

West Midlands LNZA Programme: Health Data and Metrics Scoping Report

West Midlands Combined Authority

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Term	Definition
Commissioning	Commissioning Support Units (CSUs) are NHS organisations that support
Support Unit (CSU)	commissioning activities for a variety of organisations, including hospitals,
	local authorities, ICSs, and NHS England. CSUs offer a range of outsourced
	services, including analytical and transformation support, back-office
	functions, and ICT services. The Strategy Unit is hosted by Midlands and
	Lancashire CSU.
Counterfactual	The counterfactual is an estimate of what would have happened without
	the implementation of the LNZA programme.
Effect size	The effect size in impact evaluation is the size of the difference between
	the treatment group (people who benefit from the LNZA programme) and
	the counterfactual. It is used to estimate the size of the impact of the
	policy change.
Evaluation	A systematic assessment of the design, implementation and outcomes of
	an intervention. It involves understanding how an intervention is being, or
	has been, implemented and what effects it has, for whom and why. It
	identifies what can be improved and estimates its overall impacts and cost-
	effectiveness. <u>HM Treasury Magenta Book</u>
Integrated Care	Integrated care boards (ICBs) are NHS organisations that plan and fund
Boards (ICB)	health services for their local area. They are responsible for:
	Developing a plan to meet the health needs of the population
	Managing the NHS budget
	 Working with local providers to agree a five-year plan
	Commissioning health and healthcare services
	Improving population health
	Delivering shared strategic priorities
Impact evaluation	Impact evaluation is a method of analysing the effect of the LNZA
	programme on the target population. It focuses on the outcomes of the
	programme.
NHS Digital	NHS Digital is a team that designs, builds, and runs the NHS's national IT
	and data services. They collect, analyse, and share data from health and
	social care services in England. NHS Digital has now been merged with
	NHS England, but data is still published through their website.

Term	Definition
NHS England	NHS England is the organisation that leads the National Health Service
	(NHS) in England. It's responsible for:
	Planning, commissioning, and buying NHS services
	Setting NHS strategy
	• Supporting NHS organisations to work together to improve patient
	outcomes
	• Promoting high-quality healthcare through the NHS Long Term Plan
Office for National	ONS is the UK's national statistical institute and largest independent
Statistics (ONS)	producer of official statistics They are responsible for collecting and
	publishing statistics related to the economy, population and society at
	national, regional and local levels. They also conduct the census in England
	and Wales every 10 years.
Person level data	Person level data includes data for each event an individual encounters. It
	includes details about the event, such as type of event, data of event,
	organisation and outcome, as well as details of the person undertaking the
	event, such as a unique identifier, demographics and geographical details.
	For example, data on inpatient admissions includes:
	Unique identifier (pseudonymised NHS number)
	Age at admission
	Registered GP Practice
	Ethnicity
	Deprivation decile
	Admission date
	Discharge data
	Hospital Trust
	Type of admission (elective, emergency, etc.)
	Discharge destination
Pseudonymisation	Pseudonymisation is a process of de-identifying data that still allows for
/ Pseudonymised	data in different datasets to be linked. In health datasets, it involves
	replacing the NHS Number with a different unique identifier that is
	consistent across all datasets.

1. Introduction

The West Midlands Combined Authority (WMCA) has committed the region to achieving net zero by 2041. To achieve this a place-based approach is being delivered. The West Midlands' Local Net Zero Accelerator (LNZA) Programme aims to make the case for a blend of public and private investment in net zero projects by, among other things, collecting and communicating robust information about the benefits achieved by place-based interventions.

While there are a wide range of benefits to be realised from place-based NZ projects, the LNZA programme is focusing on three types - carbon, avoided energy infrastructure costs, and health outcomes. There is a requirement to evaluate the programme to understand what works, in what circumstances and why it works. This paper focuses on evaluating the health outcomes the programme aims to deliver.

The first stage of an impact evaluation is to develop a measurement strategy. The Strategy Unit, hosted by Midlands and Lancashire Commissioning Support Unit (MLCSU), have been commissioned to support this aim by researching and suggesting appropriate metrics to report any impact on health outcomes. Additional work will be required to build on the metrics and design any future impact evaluation.

WMCA has developed a logic model to describe the theory of change. This details how LNZA is expected to lead to improvements in the proposed outcomes. Each outcome needs at least one metric to capture impact. These should be robust metrics that closely align with the expected outcome. Proxy metrics have been recommended where measuring impact is likely to take many years to realise, such as reductions in avoidable deaths.

The Strategy Unit have reviewed the logic model to identify all health-related outcomes and have suggested appropriate metrics for each outcome. These are captured in a separate metrics framework.

This report provides information to support WMCA to source the data required in the metrics framework. It identifies different data sources, both aggregate and person level, that could be used to create the metrics. It also provides some insight on what WMCA will need to consider when designing an appropriate method to evaluate impact.

The metrics have been tested against a quality framework the Unit developed to ensure they are robust and appropriate for the impact evaluation. The tests applied were:

- **Validity** do they measure what they claim to measure?
- **Quality** is a reliable supporting evidence-base available?
- **Feasibility** for measurement is it possible to populate them?
- **Attribution** can they be used in a robust evaluation method to attribute any effect to the intervention? Do they cover the target group?

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- **Time** what's the likely time frame / lag involved in populating the metric?
- **Implications** what might happen through measurement? Are there likely to be any changes in behaviour due to people being measured or are there any perverse incentives of using this metric?

The results of the tests have been summarised as a RAG rating with red identifying metrics not currently available, amber available metrics but not necessarily at the right level or of sufficient quality to be included in an evaluation and green showing metrics readily at the right level and quality for an evaluation. This supports WMCA to select the most appropriate and highest quality metrics for their evaluation.

Robust metrics should be accurate, complete and consistent over time. Each metric should be reviewed regularly to ensure are no changes in the definition or how it is applied. They should be supported by detailed metadata which have been tested with data suppliers in the design phase to ensure consistent data collection. The metadata should include:

- Metric name and definition
- Rationale for the metric, i.e. why the metric is reported
- Numerator, including source
- Denominator, including source
- Methodology, including any coding systems, such as ICD10 codes¹, and the relevant codes used to derive the data
- Population coverage, including the geography reported and any specific demographic criteria applied, for example, people aged 65 and over.
- Frequency and timing (e.g. monthly) of data release
- Unit of measurement
- Known measurement errors
- Contact details for the data owners

An example of good metadata for a metric can be found here.

The recommended metrics are generally from national aggregate data sources based on official government statistics. These have been reported consistently over an extended period to a standard definition. Submission of the data sources is compulsory so the data should be complete or where it is incomplete this will be reported. Any concerns about the robustness or quality of the metrics are highlighted in the metrics framework.

¹ ICD10 is an international coding system for diseases. It is used to record diagnoses for hospital inpatients.

2. Data sources

The metrics framework includes sources for each metric. These are generally from national aggregate data sources, as the data is readily available and validated to ensure consistency, quality and robustness. All these metrics are generated from person level data and could be replicated or amended to make them more specific to the LNZA programme. The full definition could be applied to lower geographies, or the definition could be amended to be more specific to the target group, for example people aged 65 and over.

Aggregate data sources have fixed definitions which may not be specific enough for discerning the impact of LNZA. The Net Zero Neighbourhoods (NZN) programme, which is the element of LNZA responsible for collecting outcomes data, is delivered at the neighbourhood level. Most aggregate datasets are available at larger geographies which include people that could never benefit from the NZN intervention. The impact would be lost in the random variation ('noise') in the outcome in the wider population. The metric provides a poor reflection of the change that we are attempting to use it to capture. If the geography is too large it may not be possible to detect impact. Data collected by the individual projects, such as self-reported wellbeing, may be able to mitigate for the lack of specificity although would need to be checked to ensure they do not create other issues of bias.

The same risk is applicable if the scope of the metric (geographic, demographic, temporal etc) is not well matched to the scope of the intervention. If the intervention is aimed at improving the outcomes for a specific population group but the metric definition includes the whole population then the effect is likely to be diluted for people who can never benefit from the programme. For example, if the programme is aimed at the most deprived 20% of the population and the metric covers the whole population then 80% of the population cannot benefit from the programme. The effect size would need to be large to be detected at all.

It is advised where possible to use person level data to populate the metrics for them to be useful for impact evaluation. The metrics would be built using the aggregate data definitions with additional criteria to make them more specific to the programme. For example, more specific geographies or additional demographic criteria, such as deprivation or age group, could be added to the national definition.

This section provides more detail on the available data sources split between aggregate and person level datasets.

Aggregate data sources

Aggregate datasets can be used to populate the metrics for use in the evaluation. They are easily accessible and are suitable for a variety of evaluation methods. Those recommended for LNZA are publicly available with sufficient historical data to provide pre-intervention data for the

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programme. They also have detailed metadata so we can be confident they are consistently collected.

The data is available for fixed geographies and definitions. These do not map accurately to the LNZA programme. If aggregate data sources are used, they will be less precise and are likely to underestimate any impact.

The main aggregate data sources relevant to the LNZA programme are summarised in Table 1 below.

Data source	Description
<u>Fingertips</u>	Collated dashboards with aggregate data.
	Available for different geographies / administrative boundaries
	depending on the metric. The lowest geographical level reported is
	Middle Super Output Area (MSOA) although the data at this level is
	limited and most metrics are reported by local authority.
	Data can be extracted easily for analysis.
	Includes detailed definitions of each metric.
	Data is organised into themed profiles, such as cardiovascular disease
	and respiratory disease.
NHS England /	National published datasets.
NHS Digital	 Available for different geographies and administrative boundaries.
datasets	 Data quality good for official government statistical publications.
	Data will be less robust for experimental statistics as these are newer
	metrics that have not been tested to the same level.
	Regular and one-off datasets, including:
	<u>NHSE Statistical work areas</u> ,
	<u>Referral to Treatment (RTT)</u> ,
	<u>Ambulance metrics</u> ,
	<u>NHS Workforce statistics</u> ,
	<u>Aggregate HES data</u> ,
	 <u>Diagnostics Waiting Times and Activity (DM01)</u>,
	 <u>Community Service dataset reports</u>, and
	<u>GP Appointments</u> .
Office for	Population level data.
National	 Available for different geographies and administrative boundaries.
Statistics (ONS)	Data often available down to Lower Super Output Area (LSOA) level.

Table 1 – aggregate datasets

Data source	Description
/ Government	Datasets include:
Departments	• <u>Census data</u> ,
	<u>Population estimates</u> ,
	Population projections, and
	Survey data
	Index of Multiple Deprivation (IMD)
	Urban Rural classification
	<u>Excess mortality</u>
Quality	GP practice performance data.
Outcomes	Used for payments to GP practices so well recorded.
Framework	Long Term Condition specific metrics, including prevalence.
(QOF)	Data published annually.
	 Latest data can be found <u>here</u> or <u>here.</u>
	Latest definitions can be found <u>here</u> .
NHS Survey	Patient and staff surveys are run regularly.
Data	 The questions asked are consistent over time and data quality is
	reviewed.
	Some examples are shown below.
	GP Patient Experience Survey (GPES) – annual survey of GP practice
	registrants with questions on their experience and overall health.
	 Friends and family test (FFT) – monthly data collected by trusts on
	whether patients would recommend the service to their friends and
	family.
	 <u>NHS staff survey</u> – annual survey of staff experience.
	 <u>Trust level CQC surveys</u> – specific surveys collected at irregular times,
	including:
	 Children and Young People's Patient Experience Survey,
	Adult Inpatient Survey,
	Urgent and Emergency Care Survey,
	Maternity Survey, and
	Community Mental Health Survey.
	<u>Cancer Patient Experience Survey</u> – annual survey of cancer patients
	about their experience.

Person level data sources

Person level data includes data for each event. It is usually pseudonymised but is typically treated as identifiable. Access is more controlled and requires additional governance compared to aggregate sources, see section 4. Most aggregate data is generated from person level data.

It is more flexible than aggregate data. More specific metrics and geographies can be created using the aggregate data definitions. As NZNs are not standard geographies then person level datasets would be more appropriate. They would allow for more precise identification of the people who can benefit from the programme and can be used for generating a reliable counterfactual

Table 2 below summarises the person level datasets relevant to the LNZA programme.

Data source	Description
Secondary Uses	Acute datasets created using the same base data.
<u>Service (SUS)</u> /	• SUS internal focus and HES external (paid for service).
<u>Hospital</u>	SUS updated monthly and around six weeks to two months in arrears
<u>Episode</u>	and HES depends on your contract.
Statistics (HES)	Contains demographic data, including LSOA.
	Good data quality over a lot of years.
	Activity costed using the HRG grouper.
	Available from NHS England (national), the CSU (regional) and Integrated
	Care Boards (ICBs) (local).
	Main datasets
	Emergency Care Dataset (ECDS),
	 Inpatients (episodes and spells),
	Outpatients,
	Critical care, and
	Maternity.
	Fields are detailed in the NHS Data Dictionary -
	https://www.datadictionary.nhs.uk/.
<u>Mental Health</u>	 Data on mental health and learning disability services.
<u>Services</u>	 Has previously been called MHMDS and MHLDDS.
<u>Dataset</u>	• Updated monthly and around six weeks to two months in arrears.
(MHSDS)	• Data quality is good although changes to the dataset in previous years
	will affect how much historical data can be used.
	Complex data model requiring data linkage.
	• Available from NHS England (national), the CSU (regional) and ICBs (local).

Table 2 – person level datasets

Data source	Description
	Fields are detailed in the NHS Data Dictionary -
	https://www.datadictionary.nhs.uk/.
ONS Deaths	Contains a record of every death in England.
	Limited access with specific permissions required.
	Updated regularly.
	Available from NHS England (national), the CSU (regional) and the local
	authorities (local).
	Includes:
	Cause of death,
	Date of death,
	Place of death, and
	Demographics.
<u>Community</u>	 Data on paediatric and adult community services.
<u>Services</u>	• Updated monthly and around six weeks to two months in arrears.
Dataset (CSDS)	Complex data model requiring data linkage - data submitted across
	more than 40 tables.
	Data quality is improving but still not perfect.
	• Available from NHS England (national), the CSU (regional) and ICBs (local).
Other person	<u>Cancer Outcomes and Services Dataset (COSD)</u>
level datasets	Detailed data for all cancer services.
	 Contains all cancer diagnoses and staging data.
	Gold Standard cancer registrations and Rapid Cancer Registrations
	Dataset (CSDS).
	 Extensive validation of cancer diagnoses and staging.
	<u>Cancer Waiting Times (CWT) Dataset</u>
	Data on all referrals to an Urgent Suspected Cancer (USC) pathway
	Arranged by cancer pathway (site).
	 Includes all referral sources (screening, GP and emergency).
	Clinical audits
	 Condition specific (e.g. <u>National Diabetes Audit (NDA)</u> and
	National Audit of Cardiac Rehabilitation (NACR)).
	 Access controlled and not linked to other datasets.
	Will provide aggregated outputs.
	GP Data
	<u>General Practice Extraction Service (GPES)</u> .
	 General Practice Data for Planning and Research (GPDPR).

Data source	Description
	NHS 111 and <u>ambulance</u> datasets
	Local rather data flows.
	Not readily available.
	 Inconsistent data quality as they are relatively new local flows that
	are not subject to rigorous data quality checks.
	Local data flows
	 New data flows can be established that are project specific.
	Require extensive IG and consultation.
	Commercial datasets - Clinical Practice Research Datalink (CPRD).

3. Data access

Aggregate datasets are published regularly and can be accessed without any additional requests or information governance steps. The links in table 2 on pages 5 to 7 provide access to the latest data.

Person level datasets are held by several organisations to support their statutory functions. The main datasets required for the impact evaluation are accessible from multiple sources. The most appropriate organisation from which to source the data will depend on the design of the programme and the evaluation. It will also depend on WMCA's networks. For example, requesting data from ICBs that are already partners with WMCA is likely be easier to set up than developing new relationships with NHS England.

The main routes available to access person level data are described in **Table 3** below.

Organisation	Data access
Trusts / GP practices	 Detailed datasets for all their patients, including data not held by other organisations. Require Data Sharing Agreements (DSAs) with all organisations. This is the most complicated and least complete option for accessing data and only recommended if the data is not available elsewhere. Patients may be referred to out of area trusts and would not be included in the data shared.
Integrated Care	Each ICB has access to data for their footprint and therefore WMCA will
Boards (ICBs)	need to approach all the ICBs in the region to access this data.
	 Available datasets include SUS, MHSDS and CSDS.
	WMCA could use current relationships to request the data.
Commissiong	NHS Midlands and Lancashire (ML) CSU hold person level data for most of
Support Units	the ICBs within the WMCA footprint, other than Coventry and
(CSUs)	Warwickshire ICB.
	Data for Coventry and Warwickshire ICB is held by NHS Arden & GEM
	(AGEM) CSU.
	This includes SUS, MHSDS and CSDS.
	• Data is accessed by employees of the CSU through their data warehouse.
NHS England	 NHS England holds person level data for England, including SUS, MHSDS and CSDS. Data for the whole programme could be requested from a single organisation. The data can be accessed through two routes depending on who requests the data. The routes are:

Table 3 – Data access options

Organisation	Data access
	 Unified Data Access Layer (UDAL) – Internal data workhouse
	accessed NHS England employees, including CSUs. The evaluation
	would need to be commissioned from a CSU.
	 Secure Data Environment (SDE) – External facing data warehouse
	for research purposes. WMCA would be able to apply to access the
	SDE directly. This would require a Data Sharing Agreement (DSA)
	and a licence fee to be paid. Access is not guaranteed.
	May require an application to NHS England's <u>Data Access Request Service</u>
	(DARS). This is likely to take at least three months but can be much longer
	depending on the complexity of the request.
Local	• Public health data, including the ONS deaths dataset (see page 7).
authorities	• WMCA would need to request an aggregate dataset, based on the person
	level data, from each local authority.

4. Information governance

The approach to information governance (IG) will depend on whether aggregate or person level data is required and the organisation sharing the data.

A Data Protection Impact Assessment (DPIA) is required for any new data processing task. WMCA would need to complete a DPIA before any data can be shared or processed.

Aggregate datasets

If WMCA uses nationally published aggregate datasets, available at different geographies, for the impact evaluation, then only a DPIA will be required.

Additional agreements may not be required if WMCA can identify partners, such as ICBs, that can already access the person level data. WMCA could request aggregate level data for each of the metrics from these partners. The partner would need to apply small number suppression, which means that any results containing a very small number of data contributors, usually below five, could not be provided. They can then share the aggregate data with WMCA to analyse and report.

Person level datasets

If WMCA requires access to the person level data, then additional agreements will be needed. Depending on the data flows, data controller and data processor either a Data Sharing Agreement (DSA) or Data Processing Agreement (DPA) will need to be completed. The content is similar for both, and each supplier organisation will have their own standard template to complete.

In the unlikely event that new data collection is needed using a third party supplier, this will be subject to additional IG. The approach will depend on who is undertaking the evaluation and the permissions they already have in place. The three main options are:

- **Local data feed** new datasets can flow between a provider and the CSU under Schedule 6 of the Standard NHS Contract. This would require sign off by the ICB and a DPA with the CSU and there may be a fee to set them up.
- **Directions** NHS England can apply 'directions' for any new data flows. This requires signoff from the Secretary of State and takes at least six months. It also requires patient consultation. This is unlikely to be feasible for the LNZA impact evaluation.
- Section 251 agreement An application to the Health Research Authority (HRA) for a section 251 agreement. This is used for research purposes and can provide access to person level data. It takes around six months to complete and should only be considered if other options are not available.

5. Impact evaluation methods

Evaluations aim to provide evidence of what worked, for whom, how and in what circumstances. The scope of this report is to focus on the impact analysis which aims to estimate the extent to which an intervention 'caused' a change in the outcome. Did the NZNs interventions funded by the LNZA programme create health-related outcomes or were any observed changes related to other factors, such as changes in the population or other interventions? The method should control for consider any other possible explanations for the change in outcomes and, where feasible, these should be controlled for in the method. Additional qualitative research will be required to understand context and mechanisms that delivered any impact.

Proving causality is difficult. The population changes over time and other interventions can impact the metrics being monitored. A decision on impact design is closely related to the decision on which metrics to use. A robust study design for the impact evaluation is required to estimate the impact of the LNZA programme.

Experimental designs, such as Randomised Control Trials (RCTs), are the 'gold standard' for programme evaluations. Each participant is randomised into either a treatment group that receive the intervention or a control that do not receive the intervention. They require qualitative research to provide details of the mechanisms that delivered the impact or the context in which the interventions show impact. RCTs can be blind, where the participant does not know whether they are receiving the treatment or a placebo, or double blind where neither the participant nor the researcher knows who is receiving the treatment or a placebo. These are complex and expensive to deliver. They are inappropriate where randomisation is either not feasible or unethical. An RCT is unlikely to be feasible for the LNZA evaluation.

Other methods, although less robust, are more feasible and still robust enough to provide sufficient evidence of the programme's impact. The potential methods that could be reviewed include:

- **Early-stage impact modelling** Uses published evidence, where available, and expert opinion to develop assumptions about the causal links between the programme and the outcomes. A counterfactual, what would have happened if the LNZA programme was not implemented, is modelled using data and the elicited assumptions. Methods include decision tree models and simulation modelling methods, such as System Dynamics.
- Quasi-experimental methods These replicate the conditions of RCTs using existing
 routinely collected datasets to create a counterfactual. These are easier and less costly to
 implement than RCTs. They are also more appropriate for 'real world' evaluations, such as
 the LNZA programme evaluation, than an RCT. They provide an estimate of the effect of the
 programme but do not provide details of the mechanisms that delivered the impact or the
 context in which the interventions show impact. A mixed methods approach, with

qualitative research, is recommended to provide a full view of the programme's impact. Quasi-experimental methods include difference-in-difference analysis, Interrupted Time Series (ITS) analysis and synthetic controls.

• **Theory based methods** – These are used to identify causality where it is not possible to construct a counterfactual. They allow attribution of causality, but do not provide precise estimates of effect sizes. Methods include realist evaluation, contribution analysis and process tracing.

<u>Annex A</u> of the HM Treasury Magenta Book provides more information on the different methods available.

A more detailed feasibility study is required to identify an appropriate method. This would include detailed research on the interventions and potential methods.

6. Recommendations

The recommendations for the next steps of the LNZA impact evaluation are:

- WMCA should **agree which metrics** within the framework **should be included in the impact evaluation**
- The metric definitions should be sourced from national validated aggregate sources, where applicable
- The **metric definitions should be adapted to the specific criteria and geographies** of the programme using person level data, where accessible
- WMCA should **use existing relationships to request the metric data**. The person level data will either need to be accessed directly by WMCA or aggregated to the exact data definition by the data owner, for example the ICB
- WMCA should **commission an impact evaluation feasibility study**. The provider would review the programme delivery plan and available data to devise a robust impact evaluation method, including a final set of metrics and an appropriate research design. They would test the applicability of various methods to suggest the most feasible method to show causality.

The Strategy Unit.

The Strategy Unit

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