# HAPPINESS IN THE UNITED STATES

## MEASURING THE SENTIMENT OF GEOLOCATED TWEETS

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*SISTEMAS PARA INFORMAÇÃO GEO-REFERENCIADA*

*2013/2014*

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**Analyse Twitter messages to evaluate happiness!**

# RELATED WORK

# HEDONOMETER

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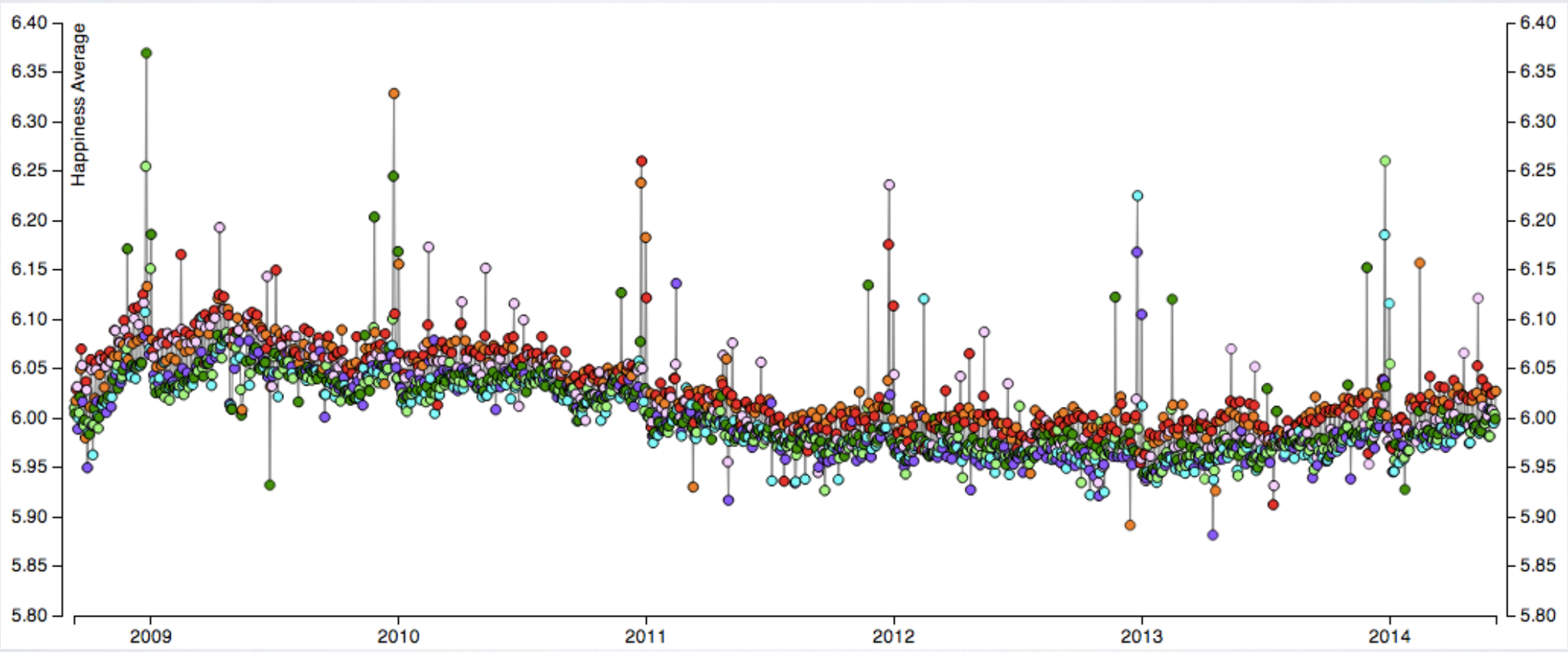

# HEDONOMETER

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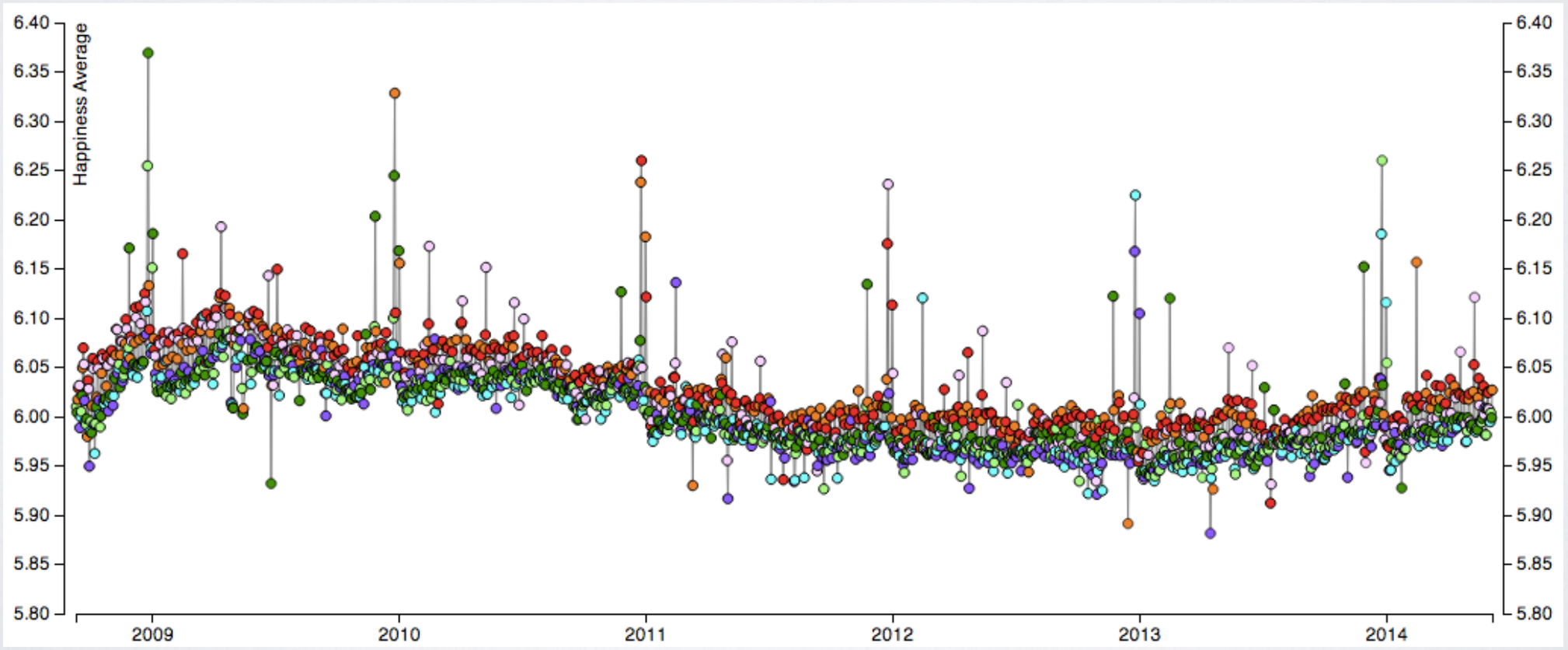
- Measure the overall average happiness
- Explain the variation in happiness across different times and places

**Results**

- Well connected users write happier status updates
- The seven day week cycle is an historical and cultural artefact



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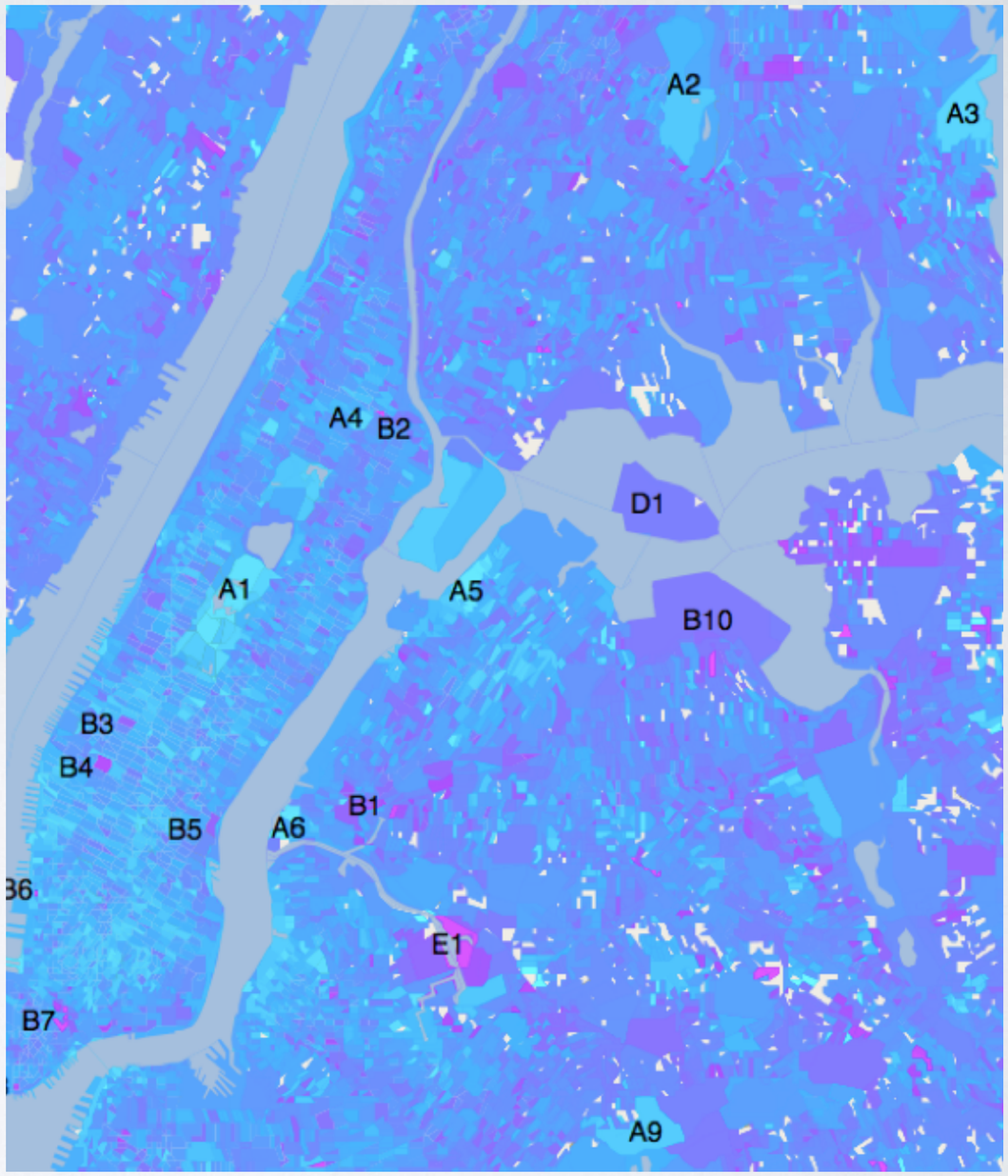


# SENTIMENT IN NYC

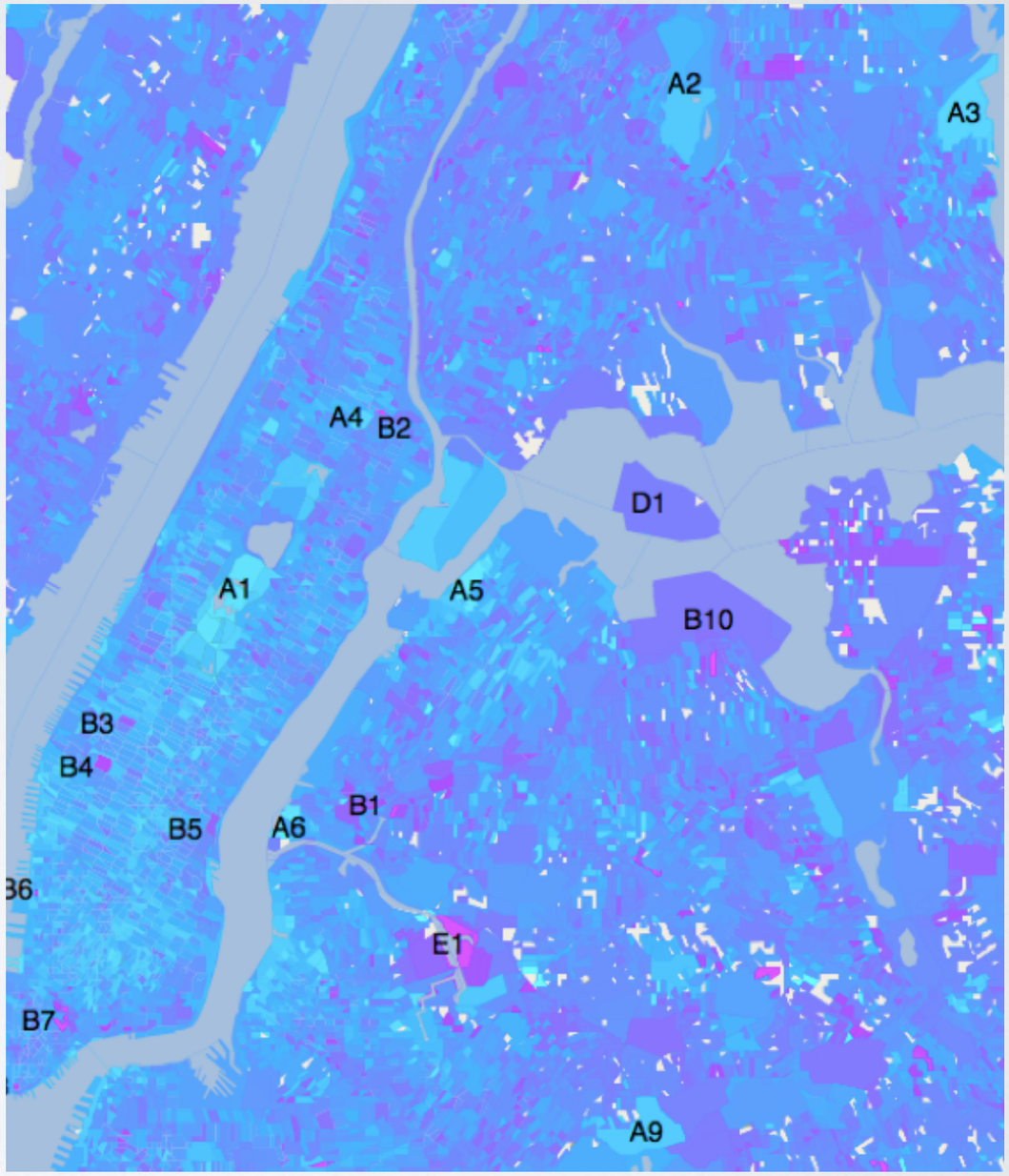
- Gauge public sentiment on extremely fine-grained spatial and temporal scales

- **Results:**

  - Sentiment progressively improves with proximity to Times Square.

  - Higher mood = parks

  - Lower mood = transportations / prisons



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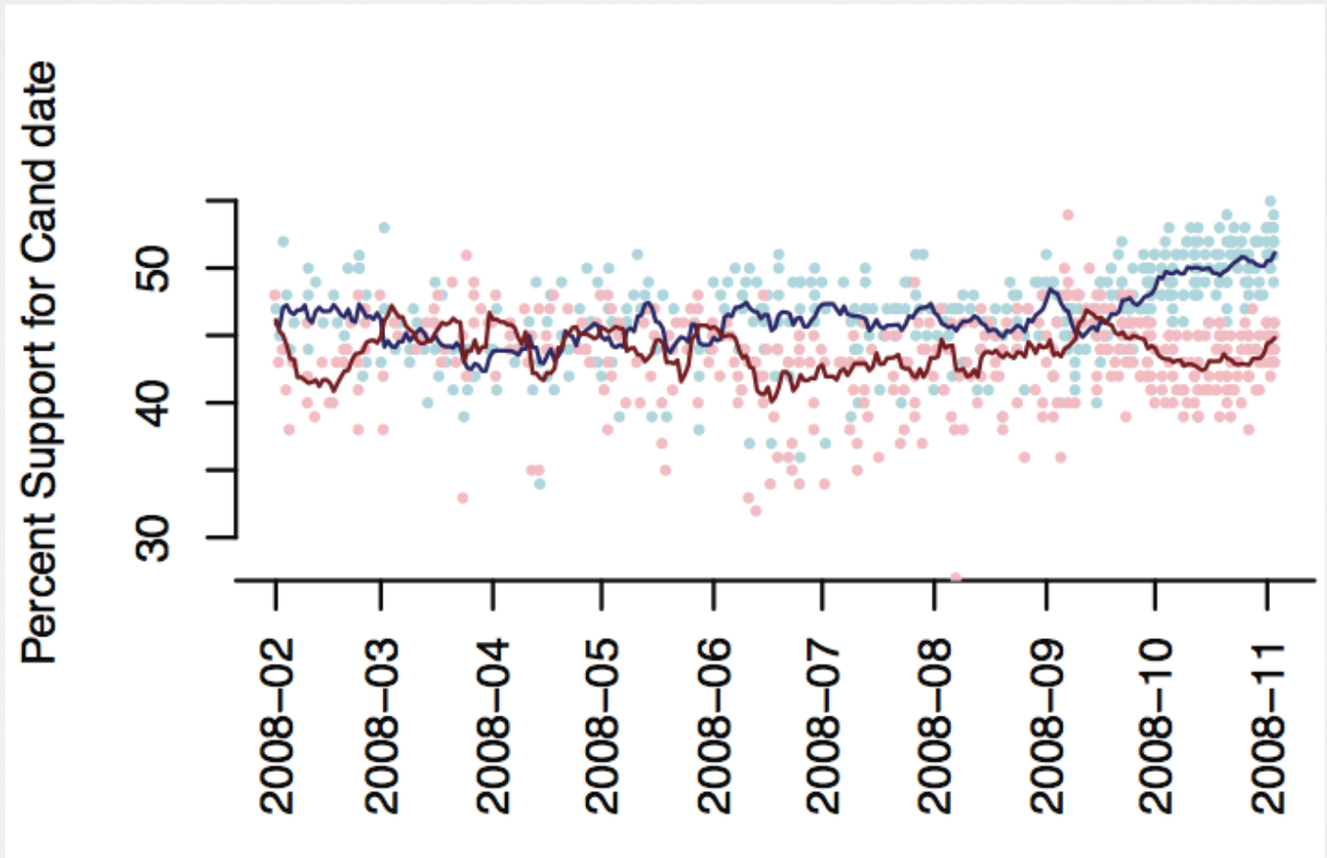

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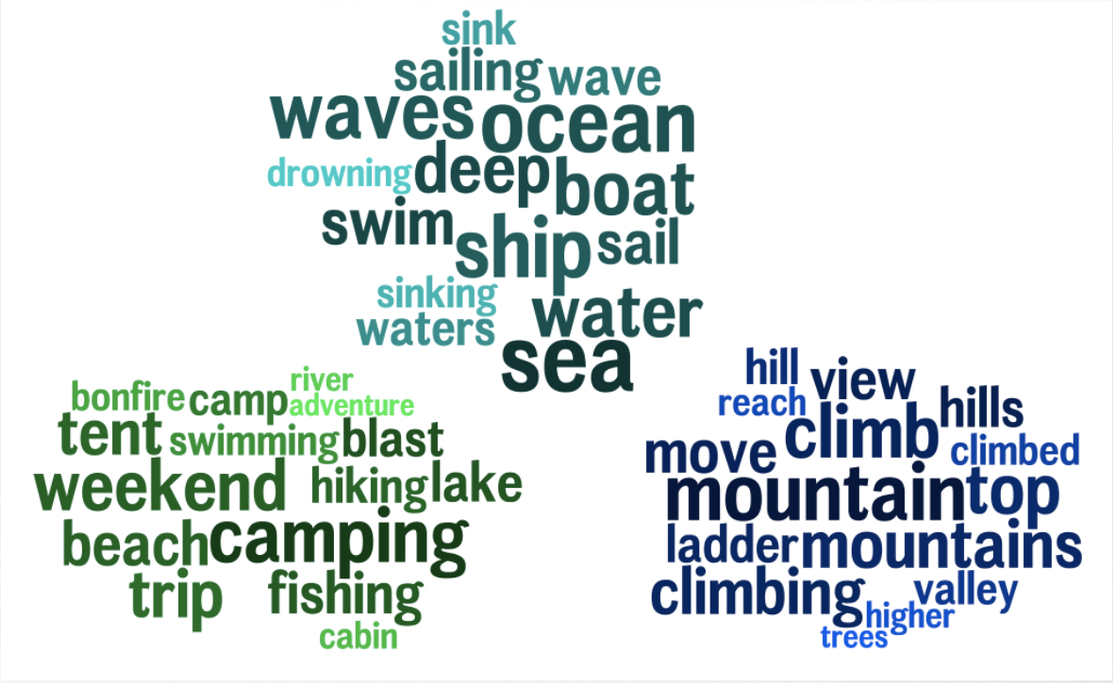

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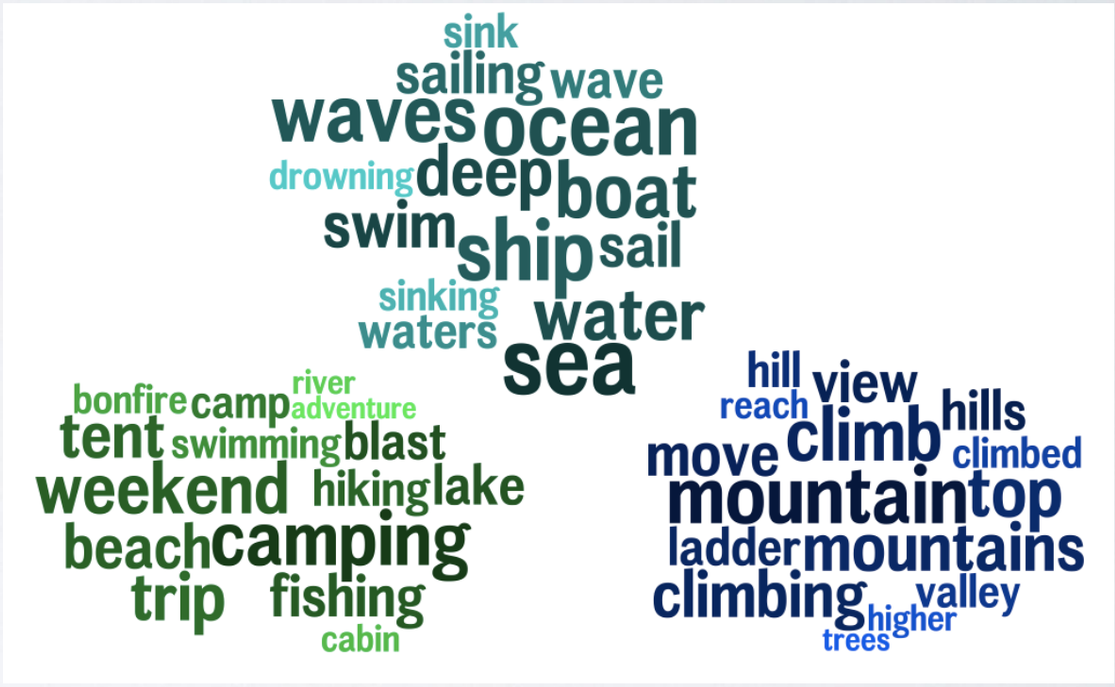

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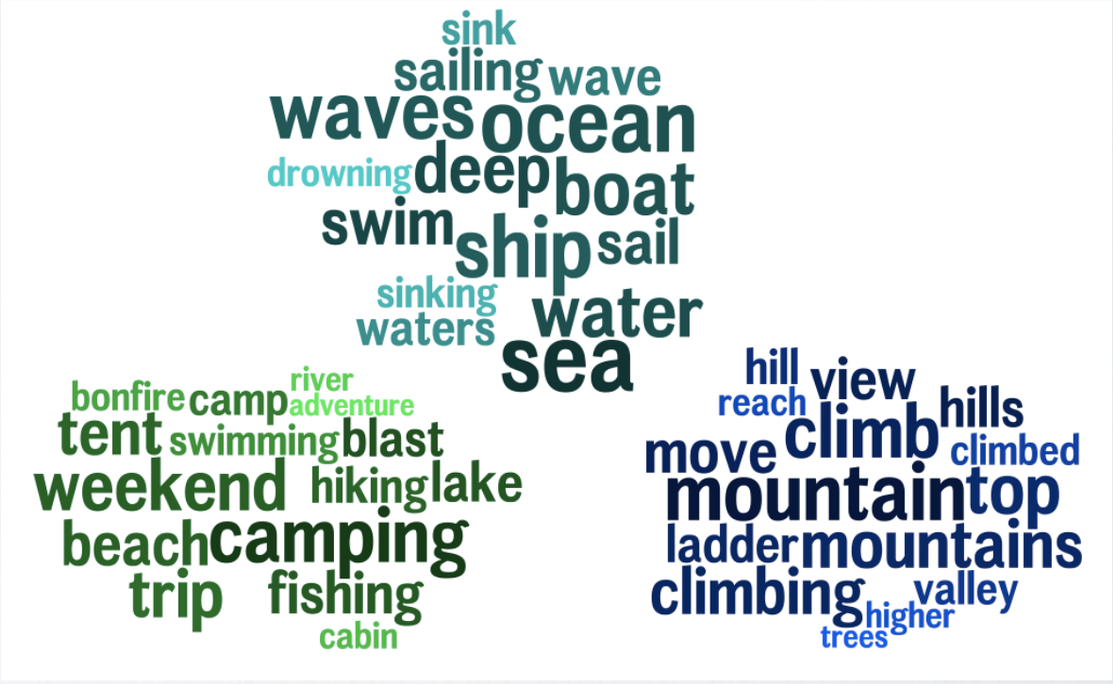
- **Result:** They can predict the happiness of one set of people from the tweets of other people



# METHODOLOGY
# &
# DATASETS

# TWEETS

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0.5 Million U.S. Geotagged Tweets

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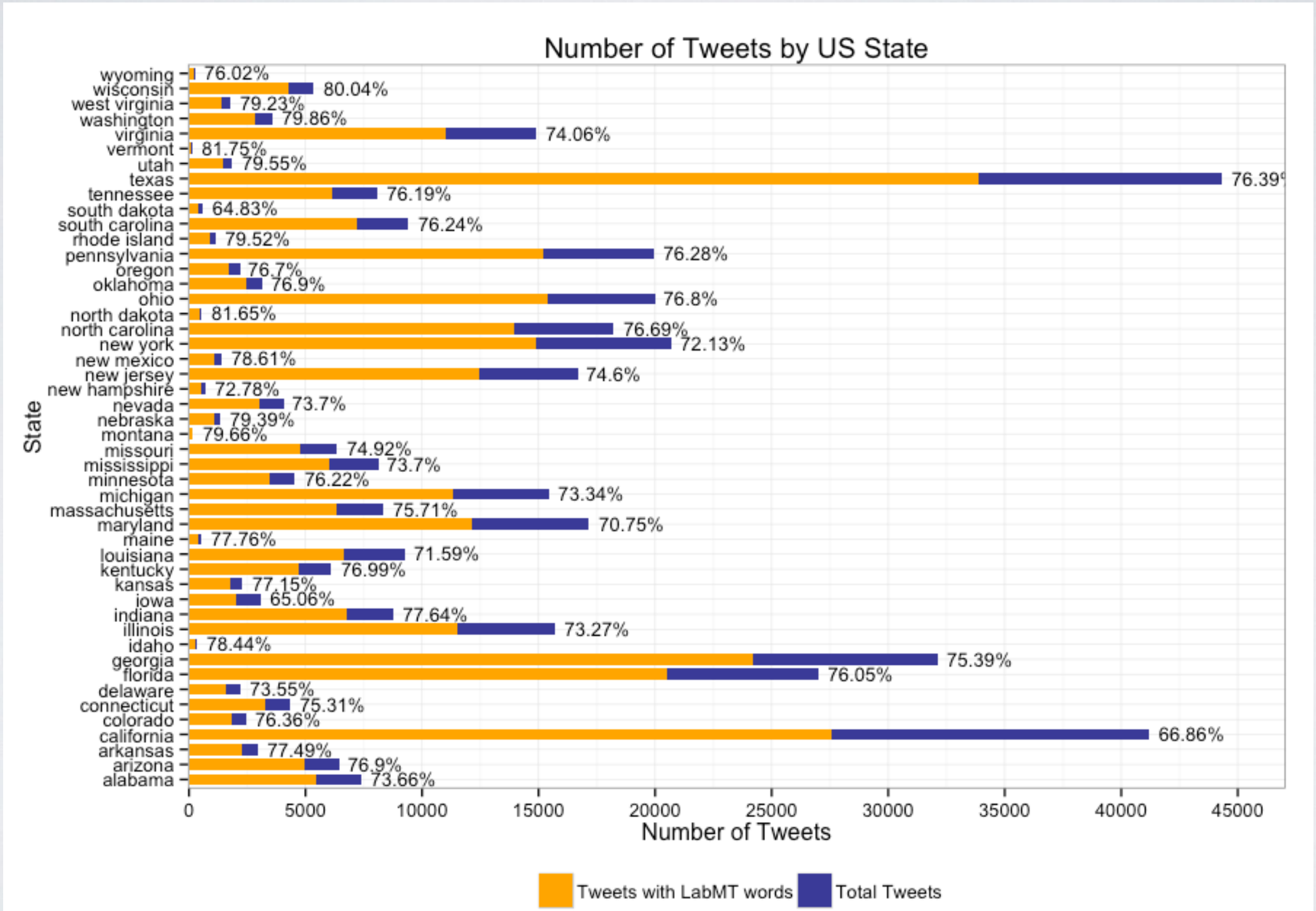
    - Removed ’N-word’
    - Removed state names
- Final list with **3’722 words — Filter tweets!**

# TWEETS WITH LABMT WORDS



# TWEET HAPPINESS SCORE

Lyrics for
Michael Jackson's Billie Jean

"She was more like a beauty queen
from a movie scene.
⋮
And mother always told me,
be careful who you love.
And be careful of what you do
'cause the lie becomes the truth.

Billie Jean is not my lover,
She's just a girl who claims
that I am the one.
⋮

| ANEW words | $v_k$ | $f_k$ |
|---|---|---|
| $k$=1. love | 8.72 | 1 |
| 2. mother | 8.39 | 1 |
| 3. baby | 8.22 | 3 |
| 4. beauty | 7.82 | 1 |
| 5. truth | 7.80 | 1 |
| 6. people | 7.33 | 2 |
| 7. strong | 7.11 | 1 |
| 8. young | 6.89 | 2 |
| 9. girl | 6.87 | 4 |
| 10. movie | 6.86 | 1 |
| 11. perfume | 6.76 | 1 |
| 12. queen | 6.44 | 1 |
| 13. name | 5.55 | 1 |
| 14. lie | 2.79 | 1 |

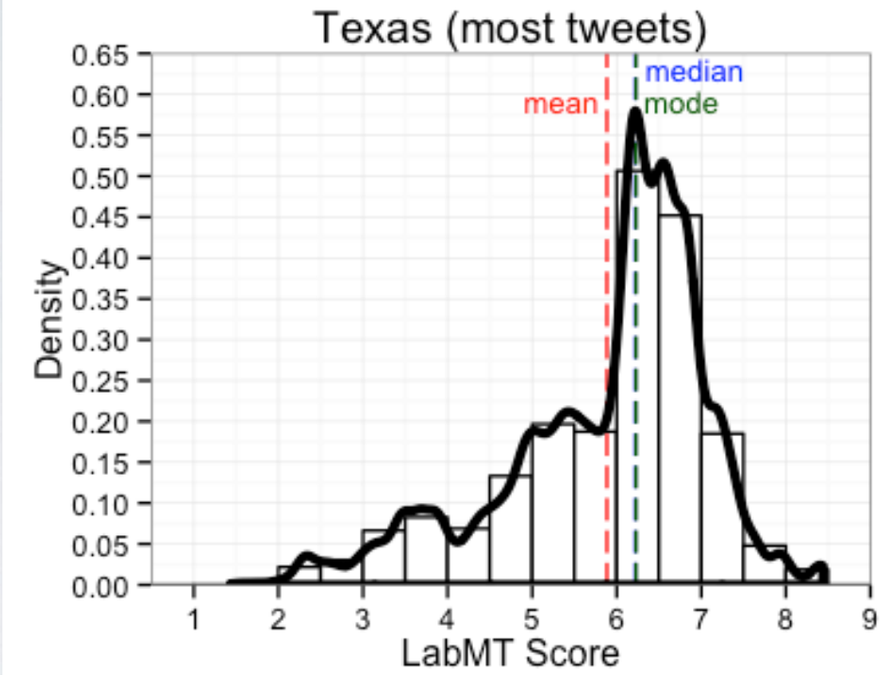
$$v_{\text{text}} = \frac{\sum_k v_k f_k}{\sum_k f_k}$$

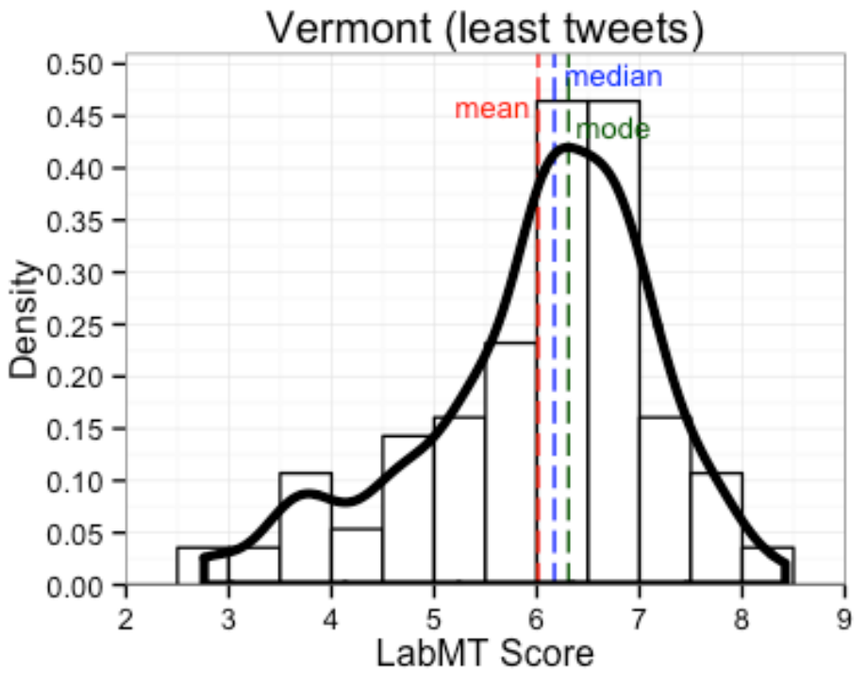
$$v_{\text{Billie Jean}} = 7.1$$

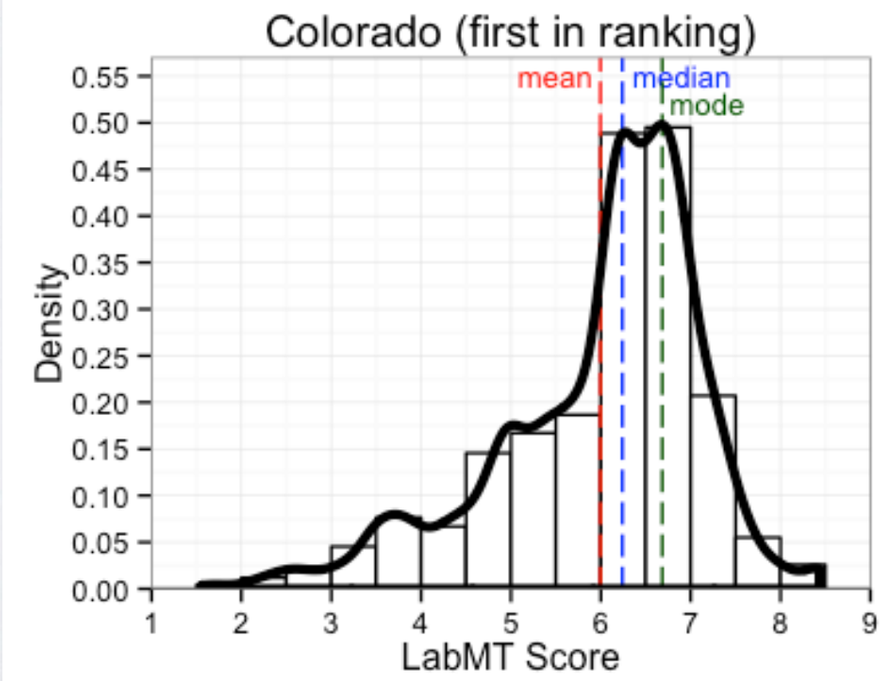
$$v_{\text{Thriller}} = 6.3$$

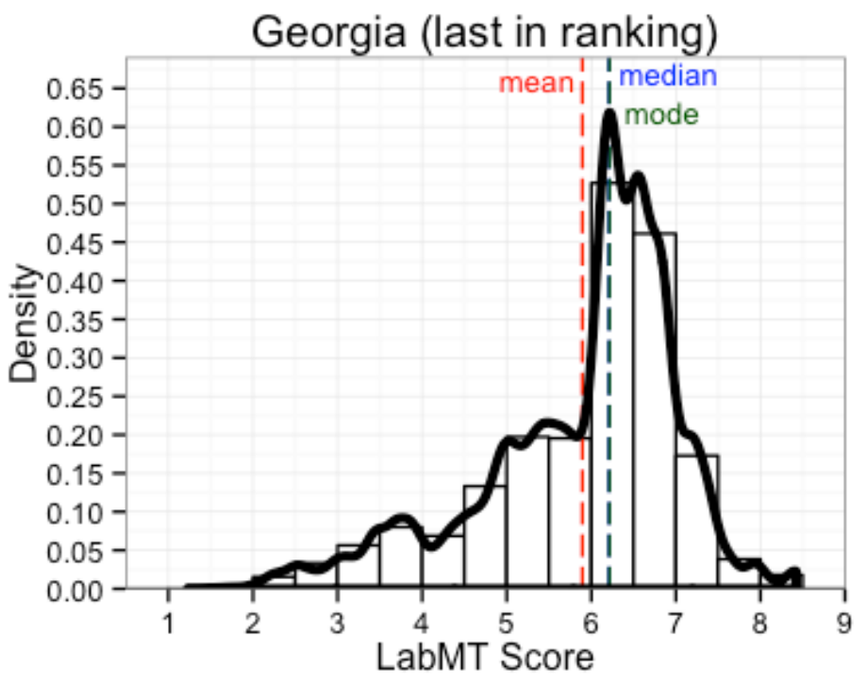
$$v_{\text{Michael Jackson}} = 6.4$$

# SCORES BY STATE



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- *mode* with:
  - range from 1 to 9 (LabMT word scale)
  - smooth factor of 0.80

# OTHER WORK

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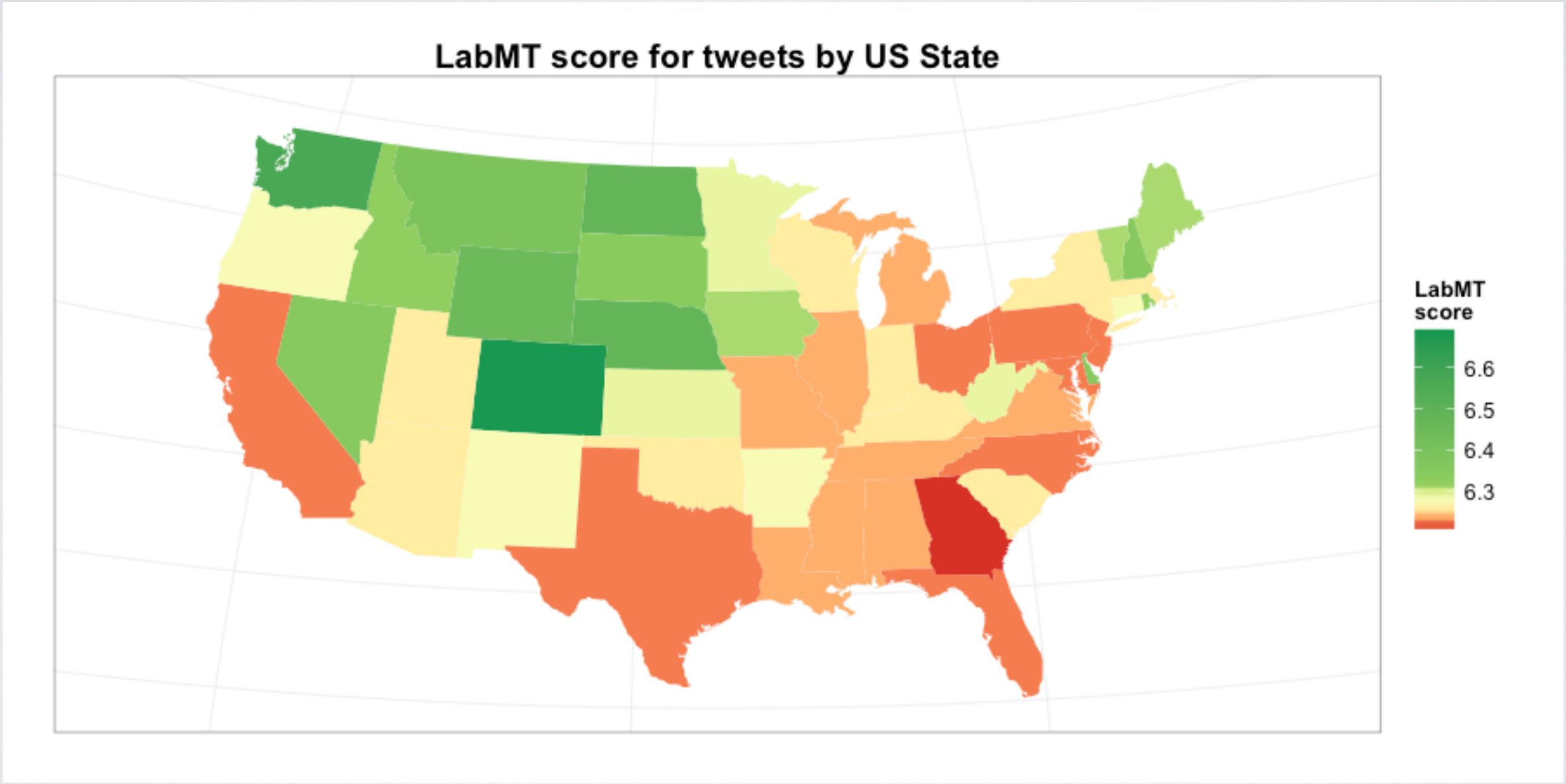
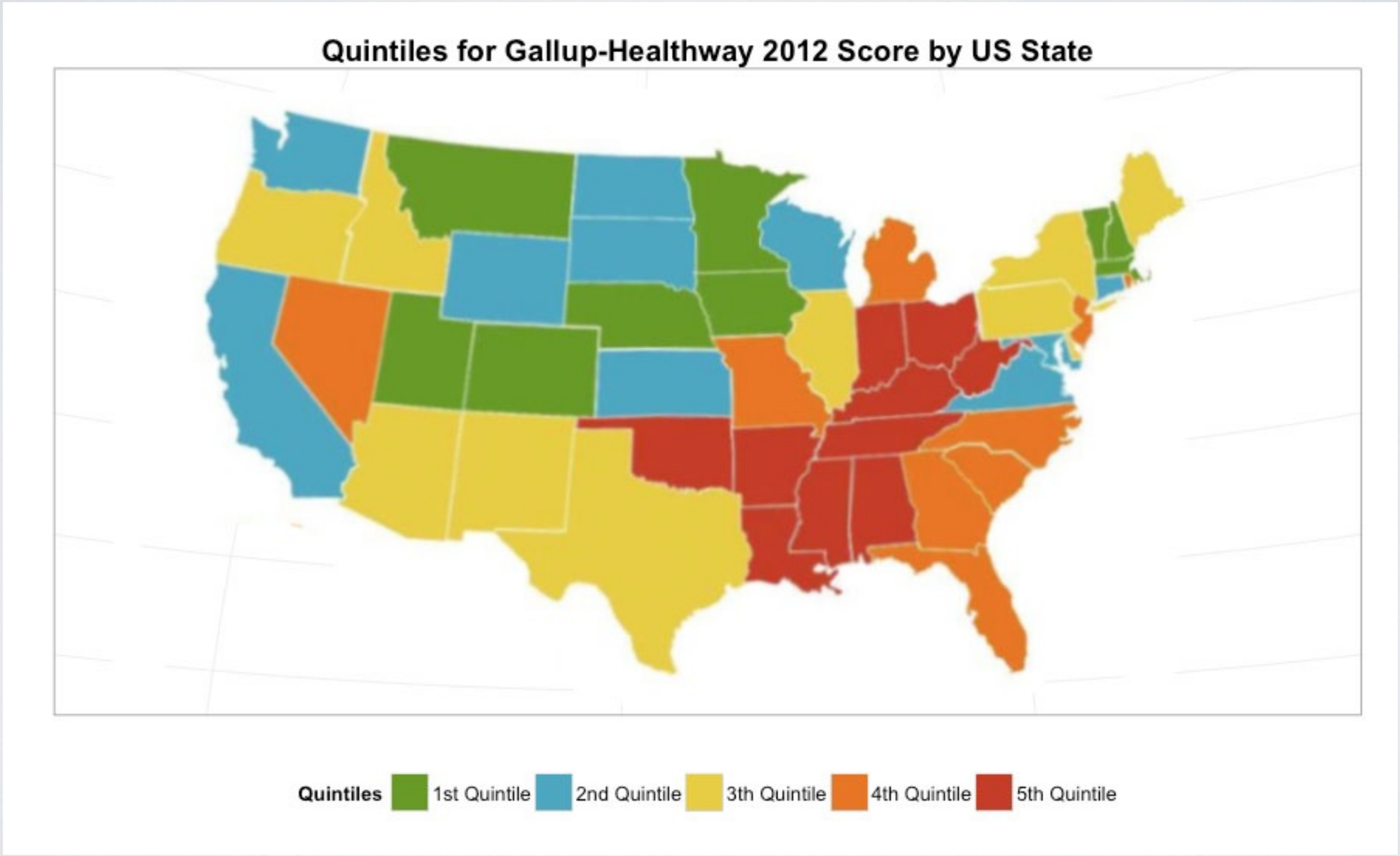
  - '*over*' function from '*sp*' R package
- *Gallup-Healthway* Well-Being Index 2012 Report
  - Rescaled from percentage scale (0-100) to 1-9 LabMT scale

# RESULTS

# SCORE BY STATE



# SCORE WITH QUINTILES BY STATE



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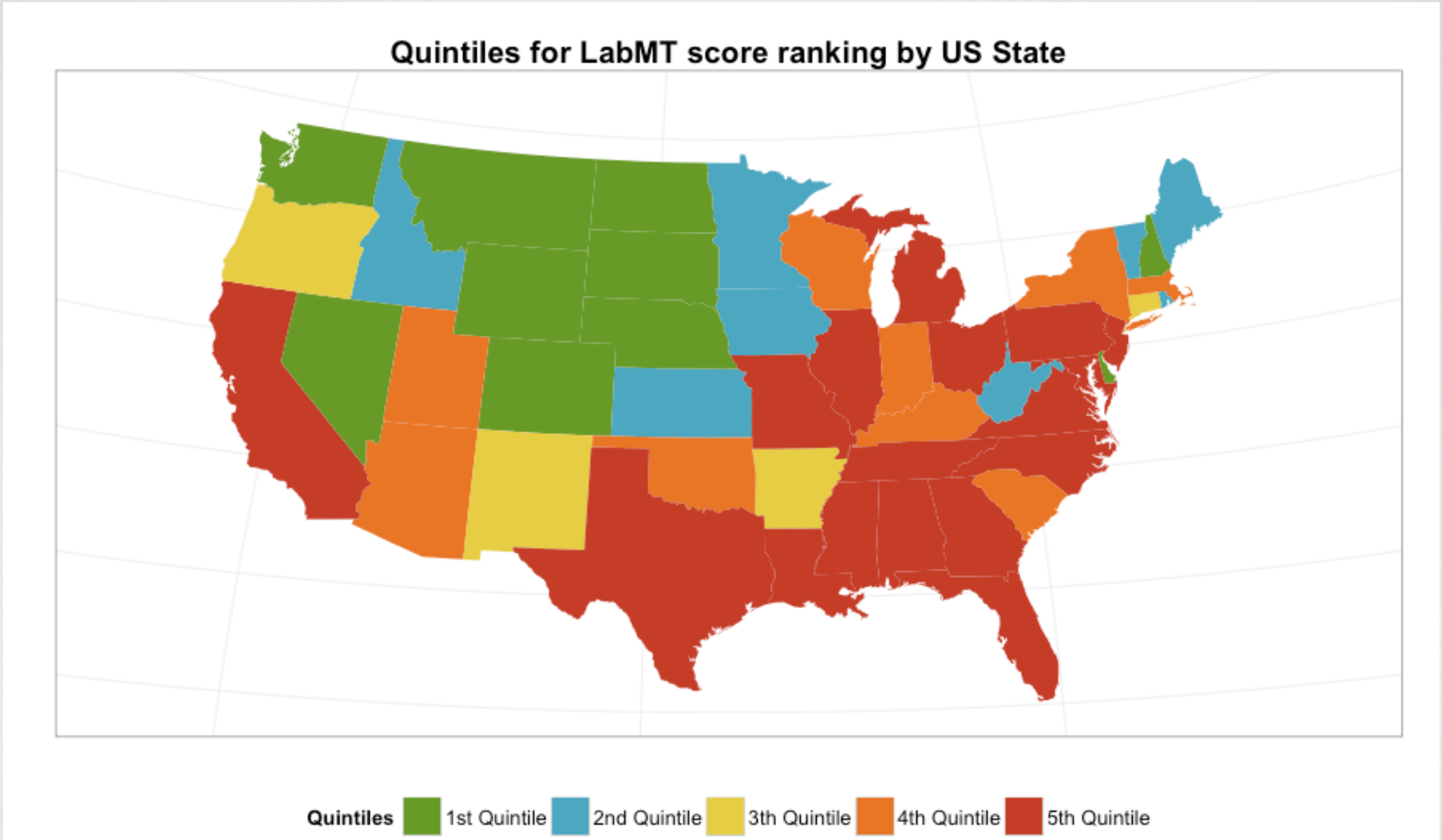
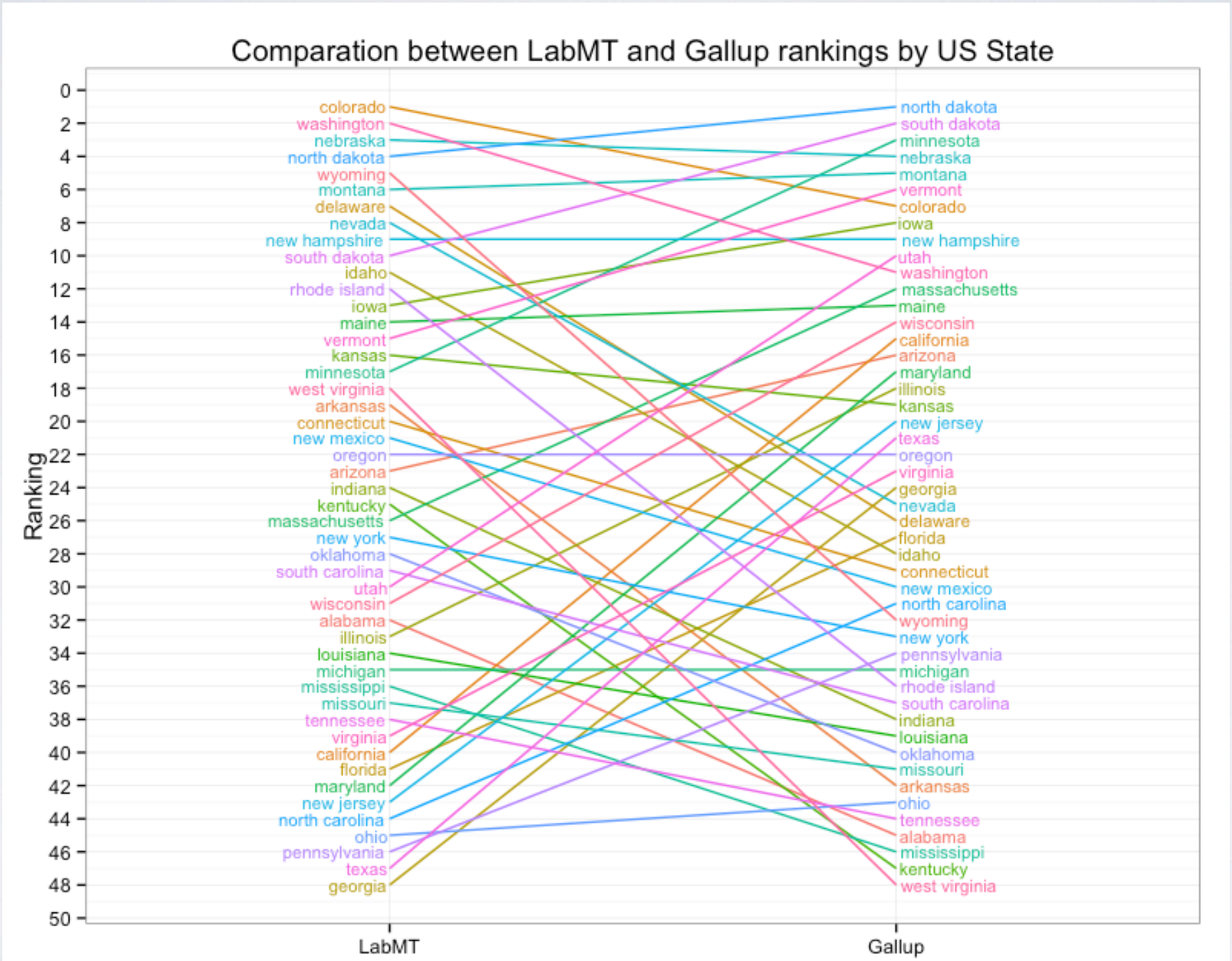


# LABMT VS GALLUP-HEALTHWAY



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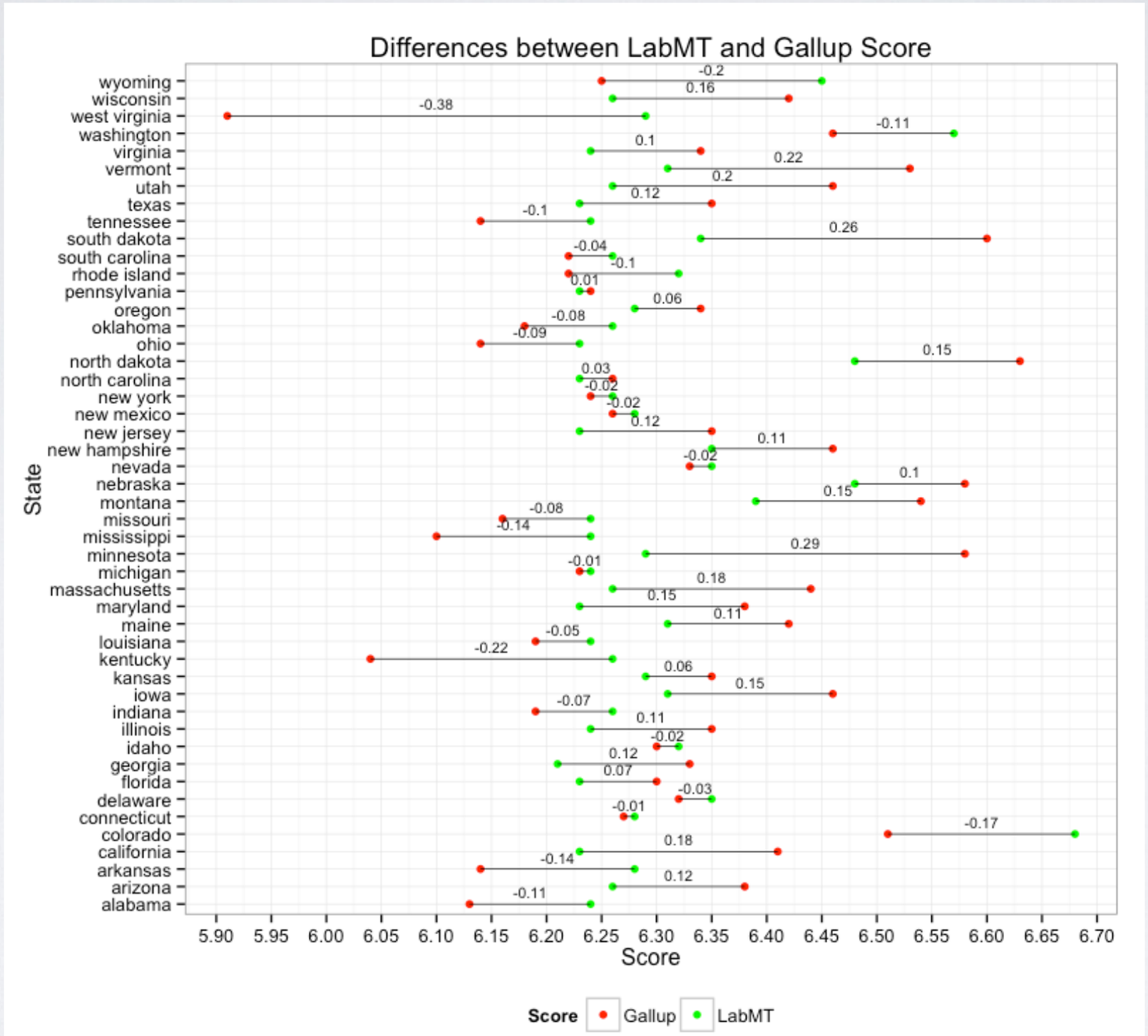
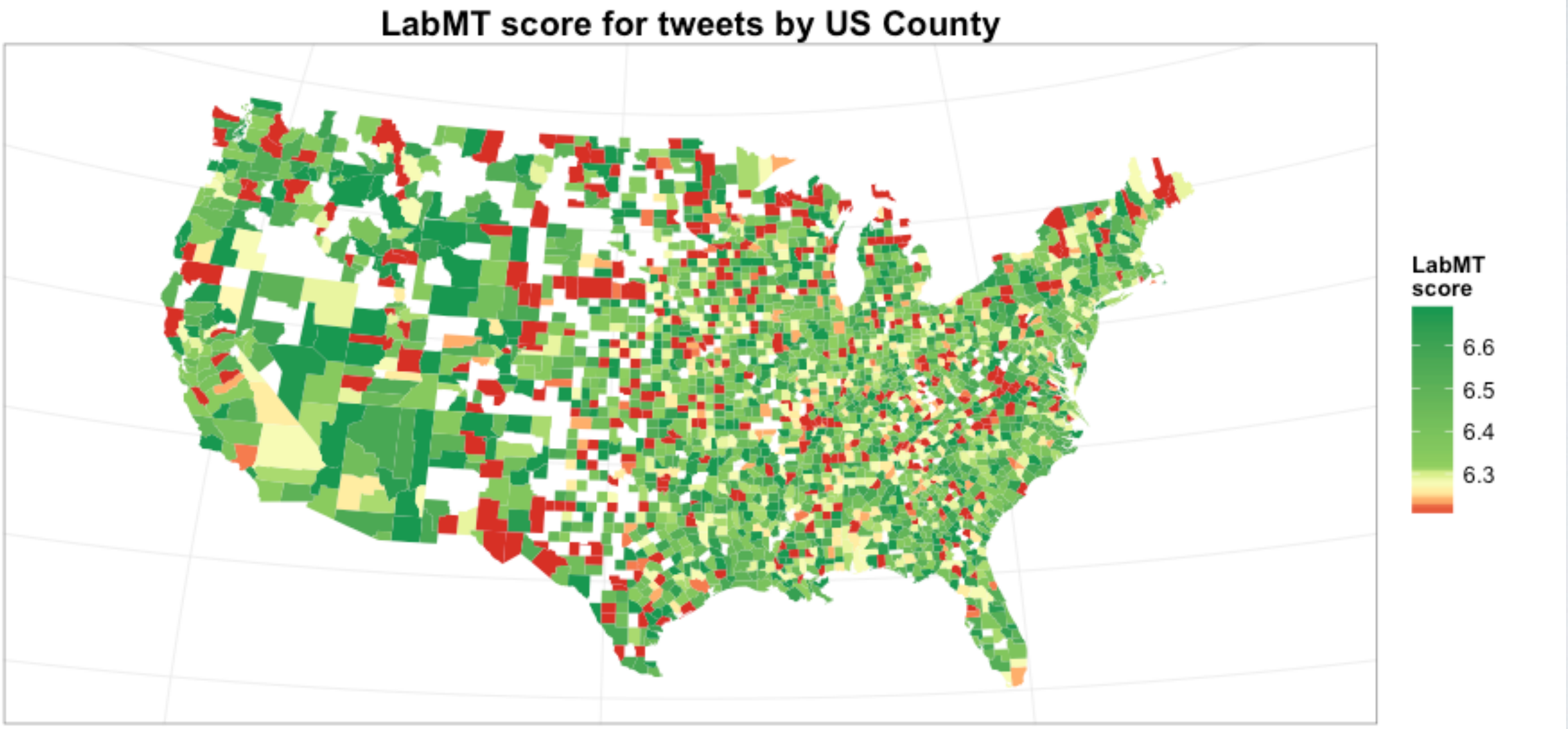


# SCORE BY COUNTY



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  - ***corr(ranking, tweets) = 0.77***
  - ***corr(score, tweets) = -0.48***

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- Good correlation value between our study and Gallup-Healthway
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| Ranking | Avg. Tweets |
|---|---|
| 1-12th | 1376 |
| 13-24th | 4391 |
| 25-36th | 5344 |
| 37-48th | 14479 |

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- Expand Schwartz et. al. work
  - Add number of tweets to regression model

# THANK YOU!

# QUESTIONS?