10th Stakeholders Forum

Harnessing mobile apps and social media for product safety

Phil Tregunno, MHRA

WEB-RADR

WEB-RADR Consortium

Mobile Apps

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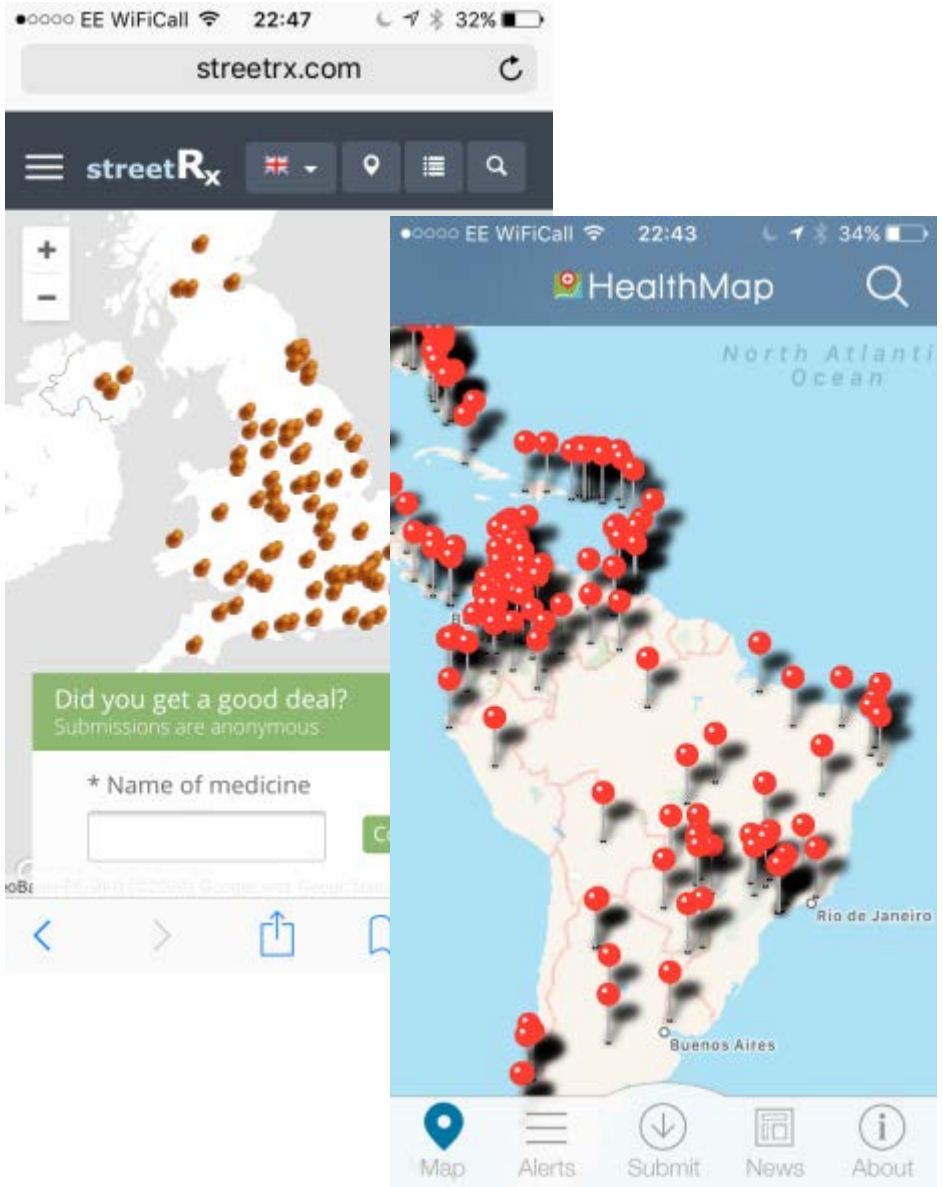
Mobile technology



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POLICY FORUM | BIG DATA

The Parable of Google Flu: Traps in Big Data Analysis

David Lazer[1,2,*], Ryan Kennedy[1,3,4], Gary King[3], Alessandro Vespignani[5,6,3]

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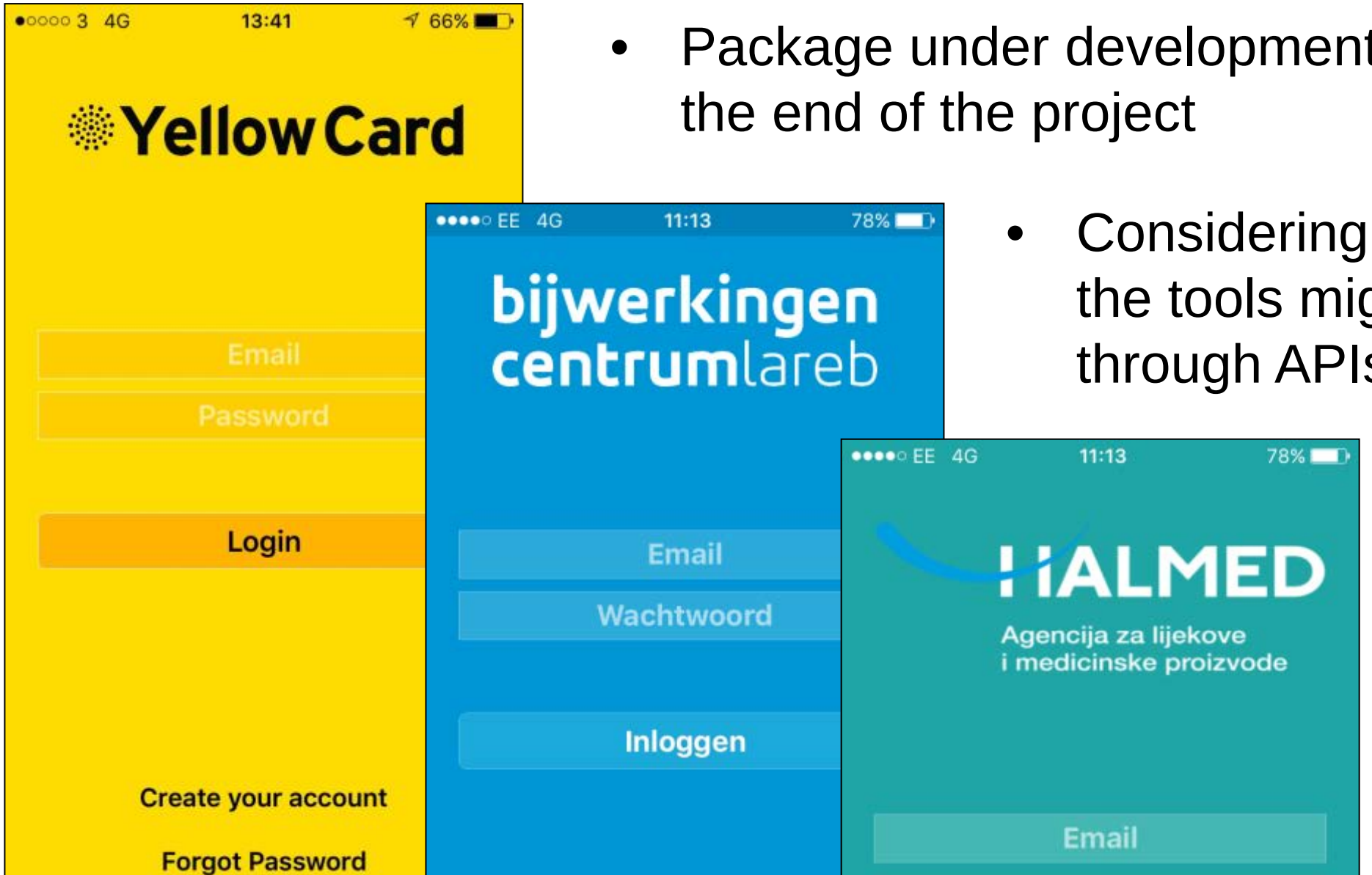
Apps Launched



- Package under development for other MS by the end of the project
- Considering how utility of the tools might be expanded through APIs
- Evidence based evolution of tools

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Value

Patient evaluation

- Patient focused studies to understand barriers and facilitators to the use of the app
- Most value in the news feeds and data streams that we can make available

Scientific Value

- Initial view indicates that the data are equivalent value to traditional data
- Quality & Value under formal evaluation but already contributing to signal detection

Meet patients where they're at

Protect their privacy

Give them easy to-use tools

Social Media

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Adverse Events In Social Media

Challenges in detecting events

- Idiomatic expressions, slang, mistakes
- Symptoms vs indications
- Large volume of potentially irrelevant data
- Challenging to code into MedDRA

Challenges in signal detection

- Either stand-alone or combine with spontaneous reporting
- If combining – how do we do it?

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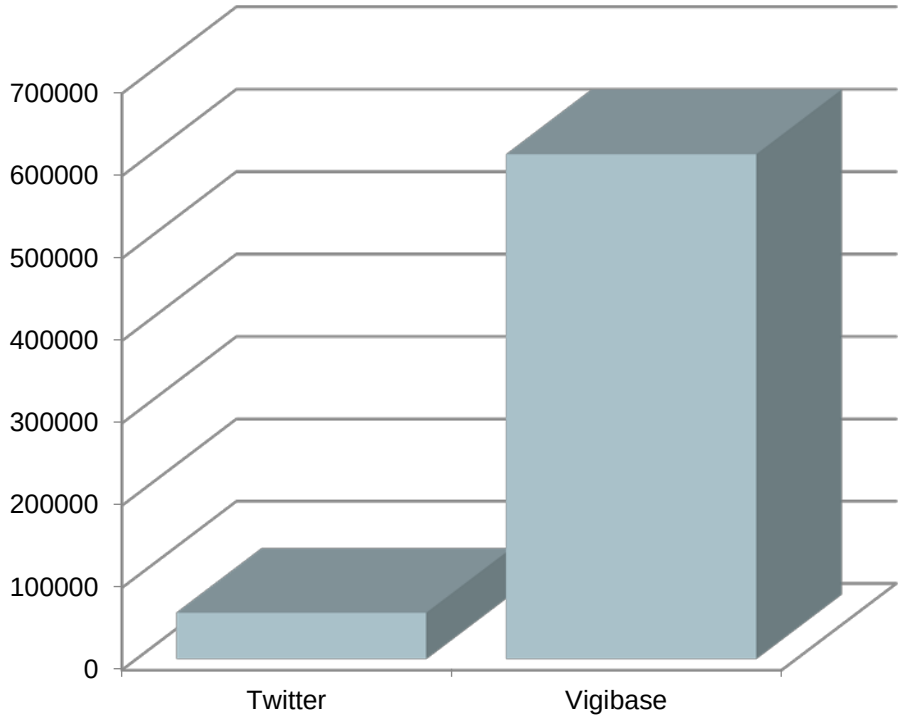
Comparisons with Vigibase

Step One: How many adverse events in Twitter vs Vigibase

- Data collected: March 2012 -> March 2015
- 38 WEB-RADR generics
- Threshold at “Epidemico score” of 0.7 (Twitter)
- Remember: detected events



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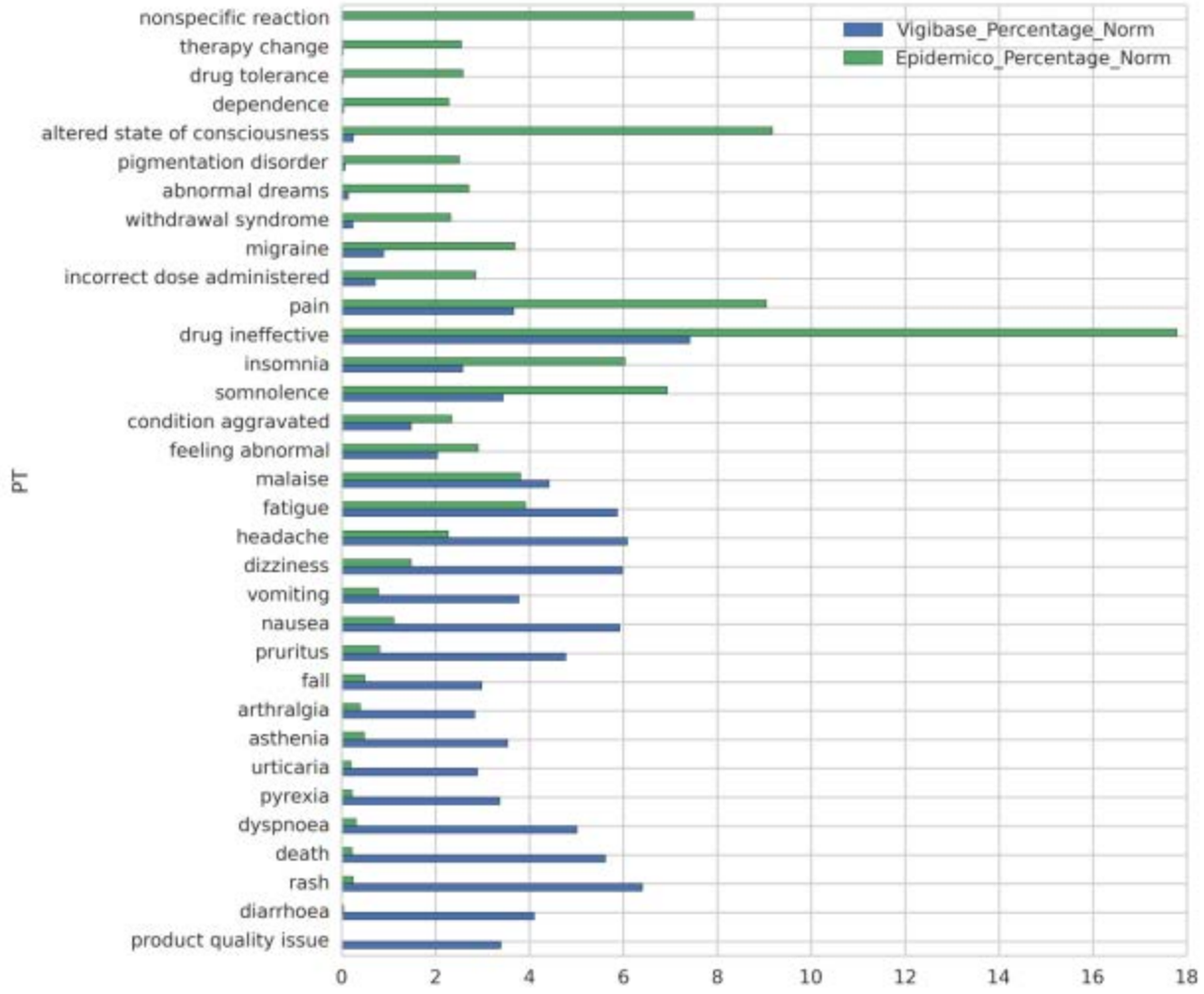
Comparisons with Vigibase

Comparisons at the Preferred Term level



- Social Media may be data-rich for specific event types i.e. drug tolerance, dependence, withdrawal syndrome,
- For these specific events it could be the informal nature of social media i.e. not reporting to a physician or official body
- Several potential explanations for the observed differences in the mediums…

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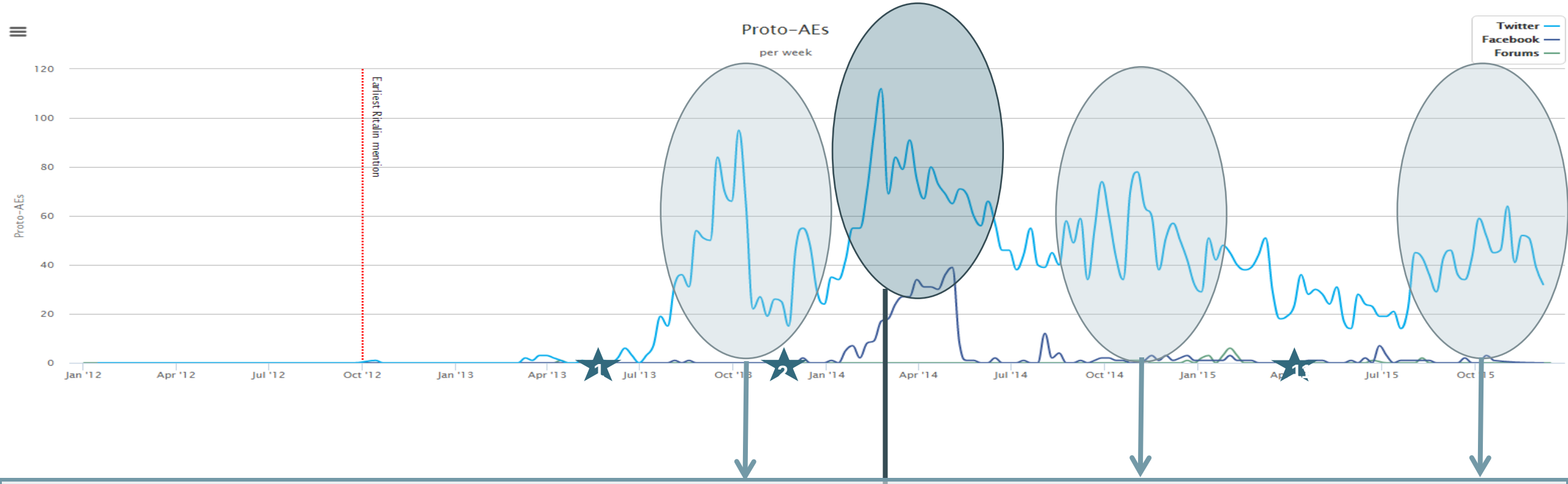
Social media conversations on Ritalin over time



October → November – academic work, cold season, contributing to increase mentions

March →April– academic work contributing to increase

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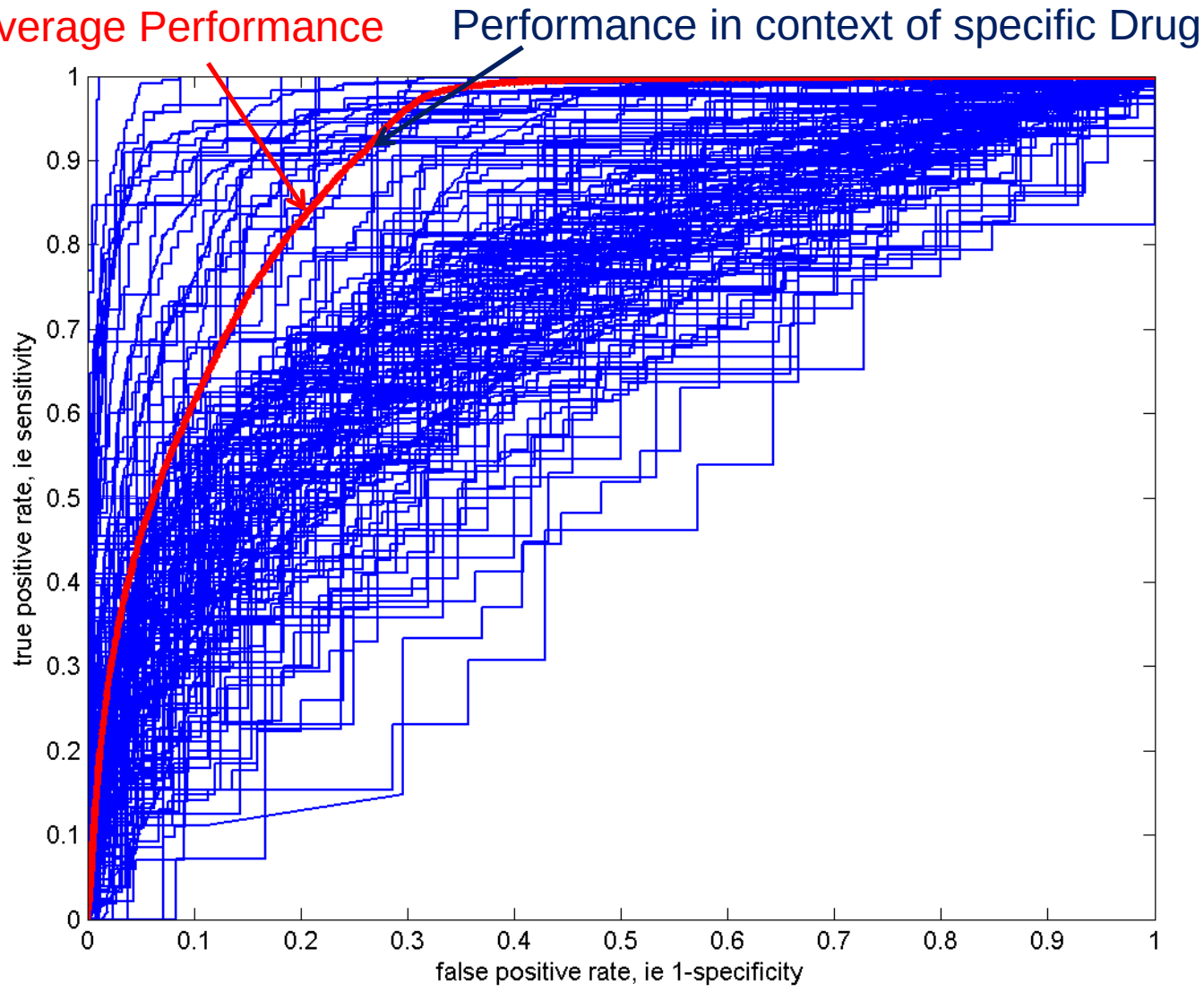
Performance Varies Across Drugs



Drug	#Training Data	AUC
humira	1481	0.689893
prednisone	1700	0.740568
co-codamol	2294	0.770509
oxycodone	1767	0.770942
meningococcal vaccine	1866	0.811062
essure	2877	0.931683
flu shot	4569	0.943119
hpv vaccine	1668	0.956768
gardasil	2140	0.970276
vaccine	5959	0.973777
tetanus vaccine	3069	0.975138

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Where is it useful?

Added value in analysis of:

- Abuse & misuse
- Real world use of medicines

- ‘Unexpected benefits’
- Evidence of ‘clinical trials’ being conducted by users to attain different ‘benefits’
- Patterns of abuse both geographically and seasonally
- Patient tolerance and reasons for stopping medication

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Where is it useful?

Added value in analysis of:

- Neurological & psychiatric effects
- Pregnancy
- Lifestyle treatments or events

- Large volume of data related to both medicines and events with neuro-psychiatric effects
- Potential for longitudinal analysis of a record; elimination of recall bias over pregnancy?
- Medically less serious events which have a serious impact on the patient and affect compliance

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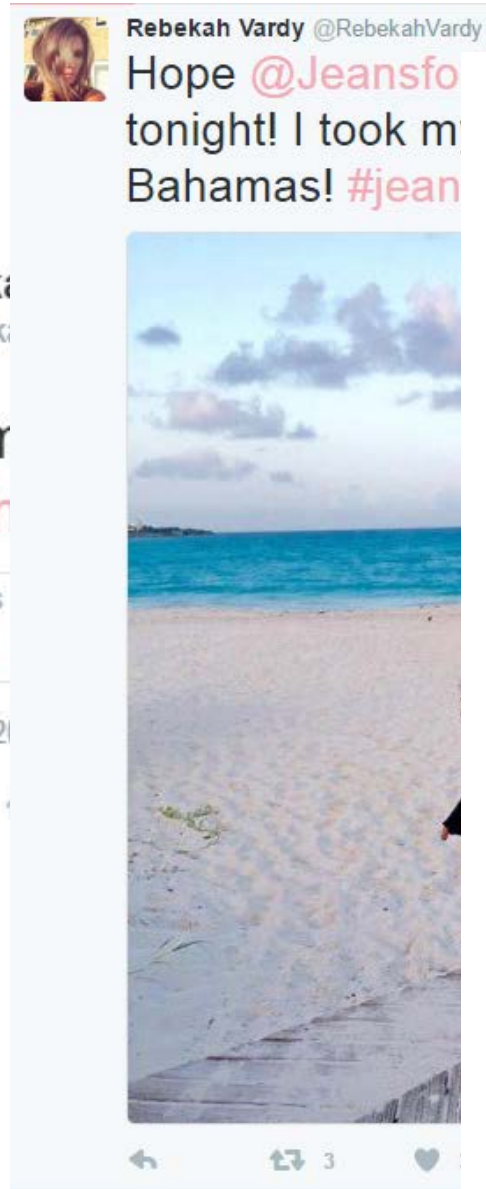
Pregnancy

Rebeka
@Rebeka

Hello Bum
instagram

RETWEET 1
LIKES 12

7:31 AM - 20 Sep 2



Rebekah Vardy @RebekahVardy · Sep 13

Hope @Jeansfo
tonight! I took m
Bahamas! #jean

Rebekah Vardy
@RebekahVardy

Guard Dogs 😂😂😂 #frenchie

RETWEETS 4
LIKES 148

11:29 AM - 6 Jul 2016

Rebekah Vardy @RebekahVardy · Jun 20

Come on England..... 🦁🦁🦁

52 444

Policy

- Recommended terms of engagement for technologies within legal and ethical boundaries
- How does the new data fit alongside traditional data
- Where can social media be harnessed to support regulatory decision-making in PV
- Watch this space!

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Thank you. Questions?

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