



LISBON ADDICTIONS

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SECOND EUROPEAN CONFERENCE ON ADDICTIVE BEHAVIOURS AND DEPENDENCIES

Online drug forum sentiment analysis

4-FA in the Netherlands

Dr. Matthijs Blankers

*Trimbos institute, the Netherlands institute of mental health and addiction, Utrecht
Arkin Mental Health Care / Jellinek, Amsterdam,
Academic Medical Center, Department of Psychiatry - University of Amsterdam
The Netherlands*

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Conflict of interest statement

I have no conflict of interest to declare

Background

- New Psychoactive Substances (NPS) have become a growing global phenomenon (UNODC, 2016)
- In the Netherlands, substantial increase acute emergencies due to the NPS 4-fluoroamphetamine (4-FA / 4-FMP), incl. media coverage
- Monitoring data indicates increase in use of 4-FA during last years
- Sale and exchange of information about NPS increasingly online (e.g. dark web, drug users online fora)
- Online data can be accessed, scraped and analysed using statistical / data science software (e.g. R, Python)

Research questions

1. Can changes in the number of 4-FA related forum posts be observed?
 - Around the time 4-FA was increasingly found by monitoring services

2. Can changes in the sentiment of these posts be observed?
 - between 2012 and 2017
 - do changes coincide with media coverage of 4-FA health incidents?

Methods

- Using *Relenium* and *PhantomJS* browser, web forums (drugsforum.nl, drugsforum.info) accessed
- Search function of fora used to find relevant posts
 - Containing words associated with 4-FA, cocaine, ecstasy, and a neutral word (forum)
- Content of these posts (with meta-data) downloaded and stored as data objects in R
- Content of posts semantically analysed using *pattern.nlp* (Python)

Methods: search forum posts

The screenshot shows the RStudio interface with a script editor on the left and a console on the right. The script in the editor is as follows:

```
34
35
36
37 #####
38
39 # search example #
40
41 remDr$screenshot(display=TRUE)
42
43 remDr$navigate("http://drugsforum.info/search.php")
44 remDr$screenshot(display=TRUE)
45
46 searchTerms <- remDr$findElement("id", "keywords")
47 searchTerms$sendKeysToElement(list("4fa + 4fmp"))
48 searchAny <- remDr$findElement("id", "terms2")
49 searchAny$clickElement()
50 remDr$screenshot(display=TRUE)
51
52 searchNow <- remDr$findElement("name", "submit")
53 searchNow$clickElement()
54 remDr$screenshot(display=TRUE)
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```

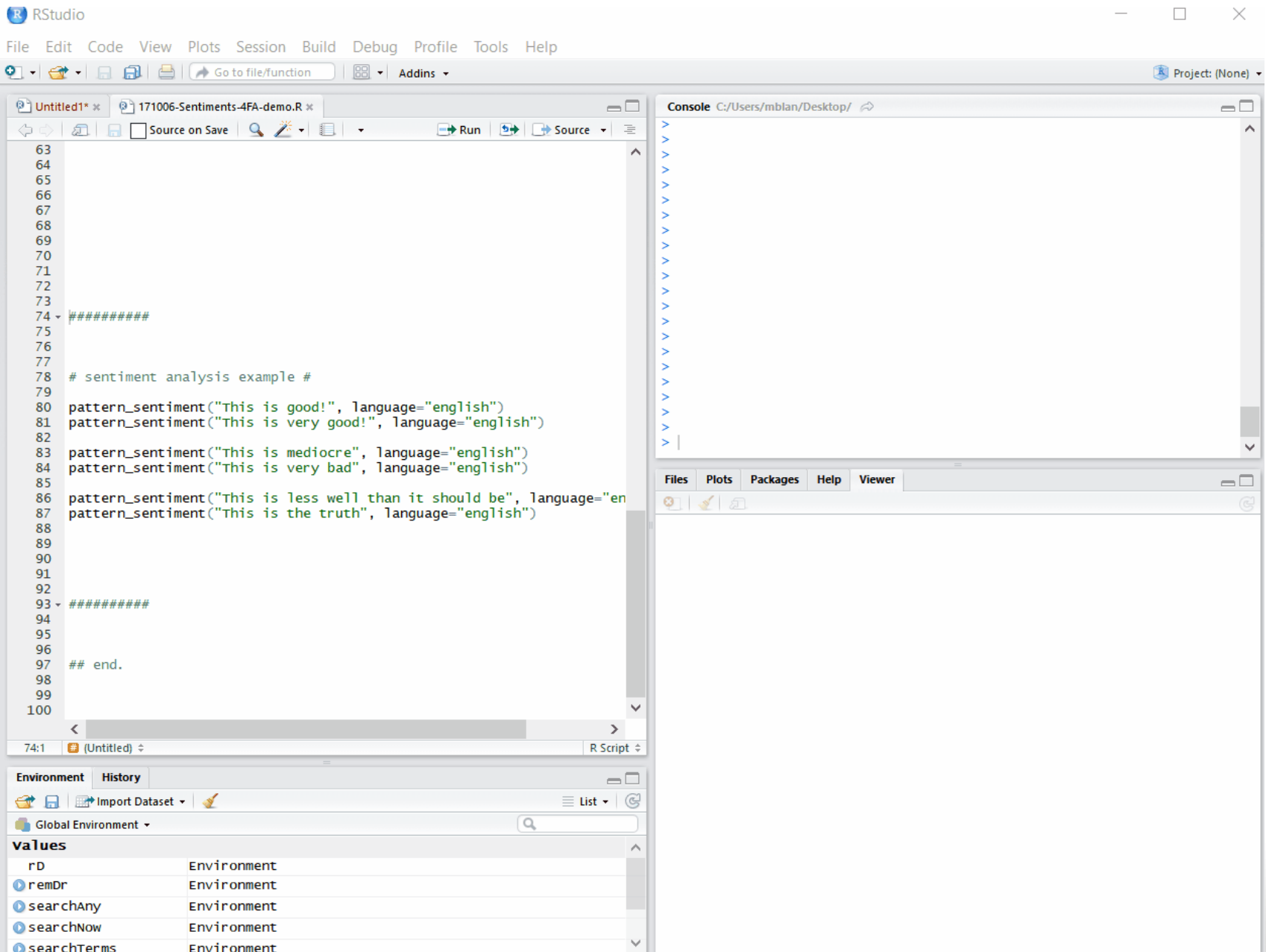
The console on the right shows a series of blue arrows pointing downwards, indicating that the script is running. The Environment pane at the bottom shows the following variables:

Values	Environment
rD	Environment
remDr	Environment

Under the Functions section, the following function is listed:

loginForum	function (loginURL, username, password)
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Methods: sentiment analysis



The screenshot shows the RStudio interface with a script editor on the left and the Environment pane at the bottom. The script editor contains the following R code:

```
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64
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69
70
71
72
73
74 #####
75
76
77
78 # sentiment analysis example #
79
80 pattern_sentiment("This is good!", language="english")
81 pattern_sentiment("This is very good!", language="english")
82
83 pattern_sentiment("This is mediocre", language="english")
84 pattern_sentiment("This is very bad", language="english")
85
86 pattern_sentiment("This is less well than it should be", language="en
87 pattern_sentiment("This is the truth", language="english")
88
89
90
91
92
93 #####
94
95
96
97 ## end.
98
99
100
```

The Environment pane at the bottom shows the following values:

Variable	Value
rD	Environment
remDr	Environment
searchAny	Environment
searchNow	Environment
searchTerms	Environment

Results

4-FA increasingly seen at first aid of dance events

4-FA illegal
May 25, 2017

Number of posts

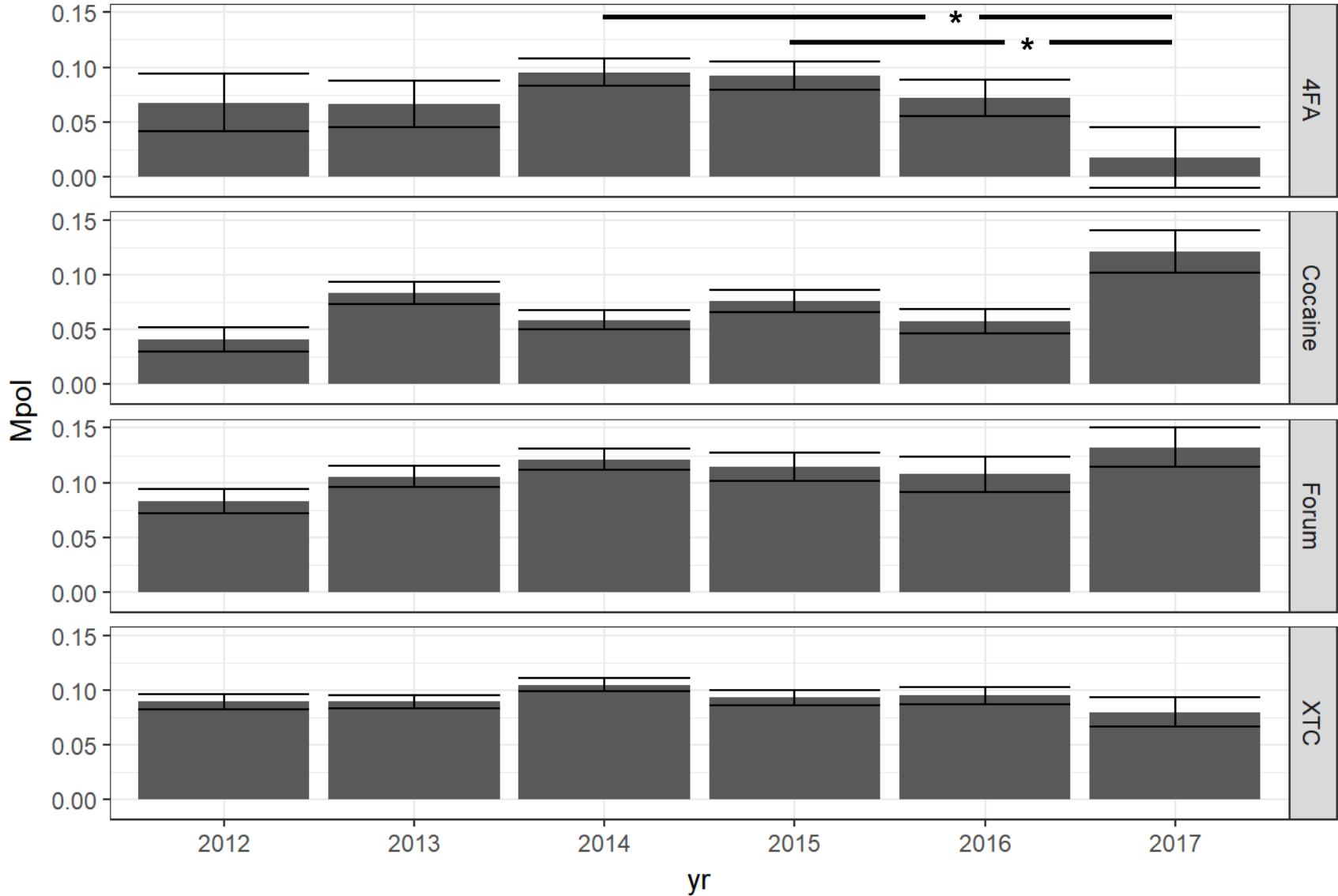


Results

4-FA increasingly seen at first aid of dance events

4-FA illegal May 25, 2017

Polarity of posts



Conclusion

- It is feasible to monitor (anonymous) online drug discussion forums using statistical software.
- Trends in the number of posts and polarity were observed in comparison to other substances and neutral words between 2012-2017.
- Trends observed in Dutch online 4-FA discussions forums correspond with trends in reported health incidents and associated media coverage.
 - Earlier than first aid reports?

Discussion themes

- Research ethics!
- Stable availability of data
- Response forums on monitoring activities



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Thank you!

Dr. Matthijs Blankers (mblankers@trimbos.nl)

In collaboration with:

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