

[Professor Marty Chamberlain](#)

Twitter: @JMChamberlain

Email: j.m.chamberlain@Swansea.ac.uk

Medicine and Machines



Swansea University
Prifysgol Abertawe

Hilary Rodham Clinton
School of Law | Ysgol y Gyfraith



wellcome



Background

Wellcome Humanities & Social Sciences Themed award : *“Artificial Intelligence and Health”*

Cross-disciplinary project which draws on fields of criminology, medical law & ethics, professional regulation, statistics, computing and machine learning.

Project activity has involved leading and delivering collaborative exploratory workshops with a range of stakeholders from the health-technology, regulatory and NHS sectors.

Amazon Cambridge

Drayson Technologies

Oxford Internet Institute

NHS Digital

Microsoft

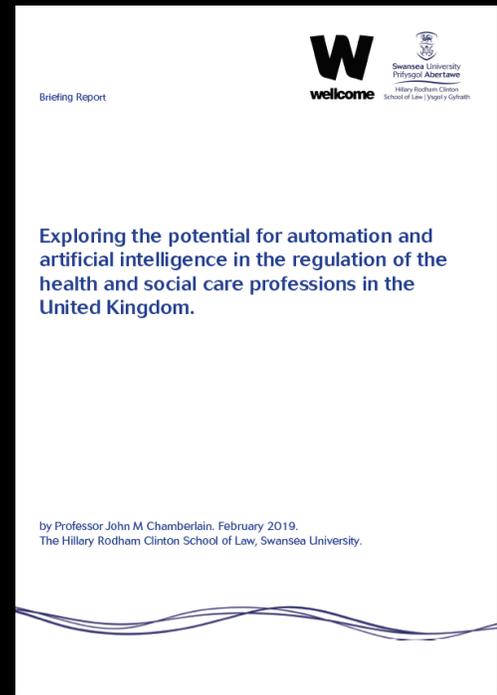
Care Quality Commission

Google DeepMind Health

Behavioral Insights Team

Medicines and Health Regulatory Authority

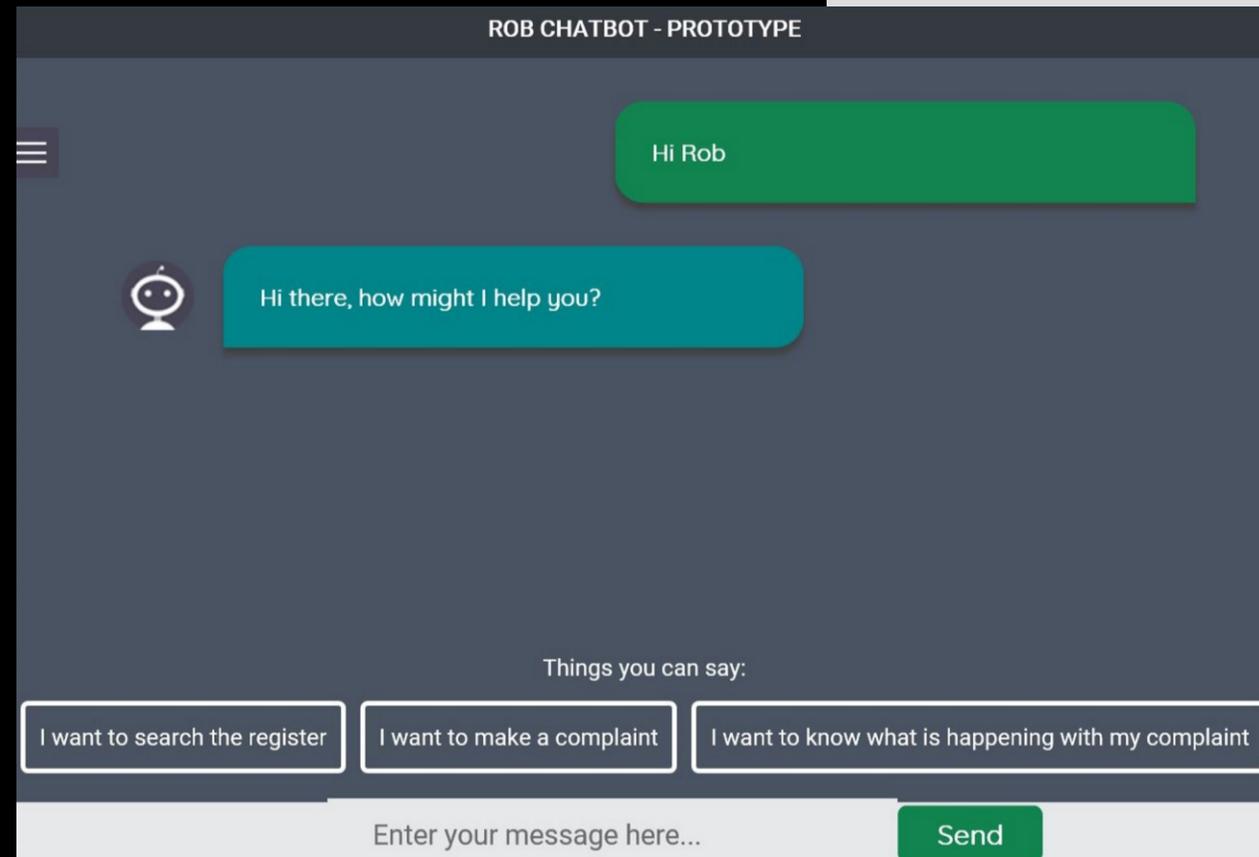
“Exploring the potential for automation and artificial intelligence in the regulation of the health and social care professions in the United Kingdom” published February 2019.



Introducing ROB, the regulatory chatbot...

As part of its activity, the project team designed a chatbot which can be used by regulators to handle enquiries and help members of public make complaints.

However, during workshop discussion core thematic concern with *'preparedness'* emerged....

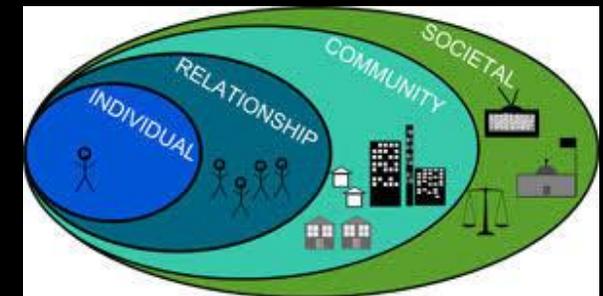
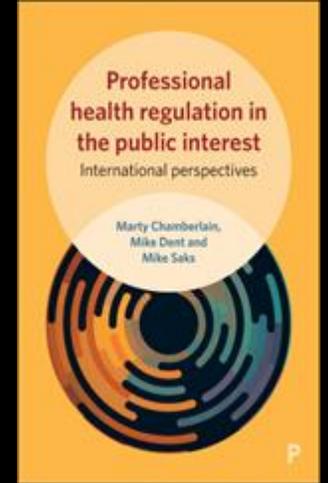


Focusing on “preparedness”: towards a social ecology model of regulatory activity

- Emergence of “digital health agenda”, and focus on machine learning & algorithmic automation in public service sector, latest emergent feature of shift to “risk-based” models of ‘good governance’.
- Forms of governmentality focused on enhancing capacity for ‘good governance’ via ongoing modernising agenda re: data capture & analysis

18th/19th Centuries & rise of Foucault’s ‘dubious sciences’: Medicine, Law and the Social Sciences.

- **‘Atomised’ practitioners** Regulatory reform and the ‘enhancement’ of professional operational transparency, accountability and reporting processes.....
- **‘Social Ecologies’** Behavioural norms and rule breaking a feature of environments, not individuals....



Proof of Concept: Is it possible to capture workplace influence on regulatory activity?

- **Regulatory data (from GMC, NMC & HCPC)**

Complaints to regulators & tribunal sanctions between 2012-17, with 30,312 cases 'tagged' to 221 NHS England Trusts.

- **Basket of local 'Heat Map' measures** to formulate at NHS Trust level:

1. Patient Safety Incident Reports (via NHS Digital)
2. Upheld Patient Complaints (via KO41a, NHS Digital)
3. Litigation, Damages and Legal Costs (via NHS Resolution)
4. Workplace Abuse, Bullying, Violence & Discrimination (via NHS Staff Survey)
5. Staff Absences due to illness and stress (via NHS Digital)
6. Vacant FTE Posts (via NHS Digital)

NB All health map measure data runs for 2012 – 17 to match regulatory data time period.

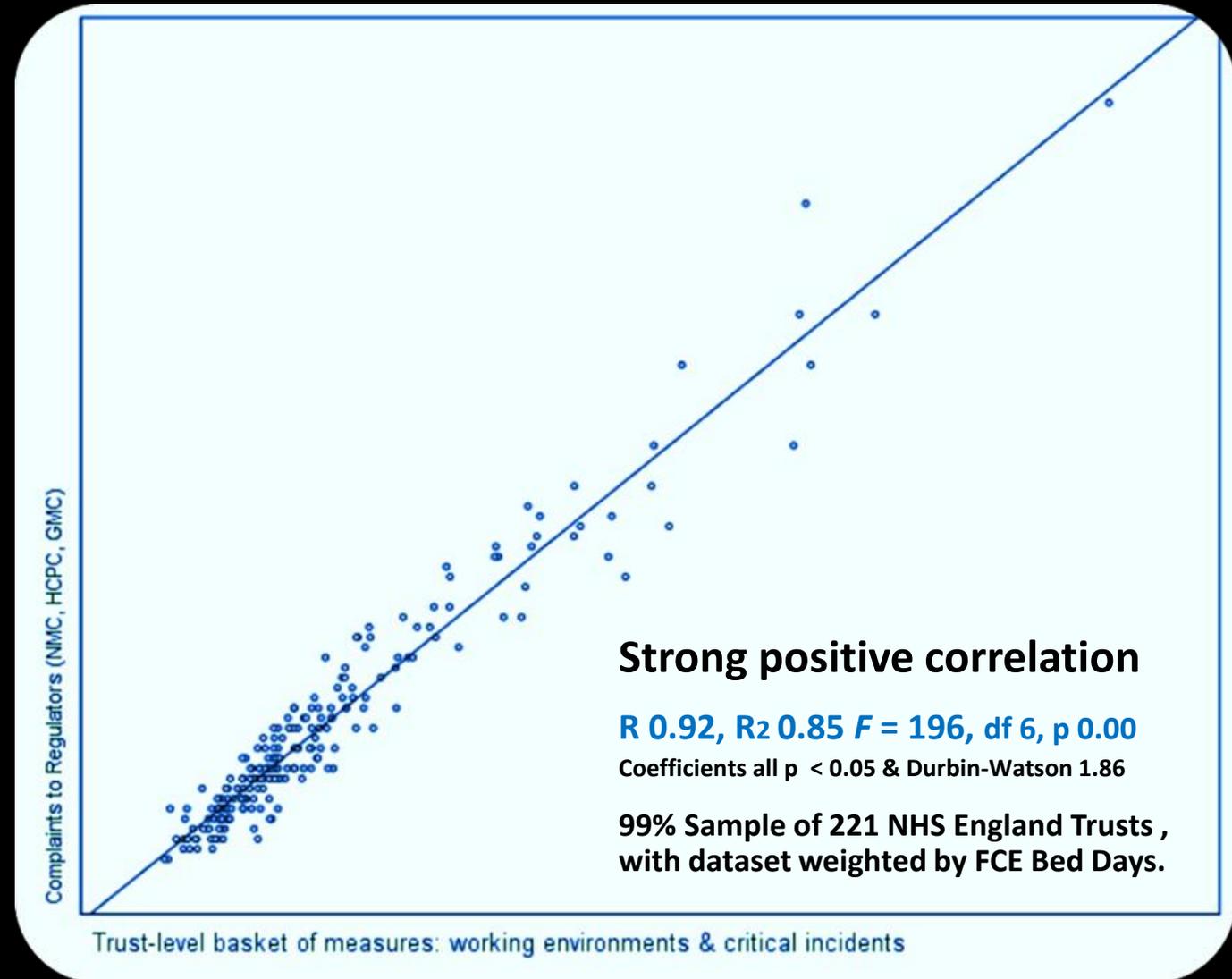
Key learning points

NHS Trust-level “basket of measures” explains 85% of variability in overall professional regulatory activity *and* end-point tribunal sanction activity

Provides robust empirical evidence of proof of concept re: applicability of “social ecology” model of deviance in regulatory context.

Highlights the need for further socio-legal policy reform to support more “joined-up”, “localised” & “no- blame” NHS whistleblowing practices.

Generates basis for possible predictive risk models which *in theory* NHS Trusts could use preemptively to reduce their exposure to the regulatory gaze. [notably, PSI reports]



Limitations & Next Steps...

Model must be treated with caution due to high-level of granularity and is idiosyncratic re: NHS context (i.e. historical tracking of trust mergers).

Nonetheless, model is robust as uses CQC dashboard elements and Completed Bed Days. While Patient Safety Incident reports highlighted as possible future 'control' for further comparative analysis/experimentation.

Next steps:

- Project report for Wellcome Trust
- Monograph *"Healthcare Governance and Disruptive Regulatory Algorithms: The Role of Machine Learning and Artificial Intelligence"* & paper to *Journal of Quantitative Criminology*
- Develop cross-disciplinary collaborations with a view to expand underpinning 'social ecology' concept into other contexts. For example, collaboration with General Pharmaceutical Council on their inspection and fitness to practice data began in March 2019.

Thank you for your time

