



IBM

**Business Analytics Live**

Driving Better Business Outcomes with Business Analytics.

2013



**Gary Seaman**  
**Head of Business Analytics**

The Grange  
St Pauls, London



# Speed date with Medway Youth Trust

Get to know MYT in 60 seconds



# SPEED DATE



**Medway Youth Trust**

Improving the life chances of Young People

We are a 5 year old non-profit

charity, dedicated to improving

t

e



**Medway Youth Trust**

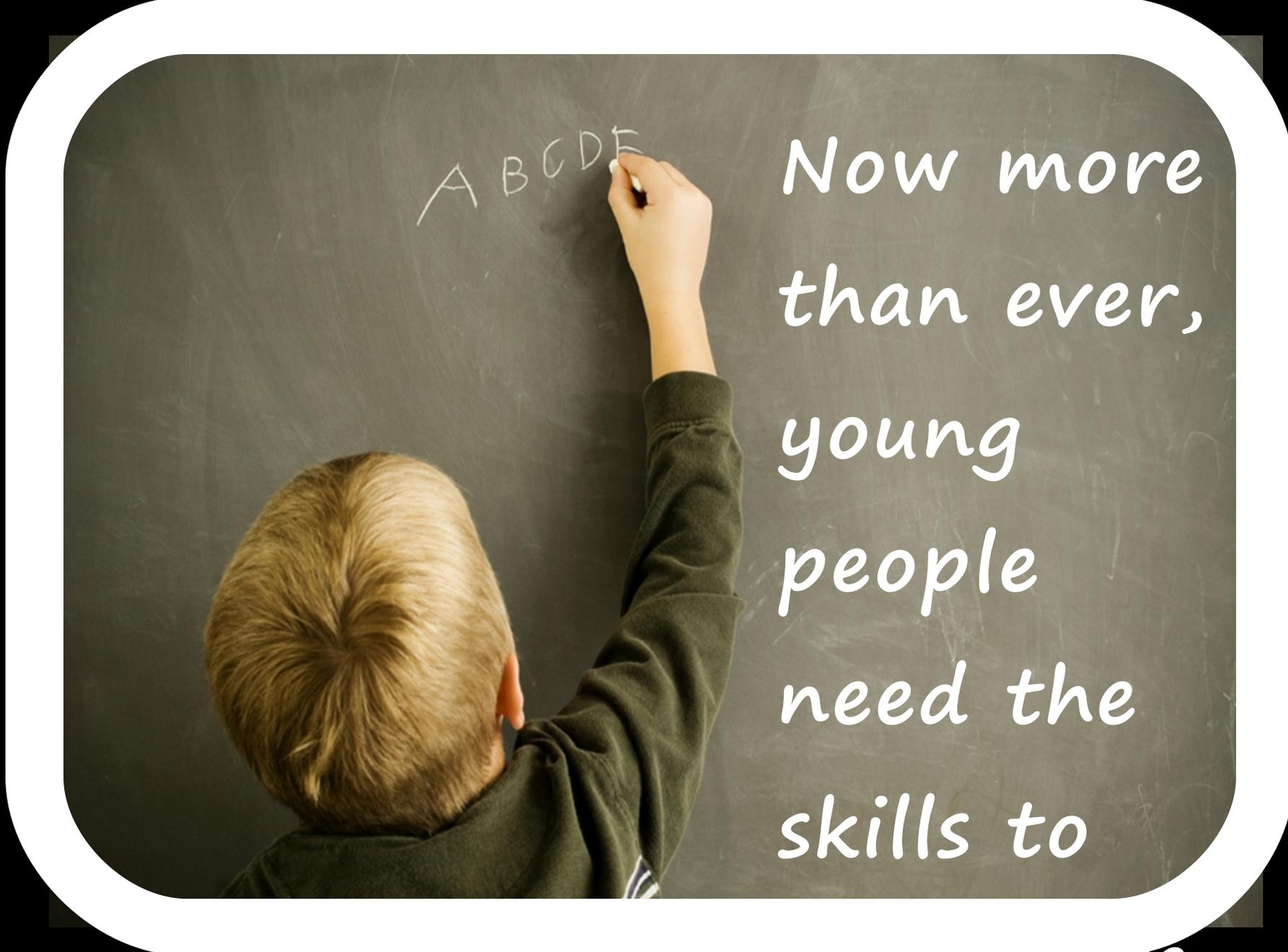
Improving the life chances of Young People

We work each year with

**24,768** young people

in a **192 km<sup>2</sup>** area

**30km** south east of London

A young boy with short, light brown hair, wearing a dark green long-sleeved shirt, is seen from behind, writing the letters 'A B C D E' on a dark grey chalkboard with white chalk. His right arm is raised, and he is in the process of writing the letter 'E'. The chalkboard is the background for the text on the right.

A B C D E

Now more  
than ever,  
young  
people  
need the  
skills to

learn, live



So we provide  
information,  
advice and  
guidance

**through  
personal 1:1  
support &  
group**

**That build...**

**CONFIDENCE**

**ASPIRATION**

**SKILLS**

**KNOWLEDGE** and

**OPPORTUNITIES**



**Some young people have  
challenges in their life**

So we **help them face**  
**up to their problems**



**Young people's voices are  
loud, clear and HEARD**

**25%**  
of our charity

Trustees are aged

**16-18 years**



**partnership**

**can-do approach**

our **partners** and **funders**

**say** we are **OUTSTANDING**

at **communication**

**creativity**

**volunteers**

We have enjoyed our date, it's



[www.medwayyouthtrust.org.uk](http://www.medwayyouthtrust.org.uk)



# Case Study



# The Business Problems We Faced

## The Telegraph

HOME NEWS WORLD SPORT FINANCE COMMENT BLOGS CULTURE TRAVEL LIFE F

Companies Comment Personal Finance Economics Markets Festival of Business Your Business

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The general trend however remains upwards and it makes it even harder for the governments concerned to collect the taxes they need to stabilise their debts”

COMPETITION

g issue for the world's economy  
youth unemployment, ex-US Treasury  
g problem.



**Andrew Walker**  
BBC World Service Economics  
correspondent

Business Unemployment and employment statistics

### UK unemployment figures: analysis

Davos 2012: Youth unemp

## The Telegraph

theguardian

News Sport Comment Culture Business

Business Unemployment and employme

### Unemployment could rise 1 in 2013, says thinktank

Despite recent falls, IPPR analysis points to bleak outlook, predicting more than a million young people among jobless

HOME NEWS WORLD SPORT FINANCE COMMENT BLOGS CULTURE TRAVEL LIFE

Companies Comment Personal Finance Economics Markets Festival of Business Your Business

HOME » FINANCE » JOBS

### Youth unemployment to top 1m again in 2013

Youth unemployment is forecast to top the psychologically damaging 1m mark again next year as the UK heads for a triple dip recession, a report has warned.

OVER

11.8 per cent in November, with 18.8m unemployed  
ate was 24.4 per cent in the eurozone  
loyment broke 26 million mark for first time  
as in Greece, where joblessness rose to 26 per cent

- But highest overall rate was in Spain, where 26.6 per cent was jobless
- Austria posted the lowest unemployment rate in the EU, at 4.5 per cent
- Rate in Luxembourg was 5.1 per cent, and rate in Germany was 5.4 per cent

Number of young  
**1,049,000**  
people aged 16-24 in  
England unemployed?

Impact in later life  
for those who  
spent time  
unemployed when  
young?

depression

reduced earnings

unemployment

The lifetime costs to  
the UK taxpayer of the  
**£13 billion**  
2008 unemployed  
youth cohort?

poor health



## Small Project Team:



- Head of Business Analytics
- CEO
- Business Manager

46 x Fte staff  
£2.1m turnover

## Project Resources:

- IBM SPSS Modeler
- 57 week Project
- €120,000 in total



**BI excellence is possible with limited resources, a focus on social outcomes and in a small organisation !**

## STRUCTURED DATA

Age  
Gender  
Ethnicity  
Postcode  
Support Levels  
Vulnerable Groups

## UNSTRUCTURED DATA

**Attitudinal**  
Opinions  
Preferences  
Needs  
Desires

## UNSTRUCTURED DATA

### Interactions:

Intervention recording  
Text Messages/Email  
Action Plans  
S139a Reviews

## UNSTRUCTURED DATA:

### Behavioural

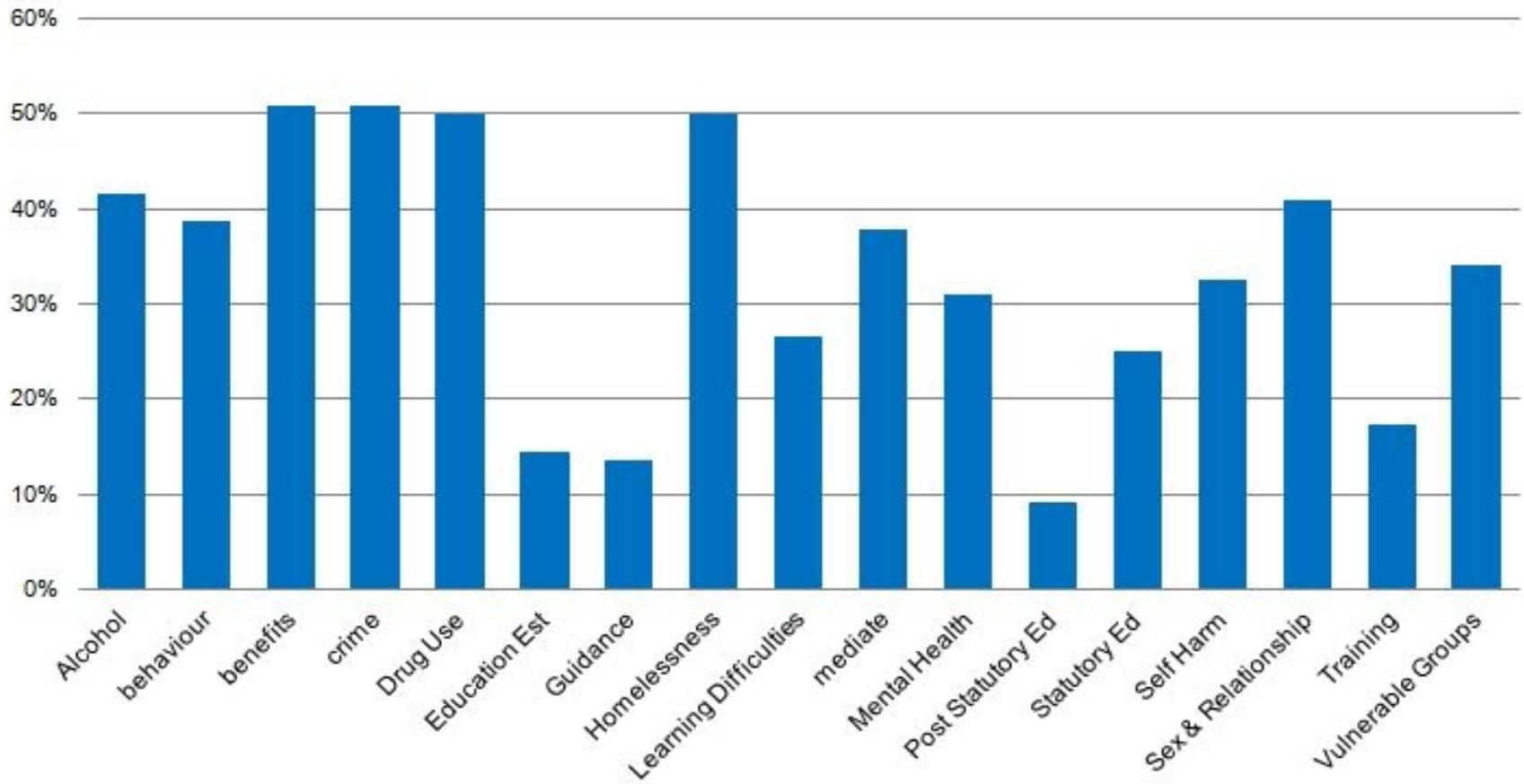
Attendance  
Number of Interventions  
Destination History  
Exam History



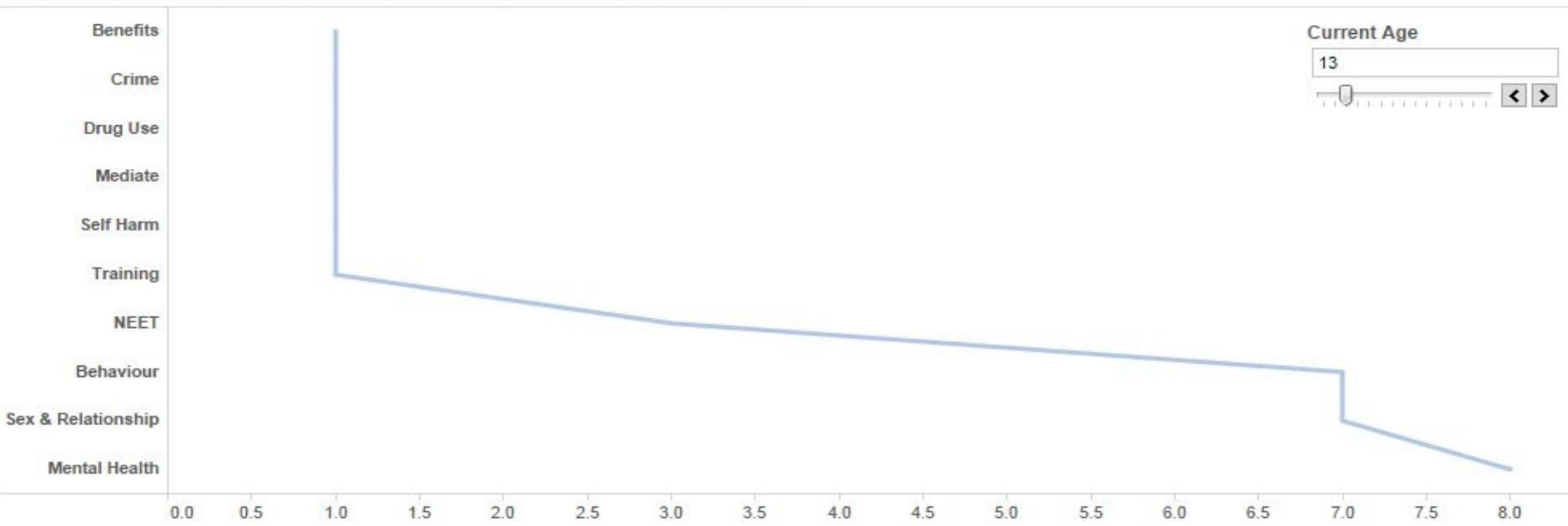
Unstructured data – we had 175,000,000 words we were not using before this project

# Text Analytics

## Text Categories in relation to Youth Unemployment



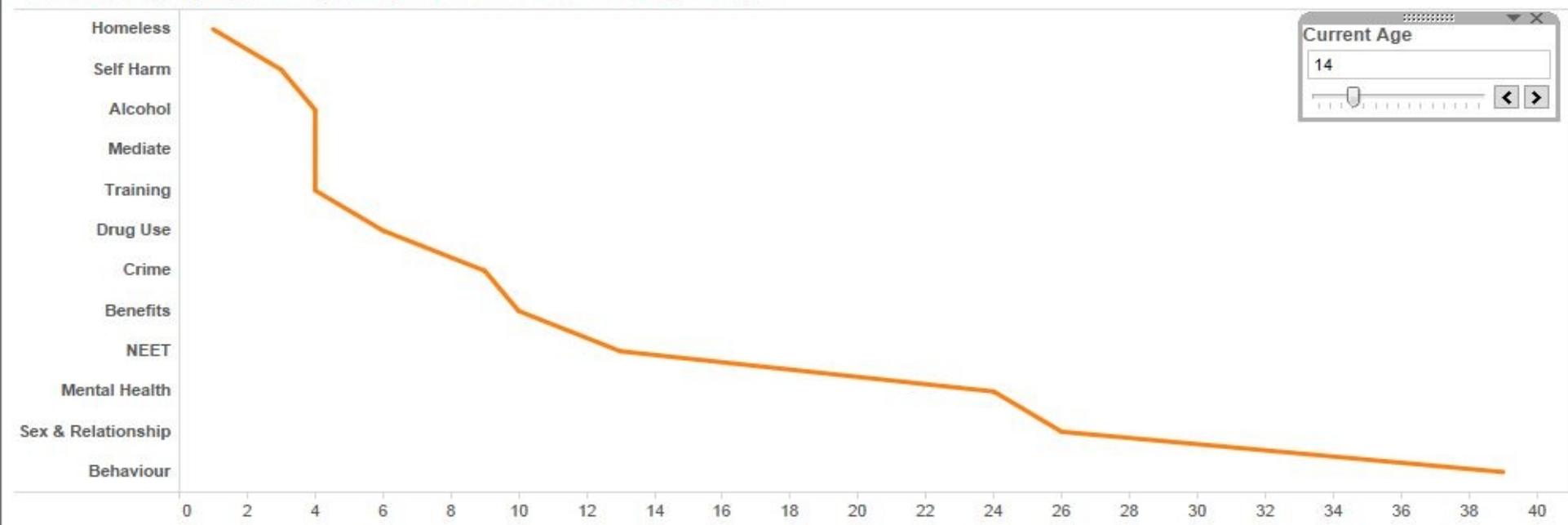
### Text Category by Frequency & Number of Young People



### Word Cloud of Text Category by Frequency & Number of Young People



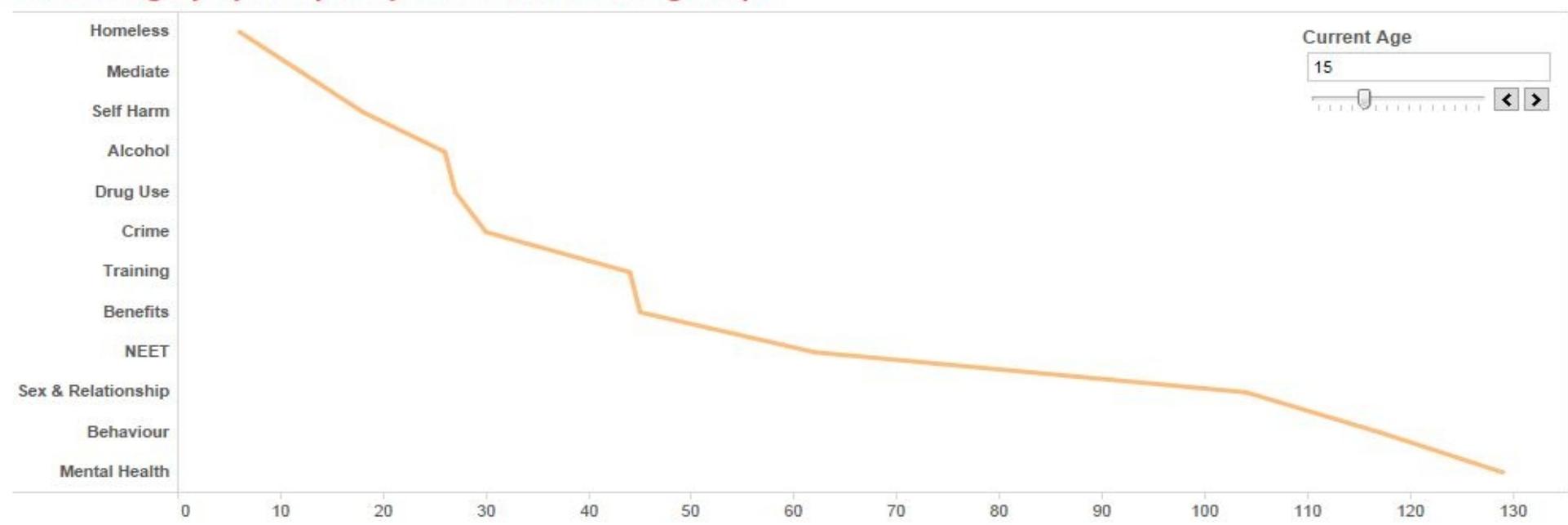
# Text Category by Frequency & Number of Young People



# Word Cloud of Text Category by Frequency & Number of Young People



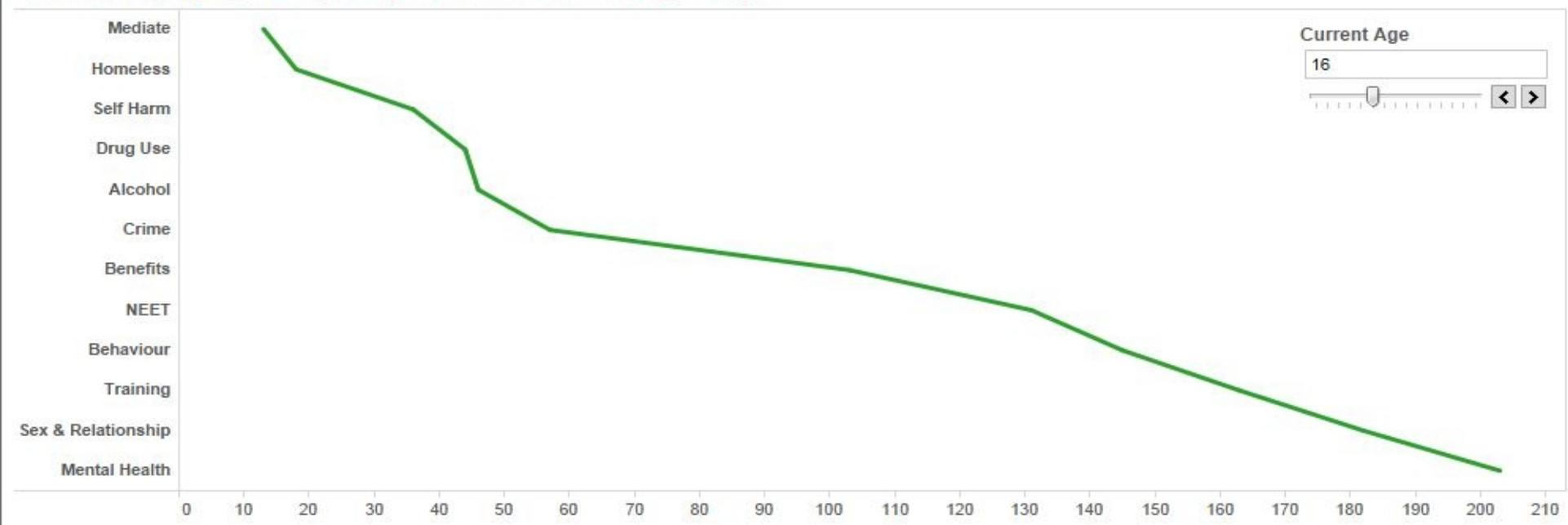
# Text Category by Frequency & Number of Young People



# Word Cloud of Text Category by Frequency & Number of Young People



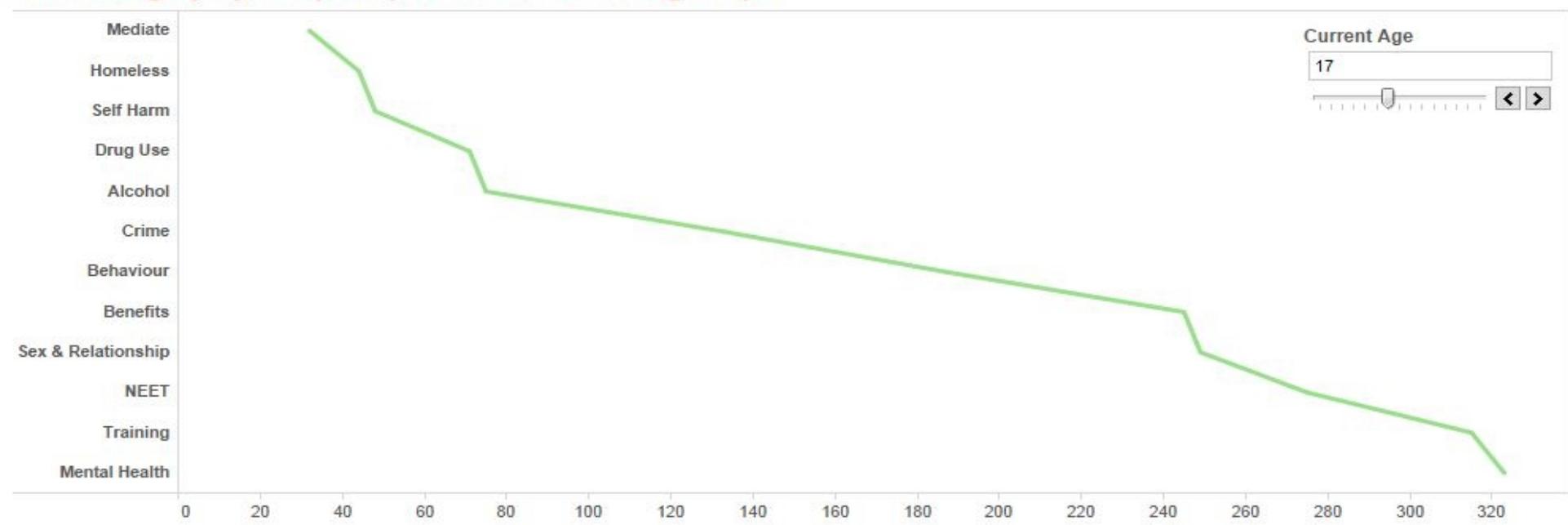
# Text Category by Frequency & Number of Young People



# Word Cloud of Text Category by Frequency & Number of Young People



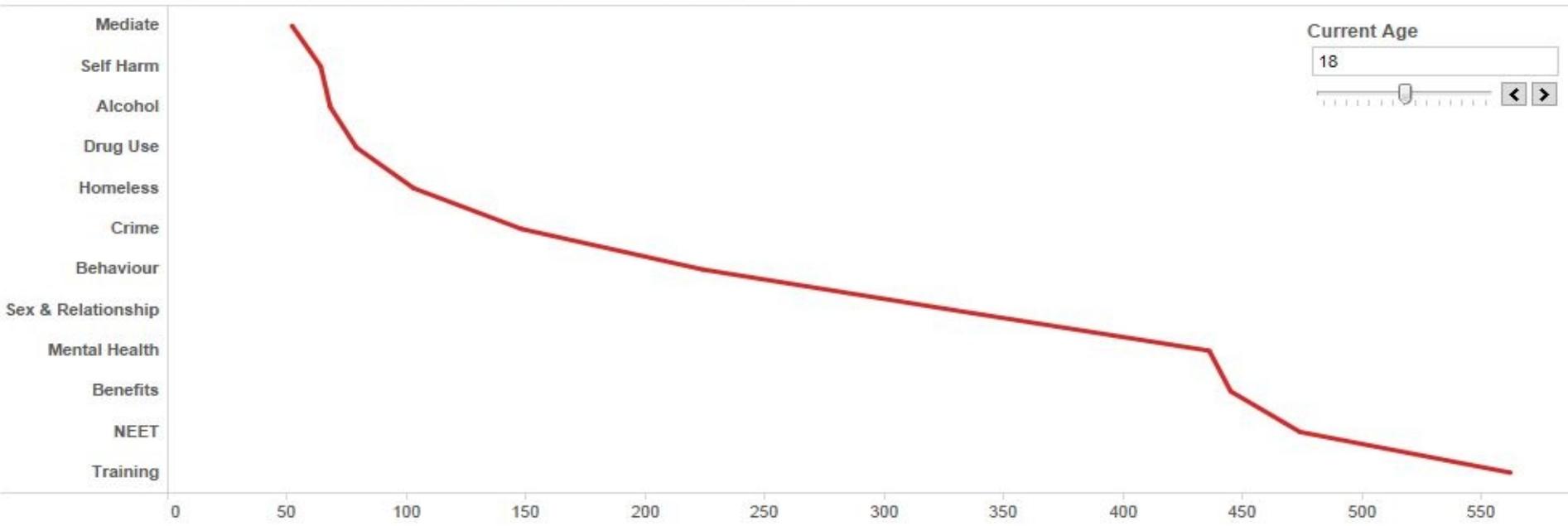
## Text Category by Frequency & Number of Young People



## Word Cloud of Text Category by Frequency & Number of Young People



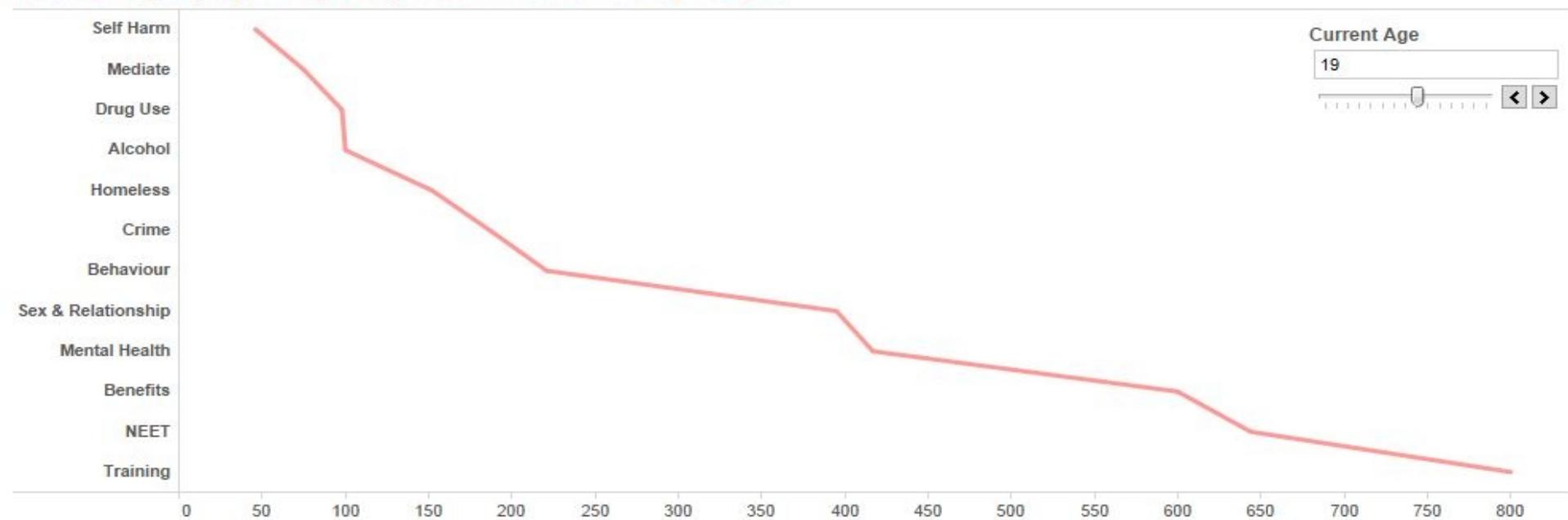
# Text Category by Frequency & Number of Young People



# Word Cloud of Text Category by Frequency & Number of Young People



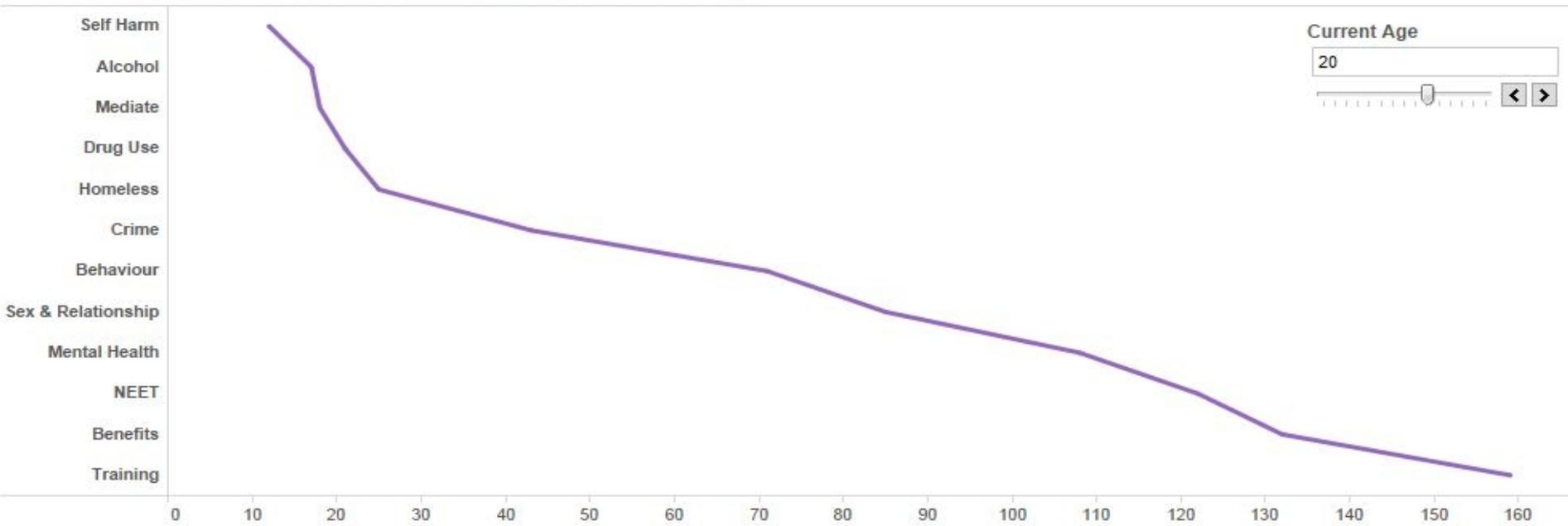
# Text Category by Frequency & Number of Young People



# Word Cloud of Text Category by Frequency & Number of Young People

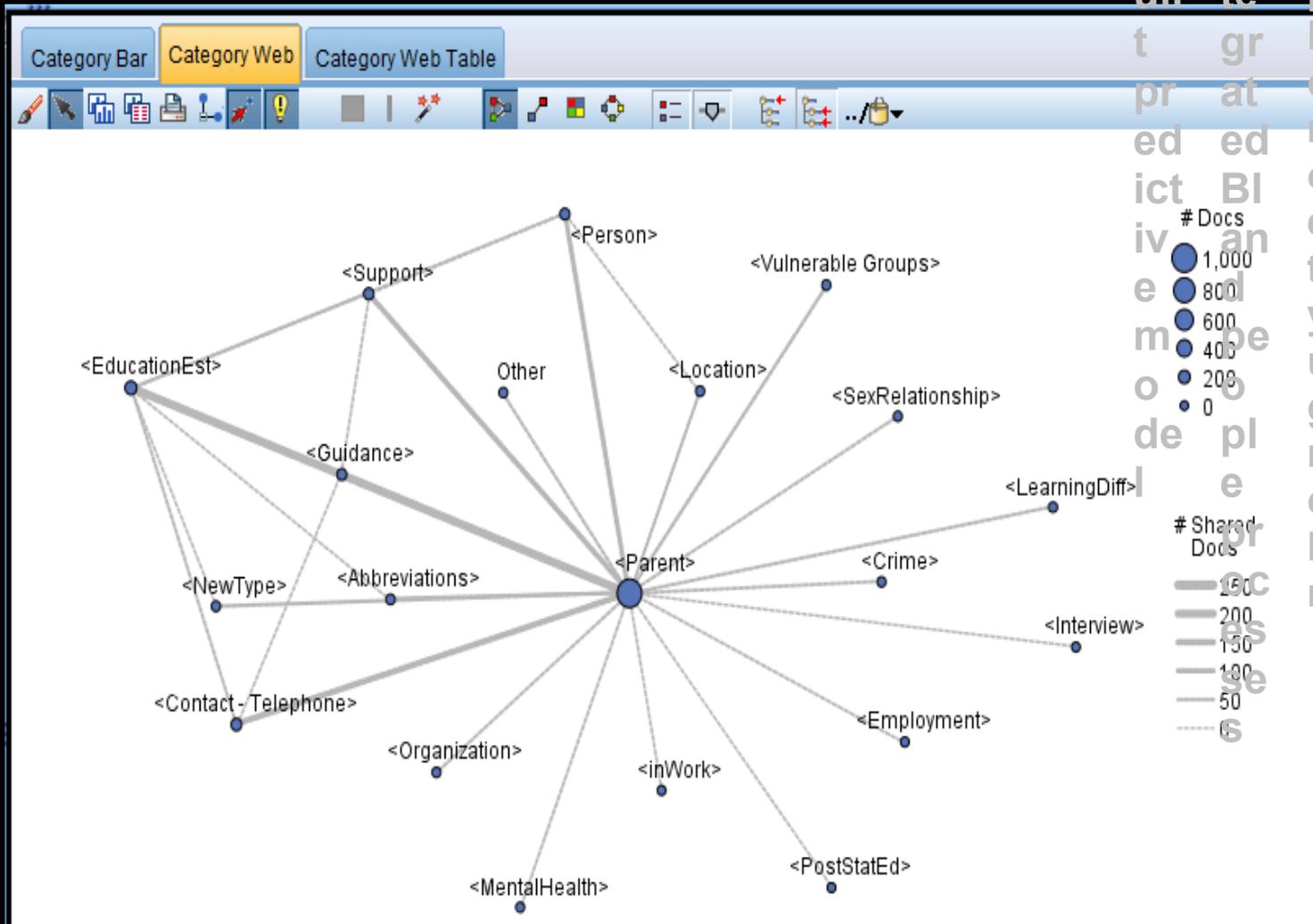


### Text Category by Frequency & Number of Young People



### Word Cloud of Text Category by Frequency & Number of Young People





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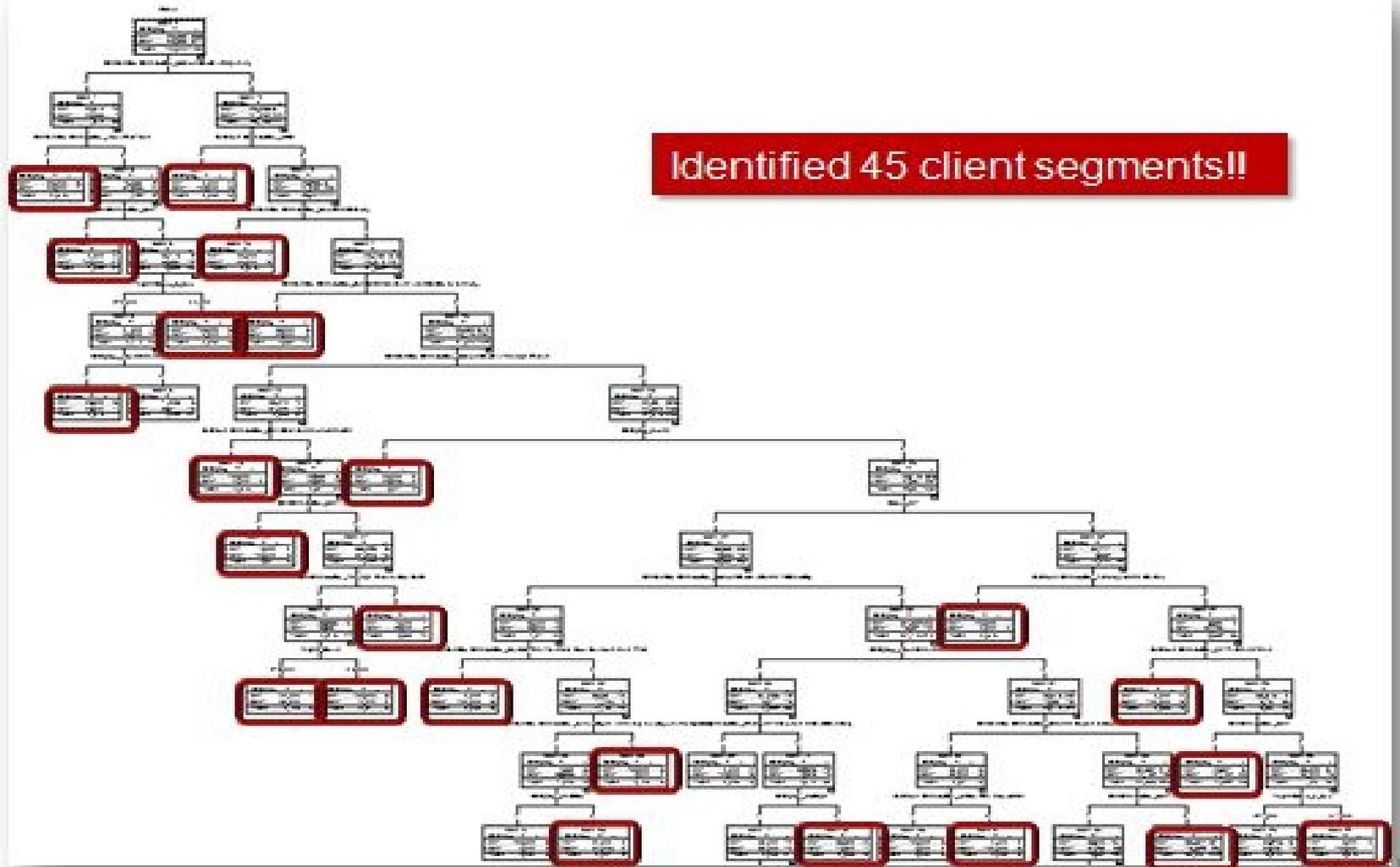
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Targeted  
interventions  
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people



**We created a data dictionary to extract key words/concepts from our unstructured data**

# Segmenting and Modelling



The models

Combined unstructured & structured data

Added in unstructured data

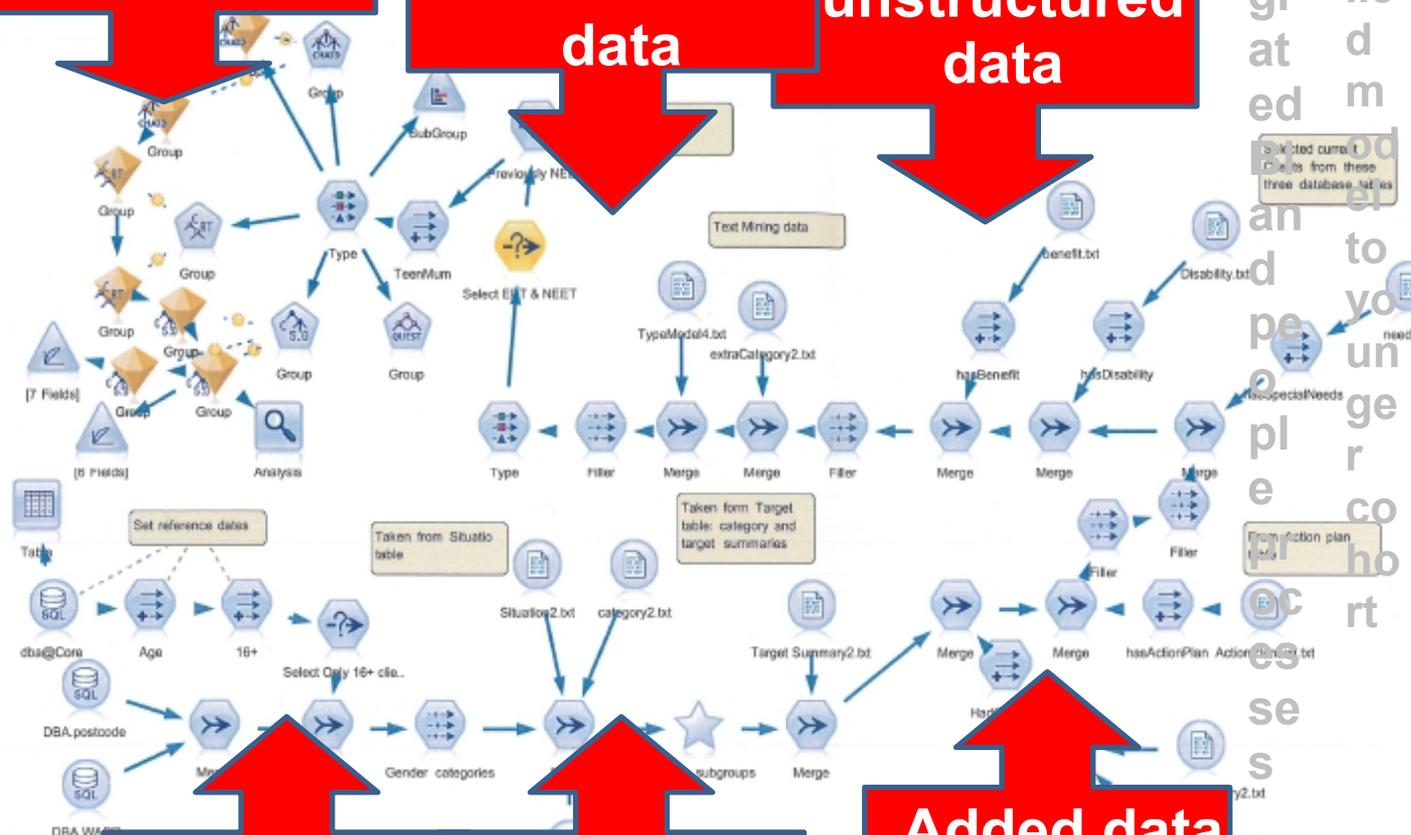
In te gr at ed A pp lie d m

B uil t pr ed ic tiv e m o d e l

Ta rget ed in te rv en ti on s w ith yo un g pe o p l e

M ea su re d Im pa ct

Cr ea te d pr of ile s of cu rre n t N E E T co h o r t



Extracted structured data

Prepared data for use

Added data from other sources

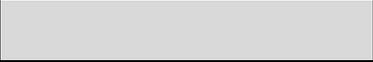


We used IBM SPSS Modeler

In te gr at ed BI an d pe o pl e pr oc es se s	A p pli ed m o de l to yo u n ge r co h or t	B u il t pr ed ict iv e m o de l	Ta rg et ed in te rv en ti o ns wi th yo u n g pe o pl e	M ea su re d Im pa ct	Cr ea te d pr of ile s of cu rr en t N E E T co h or t
--	---	--	--	--	--



Propensity models informed resource planning and service priorities



## Automation and Embedding

**“MYT has embedded its risk of NEET indicator into its core system's data-entry screens, so that staff can see whether young people's scores are going down, staying static or increasing. They can see a correlation between their intervention and making progress toward the outcome for each individual ... This enables MYT to extract full value from its analytics processes”.**

Gartner

Paper, September 2012

# Automation and Embedding`

MENU 12:26pm, 11th Jan 2013 RONI Scores

Title:  Given Name: Client Family Name: J Age: 25

Yp Ref: 4 Date Of Birth: 04/01/1988 Current Activity: Job - Full Time (With Training)

T1 S D P A G

YP RONI Score Ref	RONI Date	RONI Description	RONI Score	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
3	31/12/2012	Secondary (Medium Risk)	67%	
2	30/09/2012	Primary (High Risk)	76%	
1	30/06/2012	Primary (High Risk)	85%	

Qtr 1 - 85% Risk of NEET RED → Qtr 2 - 76% Risk of NEET RED → Qtr 3 - 67% Risk of NEET AMBER

- ~ Record Actions in one screen
- ~ Filter by selected criteria
- ~ Search for referrals to/from
- ~ Export data to various file types

MENU 11:12am, 16th May 2013 RONI Score Details

Title:  Given Name:  Family Name:  Age:

Yp Ref:  Date of Birth:  Current Activity:

**T3 S D P A G**

RONI Date: \*

RONI Code: \*

RONI Score:

iyss - 1.2.10.0 - Integrated Youth Support System -- Webpage Dialog  
[https://iyss.careervision.co.uk/Medway\\_1\\_2\\_10\\_0/IYSS\\_PopupFrameSet](https://iyss.careervision.co.uk/Medway_1_2_10_0/IYSS_PopupFrameSet)

RONI_Code	RONI_Description
SECONDARY	AMBER (Medium Risk)
TERTIARY	GREEN (Low Risk)
PRIMARY	RED (High Risk)

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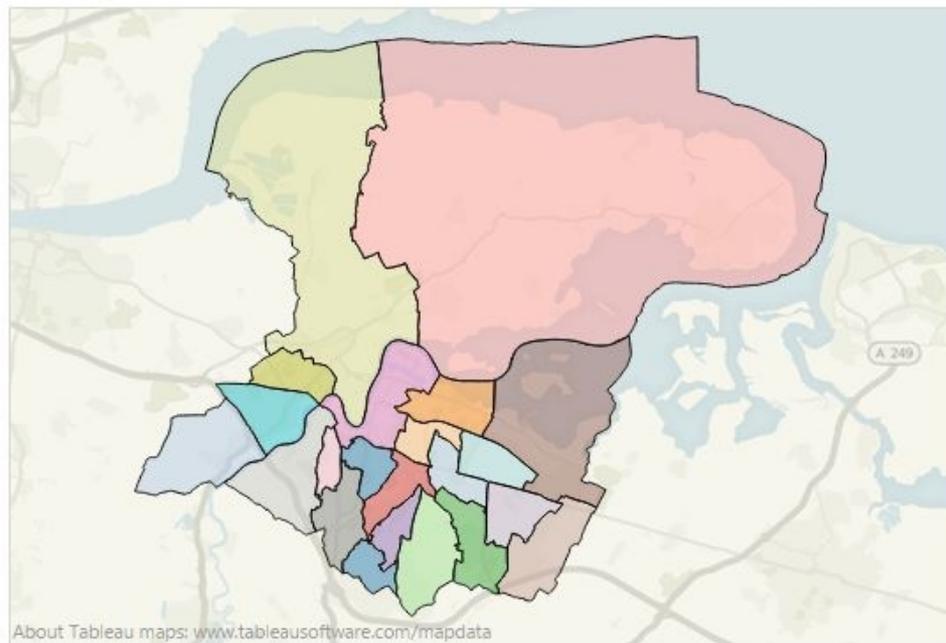
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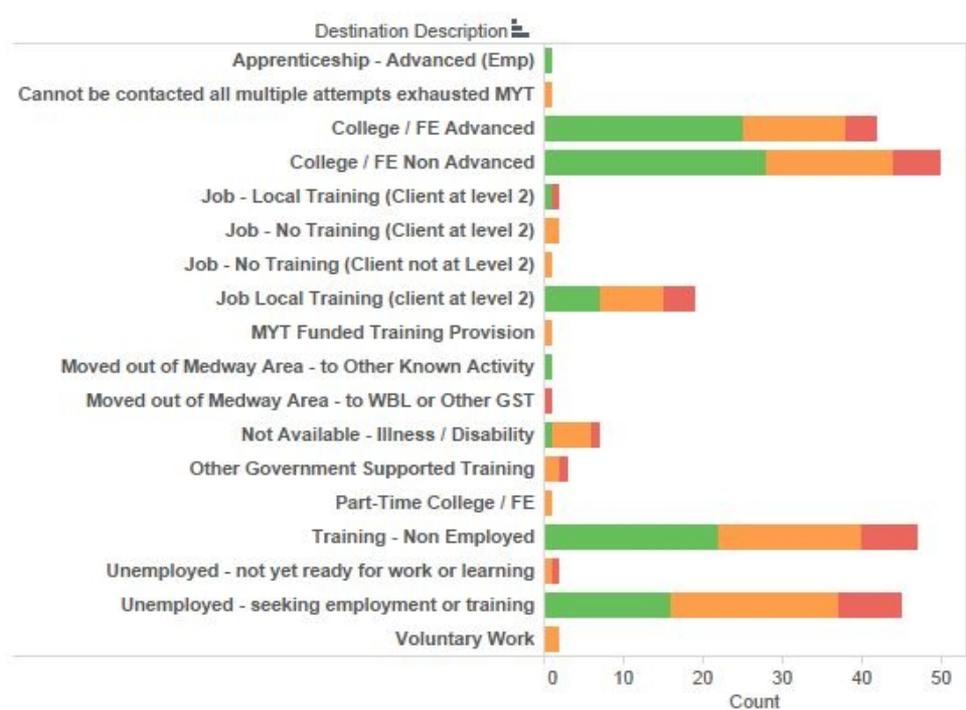
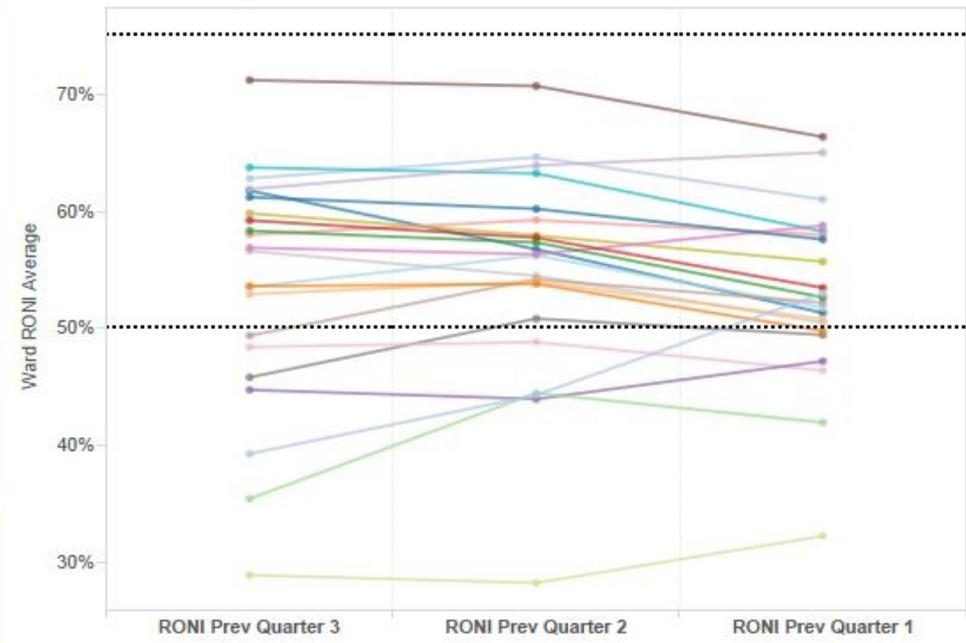
We exported the propensity data, and embedded it in a standard application

# Medway Youth Trust

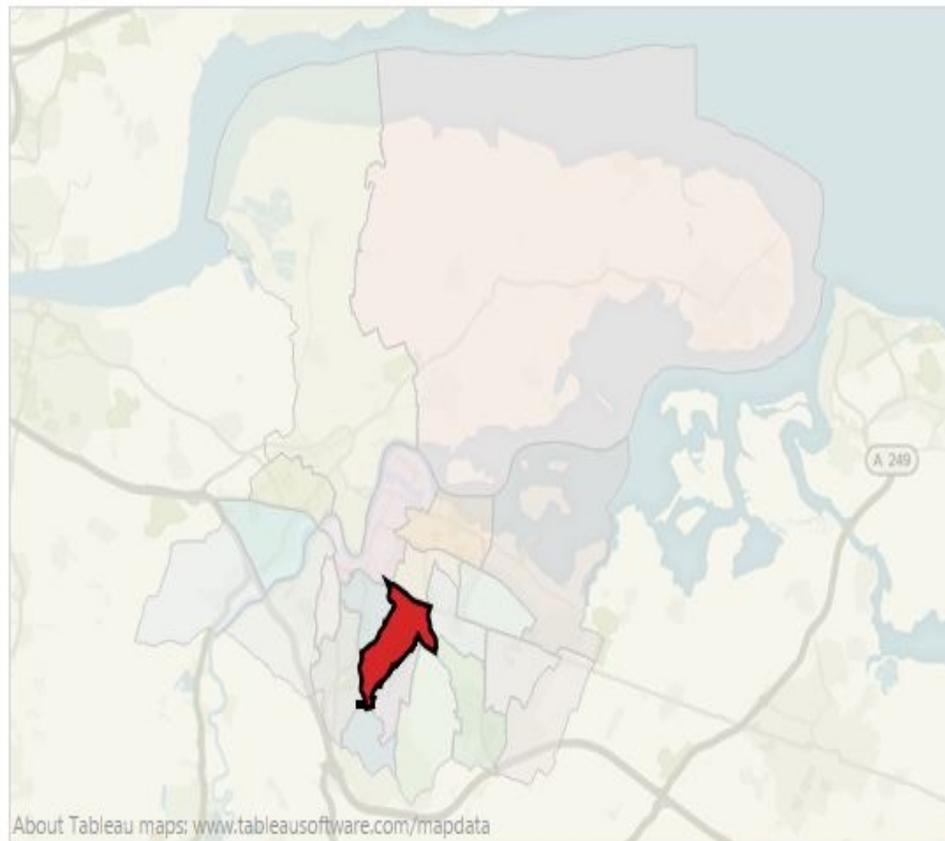


Destination Description	RED	AMBER	GREEN
Apprenticeship - Advanced (Emp)			1
Cannot be contacted all multiple attempts exhausted MYT		1	
College / FE Advanced	4	13	25
College / FE Non Advanced	6	16	28
Job - Local Training (Client at level 2)	1		1
Job - No Training (Client at level 2)		2	
Job - No Training (Client not at Level 2)		1	
Job Local Training (client at level 2)	4	8	7
MYT Funded Training Provision		1	
Moved out of Medway Area - to Other Known Activity			1
Moved out of Medway Area - to WBL or Other GST	1		
Not Available - Illness / Disability	1	5	1
Other Government Supported Training	1	2	
Part-Time College / FE		1	
Training - Non Employed	7	18	22
Unemployed - not yet ready for work or learning	1	1	
Unemployed - seeking employment or training	8	21	16
Voluntary Work		2	

# RONI Ward Average



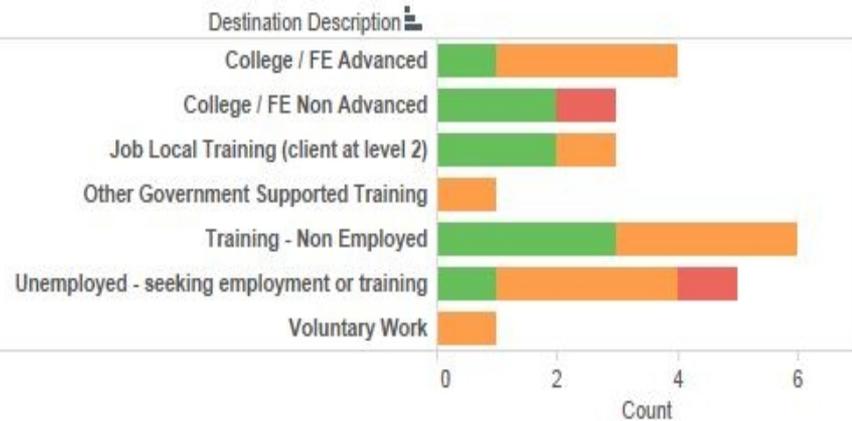
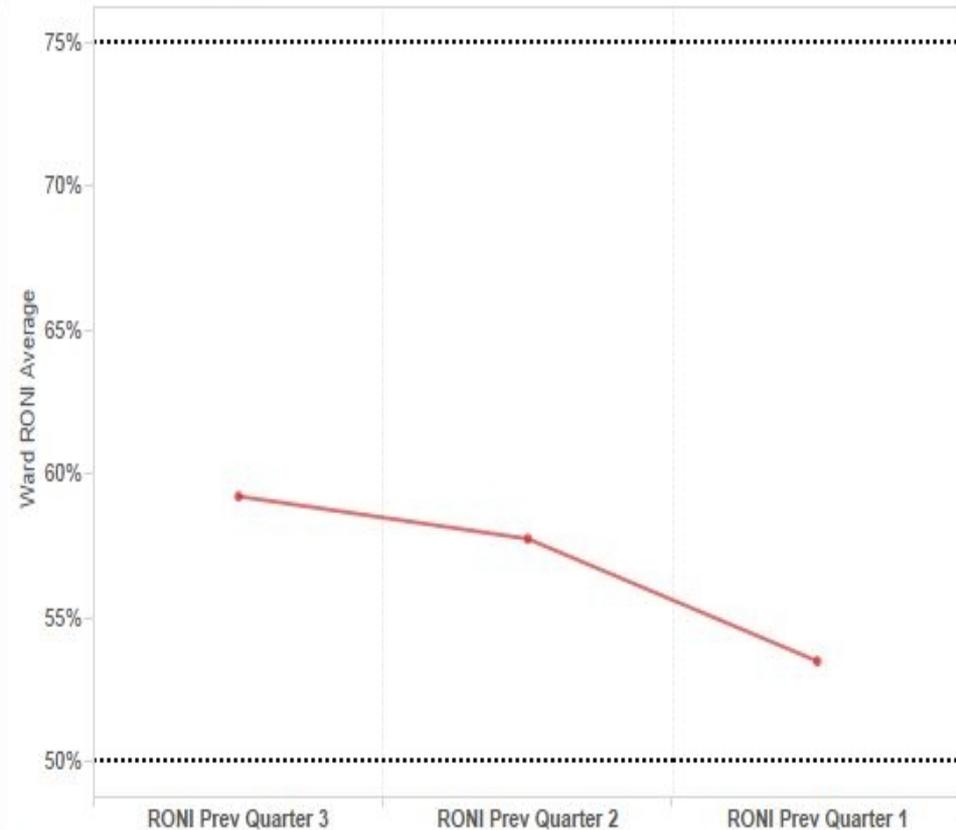
# Medway Youth Trust



About Tableau maps: [www.tableausoftware.com/mapdata](http://www.tableausoftware.com/mapdata)

Destination Description	RED	AMBER	GREEN
College / FE Advanced		3	1
College / FE Non Advanced	1		2
Job Local Training (client at level 2)		1	2
Other Government Supported Training		1	
Training - Non Employed		3	3
Unemployed - seeking employment or training	1	3	1
Voluntary Work		1	

# RONI Ward Average





# Automation and Embedding

Combine  
structured  
data  
structure  
data

Update  
6 weekly  
caseload  
management  
review

Information  
Intervention  
Risk  
Indicator  
people

Predictive  
Segmented  
lists of  
young  
people

Staff  
Caseloads



# Impact and Visualisation

**Canada:**  
Smarter Cities  
Webinar

**Wales:**  
Welsh  
Assembly

**Scotland:**  
Aberdeen local  
authority

**UK:**  
Central  
Government

**Denmark:**  
Smarter Cities  
Conference

**USA:**  
Philadel  
Digital C  
Program

**Building Engagement,  
Building Futures:**  
Our Strategy to Maximise the  
Participation of 16-24 Year Olds in  
Education, Training and Work

December 2011

 HM Government

## Charity Shows That You Don't Need a Big Budget to Succeed With Predictive Analytics

Published: 17 September 2012

Analysed by: Joao Tapadinhas

A U.K. charity has shown how the smallest organization can achieve striking results with business intelligence, winning Gartner's BI Excellence Award 2012. We give some best practices for IT leaders wanting to use data mining and predictive analytics on a small budget.

### Key Challenges

- Medway Youth Trust (MYT) had a vast amount of data about young people. It decided to experiment with business intelligence (BI) and text analytics to see whether more could be done with the data and whether this could enhance its interventional work with young people.<sup>1</sup>
- The figures for young people not in education, employment or training (NEET) in MYT's coverage area were rising. MYT wanted to discover why. It decided to use predictive analytics to try to identify the young people most at risk of becoming NEET.
- MYT faced an 18% reduction in income from government contracts and, consequently, a 16% reduction in its full-time-equivalent (FTE) head count. It saw predictive analytics as a way to concentrate the efforts of its staff and its limited resources on those young people most likely to need help to prevent them becoming NEET.

### Recommendations

- Foster a culture of innovation.
- Set clear aims to enable success to be measured.
- Have a good knowledge and understanding of the data being collected and the data to be used in the model, and put in place a governance framework.
- Reassure staff that the system won't replace their professional judgment.
- Persevere and allow the project to evolve.
- Feed analytics results into the organization's core systems, linking BI with business processes.

**Global:**  
Gartner Study  
Paper

FutureGov New  
South Wales

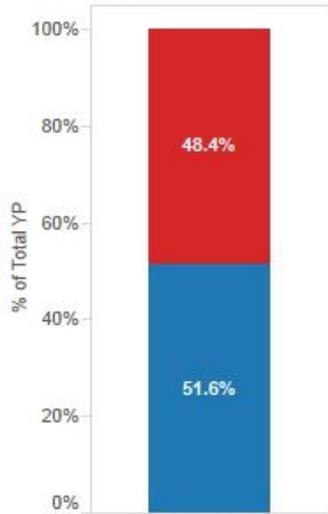
Individual Group Parameter

Group Parameter Values

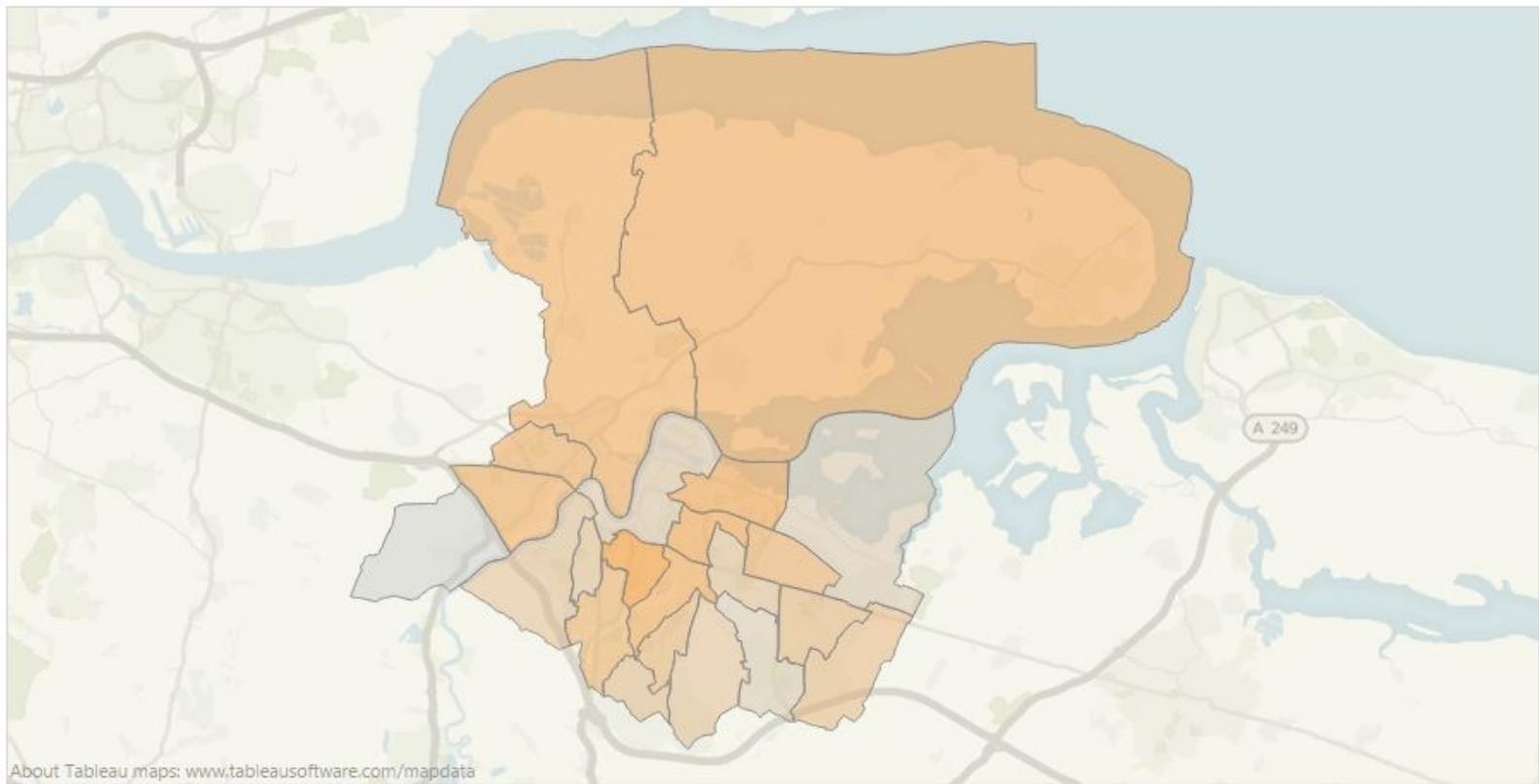
No. of YP



Breakdown UA Ward by Gender

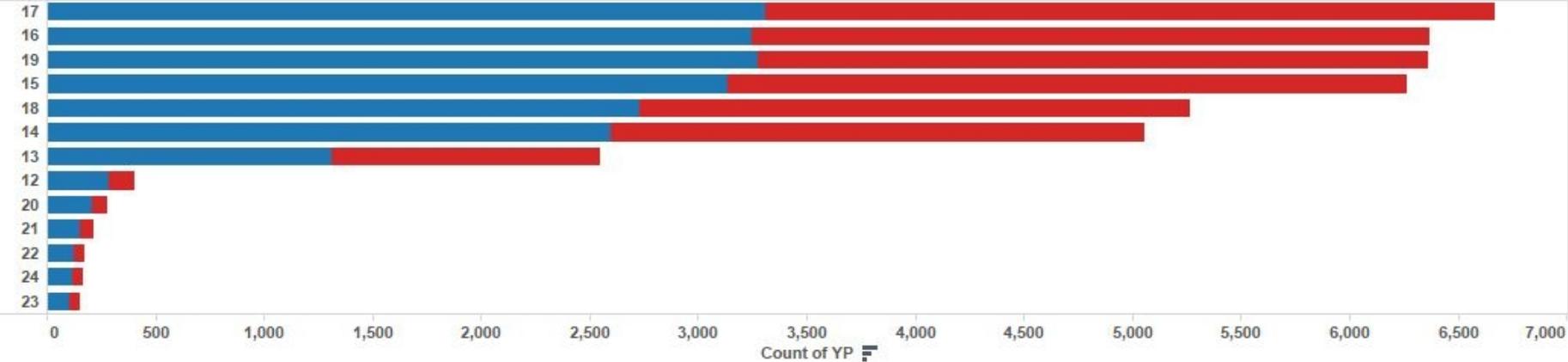


Ward Map Parameter



Ethnicity	YP	%
White	33,517	83.9%
Asian	1,893	4.7%
Refused	1,829	4.6%
Mixed	1,275	3.2%
Black	1,076	2.7%
Other Groups	359	0.9%
Grand Total	39,949	100.0%

Age



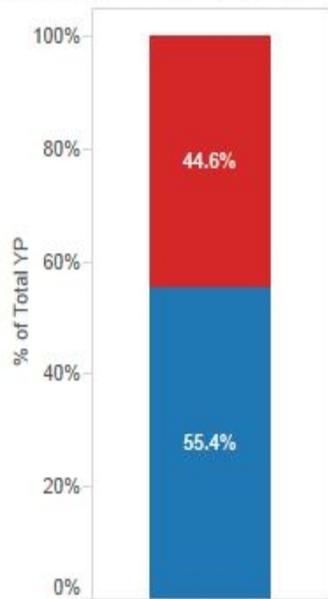
Individual Group Parameter

Group Parameter Values

Looked After/InCare

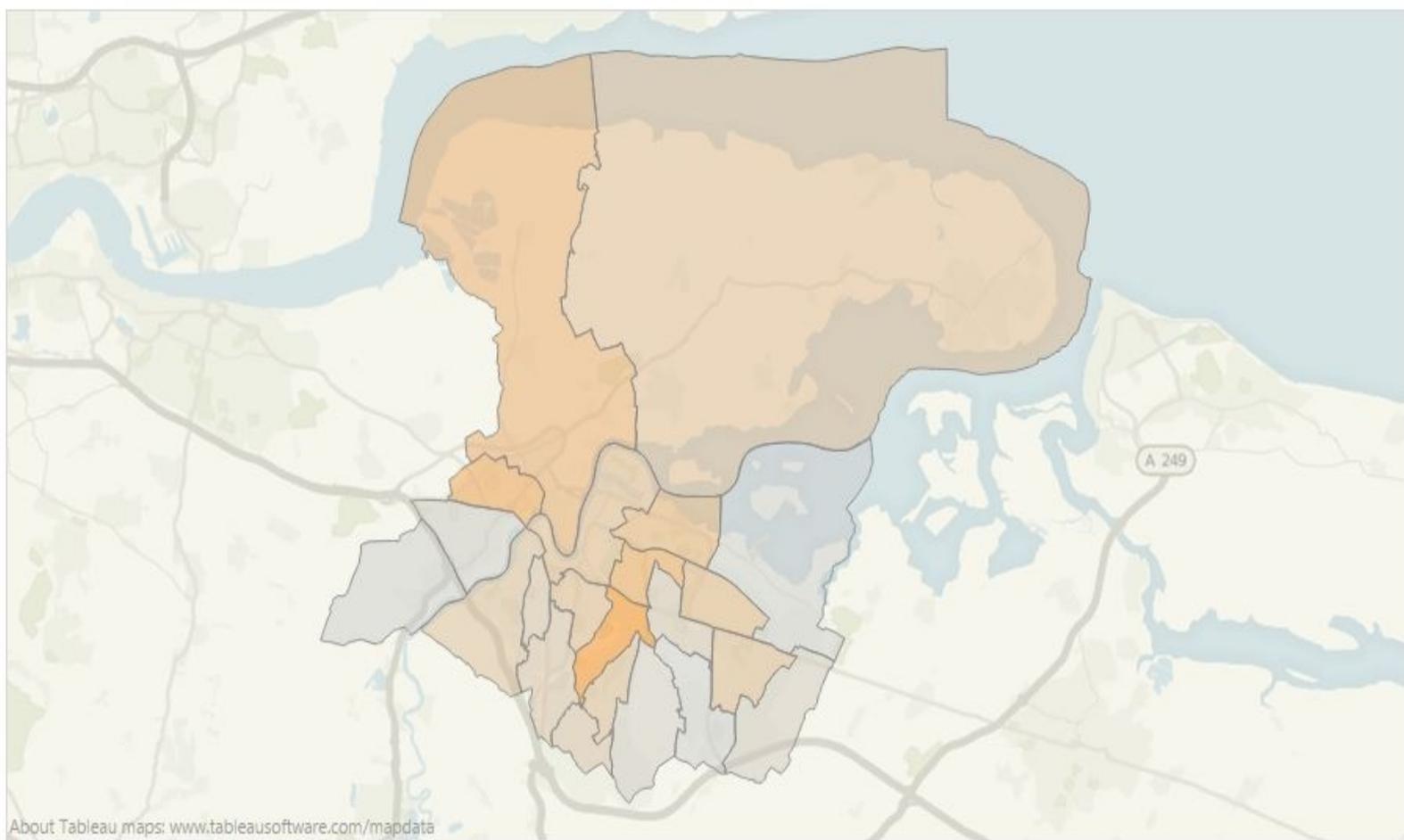


Breakdown UA Ward by Gender



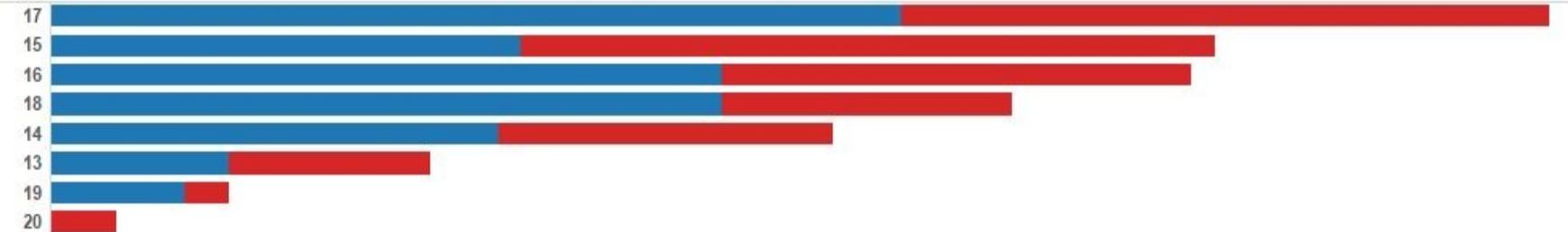
Ethnicity	YP	%
White	221	80.1%
Refused	26	9.4%
Mixed	10	3.6%
Black	8	2.9%
Other Groups	7	2.5%
Asian	4	1.4%
Grand Total	276	100.0%

Ward Map Parameter



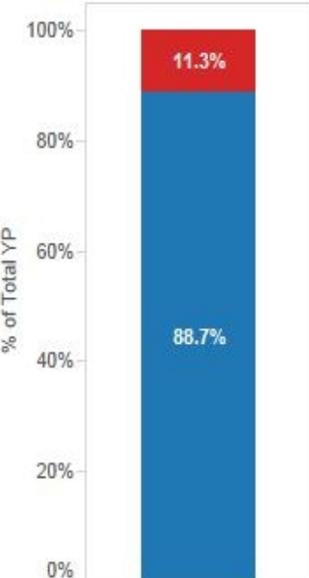
About Tableau maps: [www.tableausoftware.com/mapdata](http://www.tableausoftware.com/mapdata)

Age



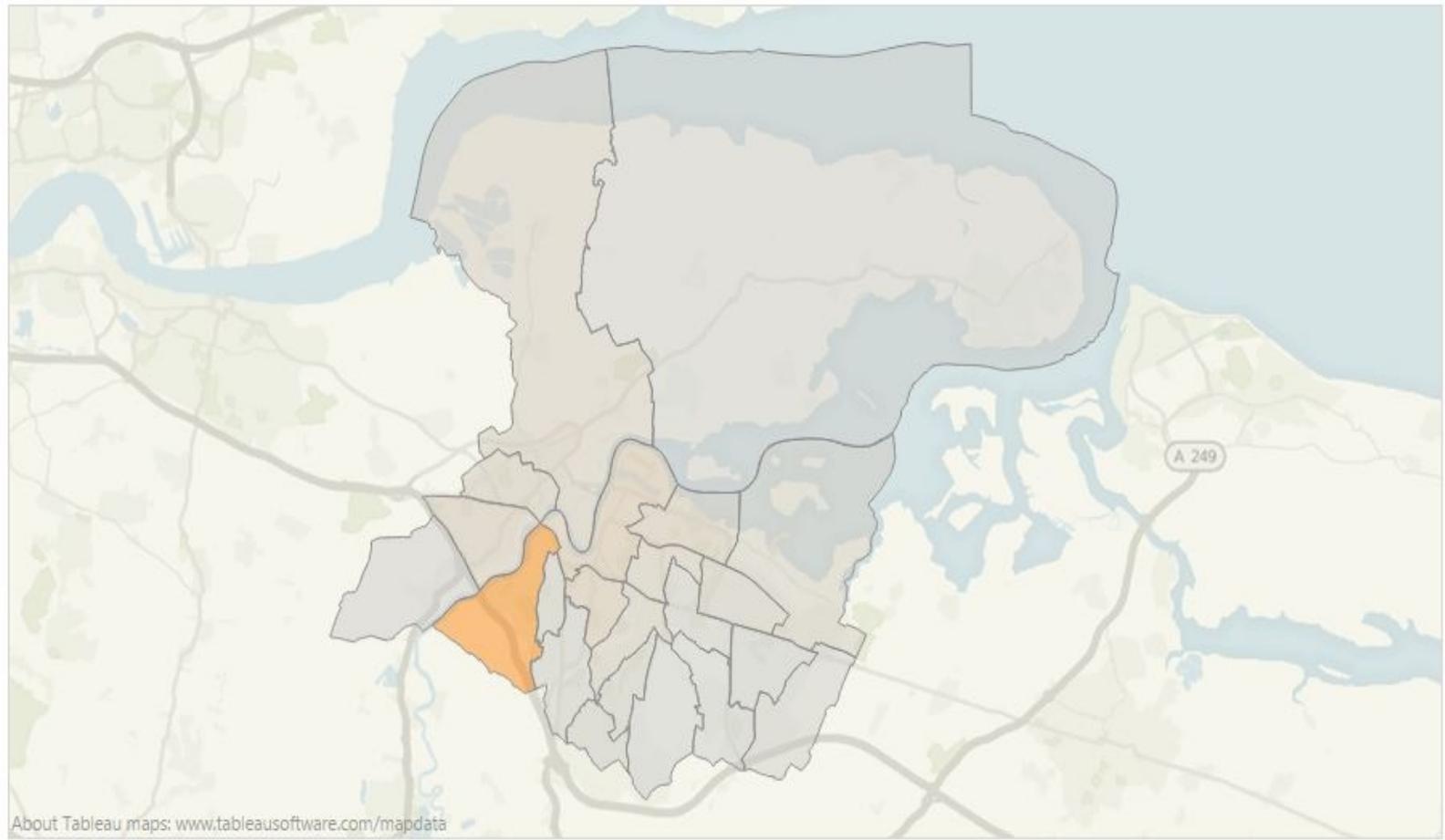


Breakdown UA Ward by Gender



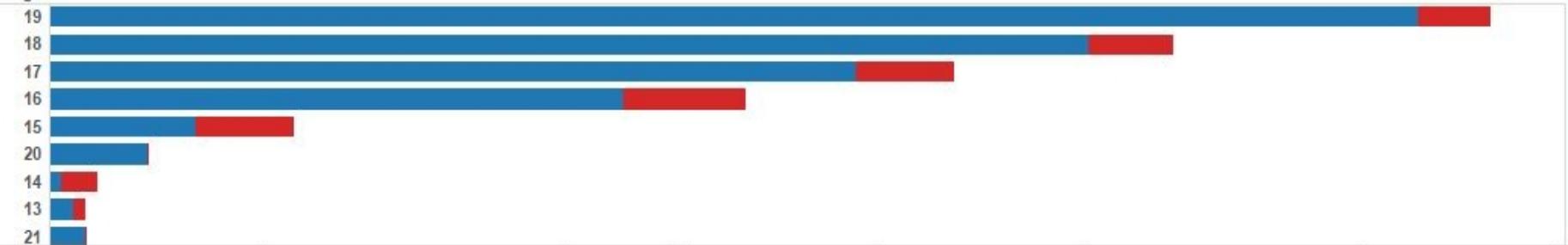
Ethnicity	YP	%
White	231	60.5%
Black	67	17.5%
Mixed	40	10.5%
Other Groups	17	4.5%
Asian	15	3.9%
Refused	12	3.1%
Grand Total	382	100.0%

Ward Map Parameter

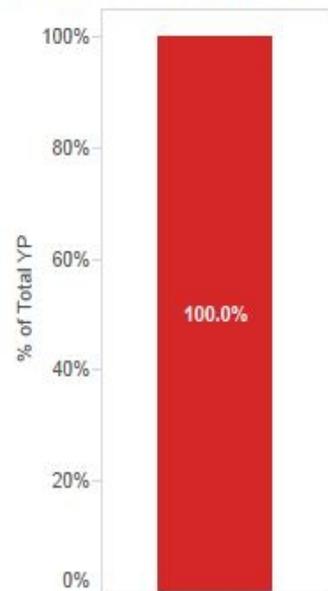


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Age

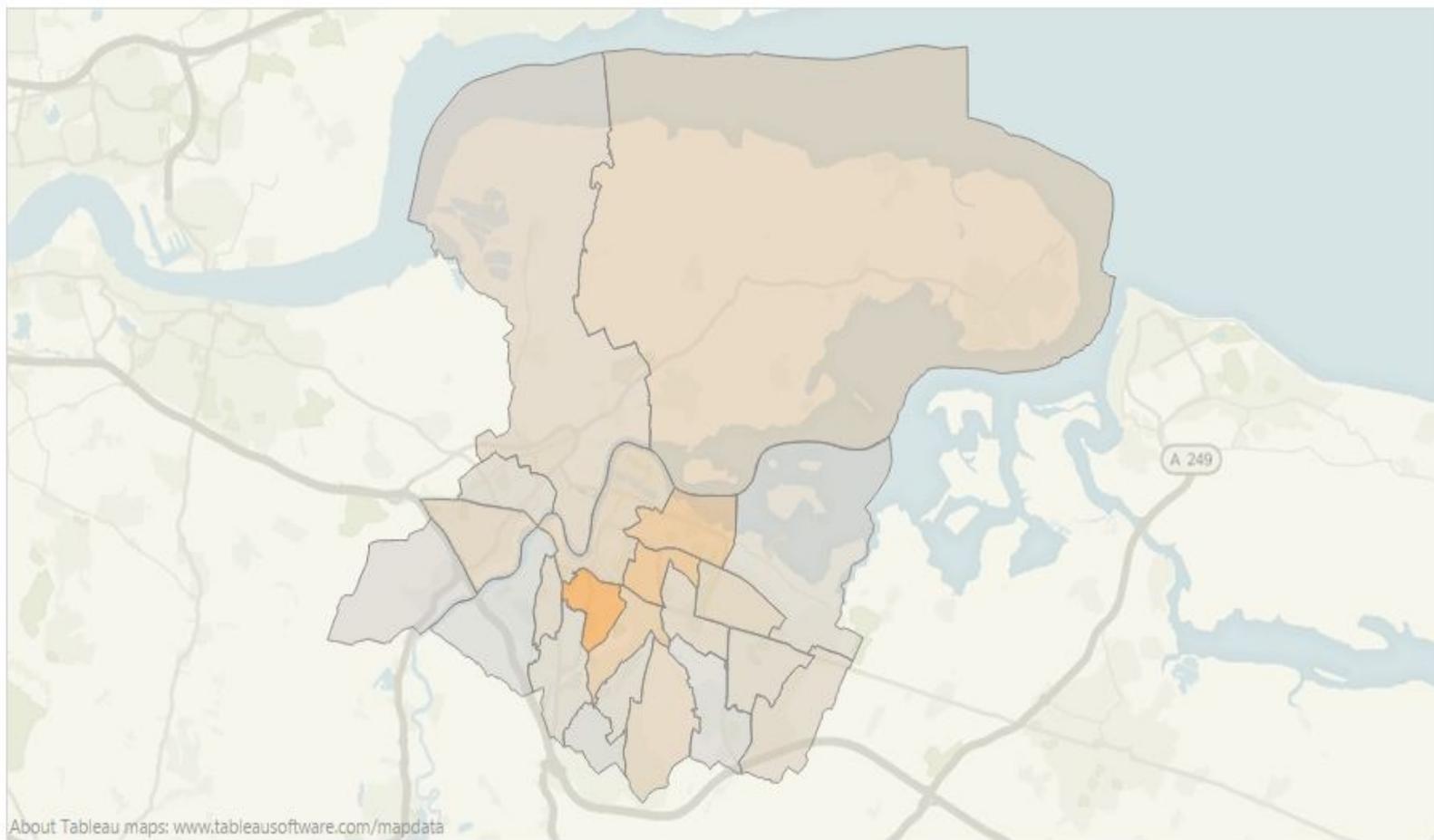


Breakdown UA Ward by Gender



Ethnicity	YP	%
White	147	91.9%
Mixed	8	5.0%
Refused	3	1.9%
Other Groups	2	1.3%
Asian	0	0.0%
Black	0	0.0%
<b>Grand Total</b>	<b>160</b>	<b>100.0%</b>

Ward Map Parameter



## To the Future

- System learning and development of our approach
- Using our learning and approach to tackle other social issues
- Attracting corporate and in-kind support
- Exploiting our knowledge and expertise to develop revenue for the charity



# QUESTIONS

#BALive2013

#AnalyticsMYT

**Gary Seaman** | Head of Business Analytics

[gary.seaman@hiddenpatterns.co.uk](mailto:gary.seaman@hiddenpatterns.co.uk)

 @GSeamanMYT

 @themytrust

