



HEADLINED BY -  databricks

**Welcome to The NHS Data  
Conference!**



3rd October 2023  
10:50am – 3pm  
Virtual Event





HEADLINED BY -  databricks

**Welcome to The NHS Data  
Conference!**



3rd October 2023  
10:50am – 3pm  
Virtual Event

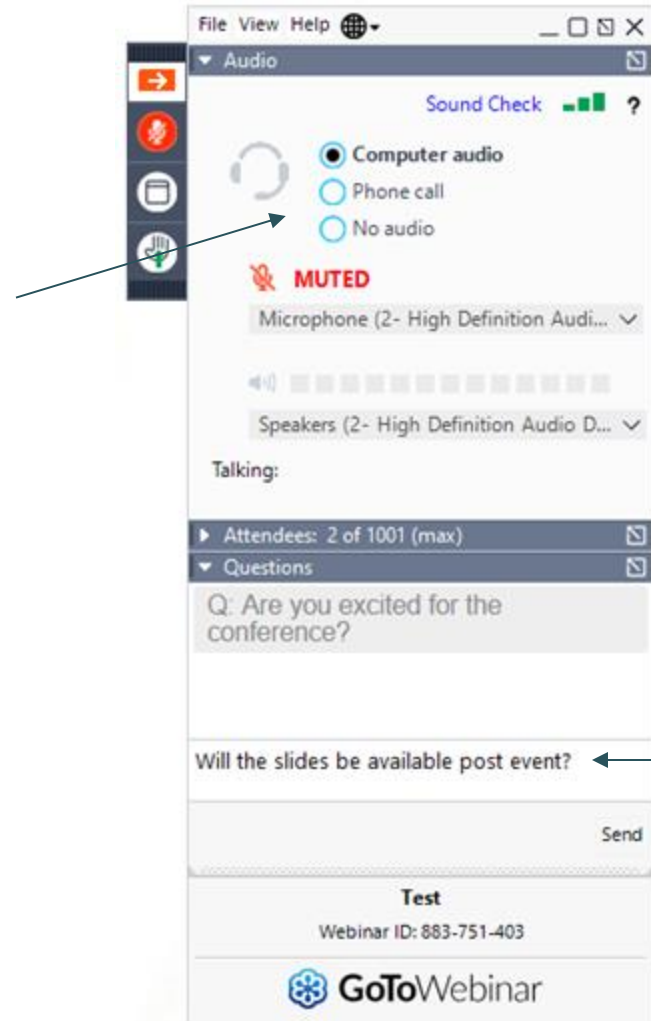


# The NHS Data Conference 2023



HEADLINED BY -  databricks

Make sure you are connected via Computer Audio for the conference. You can test your audio via the 'Sound Check' tab.



If you have any questions or comments for Speakers across the day, please expand the Questions Section on the GoToWebinar panel. You will not be able to see each others questions.



HEADLINED BY -  databricks

# The NHS Data Conference 2023



Now viewing Rhea Okine's screen

Talking:

QUICKPOLL

**Would you be interested in attending the next conference in this series?**

Please select one:

- Yes
- No

Submit

Click on **one** of the multiple choice options, then press 'Submit'

Now viewing Rhea Okine's screen

Talking:

QUICKPOLL

**Would you be interested in attending the next conference in this series?**

Please select one:

- Yes
- No

Your poll answers have been submitted.

Once **Submitted** your screen will look like this



## Speaking Now...



HEADLINED BY -  databricks



**Chris Fleming**  
Partner - Public Digital



**Heidi Uchiyama**  
Principal Consultant -  
Public Digital

# What can the NHS learn from the management of city data?

3 October 2023

Who we are

**Public Digital** is a specialist digital transformation consultancy.

What we  
have achieved

**We have transformed** the capabilities and ways of working of businesses and governments around the world.

What we do

**We help leaders** set the institutional conditions to deliver change at scale.



## Who we are

We are a global multidisciplinary team of 100+ technologists, designers, product managers, user researchers, policy professionals, and bureaucracy-hackers.



# Who we are



## Chris Fleming

Partner at Public Digital

Chris leads the healthcare practice at Public Digital. Earlier in his career he delivered a number of national platforms for the NHS including the [NHS App](#) and [111 online](#). He also led the delivery of new services to support the UK's coronavirus response including the NHS [isolation note](#), and the coronavirus [vaccine trials registry](#).

Prior to his NHS experience, Chris worked in several UK government departments, as well as the [Government Office for Science](#), where he was Head of Data & Analytics. In this role he helped shape a data science strategy for government raising capability and expertise across the government analytical professions.



## Heidi Uchiyama

Principal Consultant at Public Digital

Heidi worked as a civil servant for the Peruvian Government's Innovation Lab where she was part of the [gob.pe](#) platform founding team, working closely with ministers and senior officials in managing and coaching delivery teams in order to improve user experience for government services.

Heidi has been a consultant for top financial and public organizations in South America, and a teacher of user experience and service design [courses](#) for post-graduate students. Recently, her main focus has been helping organisations transform culture, develop team skills, and change processes.

**What are some of the  
challenges cities face today?**

*“What’s more important than the number of datasets, is the methodology of **how you run purpose-led data projects around the data needs that have emerge from teams**”*

***Theo Blackwell MBE***



Theo Blackwell was appointed Chief Digital and Data Officer for London in 2017.

## Cities - Main data challenges

### 1 Not meeting user needs

---

- No use of human centred design methodology when building data services.
- Initiatives with no follow-up or success metrics.

### 2 Data focus on transparency only

---

- Publishing data for regulatory purposes only
- (Particularly in Latam) Strong focus on data transparency for anti-corruption initiatives

### 3

#### Work in silos

---

- Data living in people's computers on spreadsheets
- No means of collaboration or sharing
- No data governance models

### 4

#### Being reactive, not strategic

---

- Decisions are made and data is used to justify them
- Real time data rarely exists and is usually gathered on a need-to-know basis

**Do these challenges sound  
familiar to you?**

**Which one resonates the most?**

# **Our work with cities**



## Our work with cities

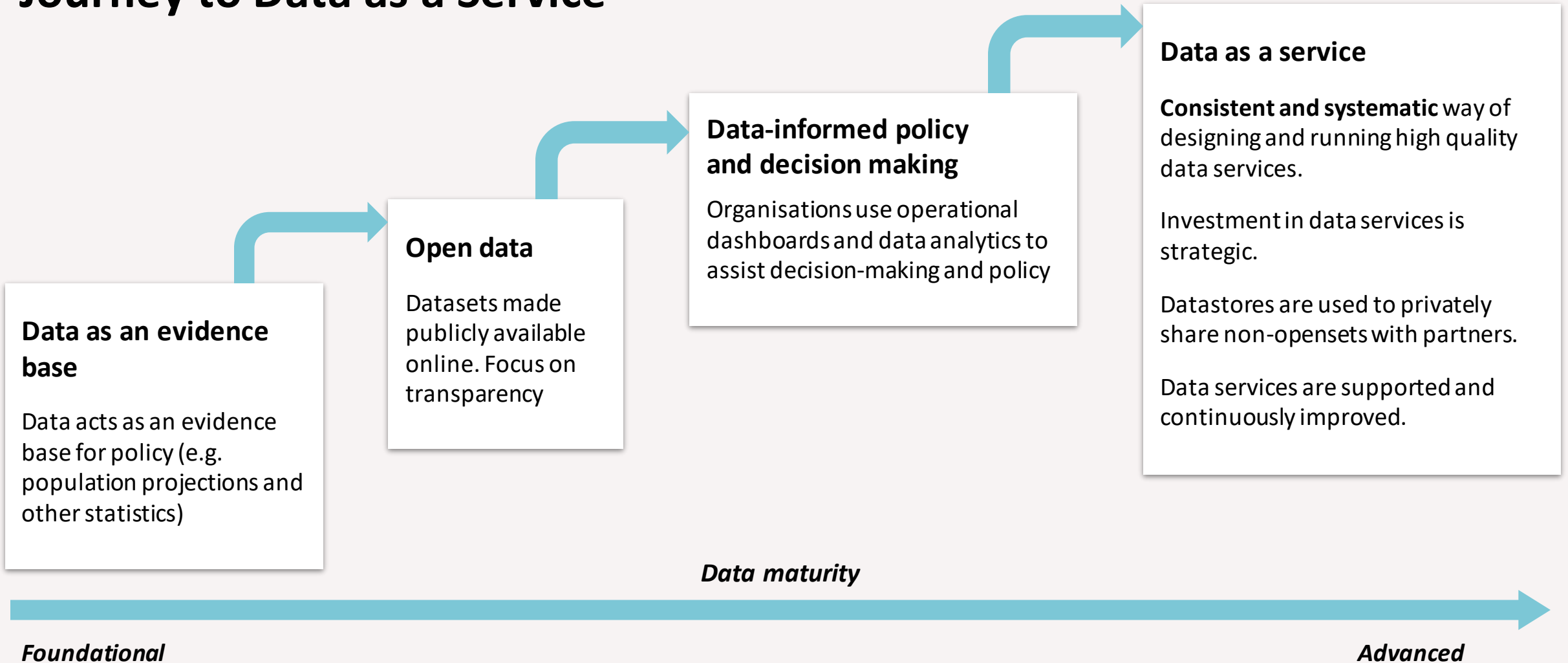
As part of the **Bloomberg Philanthropies City Data Alliance program**, which seeks to help 100 cities mature their data practices in 3 years, we have been using the Data as a Service approach to support 5 cities in their journeys to:

starting small by creating a beacon data service

building a strong community of practice

codifying good practices through a Data Service Standard

# Journey to Data as a Service



# **Key takeaways and questions for NHS leaders**

## Data-driven integrated care

### Direct care

- Single shared care record which sits across all health and care settings and is interoperable with clinical workflow systems.
- Safe cross-organisation care delivery.
- Remote and assistive technology
- Patient communication

### Population health and proactive care

- Whole population approaches to understanding needs of different groups and communities
- Information sharing to enable providers to monitor, understand and influence how interventions impact on outcomes
- Screening/prevention, case finding, proactive care, decision support

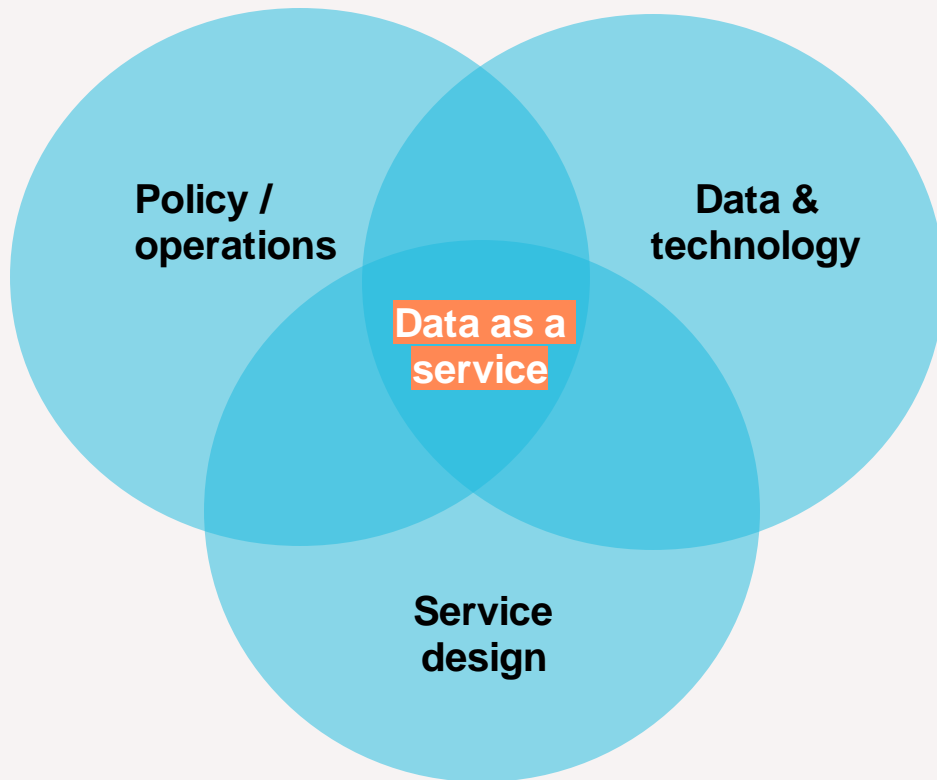
### Planning, oversight and service improvement

- Understand future drivers for change across the health economy and strategic redesign and realignment of services to meet population health needs.
- Population based financial planning, clinical quality improvement and place-based budget management

### Research and innovation

- Understand and address common ICS needs and future drivers, pool data about small cohorts, use clinical and wider research to inform understanding of risk for different population groups
- Clinical trial recruitment and follow-up.

## Questions for NHS data leaders



1. Can you define your data services and list them out clearly?
2. Do you understand your users and their needs?
3. Are your services simple to find and use?
4. Do you have a multidisciplinary team in a place that can work as one with clinical and operational colleagues?
5. Do you iterate and improve your most popular or important data products on frequent cycles?
6. Does your service protect users' privacy, and are you assured there are no negative ethical impacts?
7. Are you showing your working (by publishing source code wherever possible)?
8. Are your teams using and contributing to open standards, common components and patterns?

Source: Adapted from Greater London Authority Data Service Standard, co-developed with Public Digital

# How to contact us

Website

<http://public.digital>

Email

[heidi@public.digital](mailto:heidi@public.digital) // [chris@public.digital](mailto:chris@public.digital)

Twitter

[@publicdigitalHQ](https://twitter.com/publicdigitalHQ)

public.digital



HEADLINED BY -  databricks

# Up Next...





## Speaking Now...



HEADLINED BY -  databricks



**Adam Whiting**  
Deputy Director of Digital  
and Business Intelligence  
(Deputy CIO) - Essex  
Partnership University NHS  
Foundation Trust (EPUT)



**Paul Brady**  
Principle  
Consultant – Data  
& Analytics -  
Trustmarque



**Adrian Woolmore**  
Head of Data and  
Analytics -  
Trustmarque





HEADLINED BY -  databricks

## Speaking Now...



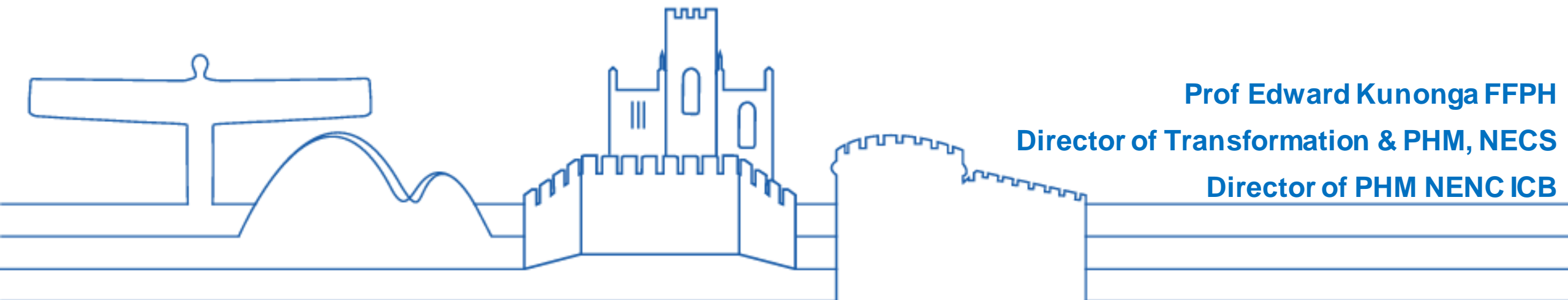
**Professor Edward Kunonga**  
Director of Transformation and  
Population Health Management -  
NECS and NENC ICB



**North East and  
North Cumbria**

# **Data Saves Lives –Using experiences and reflections from the North East and North Cumbria**

**NHS DATA conference 2023  
2/10/23**



**Prof Edward Kunonga FFPH  
Director of Transformation & PHM, NECS  
Director of PHM NENC ICB**

# What is Population Health Management?

## Population Health...

... is an approach aimed at improving the health of an entire population.

It is about improving the physical and mental health outcomes and wellbeing of people, whilst reducing health inequalities within and across a defined population. It includes action to reduce the occurrence of ill-health, including addressing wider determinants of health, and requires working with communities and partner agencies.



## Population Health Management...

...improves population health by data driven planning and delivery of proactive care to achieve maximum impact.

It includes segmentation, stratification and impactability modelling to identify local 'at risk' cohorts - and, in turn, designing and targeting interventions to prevent ill-health and to improve care and support for people with ongoing health conditions and reducing unwarranted variations in outcomes.

## Population Health Management is about:

- Reducing health inequalities by taking action
- Using data-driven insights and evidence of best practice to inform targeted interventions to improve the health & wellbeing of specific populations & cohorts
- The wider determinants of health, not just health & care
- Making informed judgements, not just relying on the analytics
- Prioritising the use of collective resources to have the best impact
- Acting together – the NHS, local authorities, public services, the VCS, communities, activists & local people. Creating partnerships of equals
- Achieving practical tangible improvements for people & communities



# Achieving your ambition and vision – a PHM programme approach

## ICS

- The NECS Director of PHM can provide **strategic support at board level** to ensure PHM is embedded at all levels and that PHM acts as an enabler for achieving the ICS vision.
- Ensure a systematic approach to embedding PHM spanning the 3 pillars for effective PHM (infrastructure, intelligence and interventions).
- Programme Management support to give oversight of PHM across key ICS workstreams.
- Expertise from the NECS PHM team to support identification of key ICS priority areas for PHM and develop collective understanding of population health within the HNY footprint, contributing to delivery of Core20 plus 5 and reducing health inequalities
- **Training opportunities throughout the duration of the programme across the ICS**

## Place

- Design and delivery of a structured place based programme, including stakeholder identification and engagement, linked to delivery of a PCN based programme.
- **Coaching and support in identifying and developing local champions to drive forward PHM.**
- Clinical facilitation of workshops (this can be delivered by developing expertise within HNY clinicians or utilising clinicians from NECS).
- Establishing action learning sets to build longer term PHM capabilities within HNY across organisational boundaries.
- Translating intelligence into evidence based, tailored interventions, and sharing innovations and case studies from elsewhere.
- Dedicated resources to support embedding PHM as part of business as usual processes (i.e. Analytics, Research & Evidence, RAIDR).
- Working with existing infrastructure to supplement PHM support within HNY (i.e. NECS analytical teams to work with PHM analysts across HNY) to develop collective understanding of segments and cohorts within the HNY

## PCN

- Design and delivery of a **16 week structured PCN based programme**, including bespoke support for PCNs who have already begun embedding PHM approaches or have completed the national NHSE/I PHM Programme (OPTUM).
- **Aligning the offer with the PCN DES requirements** to work collaboratively with Health Inequality Leads.
- Dedicated resources to support **embedding PHM as part of business as usual processes** (i.e. Analytics, Research & Evidence, RAIDR).

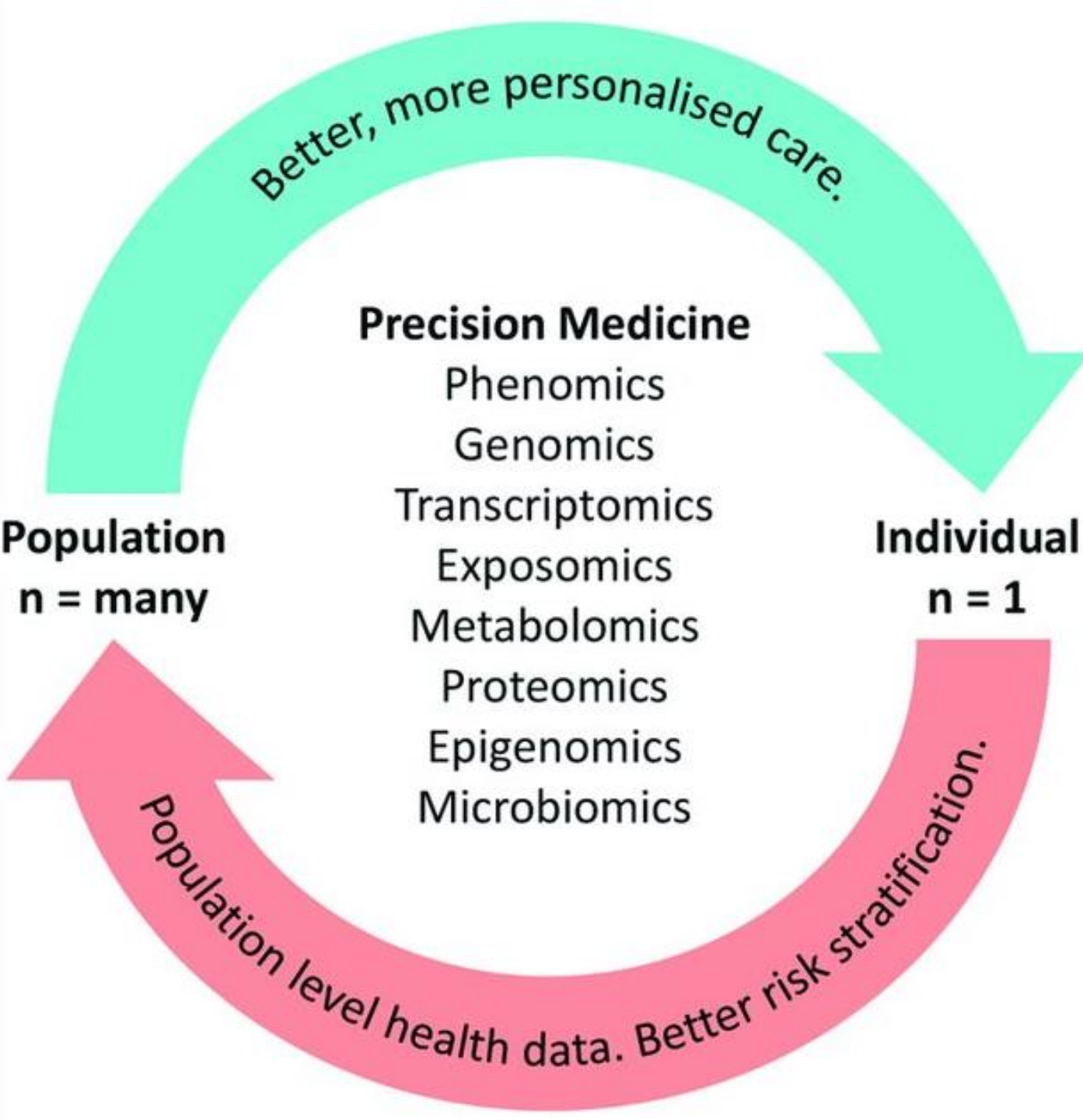
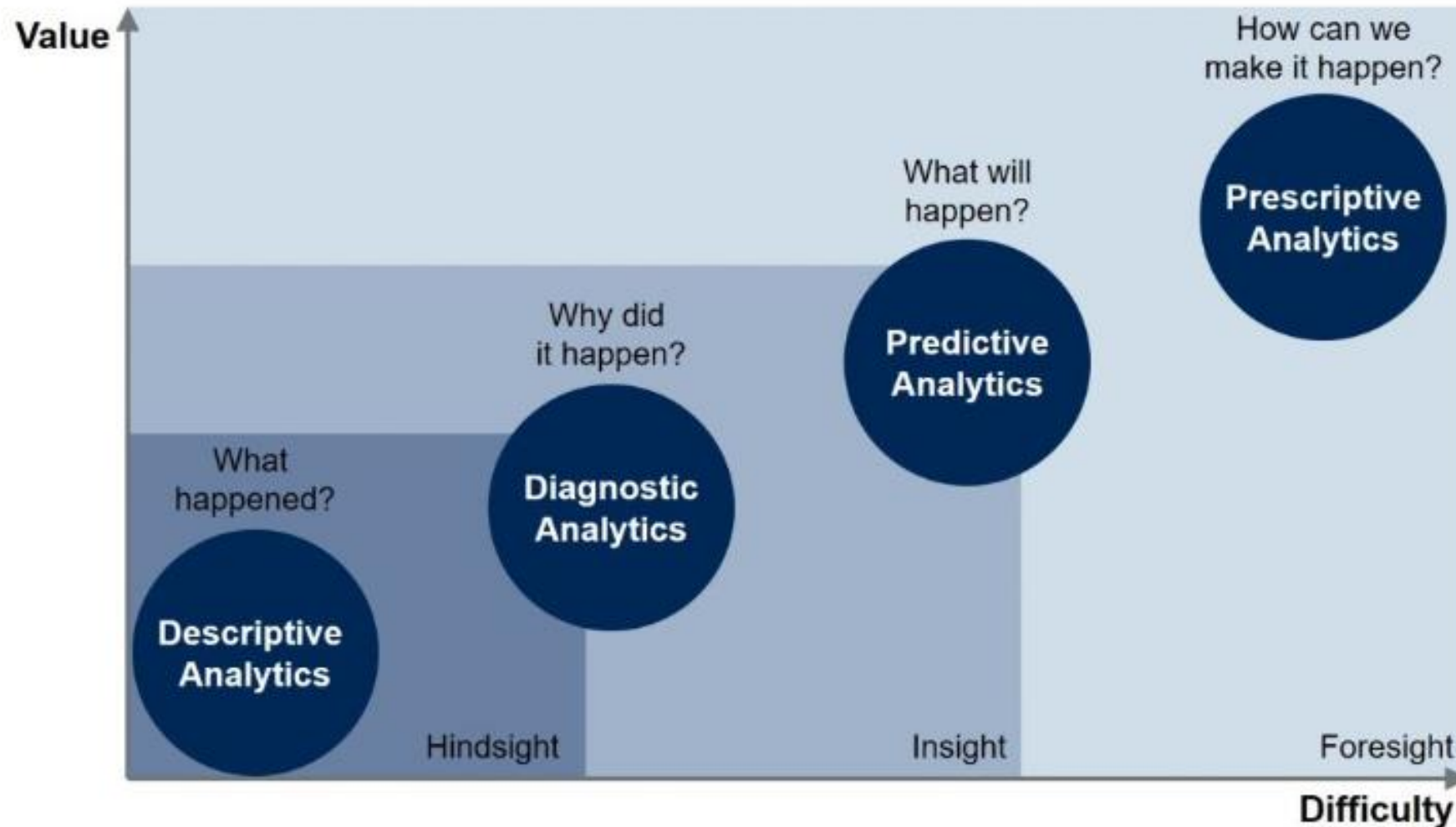


FIGURE 1 | The precision public health cycle. The cycle illustrates the benefits of precision approaches to improving patient care and population health.

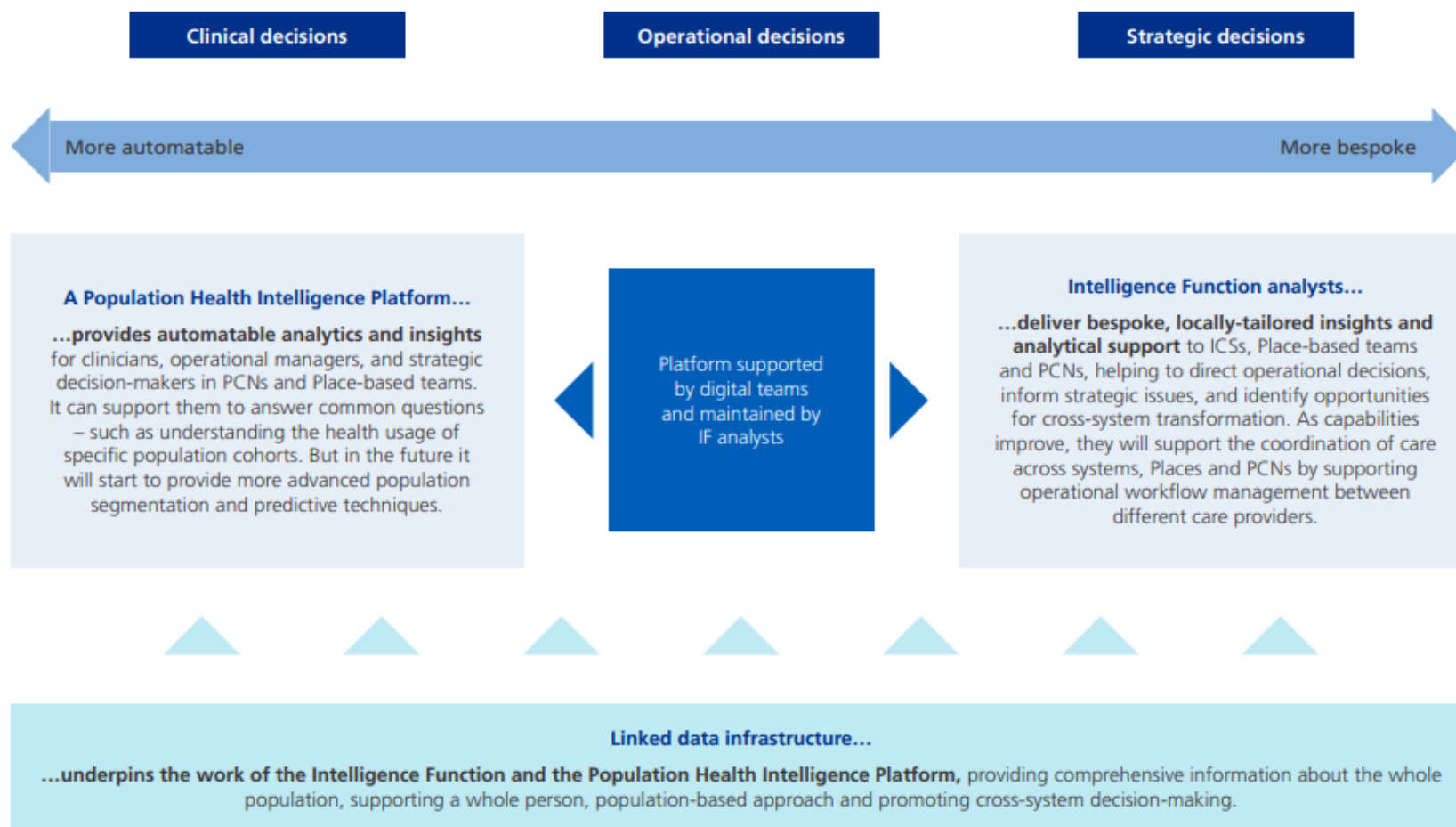
"Optimizing Precision Medicine for Public Health" — Read it on @ResearchGate:  
[https://www.researchgate.net/publication/331566859\\_Optimizing\\_Precision\\_Medicine\\_for\\_Public\\_Health?utm\\_source=twitter&utm\\_meta1=eHNSLU96VTdoWXZDdzZ2YIZMYWhDaE1YMUfAd3RuU2ZGWUZ0Q1dSeDlzaFYzT1pSQytpTVpQUHREdmsyUUg0SkdiTjhnNm50OWMzUXZrR2R0QmhKeHRZZ29oN1k%3D](https://www.researchgate.net/publication/331566859_Optimizing_Precision_Medicine_for_Public_Health?utm_source=twitter&utm_meta1=eHNSLU96VTdoWXZDdzZ2YIZMYWhDaE1YMUfAd3RuU2ZGWUZ0Q1dSeDlzaFYzT1pSQytpTVpQUHREdmsyUUg0SkdiTjhnNm50OWMzUXZrR2R0QmhKeHRZZ29oN1k%3D)

# Gartner Analytics Maturity matrix





## The decision-making eco-system of the intelligence function



# RAIDR



- 🌀 BI platform with a suite of dashboards
- 🌀 Used across the Humber and North Yorkshire region, North Cumbria, North-East and Derbyshire
- 🌀 Includes multiple data sources including primary care, SUS and CSDS data
- 🌀 Users can self-serve, drill, receive auto-generated reports and export data back into clinical systems
- 🌀 Enables actionable insight at system/community/place and patient level
- 🌀 Developed by Information Analysts in collaboration with clinicians
- 🌀 Current user base is mainly ICBs and GP practices

## Dashboards available in RAIDR include:





# Prioritisation framework



North East and  
North Cumbria

	%
Premature mortality	20
Contributing to life expectancy gap	20
Morbidity (Global burden of disease study estimates)	25
GBD risk factors	10
Highest number of people affected (prevalence)	20
Resource utilisation	5

# Population segments – North East North Cumbria



North East and  
North Cumbria

- Mostly Healthy (patients with no long term conditions)  
**(1,641,000 people, 53% of the population of NENC)**
- Patients with exactly 1 long term condition  
**(619,000 people, 20% of the population of NENC)**
- Patients with 2 or more long term conditions  
**(843,000 people, 27% of the population of NENC)**

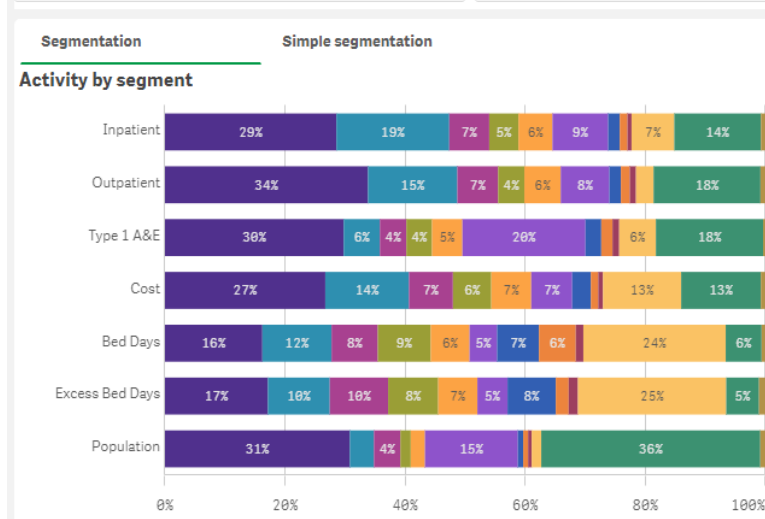
Patients of all ages are included in these segments.

# RAIDR Population Health – Segmentation



No selections applied

Partnership CCG PCN Practice IMD Decile

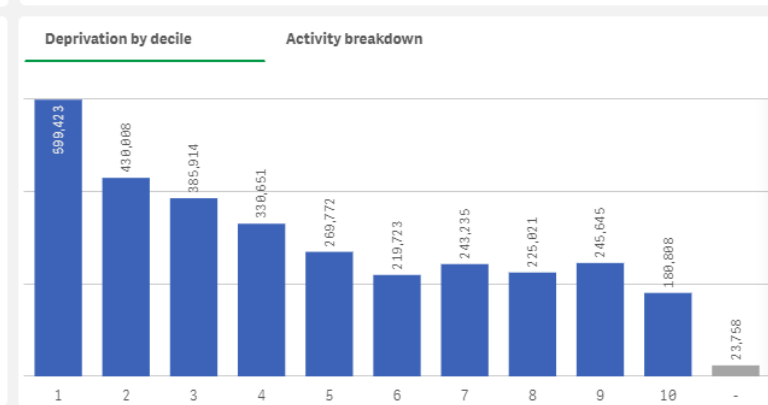
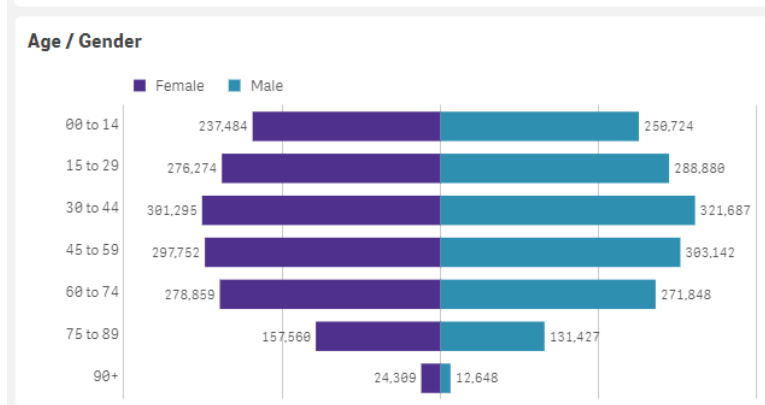
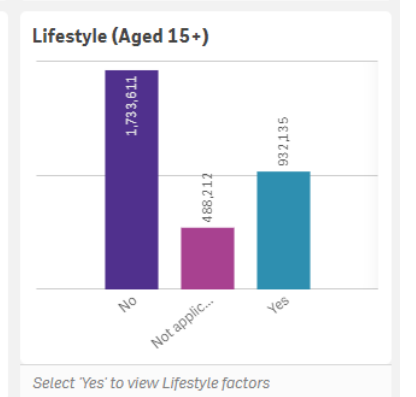
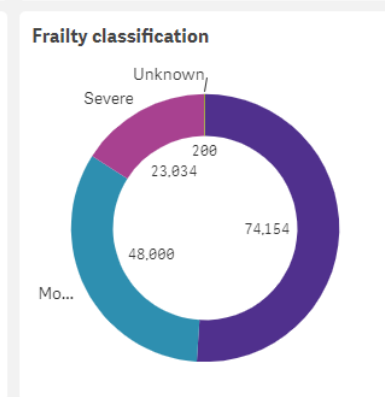
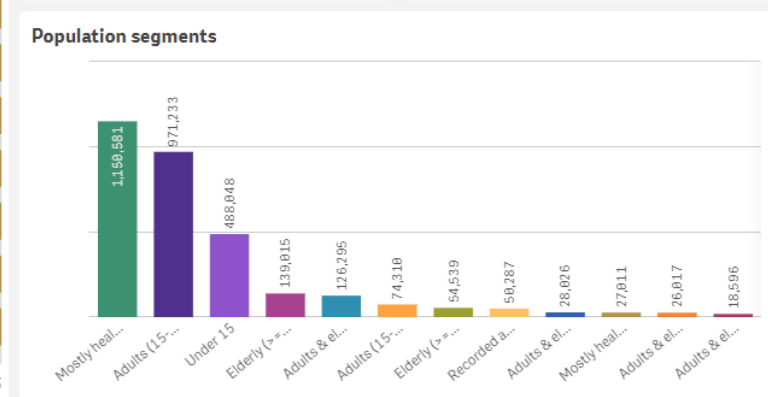


Population  
**3,153,958**

Activity  
**7,900,243**

Cost  
**£2,294,370,046**

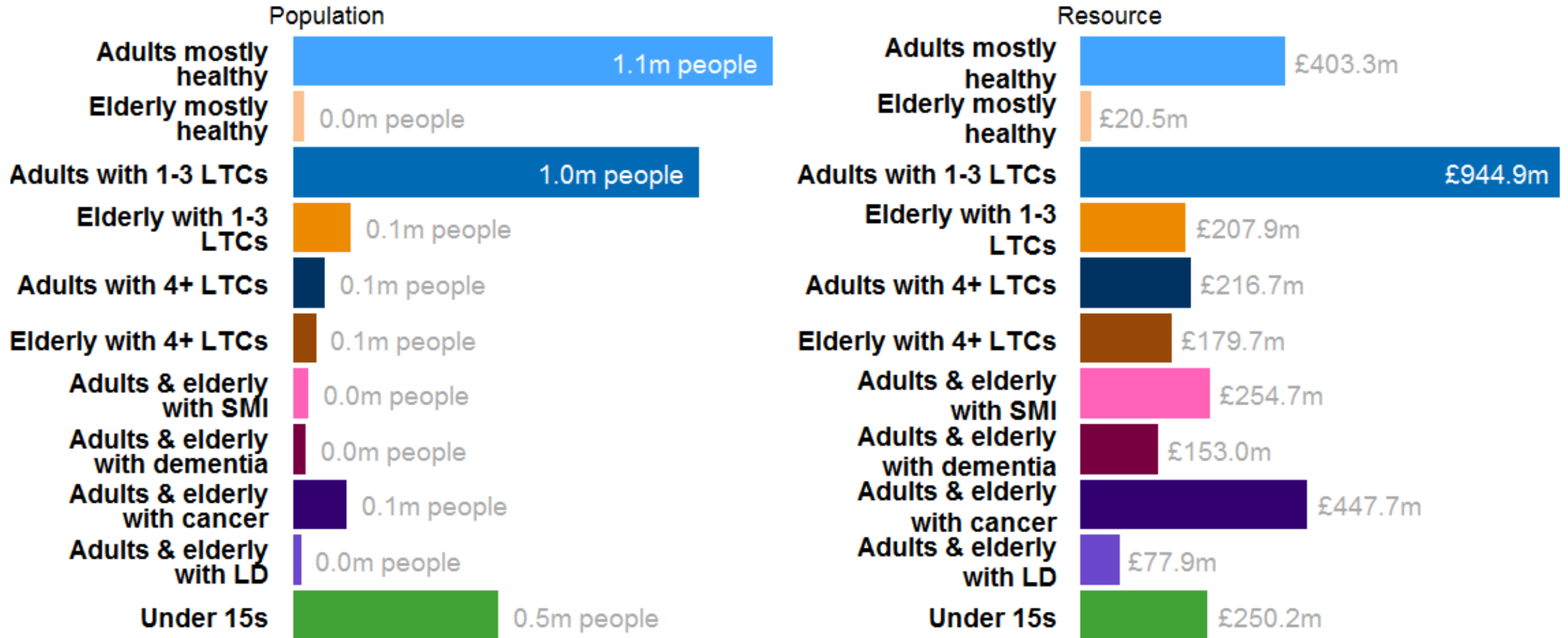
Average spend per head  
**£727**



#### Activity by Top 5 Programme Budget Category

PBC	Activity	Activity %	Cost	Cost %
<b>Totals</b>	<b>7,900,243</b>	<b>100.0%</b>	<b>£2,294,370,046</b>	<b>100.0%</b>
Unclassified	1,468,913	18.6%	£38,360,406	1.7%
Other	908,096	11.5%	£156,390,412	6.8%
Condition data not recorded	762,607	9.7%	£67,055,754	2.9%
Problems of the Musculoskeletal System	737,311	9.3%	£233,520,622	10.2%
Problems of Vision	566,998	7.2%	£96,791,912	4.2%
Others	3,456,318	43.7%	£1,702,250,940	74.2%

# NECS Segmentation Resource Use





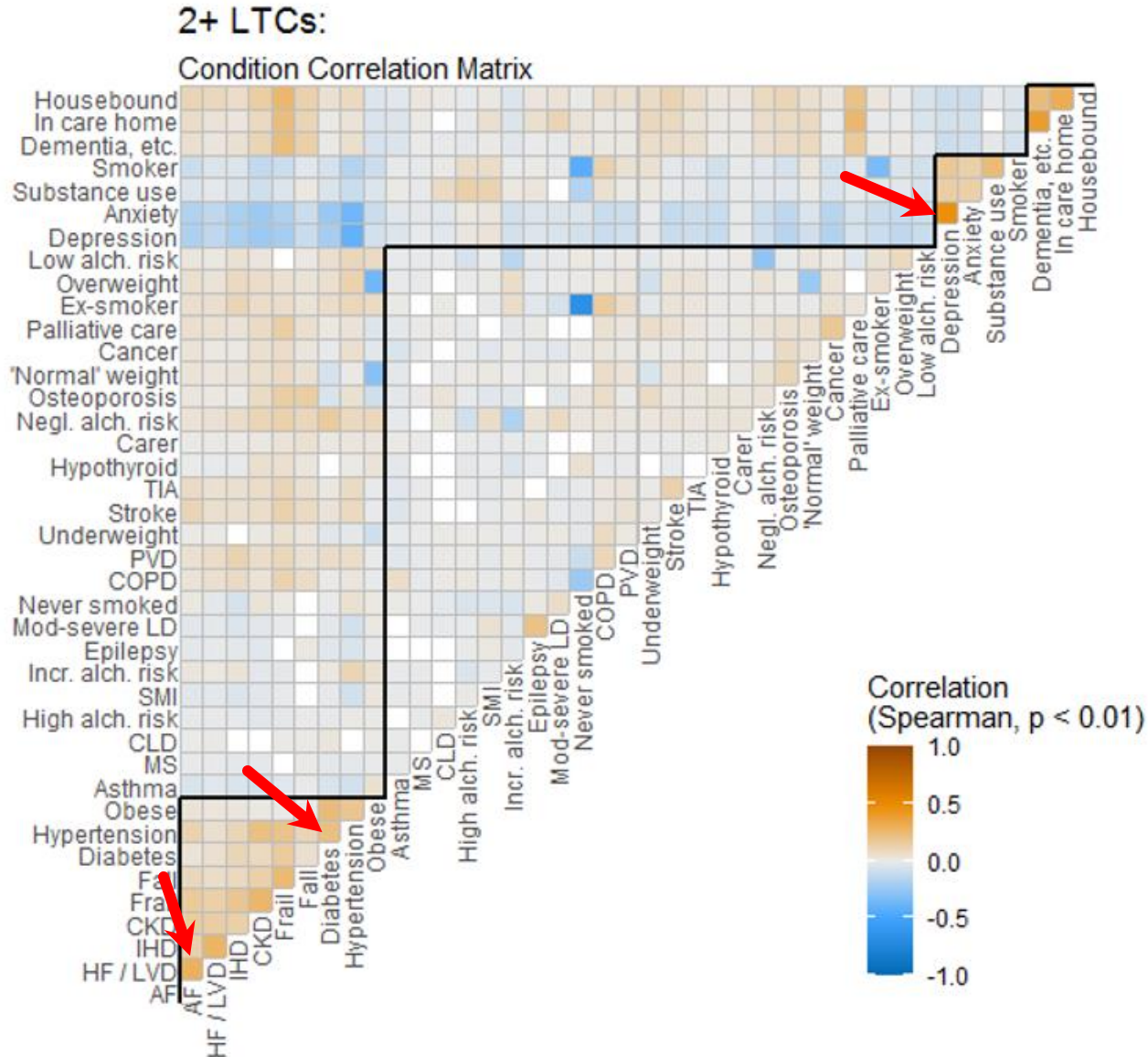
# Patients with 1 recorded Long Term Condition

Long Term Condition	Number	%
Anxiety	177,714	29%
Hypertension	118,568	19%
Depression	89,709	14%
Asthma	77,364	12%
Diabetes	29,055	5%
Cancer	24,638	4%
Hypothyroid	23,261	4%
Osteoporosis	15,373	2%
IHD	10,988	2%
COPD	7,917	1%
Mod-severe LD	7,881	1%
Epilepsy	6,808	1%
CKD	5,358	1%
AF	5,115	1%
SMI	4,592	1%
Stroke	3,300	1%
CLD	2,658	0%
Dementia, etc.	2,452	0%
MS	1,896	0%
TIA	1,872	0%
HF / LVD	1,473	0%
PVD	1,306	0%
<b>Total</b>	<b>619,298</b>	

For 3 in 10 patients with 1 long term condition, that condition is **anxiety**. For a further 2 in 10 the condition is **hypertension**.



# Correlation Plot: 2+ LTCs



This matrix shows **correlations** between traits of those with **2+ LTCs**. Darker colours mean a stronger correlation: orange for positive, and blue for negative. Non-significant correlations are removed.

**Correlation does not imply causation.**

The **black boxes** are **clusters** of correlations, e.g. Dementia, etc., In care home, and Housebound show similar patterns.

Three LTC combinations with highest correlation:

**Depression and anxiety:** 37% with one condition have the other

**Diabetes and hypertension:** 21% of those with one have the other

**Heart failure / left ventricular dysfunction and atrial fibrillation:** 19% of patients with one have the other

Criteria	Gender	1	2	3	4	5	6
Premature mortality	Males	External causes	Cancer	Circulatory	Digestive	Respiratory	Mental and behavioural
	Females	Cancer	Digestive	Respiratory	Cardiovascular	External	Covid-19
Contributing to LE gap	Males	Accidental poisonings	Suicides	Cirrhosis and liver disease	Lung cancer	Chronic lower airway pulmonary disease	Stroke
	Females	Lung cancer	Chronic lower airway disease	Accidental poisoning	Cirrhosis and liver disease	Other cancers (8%)	Heart disease (7%)
Morbidity	All persons	Low back pain	Depressive disorders	Headache disorders	Diabetes Mellitus	Neck Pain	Anxiety Disorders
GBD risk factors	All persons	Dietary risk factors	High body mass index	Smoking	High <u>systolic BP</u>	High fasting blood glucose	High LDL cholesterol
highest number of people	All persons	Hypertension	Depression	Obesity	Diabetes Mellitus	Asthma	Non Diabetic Hyperglycaemia
Health resource utilisation	All persons	Adults and elderly with SMI	People with Dementia	Adults and elderly with LD	Elderly with 4LTCs	Adults with 4LTCs	Adults with 3LTCs
Core20Plus5 Adults	All persons	Maternity continuity of care	SMI	COPD	Early cancer diagnosis	Hypertension and lipid management	
Core20Plus5 CYP	All persons	Asthma	Diabetes	Epilepsy	Oral health	Mental health	
Major conditions strategy	All persons	Cancer	CVD including stroke and diabetes	Chronic respiratory diseases	Dementia	Mental ill health	Musculoskeletal conditions

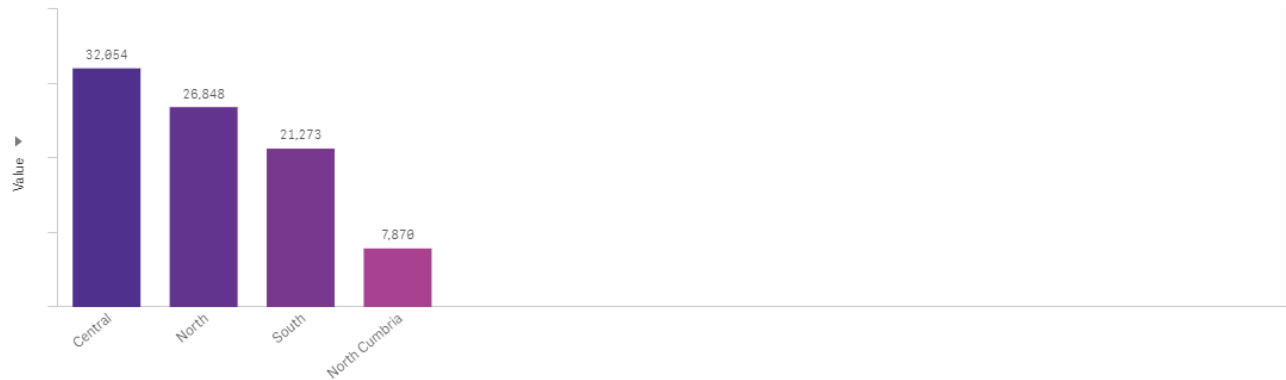
# RAIDR PH- Risk Stratification – COPD




No selections applied

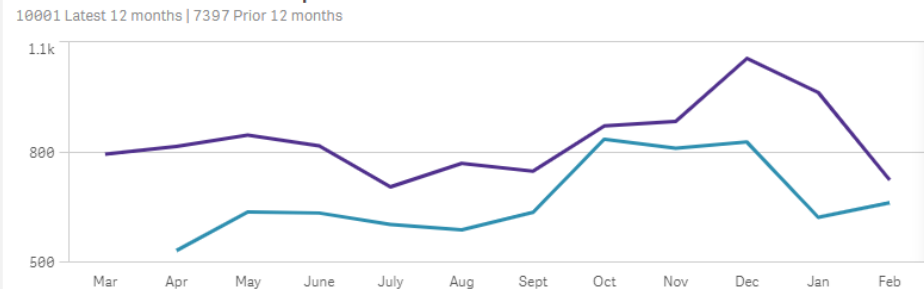
Partnership CCG PCN Practice

### Patients with COPD



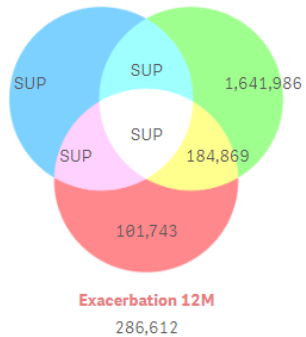
COPD population  
**88,045**

### Non-Elective COPD Admissions Apr 21 - Mar 23

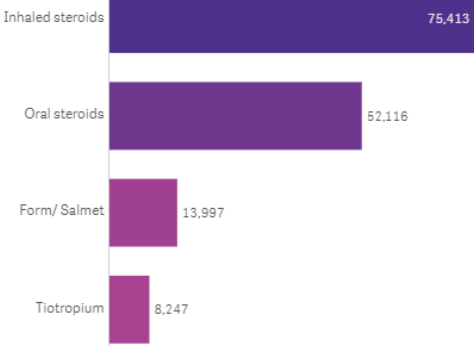


### Population without COPD

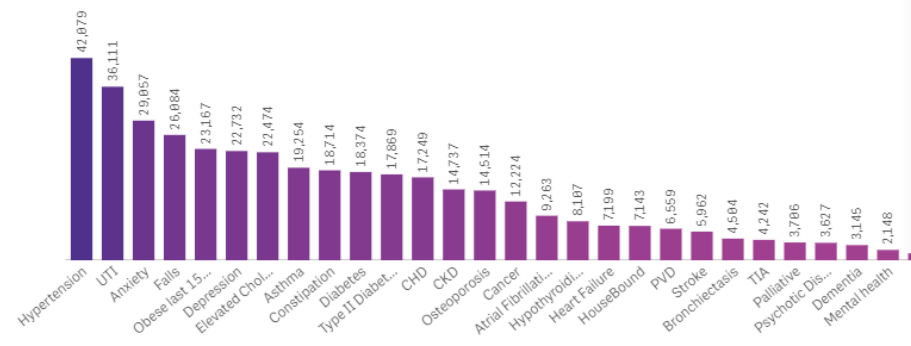
Smokers  
SUP



### Medication drug type



### Co-morbidities







# Pop Health Analytics - SMI Profile, Community MH transformation project, County Durham - Demographics

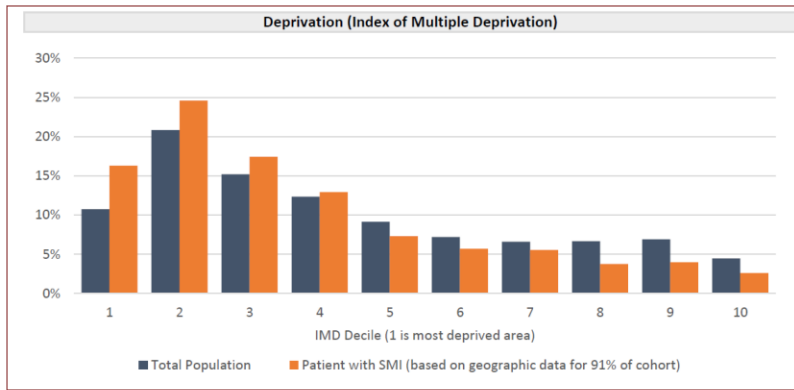
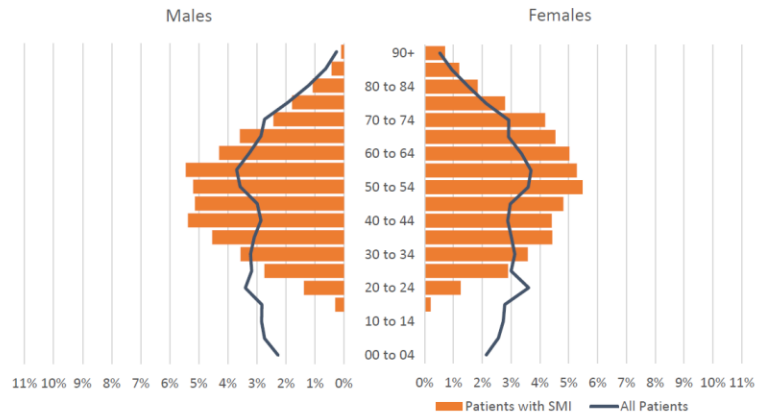
## Demographics

As you would see with most chronic conditions, the age profile for patients with a severe mental illness is older than the population as a whole. 47.4% of patient with an SMI are male, compared with 49.6% of the total CCG population.

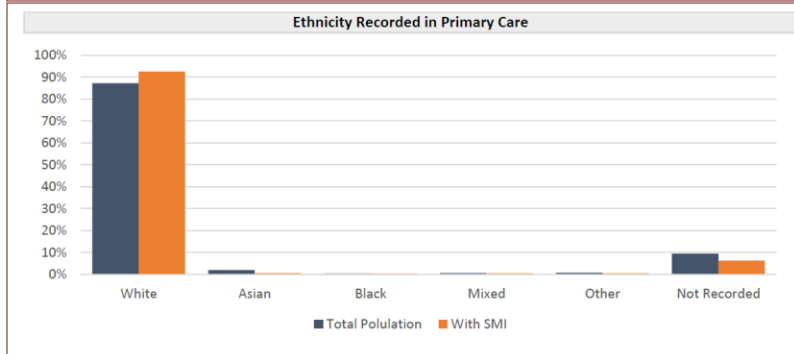
From the data available, patients with a severe mental illness are more likely to live in deprived areas – while 31.6% of the CCG population live in areas classified as being in the 5th most deprived in the country, 40.9% of the CCG population with an SMI live in these areas.

The cohort of patients with an SMI are 4.1 times more likely to be housebound, 9.5 times more likely to live in a nursing home, and 3.0 times more likely to be a military veteran.

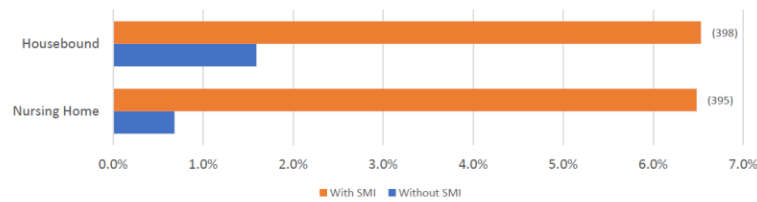
### Age / Sex Profile



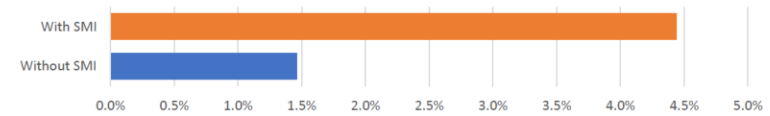
Core20+5



### % of Cohort Living in a Nursing Home or Housebound



### % of Cohort who are Military Veterans

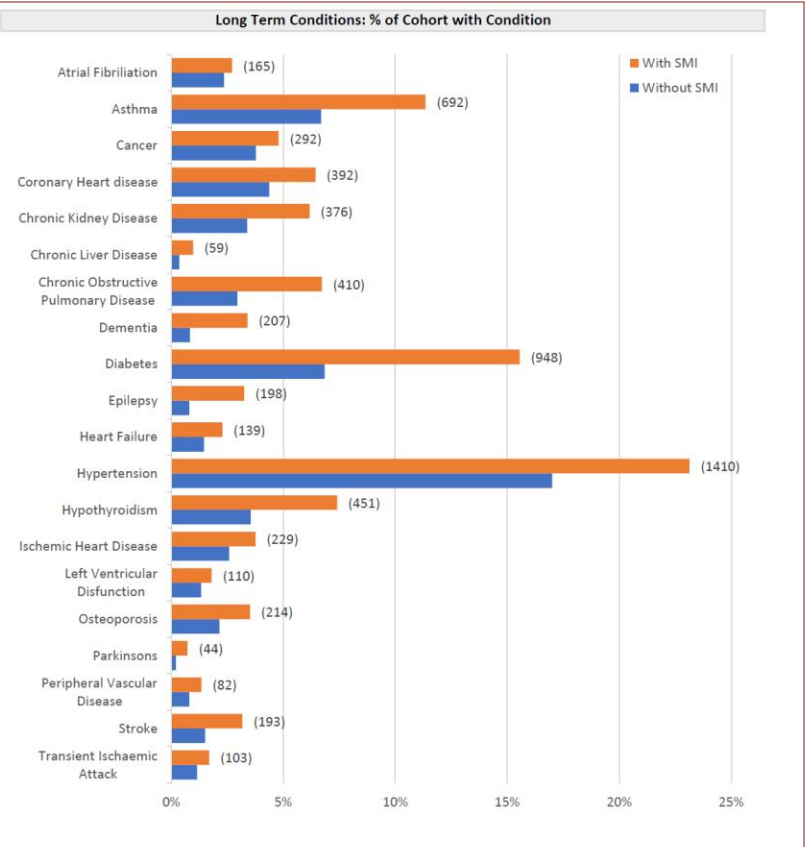


1.1% of the CCG population has an SMI; 3.3% of military veterans have an SMI



# Pop Health Analytics - SMI Profile, Community MH transformation project, County Durham - Comorbidities

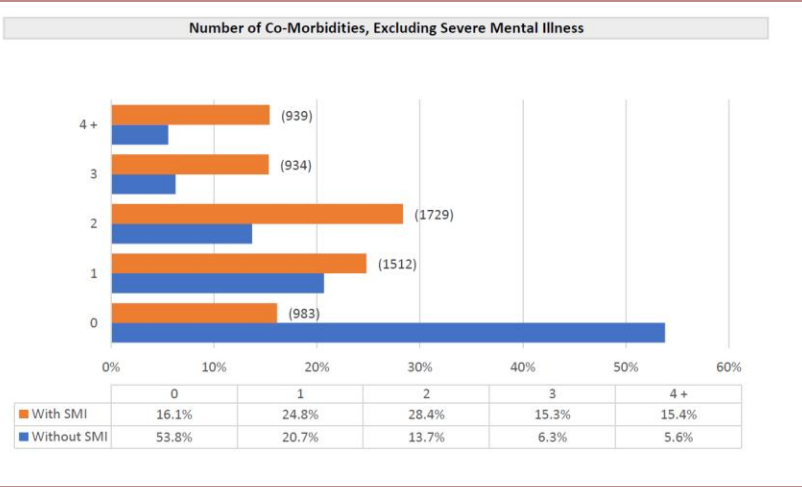
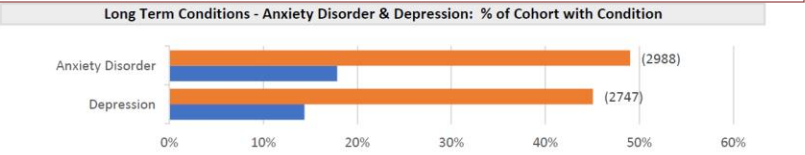
## Long Term Conditions



It is striking how many patients with a severe mental illness also suffer from additional long term conditions. While 54% of the population without an SMI are living free from any of the conditions on the left-hand charts, only 16% of patients with an SMI are. Within the CCG, 1873 patients with an SMI have 3 or more long term conditions, over and above their severe mental illness.

There is a large difference in prevalence rates for the individual long term conditions between the two patient cohorts, with the largest variation shown for Dementia, Epilepsy and Parkinsons. The page on demographics highlights that the group of patients with severe mental illness is older than the general population and potentially from more deprived areas, which may have some bearing on disease prevalence. The incidence of unhealthy behaviours is also higher in this cohort of patients, as shown on the Lifestyle Risk Factors page.

The numbers in brackets gives the number of patients with an SMI that the prevalence represents.



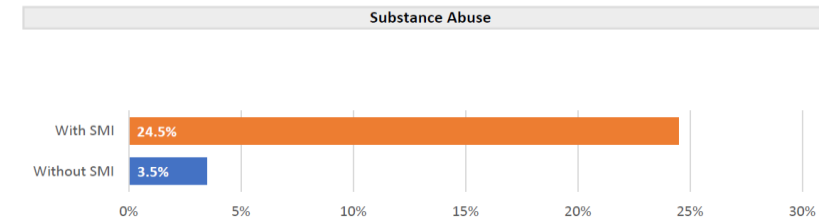
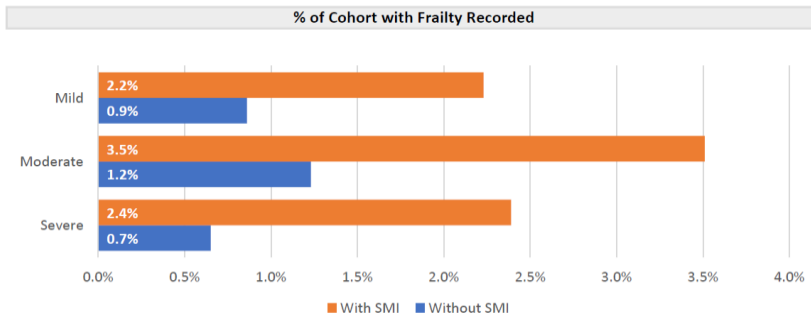
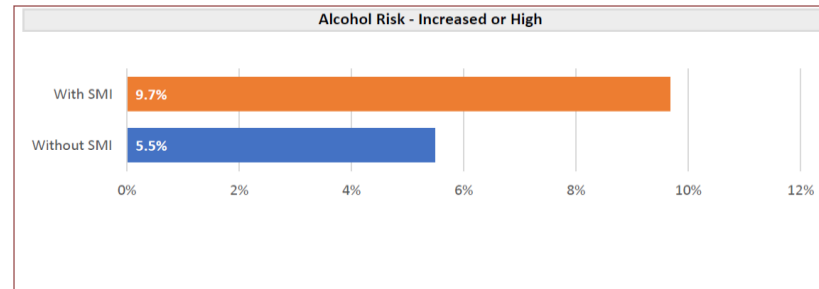
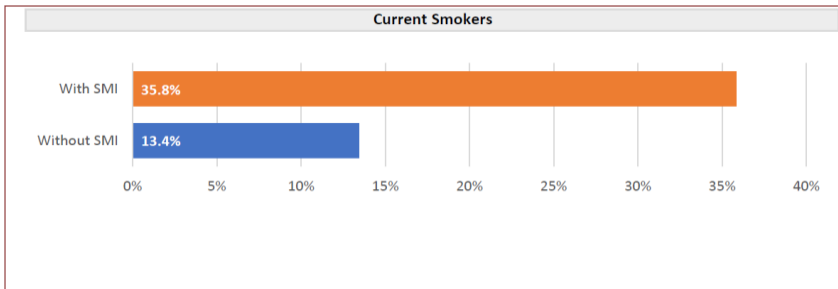
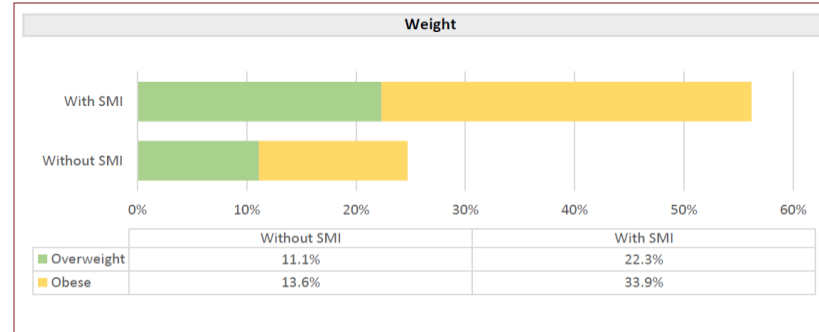


# Pop Health Analytics - SMI Profile, Community MH transformation project, County Durham – Lifestyle Risk Factors

## Health Risk Factors

Patients within NHS County Durham CCG who have a severe mental illness show far higher prevalence of lifestyle risk factors than the population without such a diagnosis. They are 2.0 times more likely to be overweight and 2.5 times more likely to be obese. Smoking rates are 2.7 higher amongst those with an SMI, while the prevalence of substance abuse is also much higher, at 7.0 times - to look at this another way, 7.2% of patients with a record of substance abuse also have a diagnosis of a severe mental illness.

There is a higher incidence of frailty (at 3.0 times) amongst those with an SMI compared to those without. This should be expected to some extent as the average age of a patient with a diagnosis of severe mental illness is higher than the population as a whole.



1.1% of the CCG population has an SMI

7.2% of substance abusers have an SMI

# RAIDR – Waiting Well

No selections applied

**CCG**

---

**PCN**

---

**Practice**

---

**Provider**

---

**IMD Decile**

---

**Age group**

---

**Gender**

---

**Ethnicity**

---

**Intended procedure**

---

**Priority**

---

**Treatment Function**

---

**Weeks Waiting**

**Area**

CCG#	Count
003	87,785
001	59,892
002	40,918
005	36,352
004	34,985
007	27,421
005	17,144

**Provider**

Provider	Count
Provider...	921,041
Provider...	48,859
Provider...	33,882
Provider...	32,864
Provider...	31,585
Provider...	17,819
Provider...	11,288
Provider...	9,889

**IMD Decile**

IMD Decile	Count
1	55,388
2	34,858
3	37,248
4	28,658
5	24,779
6	19,672
7	23,274
8	21,455
9	23,202
10	17,418
-	2,803

1 = most deprived, 10 = least deprived

**EWL records**

**283,505** 247,314 Unique EWL patients

**Primary Care records**

**247,479** 247,314 Unique PC patients

**Risk Factors**

- Atrial Fibrillation
- BMI >= 30
- BMI >= 35
- COPD
- Diabetes Type II
- Diabetes Type II HbA1c < 53
- Diabetes Type II HbA1c 53 - 69
- Diabetes Type II HbA1c > 69
- Frailty
- Hypertension
- Hypertension Unmanaged
- Learning disabilities

Buttons work as an AND

**EWL Activity Map by LSOA and IMD**

**Number of patients with each risk factor**

CCG#	Total Patients
001	62,138
002	41,641
003	62,138
004	38,186
005	18,938
006	38,491
007	29,268

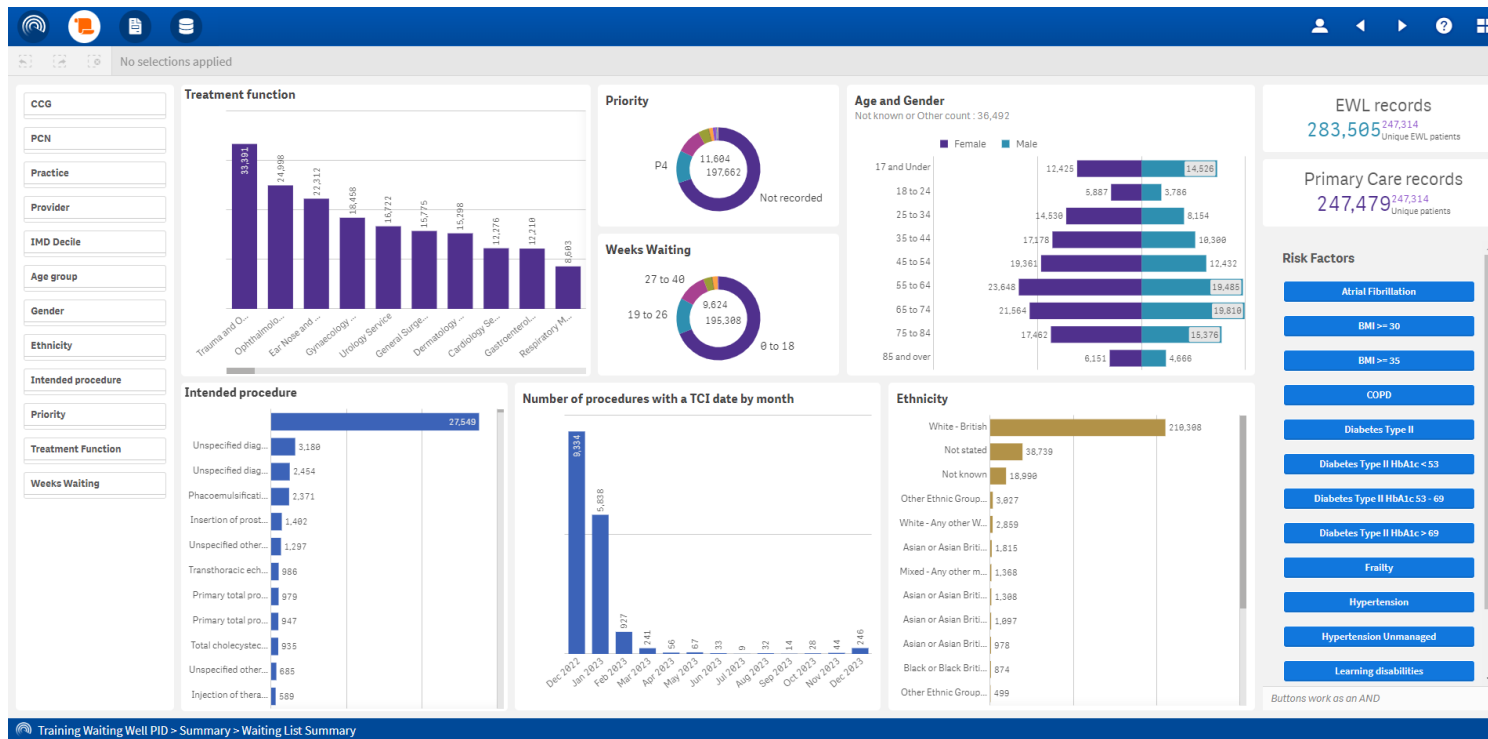
**Number of procedures per patient**

Procedures	Count
1	215,801
2	27,057
3	3,798
4	564
5	77
6	11
7	5
8	1

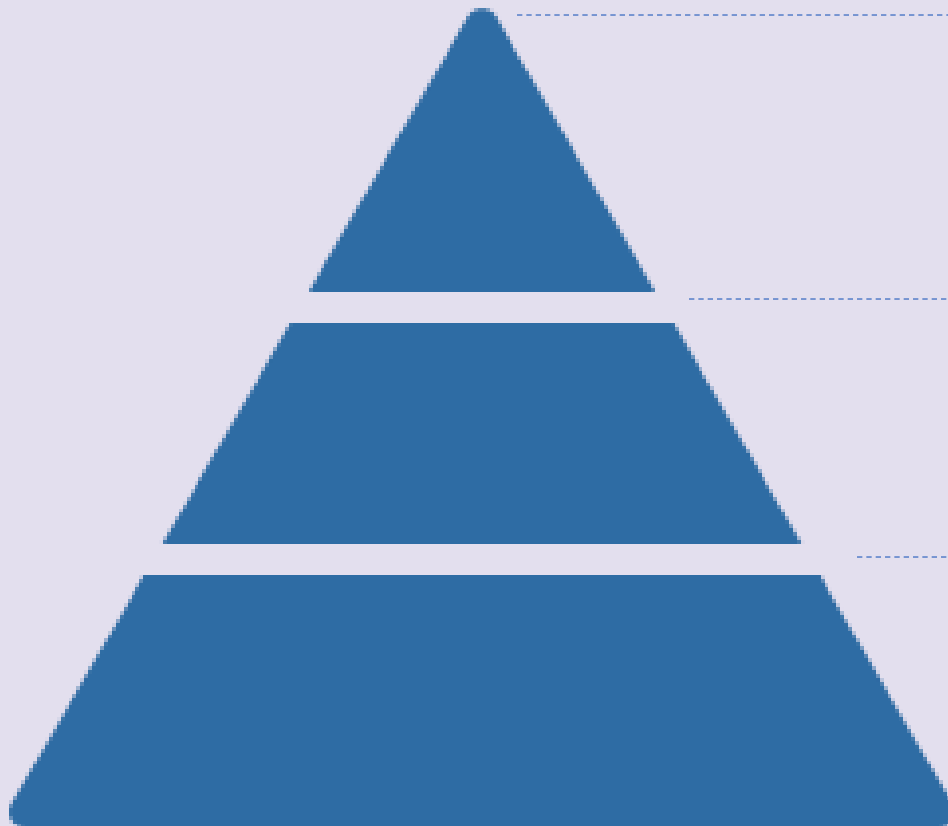
© OpenStreetMap contributors

Training Waiting Well PID > Summary > Patient Summary

# RAIDR – Waiting Well



# A tiered offer



## Complex

For example, intensive 1 to 1, very supported group therapy or intensive co-ordinated support from multiple sources

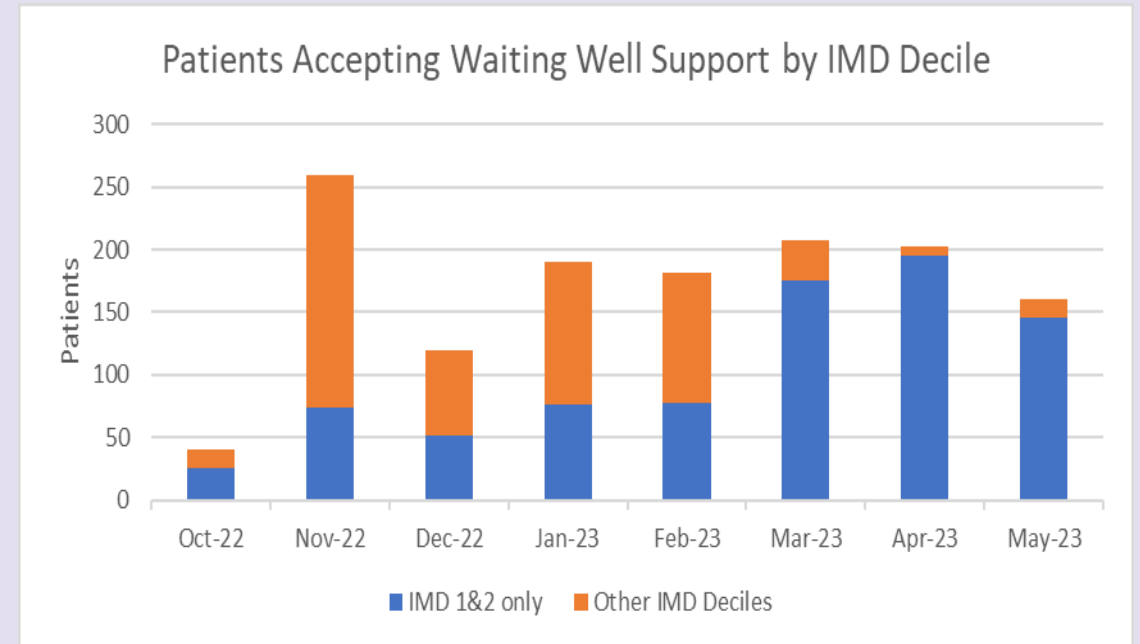
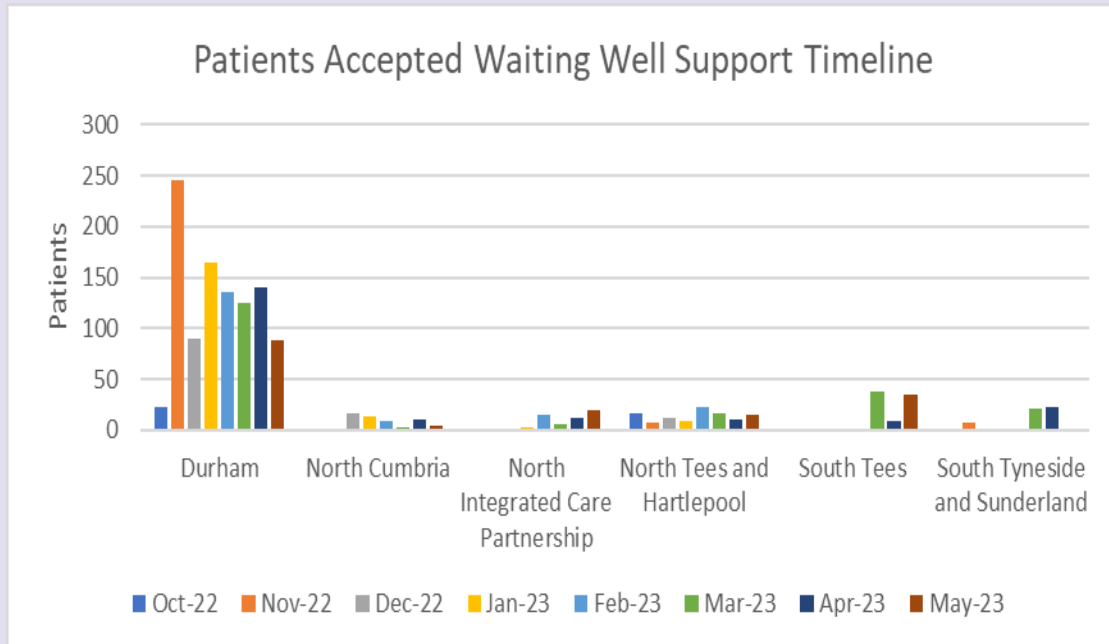
## Targeted

For example, independently able to attend group sessions

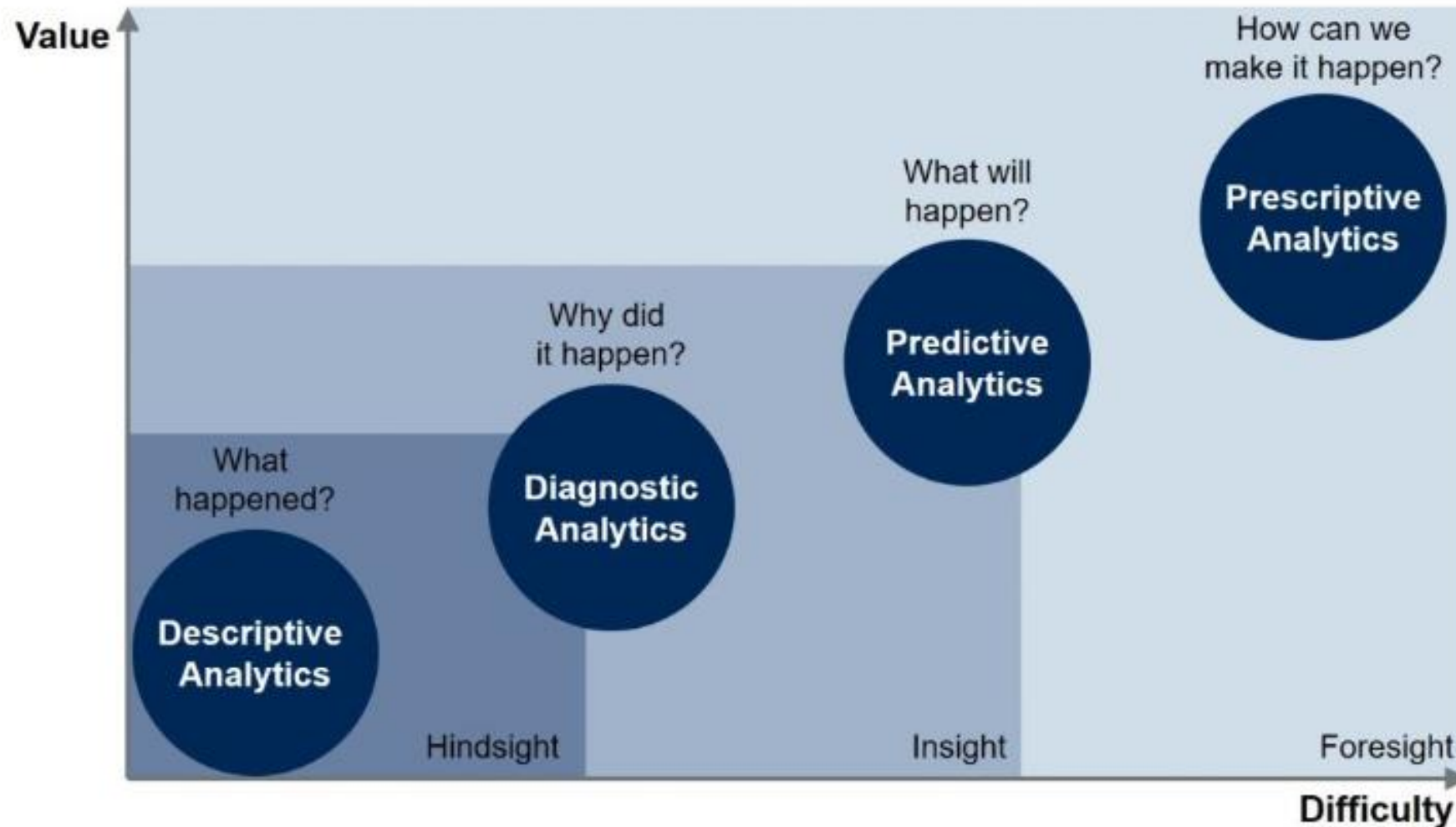
## Universal

For example, motivated and independently able to access digital offers.

# Cumulative results - Uptake



# Gartner Analytics Maturity matrix



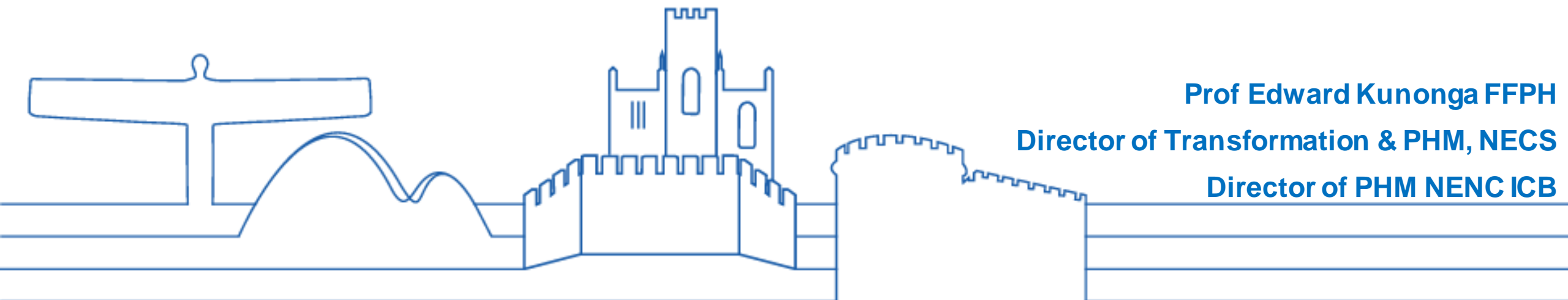




**North East and  
North Cumbria**

# **Data Saves Lives –Using experiences and reflections from the North East and North Cumbria**

**NHS DATA conference 2023  
2/10/23**



**Prof Edward Kunonga FFPH  
Director of Transformation & PHM, NECS  
Director of PHM NENC ICB**



HEADLINED BY -  databricks

Up Next...





**Speaking Now...**



**HEADLINED BY -**  **databricks**



**Oliver King-Smith**  
CEO and Founder - smartR AI



HEADLINED BY -  databricks

# Comfort Break



HEADLINED BY -  databricks

# Main Sponsor





## Speaking Now...



HEADLINED BY -  databricks



**Miguel Peralvo**  
Senior Solution Architect -  
Databricks



**Mike Dobing**  
Senior Solution  
Architect - Databricks

1

Who are Databricks

2

The Challenges of Interoperability of NHS

3

Open Lakehouse Platform

4

Databricks In the NHS

5

Summary



&



Creator of



Delta Share



DELTA LAKE



Inventor and pioneer  
of the **data lakehouse**



**databricks**

The Lakehouse Company

**Gartner-Recognised Leader**  
Database Management Systems  
Data Science & Machine Learning

**9m+**

Delta downloads

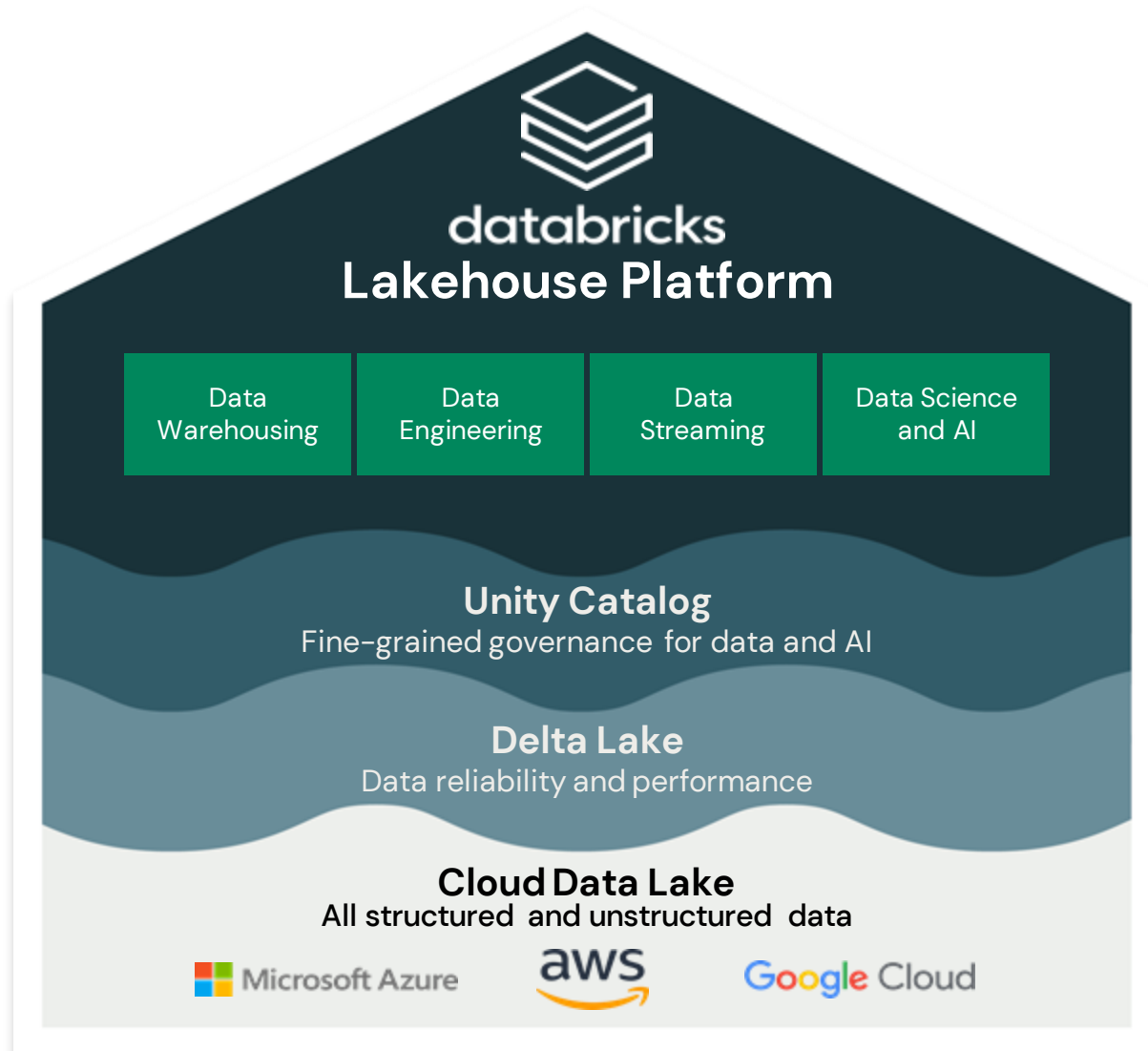
**1+**

Exabytes data  
processed daily

**5k+**

Companies in  
production





## Databricks Lakehouse Platform

### Simple

Unify your data warehousing and AI use cases on a single platform

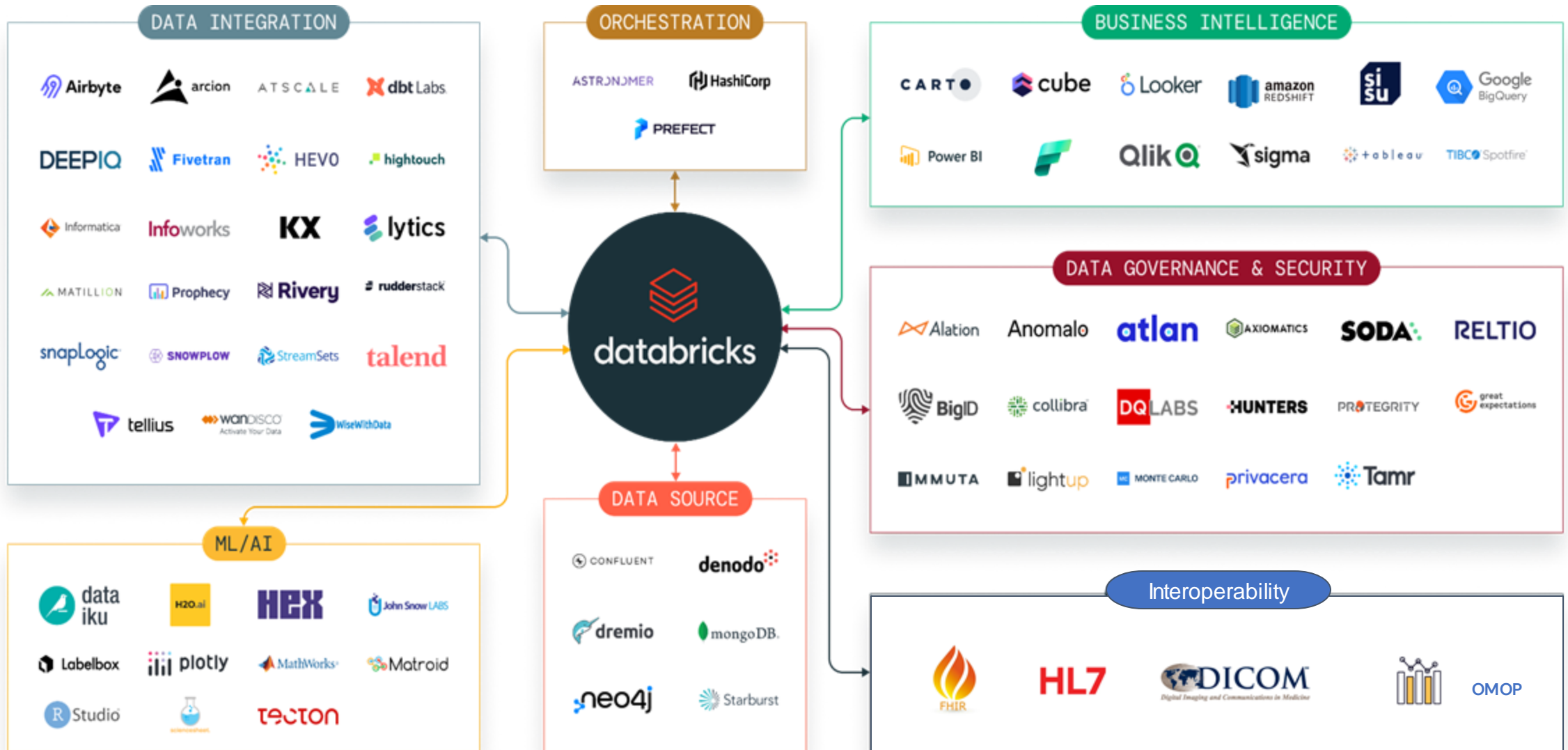
### Multi-cloud

One consistent data platform across clouds

### Open

Built on open source and open standards

# An open foundation for your data ecosystem



*“With new models of care emerging and evolving, there is a clear need for more effective information sharing between care settings, organisations and geographies, as well as between professionals and citizens, to optimise patient outcomes and quality of care. This is reliant on the ability of IT systems across health and care to be interoperable with one another and is key to the delivery of the future vision of care in England.” - [NHS England Interoperability](#)*



## Data Silos, Integration & Quality

Many disparate data silos sitting on a variety of platforms and solutions, including on-premise and cloud, coupled with varying standards and formats, make deriving value and actions from data a time consuming and costly process



## Governance & Access

The complexity and the sensitive nature of NHS data estate creates a challenge of controlling who can access what and where, often across different platforms and solutions, but also what they do with the data and capturing the lineage from source to serving



## Sharing and Collaboration

Integration and sharing of data securely between various organisations, such as Local Authorities, NHS Trusts, Central bodies and other organisations

*The Open Lakehouse hinges on open source standards, approaches and protocols that:*

- *Allow, reduce or remove vendor lock-in, data duplication and total cost of ownership in a scalable fashion*
- *Let NHS organisations own and govern their data, including proprietary AI models and IP*
- *Increase community engagement (RAP) and opportunity for training and scale skill reuse*



## **Data Silos, Integration & Quality**

Delivering a multi cloud platform, leveraging open formats and industry standards that allows for data integration and processing across shapes and sizes of data, preventing data duplication



## **Governance & Access**

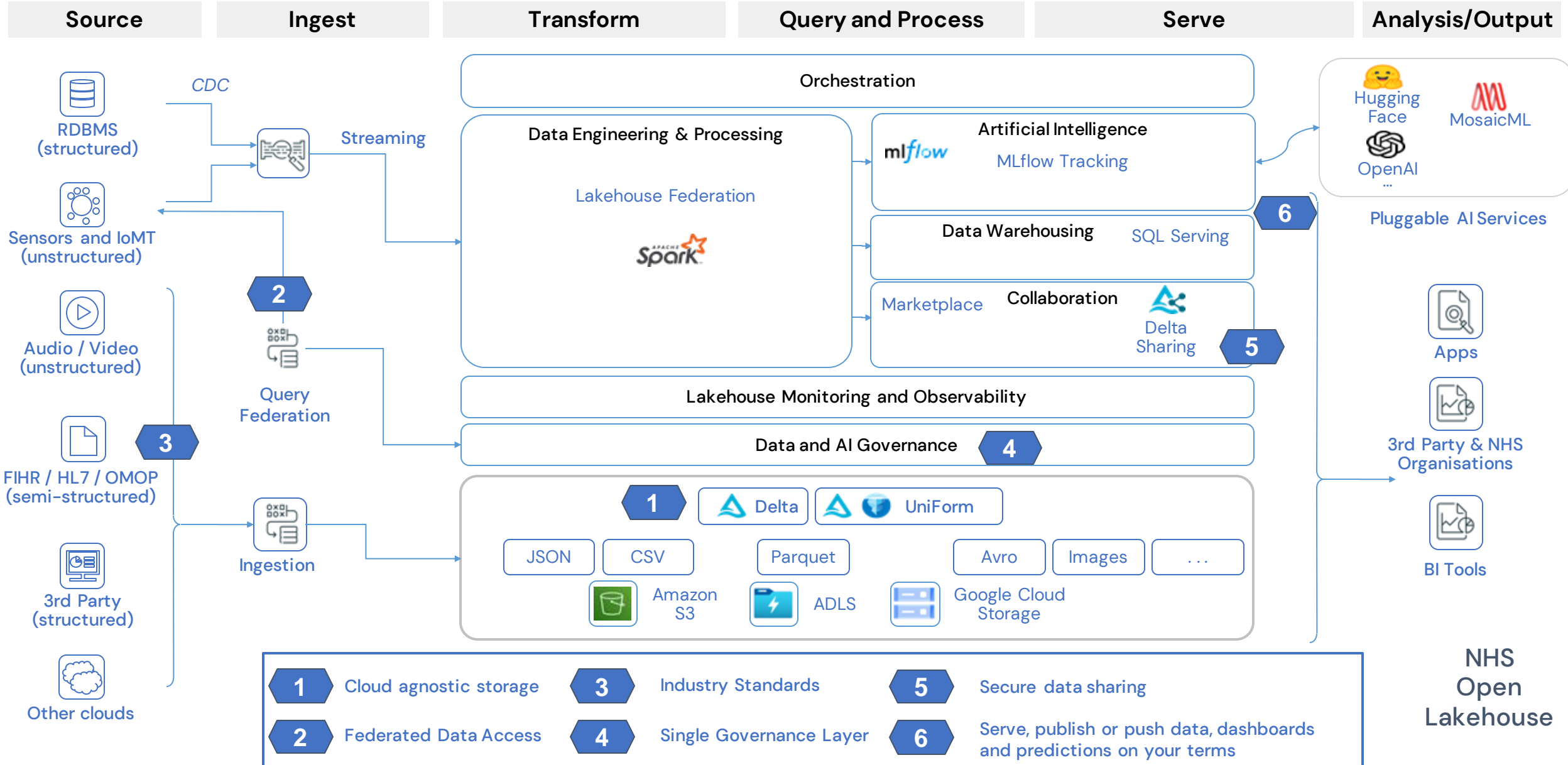
Provide a single layer of governance for data access no matter where the data sits, removing risk, cost and greatly simplifying your analytics estate



## **Sharing and Collaboration**

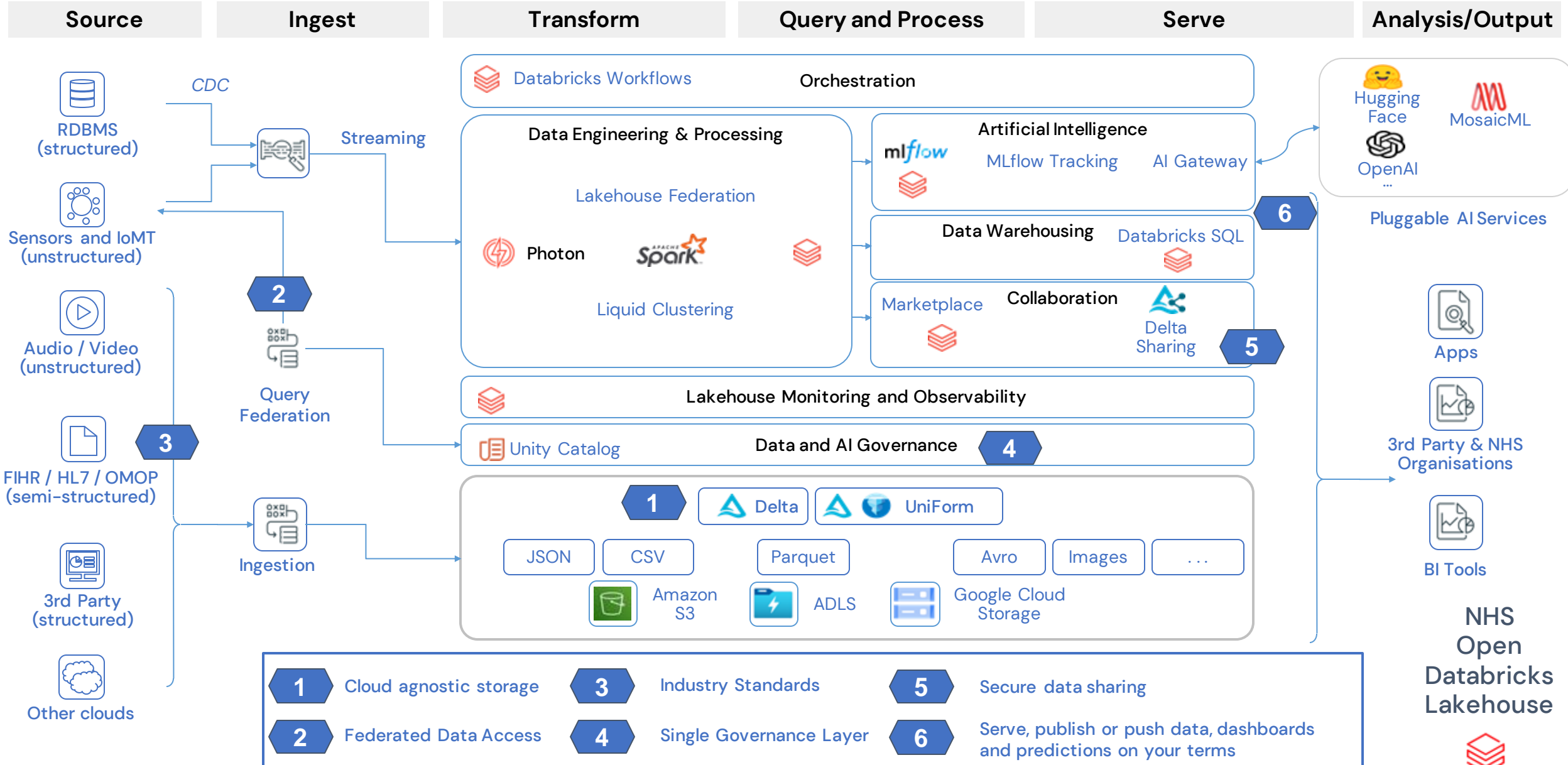
Provide capabilities to share data securely, without the need for data movement, and provide timely access to data to interact collaboratively whilst maintaining security and governance

# Open Lakehouse Architecture



NHS  
Open  
Lakehouse

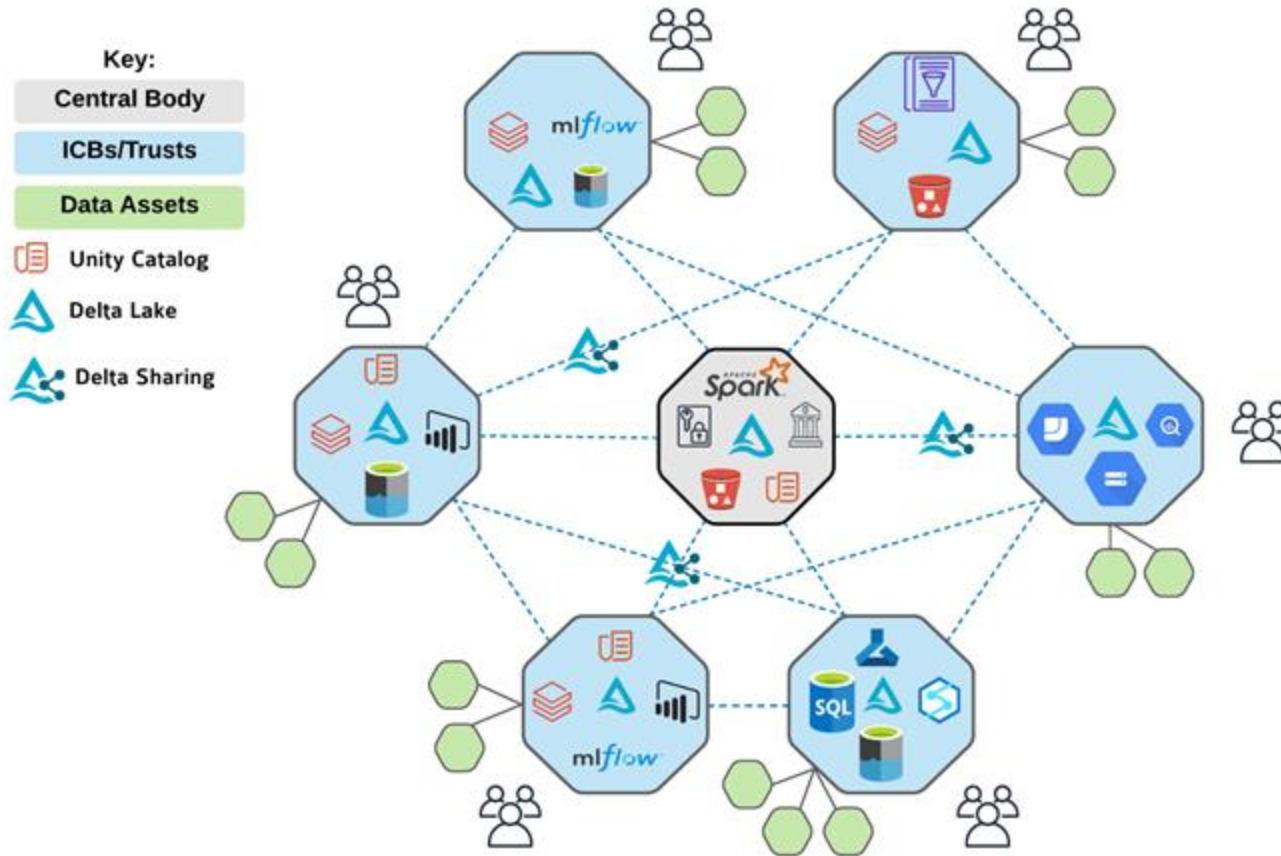
# Open Lakehouse Architecture



NHS  
Open  
Databricks  
Lakehouse



Zooming out a bit...



Federated Multi-Org Lakehouse:

- **Data Access** – In a complex multi-organisation domain such as the NHS, organisations can interact, share and collaborate using open platforms and formats such as Delta, Spark and MLFlow and thus providing more timely and secure access to data
- **Delta Sharing** provides an open and vendor-agnostic protocol allowing organisations to share data assets without duplication or vendor lock-in
- The **Delta Open Source Storage Standard** provides a durable, performant storage standard capable with dealing all shapes, sizes and speeds of data
- With **Lakehouse Federation**, query data where it sits, be it SQL Server, Oracle, Postgres or others – remove the need for risky and costly data imports/exports and enabling, for ad-hoc data analysis spanning organisations

Challenge	Technical Scenario	Technical Solution
Data Silos, Integration & Quality	<p>Data access across the whole organisation without data duplication:</p> <ul style="list-style-type: none"> <li>1: Cloud Agnostic Storage</li> <li>2: Federated Data Access</li> <li>3: Industry Standards</li> </ul>	<p><a href="#">Lakehouse Federation</a>: Federate Data Platforms with governance</p> <p><a href="#">Uniform/Delta</a>: Lakehouse format for governance and performance</p> <p><a href="#">Open Standards</a>: Facilitating skills and assets reuse</p> <p><a href="#">Cross-cloud Data access</a>: Leverage Delta cross-cloud</p>
Governance & Access	4. Single Governance Layer	<p><a href="#">Unity Catalog</a>: Lineage and Catalog for Federated Data Assets</p> <p><a href="#">MLflow</a>: AI Model Lifecycle with Standard</p>
Sharing and Collaboration	<p>Share Data Assets and AI models between organisations without duplication:</p> <ul style="list-style-type: none"> <li>2: Federated Data Access</li> <li>5: Secure Data Sharing</li> <li>6: Serve, publish, and push</li> </ul>	<p><a href="#">Delta Sharing</a>: OSS vendor-agnostic approach for data, AI model, code and asset sharing</p> <p><a href="#">Marketplace</a>: Curated Data Assets</p> <p><a href="#">Databricks SQL</a>: Best Price-performance for querying the Lakehouse</p>



How Databricks has helped tackle **some** challenges in the NHS



## National Secure Data Environment

- Linked electronic health records for research on a

**ESNEFT Saved 75% data engineering time and reduced data processing costs**

**Powys Teaching Health Board** - Great accelerated data acquisition and data governance with immediate plans to implement cross

Want to learn more? Reach out to us - [Mike Dobing](#) and [Miguel Peralvo](#)

[Solution Accelerators](#)

[Databricks Community](#) & [AnalystX](#)

[Training and Specialist Sessions](#)

[Databricks Academy](#) (Free Access for NHS - reach out to us for access info)



## Speaking Now...



HEADLINED BY -  databricks



**Diane Clark**  
Senior Business  
Analyst - NHS Arden  
& GEM CSU



**Adam McCamley**  
Senior Analyst -  
Liverpool City Council

# Linking health and social care data to improve services

NHS Arden & GEM CSU  
Liverpool City Council



Liverpool  
City Council

# The data development journey

**2018-2020**  
NATIONAL VOLUNTARY  
ASC CLD ESTABLISHED

**2022**  
HEALTH AND CARE ACT  
ASC CLD VOLUNTARY  
COLLECTION ONGOING

**2015**  
NORTH WEST PILOT

**2012**  
HEALTH AND SOCIAL CARE  
ACT

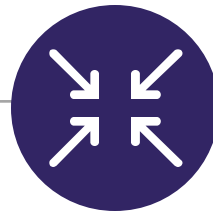
**2023**  
ASC CLD MANDATED  
COLLECTION

**2024 AND BEYOND**  
REPLACEMENT OF  
SALT COLLECTION



# We had a clear vision to tackle the complexity

We identified a clear need to link patient level data across health and social care at a national level to enable standardised and consistent data and analyses across the complete patient journey.



Combining Liverpool City Council's **'on the ground' experience** of collecting and linking local data with Arden & GEM's expertise in **operating 'at scale'**, managing standardised and national datasets.

Active involvement from **multiple organisations** including NHS England, NHS Digital, DHSC as well as regional and local.

This enabled us to combine the best elements of both **'bottom up' and 'top down'** approaches.

Hard work, persistence, dedication and a clear vision of **our ultimate goal kept us making progress** and kept the work 'high priority' despite instability and uncertainty.

Established **standards for submission** of adult social care data at a client level, and **mechanisms for linking** to health data, and sharing this with relevant local, regional and national organisations.

**Adult Social Care Client Level Data now exists across the country in a single repository.**



# A fresh approach to engagement and onboarding

Our key aims were to remove blockers, alleviate concerns and add value.

## Adding value

- Advocate for 'protecting' LAs data, ensuring it's used appropriately for the benefit of the system
- Alleviate concerns over data quality for early submissions
- Incentivise submissions with NHS number tracing and data quality reports

## Intermediary support

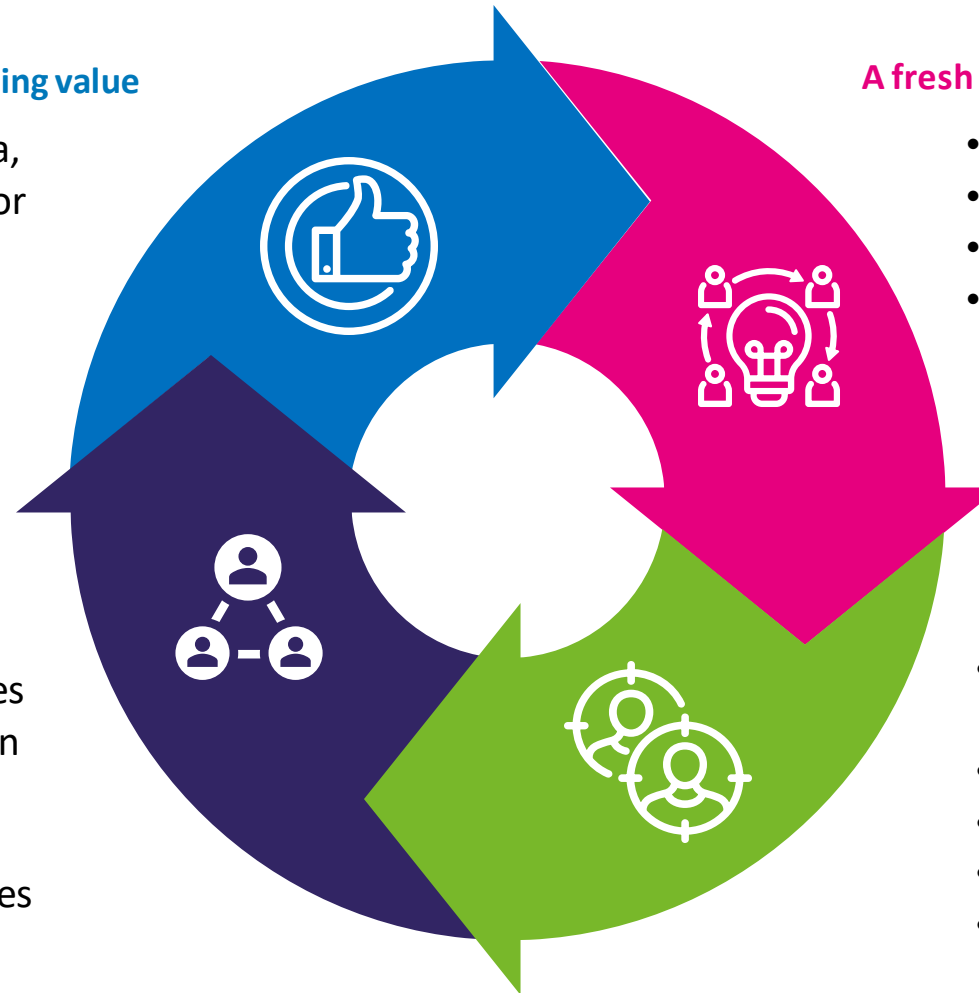
- Intermediary advice for tech issues
- Feeding back concerns to DHSC on behalf of LAs
- Key NHSD/E people engaged to support and avoid helpdesk queues

## A fresh approach

- 'Bottom up' engagement
- Clear communication and transparency
- Flexibility on submission deadlines
- Encourage to submit whatever was possible/partial submissions were welcome

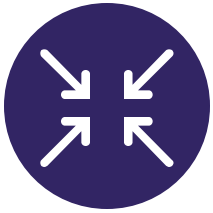
## Direct support

- Dedicated, bespoke 1:1 engagement to 'push' the voluntary submission agenda
- Engagement and onboarding sessions
- Regular 1:1 sessions
- IG support
- Dedicated webpage



This approach was successful with over 50% of LAs voluntarily submitting data.

# Benefits



## Single source of the truth

A dataset that LAs can use to answer day-to-day requests from service areas and commissioners



## National and local repositories



## Improved data quality, including completeness of the NHS number



## Improved communication and understanding

Improved consistency and transparency with central data transformations and standardised terminology

Providing more frequent and timely monitoring of social care activity, cost and outcomes



## Linked health and social care data

Whole patient pathway and journey

Seeing impact of health on social care and vice versa

Identifying where there are blockers in care pathway





# Current position



## QUARTER 1 MANDATORY SUBMISSION



**153**  
councils



**151**  
submitted Q1 data from  
9 regions



**9.3m+**  
records



**1.4m**  
individual person  
IDs



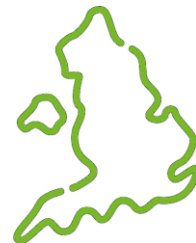
12 councils submitting  
**MONTHLY** with more  
aiming to move to this  
frequency voluntarily

## QUARTER 2 SUBMISSION

Quarter 2  
submissions  
(July, Aug and Sept data)



due between  
1-31 October 2023



expecting  
**100%**  
coverage

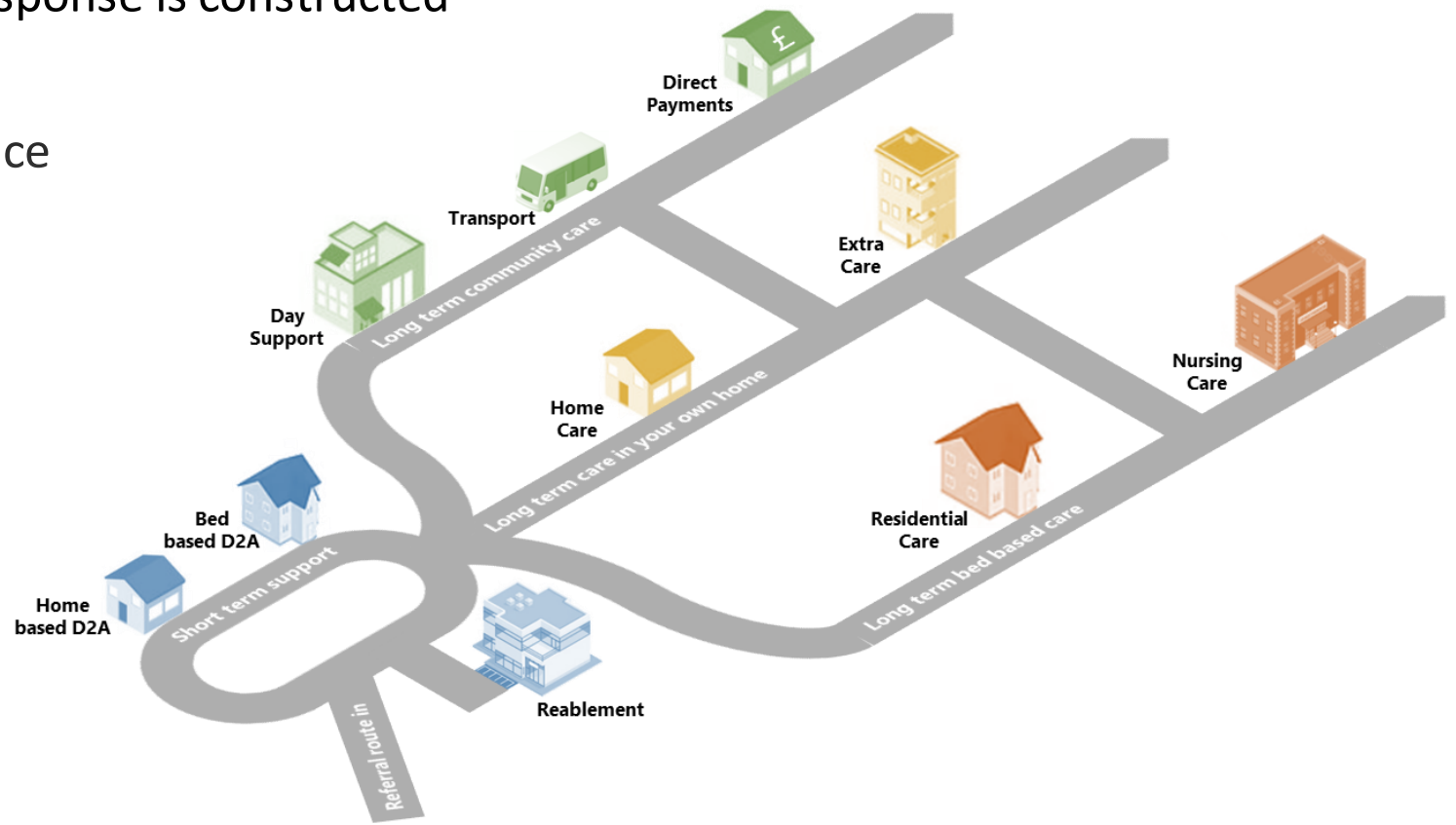


Liverpool  
City Council

# CLD concept

## 4 Core Actions (EVENTS)

- 1 **[REFERRAL]** A person will ask for help or advice
- 2 **[ASSESSMENT]** Appropriate response is constructed
- 3 **[SERVICE]** Solution is put in place
- 4 **[REVIEW]** Did it work?

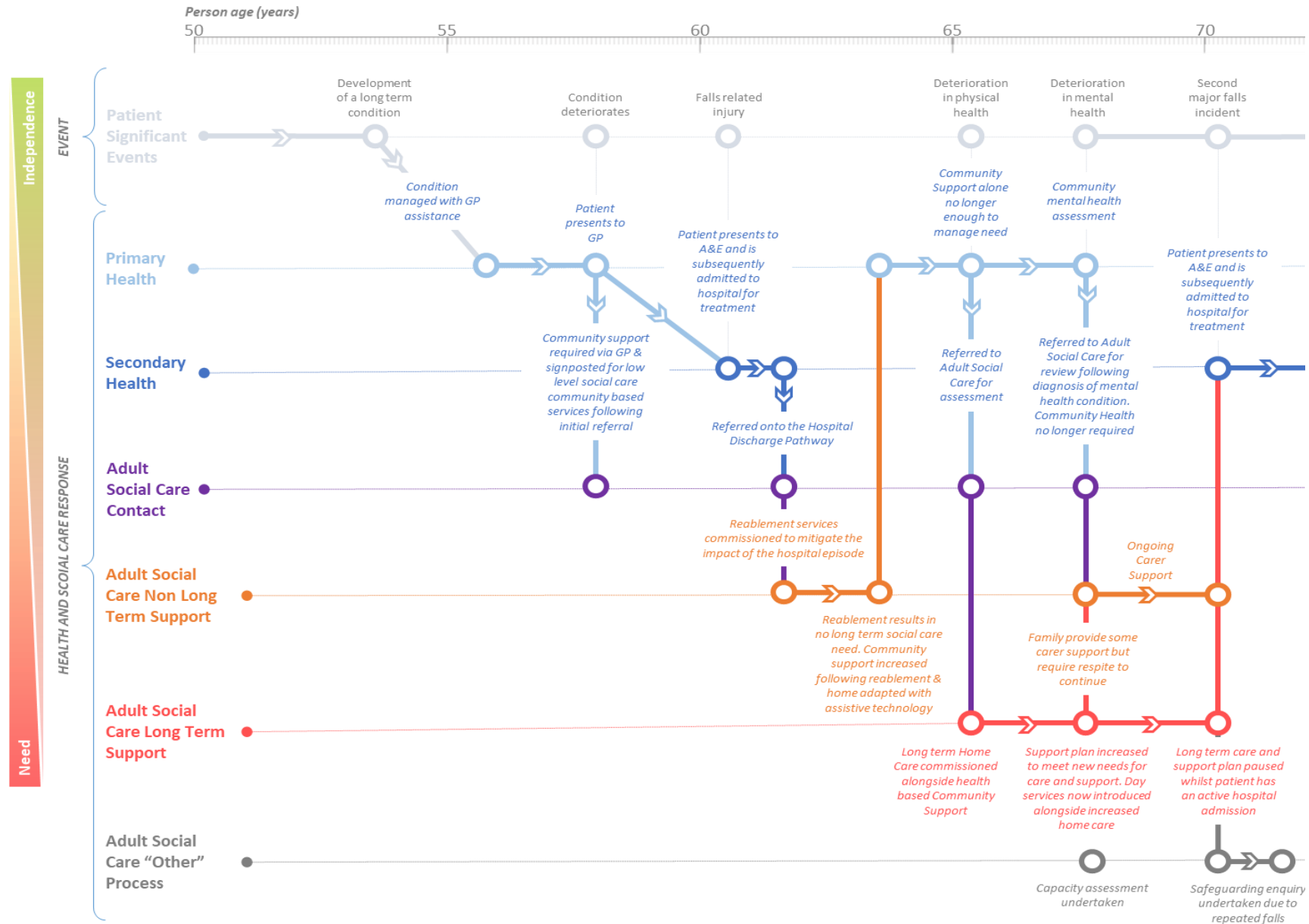


# Practical impact

- Re-establishes the person at the centre of data / intelligence system
- Single language for social care without major redesigns to local systems
- Simplification of case management for front line staff
- Facilitation of data linkages across health and social care
- Enablement of a persons health and social care timeline
- Centralised accessible data resource.



# Event timeline model

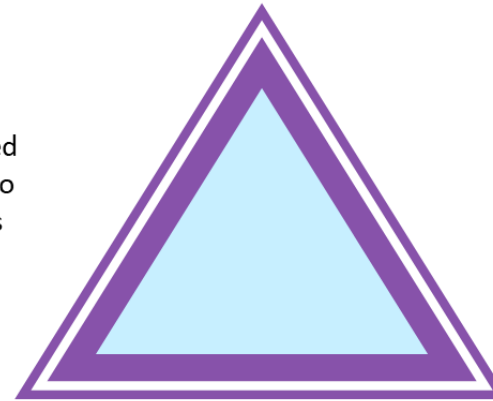


# So why CLD?

**CLD provides an unbroken flow of data from front line to national strategy for the first time.**

- 1 Demand** – *What are the pressures on services?*  
**Activity** – *What is our response to the pressures?*

Ensuring outcomes are achieved at the best possible standard to prevent/reduce further needs



Efficient use of resources to meet demand, both workforce and budget

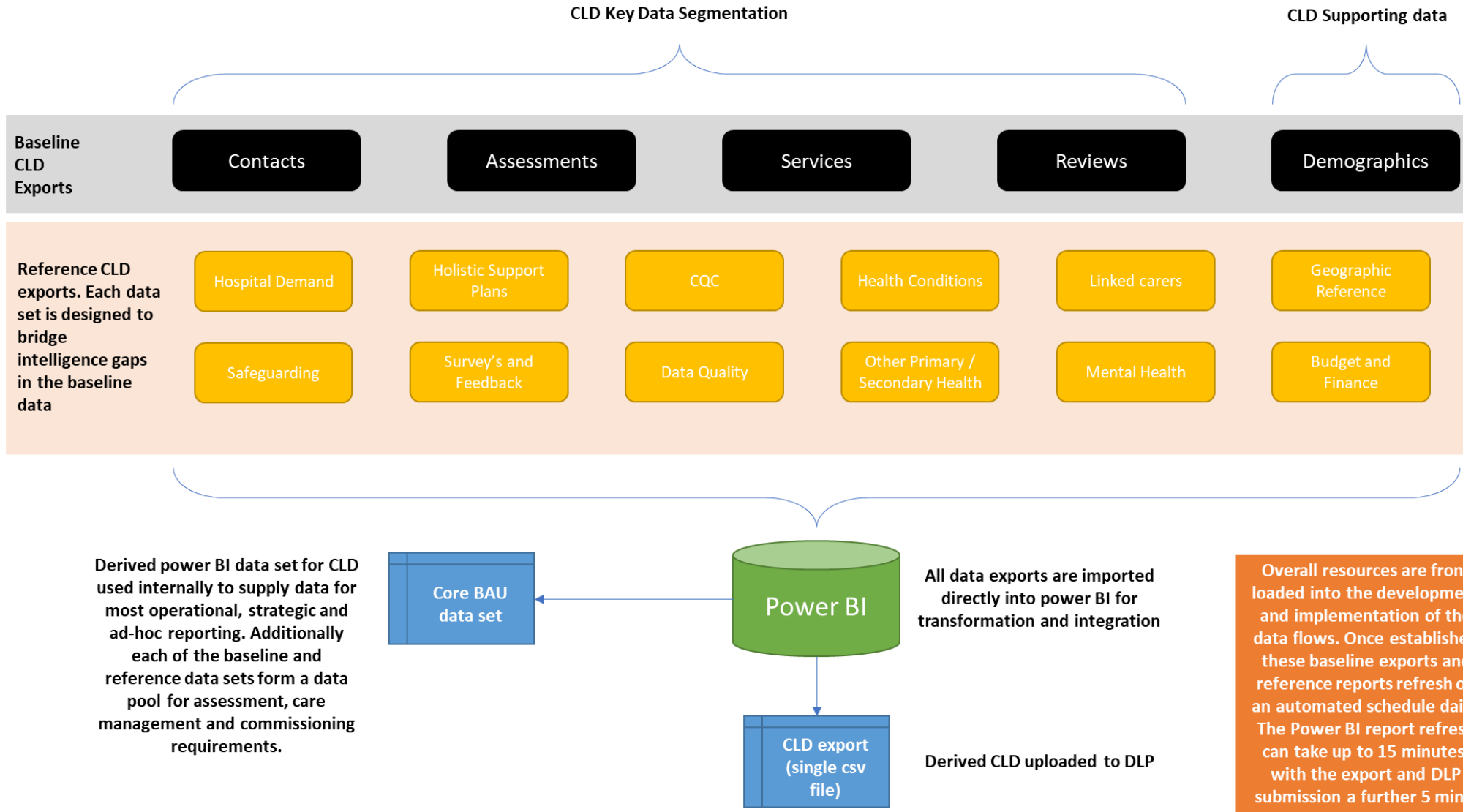
- 3 Effectiveness** – *How good is the quality of service and are we meeting expected outcomes?*

Maximise social impact and value for money

- 2 Productivity** – *How efficient is our response and use of resource meeting demand?*



# CLD in reality

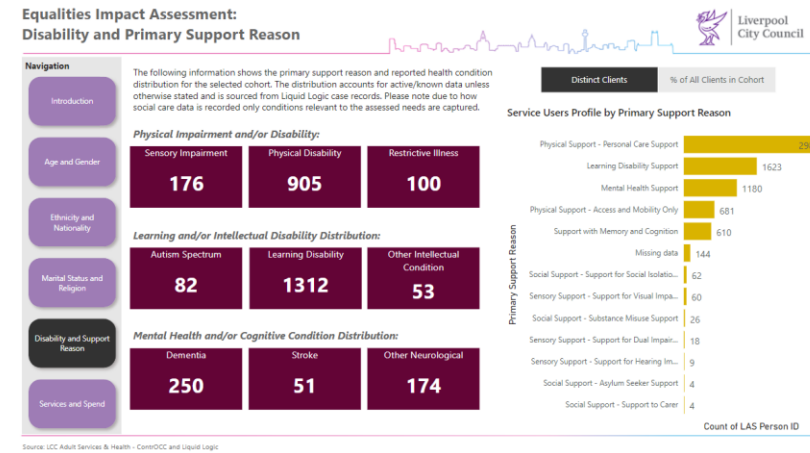


# CLD in reality

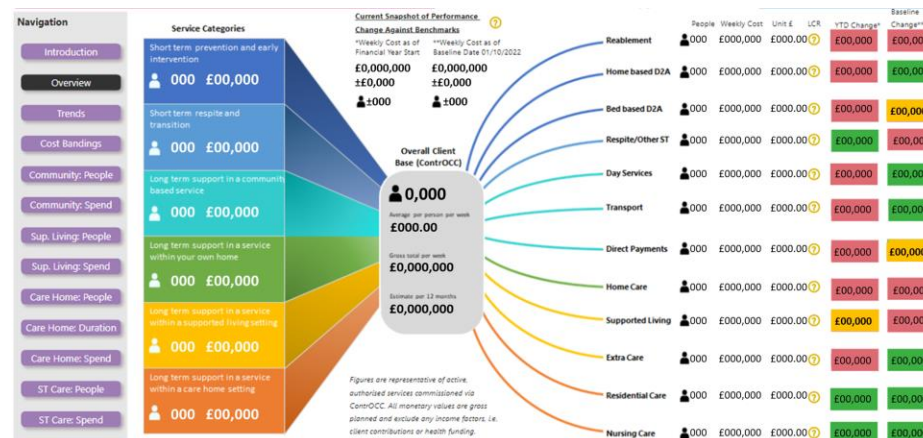
## Integrated operational oversight



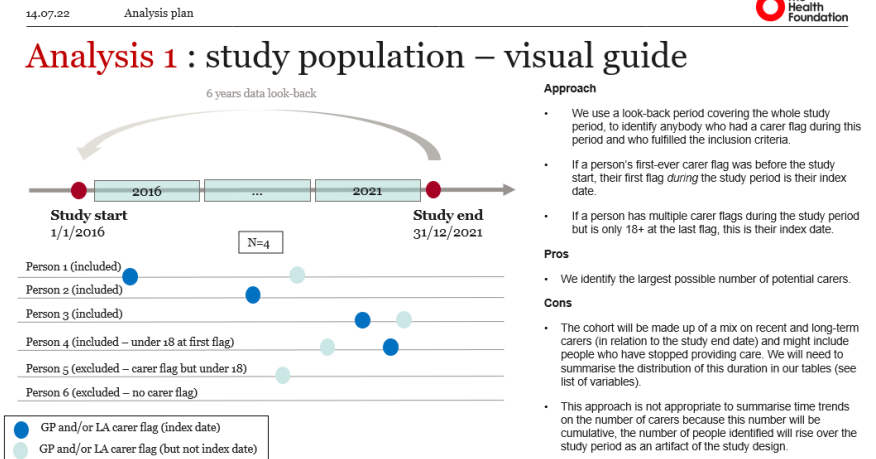
## Routine national monitoring



## Commissioning behaviour and market management



## Multi agency research



This project has fundamentally changed the philosophy of why and how we collect and use data.

Any questions?

Get in touch with us at:

 [www.ardengemcsu.nhs.uk](http://www.ardengemcsu.nhs.uk)

 @ardengem

 [contact.ardengem@nhs.net](mailto:contact.ardengem@nhs.net)







HEADLINED BY -  databricks

# Up Next...





HEADLINED BY -  databricks

## Speaking Now...



**Britta Srivas**  
Customer Solutions  
Engineer - Apheris



## Speaking Now...



HEADLINED BY -  databricks



**Max Kindred**

Net Zero Carbon Insight  
Manager - NHS Estates,  
Commercial Directorate  
NHS England



**Simran Sansoy**

Net Zero Carbon Senior  
Analyst - NHS Estates,  
Commercial Directorate,  
NHS England



England

# ERIC

## Bringing Sunshine to Estates Data

Presented by:

Lyn Howard, Strategy & Delivery Data Analyst

Max Kindred, Net Zero Carbon Insight Manager

Simran Sansoy, Net Zero Carbon Insight Manager

# Estates Returns Information Collection

The Estates Returns Information Collection (ERIC) collects financial and operational data about the providing, maintaining, and servicing of the NHS Estate used in delivering secondary care and ambulance services. ERIC is a mandatory trust return requiring Director of Estates signoff.

It includes data on:



building quality



overall costs



costs and consumption of utilities



food



waste



progress in meeting carbon reduction targets

# What we do with the ERIC data:

## The data is used to answer the following:

- Parliamentary Queries (PQ's)
- Freedom Of Information requests (FOI's)

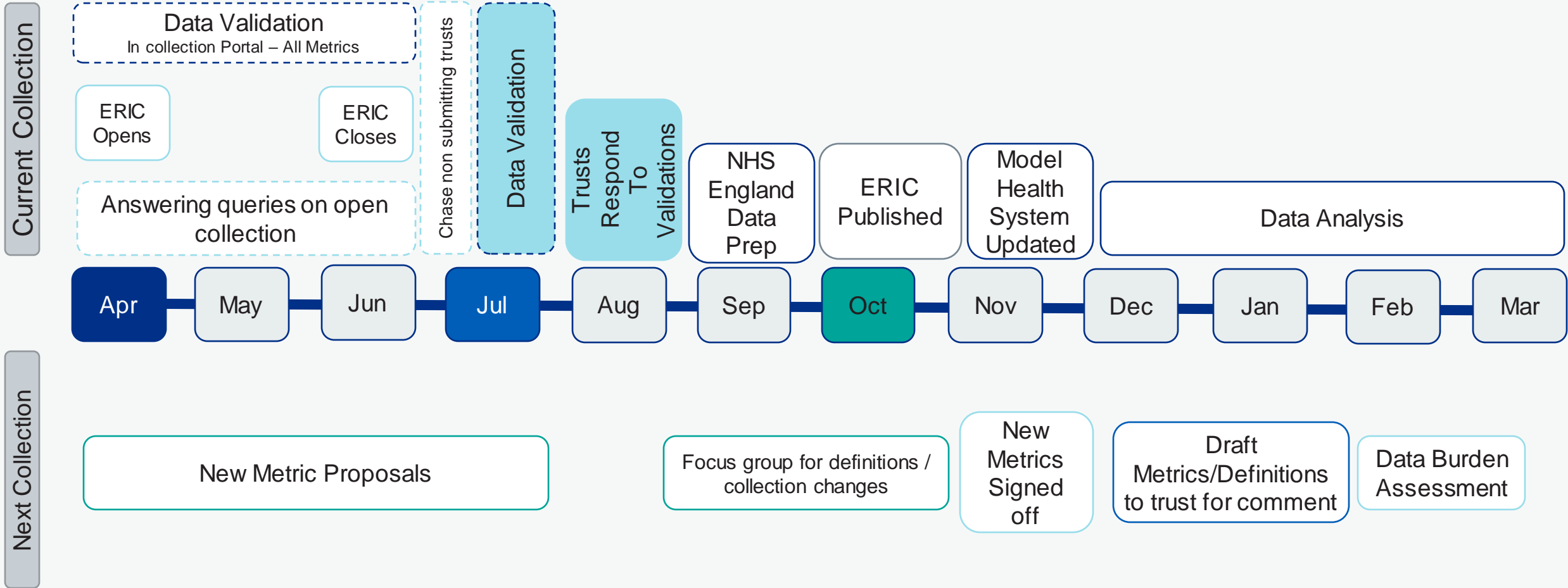
Dealt with by the NHS E team stopping requests going directly to trusts.

## Also used for:

- **Data Modelling**
  - New Hospital Program long list
  - Spending Review
  - Long Term Infrastructure Strategy
  - Backlog Maintenance
- **Capital Funding**
  - £640m funding achieved
- **Benchmarking**
  - Model Health System
  - Efficiency programmes (CIPs)
- **Carbon Footprint Reporting**
- **ICS + Trust Estates Strategies + Policies**

**Collect once**  
**Use many**

# ERIC Process



# ERIC Reporting

- 212 trusts covering 9,761 sites within the secondary sector.
- 6,475 sites reported within the ERIC collection.

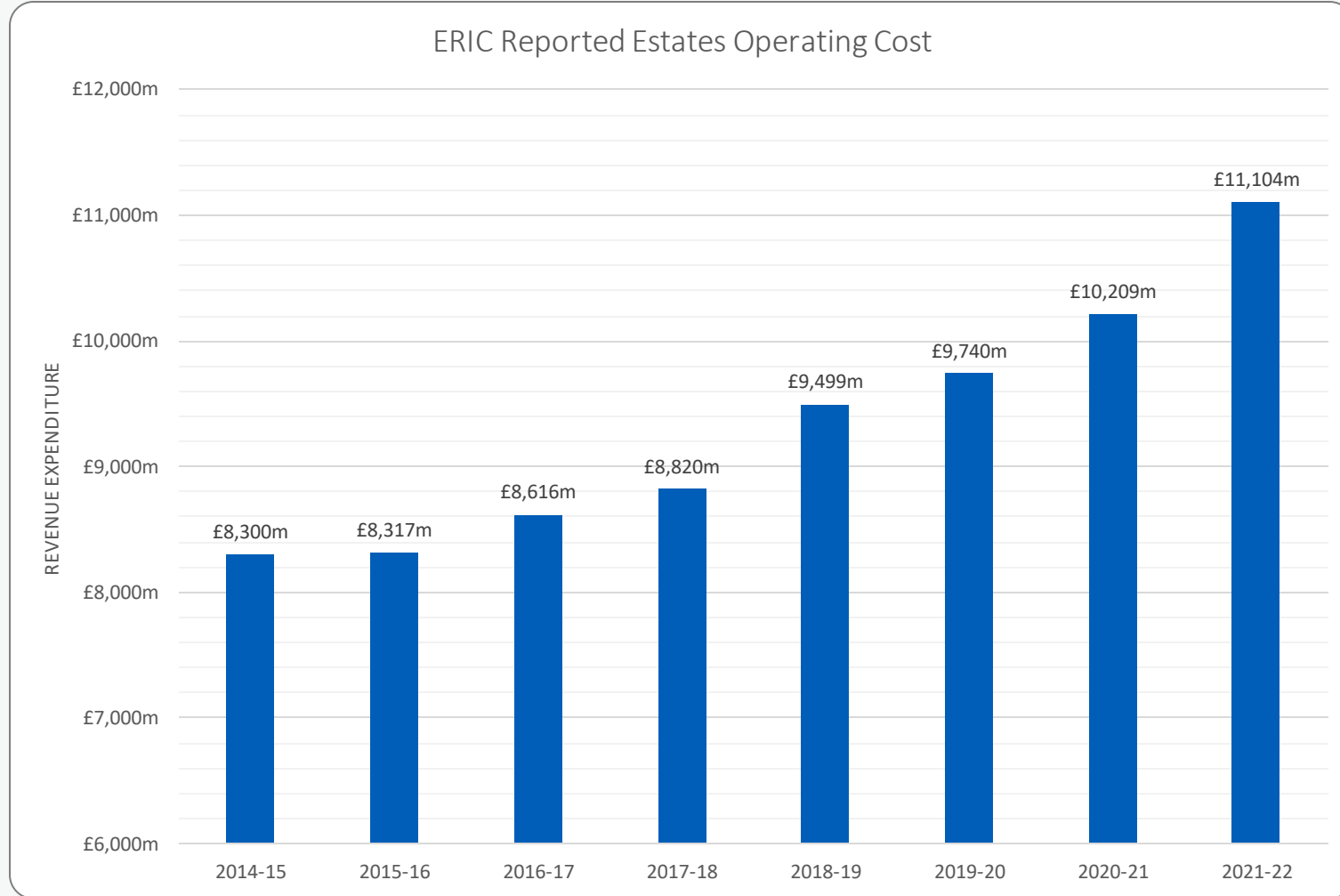
Site GIA	No Inpatient Beds	1 – 9 Inpatient Beds	10+ Inpatients Beds
Up to 150m <sup>2</sup>	Not Reported	Not Reported	Individually reported at site level.
151m <sup>2</sup> – 499m <sup>2</sup>	Other Reportable Sites	Other Reportable Sites	Individually reported at site level.
500m <sup>2</sup> or more	Individually reported at site level.	Individually reported at site level.	Individually reported at site level.

- 228 published data categories and 62 internal KPI's, total data quantity is 854,849 observations
- ERIC raw data available at [ERIC 2021/22](#)
- Data quality statement available at [Data Quality statement ERIC 21/22](#)

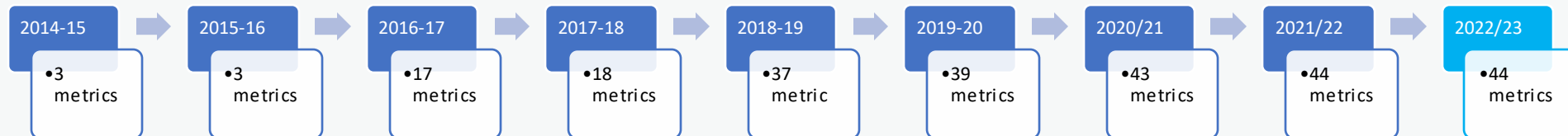
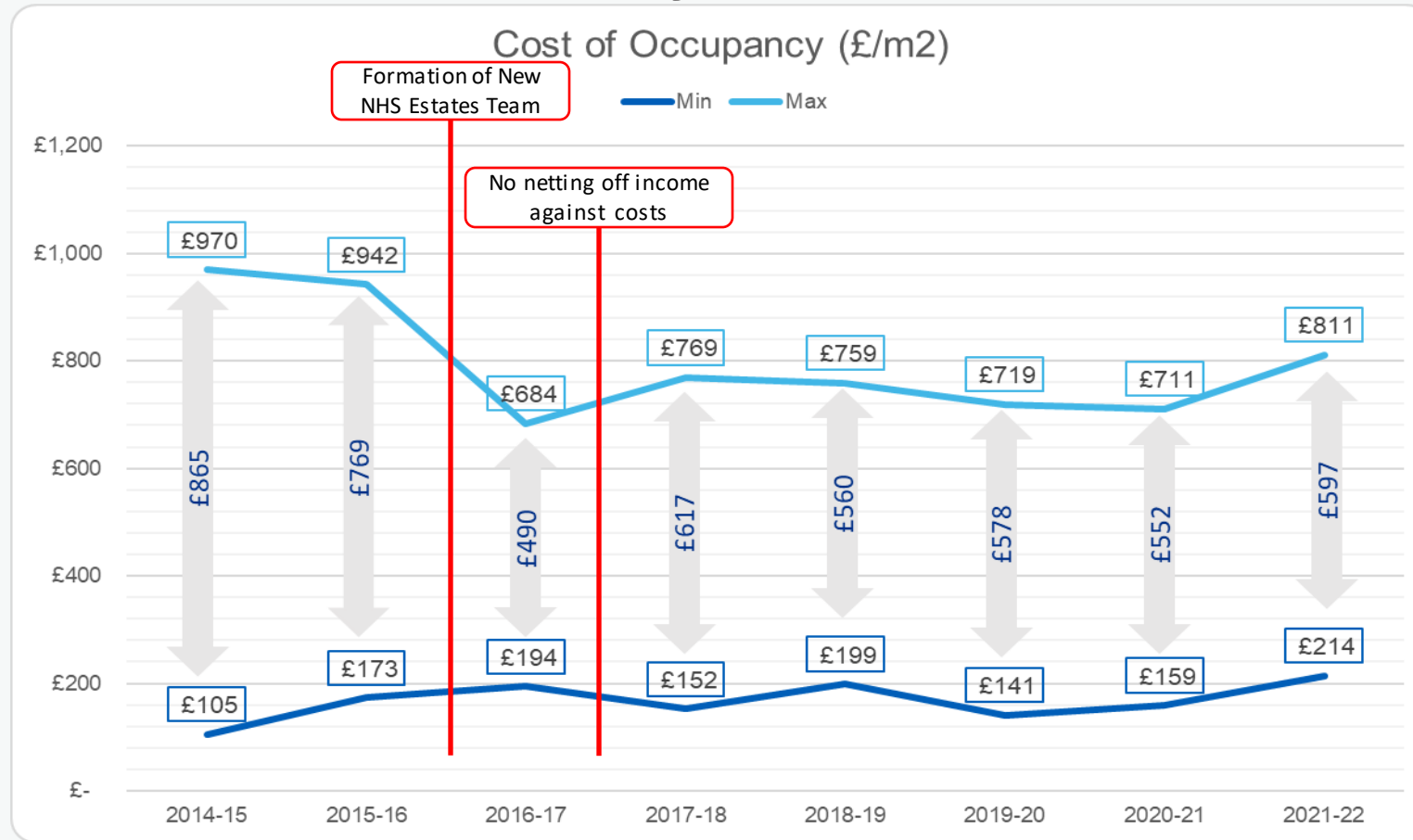


# Data Quality

# ERIC: Cost Summary

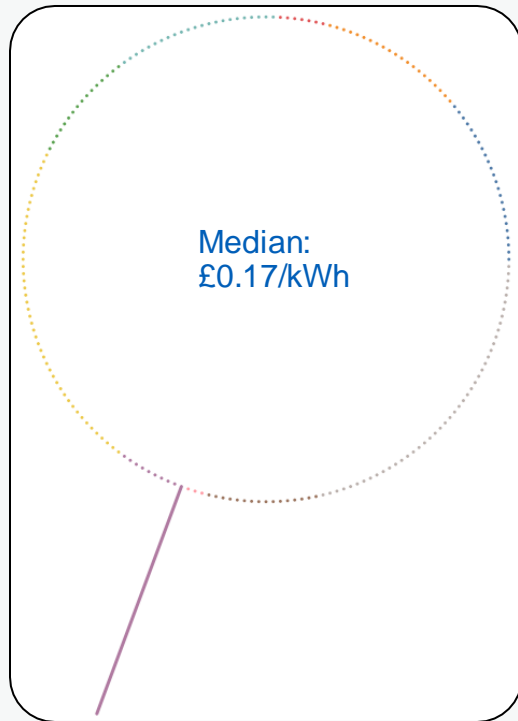


# ERIC: Cost of Occupancy



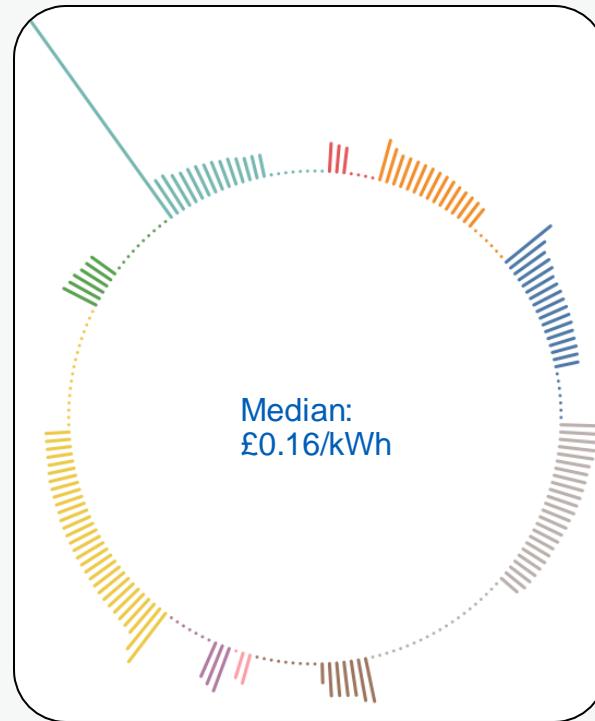
# ERIC 2021/22

## Cost per kWh and Cost per tonne



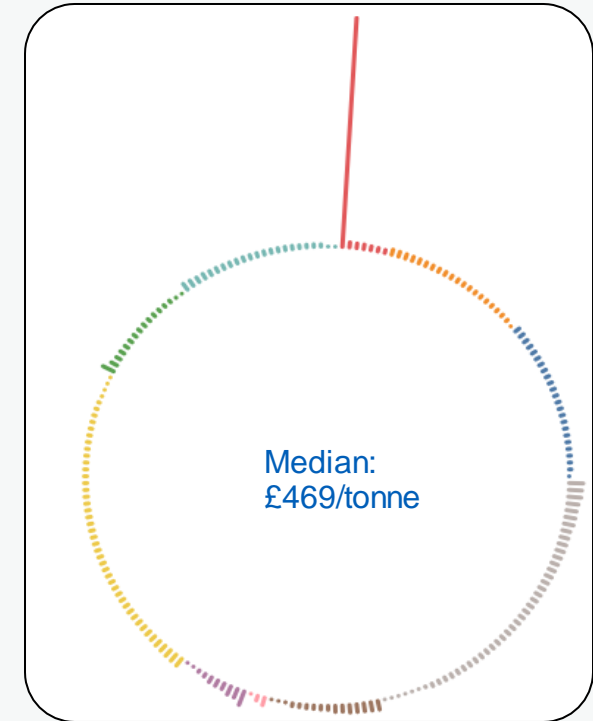
### Electricity

- Max: £6,909/kWh
- Min: £0.04/kWh



### Electricity - Green

- Max: £8.0 /kWh
- Min: £0.0008 /kWh



### Alternative Treatment waste

- Max: £21 /tonne
- Min: £28,579 /tonne

Note: Data quality remains the Trust's responsibility

Radial charts show trust aggregate position. A larger range is observed at site level.



# Last year's approach

Spreadsheet based, so:

- Labour intensive
  - Difficult to reproduce for consistency
  - Difficult to audit
  - Output was a spreadsheet, so not user friendly
- 
- 31,000 validations, less than 12% were subsequently adjusted

# New Process

# ERIC Validation Process – 2022/23

Early Data Submission

Complete Data Submission

Final Data Submission

**In System Validations**  
(Occurs as trusts populate information)

**Enhanced Validation**  
(Early data cut on Backlog, Energy, Waste)

**Summer Validation**  
(Occurring since 2016/17)

**Post Summer  
Validation Review**  
(New for ERIC 2022/23)



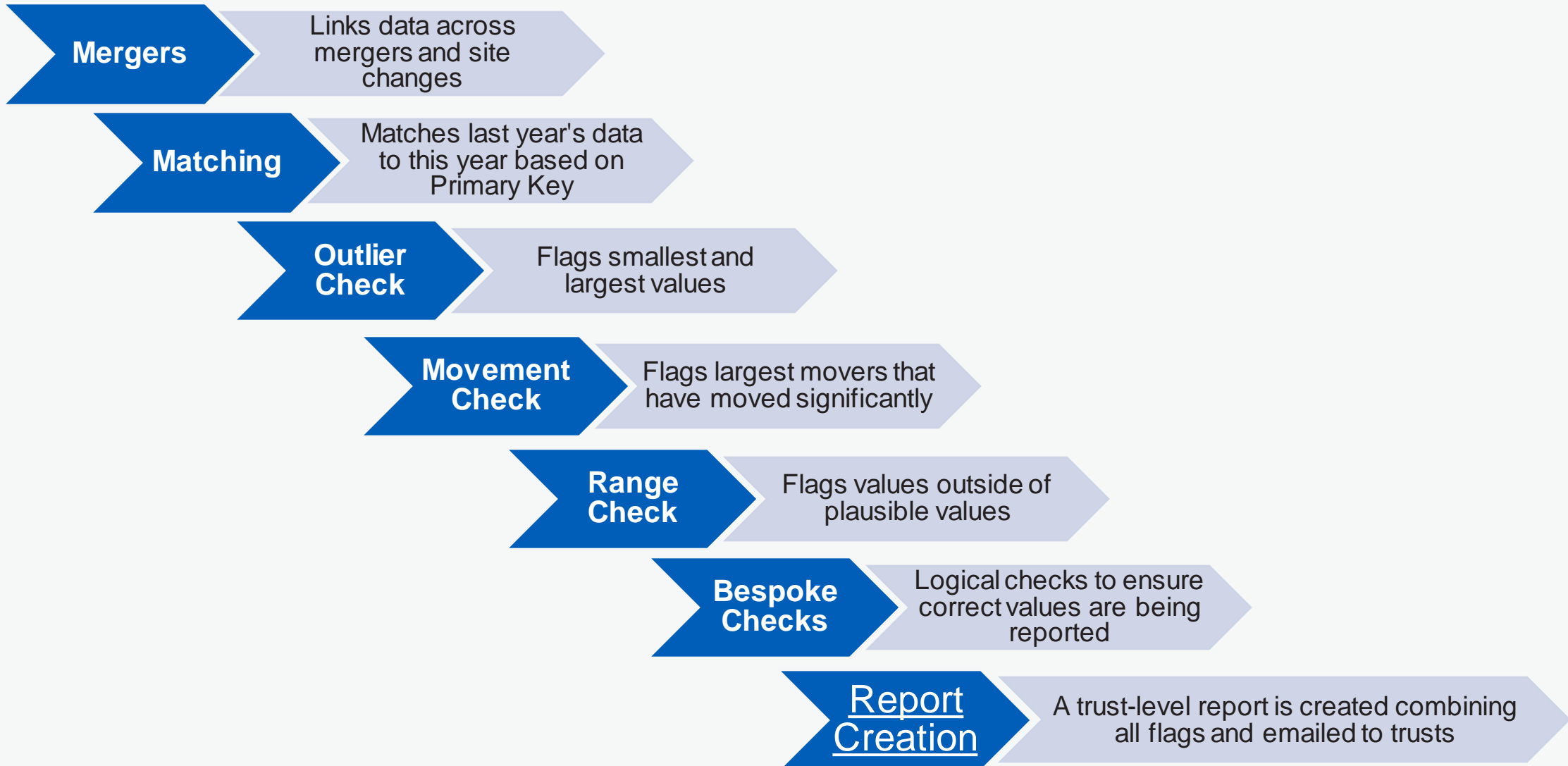
# This year's approach

R and R Markdown based, so:

- Much less labour intensive
  - Easily reproducible for consistency
  - Easy to audit
  - Output as html report, opens in browser & much more user friendly
- 
- 10,000 validations, a reduction of ~70%



# ERIC R Validation Process



```

Estates2 - RStudio Source Editor
ERIC_Validation_Code_v2.0.R
# Calculated threshold values that are specified in the validation criteria as a % of the values when grouped by metric code
# removed any sites reporting 0 values in both years
#####
314
315
316 joined_2021_2023 <- joined_2021_2023 %>%
317   # mutate(reported_value_2023_if_zero=(reported_value_2022==0 & reported_value_2023==0, NA_integer_, reported_value_2023)) %>%
318   mutate(year_change_if_zero=(reported_value_2022==0 & reported_value_2023==0, NA_integer_, year_change)) %>%
319   group_by(metric_code) %>%
320   mutate(threshold_max=quantile(year_change, movement_rank_percentiles_upper, na.rm=TRUE),
321          threshold_min=quantile(year_change, movement_rank_percentiles_lower, na.rm=TRUE),
322          "flag_change%" = case_when(year_change%>%> c(-inf, inf) ~ NA_character_,
323                                     year_change%<=(0 - movement_criteria*(-1/-30)) & year_change-threshold_min ~ movement_low_text,
324                                     year_change%>=(0+ movement_criteria*(-1/-30)) & year_change-threshold_max ~ movement_high_text))
325
326 #write_xlsx(joined_2021_2023, "joined070623.xlsx")
327
328 #join the movement check table back to the original 2022/2023 only table to have all the validations in one place
329
330 Long_2022_2023 <- Long_2022_2023 %>%
331   left_join(joined_2021_2023) %>%
332   relocate(reported_value_2022, reported_value_2023, year_change, "year_change%", threshold_max, threshold_min, "flag_change%",
333            .before = original_order)
334
335 #rm(Long_2021_2022)
336 #####
337
338 threshold_checks <- joined_2021_2023 %>%
339   select(metric_code, metric_name.x, threshold_max, threshold_min) %>%
340   distinct()
341
342 #####
343 #outliers check
344 #created outliers table to allow filtering of na and 0 values before calculating percentiles and running checks
345 #creating a duplicate graph table where the percentiles are calculated based on site type
346 # then rejoining to the main table
347 #####
348
349 Outliers_2022_2023 <- Long_2022_2023 %>%
350   filter(!is.na(reported_value), reported_value!=0)%>%
351   group_by(metric_code) %>%
352   mutate(
353     # mutate(threshold_max=quantile(year_change, movement_rank_percentiles_upper, na.rm=TRUE),
354     #   threshold_min=quantile(year_change, movement_rank_percentiles_lower, na.rm=TRUE),
355     percentile_lower_bound=quantile(reported_value, percentile_lower, na.rm=TRUE),
356     percentile_upper_bound=quantile(reported_value, percentile_upper, na.rm=TRUE),
357     IQR_lower_bound=quantile(reported_value, iqr_lower, na.rm=TRUE) - 1.5*IQR(reported_value, na.rm=TRUE),
358     IQR_upper_bound=quantile(reported_value, iqr_upper, na.rm=TRUE) + 1.5*IQR(reported_value, na.rm=TRUE)
359   )

```

1. Overview

- 2. Overview of Validation
- 3. Threshold Values
- 4. Flagging
- 5. Metrics Management (PM)
- 6. Metrics
- 7. Flags
- 8. Data
- 9. Reporting
- 10. Audit
- 11. User and Location
- 12. Mapping
- 13. Metrics Dash
- 14. Sites
- 15. Movement Rank
- 16. Daily Holdings
- 17. Aggreg
- 18. Car Parking
- 19. PFI
- 20. Appendix

### 17.1 Aggreg - 2022 to 2021 (2) - Movement dash (Flag 2)

Metric Type	Metric Name	Metric Value	2022 Reported Value	2021 Reported Value	Change from 2022 to 2021	Percentage Change from 2022 to 2021	Flag 2 Movement
Aggreg	Aggreg	Aggreg	Aggreg	Aggreg	Aggreg	Aggreg	Aggreg

### 18 Car Parking

### 18.1 Car Parking Spaces Flag

Metric Type	Metric Name	Metric Value	2022 Reported Value	2021 Reported Value	Change from 2022 to 2021	Percentage Change from 2022 to 2021	Flag 2 Movement
Car Parking	Car Parking	Car Parking	Car Parking	Car Parking	Car Parking	Car Parking	Car Parking

### 19 PFI

### 19.1 PFI Facilities, services and Service Flag

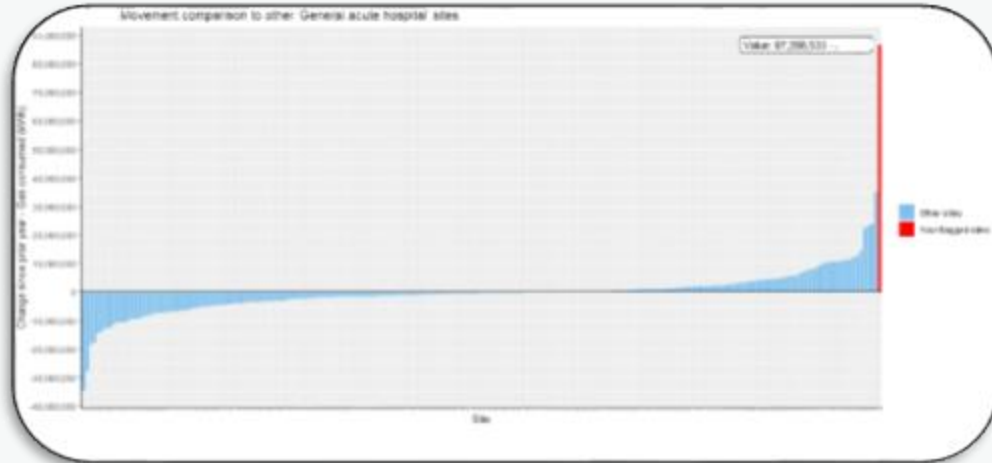
Metric Type	Metric Name	Metric Value	2022 Reported Value	2021 Reported Value	Change from 2022 to 2021	Percentage Change from 2022 to 2021	Flag 2 Movement
PFI	PFI	PFI	PFI	PFI	PFI	PFI	PFI

### 20 Appendix

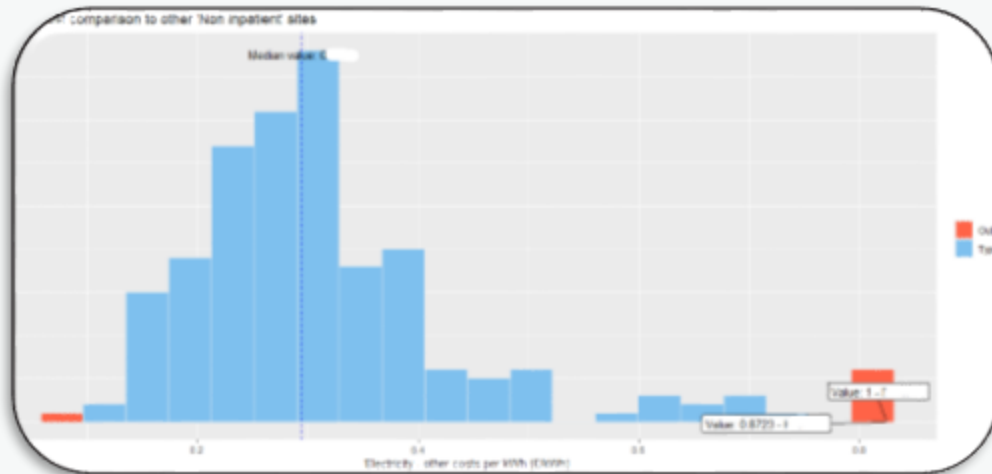
#### 20.1 Data Table

Fac	Fac Name	Metric Type	Metric Name	Metric Value	2022 Reported Value	2021 Reported Value	Change from 2022 to 2021	Percentage Change from 2022 to 2021	Flag 2 Movement	Flag 1
1	Fac 1	Metric 1	Metric 1	Value 1	2022 Value 1	2021 Value 1	Change 1	Percentage 1	Flag 2	Flag 1
2	Fac 2	Metric 2	Metric 2	Value 2	2022 Value 2	2021 Value 2	Change 2	Percentage 2	Flag 2	Flag 1
3	Fac 3	Metric 3	Metric 3	Value 3	2022 Value 3	2021 Value 3	Change 3	Percentage 3	Flag 2	Flag 1
4	Fac 4	Metric 4	Metric 4	Value 4	2022 Value 4	2021 Value 4	Change 4	Percentage 4	Flag 2	Flag 1
5	Fac 5	Metric 5	Metric 5	Value 5	2022 Value 5	2021 Value 5	Change 5	Percentage 5	Flag 2	Flag 1

# Making the reports easier to use



- Movement charts identify sites with significant changes against the previous year.



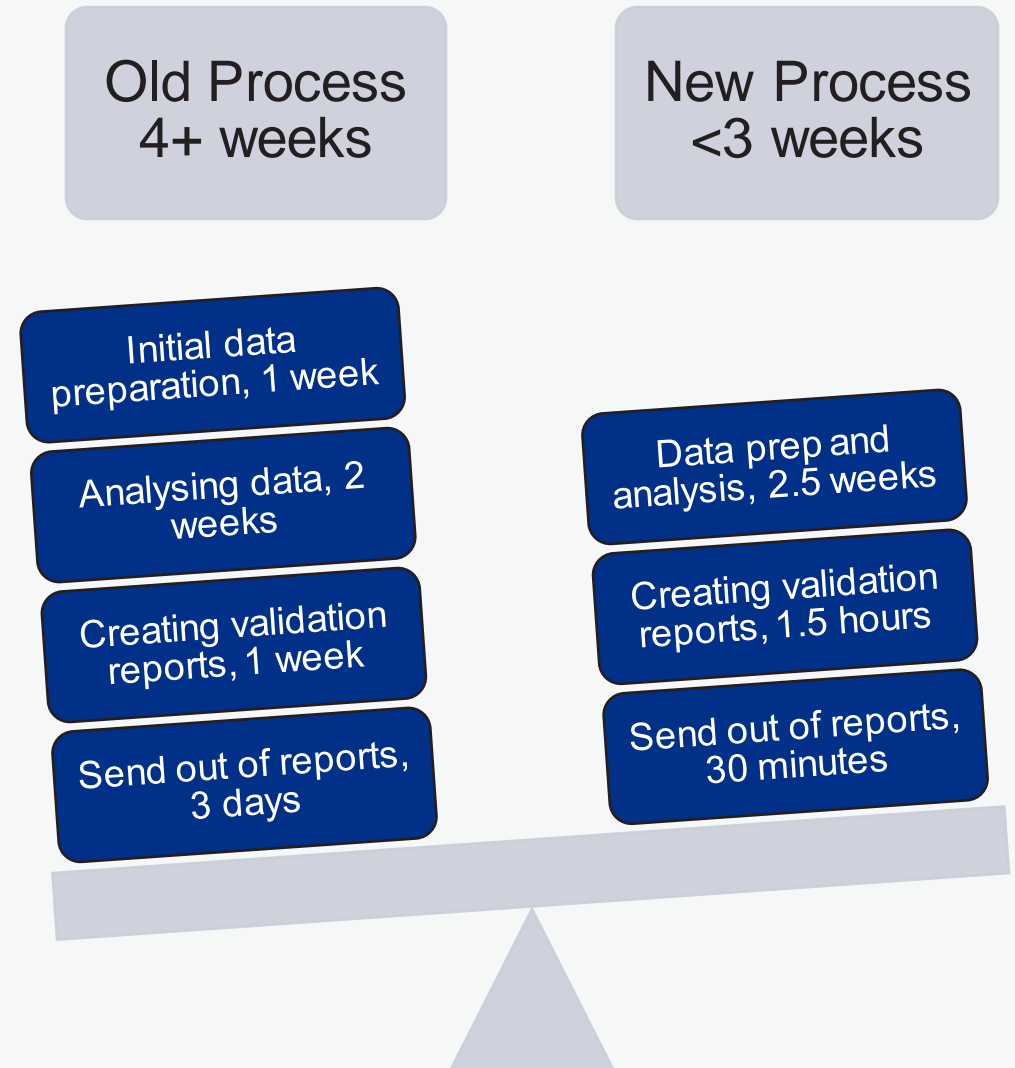
- Outlier charts identify data values outside the range of values from the majority of sites.

```
Estates2 - RStudio Source Editor
Send_emails_code.R* x
Source on Save
Run
↑ ↓
Source

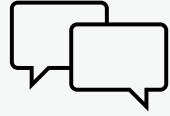
1 #####
2 #Install and Load Packages
3 #####
4 list.of.packages <- c("readxl", "emayili") # List the needed packages
5 new.packages <- list.of.packages[!(list.of.packages %in% installed.packages()[, "Package"])] # of the needed packages, list those that are not already installed
6 if(length(new.packages)) install.packages(new.packages) # Install any packages which are not already installed
7 for (k in 1:length(list.of.packages)) {
8   library(list.of.packages[k], character.only = TRUE) # Load the needed packages using library
9 }
10 rm(list = c("k", "list.of.packages", "new.packages"))
11
12 #####
13 #Run the following code to open the.Renviron file.
14 #usethis::edit_r_environ()
15 #
16 #Then set
17 # EMAIL_ADDRESS = "***@***"
18 # EMAIL_PASSWORD =
19 #
20 #Save and close the file.
21 #The variables EMAIL_ADDRESS & EMAIL_PASSWORD can be retrieved using the Sys.getenv() function
22 #####
23
24 smtp <- emayili::server(host = "send.nhs.net",
25                        port = 587,
26                        username = Sys.getenv("EMAIL_ADDRESS"),
27                        password = Sys.getenv("EMAIL_PASSWORD"))
28
29 email_df <- read_excel(file.path(Sys.getenv("MY_PATH"), "07. ERIC 2022 23/Validation/Summer validation/04. Distribution list/ERIC and Sustainability Contacts Lists.xlsx", sheet = "ExportContacts")) |> rename(trust_code = "Trust Code", trust_name = "Trust Name")
30 review_deadline <- "27/09/2023"
31
32 for(t in unique(email_df$trust_code)){
33
34   Selected_Row = email_df |> filter(trust_code == t)
35
36   email <- emayili::envelope() %>%
37     emayili::from(Sys.getenv("EMAIL_ADDRESS")) %>%
38     emayili::to(unlist(strsplit(Selected_Row$`Combined email`, ";")))%>%
39     emayili::cc(Sys.getenv("EMAIL_ADDRESS")) %>%
40     emayili::subject(paste0("Trust: ", Selected_Row$trust_code, " - ERIC 2022-23 Validation Report (ACTION REQUIRED)")) %>%
41     emayili::text(paste0("Dear colleagues,
42
43 Trust: ", Selected_Row$trust_code, " - ", Selected_Row$trust_name, "
44
45 Many thanks for completing your trust ERIC 22/23 data return, we appreciate the effort that your teams have put in to complete this work.
46 We appreciate your continued involvement in this journey with us, ensuring published data regarding NHS trusts is as accurate as possible.
47
48 Note: Saving HTML report.
49 Right-click on the attached file and select Save As, save where appropriate.
50
51 NHS England National Estates Team
52 ")
53 ) %>%
54   emayili::attachment(file.path(Sys.getenv("MY_PATH"), "07. ERIC 2022 23/Validation/Summer validation/03. outputs/Reports", paste0("Report_", t, "_(", Sys.Date(), ").html"))
55
56 #Send the email
57 smtp(email, verbose = TRUE)
58 }
```

# Lessons learned

- “One size fits all” charts
- Make outputs usable for non-technical audience
- NHS Firewalls
- Time on inputs is well spent
- Materiality



# Feedback



“Much easier to use than last year”

“A vast improvement; it is much easier to interpret and review than in previous years. The graphics are good, and the ability to export works really well indeed. Thank you and well done! ”

“This report is a lot easier use than what we've had historically. I can clearly see why our data was flagged”

“The validations portal is much easier to use than the spreadsheets in previous years – thank you for this!”

---

## Thank You



**@nhsengland**



**company/nhsengland**



**england.nhs.uk**



HEADLINED BY -  databricks

Up Next...

VERITAS™





HEADLINED BY -  databricks

## Speaking Now...



**Rob Watton**

Pre-Sales Technical Account Manager,  
UK Public Sector - Veritas



HEADLINED BY -  databricks

## Speaking Now...



**Mr Len Richards**  
Chief Executive - Mid Yorkshire  
Teaching Trust



Wakefield District  
Health & Care  
Partnership

# The Impact of High Risk Adults

---

An Update

Len Richards – Chief Executive MYTT

3rd October

Proud to be part of West Yorkshire Health and Care Partnership



# What is a 'High Risk' Adult?

---

- ◆ Compared to other over 50s in the population they are more at risk of ongoing acute healthcare needs
- ◆ Long lengths of stay mean this group account for a significant number of occupied beds at any one time and a significant number of occupied bed days in a year
- ◆ By adapting our system to either prevent these people needing acute care services, or avoiding an extended length of stay there is the potential to improve Health and Wellbeing *and*
  - release hospital bed capacity immediately and
  - reduce the risk of future long admissions

1% of our population  
accounting for 60% of  
occupied beds

# Understanding High-Risk and their Impact

---

The following slides use Mid  
Yorks Teaching NHS Trust data  
with time series analytics

The findings have been replicated in  
South East Region, 4 Welsh systems,  
Northern Health, Melbourne and  
Canterbury, NZ

Additional information has been  
sourced from Cardiff and Vale Regional  
Partnership Board

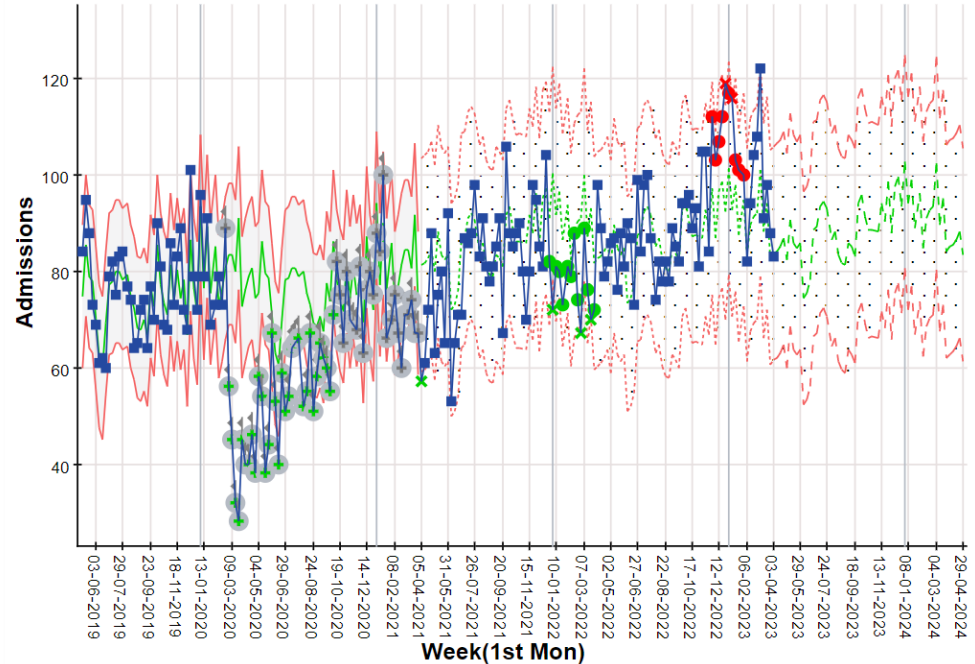




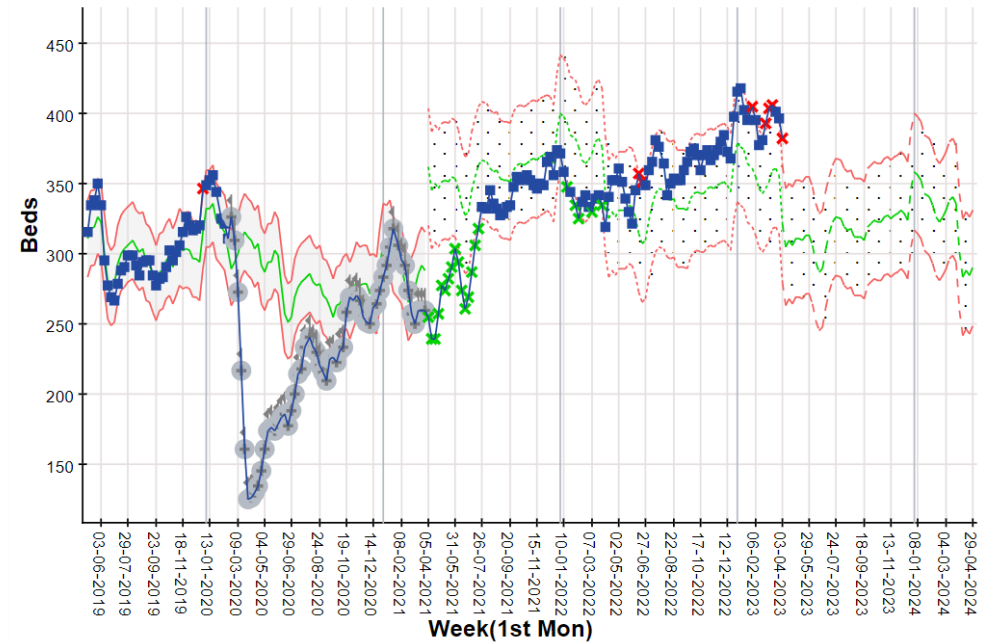


# High-Risk Index Admissions

Provider Spell Admissions : Exclude Last 14 Days \* High Risk Adults Index Admission (including undischarged) : (Weekly - 4 years, prediction)  
Data Updated: 2023-04-27 12:01:53



Occupied Beds at Midnight : Exclude Last 14 Days \* Exclude long stay in ED ward \* High Risk Adults Index Admission (including undischarged) : (Weekly - 4 years, prediction)  
(adjusted for autocorrelation)  
Data Updated: 2023-04-27 12:01:53



80 to 100 admissions per week account for 350 to 400 occupied beds.  
AoS 28 days  
Reduced during Covid but now showing a strong upward trend

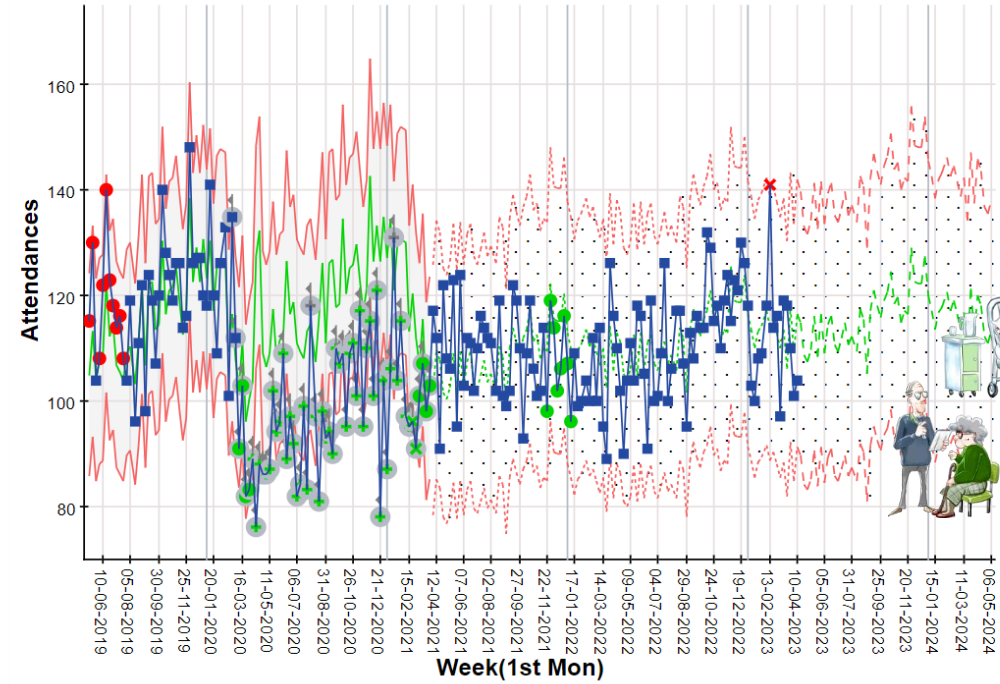




# High Risk Returners

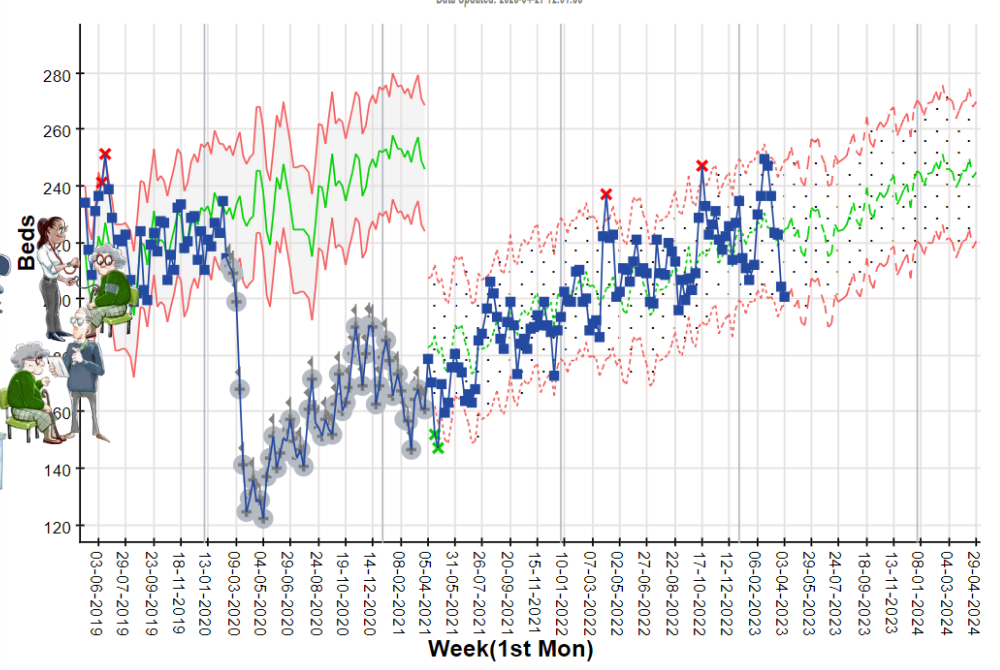
ED Attendances : Latest data set \* Exclude Last 14 Days \* High Risk Adults (after) Return < 3 years : (Weekly - 4 years, prediction)

Data Updated: 2023-05-08 12:03:19



Occupied Beds at Midnight : Exclude Last 14 Days \* Exclude long stay in ED ward \* High Risk Adults (after) Return < 3 years : (Weekly - 4 years, prediction)

(adjusted for autocorrelation)  
Data Updated: 2023-04-27 12:01:53

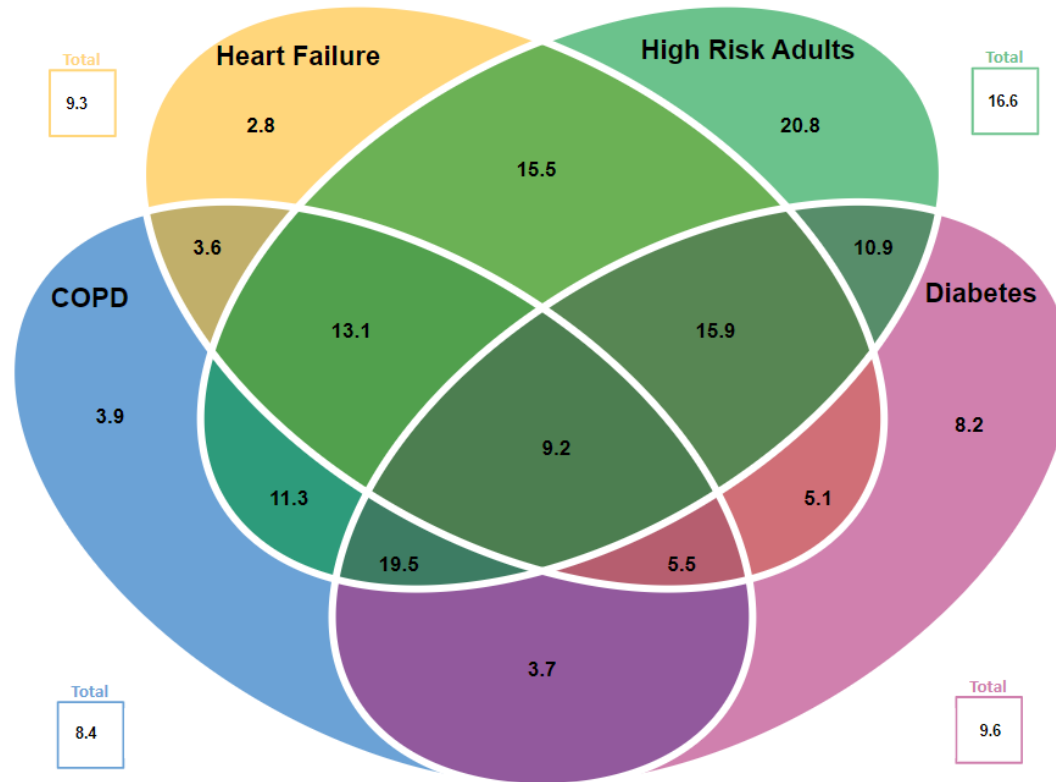


100 to 130 ED attendances per week account for 200 to 240 occupied beds.  
Usual admission rate is 66%  
The focus on reducing hospital stays during Covid impacted the size of this cohort but it has now returned to previous trend.



# High Risk Adults Spend Longer in Hospital

Fitted - 100% +



## Average Length of Provider Spell (Overnight Patients), by Discharge Date

This measures the average length of provider spell by discharge date (for patients that stay overnight), for people identified in the inpatient data who have been clinically coded with an ICD code which puts them into one of the selected cohorts.

For high risk adults, this includes the index and returning event. For chronic diseases this is measured anytime.

Each cohort is unique and exclusive.

All patients in the COPD segment of the Venn diagram have been coded with COPD. The patients who have only have been coded with COPD and have explicitly NOT been coded with any of the other 3 conditions are highlighted in the segment which does not overlap with any other segment.

### Cohort Definitions:

**High Risk Adult:** Unique patients aged over 50 that have been discharged with a length of stay equal to or greater than 14 days.

**Heart Failure:** Unique patients with a CE diagnosis code of I50 Heart Failure, J81.X Pulmonary Odema and I11.0 Hypertension with Congestive Heart Failure (coded at any time).

**Diabetes:** Unique patients with a CE diagnosis code of E10-E14 Diabetes Melitus (coded at any time).

**COPD:** Unique patients with a CE diagnosis code of J40 Bronchitis, not specified as acute or chronic, J41 Simple and Mucopurulent Chronic Bronchitis, J42 Unspecified Chronic Bronchitis, J43 Emphysema and J44 Other Chronic Obstructive Pulmonary Disease (coded at any time).

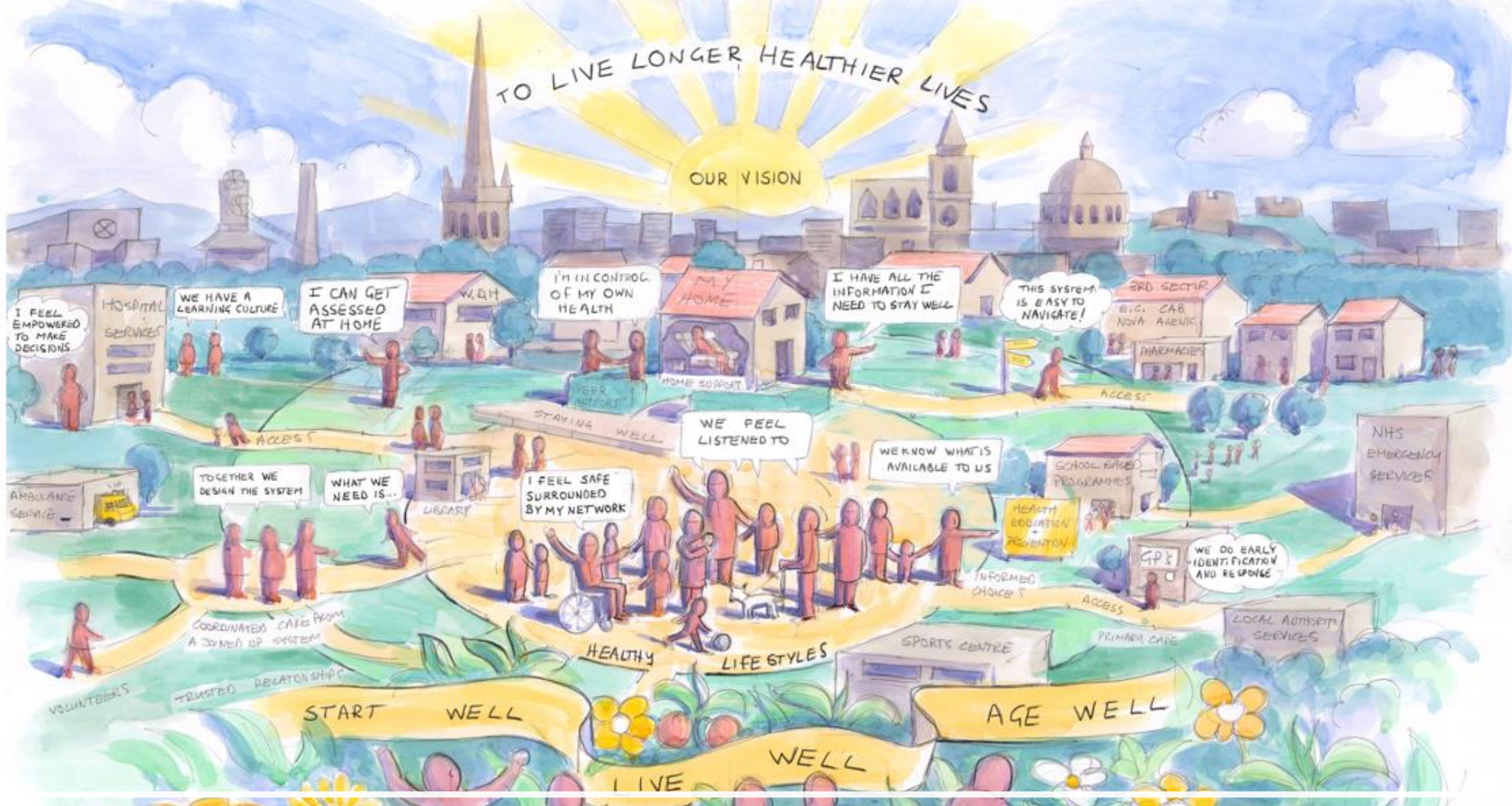


# Frailty Scores and ED Attendances

---

- ◆ Rockwood score from Cardiff and Vale illustrates that 90% of high risk adults over 65 score 4 or more but so do 69% of not high risk.
- ◆ There is an overlap in the populations of frequent ED attendees and High Risk Adults but the cohort of high frequency ED attenders only account for 15% of the occupied beds
- ◆ The High Risk cohort allows tighter targeting of the cohort that will actually have an impact on bed occupancy





# Can we make a difference?



Together, we will work with the people of Wakefield district to create a connected system that supports people in their homes and communities to live healthier, happier lives



Wakefield District  
Health & Care  
Partnership

# Using Data to Connect Care for the High Risk Cohort

---

- ◆ Reduce the admissions and length of stay for high risk returners
  - Acute care plans for winter for most at risk subset (identified in the data)
  - Dovecote pilot (discharge from ED to a rehab focused LA facility)
  - Social work, physio, OT in ED (EAT)
  - Focus on discharge from ED, assessment units, via SDECs or discharge lounge
  - Virtual Ward supporting alternative pathways
  - Focus on discharge (EDAT)
  - Redesigning ICT and Reablement and building capacity to meet the demand and reduce the rate at which new people join the cohort.



# Live Data Alert

Patient level data for selected filters. Please check that record count matches the expected record count.

Atte...	Age	ED atds last	Left before clinical assessment	Admits via ED last 12m	Admits last 3y with LOS > 14d	Beddays over last 3y where LOS > 14	Has open ACN referral	CaseloadTeam	ACN referral date	Triage	NEWS2 score	RockwoodFrailtyScore
	80+	4	0	3	2	43	-	-	-	Major	0	Clinical Frailty Scale level 7 - severely frail
	70-79	3	0	2	1	32	Yes	-	2023-03-29	Major	0	Clinical Frailty Scale level 4 - vulnerable
	50-69	5	0	3	1	28	-	-	-	Major	1	
	80+	0	0	0	1	26	-	-	-	Minor	0	Clinical Frailty Scale level 4 - vulnerable
	50-69	1	0	0	1	23	Yes	-	2023-06-26	Major	7	
	80+	1	0	0	1	22	-	-	-	Unknown	-	
	70-79	5	0	4	1	19	Yes	-	2023-02-17	Minor	3	Clinical Frailty Scale level 4 - vulnerable
	80+	2	0	1	1	16	-	-	-	Major	9	Clinical Frailty Scale level 6 - moderately frail



# Is it working ?

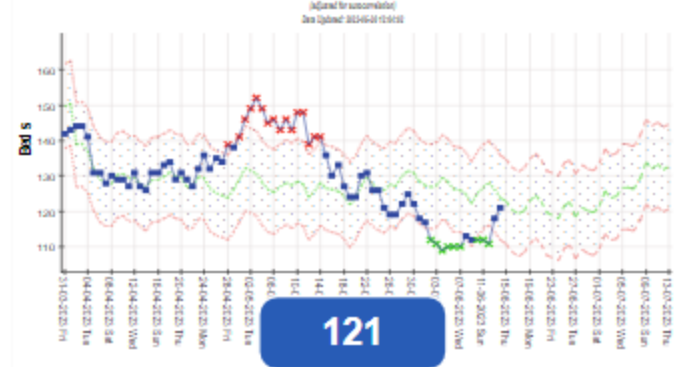
## Wakefield

## Kirklees

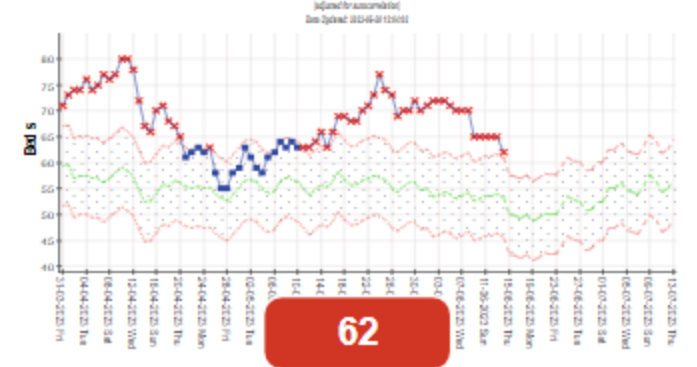
## Other

Beds occupied by people who have exceeded 14 days stay for the first time – High-Risk Index admissions

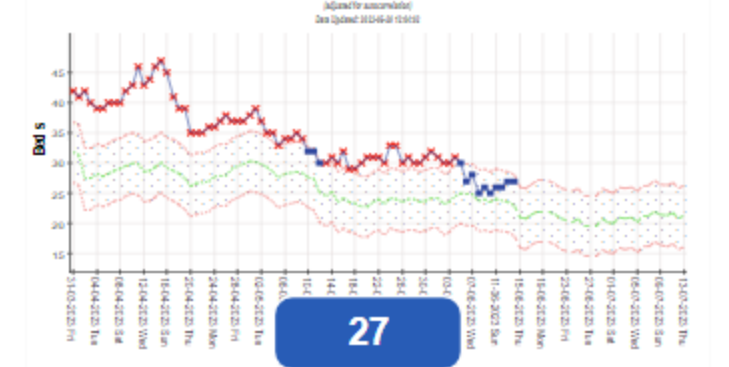
Emergency Occupied Beds: Exclude Last 14 Days \* Wakefield \* High Risk Index \* 70 to 74 years - 75 to 84 years - 85-(Daily - last 3 months, predictor)



Emergency Occupied Beds: Exclude Last 14 Days \* Kirklees \* High Risk Index \* 70 to 74 years - 75 to 84 years - 85-(Daily - last 3 months, predictor)

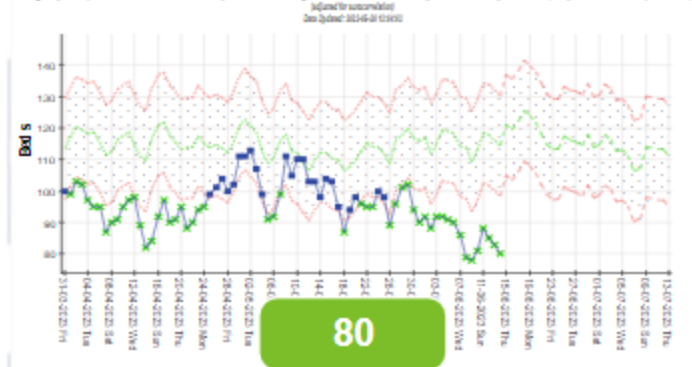


Emergency Occupied Beds: Exclude Last 14 Days \* Other \* High Risk Index \* 70 to 74 years - 75 to 84 years - 85-(Daily - last 3 months, predictor)

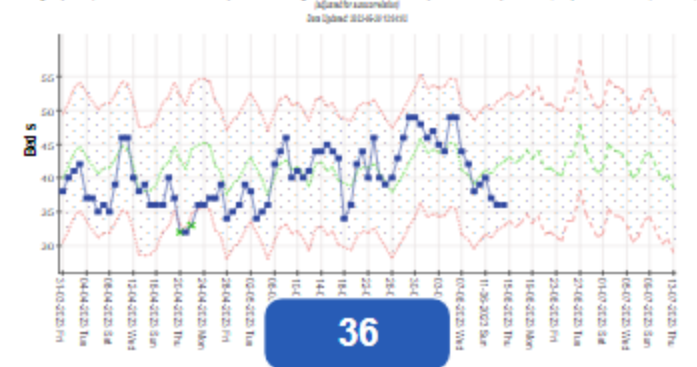


Beds occupied by people who previously have had a High-Risk Index admission and have returned .

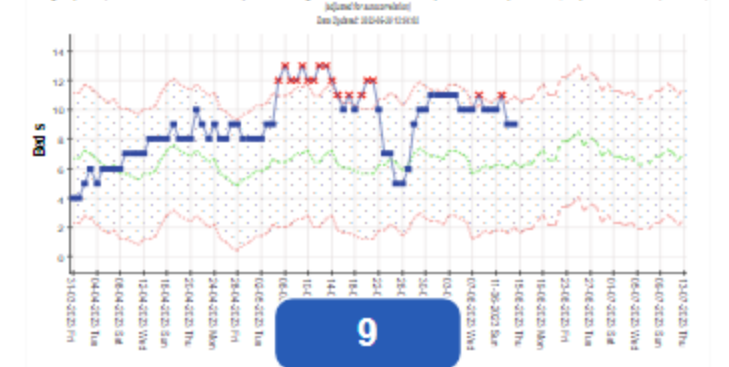
Emergency Occupied Beds: Exclude Last 14 Days \* Wakefield \* High Risk Returners \* 70 to 74 years - 75 to 84 years - 85-(Daily - last 3 months, predictor)



Emergency Occupied Beds: Exclude Last 14 Days \* Kirklees \* High Risk Returners \* 70 to 74 years - 75 to 84 years - 85-(Daily - last 3 months, predictor)



Emergency Occupied Beds: Exclude Last 14 Days \* Other \* High Risk Returners \* 70 to 74 years - 75 to 84 years - 85-(Daily - last 3 months, predictor)





# 50 plus- Reduction

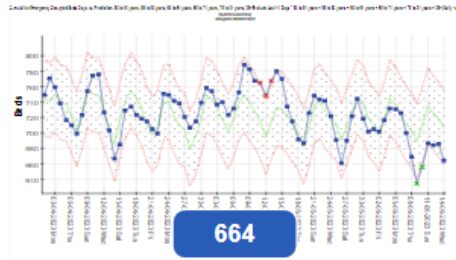
## Total Population

## Wakefield

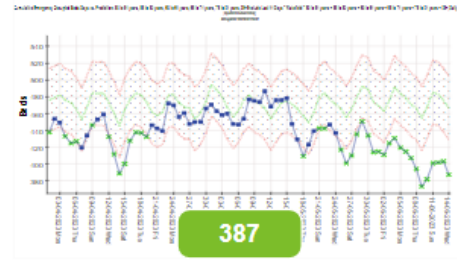
## Kirklees

## Other

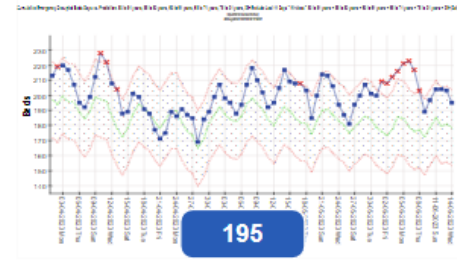
Daily Occupied Emergency Beds



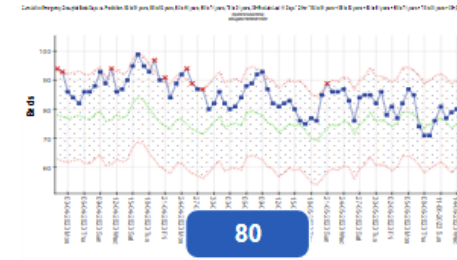
Annualised Bed Saving -10



Annualised Bed Saving -35



Annualised Bed Saving 16

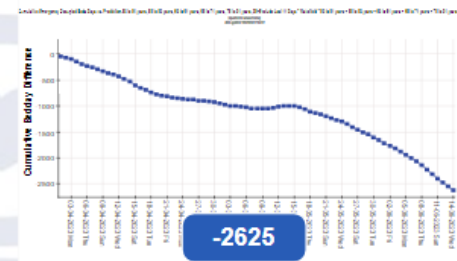


Annualised Bed Saving 9

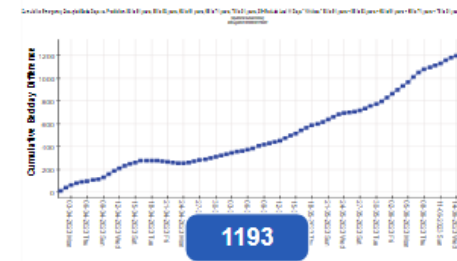
Cumulative Difference to sfn Daily Bedday Projection



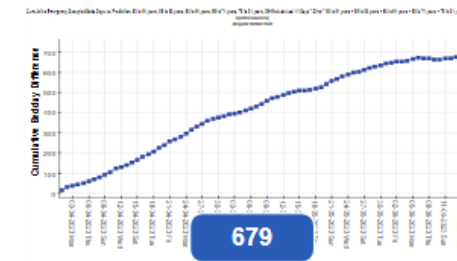
Annualised Bed Saving -10



Annualised Bed Saving -35



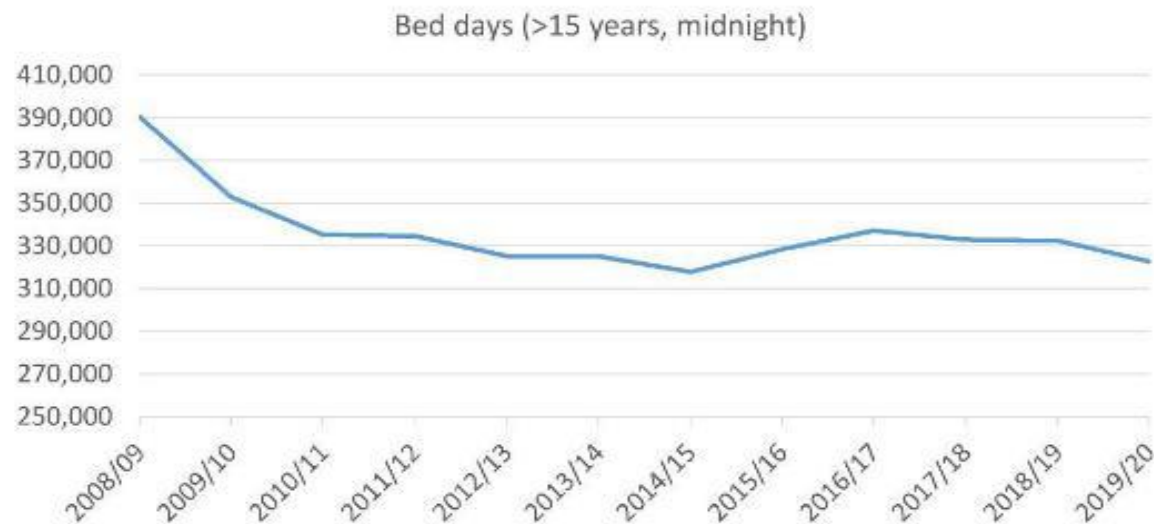
Annualised Bed Saving 16



Annualised Bed Saving 9

# Canterbury, NZ Example 2008-2022

## Total Bed Days Used

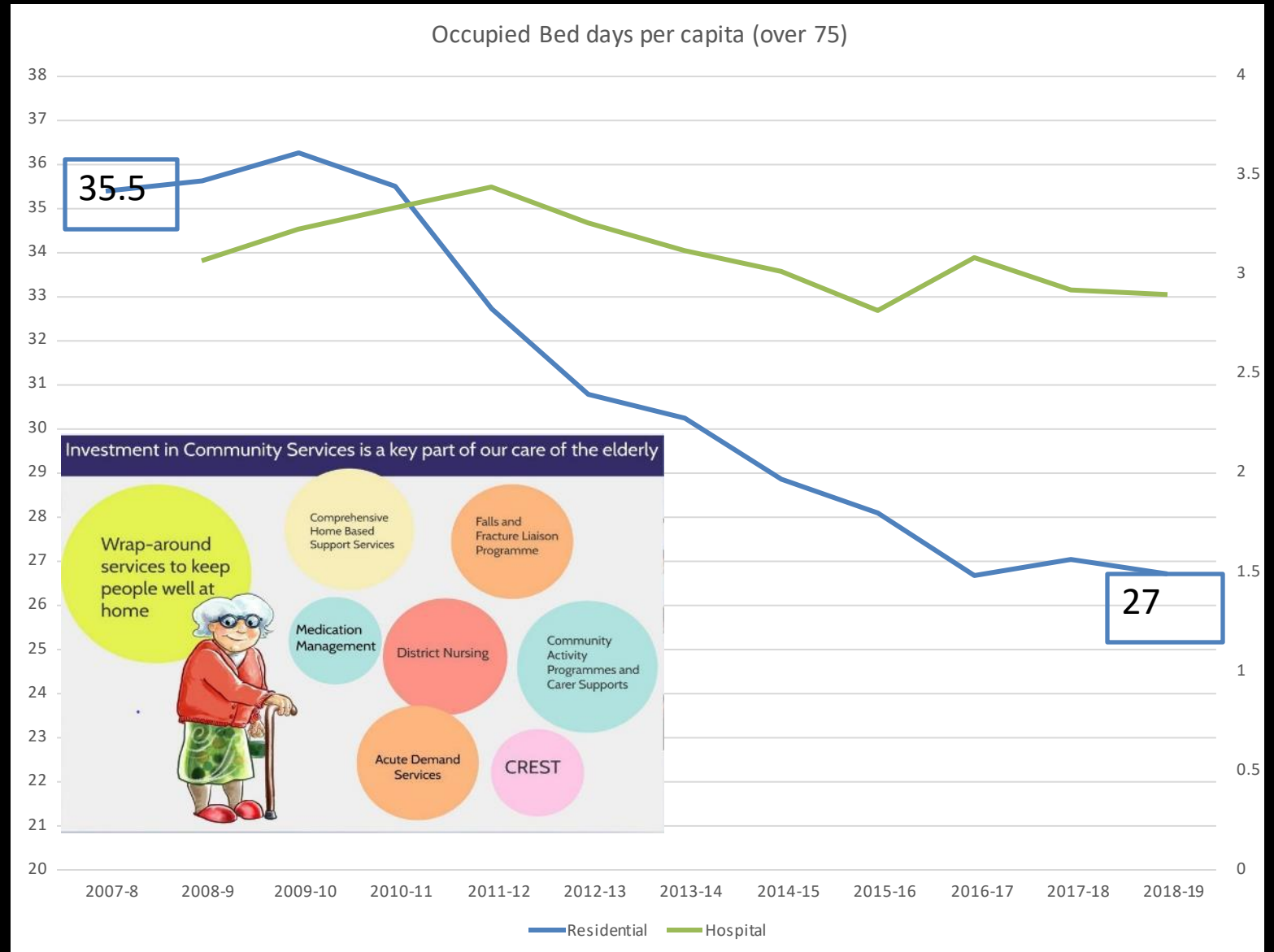


9% Less bed days used

14% Increase in population

# Keeping people well and healthy and in their own homes and communities

Time in long term care declined as community based care improved.





HEADLINED BY -  databricks

**Thank you for attending The  
NHS Data Conference!**



HEADLINED BY -  databricks

Register for the next Data Conference  
in June 2024....

