapacity Benefits register?	Individual characteristics	Family characteristics	Educational attainment	Institution responsible for register on incomes	Can the register be linked with the UR?
						owned by different institutions	owned by different institutions					
MEX	NA	NA	OR	OR	Y	NA	NA?	OR		OR	Social Security	No
MLT	N	N	UR + ORL	UR + ORL	YL	Yes	Yes	UR	OR	UR	Tax authority	No
NDL	Y	N	UR	ORL	YL	YL	YL	UR	UR	ORL	Statistics Bureau	YL
NOR	Y	NA	UR	UR	YL	Regional level	YL	UR	ORL	UR	Tax authority	YL
NZL	NA	Y	ORL	ORL	YL	Same register as main UR	Yes	UR	UR	UR	Tax authority	YL
POL	Y	NA	UR	UR	YL	Yes	YL	UR	OR	UR	Tax authority	Potentially possible
PRT	Y	Y	UR	UR	YL	YL	YL	UR	UR	UR	Social Security	YL
SVN	Y	NA	UR	UR (some measures)	Y	Yes	Yes	UR	?	UR	Social Security	No
SVK	YL	NA	UR	UR	YL	NA?	NA?	UR	OR	UR	Social Security	YL
SWE	Y	Y	UR	UR	YL	YL	YL	UR	ORL	UR	Statistics Bureau	YL
USA	Y	?	OR	OR	OR	Regional level	Regional level	OR	NA	OR	Tax authority	No

Note: Y should read yes and N should read no. YL (yes, linked) indicates that the information is available in a different register that has been linked with the main unemployment register. "Potentially possible" indicates that linking with the main unemployment register has never taken place, but that there are no legal or technical obstacles that cannot be overcome. NA refers to non-available. A question mark indicates that that information was not shared. UR refers to the main unemployment register and ORL to other registers that can be linked with the main unemployment register. OR refers to other registers that cannot be linked with the main unemployment register.
Source: Author's own compilation based on countries responses to "Questionnaire on linking administrative data for impact evaluations of labour market and social policies"