




## EPSRC Digital Economy

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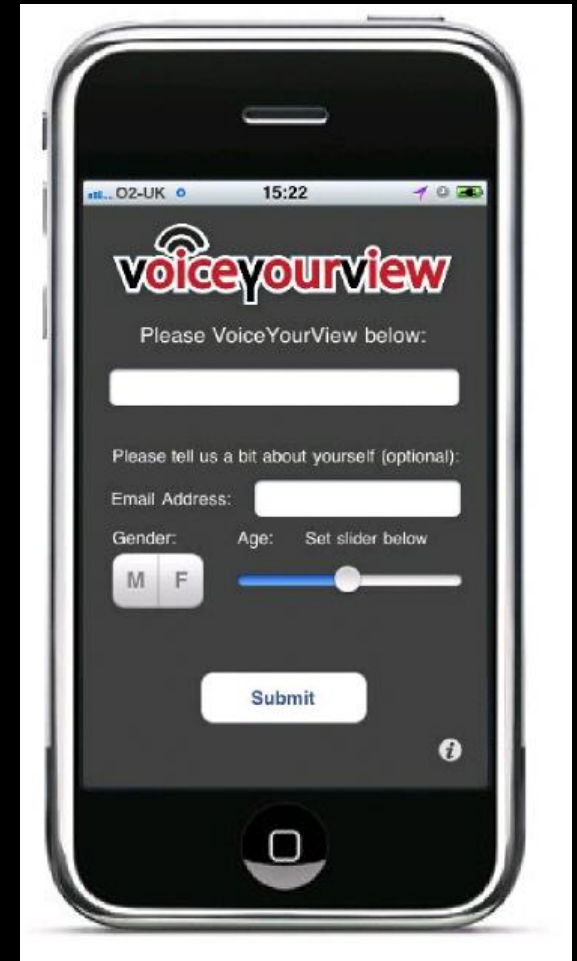
Made four calls to the police before they finally showed up

No police patrols  
– dangerous to go out at night





**Create a conversation**



speech recognition

natural language processing

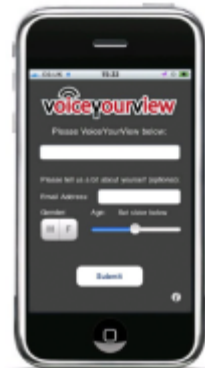
theme, sentiment, actionability

instant feedback

# VYV trials @ Lancaster Library



6 Week Installation



2000 comments from  
600 people\*

SpinVox™  
Wmatrix

Comments processed  
live with speech to  
text and NLP



Live summaries  
(Themes+Sentiment)  
presented in location

\*Photo by Nigel Slater, Lancaster Guardian

# Include everyone



# *“Very helpful and friendly staff”*

```
<w pos="NN" svo="" lemma="staff"  
sem="I3.1/S2">staff</w>
```

- Noun picked from POS = “Staff” sem tag I3.1

I2.2	Business: Selling
I3	Work and employment
I3.1	Work and employment: Generally
I3.2	Work and employment: Professionalism
I4	Industry

- Secondary sem tag S2

S1.2.5	Toughness; strong/weak
S1.2.6	Sensible
S2	People
S2.1	People:- Female
S2.2	People:- Male
S3	Relationship



# Sentiment Analysis

- Comment tagged as positive, due to presence of positives “helpful”, “friendly” and positive modifier “very”

```
<w pos="RG" svo="" lemma="very" sem="A13.3"> Very</w>  
<w pos="JJ" svo="" lemma="helpful" sem="S8+">helpful</w>  
<w pos="CC" svo="" lemma="and" sem="Z5">and</w>  
<w pos="JJ" svo="" lemma="friendly"  
sem="S1.2.1+">friendly</w>  
<w pos="NN" svo="" lemma="staff" sem="I3.1/S2">staff</w>
```

# Technology Readiness



*“Improve  
your server,  
it’s useless”*



*“Food and People”*

*“Rather  
clinical!”*



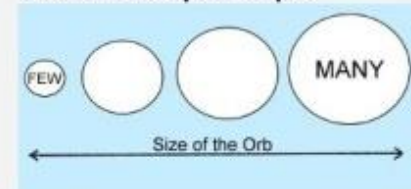
*“Medicines and medical treatment”*

Major challenge in context awareness is the **length of comment**. *There is very little information available to identify the context from the comments.*

General  
Impression



Comments per Topic



Furnishing

Ambient

Music

I think the library is much lighter and fresher and brighter and easier to to see.

I think it's a shame that there is less stoc...

# Some research findings

# traditional methods versus VYV



no significant difference  
in quality of data; but  
VYV is *anytime*,  
*anywhere*

# Accuracy of auto-tagging: theme



70-78% acceptable

# Accuracy of auto-tagging: actionability



76% accurate

# Accuracy of auto-tagging: sentiment



55% accurate



# Eliciting positive responses



VYV results in higher proportions of positive comments

# Benefits of VYV



Anytime, anywhere;

Automatic;

Two-way conversation

# Open questions

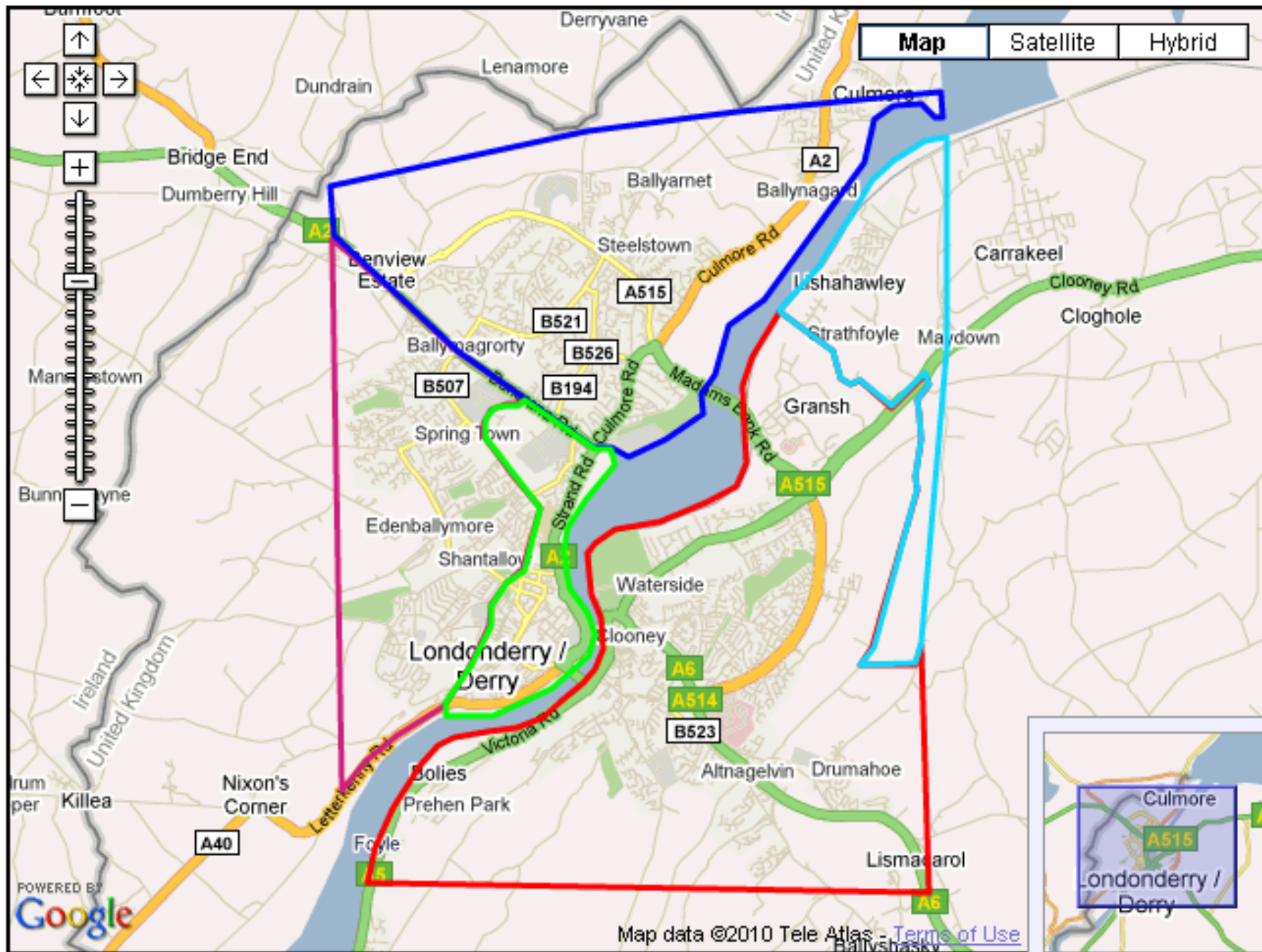


What motivates people to  
get involved;

How to encourage  
participation?

**YOU  
ARE NOW  
ENTERING  
FREE DERRY**





# DDPP Household Confidence & Satisfaction

moisten and seal

## CHAIRPERSON'S FOREWORD

Dear Householder,  
I would be grateful if you would take a few minutes of your time to complete the attached questionnaire on satisfaction and confidence with the service currently provided by the PSNI.

The District Policing Partnership has secured the inclusion of a satisfaction and confidence baseline in this year's Local Policing Plan. I would encourage you to complete the survey and return to the DPP. This is a unique opportunity for you to have your say on local policing and inform both the PSNI and the DPP what type of police service is being provided in your area.

The Derry DPP will continue to challenge the police on issues raised by you thereby ensuring that your concerns are addressed.

The results of the survey will form the basis of the Local Policing Plan for Foyle for 2010 – 2011 and will inform the Area Commander where resources need to be allocated.

Thank you for taking the time to complete the questionnaire ensuring that local people shape local policing.

Please return the completed questionnaire (no stamp required) to the Freepost address by 31<sup>st</sup> August 2009. Anyone interested in being entered into the free prize draw should provide contact details in the space below (telephone no./e-mail address) please do not provide your name or postal address.

Clr Elisha McLaughlin  
Chairperson, Derry District Policing Partnership

moisten and seal

## SATISFACTION & CONFIDENCE SURVEY

1. Which of the following groups do you belong to?

Gender: Male  Female

Age Group: Under 16  16-24  25-40   
41-60  61 or over

Religion: Protestant  Catholic   
Other (please specify)  None

2. Which police neighbourhood do you live in?

Waterside Rural - Rural Areas of the Waterside

Waterside Urban - Urban Areas of the Waterside

City Centre - Bogside, Brandywell, Fountain, City Centre, University and Pennyburn

City West - Creggan, Beechwood, Creevagh, Rosemount, Foyle Springs, Ballymagroarty, Coshquin, Hazelbank and Springtown

City North - Galliagh, Culmore, Shantallow and Steelstown

## SATISFACTION & CONFIDENCE SURVEY

3. How much confidence do you have in the police's ability to provide an ordinary day to day policing service for all the people of the Foyle area?

- Total confidence
- A lot of confidence
- Some confidence
- Little confidence
- No confidence at all
- Don't know

Reason for answer:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Do you think the PSNI are doing a good job in the Foyle Area?

- Yes
- No
- Don't know

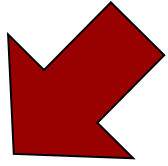
Reason for answer:

\_\_\_\_\_

\_\_\_\_\_

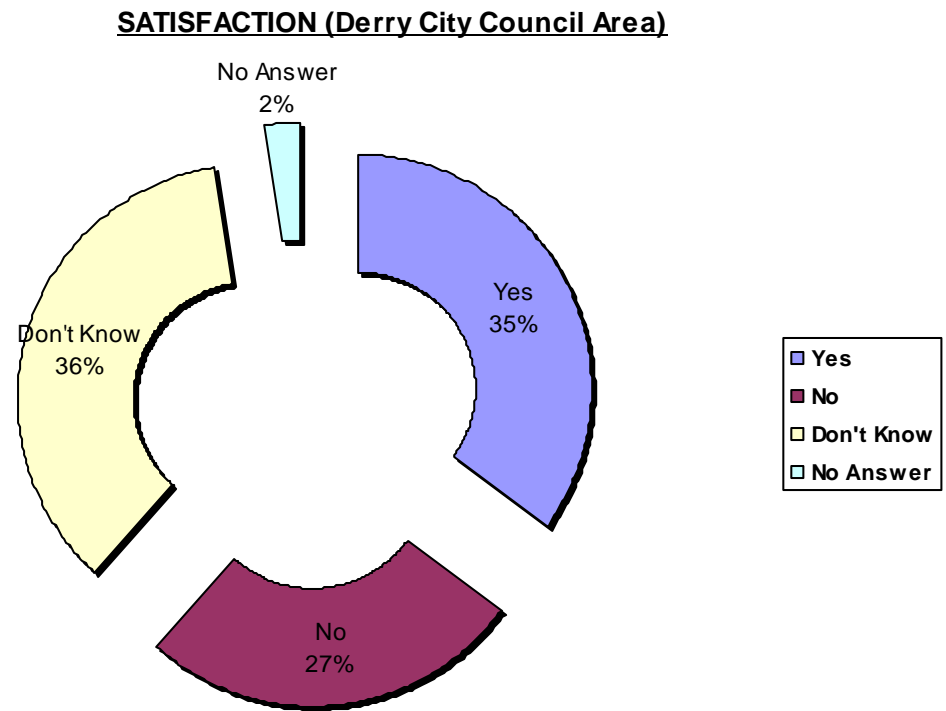
\_\_\_\_\_

# Challenge: **How** do people feel...



- **36% of respondents\*\*** answered 'don't know' to the satisfaction question => How can the police 'win' the undecided?

- Understanding 'Why' people are undecided may help...



\*\* diagram and figures from DDPP survey

# VERBATIM ANSWERS

**Do you think the PSNI are doing a good job in the Foyle area?**

Don't know – *PSNI take too long to respond to a reported incident.*

Don't Know - They certainly don't appear to be able to curb the problems in my area of Culmore.

Don't Know -Because they let the young joy riders straight out again also they know all the drug dealers in the one area still they turn a blind eye.



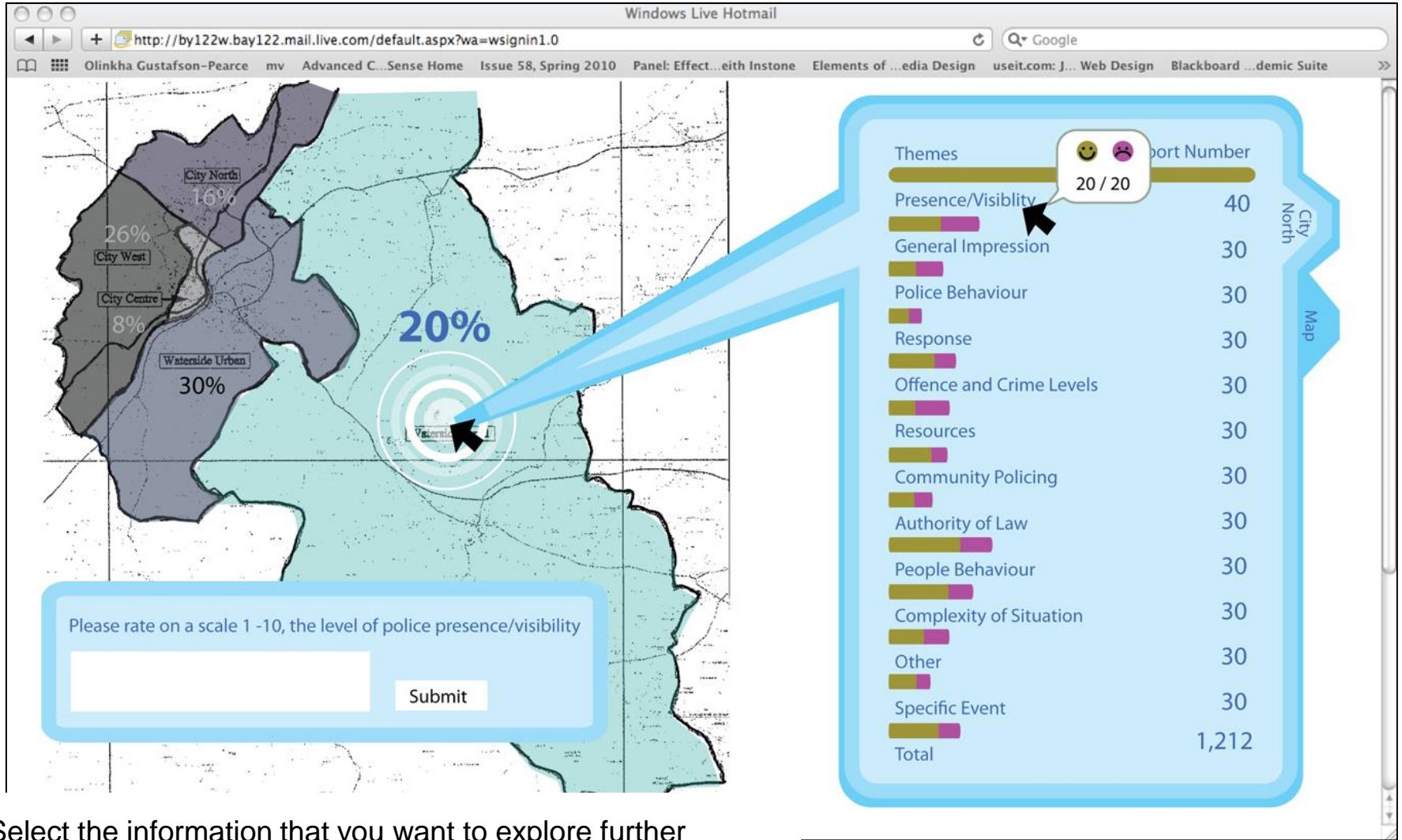
# THEMES BY LOCATION

## Match Themes to Neighbourhoods

### Neighbourhood analysis of Satisfaction with Policing in Derry

Themes (aggregated)	Foyle City	City North	Foyle City	Waterside	Waterside	Total by Themes		
	Centre		West	Rural	Urban	Freq.	%	
General Impression	8	17	8	17	11	61	17.6	
Presence and Visibility	2	13	9	16	8	48	13.9	
Police Behaviour/political policing	4	13	7	13	9	46	13.3	
Offences and Crime Level	3	14	8	11	4	40	11.6	
Response Time and Quality	1	2	6	11	12	32	9.2	
Other	5	3	4	10	7	29	8.4	
Resources Incl. Admin	2	3	5	4	7	21	6.1	
People Behaviour	3	7	2	2	3	17	4.9	
Community Policing	-	5	3	3	3	14	4.0	
Specific Events/Location	-	4	2	5	3	14	4.0	
Complexity of Situation	3	2	-	4	1	10	2.9	
Authority/Law Enforcement	-	5	1	1	3	10	2.9	
Perceived Safety	-	-	-	4	-	4	1.2	
<b>Neighbourhood</b>	<b>Freq.</b>	<b>31</b>	<b>88</b>	<b>55</b>	<b>101</b>	<b>71</b>	<b>346</b>	<b>100.0</b>
	<b>%</b>	<b>9.0</b>	<b>25.4</b>	<b>15.9</b>	<b>29.2</b>	<b>20.5</b>	<b>100.0</b>	

# Storyboard



Select the information that you want to explore further

Place the cursor on the theme for actual figures

You also can rate your satisfaction level in this category

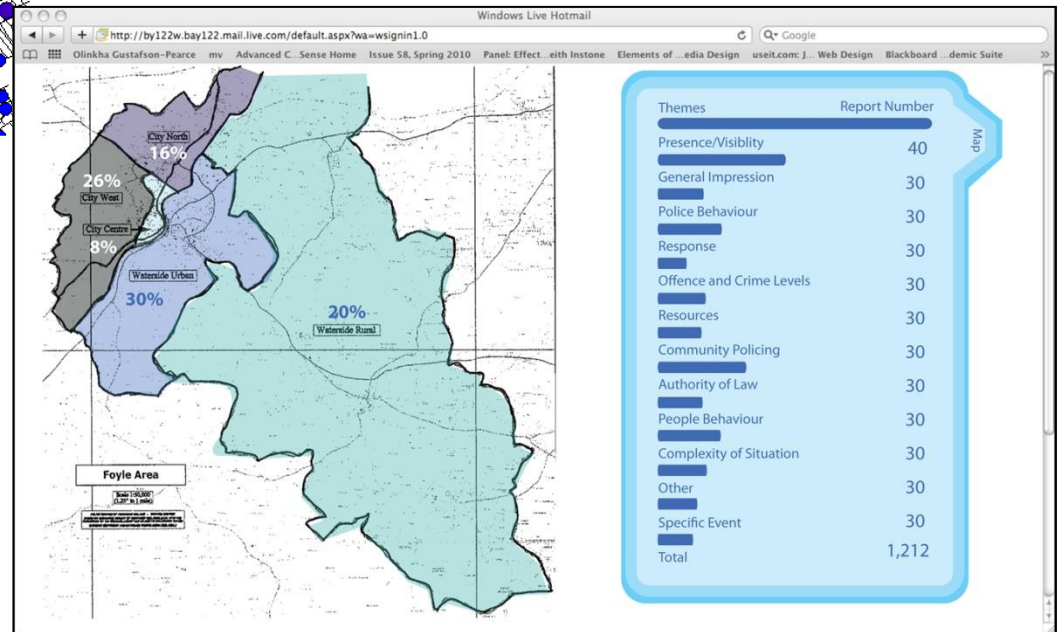
The sentiment charts will be updated automatically

# Factual vs Perception Mapping



Map of actual crime statistics

## Perceptions maps



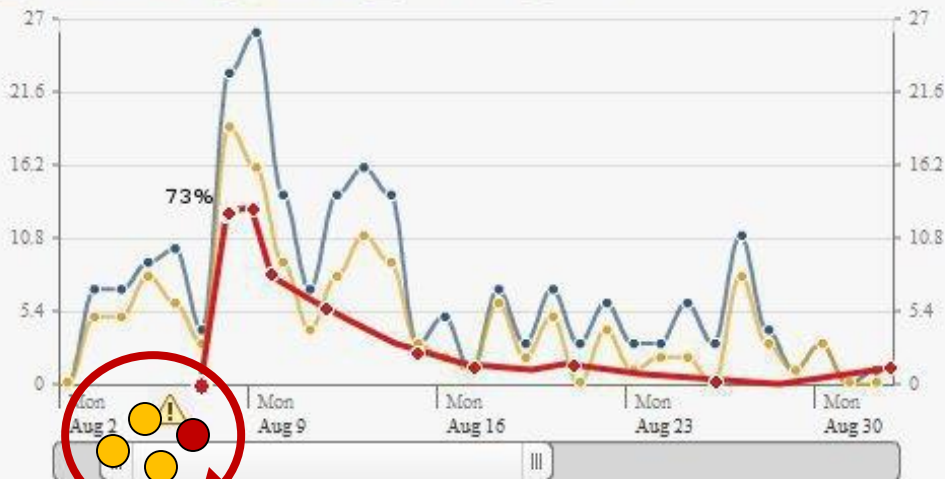
# Spikes and Triggers

## Users Who Interact With mopedcyclidiaries

Interactions Over Time [Learn more](#)

Choose a graph: **Interactions** ▾

Total Interactions  Comments  Wall Posts  Likes



## TOP THEMES

- Crime/Theft 75% of total interactions
- Catering/Food 20% of total interactions
- Transport/Vehicles 5% of total interactions
- Law and Order

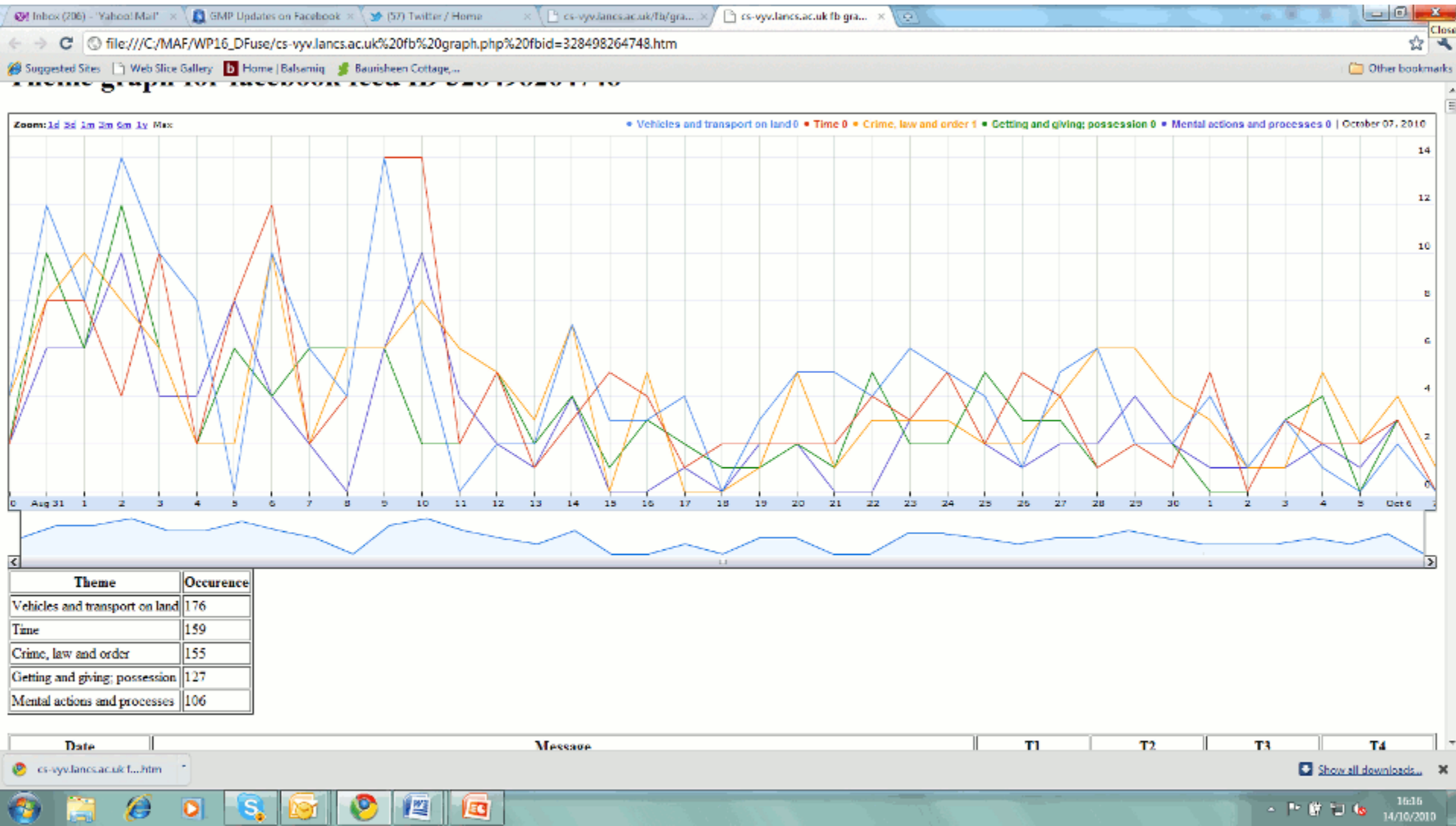
## MATCH THEME TO SIGNAL

Crime/Theft  
 Catering/Food  
 Transport/Vehicles  
 Law and Order

- Loss/Direction
- Kin
- Temperature/Hot
- General Impression

"It is not true you cannot get lost in Strasbourgh" (23:54; 04/08/2010)  
 Crime/Theft. First occurred 09:38; 05/08/2010

# Theme/over Time::PSNI Bangor FB



# L~Derry/NI – BREXIT?

facebook

Search

## City of Culture 2013's Photos - Post announcement photos

Photo 6 of 23 [Back to Album](#) · [City of Culture 2013's Photos](#) · [City of Culture 2013's Profile](#)

[Previous](#) [Next](#)



Added July 15 · [Comment](#) · [Unlike](#)

[You](#) and 30 others like this.



**Eamon Williams** Even the cops are happy!  
July 15 at 8:42pm · [Like](#) · [👤](#) 1 person · [Flag](#)



**Geraldine Coyle** Changed times - cops getting their bakes on bakebook!! Well done Derry and all the hard workers.  
July 15 at 8:51pm · [Like](#) · [Flag](#)

From the  
Post ann  
Culture 2

[Share](#)  
[Tag This](#)  
[Report T](#)

facebook

Search



[Add to My Page's Favorites](#)  
[Suggest to Friends](#)

Official Facebook page of the Police Service of Northern Ireland for Bangor, County Down.

This site is NOT monitored 24/7.

- "RULES"**
- No offensive comments.
  - No swearing.
  - No comments relating to live investigations.
  - No advertising.

### Information

Location:  
1-3 Castle Park Avenue  
Bangor, United Kingdom, BT20 4G3

Phone:  
Non emergency: 0645 600 8000 In  
emergency: 999 Ormerostoppers:  
0800555111

4,699 People Like This

## PSNI Bangor [Like](#)

[Wall](#) [Info](#) [Photos](#) [Discussions](#) [Links](#) [Events](#) [»](#)

Filters



**Corey Lendrum** He! Brilliant, there's an article on the Spectator and my mug-shot on the front page with regards to the wallet found (: Thanks guys, nice to make people realise that young people aren't out to cause havoc!  
about an hour ago · [View Feedback](#) (13) · [Flag](#)



**Cladeboye Pike** Was that wee silver 106 that I seen stopped last night the one to do with the fireworks?  
2 hours ago · [View Feedback](#) (4) · [Flag](#)



**Linda Gamble** hi we were warent to have a few fireworks in r back garden for r kids do I need a license if so were do I get it and how much is it thanks  
5 hours ago · [View Feedback](#) (2) · [Flag](#)



**PSNI Bangor** Neighbourhood officers have been giving a talk this morning at Bangor Academy warning Pupils of the dangers of fireworks and illegal possession and use of them. We will be continuing our foot and vehicle patrols in order to reduce the availability of illegal fireworks and also reporting / arresting any offenders we catch.  
[📱](#) 5 hours ago via Facebook for iPhone · [View Feedback](#) (30)



**Leigh Gourley** think there should be foot patrols in built up areas to stop the use of fireworks in those areas. my daughter was so close to get hit by one now she will not go out halloween rhyming because she is scared. i have seen kids letting fireworks off and them going a good bit down the road what if a car was coming down. think...  
[See More](#)  
5 hours ago · [View Feedback](#) (4) · [Flag](#)



**PSNI Bangor** Response officers stopped and searched a vehicle at Queens Parade last night following the report of persons setting off fireworks. 12 packets of fireworks seized and the occupants of the car reported for the offences. Great result for those of you who have been suffering lately from fireworks.  
[📱](#) 5 hours ago via Facebook for iPhone · [View Feedback](#) (32)



**Charlie Gorman** my two staffy pups went missing from greenside last nite if

# SocialMention...

socialmention.com/search?q="Greater+Manchester+Police"&t=all&btnG=Search

Suggested Sites | Web Slice Gallery | Home | Balsemiq | Baunishen Cottage,...

**21%** strength

**2:1** sentiment

**25%** passion

**17%** reach

1 minutes avg. per mention

last mention 1 minute ago

109 unique authors

28 retweets

**Sentiment**

positive	54
neutral	358
negative	25

**Top Keywords**

police	611
manchester	517
greater	457
twitter	106
hours	105
force	97
officers	96
gmp24	65
incident	65
tweeting	65

**Top Users**

bbcnews	12
gmpolice	9
numberbats	7

**Mentions about "Greater Manchester Police"**

Sort By: Date Results: Anytime Results 1 - 15 of 437 mentions.

- RT @SocialMedia411: Greater Manchester Police Tweets Emergency Calls To Make A Point - Succeeds (TNW): <http://bit.ly/dzBfUe>  
twitter.com/JannaMillerMpls/statuses/27358901633  
1 minute ago - by @JannaMillerMpls on twitter
- Greater Manchester Police on Twitter today has been such a revelation...@gmp24\_3 - The 999 system is really abused.  
twitter.com/StevenSaul/statuses/27358039222  
2 minutes ago - by @StevenSaul on twitter
- Greater Manchester Police tweets sparking interest <http://bbc.in/9zr325>  
twitter.com/ManageMyWebsite/statuses/27358733663  
3 minutes ago - by @ManageMyWebsite on twitter
- Greater Manchester Police are logging details of all their 999 calls on twitter @gmp24\_2 It's fascinating...  
twitter.com/awindram/statuses/27358675218  
4 minutes ago - by @awindram on twitter
- UK police tweet incidents over 24 hours  
One of Britain's biggest police forces is tweeting every incident it deals with over 24 hours to show the pressures police face as officials brace for cuts.  
news.brisbanetimes.com.au/breaking-news-world/uk-police-tweet-incidents-over-24-hours-20101015-16m...  
5 minutes ago - on yahoo
- #msscsm Gonna be on BBC Radio Manchester tomorrow at 7.30a.m.(eek!) talking about the Greater Manchester Police

Greater Manchester ...html | cs-vyz.lancs.ac.uk f...html

twitter Search Home Profile Messages

**GMPolice**  
@gmp24\_3  
GMP are highlighting the incidents we deal with over 24 hours. Follow @gmp24\_1, @gmp24\_2 and @gmp24\_3  
Any problems, visit @gmpolice or www.gmp.police.uk

gmp24\_3  
282 Tweets | 1 Following | 8,068 Followers | 114 Listed

Following 1

About · Help · Blog · Status · Jobs · Terms · Privacy · Short Business · Media · Developers · Widgets · © 2010 Twitter

Following

Timeline Favorites Following Followers Lists

5 new tweets

- gmp24\_3 GMPolice  
call 1632 damage to property by tenants in Salford #gmp24  
1 minute ago
- gmp24\_3 GMPolice  
call 1631 domestic dispute between father and son #gmp24  
1 minute ago
- gmp24\_3 GMPolice  
call 1618 abandoned 99 call from a mobile, when recalled, caller stated the police were in attendance #gmp24  
1 minute ago
- gmp24\_3 GMPolice  
call 1630 theft of car in Bolton #gmp24  
2 minutes ago

24 Hour Tweets - follow us on gmp24\_1, gmp24\_2, gmp24\_3

# viewki

The screenshot shows a web browser window with the title "VoiceYourView Viewki" and the URL "http://www.voiceyourview.com/viewki". The main content area is a purple-bordered panel containing a text input field with the text "Create a cluster: The new LICA building has a wonderful use of materials, I'm looking forward to visiting." Below this is a "Location" section with a map showing a circular selection and a "Within: 0.5 Km" field. To the right of the map are "Auto Tags" with three columns of checkboxes: "Theme" (Furniture, Buildings, Weather, World), "Actionability" (Very, Actionable, Not), and "Sentiment" (Positive, Neutral, Negative). Below the auto tags are "Manual Tags" with two columns: "Tense" (Past, Present, Future) and "Stakeholders" (Council, University, Environment Agency). At the bottom of the panel is a text input field "VoiceYourView here....." and two buttons: "Panel" and "Regenerate Viewki". The "voiceyourview" logo is in the bottom left corner.

voiceyourview

VoiceYourView here.....

[Panel](#) | [Regenerate Viewki](#)



# A Semi-automated Display for Geotagged Text

Vincent A. Schmidt  
Air Force Research Laboratory  
Dayton, Ohio USA

Jane M. Binner  
Sheffield Management School  
University of Sheffield, UK

# The Goal

Provide first responders and other analysts a mechanism for quickly identifying and responding to trends in social media data that indicate the status of a catastrophe or crisis.

In general:

Determine how social timestamped and georeferenced textual data (such as the data available in social media) can be effectively displayed to a specific end-user or analyst.

# The Data

## Source:

VAST 2011, Mini-Challenge 1

Characterization of an Epidemic Spread –

“determine the source of an epidemic disease and how it is spread throughout the community”

## Interesting because:

a million uniquely identified records containing typical social networking data

## Fields:

ID, Created\_at, Location, text

3,5/18/2011 13:26,42.22717 93.33772,  
this convention filled with technology could be  
better don't plan on leaving anytime soon

57,5/12/2011 21:08,42.23363 93.34164,  
There's no point of trying if no one else i  
s...

73,5/16/2011 5:28,42.28818 93.33605,  
sick of hearing bout the Oil Spill now like

127,5/10/2011 16:53,42.28051 93.34164,  
I hope #inception is as good as everyone  
says ten bux is ten bux...

238,5/9/2011 14:13,42.21771 93.33845,  
...I agree the most demanding task in our  
time is come to terms with space; so let  
time be our personal unit of confusion. ..

464,5/4/2011 20:04,42.28523 93.44908,  
Isn't it weird that after all the hoopla about  
the TSA there was another 'near disaster'  
averted? Seems like it happens too much.

# The Approach

Randomly choose 10000 records from the dataset

Find “conversations”: temporally close messages

Then, cluster “conversations” by location

Show how messages in a conversation inter-relate

Show geographic area, map conversations onto area

Allow user to examine conversation contents,  
message data, and message metadata

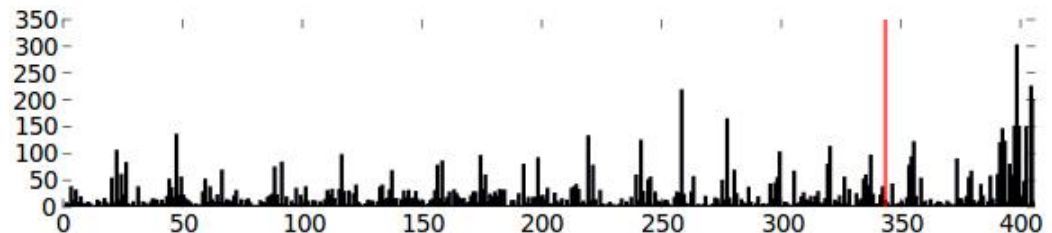
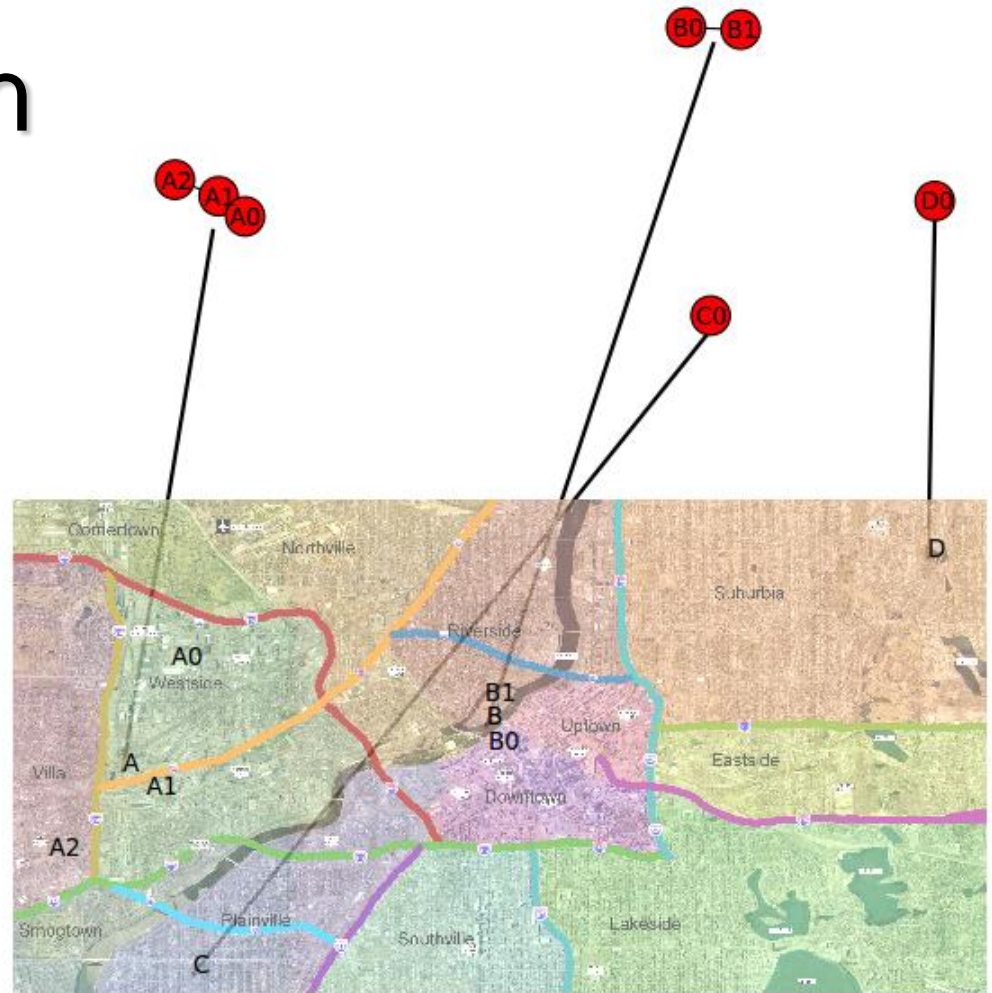
# The Visualization

Sections include:

1. message relationships
2. geospatial data
3. conversations

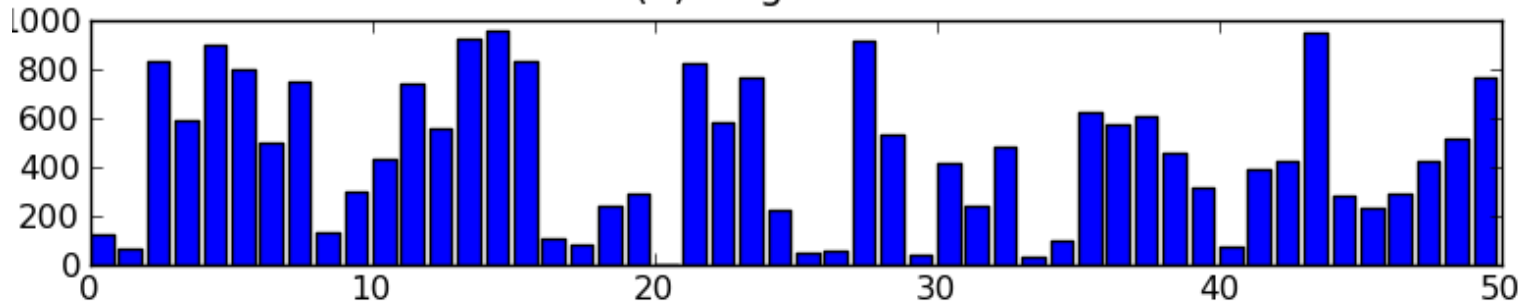
Hover over message to see message text

Hover over histogram to see number of messages in a conversation

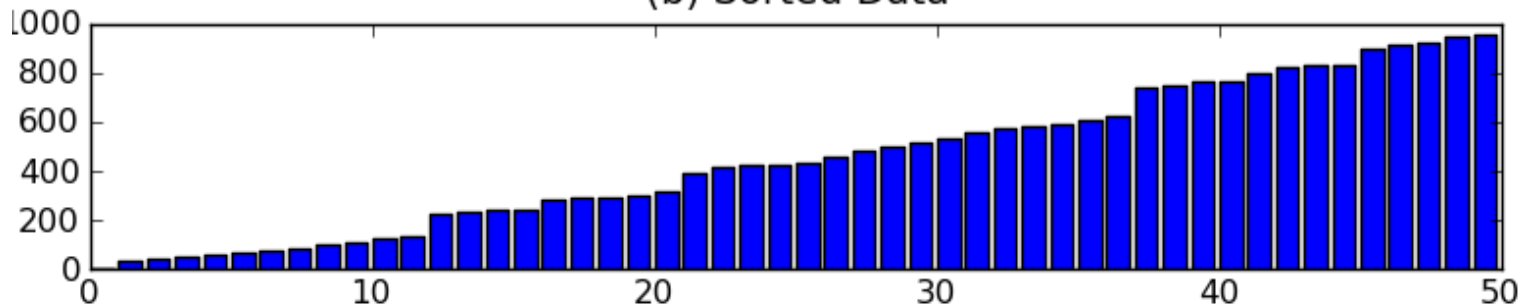


# The Details: Clustering

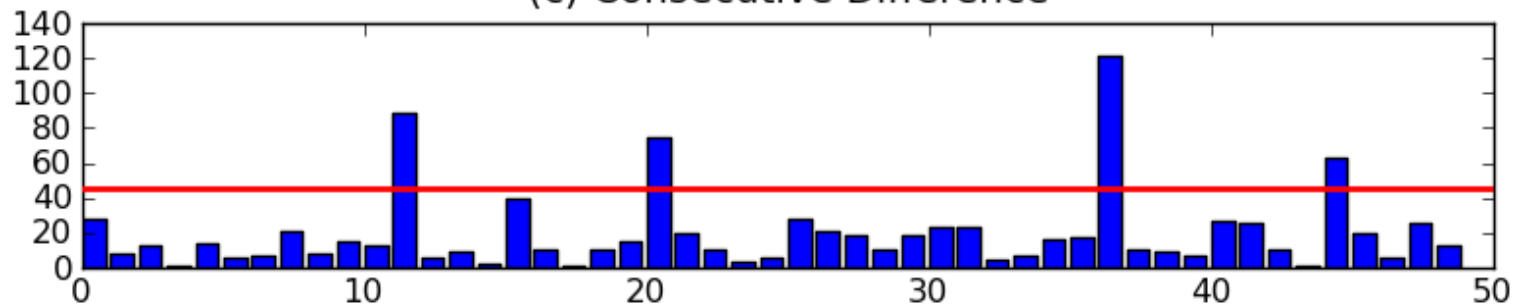
(a) Original Data



(b) Sorted Data



(c) Consecutive Difference



# The Implementation

Python 2.7.x

- Multiplatform, rapid prototyping

Networkx graph library ([networkx.lanl.gov](http://networkx.lanl.gov))

Matplotlib graphic library

GTK user interface library

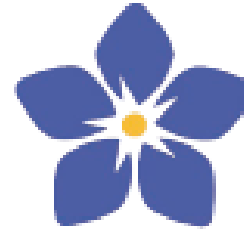
NLTK semantic processing library

Latest revision is around 800 LOC

# Partners & Collaborators



[www.voiceyourview.com](http://www.voiceyourview.com)





# Thank you: Any questions?

Safer Streets

