

# Social media platforms and clinical records: Trend detection and intervention

**Dr Anna Kolliakou**

**NIHR Biomedical Research Centre**

**South London and Maudsley NHS Trust**

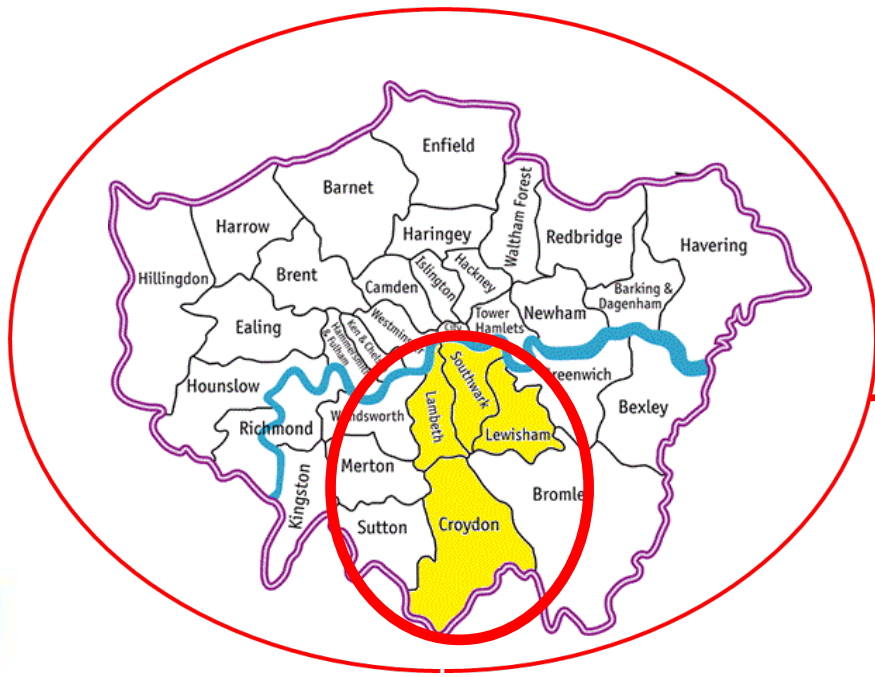
**Institute of Psychiatry, Psychology and Neuroscience**

**King's College London**

**UK**

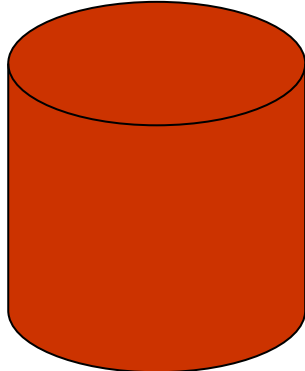
S92 **CLINICAL** A866  
M31 **RECORD** SM180  
LB6 **INTERACTIVE**  
5C0 **SEARCH** RS90M

- **CRIS and the PHEME project**
- Rumour detection on Twitter
- Case study 1 – Legal highs and mephedrone
- Case study 2 – Medication
- Case study 3 – Mental health stigma
- PHEME dashboard

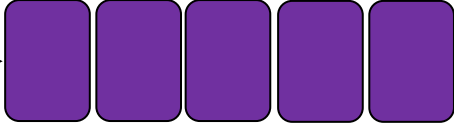


South London  
and Maudsley **NHS**  
NHS Foundation Trust

**Electronic  
Patient Journey  
System**

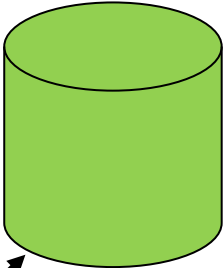


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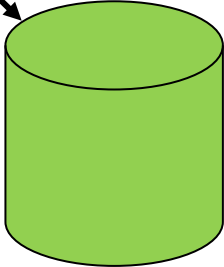
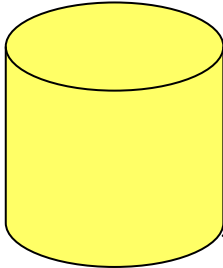


**Processing  
pipeline**

**CRIS FAST**



**CRIS application**

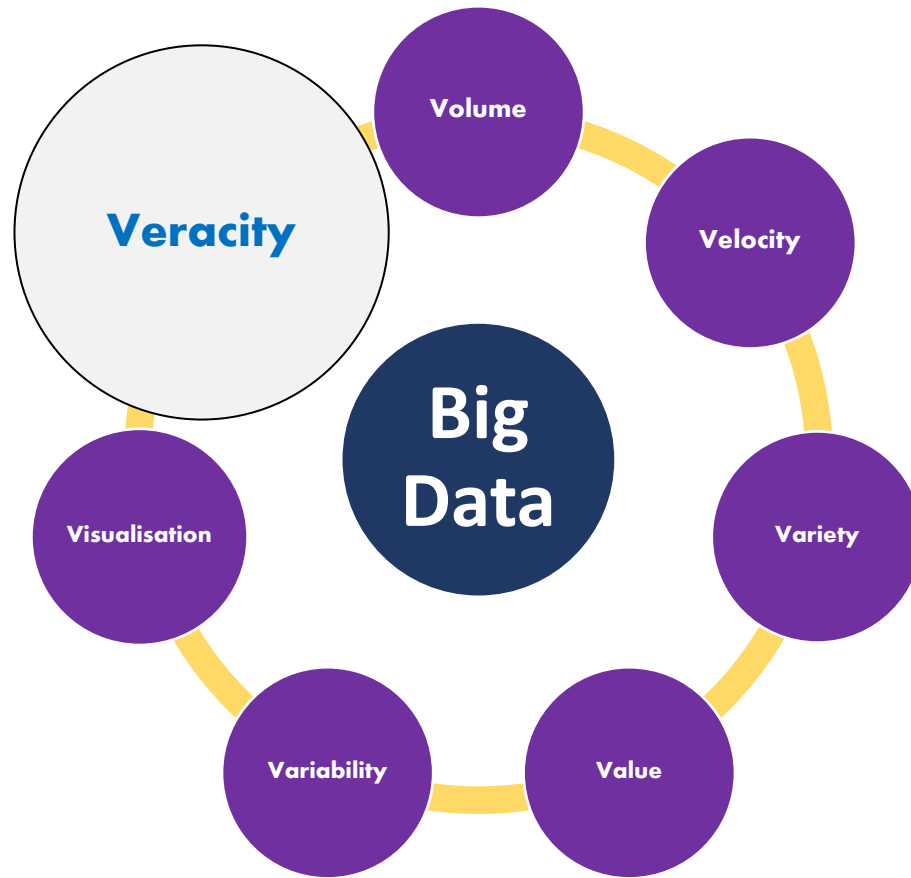


**CRIS SQL**



S92 CLINICAL A86G  
M31 RECORD SM1B0  
LB6 INTERACTIVE  
5C0 SEARCH RS90M





- CRIS and the PHEME project
- **Rumour detection in Twitter**
- Case study 1 – Legal highs and mephedrone
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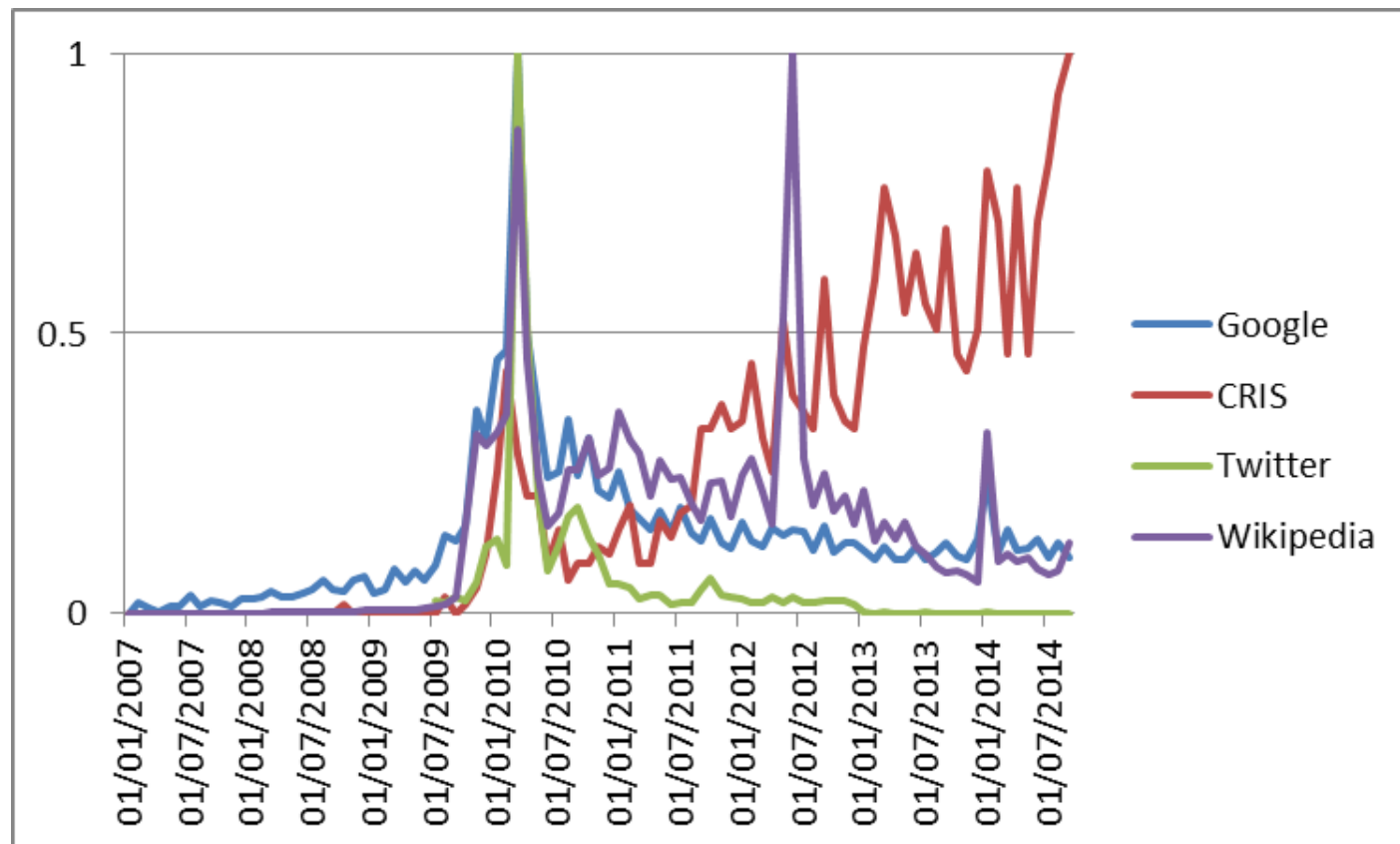
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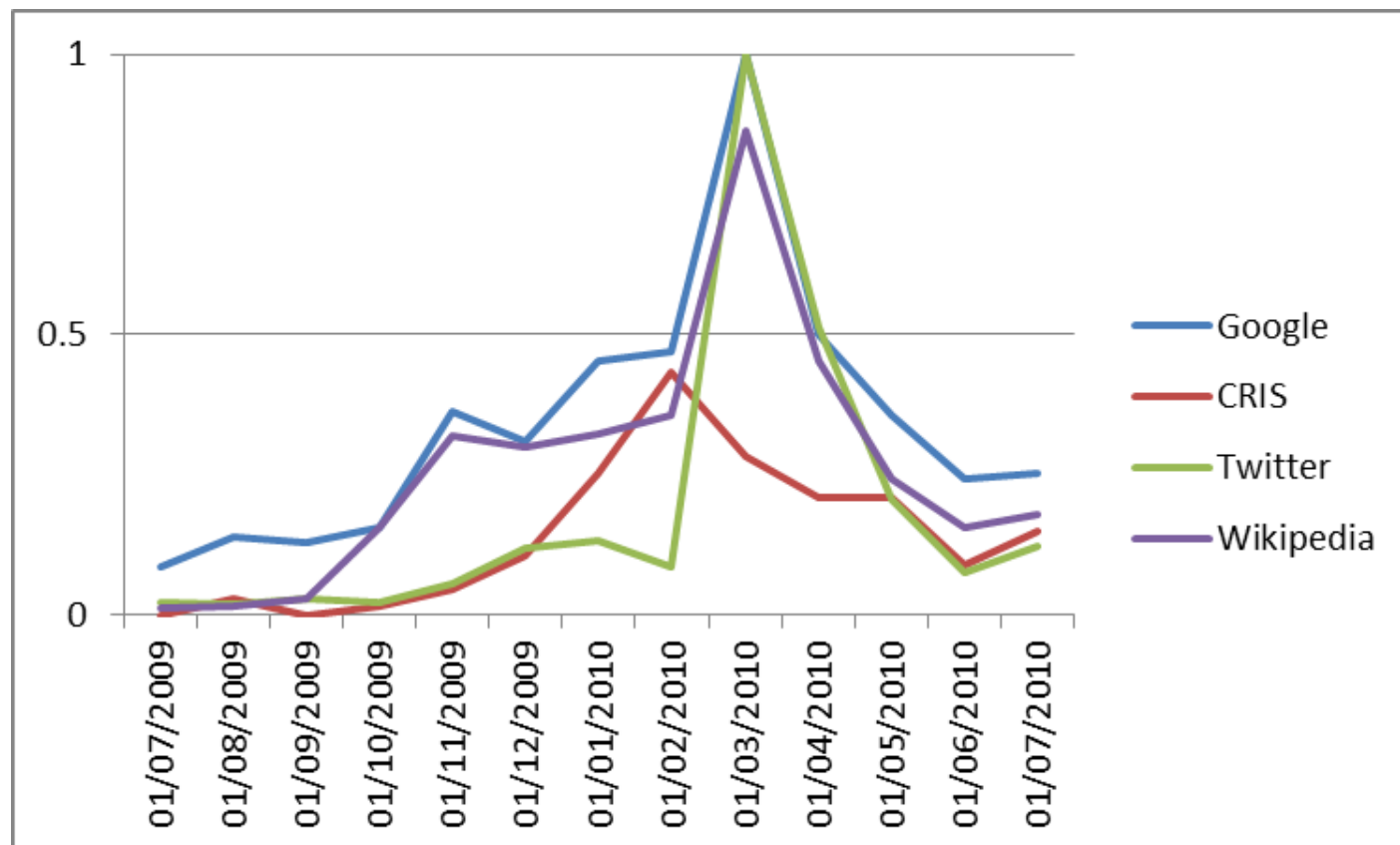


■ **2009-2014 – mephedrone / 9 keywords**

<b>Novel psychoactive substance</b>	<b>Related terms</b>
<b>Mephedrone</b>	<b>4-mmc</b>
	<b>Kitty cate</b>
	<b>White magic</b>
	<b>Miaow miaow</b>
	<b>Meph</b>
	<b>Meow meow</b>
	<b>m-smack</b>
	<b>M-cat</b>
<b>Total</b>	<b>145,578</b>

- **Application development – 5,000 double-annotated – Kappa 0.86**
- **Application performance [P= 0.99, R= 0.90 – 7,044 mephedrone]**

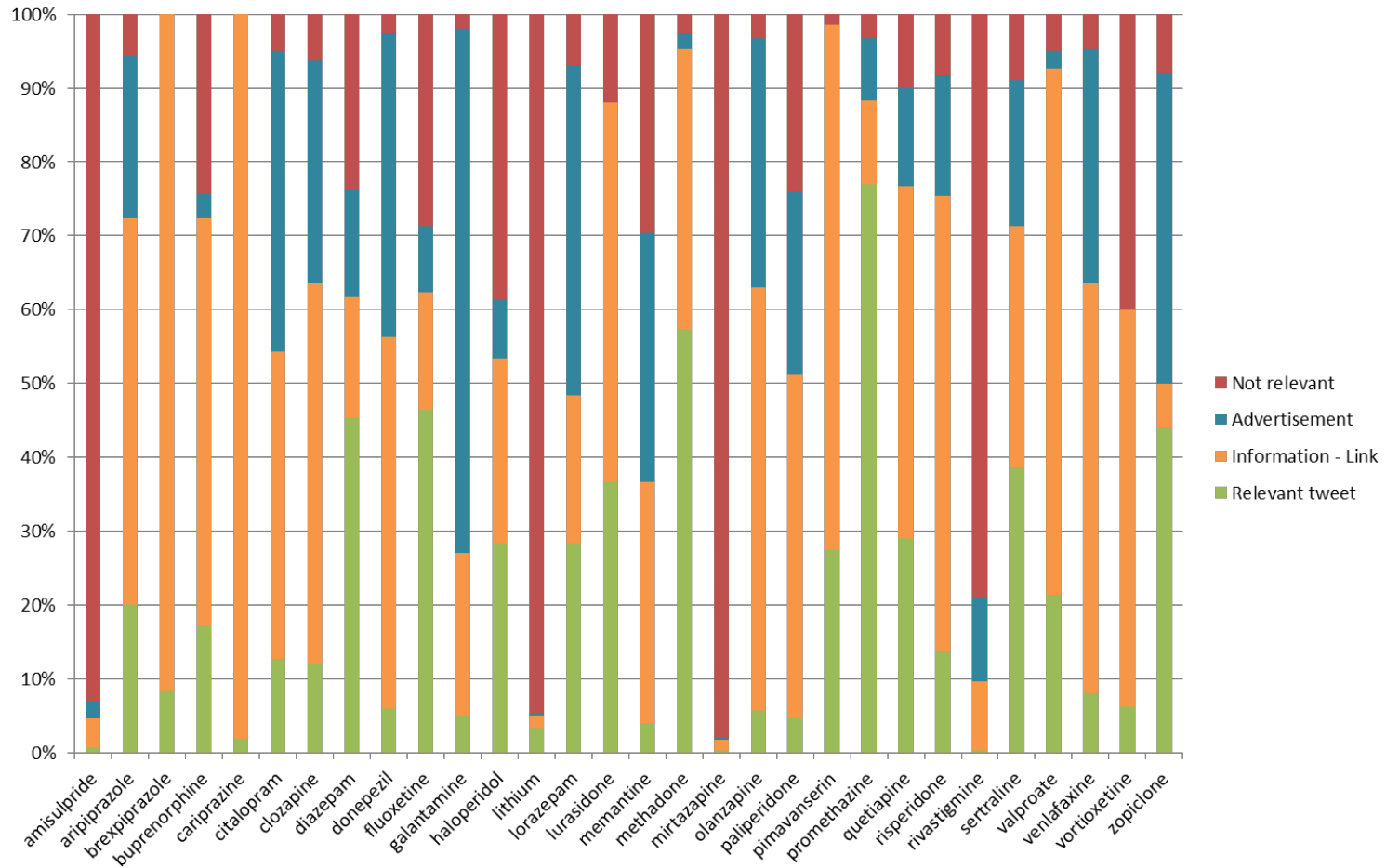




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■ 2009-2014 – 30 drugs / 123 keywords

Drug name	Tweets	Drug name	Tweets
lithium	257,854	risperidone	4,835
mirtazapine	243,218	haloperidol	3,303
diazepam	92,596	donepezil	2,305
fluoxetine	56,343	zopiclone	2,188
lorazepam	23,446	clozapine	2,087
promethazine	19,626	memantine	1,825
sertraline	18,091	buprenorphine	1,818
methadone	14,219	valproate	1,163
citalopram	13,960	paliperidone	1,016
venlafaxine	13,550	galantamine	562
olanzapine	9,907	lurasidone	333
quetiapine	8,445	pimavanserin	73
aripiprazole	6,355	vortioxetine	65
rivastigmine	6,175	cariprazine	55
amisulpride	5,871	brexpiprazole	12
<b>Total</b>	<b>811,296</b>		



■ **Application development (9,055 annotations;  
1,057 double-annotated – Kappa 0.97 )**

- discount
- buy
- online
- best price
- next day delivery
- cheap
- no|without prescription|rx
- compare prices
- save money
- overnight delivery
- viagra
- adpharm
- for sale
- lowest price
- purchase
- free delivery
- shipping
- uk pharmacy

■ **Application performance (P= 0.90, R= 0.92 – 67,420 ads)**

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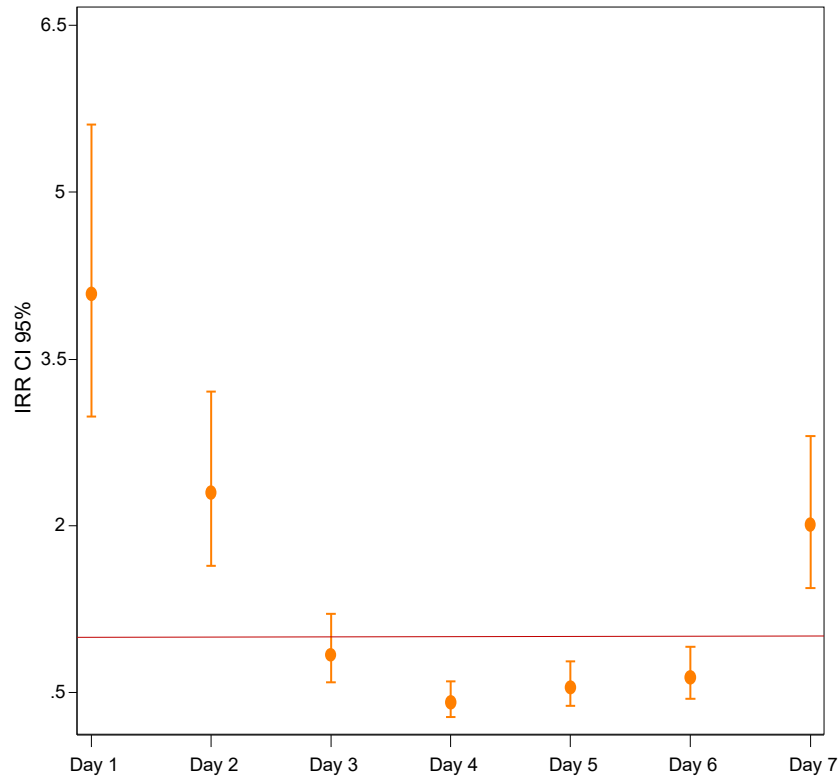
■ 2009-2014 – 11 search groups/ 36 keywords

Disorders	Tweets
Depression	7,298,900
Bipolar disorder	2,058,961
Anxiety disorder	1,339,470
Autism	836,642
Psychosis	522,137
Alzheimer's disease	464,814
Attention-deficit disorder	444,972
Obsessive-compulsive disorder	320,391
Dementia	161,074
Schizophrenia	136,989
Mental-health / stigma	31,357
<b>Total</b>	<b>13,615,707</b>

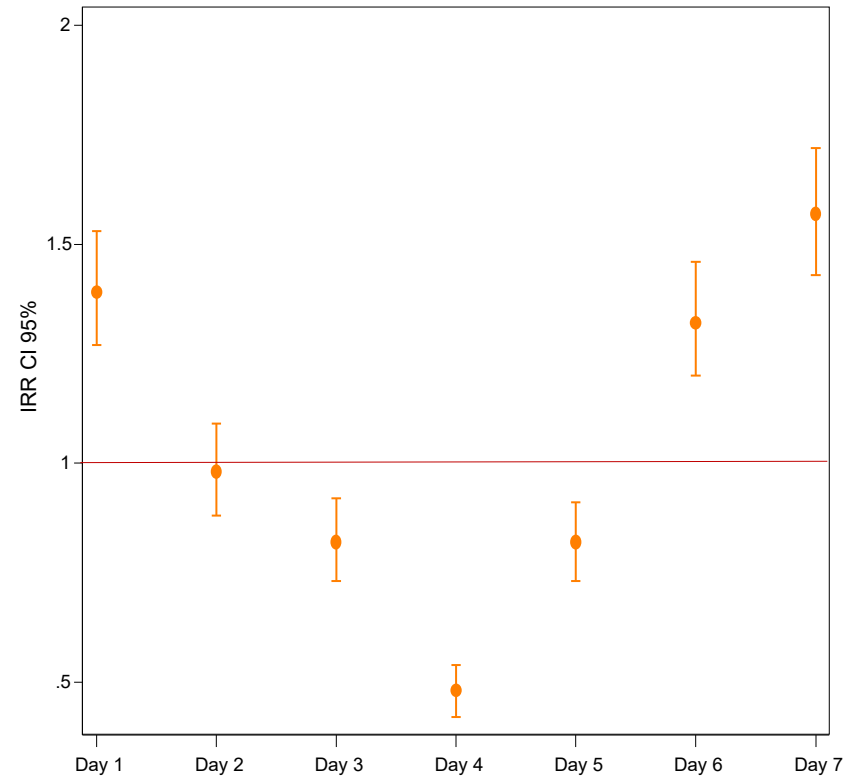
## **GERMANWINGS CRASH**

- **Collection March 24-30<sup>th</sup> 2015 – depress\*, mental\*, psych\***
- **20,713 tweets retrieved – 2,000 double-annotated (Kappa= 0.79)**
- **Application performance (P= 0.98, R= 0.31 – 1,400 anti-stigma)**

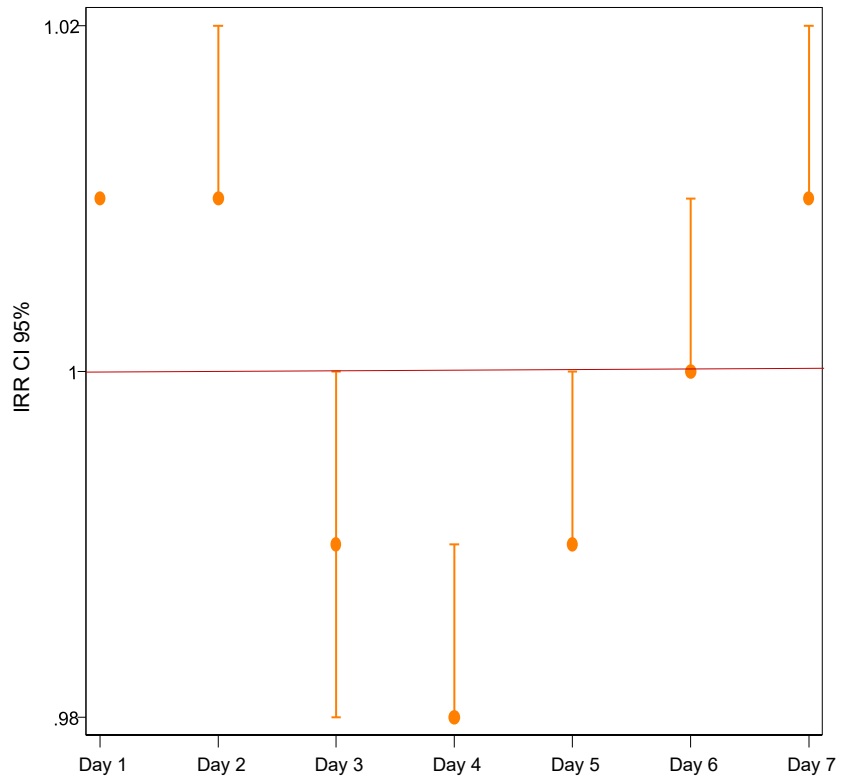
- **January 1<sup>st</sup> 2010 – December 31<sup>st</sup> 2014**
- **Twitter**
  - **Daily % of schizophrenia and depression-related tweets**
  - **Daily % of schizophrenia and depression supportive tweets**
- **Clinical record**
  - **Daily No of crisis episodes (inpatient and HTT)**



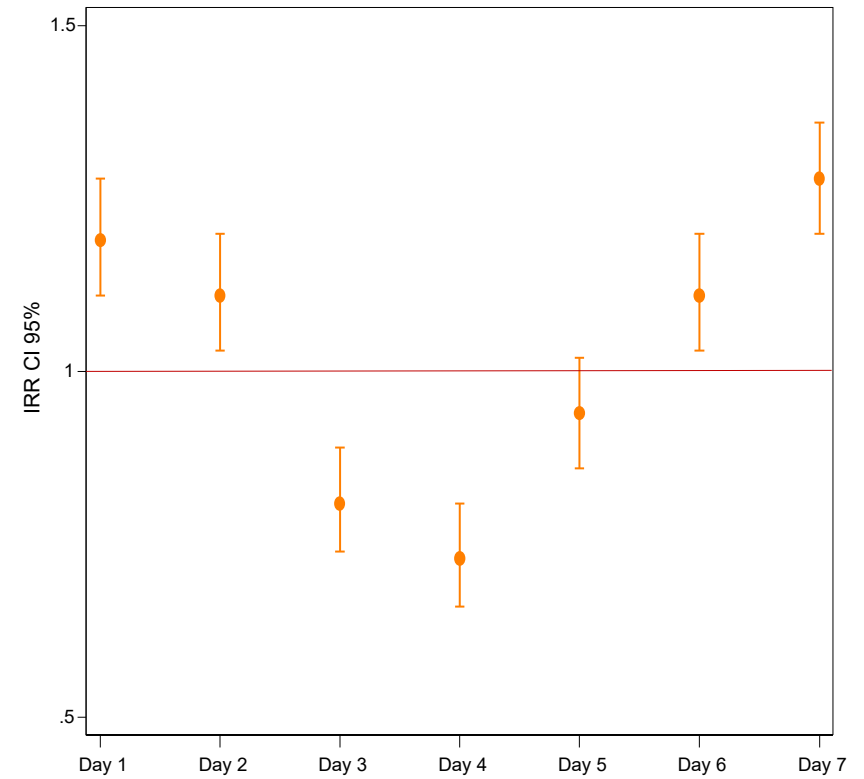
**All schizophrenia tweets/crisis episodes**



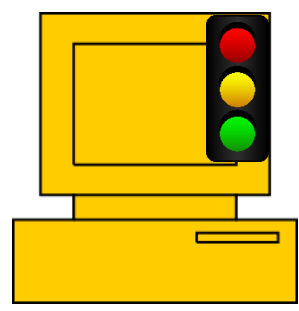
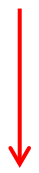
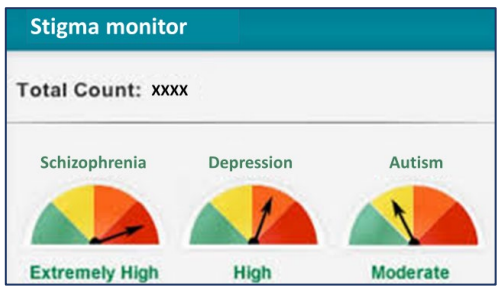
**All depression tweets/crisis episodes**



**Supportive schizophrenia tweets/crisis episodes**



**Supportive depression tweets/crisis episodes**



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- **PHEME dashboard**

- **PHEME Project Team**
- **Biomedical Research Centre CRIS Team**

[pHEME.weblyzard.com](http://pHEME.weblyzard.com)

[www.maudsleybrc.nihr.ac.uk/research/informatics/pHEME](http://www.maudsleybrc.nihr.ac.uk/research/informatics/pHEME)

 [anna.kolliakou@kcl.ac.uk](mailto:anna.kolliakou@kcl.ac.uk)

 @PHEMEEU

 [www.pHEME.eu](http://www.pHEME.eu)