

BRADFORD INSTITUTE
FOR HEALTH RESEARCH

| MAKING RESEARCH REAL

CONNECTED BRADFORD

ROUTINE DATA FOR PANDEMIC INNOVATION

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@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
- Silicon Dale
 - Combined forces of BTHFT, GPs, CCGs, Council, YAS & others

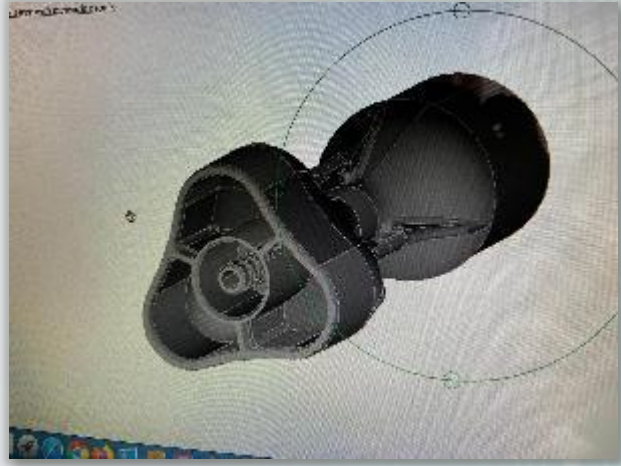


Connected Bradford

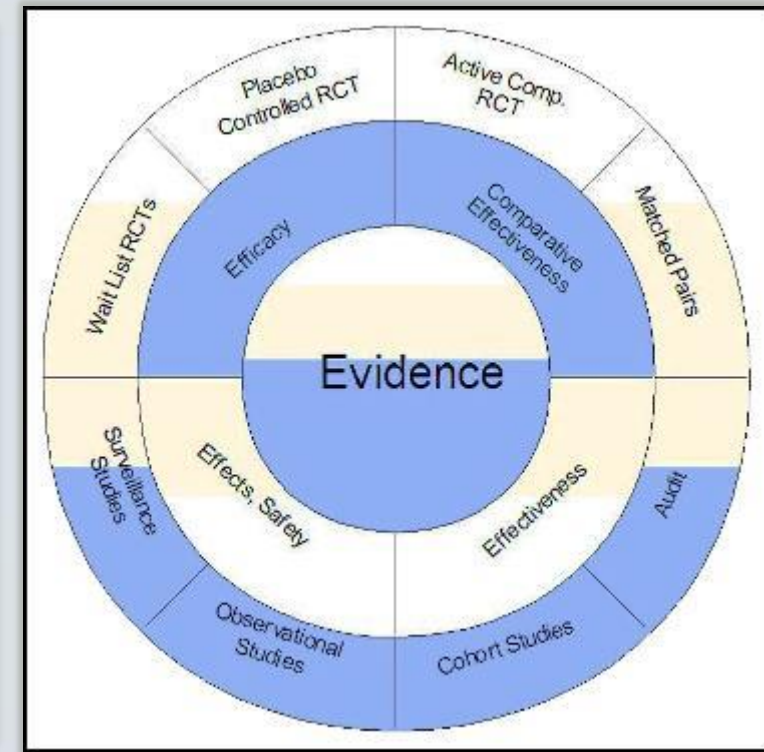
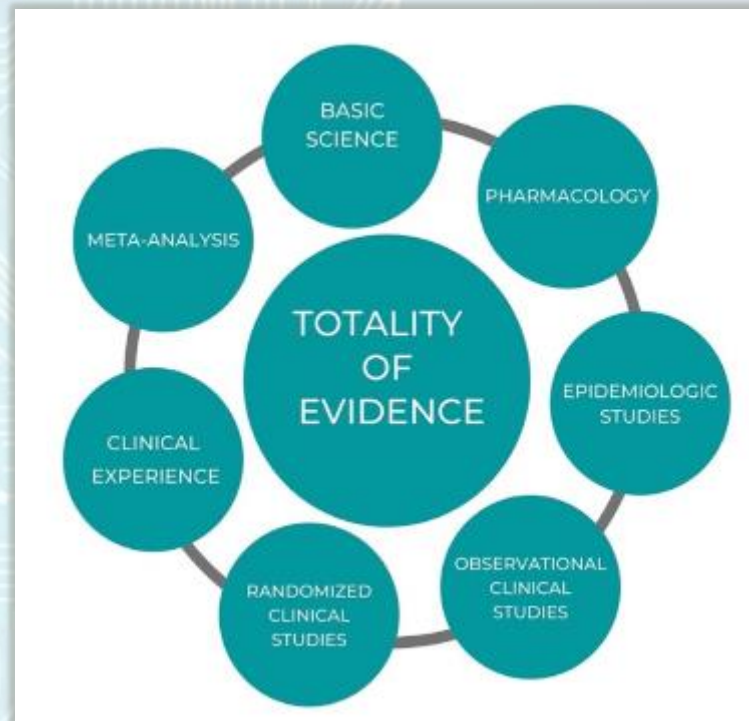
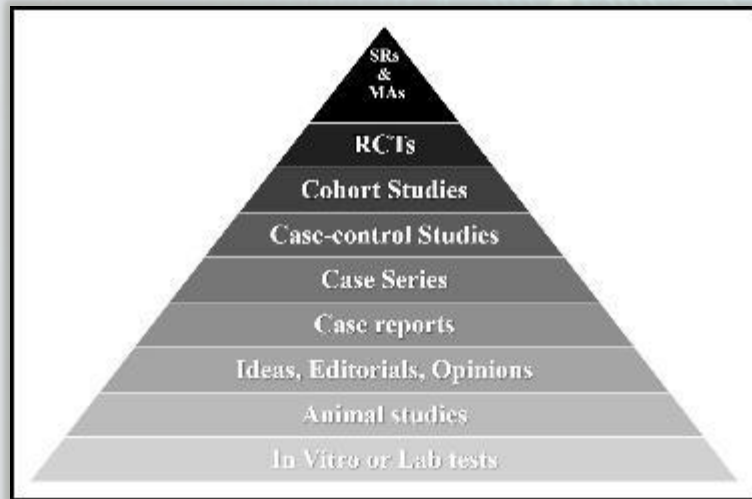


- Now over 1.4 million
- Connected Yorkshire

Innovation?

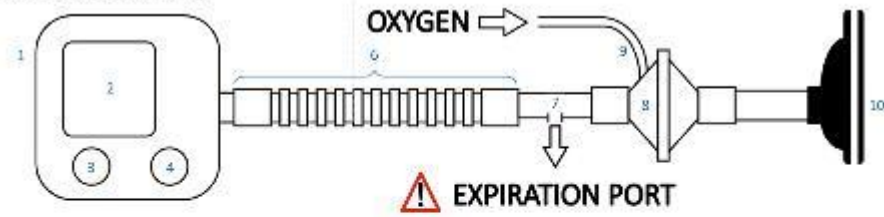


Evidence Based Medicine

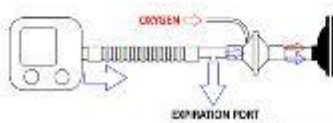


CPAP

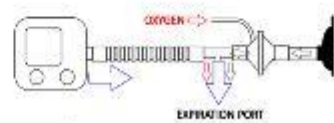
A The LeVe CPAP breathing circuit



(a) Gas flows during inhalation

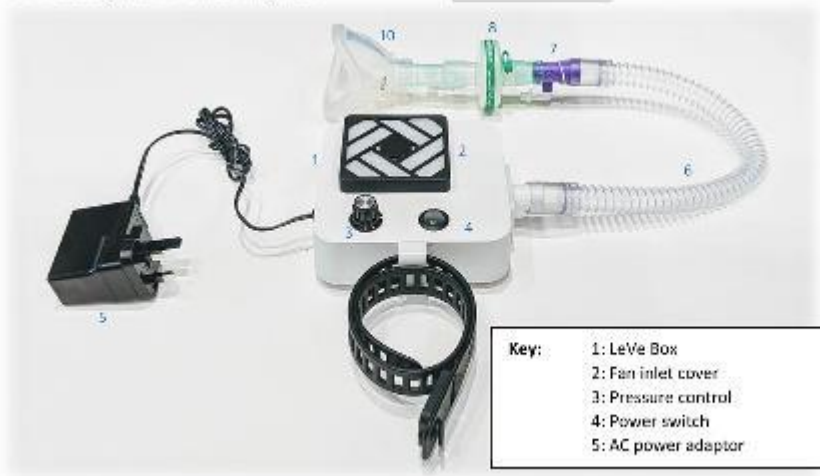


(b) Gas flows during exhalation



KEY:
 ROOM AIR FLOW
 OXYGEN FLOW
 EXHALED AIR FLOW

B The LeVe system and breathing circuit



Key: 1: LeVe Box 6: 20mm air tubing
 2: Fan inlet cover 7: Expiration port
 3: Pressure control 8: HEPA filter
 4: Power switch 9: Oxygen tubing
 5: AC power adaptor 10: CPAP mask (reusable)



CPAP and data

	Bradford patients	ISARIC patients	p
NIV use	29.5% (165 of 559)	15.9% (2670 of 16,805)	<0.0001
Critical care admission	7.2% (40 of 559)	16.5% (3001 of 18,183)	<0.0001
Intubation	5.0% (28 of 559)	9.8% (1658 of 16,866)	<0.0001
Hospital mortality	32.7% (183 of 559)	38.6% (5165 of 13,364)	0.005
Mortality for critical care patients	50% (20 of 40)	53.7% (958 of 1784)	NS
Median length of stay (IQR)	7 (3–14)	7 (unreported IQR) ³⁶	NS



The BMJ
 Cite this as: [BMJ 2021;374:n1950](https://doi.org/10.1136/bmj.n1950)
<https://doi.org/10.1136/bmj.n1950>
 Published: 4 August 2021

Covid-19: CPAP reduces need for invasive mechanical ventilation in patients requiring oxygen, study finds

Elisabeth Mahase

Continuous positive airway pressure (CPAP) reduced the need for invasive mechanical ventilation in adults admitted to hospital with acute respiratory failure due to covid-19, a trial has found.¹

He said that the findings may be beneficial in systems with limited resources, such as oxygen.

The researchers noted a number of limitations to the trial, including that they did not achieve the intended

PPE and public data

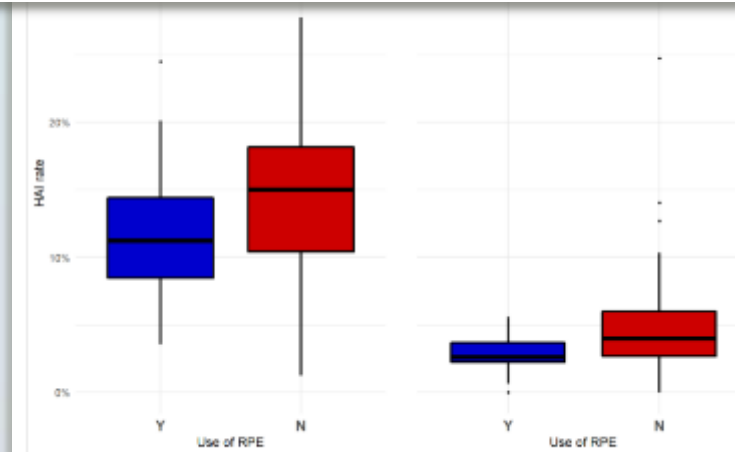
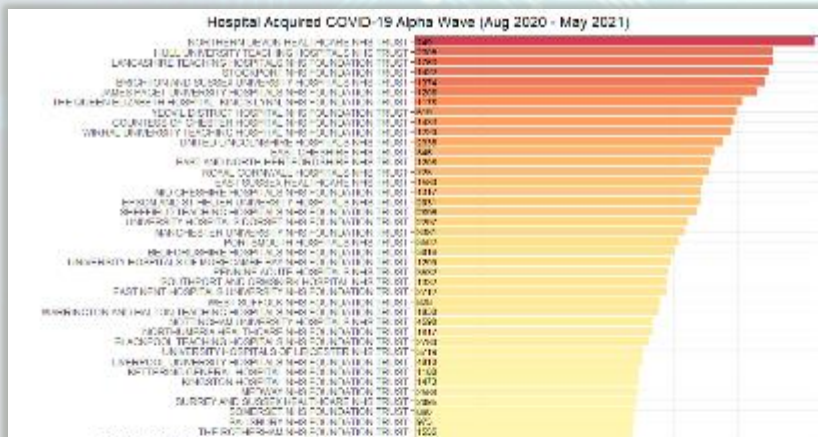
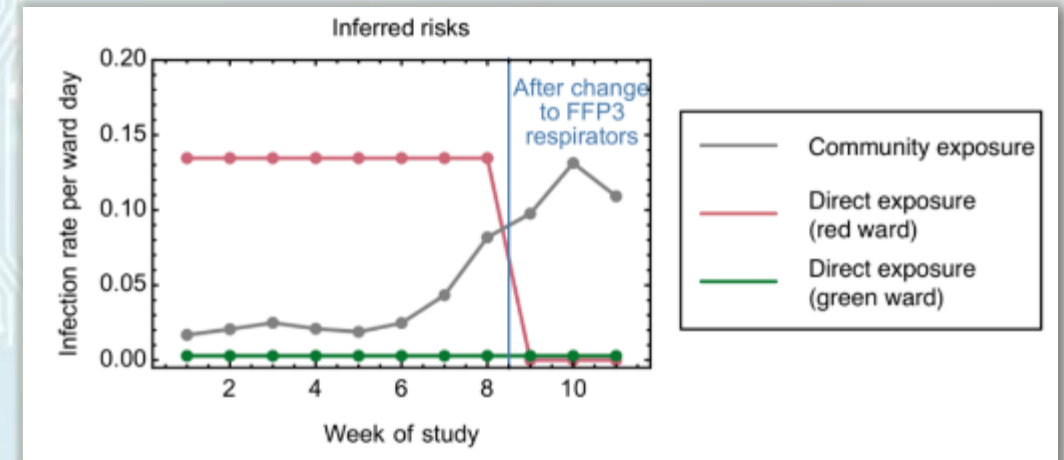
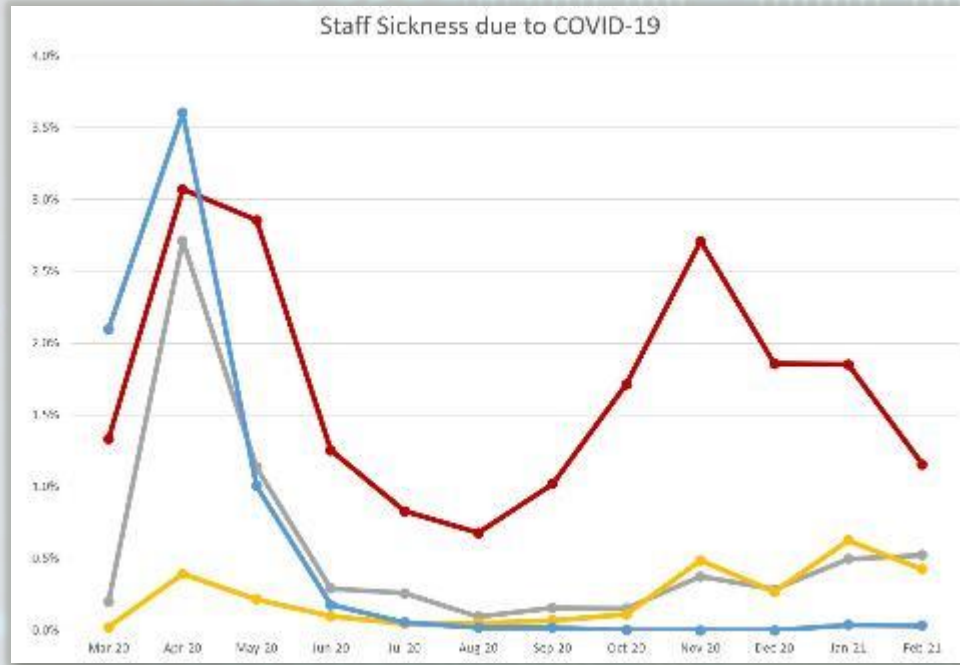
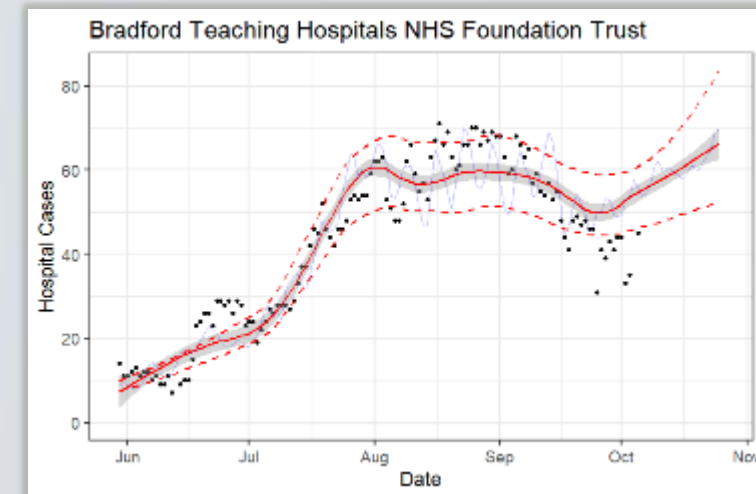
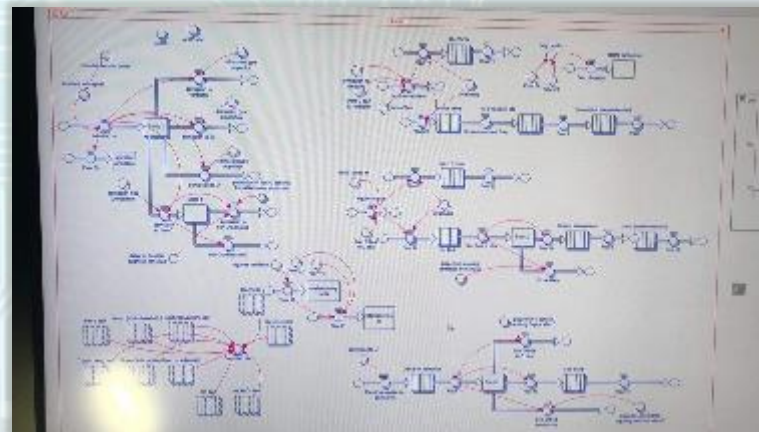
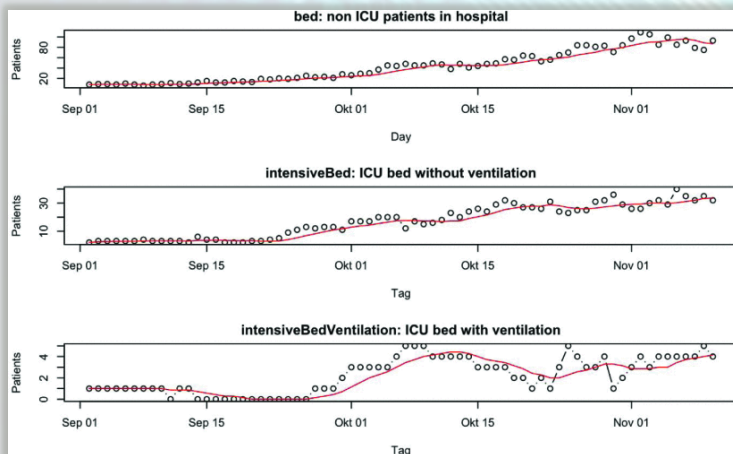
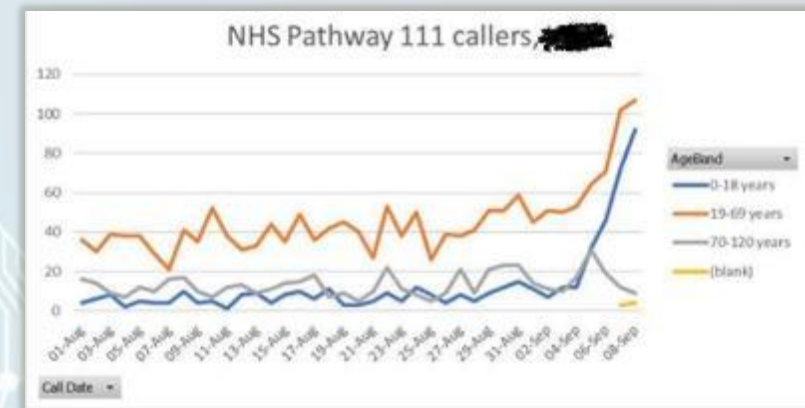
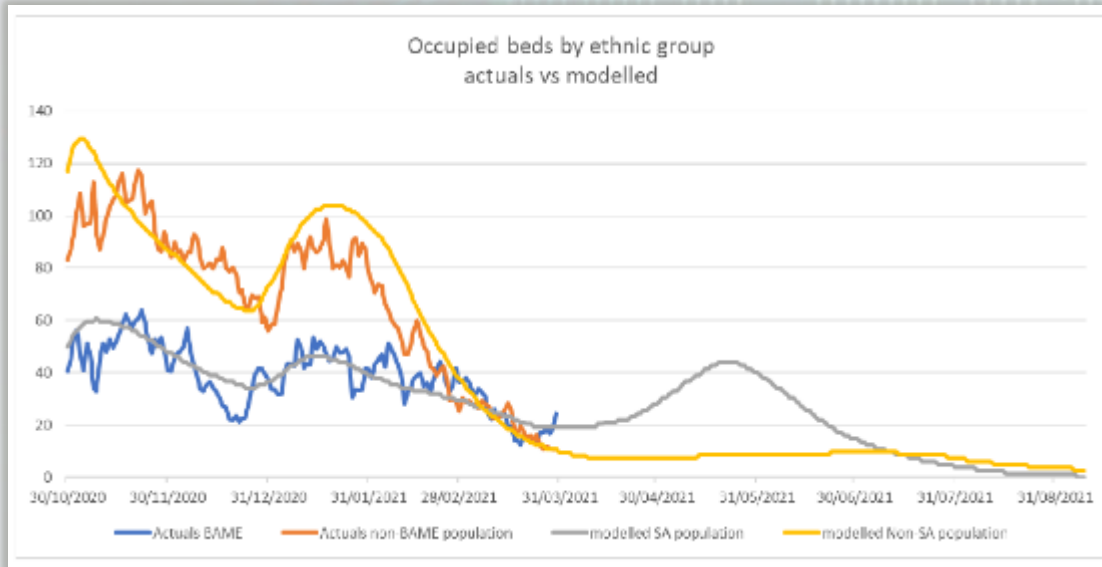


Figure 1 - Boxplot of HAI rates by NHS trust during Alpha and Delta waves

Modelling

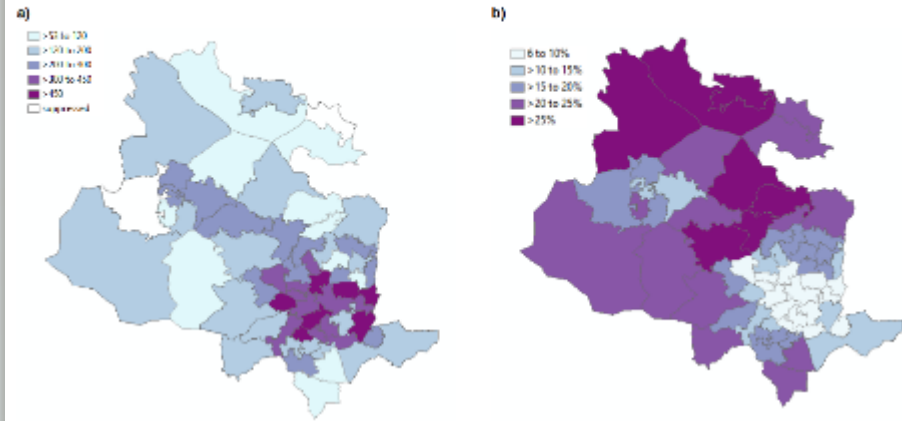


Vaccine Rollout

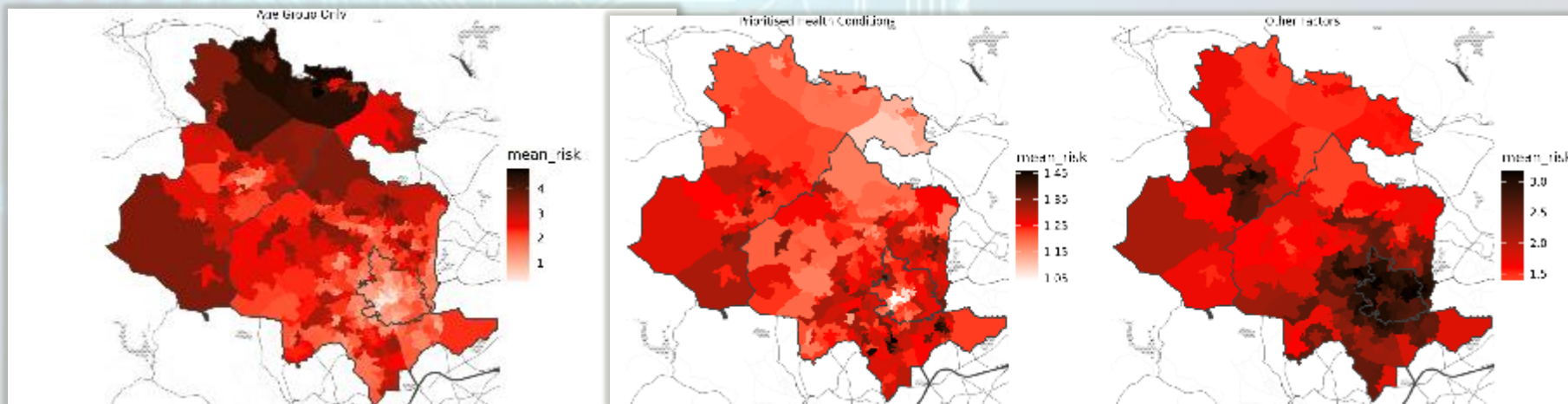
Figure 2. Directly Standardised Mortality Rate per 100,000 and proportion vaccinated in Bradford District

a) Directly standardised mortality rate per 100,000 population where cause of death was Covid-19 – up to december 2020
b) Proportion of total population (all ages) vaccinated with dose 1 up to 11 Feb 2021.

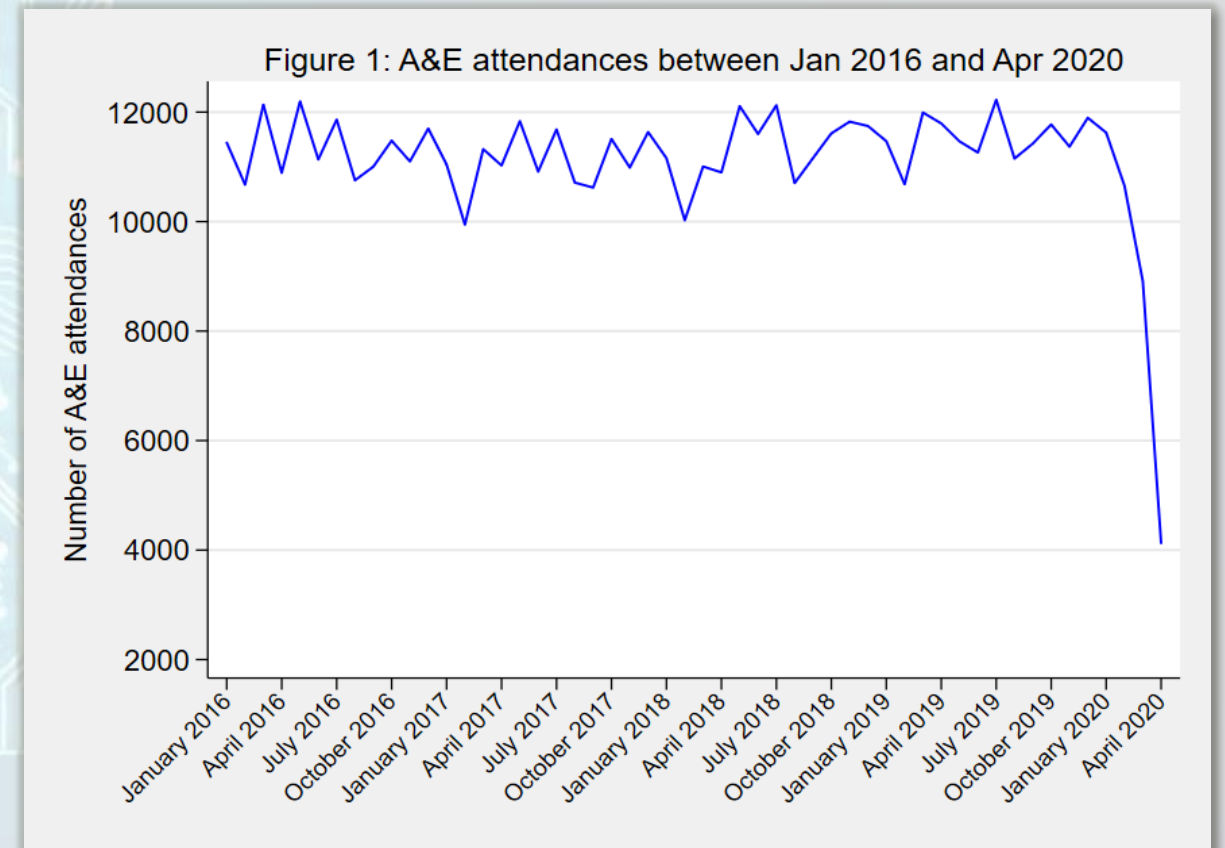
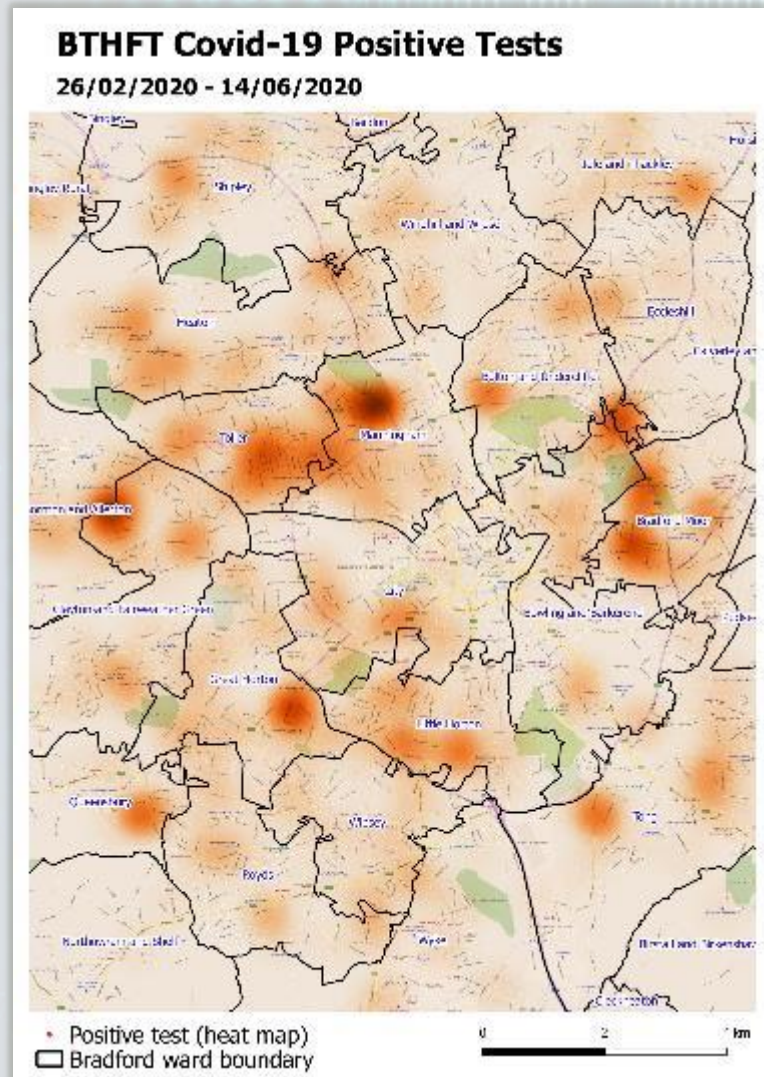
Data source: Deaths data – PCMD database, Vaccine data – Covid situational dashboard PHE extracted 11/02/2021. All data are provisional.



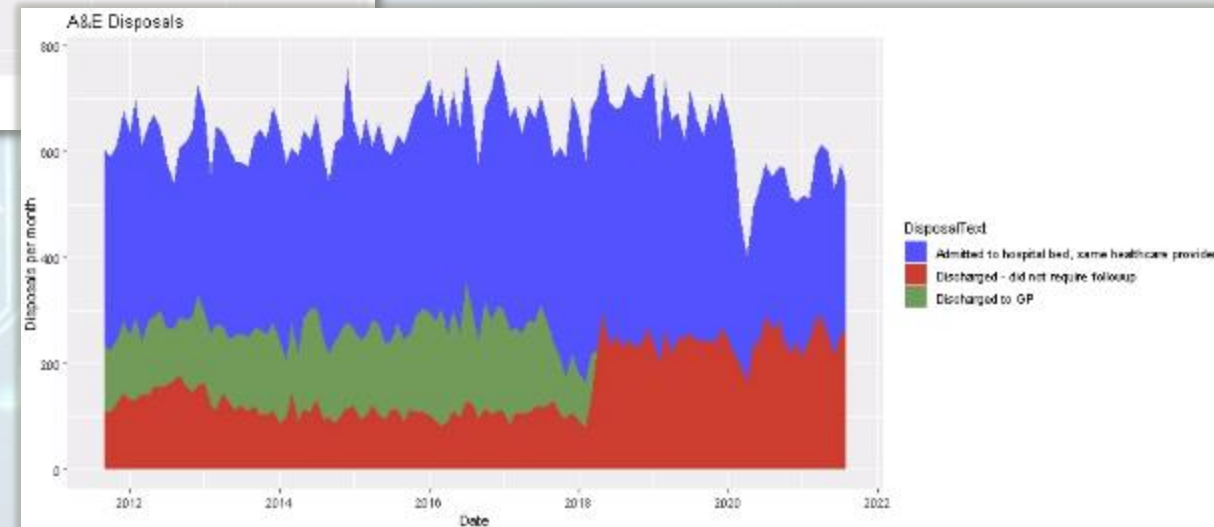
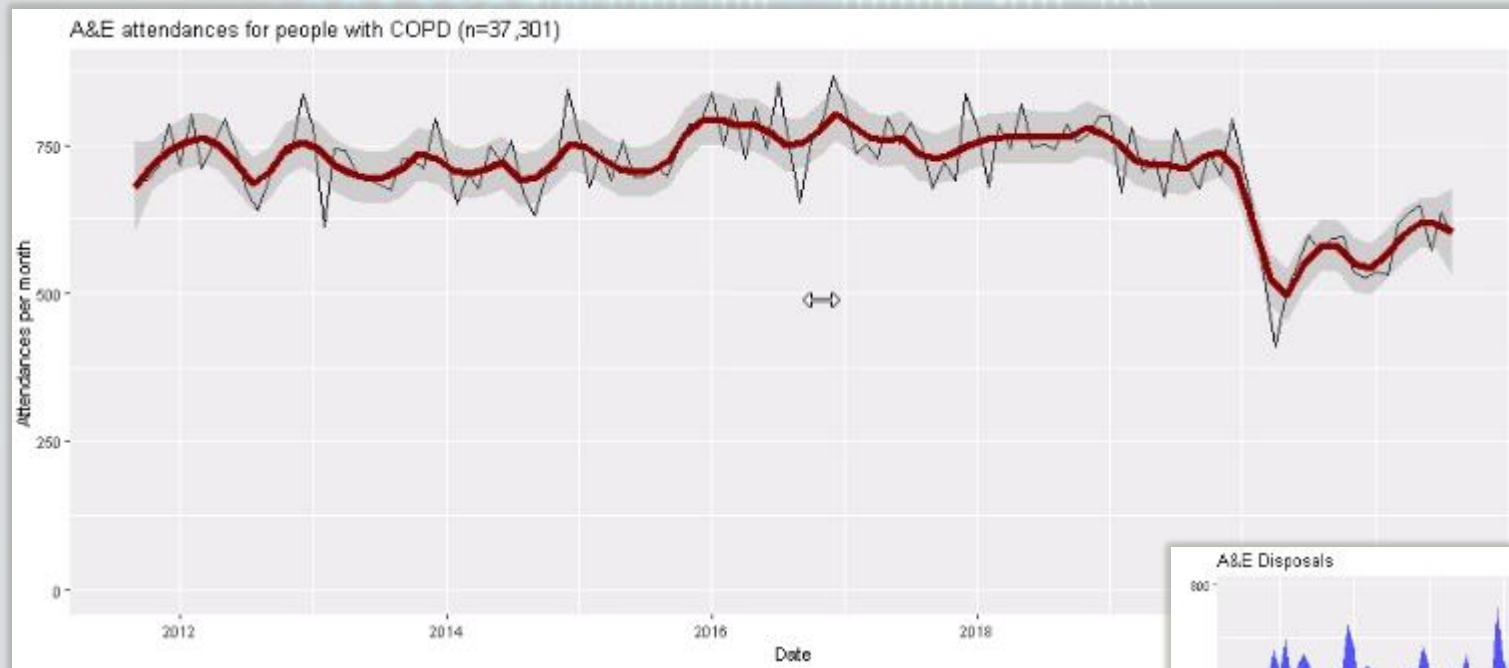
- Geospatial work – LSOA/UPRN
- Health Inequalities



Routine data



Following groups



Routine vs research

■ Routine data

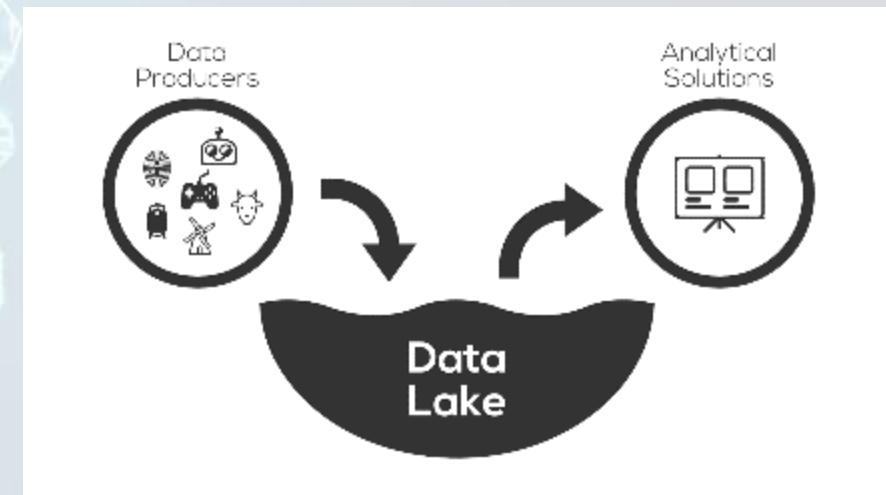
Produced as part of workflow

Accuracy is secondary

Needs to be understood in terms of work processes

May have gaps, could be worse if gaps are prevented

Different workflows and definitions in different places



Routine vs research

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)

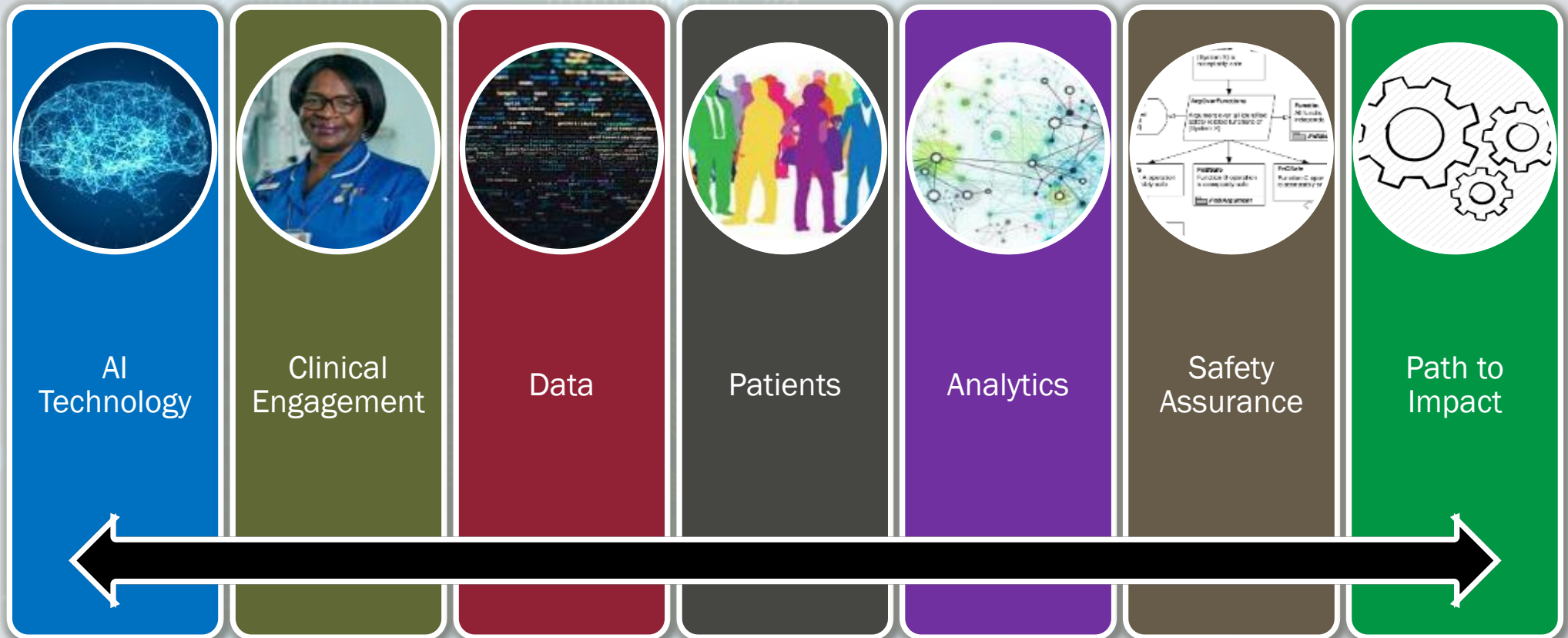
■ Coproduction

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)

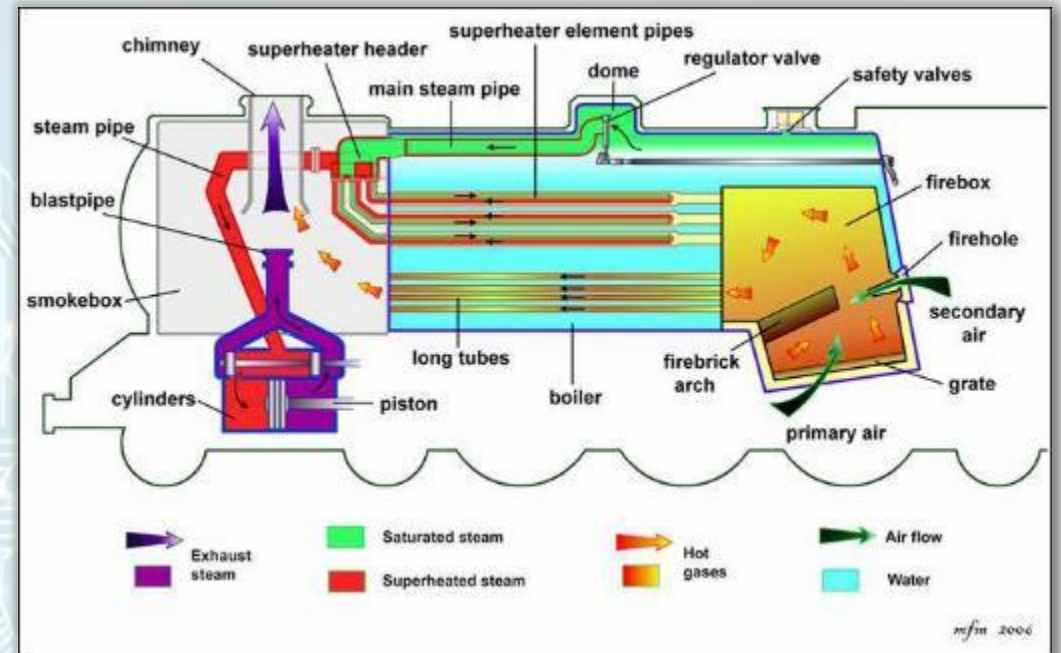
“Everything Is Connected”



Thank You



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