

BRADFORD INSTITUTE
FOR HEALTH RESEARCH

| MAKING RESEARCH REAL

SILICON DALE

COPRODUCTION IN A LARGE LINKED
DATASET

Tom Lawton – June 2020

tom.lawton@bthft.nhs.uk

[@LawtonTri](#)

 Improvement
Academy


Bradford Teaching Hospitals
NHS Foundation Trust

Bradford

- “Most Improved” 2019
- 6th largest district in UK
(overshadowed by Leeds!)
- Multi-ethnic
- Youngest, fastest growing
- High comorbidity
- Highest and lowest deprivation in UK



City of Research

- Bradford Institute for Health Research
- Connected Bradford
- Combined forces of BTHFT, GPs, CCGs, Council, YAS & others



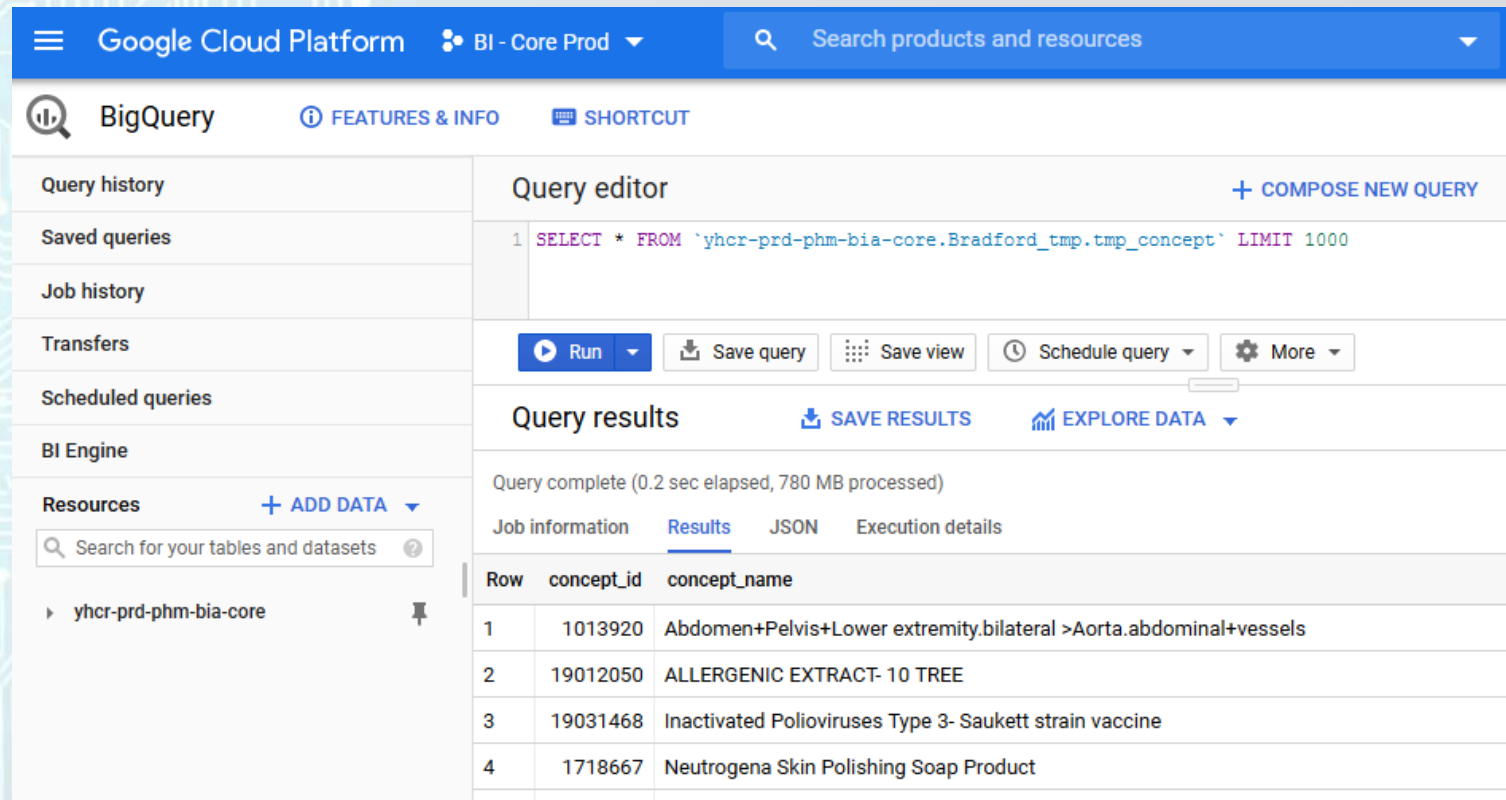
Connected Bradford



- Now over 1.4 million
- Connected Yorkshire

Into the cloud

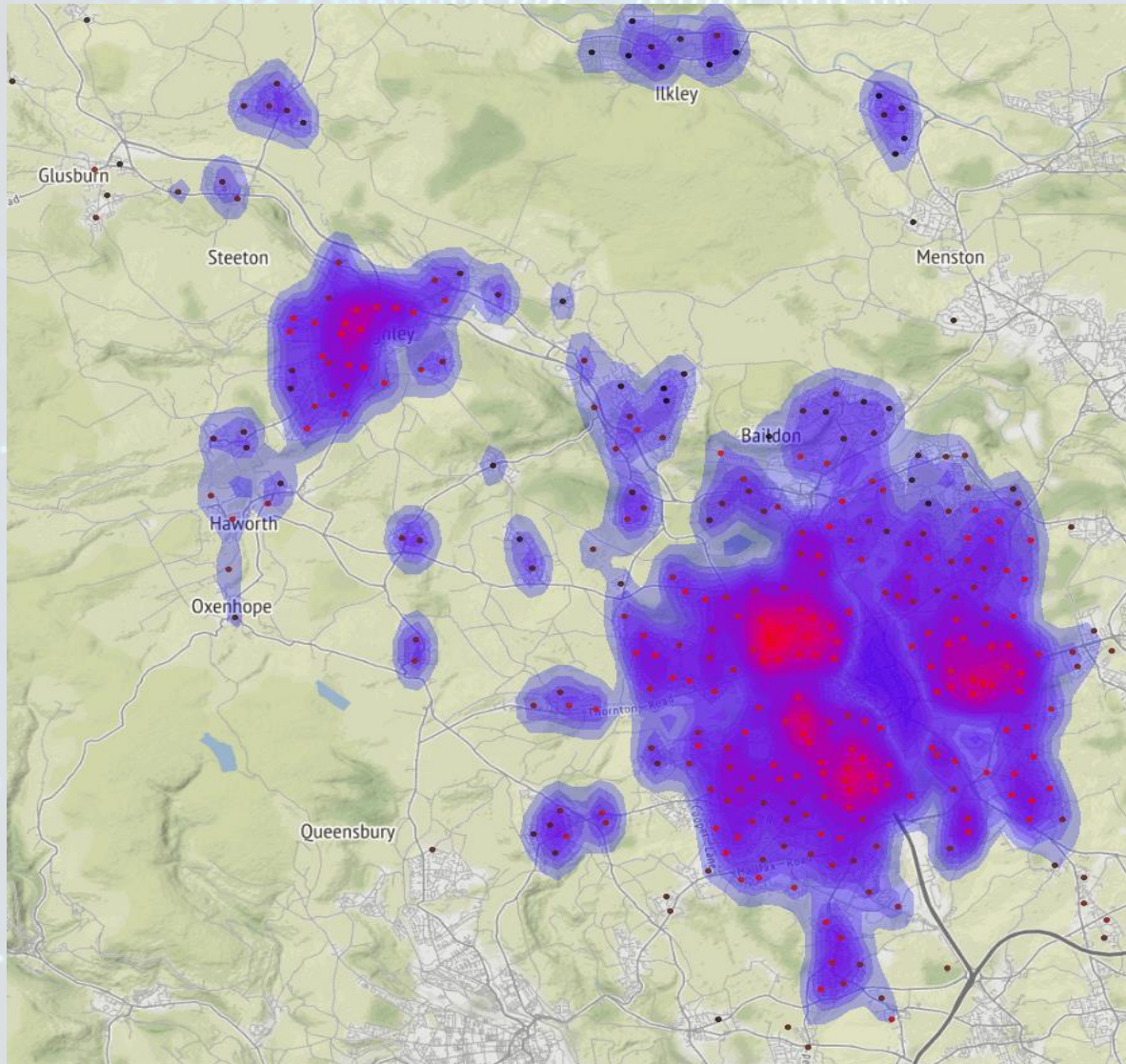
- Kindly provided by YHCR
- 50k test transfer
- Analysis tools next



The screenshot displays the Google Cloud Platform BigQuery interface. The top navigation bar includes the Google Cloud Platform logo, the project name 'BI - Core Prod', and a search bar for products and resources. The main interface is divided into a left sidebar with navigation options (Query history, Saved queries, Job history, Transfers, Scheduled queries, BI Engine, Resources) and a main workspace. The workspace contains a 'Query editor' with a SQL query: `SELECT * FROM `yhcr-prd-phm-bia-core.Bradford_tmp.tmp_concept` LIMIT 1000`. Below the editor are buttons for 'Run', 'Save query', 'Save view', 'Schedule query', and 'More'. The 'Query results' section shows a table with 4 rows of data.

Row	concept_id	concept_name
1	1013920	Abdomen+Pelvis+Lower extremity.bilateral >Aorta.abdominal+vessels
2	19012050	ALLERGENIC EXTRACT- 10 TREE
3	19031468	Inactivated Polioviruses Type 3- Saukett strain vaccine
4	1718667	Neutrogena Skin Polishing Soap Product

Geospatial work



- LSOA
- Postcode (partial)
- UPRN linkage – council/housing data

Harmonisation



- **Conceptual**

- Agreement on concepts

- Single analysis can run on multiple datasets

- **Technical**

- Implement these identically at the database layer

- Direct re-use of analytical code

- **OMOP (OHDSI)**

- **Open Source**

Upsetting clinicians

salmeterol
salmeterol 0.036 MG [Salmeterol Hexal]
salmeterol Inhalant Solution [Salmeterol Hexal]
salmeterol 0.0363 MG/ACTUAT [Salmeterol Hexal]
salmeterol Dry Powder Inhaler [Salmeterol Hexal]
salmeterol 0.036 MG Inhalant Solution [Salmeterol Hexal]
salmeterol 0.036 MG Inhalant Solution [Salmeterol Hexal] by Hexal
salmeterol 0.0363 MG/ACTUAT Dry Powder Inhaler [Salmeterol Hexal]
120 ACTUAT salmeterol 0.0363 MG/ACTUAT Dry Powder Inhaler [Salmeterol Hexal]
salmeterol 0.0363 MG/ACTUAT Dry Powder Inhaler [Salmeterol Hexal] Box of 120
salmeterol 0.02 MG
salmeterol 0.025 MG
salmeterol 0.036 MG
salmeterol 0.0363 MG
salmeterol 0.05 MG

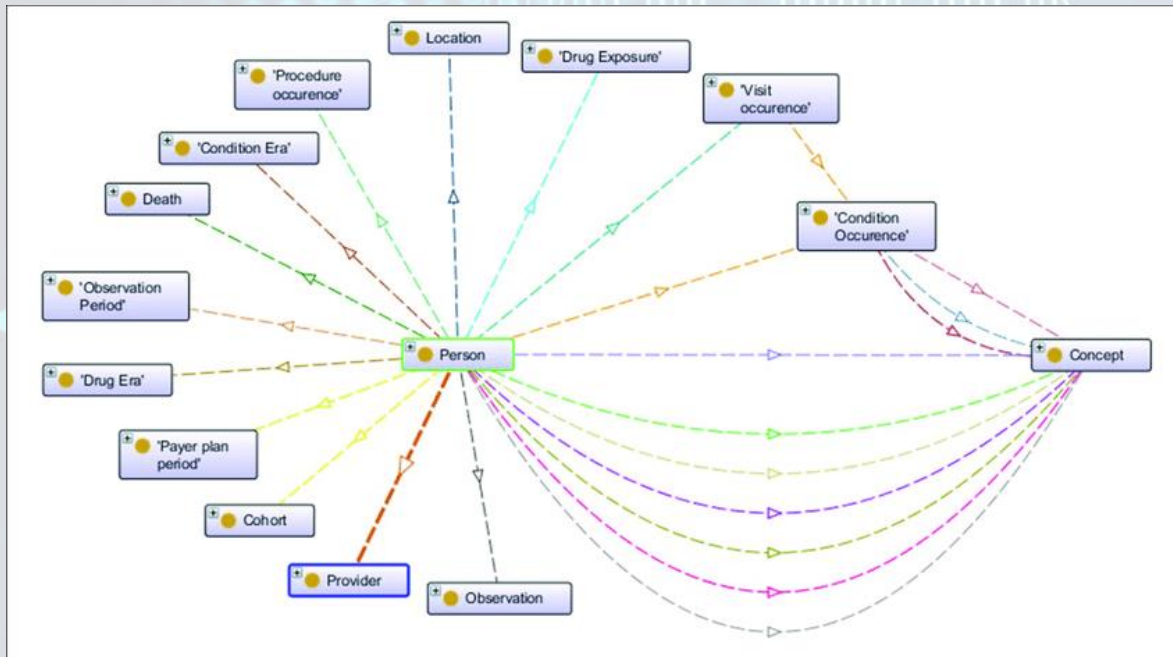
Neovent
Rolenium
SERETIDE DISKUS
SERETIDE EVOHALER
Salflutin
Salmeson
Salmeterol Hexal
SalmetoI Gsk
Sereflo
Seretide
Serevent
Serkep
Serroflo
Sirdupla
Soltel
Vertine

AirDuo
Airflusal
Airflusan
Airzate Accuhaler
Aloflute
Atmadiso
Combisal
FLUTEROL
Flusalio
Flusarion
Flutisacombo
Flutisamix
Fusacomb Easyhaler

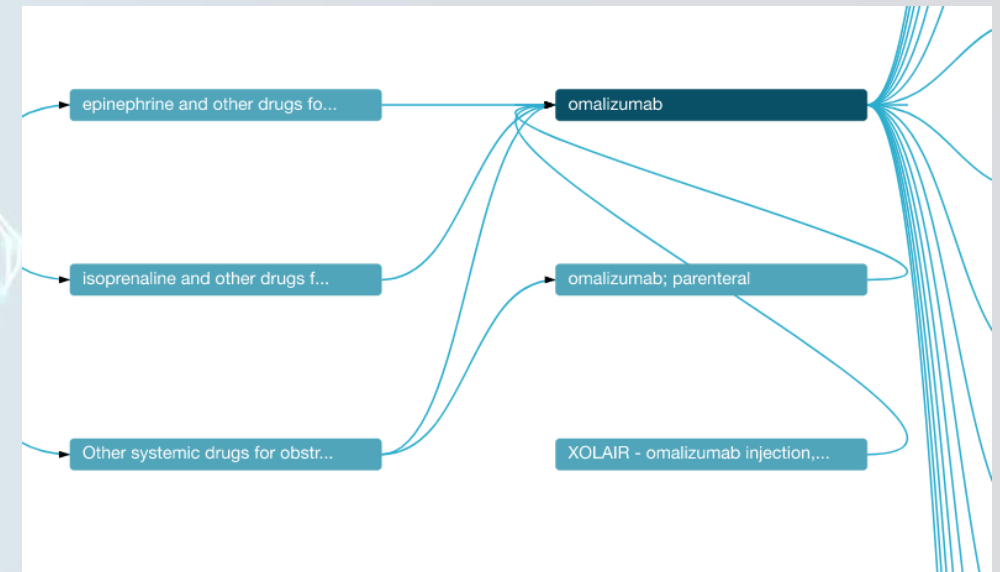
Budesonide / salmeterol Inhalant Powder
fluticasone / salmeterol Dry Powder Inhaler
fluticasone / salmeterol Inhalant Powder
fluticasone / salmeterol Inhalant Product
fluticasone / salmeterol Inhalant Solution
fluticasone / salmeterol Metered Dose Inhaler
fluticasone / salmeterol Nasal Spray

fluticasone 0.25 MG / salmeterol 0.073 MG Inhalant Solution
fluticasone 0.5 MG / salmeterol 0.05 MG [Advair Diskus]
fluticasone 0.5 MG / salmeterol 0.073 MG [Lifsar Pulmojet]
fluticasone 0.5 MG / salmeterol 0.073 MG Inhalant Powder
fluticasone 0.5 MG / salmeterol 0.073 MG Inhalant Solution
salmeterol 0.000000484 MG/MG Inhalant Solution [SalmetoI Gsk]
salmeterol 0.000484 MG/MG Inhalant Solution [SalmetoI Gsk]
salmeterol 0.0058 MG/MG Inhalant Powder [Serevent Diskus]

OMOP



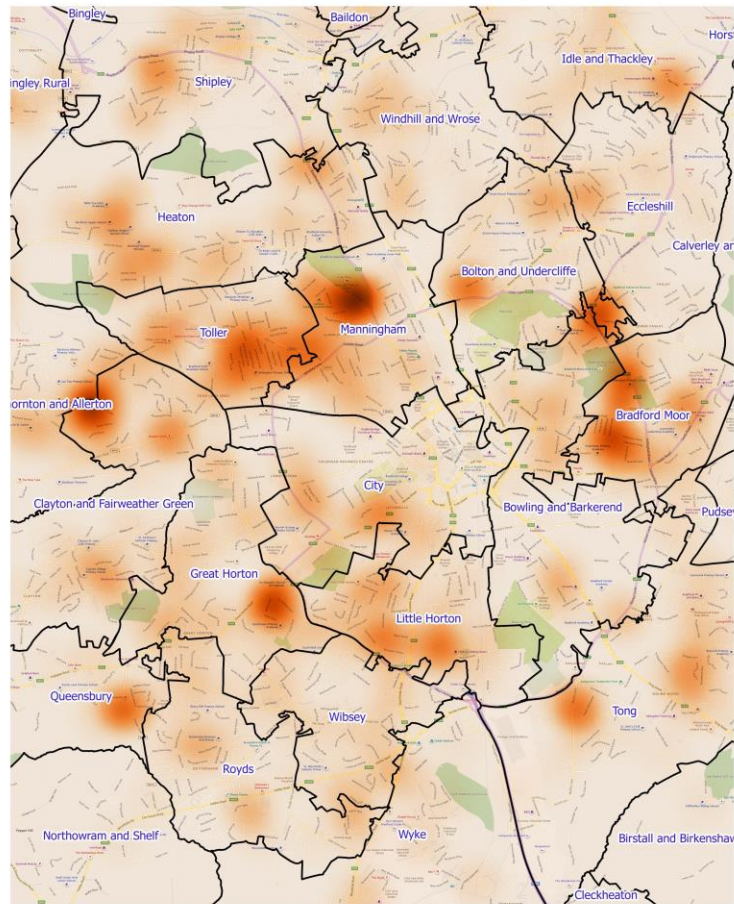
- Source agnostic
- Hierarchy and relationships
- Tools to generate code/SQL



COVID-19

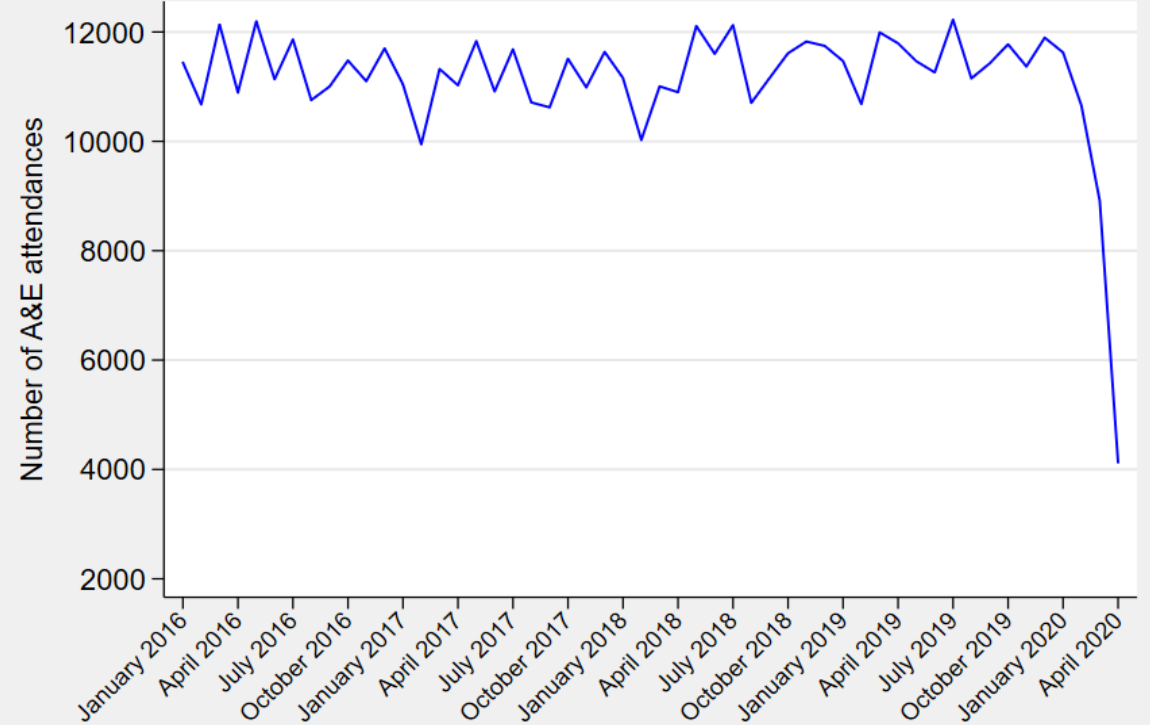
BTHFT Covid-19 Positive Tests

26/02/2020 - 14/06/2020



• Positive test (heat map)
□ Bradford ward boundary

Figure 1: A&E attendances between Jan 2016 and Apr 2020



COVID-19 learning

Acuity	Non-COVID-19			Suspected COVID-19
	2019	2020	% change	2020
High	768 (6.5)	371 (6.7)	-51.7	68 (13.1)
Medium	6,358 (53.5)	1,853 (33.7)	-70.9	202 (39.0)
Low	4,749 (40.0)	2,322 (42.2)	-51.1	105 (20.3)
Missing	0	955 (17.4)		143 (27.6)

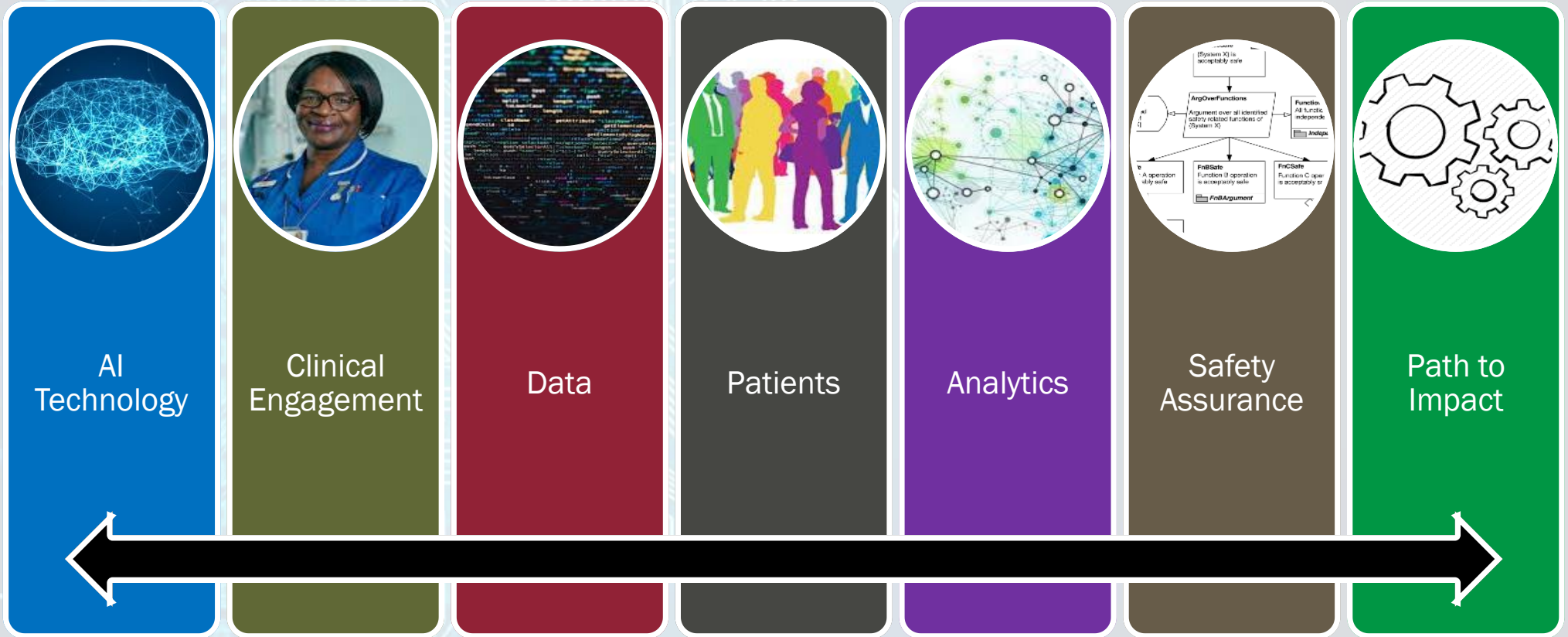
■ Coproduction

Speak to data providers

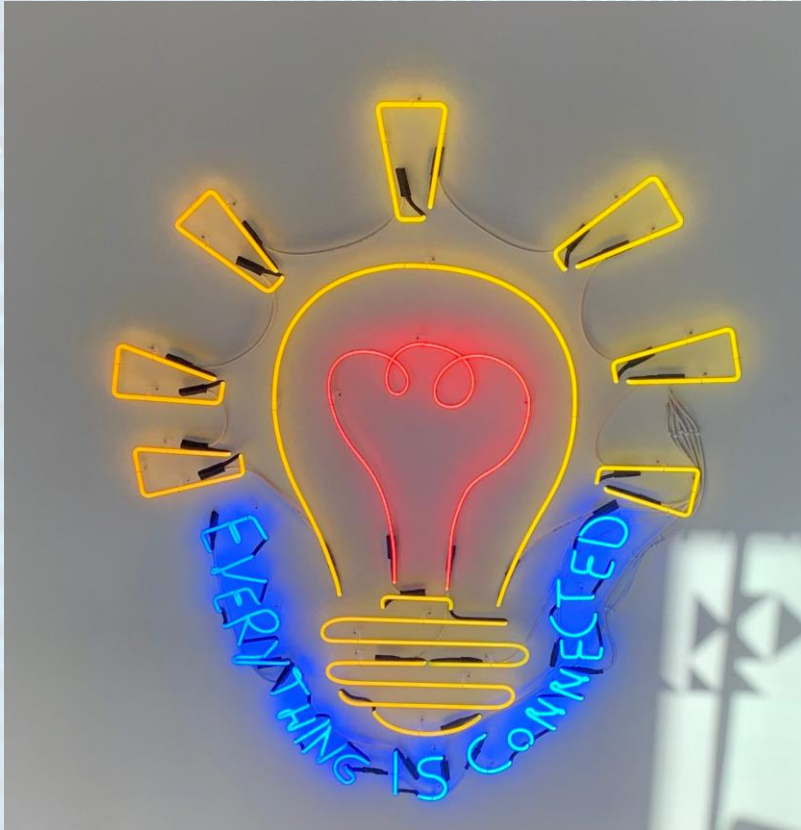
Speak to domain experts
(eg clinicians, patients)

Disposal from A&E	Non-COVID-19			Suspected COVID-19
	2019	2020	% change	2020
Admitted	3623 (30.5)	1773 (32.2)	-51.1	264 (51.0)
Discharge, no follow-up	6246 (52.6)	3600 (65.4)	-42.4	251 (48.5)
Transfer to other healthcare provider ¹	1185 (10.0)	22 (0.4)	-98.1	1 (0.2)
Left before treatment/refused treatment	815 (6.9)	101 (1.8)	-87.6	1 (0.2)
Other ²	6 (0.1)	5 (0.1)	-16.7	1 (0.2)

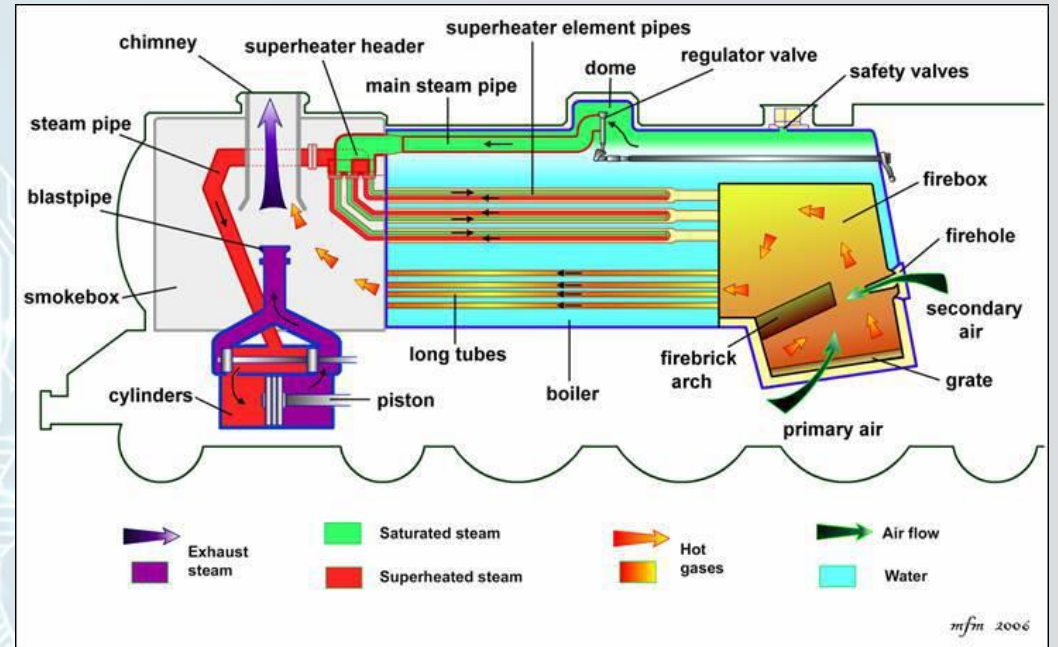
“Everything Is Connected”



Thank You



Tom.Lawton@bthft.nhs.uk



@LawtonTri