Statistical Services Branch – Data Linkage update

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Queensland Government

Acknowledgement of Country

I would like to acknowledge the Traditional Custodians of the lands on which we meet today, and pay my respects to their Elders past, present and emerging. I extend that respect to Aboriginal and Torres Strait Islander peoples attending today.

What is data linkage?

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- Unique person identifiers are not often available within or across siloed data collections in Queensland and Australia
- Data linkage is used to identify persons across siloes
- Uses person-level identifying information (such as name, date of birth, address) to determine which records within a data source, or between multiple data sources, pertain to a particular individual.

Probabilistic linkage

- Uses the concept of probability to produce a composite score based on weighted values for each element used for linkage
- Relies on completeness and quality of identifiers (names, date of birth, address)
- Not all identifiers have to be available to determine a match – probabilistic linkage is more resilient to data quality challenges than alternative methods

Linkage in Queensland Health

- Funded by ongoing National Collaborative Research Infrastructure Strategy (NCRIS) funding and Queensland Government funding since 2011

- Queensland Department of Health and Queensland Ambulance Service recurrently funds positions and various in-kind support in addition to NCRIS funds to provide an ongoing data linkage service

PHRN

DLQ (Qld)

CHeReL (NSW, ACT)

QGSO (Qld)

NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative

AIHW (National)

WADLS (WA)

SA NT Datalink (SA, NT)

CVDL (Vic)

TDLU (Tas)

ABS (National)

Our role

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

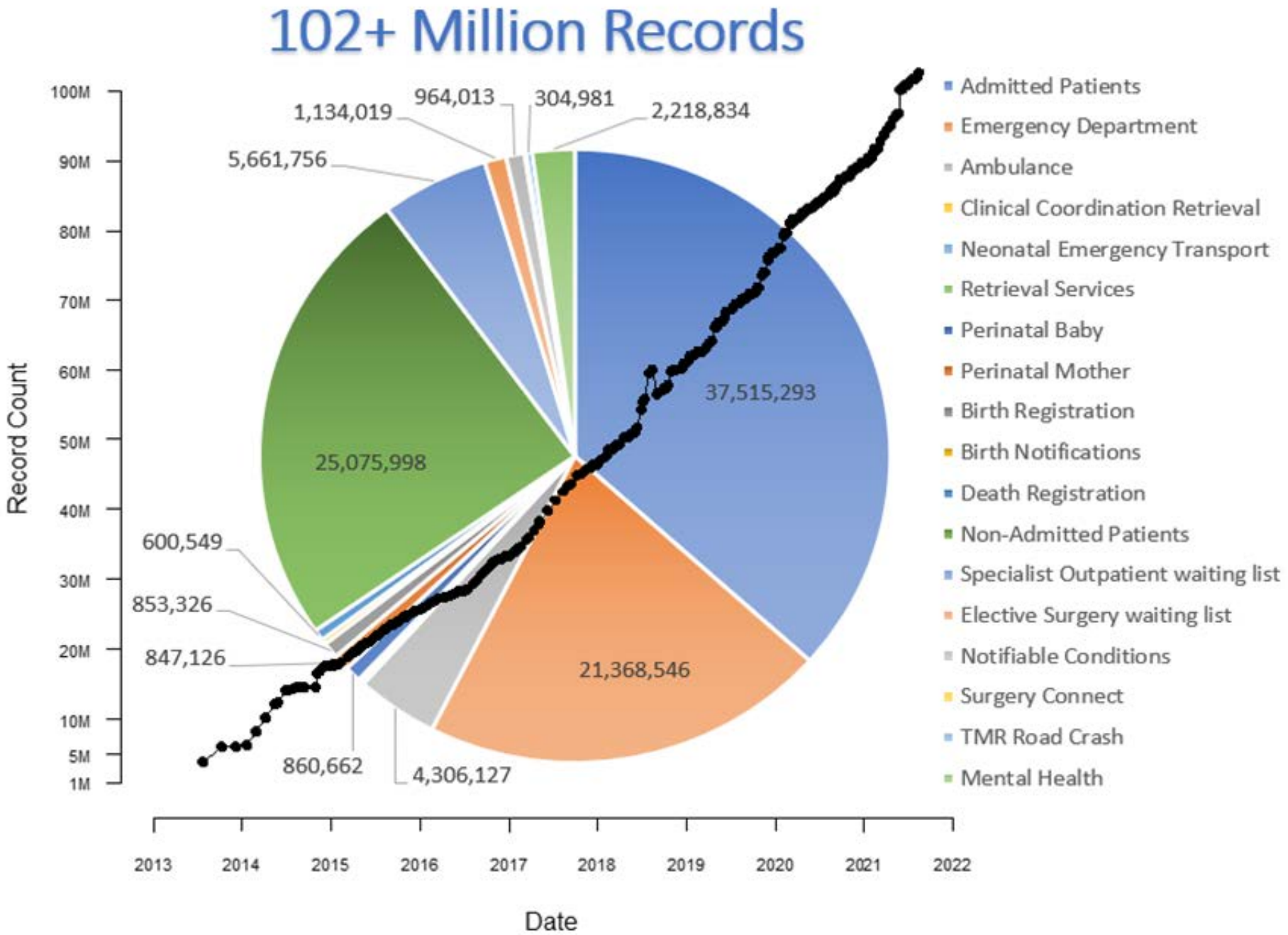
Key clients:

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

Linkage in Queensland Health

- Production Linkage – creation of a Master Linkage File (MLF) with enduring linkages between core health data collections which is maintained in near-real time. The MLF currently includes over 112M records.
- Request linkage – provision of data from the MLF and custom linkage for ad hoc research and government requests
- Client services – supporting clients to access the data they need to support decision-making and research

Master Linkage File (MLF)



Queensland Health MLF

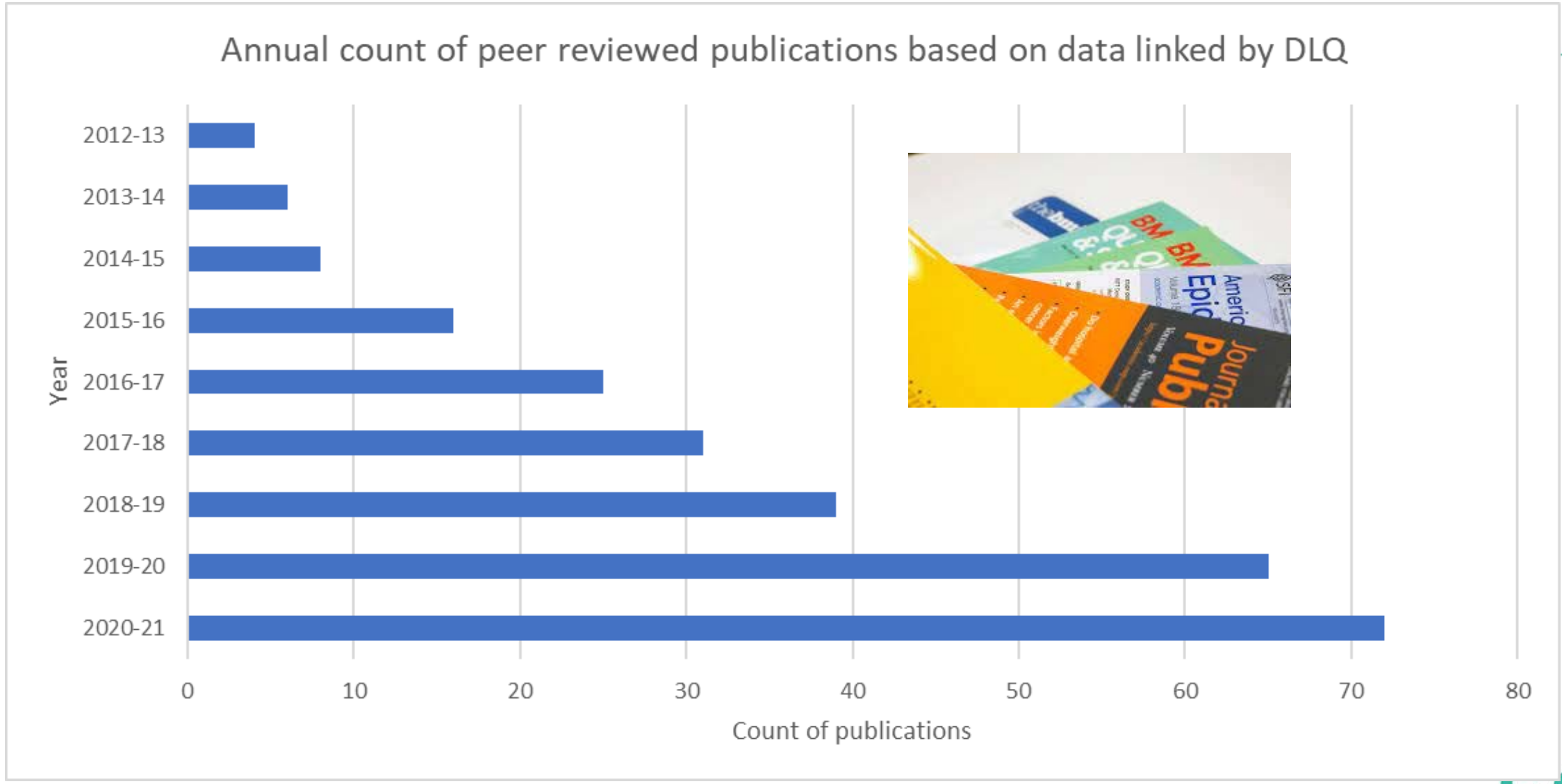
- Routinely brings together information from multiple data collections and registries in near real time
- Groups together event-level records belonging to the same person (identified by an enduring linkage key)
- Client requirements have determined MLF inclusions
- Encrypted MLKs provided directly to approved QH users for evidence-based policy, service planning, management, monitoring and evaluation
- MLF is used as the basis for ~80% of linkage requests and enables much faster response times

Linkage requests

Linkage requests received

Linkage requests completed

Research use of linked data



Use of linked data in Queensland Health

- Person-level data means we can combine information:
  - from different service settings such as ambulance, hospital admissions and non-admitted patient services
  - relating to an individual over time such as 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 for models of care

Examples of use of linked data in Queensland Health

- Extensively used for COVID health service management (contact, surveillance, compliance, planning, evaluation)
- Ongoing operation of the Advancing Kidney Care Information Stream
- Patient safety KPIs for monitoring of service quality and patient safety
- Monitoring and evaluating QAS service delivery
- Cost recovery for services funded by Commonwealth Government and other sources

Examples of use of linked data in Queensland Health

- Use for predictive analytics to target patient care for integrated care programs
- Identification of deceased patients prior to patient follow up contact and for supply to HHSs for waiting list and patient master list management
- Creating data repositories and automated reports that combine data from multiple sources – eg COVID case information, chronic disease dashboard, congenital anomaly repository and dashboard, cross-episode/collection data validation reports.

What's new?

- QH datasets added to MLF – Community Mental Health, more frequent linkage of QAS data
- Linking other government data – Queensland Department of Transport and Main Roads, Australian Early Development Census and Australian Immunisation Register
- Data Linkage Framework document updated

What's new?

- Application for Integrating Authority accreditation
- Work towards solutions for more efficient, secure delivery of linked data
- Working with Australian Institute of Health and Welfare and other state-based linkage units on more efficient ways of using existing linked data for cross-jurisdictional projects

-CEQ Engage

-Client Services Team

-Presenters

-Clients and supporters

-Linkage Team

-Please submit questions/comments via the chat

-After each presentation

-Email us at HSBresearch@health.qld.gov.au

1:10 **Strategic vision for data access and use to inform health service delivery in Queensland**
Professor Keith McNeil, Assistant Deputy Director-General, Chief Medical Officer (Prevention Division) and Chief Clinical Information Officer, Queensland Health

1:20 **Requesting linked data from Queensland Health**
Ann Harrington, Principal Linkage Officer, Client Services, Statistical Analysis and Linkage Unit, Statistical Services Branch, Queensland Health

1:30 **Linkage for ongoing monitoring and reporting about Queensland COVID cases**
Catherine Taylor, Principal Linkage Officer and Dr Dale Steinhardt, Senior Linkage Officer, Statistical Analysis and Linkage Unit, Statistical Services Branch, Queensland Health

1:45 **Pre-hospital retrieval pathways and processes for road trauma patients**
Dr Robert Andrews, Senior Research Fellow, School of Information Systems, Queensland University of Technology

2:10 **RN4Cast project: Evaluation of the impact of Nurse to Patient Ratio increases in Queensland hospitals**
Distinguished Professor Patsy Yates, Executive Dean, Faculty of Health and Director, Centre for Healthcare Transformation, Queensland University of Technology

2:35 **ATHENA COVID-19 Study**
Professor Kim Greaves, Director of Cardiac Research and Consultant Cardiologist, Sunshine Coast University Hospital, Queensland Health

SSB