

TED Talks Ingredients for Popularity

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10th Nov 2017

Objective

What makes a TED Talk popular?

Analysis based on Talk Transcripts:

- Topics Modeling
- Sentiment Analysis

Data Details:

- 2386 Ted Talks
- Published from 2006 to June 2017

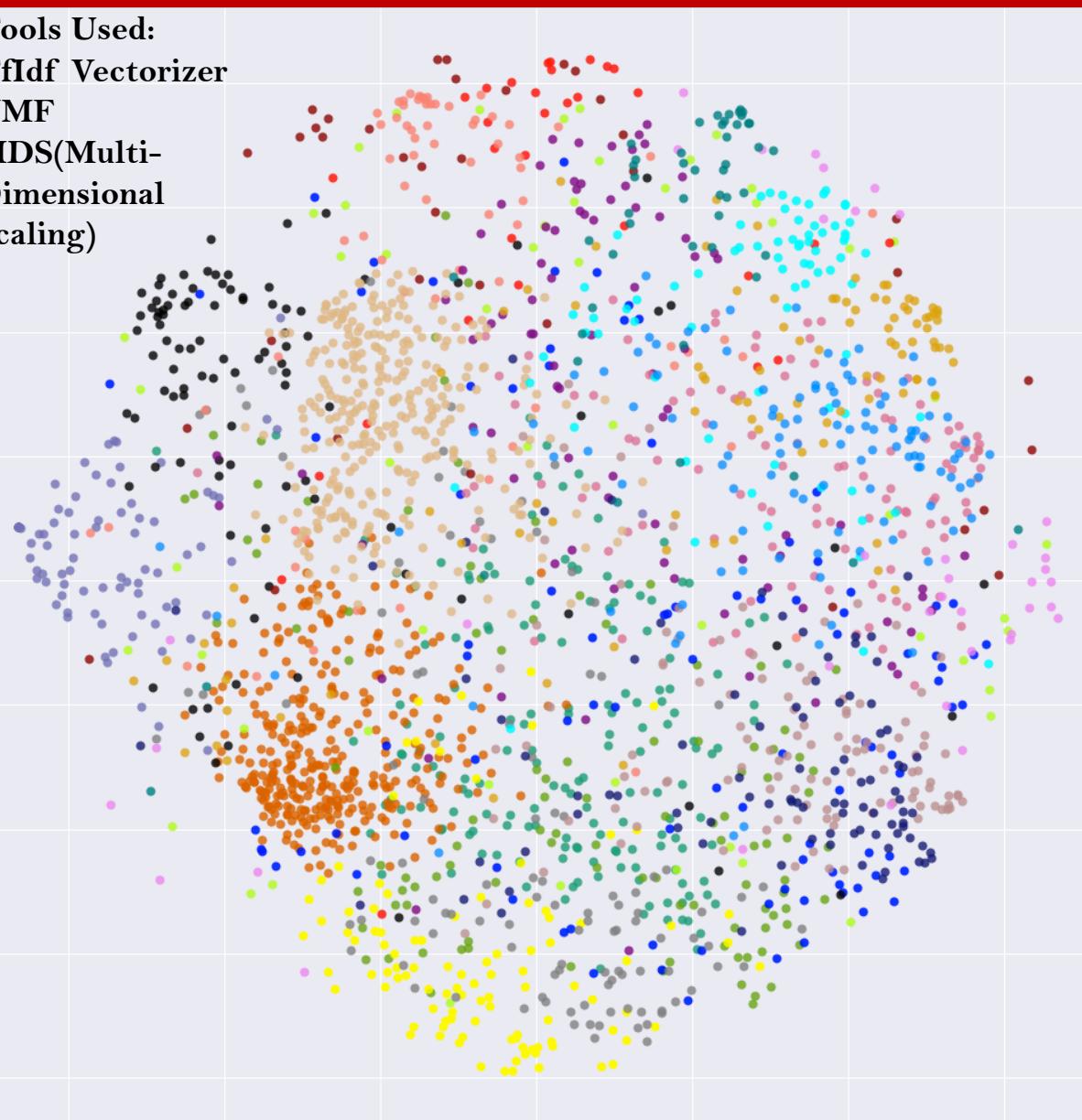
Topic Modeling

Tools Used:

TfIdf Vectorizer

NMF

MDS(Multi-Dimensional Scaling)



● Better Me-Happiness,Compassion,Psychology
● Stories-Courage,Positivity
● Music
● Brain-Unravel,Treatment
● Global Conflicts-Governance,Wars,Terrorism
● Life & Universe
● Health Care Issues & Solutions
● Women's Issues-Education,Health,Inequality

● City Design-Architecture,Community
● Child Issues,Education
● Space Exploration
● Data Impact-Knowledge,Social Media,Privacy
● Climate Change,Alternative Energy
● Robotics/AI
● Tech. Innovations Meets Art

● Developing Nations-Africa,Economy,Diseases
● Genetics
● Global Economy
● Exploring Marine World & Issues
● Living Organisms-Evolution,Conservation
● Cancer-Research, Advances
● Advances-Medical Science

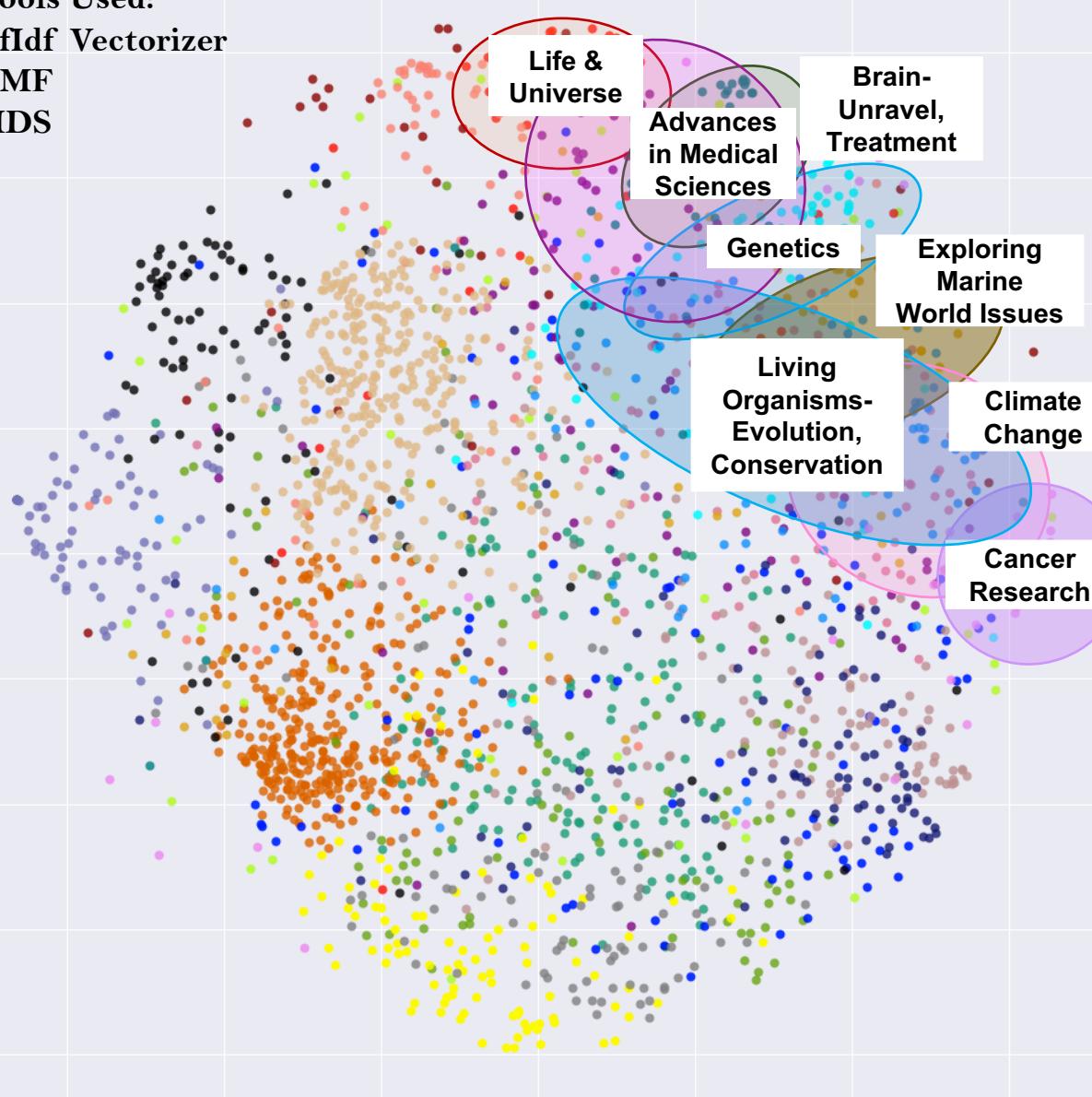
22 Topics Emerged



22 Topics Emerged

- Better Me-Happiness,Compassion,Psychology
- Stories-Courage,Positivity
- Music
- Brain-Unravel,Treatment
- Global Conflicts-Governance,Wars,Terrorism
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Tools Used:
TfIdf Vectorizer
NMF
MDS



Bio Sciences

- Better Me-Happiness,Compassion,Psychology
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Tools Used:

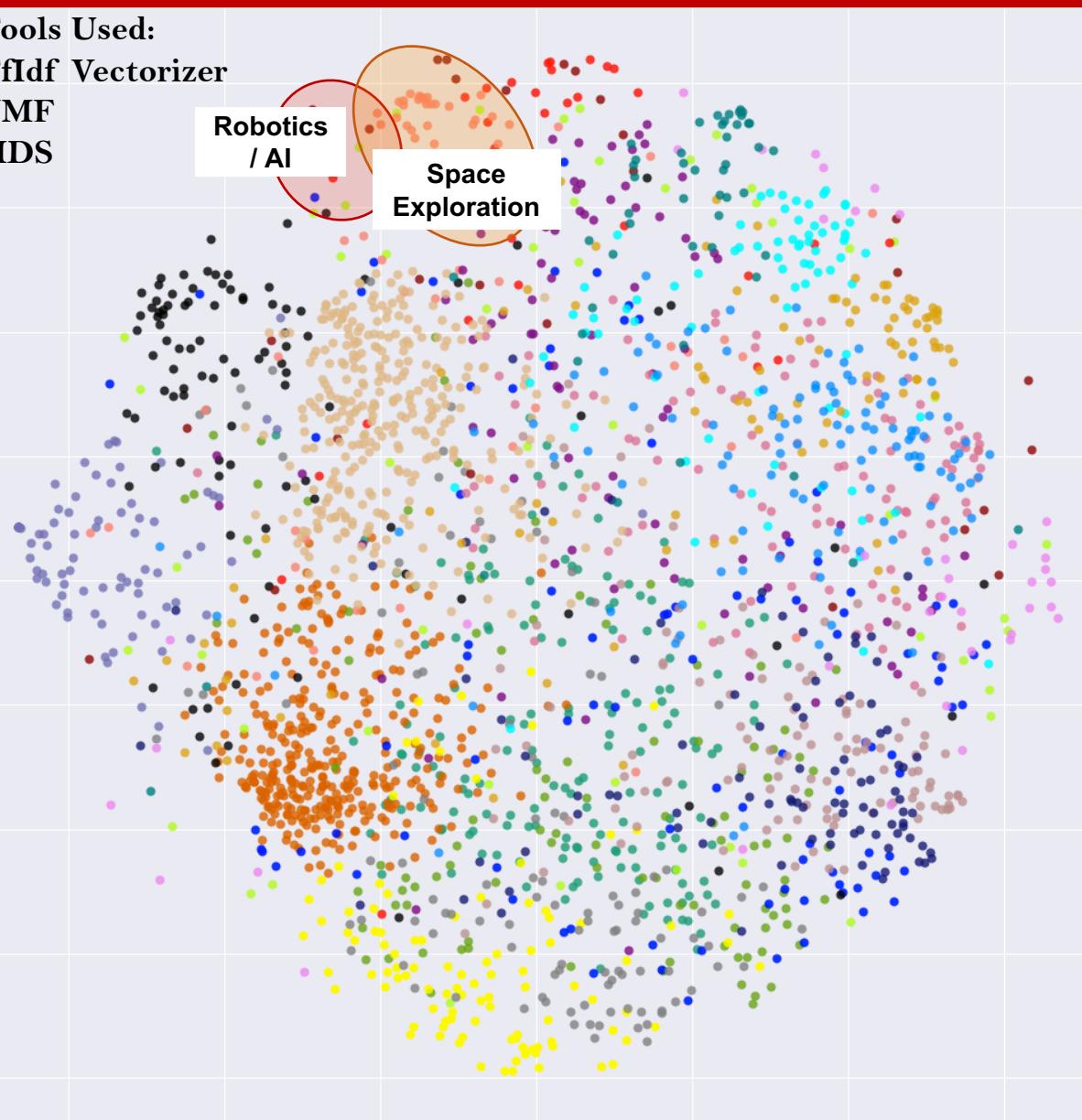
TfIdf Vectorizer

NMF

MDS

Robotics / AI

Space Exploration



- Better Me-Happiness, Compassion, Psychology
- Stories-Courage, Positivity
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- Developing Nations-Africa, Economy, Diseases
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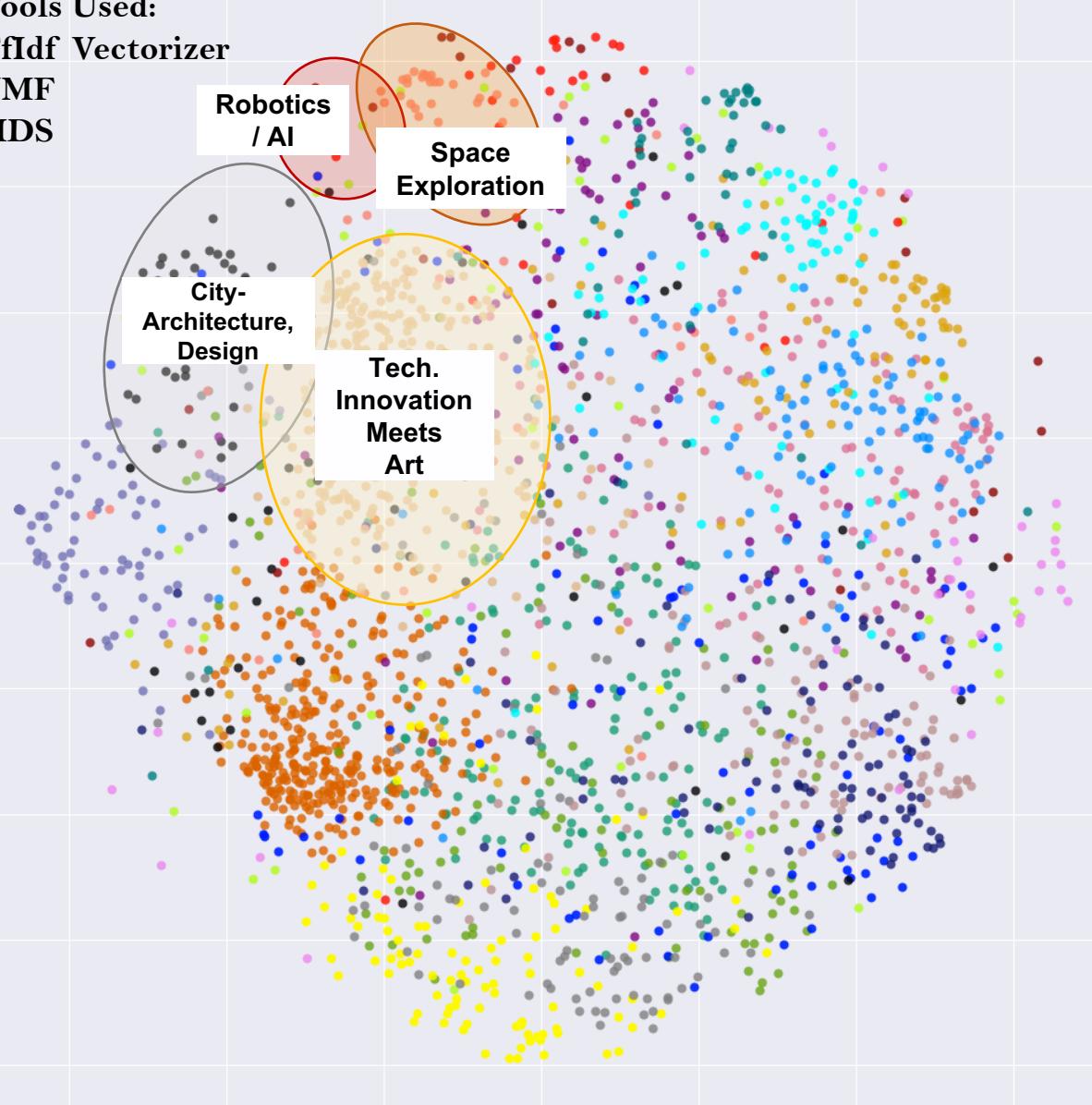
Frontier of Technology

Tools Used:

TfIdf Vectorizer

NMF

MDS



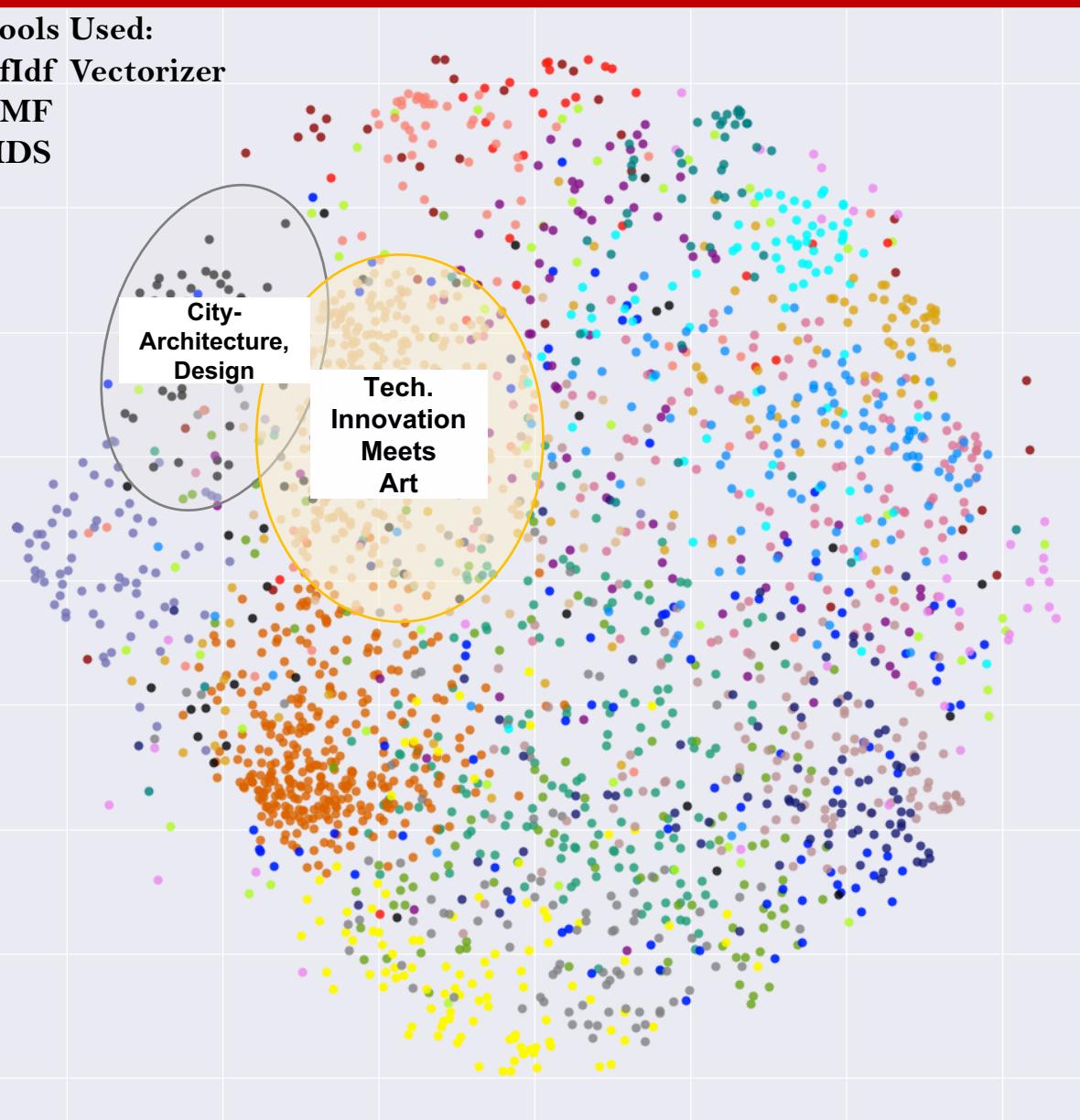
Creative Technology

● Better Me-Happiness,Compassion,Psychology
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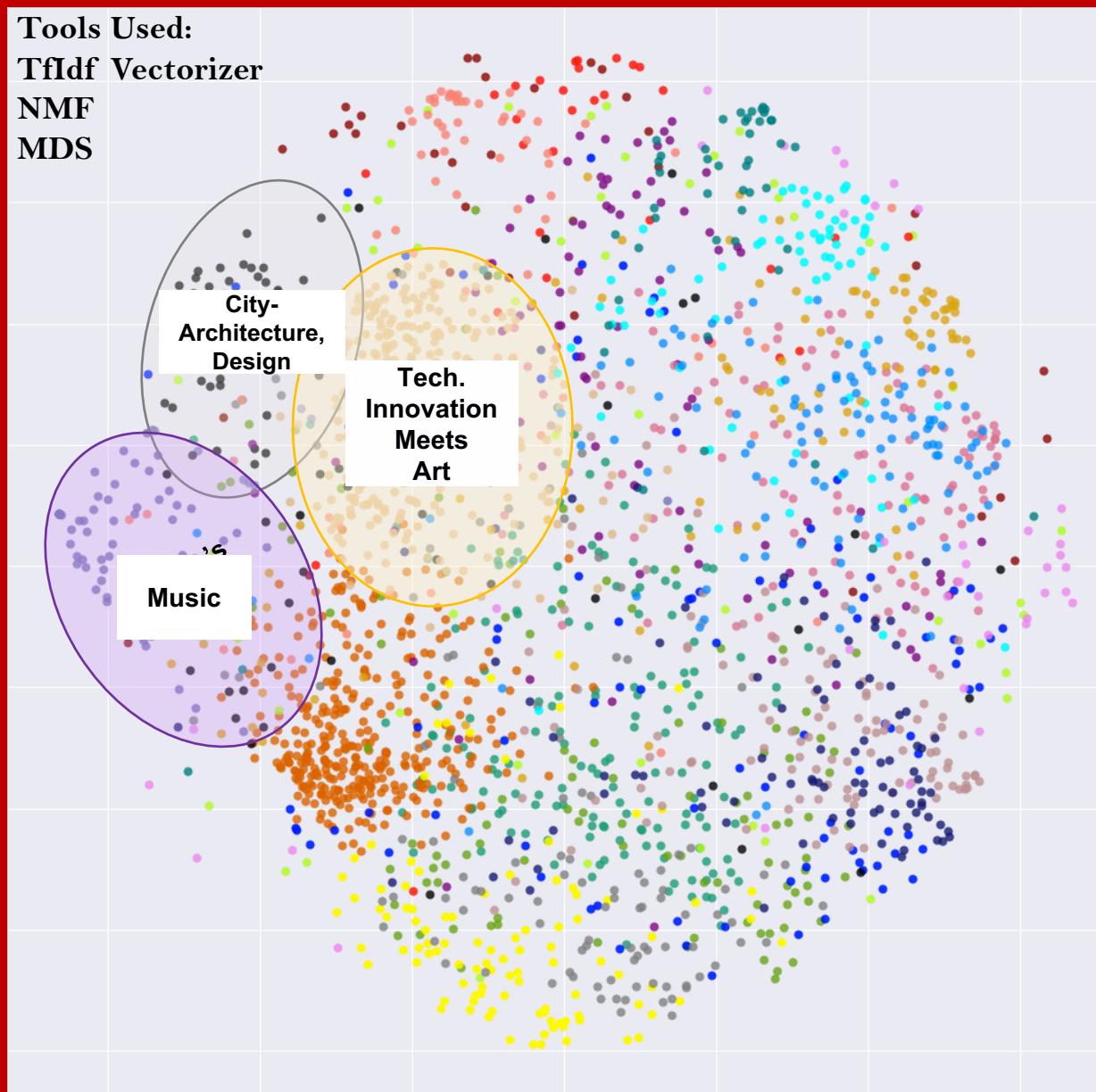
Tools Used:
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NMF
MDS



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Creative Technology

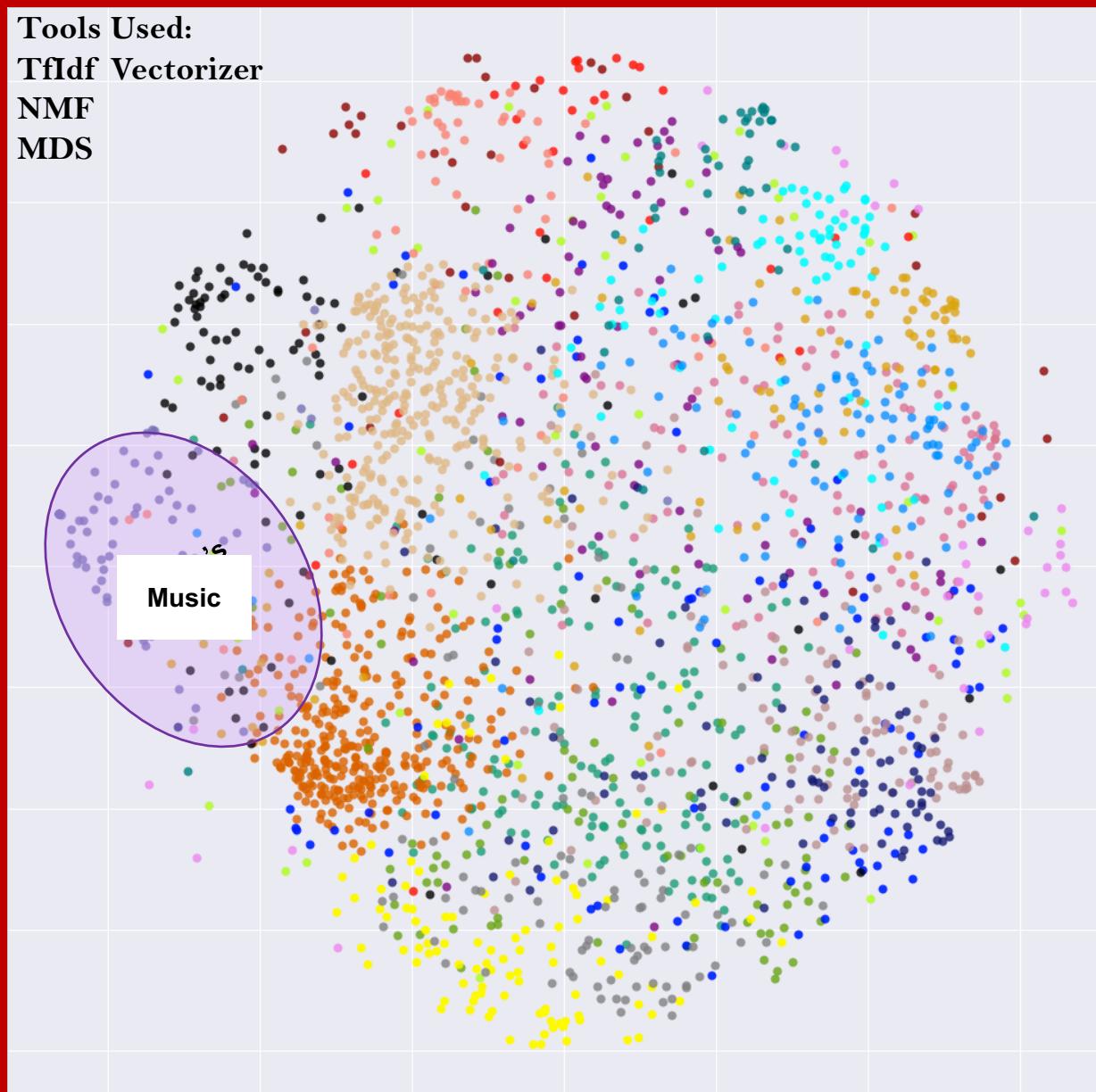
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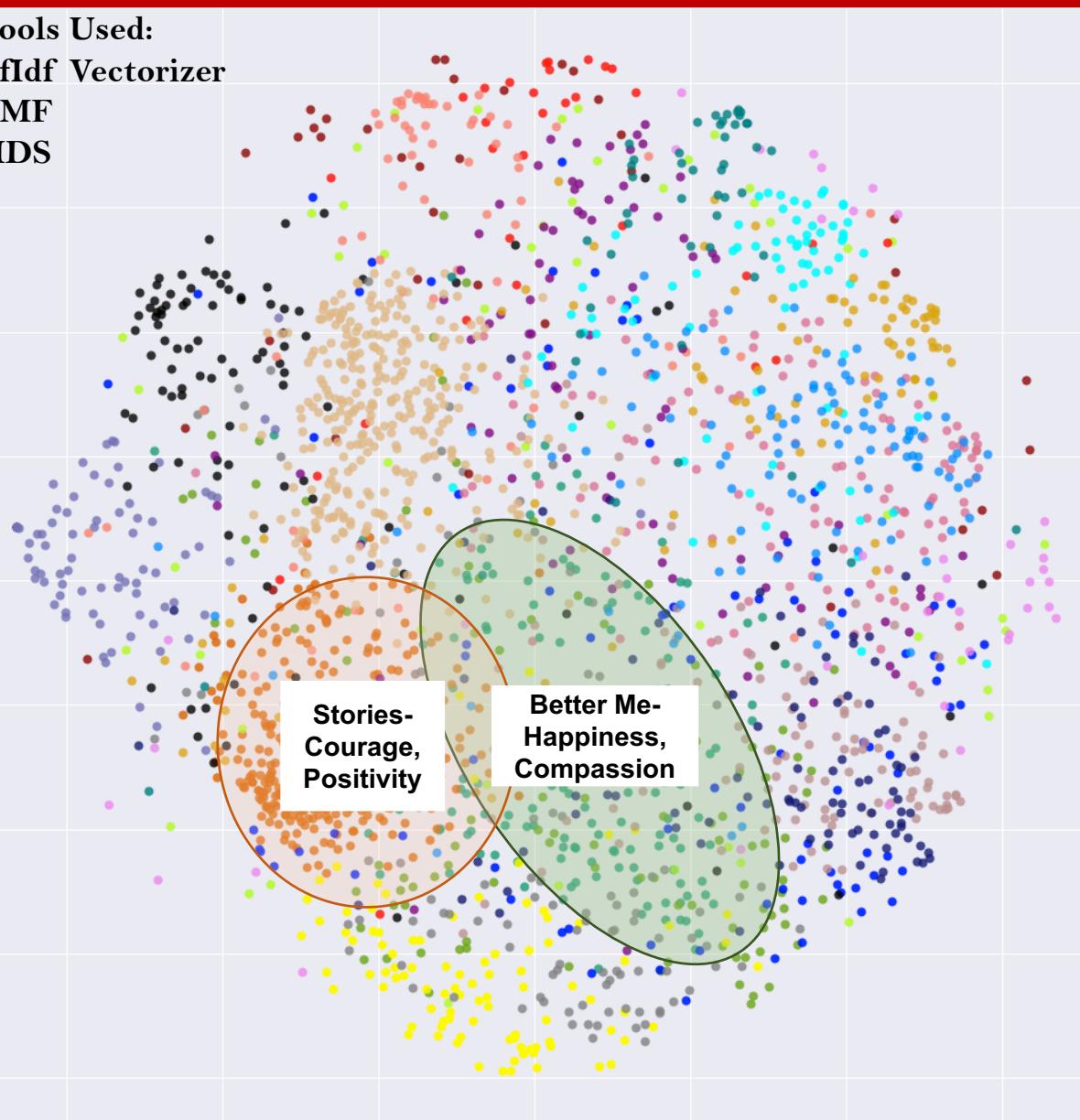
Creative Art

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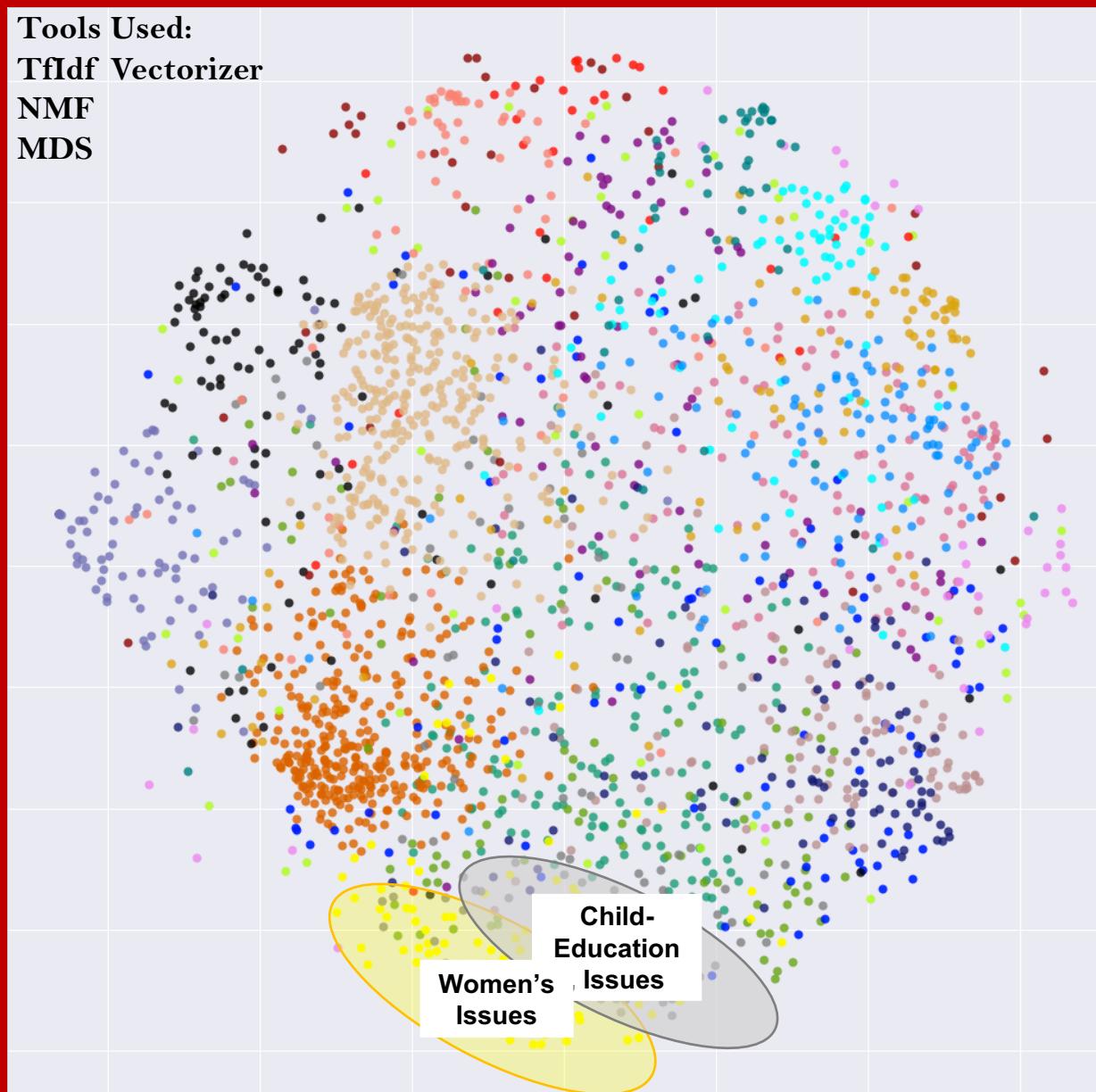
Tools Used:
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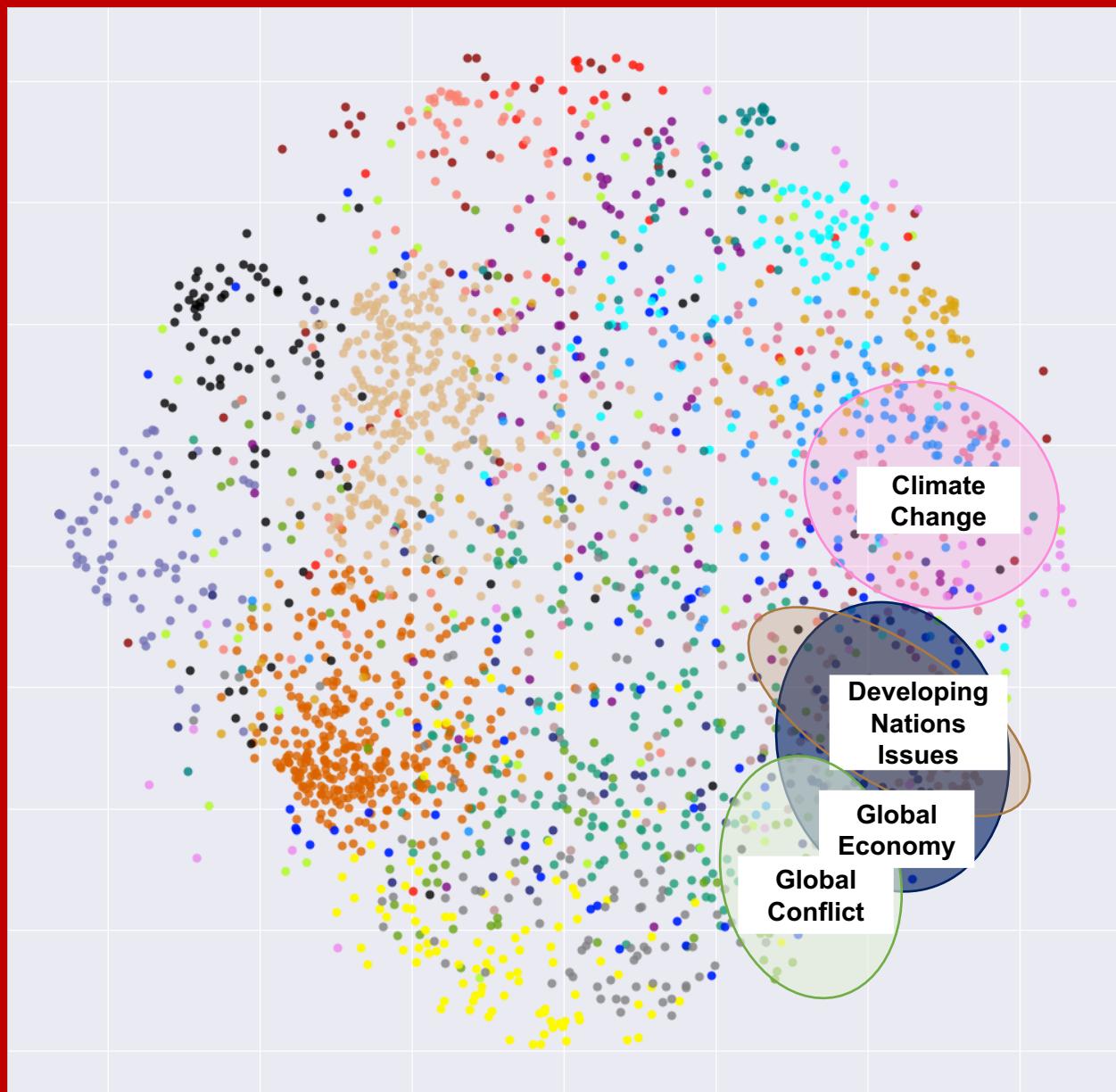
Lessons for Self Enhancements

Tools Used:
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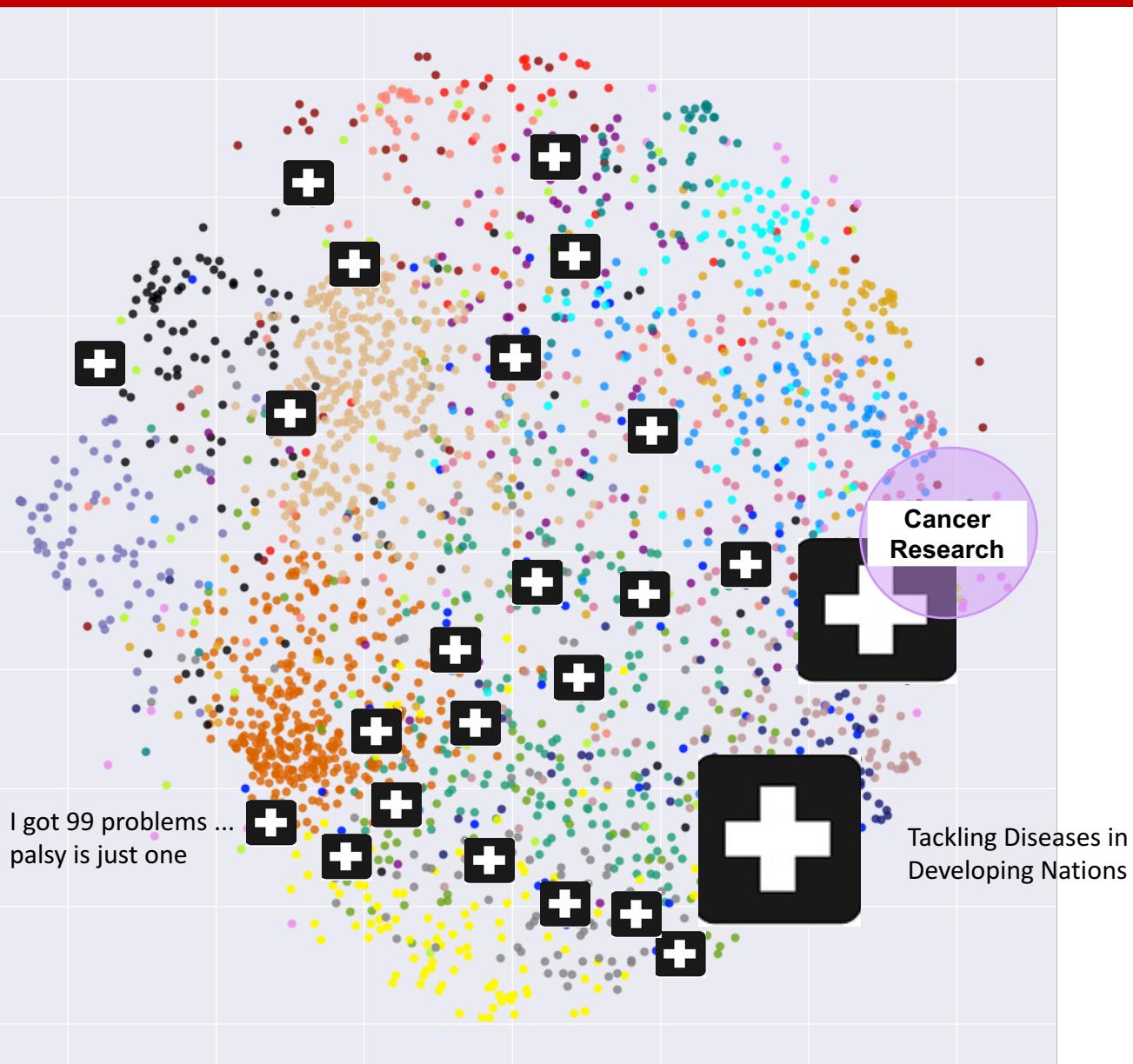
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Individual Matters



Global Matters

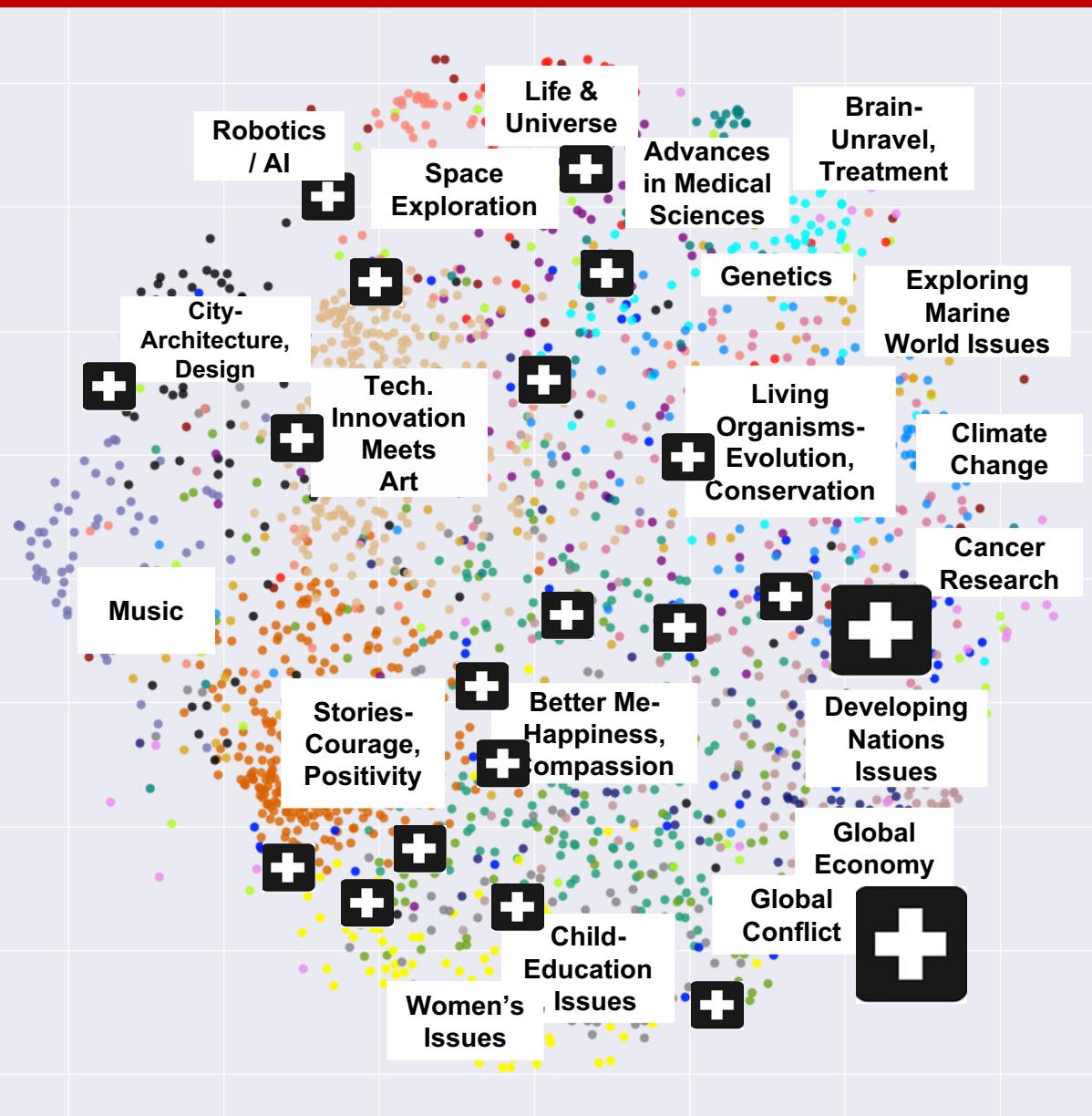
- | | | |
|--|--|--|
| ● Better Me-Happiness,Compassion,Psychology | ● City Design-Architecture,Community | ● Developing Nations-Africa,Economy,Diseases |
| ● Stories-Courage,Positivity | ● Child Issues,Education | ● Genetics |
| ● Music | ● Space Exploration | ● Global Economy |
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| ● Women's Issues-Education,Health,Inequality | | |



Health Care Issues & Solutions are spread across Topics

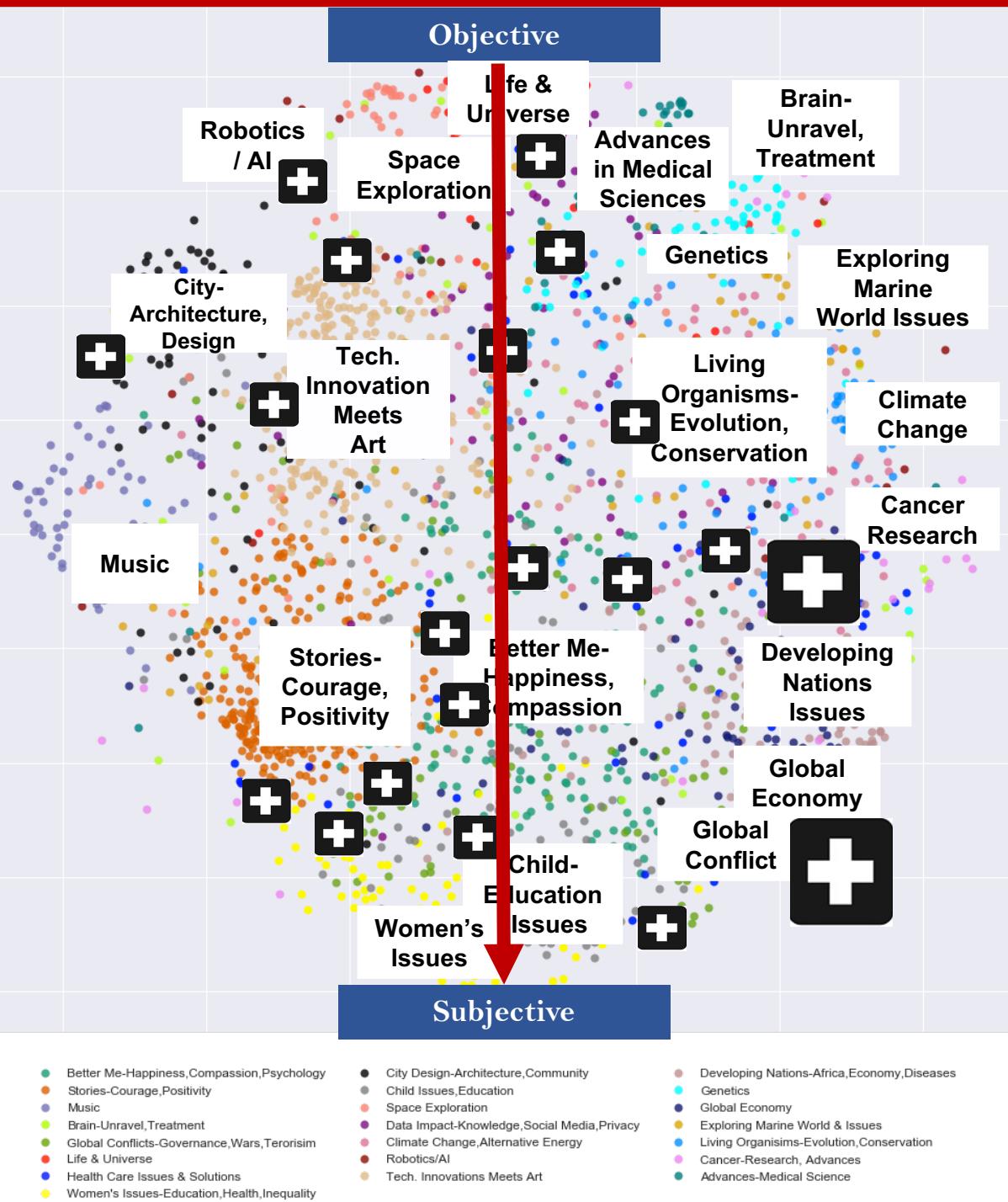
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Health Care Issues & Solutions are spread across Topics

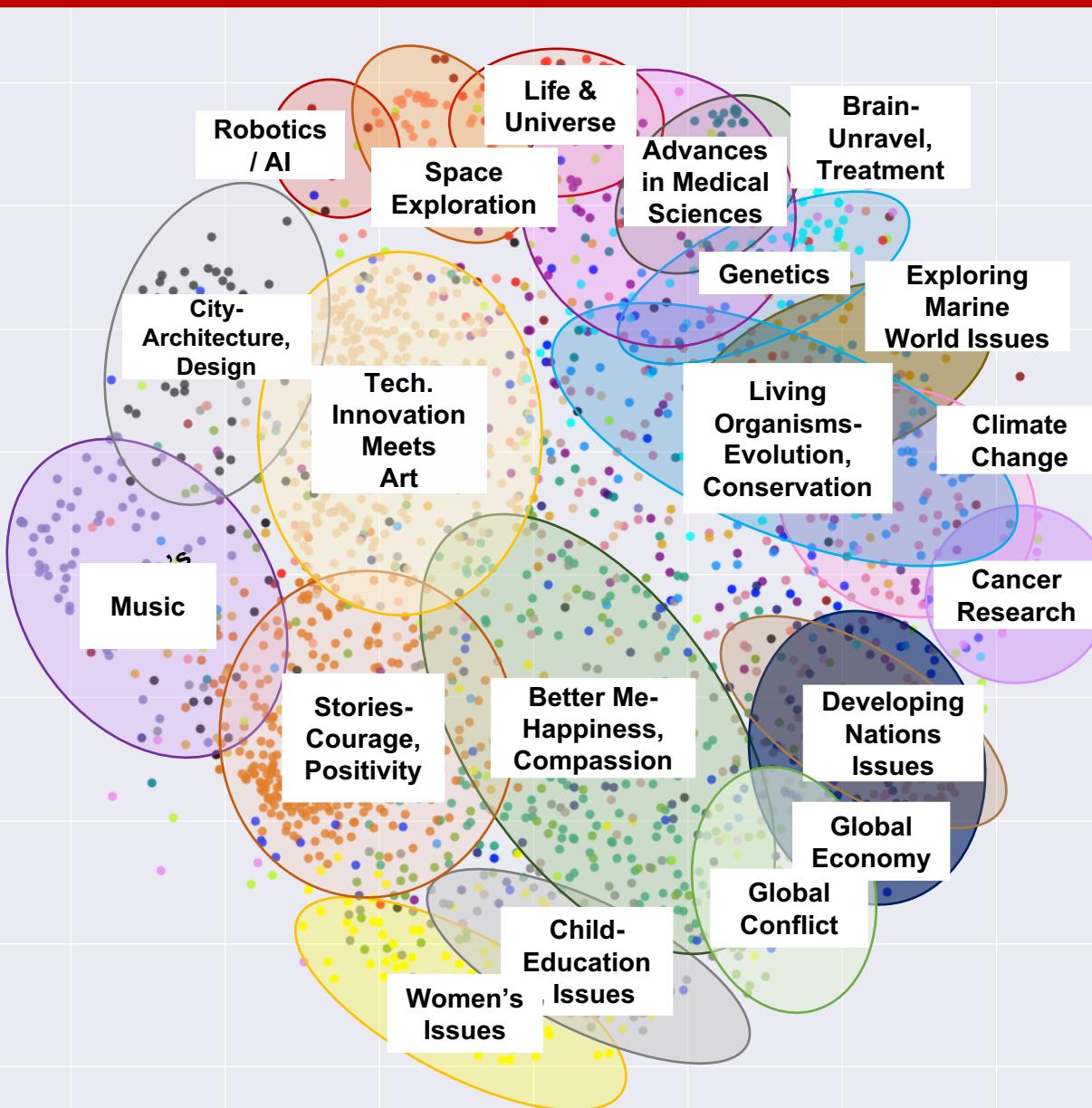
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Order of Topics

Generic
↓
Community
↓
Individual

22 Topics Emerged



- Better Me-Happiness,Compassion,Psychology
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Largest Topics:

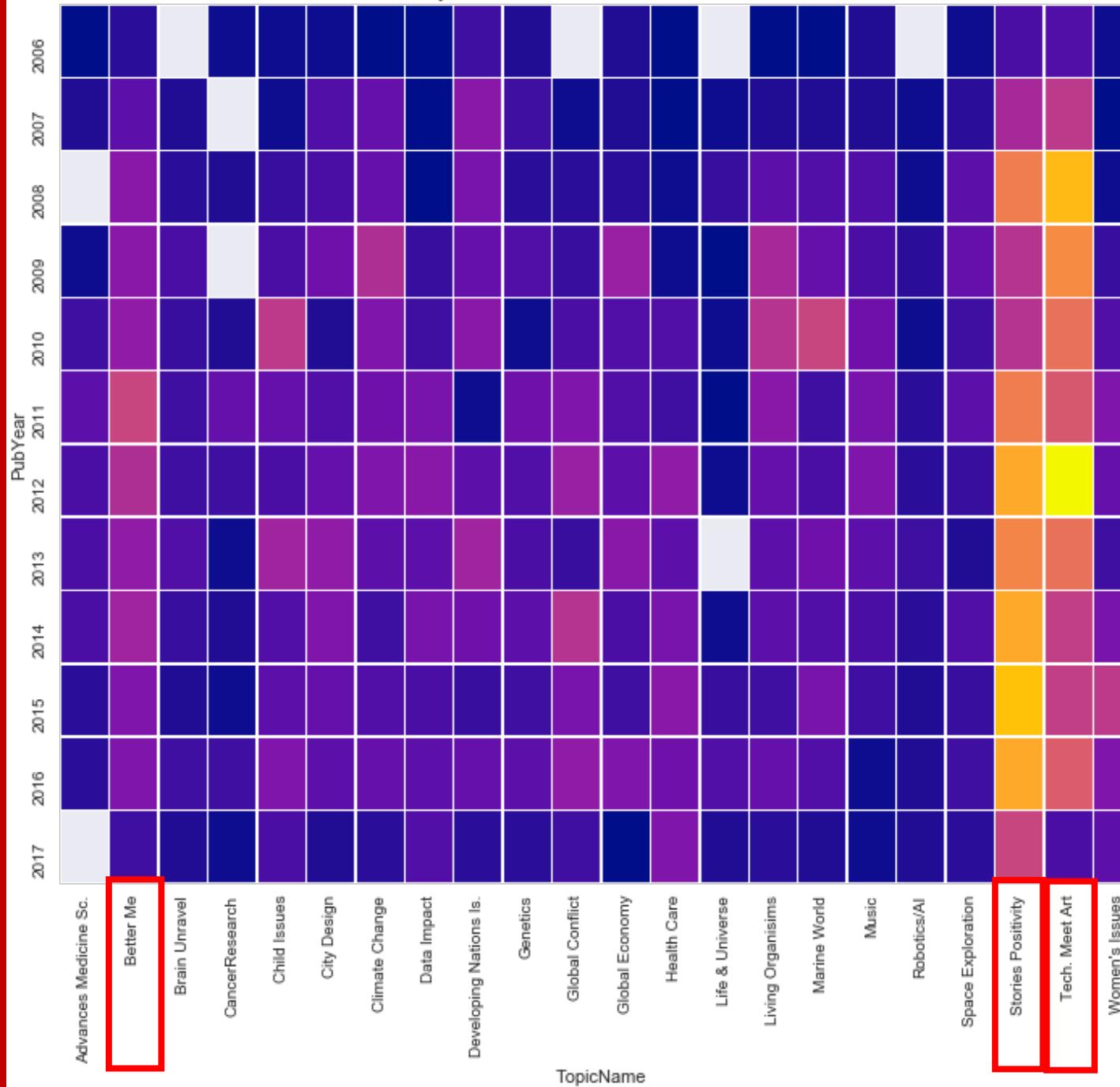
- Stories of Positivity - 14%
- Tech. Meet Art - 13.2%
- Better Me 162 - 6.8%

Highest Average Views:

- Better Me- 2.98Mn
- Brain Unraveled- 2.51Mn
- Child Issues – 2.46Mn

Which topics are more popular?

Topic Wise Count- All Years



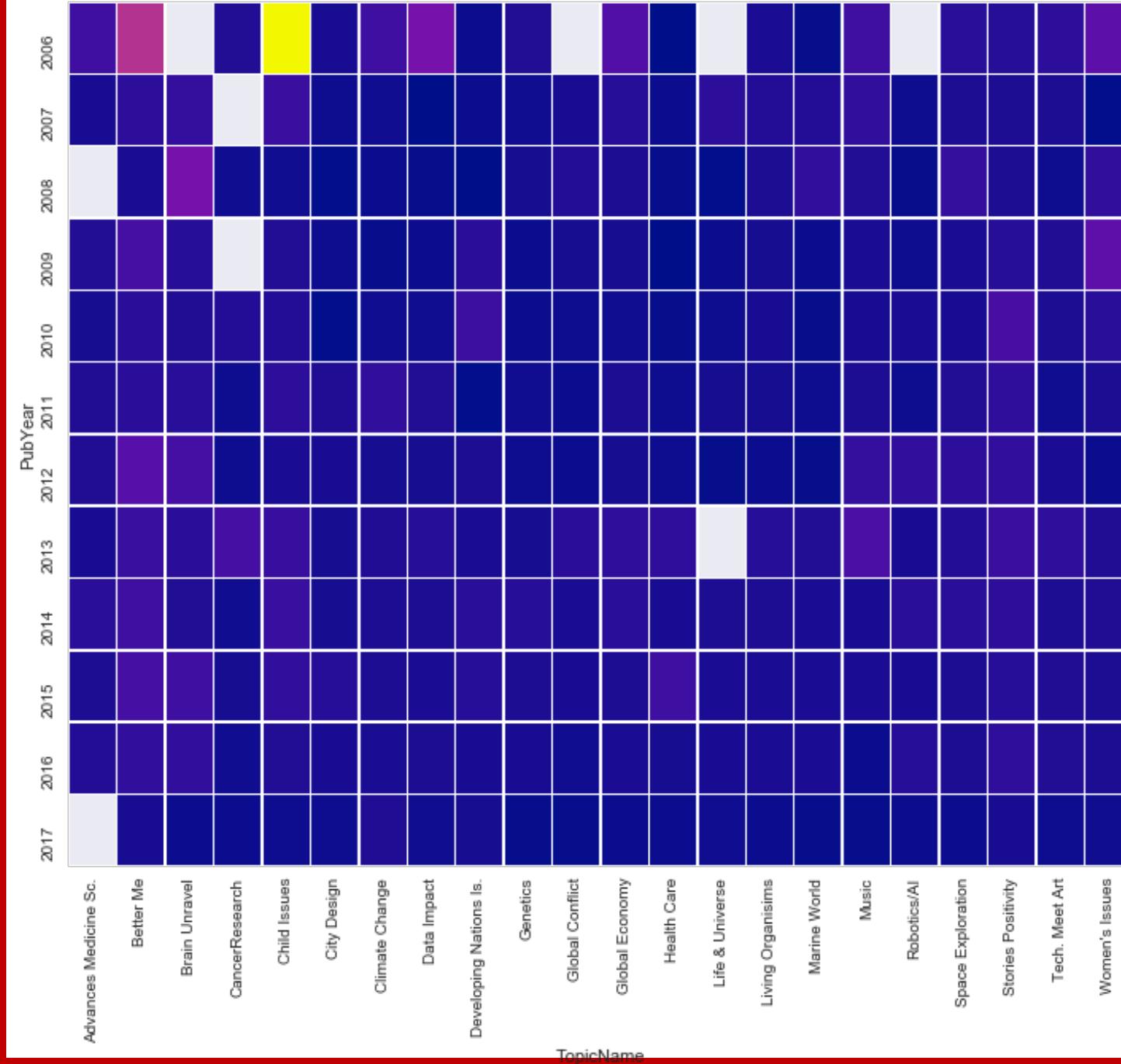
Year wise Topics Counts

Consistently High No. of Talks on:

- Stories of positivity
- Tech Meets Art
- Better Me-Happiness, Compassion

Topic Assignment Basis:
Top Topic Wt.

Topic Wise Average Views- All Years



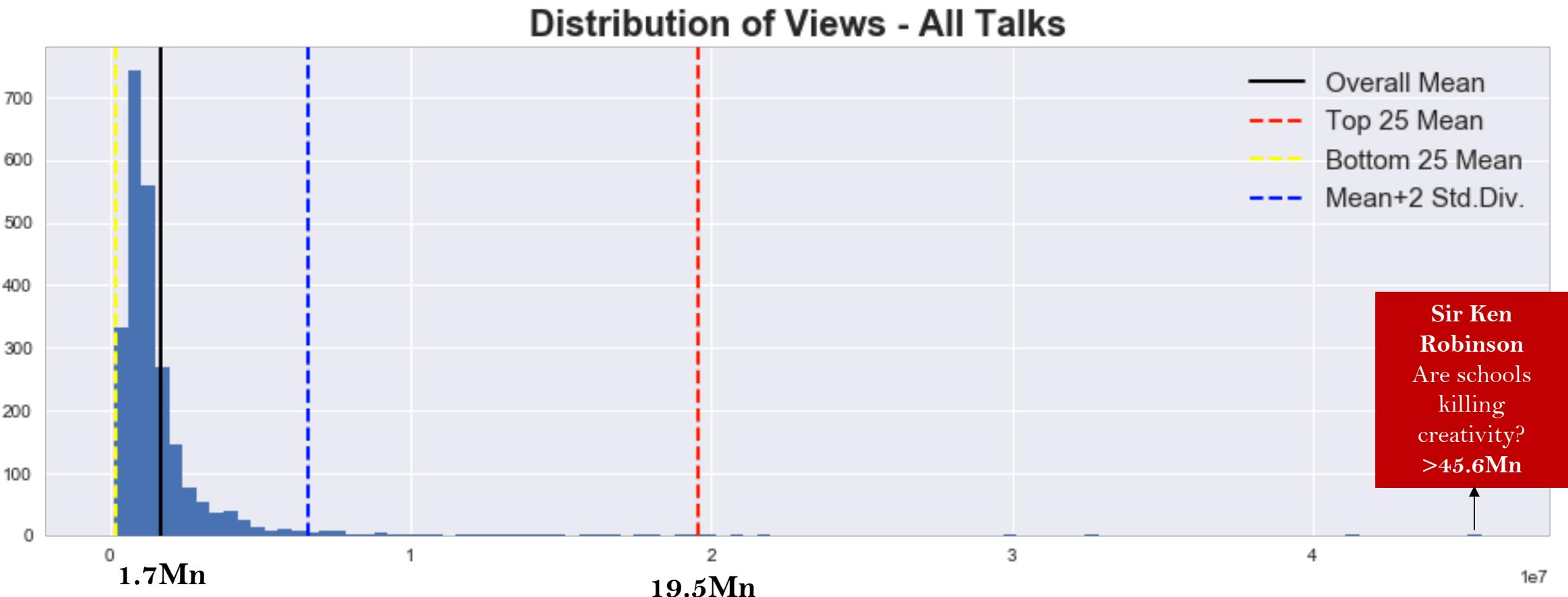
All topics overshadowed by as single talk

Viewership is skewed by extremely popular Talks in 2006 and as the no. of talks were fewer

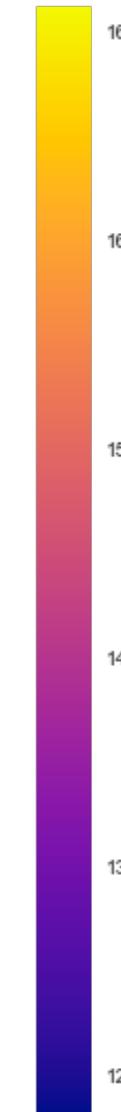
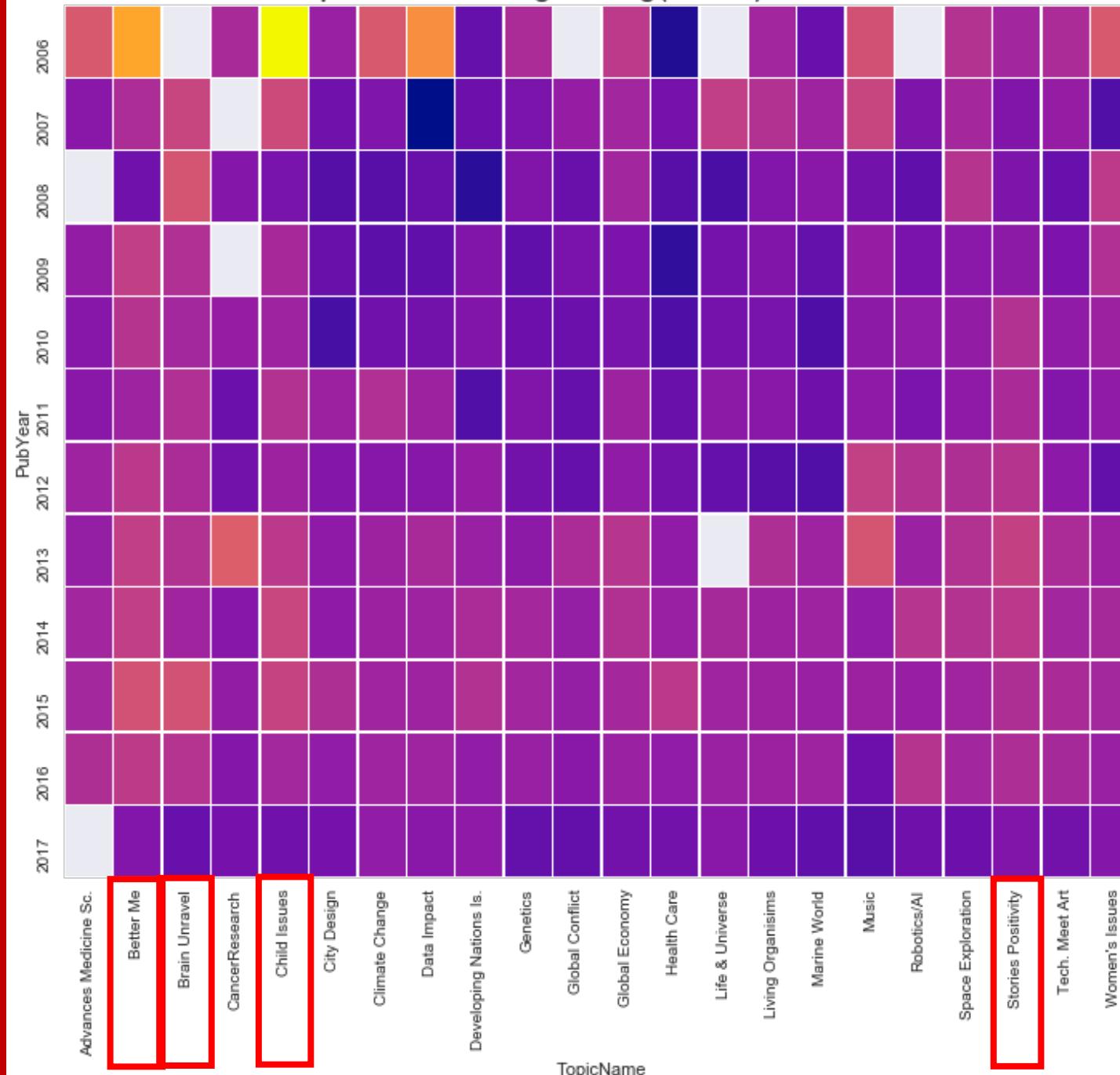
- Sir Ken Robinson
 - Do schools kill creativity?
 - Over 45.6 Mn views
- Tony Robbins
 - Why we do what we do?

Topic Assignment Basis:
Top Topic Wt.

Views are highly skewed



Topic Wise Average of log(Views) - All Years



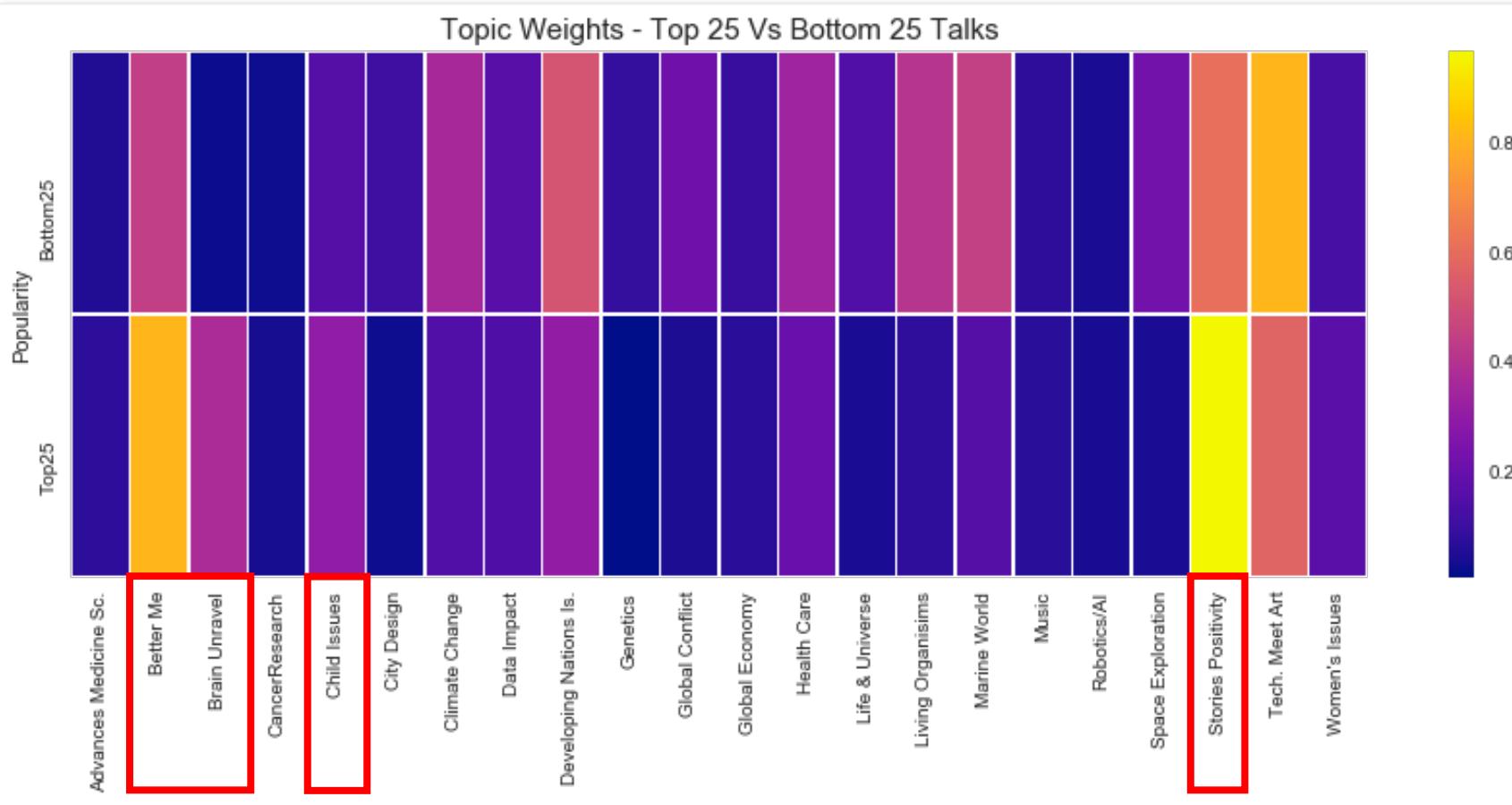
Avg. log(Views) aids in finding popular topics

Topics that are consistently popular across the years are:

- Better Me-Happiness, Compassion
- Brain-Unravel, Treatment
- Child Issues, Education
- Stories of positivity

Topic Assignment Basis:
Top Topic Wt.

Topic Weights - Top 25 & Bottom 25 Talks by Views



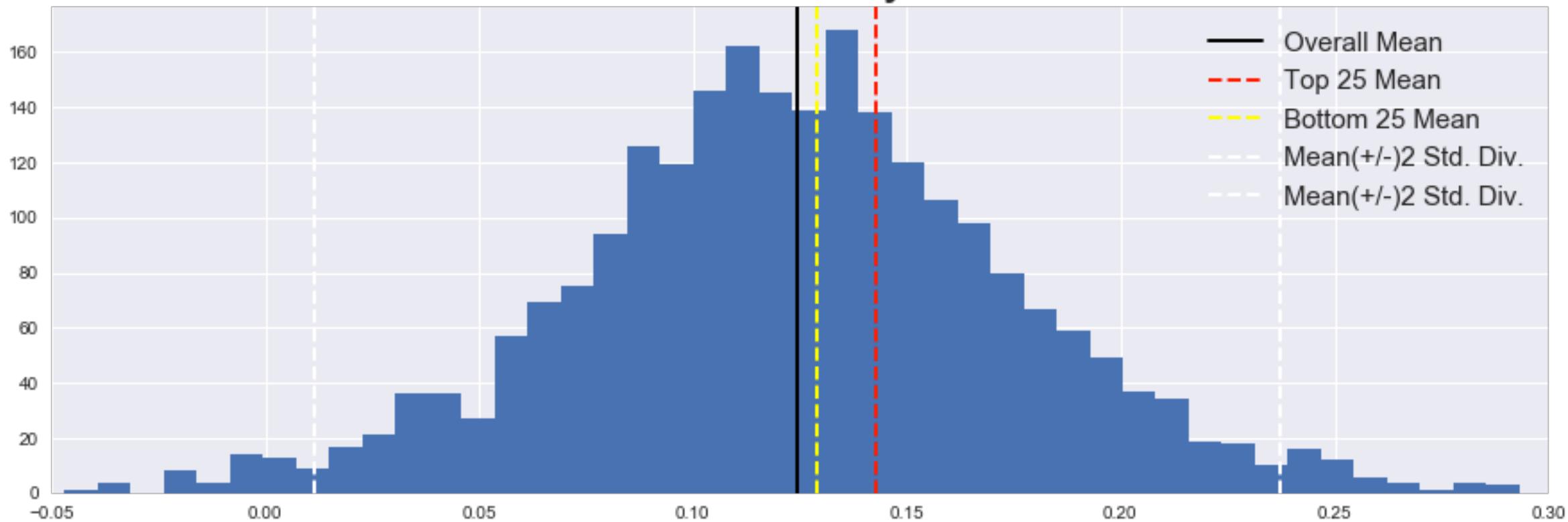
Topics with higher weights in Top 25 vis-à-vis Bottom 25 :

- Better Me-Happiness, Compassion
- Brain-Unravel, Treatment
- Child Issues, Education
- Stories of positivity, courage

Subjective Topics
are more popular

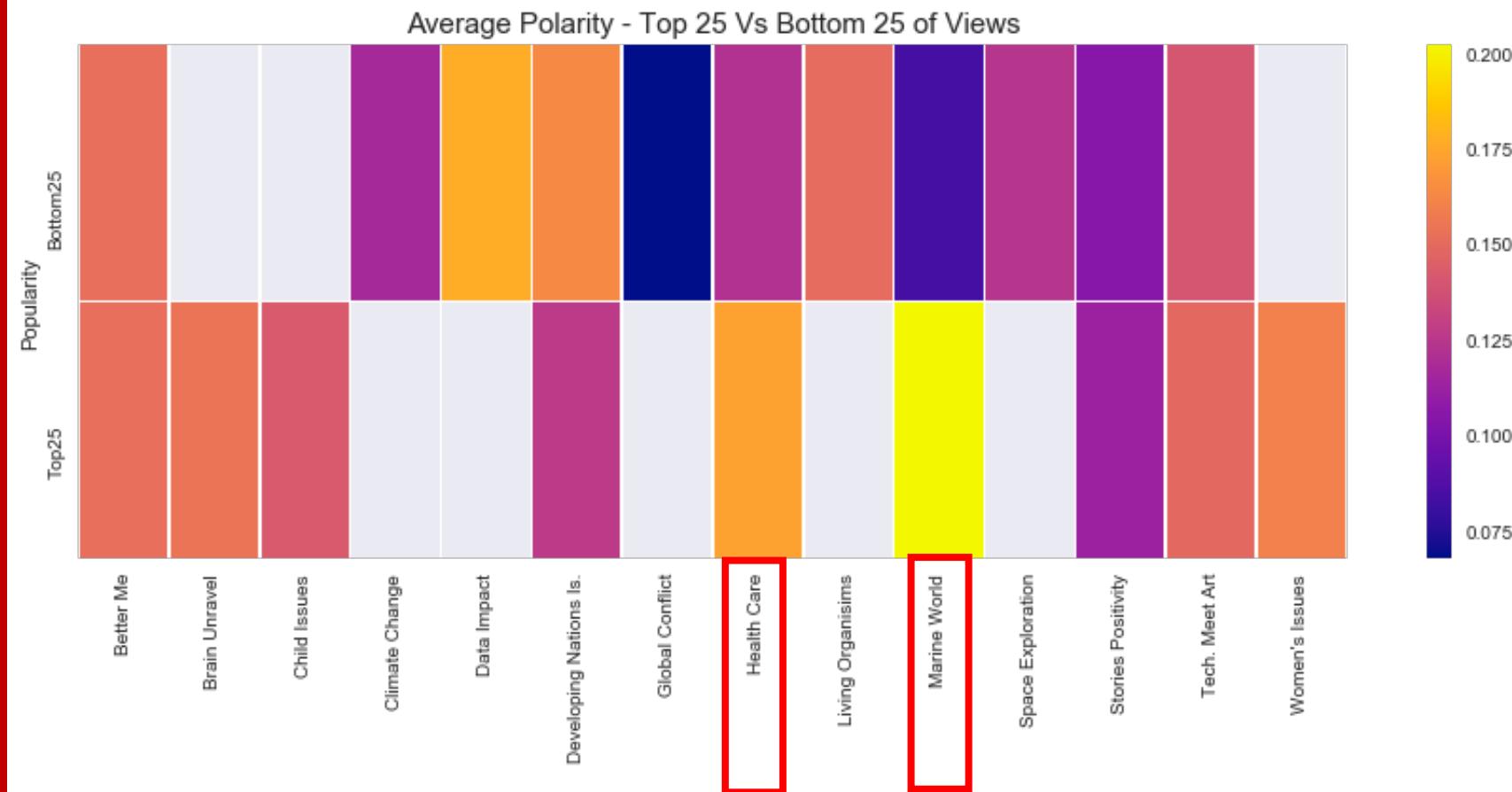
Sentiment Analysis

Distribution of Polarity - All Talks



Polarity of Top 25 Talks is higher

Polarity - Top 25 & Bottom 25 Talks by Views



Average Polarity in top 25 talks is higher compared to Bottom 25 for 2 Topics-

- Health Care
- Marine World Exploration & Conservation are higher

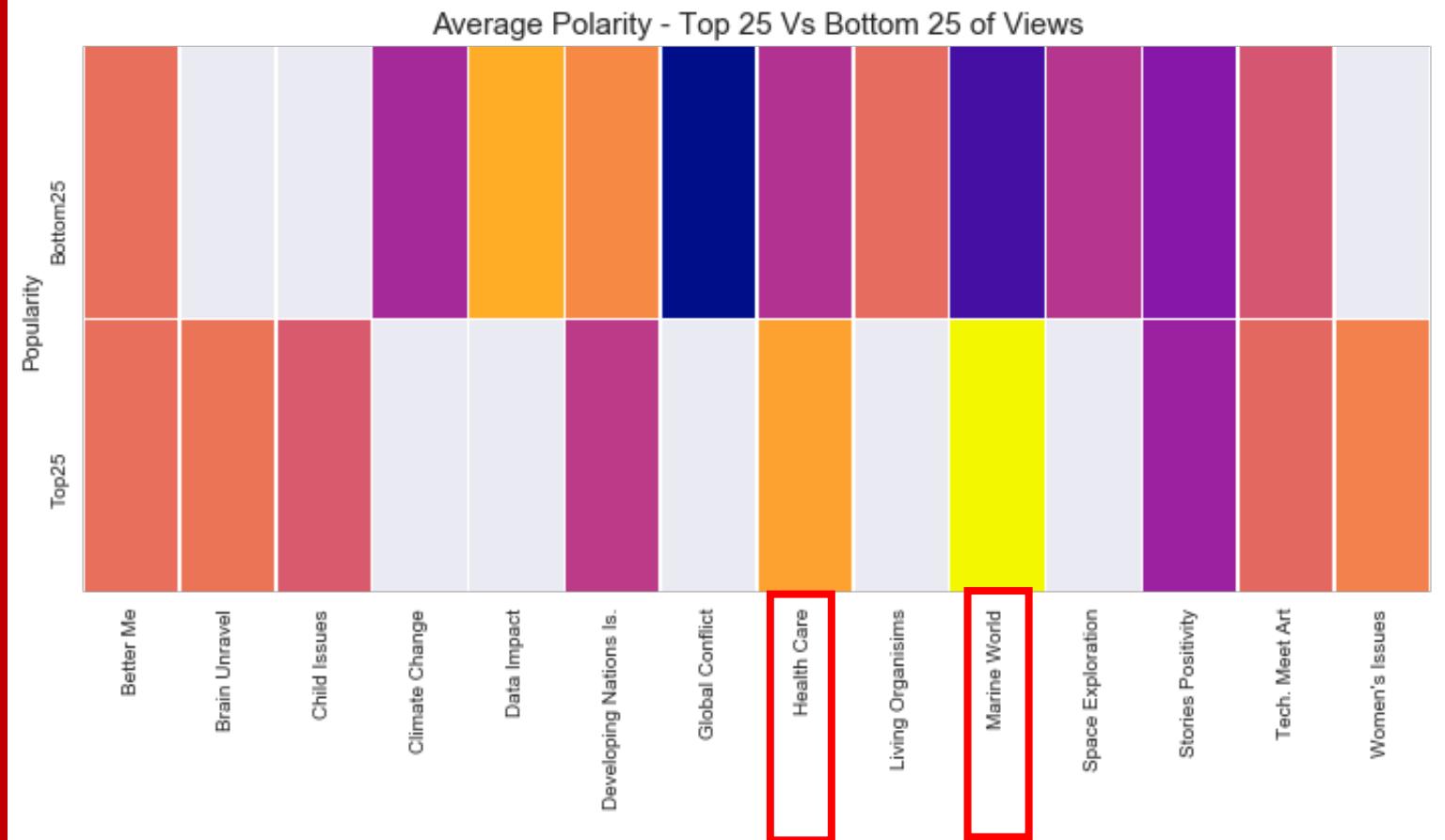
Health Care Bottom 25

Mothers helping mothers fight HIV

Top25

How to make stress your friend?
What makes a good life? Lessons from the longest study on happiness.

Polarity - Top 25 & Bottom 25 Talks by Views



Average Polarity in top 25 talks is higher compared to Bottom 25 for 2 Topics-

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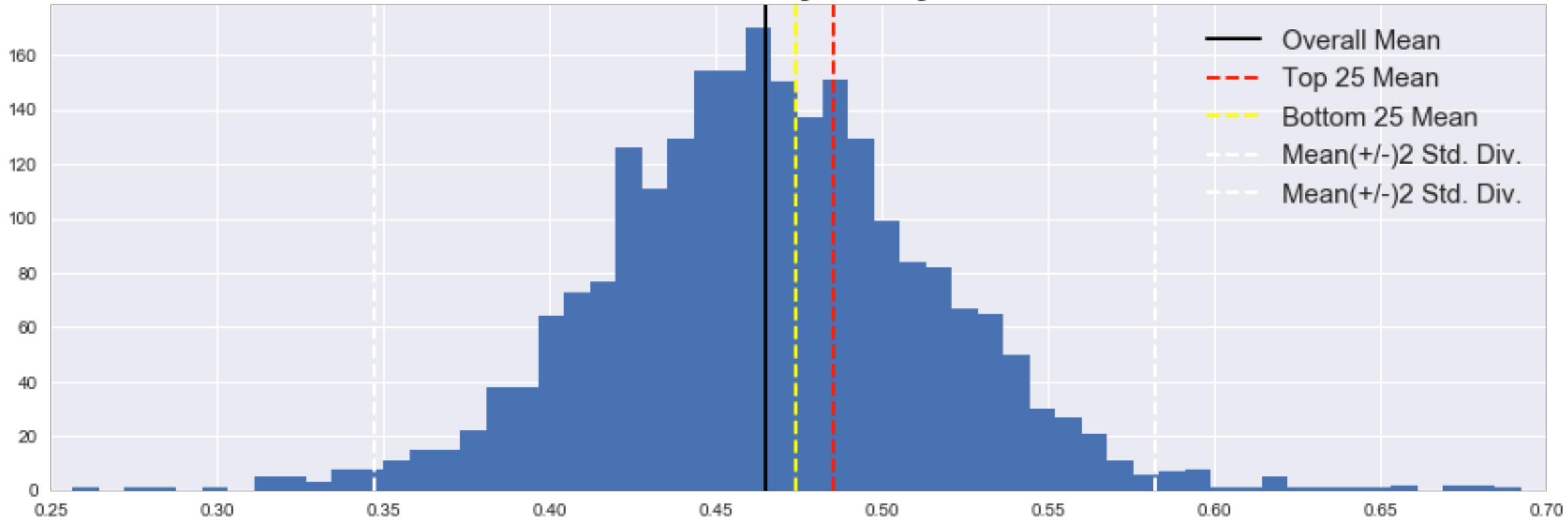
**Marine World
Bottom 25**

The oil spill's toxic trade-off

Top25

Underwater astonishments

Distribution of Subjectivity - All Talks



Subjectivity of Top 25 Talks is higher

Question

What makes a
TED Talk popular?

Sentiments?

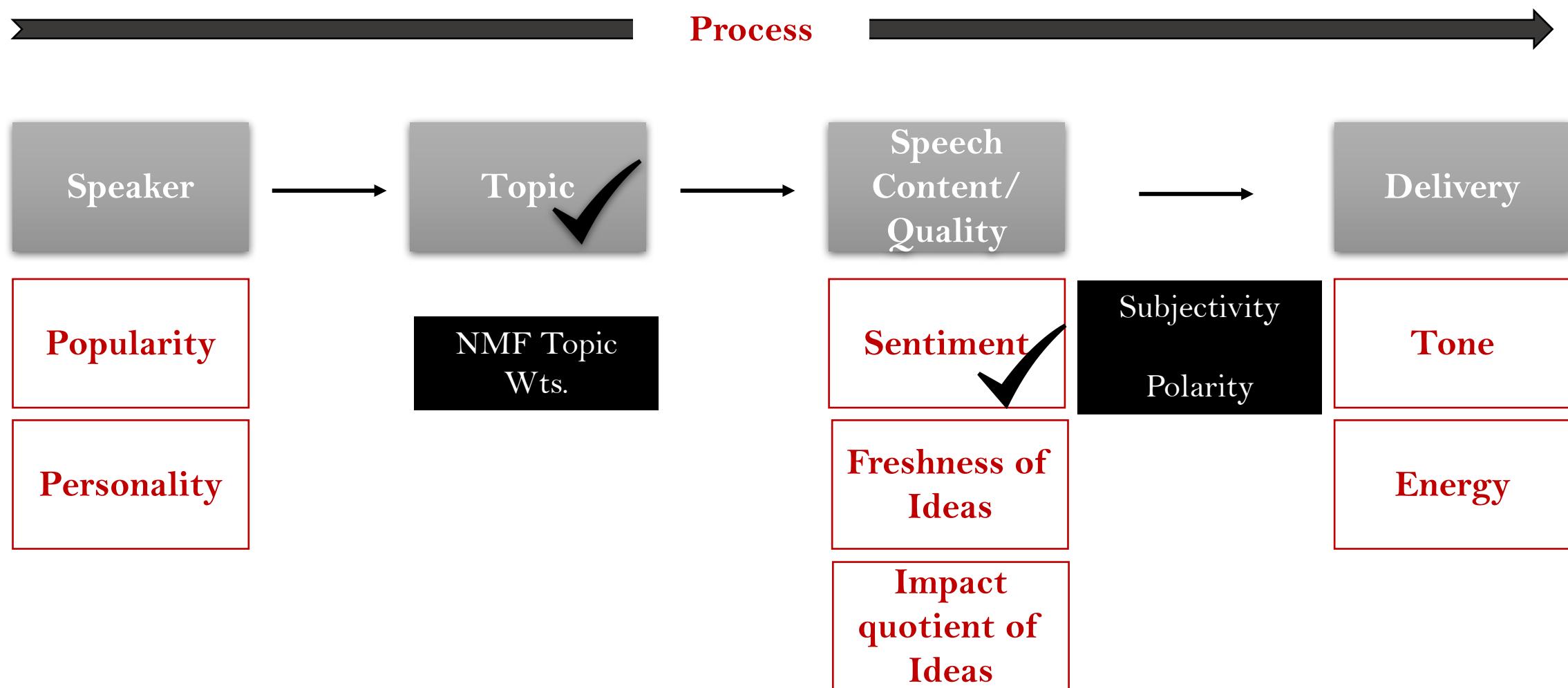
- Polarity
- Subjectivity

Topics?

- Better Me
- Stories of Positivity

Linear Regression Analysis

Key ingredients that may contribute to views of TED talks



Regression Model

CV Log R²

8.7%

Positive Coefficients

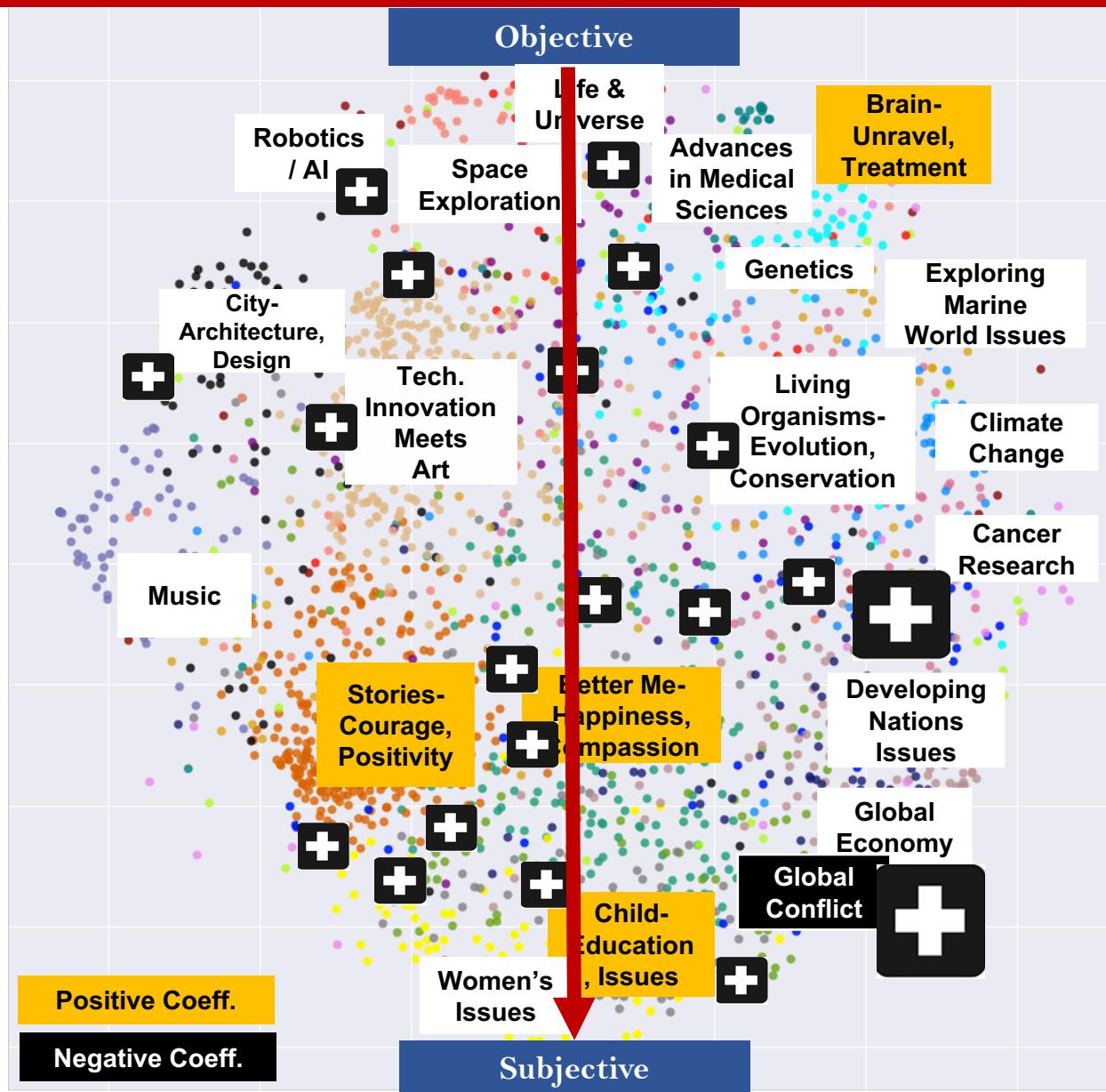
Negative Coefficients

Zero Coefficients

Better Me :	8.59
Stories of Positivity :	3.39
Brain Unravel :	2.82
Child Issues :	1.99
Robotics/AI :	0.39
Music :	0.35
Global Economy :	0.34
Subjectivity :	0.29
Data Impact :	0.07
Advances Medicine Sc. :	0.06

Global Conflict :	-3.49
Health Care :	-1.91
City Design :	-1.68
Marine World :	-1.45
Developing Nations Is. :	-1.41
Tech. Meet Art :	-1.08
Genetics :	-0.97
Women's Issues :	-0.11

Polarity
Life & Universe
Space Exploration
Climate Change
Living Organisms
Cancer Research



- Better Me-Happiness, Compassion, Psychology
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- Developing Nations-Africa, Economy, Diseases
- Genetics
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- Cancer-Research, Advances
- Advances-Medical Science

Conclusion

- A TED talk's Topic Weights and Subjectivity can explain 8.7% variance in $\log(\text{Views})$
- Subjective Topics have higher impact on the Views compared to Objective Topics

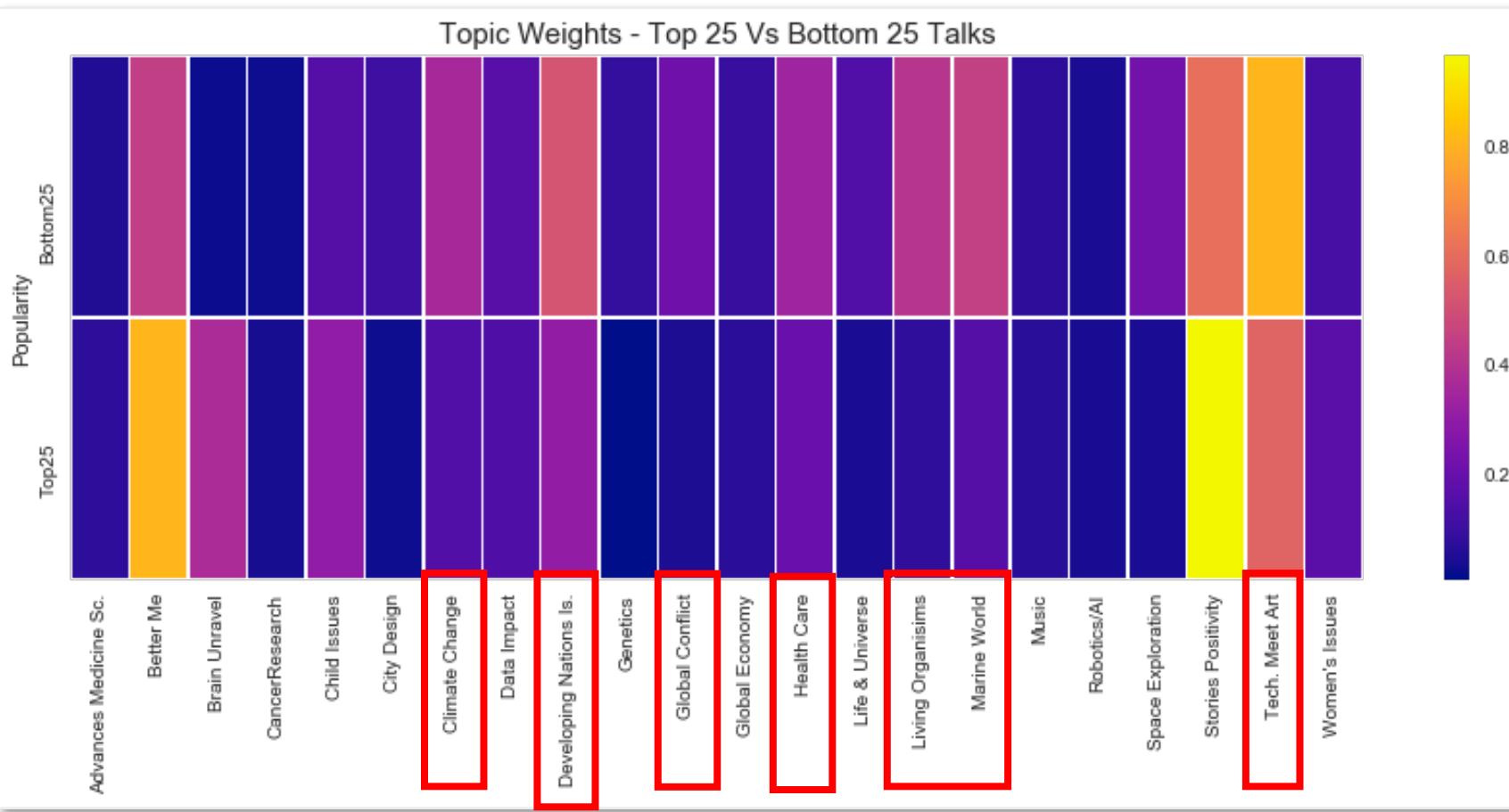
Thank You!!

Index

Plot Polarity Analysis
for Better Me

Plot Average Polarity
of all topics

Topic Weights - Top 25 & Bottom 25 Talks by Views

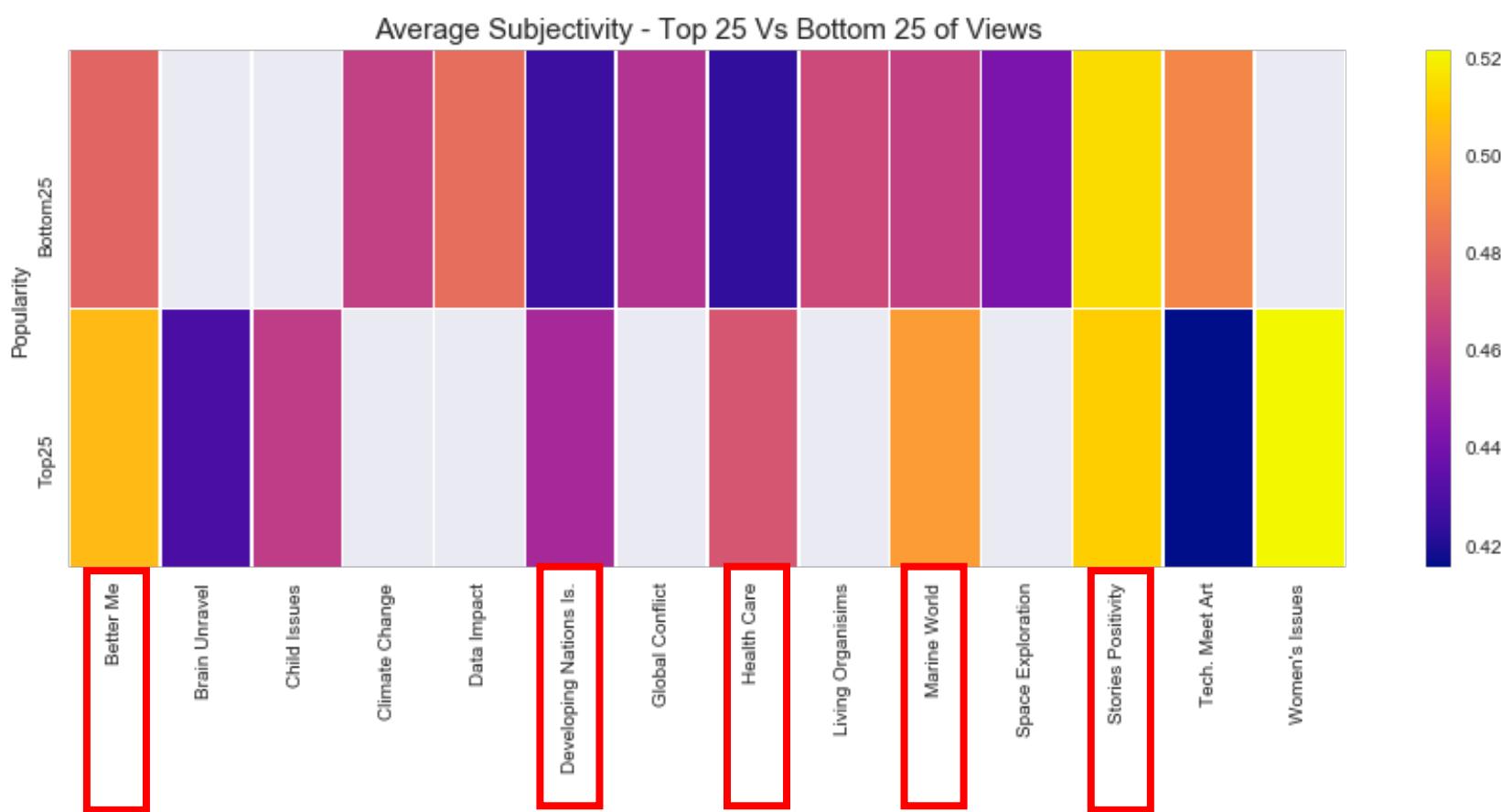


Topics with higher weights in Bottom 25 vis-à-vis Top 25 :

- Tech Meets Art
- Living Organisms-Evolution, Conservation
- Marine World-Exploration & Issues
- Global Conflicts
- Developing Nation-Economy, Diseases, Issues
- Climate Change
- Health Care

Topics on
Generic & Community Matters

Subjectivity - Top 25 & Bottom 25 Talks by Views



Average Subjectivity in top 25 talks is higher compared to Bottom 25 for these Topics-

- Health Care
- Marine World Exploration & Conservation are higher
- Better Me-Happiness, Compassion
- Stories of positivity, courage
- Developing Nation Issues

Topics

0) 'Better Me-Happiness, Compassion, Psychology',

- A philosophical quest for our biggest problems
- The surprising science of happiness
- Lose your ego, find your compassion
- Don't regret regret

1: 'Stories-Courage,Positivity', #Overcomming Odds & Writing/Stories

- Lessons from past presidents
- A life lesson from a volunteer firefighter
- My immigration story
- The bridge between suicide and life

2: 'Music',

- An 11-year-old's magical violin
- Improvising on piano, aged

3: 'Brain-Unravel,Treatment', #unravel mysteries of how the brain works & treating illness

- How brain science will change computing
- clues to understanding your brain
- Toward a new understanding of mental illness

4: 'Global Conflicts-Governance,Wars,Terorisim',

Let's rethink America's military strategy

Can democracy exist without trust?

Imagine a European democracy without borders

5: 'Life & Universe', #Quesy of life beyond earth, life sustainable conditions, clues to origins of

I'm going to the moon. Who's with me?

There might just be life on Mars

Why we need to go back to Mars

How we'll find life on other planets

6: 'Health Care Issues & Solutions',
Take health care off the mainframe
Pool medical patents, save lives
Humanity vs. Ebola.
Where to train the world's doctors? Cuba.
7: 'Women\\'s Issues-Education,Health,Inequality',
Women entrepreneurs, example not exception
Women should represent women in media
Why I believe the mistreatment of women is the number one human rights abuseâ
We should all be feminists
8: 'City Design-Architecture,Community',
Behind the design of Seattle's library
Building a park in the sky
The walkable city
Architecture that repairs itself?
9: 'Child Issues,Education',
Do schools kill creativity?
secrets of success
Teaching one child at a time
My green school dream
10: 'Space Exploration',
Is our universe the only universe?
A history of the universe in sound
How a blind astronomer found a way to hear the stars
A preview of the WorldWide Telescope
The hunt for a supermassive black hole

11: 'Data Impact-Knowledge,Social Media,Privacy', #DataScience improving knowledge in many fields

Surprising stats about child carseats

How data will transform business

How algorithms shape our world

Machine intelligence makes human morals more important

Think your email's private? Think again

12: 'Climate Change,Alternative Energy',

Averting the climate crisis

Winning the oil endgame

How fear of nuclear power is hurting the environment

13: 'Robotics/AI',

Building "self-aware" robots

The sticky wonder of gecko feet

Robots inspired by cockroach ingenuity

Robots will invade our lives

14: 'Tech. Innovations Meets Art',

Augmented-reality maps

Organic algorithms in architecture

Science-inspired design

How to engineer a viral music video

15: 'Developing Nations-Africa,Economy,Diseases',

How to rebuild a broken state 3) My wish: Three actions for Africa 4) Global priorities bigger than climate change 5) Why we should invest in a free press 6) How mobile phones can fight poverty 7)

Invest in Africa's own solutions 8) Want to help Africa? Do business here 9) Flip your thinking on AIDS in Africa 10) Africa's cheetahs versus hippos 11) Aid versus trade

16: 'Genetics',

Sampling the ocean's DNA 2) How technology evolves 3) How we discovered DNA 5) How juries are fooled by statistics 6) The life code that will reshape the future 7) My wish: Build the Encyclopedia of Life 9) Playing with DNA that self-assembles 10) On the verge of creating synthetic life

17: 'Global Economy',

New insights on poverty

Asia's rise -- how and when

The voices of China's workers

The next manufacturing revolution is here

18: 'Exploring Marine World & Issues',

Why did I ski to the North Pole? 2) Cape Breton fiddling in reel time 3) Swim with the giant sunfish 4) My creations, a new form of life 5) Underwater astonishments 6) The astonishing hidden world of the deep ocean 7) The worldwide web of belief and ritual 8) Let's look for life in the outer solar system 10) Life in the deep oceans 11) A flight through the ocean 12) The Long Now 13) Digging up dinosaurs 14) My wish: Protect our oceans 15) Seas of plastic 16) A dive into the reef's Twilight Zone 17) The beautiful math of coral 18) A wide-angle view of fragile Earth 19) My trek to the South Pole 20) Time-lapse proof of extreme ice loss 21) How I swam the North Pole 22) Dragonflies that fly across oceans

19: 'Living Organisms-Evolution,Conservation',

What separates us from chimpanzees?

Biomimicry's surprising lessons from nature's engineers

How to restore a rainforest

The mysterious lives of giant trees

The hidden beauty of pollination

20: 'Cancer-Research, Advances',

Meet the future of cancer research 3) Your genes are not your fate 4) "Clonie" 5) Healing through diet 6) A new strategy in the war on cancer 7) Can we eat to starve cancer?

21: 'Advances-Medical Science

The potential of regenerative medicine

The promise of research with stem cells

Caring for engineered tissue

A light switch for neurons

Topics in every year

- PubYear
- 2006 50
- 2007 119
- 2008 185
- 2009 215
- 2010 233
- 2011 246
- 2012 275
- 2013 241
- 2014 240
- 2015 220
- 2016 243
- 2017 119

Size of Topics-- > No. of talks in every Topic

- TopicName
 - Life & Universe 31
 - Robotics/AI 37
 - CancerResearch 39
 - Advances Medicine Sc. 50
 - Brain Unravel 56
 - Space Exploration 71
 - Genetics 77
 - Music 83
 - Data Impact 85
 - Global Economy 92
 - Health Care 94
- City Design 99
 - Marine World 100
 - Women's Issues 102
 - Global Conflict 105
 - Child Issues 108
 - Living Organisms 113
 - Developing Nations ls. 114
 - Climate Change 114 → 4.8%
 - Better Me 162 -→ 6.8%
 - Tech. Meet Art 314 →13.2%
 - Stories Positivity 340 -> 14%

Topics by Sorted by Avg.Views

Topic

- 4: 1.091570e+06
- 5: 1.144272e+06
- 8: 1.162043e+06
- 16: 1.164973e+06
- 20: 1.176604e+06
- 18 1.177798e+06
- 12 1.237095e+06
- 19 1.268315e+06
- 13 1.361770e+06

Topics by Sorted by Avg.Views

Topic

- 11: 1.387145e+06
- 6: 1.399976e+06
- 14: 1.466282e+06
- 15: 1.494542e+06
- 21: 1.546209e+06
- 17: 1.591701e+06
- 7: 1.681169e+06
- 10: 1.686881e+06
- 2: 1.958930e+06
- 1: 2.191294e+06
- 9: 2.458563e+06
- 3: 2.513969e+06
- 0: 2.987625e+06