

A GUIDE FOR USING ADMINISTRATIVE DATA TO EXAMINE LONG-TERM OUTCOMES IN PROGRAM EVALUATION

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AUTHORS: Jonathan Bigelow, Alexandra Pennington,
Kelsey Schaberg, and Deondre' Jones, MDRC

SUBMITTED TO:
Brett Brown, Project Officer
Office of Planning, Research, and Evaluation, Administration for Children and
Families, U.S. Department of Health and Human Services

PROJECT DIRECTOR:
Kelsey Schaberg
MDRC
200 Vesey Street
New York, NY 10281

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Overview

INTRODUCTION

Many social programs are intended to generate long-term benefits for their participants, but evaluations of those programs have historically not had access to the necessary resources to measure such outcomes over the long run—for 5, 10, or 15 years or longer. Administrative data—data that are created and stored to enable government administration, or as a by-product of it—present a potentially low-cost opportunity for tracking the long-term effects of new policy or program interventions. However, the procedures for gaining access to these data are often idiosyncratic, time-intensive, or undocumented.

The case of the Moving to Opportunity demonstration may be particularly instructive here. Early research focused on the adults of households that were supported in moving from subsidized, public housing to neighborhoods with low levels of poverty, finding little to no economic impact after families completed such moves. However, later findings indicated that living in neighborhoods with low poverty levels had substantial, positive economic impacts on some children of those families after they reached adulthood. As government agencies and their research partners consider opportunities to leverage these data to extend evidence about their programs—and as data privacy and security take on ever-increasing importance—the Administration for Children and Families’ Office of Planning, Research and Evaluation (ACF/OPRE) in the U.S. Department of Health and Human Services is developing resources to support these interests and explore the benefits and limitations of linking study and administrative data for long-term research. The “From Theory to Practice” project represents one of ACF/OPRE’s efforts to support the research community in conducting such explorations.

PURPOSE

This *Guide for Using Administrative Data to Examine Long-Term Outcomes in Program Evaluation* is being produced to complement federal efforts to expand the use of administrative data for building evidence—in this case, evidence about the long-term effectiveness of federally funded programs and interventions. This guide is a resource to assist program evaluation teams—including funders, sponsors, and evaluation research partners—in assessing the feasibility and potential value of examining long-term outcomes using administrative data. It describes common steps that are involved in linking evaluation data and administrative data. It will help teams tackle topics such as:

- how to identify worthwhile, policy-relevant opportunities for extending evaluation follow-up
- what study data and infrastructure are required to enable extended follow-up

- factors to consider in selecting suitable administrative data sources
- navigating the legal and ethical requirements that are commonly associated with pursuing extended follow-up
- special considerations for matching study and administrative data
- how to assess the quality of linked study and administrative data

The guide is directed primarily toward research teams considering whether to examine long-term outcomes for evaluations, particularly those whose work has been completed. This guide also includes valuable information that may enable research on long-term outcomes for new or ongoing evaluations.

KEY FINDINGS AND HIGHLIGHTS

This guide proposes to think about the preparation and work that are required to extend study follow-up using administrative data in three main phases of effort:

- Phase 1 entails considering the value and practicality of long-term follow-up. It is focused on ensuring that there is a solid policy and research justification for extending follow-up and that there are suitable and accessible administrative data that will answer specified research questions.
- Phase 2 involves preparing for long-term follow-up by laying the necessary legal and ethical groundwork. Notably, study teams are advised to ensure that data-related agreements between evaluation teams and other entities governing the research describe and enable the planned research activities. Teams are also advised to assess what, if any, human subjects ethical standards apply to the proposed long-term follow-up research by consulting an Institutional Review Board (IRB).
- Phase 3 centers around assessing administrative data to determine whether they are suitable for answering the proposed research questions and linking to study data. Researchers are advised to assess administrative data providers' requirements for matching to study data, to consider the extent to which administrative data will cover study participants and their activities, to determine the identifiers that will be used to match and the method for matching, and to establish how the quality of linked data will be assessed.

The full guide describes in more detail the various considerations that study teams might take into account to begin to realize the potential uses of administrative data in researching long-term outcomes. Examples and case studies throughout the guide generally highlight efforts to research long-

term economic outcomes, such as participant employment and earnings, but the concepts presented should be applicable to a variety of social policy research contexts.

GLOSSARY

Administrative data: Information created and stored to enable government administration, or as a by-product of it. In this context, administrative data may allow researchers to describe and analyze the experiences and outcomes of particular interest to evaluations of federally-funded social programs.

Follow-up: A period of time across which a program evaluation expects to describe individual study participants' activities and outcomes.

Identifier: A set of numbers or characters, such as a Social Security number or name, that can be used to identify an individual, either on its own or in combination with other identifiers.

Institutional Review Board (IRB): A type of formally designated committee that applies research ethics standards and statutes. IRBs review the methods that are proposed for research to ensure that they should be conducted and that they take appropriate steps to protect the rights and welfare of humans participating as subjects in a research study.

Long-term outcomes: The findings among individuals participating in a social program, as measured in a program evaluation over a period of time and generally considered to be longer than 5 or 10 years.

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Executive Summary

Many social programs are intended to generate long-term benefits for their participants, but evaluations of those programs have historically not had access to the necessary resources to measure those outcomes over the long run—for 5, 10, or 15 years or longer. The case of the Moving to Opportunity demonstration may be particularly instructive here. Early research focused on the adults of households that were supported in moving from subsidized, public housing to neighborhoods with low levels of poverty, finding little to no economic impact after families completed such moves. However, later findings indicated that living in neighborhoods with low poverty levels had substantial, positive economic impacts on some children of those families after they reached adulthood.¹ Administrative data—data that are created and stored to enable government administration, or as a by-product of it—present a potentially low-cost opportunity for tracking the long-term effects of new policy or program interventions. However, the procedures for gaining access to these data are often idiosyncratic or time-intensive. In addition, little documentation is available about how to access and use these data for research purposes, and researchers are likely to encounter unique data-quality challenges in so doing.

This *Guide for Using Administrative Data to Examine Long-Term Outcomes in Program Evaluation* is being produced as part of the “From Theory to Practice” (T2P) project. This guide complements federal efforts to expand the use of administrative data for building evidence—in this case, evidence about the long-term effectiveness of federally funded programs and interventions. Through T2P, the Administration for Children and Families’ Office of Planning, Research, and Evaluation (ACF/OPRE) in the U.S. Department of Health and Human Services is developing resources to support these interests and explore the benefits and limitations of linking study and administrative data for long-term research.

This guide is a resource to assist program evaluation project teams—including funders, sponsors, and evaluation research partners—in assessing the feasibility and potential value of examining long-term outcomes using administrative data. It describes common steps that are involved in linking evaluation data and administrative data. The guide will help teams tackle topics such as:

- how to identify worthwhile, policy-relevant opportunities for extending evaluation follow-up
- what study data and infrastructure are required to enable extended follow-up

¹Raj Chetty, Nathaniel Hendren, and Lawrence F. Katz, “The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Project,” *American Economic Review* 106, 4 (2016): 855–902.

- factors to consider in selecting suitable administrative data sources
- navigating the legal and ethical requirements that are commonly associated with pursuing extended follow-up
- special considerations for matching study and administrative data
- how to assess the quality of linked study and administrative data

The guide is directed primarily toward research teams considering whether to examine long-term outcomes for evaluations, particularly those whose work has been completed. This guide also includes valuable information that may enable research on long-term outcomes for new or ongoing evaluations. Examples and case studies throughout the guide generally highlight efforts to research long-term, employment-related interventions, but the concepts presented should be applicable to a variety of social interventions.

A SUMMARY OF CONCEPTS INCLUDED IN THIS GUIDE

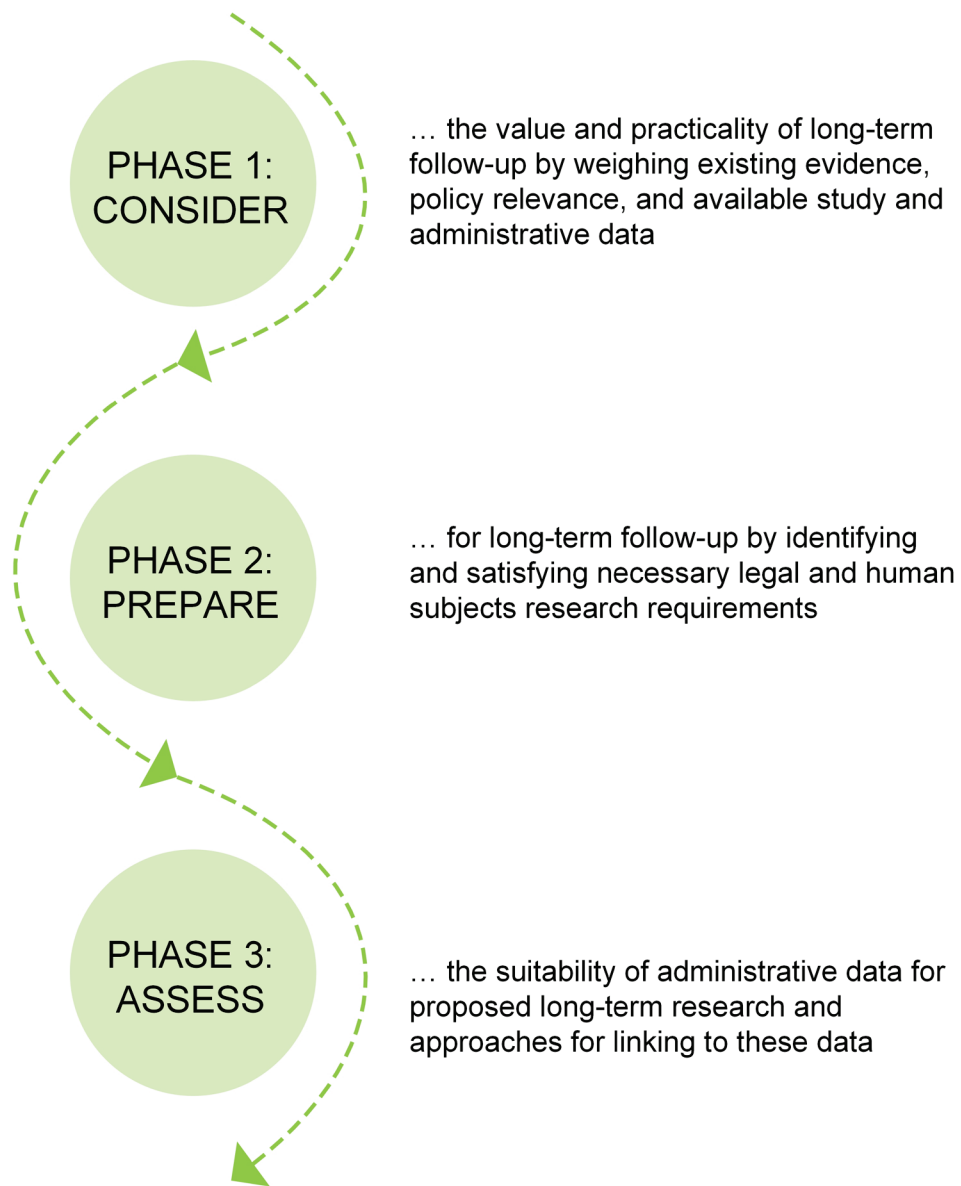
This guide proposes to think about the preparation and work that are required to extend study follow-up using administrative data in *three main phases of effort*. (See Figure ES.1.)

Phase 1 entails *considering the value and practicality of long-term follow-up*, ensuring that there is solid policy and research justification to extending follow-up and that there are suitable and accessible administrative data that will answer specified research questions. Study teams are advised to:

- Articulate a theory of change and analysis plan, grounded in existing evidence, that prospectively outlines and justifies the proposed research on long-term outcomes.
- Ensure that proposed long-term follow-up will yield credible, unbiased results about long-term effects and that no threats to internal validity from prior research pose risks to proposed new activities.
- Assess whether the proposed analyses will have adequate statistical power to detect meaningful effects.
- Inventory extant study data to confirm that necessary data, especially participants' personally identifiable information (PII), are available for linking to administrative records.
- Consider the possible sources of administrative data to measure outcomes of interest and identify factors that should be taken into account during planning, including what data are available, the

Figure ES.1

Three Phases of Work for Extending Follow-Up Using Administrative Data



process for obtaining them, how matching between data sets will occur, and whether there are significant costs or restrictions associated with accessing them.

Tackling this work will vary by the circumstances and aspirations of each study and proposed analysis. However, there are common tasks and conditions shared by studies based on the stage of work that each is in.

- Studies in the planning stage have the chance to work prospectively to lay the necessary groundwork for future research on long-term outcomes even before participants are enrolled and initially exposed to the interventions that are being evaluated. Such studies should generate program theory hypothesizing long-term effects, invest in writing informed consent forms and procedures that enable extended follow-up, and include language in data agreements that will smooth the path toward future long-term follow-up.
- Ongoing studies may (re)assess the prospects for long-term follow-up given what is known about the implementation of studied interventions and their contexts, and consider any course corrections in proposed long-term research plans to account for new learnings about implementation or developments in the data landscape.
- Finally, studies whose primary or initial work has been completed should inventory study data artifacts, such as funding data agreements, to assess feasibility and inform planning for research investigating outcomes that may (or may not) differ significantly from those that were examined during earlier efforts.

Phase 2 involves *preparing for long-term follow-up by laying the necessary legal and ethical groundwork*. After research teams have assessed the value and practicality of conducting long-term follow-up research, there are two essential hurdles to clear.

- Study teams must ensure that data-related agreements that govern the administration and scope of the study—including funding agreements, agreements with site partners, agreements with participants (such as informed consent documents), and agreements with data providers—adequately describe and enable the planned research activities.
- Researchers must assess what, if any, human subjects ethical standards apply to the proposed long-term follow-up research by consulting an Institutional Review Board (IRB). In particular, teams must establish whether the research is subject to the Common Rule. The Common Rule encompasses the baseline ethical standards under which government-funded (and many other types of) research in the United States is conducted. At least one IRB with jurisdiction will, in most cases, review proposed long-term follow-up activities. Determining whether there is a requirement to collect new informed consent will likely be central to an IRB’s review of proposed new research activities. It will also consider factors such as the burdens and benefits of the research and the data privacy and security measures to be employed by researchers.

Studies in the planning stage are more likely than not to have the ability to anticipate future long-term research activities by describing them in data-related agreements, IRB applications, and informed consent forms, in consultation with funders, data providers, IRB(s), and site and other partners. Studies that are still ongoing or that are completed will probably have to reconcile plans for research on long-term follow-up with past agreements and documents, amending agreements as

necessary, and considering whether participants can (or must) be reconsented, or if waivers of consent may be secured.

After necessary clearances and permissions are obtained, **Phase 3** centers around *assessing administrative data to determine if they are suitable for answering the proposed research questions*. Considerations that study teams must confront often include the following:

- What an administrative data provider's requirements are for how study data and administrative data can be matched. The matching process may be as straightforward as researchers sharing a sample file with study identifiers (for example, names and Social Security numbers [SSNs]), with providers then returning a file with additional measures merged onto those records. Some data providers use more elaborate procedures that protect individuals by returning anonymized data to the research team, and research teams may consider approaches to ensuring that the ability to conduct analyses using administrative data is not constrained.
- The extent to which administrative data cover study participants and the desired activity and time period that are being investigated. Determining what match rates between study data and administrative data are reasonable to expect may be more art than science, depending on the study population, the program context, and the nature of the data source in question.
- The person-level identifiers that will be used for matching, and what type of matching method will be used to link data. In many cases, exact matching on identifiers such as SSNs will be possible, while other data providers may use probabilistic matching methods, using a combination of fields that are unlikely to change (for example, race, gender) to identify records with a high probability of the matches being "true matches."
- How the quality of the linked data can be assessed. Assessing match rates overall and by research groups (for example, for the program and control groups) is customary when assessing data matches, as is investigating the characteristics of study sample members who did not match to administrative records for any systematic trends (for instance, a lower match rate from a certain study site or demographic group).

Long-term matches can present unique considerations for study teams, including:

- certain identifiers, such as case numbers, that are less reliable over time
- participant geographic mobility, such as moves across state lines in studies that expect to rely on data sources from the state included in the original study only
- the use of different data sources for long-term research than those that were used for earlier research

- secular changes to social programs, such as time limits or program rules that might change the extent to which participants are expected to receive those benefits in the long run and therefore be covered by data sources capturing those benefits
- changes to administrative data coverage, quality, or the process for accessing them, such as new laws dictating the extent to which researchers may access data

The full guide describes in more detail the considerations that should be taken into account by study teams aspiring to research the long-term outcomes of social programs, offering examples, case studies, and links to additional resources.

Introduction

Many social programs are intended to generate long-term benefits for their participants, but most evaluations of those programs have historically not had access to the necessary resources to measure those outcomes over the long run—for 5, 10, or 15 years or longer. Administrative data—data that are created and stored to enable government administration, or as a by-product of it—present a potentially low-cost opportunity for tracking the long-term effects of new policy or program interventions. However, the procedures for gaining access to these data are often idiosyncratic or time-intensive. In addition, little documentation is available about how to access and use these data for research purposes, and researchers are likely to encounter unique data-quality challenges in so doing.

As government agencies and their research partners consider opportunities to leverage administrative data to extend evidence about their programs—and as data privacy and security take on ever-increasing importance—the Administration for Children and Families’ Office of Planning, Research, and Evaluation (ACF/OPRE) in the U.S. Department of Health and Human Services is developing resources to support these interests and explore the benefits and limitations of linking study and administrative data for long-term research.

This *Guide for Using Administrative Data to Examine Long-Term Outcomes in Program Evaluation* is being produced as part of the “From Theory to Practice” (T2P) project at MDRC, funded by OPRE. The guide complements federal efforts to expand the use of administrative data for building evidence—in this case, evidence about the long-term effectiveness of federally funded programs and interventions.

WHO MIGHT BENEFIT FROM THIS GUIDE?

This guide is a resource to assist program evaluation teams—including funders, sponsors, and evaluation research partners—in assessing the feasibility and potential value of examining long-term outcomes using administrative data. It describes common steps that are involved in linking evaluation data and administrative data. It will help teams tackle topics such as:

- how to identify worthwhile, policy-relevant opportunities for extending evaluation follow-up
- what study data and infrastructure are required to enable extended follow-up
- factors to consider in selecting suitable administrative data sources

- navigating the legal and ethical requirements that are commonly associated with pursuing extended follow-up
- special considerations for matching study and administrative data
- how to assess the quality of linked study and administrative data

The guide is directed primarily toward research teams considering whether to examine long-term outcomes for evaluations, particularly those whose work has been completed. This guide also includes valuable information that may enable research on long-term outcomes for new or ongoing evaluations. Examples and case studies throughout the guide generally highlight efforts to research long-term employment-related interventions, but the concepts presented should be applicable to a variety of social interventions.

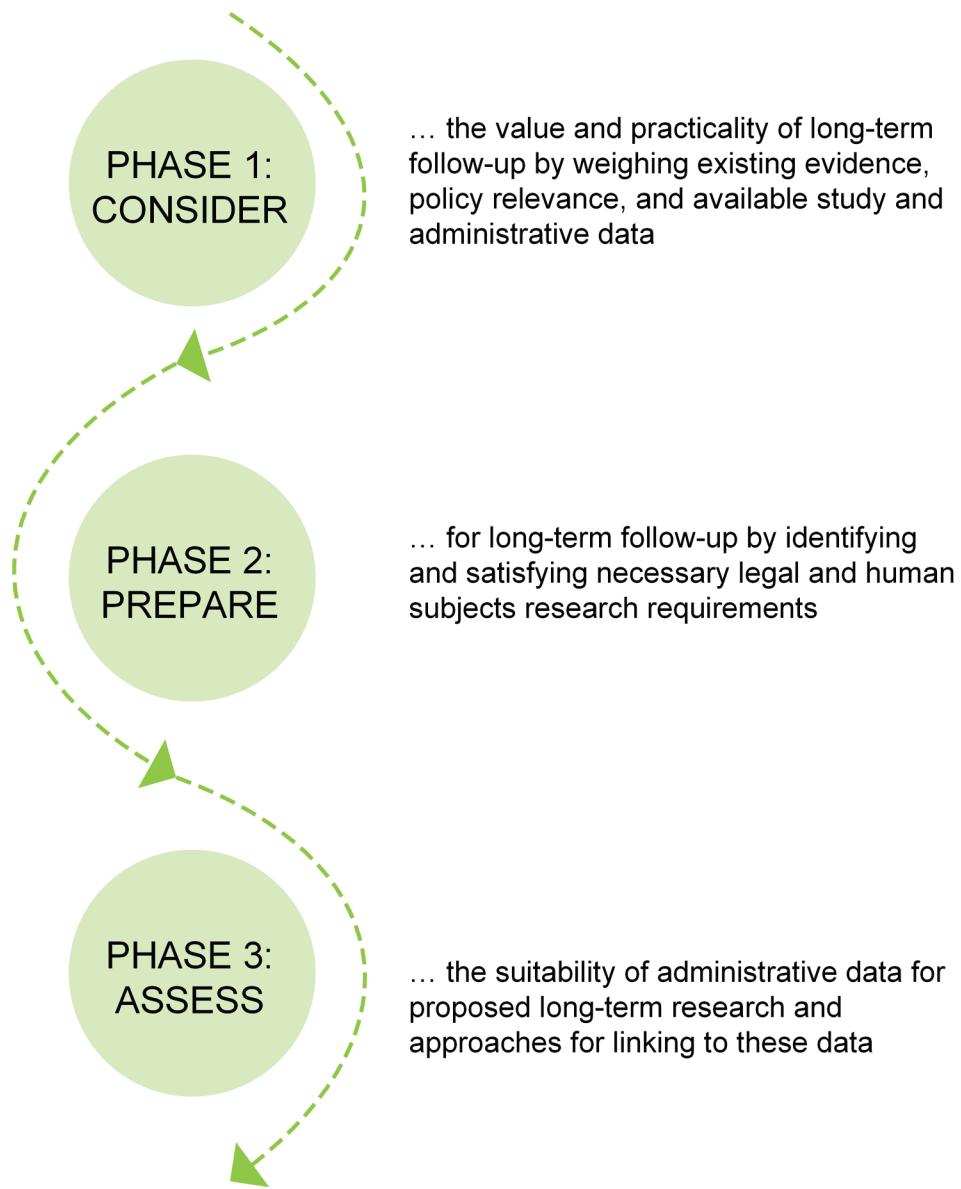
HOW IS THE GUIDE STRUCTURED?

This guide describes the work that is required for long-term study follow-up using administrative data as occurring in *three main phases of effort*. (See Figure 1.)

- Acquiring administrative data for extended follow-up research can (and often does) consume precious time and resources. The focus of **Phase 1** is to consider the value and practicality of long-term follow-up, by ensuring that there is solid policy and research justification for extending follow-up and that there are suitable and accessible administrative data that will answer specified research questions.
- **Phase 2** is focused on laying the legal and ethical groundwork for extending follow-up using administrative data. Many studies of social programs—indeed, *all* federally sponsored evaluations of such programs—will be governed by an Institutional Review Board (IRB) that determines what human subjects research requirements are applicable to the proposed research activities and must weigh the risks and benefits to the study participants, the targeted beneficiaries of the research, and the policy community. IRBs and potentially other entities—such as study funders, agency compliance offices, and data providers—will consider the legal parameters for the pursuit of long-term data describing study participants, as laid out in various study agreements and informed consent agreements, and the privacy and security standards that are in place to safeguard participants.
- Once the necessary clearances to access administrative data are obtained, **Phase 3** entails assessing the data to determine if they are suitable for answering the proposed research questions. This involves thinking through methods for matching study data to administrative records, reviewing match rates to see how well data cover the study sample and their activities during the proposed

Figure 1

Three Phases of Work for Extending Follow-Up Using Administrative Data



follow-up period, and confirming that the data are complete and that outcome measures can be constructed, as planned.

The guide highlights important questions that study teams should navigate in each phase of the extended follow-up process. Examples and case studies of research efforts that have linked or are in the process of linking to administrative records are included throughout the guide.

WHO SHOULD BE CONTACTED WITH QUESTIONS?

- At ACF/OPRE: Brett.Brown@acf.hhs.gov
- At MDRC: T2P@mdrc.org

Phase 1: Considering the Value and Practicality of Long-Term Follow-Up

This section covers essential factors that researchers should consider as they determine if it is possible and worthwhile to pursue using administrative data for long-term follow-up studies for evaluations. These considerations include the underlying study design and data availability and should be taken into account before study teams invest resources and effort to obtain the approvals and data access that are needed to conduct extended follow-up. Study teams are advised to consider the following questions:

1. Do theory and evidence suggest that long-term effects may be found?
2. Will it be possible to produce unbiased estimates of long-term effects?
3. Will there be adequate statistical power for the proposed analysis to yield meaningful results?
4. Are study data, especially personally identifiable information, available to enable matching to and analysis of administrative data?
5. What factors should study teams take into account when selecting administrative data sources?
6. How might the age of a completed study determine the possibilities for conducting extended follow-up?
7. What steps can teams designing and carrying out new or ongoing program evaluations take to ensure that long-term follow-up is possible and relevant down the road?

Tackling these questions before beginning more intensive work will likely streamline later efforts to obtain needed legal or ethical approvals to enable extended follow-up or to access data sources, which are covered in the Phase 2 section of this report. See Box 1 for a case study on how planners for new extended follow-up on the Career Academies evaluation preliminarily addressed many of the concepts in this section.

Question 1. Do theory and evidence suggest that long-term effects may be found?

A good candidate study for long-term follow-up will have a theory of change that articulates the program mechanisms that are expected to produce measurable effects on defined outcomes for an

Box 1. Featured Study: Extended Follow-Up on the Career Academies Evaluation

Study background. Established more than 30 years ago, Career Academies have become a widely used high school reform initiative that seeks to keep students engaged in school and prepare them for successful transitions to postsecondary education and employment. Beginning in 1993 and enrolling cohorts of Career Academies students between 1993 and 1995, MDRC conducted a rigorous evaluation of the Career Academy model using a random assignment research design in nine high schools across the United States.

Outcomes of interest. At the time of this guide's publication, the study team is currently pursuing access to a federal administrative data source. The data accessed would allow the study team to analyze long-run outcomes in employment and earnings for students who are now in early middle age. Other exploratory analyses could examine other outcomes, including homeownership, marriage status, and dependent children.

Program theory justifying follow-up activities. Based on survey data, original findings from eight years of follow-up on study sample members included sustained earnings gains that averaged 11 percent more per year for Academy group members, \$16,704 more on average across the analysis period, relative to control group members.* The study team reasons that investigating the persistence and magnitude of study impacts on economic outcomes will be relevant to policymakers and practitioners who are interested in the impacts of investments in secondary career and technical education.

Investigating study data quality. MDRC has retained identifying information on the original sample, including names, dates of birth, and one-time addresses, for matching to an administrative data source. The study team does not anticipate problems related to attrition or missing study data for the sample, but they will replicate the original results as a way to test the baseline replicability of results with a new source of data. Additional study data, including site indicator variables, cohort year variables, random assignment treatment status, and data from baseline surveys, are also available.

Assessing statistical power. The study team does not anticipate challenges related to statistical power, given the proposed impact sample of 1,764 students from the original evaluation.

Waiving informed consent. The study team requested and received from an IRB a waiver of informed consent for the planned follow-up activities due to the minimal risk to participants, the impracticability of conducting the research without the waiver, and the fact that the waiver did not adversely affect the participants' rights and welfare.

Extended follow-up research on the Career Academies Evaluation is a part of the Learning from Administrative Data (LAD) initiative at MDRC.

extended period. Well-founded hypotheses are needed to justify the proposed research effort and to ensure that spurious or unexpected effects are not confounded with program effects.² By producing a prespecified analysis plan that articulates a theory of change and defines the primary outcomes that are needed to detect change over the long run (however that is being defined), researchers will ensure the credibility and reliability of the proposed research activities, and that time and resources are focused on administrative data sets that will provide the important measures that are needed. These

²Head et al. (2015).

considerations may be especially vital given that long-run follow-up studies often examine a broader range of outcomes than the original study and may even examine outcomes for new subjects, such as children of family members who participated in the original study.

Studies with credible and consistent findings about important outcomes from a shorter follow-up period may be especially promising for extended follow-up. However, in some circumstances, existing evidence may be modest, somewhat promising, or lacking because the original follow-up period was too short to fully examine the long-run impacts of a program. This is commonly the case for studies of employment or training programs, for instance, which often require two or three years to produce impacts.³ The case of the Moving to Opportunity demonstration may be particularly instructive here. Early research focused on the adults of households that were supported in moving from subsidized, public housing to neighborhoods with low levels of poverty, finding little to no economic impact after families completed such moves. However, later findings indicated that living in neighborhoods with low poverty levels had substantial, positive economic impacts on some children of those families after they reached adulthood.⁴

The timing and context of earlier follow-up may also play a significant role in supporting (or not) extended follow-up. For example, exogenous local or national events, such as a natural disaster or global pandemic, or contextual factors related to program outcomes, like an economic recession, may point toward the value of examining outcomes beyond a study's original follow-up period.

Extended follow-up research should help inform current policy conversations and concerns, and add to the evidence base on a given research topic. Extending follow-up can inform how future programs should be designed or implemented and help sponsors and funders of social policy research decide how best to allocate resources for evidence-based practice. Good candidates for longer-term follow-up may also offer the opportunity to reveal new lessons to enhance or refine a given field's understanding of a program's operations and how those participants were served by it. For example, in recent years, there have been discussions about time-limiting or adding work requirements for several income and social support programs. Assessing the long-run performance of previous efforts can be instructive to such discussions, and results can help calibrate the microsimulation models that are heavily used for fiscal and social policy decisions.⁵

Question 2. Will it be possible to produce unbiased estimates of long-term effects?

More rigorous study designs are more likely to yield credible results that justify the effort, resources, and potential risks to program participants of long-term follow-up research. Still, even rigorous studies can be compromised by so-called threats to internal validity, especially after their original

³Card, Kluve, and Weber (2010).

⁴Chetty, Hendren, and Katz (2016).

⁵Urban Institute (n.d.); Magnani and Piccoli (2018).

follow-up periods have concluded. Some common risks to studies pursuing extended follow-up may include:

- *Broad implementation of the studied intervention*, such as when the program, similar program model, or certain critical program approaches that were initially studied later become available to the general population, including (or even particularly) the members of a study's control or comparison group(s). This may reduce or eliminate the expected service or research “contrast”—the qualitative differences between research groups that are theorized to produce different levels of outcomes.⁶
- *Treatment crossover*, referring to compromised treatment conditions stemming from circumstances in which members of research groups were able to access services or supports to which they were not assigned during the original study period. As with broad implementation, significant treatment crossover may weaken the research contrast.
- *Program attrition*, where study participants from different research groups exit the study at different rates over time, also calling into question research contrast.

It is essential to review the implementation of the study and evaluated programs and contexts to ensure that these factors will not bias long-term results.

Question 3. Will there be adequate statistical power for the proposed analysis to yield meaningful results?

It is crucial to perform statistical power calculations in advance of pursuing follow-up to ensure that expected effects will be detectable. Statistical power is a function of the unit of measurement, the sample size, the share(s) of sample allocated to various research groups, the desired significance level, and the estimation process (such as whether adjustments are made for multiple comparisons).⁷ Studies with smaller sample sizes will require larger minimum detectable effect sizes, that is, the smallest possible true effect on an indicator or outcome that can be detected for a given sample size and significance level. Study teams should consider whether minimum detectable effect sizes

⁶Examination of a study's governing consent or registration information forms may inform an understanding of whether or how service embargoes prospectively determined study participants' program eligibility in a given follow-up period.

⁷Open-source tools such as PowerUp! can aid study teams in power modeling: <https://www.causalevaluation.org/power-analysis.html>; Porter (2018).

are so high that they may not be reasonable to expect given the nature of the intervention and the magnitude of effects that might be seen.⁸

Question 4. Are study data, especially personally identifiable information, available to enable matching to and analysis of administrative data?

Because researchers leading completed studies may have chosen to, or been required to, delete some or all study data after analyses were concluded, an important task in planning extended follow-up involves assessing what data, if any, are available for future use. The availability and quality of personally identifiable information (PII)—especially study participant identifiers, such as name, Social Security number (SSN), and date of birth—that is collected as part of the original study are paramount for matching to administrative records for use in extended follow-up research. Other study data (for example, analysis sample indicators and research group indicators) may also be crucial to enabling analysis of long-term outcomes. It is important to review the types of available data to ensure that these will enable linking to and analysis of an administrative data source. This work typically includes:

- confirming the types of person-level identifiers that are available describing the sample on which extended follow-up activities will be conducted
- ensuring that the study dates (for example, the date of study enrollment) and research group indicators (for example, the program or treatment group assignment) are available to generate longitudinal outcome measures and conduct analysis
- checking the availability of other study entry data (for example, data to use as covariates or to define subgroups such as age, employment history, gender, race/ethnicity, and other characteristics relevant to the study) to support matching or analyses⁹

Prevailing data security norms may suggest that many evaluators of social policy programs are required to delete data after a certain period following the end of evaluation activities, rather than retaining data with appropriate data security protocols. Research teams leading new or ongoing evaluations are advised to explore ensuring that data-related agreements do not require that study data needed for extended follow-up be destroyed.

⁸Although the meaning of effect sizes depends on the context, Cohen has suggested defining an effect size of 0.2 as small, 0.5 as medium, and 0.8 as large. Lipsey, another prominent researcher, set the threshold lower; to Lipsey, an effect size of 0.15 or lower is small. See Cohen (1992) and Hill, Bloom, Black, and Lipsey (2007).

⁹For studies that have been completed, it may be the case that some or all PII has been destroyed or has otherwise not been retained by the original study team.

Question 5. What factors should study teams take into account when selecting administrative data sources?

Administrative data sources vary in the data coverage they offer, the procedures and restrictions related to their access and use, their data security measures, and their costs. For example, the National Directory of New Hires (NDNH), a data source for accessing wage records, offers national data coverage but does not retain more than two years of historical information at any given time. The NDNH requires federal agency approval to access data, based on statutory requirements. Study participant identifiers are not included on matched files that are returned to researchers (a pseudo identifier is instead included), but researchers may “pass through” additional variables that are needed for analysis. Additionally, the costs for matching to NDNH data can be substantial.¹⁰ State-level sources of wage data, in contrast, may have only state-level coverage but typically have more historical data and do not have these other access-related stipulations. However, each source will have its own unique requirements and processes for researchers to address. Researchers need to weigh each administrative data source’s benefits and limitations to ensure that they are suitable for answering longer-term research questions for the proposed outcomes to be measured.

Research teams should seek data sources that can be used within their study agreements’ legal parameters and the promises that were made to study participants. Primary elements to review when vetting an administrative data source for extended follow-up include the following:

- What and who are covered by the administrative data—types of outcomes, geography, time period, data elements and quality, and so on—and can the main long-term outcomes be measured with these data? For instance, if information about hourly wages or employer-provided benefits is needed, unemployment insurance (UI) wage data sources will not typically include this information. UI wage data usually only include quarterly earnings amounts for a given individual and employer.
- What is the process for gaining access or clearance to use an administrative data source, and how much time and staff resources will be required to do so? In certain study contexts and with some data sources, obtaining access to data may take two years or more. Additional time may be required to conduct matching or analysis, if these are required to occur at the source.
- Which person-level identifiers will be available for matching records between data sets? Many studies are required to destroy identifiers upon the completion of initial study deliverables, and

¹⁰See Holman, Pennington, Schaberg, and Rock (2020) for more information on the NDNH and several other data sources.

it may be impossible to pursue follow-up unless alternate means of identifying participants are developed.¹¹

- How will matching to administrative data be done, and what implications are there for study data management? Many administrative data sources require specific identifiers, such as SSNs, for matching, and there may be limitations or constraints on the types of data that may be returned. For example, there can be “one-way” matches, in which researchers provide source identifiers and receive only deidentified data in return.
- Are there noteworthy restrictions for working with the administrative data records? What data privacy and security standards must be followed? For instance, will staff be required to obtain certain clearances or to access data at secured sites, as with Census Federal Statistical Research Data Centers (FSRDCs)?¹² Some rigorous security regimes may increase research costs or otherwise present barriers to entry for smaller research organizations.
- What are the costs associated with the administrative data source? Fees can range from zero to significant amounts.

Administrative data sources that update information regularly, such as many state and federal data sources, like the NDNH, may be better suited for current studies that intend to conduct follow-up, as they may be more likely to contain records that cover more recent time periods, while others may offer more outdated information and be less well suited. For instance, state wage records retained in Census FSRDCs (as part of the Longitudinal Employer-Household Dynamics program) cover employment through early 2015, six years old at the time of writing.¹³ Study teams may find it useful to periodically monitor public information stores for resources and updates about the availability and parameters of administrative data for social science research.¹⁴

Question 6. How might the age of a completed study determine the possibilities for conducting extended follow-up?

¹¹For instance, it may be possible to reidentify participants if a restricted-access file was transferred to a federal funder or if the agency or organization that operated the program maintained information on participants.

¹²See Box 2 for additional details about some of the requirements to access Census FSRDC data. See <https://www.census.gov/about/adrm/fsrdc.html> for general information on the Census FSRDCs.

¹³Longitudinal Employer-Household Dynamics program: <https://lehd.ces.census.gov/>.

¹⁴See the [ACF's compendium of administrative and survey resources \(https://aspe.hhs.gov/pdf-report/acf-data-compendium\)](https://aspe.hhs.gov/pdf-report/acf-data-compendium), the Compendium of Administrative Data Sources for Self-Sufficiency Research prepared by MDRC for OPRE (https://www.mdrc.org/sites/default/files/lto_data_compendium_032020_508.pdf), J-PAL's [Catalogue of Administrative Data Sets \(https://www.povertyactionlab.org/catalog-administrative-data-sets\)](https://www.povertyactionlab.org/catalog-administrative-data-sets), and the Association of Public Data Users [website \(https://www.apdu.org/\)](https://www.apdu.org/).

Studies whose primary research work has been completed may encounter myriad challenges, opportunities, and nuances in their pursuit of long-term follow-up. For example:

- *Ideal data sources may be different for studies that were completed more recently than those pursued for older studies.* An older study may want to pursue an administrative data source that has more coverage in terms of years, types of outcomes, and geography, given the likelihood that study participants' circumstances may have changed significantly since the study period ended. Such studies will find that federal data repositories often maintain information with broader geographic coverage than state data sources, which may be important given that the geographic mobility of study participants generally increases with time. This was an influential factor driving the selection of the U.S. Census Bureau's Research Data Centers as the data source for the follow-up being conducted through MDRC's Learning from Administrative Data (LAD) initiative.¹⁵ By contrast, for a study that has only one site and where data are needed describing one outcome domain, administrative data accessed through a state or local source may suffice.
- *The availability of study data and related artifacts may be limited for older studies, or access may be difficult.* Retrieving and accessing information—such as the study data and legal agreements—can take time and involves uncertainty, and this should be factored into the follow-up timeline. In some cases, accessing restricted-access files may require staff members to travel to a study sponsor's location, entailing additional costs.
- Long-term outcomes may be different from those examined in the shorter term. For example, extended follow-up on the National Evaluation of Welfare-to-Work Strategies (NEWS) sample is focused on understanding the long-term effects on welfare recipients' children, and their employment outcomes are of primary interest now that they are adults. (See the case study in Box 2 for more information.)

Regardless of whether a study is new or ongoing, or how long ago an older study was completed, study teams should bear in mind that what may be an ideal data source at any given time may not be the optimal data source in the future. Given the potential for shifts in the administrative data landscape where sources, coverage, and access requirements are concerned, study teams may be best served by focusing their planning on the types of outcomes and measures desired for analysis until they are ready to explore data sources.¹⁶

¹⁵Learn more about LAD and the proposed analyses here: <https://www.socialscisearch.org/trials/4722>.

¹⁶For instance, seeking to describe data sources and outcomes broadly in informed consent documents, without specifying particular data sources, may offer study teams the flexibility to explore multiple data sources.

Box 2. From Theory to Practice: Follow-Up on the National Evaluation of Welfare-to-Work Strategies

Study background. The National Evaluation of Welfare-to-Work Strategies (NEWWS) was funded in 1989 by the U.S. Department of Health and Human Services with support from the U.S. Department of Education. MDRC conducted a randomized controlled trial of welfare-to-work programs in seven sites that investigated the effects of strategies designed to help welfare recipients find jobs and leave public assistance. The strategies that were tested led to increases in employment and earnings and a reduction in public-assistance receipt in a five-year follow-up, but no effects were found 10 to 15 years after study entry.

Program theory justifying follow-up activities. MDRC, with two university partners, is pursuing extended follow-up to understand the long-run effects on adult and child members of households that were originally offered NEWWS interventions. A primary motivator of the focus on children is recent evidence describing positive long-term effects of childhood receipt of social safety net programs, such as the programs NEWWS participants received.* Adult outcomes are of particular interest because the 10-to-15-year follow-up occurred before the Great Recession, and the study team reasons that skills obtained through NEWWS interventions may have helped participants weather the effects of economic recession.

Accessing administrative data. Data describing outcomes will be accessed via data sets stored at Census Federal Statistical Research Data Centers (FSRDCs). FSRDC data will help the team analyze multiple outcomes, including employment and earnings (from the Internal Revenue Service and the Longitudinal Employer-Household Dynamics program); Medicaid enrollment and utilization (from the Centers for Medicare and Medicaid Services); Social Security disability program participation, and fertility and death records (from the Social Security Administration); subsidized housing program assistance (from the U.S. Department of Housing and Urban Development); and, in selected states, participation in the Temporary Assistance for Needy Families (TANF) program and the Supplemental Nutrition Assistance Program (SNAP). Obtaining clearance to access data stored by FSRDCs was a typically time- and cost-intensive process for the study team. Staff are required to undergo a federal background check and obtain Special Sworn Status. The Census Bureau requires that matches to study data be completed by Census staff, and the base rate for matching is currently \$20,000. Additional fees are required for initial membership. FSRDC-held data may be accessed by researchers only in clean rooms, under constant surveillance, and all user activity is logged. Any estimates that researchers wish to share outside of an FSRDC must go through a review process that is designed to prevent the redisclosure of personal information.

Obtaining a waiver of consent. The original NEWWS evaluation was exempt from the Common Rule under federal regulations, and informed consent from participants was not collected for earlier research activities. For the proposed long-term follow-up analysis, a waiver of consent was requested and approved because the last contact with NEWWS sample members occurred nearly 20 years ago, which raised defensible concerns regarding the difficulty and costs associated with tracking and reconnecting with study participants for the purpose of collecting informed consent.

Extended follow-up research on the NEWWS evaluation is a part of the Learning from Administrative Data (LAD) initiative at MDRC. Learn more about LAD, the original NEWWS findings, the proposed extended follow-up analysis, and the theory of change that supports it here: <https://www.socialsciregistry.org/trials/4722>.

NOTES: *See Morris, Gennetian, and Duncan (2005).

Question 7. What steps can teams designing and carrying out new or ongoing program evaluations take to ensure that long-term follow-up is possible and relevant down the road?

Studies that are in the planning stage have the opportunity to consider the value of conducting extended follow-up prospectively and may lay the groundwork for necessary activities well in advance of their being undertaken or funded. Indeed, study resources often can accommodate only shorter-term follow-up, but if the intervention may have significant longer-term impacts, allowing for the potential for longer-term follow-up in the design and execution of the study can help facilitate extended research, should funds become available. Considering the possibility of long-term outcomes in the early planning stages of the study can also improve the likelihood that the data and permissions to use them are in place. For example, long-term outcomes were considered in the early stages of development for the Mother and Infant Home Visiting Program Evaluation's (MIHOPE) conceptual model.¹⁷ Likewise, the informed consent forms in many studies—such as the WorkAdvance study—were written to enable 10 years of data collection, recently enabling a 10-year follow-up analysis to be conducted.¹⁸ (See the Phase 2 section for a discussion of how study consent language may prospectively enable long-term follow-up.)

Setting up procedures to collect and securely maintain good-quality PII from study participants can help to ensure that long-term linkages to administrative sources remain possible and can provide reassurances to study stakeholders that privacy and confidentiality are paramount. Study teams may consider the following approaches:

- Collecting live study entry data directly from participants via a web form may offer better data than manual data entry from paper forms filled out by participants.
- Field-level validation and double entry of crucial identifiers, such as SSNs, dates of birth, and cell phone numbers (for maintaining contact with participants, if desired), will further reduce data-entry mistakes.
- Developing and reviewing data-management procedures—including how data will be stored and transferred, how access rights will be determined, and when and how data will be archived or deleted—early on is critical and can help study teams avoid potential data-security and privacy concerns in the future.
- Finally, and related, it is imperative that all study enrollees be provided with appropriate and accessible information about why their information is being collected, how it will be used, and how any data describing them will be stored and protected.

¹⁷Michalopoulos et al. (2019).

¹⁸The current follow-up period for the WorkAdvance study is six to eight years. See Schaberg and Greenberg (2020). A future analysis will look at even longer-term effects, through Year 10.

Studies whose work is ongoing may encounter unexpected scenarios that force investigators to reconsider the breadth of data and measures needed to answer primary research questions, especially if the scenarios entail events that are likely to affect a study's outcomes. Examples include economic recessions, the COVID-19 pandemic, and unanticipated changes to a program's service context.¹⁹ Adaptations to such scenarios may entail:

- *extending the initial follow-up period*, for instance, if an event theoretically delays program impacts
- *expanding the range of study outcomes*, for example, if an event brings into focus new exploratory outcomes that interact with primary study outcomes

Such modifications may obviate or expand the rationale for conducting extended follow-up, and the analysis plan should be assessed and updated accordingly.

¹⁹For a discussion, see Hedges and Tipton (2020).

Phase 2: Laying the Groundwork for Pursuing Extended Follow-Up

Once research teams have assessed the value and practicality of conducting long-term follow-up using administrative data, groundwork must be laid to secure the necessary authority, permissions, and approvals to conduct the desired research activities. This section describes the core factors that must be considered once the decision to pursue extended follow-up data from an administrative source has been made. Considerations that will help determine the extent to which linking study and administrative data is feasible, and the parameters for using these linked data for extended follow-up, generally fall into two categories: (a) study agreement-related requirements affecting the use of participant study or administrative data and (b) requirements stemming from prevailing human subjects research ethics standards, for example, as determined by an Institutional Review Board (IRB). Tackling the following questions will help research teams navigate these requirements, which are likely to vary from study to study:

1. How do existing or future data agreements govern access to study participants' research and administrative data?
2. What human subjects ethical standards apply to the proposed follow-up?
3. What should research teams planning new evaluations consider when preparing participation agreements with study participants?

Question 1. How do existing or future data agreements govern access to study participants' research and administrative data?

Each study has a unique set of data-related agreements that need to be reviewed to inform the legal and ethical parameters for obtaining and using study participant data for the purposes of extended follow-up research. These can include agreements between the research team and:

- study funder(s)
- study participants (in the form of informed consent or permission forms)
- study site partners, such as those who recruit participants or provide control or treatment services
- data providers, such as a state government agency that provided unemployment insurance (UI) wage records

These agreements often can be restrictive regarding the types of data that can be collected and how and by whom those data may be used. Interpretation of these agreements can also vary by study stakeholder and may shift over time, as norms and staffing evolve, but especially if laws regulating the use of data or guidelines for IRBs change.

Ultimately, the types, scope, and interpretation of these agreements are unique to each study, but there are important elements to look for and consider. For example:

- Who has (or who must give) permission to use or share study participant data, and for what purpose?
- What time period is covered in the agreement, and does it cover the period for which additional follow-up data are needed?
- What types and sources of study participant data are covered in the agreement (for example, personally identifiable information [PII], baseline survey data, outcome data)?
- What types of administrative data can be collected for study participants, and from which sources, according to the agreement?
- Are there any other restrictions on study participant data use and sharing to consider, such as an agreement to only use the data for narrowly defined purposes or to return or destroy data after a certain period of time has elapsed?

The ideal time to consider these items is when a study is being planned. If a study is ongoing or completed, it may sometimes be necessary to renew, renegotiate, or extend data-related agreements to facilitate extended follow-up research activities. Research teams should review agreement language and consult parties to these agreements to determine whether modifications will be required, permissible, and practical given the current stage of the study and what modifications are necessary. Alternatively, teams may be required to make modifications to multiparty agreements that entail coordination across multiple institutions.²⁰ If research teams need to modify (or add addenda to) study contracts, funding agreements, or data agreements, it may be advisable to add language that leaves open the opportunity for additional data collection, revision of outcome measures, or linking in the future. Such additions may still need to fall within the parameters of existing agreements.

Research teams pursuing extended follow-up for existing studies must factor in that it can be difficult to locate old agreements, particularly if organizations have moved, changed document-management systems, or experienced staff turnover. It is not uncommon where older studies are

²⁰In certain circumstances, such as when the research team has members from multiple institutions or study sites that are party to agreements, data-related agreements must be updated in coordination with all parties to an agreement.

concerned for there to be no remaining original study team members at an organization. Teams should also be aware that requests for documents can often require multiple instances of outreach, as completed studies may be a lower priority than ongoing studies. The difficulty of obtaining source documents such as original informed consent forms and contracts should not be underestimated.

Question 2. What human subjects ethical standards apply to the proposed follow-up?

As with all domestic research activities involving human subjects, it is important to assess whether the extended follow-up research is subject to the Common Rule and therefore requires IRB review and approval of all proposed activities. The Common Rule encompasses the baseline ethical standards by which any government-funded research in the United States is conducted.²¹ Whether or not an IRB originally reviewed a study will influence the ethical parameters for extending follow-up for that study. For example, if the original study activities were exempt from human subjects research requirements, then extended follow-up may be exempt also, but this should not necessarily be assumed. An IRB will need to review the historical context of the study to determine if extended follow-up is subject to certain requirements. If so, the IRB will weigh the risks and benefits to study participants along with the expected beneficiaries of the research. Among other factors, an IRB will consider:

- which IRBs—there may be more than one—might have purview over the proposed research activities
- whether one or more informed consent agreements were made with study participants, and how the agreements describe extended follow-up, if at all (for example, how they describe the data to be collected and outcomes to be analyzed, data sources, usage of the data, and time limits for conducting research activities)
- whether the extended follow-up meets criteria for consent waivers if informed consent was not originally collected or if consent does not describe the proposed extended follow-up activities
- the privacy and security standards that are in place to safeguard study participants' PII as a part of the extended follow-up²²

While it is common for contemporary research involving human subjects to collect informed consent from study participants, many older studies of government-funded social programs were

²¹More information on the Common Rule may be found here: <https://www.hhs.gov/ohrp/regulations-and-policy/regulations/common-rule/index.html>. Researchers are usually advised to seek any general guidance on human subjects research ethics directly from an IRB with jurisdiction.

²²See this Q & A on informed consent for more information on the conditions for obtaining waivers of consent: <https://www.hhs.gov/ohrp/regulations-and-policy/guidance/faq/informed-consent/index.html>.

determined to be exempt from human subjects research requirements—including the need to obtain informed consent—because they involved an examination of a public benefit or service program.²³ Regardless of a study’s age or current status, if consent was not collected as part of an original study, the research team may need to request from an IRB a waiver of consent for extended follow-up activities. Obtaining a waiver of consent may be feasible if the research cannot be practically carried out should consent be required—for example, if collecting informed consent were to be excessively burdensome or expensive—and conditional upon there being no more than a minimal risk to participants if additional data were to be accessed and used for the proposed research.

Question 3. What should research teams planning new evaluations consider when preparing participation agreements with study participants?

Evaluations that are still in the planning phase should consider taking advance steps to enable extended follow-up, including:

- building language into agreements, IRB applications, and consent forms that leaves open the opportunity for additional data sources, long-term follow-up, and linking to additional data sources if doing so has clear research and policy-relevant benefits
- establishing clear documentation and standards related to data ownership and the parameters for the use and possible future sharing of study data²⁴

Informed consent language should, among other things, clearly lay out (a) what information will be collected as part of the study, (b) how and with whom information will be shared, (c) how all parties will protect information that could identify participants, and (d) the anticipated duration of study participation and research use of data, especially for PII.²⁵ In crafting informed consent language, some approaches may help research teams avoid pitfalls in pursuing extended follow-up in the future:

²³For more information, see <https://www.hhs.gov/ohrp/regulations-and-policy/guidance/exemptions-for-public-benefit-and-service-programs/index.html>.

²⁴Per changes under the Revised Common Rule in 2018, research teams may also consider seeking “broad consent” from participants for the storage and use of their information for future, secondary research activities at the time of their informed consent and enrollment into a study. In circumstances where research teams have identified extended follow-up research activities, it may be appropriate to seek informed consent for those defined activities and to consider seeking broad consent as a supplementary measure. More information on broad consent may be found here: <https://www.hhs.gov/ohrp/education-and-outreach/revised-common-rule/revised-common-rule-q-and-a/index.html#broad-consent-in-the-revised-common-rule>.

²⁵Teams are generally encouraged to consult with IRB staff and other stakeholders as necessary or required as they draft informed consent and other research forms. The general requirements for informed consent may be found here: <https://www.hhs.gov/ohrp/regulations-and-policy/regulations/45-cfr-46/revised-common-rule-regulatory-text/index.html>.

- Avoiding language that limits the duration of studies to short periods of time can help prevent future obstacles to using administrative data for long-term follow-up.
- It is advisable that teams be expansive in describing the possible types of administrative data sources that might be used to collect information about participants, even if there is only a possibility that those data will not be collected.
- Overly broad consent language may be found objectionable or confusing by the potential study enrollees, risking low rates of consent. It is generally advisable to test language in advance, to prepare advance answers to questions of concern, and to monitor how consent language is being received in the field.
- Describing certain types of actors (such as “other researchers in the future”) who may access data who are not part of the primary research team, and who may authorize future users, can be helpful.
- Having advance conversations with potential data providers before consent language is finalized about what they need to release participant information can reduce the risk that informed consent language or processes (such as the retention of original, signed informed consent forms or additional forms) are misaligned with any requirements they have for adequate consent for data collection. For example, some state sources of UI wage records require that participants sign waivers authorizing the release and sharing of their administrative records in addition to an informed consent form.

Phase 3: Assessing the Suitability of Administrative Data for Extended Follow-Up Research

This section describes the final steps in the process of using administrative data for extended follow-up research. At this stage, researchers have already obtained the necessary clearances to access the administrative data for study participants. Now they must assess the data to determine if they are suitable for answering the main extended follow-up research questions. To do so, study teams should consider the following questions:

1. What are the administrative data providers' requirements for record matching?
2. What are reasonable expectations for the match rate between the study and administrative data?
3. Which person-level identifiers and what type of match will be used to link the study and administrative data?
4. How will the quality of the linked data be assessed?

In many respects, the procedures for linking study and administrative data for extended follow-up research and assessing the quality of those linkages are similar to the procedures that are used for shorter-term follow-up research. The last part of this section discusses a few important reasons why the quality of longer-term linkages could differ from the quality of shorter-term linkages.

Question 1. What are the administrative data providers' requirements for record matching?

Before linking study data to administrative data, it is necessary to understand how the data will be linked and whether the data provider has any specific requirements that will influence the type of match that can be done.

The procedures for preparing the study data for linking are contingent upon the data-sharing agreement that has been established between the research team and administrative data provider. In the most straightforward matching scenarios, the research team will send the data provider a file with study sample identifiers (for example, names and Social Security numbers [SSNs]). The data provider will use the file to perform the match and will return a separate file containing the sample identifiers along with the associated outcome data for each individual. This is a common process for collecting unemployment insurance (UI) wage records and benefits data from state agencies.

In other scenarios (especially for federally managed data), research teams still share files with study sample identifiers with data providers, but data providers share only anonymized administrative records with the research team, in order to protect the confidentiality and privacy of the individuals the data describe. Data providers remove any personally identifiable information (PII) that has been submitted by the research team after merging to the outcomes data and replace it with a randomly generated person-level identifier. In such cases, research teams may choose to submit the study sample identifiers alongside other meaningful data needed for the research (for example, research group codes, sample member baseline characteristics, and covariates) to the data provider. These extra data are “passed through” by the data provider and returned to the research team along with the same randomly generated person-level identifier for use in analysis. The research team is then able to match the two output files using the random identifier. Research teams can often request that this identifier be retained by the data provider to allow for long-term matches to be matched to prior matches. This process is common for highly sensitive data sources such as the National Directory of New Hires (NDNH) and for data that are available through the U.S. Census Bureau’s Federal Statistical Research Data Centers (FSRDCs). Using a pass-through file may also be an option that research teams suggest as they negotiate data access with providers that are especially concerned about participant confidentiality.²⁶

Research teams should consider proposing other potential workarounds to data providers when concerns are identified. For example, in the Work Advancement and Support Center Demonstration, the research team was able to collect state UI wage records by agreeing to do group-level matches, wherein the returned data file contained earnings amounts averaged across a prespecified group of individuals, rather than individual-level earnings records.²⁷ A similar approach was used as part of the Grameen America evaluation. One of the major credit reporting agencies agreed to share credit data with MDRC, as long as MDRC met the credit reporting agency’s requirements for not being able to reidentify specific individuals in the matched outcome files that were returned to the team.²⁸

²⁶Pass-through files can present some limitations. Data providers typically want to review the variables that will be included in pass-through files, and in many cases, data providers require research teams to use specific formats for variables that are included in the files — for example, a data provider may specify that a variable such as age must be formatted as a categorical variable, rather than as a continuous variable. This may influence how analyses, such as subgroup analyses, can be conducted. Additionally, researchers often have to specify which variables they will need for the analysis and include in the pass-through file in advance of doing the match. Data providers may allow researchers to update the included variables later on, but this typically requires an additional round of review. Developing an analysis plan in the early stages of an extended follow-up study can help research teams think through which variables to include in pass-through files.

²⁷Miller, Dok, Tessler, and Pennington (2012).

²⁸Quiroz Becerra, Schaberg, Holman, and Hendra (2020).

Question 2. What are reasonable expectations for the match rate between the study and administrative data?

Researchers should understand the structure and content of both the study and administrative data files before linkages are done in order to set reasonable expectations for what the linked file will contain, once returned. The highest-priority checks to perform before linking the data sets involve confirming who and what is covered in each data set to establish reasonable expectations for the match and match rate. This includes checking the sample, time period, and activity coverage of the data set.

Match rates are based on two factors: the actual behavior of individuals in the study sample and the identifiers that are used to do the matching. When matching to public benefits data, for example, an individual may not match because he or she was not receiving benefits or because his or her SSN was recorded incorrectly. In most cases, it is impossible to know which of these reasons led to a nonmatch.²⁹ There is no exact threshold for determining whether a match rate is too low and indicates that there is an issue with the study or administrative data. This determination should instead be made based on whether the match rate looks reasonable given what is known about the study sample and their behavior.³⁰ The reasonableness of a match rate should be informed by who is in the study sample that is being matched to administrative data. For example, one would expect a much higher match rate to Temporary Assistance for Needy Families (TANF)/welfare data among a sample of prior welfare recipients than among a sample from the broader population. Similarly, matching a sample of older adults to employment records may yield a low match rate—especially in later follow-up years—if those adults have reached retirement age. Expectations can also be informed by looking at other studies and by subject matter expertise. Reviewing other studies that examined similar interventions, programs, or target populations can identify potential administrative data sources to match to, as well as give a baseline for expected match rates to those data sources.

Question 3. Which person-level identifiers and what type of match will be used to link the study and administrative data?

After confirming that the study data are ready to be linked to the administrative data, the next step is to explore how the data will be matched. This consideration includes the identifiers that will be used for the match and the matching method. Data providers typically dictate both.³¹

²⁹In some cases, researchers can do quality checks of identifiers. For example, researchers can check whether the SSNs provided for individuals in a study are valid numbers, meaning they have nine digits and do not have invalid area, group, or serial numbers. This type of check does not indicate whether an individual's SSN was recorded correctly, however.

³⁰Researchers should also think about whether potential matching issues will lead to biased estimates. For example, matches to UI wage records often result in some undermatching because those data do not cover all types of jobs. This type of undermatching is not always an issue, though. For example, in a random assignment study, this would not lead to biased estimates if individuals in both research groups were equally likely not to match for this reason.

³¹Research teams should, however, understand what each record in the administrative data set represents, as this will inform what fields will be needed for linking. For example, if both files are person-level files, they will likely be

In many cases, linkages between study data and administrative data are done using exact (or deterministic) matching—meaning the identifiers that are used to complete the match are exactly the same in both data sets. Studies that have access to SSNs for their sample, for example, are often able to do exact matches to administrative data using only this identifier because SSNs are unique to individuals (unlike names or dates of birth). Exact matches that are done using SSNs may result in fewer false positives—meaning fewer individuals identified as a match in the administrative data that are actually not true matches. However, exact matches using only SSNs may result in more false negatives (that is, true matches that are not identified as matches) if the SSNs were not recorded correctly.

Some administrative data sources do exact matches but rely on identifiers other than SSNs. For example, the National Student Clearinghouse requires that researchers submit a “finder file” containing first names, last names, and dates of birth for the students in their sample in order to match to the education records.³²

In cases where exact matching cannot be done or does not seem appropriate, fuzzy or probabilistic matching may be used.³³ Unlike deterministic matching, this type of matching allows for nonexact matches across one or more fields. This method can use both participant identifiers and characteristics that are unlikely to change (for example, gender or race) to identify records with a high probability of being true matches. This type of matching may be more useful for data sources that link by identifiers such as name (which could be misspelled or not captured as the formal version in the study data) or date of birth (which could be formatted in different ways—for example, by month, day, year or by day, month, year). There are trade-offs to using this matching approach, however.³⁴

Record linkages can also be done through a combination of deterministic and fuzzy matching—for example, when the identifiers that are available for a sample of individuals differ. Alternatively, they can be done in stages—for example, by first using exact matches and then using probabilistic matches for the remaining cases. This type of approach can also be considered if researchers encounter issues, including lower-than-expected match rates, using deterministic matching alone.

Various techniques can be applied to address challenges with long-term matching or to facilitate data-quality assessment. As one example, research teams can explore whether it makes sense to match the study sample to more than one administrative data set. This can be done to confirm data set coverages and to identify potential gaps in one or more data sets. For example, if a research team

matched using only person-level identifiers. On the other hand, matching a person-level file to an activity- or case-level file (such as taking out a loan or receiving Supplemental Nutrition Assistance Program [SNAP]/food stamp benefits) may need to be done using person-level and case-level identifiers.

³²Holman, Pennington, Schaberg, and Rock (2020); Abdul Latif Jameel Poverty Action Lab (2019).

³³Fellegi and Sunter (1969); Sayers, Ben-Shlomo, Blom, and Steele (2016); National Research Council (2002).

³⁴For example, fuzzy matching may result in a high rate of false negatives if the matching rules are too loose.

is linking a study sample to TANF/welfare and UI wage data, a study sample with a high rate of TANF take-up may have a lower employment rate than a sample with a low rate of TANF take-up since TANF recipients may not be working while receiving benefits.

In some cases, it may be possible to verify data set coverages by linking a study sample to adjacent or similar data sets. Researchers can then see how match rates and coverages compare. For example, the U.S. Census Bureau's FSRDCs retain multiple sources of employment and wage information, including tax return data overseen by the Internal Revenue Service and Longitudinal Employer-Household Dynamics data (which combine quarterly earnings data obtained from state agencies).³⁵ By matching to both data sources, a research team would be able to see whether the data sources capture different types of employment (for example, self-employment or contract work) and therefore whether the data sources would result in different overall employment rates for a study sample. This was true in an evaluation that looked at employment rates in both state UI and tax data for a sample of tax filers. The employment rates were somewhat lower in the UI data (because they do not capture self-employment) than in the tax data. The employment effects, however, were similar.³⁶ Another recent analysis of a sector-based program compared labor market outcomes based on state UI and NDNH data and found a similar pattern of employment and earnings impacts across the data sources.³⁷ (See Box 3 for more information.)

Question 4. How will the quality of the linked data be assessed?

The final step in this phase is to determine the quality of the linked data files. The highest-priority checks to perform at this step involve confirming who and what is covered in the linked data set to verify if study participant activity is sufficiently covered.

Reviewing match rates: One of the first and most important checks is to investigate the match rates between the two sets of data.³⁸ Researchers should consider the following questions:

- What was the overall match rate? Is it as expected given what is known about the study sample and the administrative data?
- Does the match rate differ across research groups? Is this expected given the intervention or program that is being evaluated?

³⁵For more information, see Czajka, Patnaik, and Negoita (2018). Also see <https://www.census.gov/programs-surveys/ces/data/restricted-use-data/lehd-data.html>.

³⁶Miller et al. (2018).

³⁷Schaberg and Greenberg (2020).

³⁸It is often helpful to include a file indicator on each data set to facilitate the verification of the match rate.

Box 3. From Theory to Practice: Follow-Up on the WorkAdvance Evaluation

Study background. The WorkAdvance evaluation assessed the effectiveness of a sector- and advancement-focused workforce development model. The model calls for the provision of career-readiness and occupational skills training to help adults who are currently unemployed or earning low wages to increase their economic mobility. Four providers implemented the model between 2011 and 2013, and MDRC evaluated the programs using a randomized controlled trial design.

Program theory justifying follow-up activities. The two-year impact findings from the original study showed some promising evidence for the WorkAdvance model but varied across the four providers in the evaluation.* This variation, along with findings from prior research showing that it can take two or more years for economic impacts to emerge from evaluations of training programs, reinforced the need to look at the longer-term effects of WorkAdvance.†

Linking to multiple data sources. For the current long-term follow-up analysis (which extended to between six and eight years of follow-up), MDRC gained access to employment and earnings records from three data sources:‡

- National Directory of New Hires (NDNH) data — data were collected for all individuals in the study. These data cover employment in all 50 states and federal employment.
- State unemployment insurance (UI) wage data from the New York State Department of Labor — data were collected for individuals from the two sites in New York and cover employment in New York.
- State UI wage data from the Ohio Department of Jobs and Family Services — data were collected for individuals from the site in Ohio and cover employment in Ohio.

Because MDRC had access to multiple sources of data covering the same (or a similar) time period for some individuals in the study, the team was able to compare the employment and earnings levels across the sources. This allowed the team to check for data coverage issues and see whether the overall impact story differed based on the type of employment included in the analysis.

Assessing data linkages. In general, the overall pattern of impacts was similar across the two data sources.§ As expected—given that the NDNH data cover more employment, including national employment, while the state UI data only cover employment in a given state—the employment and earnings levels for individuals in the study were higher in the NDNH-based findings than in the UI-based findings.|| The inclusion of this additional employment did not appear to change the impact story, however. The team was able to measure out-of-state employment (meaning in a state other than the state in which the WorkAdvance provider was located) using the NDNH data and found no difference across research groups. This suggests that the state UI data that were used in the original study were a reliable source of employment information for the individuals in the study sample.

NOTES: *Hendra et al. (2016).

†Card, Kluve, and Weber (2010).

‡The evaluation team was not able to collect state UI wage data from Oklahoma, so state UI wage records were not available for sample members from one site. MDRC is currently conducting an additional extended follow-up analysis that will look at impacts through Year 10. That analysis will also look at the effect — if any — of the COVID-19 pandemic on individuals' outcomes.

§Due to data provider restrictions, MDRC was unable to do a direct comparison of the two data sources at the individual level.

||Schaberg and Greenberg (2020).

- Who from the study sample did not match to the administrative data? Do these individuals have anything in common? For example, did they all enter the study at the same time? Are they all from the same site? Do they all share certain demographic characteristics, such as work or public-assistance history?

Identifying and addressing duplicates: Research teams should check whether the linked file contains any exact or partial duplicates (meaning, for example, that one individual in a study sample matched to more than one record in the administrative data). If duplicates are identified, research teams should consider whether these are expected or whether they indicate a potential issue with the match. Partial duplicates, for example, may be evidence of administrative records being updated. UI wage records sometimes have more than one record with the same person-level identifier, quarter, and employer identifier, but with different earnings amounts. This can happen when an employer has corrected and resubmitted new earnings data for an employee.

Outliers: Extreme values (on the high and low end) in administrative data can have effects on analysis findings, including outcomes and impacts. Research teams should determine how they are going to address them, if at all. Additional thought must be given to studies that span longer periods of time and where study participants' circumstances might have changed significantly over time. For example, the earnings for a TANF/welfare recipient might be very different at the onset of the study (when the person is receiving benefits and might not be working) compared with 20 years later (when the person could be more consistently employed and working in a higher-salary job). The expected range of earnings amounts—and therefore what might be considered an earnings outlier—would be higher in the second time period than the first time period.

SPECIAL CONSIDERATIONS FOR ASSESSING THE QUALITY OF EXTENDED FOLLOW-UP MATCHES

In general, the considerations for matching study and administrative records are similar no matter what is the length of the follow-up period being analyzed. However, there are multiple reasons why the quality of long-run linkages could differ from the quality of shorter-run linkages.

- Identifiers, particularly volatile identifiers like case numbers, may have changed over time. Matches to some administrative data, such as benefits data, require the use of a case number. While case numbers are likely to be stable and reliable in the short term, they may not be sustained in the longer term, making matching more difficult and potentially leading to lower match rates.
- Participants may have moved. Evaluations of programs in a specific state or locality may be able to rely on an administrative data source that covers just that state or locality to capture most

participants' outcomes in the short term. This is less likely in the longer term, as more participants may have moved out of the state or locality. This may be especially problematic if the program or intervention that is being evaluated made participants more or less likely to move than they would have been otherwise (as the coverage rates for individuals in the program versus control group will differ).

- Long-term matching procedures may be different, especially if the sources of longer-term administrative data are different. This may present difficulties if study participants only gave consent for data to be collected on them from a specific administrative data source (for example, employment data from a state agency but not from the IRS) or if certain identifiers were not collected because they were not required by the original administrative data source (for example, some administrative data sources match only using SSNs, while others match on SSNs and names).
- Study participants' propensity to engage with certain administrative systems may have changed over time. For example, it may not make sense for studies that initially targeted individuals who were likely to be receiving public benefits, such as Supplemental Nutrition Assistance Program (SNAP)/food stamps or TANF/welfare, to match to those administrative data sources in the longer term if study participants are not expected to still be receiving those benefits (or at least the research team should expect to see a lower match rate).
- The coverage and quality of the administrative data, as well as the processes for accessing the data, may also have changed over time. For example, in the WorkAdvance evaluation, the research team was initially able to access state UI wage records from Oklahoma in the original evaluation. However, due to a change in state laws, the agency was unable to provide additional wage records for the long-term analysis.³⁹

³⁹Schaberg and Greenberg (2020).

Conclusions

This guide highlights questions that researchers should explore as they think about and engage in using administrative data to examine the long-term effects of policy and program interventions. Overall, researchers need to consider the value and practicality of pursuing extended follow-up, prepare for and obtain the necessary legal and ethical clearances to access the administrative data, and assess the suitability and quality of the linked study and administrative data. Critical considerations for this work overall include the following points:

- Extended follow-up should not be pursued for all studies. Before beginning this work, it is important to confirm the value of extending follow-up for a given study. If the value is confirmed, then the right time to pursue extended follow-up should be determined.
- While pursuing extended follow-up is potentially more cost-effective and efficient than collecting new, original data, it can take a lot of time and resources, particularly for older studies. This makes advance thinking and planning even more meaningful.
- Studies in the planning stage should consider the value of conducting extended follow-up prospectively and lay the groundwork for those efforts. This can make later efforts to pursue extended follow-up more feasible and efficient.
- The procedures for gaining access to administrative data are highly variable and tend to take a lot of time, especially for federal sources of administrative data. Efforts are underway to streamline the process of and remove barriers to accessing some administrative data for specific purposes.
- Before entering into agreements with data providers, it is vital to confirm that the outcomes of interest can be constructed from the data and that the necessary identifiers for linking are available for the study sample. Learning about the benefits, limitations, requirements, and coverages of administrative data sources up front can save time and resources.
- Given increasing concerns about data use, privacy, and security, it is critical that researchers, funders, and others who are involved in this work weigh its potential benefits and risks.

Administrative data can provide unlimited learning opportunities, and researchers, funders, and policymakers should think creatively about how the field can take better advantage of these data to look at the long-term effects of programs and policies.

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