Using SAS® Visual Analytics to Explore the Western Kentucky University Twittersphere

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#SASGF
The purpose of this project was to analyze publicly accessible Twitter data related to Western Kentucky University (WKU). This process involved the weekly use of SAS® Visual Analytics to scrape 140-character tweets relative to a given search term. Once pulled into SAS Visual Analytics, the sentiment and text-body of the tweets were analyzed using the text analysis features of SAS Visual Analytics, and the results were recorded. Because this project was conducted on a weekly basis, the average sentiment results provided an interesting time-series perspective into the positive and negative sentiments surrounding WKU in the digital world.

**SENTIMENT ANALYSIS**

• “...the field of study that analyzes people’s opinions, sentiments, evaluations, appraisals, attitudes, and emotions towards entities such as products, services, organizations, individuals, issues, events, topics, and their attributes.” (Liu, 2012)

**THE BIG PICTURE**

• What are people saying about Western Kentucky University on Twitter?
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METHODOLOGY

2. **Import Twitter Data** → **Input search term, number of Tweets, and name data set:**

![Import Twitter Data](image1)

- **Search term:** WAU
- **Maximum tweets to return:** 2000
- **Name:** TWEETS_KYU203
- **Description:** Imported on Thursday, November 10, 2017 11:51:15 AM GMT-0600 to "Twitter Output" by "Bozzich, Taylor"

3. **Create ‘Document Collection’ from the body of Tweets:**

![Create Document Collection](image2)
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METHODOLOGY

4. Word cloud visualization:

5. Properties ➔ Text analytics: Advanced ➔ Analyze document sentiment:
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**METHODOLOGY**

6. **Select topic of interest → View Tweets and sentiment ratings:**

7. **Explore topics and number of Tweets at different sentiment levels:**

8. **Record week number, date range, search term, and topics:**

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### METHODOLOGY

8. Record number of Tweets per topic, the number of Tweets at each sentiment level, and the average percentage for each sentiment level:

<table>
<thead>
<tr>
<th>Week #</th>
<th>Date Range</th>
<th>Search Term</th>
<th>Topics</th>
<th>Total # of Tweets</th>
<th>Positive</th>
<th>Neutral</th>
<th>Negative</th>
<th>Positive [%]</th>
<th>Neutral [%]</th>
<th>Negative [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>2/11/13 - 2/23/13</td>
<td>WKU</td>
<td>wku, wku, clay</td>
<td>535</td>
<td>189</td>
<td>259</td>
<td>47</td>
<td>35.33%</td>
<td>55.89%</td>
<td>8.79%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>point, thompson, johnson, justin</td>
<td>852</td>
<td>58</td>
<td>270</td>
<td>24</td>
<td>16.48%</td>
<td>76.70%</td>
<td>6.82%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>marshall, lady, brown, Ivy brown</td>
<td>265</td>
<td>34</td>
<td>212</td>
<td>19</td>
<td>12.83%</td>
<td>80.00%</td>
<td>7.17%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>wku etown, etc, etown, etc</td>
<td>203</td>
<td>50</td>
<td>190</td>
<td>12</td>
<td>20.91%</td>
<td>74.52%</td>
<td>4.56%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>gotigersgo, memphis, lead, inning</td>
<td>223</td>
<td>26</td>
<td>175</td>
<td>32</td>
<td>11.18%</td>
<td>75.11%</td>
<td>13.73%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>texas, north texas, north, north</td>
<td>191</td>
<td>24</td>
<td>154</td>
<td>13</td>
<td>12.57%</td>
<td>80.63%</td>
<td>6.81%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>versus, mt_vubb, 6:30, wgnssports</td>
<td>159</td>
<td>84</td>
<td>117</td>
<td>8</td>
<td>21.86%</td>
<td>78.58%</td>
<td>5.03%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>wind speed, speed, brisk, wind</td>
<td>133</td>
<td>4</td>
<td>127</td>
<td>2</td>
<td>3.01%</td>
<td>95.49%</td>
<td>1.50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>rain, chance, evening, low</td>
<td>117</td>
<td>40</td>
<td>64</td>
<td>16</td>
<td>34.19%</td>
<td>54.70%</td>
<td>13.05%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>squirrel weather, white, sunrise, sunset</td>
<td>79</td>
<td>3</td>
<td>74</td>
<td>2</td>
<td>3.80%</td>
<td>93.87%</td>
<td>2.33%</td>
</tr>
</tbody>
</table>

9. Record the average sentiment across topics and import into a SAS data set:
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10. Visualize using PROC SGPLOT or upload to Visual Analytics and generate a new report:

- Week 6: Tucker Carlson interview about preparations
- Week 7: WKU Players in NFL Draft
- Week 12: WKU Football Players Indicted in Assault
- Week 18: A lot of birthday wishes and overall happiness for WKU students and alumni
- Week 20: WKU suspended a 5-star basketball recruit after he broke team rules
- Week 22: Students starting to come back to WKU for the fall semester
- Weeks 25-28: Bad football loss, 5-Star Basketball Recruit Left, and Basketball Alumni Passed Away
- Week 33: A handful of big wins for WKU athletics
- Week 32: Cold weather and bad football loss
11. View common devices and number of retweets:

![Graph showing frequency of devices and retweets](image-url)
RESULTS AND OBSERVATIONS

• WKU appears to have a generally positive sentiment on Twitter

• Sports topics overwhelmingly make up the majority of WKU Twitter activity

• Notable positive spikes:
  - associated with football and basketball (men's and women's) victories
  - good weather patterns
  - the start of a new semester

• Notable negative spikes:
  - Fox News story about the WKU Student Government Association
  - Football players and fraternity got into a fight/legal indictments
  - Streak of bad weather and sports losses

IMPLEMENTATIONS AND CONCLUSION

• Possible uses and implementations:
  - Track public perception and coordinate public relations campaigns
  - Optimize marketing based on weekly trends
  - Promote athletics

• SAS® Visual Analytics is extremely easy to use and provides a great tool for basic social media analysis

REFERENCES
