DATA LINKAGE SYMPOSIUM 16 Nov 2023

Translating data into action

The linkage landscape

– what data is being linked and how it is being used

Dr Trisha Johnston

A/Senior Director,

Statistical Services Branch,

Queensland Health

NCRIS National Research Infrastructure for Australia
An Australian Government Initiative

PHRN Population Health Research Network

Queensland Government

Overview

1. What data is being linked?
2. How does it all fit together – ‘the Linkage Landscape’?
3. Who is using linked data?
4. How is linked data being used to understand the patient journey and to improve health services and outcomes?

Our Role

We are responsible for linkage of data to create an evidence base to inform health system management and service delivery.

Key Clients:

- Queensland Department of Health
- Hospital and Health Services
- Researchers
- Other government departments and private agencies

Our Role

MLF

Requests

Data linkage system design – QH, Qld govt, national

Data security and information privacy

Data governance processes – design and management

Data use and disclosure legislation

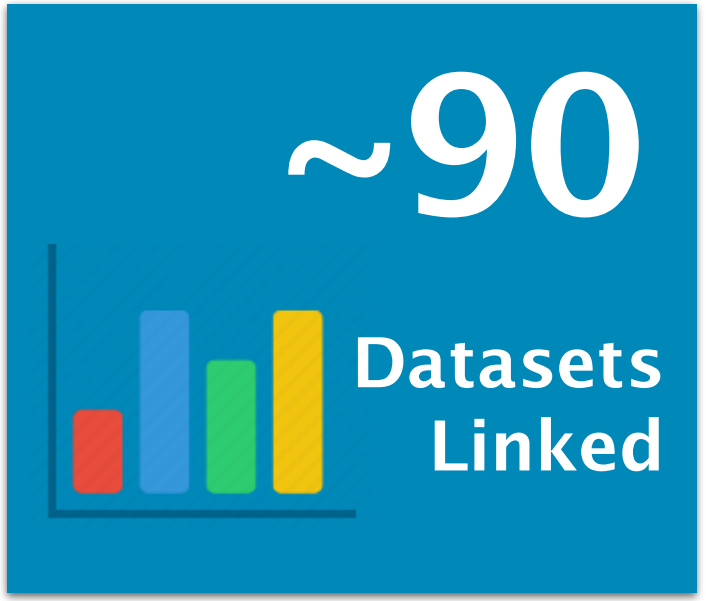
Data engineering and management

Data access - technology, security, governance

Data sharing agreements

Strategy

1. WHAT data is being linked?



Data Linkage SYMPOSIUM 2023

Queensland Health Data

QH data - MLF

Birth Notification data	⚙	✓
Consumer Integrated Mental Health Application (community mental health)	⚙	✓
Elective Surgery Data Collection (waiting list - public hospitals)	⚙	✓
Emergency Data Collection (public hospitals and Mater)	⚙	✓
Notifiable Conditions System	⚙	⏸
QLD Cancer Registry	⚙	⏳
QLD Cardiac Outcomes Registry	⚙	✓
QLD Health Admitted Patient Data Collection (private hospitals)	⚙	✓
QLD Health Admitted Patient Data Collection (public hospitals)	⚙	✓
QLD Hospital Non-Admitted Patient Data Collection (public hospitals & Mater)	⚙	✓
QLD Master Patient Index	⚙	✓
QLD Perinatal Data Collection (all births in Queensland)	⚙	✓
Specialist Outpatient Data Collection (waiting list - public hospitals)	⚙	✓
Surgery Connect (public hospitals)	⚙	✓

QH data – merged on unique IDs as required

AUSLAB Public Pathology data	⚙	✓
Clinical Costing data	⚙	✓
Geriatrics and Rehabilitation Unit Patient database (PAH)	⚙	✓
iPharmacy data	⚙	✓
Metavision ICU data	⚙	✓

QH data – routinely linked outside MLF

Notifiable Conditions System - COVID and Influenza notifications	⚙	✓

Linkage type		Status	
⚙	SSB	✓	Linking
⚙	eHQ	⏸	Paused
		⏳	Pending

Data Linkage SYMPOSIUM 2023

Queensland Health Data

Queensland Master Patient Index (QMPI) – example consuming systems

integrated electronic Medical Record	⚙	✓
Consumer Integrated Mental Health and Addiction	⚙	✓
COMPASS Nurse Navigator	⚙	✓
Emergency Department Information System	⚙	✓
Enterprise Discharge Summary	⚙	✓
ICU MetaVision	⚙	✓
Notifiable Conditions System	⚙	✓
Pharmacy Oncology Information Management Solution	⚙	✓
Queensland Radiology Information System	⚙	✓
Enterprise-Wide Liaison Medication System	⚙	✓

QH – examples of data linked by SSB for one-off linkage requests

Alcohol, Tobacco and Other Drugs (ATODS)	⚙	✓
BreastScreen Queensland	⚙	✓
Child Maltreatment data	⚙	✓
Children's Health Queensland Paediatric Palliative Care database	⚙	✓
Medical Aids Subsidy Scheme (MASS) data	⚙	✓
Metro North HHS GP referral data	⚙	✓
Monitoring of Drugs of Dependency System (MODDS) data	⚙	✓
QLD Health Healthy Hearing database	⚙	✓
QLD High Risk Foot database	⚙	✓
QLD Rheumatic Heart Disease Registry	⚙	✓
The Prince Charles Hospital Orthopaedic database	⚙	✓

Linkage type	Status
⚙ SSB	✓ Linking
⚙ eHQ	⏸ Paused
	⏳ Pending

Data Linkage SYMPOSIUM 2023

Queensland Health Data

Linkage type

- SSB
- eHQ

Status

- Linking
- Paused
- Pending

Data Linkage SYMPOSIUM 2023

Other Queensland Government data

Other QG data - MLF

Birth Registration Data	⚙	✓
Death Registration Data	⚙	✓
Queensland Ambulance Service clinical data	⚙	✓
Retrieval Services Queensland service data	⚙	✓
Road Crash data	⚙	✓

QG – example of data linked by QGSO for one-off linkage requests

Justice data	⚙	✓

QG – examples of data linked by SSB for one-off linkage requests

Child Protection data	⚙	✓
NAPLAN	⚙	✓
Children, Youth Justice and Multicultural Affairs data	⚙	✓
Queensland Coroner's data	⚙	✓
Queensland Police Service data	⚙	✓
WorkCover data	⚙	✓
Cause of Death data (coded by Australian Bureau of Statistics)	⚙	✓
Motor Accident Insurance Commission data	⚙	✓

Linkage type	Status
⚙ SSB	✓ Linking
⚙ QGSO	

Data Linkage SYMPOSIUM 2023

Other Queensland Government data

Birth Registration Data	⚙	✓
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Cause of Death data (coded by Australian Bureau of Statistics)	⚙	✓
Motor Accident Insurance Commission data	⚙	✓
Justice data	⚙	✓

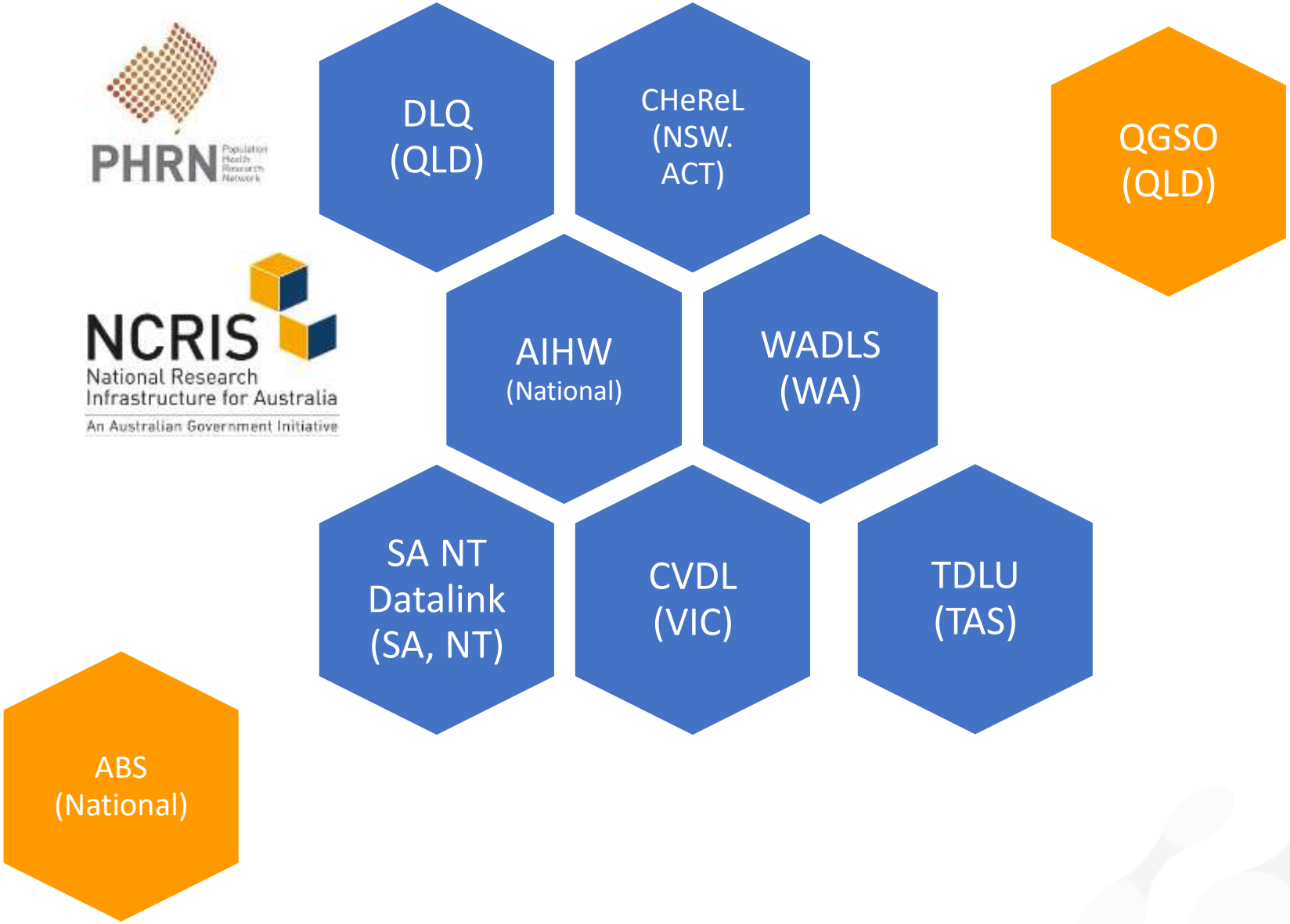
Linkage type

⚙ SSB

⚙ eHQ

Status

✓ Linking


PHRN
Population Health Research Network
NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative
DLQ (QLD)
CHeReL (NSW. ACT)
QGSO (QLD)
AIHW (National)
WADLS (WA)
SA NT Datalink (SA, NT)
CVDL (VIC)
TDLU (TAS)
ABS (National)

Commonwealth Data

Commonwealth Data linked routinely by AIHW (National Integrated Health Services Information (NIHSI))

Medicare Benefits Schedule data	⚙	✓
National Death Index data	⚙	✓
Pharmaceutical Benefits Scheme data	⚙	✓
Residential Aged Care data	⚙	✓

Commonwealth Data linked routinely by SSB

GP system data	⚙	⧗
Medicare Urgent Care Clinic data	⚙	⧗

Commonwealth Data linked for requests by AIHW or SSB (examples)

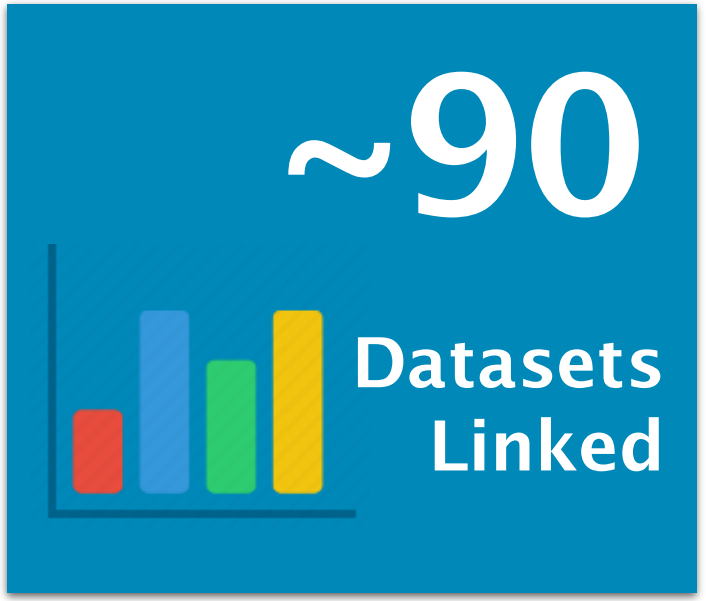
National Clinical Registries	⚙	✓
National Disability Insurance Scheme data	⚙	✓
Australia and New Zealand hip fracture registry database	⚙	✓
Australian Early Development Census	⚙	✓
Juvenile Justice National Minimum Data Sets	⚙	✓
National Diabetes Service Scheme data	⚙	✓
Australian and New Zealand Intensive Care Society (ANZICS) data	⚙	✓
Australian Stroke Clinical Registry	⚙	✓

ABS (National)

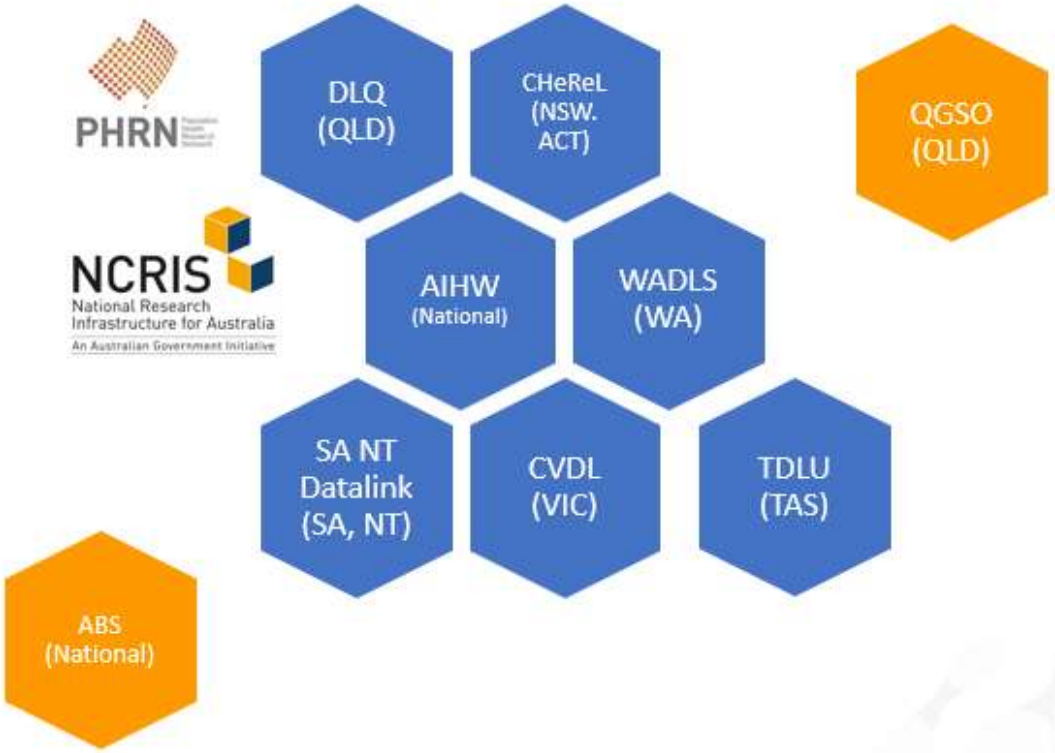
Linkage type	Status
⚙ SSB	✓ Linking
⚙ AIHW	⧗ Pending

Data Linkage SYMPOSIUM 2023

2. HOW does it all fit together? The Linkage Landscape.



The Linkage Landscape



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The Prince Charles Hospital Orthopaedic database	✓	
Notifiable Conditions System - COVID and influenza notifications	✓	
QMPI Consuming Systems*	✓	
Integrated electronic Medical Record	✓	
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Motor Accident Insurance Commission data	✓	
Justice data	✓	

GP system data	⧗	
Medicare Urgent Care Clinic data	⧗	
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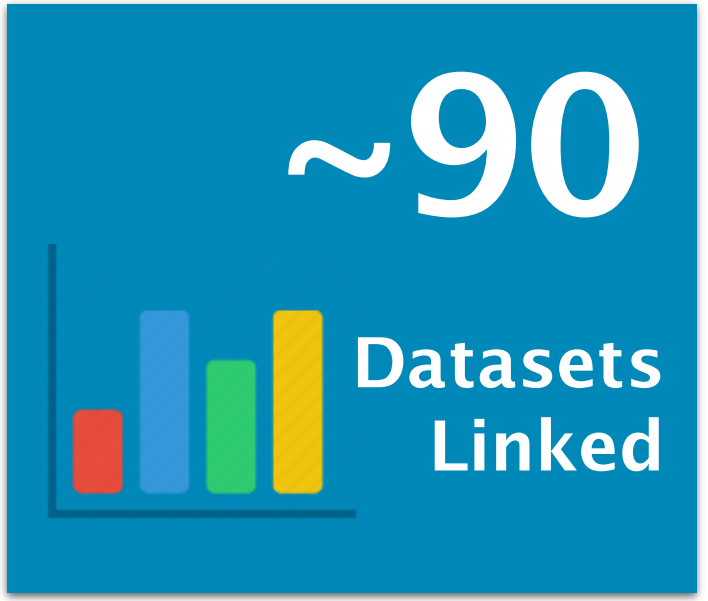
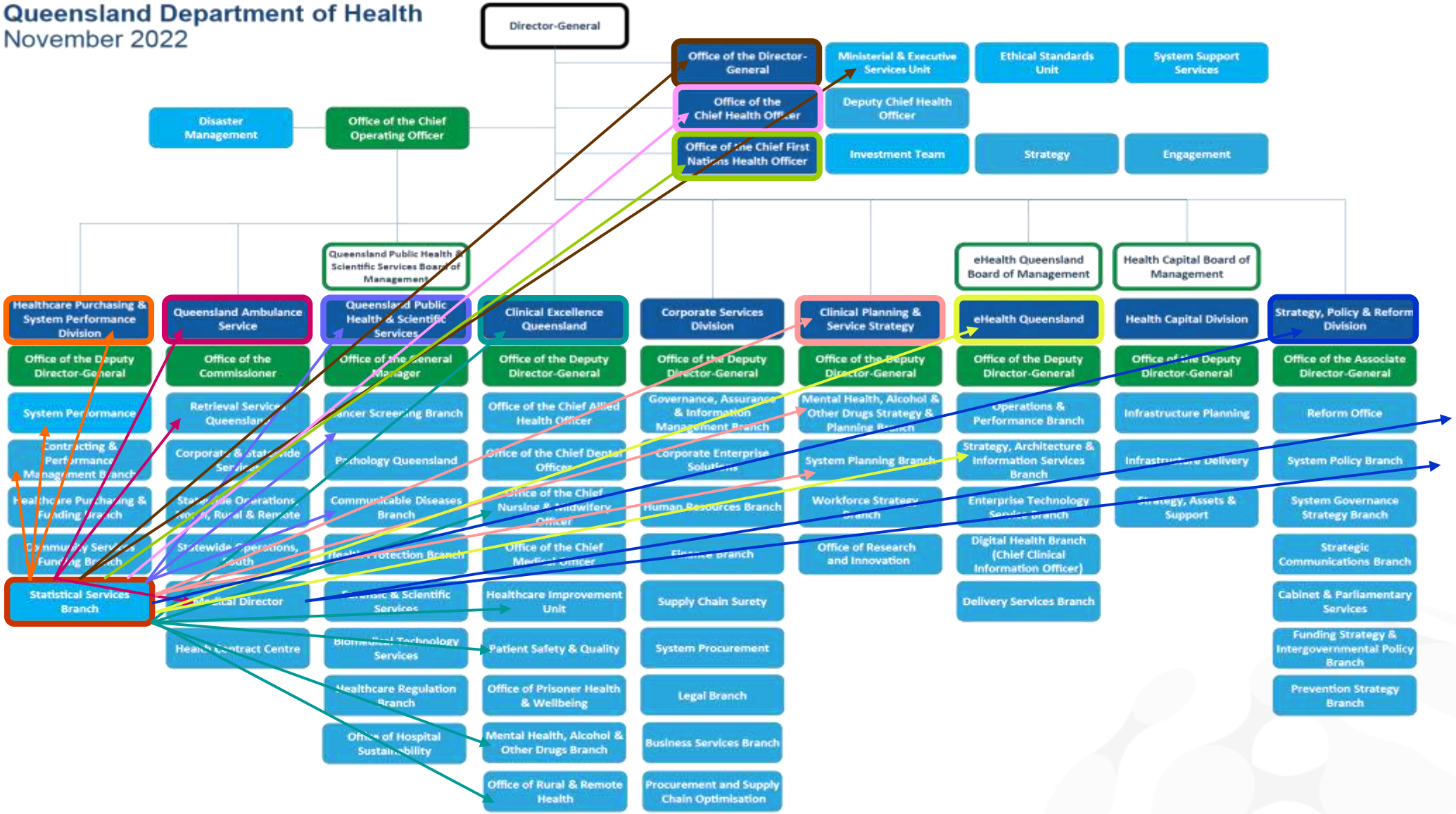
National Diabetes Service Scheme data	✓	
Australian and New Zealand Intensive Care Society (ANZICS) data	✓	
Australian Stroke Clinical Registry	✓	
Australian Immunisation Registry - COVID and influenza vaccinations	✓	

3. WHO is using linked data?



Data Linkage SYMPOSIUM 2023

SSB Data Provisioning & Linking Services – Queensland Health



Data Linkage SYMPOSIUM 2023

SSB Data Provisioning & Linking Services – Hospital and Health Services

- Beaudesert Hospital
- Cairns & Hinterland HHS
- Ipswich Hospital
- Mater Mother's Hospital
- Metro South Addiction & Mental Service
- Nambour Hospital
- Princess Alexandra Hospital
- QLD Children's Hospital
- Redlands Hospital
- Royal Brisbane & Women's Hospital
- The Prince Charles Hospital
- Wesley Hospital
- Buderim Private Hospital
- Clinical Network
- Logan Hospital
- Metro North HHS
- Metro South HHS
- Northside Holy Spirit Private Hospital
- Private Hospitals
- Redcliffe Hospital
- Rockhampton Hospital
- Sunshine Coast University Hospital
- Warwick Hospital

Children's Health Queensland Hospital and Health Service

Centre for Children's Health and Wellbeing
Healthy Kids
Free health professional development for the early childhood education and care sector

ST VINCENT'S HOSPITAL MELBOURNE

Prepared by: Statistical Reporting & Coordination, Statistical Services Branch, 02 March 2021 Hospital and Health Services by recognised public hospitals and primary health centres, as at October 2020

Data Linkage SYMPOSIUM 2023

SSB Data Provisioning & Linking Services – Government

Australian Government
Australian Institute of Health and Welfare

QUEENSLAND GOVERNMENT
Department of Communities, Child Safety and Disability Services

QUEENSLAND AMBULANCE SERVICE

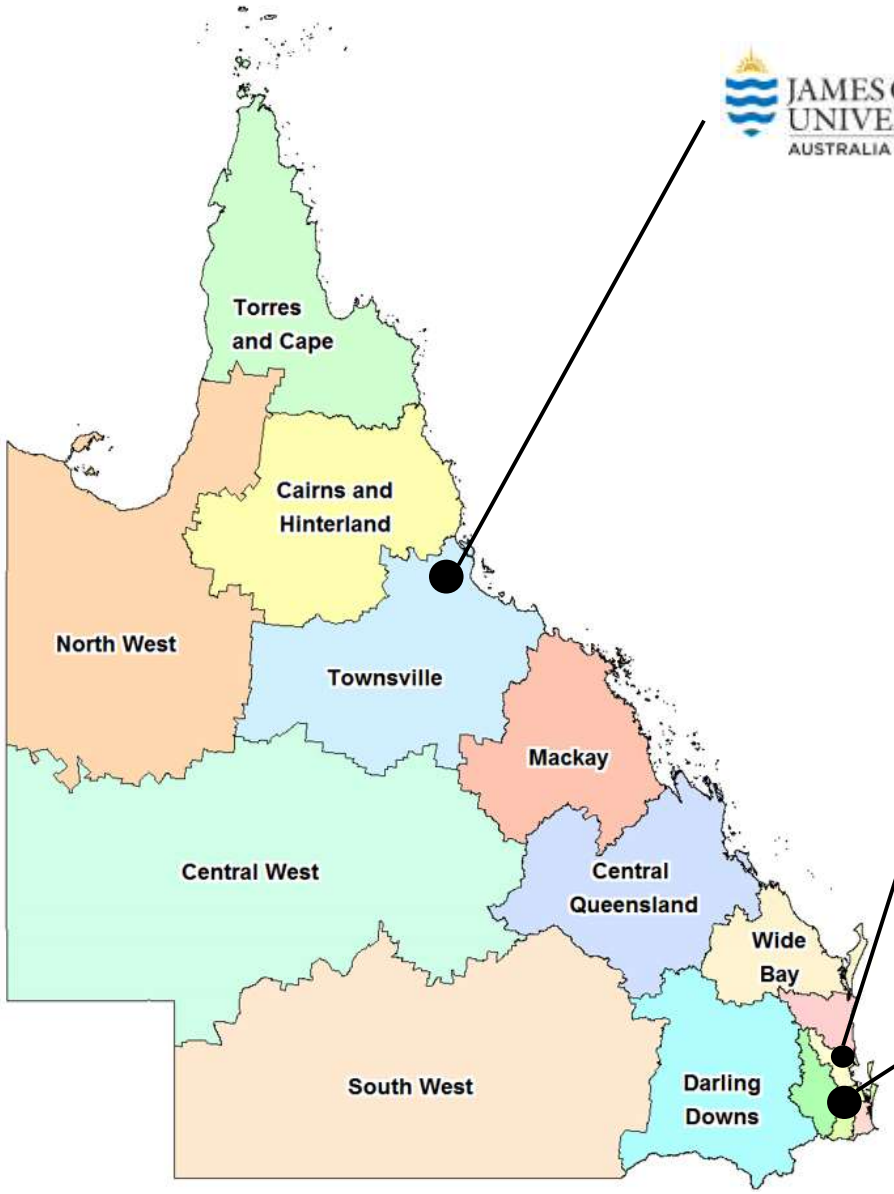
Defence & Veteran Suicide Royal Commission

Queensland Government
Medical Aids Subsidy Scheme

Queensland Government
Department of Transport and Main Roads

Data Linkage SYMPOSIUM 2023

SSB Data Provisioning & Linking Services – Tertiary Institutions



James Cook University Australia

University of the Sunshine Coast

Griffith University Queensland Australia

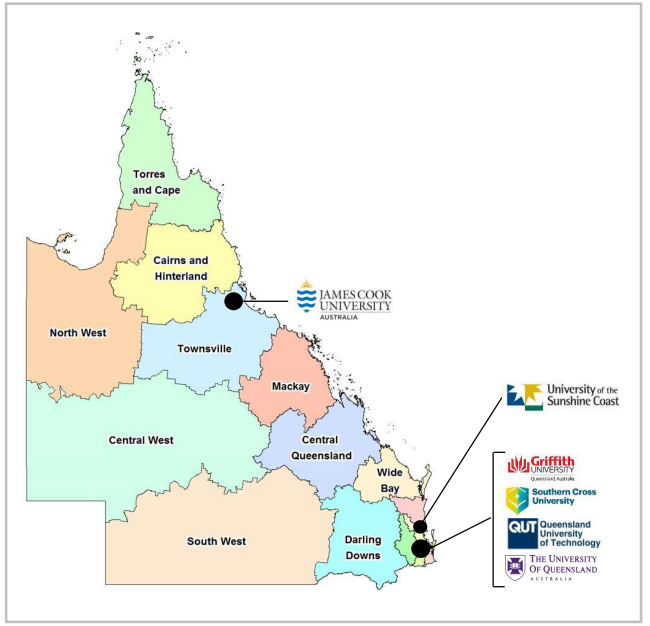
Southern Cross University

QUT Queensland University of Technology

The University Of Queensland Australia

Data Linkage Symposium 2023

SSB Data Provisioning & Linking Services – Tertiary Institutions



Curtin University
EDITH COWAN UNIVERSITY
THE UNIVERSITY OF WESTERN AUSTRALIA

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

Flinders University
ROYAL ADELAIDE HOSPITAL
THE UNIVERSITY of ADELAIDE
University of South Australia

DEAKIN UNIVERSITY AUSTRALIA
LA TROBE UNIVERSITY
MONASH University
SWINBURNE
THE UNIVERSITY OF MELBOURNE

UNIVERSITY of TASMANIA

UNIVERSITY OF CANBERRA

MACQUARIE University
UNSW SYDNEY
THE UNIVERSITY OF SYDNEY
UTS

Data Linkage SYMPOSIUM 2023

SSB Data Provisioning & Linking Services – Medical Research Institute

QCMHR

IN THIS TOGETHER parkinson's QUEENSLAND

Cancer Council Queensland

Mater Research

JAMIESON TRAUMA INSTITUTE

pathology queensland

menzies school of health research

TRI TRANSLATIONAL RESEARCH INSTITUTE AUSTRALIA

IUIH institute for urban indigenous health

MENZIES HEALTH INSTITUTE QUEENSLAND

Griffith UNIVERSITY

THE UNIVERSITY OF QUEENSLAND AUSTRALIA

ISSR Institute for Social Science Research

CP Register Queensland

HSR Health Services Research

QUT ihbi Institute of Health and Biomedical Innovation

QIMR Berghofer Medical Research Institute

Data Linkage SYMPOSIUM 2023

QPQC Queensland Paediatric Quality Council

Australian Red Cross Lifeblood

cancer alliance queensland

Partnership qccat qcr

SSB Data Provisioning & Linking Services – Medical Research Institute

Charles Darwin University Australia

Molly Wardaguga Research Centre – The Best Start to Life

Royal Australasian College of Surgeons

SAHMRI – South Australian Health & Medical Research Institute

hoi – Health Outcomes International

NHMRC Clinical Trials Centre

The picture can't be displayed.

Biointelect

Data Linkage Symposium 2023

PHRN – Population Health Research Network

University of Tasmania Menzies Institute for Medical Research

Garvan Institute of Medical Research

The George Institute for Global Health

Breast Cancer Network Australia

Cancer Council Victoria

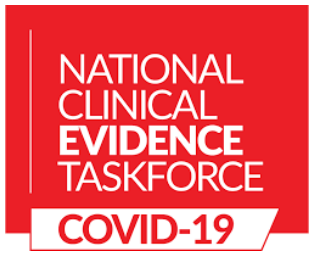
murdoch children's research institute

BioGrid – Connecting health information

AuSCR – Australian Stroke Clinical Registry

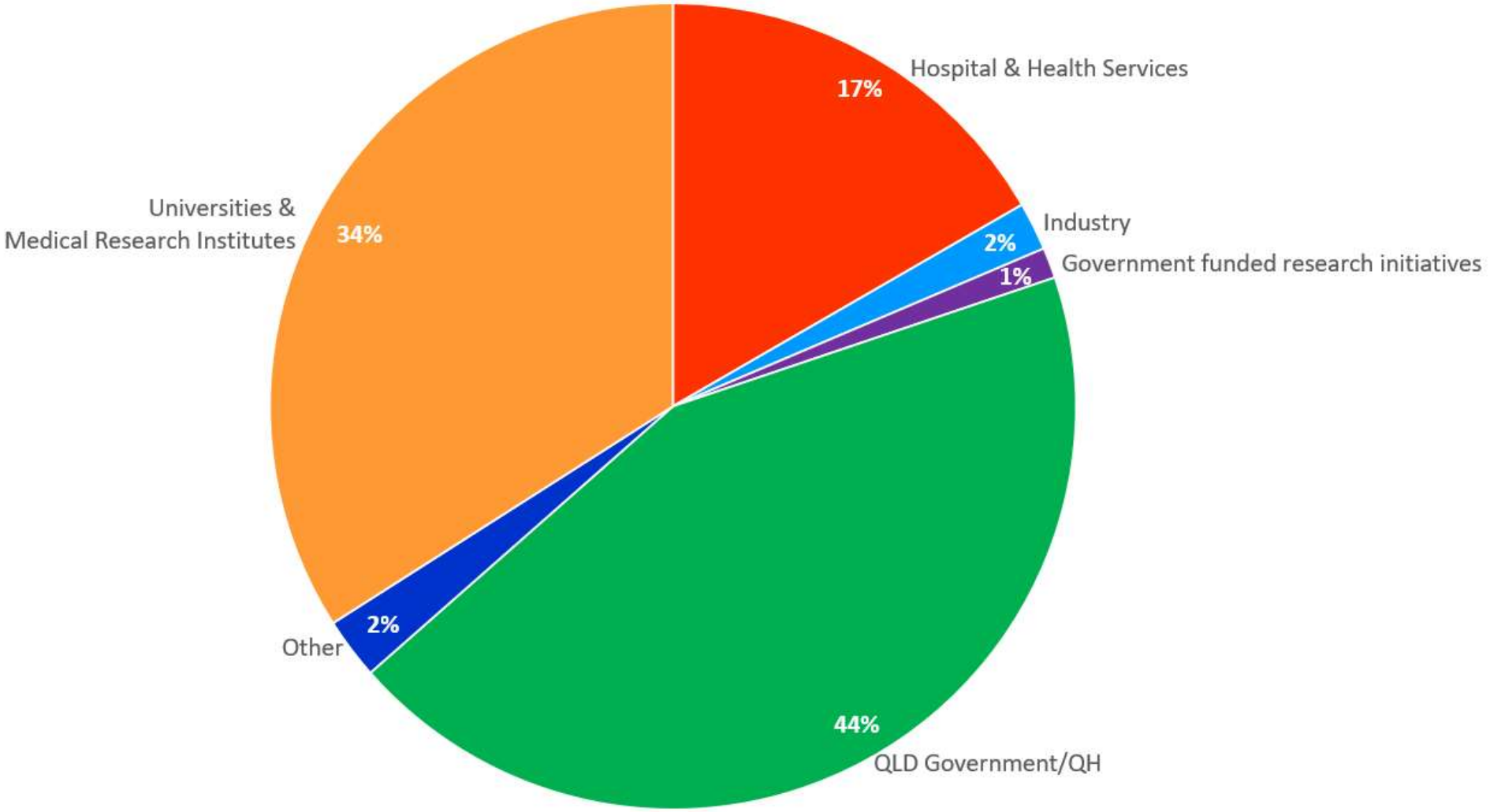
scleroderma australia

SSB Data Provisioning & Linking Services – Other



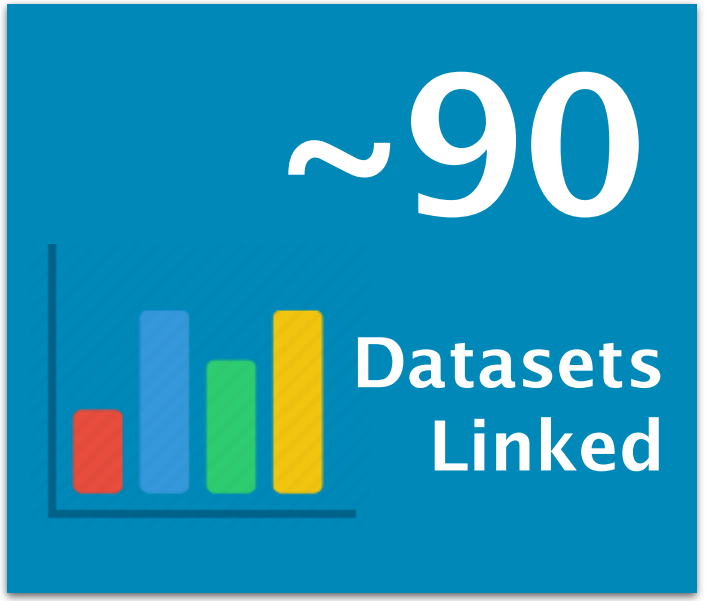
SSB Data Provisioning & Linking Services

Organisations SSB Offers Data Provisioning & Linkage Services



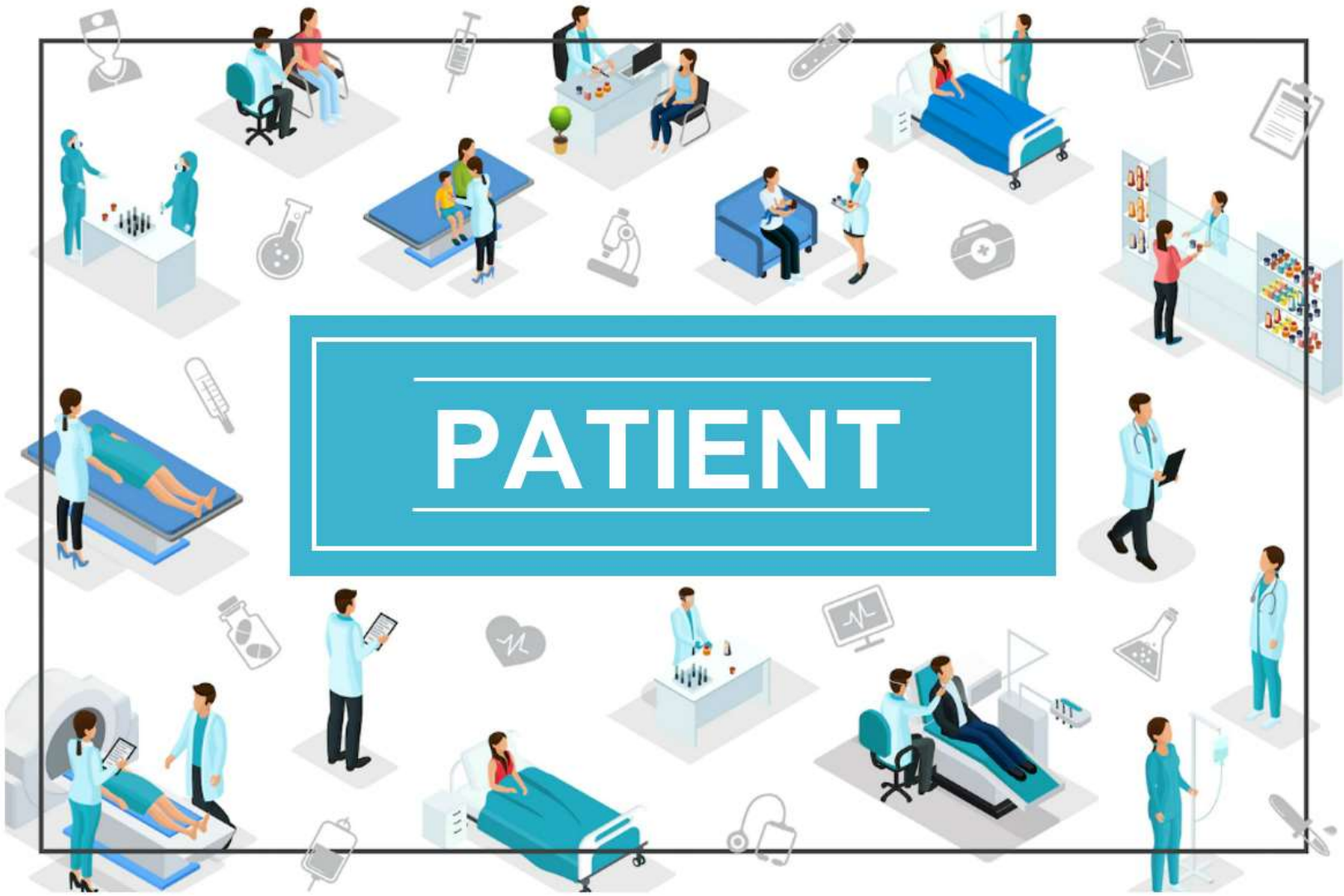
Data Linkage SYMPOSIUM 2023

4. How is linked data being used?



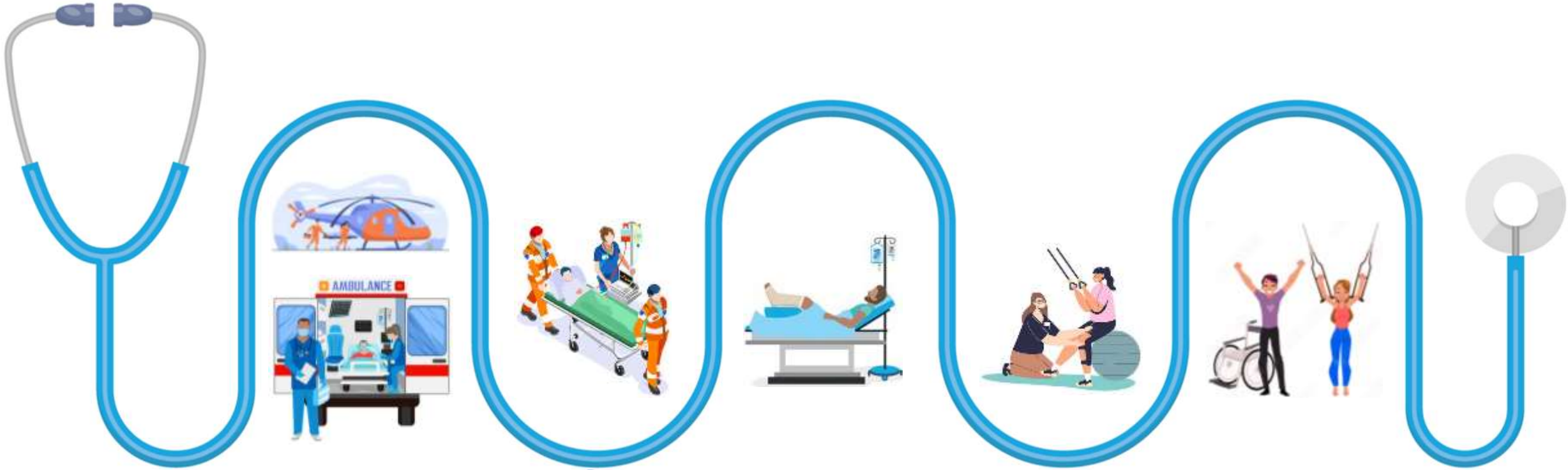
Data Linkage SYMPOSIUM 2023

Understanding the Patient Journey



Data Linkage SYMPOSIUM 2023

Understanding the Patient Journey



1

First responder Car e

2

Emergency Department presentation

3

Hospital Admission – inc. across episodes and transfer between Hospitals, emergency surgery, ICU admission

4

Rehabilitation – inpatient/ outpatient clinic/private service providers

5

Patient recovery

Data Linkage SYMPOSIUM 2023

Understanding the Patient Journey

6

Future independent episodes in public and private hospitals

7

Emergency Department presentations

8

Primary care

9

Testing

e.g. Public and private pathology, scans etc.

10

Treatments

e.g. Medications, allied health, surgery, chemotherapy

Understanding the Patient Journey

Theograph Visualising a Patient's Care Contacts

Source: A 10-year story: visualising patient journeys | Nuffield Trust

Understanding the Patient Journey

- Person-level data means we can combine information:
  - from different service settings – eg health and human services
  - relating to an individual over time to look at e.g. readmissions or deaths after hospital discharge
  - across public and private hospital settings
  - from different routinely collected sources to enable improved case enumeration or to add additional details about a cohort
  - to accurately estimate costs and assess impact of models of care

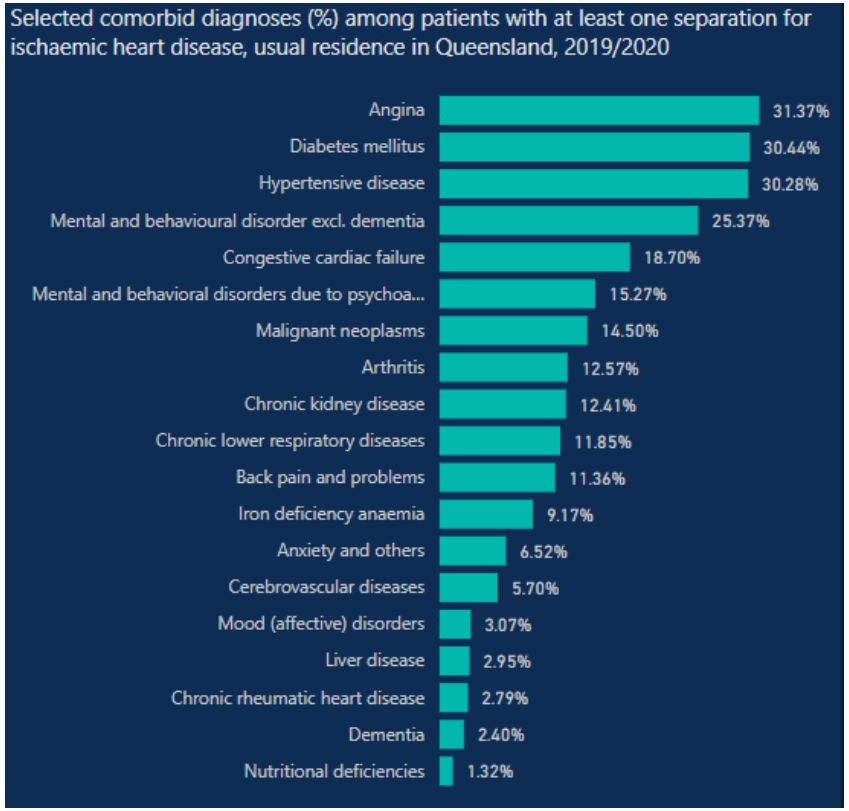
Understanding the patient journey

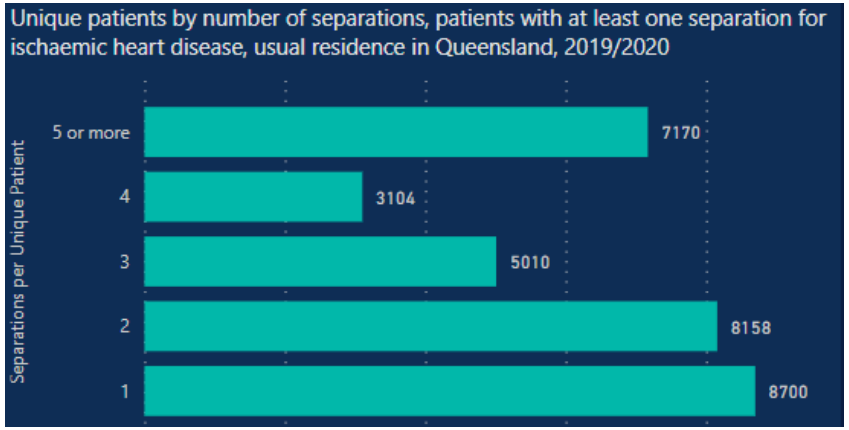
- Creating deidentified data repositories and automated reports that combine data from multiple sources – e.g. NIHSI, COVID registry, NDDA, congenital anomaly repository, Integrated Patient Journey projects, cross-episode/collection data validation reports, chronic disease dashboard

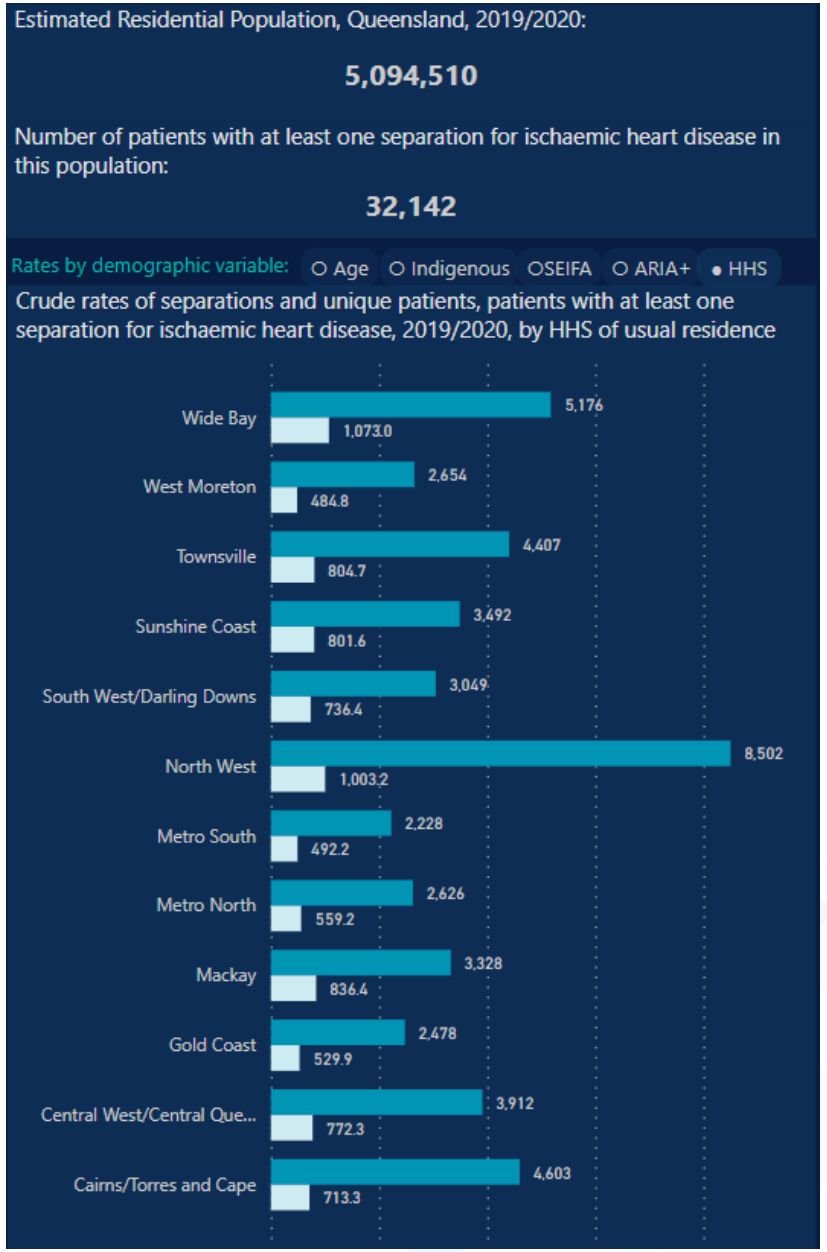
- Use for monitoring of service quality and patient safety, funding models, monitoring and evaluating services, joint Primary Health Network and Hospital and Health Service planning

- Use for predictive analytics to target patient care

Understanding the Patient Journey

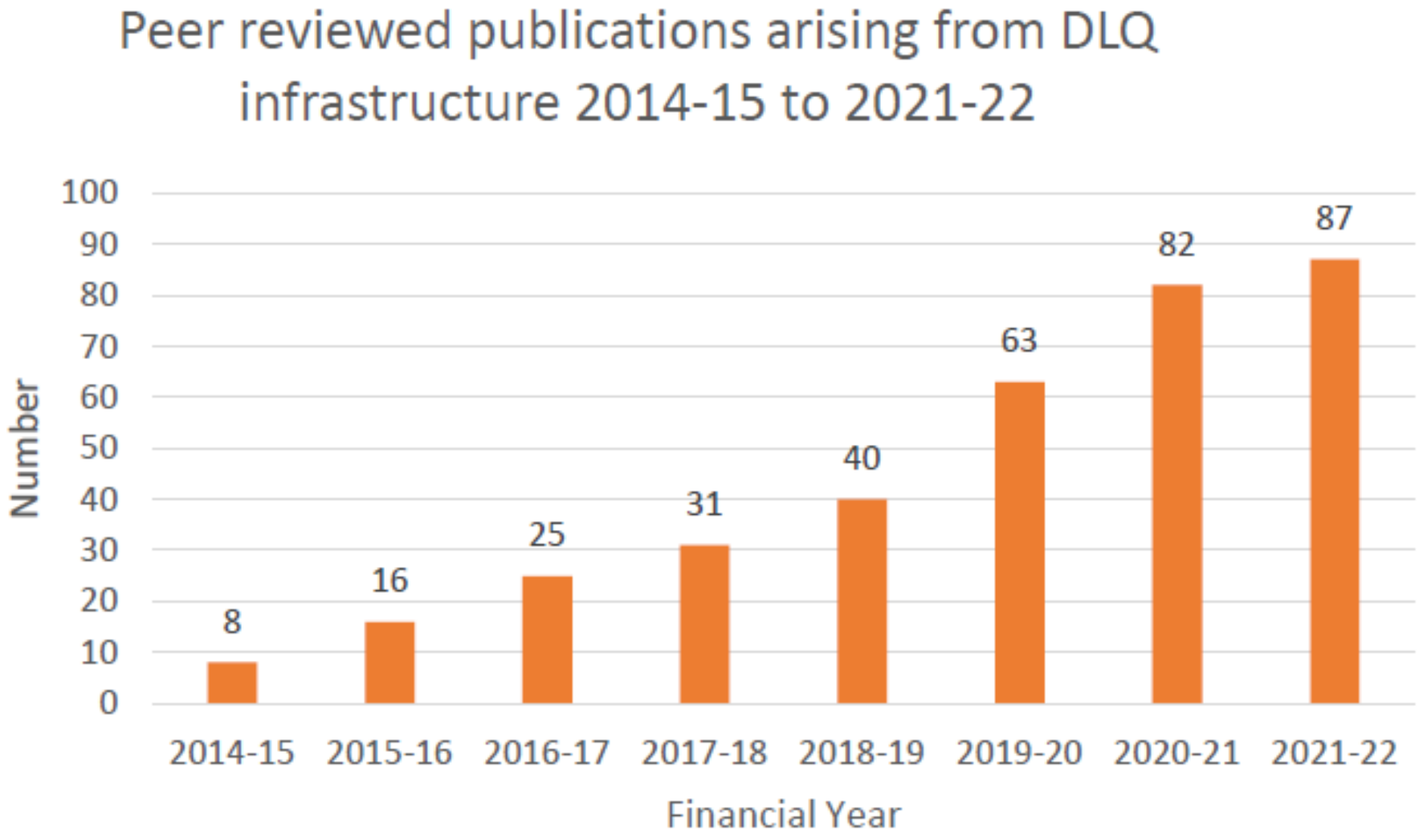






Data Linkage SYMPOSIUM 2023

Peer reviewed publications from SSB linked data



Data Linkage SYMPOSIUM 2023

What's next?

- Focus on national data linkage projects to understand patient journeys across intersections of service provision: NDDA, NIHSI, primary care linkage and National Linkage System projects.

- Working on solutions for more efficient, secure delivery of linked data.

- Review of linkage service to understand how we can best meet expanding requirements for linked data.

Thank you

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Dr. Trisha Johnston

A/ Senior Director

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